



BLACK BOX
OPERATIONS

SERVICE CATALOG
AND PORTFOLIO

From our Founder and CEO



At Black Box, solving complex problems and creating adaptive solutions that benefit the world, its people, and the economy, is central to our business strategy and the very backbone of our culture. Black Box's success is tied directly to our culture of business and technology innovation, a culture built on our core values of honor, loyalty, and courage.

As Black Box moves into its 10th year of business, as our teams continue to grow, as our partnerships continue to strengthen, and as our clients continue to sprint past their goals and exceed their own projections and expectations, we remain motivated by the efficacy of our culture and steadfast in the strength and persistence of our core values.

FROM SOLUTIONS MANAGEMENT TO INNOVATION OPPORTUNITIES

We are constantly integrating more sustainable, cost-effective, and scalable ways of conducting good business and steering technological innovation, and dedicate a significant amount of time and effort to working on Black Box while also working in Black Box - from development processes, to logistics and standard operating procedures, to exchanges, partnerships, and client relations.

While our efforts are focused on ensuring our clients, our partners, and our own ongoing growth and success, we recognize that we're positioned to leverage the evolution of our techniques and methodologies to drive positive change across any and every industry that uses, relies, or thrives on technology or technological innovation.

STRATEGY OF CERTAINTY

Our strategy to create value while pursuing innovation that strengthens businesses and has a lasting, positive impact on our world, is simple; focus directly on core issues, provide measurable results, and be finished only when the results themselves resolve all core issues and exceed even our own expectations.

Our clients often need more than technological solutions. They require a deeper understanding of their objectives, a firmer grasp on their audience and their market, and a clearer vision of how they go from ideation to implementation to daily operations.

Black Box exists in order to provide certainty to businesses and organizations; Certainty that requirements specify something that can be created and will be used. Certainty that solutions will satisfy real needs and solve complex problems. Certainty that development and innovation will not demand an unknown amount of time, effort, and money.

IT'S NOT ABOUT MOVEMENT, IT'S ABOUT IMPROVEMENT

By sharing our experience, documenting our own efforts, noting where we've fallen or faltered, using results and feedback to improve our processes and offerings, and identifying challenges that lie ahead, we hope Black Box continues to raise the bar of excellence and positively shape the future.

The challenge of innovating and creating profound, lasting solutions requires unwavering commitment and dedication, and we strongly believe it all begins with a simple idea: better identify problems, create better solutions.

I look forward to looking forward with you,

Dr. Kelly Storm
Founder, CEO
Black Box Operations, LLC

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01

Designing and Planning Software and Business Solutions

The effectiveness of software and business depends entirely on the content and qualities of their designs, specifications, and plans. The services found in this section provide deliverables and results that adhere to international standards, recommended practices, and guidelines for compliance with the IEEE-SA Standards Board.

Black Box specializes in pre-development analysis, research, design, and planning, providing our clients with bullet-proof software specifications, marketing strategy, and business plans.

This section contains services that define the requirements, policies, procedures, and work instructions for creating software and business solutions. Rely on Black Box to give you the level of quality and professional expertise necessary to research, analyze, design, and plan your solutions.

1. Designing and Planning Software and Business Solutions

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Contact Black Box Support to request more information about our Designing and Planning Software and Business Solutions services found within this section

- Email: support@blackboxoperations.com
- Online: <https://blackboxoperations.com/services/designing-software-and-business-solutions>

Or reach out if you'd like to go ahead and schedule our initial consultation where we will:

1. Identify and further discuss your needs, time lines, and expectations
2. Determine if other related services may benefit your business or organization
3. Provide a time and cost estimate for review, discussion, and negotiation

1.1 Software Requirements Analysis and Specification

1.1.1 Description of Service

The Software Requirements Analysis and Specification service allows our teams to create exhaustive specifications for software, platforms, and applications, such that the requirements themselves are based entirely on your specific business requirements, needs, and expectations.

This service allows us to remove all the guesswork, providing you with specifications that meet or exceed international standards and expectations. Our teams will work together on the strategy and design of your software, platform, and application requirements, providing you and your team the comfort of certainty and guarantee of quality and completeness.

1.1.2 Why It's Valuable and How It's Beneficial

By adhering strictly to the guidelines and recommended practices of the IEEE-SA Standards Board, the deliverables and results of our work and efforts are provided in internationally understood, and expected, structures, frameworks, and language.

We believe so strongly in the value of our specifications that we employ the use of these services internally when creating our own software, platforms, and applications, or specifying the requirements for a system we build to solve problems we're experiencing ourselves.

1.1.3 What You Purchase and Receive

The Software Requirements Analysis and Specification service provides our clients with any or all of the following fully completed plans, descriptions, and specifications.

1. **Software Requirements Specification (SRS):** Documentation of the essential requirements, such as functions, performance, design constraints, and attributes, of the software. The software requirements are derived from the system specification.
2. **Software Design Description (SDD):** A representation of software created to facilitate analysis, planning, implementation, and decision making. The software design description is used as a medium for communicating software design information, and may be thought of as a blueprint or model of the system.
3. **Interface Requirements Specification (IRS):** Documentation that specifies requirements for interfaces between systems or components. These requirements include constraints on formats and timing.
4. **Interface Design Description (IDD):** Documentation that describes the architecture and design of interfaces between system and components. These descriptions may include control algorithms, protocols, data contents and formats, and performance metrics.
5. **Software Project Management Plan (SPMP):** A plan containing the policies, procedures, and work instructions for managing a software development project that defines the technical and managerial processes necessary to develop work products that satisfy the product requirements.
6. **Interface Development Plan (IDP):** A plan containing the policies, procedures, and work instructions for the work necessary to create and complete a design, interface, or front-end according to the core requirements and guidelines within the corresponding Interface Requirements Specification (IRS) and Interface Design Description (IDD).
7. **Software Testing and Modeling Plan (STMP):** A plan containing the policies, procedures, and work instructions for conducting software A/B testing, multivariate testing, choice modeling, and between-group

design experiments.

8. **Software Verification and Validation Plan (SVVP):** A plan containing the policies, procedures, and work instructions for conducting software verification and validation analysis and testing of core system and software requirements found within the corresponding Interface Design Description (IDD) and Software Design Description (SDD) documents.

1.1.4 How Much It Will Cost

The cost of our Software Requirements Analysis and Specification service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

1.1.5 How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

1.1.6 Similar or Related Services

1. Also in need of defining, designing, and developing your business? We strongly recommend our Business Solutions Analysis, Planning, and Design service on page 10.
2. Simply looking to determine if your innovation or venture is technically feasible or financially worthwhile? You would benefit greatly from our Project and Innovation Feasibility Study, Analysis, and Design service on page 8.
3. Need Black Box to create the applications, platforms, and systems as well? See our Custom Programs and Applications service on page 56.
4. Know you'll need Black Box to provide deployment, maintenance, and support services after the fact? Read about our Software, System, and Storage Installation and Deployment service on page 76 and contact us if you're interested in knowing more.

1.2 Project and Innovation Feasibility Study, Analysis, and Design

1.2.1 Description of Service

Black Box provides technical feasibility services to businesses and organizations who have identified a project or innovation they wish to undertake, but lack the staff of engineers and technicians necessary to conduct technical studies themselves. Determining feasibility requires thorough analysis of the availability of resources, the quality and cost of those resources, project requirements, intended functionality, and the existence and availability of technologies that can serve as components for the innovation.

1.2.2 Why It's Valuable and How It's Beneficial

The studies, analyses, and plans created through our Project and Innovation Feasibility Study, Analysis, and Design service are most useful when they precede requirements specification, development, and implementation services. Our goal is to objectively determine the feasibility, effort, and resources required to carry through a project or innovation. In its simplest form, these services determine feasibility based on the resources required and the value to be attained.

Simply put, technical feasibility services allow businesses and organizations to fully understand if the completion of a project or realization of an innovation is possible, the required resources and effort, and the general outline of how to go from start to finish.

1.2.3 What You Purchase and Receive

The Project and Innovation Feasibility Study, Analysis, and Design service provides our clients with any or all of the following fully completed studies, analyses, and plans.

1. **Feasibility Study:** A careful and thorough analysis that uses two criteria to judge feasibility; cost required and value to be obtained. The study comprises historical background of the business and project, description of the product or service, details of the operations and management, marketing research and policies, and financial data.
2. **“Steel Thread” and “Proof of Technology” Proof of Concept:** Technical proof of concepts that include all technologies or a single technology within or representing a potential product or solution. The proof comprises the following specifications, designs, plans, and reviews:
 1. **Software Requirements Specification (SRS):** Documentation of the essential requirements, such as functions, performance, design constraints, and attributes, of the software. The software requirements are derived from the system specification.
 2. **Software Design Description (SDD):** A representation of software created to facilitate analysis, planning, implementation, and decision making. The software design description is used as a medium for communicating software design information, and may be thought of as a blueprint or model of the system.
 3. **Software Verification and Validation Plan (SVVP):** A plan containing the policies, procedures, and work instructions for conducting software verification and validation analysis and testing of core system and software requirements found within the corresponding Interface Design Description (IDD) and Software Design Description (SDD) documents.
 4. **Software Verification and Validation Report (SVVR):** A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and

completion of all core requirements within corresponding specification and design documentation.

3. **“Pilot” Proof of Concept:** A project management plan that serves as the initial deployment of a minimum viable product containing only crucial functionality and necessary business processes and users.

The project

1. All specifications, designs, plans, and reviews listed above for “Steel Thread” and “Proof of Technology” proof of concepts
2. **Software Project Management Plan (SPMP):** A plan containing the policies, procedures, and work instructions for managing a software development project that defines the technical and managerial processes necessary to develop work products that satisfy the product requirements.

1.2.4 How Much It Will Cost

The cost of our Project and Innovation Feasibility Study, Analysis, and Design service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations. This service may be provided against a consulting retainer as well, where Black Box will provide any requested services up to a purchased number of hours - especially useful when your budget is as tight as your time line.

1.2.5 How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

1.2.6 Example from Portfolio

Ichor hardware technical feasibility studies (Steel Thread comprised of several Proof of Technology POCs), Software Design Description (SDD), and Software Validation and Verification Plan, Review, and Report (SVVP, SVVPR, SVVR).

1.2.7 Similar or Related Services

1. Also in need of defining, designing, and developing your business? We strongly recommend our Business Solutions Analysis, Planning, and Design service on page 10.
2. Need Black Box to create the applications, platforms, and systems as well? See our Custom Programs and Applications service on page 56.
3. Only need a specification, design, plan, or firm understanding of the effort and costs required to create a software engine, platform, or system? We recommend our Software Requirements Analysis and Specification service on page 6.
4. Know you’ll need Black Box to provide deployment, maintenance, and support services after the fact? Read about our Software, System, and Storage Installation and Deployment service on page 76 and contact us if you’re interested in knowing more.

1.3 Business Solutions Analysis, Planning, and Design

1.3.1 Description of Service

Black Box provides development, strategy, and design solutions for businesses through infrastructure analysis and consultation. Our consultants analyze current technology and determine where and how improvements can be made. If no infrastructure exists, an analysis of other aspects of the business will determine the best design and implementation strategy for a new system. In both cases, Black Box can provide the correct solutions to implement the necessary technology.

1.3.2 Why It's Valuable and How It's Beneficial

Business development, strategy, and design is the best first step to take when preparing or improving any given venture. While having a perfect software, platform, or application is vital, it's equally as important to understand market demand and expectations, your audience, and the processes and systems necessary to manage sales, marketing, support, maintenance, and ongoing development day-to-day. When your business strategy is as well defined as your development strategy, you significantly improve your own organizations ability to grow, to evolve, to ensure high quality products, services, and support - to succeed.

By relying on Black Box to meet your expectations and provide guaranteed deliverables, you also avoid common pitfalls, such as growing to death, not being able to acquire or retain clients, and being caught off guard by expected costs, unforeseen client expectations, and unnecessary additional work that drains your capacity, takes up too much of your time, and exhausts your staff.

1.3.3 What You Purchase and Receive

The Business Solutions Analysis, Planning, and Design service provides our clients with any or all of the following fully completed plans, analyses, and summaries.

1. **Business Plan:** A formal statement of business goals, reasons they are attainable, and plans for reaching them. The structure, content, and presentation of a business plan depends on its goals and audience.
2. **SWOT Analysis:** Also known as a SWOT matrix, a SWOT is a structured planning method used to evaluate the strengths, weaknesses, opportunities, and threats involved in a project or business venture.
3. **Market Analysis:** An analysis that studies the attractiveness and the dynamics of a special market within a special industry. A market analysis is also known as a documented investigation of a market that is used to inform a firm's planning activities, particularly around decisions of inventory, purchase, work force expansion/contraction, facility expansion, purchases of capital equipment, promotional activities, and many other aspects of a company.
4. **Competitor Analysis:** An assessment of the strengths and weaknesses of current and potential competitors. This analysis provides both an offensive and defensive strategic context to identify opportunities and threats.
5. **Marketing Plan:** A comprehensive blueprint which outlines an organization's overall marketing efforts, which allows for strategic and tactical implementation and management.
6. **Operational Plan:** A plan that maps strategic goals and objectives to tactical goals and objectives by describing milestones, conditions for success, operational periods, and budgetary term.
7. **SMART KPI analysis:** The criteria behind, and process for, identifying, judging, and selecting Key Performance Indicators (KPI).

1.3.4 How Much It Will Cost

The cost of our Business Solutions Analysis, Planning, and Design service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

1.3.5 How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

1.3.6 Example from Portfolio

Wagglez's project management, ticketing, and customer relations management systems, relative to ongoing development track planned and maintained through related software requirements and custom development services

1.3.7 Similar or Related Services

1. Simply looking to determine if your innovation or venture is technically feasible or financially worthwhile? You would benefit greatly from our Project and Innovation Feasibility Study, Analysis, and Design service on page 8.
2. Only need a specification, design, plan, or firm understanding of the effort and costs required to create a software engine, platform, or system? We recommend our Software Requirements Analysis and Specification service on page 6.
3. Need Black Box to create the applications, platforms, and systems as well? See our Custom Programs and Applications service on page 56.
4. Know you'll need Black Box to provide deployment, maintenance, and support services after the fact? Read about our Software, System, and Storage Installation and Deployment service on page 76 and contact us if you're interested in knowing more.

1.4 Authentication Systems Analysis, Planning, and Design

1.4.1 Description of Service

Customers and employees often have several accounts with their own usernames and passwords that they have to remember, and creating more accounts with their own specific credentials only add to the already unnecessary hindrance of service adoption - why not use an existing service?

Our Authentication Systems Analysis, Planning, and Design service allows our teams to work together in order to identify your needs and determine the best approach and authentication system based on your specific needs and expectations. Below you will find two great examples of authentication systems and services to help better understand the types of systems that are available to you.

1. OAuth - Facebook, Google, and several other social media platforms can verify, and provide information about, your users
2. LDAP and Active Directory - Single authentication systems that combine several accounts and their respective credentials into a single username and password

1.4.2 Why It's Valuable and How It's Beneficial

Using a single authentication end point reduces management costs, plain and simple. With a single authentication end point, your IT professionals no longer have to go through multiple systems to manage access permission and keep user information up to date.

1.4.3 What You Purchase and Receive

The Authentication Systems Analysis, Planning, and Design service provides our clients with all of the following fully completed designs, plans, and reports.

1. Analysis and verification of existing, available authentication services to determine their compatibility and integrability, which comprises the following:
 1. **SWOT Analysis:** Also known as a SWOT matrix, a SWOT is a structured planning method used to evaluate the strengths, weaknesses, opportunities, and threats involved in a project or business venture.
2. Complete specification and outline of service implementation and integration for client-selected authentication service, which comprises the following:
 1. **Software Requirements Specification (SRS):** Documentation of the essential requirements, such as functions, performance, design constraints, and attributes, of the software. The software requirements are derived from the system specification.
 2. **Software Design Description (SDD):** A representation of software created to facilitate analysis, planning, implementation, and decision making. The software design description is used as a medium for communicating software design information, and may be thought of as a blueprint or model of the system.
 3. **Interface Requirements Specification (IRS):** Documentation that specifies requirements for interfaces between systems or components. These requirements include constraints on formats and timing.
 4. **Interface Design Description (IDD):** Documentation that describes the architecture and design of interfaces between system and components. These descriptions may include control algorithms,

protocols, data contents and formats, and performance metrics.

5. **Software Project Management Plan (SPMP):** A plan containing the policies, procedures, and work instructions for managing a software development project that defines the technical and managerial processes necessary to develop work products that satisfy the product requirements.

1.4.4 How Much It Will Cost

The cost of our Authentication Systems Analysis, Planning, and Design service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations. This service may be provided against a consulting retainer as well, where Black Box will provide any requested services up to a purchased number of hours - especially useful when your budget is as tight as your time line.

1.4.5 How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

1.4.6 Example from Portfolio

University departments or schools like UGA at Oxford (University of Georgia) already have credentials at the University level. They need all their software to talk to this single point of authentication. In implementing an online registration system for UGA at Oxford, Black Box determined integration with UGA authentication systems was best. Student signups could be tracked via their UGA credentials.

1.4.7 Similar or Related Services

1. Simply looking to determine if your innovation or venture is technically feasible or financially worthwhile? You would benefit greatly from our Project and Innovation Feasibility Study, Analysis, and Design service on page 8.
2. Already have authentication systems in place, but need better or more specific ways to manage users, roles, permissions, access levels, and so on? Our Authorization and Access Control service on page 38 allows us to configure and customize your systems according to your specifications.
3. Know you'll need Black Box to provide deployment, maintenance, and support services after the fact? Read about our Software, System, and Storage Installation and Deployment service on page 76 and contact us if you're interested in knowing more.
4. Wanting to set up secure, private networks for your business or organization? Our Virtual Private Network (VPN) service on 72 may benefit and be of interest to you.



02

Developing, Implementing, and Integrating Software, Infrastructure, and Business Solutions

Black Box also specializes in full cycle, custom software development. Our engineers focus on creating enterprise strength platforms and applications, and have extensive experience designing everything from mobile apps to city-wide systems. Many times, our clients come to us with little more than an idea or a problem that needs to be solved. Once these ideas or problems have been defined or identified through services found in the previous section, we simply get to work.

Black Box has created custom solutions for a wide variety of organizations, from large companies to small businesses to major universities. For a startup client, for example, we helped create a medical device that monitors vital signs like no other device on the market. As another example, a client in the financial sector needed a way to make loan processes more efficient, so we built a custom reporting system.

Each client had a unique idea that would solve a need. With help from Black Box, they were able to realize their concepts and create lasting, meaningful solutions.

2. Developing, Implementing, and Integrating Software, Infrastructure, and Business Solutions

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Contact Black Box Support to request more information about our Developing, Implementing, and Integrating Software, Infrastructure, and Business Solutions services found within this section

- Email: support@blackboxoperations.com
- Online: <https://blackboxoperations.com/services/developing-software-and-business-solutions>

Or reach out if you'd like to go ahead and schedule our initial consultation where we will:

1. Identify and further discuss your needs, time lines, and expectations
2. Determine if other related services may benefit your business or organization
3. Provide a time and cost estimate for review, discussion, and negotiation

2.1 Business Application Development and Integration

2.1.1 Big Data and Analytics

Description of Service

The information age gives businesses of all kinds access to big data that's growing in volume, variety, velocity and complexity. With more data coming from more sources faster than ever, the question is: what is your big data strategy? How are you combining new and existing data sources to make better decisions about your business? How could new data sources including social, sensors, location and video help improve your business performance? Will your big data remain dormant or will you make it work for you?

Big data analysis is the process of examining large data sets containing a variety of data types to uncover hidden patterns, unknown correlations, market trends, customer preferences, and other useful business information. Big data platforms, systems, and analytics engines automate these processes and provide the tools and interfaces that allow users to better understand and interact with big data through predictive analyses, data mining techniques, text analytics, statistical analyses, data visualizations, and data relationship identification techniques.

Why It's Valuable and How It's Beneficial

Analytical findings often lead to more effective marketing, new revenue opportunities, better customer service, improved operational efficiency, competitive advantages over rival organizations, and other business benefits. The most significant advantage of big data analytics engines, platforms, and systems, however, is providing companies with the ability to make better informed data-driven decisions.

Black Box will work to help you bring order to your big data. With proven expertise and thought leadership in this realm's current and emerging technologies, our team of researchers, engineers, and developers will help you define, design, and implement the systems you need in order to manage and understand your data. By relying on Black Box to meet your expectations and provide guaranteed deliverables, you also avoid common pitfalls, such as the high cost of staffing experienced analytics professionals and initiatives that fail outright due to a lack of internal analytics skills and experience.

What You Purchase and Receive

The Big Data and Analytics service provides you with the following development, reports, documentation, source materials, and implementations:

1. Software development for creating, integrating, or building upon the following technologies: **data fusion, data integration, genetic algorithms, machine learning, natural language processing, signal processing, simulation, time series analysis, visualization, massively parallel-processing databases, search-based applications, data mining, clustered file systems, distributed databases, and cloud computing infrastructures**
2. Complete code base containing all design and implementation source code
3. Source code used for corresponding unit testing
4. **Software Verification and Validation Report (SVVR):** A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and completion

of all core requirements within corresponding specification and design documentation.

5. **Software and User Documentation:** Written text that accompanies computer software that explains how the software operates, how it is used, and acts as the user manual for system administrators and support staff.

How Much It Will Cost

The cost of our Big Data and Analytics service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

Example from Portfolio

The algorithms, heuristics, and machine learning techniques behind compiling the data for, and creating, Customer Behavior Model Graphs (CBMG) and Time-Series Analysis Selected Episode Graphs (TSA-SEGs) within Ajaxalytics for examining usage behavior within CTEGD resources, as well as within External Affairs resources (Alumni case study).

Similar or Related Services

1. Only need a specification, design, plan, or firm understanding of the effort and costs required to create a software engine, platform, or system? We recommend our Software Requirements Analysis and Specification service on page 6.
2. Need help analyzing and classifying large sets of complex data? Our Machine Learning service on 46 may be what you're after.
3. Having trouble visualizing, or creating visualizations and graphics for, data? Our Scientific Visualization service on 48 provides the type of development and expertise you require.
4. Trying to better understand your customer's online usage and patterns of behavior? Read about our Web Analytics service on 52 provides the software and systems you're after.

2.1.2 Business Intelligence

Description of Service

Business intelligence means having the ability to predict trends, uncover insights, and operate continuously at peak performance. Business intelligence tools are a type of application software designed to retrieve, analyze, transform and report data for business intelligence.

Business intelligence tools aren't only for companies with a large market share, they're for businesses of all sizes. Even more important, they're for people: employees can use the software built through our Business Intelligence service to collaborate closely and to access the exact information they need in order to be most effective.

Why It's Valuable and How It's Beneficial

Business intelligence technologies are capable of handling large amounts of unstructured data to help identify, develop and otherwise create new strategic business opportunities. The goal of business intelligence and reporting is to allow for the easy interpretation of these large volumes of data. Identifying new opportunities and implementing an effective strategy based on insights can provide businesses with a competitive market advantage and long-term stability.

What You Purchase and Receive

The Business Intelligence service provides you with the following development, reports, documentation, source materials, and implementations:

1. Software development for creating, integrating, extending, or improving the following technologies:
 1. Online analytical processing (OLAP) based implementations
 2. Data mining tools
 3. Business activity monitoring (BAM) based implementations
 4. Local information system (LIS) based implementations
2. Complete code base containing all design and implementation source code
3. Source code used for corresponding unit testing
4. **Software Verification and Validation Report (SVVR):** A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and completion of all core requirements within corresponding specification and design documentation.
5. **Software and User Documentation:** Written text that accompanies computer software that explains how the software operates, how it is used, and acts as the user manual for system administrators and support staff.

How Much It Will Cost

The cost of our Business Intelligence service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

Similar or Related Services

1. Only need a specification, design, plan, or firm understanding of the effort and costs required to create a software engine, platform, or system? We recommend our Software Requirements Analysis and Specification service on page 6.
2. Looking to automate processes, reduce errors, and increase efficiency of your applications or organization? We recommend our Workflow and Workflow Management service on 22.
3. Trying to better understand how your applications or organizations is performing? Our Key Performance Indicators and Metrics service on 24 will allow us to work together and towards the measurements, metrics, and systems you require.
4. Do you require custom development for complex scientific software or solutions? See our Science Software service on page 50 for more detailed information.

2.1.3 Digital Dashboards

Description of Service

In management information systems, a dashboard is an easy to read, often single page, real-time user interface, showing a graphical presentation of the current status (snapshot) and historical trends of an organization's or computer appliances key performance indicators to enable instantaneous and informed decisions to be made at a glance.

In real-world terms, "dashboard" is another name for "progress report" or "report". Often, the "dashboard" is displayed on a web page that is linked to a database which allows the report to be constantly updated.

For example, a manufacturing dashboard may show numbers related to productivity such as number of parts manufactured, or number of failed quality inspections per hour. Similarly, a human resources dashboard may show numbers related to staff recruitment, retention and composition, for example number of open positions, or average days or cost per recruitment.

Why It's Valuable and How It's Beneficial

Digital dashboards allow managers to monitor the contribution of the various departments in their organization. To gauge exactly how well an organization is performing overall, digital dashboards allow you to capture and report specific data points from each department within the organization, thus providing a "snapshot" of performance.

Benefits of using digital dashboards include:

1. Visual presentation of performance measures
2. Ability to identify and correct negative trends
3. Measure efficiencies/inefficiencies
4. Ability to generate detailed reports showing new trends
5. Ability to make more informed decisions based on collected business intelligence
6. Align strategies and organizational goals
7. Saves time compared to running multiple reports
8. Gain total visibility of all systems instantly
9. Quick identification of data outliers and correlations

What You Purchase and Receive

The Digital Dashboards service provides you with the following development, reports, documentation, source materials, and implementations:

1. Software development for creating, integrating, or building upon the following technologies:
 1. Stand-alone or web-browser based dashboards
 2. Widgets for data representation and visualization
 3. Operating System specific desktop widgets
 4. Web-browser based widgets and portlets
2. Complete code base containing all design and implementation source code
3. Source code used for corresponding unit testing
4. **Software Verification and Validation Report (SVVR):** A report containing the results of the

verification and validation testing, which provides a full breakdown of the verified correctness and completion of all core requirements within corresponding specification and design documentation.

5. **Software and User Documentation:** Written text that accompanies computer software that explains how the software operates, how it is used, and acts as the user manual for system administrators and support staff.

How Much It Will Cost

The cost of our Digital Dashboards service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

Example from Portfolio

Passion Pointe's administrative dashboard and immediate exposure and access to the wizards and workflows.

Similar or Related Services

1. Trying to better understand how your applications or organizations is performing? Our Key Performance Indicators and Metrics service on 24 will allow us to work together and towards the measurements, metrics, and systems you require.
2. Do you require custom development for complex scientific software or solutions? See our Science Software service on page 50 for more detailed information.
3. Having trouble visualizing, or creating visualizations and graphics for, data? Our Scientific Visualization service on 48 provides the type of development and expertise you require.
4. Wanting to guarantee a consistent and quality user experience of your web-based applications instead of developing new mobile apps? Read about our Responsive Web Applications service on page 60 for more detailed information.

2.1.4 Workflow and Workflow Management

Description of Service

A workflow consists of an orchestrated and repeatable pattern of business activity enabled by the systematic organization of resources into processes that transform materials, provide services, or process information. It can be depicted as a sequence of operations, declared as work of a person or group, an organization of staff, or one or more simple or complex mechanisms.

Workflows may be viewed as one fundamental building block to be combined with other parts of an organization's structure such as information technology, teams, projects and hierarchies. Adding forms to workflows enable you to make your workflows more dynamic and flexible. Forms enable you to gather information from users at predefined times in the workflow's life, as well as let users interact with the tasks for that workflow.

Black Box provides the Workflow and Workflow Management service to businesses and organizations that require development or improvement of systems and applications that manage workflow processes and operations, and form customization and integration.

Why It's Valuable and How It's Beneficial

Workflows and Workflow Management Systems:

1. Drastically reduces errors and prevents tasks from fall through the cracks
2. Empowers employees to successfully manage their own work with little to no supervision
3. Increases the efficiency and effectiveness of completion and correctness for systems, applications, as well as customers and employees
4. Improves communication, reliability and availability of information, and quality of results across the board

What You Purchase and Receive

The Workflow and Workflow Management service provides you with the following development, reports, documentation, source materials, and implementations:

1. Software development for creating, integrating, or building upon the following technologies:
 1. Document management system (DMS)
 2. Business process management (BPM) systems
 3. User registration and management systems
 4. Form or application submission and management systems
2. Complete code base containing all design and implementation source code
3. Source code used for corresponding unit testing
4. **Software Verification and Validation Report (SVVR):** A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and completion of all core requirements within corresponding specification and design documentation.
5. **Software and User Documentation:** Written text that accompanies computer software that explains how the software operates, how it is used, and acts as the user manual for system administrators and support staff.

How Much It Will Cost

The cost of our Workflow and Workflow Management service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

Example from Portfolio

Study Abroad Manager's (SAM) form builder and workflow management system (WfMS).

Similar or Related Services

1. Also in need of defining, designing, and developing your business? We strongly recommend our Business Solutions Analysis, Planning, and Design service on page 10.
2. Off-the-shelf software not providing what your business needs? Read about our Business Intelligence service on 18 to see how we can help.
3. In need of a customized file sharing and content management system (CMS)? We can help with our File Sharing and Content Management service on 34.
4. Looking to convert physical documents, pictures, and other materials into digital form? You may benefit from our Physical to Virtual Digitization service on 36.

2.1.5 Key Performance Indicators and Metrics

Description of Service

A key performance indicator (KPI) is a type of performance measurement that evaluates the success of an organization or of a particular activity in which it engages. Often success is simply the repeated, periodic achievement of some levels of operational goal (e.g. zero defects, 10/10 customer satisfaction, etc.), and sometimes success is defined in terms of making progress toward strategic goals.

Black Box provides the Key Performance Indicators and Metrics service that allows our organizations to work together and investigate, identify, and intelligently choose the right KPIs, as well as the programming and development necessary to integrate the chosen KPIs into your existing applications and systems, or create entirely new systems or software around the KPIs and the requirements of such systems based on your specific needs and expectations.

Why It's Valuable and How It's Beneficial

The systems and software created through our Key Performance Indicators and Metrics service will allow you to transform your business strategy and day-to-day into actionable metrics and analytics, then expose and better understand the cause-and-effect relationships that provide real insight into decision-making.

What You Purchase and Receive

The Key Performance Indicators and Metrics service provides you with the following development, reports, documentation, source materials, and implementations:

1. Software development for creating, integrating, or building upon the following technologies:
 1. balanced scorecard (BSC) systems
 2. Business performance management systems
2. Complete code base containing all design and implementation source code
3. Source code used for corresponding unit testing
4. **Software Verification and Validation Report (SVVR):** A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and completion of all core requirements within corresponding specification and design documentation.
5. **Software and User Documentation:** Written text that accompanies computer software that explains how the software operates, how it is used, and acts as the user manual for system administrators and support staff.

How Much It Will Cost

The cost of our Key Performance Indicators and Metrics service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

Example from Portfolio

Study Abroad Manager's application and form submission management and performance overview and report.

Similar or Related Services

1. Do you need a unified front-end, dashboard, or control center? Our Digital Dashboards service on 20 provides you with everything you need.
2. Having trouble visualizing, or creating visualizations and graphics for, data? Our Scientific Visualization service on 48 provides the type of development and expertise you require.
3. Off-the-shelf software not providing what your business needs? Read about our Business Intelligence service on 18 to see how we can help.
4. Also in need of defining, designing, and developing your business? We strongly recommend our Business Solutions Analysis, Planning, and Design service on page 10.

2.1.6 Reporting Software and Report Design

Description of Service

Reporting software takes data from a source, such as a database or spreadsheet, and uses it to produce a document in a format which satisfies given guidelines, requirements, and expectations. These reports are made with the specific intention of relaying information or recounting certain events in a widely presentable form, and used for keeping track of information, which may be used to make decisions.

Black Box provides the Reporting Software and Report Design service to businesses and organizations in need of expert analysis, design, and development of physical and virtual reports. Regardless of the report's required features, or the programming language or framework in which the reports are generated, Black Box provides the consulting, design, and development to create or improve everything from your reports all the way down to the systems housing the raw report data itself.

Why It's Valuable and How It's Beneficial

Reporting software allows for reports and report data to be managed more efficiently and effectively, while the reports themselves provide the accuracy and relevancy necessary for the target readers and audience readily accept and comprehend. Great reporting software allows for reports to be created and provided to an audience quickly, and effective reports contain verifiably accurate information presented in a manner that is most relevant to the audience.

What You Purchase and Receive

The Reporting Software and Report Design service provides you with the following development, reports, documentation, source materials, and implementations:

1. Software development and graphic design for creating, integrating, or building upon the following technologies:
 1. Report generator, or reporting, software
 2. Report format, layout, structure, and design
2. Complete code base containing all design and implementation source code and multimedia assets
3. Source code used for corresponding unit testing
4. **Software Verification and Validation Report (SVVR):** A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and completion of all core requirements within corresponding specification and design documentation.
5. **Software and User Documentation:** Written text that accompanies computer software that explains how the software operates, how it is used, and acts as the user manual for system administrators and support staff.

How Much It Will Cost

The cost of our Reporting Software and Report Design service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

Example from Portfolio

The report design and reporting framework built for FormFree to allow for the creation of a completely new type of financial report and model currently being used by the mortgage lending industry directly.

Similar or Related Services

1. Do you need security experts to determine if your at risk? Our Security Risk Assessment service on 70 will provide you with the effort and expertise you require.
2. Need Black Box to create the applications, platforms, and systems as well? See our Custom Programs and Applications service on page 56.
3. Having trouble visualizing, or creating visualizations and graphics for, data? Our Scientific Visualization service on 48 provides the type of development and expertise you require.
4. Have a great system in place, but need to ensure that it runs smoothly and efficiently? We recommend our Software Maintenance and Support service on 78.

2.2 Data and Records Management Development, Design, and Integration

2.2.1 Data Conversion, Translation, and Migration

Description of Service

Your organization has data that flows in and out of your systems continuously. Receiving, interpreting, parsing, translating, and submitting data from one system to another is a vital part of your organizations daily business processes. Whether you are migrating data from outdated systems, or translating data received from an external service, you may have to rely on manual efforts to reformat the data before it is usable in your systems. Black Box can design and integrate systems for your users in these scenarios that can greatly improve the manual process, if not remove it altogether.

Why It's Valuable and How It's Beneficial

Introducing an automated system to handle data conversions, translations, or migrations creates a reliable exchange of data between systems. As these systems usually export or import data in well defined formats, an automated system will abide by these formats consistently, thus reducing human introduced errors in the process. Users of the system will notice a vast improvement in operational efficiency.

The manual process of converting, translating, or migrating data is antiquated and slow. By utilizing a custom solution to integrate data between systems, data exchange will happen rapidly and reliably. An automated system also has the advantage of working continuously, and in the background, allowing users to focus on tasks that require their manual efforts.

What You Purchase and Receive

The Data Conversion, Translation, and Migration service provides you with the following development, reports, documentation, source materials, and implementations:

1. Software development for creating, integrating, or building upon the following technologies: **data conversion, data transformations, data migration, and transcoding**
2. Complete code base containing all design and implementation source code
3. Source code used for corresponding unit testing
4. **Software Verification and Validation Report (SVVR):** A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and completion of all core requirements within corresponding specification and design documentation.
5. **Software and User Documentation:** Written text that accompanies computer software that explains how the software operates, how it is used, and acts as the user manual for system administrators and support staff.

How Much It Will Cost

The cost of our Data Conversion, Translation, and Migration service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service

level expectations.

How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

Example from Portfolio

J.Craig's intensive data conversion and migration processes for massive online inventory shift and management through a new unified platform Black Box also built and provided.

Similar or Related Services

1. Looking to convert physical documents, pictures, and other materials into digital form? You may benefit from our Physical to Virtual Digitization service on 36.
2. Is your company in need of a customized storage system? Our Storage Resource Management service on 40 will offer a unique solution.
3. Looking to save time and money by storing documents electronically? Try our Document Management service on 32.
4. Know you'll need Black Box to provide deployment, maintenance, and support services after the fact? Read about our Software, System, and Storage Installation and Deployment service on page 76 and contact us if you're interested in knowing more.

2.2.2 Digital Asset Management

Description of Service

Outlining a path and planning a strategy for managing your assets within a digital platform is an essential component of creating a more manageable and scalable content library. Even with the multitude of services offering to host and manage your digital assets, it's challenging to find one that meets the exact needs of your business without adding complex procedural overhead or exorbitant cost.

With Black Box manning the helm of your digital asset management strategy, we can develop a custom solution tailored to fit your exact needs. Enjoy all of the functionality your business needs without paying for ancillary services. We can help you:

1. Get set up with a plan for digitizing, storing, and managing your content library.
2. Learn best practices for interacting with your newly organized assets.
3. Provide support as you or your customers acclimate to any new asset management systems.

Why It's Valuable and How It's Beneficial

Storing, managing, and accessing your assets in this way will provide you with several benefits, including:

1. Greater security
2. Improved scalability
3. More reliable data redundancy
4. An easy way to search and sort through large amounts of data

What You Purchase and Receive

The Digital Asset Management service provides you with the following development, reports, documentation, source materials, and implementations:

1. Software development for creating, integrating, or building upon the following technologies: **Digital asset managements platforms and distributed data management platforms**
2. Complete code base containing all design and implementation source code
3. Source code used for corresponding unit testing
4. **Software Verification and Validation Report (SVVR):** A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and completion of all core requirements within corresponding specification and design documentation.
5. **Software and User Documentation:** Written text that accompanies computer software that explains how the software operates, how it is used, and acts as the user manual for system administrators and support staff.

How Much It Will Cost

The cost of our Digital Asset Management service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

Example from Portfolio

The Elberton Granite Association has been publishing an industry-leading magazine since 1957. What was once only managed and viewable by visiting the physical location at the EGA where the archive is kept, is now organized, backed up, and accessible through an online portal. Each issue of the magazine will be made available for the public to view, while administrators can easily upload and add new issues as they're released.

Similar or Related Services

1. Looking to convert physical documents, pictures, and other materials into digital form? You may benefit from our Physical to Virtual Digitization service on 36.
2. Need to save time manually entering data? A great solution is our Data Conversion, Translation, and Migration service on 28.
3. Looking to save time and money by storing documents electronically? Try our Document Management service on 32.
4. In need of a customized file sharing and content management system (CMS)? We can help with our File Sharing and Content Management service on 34.

2.2.3 Document Management

Description of Service

Your organization has embraced electronic documents as a viable alternative to their paper products. Choosing to replace your paper documents with electronic data files offers valuable rewards, such as lower operational costs and reduced ecological footprints. Implementing a sound electronic document management platform is paramount to ensuring a successful conversion.

Many off-the-shelf electronic document management systems exist, but they are as varied as they are complex. They can come as standalone services, such as Google Drive, or bundled within larger enterprise application software suites, such as Microsoft SharePoint. If you are unsure which to choose, or how to even go about making a choice, Black Box can help. Black Box services include:

1. Initial consultation and strategy planning to help you discover a best solution for your needs.
2. Informational training to help you and your users organize and locate your documents.
3. Attentive consideration paid to your business processes to ensure your file formats are supported.
4. Analysis of your infrastructure to assess potential issues in file storage or security.
5. Custom application development to produce either a complete solution, or cover gaps in an off-the-shelf option.

Why It's Valuable and How It's Beneficial

Electronic documents can save an organization a significant amount of money by reducing expenditures on paper, printers and printing products, and the expenses involved in transporting and storing paper documents. An effective electronic document management solution can help these organizations run more efficiently and cost effectively.

What You Purchase and Receive

The Document Management service provides you with the following development, reports, documentation, source materials, and implementations:

1. Software development for creating, integrating, or building upon the following technologies: **Clustered file systems, distributed data management platforms, and document management system (DMS)s**
2. Complete code base containing all design and implementation source code
3. Source code used for corresponding unit testing
4. **Software Verification and Validation Report (SVVR):** A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and completion of all core requirements within corresponding specification and design documentation.
5. **Software and User Documentation:** Written text that accompanies computer software that explains how the software operates, how it is used, and acts as the user manual for system administrators and support staff.

How Much It Will Cost

The cost of our Document Management service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

Example from Portfolio

FormFree's report management platform, where the documents themselves are the bank statements and financial reports generated by the platform itself.

Similar or Related Services

1. Does your company need an efficient way to store its digital content? We recommend our Digital Asset Management service on 30.
2. Looking to convert physical documents, pictures, and other materials into digital form? You may benefit from our Physical to Virtual Digitization service on 36.
3. In need of a customized file sharing and content management system (CMS)? We can help with our File Sharing and Content Management service on 34.
4. Can't find a good solution for designing, creating, and managing reports and similar documents? Read about our Reporting Software and Report Design service on 26 for more information on how we can help.

2.2.4 File Sharing and Content Management

Description of Service

Your organization recognizes that sharing files and content, publicly or privately, is a critical component to staying competitive and successful. Implementing a successful file sharing and content management platform plays a large role in meeting this goal. Several solutions and services exist to help share your files and content efficiently, but discerning which is best suited for your needs can be a challenge in itself.

By utilizing services provided by Black Box, together we can review all your content sharing needs, help you understand the security risks involved, and analyze your infrastructure to help you launch a successful platform. Black Box is also capable of helping your business by developing custom application software to cover any areas where your data sharing systems fall short.

Why It's Valuable and How It's Beneficial

File sharing and content management systems provide convenient and efficient methods for granting and managing access to shared resources. Developing and implementing a file sharing and content management platform will ensure that the right users have access to the right resources, improving overall data security and visibility.

What You Purchase and Receive

The File Sharing and Content Management service provides you with the following development, reports, documentation, source materials, and implementations:

1. Software development for creating, integrating, or building upon the following technologies: **content management systems, web content management systems, knowledge management system, and web content management systems**
2. Complete code base containing all design and implementation source code
3. Source code used for corresponding unit testing
4. **Software Verification and Validation Report (SVVR):** A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and completion of all core requirements within corresponding specification and design documentation.
5. **Software and User Documentation:** Written text that accompanies computer software that explains how the software operates, how it is used, and acts as the user manual for system administrators and support staff.

How Much It Will Cost

The cost of our File Sharing and Content Management service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems.

Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

Example from Portfolio

Design Mart's content management system (CMS) that serves as the backbone for the Monument Designer application and Online Catalog service that's built into the CMS itself.

Similar or Related Services

1. Does your company need an efficient way to store its digital content? We recommend our Digital Asset Management service on 30.
2. Looking to save time and money by storing documents electronically? Try our Document Management service on 32.
3. Can't find a good solution for designing, creating, and managing reports and similar documents? Read about our Reporting Software and Report Design service on 26 for more information on how we can help.
4. Looking to convert physical documents, pictures, and other materials into digital form? You may benefit from our Physical to Virtual Digitization service on 36.

2.2.5 Physical to Virtual Digitization

Description of Service

One of the most daunting tasks for any business is the digitization of their products or records. When you've got years and mountains of company assets, such as documents or images, it can be incredibly time-consuming to convert them to digital formats.

We can help you achieve this, and ensure that it's done the right way. A common misconception of "asset digitization" is that this merely entails scanning and loading documents or images to a computer. While this may make them digital in the strictest definition, without proper cataloging and definition you haven't saved yourself any work or time. What if you could actually edit those documents online? Create new ones? Change their very structure and formatting? Even choose how much information to be displayed based on who's currently viewing it?

Besides documents, your other company assets - such as logos and letterheads - may exist but only in low resolution, raster formats. Without proper, vector versions of your valuable branding materials the creation of additional, quality marketing resources is greatly limited. We can help you identify what formats you have, what formats you need, and our design team can even generate the content for you.

Why It's Valuable and How It's Beneficial

Having a digital version of your assets provides enumerable benefits. A few highlights:

1. Typically, highly reduced cost in physical space for storage.
2. Backups can be created and maintained with much more efficiency.
3. Modern formats open a bevy of conversion options, giving you increased flexibility.
4. Security can be more directly and confidently controlled through modern data encryption and security practices, keeping your information safer.
5. Sharing and collaboration on an entirely different level, thanks to a degree of interactivity and accessibility impossible through purely analog formats.

What You Purchase and Receive

The Physical to Virtual Digitization service provides you with the following development, reports, documentation, source materials, and implementations:

1. Software development for creating, integrating, or building upon the following technologies: **document conversion, data transformations, and data wrangling**
2. Complete code base containing all design and implementation source code
3. Source code used for corresponding unit testing
4. **Software Verification and Validation Report (SVVR):** A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and completion of all core requirements within corresponding specification and design documentation.
5. **Software and User Documentation:** Written text that accompanies computer software that explains how the software operates, how it is used, and acts as the user manual for system administrators and support staff.

How Much It Will Cost

The cost of our Physical to Virtual Digitization service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

The quantity of assets properly converted to digital formats, as well as the level of interactivity gained or maintained, is our measure of success when it comes to asset digitization. We can work with you to establish what these targets are and convert that into meaningful deliverables.

Example from Portfolio

Design Mart's Monument Designer software allows their clients to create print and presentation-ready memorial designs right in their web browsers. A primary feature of this incredible tool is its built-in library, comprised of thousands of Design Mart's pre-built monument designs and graphics resources. In order to make this software a reality, Black Box converted their massive catalog of graphics into a digital format easily integrated into the Monument Designer software, while also being easily exportable in a variety of industry-friendly formats.

Similar or Related Services

1. Need to save time manually entering data? A great solution is our Data Conversion, Translation, and Migration service on 28.
2. Does your company need an efficient way to store its digital content? We recommend our Digital Asset Management service on 30.
3. Looking to save time and money by storing documents electronically? Try our Document Management service on 32.
4. In need of a customized file sharing and content management system (CMS)? We can help with our File Sharing and Content Management service on 34.

2.3 User and Access Management Design, Development, and Integration

2.3.1 Authorization and Access Control

Description of Service

Authorization is the function of specifying access rights to resources related to information security and computer security in general and to access control in particular. For example, human resources staff is normally authorized to access employee records and this policy is usually formalized as access control rules in a computer system.

Access control is the selective restriction of access to a place or other resource. The act of accessing may mean consuming, entering, or using, and permission to access a resource is called authorization.

Authorization and access control are the most important counterparts to Authentication. They define how users are allowed to interact with a system. Whether in custom software or off-the-shelf systems things are rarely as simple as once you login do anything. Black Box implements schemes like Role based Authorization (RBAC) or customized controls based on characteristics such as access by location or by system.

Why It's Valuable and How It's Beneficial

Even when access is controlled through access control lists, the problems of maintaining the authorization data is not trivial, and often represents a great deal of administrative burden. Providing people with access to systems and information is always a risk, and mistakes can be incredibly costly when they violate the law or your customers' trust.

What You Purchase and Receive

The Authorization and Access Control service provides you with the following development, reports, documentation, source materials, consulting, and implementations:

1. Software development for creating, integrating, or building upon the following technologies: **access control, access control list (ACL)s, authorization, Authorization Open Service Interface Definition (OSID), permissions, information security (InfoSec), Payment Card Industry Data Security Standard (PCI DSS), physical security, privilege escalation, and security engineering**
2. Complete code base containing all design and implementation source code
3. Source code used for corresponding unit testing
4. **Software Verification and Validation Report (SVVR):** A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and completion of all core requirements within corresponding specification and design documentation.
5. **Software and User Documentation:** Written text that accompanies computer software that explains how the software operates, how it is used, and acts as the user manual for system administrators and support staff.

How Much It Will Cost

The cost of our Authorization and Access Control service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

Example from Portfolio

Study Abroad Manager (SAM) is a system that allows for student application and enrollment tracking. Designed to inter-operate with multiple institutional programs or organizations at once; it was apparent that people have different roles in different programs or organizations. To that end, SAM allows people to assume different management or user roles within the system depending on which program or organization they are currently accessing. An example of this is a single person being the administrator for one program while simultaneously only being allowed to view and act upon student applications within another.

Similar or Related Services

1. Having trouble understanding, installing, or configuring a firewall? Our Firewall Management service on 64 is precisely what you need.
2. Looking to consolidate all of your accounts into a single authentication service? Our Authentication Systems Analysis, Planning, and Design service on 12 is perfect for your needs.
3. Need to determine if you're software or systems are exposed or vulnerable? Read about how our Penetration Testing service on 66 will provide just that.
4. Do you need security experts to determine if your at risk? Our Security Risk Assessment service on 70 will provide you with the effort and expertise you require.

2.3.2 Storage Resource Management

Description of Service

Your organization has become ever more reliant on digital data storage, and your users have an expectation to reliable access and availability to these data stores. As your data storage platform grows and becomes spread across a variety of storage utilities, ranging from local disk storage devices, NAS or SAN type storage devices, to cloud-based storage solutions, the tools to manage any variety of these storage solutions can be time consuming, complicated, and cumbersome.

Black Box can provide custom programming and application development to enhance these tools to give you more control over, and better compartmentalize or operate your storage devices.

Why It's Valuable and How It's Beneficial

As your organization's data storage needs grow and change, it is important to continuously evaluate your storage management platform. Having the appropriate tools to manage your data storage platform can enhance your ability to create or monitor data stores, or alert you of data store failure or potential failure, all while reducing the time costs when dealing with storage.

Black Box can work with you to provide custom software solutions built to address your exact needs to address shortcomings of your data storage platform. Providing a custom solution can create significant monetary gains by reducing the time cost of managing their storage platforms.

What You Purchase and Receive

The Storage Resource Management service provides you with the following development, reports, documentation, source materials, consulting, and implementations:

1. Software development for creating, integrating, or building upon the following technologies: **enterprise storage, hierarchical storage management (HSM), network-attached storage (NAS), storage resource management (SRM), storage area network (SAN), online (cloud) storage, backups, archiving, and disaster recovery (DR)**
2. Complete code base containing all design and implementation source code
3. Source code used for corresponding unit testing
4. **Software Verification and Validation Report (SVVR):** A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and completion of all core requirements within corresponding specification and design documentation.
5. **Software and User Documentation:** Written text that accompanies computer software that explains how the software operates, how it is used, and acts as the user manual for system administrators and support staff.

How Much It Will Cost

The cost of our Storage Resource Management service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

How We Will Work Together

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Example from Portfolio

WizAds created an internet-based service by which most of their content is generated by their users. Because their software allows users to create and submit various amounts of text and image related data, they needed to make sure they could provide consistent and available storage. Through consultation with Black Box, WizAds determined that a cloud-based storage solution would optimally satisfy their needs. We were able to assist WizAds configure their online file storage, and adapt their software offering to utilize this new platform.

Similar or Related Services

1. In need of a customized file sharing and content management system (CMS)? We can help with our File Sharing and Content Management service on 34.
2. Looking to consolidate all of your accounts into a single authentication service? Our Authentication Systems Analysis, Planning, and Design service on 12 is perfect for your needs.
3. Storage and Infrastructure Maintenance and Support service on 80.
4. Is your software system down and you need help getting it up and running? Our team will get your system back up with our Recovery of Critical Systems service on 84.

2.3.3 Project Management

Description of Service

Project management is the discipline of carefully projecting or planning, organizing, motivating and controlling resources to achieve specific goals and meet specific success criteria. The primary challenge of project management is to achieve all of the project goals and objectives while honoring the project's scope, time, quality and budget.

Black Box provides the Project Management service to businesses and organizations in need of programming and application development to create, improve, or extend project management software, project management information systems, and other systems that are used to help plan, organize, and manage resource pools, develop resource estimates, and implement project plans.

Why It's Valuable and How It's Beneficial

A well designed and professionally developed project management platform increases the effectiveness and efficiency of estimation and planning, scheduling, cost control and budget management, resource allocation, collaboration and communication, decision-making, workflow management, quality management, documentation management, and even basic administrative tasks.

What You Purchase and Receive

The Project Management service provides you with the following development, reports, documentation, source materials, consulting, and implementations:

1. Software development for creating, integrating, or building upon the following technologies: **project management software, project management information systems (PMIS), calendaring software, and workflow management systems (WfMS)**
2. Complete code base containing all design and implementation source code
3. Source code used for corresponding unit testing
4. **Software Verification and Validation Report (SVVR):** A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and completion of all core requirements within corresponding specification and design documentation.
5. **Software and User Documentation:** Written text that accompanies computer software that explains how the software operates, how it is used, and acts as the user manual for system administrators and support staff.

How Much It Will Cost

The cost of our Project Management service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with

limited access to information and documentation related to ongoing design and development requiring client feedback or input.

Example from Portfolio

Study Abroad Manager (SAM) has extensive form and workflow builders integrated into its system, allowing end-users to take full advantage of SAM as, amongst many other things, a complete workflow management system (WfMS) for international education organizations and departments, as well as college institutions in need of registration and applicant management systems.

Similar or Related Services

1. Looking to automate processes, reduce errors, and increase efficiency of your applications or organization? We recommend our Workflow and Workflow Management service on 22.
2. Off-the-shelf software not providing what your business needs? Read about our Business Intelligence service on 18 to see how we can help.
3. Trying to better understand how your applications or organizations is performing? Our Key Performance Indicators and Metrics service on 24 will allow us to work together and towards the measurements, metrics, and systems you require.
4. Already have authentication systems in place, but need better or more specific ways to manage users, roles, permissions, access levels, and so on? Our Authorization and Access Control service on page 38 allows us to configure and customize your systems according to your specifications.

2.4 Scientific Computing and Research and Development

2.4.1 A/B and Multivariate Testing

Description of Service

A/B testing is a form of statistical hypothesis testing with two variants leading to the technical term, two-sample hypothesis testing, used in the field of statistics. Other terms used for this method include bucket tests and split-run testing but these terms can have a wider applicability to more than two variants. In online settings, such as web design (especially user experience design), the goal of A/B testing is to identify changes to web pages that increase or maximize an outcome of interest (e.g., click-through rate for a banner advertisement).

As the name implies, two versions (A and B) are compared, which are identical except for one variation that might affect a user's behavior. Version A might be the currently used version (control), while version B is modified in some respect (treatment). For instance, on an e-commerce website the purchase funnel is typically a good candidate for A/B testing, as even marginal improvements in drop-off rates can represent a significant gain in sales.

Why It's Valuable and How It's Beneficial

Numerous case studies show that when companies modify content or functionality based on A/B testing results, they experience reduced bounce rates, increased conversion rates, higher conversion value, and more sales - not to mention the inherent added benefit of improved content and functionality! A/B testing lowers the risks and increases the probability of success, saving both time and money while providing a stronger, more evidence-based approach to improving your existing applications, platforms, and products.

What You Purchase and Receive

The A/B and Multivariate Testing service provides you with the following reports and implementations:

1. Conducting and providing the results for the following tests and experiments: **A/B testing, multivariate testing, choice modeling, between-group design**
2. **Software Testing and Modeling Report (STMR):** A report containing the results of the software testing and modeling experiments, which provides a full breakdown of the experiments pre-defined metrics and measurements.

How Much It Will Cost

The cost of our A/B and Multivariate Testing service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems.

Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

Example from Portfolio

Design Mart's Monument Designer has evolved rapidly and significantly over time, largely due to the A/B user interface and user experience studies and experiments conducted by Black Box in conjunction with Design Mart and a careful selection of their key customers and champions.

Similar or Related Services

1. Only need a specification, design, plan, or firm understanding of the effort and costs required to create a software engine, platform, or system? We recommend our Software Requirements Analysis and Specification service on page 6.
2. Can't find a good solution for designing, creating, and managing reports and similar documents? Read about our Reporting Software and Report Design service on 26 for more information on how we can help.
3. Trying to better understand how your applications or organizations is performing? Our Key Performance Indicators and Metrics service on 24 will allow us to work together and towards the measurements, metrics, and systems you require.
4. Also in need of defining, designing, and developing your business? We strongly recommend our Business Solutions Analysis, Planning, and Design service on page 10.

2.4.2 Machine Learning

Description of Service

Machine learning is about analyzing and classifying data and potentially predicting outcomes. You have a huge dataset, you want to see if it naturally groups together, it fits a set of expectations, or you can make predictions with it.

With the right data, Black Box can apply machine learning algorithms to help you understand your data. We look at your data and analyze with you and your experts to make it work to meet your goals.

Why It's Valuable and How It's Beneficial

As a business it is inherent that you collect a lot of data about your customers. Black Box with machine learning can provide you an edge with that data. Target your advertising better or determine how best to make sale.

Maybe you are researcher who doesn't have a specific target, but needs to understand their data better. Black Box can help there as well. Showing how your work can predict medical or some other outcome can lead to more direct funding.

What You Purchase and Receive

The Machine Learning service provides you with the following development, reports, documentation, source materials, consulting, and implementations:

1. Software development for creating, integrating, or building upon the following technologies: **pattern recognition, optical character recognition (OCR), computer vision, predictive analytics, and predictive modeling**
2. Complete code base containing all design and implementation source code
3. Source code used for corresponding unit testing
4. **Software Verification and Validation Report (SVVR):** A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and completion of all core requirements within corresponding specification and design documentation.
5. **Software and User Documentation:** Written text that accompanies computer software that explains how the software operates, how it is used, and acts as the user manual for system administrators and support staff.

How Much It Will Cost

The cost of our Machine Learning service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with

limited access to information and documentation related to ongoing design and development requiring client feedback or input.

Example from Portfolio

J.Craig Footwear needed a way to take images of their shoes and accurately determine the color of the shoe for display in their online store. Black Box was able to research various color representations like RGB and HSL with various use clustering techniques to determine the best color value for display. The end result was increased color accuracy for nearly 75% of their shoe inventory.

Similar or Related Services

1. Simply looking to determine if your innovation or venture is technically feasible or financially worthwhile? You would benefit greatly from our Project and Innovation Feasibility Study, Analysis, and Design service on page 8.
2. Only need a specification, design, plan, or firm understanding of the effort and costs required to create a software engine, platform, or system? We recommend our Software Requirements Analysis and Specification service on page 6.
3. Do you require custom development for complex scientific software or solutions? See our Science Software service on page 50 for more detailed information.
4. Need Black Box to create the applications, platforms, and systems as well? See our Custom Programs and Applications service on page 56.

2.4.3 Scientific Visualization

Description of Service

Scientific visualization is primarily concerned with the visualization of three-dimensional phenomena (architectural, meteorological, medical, biological, etc.), where the emphasis is on realistic renderings of volumes, surfaces, illumination sources, and so forth, perhaps with a dynamic (time) component. It is also considered a branch of computer science that is a subset of computer graphics.

The purpose of scientific visualization is to graphically illustrate scientific data to enable scientists to understand, illustrate, and glean insight from their data. Black Box provides the Scientific Visualization service to assist or lead work and projects related to computer animation, computer simulation, information visualization, interface technology and perception, surface rendering, volume rendering, and volume visualization.

Why It's Valuable and How It's Beneficial

Black Box staffs mathematics and computational theory Ph.D.s highly experienced in understanding, visualizing, developing, and improving scientific data systems, visualizations, and techniques.

What You Purchase and Receive

The Scientific Visualization service provides you with the following development, reports, documentation, source materials, consulting, and implementations:

1. Software development for creating, integrating, or building upon the following technologies: **computer graphics, computer animations, computer-generated imagery, computer simulations, information visualizations, mathematical modeling, and rendering**
2. Complete code base containing all design and implementation source code
3. Source code used for corresponding unit testing
4. **Software Verification and Validation Report (SVVR):** A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and completion of all core requirements within corresponding specification and design documentation.
5. **Software and User Documentation:** Written text that accompanies computer software that explains how the software operates, how it is used, and acts as the user manual for system administrators and support staff.

How Much It Will Cost

The cost of our Scientific Visualization service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with

limited access to information and documentation related to ongoing design and development requiring client feedback or input.

Example from Portfolio

Ajaxalytics and KitBox both have several modules built into their systems allowing end-users to visualize and better understand everything from simple data to complex mathematical models.

Similar or Related Services

1. Simply looking to determine if your innovation or venture is technically feasible or financially worthwhile? You would benefit greatly from our Project and Innovation Feasibility Study, Analysis, and Design service on page 8.
2. Only need a specification, design, plan, or firm understanding of the effort and costs required to create a software engine, platform, or system? We recommend our Software Requirements Analysis and Specification service on page 6.
3. Do you require custom development for complex scientific software or solutions? See our Science Software service on page 50 for more detailed information.
4. Need Black Box to create the applications, platforms, and systems as well? See our Custom Programs and Applications service on page 56.

2.4.4 Science Software

Description of Service

Black Box works with you to refine existing technology or create new technology pushing boundaries forward. Working closely with you and your team we discuss and try different algorithmic implementations and applications. Working together we can create a solution to any problem. With the solution in hand you can move your project or product forward introducing the world to something spectacular.

It is important to understand that this is research oriented and is not simply creating a program or application. Both you and Black Box must be committed to working together and cooperating to the fullest extent possible. These projects can take significant time before viable results are produced, so it is important to meet and discuss progress.

Why It's Valuable and How It's Beneficial

The end result of our work is the ultimate value. Together we will have produced something unique and not seen before. The opportunities born from it are therefore limited by only your imagination and understanding. In the business world, the results typically lead to a brand new product that may get patent protection.

What You Purchase and Receive

The Science Software service provides you with the following development, reports, documentation, source materials, consulting, and implementations:

1. Software development for creating, integrating, or improving software in the following domains: **Artificial Intelligence, Astronomy, Bioinformatics, Biology, Chemistry, Computational Science the Theory, Earth Sciences, Forensics, Geology, Mathematics, and Physics**
2. Complete code base containing all design and implementation source code
3. Source code used for corresponding unit testing
4. **Software Verification and Validation Report (SVVR):** A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and completion of all core requirements within corresponding specification and design documentation.
5. **Software and User Documentation:** Written text that accompanies computer software that explains how the software operates, how it is used, and acts as the user manual for system administrators and support staff.

How Much It Will Cost

The cost of our Science Software service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

How We Will Work Together

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limited access to information and documentation related to ongoing design and development requiring client feedback or input.

Example from Portfolio

Ichor is a company that creates devices to monitor the health of individuals playing sports. The device is worn by the player and tracks vitals. Black Box was brought on to make first pass of the statistics that were possible and rough implementation of those statistics. Black Box used various signal processing techniques to extract heartbeat and other vital statistics that were displayed to appropriate team coaches.

Similar or Related Services

1. In need of more information or a better understanding of how to improve the quality and effectiveness of your mobile app? A/B and Multivariate Testing on page 44 provides the value, benefits, and deliverables you seek.
2. Need help analyzing and classifying large sets of complex data? Our Machine Learning service on 46 may be what you're after.
3. Having trouble visualizing, or creating visualizations and graphics for, data? Our Scientific Visualization service on 48 provides the type of development and expertise you require.
4. Simply looking to determine if your innovation or venture is technically feasible or financially worthwhile? You would benefit greatly from our Project and Innovation Feasibility Study, Analysis, and Design service on page 8.

2.4.5 Web Analytics

Description of Service

Web analytics is the measurement, collection, analysis and reporting of web data for purposes of understanding and optimizing web usage. Web analytics is not just a process for measuring web traffic, it can also be used as a tool for business and market research, as well as to assess and improve the effectiveness of a website.

Black Box provides the Web Analytics service to businesses and organizations in need of web analytics applications or platforms, or the design, development, and integration of metrics and heuristics for use within web analytics engines.

Why It's Valuable and How It's Beneficial

Web analytics platforms and applications help companies measure the results of traditional print or broadcast advertising campaigns, as well as estimate how traffic to a website changes after the launch of a new advertising campaign. Web analytics provides information about the number of visitors to a website and the number of page views, and gauge traffic and popularity trends most useful for market research.

What You Purchase and Receive

The Web Analytics service provides you with the following development, reports, documentation, source materials, consulting, and implementations:

1. Software development for creating, integrating, or building upon the following techniques and technologies: **behavioral targeting, click analytics, geolocation, geotargeting, marketing funnels, page tagging, personalization, website localization, website optimization, web mining, and web server log file analysis**
2. Complete code base containing all design and implementation source code
3. Source code used for corresponding unit testing
4. **Software Verification and Validation Report (SVVR):** A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and completion of all core requirements within corresponding specification and design documentation.
5. **Software and User Documentation:** Written text that accompanies computer software that explains how the software operates, how it is used, and acts as the user manual for system administrators and support staff.

How Much It Will Cost

The cost of our Web Analytics service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with

limited access to information and documentation related to ongoing design and development requiring client feedback or input.

Example from Portfolio

Ajaxalytics is a complete web analytics solution - it's one of our core products, and is provided to our clients as-is, as a platform that can be integrated, or as a parts-store where modules can be selected and used within a customer's existing virtual infrastructure.

Similar or Related Services

1. Wanting to guarantee a consistent and quality user experience of your web-based applications instead of developing new mobile apps? Read about our Responsive Web Applications service on page 60 for more detailed information.
2. Are your custom development requirements specific to mobile devices, are you in need of native iOS/Android app development? Read about our Mobile Apps and Mobile Web Applications service on page 58.
3. In need of more information or a better understanding of how to improve the quality and effectiveness of your mobile app? A/B and Multivariate Testing on page 44 provides the value, benefits, and deliverables you seek.
4. Only need a specification, design, plan, or firm understanding of the effort and costs required to create a software engine, platform, or system? We recommend our Software Requirements Analysis and Specification service on page 6.

2.5 Web, Mobile, and Custom Application Design and Development

2.5.1 Cross-Platform and Cross-Browser Compatibility

Description of Service

A product or service is considered compatible with a platform if it works as intended and expected on said platform. Achieving compatibility could mean testing across hardware, such as different devices from several different brands. Or you may be anticipating a large disparity in operating systems across your user-base.

At Black Box, we strive to ensure compatibility, marrying modern web standards and practices with you and your customers' expectations. If we know a portion of your users will be using a particular device or certain version of an operating system, we'll work with you to plan a development track optimized to providing the best experience possible.

Why It's Valuable and How It's Beneficial

Compatibility testing is one of the most important aspects of development. If your product is built around a platform your users don't take advantage of, or was designed with outdated technologies which are no longer relevant or accessible to your users, all of the features in the world will still result in a poor experience and unhappy customers.

Scenarios like these are exactly why we prioritize cross-browser and cross-platform testing.

What You Purchase and Receive

The Cross-Platform and Cross-Browser Compatibility service provides you with the following development, reports, documentation, source materials, consulting, and implementations:

1. Software development for creating, integrating, or building upon any resource or technology necessary in order to satisfy all core requirements.
2. Complete code base containing all design and implementation source code
3. Source code used for corresponding unit testing
4. **Software Verification and Validation Report (SVVR):** A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and completion of all core requirements within corresponding specification and design documentation.
5. **Software and User Documentation:** Written text that accompanies computer software that explains how the software operates, how it is used, and acts as the user manual for system administrators and support staff.

How Much It Will Cost

The cost of our Cross-Platform and Cross-Browser Compatibility service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

Example from Portfolio

Black Box partner Design Mart's Monument Designer software is web-based design application created specifically for the memorial industry. It features a live HTML5 canvas and advanced usage of SVG elements and technologies. Some of these elements, though, are treated differently by different browsers and even by different operating systems. Testing and implementing edge-case fixes across several different machines and operating systems ensures Design Mart's customers will have a cohesive, singular experience, regardless of device.

Similar or Related Services

1. Wanting to guarantee a consistent and quality user experience of your web-based applications instead of developing new mobile apps? Read about our Responsive Web Applications service on page 60 for more detailed information.
2. Are your custom development requirements specific to mobile devices, are you in need of native iOS/Android app development? Read about our Mobile Apps and Mobile Web Applications service on page 58.
3. In need of more information or a better understanding of how to improve the quality and effectiveness of your mobile app? A/B and Multivariate Testing on page 44 provides the value, benefits, and deliverables you seek.
4. Only need a specification, design, plan, or firm understanding of the effort and costs required to create a software engine, platform, or system? We recommend our Software Requirements Analysis and Specification service on page 6.

2.5.2 Custom Programs and Applications

Description of Service

Black Box provides Custom Programs and Applications services to businesses and organizations needing to create, extend, or improve their systems, platforms, and applications. If your existing solutions do not meet the needs or requirements of your business or your customer base, Black Box is ready to work together and refine those requirements and conduct the work necessary to ensure the systems and software built, integrated, or improved meets those needs and satisfies those requirements.

Whether it's straightforward business process automation, specific application upgrades, or brand new internal or customer facing application development, Black Box is here to provide the expertise and dedicate the effort to rapidly go from ideation and specification to implementation and project completion.

Why It's Valuable and How It's Beneficial

Effective software reduces costs, decreases latency, and improves the availability, profitability, and efficiency of any given business. Our teams work closely together to ensure that any software written, extended, or improved meets or exceeds your needs. Black Box develops solutions built to last, where maintainability, scalability, and reliability are of utmost importance, second only to ensuring the full coverage and completion of your requirements and expectations.

What You Purchase and Receive

The Custom Programs and Applications service provides you with the following development, reports, documentation, source materials, consulting, and implementations:

1. Software development for creating, integrating, or building upon any resource or technology necessary in order to satisfy all core requirements.
2. Complete code base containing all design and implementation source code
3. Source code used for corresponding unit testing
4. **Software Verification and Validation Report (SVVR):** A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and completion of all core requirements within corresponding specification and design documentation.
5. **Software and User Documentation:** Written text that accompanies computer software that explains how the software operates, how it is used, and acts as the user manual for system administrators and support staff.

How Much It Will Cost

The cost of our Custom Programs and Applications service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations. This service may be provided against a consulting retainer as well, where Black Box will provide any requested services up to a purchased number of hours - especially useful when your budget is as tight as your time line.

How We Will Work Together

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Example from Portfolio

Replicam is a Video Management System that needed to be created from nearly the ground up. Black Box working closely with principals and employees inside Replicam was able to come up with an implementable system within the required time frame. Black Box programmed everything from the interface, camera interaction, and security aspects of the system bringing the Replicam system to life. Replicam now sells to different levels of government with improvements being added all the time (Software Maintenance and Support).

Similar or Related Services

1. Only need a specification, design, plan, or firm understanding of the effort and costs required to create a software engine, platform, or system? We recommend our Software Requirements Analysis and Specification service on page 6.
2. Simply looking to determine if your innovation or venture is technically feasible or financially worthwhile? You would benefit greatly from our Project and Innovation Feasibility Study, Analysis, and Design service on page 8.
3. Are your custom development requirements specific to mobile devices, are you in need of native iOS/Android app development? Read about our Mobile Apps and Mobile Web Applications service on page 58.
4. Do you require custom development for complex scientific software or solutions? See our Science Software service on page 50 for more detailed information.

2.5.3 Mobile Apps and Mobile Web Applications

Description of Service

Mobile application development comprises the processes and procedures by which software is developed for small, wireless computing devices such as personal digital assistants (PDA), smartphones, and tablets.

Black Box provides the Mobile Apps and Mobile Web Applications service to businesses and organizations in need of expert native application development (apps) or browser-based, device-agnostic web applications. Keeping Mobile-First design in mind as all times, we prioritize a complete experience across all devices, and ensure your content and intended functionality seamlessly adapt to a broad spectrum of smartphones and tablets.

This service is perfect for businesses and organizations in need of:

1. Native iOS, Android, or Windows apps
2. Cross-platform responsive web applications
3. Custom front-end and back-end mobile development

Why It's Valuable and How It's Beneficial

Black Box develops solutions built to last, where maintainability, scalability, and reliability are of utmost importance, second only to ensuring the full coverage and completion of your requirements and expectations.

Mobile devices and platforms change so rapidly and are upgraded and updated so often, and it's important to plan ahead and focus on building a solid foundation in anticipation of future maintenance, support, and improvement of the mobile software itself.

What You Purchase and Receive

The Mobile Apps and Mobile Web Applications service provides you with the following development, reports, documentation, source materials, consulting, and implementations:

1. Software development for creating, integrating, or building upon any mobile-based framework or technology.
2. Complete code base containing all design and implementation source code
3. Source code used for corresponding unit testing
4. **Software Verification and Validation Report (SVVR):** A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and completion of all core requirements within corresponding specification and design documentation.
5. **Software and User Documentation:** Written text that accompanies computer software that explains how the software operates, how it is used, and acts as the user manual for system administrators and support staff.

How Much It Will Cost

The cost of our Mobile Apps and Mobile Web Applications service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations. This service may be provided against a consulting retainer as well, where Black Box will provide any requested services up to a purchased number of hours - especially useful when your budget is as tight as your time line.

How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

Example from Portfolio

One of our partners, J.Craig, is a high-end shoe retailer with physical locations and an online store. Mobile and tablet account for nearly 70% of their traffic. Knowing that Black Box has given consideration to both mobile and desktop platforms, creating a device-agnostic browsing and buying experience, allows them to focus on their product and serve their customers with confidence.

Similar or Related Services

1. Only need a specification, design, plan, or firm understanding of the effort and costs required to create a software engine, platform, or system? We recommend our Software Requirements Analysis and Specification service on page 6.
2. Are you looking to increase exposure or improve the quality of your mobile app by ensuring it's stability and correctness on multiple platforms? Check out our Cross-Platform and Cross-Browser Compatibility service on page 54.
3. Wanting to guarantee a consistent and quality user experience of your web-based applications instead of developing new mobile apps? Read about our Responsive Web Applications service on page 60 for more detailed information.
4. In need of more information or a better understanding of how to improve the quality and effectiveness of your mobile app? A/B and Multivariate Testing on page 44 provides the value, benefits, and deliverables you seek.

2.5.4 Responsive Web Applications

Description of Service

Designer Josh Clark describes the ideal web content as water, effortlessly taking the shape of its container.

In an increasingly mobile world, customers expect to be able to perform the same functions and get the same information from their phones and tablets as they would on a desktop computer. Providing your visitors and customers with the same value and experience, regardless of context, is the crux of responsive design. Our design team is familiar with and experienced in modern design and usability standards, giving your project integrity in areas such as:

1. Mobile-First design, prioritizing a complete experience across all devices. All of the same content, seamlessly adapted to a broad spectrum of screen sizes.
2. Technologies that are platform-aware. Reflected in our approach regarding cross-compatibility, we work to ensure the form and functionality of your project exist as separate entities. This means greater backwards compatibility and more opportunities for customers to access your product or service.

Why It's Valuable and How It's Beneficial

Developing an exceptional user-experience is more an exercise in psychology than design. Anticipating your users' needs and giving them what they want before they even ask is what creates a great experience.

Understanding your users will visit and use your product from a variety of platforms, and developing using responsive methodologies, allows us to create such an experience.

What You Purchase and Receive

The Responsive Web Applications service provides you with the following development, design, reports, documentation, source materials, and implementations:

1. Software development and graphic design for responsive, web-based user interfaces
2. Complete code base containing all design and implementation source code and multimedia assets
3. Source code used for corresponding unit testing
4. **Software Verification and Validation Report (SVVR):** A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and completion of all core requirements within corresponding specification and design documentation.

How Much It Will Cost

The cost of our Responsive Web Applications service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with

limited access to information and documentation related to ongoing design and development requiring client feedback or input.

Example from Portfolio

The Elberton Granite Association has been publishing an industry-leading magazine since 1957. Thanks to their record-keeping and Black Box's mobile-first design principles, the entirety of this incredible archive will be made available to the public for reading on both mobile and desktop browsers. This means, for the first time, it will be easier than ever for people to keep up with industry news, regardless of location or device.

Similar or Related Services

1. Also in need of defining, designing, and developing your business? We strongly recommend our Business Solutions Analysis, Planning, and Design service on page 10.
2. Trying to better understand your customer's online usage and patterns of behavior? Read about our Web Analytics service on 52 provides the software and systems you're after.
3. Are you looking to increase exposure or improve the quality of your mobile app by ensuring it's stability and correctness on multiple platforms? Check out our Cross-Platform and Cross-Browser Compatibility service on page 54.
4. Know you'll need Black Box to provide deployment, maintenance, and support services after the fact? Read about our Software, System, and Storage Installation and Deployment service on page 76 and contact us if you're interested in knowing more.



03

Securing Software and Infrastructure

Black Box provides professional security services designed to help businesses and organizations prevent common attacks and protect their employee and customer data, personal information, and communications. Our development practices and code reviews are centered around security, reliability, and correctness, allowing us to effectively anticipate and better manage exploits while addressing potential vulnerabilities before they even have the chance to become real concerns.

This section contains services that provide professional consulting, development, and operational work from certified security experts, and focus entirely on the analysis, installation, integration, and configuration of systems, software, and testing and risk assessment methodologies and techniques.

Whether you're in need of securing your site or your entire virtual infrastructure, Black Box is here to provide you with the level of effort and attention necessary to wholly, verifiably keep you safe.

3. Securing Software and Infrastructure

Contents

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Contact Black Box Support to request more information about our Securing Software and Infrastructure services found within this section

- Email: support@blackboxoperations.com
- Online: <https://blackboxoperations.com/services/security>

Or reach out if you'd like to go ahead and schedule our initial consultation where we will:

1. Identify and further discuss your needs, time lines, and expectations
2. Determine if other related services may benefit your business or organization
3. Provide a time and cost estimate for review, discussion, and negotiation

3.1 Firewall Management

3.1.1 Description of Service

Black Box provides Firewall Management services for installing and maintaining three types of firewalls:

1. **External Firewall:** blocks all incoming and outgoing internet traffic, where firewall rules are written and enabled to allow certain types of network traffic, such as websites and e-mails, to pass through the firewall itself. Only network traffic that satisfies one of the enabled rules will be allowed in from or out to the internet.
2. **Internal Firewall:** blocks all incoming and outgoing network traffic between entities or departments within your organization's intranet, where firewall rules are written and enabled to allow certain types of network traffic between said entities and departments.
3. **Remote Sites Firewall:** blocks all incoming internet traffic while allowing outgoing internet traffic to pass through directly.

3.1.2 Why It's Valuable and How It's Beneficial

The key benefit and value of a firewall is its ability to understand and actively filter and manage access to applications and protocols, even down to who is attempting to access them and from where. Firewalls allows businesses and organizations to enjoy all of the benefits of iron-clad security, without having to suffer any of the consequences or loss of access or functionality to legitimate users, and approved access to applications and protocols.

3.1.3 What You Purchase and Receive

Black Box ensures that our Firewall Management service provides the expertise and effort necessary to complete the installation, integration, and deployment phases defined within the following plans, as well as generate the verification and validation report to ensure full and proper coverage of all requirements:

1. Software development and DevOps for:
 1. Installation and configuration of firewall within organization's infrastructure
 2. Definition and integration of firewall rules

Software Verification and Validation Report (SVVR): A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and completion of all core requirements within corresponding specification and design documentation.

3.1.4 How Much It Will Cost

The cost of our Firewall Management service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

3.1.5 How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems.

Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

Additional statistical information may also be maintained and used to generate reports tracking a firewall's effectiveness in protecting machines and defending against vulnerability and exploit penetration attempts.

3.1.6 Example from Portfolio

WizAds created an internet-based service by which most of their content is generated by their users. Because their software allows users to create and submit various amounts of text and image related data, they needed to make sure they could provide consistent and available storage. Through consultation with Black Box, WizAds determined that a cloud-based storage solution would optimally satisfy their needs. We were able to assist WizAds configure their online file storage, and adapt their software offering to utilize this new platform.

3.1.7 Similar or Related Services

1. In need of a customized file sharing and content management system (CMS)? We can help with our File Sharing and Content Management service on 34.
2. Storage and Infrastructure Maintenance and Support service on 80.
3. Need to determine if you're software or systems are exposed or vulnerable? Read about how our Penetration Testing service on 66 will provide just that.
4. Do you need security experts to determine if your at risk? Our Security Risk Assessment service on 70 will provide you with the effort and expertise you require.

3.2 Penetration Testing

3.2.1 Description of Service

A penetration test, sometimes referred to as a “pentest”, is a software attack on a computer system that looks for security weaknesses, potentially gaining access to the computer’s features and data. The process typically identifies the target systems and a particular goal, then reviews available information and undertakes various means to attain the goal.

A penetration test target may be a white box, which provides background and system information, or black box, which provides only basic or no information except the company name.

Black Box provides the Penetration Testing service to businesses or organizations in need of professional penetration testing in order to fully understand and assess potential impacts, recourse, and feasible countermeasures to mitigate or remove unnecessary vulnerability and risk.

3.2.2 Why It’s Valuable and How It’s Beneficial

A penetration test can help determine whether a system is vulnerable to attack, if the defenses were sufficient, and which defenses, if any, the test defeated. Penetration test reports assess potential impacts to the organization and suggest countermeasures to reduce risk.

3.2.3 What You Purchase and Receive

Black Box ensures that our Penetration Testing service provides the expertise and effort necessary to conduct the following plan in order to generate the following report:

1. **Penetration Testing Plan (PRP):** A plan containing the policies, procedures, and work instructions for penetration testing activities, how they are to be conducted, who is responsible for each activity, when the activities are supposed to occur, and what resources are required.
2. **Penetration Testing Report (PRT):** A report containing the results of penetration testing, which provides a full breakdown of each test’s outcome and results, the feasibility of particular types or sets of attacks, identification of high-risk vulnerabilities, assessment of the potential business and operational impacts of successful attacks, and evidence per claim supporting the claims and assessments themselves directly.

3.2.4 How Much It Will Cost

The cost of our Penetration Testing service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

3.2.5 How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

3.2.6 Example from Portfolio

Black Box routinely runs penetration testing against its own products and services to ensure no exploits or vulnerabilities are unwitting being left open and exposed.

3.2.7 Similar or Related Services

1. In need of a customized file sharing and content management system (CMS)? We can help with our File Sharing and Content Management service on 34.
2. Storage and Infrastructure Maintenance and Support service on 80.
3. Having trouble understanding, installing, or configuring a firewall? Our Firewall Management service on 64 is precisely what you need.
4. Do you need security experts to determine if your at risk? Our Security Risk Assessment service on 70 will provide you with the effort and expertise you require.

3.3 Secure Socket Layer Certificate (SSL)

3.3.1 Description of Service

Secure Socket Layer (SSL) certificates are an important component of security that prevent attackers from impersonating a secure website or other server, ensure strong and reliable email encryption, and even provide signing and verification of code and applications so that your customers know they're safe when downloading or accessing your products and services.

Black Box helps you protect your web services and ensure that confidential data sent via the internet is encrypted and secure. Through globally verified certificate authorities, we provide our Secure Socket Layer Certificate (SSL) service to businesses and organizations in need of identifying, purchasing, installing, and configuring the SSL server certificates.

3.3.2 Why It's Valuable and How It's Beneficial

Secure Socket Layer (SSL) certificates provide you with the security and peace of mind that comes with SHA-2 enhanced server security encryption. Black Box also works closely with your teams to guarantee that the most effective, affordable, and appropriate SSL certificate is selected and professionally installed.

3.3.3 What You Purchase and Receive

Black Box ensures that our Secure Socket Layer Certificate (SSL) service provides the expertise and effort necessary to perform the following work and generate the following report.

1. DevOps for the installation and configuration of Secure Socket Layer (SSL) certificates within organization's infrastructure
2. **Software Verification and Validation Report (SVVR):** A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and completion of all core requirements within corresponding specification and design documentation.

3.3.4 How Much It Will Cost

The cost of our Secure Socket Layer Certificate (SSL) service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

3.3.5 How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

3.3.6 Example from Portfolio

Almost every one of our clients have needed a secure online resource, and identifying, acquiring, installing, and configuring SSL certificates occurs in almost every one of our projects and absolutely for all of our own products and services.

3.3.7 Similar or Related Services

1. Need to determine if you're software or systems are exposed or vulnerable? Read about how our Penetration Testing service on 66 will provide just that.
2. Is your software system down and you need help getting it up and running? Our team will get your system back up with our Recovery of Critical Systems service on 84.
3. Having trouble understanding, installing, or configuring a firewall? Our Firewall Management service on 64 is precisely what you need.
4. Do you need security experts to determine if your at risk? Our Security Risk Assessment service on 70 will provide you with the effort and expertise you require.

3.4 Security Risk Assessment

3.4.1 Description of Service

Security is of the utmost concern when you have private or sensitive data that cannot leak out. Black Box looks at your physical and virtual infrastructure and understanding their entry points and vulnerabilities. We conduct a risk assessment based on the information being protected and then provide recommendations to reduce or eliminate and vulnerabilities found.

On the tip of everyone's mind, "Is my system secure from an outsider?" Can an unauthorized person just walk into by building and steal my data? Can a hacker gain access to my internal network and manipulate my data? Can I detect these threats? Black Box with your cooperation will evaluate how an unauthorized person could walk away with your information presenting you all details.

Threats to your data don't just come from the outside. Evaluation of your organizations internal threat detection and mitigation must also take a top priority. According Forrester Research around half of data breaches are caused by internal actors. Black Box will look at your physical access controls, the systems that authorize information access, data access procedures and present to you potential breach points.

3.4.2 Why It's Valuable and How It's Beneficial

Depending on your domain a data breach could be costly in a series of the different ways. The most direct is when your organization is fined (e.g. It loses Private Health Information under HIPPA). Another is a competitor getting direct access to your research and gaining an advantage. In taking preventative action, you can avoid these direct and indirect costs.

3.4.3 What You Purchase and Receive

Black Box ensures that our Security Risk Assessment service provides the expertise and effort necessary to conduct the following plan in order to generate the following report:

1. DevOps for:
 1. **Security Risk Assessment Plan (SRAP):** A plan containing the policies, procedures, and work instructions for a security risk assessment, how it is to be conducted, who is responsible for each activity, when the activities are supposed to occur, and what resources and access privileges are required.
 2. **Security Risk Assessment Report (SRAR):** A report containing the results of the security risk assessment, which provides a full breakdown of the assessment's identified risks, the system's characterizations, an impact analysis, risk likelihood determination, and professional security recommendations.

3.4.4 How Much It Will Cost

The cost of our Security Risk Assessment service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

3.4.5 How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

3.4.6 Example from Portfolio

Black Box performed a virtual security analysis for the Coweeta LTER program at the University of Georgia. We examined all their infrastructure and software platforms. Our recommendations lead to Coweeta LTER replacing parts of their home grown software infrastructure because of SQL injection vulnerabilities and lead to them centralizing their authentication and authorization infrastructure for better access control.

3.4.7 Similar or Related Services

1. Need to determine if you're software or systems are exposed or vulnerable? Read about how our Penetration Testing service on 66 will provide just that.
2. Is your software system down and you need help getting it up and running? Our team will get your system back up with our Recovery of Critical Systems service on 84.
3. Having trouble understanding, installing, or configuring a firewall? Our Firewall Management service on 64 is precisely what you need.
4. In desperate need of last-minute, emergency development or support? See our Rapid Development, Repair, and Support service on 82, and contact us as soon as possible.

3.5 Virtual Private Network (VPN)

3.5.1 Description of Service

A Virtual Private Network (VPN) is a secure and critical component that will allow all your geographically diverse assets, such as regional offices or telecommuting employees, to access your internal private network. Your organization has recognized the potential of allowing remote users to access your internal resources, but have failed to implement a strategy due to fears of exposing sensitive data to the Internet.

Whether your organization is seeking to link the private networks of your regional offices together with the private network of your main office, or you are seeking to provide a “work-from-home” option for your employees, a VPN can provide an elegant solution. Black Box provides analysis and consulting services to help you establish a VPN strategy. Black Box also provides services for installation or integration, deployment, or management of a VPN solution that will help meet your business needs.

3.5.2 Why It’s Valuable and How It’s Beneficial

By embracing a VPN solution, your organization will allow your users access to the organization’s private network as if they were directly connected, without exposing your resources to public networks, like the Internet. Because a VPN securely extends your organization’s private network across the Internet, users will be able to efficiently connect to the network regardless of geographic locations, whilst benefiting from the same functionality, security, and management policies of the private network.

3.5.3 What You Purchase and Receive

Black Box ensures that Virtual Private Network (VPN) services provide the following deliverables:

1. Installation and configuration of VPN within organization’s infrastructure
2. Full verification report on VPN’s functional completeness and correctness

3.5.4 How Much It Will Cost

The cost of our Virtual Private Network (VPN) service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

3.5.5 How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

3.5.6 Example from Portfolio

WizAds created an internet-based service by which most of their content is generated by their users. Because their software allows users to create and submit various amounts of text and image related data, they needed to

make sure they could provide consistent and available storage. Through consultation with Black Box, WizAds determined that a cloud-based storage solution would optimally satisfy their needs. We were able to assist WizAds configure their online file storage, and adapt their software offering to utilize this new platform.

3.5.7 Similar or Related Services

1. Having trouble understanding, installing, or configuring a firewall? Our Firewall Management service on 64 is precisely what you need.
2. Looking to consolidate all of your accounts into a single authentication service? Our Authentication Systems Analysis, Planning, and Design service on 12 is perfect for your needs.
3. Need to determine if you're software or systems are exposed or vulnerable? Read about how our Penetration Testing service on 66 will provide just that.
4. Do you need security experts to determine if your at risk? Our Security Risk Assessment service on 70 will provide you with the effort and expertise you require.



04

Deploying, Supporting, and Maintaining Software and Infrastructure

Black Box provides professional deployment, support, and maintenance policies and services that are designed to help businesses and organizations bring their own products and services to their employees, their partners, and the world. Whether you're in need of expert installation or integration of recently completed software or off-the-shelf solutions, you can rely on Black Box to make it available to your customers and audience and ensure your online presence and solutions remain reliable, available, and safe.

In this section you'll also find emergency support services that are specifically designed for businesses and organizations who require last-minute, high-quality, professional consulting and development, or immediate analysis and recovery of their critical systems.

Our emergency services are available 24/7 to those in dire need of assistance. Regardless of the level of damage or nature of the emergency, know that Black Box will always be there, any time day or night, to recover your critical systems, provide the level of effort and expertise necessary to meet impossible deadlines, and focus entirely on stabilizing your business, services, systems, and security.

4. Deploying, Supporting, and Maintaining Software and Infrastructure

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Contact Black Box Support to request more information about our Deploying, Supporting, and Maintaining Software and Infrastructure services found within this section

- Email: support@blackboxoperations.com
- Online: <https://blackboxoperations.com/services/maintenance-and-support>

Or reach out if you'd like to go ahead and schedule our initial consultation where we will:

1. Identify and further discuss your needs, time lines, and expectations
2. Determine if other related services may benefit your business or organization
3. Provide a time and cost estimate for review, discussion, and negotiation

4.1 Software, System, and Storage Installation and Deployment

4.1.1 Description of Service

Black Box's deployment design and implementation service takes software through the entire deployment process. This process gets software running in a usable space and ensures its availability. Black Box experts test systems' performance, abilities, and limits and determine the best deployment route for its specific needs. Our experts have experience taking software from a testing environment to a usable space and are sure to make the transition smooth to deploy software properly. Software is made accessible to users while maintaining its functionality and keeping costs low.

4.1.2 Why It's Valuable and How It's Beneficial

Black Box handles all aspects of software deployment to preserve a system's functionality as it is taken from testing/staging to a usable space. This allows the deployment to be as smooth and efficient as possible.

4.1.3 What You Purchase and Receive

Black Box ensures that our Software, System, and Storage Installation and Deployment service provides the expertise and effort necessary to complete the installation, integration, and deployment phases defined within the following plans:

1. **Software Configuration Management Plan (SCMP):** A plan containing the policies, procedures, and work instructions for software configuration management activities, how they are to be conducted, who is responsible for each activity, when the activities are supposed to occur, and what resources are required.
2. **Software Project Management Plan (SPMP):** A plan containing the policies, procedures, and work instructions for managing a software development project that defines the technical and managerial processes necessary to develop work products that satisfy the product requirements.

4.1.4 How Much It Will Cost

The cost of our Software, System, and Storage Installation and Deployment service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

4.1.5 How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

Stress testing is done to test a system's limits and restrictions. Stress testing overuses a system to assure that it will operate properly under normal circumstances. Load balancing measures understand a system's capacity and aims to avoid overloads. These measures are used during the deployment process to ensure functionality is maintained as software goes from a testing environment to users' hands.

4.1.6 Example from Portfolio

FormFree came to Black Box for help with developing an application capable of generating and sharing electronic financial documents between individuals and financial institutions. A must have requirement for Form Free was the integration with Ellie Mae's widely used Loan Origination Software (LOS). Black Box was able to produce for Form Free a custom application that integrated with LOS, allowing for their generated reports to be shared with lenders. This application is essential to linking Form Free's electronic document platform with the LOS platform and allows the entire process of requesting the individual's authorization, to the electronic delivery of reports to be automated, thus greatly expediting the process of securing a loan.

4.1.7 Similar or Related Services

1. Have a great system in place, but need to ensure that it runs smoothly and efficiently? We recommend our Software Maintenance and Support service on 78.
2. Need Black Box to create the applications, platforms, and systems as well? See our Custom Programs and Applications service on page 56.
3. Is your software system down and you need help getting it up and running? Our team will get your system back up with our Recovery of Critical Systems service on 84.
4. Only need a specification, design, plan, or firm understanding of the effort and costs required to create a software engine, platform, or system? We recommend our Software Requirements Analysis and Specification service on page 6.

4.2 Software Maintenance and Support

4.2.1 Description of Service

Black Box offers software maintenance and support to ensure systems run as efficiently as possible. Services are provided for virtually all systems, custom Black Box work as well as most external software products. Black Box's extensive product knowledge allows for the resolution of all forms of software issues. Our professionals are equipped to handle everything from simple errors and bugs to large-scale complications. Maintenance and support services improve functionality and reduce downtime to keep systems up and running.

4.2.2 Why It's Valuable and How It's Beneficial

It is necessary for the success of a business or organization to have properly functioning software. A solid support team makes this possible and ensures systems operate correctly.

4.2.3 What You Purchase and Receive

Black Box ensures that our Software Maintenance and Support service provides ongoing, scheduled maintenance and support by conducting verification and validation testing, the effort and expertise necessary to ensure a system is functionally accurate and complete and a full coverage report of each maintenance or support cycle. Specifically:

1. **Software Verification and Validation Plan (SVVP):** A plan containing the policies, procedures, and work instructions for conducting software verification and validation analysis and testing of core system and software requirements found within the corresponding Interface Design Description (IDD) and Software Design Description (SDD) documents.
2. **Software Verification and Validation Report (SVVR):** A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and completion of all core requirements within corresponding specification and design documentation.
3. **Software Development:** The process of computer programming, documenting, testing, and bug fixing involved in creating and maintaining applications and frameworks resulting in a software product or software service.
to ensure a system is functionally accurate and functionally complete, relative to the full coverage verification and validation report above.

4.2.4 How Much It Will Cost

The cost of our Software Maintenance and Support service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

4.2.5 How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

4.2.6 Example from Portfolio

The UGA at Oxford program required ongoing maintenance and support for the virtual infrastructure and responsive content management system (CMS) Black Box built and deployed for them. Almost all of our clients have requested and are provided with maintenance and support in one form or another - once development has concluded, we stick around to keep things running smoothly and continue to evolve and improve the very products and services themselves.

4.2.7 Similar or Related Services

1. Know you'll need Black Box to provide deployment, maintenance, and support services after the fact? Read about our Software, System, and Storage Installation and Deployment service on page 76 and contact us if you're interested in knowing more.
2. Is your software system down and you need help getting it up and running? Our team will get your system back up with our Recovery of Critical Systems service on 84.
3. Only need a specification, design, plan, or firm understanding of the effort and costs required to create a software engine, platform, or system? We recommend our Software Requirements Analysis and Specification service on page 6.
4. Do you need security experts to determine if your at risk? Our Security Risk Assessment service on 70 will provide you with the effort and expertise you require.

4.3 Storage and Infrastructure Maintenance and Support

4.3.1 Description of Service

Black Box's Storage and Infrastructure Maintenance and Support service keeps systems operating properly. Software requires a reliable space to be stored and used before, during, and after its deployment. Black Box's extensive knowledge and experience allows our staff to combat a range of problems that can occur in a software's staging and production environments. Whether it is an easy fix or a larger complication, Black Box's support staff solve issues effectively to keep systems running smoothly.

4.3.2 Why It's Valuable and How It's Beneficial

It is essential to an organization's success to have properly functioning software and that means properly functioning space for software to operate. Black Box solves infrastructure issues quickly to keep systems up and running.

4.3.3 What You Purchase and Receive

Black Box ensures that our Storage and Infrastructure Maintenance and Support service provides ongoing, scheduled maintenance and support by conducting verification and validation testing, the effort and expertise necessary to ensure storage configurations and infrastructure is available, reliable, and functionally complete, and a full coverage report of each maintenance or support cycle. Specifically:

1. **Software Verification and Validation Plan (SVVP):** A plan containing the policies, procedures, and work instructions for conducting software verification and validation analysis and testing of core system and software requirements found within the corresponding Interface Design Description (IDD) and Software Design Description (SDD) documents.
2. **Software Verification and Validation Report (SVVR):** A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and completion of all core requirements within corresponding specification and design documentation.
3. **Software Development:** The process of computer programming, documenting, testing, and bug fixing involved in creating and maintaining applications and frameworks resulting in a software product or software service.
to ensure a system is functionally accurate and functionally complete, relative to the full coverage verification and validation report above.

4.3.4 How Much It Will Cost

The cost of our Storage and Infrastructure Maintenance and Support service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

4.3.5 How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems.

Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

4.3.6 Example from Portfolio

WizAds requires ongoing storage and infrastructure maintenance and support, largely because the platform we built that allows them to provide their services is done so on a global scale. The WizAds advertisement management platform needs to be up and running, and available to the world, 24/7 - not an easy feat to accomplish, certainly not a simple, one-time task to complete.

4.3.7 Similar or Related Services

1. Know you'll need Black Box to provide deployment, maintenance, and support services after the fact? Read about our Software, System, and Storage Installation and Deployment service on page 76 and contact us if you're interested in knowing more.
2. Is your software system down and you need help getting it up and running? Our team will get your system back up with our Recovery of Critical Systems service on 84.
3. Only need a specification, design, plan, or firm understanding of the effort and costs required to create a software engine, platform, or system? We recommend our Software Requirements Analysis and Specification service on page 6.
4. Do you need security experts to determine if your at risk? Our Security Risk Assessment service on 70 will provide you with the effort and expertise you require.

4.4 Rapid Development, Repair, and Support

4.4.1 Description of Service

Black Box provides Rapid Development, Repair, and Support services to businesses and organizations in dire need of last-minute professional development in order to meet unexpected customer demands before seemingly impossible deadlines, perform immediate repairs or modifications to mission-critical systems, or push their own software and services to completion in an unmanageably short period of time.

In these situations, our expert team of developers, engineers, and analysts will work with your team to quickly identify, plan, conduct the development necessary to handle emergencies and focus on reestablishing stability within your team and your business by pulling you directly out of these critical, unfavorable scenarios.

4.4.2 Why It's Valuable and How It's Beneficial

When failure seems inevitable, having another team of experts immediately complement and supplement your own team oftentimes makes the difference between surviving worst-case scenarios and closing your doors. Our Rapid Development, Repair, and Support service is provided to businesses and organizations with the specific intent and purpose of resolving impossible issues, and our primary objective is to ensure that your business not only makes it its darkest hour, but that it has more certainty and stability than even before.

4.4.3 What You Purchase and Receive

The Rapid Development, Repair, and Support service provides you with the following development, reports, and source materials:

1. Agile software development software development through scrum software development or extreme programming (XP)
2. Complete code base containing all design and implementation source code
3. **Software Verification and Validation Report (SVVR):** A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and completion of all core requirements within corresponding specification and design documentation.

4.4.4 How Much It Will Cost

The cost of our Rapid Development, Repair, and Support service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

We will make our best effort to keep your budget in mind, but it is important to note that our Rapid Development, Repair, and Support service is much more costly than providing you with the same amount of work within the usually expected and typical amount of time.

That said, we will first discuss your budget and budgetary constraints in order to determine and agree on the total cost of work necessary to to perform rapid development, repair, or support. While we are more than willing to also discuss a payment schedule or plan in extreme scenarios, we do require 100% of the total cost up front before conducting any rapid work.

4.4.5 How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

4.4.6 Example from Portfolio

COGDA required last-minute rapid development because of their iterative and aggressive versioning for their own services - specifically because they were focused entirely on meeting and satisfying their initial customers' demands so that they could continue their own growth accordingly.

4.4.7 Similar or Related Services

1. Is your software system down and you need help getting it up and running? Our team will get your system back up with our Recovery of Critical Systems service on 84.
2. Have a great system in place, but need to ensure that it runs smoothly and efficiently? We recommend our Software Maintenance and Support service on 78.
3. Do you need security experts to determine if your at risk? Our Security Risk Assessment service on 70 will provide you with the effort and expertise you require.
4. Need Black Box to create the applications, platforms, and systems as well? See our Custom Programs and Applications service on page 56.

4.5 Recovery of Critical Systems

4.5.1 Description of Service

When software or systems critical to your organization or business go down, you're left unable to provide your services, honor your own service level agreements, or meet any of your customer's expectations. The purpose of our Recovery of Critical Systems service is simple; bring your software and systems back to operational status as soon as possible.

Black Box will analyze and diagnose the issues that are keeping your critical software and systems, then provide temporary fixes that can be implemented as quickly as possible. We will also identify long-term solutions that are discussed once your software and systems have been temporarily stabilized, allowing our teams to determine next best steps to ensuring your infrastructure's availability and reliability without the added chaos and emergency rush of repair and recovery work.

4.5.2 Why It's Valuable and How It's Beneficial

Getting your system back up and working is invaluable. The longer a system is down the more money is lost as angry customer's are beating down your door looking for information. The sooner Black Box can start the sooner the situation can be resolved and your business return to it's normal routine.

4.5.3 What You Purchase and Receive

The Recovery of Critical Systems service provides you with the following development, reports, and source materials:

1. Agile software development DevOps
2. Complete code base containing all design and implementation source code
3. **Software Verification and Validation Report (SVVR):** A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and completion of all core requirements within corresponding specification and design documentation.

4.5.4 How Much It Will Cost

The cost of our Recovery of Critical Systems service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

We will make our best effort to keep your budget in mind, but it is important to note that our Recovery of Critical Systems service is much more costly than providing you with the same amount of work within the usually expected and typical amount of time.

That said, we will first discuss your budget and budgetary constraints in order to determine and agree on the total cost of work necessary to recover your critical systems. While we are more than willing to also discuss a payment schedule or plan in extreme scenarios, we do require 100% of the total cost up front before conducting any emergency recovery work.

4.5.5 How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

4.5.6 Example from Portfolio

In early 2013 the company OfficeHours contacted Black Box after their development team was unable to make their WebRTC implementation work. Black Box was given 4 days to bring the system back into shape, so that they could make a presentation to potential clients. Black Box ensured that OfficeHours was able to make their demo.

4.5.7 Similar or Related Services

1. In desperate need of last-minute, emergency development or support? See our Rapid Development, Repair, and Support service on 82, and contact us as soon as possible.
2. Have a great system in place, but need to ensure that it runs smoothly and efficiently? We recommend our Software Maintenance and Support service on 78.
3. Do you need security experts to determine if your at risk? Our Security Risk Assessment service on 70 will provide you with the effort and expertise you require.
4. Need Black Box to create the applications, platforms, and systems as well? See our Custom Programs and Applications service on page 56.



05

Promoting Software and Business Solutions

Black Box offers strategic planning, digital marketing, and traditional marketing services. Our marketing team will help you determine who your competitors are, who your target customers are, and the best ways to promote your business. Using traditional and digital methods, our marketing team will help your business engage with potential customers, increase brand awareness, and, ultimately, increase sales and grow your business.

In this section you'll find services focused on providing businesses and organizations with targeted, highly-specific marketing plans and strategy, professional graphic design and branding, and virtual and physical marketing material design and implementation.

Black Box is here to help promote, sell, and improve the solutions and innovations we also worked together to build and create, with our primary objective being to provide businesses and organizations with everything they could possibly need in order to ensure their success, growth, and longevity.

5. Promoting Software and Business Solutions

Contents

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5.2	Marketing Assets, Views, and Materials	90
5.3	Social Media Strategy	92

Contact Black Box Support to request more information about our Promoting Software and Business Solutions services found within this section

- Email: support@blackboxoperations.com
- Online: <https://blackboxoperations.com/services/promoting-software-and-business-solutions>

Or reach out if you'd like to go ahead and schedule our initial consultation where we will:

1. Identify and further discuss your needs, time lines, and expectations
2. Determine if other related services may benefit your business or organization
3. Provide a time and cost estimate for review, discussion, and negotiation

5.1 Brand Identity and Brand Harmony

5.1.1 Description of Service

Creating a cohesive identity and recognizable brand is paramount for creating a forward-moving business. It drives customer perception, marketing materials, and reflects your company's philosophies and ideals. Something this important needs proper care, consideration, research, and execution.

Do you already have an established identity but would like to refine or modernize it? We're equipped to help you there as well. Refining an already public identity is a delicate task. We can guide you to reach new audiences with a revitalized image while keeping long-standing customers from feeling alienated.

Black Box understands the importance of branding, as well as the complexities and abstract concepts that are part of cultivating one. Our concrete resources and experienced personnel are dedicated to helping you uncover, define, and construct your identity.

5.1.2 Why It's Valuable and How It's Beneficial

As a reflection of your company's philosophies and ideals, it's essential that you have someone you trust championing your brand's evolution. An updated identity will help attract more attention to your products or services, providing greater opportunity to market, build customer loyalty, and generate revenue.

5.1.3 What You Purchase and Receive

The Brand Identity and Brand Harmony service provides you with the following development, design, reports, documentation, source materials, and implementations:

1. Graphic design for brand identity across full product and service set that correspond and adhere to requirements and guidelines set within a solution's Interface Design Description (IDD)
2. Complete set of multimedia assets

5.1.4 How Much It Will Cost

The cost of our Brand Identity and Brand Harmony service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

5.1.5 How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

5.1.6 Example from Portfolio

The Elberton Granite Association wanted to update their image for their new website, without losing sight of their heritage and long legacy. Black Box sent a design and brand strategy team to their headquarters, where

they toured the city and spoke with locals and granite industry leaders to ensure the materials we produced were authentic, speaking to the core of their organization and what they represent. Through this, we were able to generate an entirely new catalog of resources and identity with a modern design, tempered with a sincerity that can only be found when proper care and attention is given to the details and history of an organization and its members.

5.1.7 Similar or Related Services

1. Looking to step into the social sphere? Read about our Social Media Strategy service on 92 to get started.
2. Does your company require effective marketing materials? See our Marketing Assets, Views, and Materials service on 90 for help curating materials.
3. Wanting to guarantee a consistent and quality user experience of your web-based applications instead of developing new mobile apps? Read about our Responsive Web Applications service on page 60 for more detailed information.
4. Know you'll need Black Box to provide deployment, maintenance, and support services after the fact? Read about our Software, System, and Storage Installation and Deployment service on page 76 and contact us if you're interested in knowing more.

5.2 Marketing Assets, Views, and Materials

5.2.1 Description of Service

Marketing is a broad subject, but it all comes down to communication. Identifying the distinction between existing and potential customers, their wants and needs, and succinctly speaking to those wants and needs in a meaningful way to elicit a positive response.

We understand what makes this so important, and know that a product or service, no matter how great, can only go so far if not properly marketed. The document you're holding and reading, right now, is an expression of our commitment to this. It represents a collection of time, research, resources, personnel, and dedication to creating something we believe communicates our value to you.

Creating a strong presentation layer in your business is a complex and challenging process, but it doesn't have to be painful. Whether you need a bit of polish applied to an existing campaign, or simply have an idea that hasn't made it past the drawing board yet, our design and marketing strategists can help you maximize your level of engagement with your customers.

5.2.2 Why It's Valuable and How It's Beneficial

We can help you generate marketing campaigns and related resources such as:

1. Physical materials, such as business cards, pamphlets, posters, product catalogs, or backdrops.
2. Digital materials, like clean and effective emails, web banners, and even animated or presentation content.

5.2.3 What You Purchase and Receive

The Marketing Assets, Views, and Materials service provides you with the following development, design, reports, documentation, source materials, and implementations:

1. Software development and graphic design for marketing assets, views, and materials that correspond and adhere to requirements and guidelines set within a solution's Interface Design Description (IDD) and Software Design Description (SDD)
2. Complete code base containing all design and implementation source code and multimedia assets
3. Source code used for corresponding unit testing
4. **Software Verification and Validation Report (SVVR):** A report containing the results of the verification and validation testing, which provides a full breakdown of the verified correctness and completion of all core requirements within corresponding specification and design documentation.

5.2.4 How Much It Will Cost

The cost of our Marketing Assets, Views, and Materials service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

5.2.5 How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems.

Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

5.2.6 Example from Portfolio

Partner Design Mart creates digital resources for use in the memorial industry, as well as provides online design software. When having trouble communicating the breadth of their software offering in a concise way, Black Box was able to step in and aggregate the most important information to be displayed, building an attractive single page promotional resource.

Similar or Related Services

1. Looking to step into the social sphere? Read about our Social Media Strategy service on 92 to get started.
2. Does your company need cohesive branding and design throughout its marketing materials? Our Brand Identity and Brand Harmony service on 88 offers personalized solutions.
3. Wanting to guarantee a consistent and quality user experience of your web-based applications instead of developing new mobile apps? Read about our Responsive Web Applications service on page 60 for more detailed information.
4. Trying to better understand your customer's online usage and patterns of behavior? Read about our Web Analytics service on 52 provides the software and systems you're after.

5.3 Social Media Strategy

5.3.1 Description of Service

Black Box's social media services give businesses and organizations a meaningful online presence in social atmospheres. Our consultants research, define, design, and implement social media plans to increase exposure and build brand loyalty. Services includes finding and getting started on the right platforms, maintaining a consistent design across all media, determining when and what to post, and establishing a content calendar. Whether an existing account needs updating or a unique plan needs to be put in place, Black Box can assist.

5.3.2 Why It's Valuable and How It's Beneficial

Social media plays an important role in many business marketing campaigns. It can be a way to advertise to potential customers as well as to maintain a relationship with past and current customers.

5.3.3 What You Purchase and Receive

The Social Media Strategy service provides our clients with any or all of the following fully completed plans relative to your social media strategy.

1. **Marketing Plan:** A comprehensive blueprint which outlines an organization's overall marketing efforts, which allows for strategic and tactical implementation and management.
2. **Operational Plan:** A plan that maps strategic goals and objectives to tactical goals and objectives by describing milestones, conditions for success, operational periods, and budgetary term.

5.3.4 How Much It Will Cost

The cost of our Social Media Strategy service is determined based on your deadlines and expectations, and the amount of time and effort necessary to provide the deliverables guaranteed by our service level expectations.

5.3.5 How We Will Work Together

All research materials, information, and documentation will be maintained, compiled, and stored by Programming and Application Services, and directly accessible over secure channels or through Black Box secure systems. Private Black Box accounts are created and assigned to our clients as soon as work begins, providing them with limited access to information and documentation related to ongoing design and development requiring client feedback or input.

5.3.6 Example from Portfolio

A partner of ours, Unified Intelligence, created a highly competitive set of products, but was having trouble attracting attention and appearing competitive next to larger companies. Black Box helped them identify pressure points in their identity and marketing, leading to the generation of a completely revamped set of brand and marketing assets. Since then, Unified Intelligence has received a much higher volume of interest at trade shows and conferences.

5.3.7 Similar or Related Services

1. Does your company require effective marketing materials? See our Marketing Assets, Views, and Materials service on 90 for help curating materials.
2. Does your company need cohesive branding and design throughout its marketing materials? Our Brand Identity and Brand Harmony service on 88 offers personalized solutions.
3. Wanting to guarantee a consistent and quality user experience of your web-based applications instead of developing new mobile apps? Read about our Responsive Web Applications service on page 60 for more detailed information.
4. Trying to better understand your customer's online usage and patterns of behavior? Read about our Web Analytics service on 52 provides the software and systems you're after.



■ Portfolio

6. Portfolio

Black Box has been providing professional services to a wide variety of businesses and organizations for almost a decade, and has created several products and services and formed many partnerships and exchanges along the way.

In this section you'll find our product and project portfolio letting you to see, review, and better understand how our services, expertise, methodologies, and techniques create real results, and how our professional effort and approach can provide you with everything from effective disaster recovery to full solution productization, marketing, and sales.

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6.1 Products

6.1.1 Ajaxalytics

Description

Ajaxalytics is an analytics engine that generates reports, visualizations, and interactive tables and graphs from server access logs. This information can then be used by site administrators and developers to provide more insight into their users' behavior and activities. Ajaxalytics is constantly evolving, and while it's our goal to create a useful, intuitive, informative application we are open to suggestions and critiques. Especially critiques.



Buy Software License

Contact **Black Box Sales** to request more information about purchasing a Ajaxalytics software license

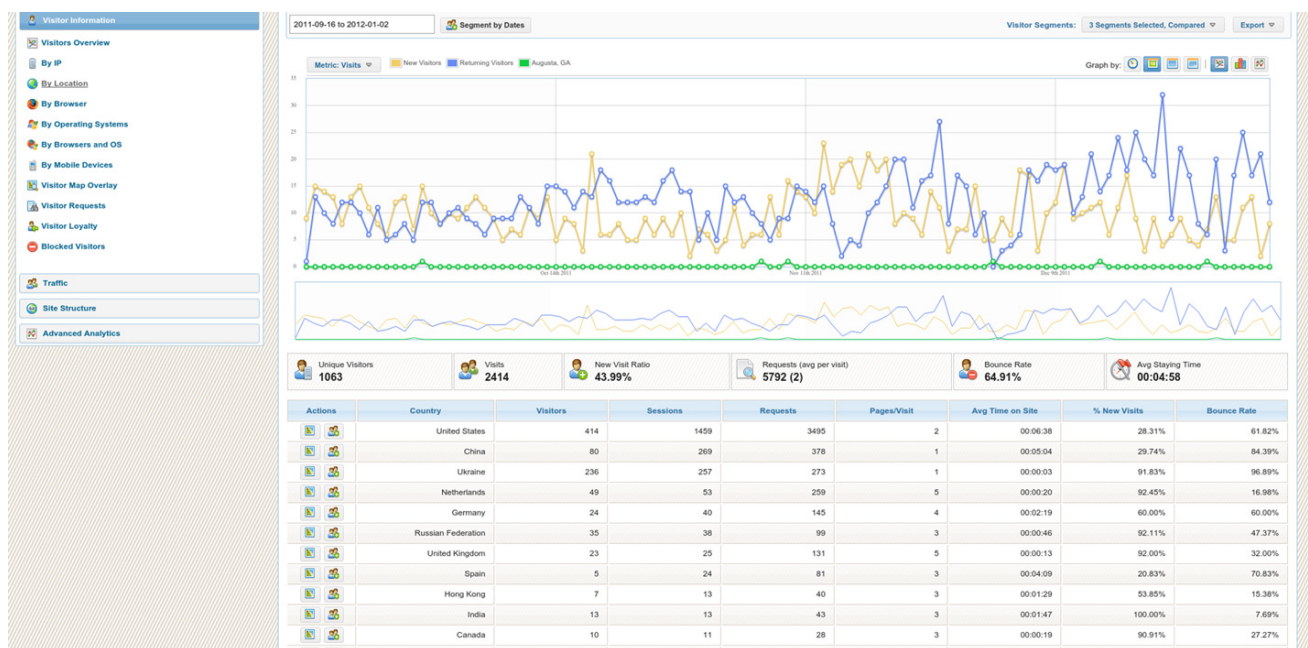
- Email: sales@blackboxoperations.com
- Online: <https://blackboxoperations.com/solutions/ajaxalytics>

Or reach out if you'd like to go ahead and schedule a demo and initial consultation where we will:

1. Identify and further discuss your needs, time lines, and expectations
2. Determine if any of our services may benefit your business or organization when installing or integrating your licensed version of Ajaxalytics
3. Provide a time and cost estimate for review, discussion, and negotiation

Key Features

1. Event tracking allows you to measure any interaction by users on your websites and apps
2. Site search analytics tracks searches from publicly available global search engines, such as Google, as well as your own internal search features and functionality
3. Geolocation allows you to locate your visitors for accurate detection of Country, Region, City, Organization. View the visitors statistics on a World Map by Country, Region, and City
4. Advanced data visualization techniques such as Customer Behavior Model Graphs (CBMG) and time-series analysis selected episode graphs (TSA-SEG) allow you to better understand the usage of your systems and the actual behavior and intent of your users



Key Benefits

1. Ajaxalytics works as a web server access log analyzer as well as page tagging implementation, allowing you to retroactively analyze your users' online usage patterns and behavior alongside real-time usage data generated by your current and future users
2. Be provided with incredibly strong, yet very easy to use, functionality for segmenting data by dates and times as well as by visitors and visitor types
3. Visualize your data in a wide variety of ways, and compare data sets directly based on each and every data attribute available
4. Black Box provides services to customize, extend, and integrate your licensed version of Ajaxalytics

6.1.2 Gallery Manager

Description

Gallery Manager is a Content Management System (CMS) and Customer Relationship Management system (CRM) for photographers and artists. The system is turnkey, allowing users to purchase and install instances in only a few steps and a few minutes. Once the instance is in place, Gallery Manager will allow you to manage galleries, categories for galleries, photos for categories, packages for photos and galleries, and much, much more.



Buy Software License

Contact **Black Box Sales** to request more information about purchasing a Gallery Manager software license

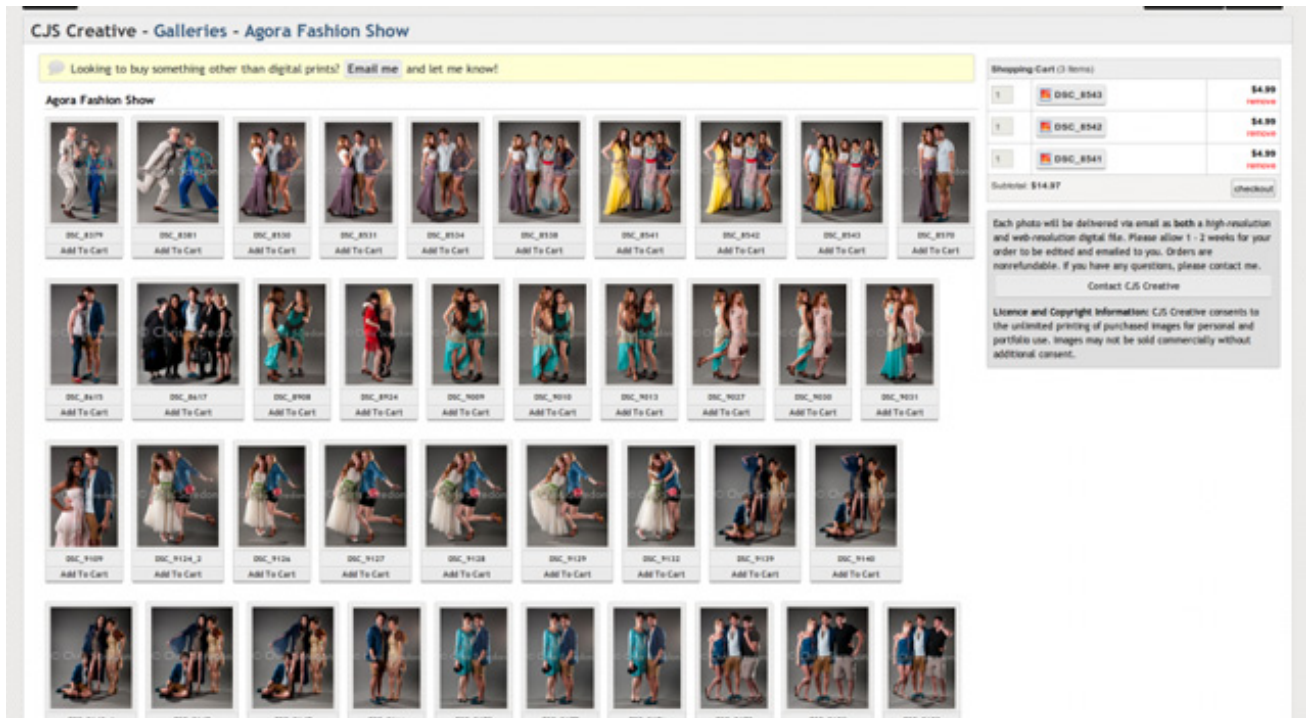
- Email: sales@blackboxoperations.com
- Online: <https://blackboxoperations.com/solutions/gallery-manager>

Or reach out if you'd like to go ahead and schedule a demo and initial consultation where we will:

1. Identify and further discuss your needs, time lines, and expectations
2. Determine if any of our services may benefit your business or organization when installing or integrating your licensed version of Gallery Manager
3. Provide a time and cost estimate for review, discussion, and negotiation

Key Features

1. Extensive, easy-to-use content and image management to more efficiently and effectively manage your photos, images, albums, products, packages, and customer purchases
2. Responsive, dynamic front-end that allows users and customers to quickly and easily view products, offerings, and their own photo shoots
3. Watermark your photos to ensure your intellectual property and copyrighted materials remains in your hands and under your control



Key Benefits

1. Full e-commerce and payment processing functionality right out of the box, so you can begin marketing and selling your work to your clients, or to the world, immediately
2. Secure account management and authentication gateways, ensuring your information, as well as your customers' information, is safe and secure at all times
3. Black Box provides services to customize, extend, and integrate your licensed version of Gallery Manager

6.1.3 KitBox

Description

KitBox is a plug-in for the jQuery JavaScript library that provides feature-rich, highly configurable data visualization widgets. When given a bit of raw data, KitBox creates enhanced data presentation layers with advanced interaction controls.

KitBox is designed to facilitate data analyses by creating easy-to-use, feature-rich widgets from various data sources. One of the more significant advantages to KitBox is not having to worry about complex transformations, intricate formats, or hours of data preparation.



Buy Software License

Contact **Black Box Sales** to request more information about purchasing a KitBox software license

- Email: sales@blackboxoperations.com
- Online: <https://blackboxoperations.com/solutions/kitbox>

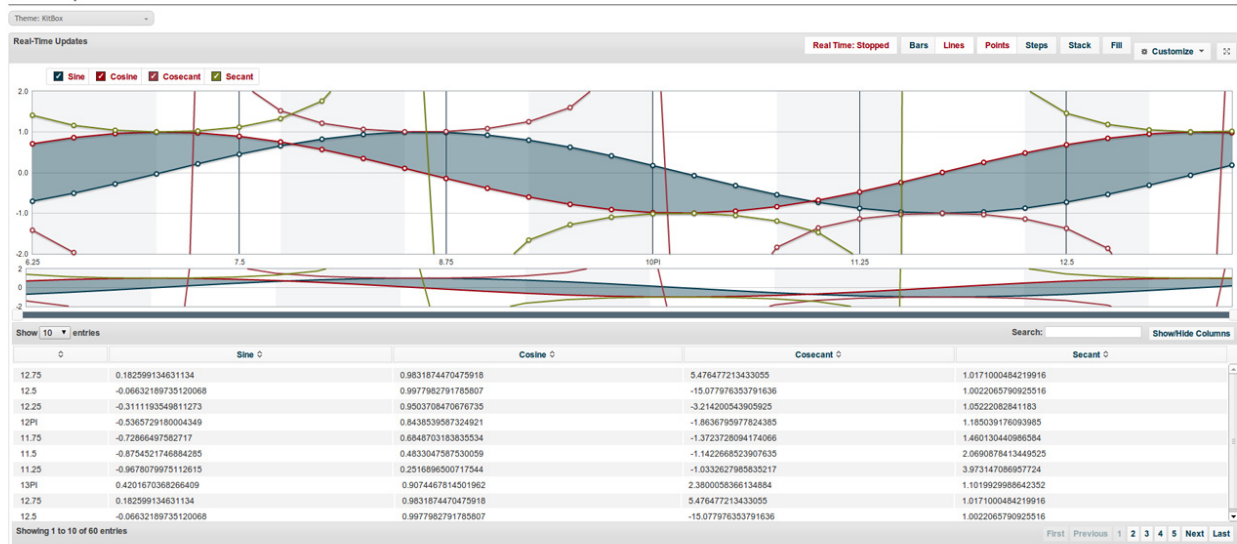
Or reach out if you'd like to go ahead and schedule a demo and initial consultation where we will:

1. Identify and further discuss your needs, time lines, and expectations
2. Determine if any of our services may benefit your business or organization when installing or integrating your licensed version of KitBox
3. Provide a time and cost estimate for review, discussion, and negotiation

Key Features

1. Use data from HTML, using JavaScript, or through remote procedure calls for server-side processing
2. Intelligent data handling validates data sources and informs you of any issues with your data
3. Comes equipped with a wide variety of graphs, advanced functionality for real-time graphs, and interactive user-interfaces

Live Example



Initialization Code

```

1 <script>
2
3 g("#kitbox").kitbox({
4   kitboxType: "kitboxSeries",
5   dataType: "json",
6   url: "pages/series/realtime.php",
7   header: {text: "Real-Time Updates"},
8   options: {
9     seriesType: "realtime",
10    interval: 3000,
11    window: 20
12  }
13 });
14
15 </script>

```

PHP Random Data Series Generator

```

1 <?php
2 $data = array("data" => array(), "axis" => array());
3 $number = 300;
4
5 for( $x = 0; $x < $number; $x++ ){
6   $slices = array();
7
8   for( $y = 0; $y < $number; $y++ )
9     array_push( $slices, mt_rand( ($y+1)*10, ($y+1)*200) );
10 }

```

Key Benefits

1. Spend more time analyzing and visualizing data, zero time cleaning up data and creating graphs in spreadsheets
2. Black Box provides services to customize, extend, and integrate your licensed version of KitBox
3. User and Developer APIs allow your team or IT staff to integrate and extend KitBox themselves

6.1.4 Monument Designer

Description

Until now online monument designers could only create color pictures, which must be redrawn by CAD artists at your manufacturer. Design Mart has removed the unnecessary wait for approval drawings to be returned to the retailer by allowing you to create a color image, which can actually be a production-ready CAD file for cutting sandblast stencil. Another unique feature is the ability to change and display the side and top of the monument rather than only displaying the front. These photo-realistic renderings may be changed to display polished, steeled/sawed or rock pitch tops and sides on monuments as well as bases. Polished margins may also be added to bases as seen in the image below.



Buy Software License

Contact **Black Box Sales** to request more information about purchasing a Monument Designer software license

- Email: sales@blackboxoperations.com
- Online: <https://blackboxoperations.com/solutions/monument-designer>

Or reach out if you'd like to go ahead and schedule a demo and initial consultation where we will:

1. Identify and further discuss your needs, time lines, and expectations
2. Determine if any of our services may benefit your business or organization when installing or integrating your licensed version of Monument Designer
3. Provide a time and cost estimate for review, discussion, and negotiation

Key Features

1. Users may easily access hundreds of preformatted designs from popular Design Mart series including Precious Memories, A Closer Walk, Ties That Bind, and more
2. There are also hundreds of blank monument shapes and more than 3,500 design components for users to create their own designs or edit popular preformatted designs
3. Monument projects may be saved and opened later if changes are required or if you would like to use a monument again for another client



Key Benefits

1. It is easy to change granite colors, background images and export a color picture which may be viewed in any web browser or photo viewer
2. While monuments are viewed in color and color images may be saved, exported and emailed, Design Marts newest Online Catalog and Monument Designer distinguishes itself from all other online monument designers by utilizing vector (CAD) graphics
3. These CAD files save retailers and families from experiencing inconvenient turnaround times while waiting for approval drawings

6.1.5 Replicam Management Suite

Description

Replicam Management Suite comprises several Replicam products and services that are integrated and deployed all at once, providing customers with a holistic, efficient, cost-effective Cross-Platform Video Management System (VMS) . From small towns to large cities, each deployment of Replicam is tailored to meet the customers needs while remaining within their budget.

Replicam Management Suite can effectively be deployed on several indigenous enterprise networks, where the performance of the system, and the number and quality of video streams, depend only on the networks hardware, configuration of hardware, and availability of bandwidth.



Buy Software License

Contact **Black Box Sales** to request more information about purchasing a Replicam Management Suite software license

- Email: sales@blackboxoperations.com
- Online: <https://blackboxoperations.com/solutions/replicam>

Or reach out if you'd like to go ahead and schedule a demo and initial consultation where we will:

1. Identify and further discuss your needs, time lines, and expectations
2. Determine if any of our services may benefit your business or organization when installing or integrating your licensed version of Replicam Management Suite
3. Provide a time and cost estimate for review, discussion, and negotiation

Key Features

1. PTZ camera control features, unlimited video and live streaming, as well as cross-platform performance, Replicam is fully formatted for organizational management
2. Replicam is formatted for deployment on several networks simultaneously without interruption
3. Allows users to stream HD quality video to a wide variety of devices or publicly online

Replicam Total Recall

Replicam Total Recall allows any amount of video to be buffered from multiple cameras for simultaneous recording and playback at their full frame rate and resolution



Replicam Display Module

Replicam Media Server is a purely software based solution that can be installed on any machine, allowing countless clients to stream video from multiple cameras and devices simultaneously

Replicam Display Module

Replicam Display Modules comprise the hardware and software for each monitor used within an IP video wall or remotely controlled display



Replicam Desktop Streaming

Replicam Desktop Streaming software turns Windows desktops into video streams in real-time, allowing them to be shared and viewed on countless other devices and video walls

Replicam Control Center

Replicam Control Center is intuitive, user-friendly software that allows you to easily manage of all your cameras, devices, locations, and video walls from any computer or mobile device

Key Benefits

1. Replicam's in-house engineering team started with a goal of creating an all new system based on the latest industry standards
2. Replicam provides flawless unification of video software and hardware without impeding organization functionality
3. As an Adaptive User Interface (AUI), Replicam can be easily installed and used without high-end hardware.

6.1.6 Passion Pointe

Description

Passion Pointe is a hosted platform that allows studio managers to create and manage multiple user roles and account types, assign and schedule teachers to classes, create a wide variety of information-rich reports, and effortlessly handle payments and invoices through its advanced billing platform.



Buy Software License

Contact **Black Box Sales** to request more information about purchasing a Passion Pointe software license

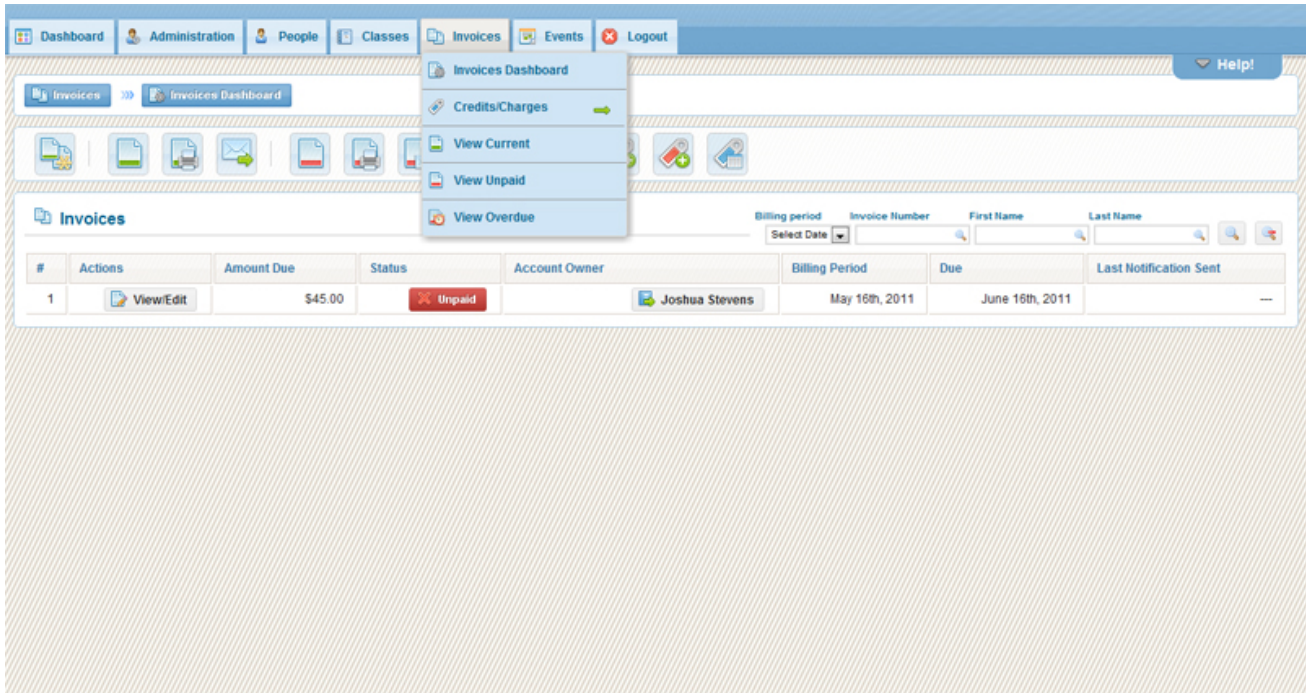
- Email: sales@blackboxoperations.com
- Online: <https://blackboxoperations.com/solutions/passion-pointe>

Or reach out if you'd like to go ahead and schedule a demo and initial consultation where we will:

1. Identify and further discuss your needs, time lines, and expectations
2. Determine if any of our services may benefit your business or organization when installing or integrating your licensed version of Passion Pointe
3. Provide a time and cost estimate for review, discussion, and negotiation

Key Features

1. Student, class, event, and billing wizards help guide you through workflows efficiently and effectively
2. Full digital dashboard containing schedules and events distinct to the users and their account types
3. Intelligent enrollment and extensive class and scheduling functionality allows for Passion Pointe to genuinely serve as software that helps you save time and money



Key Benefits

1. Passion Pointe is a hosted solution, so it's not only affordable, it's readily available - no need to worry about expensive and lengthy installations and maintenance cycles
2. Account types and user information structured in a way that makes finding class, student, parent, guardian, teacher, and event information a breeze
3. Speak to Black Box about further integrating Passion Pointe into your existing site, services, or online infrastructure, the sky's the limit!

6.1.7 Study Abroad Manager

Description

SAM is a secure, web-based platform that streamlines processes for international education departments, international exchanges, faculty led study abroad programs, and risk management agencies.

SAM provides genuine flexibility in a secure, highly-usable fashion, and will help you build and manage content, forms, applications, and processes specifically for each program. SAM does more than simplify your day-to-day, it adapts to your information and processes. SAM not only streamlines your services, it allows you to digitally recreate each and every form, process, and account.



Buy Software License

Contact **Black Box Sales** to request more information about purchasing a Study Abroad Manager software license

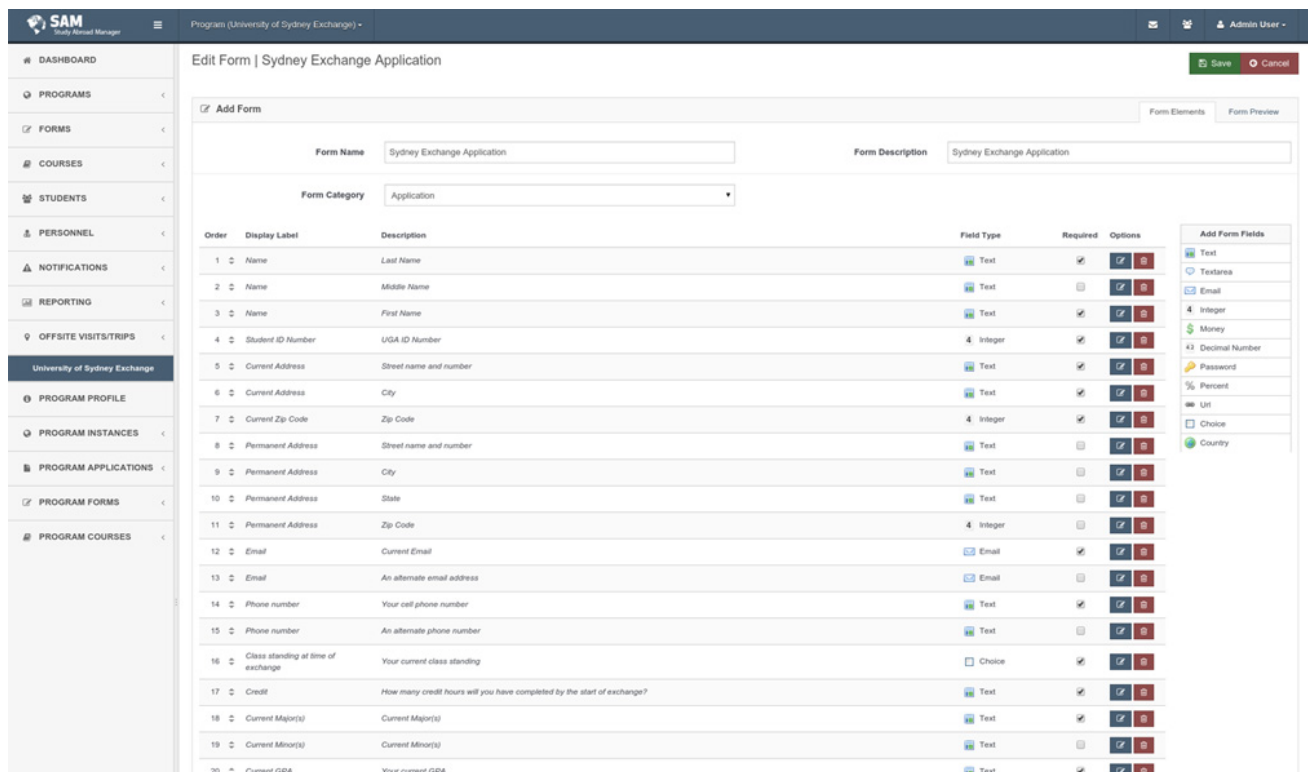
- Email: sales@blackboxoperations.com
- Online: <https://blackboxoperations.com/solutions/study-abroad-manager>

Or reach out if you'd like to go ahead and schedule a demo and initial consultation where we will:

1. Identify and further discuss your needs, time lines, and expectations
2. Determine if any of our services may benefit your business or organization when installing or integrating your licensed version of Study Abroad Manager
3. Provide a time and cost estimate for review, discussion, and negotiation

Key Features

1. Create, copy, and share outlines and processes for programs, exchanges, and other activities with other administrators, faculty, and staff
2. Manage courses, course information, and foreign course equivalences, as well as the submission and approval process
3. Digitally replicate your entire day-to-day with highly customizable program and workflow builders



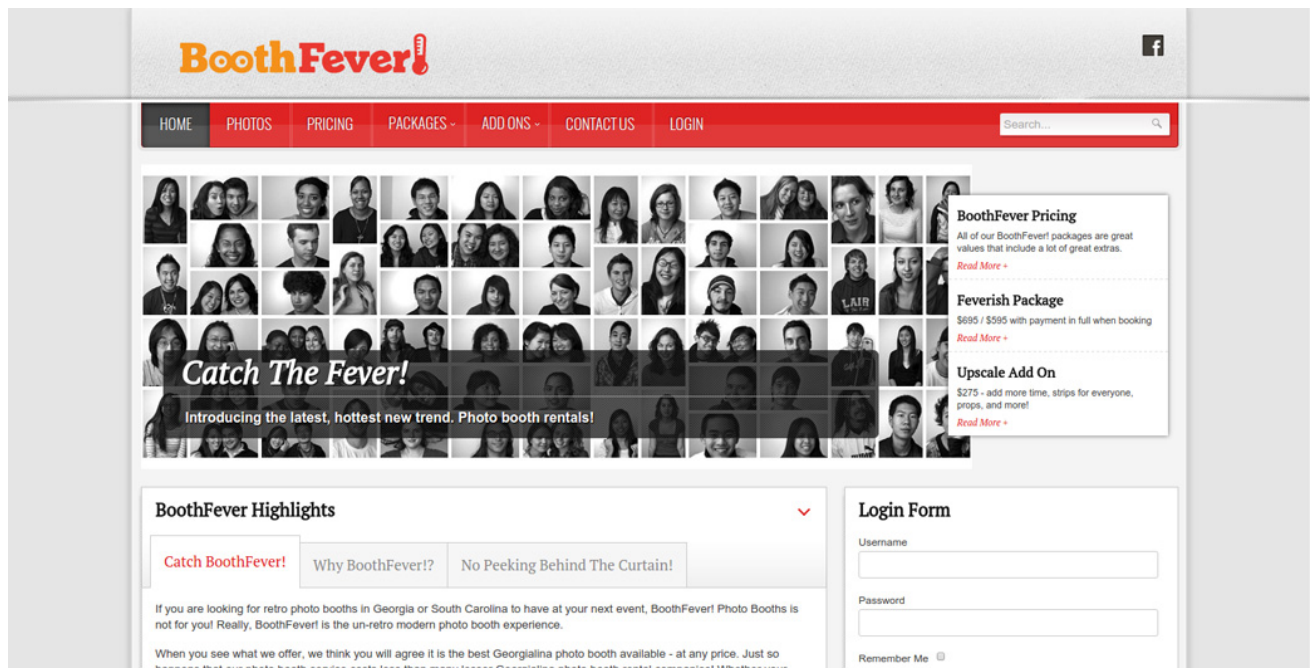
Order	Display Label	Description	Field Type	Required	Options
1	Name	Last Name	Text	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Name	Middle Name	Text	<input type="checkbox"/>	<input type="checkbox"/>
3	Name	First Name	Text	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	Student ID Number	UGA ID Number	Integer	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	Current Address	Street name and number	Text	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6	Current Address	City	Text	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7	Current Zip Code	Zip Code	Integer	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8	Permanent Address	Street name and number	Text	<input type="checkbox"/>	<input type="checkbox"/>
9	Permanent Address	City	Text	<input type="checkbox"/>	<input type="checkbox"/>
10	Permanent Address	State	Text	<input type="checkbox"/>	<input type="checkbox"/>
11	Permanent Address	Zip Code	Integer	<input type="checkbox"/>	<input type="checkbox"/>
12	Email	Current Email	Email	<input checked="" type="checkbox"/>	<input type="checkbox"/>
13	Email	An alternate email address	Email	<input type="checkbox"/>	<input type="checkbox"/>
14	Phone number	Your cell phone number	Text	<input checked="" type="checkbox"/>	<input type="checkbox"/>
15	Phone number	An alternate phone number	Text	<input type="checkbox"/>	<input type="checkbox"/>
16	Class standing at time of exchange	Your current class standing	Choice	<input checked="" type="checkbox"/>	<input type="checkbox"/>
17	Credit	How many credit hours will you have completed by the start of exchange?	Text	<input checked="" type="checkbox"/>	<input type="checkbox"/>
18	Current Major(s)	Current Major(s)	Text	<input checked="" type="checkbox"/>	<input type="checkbox"/>
19	Current Minor(s)	Current Minor(s)	Text	<input type="checkbox"/>	<input type="checkbox"/>
20	Current GPA	Your current GPA	Text	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Key Benefits

1. Assign roles and permissions to others so that program administrators manage their own staff, staff help manage specific programs and activities, and more
2. Add and manage additional categories for unique activities or specific processes such as seminars and scholarships
3. Account permissions within SAM are based on the type of account, making it easier to delegate day-to-day tasks

6.2 Projects

6.2.1 BoothFever



About

If you are looking for retro photo booths in Georgia or South Carolina to have at your next event, BoothFever! Photo Booths is not for you! Really, BoothFever! is the un-retro modern photo booth experience.

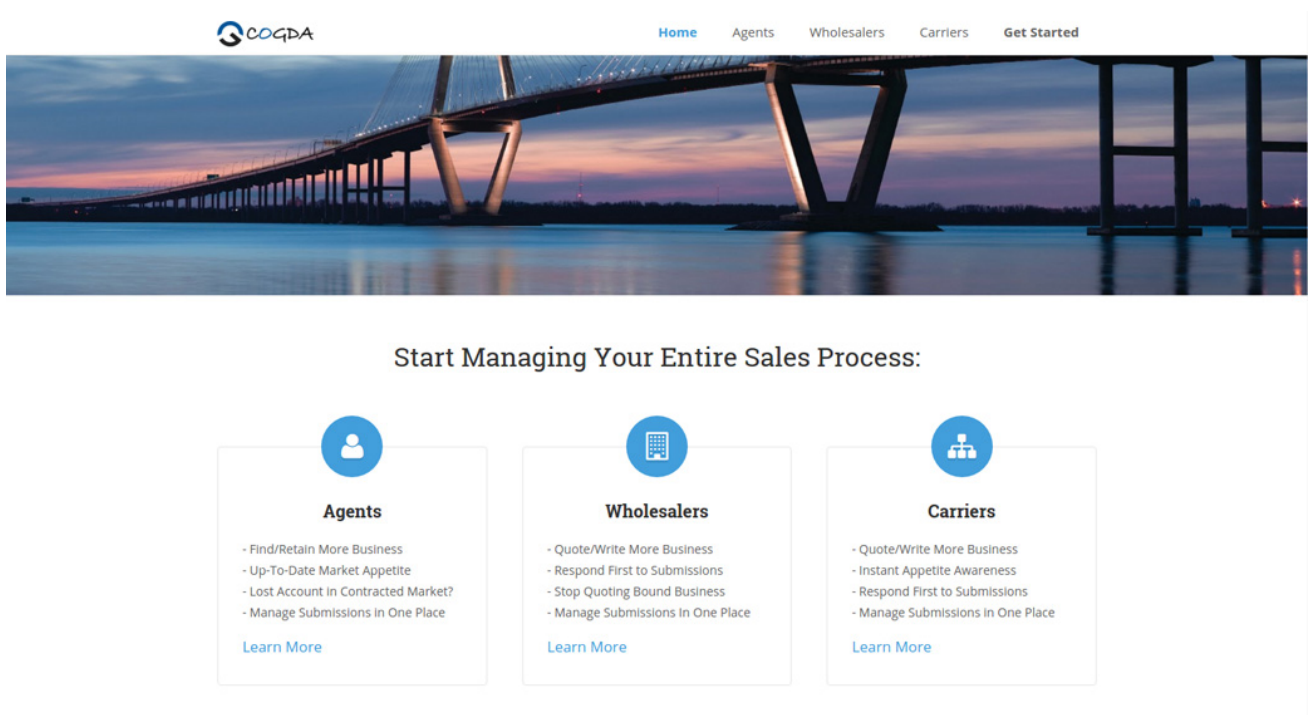
What They Needed From Black Box

BoothFever! requested professional graphic design and responsive site development, integrated with a content management system (CMS) that would allow them to efficiently manage their content, their customers, and their bookings. They also requested interfaces and functionality for administrators as well as customers to book and manage photo booth reservations, such that customers could essentially book an event where BoothFever! would provide a photo booth and professional photography services at a scheduled time and location.

The Services Black Box Provided

1. Business Solutions Analysis, Planning, and Design, found on page 10
2. Software Requirements Analysis and Specification, found on page 6
3. Brand Identity and Brand Harmony, found on page 88
4. File Sharing and Content Management, found on page 34
5. Custom Programs and Applications, found on page 56
6. Responsive Web Applications, found on page 60
7. Software, System, and Storage Installation and Deployment, found on page 76

6.2.2 COGDA



About

COGDA was started by a group of insurance professionals who knew there had to be a better way to manage the insurance sales process. Tired of the lack of connectivity and accountability, COGDA links agents, wholesalers and carriers on the same platform, delivering a seamless flow of information, carrier appetite, and market intelligence from agent prospecting to individual carrier sales so you can write more business.

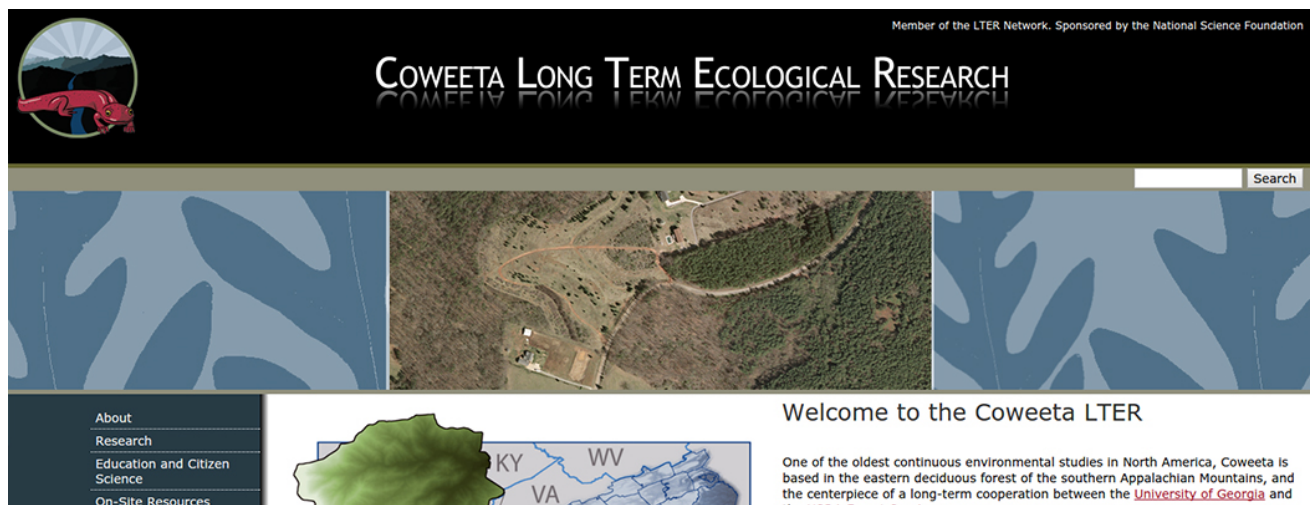
What They Needed From Black Box

COGDA required programming and development services to help build out and complete the front-end and back-end of their Document Viewer Interface, which involved rapid application development against their code base and with third-part services and dependencies such as the Snowbound API.

The Services Black Box Provided

1. Business Solutions Analysis, Planning, and Design, found on page 10
2. Software Requirements Analysis and Specification, found on page 6
3. Brand Identity and Brand Harmony, found on page 88
4. File Sharing and Content Management, found on page 34
5. Custom Programs and Applications, found on page 56
6. Responsive Web Applications, found on page 60
7. Software, System, and Storage Installation and Deployment, found on page 76

6.2.3 Coweeta LTER, University of Georgia



About

Funded by the National Science Foundation, Coweeta LTER has evolved from a site-based to a site- and region-based project centering on the effects of disturbance and environmental gradients on biogeochemical cycling, and the underlying watershed ecosystem processes that regulate and respond to those ecological cycles. Our current research program, entitled “Southern Appalachia on the Edge” focuses on the impacts that ex-urbanization and climate change are having on water quality, water quantity, and other ecosystem services. Our signature scientific publications page provides a general oversight for major findings generated from NSF research funding over the past 40 years.

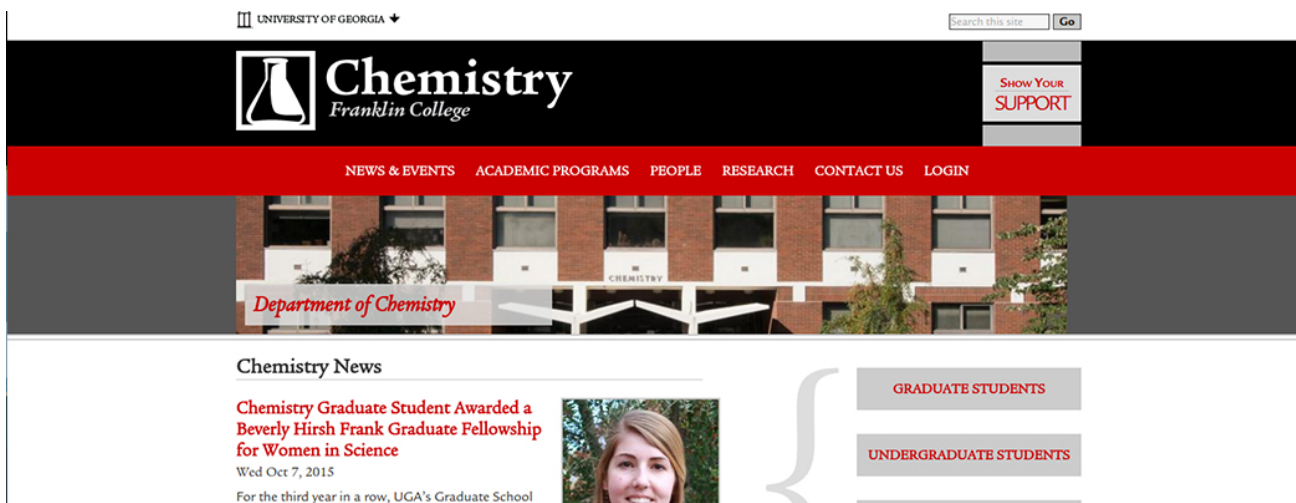
What They Needed From Black Box

Coweeta Long Term Ecological Research, or Coweeta LTER existing as <http://coweeta.uga.edu>, contained a variety of applications and custom code that comprised the previous version of Coweeta’s Infrastructure. The infrastructure required upgrading, and all of the infrastructure’s applications needed to be configured to authenticate against a newly installed and configured LDAP server and database accordingly.

The Services Black Box Provided

1. Authentication Systems Analysis, Planning, and Design, found on page 12
2. Storage and Infrastructure Maintenance and Support, found on page 80
3. Custom Programs and Applications, found on page 56
4. Authorization and Access Control, found on page 38
5. Software Maintenance and Support, found on page 78

6.2.4 Department of Chemistry, University of Georgia



UNIVERSITY OF GEORGIA

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Department of Chemistry

Chemistry News

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Wed Oct 7, 2015

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GRADUATE STUDENTS

UNDERGRADUATE STUDENTS

About

The Department of Chemistry offers B.S., M.S., and Ph.D. degrees in Chemistry. Their undergraduates have the option of obtaining an ACS-certified B.S. in Chemistry. They graduate around 40 B.S. Chemists each year. Their graduate degree program is a research-intensive program with an emphasis on coursework required for in-depth training in a particular project. They also emphasize interdisciplinary training to prepare our graduates for multiple career paths.

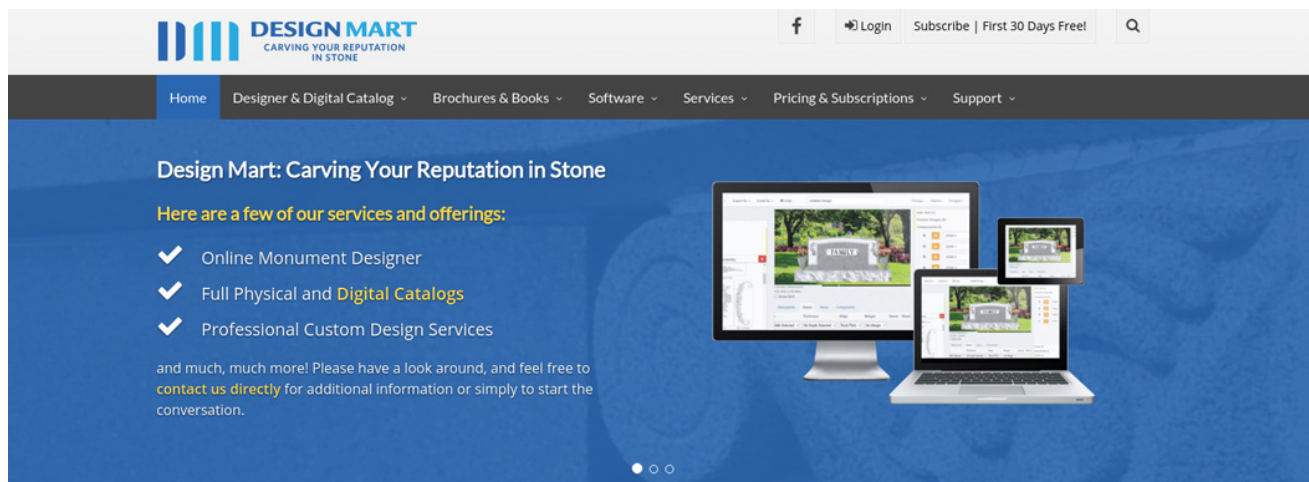
What They Needed From Black Box

The Department of Chemistry needed a complete infrastructure upgrade for their site and virtual infrastructure, which consisted of upgrading their content management system and upgrading and integrating their site template and theme. They also required custom development for the creation of modules for the content management system that provided very specific functionality to the department, its staff, and its students.

The Services Black Box Provided

1. Software Requirements Analysis and Specification, found on page 6
2. Workflow and Workflow Management, found on page 22
3. Data Conversion, Translation, and Migration, found on page 28
4. File Sharing and Content Management, found on page 34
5. Custom Programs and Applications, found on page 56
6. Responsive Web Applications, found on page 60

6.2.5 Design Mart



About

Design Mart is a company that specializes in the design of mortuary monuments. When Design Mart opened in 1968 the industry still relied heavily on glossy design prints. As sales strategies changed, Design Mart saw the need for brochures and sales books to generate interest for monument companies. As marketing strategies changed, Design Mart saw the the need for in-browser, online CAD monument designers.

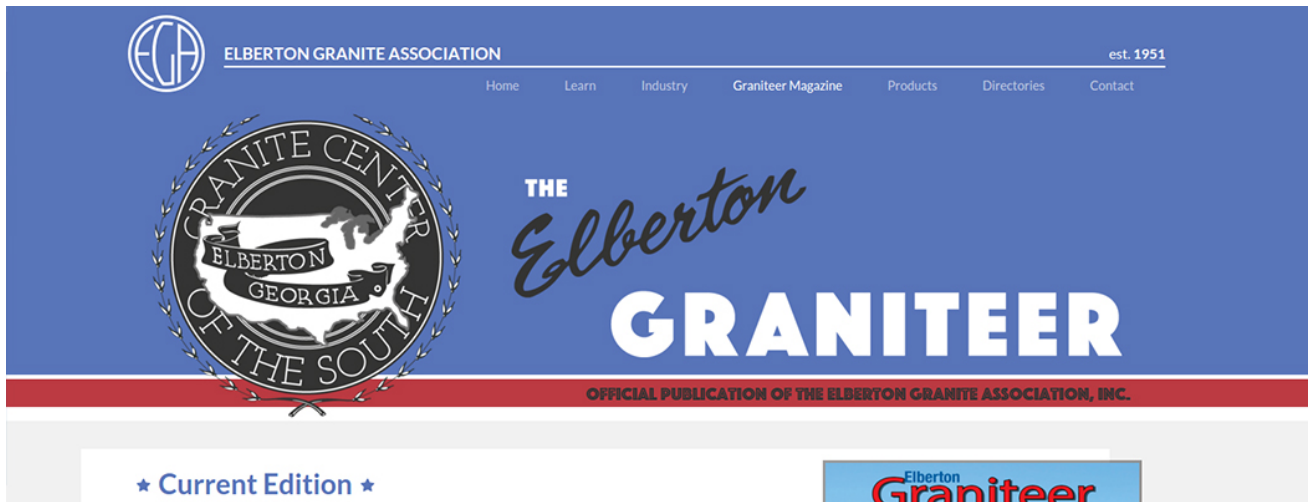
What They Needed From Black Box

Design Mart approached Black Box with a goal to share their design catalog and monument designer online with their paid subscribers. They requested extensive research and development, application development, marketing and design services, and full solution productization and deployment.

The Services Black Box Provided

1. Business Solutions Analysis, Planning, and Design, found on page 10
2. Software Requirements Analysis and Specification, found on page 6
3. Digital Dashboards, found on page 20
4. Workflow and Workflow Management, found on page 22
5. Data Conversion, Translation, and Migration, found on page 28
6. Digital Asset Management, found on page 30
7. Document Management, found on page 32
8. File Sharing and Content Management, found on page 34
9. A/B and Multivariate Testing, found on page 44
10. Custom Programs and Applications, found on page 56
11. Responsive Web Applications, found on page 60
12. Software, System, and Storage Installation and Deployment, found on page 76
13. Brand Identity and Brand Harmony, found on page 88
14. Marketing Assets, Views, and Materials, found on page 90
15. Social Media Strategy, found on page 92

6.2.6 Elberton Granite Association



About

The Elberton Granite Association has been publishing an industry-leading magazine since 1957. Thanks to their record-keeping and Black Box’s mobile-first design principles, the entirety of this incredible archive will be made available to the public for reading on both mobile and desktop browsers. This means, for the first time, it will be easier than ever for people to keep up with industry news, regardless of location or device.

We’d also like to thank one of our most valued and esteemed strategic partners, Design Mart, for bringing the Elberton Granite Association and Black Box together, and for their tireless efforts and salient, sage advice, insight, and direction in this body of work. This project genuinely represents the power and potential of honest partnerships, collaborative corporate initiatives and effort, and the incredible changes that can be made that positively impact our society, our culture, our cities, and our lives - all because Black Box, Design Mart, and every other strategic partner with Black Box, make it a point to only conduct good business.

What They Needed From Black Box

The Elberton Granite Association requested a complete infrastructure upgrade for their site and virtual

infrastructure, which consisted of upgrading their content management system and upgrading and integrating their site template and theme, and a complete overhaul of their site template and theme, wanting it to be cleaner, more professional, and responsive. They also requested that their physical marketing and member directories, as well as their magazine “The Graniteer”, be digitized and integrated into the content management system in order to allow them to manage everything entirely through their new infrastructure once completed.

The Services Black Box Provided

1. Software Requirements Analysis and Specification, found on page 6
2. Data Conversion, Translation, and Migration, found on page 28
3. Document Management, found on page 32
4. File Sharing and Content Management, found on page 34
5. Custom Programs and Applications, found on page 56
6. Responsive Web Applications, found on page 60
7. Software, System, and Storage Installation and Deployment, found on page 76
8. Physical to Virtual Digitization, found on page 36

6.2.7 FormFree



About

FormFree Holdings Corporation is a privately-held technology provider that specializes in helping financial institutions determine the ability of their customers to pay back loans and reduce closing times by automating the financial verification process.

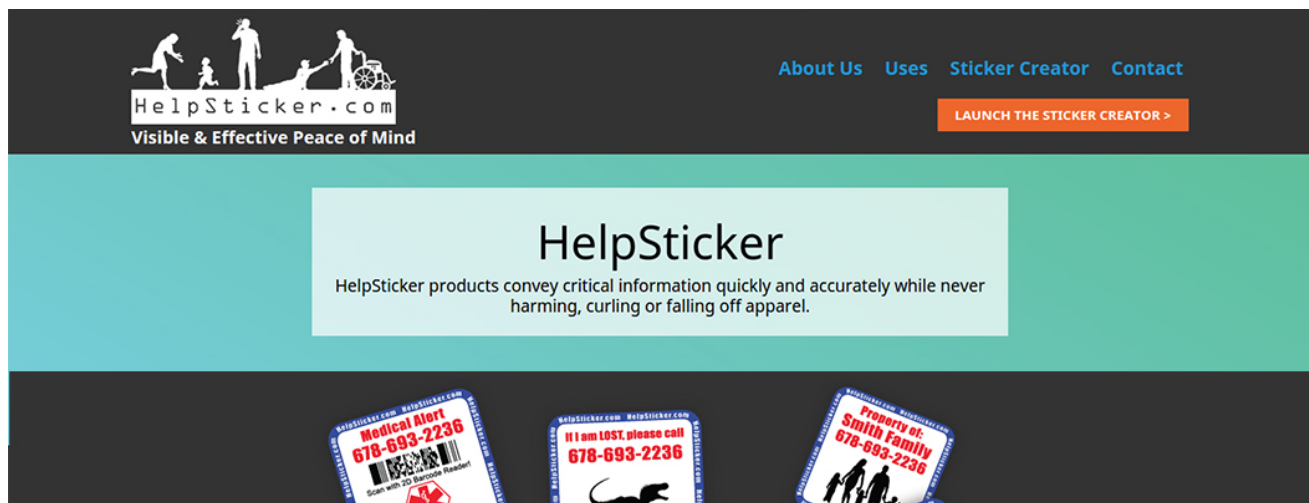
What They Needed From Black Box

FormFree came to Black Box for help with developing an application capable of generating and sharing electronic financial documents between individuals and financial institutions. A must have requirement for FormFree was the integration with Ellie Mae's widely used Loan Origination Software (LOS). They also needed for Black Box to design the reports generated by their product, AccountChek, and integrate the data into those reports once Black Box also repaired and improved the report generating system itself.

The Services Black Box Provided

1. Business Solutions Analysis, Planning, and Design, found on page 10
2. Software Requirements Analysis and Specification, found on page 6
3. Data Conversion, Translation, and Migration, found on page 28
4. Document Management, found on page 32
5. Custom Programs and Applications, found on page 56
6. Business Intelligence, found on page 18
7. Reporting Software and Report Design, found on page 26

6.2.8 HelpSticker



About

The Mission of HelpSticker is to convey critical information through simple solutions for individuals of all ages helping to mitigate time and risk in emergency situations.

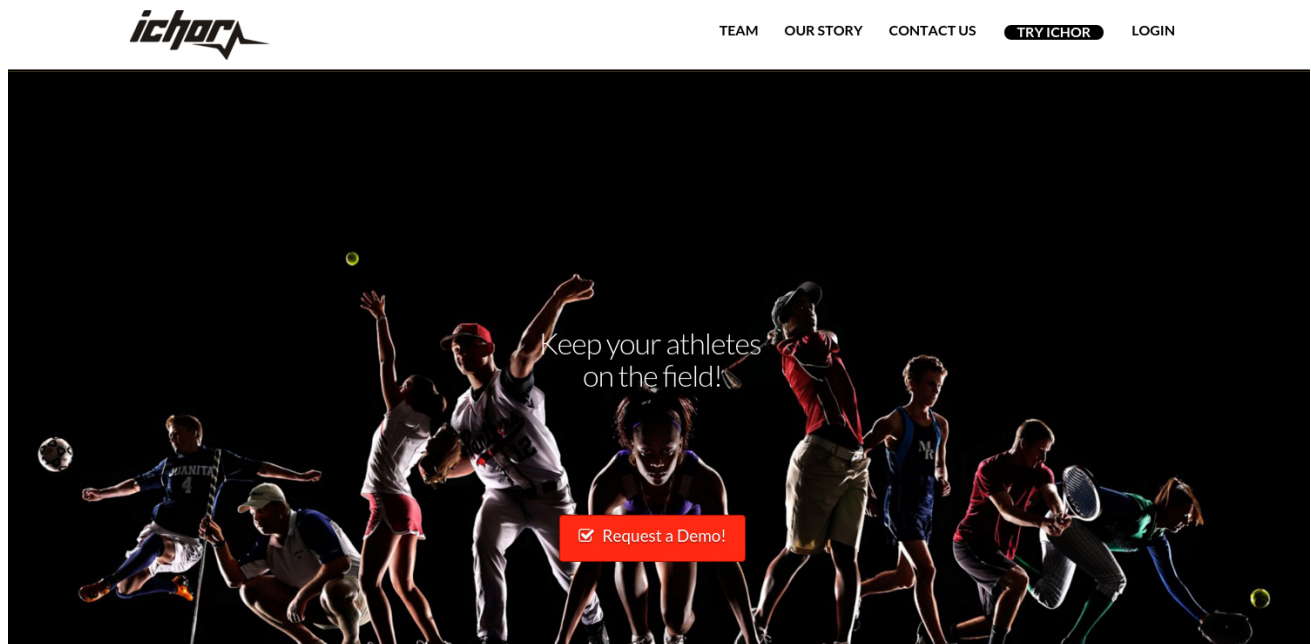
What They Needed From Black Box

HelpSticker reached out to Black Box requesting assistance with the analysis, specification, design, development, and deployment of a new and unique type of online resource that allowed its online users and customers to design and purchase “HelpStickers” entirely through a web browser. By building out a content management system (CMS) to also serve as a customer-relation management (CRM) and e-commerce platform, then extending the system and interfaces to provide an in-browser sticker designer, Black Box was able to bring HelpSticker’s ideas to life and deploy the service to the world.

The Services Black Box Provided

1. Business Solutions Analysis, Planning, and Design, found on page 10
2. Software Requirements Analysis and Specification, found on page 6
3. Digital Asset Management, found on page 30
4. Document Management, found on page 32
5. File Sharing and Content Management, found on page 34
6. Custom Programs and Applications, found on page 56
7. Responsive Web Applications, found on page 60
8. Software, System, and Storage Installation and Deployment, found on page 76
9. Brand Identity and Brand Harmony, found on page 88
10. Marketing Assets, Views, and Materials, found on page 90
11. Social Media Strategy, found on page 92

6.2.9 Ichor



About

Ichor is a company founded by athletes for athletes and coaches. They understand the daily demands of championship athletics and will work with you to make the transition to our system as smooth as possible. After installation their team will continue to work closely with you to custom mold their products to fit your needs.

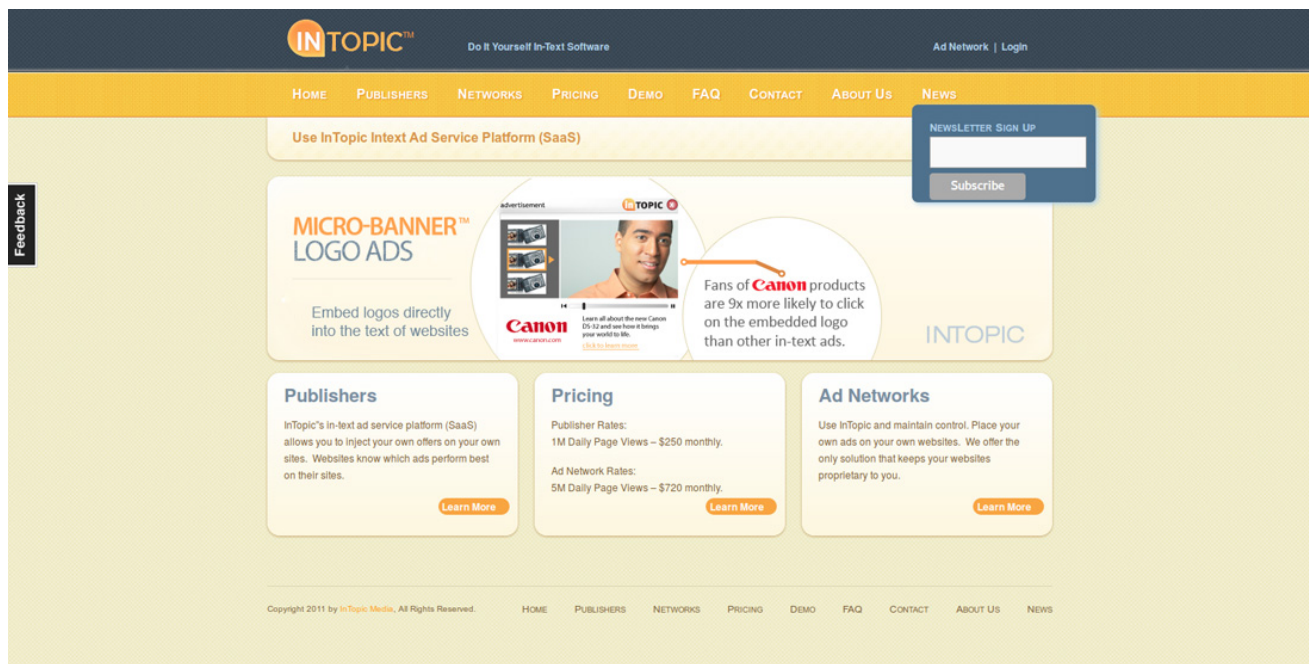
What They Needed From Black Box

Ichor initially approached Black Box for help determining the feasibility of new and highly unique technological innovation. Through careful analysis, hard work, and dedication, Ichor and Black Box worked together to create hardware and software that, before our efforts, did not exist. Ichor needed professional assistance with everything from the design of their site to the development of their digital dashboards.

The Services Black Box Provided

1. Business Solutions Analysis, Planning, and Design, found on page 10
2. Software Requirements Analysis and Specification, found on page 6
3. Project and Innovation Feasibility Study, Analysis, and Design, found on page 8
4. Digital Dashboards, found on page 20
5. Big Data and Analytics, found on page 16
6. Scientific Visualization, found on page 48
7. Science Software, found on page 50
8. Custom Programs and Applications, found on page 56
9. Responsive Web Applications, found on page 60
10. Software, System, and Storage Installation and Deployment, found on page 76

6.2.10 InTopic Media



About

InTopic's in-text ad service platform (SaaS) allows you to inject offers into sites and online offerings

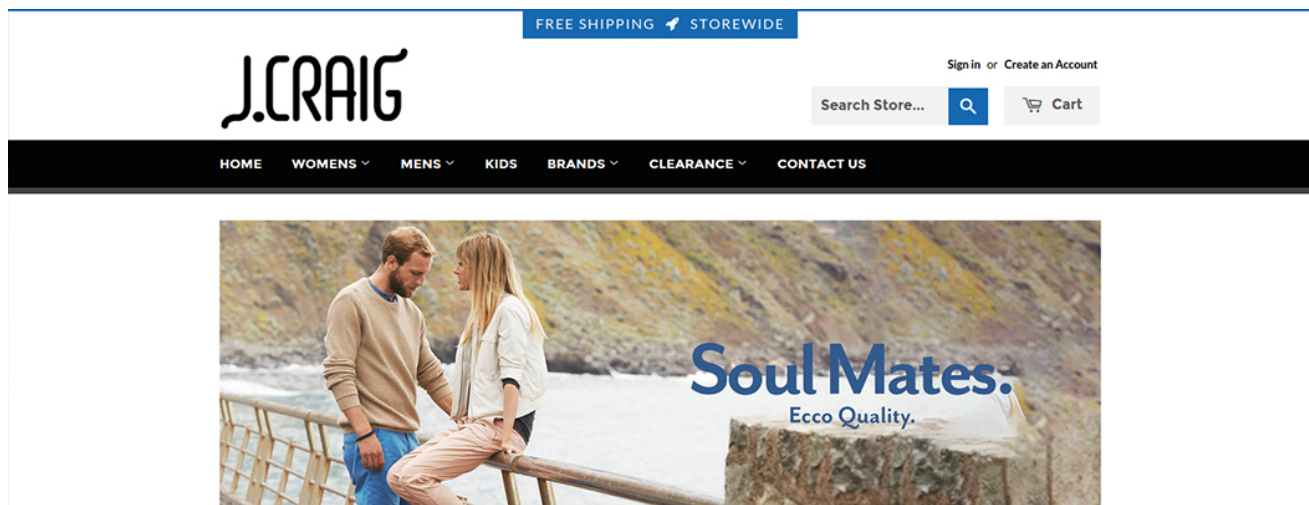
What They Needed From Black Box

InTopic approached Black Box in need of professional research and development and expert systems and application development for their in-text ad service platform and analytics modules and components.

The Services Black Box Provided

1. Software Requirements Analysis and Specification, found on page 6
2. Big Data and Analytics, found on page 16
3. Custom Programs and Applications, found on page 56

6.2.11 J.Craig



About

J.Craig is a high-end shoe retailer who was looking to expand their online storefront offerings. They had a daily process that required a person to login into several of their distributor websites to obtain accurate quantity and availability information. They had to take the presented data from each site, and transcribe it into their daily spreadsheets.

What They Needed From Black Box

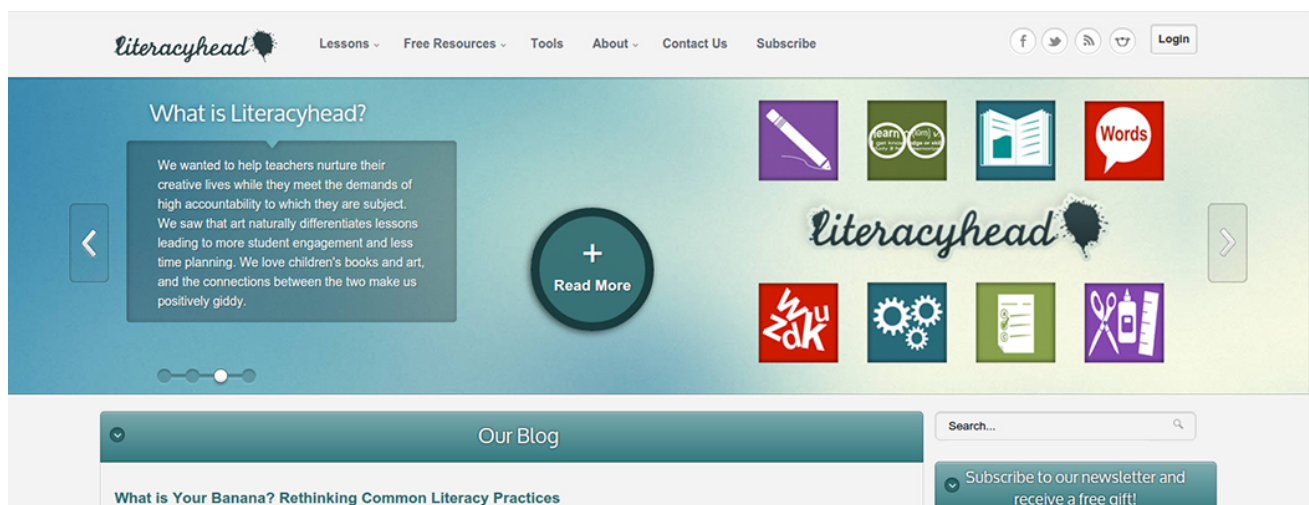
J.Craig approached Black Box in need of converting and migrating the significant amount of information and process they were using to manually update their existing Amazon, Shopify, and Ebay storefronts. The entire process took several man hours to complete, causing J.Craig hesitation when deciding to include additional brands in their online catalog.

Black Box was able to design an automated system that has replicated their entire daily online inventory management process. Not only are their catalogs updated by the time they open for business each day, they have been able to include additional brands into their online presence.

The Services Black Box Provided

1. Business Solutions Analysis, Planning, and Design, found on page 10
2. Software Requirements Analysis and Specification, found on page 6
3. Digital Asset Management, found on page 30
4. Data Conversion, Translation, and Migration, found on page 28
5. File Sharing and Content Management, found on page 34
6. Custom Programs and Applications, found on page 56
7. Responsive Web Applications, found on page 60
8. Software, System, and Storage Installation and Deployment, found on page 76
9. Software Maintenance and Support, found on page 78

6.2.12 Literacyhead



About

A Literacyhead is someone who is intensely serious about exercising creative literacy, making connections across multiple literacies, pursuing thoughtful literacy as an individual and as a teacher, and constantly searching for ideas. Literacyheads may have expertise in different areas of literacy, but all are committed to children's literacy, passionate about the arts, incessant thinkers, and display a propensity for having fun

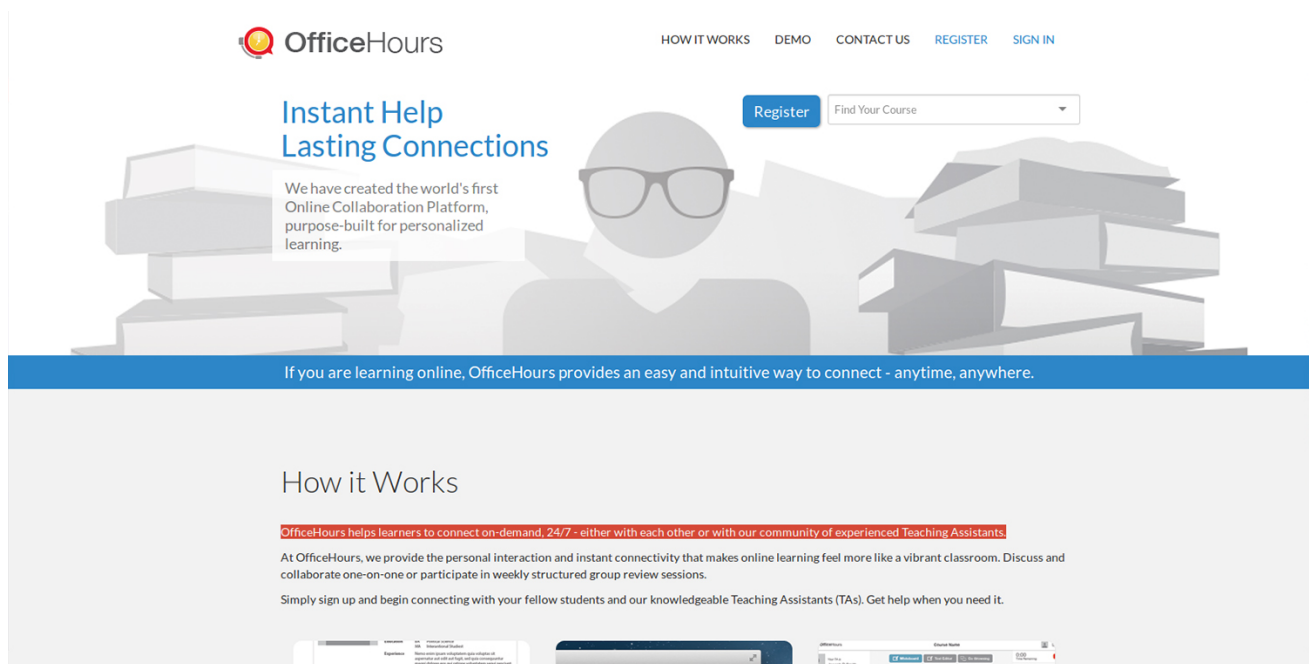
What They Needed From Black Box

Literacyhead approached Black Box in need of significant data conversion and migration, and professional platform and application development, all in order to bring their content to life as a publicly available subscription based service.

The Services Black Box Provided

1. Business Solutions Analysis, Planning, and Design, found on page 10
2. Software Requirements Analysis and Specification, found on page 6
3. Digital Asset Management, found on page 30
4. File Sharing and Content Management, found on page 34
5. Custom Programs and Applications, found on page 56
6. Responsive Web Applications, found on page 60
7. Software, System, and Storage Installation and Deployment, found on page 76
8. Workflow and Workflow Management, found on page 22

6.2.13 OfficeHours



The screenshot shows the OfficeHours website homepage. At the top left is the OfficeHours logo. To the right are navigation links: HOW IT WORKS, DEMO, CONTACT US, REGISTER, and SIGN IN. Below the navigation is a hero section with the headline "Instant Help Lasting Connections" and a "Register" button next to a search box labeled "Find Your Course". A central graphic features a stylized person with glasses and stacks of books. A text box on the left states: "We have created the world's first Online Collaboration Platform, purpose-built for personalized learning." Below the hero section is a blue banner with the text: "If you are learning online, OfficeHours provides an easy and intuitive way to connect - anytime, anywhere." The main content area is titled "How it Works" and contains a red-bordered box with the text: "OfficeHours helps learners to connect on-demand, 24/7 - either with each other or with our community of experienced Teaching Assistants." Below this, it says: "At OfficeHours, we provide the personal interaction and instant connectivity that makes online learning feel more like a vibrant classroom. Discuss and collaborate one-on-one or participate in weekly structured group review sessions." At the bottom of the main content area, it says: "Simply sign up and begin connecting with your fellow students and our knowledgeable Teaching Assistants (TAs). Get help when you need it." At the very bottom of the screenshot, there are three small screenshots showing the user interface of the platform.

About

OfficeHours helps learners to connect on-demand, 24/7 - either with each other or with our community of experienced Teaching Assistants.

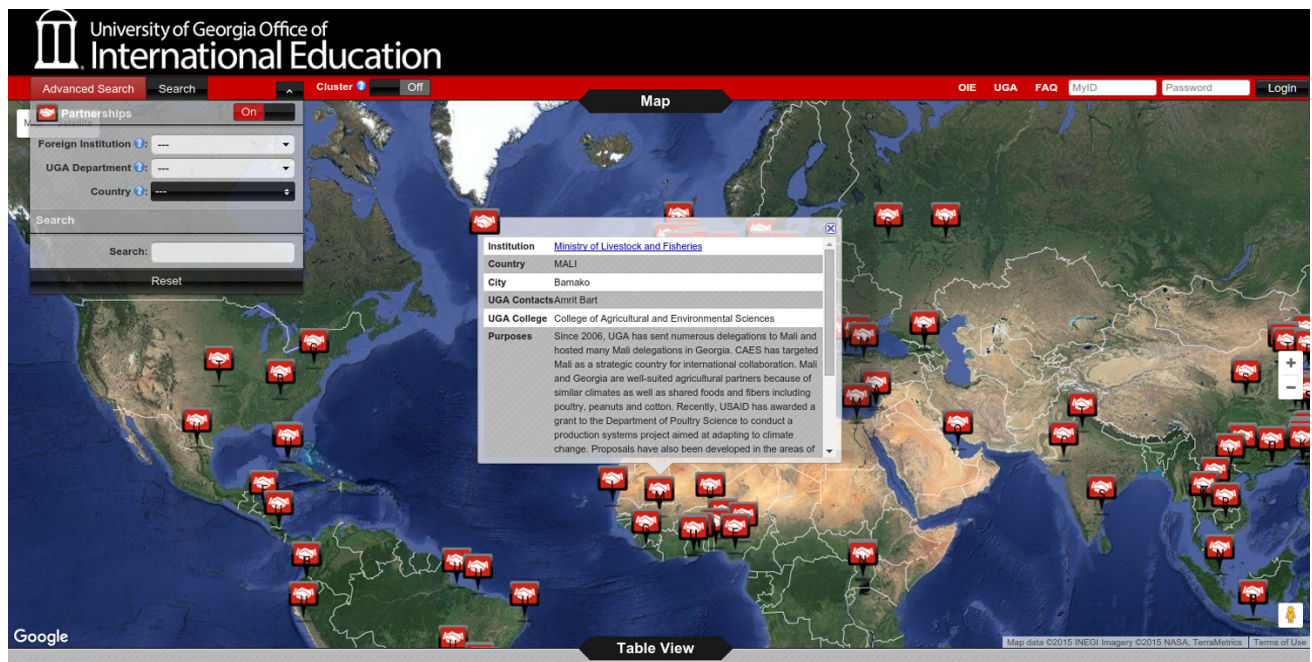
What They Needed From Black Box

In early 2013 the company OfficeHours contacted Black Box after their development team was unable to make their WebRTC implementation work. Black Box was given 4 days to bring the system back into shape, so that they could make a presentation to potential clients. Black Box ensured that OfficeHours was able to make their demo.

The Services Black Box Provided

1. Rapid Development, Repair, and Support, found on page 82
2. Recovery of Critical Systems, found on page 84
3. Custom Programs and Applications, found on page 56

6.2.14 Office of International Education, University of Georgia



About

The Office of International Education supports the University of Georgia’s academic, research, and outreach missions and strategic directions through the promotion of global learning experiences for our students, the sponsorship and support of international students, scholars, faculty and staff, and the development of international research and instructional partnerships and collaborations.

What They Needed From Black Box

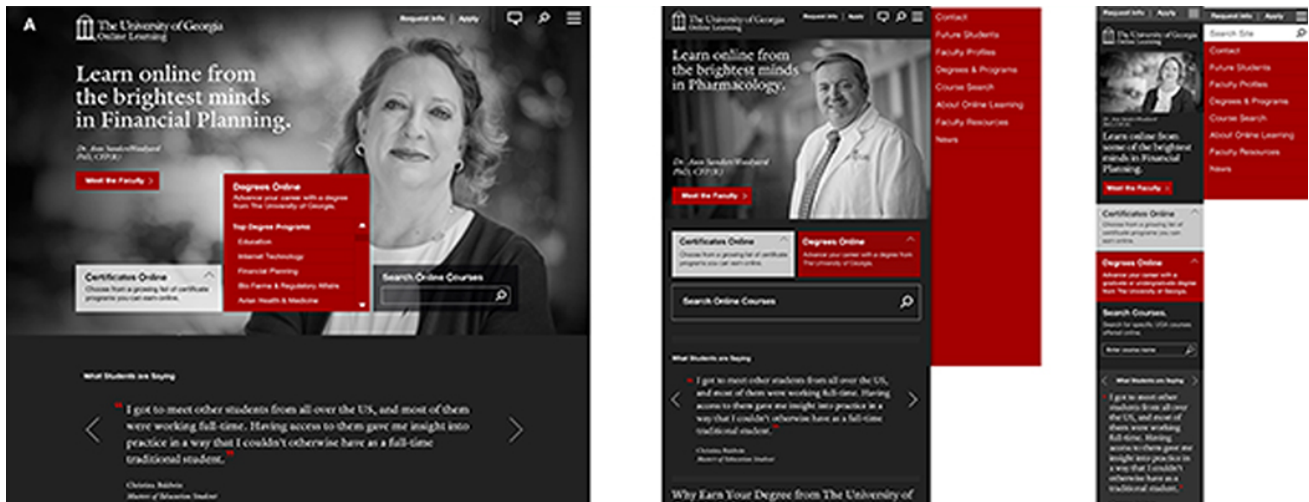
The Office of International Education (OIE) requested our services in order to create a robust, secure application for managing a significant amount of information about partnerships, institutions, exchanges, and programs.

1. Immediate code maintenance to repair broken or barely functional aspects of the existing application
2. Custom application development in order to extend the system to gracefully manage the significantly large databases
3. Integration with third-party data service providers such as Google Maps through the Google Maps API

The Services Black Box Provided

1. Software Requirements Analysis and Specification, found on page 6, were provided to fully understand and identify the Office of International Education’s core requirements and expectations for this project
2. Scientific Visualization, found on page 48, were provided to conceptualize and ultimately visualize several distinct data sets, as well as associations and relationships within the data sets themselves
3. Our Custom Programs and Applications service, found on page 56, was provided in order to repair, extend, and improve the administrative back-office used internally to manage the data, access and authorization for roles and accounts, and relationships within the data

6.2.15 Office of Online Learning at UGA



About

The University of Georgia’s Office of Online Learning is for highly motivated students seeking a challenging academic experience and highly regarded degree. Online Learning provides individuals the ability the pursue a quality education online from the most respected higher education institution and educators in the state of Georgia in order to expand their professional opportunities world-wide.

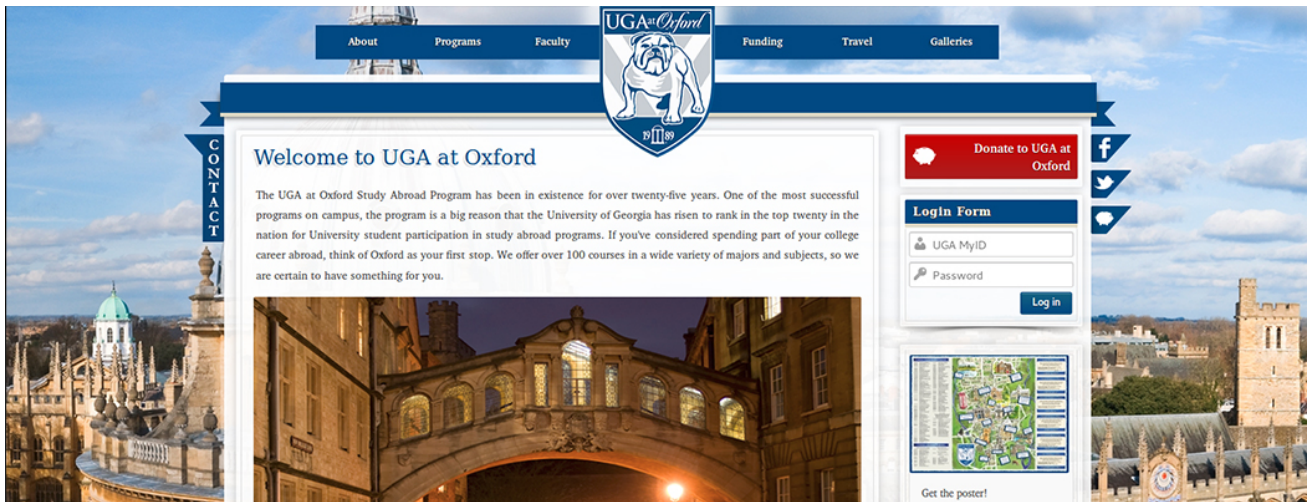
What They Needed From Black Box

The University of Georgia’s Office of Online Learning approached Black Box in need of significant professional development and integration work to bring their new ideas and designs to life, fully functioning and available through a strong content management system (CMS).

The Services Black Box Provided

1. Business Solutions Analysis, Planning, and Design, found on page 10
2. Software Requirements Analysis and Specification, found on page 6
3. Workflow and Workflow Management, found on page 22
4. Data Conversion, Translation, and Migration, found on page 28
5. Digital Asset Management, found on page 30
6. File Sharing and Content Management, found on page 34
7. Custom Programs and Applications, found on page 56
8. Responsive Web Applications, found on page 60

6.2.16 Oxford



About

The UGA at Oxford Study Abroad Program has been in existence for over twenty-five years. One of the most successful programs on campus, the program is a big reason that the University of Georgia has risen to rank in the top twenty in the nation for University student participation in study abroad programs.

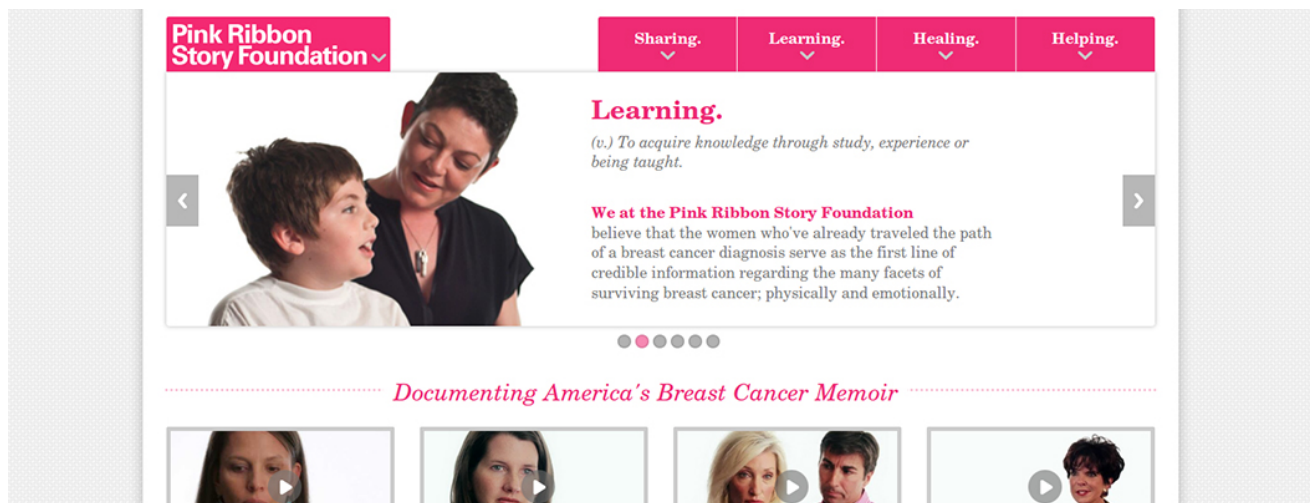
What They Needed From Black Box

The UGA at Oxford program approached Black Box in need of business and application workflow analysis, platform design and development, and data conversion and migration, with the specific intent and purpose of creating a content management system (CMS) that also served as a fully functioning application and registration workflow management system (WfMS) that allowed the program to further their marketing initiative while strengthening their core day-to-day work and management processes.

The Services Black Box Provided

1. Business Solutions Analysis, Planning, and Design, found on page 10
2. Software Requirements Analysis and Specification, found on page 6
3. Digital Dashboards, found on page 20
4. Workflow and Workflow Management, found on page 22
5. Data Conversion, Translation, and Migration, found on page 28
6. Digital Asset Management, found on page 30
7. File Sharing and Content Management, found on page 34
8. Custom Programs and Applications, found on page 56
9. Responsive Web Applications, found on page 60
10. Software, System, and Storage Installation and Deployment, found on page 76
11. Marketing Assets, Views, and Materials, found on page 90

6.2.17 Pink Ribbon Story Foundation



About

The Pink Ribbon Story Foundation provides a platform for those affected by breast cancer to share their stories and knowledge while building an active support community providing hope and guidance.

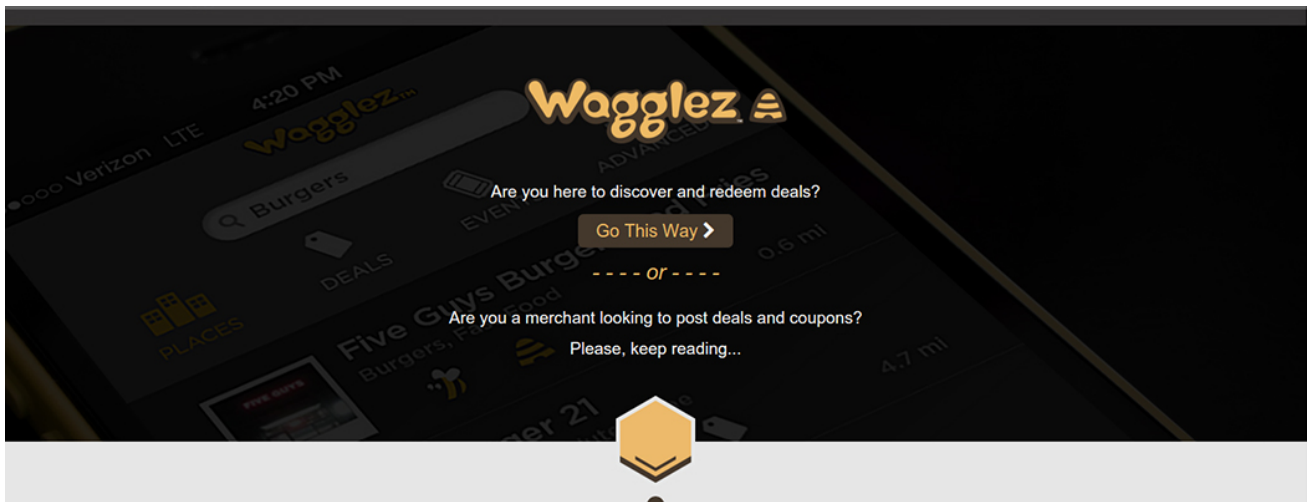
What They Needed From Black Box

The Pink Ribbon Story Foundation approached Black Box in need of professional design and development to cleanly, expertly, and accurately convey their incredibly important message, and provide their profoundly beneficial and supportive information and services, to a specific audience deserving of all of our time, attention, and efforts. Black Box is very proud to have helped the foundation bring this service and this online resource to the world and help further the initiatives and strengthen the front line in the fight against cancer.

The Services Black Box Provided

1. Business Solutions Analysis, Planning, and Design, found on page 10
2. Software Requirements Analysis and Specification, found on page 6
3. Data Conversion, Translation, and Migration, found on page 28
4. Digital Asset Management, found on page 30
5. File Sharing and Content Management, found on page 34
6. Custom Programs and Applications, found on page 56
7. Responsive Web Applications, found on page 60
8. Software, System, and Storage Installation and Deployment, found on page 76

6.2.18 Wagglez



About

Wagglez is an online platform and service built to provide the best coupons, ads, specials, and event promotions in highly specific, geo-location aware ways. It's also a very powerful resource for merchants and business owners to efficiently and effectively manage their locations, ads, specials, coupons, and events with ease.

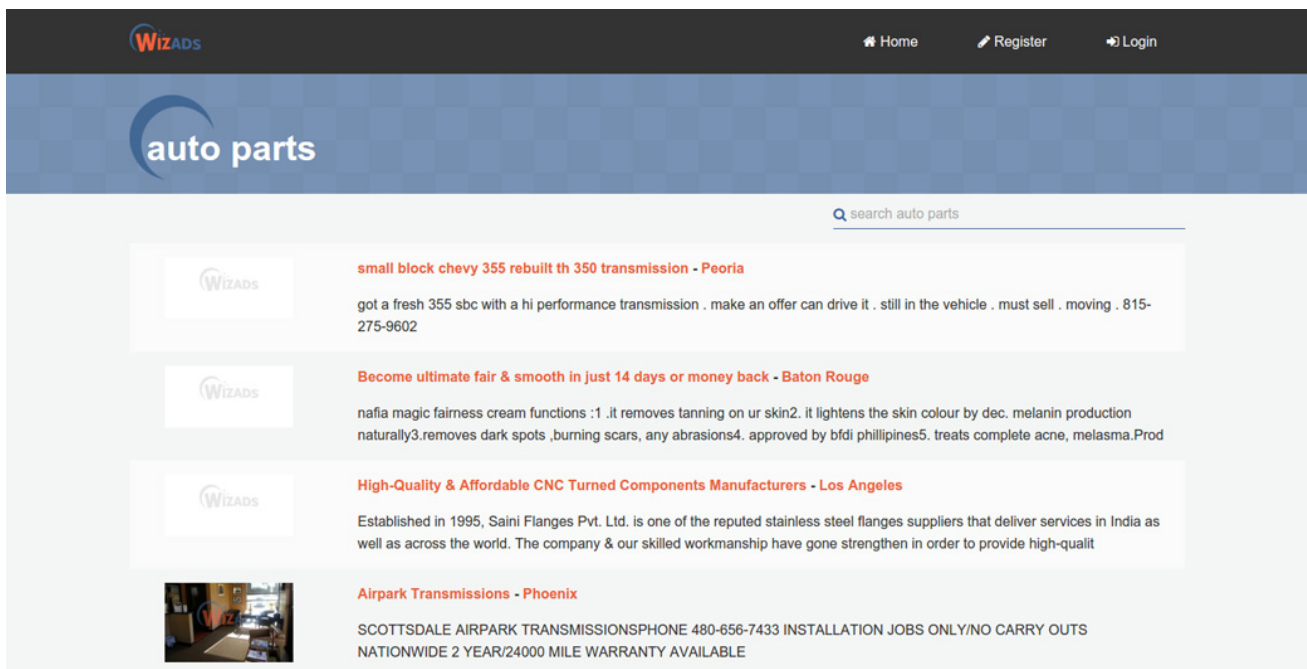
What They Needed From Black Box

Wagglez approached Black Box in need of full business and software analysis, design, development, and deployment. Starting almost entirely from scratch, our teams worked together to ensure Wagglez products and services were as sound, complete, and intelligently crafted as the business strategy for sales and marketing also defined and designed by Black Box.

The Services Black Box Provided

1. Business Solutions Analysis, Planning, and Design, found on page 10
2. Software Requirements Analysis and Specification, found on page 6
3. Digital Dashboards, found on page 20
4. Workflow and Workflow Management, found on page 22
5. Data Conversion, Translation, and Migration, found on page 28
6. Digital Asset Management, found on page 30
7. Document Management, found on page 32
8. File Sharing and Content Management, found on page 34
9. A/B and Multivariate Testing, found on page 44
10. Custom Programs and Applications, found on page 56
11. Responsive Web Applications, found on page 60
12. Software, System, and Storage Installation and Deployment, found on page 76
13. Brand Identity and Brand Harmony, found on page 88
14. Marketing Assets, Views, and Materials, found on page 90
15. Social Media Strategy, found on page 92

6.2.19 WizAds



About

WizAds created an internet-based service by which most of their content is generated by their users.

What They Needed From Black Box

WizAds needed software that allows users to create and submit various amounts of text and image related data. Above all else, they needed to make sure they could provide consistent and available storage.

The Services Black Box Provided

1. Business Solutions Analysis, Planning, and Design, found on page 10
2. Software Requirements Analysis and Specification, found on page 6
3. Digital Dashboards, found on page 20
4. Workflow and Workflow Management, found on page 22
5. Data Conversion, Translation, and Migration, found on page 28
6. Digital Asset Management, found on page 30
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8. File Sharing and Content Management, found on page 34
9. A/B and Multivariate Testing, found on page 44
10. Custom Programs and Applications, found on page 56
11. Responsive Web Applications, found on page 60
12. Software, System, and Storage Installation and Deployment, found on page 76
13. Brand Identity and Brand Harmony, found on page 88
14. Marketing Assets, Views, and Materials, found on page 90
15. Social Media Strategy, found on page 92



Glossary

Glossary

- A/B testing** A/B testing is a randomized experiment with two variants, A and B, which are the control and variation in the controlled experiment. Other terms used for this method include bucket tests and split-run testing but these terms can have a wider applicability to more than two variants. In online settings, such as web design and user experience design, the goal of A/B testing is to identify changes to web pages that increase or maximize an outcome of interest, such as the click-through rate for a banner advertisement for example.. 44, 131
- access control** Access control is the selective restriction of access to a place or other resource. The act of accessing may mean consuming, entering, or using. Permission to access a resource is called authorization.. 38, 131
- access control list (ACL)** An access control list (ACL) is a list of permissions attached to an object. An ACL specifies which users or system processes are granted access to objects, as well as what operations are allowed on given objects.. 38, 131
- agile software development** Agile software development is a group of software development methods in which requirements and solutions evolve through collaboration between self-organizing, cross-functional teams. It promotes adaptive planning, evolutionary development, early delivery, continuous improvement, and encourages rapid and flexible response to change.. 82, 84, 131
- archiving** The purpose of archiving is for long-term retention, management, and discovery of fixed-content data to meet regulatory compliance, litigation protection, and storage cost optimization objectives.. 40, 131
- authorization** Authorization is the function of specifying access rights to resources related to information security and computer security in general and to access control in particular.. 38, 131
- Authorization Open Service Interface Definition (OSID)** The Authorization Open Service Interface Definition (OSID) is a specification which provides the means to define who is authorized, what they're authorized to do, and when they're authorized to do it.. 38, 131
- backup** A backup, or the process of backing up, refers to the copying and archiving of computer data so it may be used to restore the original after a data loss event.. 40, 131
- balanced scorecard (BSC)** A strategy performance management tool that can be used by managers to keep track of the execution of activities by the staff within their control and to monitor the consequences arising from these actions.. 24, 131
- between-group design** Between-group design is an experiment that has two or more groups of subjects each being tested by a different testing factor simultaneously. . 44, 131
- business activity monitoring (BAM)** Combines, analyzes, and reports real-time information on an organizations internal and external activities.. 18, 131
- business performance management** A set of management and analytic processes that enables the management of an organization's performance to achieve one or more pre-selected goals. Also known as "corporate performance management (CPM)" .. 24, 131

- business plan** A formal statement of business goals, reasons they are attainable, and plans for reaching them. The structure, content, and presentation of a business plan depends on its goals and audience. . 131
- business process management (BPM)** A field in operations management that focuses on improving corporate performance by managing and optimizing a company's business processes.. 22, 131
- calendaring software** Calendaring software is software that provides users with an electronic version of a calendar, appointment book, address book, and contact list.. 42, 131
- choice modeling** Choice modeling attempts to model the decision process of an individual or segment via Revealed preferences or stated preferences made in a particular context or contexts. . 44, 131
- cloud computing** Internet-based computing, where shared resources and information are provided to computers and other devices on-demand.. 16, 131
- clustered file system** A file system which is shared by being simultaneously mounted on multiple servers.. 16, 32, 131
- code base** A collection of source code that is used to build a particular software system, application, or software component.. 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 46, 48, 50, 52, 54, 56, 58, 60, 82, 84, 90, 131
- computer animation** Computer animation, or CGI animation, is the process used for generating animated images by using computer graphics. The more general term computer-generated imagery encompasses both static scenes and dynamic images while computer animation only refers to moving images.. 48, 131
- computer graphics** Computer graphics are pictures and movies created using computers, usually referring to image data created by a computer specifically with help from specialized graphical hardware and software.. 48, 131
- computer simulation** A computer simulation is a simulation, run on a single computer, or a network of computers, to reproduce behavior of a system. The simulation uses an abstract model (a computer model, or a computational model) to simulate the system.. 48, 131
- computer vision** Computer vision is a field that includes methods for acquiring, processing, analyzing, and understanding images and, in general, high-dimensional data from the real world in order to produce numerical or symbolic information in the forms of decisions.. 46, 131
- computer-generated imagery** Computer-generated imagery (CGI) is the application of computer graphics to create or contribute to images in art, printed media, video games, films, television programs, commercials, videos, and simulators. The visual scenes may be dynamic or static, and may be two-dimensional (2D), though the term "CGI" is most commonly used to refer to 3D computer graphics used for creating scenes or special effects in films and television. . 48, 131
- content management system** A content management system (CMS) is a computer application that allows publishing, editing and modifying content, organizing, deleting as well as maintenance from a central interface. Such systems of content management provide procedures to manage workflow in a collaborative environment.. 34, 131
- dashboard** An easy to read, often single page, real-time user interface, showing a graphical presentation of the current status, or snapshot, and historical trends of an organization's key performance indicators to enable instantaneous and informed decisions to be made at a glance.. 131

- data conversion** Data conversion is the conversion of computer data from one format to another.. 28, 131
- data fusion** The process of integration of multiple data and knowledge representing the same real-world object into a consistent, accurate, and useful representation.. 16, 131
- data integration** The process of combining data residing in different sources and providing users with a unified view of these data.. 16, 131
- data migration** Data migration is the process of transferring data between storage types, formats, or computer systems. . 28, 131
- data mining** The computational process of discovering patterns in large data sets, or big data.. 16, 18, 131
- data transformation** A data transformation converts a set of data values from the data format of a source data system into the data format of a destination data system.. 28, 36, 131
- data wrangling** Data munging or data wrangling is loosely the process of manually converting or mapping data from one “raw” form into another format that allows for more convenient consumption of the data with the help of semi-automated tools. This may include further munging, data visualization, data aggregation, training a statistical model, as well as many other potential uses.. 36, 131
- DevOps** DevOps, a clipped compound of “development” and “operations”, is a culture, movement or practice that emphasizes the collaboration and communication of both software developers and other information-technology (IT) professionals while automating the process of software delivery and infrastructure changes. It aims at establishing a culture and environment where building, testing, and releasing software, can happen rapidly, frequently, and more reliably.. 64, 68, 70, 84, 131
- digital asset management** Digital asset management (DAM) consists of management tasks and decisions surrounding the ingestion, annotation, cataloging, storage, retrieval and distribution of digital assets. . 30, 131
- disaster recovery (DR)** Disaster recovery (DR) involves a set of policies and procedures to enable the recovery or continuation of vital technology infrastructure and systems following a natural or human-induced disaster.. 40, 131
- distributed data management** Distributed data management (DDM) consists of management tasks and decisions for creating, managing and accessing data on a remote computer.. 30, 32, 131
- distributed database** A database in which storage devices are not all attached to a common processing unit such as the CPU, and is controlled by a distributed database management system.. 16, 131
- document conversion** Document conversion is the act of converting one document’s format to another, which allows the document to be read in many more applications. Documents can be converted into other source document formats, consumer formats, or structured data.. 36, 131
- document management system (DMS)** A software based system used to track, manage and store documents and reduce paper.. 22, 32, 131
- enterprise storage** Enterprise storage is the computer data storage designed for large-scale, high-technology environments of modern enterprises. In contrast to consumer storage, it has higher scalability, higher reliability, better fault tolerance, and a much higher initial price.. 40, 131

- extreme programming (XP)** Extreme programming (XP) is a software development methodology which is intended to improve software quality and responsiveness to changing customer requirements. As a type of agile software development, it advocates frequent releases in short development cycles, which is intended to improve productivity and introduce checkpoints at which new customer requirements can be adopted.. 82, 131
- genetic algorithm** A search heuristic that mimics the process of natural selection. This heuristic, sometimes called a meta-heuristic, is routinely used to generate useful solutions to optimization and search problems.. 16, 131
- graphic design** The process of visual communication, and problem-solving through the use of type, space, image and color, that include identity (logos and branding), publications (magazines, newspapers and books), print advertisements, posters, billboards, website graphics and elements, signs and product packaging.. 26, 60, 88, 90, 131
- hierarchical storage management (HSM)** Hierarchical storage management (HSM) is a data storage technique, which automatically moves data between high-cost and low-cost storage media.. 40, 131
- information security (InfoSec)** Information security, sometimes shortened to InfoSec, is the practice of defending information from unauthorized access, use, disclosure, disruption, modification, perusal, inspection, recording or destruction.. 38, 131
- information visualization** Information visualization is the study of (interactive) visual representations of abstract data to reinforce human cognition. The abstract data include both numerical and non-numerical data, such as text and geographic information. . 48, 131
- knowledge management** Knowledge management (KM) is the process of capturing, developing, sharing, and effectively using organizational knowledge.. 34, 131
- local information system (LIS)** Reports statistics and analyses of structured data linked to discrete geographic areas.. 18, 131
- machine learning** A field of study that explores the analysis and construction of algorithms that can learn from and make predictions on data.. 16, 131
- massively parallel-processing** The use of a large number of processors or computers to perform a set of coordinated computations in parallel, or simultaneously.. 16, 131
- mathematical modeling** A mathematical model is a description of a system using mathematical concepts and language. The process of developing a mathematical model is termed mathematical modeling. . 48, 131
- multimedia** Content that uses a combination of different content forms that includes text, audio, still images, animation, video, and interactive content forms.. 26, 60, 88, 90, 131
- multivariate testing** Multivariate testing or multi-variable testing techniques apply statistical hypothesis testing on multi-variable systems, typically consumers on websites. . 44, 131
- natural language processing** A field of study concerned with the interactions between computers and human, or natural, languages, focusing largely on natural language understanding, or enabling computers to derive meaning from human or natural language input.. 16, 131

network-attached storage (NAS) Network-attached storage (NAS) is a file-level computer data storage server connected to a computer network providing data access to a heterogeneous group of clients. NAS is specialized for serving files either by its hardware, software, or configuration.. 40, 131

online (cloud) storage Online storage, or cloud storage, is a model of data storage where the digital data is stored in logical pools, the physical storage spans multiple servers, and the servers often span multiple locations.. 40, 131

online analytical processing (OLAP) Enables users to analyze mutli-dimensional data interactively from multiple perspectives. 18, 131

operating environment An operating environment or integrated applications environment is the environment in which users run application software. . 131

optical character recognition (OCR) Optical character recognition, or optical character reader, (OCR) is the mechanical or electronic conversion of images of typed, handwritten or printed text into machine-encoded text. It is widely used as a form of data entry from printed paper data records, whether passport documents, invoices, bank statements, computerized receipts, business cards, mail, printouts of static-data, or any suitable documentation.. 46, 131

pattern recognition Pattern recognition focuses on the recognition of patterns and regularities in data. Pattern recognition systems are in many cases trained from labeled “training” data (supervised learning), but when no labeled data are available other algorithms can be used to discover previously unknown patterns (unsupervised learning).. 46, 131

Payment Card Industry Data Security Standard (PCI DSS) The Payment Card Industry Data Security Standard (PCI DSS) is a proprietary information security standard for organizations that handle branded credit cards from the major card schemes. The standard was created to increase controls around cardholder data to reduce credit card fraud via its exposure. . 38, 131

permissions Permissions, or access rights, dictate the ability of a system’s users and groups to view or make changes to content, as well as access and utilize functionality within the system itself.. 38, 131

physical security Physical security describes security measures that are designed to deny unauthorized access to facilities, equipment and resources, and to protect personnel and property from damage or harm.. 38, 131

predictive analytics Predictive analytics encompasses a variety of statistical techniques from modeling, machine learning, and data mining that analyze current and historical facts to make predictions about future, or otherwise unknown, events.. 46, 131

predictive modeling Predictive modeling leverages statistics to predict outcomes. Most often the event one wants to predict is in the future, but predictive modeling can be applied to any type of unknown event, regardless of when it occurred. . 46, 131

privilege escalation Privilege escalation is the act of exploiting a bug, design flaw or configuration oversight in an operating system or software application to gain elevated access to resources that are normally protected from an application or user. The result is that an application with more privileges than intended by the application developer or system administrator can perform unauthorized actions.. 38, 131

project management information system A project management information system (PMIS) is the coherent organization of the information required for an organization to execute projects successfully. A PMIS is typically one or more software applications and a methodical process for collecting and using project information.. 42, 131

project management software Project management software has the capacity to help plan, organize, and manage resource tools and develop resource estimates. . 42, 131

rendering Rendering is the process of generating an image from a 2D or 3D model, or models in what collectively could be called a scene file, by means of computer programs. The results of such a model are referred to as a “rendering”.. 48, 131

scrum software development Scrum is an iterative and incremental agile software development methodology for managing product development. It defines a flexible, holistic product development strategy where a development team works as a unit to reach a common goal, and enables teams to self-organize by encouraging physical co-location or close online collaboration of all team members.. 82, 131

search-based application Software application in which a search engine platform is used as the core infrastructure for information access and reporting, and utilize semantic technologies to aggregate, normalize, and classify unstructured, semi-structured, and structured content across multiple repositories.. 16, 131

security engineering Security engineering is a specialized field of engineering that focuses on the security aspects in the design of systems that need to be able to deal robustly with possible sources of disruption, ranging from natural disasters to malicious acts.. 38, 131

signal processing An enabling technology that encompasses the fundamental theory, applications, algorithms, and implementations of processing or transferring information contained in many different physical, symbolic, or abstract formats broadly designated as signals.. 16, 131

simulation An attempt to model a real-life or hypothetical situation on a computer so that it can be studied to see how the system works. By changing variables in the simulation, predictions may be made about the behavior of the system.. 16, 131

software development The process of computer programming, documenting, testing, and bug fixing involved in creating and maintaining applications and frameworks resulting in a software product or software service.. 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 46, 48, 50, 52, 54, 56, 58, 60, 64, 82, 90, 131

source code A collection of computer instructions written using a human-readable computer programming language, specially designed to facilitate the work of computer programmers who specify the actions to be performed by a computer.. 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 46, 48, 50, 52, 54, 56, 58, 60, 82, 84, 90, 131

storage area network (SAN) A storage area network (SAN) is a network that provides access to consolidated, block level data storage.. 40, 131

storage resource management (SRM) Storage Resource Management (SRM) involves optimizing the efficiency and speed with which a storage manager, network, or approach utilizes available drive space.. 40, 131

time series A sequence of data points, typically consisting of successive measurements made over a time interval.. 16, 131

transcoding Transcoding is the direct analog-to-analog or digital-to-digital conversion of one encoding to another, such as for movie data files (e.g., PAL, SECAM, NTSC), audio files (e.g., MP3, WAV), or character encoding (e.g., UTF-8, ISO/IEC 8859).. 28, 131

unit testing A software testing method by which individual units of source code, sets of one or more computer program modules together with associated control data, usage procedures, and operating procedures, are tested to determine whether they are fit for use.. 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 46, 48, 50, 52, 54, 56, 58, 60, 90, 131

user interface The space where interactions between humans and machines occur, allowing effective operation and control of the machine from the human end, whilst the machine simultaneously feeds back information that aids the operators' decision making process. . 60, 131

visualization Any technique for creating images, diagrams, or animations to communicate a message.. 16, 131

web content management Enterprise Content Management (ECM) is a formalized means of organizing and storing an organization's documents, and other content, that relate to the organization's processes. The term encompasses strategies, methods, and tools used throughout the lifecycle of the content.. 34, 131

web content management system A web content management system (WCMS) is a software system that provides website authoring, collaboration, and administration tools designed to allow users with little knowledge of web programming languages or markup languages to create and manage website content with relative ease.. 34, 131

workflow management system A workflow management system (WfMS) provides an infrastructure for the set-up, performance and monitoring of a defined sequence of tasks, arranged as a workflow.. 42, 131