SMARTS™ Decision Manager

Analytics-Driven Automated Decisions
Today, every business must be a digital business. The lines between business and technology have blurred as customers increasingly interact through digital channels while expecting seamless experiences across human and digital touchpoints. Yet, most organizations face challenges with operational systems and processes that lack the agility, flexibility, and customer-centric focus to support new digital business models.

Digital transformation requires systems that enable rapid innovation. Your internal processes and systems must be streamlined and efficient, as well as flexible, agile and transparent. Automated decisions are at the heart of your core systems and processes — driving your interactions with customers, managing your risk and fraud, ensuring compliance, and dynamically defining, configuring and pricing your products and services. SMARTS Decision Manager lets you define, optimize, and deploy data-informed automated decisions, enabling you to power your digital transformation and turn smart insights into smart actions.
SMARTS Decision Manager

SMARTS Decision Manager is a business rules and analytics platform that lets you automate, and continuously improve the decisions that drive your daily business operations. Using SMARTS you can:

• Author business rules, leverage data insight and build predictive models to define automated decisions
• Measure and maximize decision quality using dashboards and decision analytics
• Deploy, dynamically evolve and optimize decisions that drive your daily business and customer interactions
SMARTS Decision Manager includes:

**SMARTS Decision Analytics Workbench**, a web-based, visual, intuitive, and interactive environment for defining, testing, simulating and optimizing automated decisions using business rules and predictive models.

**SMARTS Decision Repository**, which stores decisions (rules and models) and provides governance services such as access control, security, audit trails for changes, versioning, and releases management.

**SMARTS Decision Services**, where deployed decisions are used by your business processes and operational systems.

In the SMARTS Decision Analytics Workbench, you define, test, and ultimately deploy your automated decisions. Decisions and their related artifacts are stored in the SMARTS Decision Repository and deployed to SMARTS Decision Services, either on the cloud or on-premise.
Business agility requires software that keeps pace with the speed of digital business. SMARTS Decision Manager supports modern application architecture principles, separating concerns by encapsulating decision logic in decision services that are loosely coupled with and can be changed independently of a system or application.

The digital world forces organizations to evolve and change at a faster rate than ever before. Agility also results from the speed and ease of defining, maintaining, and continuously improving SMARTS decisions. The SMARTS Decision Analytics Workbench significantly reduces the need for complex upfront modeling and abstraction, allowing business analysts to quickly start capturing business rules in the context of data.
RedPen™ Rule Authoring

Using SMARTS’ patented RedPen, business analysts write business rules using a use-case driven approach that results in higher-quality operational decisions. In the SMARTS Decision Analytics Workbench, a loaded data sample provides the context for the business rules and enables immediate execution and testing of each rule. Rules are written without learning a special rule language or syntax by simply clicking on fields to specify rule conditions and actions.

Fluid Rule Metaphors

RedPen makes it easy to understand individual rules but real-world decisions require a significant number of rules. Graphical representations make it easier to understand how rules are interrelated. SMARTS lets you view and author rules in different visual representations and choose the best representation to understand and refine your decision logic. You can work with the same business rules as text rules, decision tables, decision trees, or decision graphs and work with the representation that’s best suited to the problem and task at hand.
Cascading Decisions

Many operational decisions vary by geography, line of business, product, customer segment, or channel. SMARTS simplifies the maintenance of complex decision logic with cascading decisions where a base or common decision can have common rules along with rules that vary by geography or some other dimension. SMARTS let’s you easily re-use and maintain rules across these complex decisions.

Business rules are well suited for defining decisions where regulations or policies define the criteria for decision making. But under less certain conditions, predictive analytics allows you to transform historical data into actionable insights for more effective decisions.

Dynamic Questionnaires

SMARTS Dynamic Questionnaires feature allows you to use rules to drive the interactions with users to collect and/or provide relevant context-sensitive information. Business analysts can quickly and easily automate complex interactions with a graphical flow of pages, questions, and decision logic. Which questions to ask and their order is controlled by rules, allowing tremendous
Targeted Decisions

Digital business requires moving from gut intuition to data driven decisions. Predictive analytics enables organizations to extract insight from data for better decisions and a competitive advantage. Predictive analytics is used across industries to segment, target, and retain customers, identify fraud, and maintain assets.

SMARTS Decision Manager lets you build and operationalize predictive models. SMARTS BluePen™ is an integrated predictive analytics capability that lets you generate predictive models in the form of readable business rules. SMARTS also lets you import PMML models developed by your data scientists using the analytics platform of their choice. PMML is the de facto standard for sharing and deploying predictive models.
BluePen™ Predictive Analytics

SMARTS BluePen lets you explore and analyze your data using your domain knowledge and expertise to identify predictors, or, alternatively, selects the predictors for you. Then, using your selected predictors, you can generate a model in the form of readable business rules and integrate them into your decision logic.

Using BluePen, business analysts can build meaningful predictive models in hours or days, rather than months it often takes. Business analysts can also engineer or modify the models. As a result, without heavy investment in data analytics efforts, these models can be tested, leveraged in simulations and quickly deployed in the context of an operational business decision.

PMML Model Integration

Many organizations struggle to realize value from predictive analytics despite significant investments in technology and human resources since they struggle to operationalize predictive models and leverage them in automated decisions. SMARTS closes the “insights-to-action” gap by allowing easy import and deployment of PMML models developed by data scientists using analytics toolkits such as R, SAS, SPSS, and Python.
In SMARTS, these models can be used in simulations and analysis in a decision context and ultimately, can be deployed for real-time scoring that is translated into specific actions by business rules.

SMARTS drastically reduces the amount of time needed to integrate and deploy predictive models. Rather than waiting for IT to code and integrate the model, data scientists can produce a PMML model that can be consumed by SMARTS where it is versioned, managed and leveraged by operational decisions. This streamlined process simplifies the initial integration and deployment and also benefits model maintenance for businesses operating in fast-changing environments.
Optimal Decisions

Pervasive computing, low cost and highly available data storage, ubiquitous networks, big data, and the digitization of the analog world have made automated decisions pervasive. Your organization makes automated decisions hundreds, thousands, or perhaps, millions of times per day. While the impact of each individual decision may be relatively insignificant, cumulatively these decisions have a major business impact. This means small improvements in how each decision is made can add up to a big difference in your bottom line.

Improving decisions means continually adjusting them so they are consistent with your organization’s strategy and customer’s needs. In SMARTS Decision Manager, you define metrics on decision results so you can measure and understand how the decision contributes to your organization’s success. Decision metrics also enable you to assess alternative decision strategies to see which should be kept and which rejected. They are the foundation for improvement, allowing decision logic to be refined, both during development, and after deployment over time based on measured results.
**Decision Analytics**

A unique feature of SMARTS Decision Manager is the central role of data in the decision development process. Any number of data samples can be associated with a decision and loaded into the environment to support decision development, testing and simulation. These data samples can be real historical data or generated data for specific development or simulation purposes.

From the start, SMARTS focuses the decision automation effort on tangible business objectives, measured by KPIs and metrics in the Decision Analytics Workbench dashboard. Multiple performance metrics can be defined through graphical interactions and simple, yet powerful formulas. You can even specifically measure the individual contribution of business rules and predictive models to the overall decision performance in order to focus on the most effective changes.

With SMARTS, your business objectives are in the forefront as you define and refine the decision logic. As you make changes to your decision logic, adding or modifying business rules or predictive models, the results of executing the currently loaded data set are immediately reflected in the dashboard reports so you can refine your decision logic guided by the dashboard results. SMARTS lets you continually challenge, experiment with, and improve your decisions to produce the best business outcome.

**Simulations**

In SMARTS you can run simulations to compare one decision approach to another or to determine how your decision logic performs under different business conditions as reflected in your data sample. Simulations can be executed on very large datasets using SMARTS’ built-in map reduce framework to increase your confidence in decision outcomes for mission critical systems.
Champion / Challenger Experiments

SMARTS Decision Manager enables you to identify the optimal decision in cases where the decision’s performance can only be measured based on outcomes in the live system through a powerful experimental design capability, Champion/Challenger. Using Champion/Challenger, you can experiment with multiple alternatives (Challengers) for a decision in a controlled deployment and measure their business performance to select the best decision strategy to promote to the new Champion.
Collaborative Decisions

Decisions are social—typically business stakeholders are involved in formulating how a decision is made and then in evaluating the effectiveness of the decision. SMARTS social and collaboration features enable all decision stakeholders to participate and be informed at the appropriate level.

In SMARTS, people can work on multiple projects. Different user roles are supported so some users may be responsible for defining a decision while others have an approval role. Customized roles and permissions can be defined to control what users can access and what they can modify.
Social Collaborative Platform

Collaboration is built into SMARTS to provide transparency and visibility into your company’s decision making process. Interactions with co-workers related to the management of decisions are supported with the activity stream, discussions, notifications, and todo’s so you can track and understand the business motivation, context, and current state of the project. SMARTS Decision Manager enables the interactions between project participants and stakeholders to take place directly in the context of the decision logic where they provide the business background and motivation for the decision.

Decision Governance

SMARTS supports the complete governance and management of changes to decisions so you can ensure compliance and traceability. You can manage and govern decisions through their decision lifecycle from creation through testing, deployment, and retirement. SMARTS keeps the history of changes to your business rules and you can easily revert to previous versions.

SMARTS social and collaborative features provide the foundation for formal or adhoc approval cycles so stakeholders can be informed and involved to changes to decisions. Since SMARTS keeps discussions in the context of your decision logic, the business requirements and rationale behind changes are always available.
Once decisions are ready to deploy, you can create a release of the current state of the decision in the Decision Analytics Workbench. A release contains the current version of the business rules and decision artifacts at the point the release is created. SMARTS releases keep an exact history of decision deployments over time so you can always determine the exact decision that was applied to a particular transaction.
Highly Available, Efficient, and Scalable Decisions

To support digital imperatives IT is faced with the challenge of traditional infrastructure initiatives coupled with new capabilities to enable, agile innovation. Application architectures must be both stable, reliable, and safe as well as flexible and agile.
Zero Install, No Customization Needed Platform

Sparkling Logic, first to offer cloud decision management and deployment, designed SMARTS for the cloud. True cloud readiness means no installation and more importantly, no customization. SMARTS is ready to use out-of-the-box, either on the cloud or on-premise to support your decision management projects.

Decision Analytics Workbench

SMARTS’ Decision Analytics Workbench provides the complete environment to capture, automate, and manage decisions. Designed for the from the ground up for the cloud, SMARTS supports multi-tenancy and securely isolates customers on the cloud. Applied to an enterprise solution, different departments or customers can be hosted on the same platform even when they require complete isolation.

SMARTS on-premise solution includes all of the functionality of the cloud solution. On-premise, SMARTS is delivered as a virtual appliance that mimics the product stack of the on-demand model.

Decision Repository

The SMARTS Decision Repository persists your projects and decision artifacts and provides powerful services such as governance, versioning, lifecycle management, search and cataloging, audit and compliance, and verification and validation. SMARTS Decision Repository accommodates the needs of large scale systems. It features the elastic scaling of No-SQL databases, augmented with transactional capabilities, and the powerful search engine used by sites like Wikipedia. The Decision Analytics Workbench connects via a REST interface to the Decision Repository.
Decision Services

Once your decision has been, defined, validated and approved for deployment you can deploy it as a SMARTS Decision Service on the cloud or on-premise. The SMARTS Decision Service offers a choice of best in class algorithms for fast decision execution, including the most advanced RETE-NT algorithm developed by Dr. Charles Forgy.

Business processes, live applications, mobile clients, or batch jobs can invoke Decision Services with transactional data. The decision logic augments the object structure and returns it to the invoking system or application. You can invoke SMARTS Decision Services from a business process or application through a simple and secure REST API. SMARTS accepts JSON or XML payloads, as well as other formats, and returns the updated data to the invoking system to resume processing.

Decisions can be updated on the fly, ensuring consistency during execution while the Decision Service is processing transactions. There is no need to stop and restart the service.

SMARTS Decision Services handle extremely high transaction throughput. SMARTS preloads and compiles releases so they are cached and ready for execution. Decision Services integrate into load-balancer or sprayer-based high availability and high performance infrastructures. SMARTS Decision Services are designed for the cloud and virtual machines and scale horizontally through leveraging more cores in instance or load balancing by instances synchronized through replication behind a dispatcher. SMARTS supports multi-tenancy and securely isolates customers on the cloud. Applied to an enterprise solution, different departments or customers can be hosted on the same platform even when they require complete isolation.

Cloud Decision Services

Decision can be deployed on the cloud, hosted by Sparkling Logic. No IT involvement is required, the deployment is fully managed by our services. Besides the convenience of cloud deployment, a key benefit is out-of-the-box elasticity.
Hardware sizing is often a painful exercise: peak usage must be anticipated, and unused capacity must be acquired ahead of time to avoid expensive upgrades in the future. Cloud decision services remove this infrastructure headache. You just deploy, and let the SMARTS Cloud Decision Service scale by transparently allocating additional resources when usage spikes.

**On-Premise Decision Services**

Companies that require that all data reside behind the corporate firewall, or that must meet compliance guidelines governing company data management, can choose one of SMARTS’ on-premise deployment options. When installed on-premise, SMARTS behaves exactly like the cloud version except all interactions are within the on-premise network.

**Decision Service as a virtual appliance**

The SMARTS virtual appliance contains all of the components you need to run SMARTS on a standard server-class machine. It represents a complete self-contained operating system, database, and application server that will install without modification. Once a decisions are deployed, hosted by your organization, the IT involvement is minimal - managing a virtual appliance within its virtualization environment. The Decision Service is then accessible to your business applications through a simple REST interface or through AMQP interactions through tools like RabbitMQ.

**Decision Service as Docker container**

The SMARTS Docker container supports fully configurable containers, auto registration of replicas, on-demand container instances, repository database encryption, logging through Docker logging, and Docker healthchecks.

**.NET or Java deployment component**

You can also deploy SMARTS decisions as decision service components so you can directly integrate them into your business processes or applications. The SMARTS’ .NET or Java native component allows you to integrate directly into an application with a small footprint and simple invocation API.
Automated data-informed decisions are critical to digital business. Leading organizations are building competitive strategies around automated decisions based on data and analytics.

Sparkling Logic’s SMARTS Decision Manager is the leading platform for defining, optimizing, and deploying data-informed automated decisions, enabling you to power your digital transformation and turn smart insights into smart actions.

Contact us to see a demo of SMARTS Decision Manager or sign-up for a free trial

About Sparkling Logic
Sparkling Logic Inc. is a California based company leading technology innovation in decision management. Sparkling Logic’s SMARTS Decision Manager is a business rules and analytics platform that empowers business and data analysts to discover, test, simulate and continuously deploy data informed business decisions that driver daily business operations in applications in systems.

Learn more about Sparkling Logic at www.sparklinglogic.com