For Model-Driven eBusiness Applications

Brane Overview

Business Paper

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Beyond the Limits with Brane

Information-intensive companies in financial services, health care and other industries want custom applications that separate them from their competitors. They use commodity software for routine processes such as accounting, but put enormous resources into their web presence and other applications that enhance their value proposition.

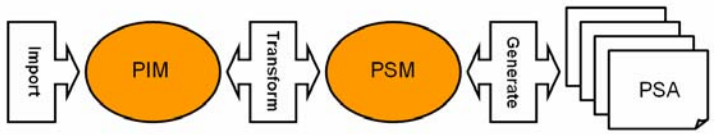
Today these companies spend heavily to implement custom e-business applications that separate them from the competition, but relentlessly evolving requirements demand frequent and expensive upgrades of those applications. Predictable development budgets remain out of reach as organizations grapple with vendor lock-in, integration barriers, aging technologies, risk of project failure, and skills shortages.

Brane is a model-driven e-business platform that enables companies to ensure that their critical applications fit their needs now and in the future. Brane enables real business agility by shortening development cycles, avoiding technology traps and enabling more effective collaboration between business analysts and developers.

Building Software from Models

Brane adopts Model Driven Architecture (MDA), which defines a standard approach for using models to build software. MDA addresses the complete development lifecycle from analysis through deployment and evolution. Most importantly, MDA carefully separates business logic from implementation details. Analysts define business logic in a *platform-independent model* (PIM). This model then translates into *platform-specific models* (PSM) and finally *platform-specific artifacts* (PSA) such as programs and configuration files which run the application.

MDA offers the potential to dramatically streamline application development and evolution, particularly the painful task of integrating new platforms and technologies, making it possible to upgrade existing applications without complete rewrites.



For more MDA information please visit the sponsoring Object Management Group's site at www.omg.org/mda.

Building e-Business Applications with Brane

Brane delivers the first fully automated MDA platform for creating future proofed e-Business applications. With Brane customers can produce powerful, extensible, modular, and scalable e-Business Applications with little or no hand-coding.

Brane's novel approach breaks through the limitations that have hampered earlier attempts to replace coding with intuitively more productive modeling.

- Brane unifies data, rules, presentation, process, integration, and lifecycle management into a single easy-to-understand whole.
- Brane applications are best-practice uses of standard technologies that developers are familiar with. Brane applications look like "what skilled developers would have written if they only had the time".
- Brane applications are modular and contribution-based, featuring dynamic extensibility at all levels to handle special requirements. This "have it your way" approach obsoletes earlier "black-box RAD" approaches.
- Brane makes it practical to migrate applications to new technologies without rewrites by systematically defining the necessary integration points and automating required steps.

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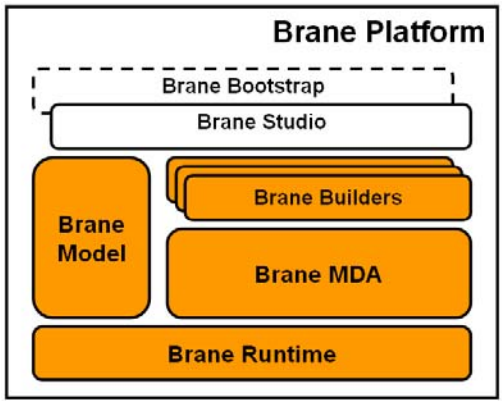
Brane Platform

To enable such “future-proof” MDA applications Brane offers the Brane Platform. This unique, powerful, and extensible platform provides a flexible and fully automated foundation for e-Business applications.



- **Brane Studio** - a highly intuitive graphical development environment for building Brane applications. Brane Studio users find they can become productive within just a few hours. With Brane Studio business analysts can define most or all of the business model themselves, and within minutes of defining the model they can have an e-Business application deployed and running.
- **Brane Model** - a rich yet very compact platform-independent model (PIM) capable of capturing up to 100% of application logic. Brane Model is specifically designed for productivity, ease of use, and expressive power. Brane Model incorporates high-level e-business application patterns so that application developers can specify sophisticated behavior with very little effort.
- **Brane MDA** - a framework that supports PSM “builders” and helps the builders process PIMs and produce corresponding platform specific runtime components. Brane MDA dramatically simplifies the task of adding support for new technologies.
- **Brane Builders** –components that translate Brane Model into code, configurations and other artifacts for a specific technology. Brane supports builders for Java EE, Hibernate, Object Constraint Language (OCL), Unified Modeling Language (UML2), EMF (Eclipse Modeling Framework), Struts/JSP, and Eclipse Rich Client Platform (RCP).
- **Brane Runtime** – runtime components that provide services to Brane applications.

Brane offers tangible benefits for proficient developers as well. Since Brane automates most of the repetitious, mundane tasks that otherwise take so much developer time, developers can focus on edge cases that are specific to their organization. Such cases are often extremely valuable, but often fall out of scope for lack of resources.

Brane also simplifies life for architects as well, allowing them control over the technologies that applications use. They can choose the right building blocks and define standards for security, service boundaries, and integration, and enforce consistency and reuse across their entire suite of applications.

For more information about the architecture of the Brane Platform please refer to the *Architectural Overview of the Brane Platform* whitepaper (info@brane.com.)

Brane Development Process

Building Brane applications is a simple three step process; define the business model, configure the application, and build/deploy/run. The last step is completely automatic.

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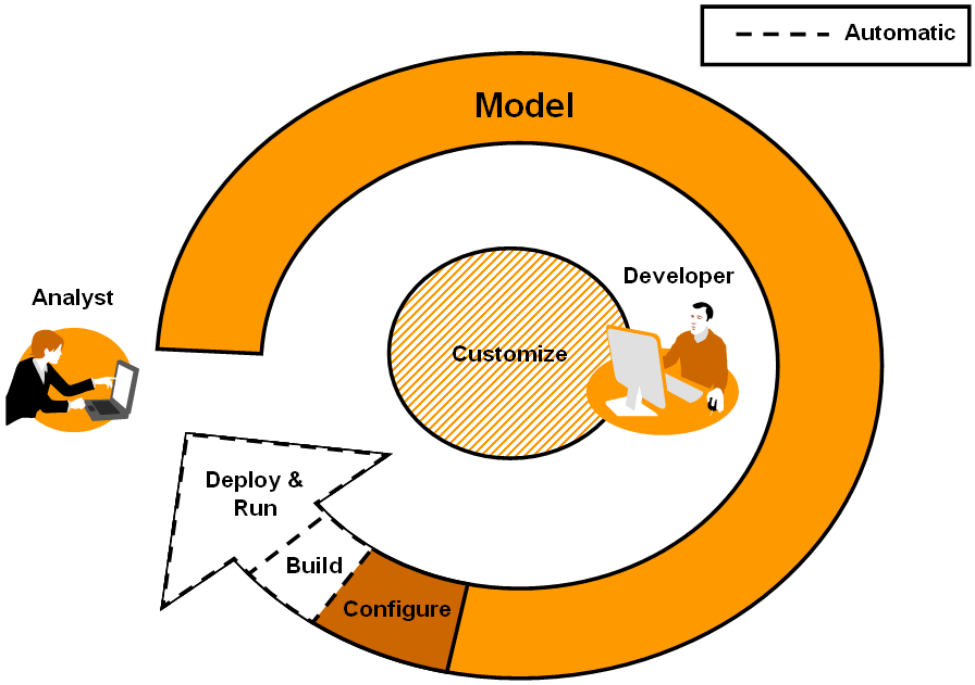
These three simple steps can be repeated as necessary to incorporate feedback, correct errors, and address new requirements. Also, every aspect of the application's models (both platform independent as well as platform specific) is customizable in Brane Studio.

Brane Studio includes wizards and forms to guide users through these tasks, most of which require only a few mouse clicks to complete.



Define the Business Model

With Brane, users can start from scratch or import an existing UML class model, XML schema, or the relational database schema and annotated Java classes from an existing application. In either case, users then use Brane Studio to enrich the data model, and define business rules, use cases, and user interface.

- **Data Model -** describes the application's persistent data and reusable derived data such as calculations. The only knowledge needed is of the actual business, because Brane designs the database, the object model and everything else needed to run the application. Given only the data model, the user can choose to generate and run a default version of the application.
- **Rules -** Rules ensure that application data is always in a valid state. Rules can be simple - order quantity greater than 0 - or sophisticated - no employee can report to themselves or to a subordinate. Brane includes a rich set of high-level patterns that enable analysts to express complex requirements easily.
- **Use Case -** Use cases include use case specific data, as well as rules, calculations, and operations.
- **Presentation -** Brane automatically produces a default presentation model based on the above use cases for later customization. The presentation model includes standard presentation patterns, such as master/detail and outline/property sheet. Developers can customize and extend the patterns by editing the templates that implement those patterns.

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Defining a business model is highly iterative. Brane's model is easy to change and enhance. For example, "Address" can begin as a simple string and evolve to have its own structure with separate items for Street, City and so on. Brane automatically propagates such changes throughout the application, adjusting the database schema, the user interface, and so on, so that the application continues to function as it evolves.

Brane's modularity means that one "application" can include multiple PIMs. A PIM can reference and/or extend another PIM, encouraging the creation of "standard" models for reuse in multiple applications.

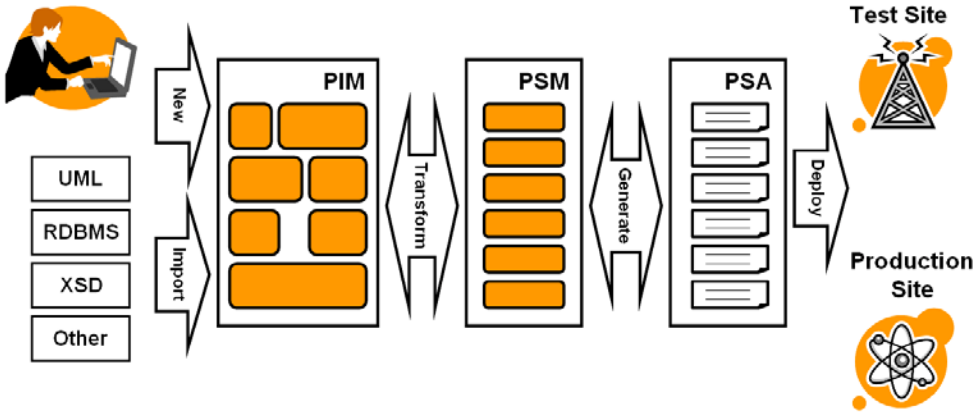
Configure the Application

Configuring an application involves selecting the required implementation technologies, such as a database and client technology and defining other configuration information. Brane automatically builds the implementations (one for each model for each technology) with their configurations and personalization and security rules into a deployment bundle. For example, the user might choose Eclipse RCP instead of JSP as the user interface technology and define end-user controllable preferences. Brane automatically generates everything necessary to install and run the application.

Deploy and Run the Application

Users can choose deployment targets from among the servers and software configured once by an administrator, and then in one step deploy the application. During this process Brane creates the relational database schema, updates the application server and does whatever else is necessary to run the application.

With just a few clicks the business becomes a fully-functional e-business application using best-of-breed components and confirming to best-practice architectural guidelines.



Refine, Customize, and Evolve

Once the application is running the process of evolving it to meet the organization's requirements continues. Businesses never stop evolving and business applications must evolve with them to keep the organizations' competitive edge.

Brane e-Business applications can be maintained post-deployment by adjusting the application model to needed changes, and updating runtime components post-deployment without restarting the application.

Brane provides a feature called *Auto-synch* to simplify working with the different parts of an application. Auto-synch allows Brane to synchronize PIM changes with PSM changes, as well as with imported source material. For example, external changes in the imported UML, XSD, or the deployed relational schema are reflected back into the Brane Model during on demand synchronization. Auto-synch also can modify presentation definitions as the data model and use cases evolve.

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Extending Brane

While many applications can be implemented using Brane natively, Brane is open at all levels to ensure that developers can customize, tune and extend the results to ensure complete conformance to business and technical requirements.

Brane is built on top of the Eclipse platform and employs the Eclipse Project's (www.eclipse.org) standard plug-in mechanism to provide extensibility for Brane applications and for Brane Platform. Developers create plug-ins that implement extensions for Brane extension points. Brane then invokes the extensions as appropriate.

Developers can edit PSMs as well as generated artifacts without losing such customizations upon subsequent regeneration. For example, developers can edit individual methods in a generated Java class. When the application is regenerated, Brane regenerates untouched methods, but leaves customizations in place.

Organizational impact

Brane can help organizations build fully functional e-Business applications, in just a few steps. Brane cuts development time and coding effort by anywhere from 50% to 90%, thus ensuring faster delivery and quicker time to market. The list of improvements impacting an organization using Brane includes:

- Reduced time-to-market because modeling is much faster than coding
- Lower total cost of ownership (TCO) because teams are smaller and applications last longer
- Accelerated adaptation to the ever-changing business environment because modeling is faster than programming
- Reduced learning curve because Brane unifies all application aspects
- Better match to companies' technology strategies because Brane leverages standard technologies
- Future proofed applications via Brane's ability replace obsolete technologies without a complete and costly rewrite
- Greater sense of ownership by the business because business analysts perform most of the work of building the application
- Increased developer satisfaction because of the move from repetitive low-level tasks to features that add real business value

Summary

With the Brane Platform customers can generate up to 100% of the application with their choice of runtime, including the Eclipse Rich Client Platform (RCP) and Java EE. Brane delivers the features enterprises need for building, operating, and evolving their custom applications.

Customers can extend Brane at every level allowing organizations to provide, if needed, their own guidelines for best practices application with the choice of their preferred technologies.

Brane is by far the fastest way to build scalable, reliable e-business applications ranging from small eCommerce solutions to large, enterprise-wide applications that are accessible via traditional desktop applications or Web applications.

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