

THE REDBERRI GUIDE TO SERVICE-ORIENTED ARCHITECTURE:

SOLVING YOUR APPLICATION, DATA AND
BUSINESS INTEGRATION CHALLENGES
IN THE VALUE CHAIN

REDBERRI 6.0
REDBERRI
ENTERPRISE

The Redberri Integration Platform helps enterprises to leverage the power of service-oriented architecture to streamline processes within a reliable, scalable and secure infrastructure. The standards-based technology provides powerful tools to build complex work

The Redberri
Integration



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SERVICE-ORIENTED ARCHITECTURE

A growing number of organizations are coming to the realization that without a consistent architectural framework within which applications can be rapidly developed, integrated and reused, “point solutions” won’t provide the return on investment they seek. Service-oriented architecture (SOA) is now emerging as the foundation for building applications with unprecedented levels of flexibility, agility and sophistication. The flexibility and reusability inherent in SOA, especially when implemented using XML-based Web services, enable IT service organizations to transform their business models from highly customized one-to-one services to one-to-many, or many-to-many reusable services.

AGILE INTEGRATION

Redberri represents a new generation of Integration Middleware that is standardized on Web Service protocols. Its openstandards based integration suite allows the deployment of systems that are ideal for heterogeneous and dynamic environments, where they must accommodate an endless variety of hardware, operating systems, middleware, languages and data stores. This provides the ability to connect systems that were never designed to talk to each other, and enable multiple applications to collaborate in automating existing and emerging tasks for the agile enterprise.

REDBERRI REDUCES TIME-TO-MARKET

- Redberri enables an independent software vendor (ISV) to focus on its core competency in application development. The troublesome task of integrating with pre-existing applications on the customer site is left to Redberri. Once Redberri is embedded in an application, ISV field staff have a much easier time of dragging and dropping links to other data sources on the customer network.
- ISVs can do remote fixes to the integration framework at a customer site by using the Redberri Web-based workflow editor, which allows remote building of business processes using ordinary browsers.
- Typically, an ISV or reseller field staff must be a highly skilled programmer in order to deal with the complexity of customer sites. But with Redberri, the integration work can be performed more easily, freeing up the high level programmers more quickly.
- Redberri is platform neutral for maximum compatibility.
- Redberri handles complex business processes due to a fully featured workflow engine that includes most common programming constructs.
- Redberri runs on JBoss, allowing seamless integration with J2EE environments. Also, with the ability to connect to any database with JDBC or ODBC drivers, Redberri lets you obtain data from anywhere, transport it, translate it and integrate it.

Redberri also addresses real business issues through an architectural framework allowing the assembly of components and services for the rapid and dynamic delivery of solutions, as well as an efficient mechanism to share information with internal and external stakeholders. Companies across the board stand to gain from an understanding and adoption of Redberri especially when implementing XML-based Web services for their SOA projects.

SOME COMMON CHALLENGES INCLUDE:

- Integrating a demand channel and/or a supply channel, which is complicated by varying non-Internet-enabled systems
- Business information stored with individuals or separate systems, which is difficult to track and report within and across enterprises
- A lack of common document standards
- A disparate network of trading partners ranging from large companies with sophisticated IT systems to "mom-and-pop" type companies with no IT resources
- Trading partners that want full integration within their existing business operating procedures

ENTERPRISE BUSINESS INTEGRATION

The subject of application integration has been around for almost 20 years, yet many companies are still struggling to find an integration solution that meets their needs, is easily implemented and affordable. An excellent example of this is the manufacturing sector, where the disparate size and technologies of manufacturers, their suppliers and their distributors continually pose integration challenges. Additionally, many independent software vendors (ISVs) are searching for tools to enhance the integration capabilities of their software products to improve deployment efficiencies and create better user experiences.

Many enterprises have historically focused on integrating their internal applications. With the rise of the Internet, eBusiness strategies and Business-2-Business Integration (B2Bi), the communications capabilities among companies, their customers, suppliers and business partners have become increasingly important. Available B2Bi solutions, however, require complex implementations and costly licenses.

What is required today is a cost-effective, easily implemented integration broker that performs data translation and transportation between disparate systems within enterprise application integration (EAI) and across B2Bi enterprises. The remainder of this document will take a look at the application integration issues facing enterprises, and discuss the Redberri Solution.

CURRENT CHALLENGES

Redberri can solve problems in a wide variety of IT integration scenarios in sectors such as financial services or health care, but it is also useful for the manufacturing sector. WDI, the internal division of Brunswick Corporation, originally developed Redberri with the perspective of a manufacturer as it addressed Brunswick's integration needs. The functionality described can be universally applicable for any industry or software development project.

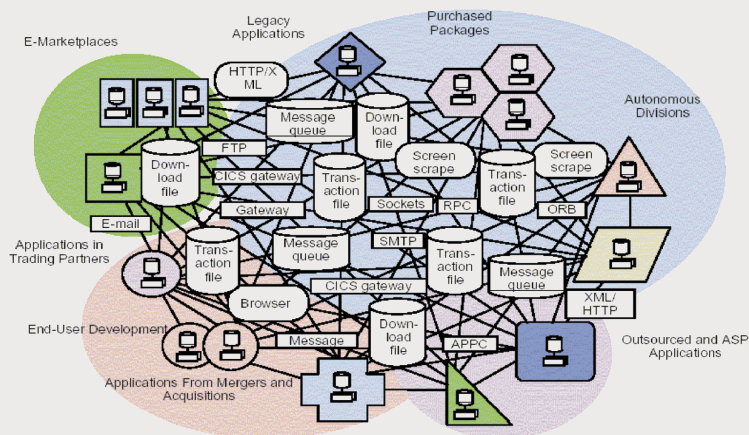
Manufacturers, their suppliers and their distribution networks are burdened with application-to-application and business-to-business integration challenges along the manufacturing value chain. There are many independent applications, each one disconnected from every other application. This creates an environment of multiple imbedded integration utilities that do not work with one another, or with existing systems, including legacy systems.

TRADITIONAL SOLUTIONS

Traditional solutions require massive investments in either custom integration solutions or Application Integration Middleware (AIM).

CUSTOM SOLUTIONS

Providing a custom distributed computing environment (i.e., applications dividing the processing and data across several computers) can be done; however, this is a costly endeavor, as developers must prepare custom code to handle many of the low-level chores of integration. Custom solutions are often created on an ad hoc basis, rather than being part of a common, centrally managed integration infrastructure. This ad hoc approach has resulted in a complex, disorganized, unmanaged, inefficient—and expensive—“spaghetti-like” architecture. Gartner Inc. estimates that 35 percent of an enterprise’s software maintenance budget is spent on managing this multitude of point-to-point, or spaghetti-like, integration architecture (see Figure 1).



Source: Gartner Research

Figure 1 – Spaghetti-Like Architecture

REDBERRI SOLUTIONS FOR THE ANUFACTURING/LOGISTICS INDUSTRY

PROBLEM:

Manufacturing/logistics companies need to drive down costs of doing business by strategically positioning inventory throughout the supply chain.

SOLUTION:

Redberri seamlessly connects RFID and other technologies to help companies control their costs.

PROBLEM:

Manufacturing/logistics companies have to balance variability in demand, production and lead times with service requirements.

SOLUTION:

Redberri’s scheduling system allows timed events to kick off business processes and to check resources at timed intervals.

PROBLEM:

With global sourcing growing more than ever before, manufacturing/logistics companies are struggling to address the trade-offs between outsourcing and vertical integration.

SOLUTION:

Redberri is a flexible framework to integrate business partners across the Internet, to achieve efficiencies and improve service levels. Redberri’s pluggable nature allows it to communicate with all business systems.

PROBLEM:

Manufacturing/logistics companies are struggling to manage risk and uncertainty in the supply chain and the need to move from supply chain management to network supply management to improve business performance, according to the Yankee Group.

SOLUTION:

Yankee Group recommends meeting these challenges through the deployment of integration and application technologies, besides creative business strategies. Redberri provides the flexibility and integration hooks to connect the various ERP and decision-support systems required to migrate to the network supply model.

PROBLEM:

Manufacturing/logistics companies are faced with leveraging existing IT infrastructure while trying to optimize their inventories.

SOLUTION:

Redberri is adept at integrating legacy systems in highly distributed environments, and addresses the manufacturing/logistics environment without the need to scrap investments in existing systems.

WDI was founded as the internal technology division of Brunswick Corporation, a major manufacturer and marketer of consumer brands, with the goal of solving integration issues among its diverse dealer network. Hence, Redberri was developed with an understanding of the manufacturing and consumer environment, resulting in a fundamentally better product. Redberri is production-stable, with years of design and development invested in this highly reliable application.

APPLICATION INTEGRATION MIDDLEWARE

AIM has shown the most potential, and promised the most, in terms of providing a solution to those implementation issues. AIM is packaged, commercial software used by organizations to connect applications and databases on different computer systems. AIM reduces application development time by providing code libraries for the many functions required to integrate applications. Products in this market facilitate application-to-application integration and business-to-business integration. These integration suites offer data translation and intelligent routing as well as business process management, Web Services-enablement, portal features and activity monitoring.

The price tag for AIM software is often prohibitive, and the complexity of AIM requires a substantial investment for implementation and support. According to Gartner, prices for an integration broker license typically start at \$250,000, but for a medium-sized configuration (e.g., a four-CPU production server, a test server and six adapters), it can be considerably more than \$500,000. Hardware, training, maintenance, professional services and other costs must also be factored into total project costs.

THE REDBERRI SOLUTION

Redberri was developed by WDI, a division of Brunswick Corporation, as a robust integration solution that provides almost all of the features and capabilities of more expensive AIM software packages at a fraction of the costs and with much lower complexity. Gartner has estimated that the worldwide integration market will reach \$10.5 billion in 2006, labeling it one of the fastest growing areas in IT, and Redberri will play a role in this market. While Redberri was developed to address manufacturers with disparate backend systems and large, fragmented distribution and supply networks, it continues to be successfully implemented in a wide variety of industries such as health care and financial services.

REDBERRI AT-A-GLANCE

SOFTWARE FUNCTION: Flexible EAI integration middleware with a Web-based GUI

PLATFORMS SUPPORTED: Platform-independent (runs on Windows, UNIX, OSX, Linux, etc.)

PROGRAMMING LANGUAGE: Written in Java

FRAMEWORK: BPML (Business Process Modeling Language) defined by BPMI

COMPLIANCE: W3C protocols and W3C schemas (list below)

APPLICATION TYPE: Redberri runs on a server as a service

Fundamentally, Redberri makes application integration easier and affordable, especially for smaller companies along the supply and distribution chain. Redberri's value lies in its ability to allow all partners in a value chain to retain their business applications, processes and data formats, while also enabling full integration. The Redberri product support team enables companies of all sizes, and with various levels of integration complexity, to find rapid value through the Redberri licensing and solution support programs that are available in flexible packages. ISVs also have found advantages embedding Redberri in their products (under licensing terms) so their products install easier in enterprise environments.

FUNCTIONALITY AND BUSINESS BENEFITS

The Redberri software installation runs as a service, listening for events from the file system or external applications. When an event is triggered, Redberri performs data translation, workflow logic and transportation as needed. The workflow engine can make decisions based on a document's content prior to translation and routing. This allows for the building of complex business processes to solve complex problems.

The translation engine is built on XML technology and will allow translation between any two document formats that can be represented by W3C schemas. Message formatters are included to marshal documents into XML, allowing for translations between documents that cannot be represented by a W3C schema. Redberri has support for multiple data formats including CSV, tab, fixed width, XML, EDI X12, XSLT, LDIF, Edifact, HL7, and MS Excel. Redberri also supports multiple protocols for moving data between disparate systems, including FTP, HTTP, Web services, JMS, LDAP and JDBC for communication with relational databases. Redberri can be deployed as a single instance or distributed throughout a network.

REDBERRI DASHBOARD

Originally designed to facilitate electronic data interface projects that link manufacturers with their diverse dealers, Redberri can convert data from any one system into a format that can be used by another system. With Redberri, the need to replace or update legacy databases or platforms goes away.

For example, if an acquired company has a PICK legacy accounting program and the acquiring company uses Oracle, Redberri will allow a business manager to map the two applications to each other using a simple drag-and-drop application called the Map Builder and a Web-based application called the Dashboard.

As one can imagine, there are many possible scenarios that Redberri can handle. For example, it can manage and translate protocols, enabling data that comes in as a Web service to go out as FTP. Or data that comes in as FTP can be written to a database. Redberri can access and connect to any database that has a Java Database Connectivity (JDBC) driver available. Another example of the power of Redberri is that incoming documents can be split into multiple documents and routed via multiple protocols as required.

A good example of this splitting process is a warranty transaction between a boat dealer and a boat manufacturer. Once a boat dealer has completed the sale of a boat, he or she is required to submit the warranty information to the manufacturers. Often, within one boat sale, there will be multiple manufacturers that need to receive warranty registration data. Redberri can be used to forward the data to the manufacturer, and then split the data into applicable pieces that are forwarded to all the vendors who supply parts on the boat (the refrigerator, navigation system, bilge pumps, etc.). Those suppliers are looking for different data, in different formats and in different protocols (email, automatic insertion into a database, EDI, etc.). Redberri is capable of providing the information vendors seek, in the form that they wish to receive it. This is a more complex example of how Redberri can be used to streamline business processes and improve inter-company automation (See Figure 2).

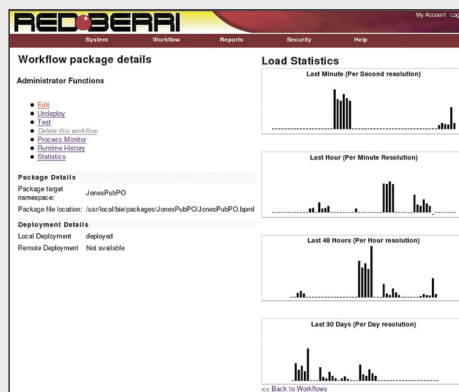


Figure 2 – Dashboard

REDBERRI MAP BUILDER

Redberri's Dashboard gives administrators the ability to build complex business processes and provides a quick overview of business transactions, allowing them to drill down as necessary into the specifics of data transfer with their trading partners. It also provides a valuable, real-time tool for verifying transaction data such as customer orders and consolidated business statistics. Redberri also provides automated alerts to users, easy security management, report generation and system configuration — all easily accessed through a standard browser. An advantage of Redberri's dashboard is that it can be accessed on the Web from any remote location, using only a Web browser. This is superior to vendor solutions that require the administrator to run proprietary software packages to access the system.

The end result is streamlined integration projects and the capability to have existing staff manage administration.

The following screen shot (Fig. 3) shows Redberri's Map Builder, a visual drag-and-drop tool which allows fields to be linked quickly. Data mapping is quite easy, and within a few minutes of construction, the map can be deployed. In Fig. 3, a purchase order from one company is being mapped to a second company, to enable data exchange as an ongoing business process. A macro can be added to the middle of a connecting line to allow business rules and math equations. This built-in macro system performs many common data manipulations, including string, date and math functions, which can quickly and easily be extended by your developers. The Map Builder can use any valid W3C schema and was one of the first in the industry to be able to use the entire Oasis Application Group (OAG) schema.

For example, if you need to convert a supplier's currency into US Dollars, you would be able to add a currency conversion formula to the middle of the map as you draw a connection. Macros can even access dynamic variables from outside resources, such as obtaining the daily exchange rates from an Internet source. As the user makes connections on the map, Redberri creates code to perform that task, as depicted at the bottom of the screen.

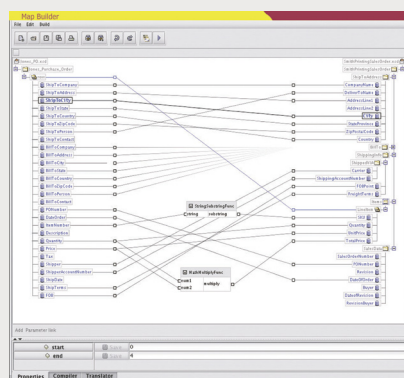


Figure 3 – Map Builder

REDBERRI SOLUTIONS FOR THE FINANCIAL SERVICES INDUSTRY:

PROBLEM:	SOLUTION:
<p>Increased focus on Sarbanes-Oxley requires comprehensive reporting and data gathering, so the executive level receives reports that are complete and representative.</p>	<p>Redberri can automate the aggregation of data to ensure that complete reporting is simple.</p>
PROBLEM:	SOLUTION:
<p>Data from financial transactions increasingly need to be parsed and sent to different databases for reporting, compliance, and record keeping.</p>	<p>Redberri can take transactions data in any format or protocol, parse specific pieces of the data and send them to databases, as messages, and in any format or protocol needed for the variety of needs a financial services organization might have.</p>
PROBLEM:	SOLUTION:
<p>Financial reporting used to be acceptable within weeks of a fiscal quarter end, but now there are requirements for faster delivery of reports once a business period closes.</p>	<p>Redberri can speed reporting by connecting databases throughout the business period and compiling reports as an ongoing process, making the “close” of a business period much less painful, and much faster.</p>
PROBLEM:	SOLUTION:
<p>Financial organizations frequently have a high load of data transfers.</p>	<p>Redberri can scale easily to support a relatively large amount of transactions.</p>
PROBLEM:	SOLUTION:
<p>For many industries, financials are heavily dependent on data from trading partners and supply chain partners, and that data is not exposed in real-time. There are inefficiencies and lag time in receiving this critical data.</p>	<p>Redberri connects trading partners for realtime data integration, so that key information such as inventory, goods sold, etc. is readily available and incorporated into a company’s financial reporting and planning systems.</p>

REDBERRI ADVANTAGES

For customers seeking a robust application integration solution, the Redberri licensing model delivers an affordably priced software package. Redberri is standardsbased, and is built on BPMI's Business Process Modeling Language (BPML).

The extensible framework adheres to W3C approved interfaces and schemas, as listed below. This means that extensions and tags are traceable and referenced, allowing additional features or functions to be added to the application by your programming staff. Redberri is very flexible and adaptable. Yet the intent is to allow ordinary business managers to integrate processes by using a simple drag and drop GUI.

Redberri complies with a variety of specifications, which can be found at these URLs:

<http://www.w3.org/XML/>

<http://www.w3.org/XML/Schema>

<http://www.w3.org/TR/xpath>

<http://www.w3.org/Style/XSL/>

<http://www.w3.org/TR/SOAP/>

<http://www.w3.org/TR/wsdl>

<http://www.w3.org/Protocols/>

<http://www.w3.org/Protocols/rfc959/>

<http://www.bpmi.org/bpml.esp>

<http://www.oasisopen.org/specs/index.php#dsmlv2>

REDBERRI SOLUTIONS FOR THE HEALTH CARE INDUSTRY

PROBLEM:	SOLUTION:
When health care providers and hospitals submit paperwork for insurance claims, 40% are refused because of incomplete data.	Redberri “listens” for data pertaining to individual patients and can integrate that data in a central repository for easy access to a complete record. This increases likelihood of claim payment, shortens receivables cycles and improves cash flow.
PROBLEM:	SOLUTION:
Health care organizations have highly distributed IT systems, with “silos” of data in different groups. The IT system for billing might be completely separate from lab results, which is separate from practitioner records.	Redberri is adept at integrating legacy systems in highly distributed environments, and addresses the health care IT environment without the need to scrap investments in existing systems.
PROBLEM:	SOLUTION:
Health care providers are trying to address HIPAA compliance.	Redberri defines portability, and allows a secure business process for HIPAA Compliance.
PROBLEM:	SOLUTION:
Doctors’ associations are loosely organized from an IT perspective, and there are inefficiencies in billing and business processes. Many times the billing for doctors is done by an external vendor.	Redberri is a flexible framework to integrate these business partners across the Internet, to achieve efficiencies and improve service levels.
PROBLEM:	SOLUTION:
The evolution of health care networks has been painfully expensive, and stakeholders dread change due to the costs that are inevitably incurred. Therefore, it is difficult for resellers to get approval for changing and adapting these systems to improve business processes.	Redberri allows business process modeling and improvements based on the existing network framework with straightforward, quick deployment.

Redberri runs on a wide variety of platforms, including Linux and Macintosh OSX and Windows. Redberri communicates with .NET applications just as easily as Java or Perl applications and will work with the databases of your choice. The following platforms have been tested by the WDI team and have been verified to work:

- Mac OS X version 10.2.3 • Windows NT, 2000, XP, and 2003 • Red Hat Linux 7.3, 8, and 9 • Debian 2.2 • SuSE Linux 8.1 and 8.2 • Solaris 8 and 9

Redberri 6.0 and higher should be compatible with any platform that supports Java 1.4 runtime environment.

OBTAINING THE SOFTWARE

Redberri is available through a commercial license. There are three binary versions of Redberri available, one for UNIX platforms (including Solaris, BSD, and Apple, OSX); one for Linux platforms like Fedora, RedHat, Debian, and SuSE; and one version for Windows-based platforms.

REDBERRI SUPPORT

All Redberri users have access to Redberri Documentation, a Help Desk and Technical Webinars. A community support forum has also been established to serve users who may wish to share implementation experiences. WDI also provides training and support.

TESTING AND EVALUATION

To evaluate the potential of Redberri, it is recommended that a primitive installation be completed and a document be selected for translation and transportation. A sample document and route is included in the distribution of the software.

TRAINING SERVICES

The Redberri training network provides hands-on experience with SOA concepts, knowledge of open-standards-based integration techniques and an understanding of best practice XML-based Web service projects. Through a formally structured program, customers are able to achieve various levels of expertise in key technologies that impact their IT operations across the value chain. Our training partners provide the infrastructure, curriculum and experience to provide customers with firsthand knowledge.

CONCLUSION

Redberri is proven to deliver strong ROI outcomes for businesses of all sizes with diverse integration requirements. Development teams can do more in less time thanks to graphical tools, a reduced need to custom code and architectures that promote reuse. Redberri customers have been able to keep costs down, squeeze more efficiency from existing systems and implement real time technology that supports a wide range of existing systems. With Redberri Remote Client, thousands of customers, dealers, brokers, suppliers and account managers can run data integration for self-service portals. Redberri simplifies infrastructure through the use of open standards rather than customized integration. This provides a multiplatform solution that breathes new life into legacy and operational systems, enabling customers to easily extend their skills to build integration applications. With the support services available through WDI and it's certified partners, customers can quickly realize the full benefits of Redberri's application integration capabilities. WDI offers training on Redberri, project management and process definition techniques. The training is conducted by experienced partners, with costs quoted on a project basis. WDI also can provide technical support assistance with embedding Redberri's functionality into other ISV software products.

ESSENTIAL REASONS WHY REDBERRI WILL WORK FOR YOU:

WEB SERVICES ARE HERE TO STAY

- No matter what type of software you're creating, it should contain secure Web services for any back-end functions — authentication, privilege levels, encryption, logging, auditing, etc. Web services and service-oriented architectures are becoming increasingly important in today's enterprise. If you can't connect to them, your software may not get a second look.
- Redberri is great as a secure web services gateway in front of soft backoffice applications.
- Redberri provides:
 - Authentication
 - Privilege Levels
 - Logging
 - Auditing
 - Web Service Publishing
 - SSL

CREATE TRUE INTEROPERABILITY

- Interoperability is one of those words that crops up a lot in press releases, but its meaning seems to vary depending on who's using it. True interoperability, however, is really an automatic function rather than a manual one. Two applications should be able to deal with each other natively without a great deal of gnashing of teeth. If someone has to create a connector manually every time your application needs to interface with another, your application will quickly become bloatware. It probably won't work well across the board, and users won't be able to get the support they need. Make it simple — build in automatic interoperability.
- Redberri is a general purpose integration suite so it is well suited for many different tasks and is certainly not a "one off" integration technology.
- Redberri is designed to handle integration tasks in an automated fashion once it's set up. So, "Configure it, and forget it!"

ESSENTIAL REASONS WHY REDBERRI WILL WORK FOR YOU:

LOOK BEYOND THE WALLS

- Interoperability isn't limited to internal systems. Financial institutions and manufacturers, for example, both need applications to interface not only internally with each other but also with suppliers and dealers as well. Making sure information such as purchase orders can move from one system to another — no matter what that "other" is — is key to taking advantage of technology. Every time something needs to be re-keyed, it creates an opportunity for error. Keep data exchange automatic without either side having to change their systems.
- Redberri's pluggable architecture enables it to communicate with many different systems, over many protocols, and with many document formats. It is ideal as a transaction exchange platform for integration across and within businesses.

SEE THE BIG PICTURE

- Most ISVs tend to focus solely on their own applications. For the most part that makes sense, because you want to keep focus on things you can control. But in this increasingly connected world, smart ISVs also look at the business aspects of their software, i.e. how it will be used in the real world, and plan ahead of time for integration. While you may not be able to envision every scenario, the more you work toward universal, automated connectivity, the better off you will be.
- Redberri means universal automated connectivity. Everything about it enables ISVs to connect to a myriad of external systems that will make their product more functional, and more marketable to their clients.

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