



# Reusable Services Framework & Architecture

**"Things should be made as simple as possible, but no simpler"**  
*Albert Einstein*



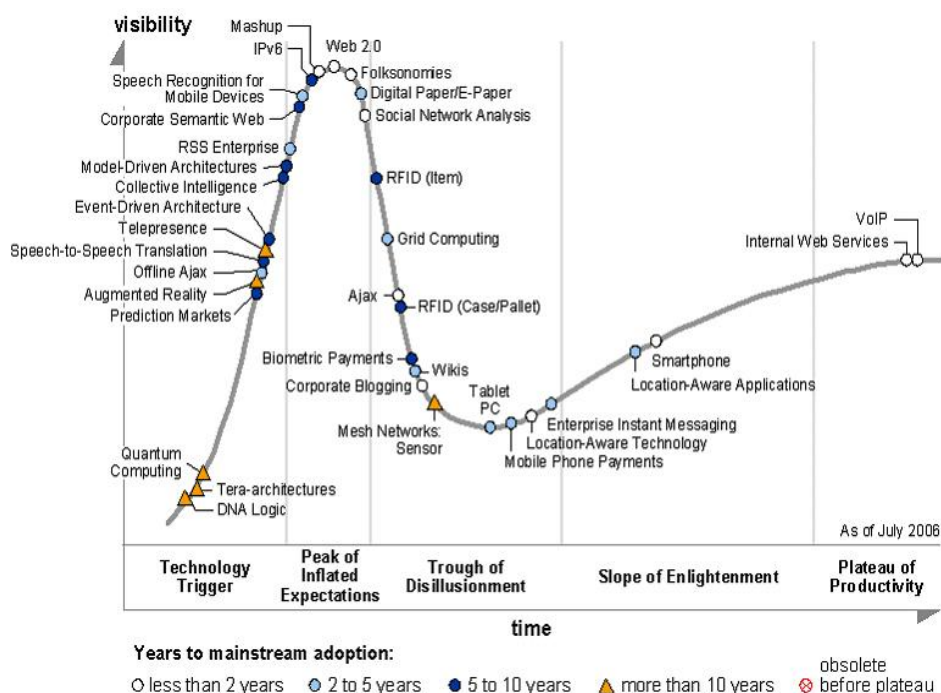
## Reusable Services Framework (RSF)

Reusable Services Framework (RSF) is a library of component building blocks from which various banking and financial solutions can be derived. BrainCube offers world class solutions based on the RSF; a Service-Oriented Architecture (SOA) delivering common, reusable services on which to build a wide array of solutions.

### Business Led Banking & Financial Environments

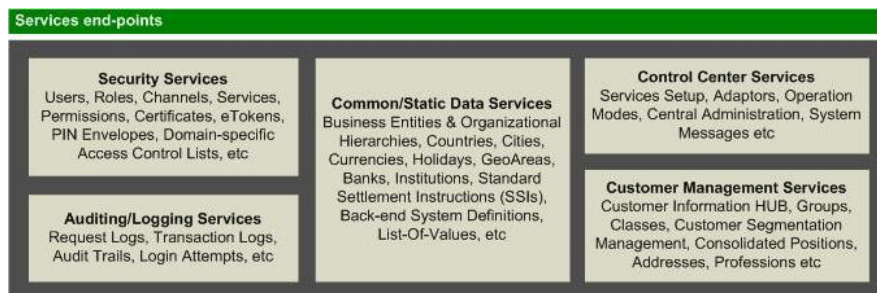
From cutting cost to strategic advantage - It is no longer the question whether banks and financial institutions need to transform their existing infrastructures, but how. Their application silos are rich in functionality and deeply embedded in the systems environment, yet rigid, expensive to maintain and lacking the agility to quickly respond to growing customer demand – particularly from large corporations. A big bang systems replacement is simply no option, yet approaching it piecemeal carries its own burden and risk. The answer is staged and managed migration towards future-proof service oriented architecture, with some visible and client-driven quick-wins.

Banks and financial institutions typically build and maintain their own custom applications to service their requirements. If these organizations do not build their own systems, they are forced to modify their procedures to match a packaged solution's capability. Either way it is a costly exercise and wrestles control of the process away from those that know it best. Often, technical capability is duplicated across numerous departments and lines of business and any need for these diverse IT systems to actually communicate with each other results in a major project with significant cost and time delay.

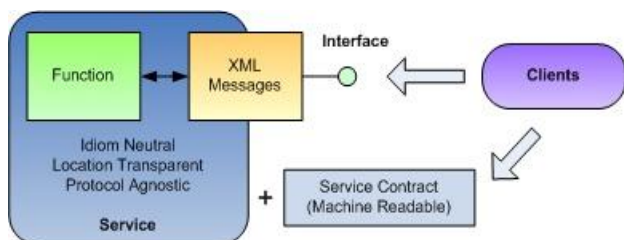


## The Reusable Services Framework

The Reusable Services Framework (RSF) from BrainCube is a library of component building blocks from which banking and financial solutions can be derived. The Reusable Services Framework is built entirely on a Service-Oriented Architecture (SOA) delivering common, reusable services consisting of a comprehensive data model, financial business processes and configurable services including Security, Auditing, Common/Static Data Maintenance, System Administration, Workflow Runtime, Customer Management and many more.



From Reusable Services Framework, BrainCube has created defined solutions that include E-Banking & Multi-Channel Platform, Credit-Line Approval and Cheques Management.



**Service-Oriented:** Focusing on delivering function via open, contract-based message exchange, while being location transparent, protocol agnostic, and free of implementation idioms.

## Service-Oriented Architecture and Web-Services

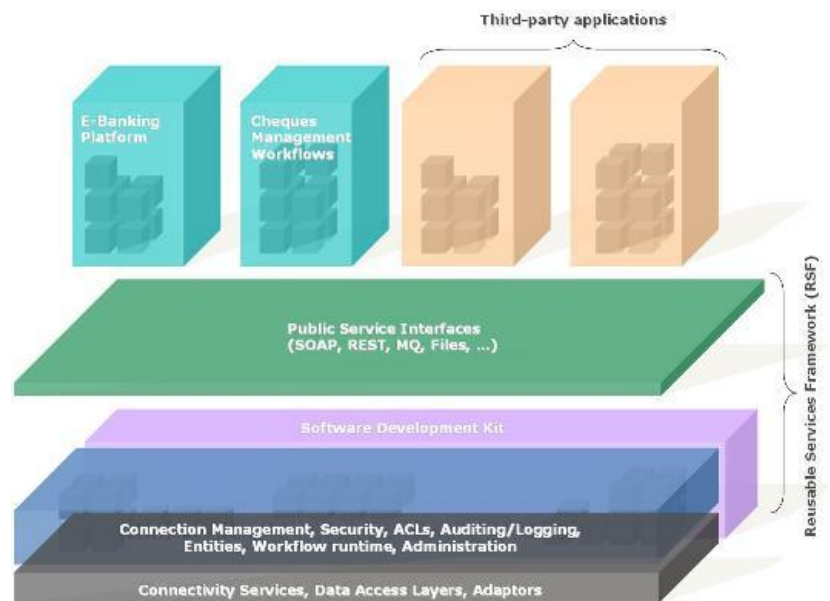
Service-Oriented Architecture (SOA) and web services express a business-driven approach to software architecture that supports integrating the business as a set of linked, repeatable business tasks, or "services". Services are self-contained, reusable software components with well-defined interfaces and are independent from the consuming application; composite SOA applications can invoke services that may, and often will, run on an entirely different infrastructure.

## Adaptive-SOA – a Grey Box Solution

The RSF not only provides a set of callable black-box business services: each individual service can be fully customized and extended. This "Adaptive-SOA" approach offers the best of both worlds; the business processes flow can be fine-tuned by invoking a rich set of business services and each service can be adapted to the specific needs of the institution. The RSF allows the adaptation of the underlying data model; the Adaptive-SOA grey box approach enables the customisation teams to incorporate these extensions in the individual services. Meta-data describing the underlying data model is used by the Adaptive-SOA services and can be fully extended.

## The Software Development Kit (SDK)

BrainCube's RSF-based solutions ship with a comprehensive Software Development Kit (SDK). **The SDK changes the paradigm of a “buy vs. build” decision to a “buy and build”.** Through documented APIs, customisation patterns and a suite of reusable frameworks, the SDK offers our customers the ability to add, change and round out components to meet their unique requirements. Time to market is an essential ingredient of maintaining a competitive edge, so whether it is with a 3rd party Systems Integrator, the organization's own IT department or BrainCube, the SDK provides the technical stuff with all the necessary tools to implement a complete solution.



## Why use RSF?

Embracing the Service-Oriented Architecture (SOA) and the architectures that it underpins offers six primary returns:

### **Investment protection**

Exposing existing legacy application code as web services re-uses existing applications.

### **Reusability**

Publication of services through service registries allows resource sharing across the enterprise.

### **Interoperability**

Regardless of platform and vendor through a maturing set of Web Service Interoperability (WS-\*) standards.

### **Scalability**

Replaces tightly coupled application-to-service environments with loosely coupled, asynchronous, coarse grained architectures, allowing for easier growth of clients and services.

### **Flexibility**

New services added through publishing.

### **Cost efficiency**

Customised solutions are expensive to build and maintain.

## **RSF Solution Highlights**

- Enables the multi-channel approach and the cross-channel collaboration
- Provide a consistent customer view across channels & systems
- Enhanced and extended branch application functionality
- Service creation and delivery (Write-once, Consume anywhere)
- Centralized authorization and permission maintenance using Role-Based Access Control (RBAC) supporting fully customized permissions, access control lists (ACLs, DACLs) and custom hierarchies (e.g. Organization Chart)
- Helps to define the business process across systems (orchestration)
- Windows Workflow Foundation enabled supporting visual workflow designer
- Exhaustive Auditing/Logging and Tracing
- Store and Forward (SAF) and transaction scheduling mechanisms available to all services, all channels
- Supports "mode of operation" providing automating switching of back-end systems
- Out of the box support of PIN generation and PIN mailers
- Pluggable integration adaptors framework with configurable recovery and retry logic
- SOAP, XML, WS-\*, REST standards compliance (smooth interoperability with WebSphere, JBoss etc.)

## **RSF Technology**

### **Clients**

- Any type (Win32, Web-browser, PDAs, etc)
- Communication via open interfaces (SOAP, WS-\*, REST)

### **Application Servers**

- Support of large application farms and stateless dynamic load-balancing
- Based on proven .NET technology stack running on Win2003/IIS

### **Databases**

- Any popular database (Oracle, DB2, SQL Server, MySql, Sybase, etc)
- Cluster-aware Data Access Layers (DAL)

### **Security**

- Using the latest WS-Security standards including WS-Federation
- Support of Digital Certificates, Digital Signing and One-Time Password (OTP) devices
- Encrypted communication between layers using SSL/TLS

### **Performance**

- Very-large transaction throughput on the platform level using advanced techniques such as asynchronous auditing and logging, cached permission checks, etc.

## Reusable Services Architecture (RSA)

Can you meet the challenge of managing a disparate array of information technology systems spanning technology platforms, databases, programming languages and application servers?

### Service Description

BrainCube Consulting Services introduced its SOA solution, Reusable Services Architecture (RSA), to meet this challenge. After spending many years mastering SOA design, implementation and optimization, we can now deliver the best practices learned to customers looking to foster innovation and enhance agility.

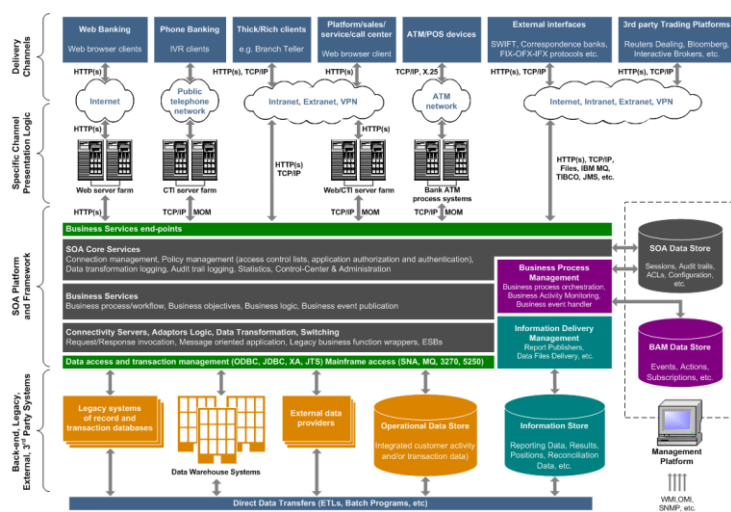
RSA is both a collaborative development process and a vendor-agnostic technology framework and it is the blueprint used to build the Reusable Services Framework (RSF) that BrainCube uses internally in order to deliver successful solutions. RSA breaks down applications into components that are placed within an easily accessed common architecture for reuse across multiple applications and channels. Additionally, we provide real technical accelerators such as code generators and integration adapters in order to help customers quickly establish a SOA solution.

### Benefits

Our consultants help determine which components should be chosen and how they will work together in order to meet a company's unique business needs.

The benefits realized from this type of solution include the following:

- Power of many developers with the focus of one
- Reduced delivery risk for technology projects
- Improved collaboration across business silos
- Enables the multi-channel approach and the cross-channel collaboration
- Orchestration of business process solutions
- Efficient reuse of functional components
- Faster time to market for custom applications



BrainCube's Reusable Services Architecture (RSA) blueprint



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