



RED HAT  
**FORUM**  
Europe, Middle East & Africa



# APPLICATION INTEGRATION WITH JBOSS FUSE

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Israel, Greece & Cyprus

# AGENDA

- **APPLICATION INTEGRATION, AGAIN?**
- **REDHAT JBOSS INTEGRATION SOLUTIONS**
- **REDHAT JBOSS FUSE**
- **REDHAT JBOSS FUSE SERVICE WORKS**

# BUSINESS AND IT CHALLENGES

Inconsistent  
Information

Inefficient  
Processes

Lack of  
Visibility  
and Control

**NET RESULT: Lack of productivity, more errors & higher costs**

# BUSINESS AND IT CHALLENGES

CONSISTENCY

OPTIMIZING  
EFFICIENCY

VISIBILITY AND CONTROL

“As current application environments get more complex and heterogeneous, the respective data and application logic is spread across a multitude of different environments—both on premises and in the cloud. As a result, maintaining the **consistency of business logic and data structures is becoming one key differentiator for integration products.**”

**Stefan Raid**

PhD, vice president, principal analyst, Forrester Research

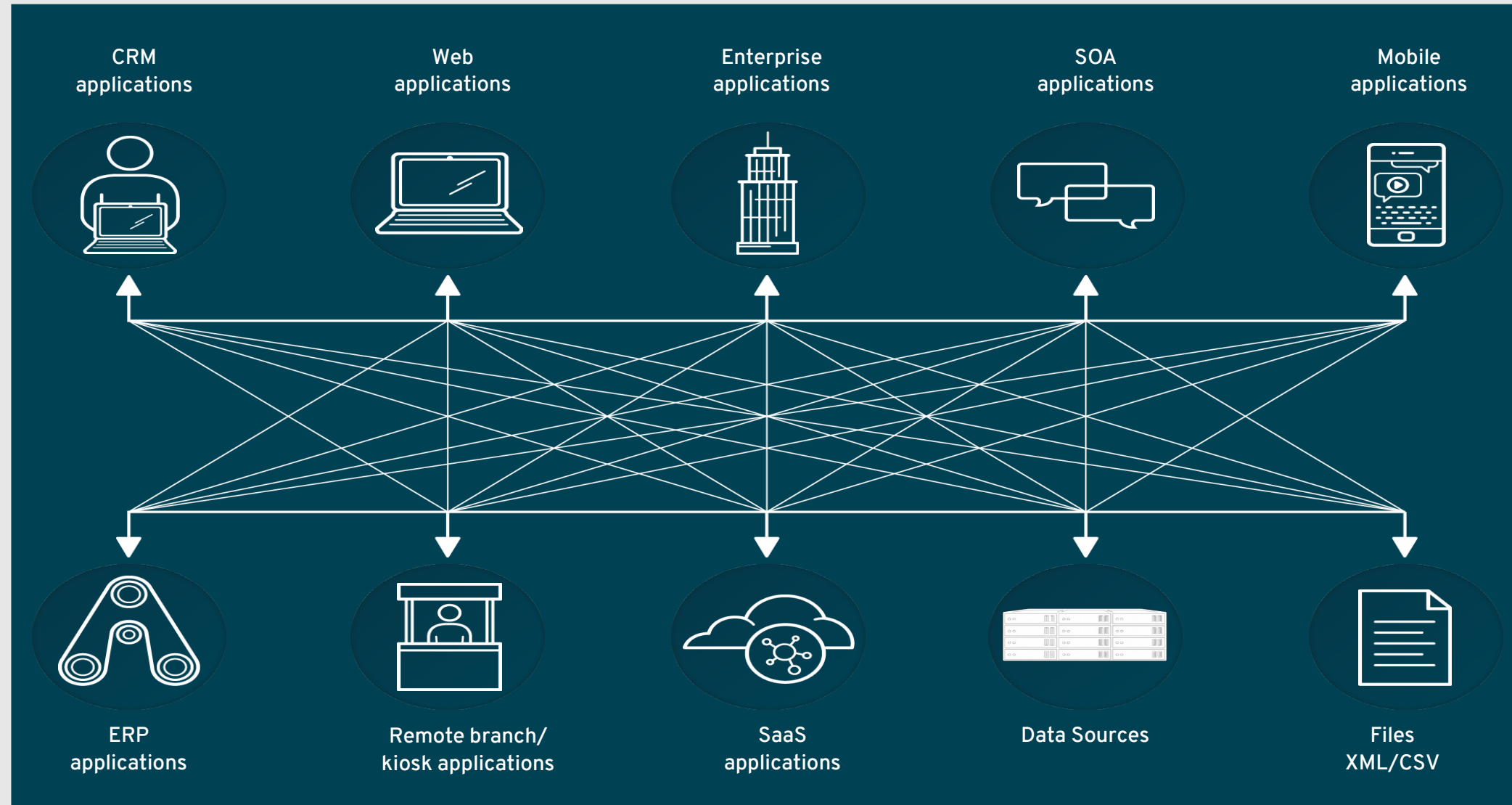
# BUSINESS AND IT CHALLENGES

CONSISTENCY

OPTIMIZING  
EFFICIENCY

VISIBILITY AND  
CONTROL

## CONSISTENCY, INTEROPERABILITY, AND REAL TIME





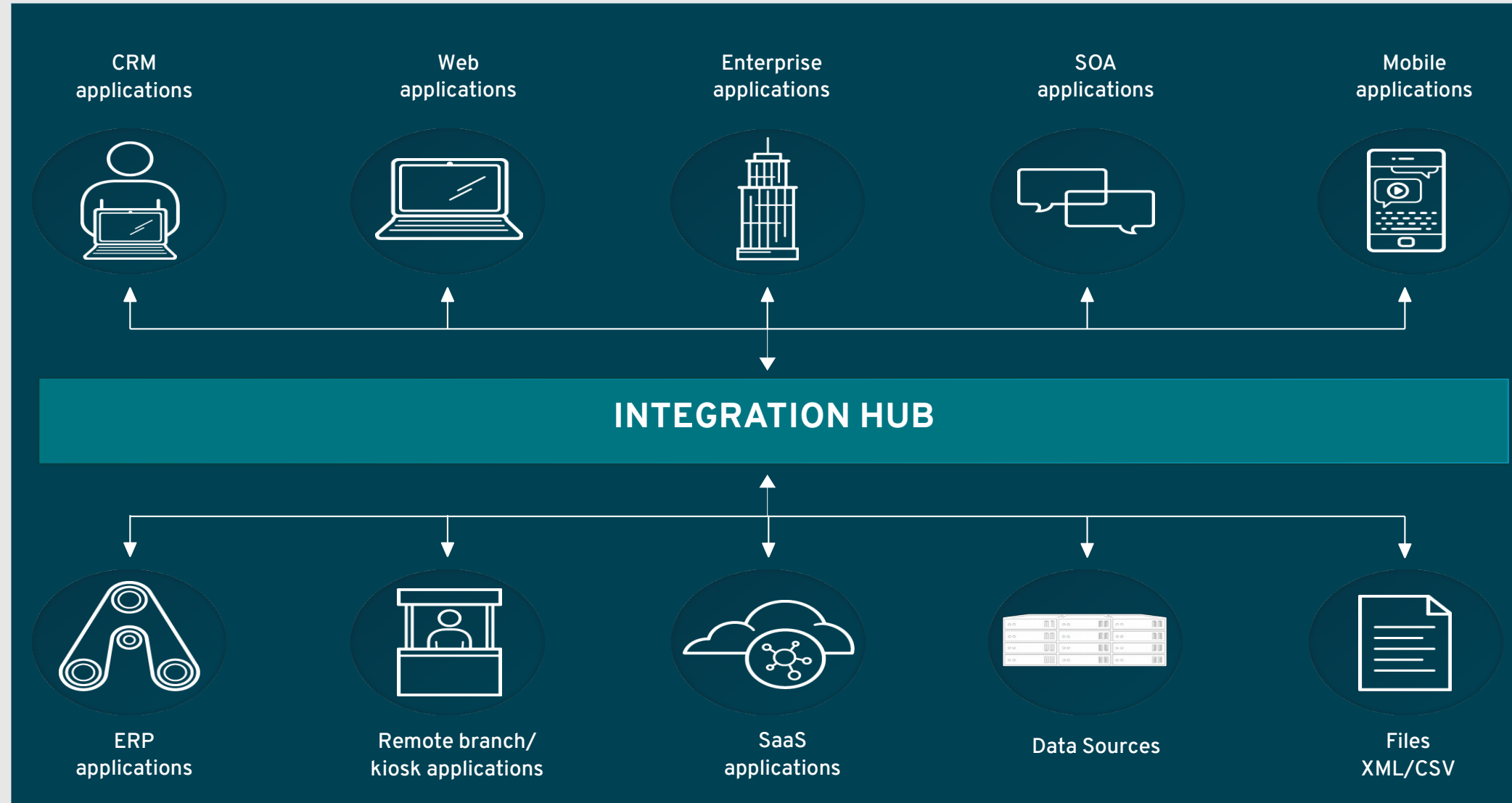
# CONSISTENCY SOLUTION

CONSISTENCY

OPTIMIZING  
EFFICIENCY

VISIBILITY AND  
CONTROL

INTEROPERABILITY + REAL TIME SHARING = CONSISTENCY



# BUSINESS AND IT CHALLENGES

CONSISTENCY

OPTIMIZING  
EFFICIENCY

VISIBILITY AND CONTROL

“Composite applications are becoming more important, as enterprises leverage internally developed business services and those from partners and cloud service providers.”

Gartner Research

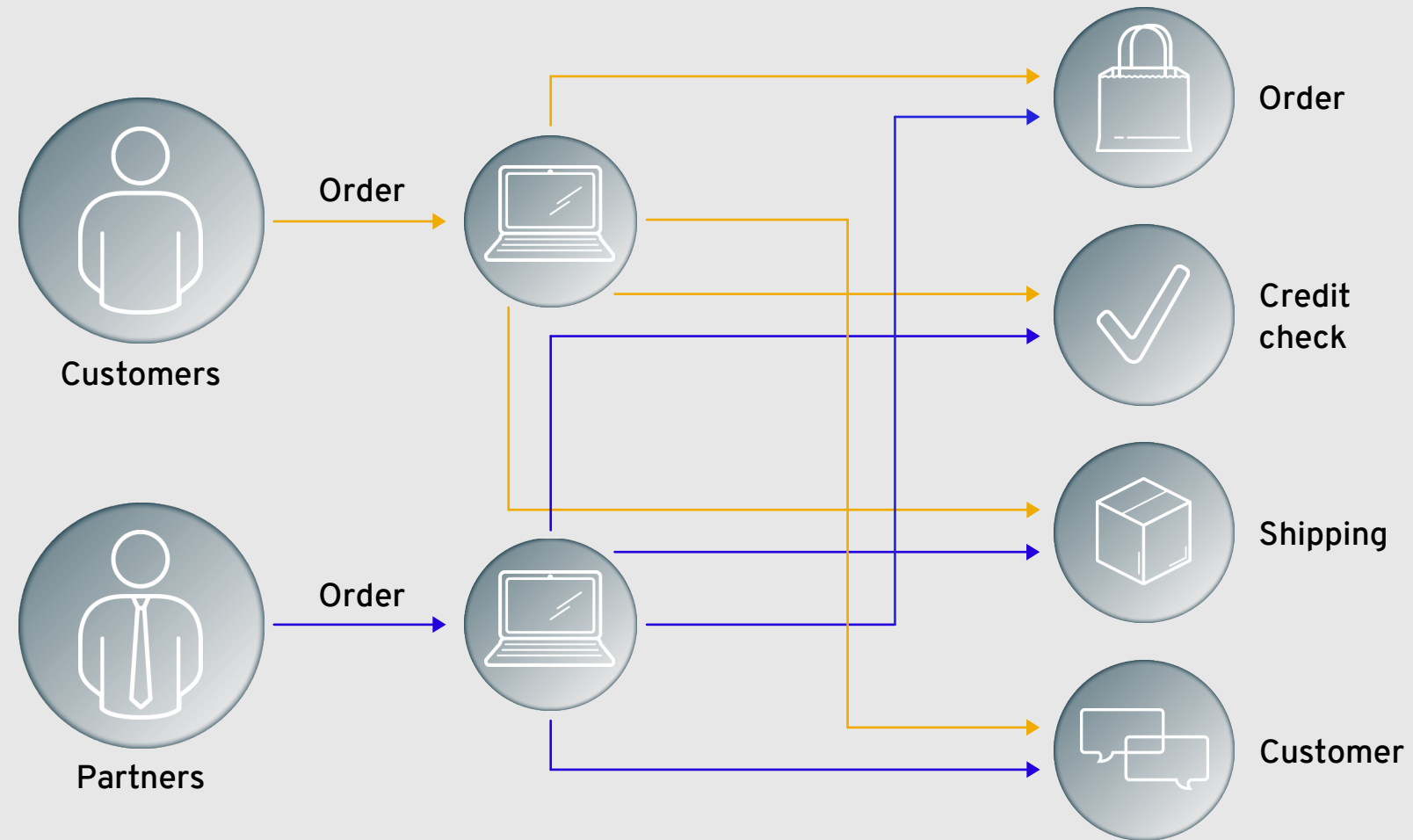
# EFFICIENCY CHALLENGE

CONSISTENCY

OPTIMIZING EFFICIENCY

VISIBILITY AND CONTROL

## QUICKLY CREATE NEW APPS AND REDUCE REDUNDANCIES





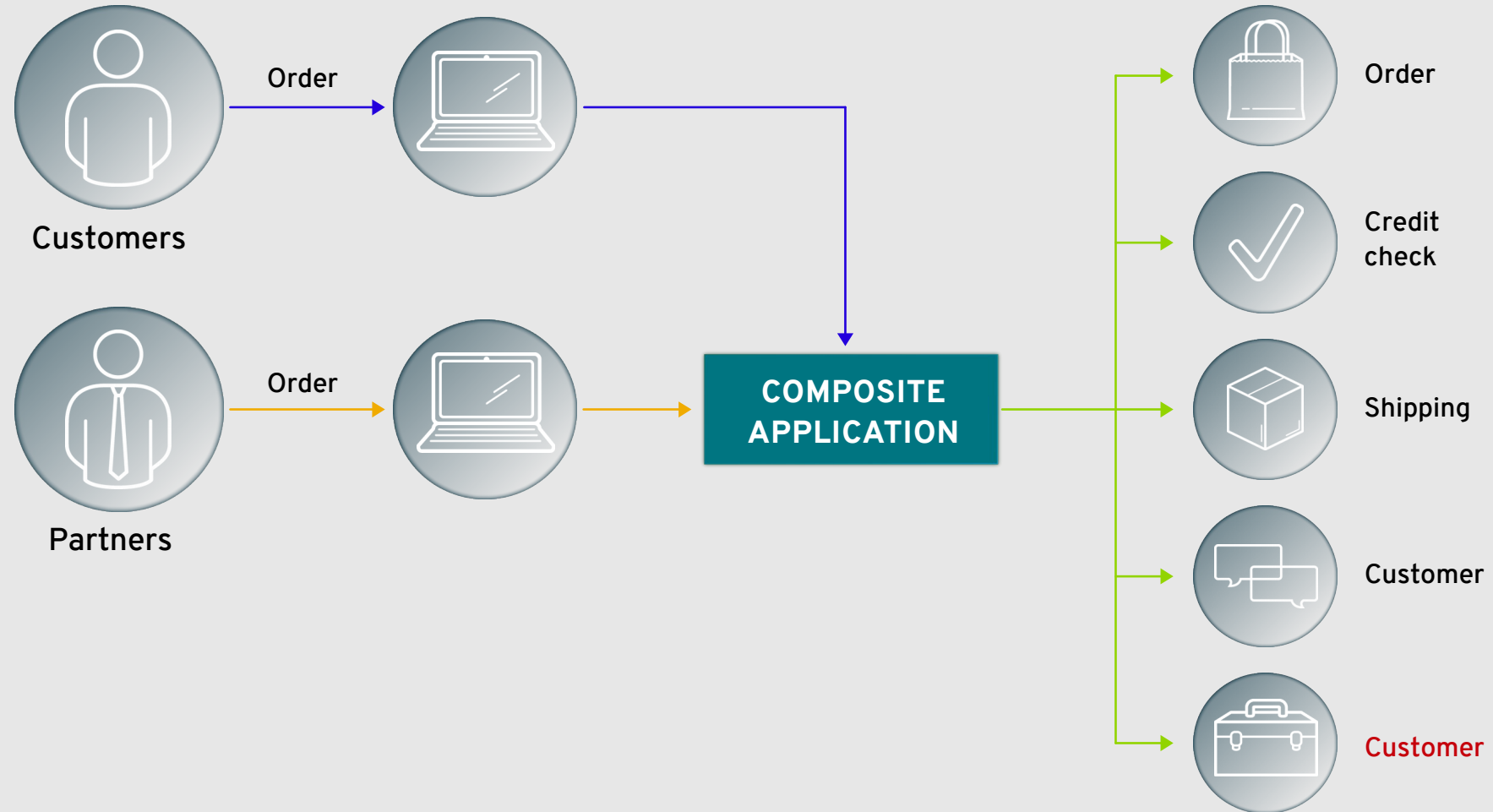
# EFFICIENCY SOLUTION

CONSISTENCY

OPTIMIZING EFFICIENCY

VISIBILITY AND CONTROL

FASTER APP DEV + REUSABLE COMPONENTS = EFFICIENCY



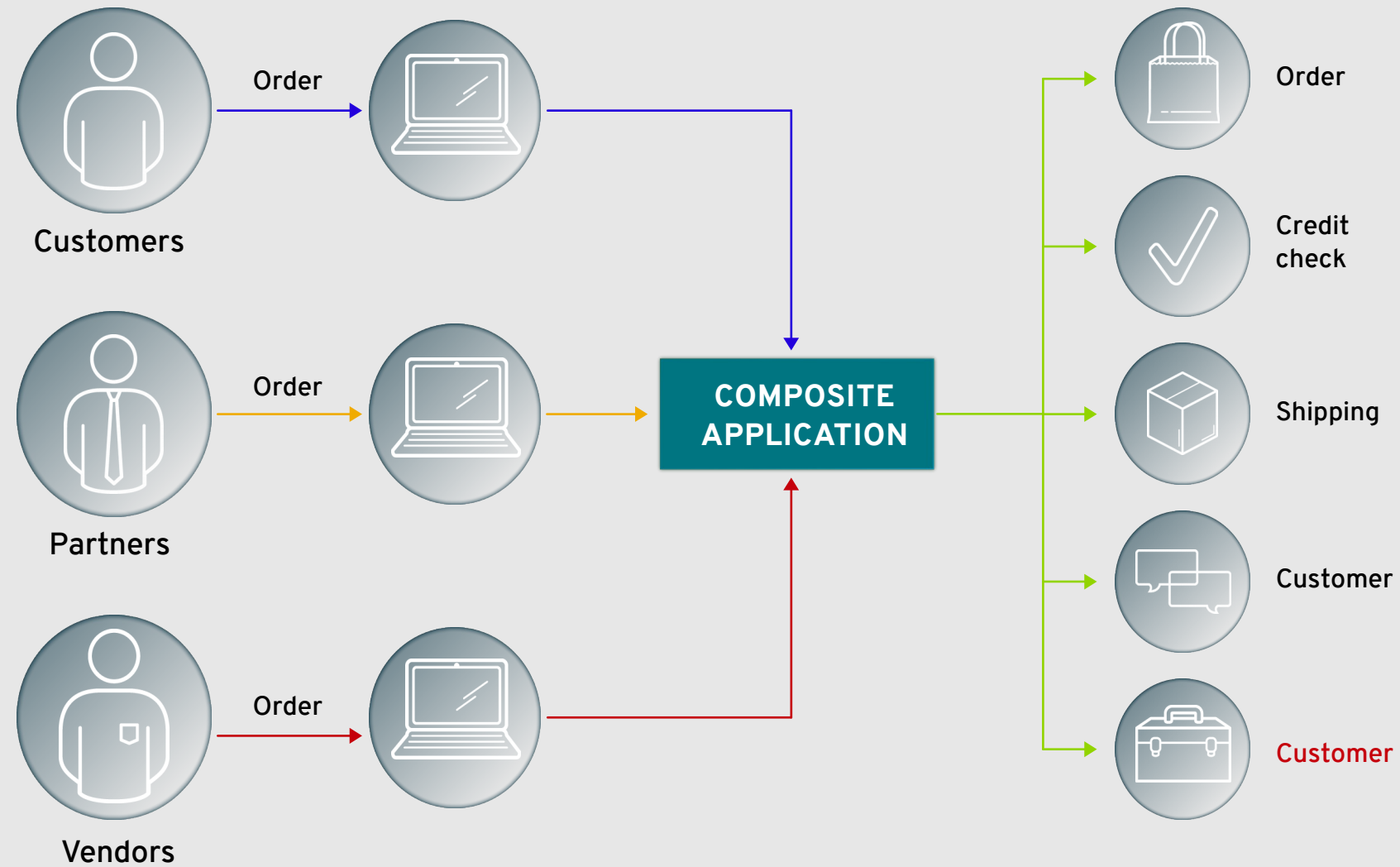
# EFFICIENCY SOLUTION

CONSISTENCY

OPTIMIZING EFFICIENCY

VISIBILITY AND CONTROL

## FASTER APP DEV + REUSABLE COMPONENTS = EFFICIENCY



# BUSINESS AND IT CHALLENGES

CONSISTENCY

OPTIMIZING  
EFFICIENCY

VISIBILITY AND CONTROL

"Data and application logic is spread across different packaged and custom-built applications on-premises, on managed infrastructures, and in the public cloud. While this presents a massive integration challenge today, **the situation will only get more complex.**"

**Stefan Raid**

PhD, vice president, principal analyst, Forrester Research

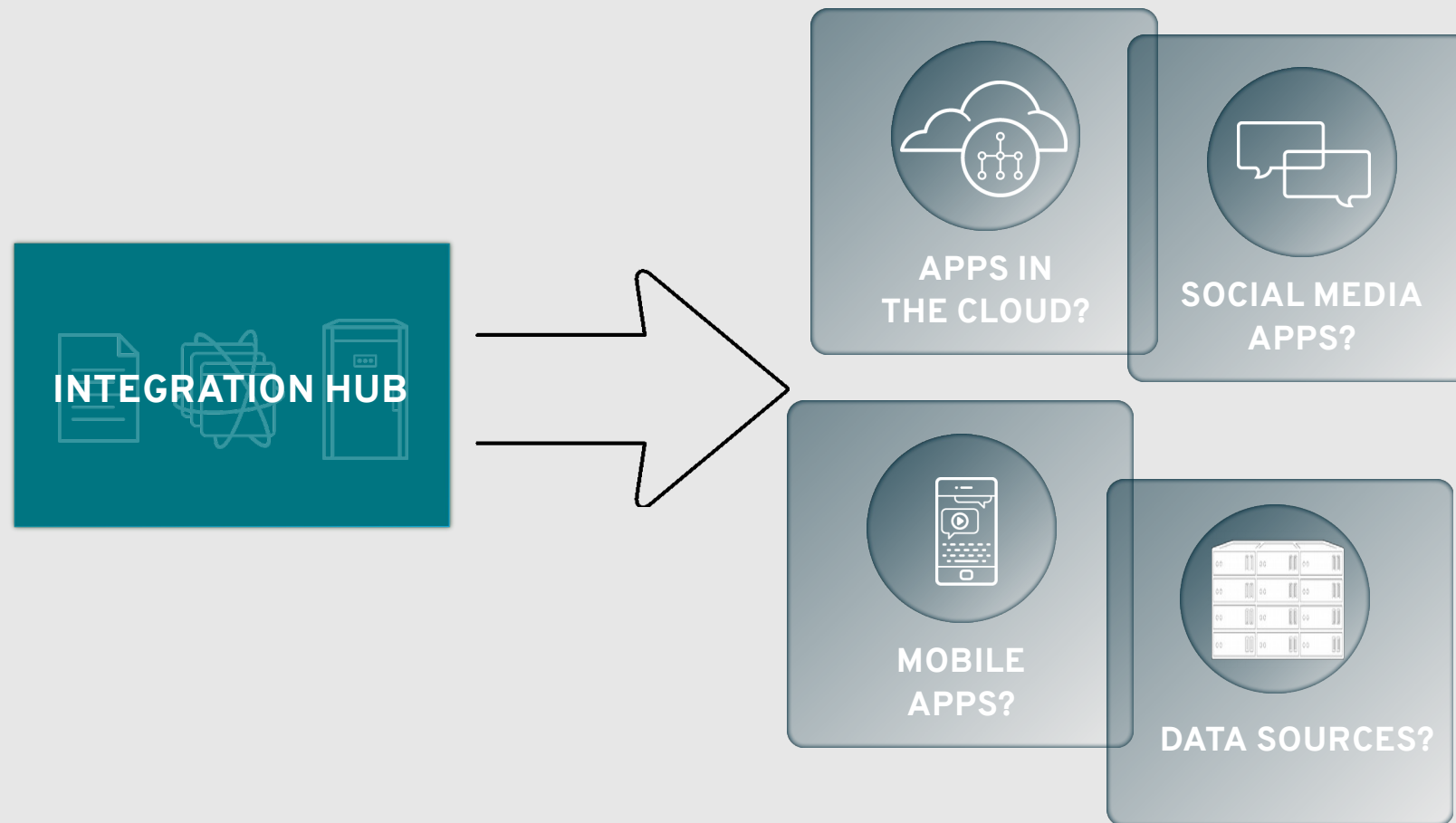
# VISIBILITY AND CONTROL CHALLENGE

CONSISTENCY

OPTIMIZING  
EFFICIENCY

VISIBILITY AND  
CONTROL

FRAGMENTATION OF APPLICATIONS AND DATA THREATENS  
SECURITY, VISIBILITY AND CONTROL



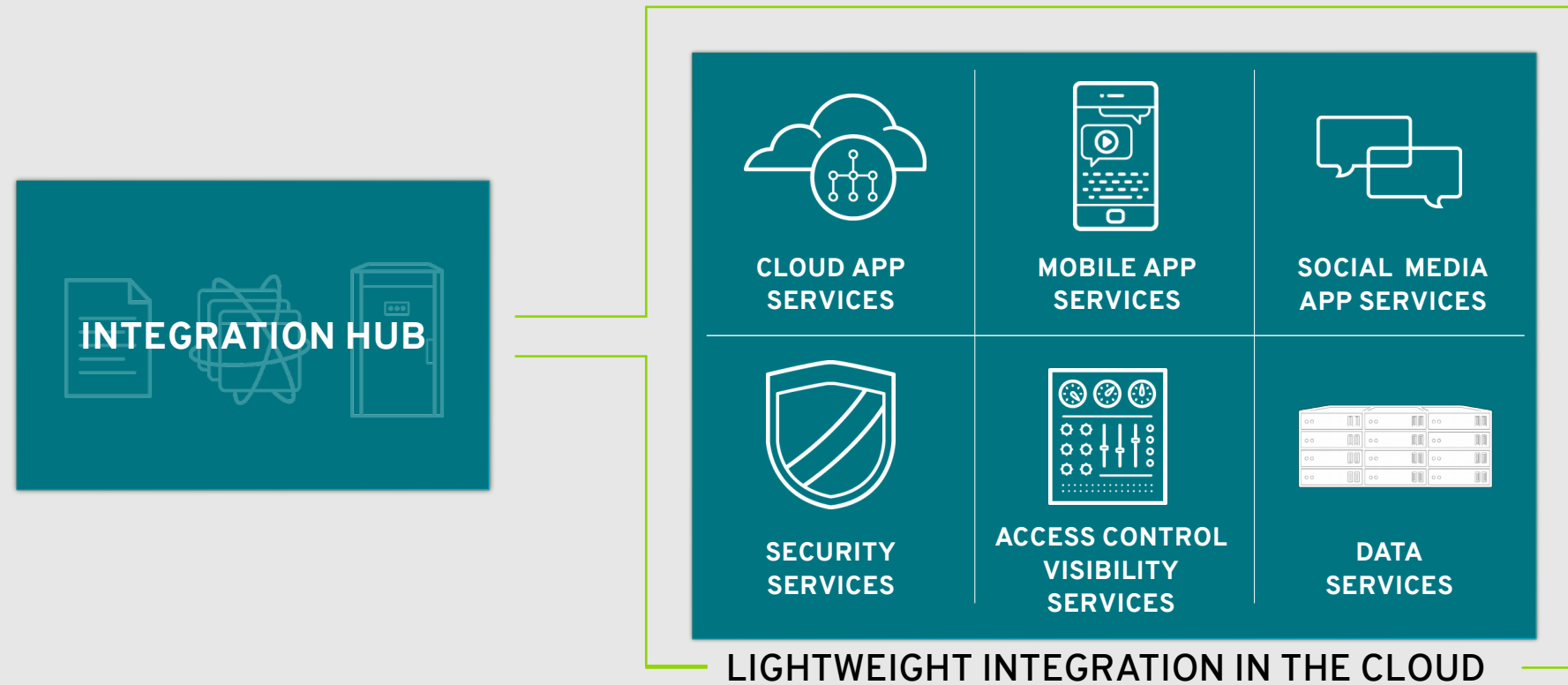
# VISIBILITY AND CONTROL SOLUTION

CONSISTENCY

OPTIMIZING  
EFFICIENCY

VISIBILITY AND  
CONTROL

**AGILITY + SECURITY = VISIBILITY AND CONTROL**



# VISIBILITY AND CONTROL SOLUTION

Apps & Data On-premise

ORACLE®



Mobile Clients,  
Devices & Sensors

Apps & Data in the Cloud

facebook



twitter



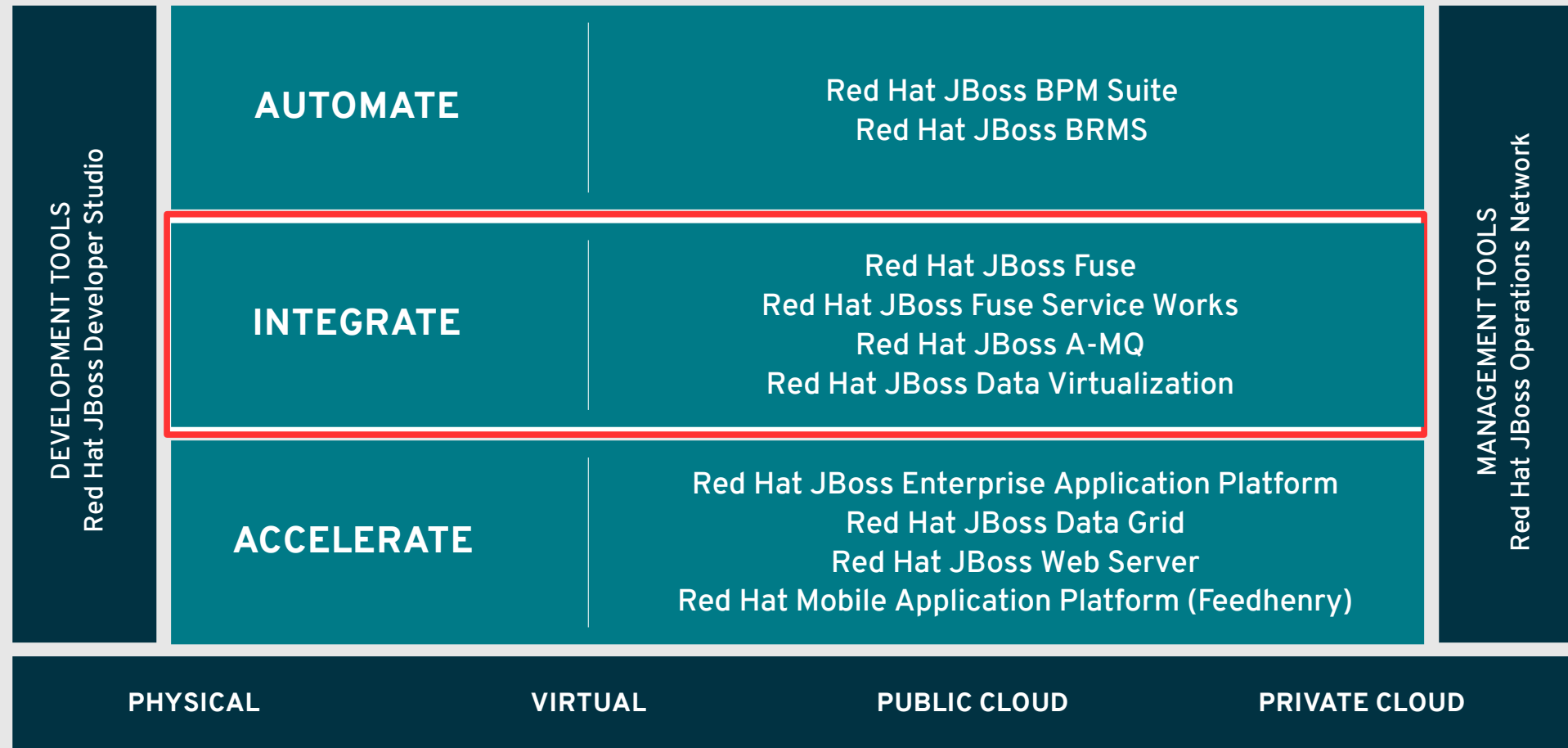
Integrate  
Everything  
Everywhere



# RED HAT INTEGRATION

# REDHAT JBOSS MIDDLEWARE

INNOVATE FASTER, IN A SMARTER WAY



# INTEGRATION SOLUTIONS

## JBOSS MIDDLEWARE LIGHTWEIGHT INTEGRATION

**ESB**  
Transformations  
Media routing  
Integration services

**RED HAT® JBOSS®  
FUZE**

RED HAT JBOSS FUZE  
FOR xPaaS

**MESSAGING**  
Between legacy silos  
Real-time notifications

**RED HAT® JBOSS®  
A-MQ**

RED HAT JBOSS A-MQ  
FOR xPaaS

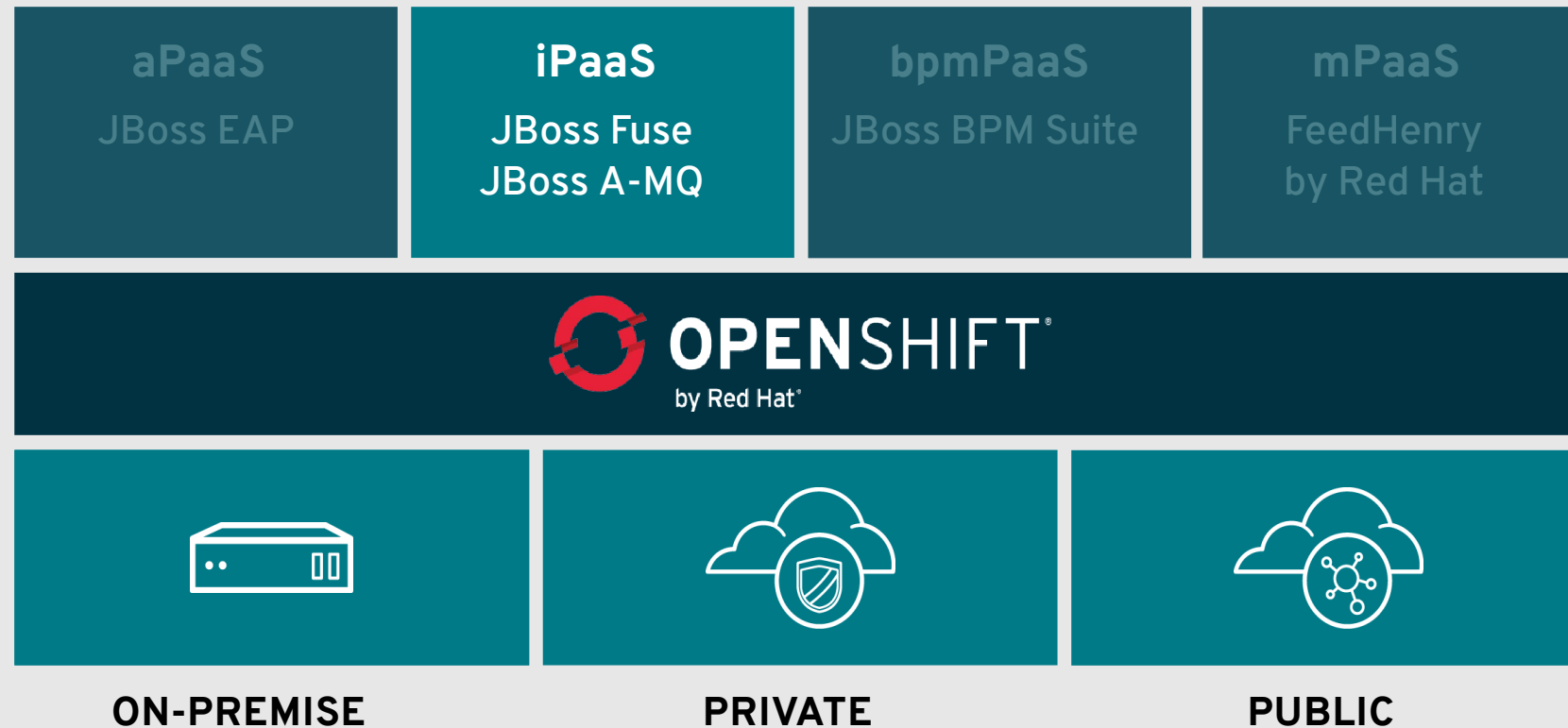
**DATA VIRTUALIZATION**  
Connect Sources,  
Compose Data,  
Consume

**RED HAT® JBOSS®  
DATA VIRTUALIZATION**

# XPAAS SOLUTIONS

## JBOSS xPaaS SERVICE: LIGHTWEIGHT INTEGRATION IN THE CLOUD

- Integration and messaging services in the cloud
- Based on the foundation of award-winning\* OpenShift Enterprise by Red Hat



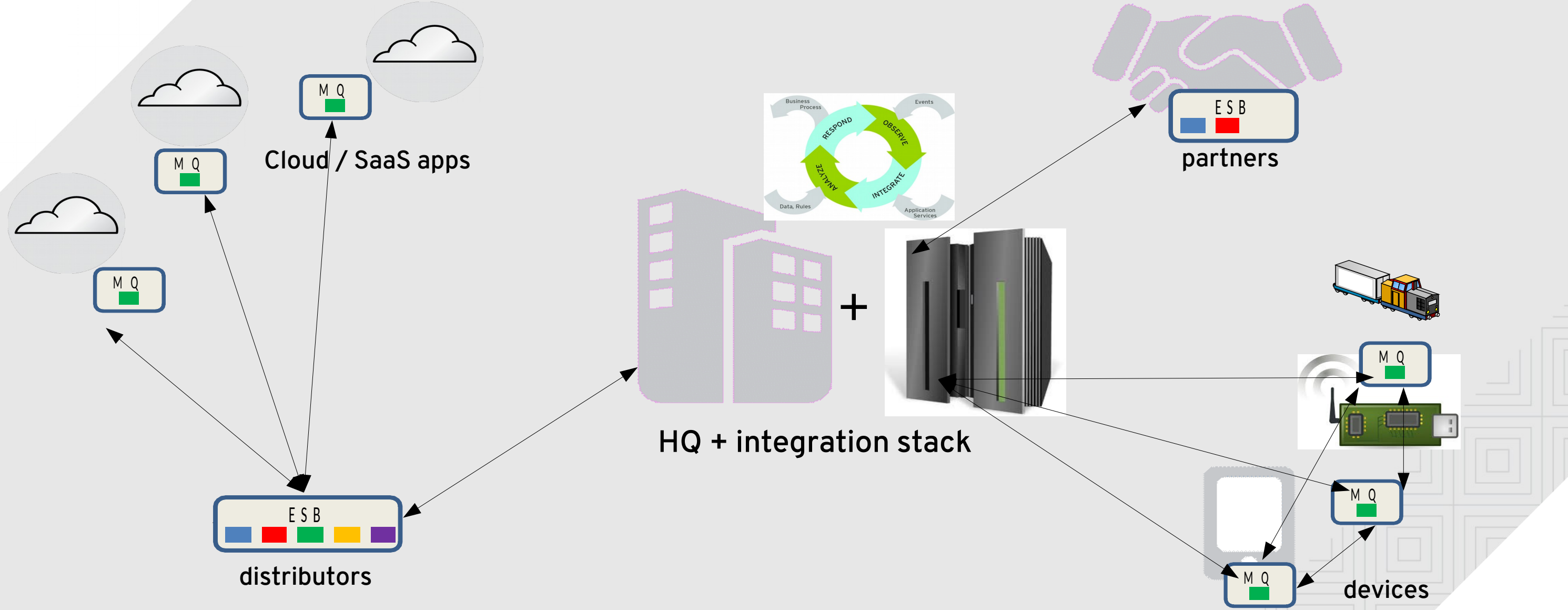
[redhat.com/en/technologies/cloud-computing/openshift](https://redhat.com/en/technologies/cloud-computing/openshift)



# JBOSS FUSE JBOSS FUSE SERVICE WORKS

# JBOSS FUSE

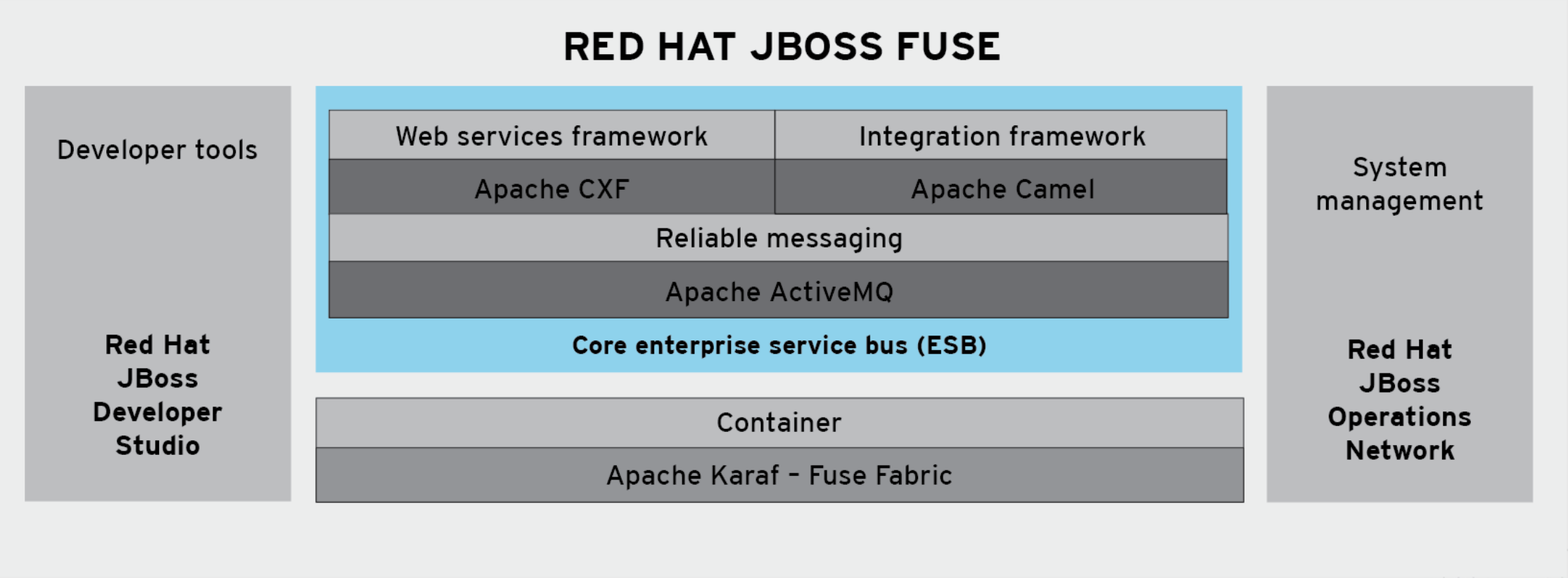
INTEGRATE EVERYTHING, EVERYWHERE





# JBOSS FUSE

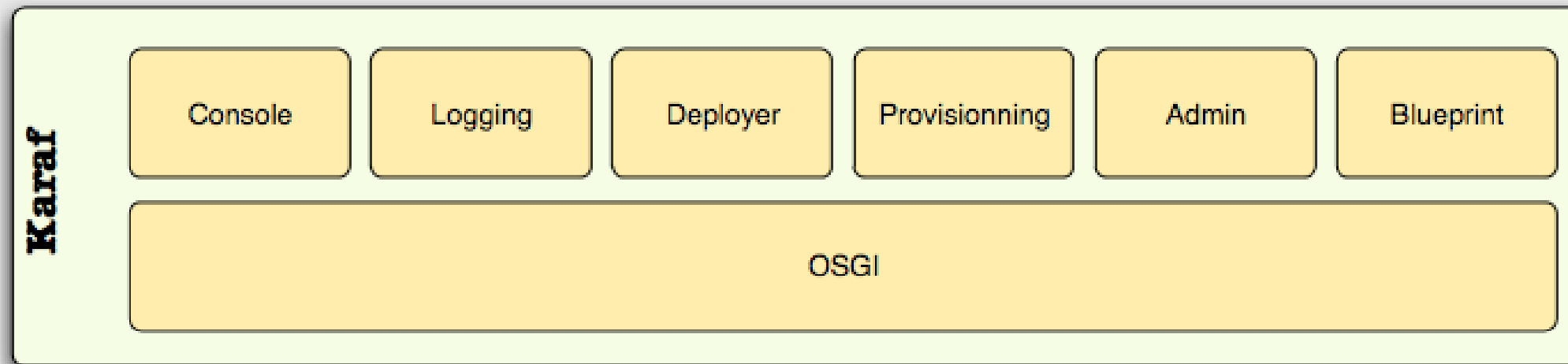
Lightweight integration platform that enables  
**integrate everything, everywhere**



JB0011-S

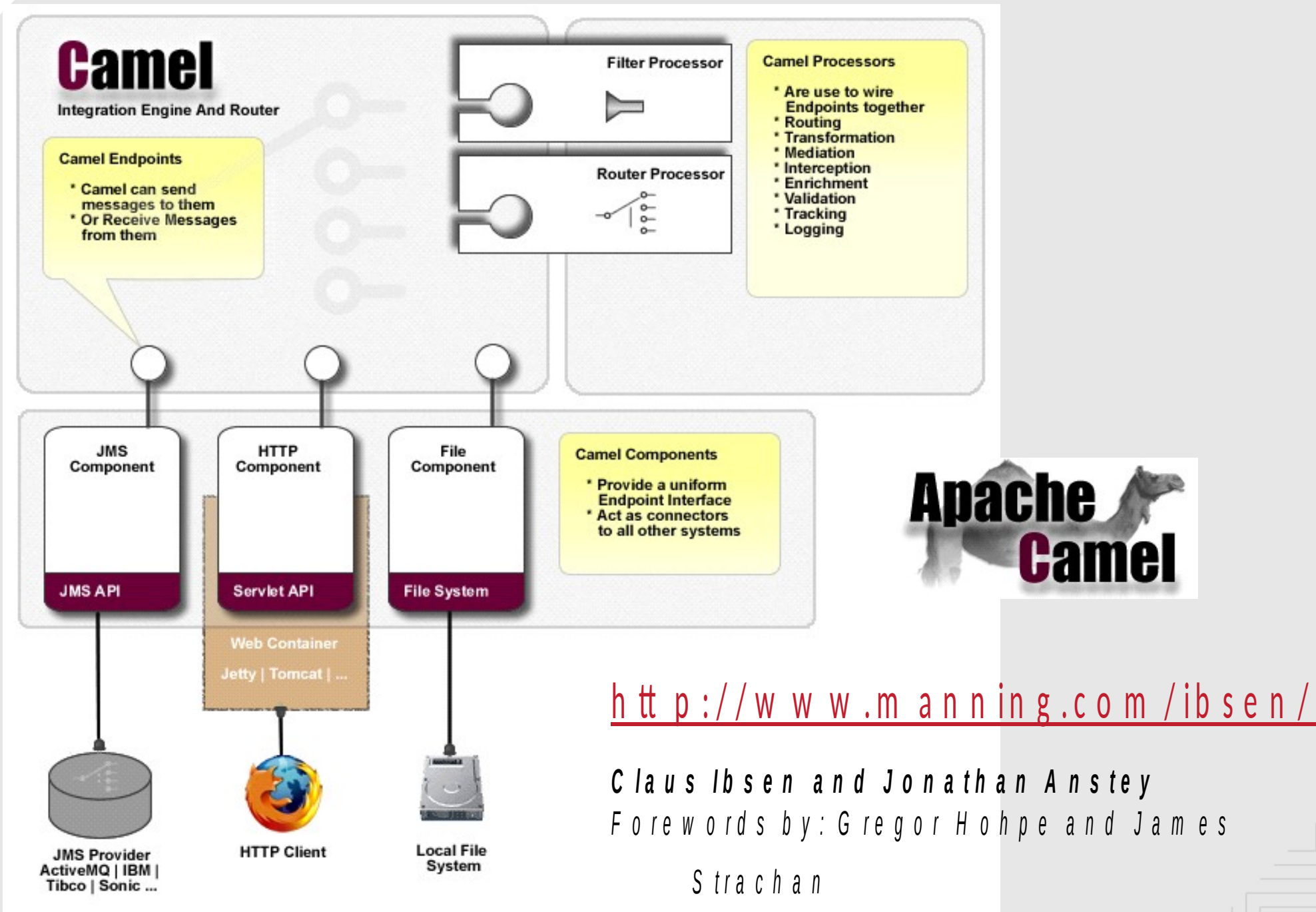
# JBOSS FUSE - APACHE KARAF/OSGi

Apache Karaf is a small OSGi based runtime which provides a lightweight container onto which various components and applications can be deployed



Hot deployment, Dynamic configuration, Logging System, Provisioning, Native OS, integration, Extensible Shell console, Remote access, Security framework based on JAAS, Instance Management

# JBOSS FUSE - APACHE CAMEL ENTERPRISE INTEGRATION PATTERN



# JBOSS FUSE - APACHE CAMEL

## 80+ Endpoint Components

activemq	cxfrs	flatpack	jasypt
activemq-journal	cxfrs	freemarker	javaspace
amqp	dataset	ftp/ftps/sftp	jbi
atom	db4o	gae	jcr
bean	direct	hdfs	jdbc
bean validation	ejb	hibernate	jetty
browse	esper	hl7	jms
cache	event	http	jmx
cometd	exec	ibatis	jpa
crypto	file	irc	jt/400

# JBOSS FUSE - APACHE CAMEL

19+ Data Formats

bindy	protobuf
castor	serialization
csv	soap
crypto	syslog
dozer	tidy markup
flatpack	xml beans
gzip	xml security
hl7	xstream
jaxb	zip
json	

# JBOSS FUSE - APACHE CXF

- Apache CXF is an open source services framework.
- CXF helps you build and develop services using frontend programming APIs, like JAX-WS and JAX-RS.
- These services can speak a variety of protocols such as SOAP, XML/HTTP, RESTful HTTP, or CORBA and work over a variety of transports such as HTTP, JMS or JBI



# JBOSS FUSE - APACHE CXF

## JSR Support

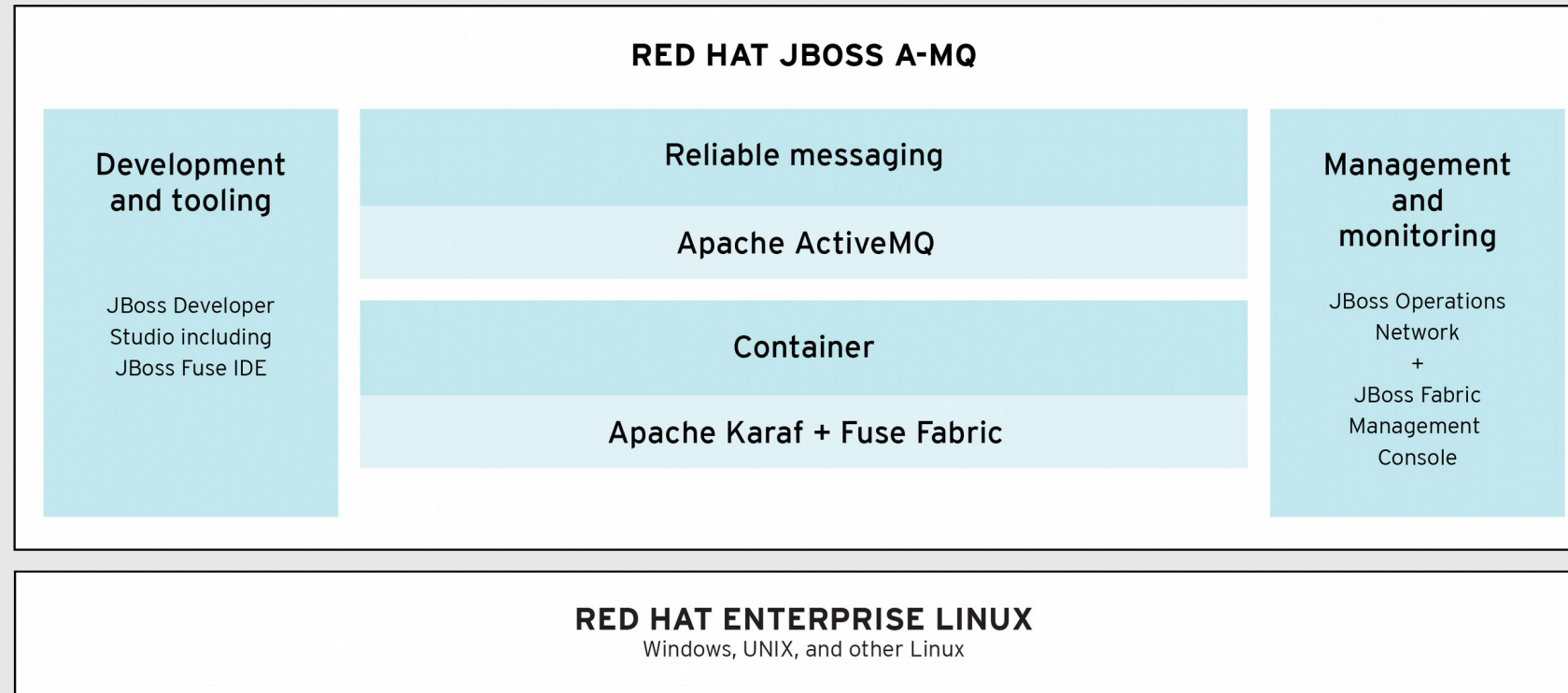
- JAX-WS - Java API for XML-Based Web Services (JAX-WS) 2.0 - JSR-224
- Web Services Metadata for the Java Platform - JSR-181
- JAX-RS - The Java API for RESTful Web Services - JSR-311
- SAAJ - SOAP with Attachments API for Java (SAAJ) - JSR-67

## WS-\* and related Specifications Support

- Basic support: WS-I Basic Profile 1.1
- Quality of Service: WS-Reliable Messaging
- Metadata: WS-Policy, WSDL 1.1 - Web Service Definition Language
- Communication Security: WS-Security, WS-SecurityPolicy, WS-SecureConversation, WS-Trust (partial support)
- Messaging Support: WS-Addressing, SOAP 1.1, SOAP 1.2, Message Transmission Optimization Mechanism (MTOM)

# JBOSS FUSE - APACHE ACTIVEMQ

## A lightweight, high performance messaging platform



Enables real-time **integration everywhere**

JB0009

- ✓ Full support for AMQP 1.0
- ✓ Unified management console which leverages Fuse Fabric
- ✓ Multi-protocol support (MQTT, AMQP) enables Internet-of-things (IOT)
- ✓ Improved High Availability
- ✓ Messaging in the Cloud

# JBOSS FUSE - BUILTIN COMPONENTS and PROPERTIES

The screenshot displays the JBoss Fuse IDE interface. On the left, a 'Palette' window lists various built-in components such as ActiveMQ, AMQ Broker, Atom, Bean, Control Bus, CXF, CXF-RS, Direct, Direct VM, EJB, File, FTP, FTPS, Generic, IMAP, IMAPS, and Infinispan. A 'marshal' component is placed on the canvas. A 'Properties' window is open, showing the 'Advanced Properties - file:datafile' dialog. The 'Consumer' tab is selected, displaying configuration options like 'Ant Exclude', 'Ant Include', 'Backoff Error Threshold', 'Backoff Idle Threshold', 'Backoff Multiplier', 'Delay', 'Delete', 'Directory Must Exist', 'Eager Max Messages Per Poll' (checked), 'Exclude', 'Exclusive Read Lock Strategy', 'Filter', 'Greedy', and 'Idempotent'. Three callout boxes provide additional context: one points to the 'marshal' component, another points to the 'Consumer' tab, and a third points to the 'Eager Max Messages Per Poll' checkbox.

Built-in Camel component  
Easy drag and drop

Consumer/Procedure  
Provides consumer and producer configuration

Built-in Properties  
Help on configuration settings.

# JBOSS FUSE - DEBUGGING and TRACING

Displays the stack frame for the suspended threads for each target you are debugging.

Display camel outlines

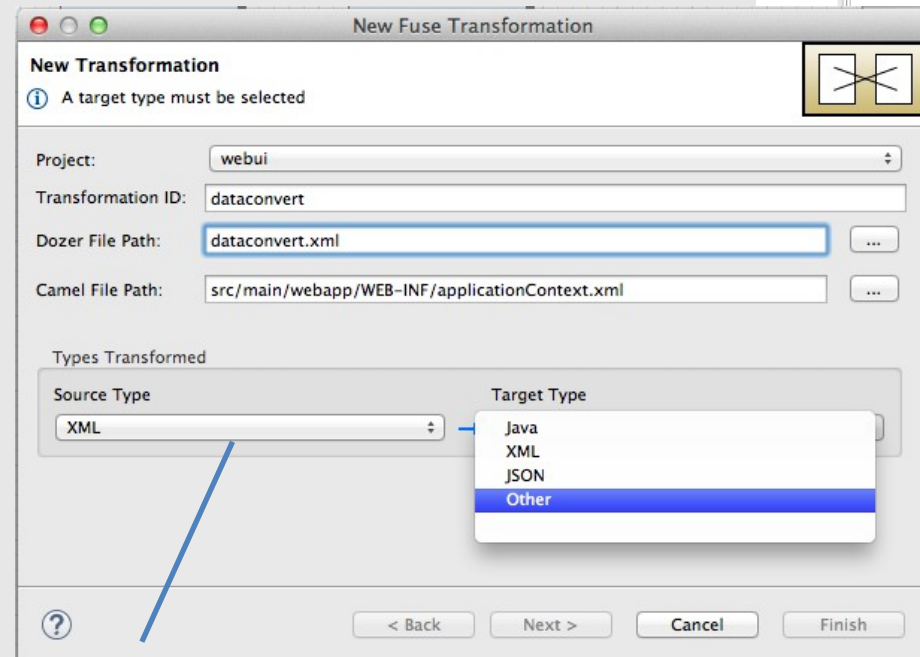
Entire Camel route diagram and show what current section is

The screenshot shows the JBoss Fuse IDE interface. At the top, there's a 'Variables' and 'Breakpoints' panel. Below it is a 'Thread' list showing various daemon threads and the main thread. The central part of the screen displays a Camel route diagram with components like 'getSchoolNum', 'bean1', 'ref:fileToHouse', 'log', and 'log1'. To the right, there's an 'Outline' panel showing the route structure. At the bottom, a 'Console' panel shows log output from Dozer and Camel. A 'Message' panel at the bottom right shows the XML body of a Camel message.

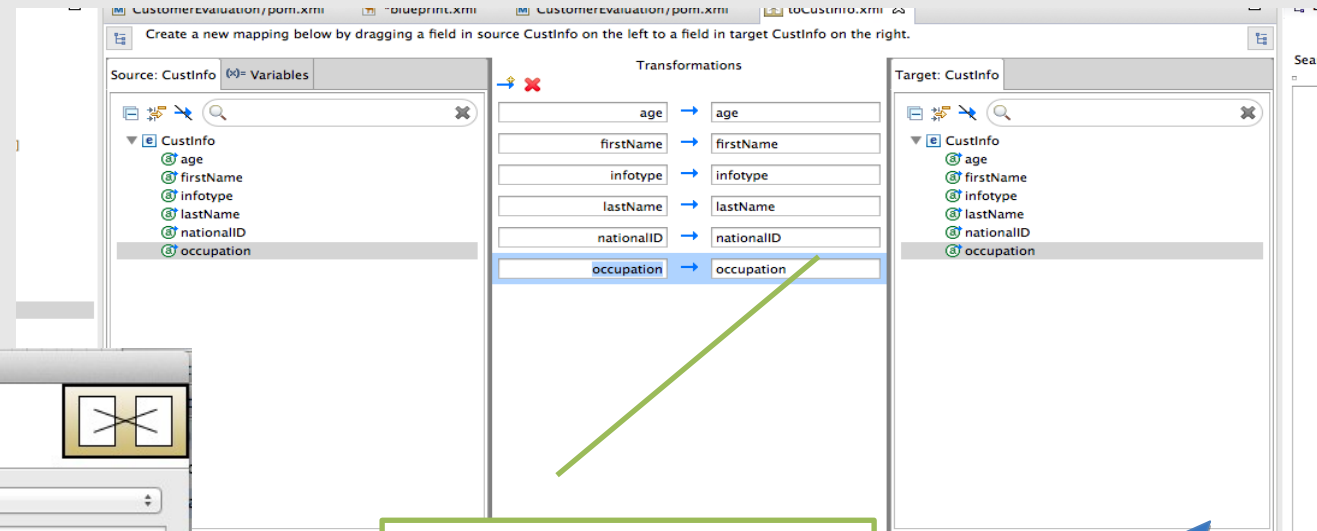
Log

Header and body of Camel message

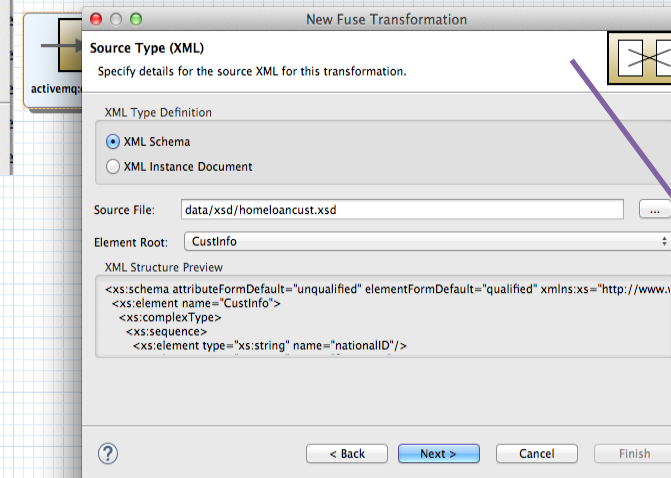
# JBOSS FUSE - VISUAL DATA MAPPER



Mapping between Java, XML, JSON and open for customization



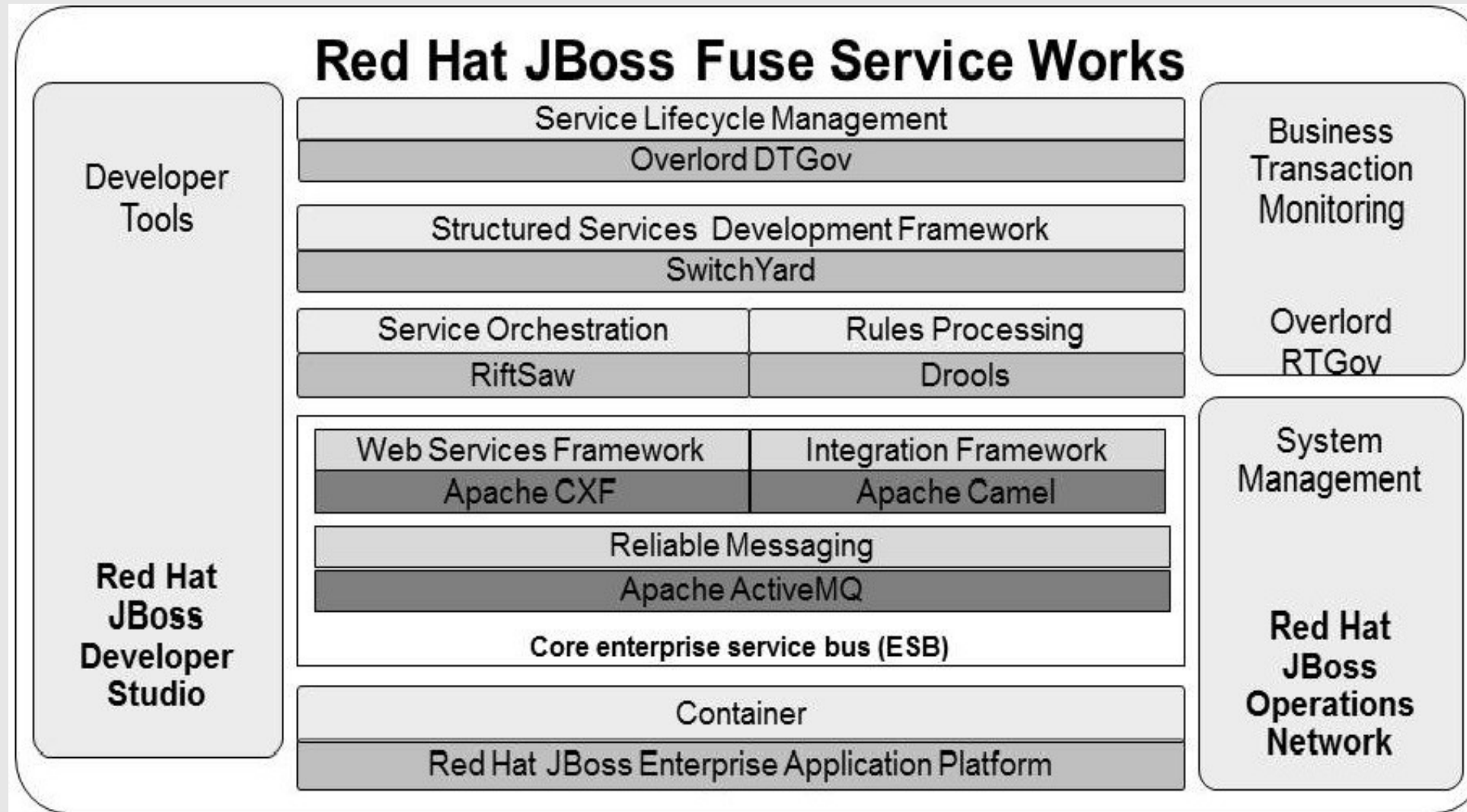
Dragging fields from the source model to the target model



Generate Java base from XML and JSON schema and instance



# JBOSS FUSE SERVICE WORKS



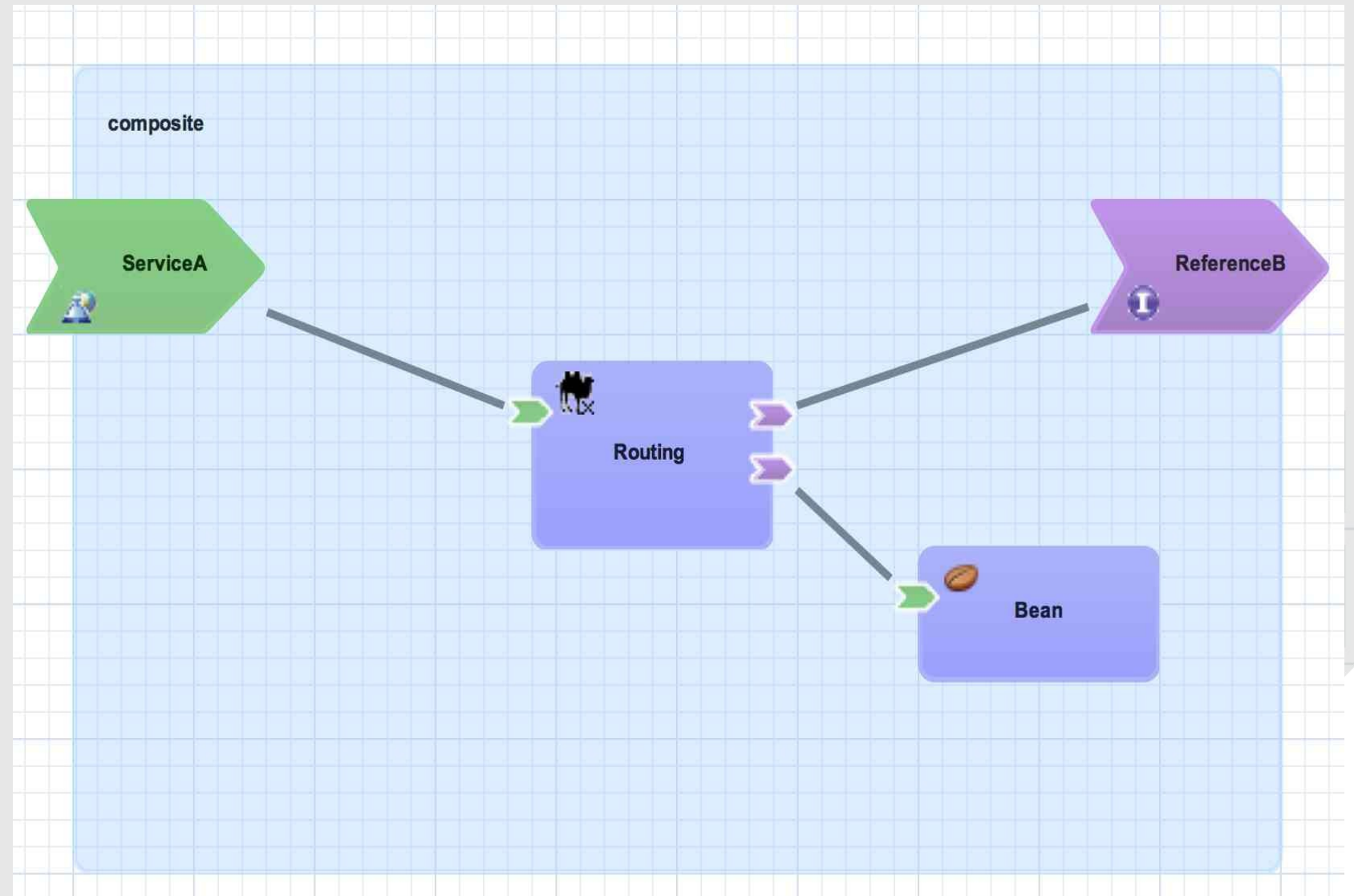
Enables organizations to **Simplify integration** and focus on business innovation



# JBOSS FUSE SERVICE WORKS - SWITCHYARD

## Structured Development with SY

- ✓ Lightweight, SCA-based, structured service development framework
- ✓ Design, code, test at higher service abstraction
- ✓ Store and reuse business services - shared repository
- ✓ Easily call BPMN based BPM processes
- ✓ Visual Tooling: Model is the application

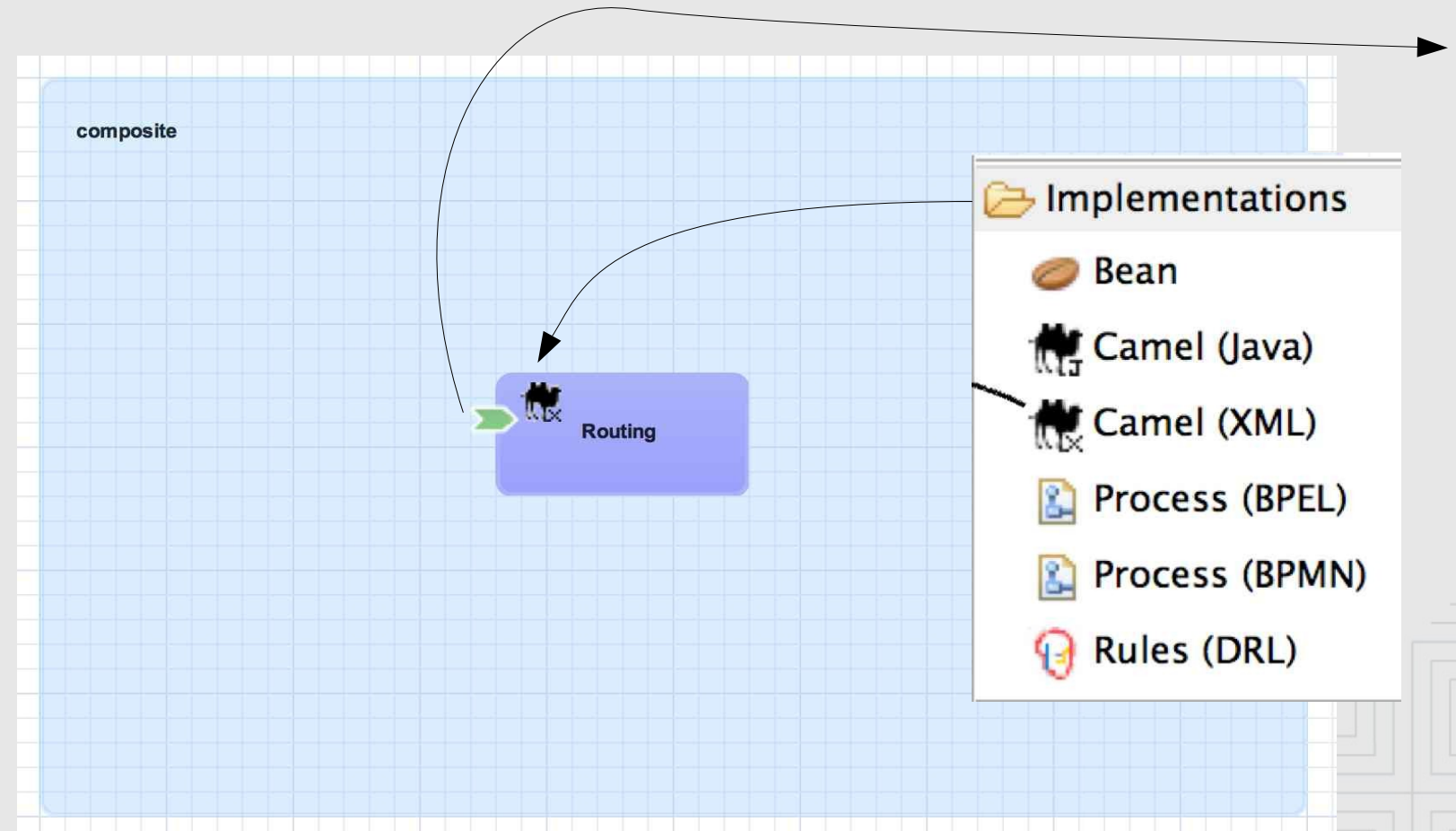


# JBOSS FUSE SERVICE WORKS - SWITCHYARD

## Structured Development with SY

### Implementations:

- ✓ Java (POJO)
- ✓ Camel (Java DSL, XML DSL)
- ✓ BPEL based service orchestration
- ✓ BPMN based service orchestration
- ✓ Rules based content-based routing



**Semiconductor Technology Industry**  
**9,867 employees worldwide (Dec 2014)**  
**HQ: Sunnyvale, CA**

## Challenges:

- Synchronizing data throughout the global enterprise
- Delivering critical information
- Relying on batch processing to push data
- Bottlenecks causing 24-48 hrs. delay
- Manual remediation (additional delay)

## Solution:

- **Just-in-time** delivery of critical data across AMD worldwide
- **Standardized** and **centralized** data for enforcing **economies of scale**
- Reduced complexity, minimizing bottlenecks and **automating** remediation

*“Once we've established a data set, we can publish it to the whole company, and anyone who needs access to that data can subscribe to it. There's a cost benefit to that, but also a simplification benefit. Because we're a lean IT organization, we need good tools like this to help enforce the economies of scale we require.”*

Joel Holder,  
Principal Software Architect, AMD



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