

SOA Trends Events, Web2.0 and Cloud in the SOA mix

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PUNE, INDIA

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The SOA Promise

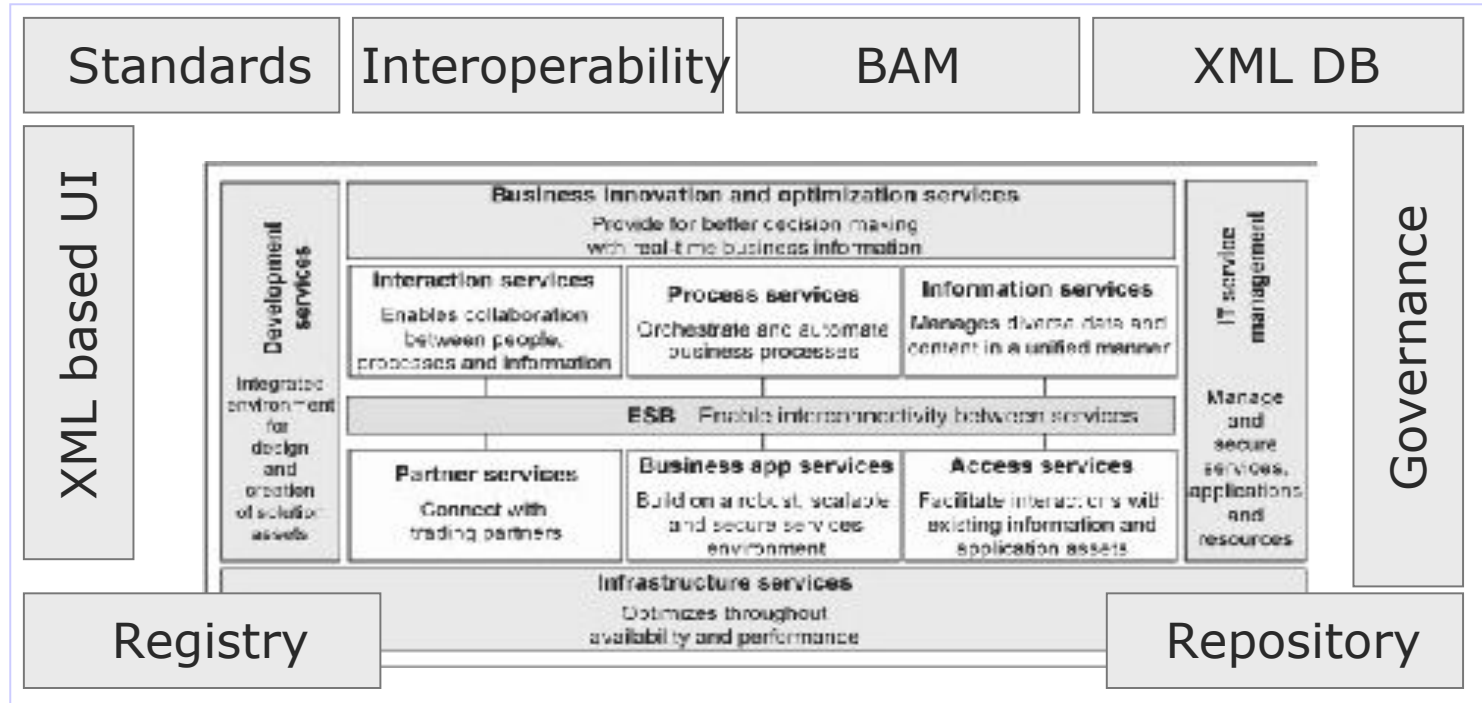
Agility: Respond faster to changing business needs; create and modify business processes

Re-use: Make services broadly available, including across the Internet “cloud”

Integration: Eliminate boundaries between business functions and integrate value chains



And, the SOA “enablers”.. are complex!



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SOA gets into serious adoption phase, solution models beyond just the integration patterns come into play.

Paradigms are shifting to now use SOA concepts in ground-up solution design-beyond just integration.

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More demands from Real-world SOA

Reality intrudes along multiple dimensions:

Distribution

SOA will span systems running on many computers, managed by different IT groups



Real-world SOA

Heterogeneity

SOA will incorporate many platforms, applications and data models

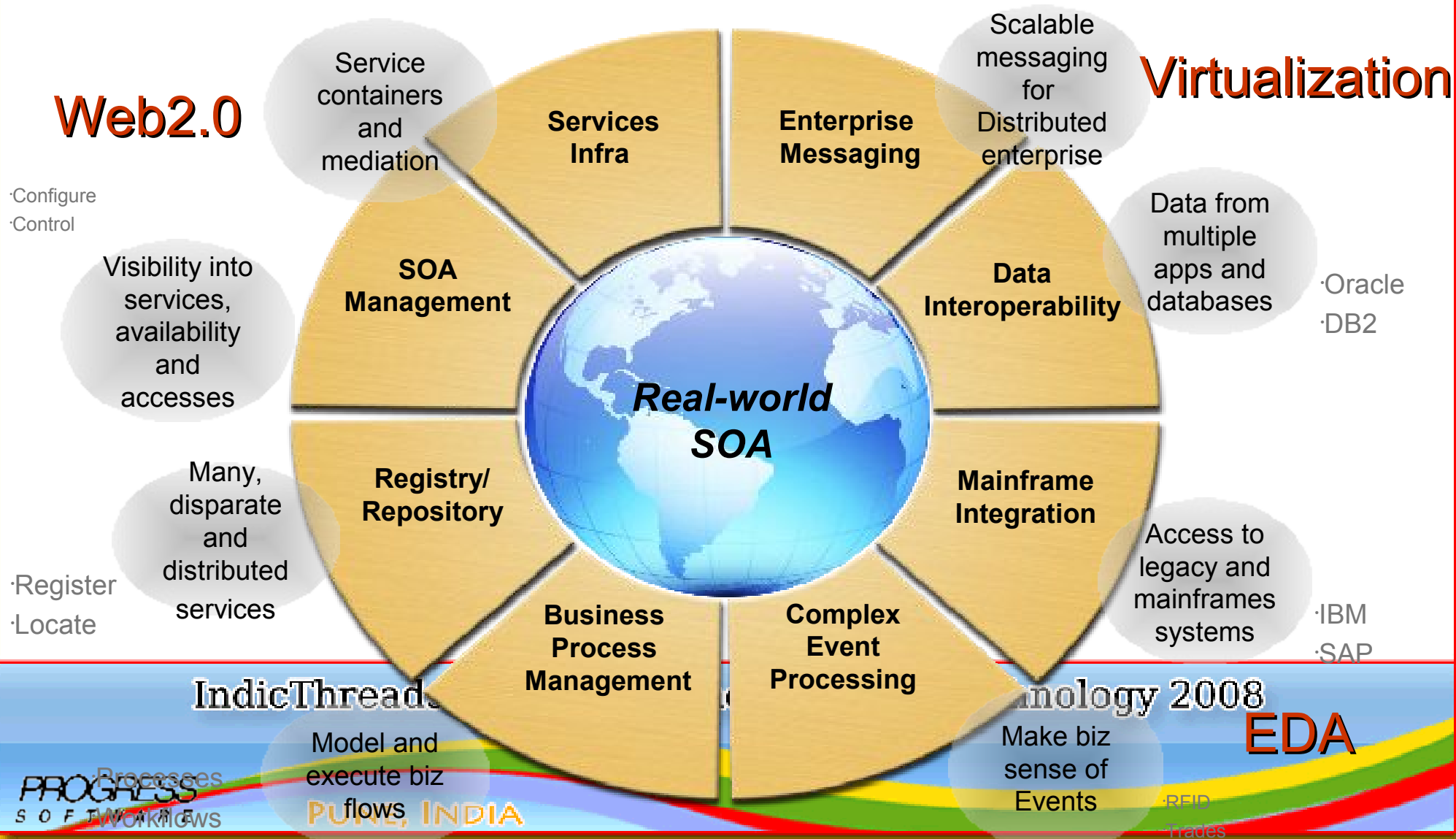
Quality of Service

SOA must be fast, reliable, scalable and secure

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The Challenges of the Real World



As the paradigms shift..

Three key drivers are emerging

One key element is the Web2.0 approach to user interactions and control in what the user sees in the enterprise and how

The second is the evolution of optimized Event handling infrastructure,

Third, Virtualization and the resulting Cloud

In this session we will discuss some of these trends in Event Infrastructure and Web2.0 space in the SOA context.

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Outline

In this session we will discuss some of the real-world trends in the SOA space.

The outline:

- Events and ESP
- Event Driven SOA
- Further distribution thru virtualization
 - Enter SaaS
 - PaaS adding a new dimension
 - Virtualization- abstracting the hardware and operating layer
- Where do they all meet?
- The resulting computing cloud
 - SOA in the cloud
- User into the mix- Web 2.0 style
- The synergies, Emerging enterprise architecture models

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“Events” in the Architecture

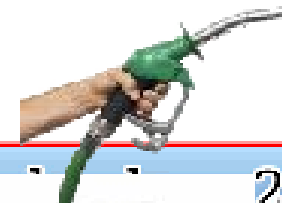
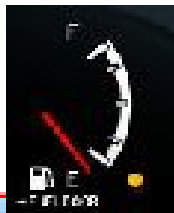
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The real world is both event-driven & service-oriented

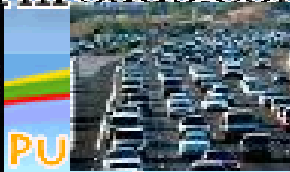
Not just SOA!

Events

Services



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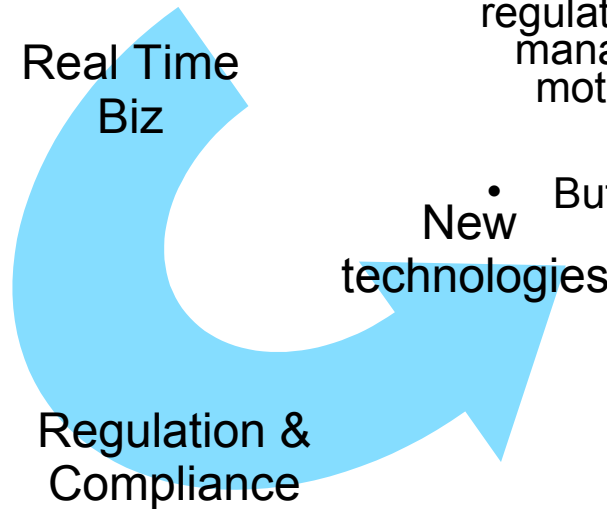


PROGRAM
SOFTWARE

PU

Ever increasing needs for speed

- The world is moving to real-time –
 - Real-time manufacturing
 - Real-time retail, and
 - Real-time operational infrastructure.
- Building Innovation and Efficiencies



- So real-time business, real-time regulation, and real-time risk management combine to motivate new real-time technologies.

- But what kind of new technology?

eBay; Dell;

- The increasing speed of business has led to an associated need to increase the speed of regulation.
- Business leaders have begun to issue a tidal wave of mandates and regulations to deal with the increasing speed of business:

Need to “react” faster

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Case: Credit-card fraud detection

- Finding ESB Event Patterns Due to Causality & Temporal Conditions

ON first = **CHARGE**

```
int x = 1;
```

FOLLOWED-BY

```
CHARGE.ACCT = first.ACCT
```

```
x = x+1;
```

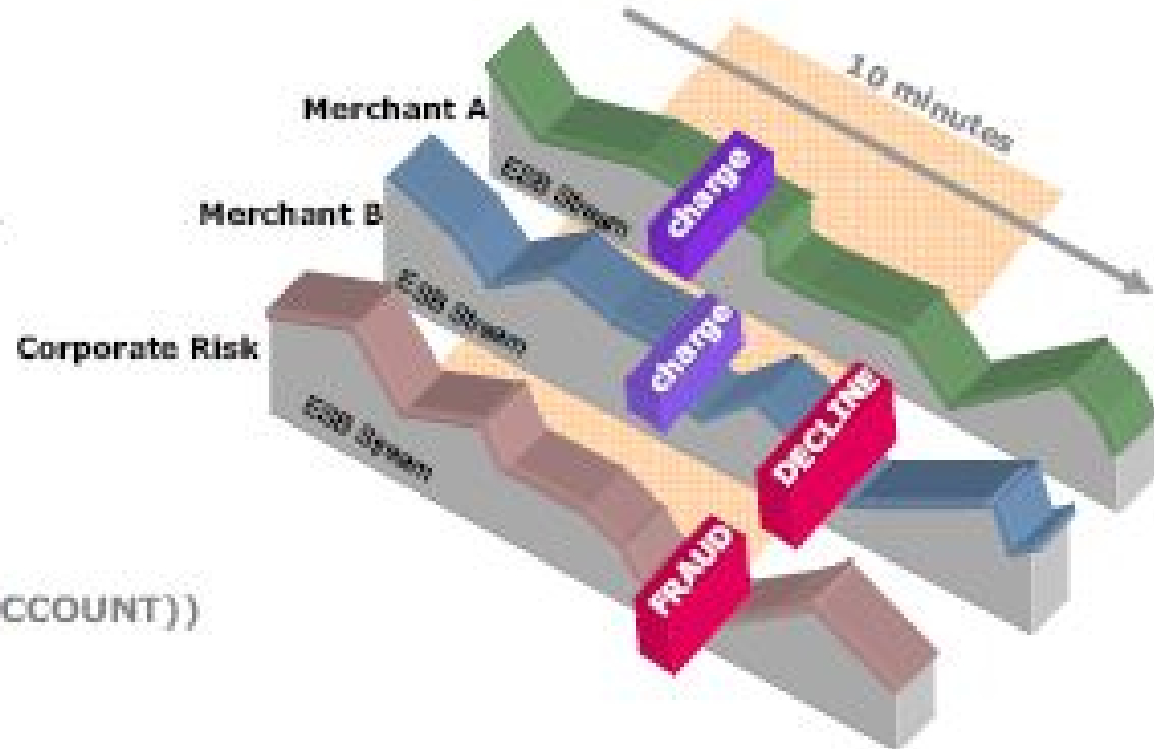
```
IF (x > max-charges)
```

WITHIN 10 minutes

ACTION

```
DECLINE CHARGE
```

```
ALERT (FRAUD (CHARGE.ACCOUNT))
```



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The enabling Technologies

- SOA forms the base
 - SOA is a technical architecture that allows software systems to interoperate dynamically.
- But an effective SOA alone does not satisfy the requirement for instant business insight.
- Business Activity Monitoring, or BAM, is a one element to business insight.
Leveraging SOA for access to information



**The
Technology
Need: Instant IT
Insight**

But where's the event data for BAM?

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Event infrastructure is the “link”

- Event infrastructure will provide necessary frameworks for event detection, handling and processing
- Event driven solutions will demand more accurate and fast data sources, event fabric and processing environments
- Solutions will need to truly harness the power of an ESB
- Providing a foundation from which to answer real-time biz questions
- Say:
 - "How many plasma screens do we have in stock, how many have been ordered, what is our rate of consumption, and how are we doing against our forecasted rates - right now?"
 - "Is bad weather forecast within 10 minutes of this flight's path? If so, re-route the plane, determine which passengers will be impacted by delays, rebook the passengers, update kiosks and gate agents at all locations, and update our real-time P&L."
 - "If transactions have occurred in the last 5 seconds against this credit card from different businesses in different physical locations, deny the most recent request and alert fraud detection of the account in question."
- An effective EDA needs a solid new form of computing – Event Stream computing.

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Further: Complex Event Processing

*Real-time response to fast-changing business conditions.
Detecting the “patterns” to recognize complex events.*

- **Heterogeneity:** Adapts to any event source
- **Distribution:** Correlates complex events from across the enterprise – anywhere in the SOA
- **QoS:** Reacts in real-time with ultra-low latency and scales to monitor tens of thousands of conditions

“We increased machine capacity by 7% and our operating production efficiency by 15%.”

- Dave Barna, CFO, Premier Manufacturing (Manuvis Customer)

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Events, BAM, CEP- All combined with SOA for ...

ED-SOA

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Define: Event Driven Architecture

EDA provides an architecture that enables the real-time intelligence that drives real-time trading, real-time supply chains – real-time business operations of any type.

ED-SOA, a case of EDA

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Event-Driven SOA

Who Benefits Most?

- Event-based Applications / BAM
 - Manufacturing and logistics
 - Algorithmic trading
 - Risk and compliance management
 - Airline operations
 - Emergency response
- Application Integration Optimized by Events
 - Agility through extreme loose coupling
 - Supports real-time processing
 - Better supports federation



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Event driven SOA: Solution components



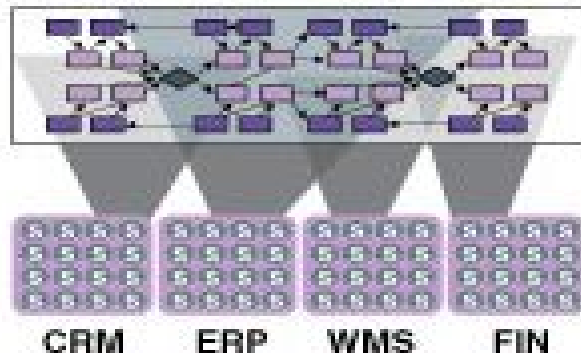
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SOA vs. Event-SOA (Case: Infor)

Event-driven service-oriented architecture SOA

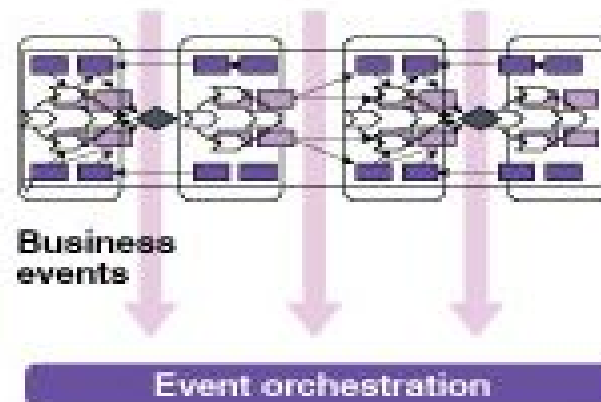
Traditional SOA

1. Single engine that solves everything
2. High complexity in modeling, customizing, and deploying the solution
3. Processes are not partitioned to fit the heterogeneous nature of IT



Infor event-driven SOA

1. Smaller and distributed (sub-)processes
2. Services for internal flows and roles
3. Business events drive orchestration across software component boundaries

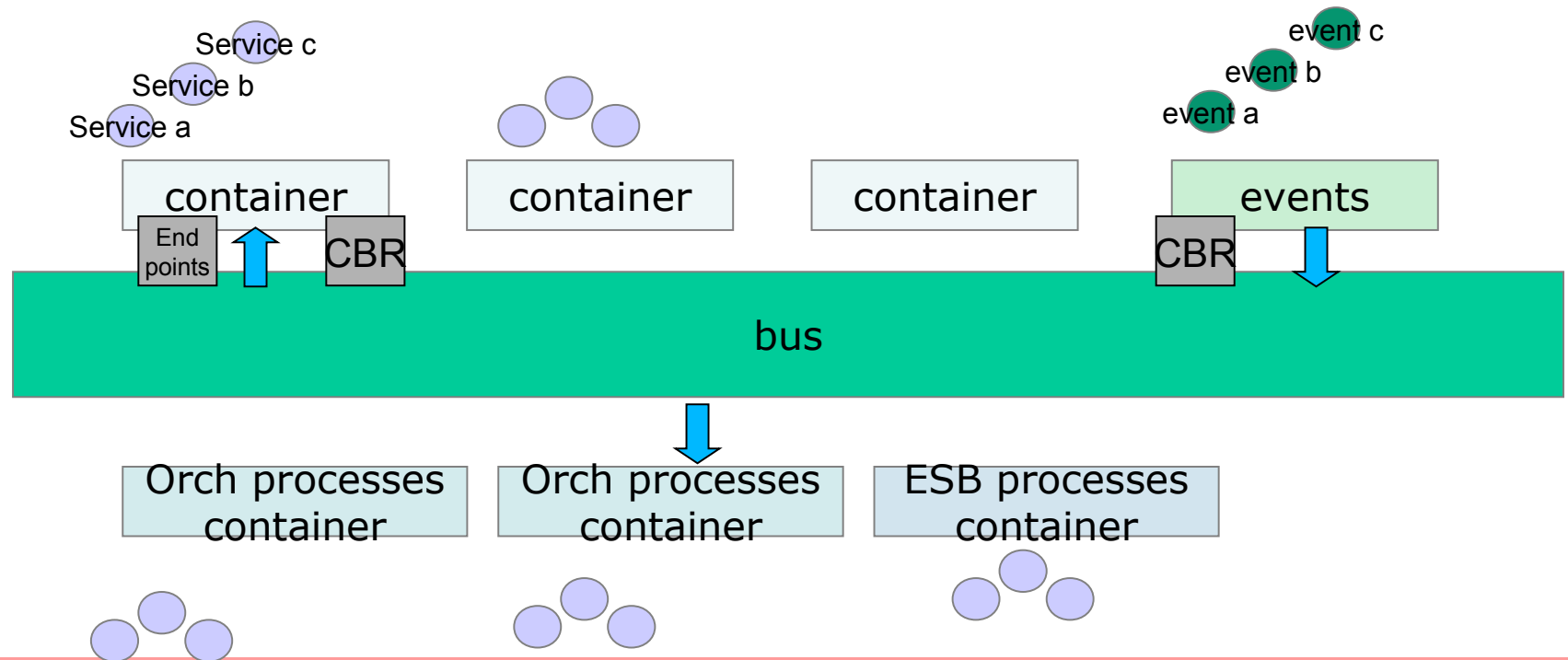


Source: Infor Global Solutions

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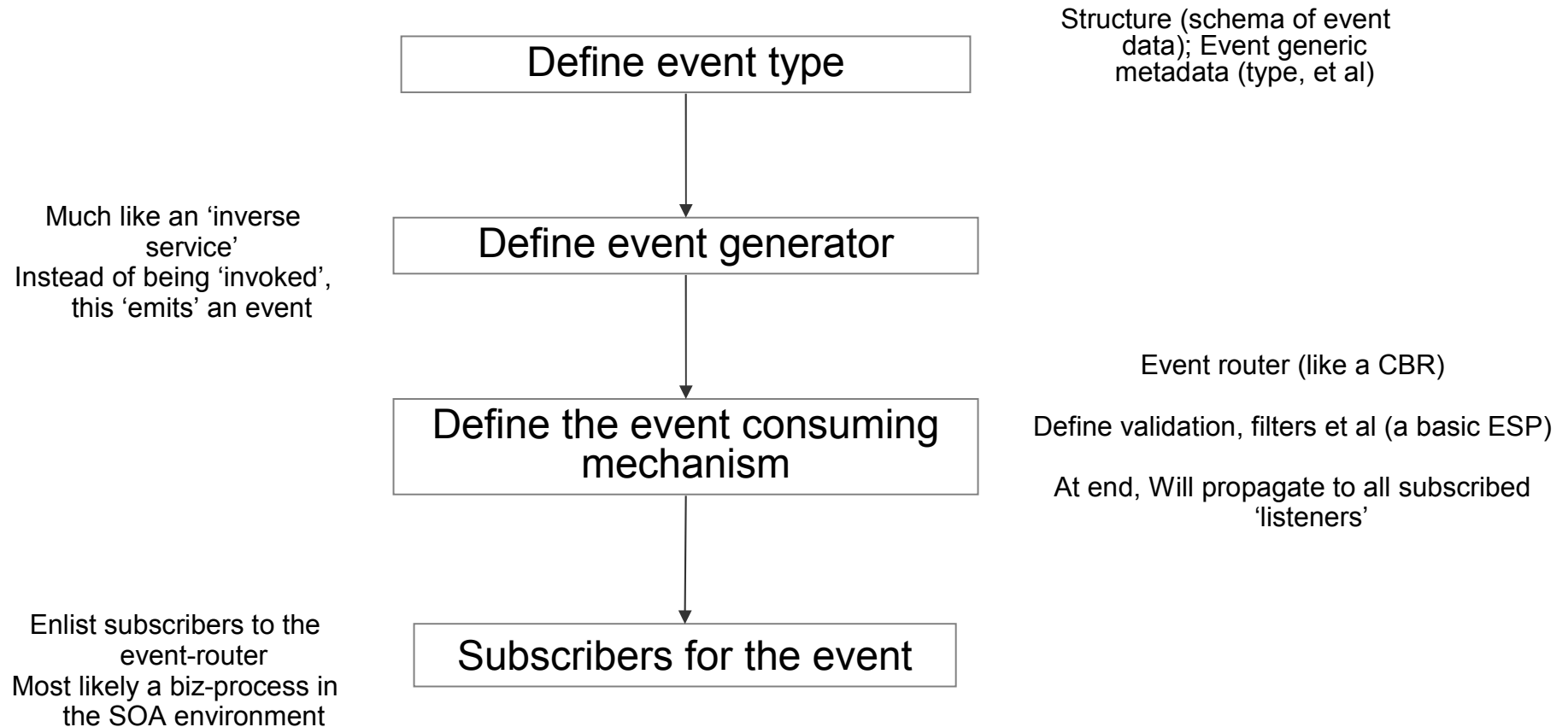
Events in the ESB bus

- Process emits events
- Events trigger processes



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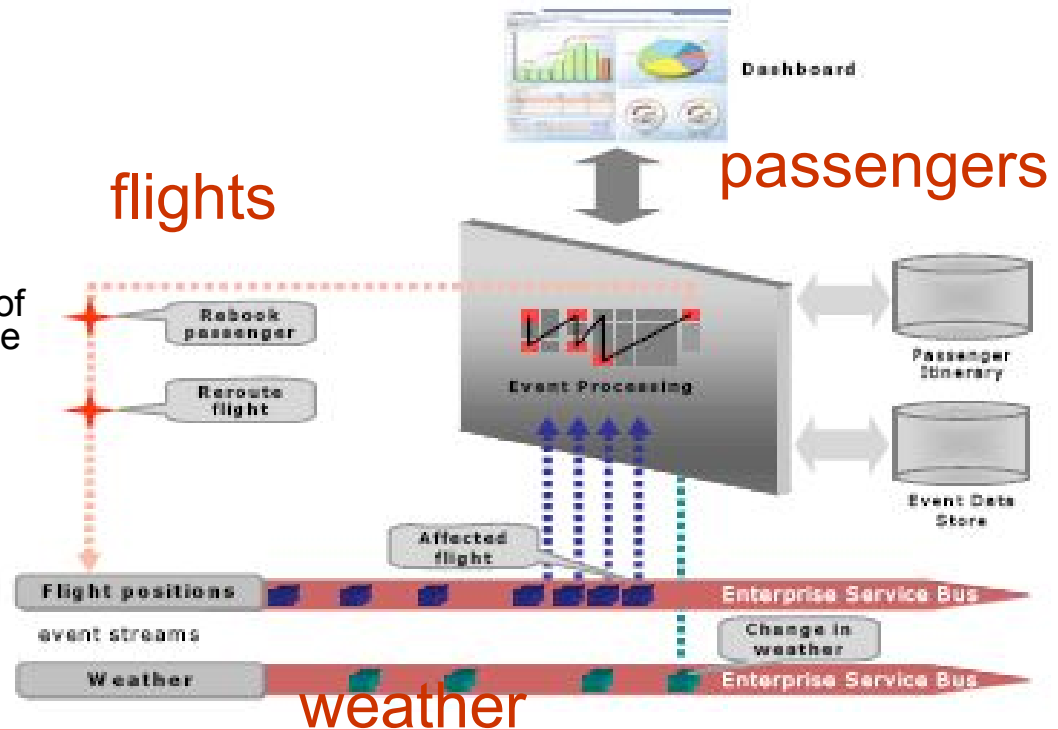
A typical Event-Services flow



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Consider this

- The Delta Nervous System monitors operational events, analyzes them, and makes operational decisions – all in real time.
- Tracks weather forecasts and flight positions
- Need to identify patterns among the events
 - Such as changes in the weather that might determine flights that need rerouting.
- When flights are rerouted, passengers are to be rebooked in real time
- Alert Delta flight operations personnel of the status of flights, and messages to kiosks in terminals and gate agents
- Keep the whole operational organization synchronized.



Need to bring the Event Infrastructure into the services mix here!

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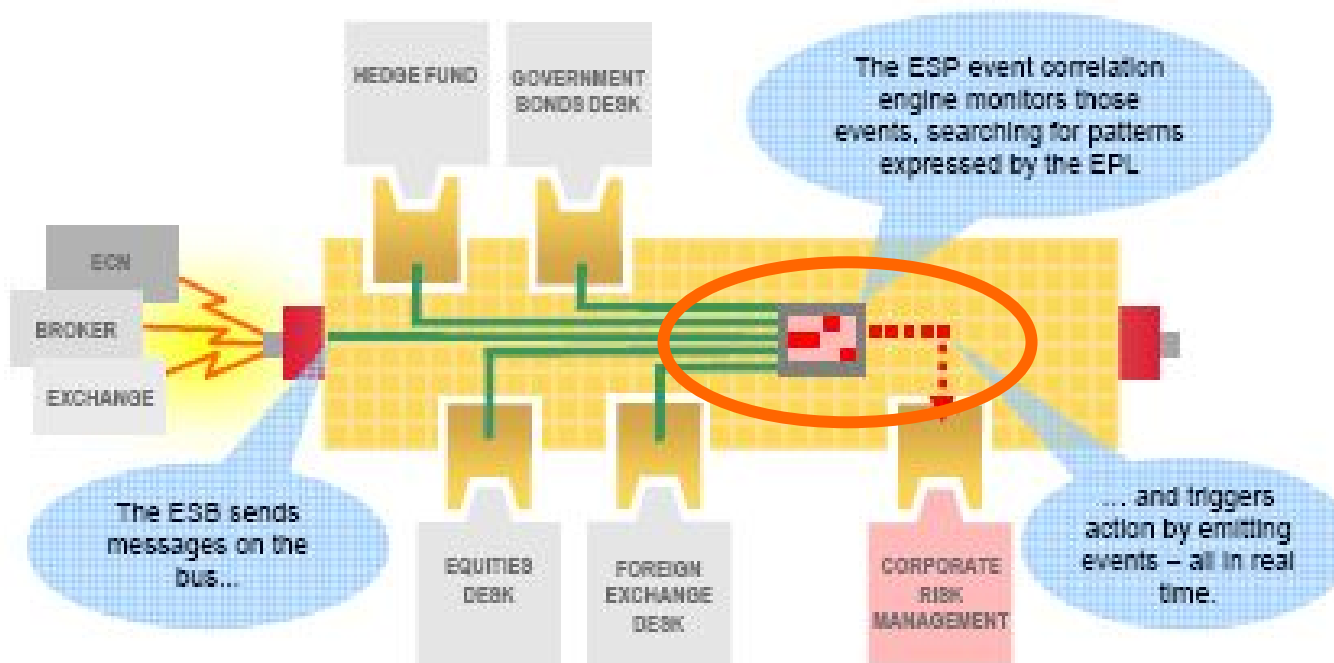
An ESB Provides the Backbone

The ESB provides a bus that enables a flexible, integrated fabric of services.

- Networking
- Communication backbone
- Mediation layer
- Service container management

Together enable a loosely coupled, service oriented architecture.

- ESB offers an integration backbone, and
- ESP provides the tools to monitor, analyze, and act on events on the ESB - in real time.



Event Fabric is tightly integrated

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Enter Virtualization

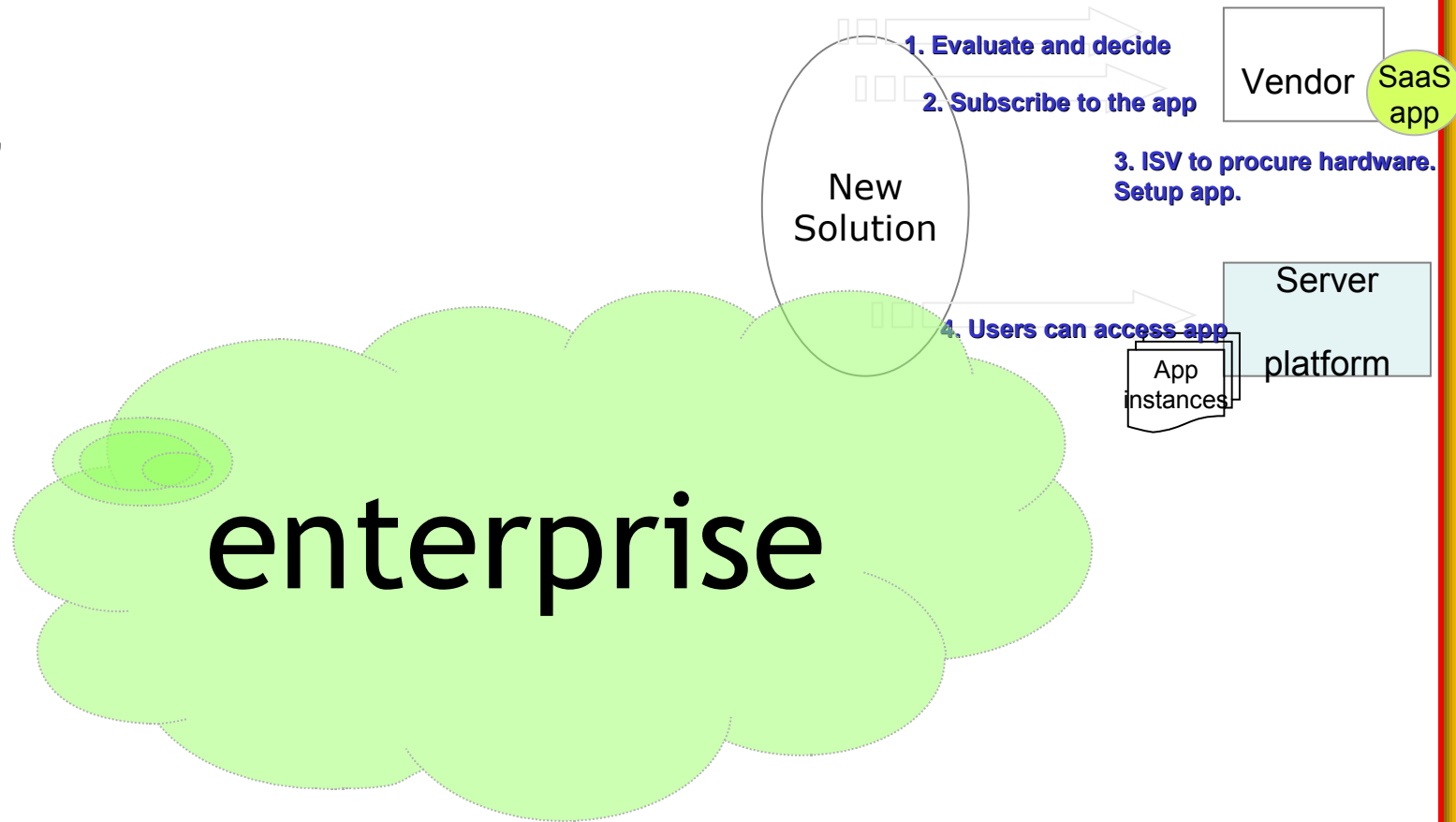
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SaaS- easy acquisition of new apps

Simplify 'acquiring'
new solutions..



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Multiple view of SaaS

- In SaaS, typically, a specific application or solution is offered in a managed model .
- With the client just signing up for the solution and accessing it over the web- all operational aspects taken care by the SaaS provider.

Solution developers

isv

Production team

- SaaS provider takes care of hosting and managing the production operations.



Management

- The enterprise will just need to sign up and the solution is available- in a traditional utility model, 'off the tap' .
- This lets the small enterprise focus on its core business and not have to deal with any aspect of the IT solution operations.

enterprise

end users

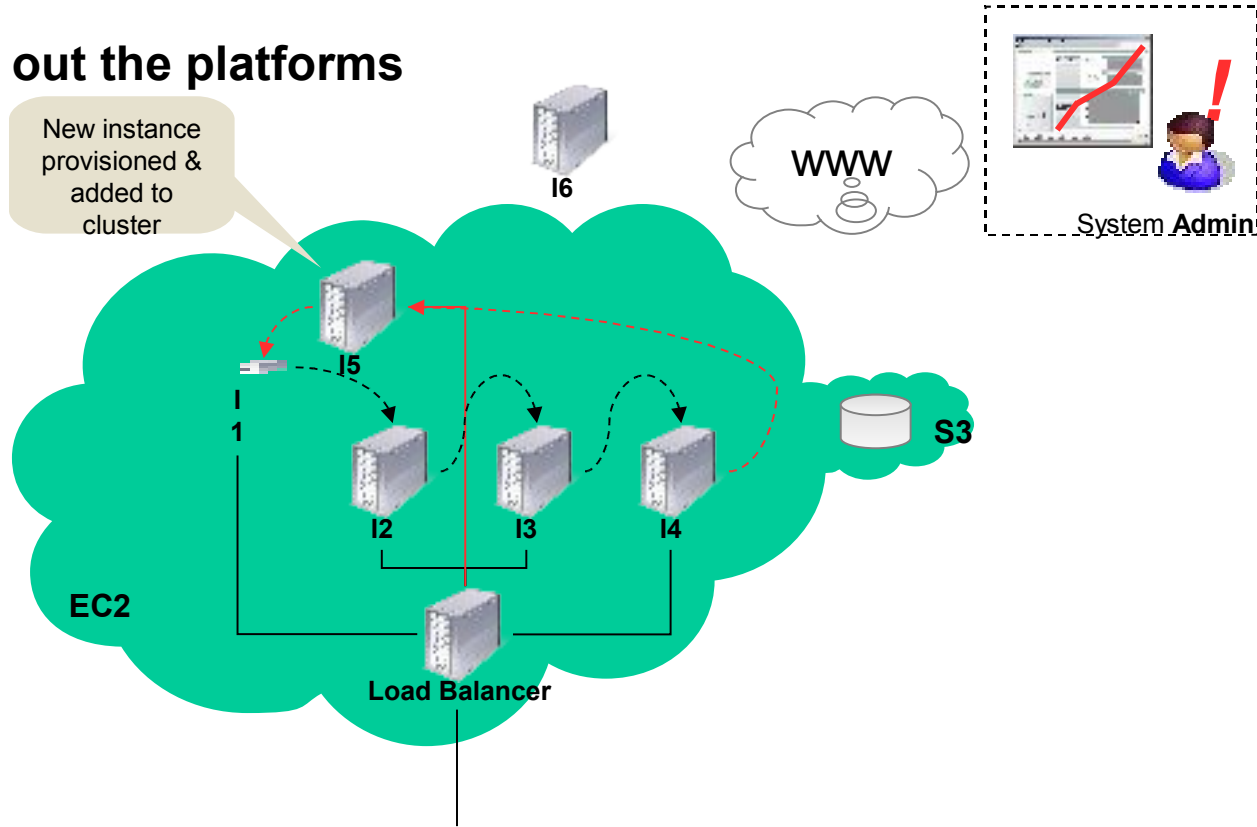
- Simply access the app from a browser.

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- The Software is either completely hosted or parts of the functionality hosted.

Virtualization- abstracting the env

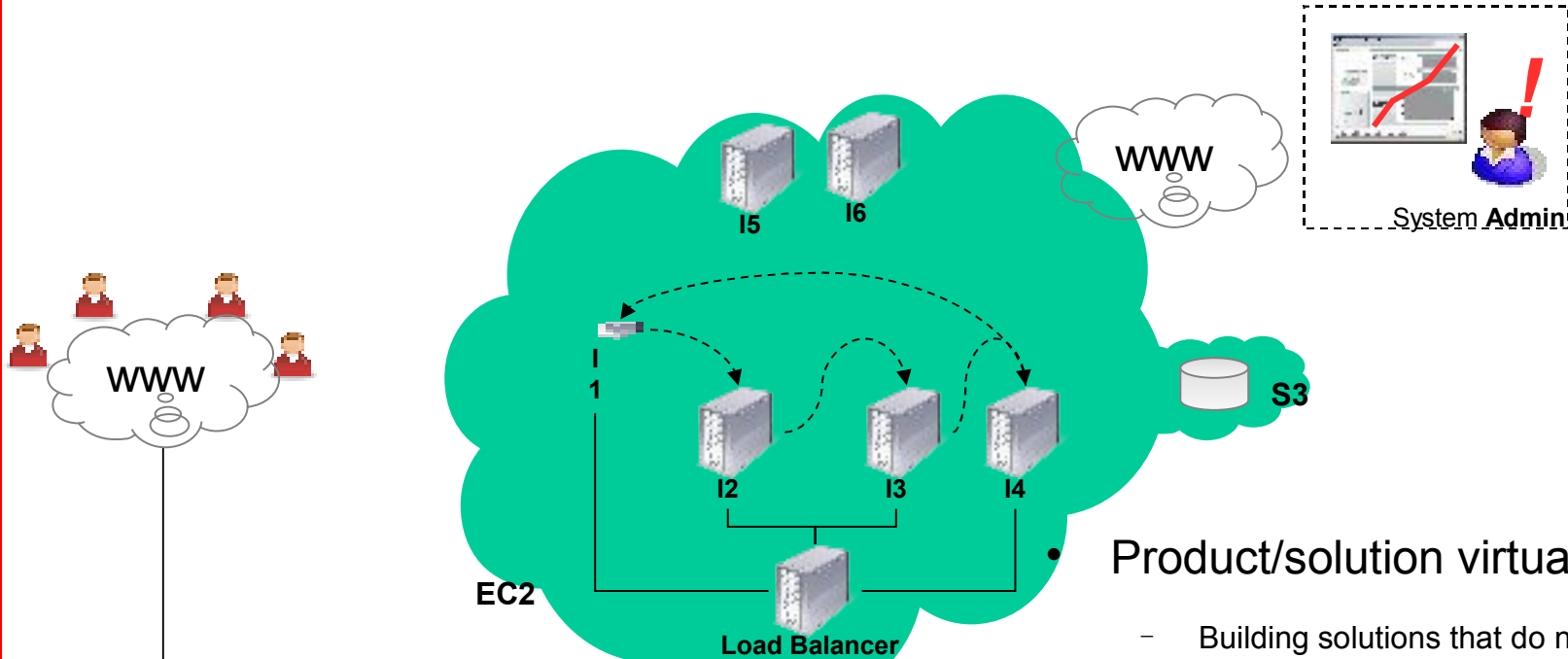
Abstracting out the platforms



Virtualization enables Elastic app server

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Even better: Server virtualization over the web



The computing 'cloud'

- Product/solution virtualization
 - Building solutions that do not have any assumptions on where and how it is run
 - On dedicated servers, or if for just a single end-client, or if multi-tenanted.
- Platform options available
 - Server virtualization software that enable creating dedicated and custom SaaS platforms
 - Or platforms such as Amazon EC2 that are ready and available for use in SaaS

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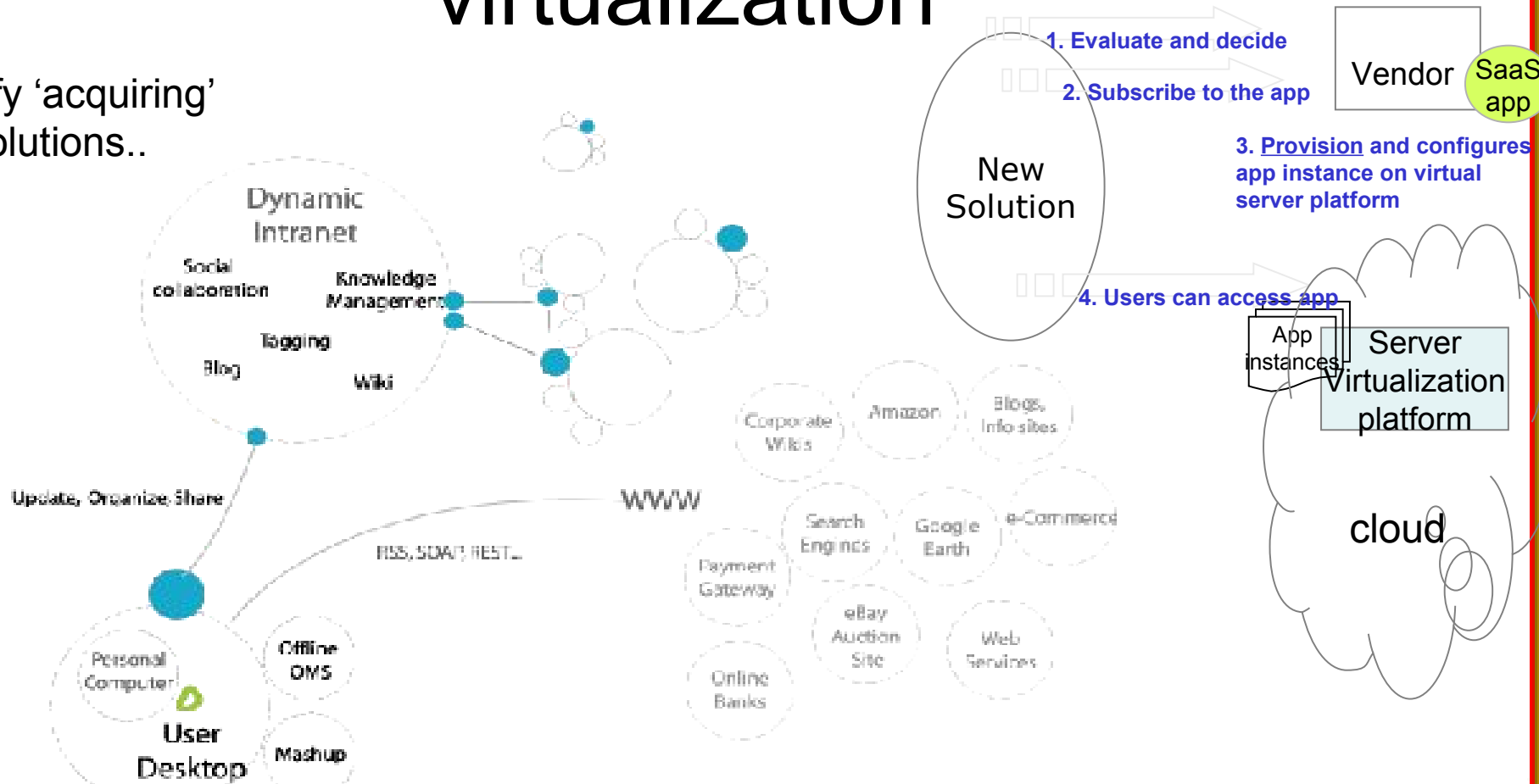
The cloud- built on Virtualization

- Cloud: computing env on the www/net
 - SaaS abstracts the application
 - Just access the solution as a service
 - Without having to worry about hardware, platforms, installation, configuration and administration
 - Virtualization abstracts the hardware and platform
 - The physical computing platform is abstracted out by multiple 'virtual' platforms- each giving the end user a virtual dedicated platform.
 - SaaS solutions could possibly run on virtualized platforms
- Virtualization platforms
 - The platform may be a virtual OS instance with the equivalent of a specified CPU, memory and network resources.
 - Transparent Access
 - How this resource is made available, from the underlying physical computing platform/machines, is left to the virtualization infrastructure and system software.
 - Standard abstractions
 - OS and application environment

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SaaS, further simplified with virtualization

Simplify 'acquiring' new solutions..



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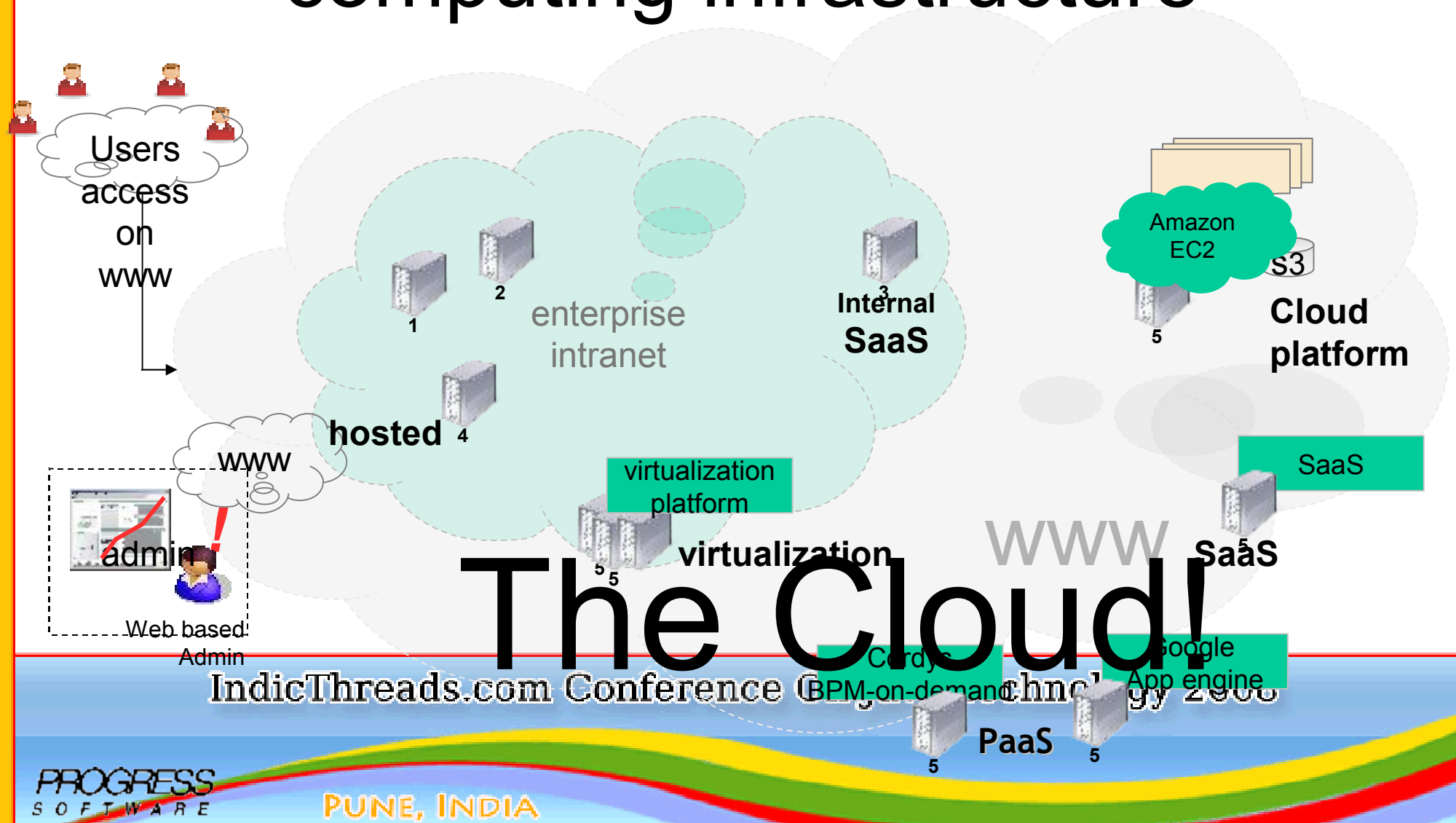
Can this be extended to SOA?

SOA “in” the cloud

Flip the view- can SOA services be in, and
as, a SaaS cloud

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The emerging enterprise computing infrastructure

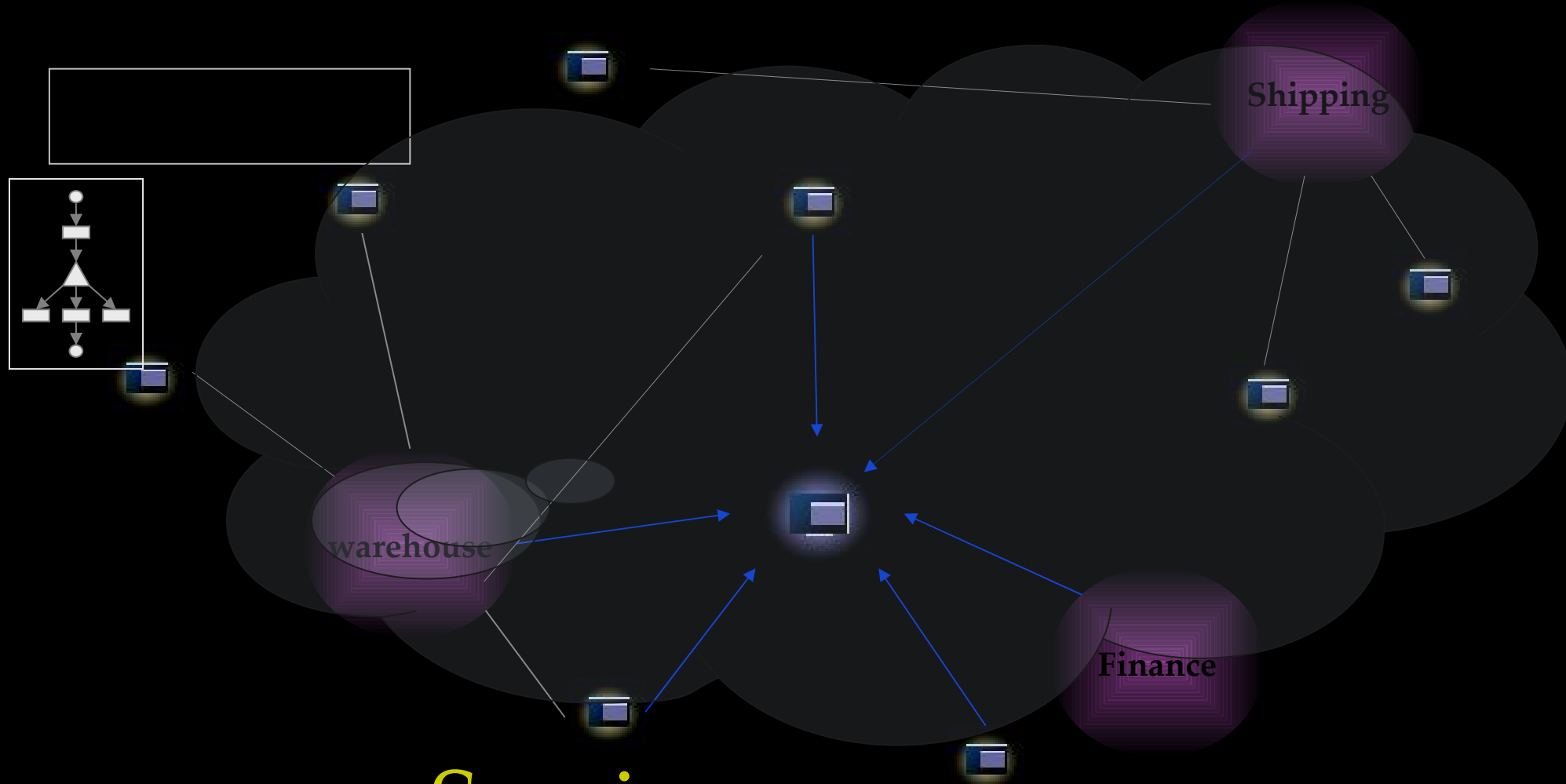


Getting SOA onto the cloud

- SOA brings forth a seamlessly integrated enterprise solution landscape
 - Virtualized application components “in” the cloud
 - All having a services layer (along with web based UI)
- Can be extended to the web
 - Break down the ‘service’ component
 - As a federated “set” of services in the SaaS cloud!
- Orchestrated to serve biz processing needs
 - Including, on-demand end user driven orchestration
 - Changing the application paradigm, from complete solutions to a set of services available for end user to “orchestrate as needed”
- Every solution in cloud WILL have services layer
 - ~~A federated set of services in the SaaS cloud.~~

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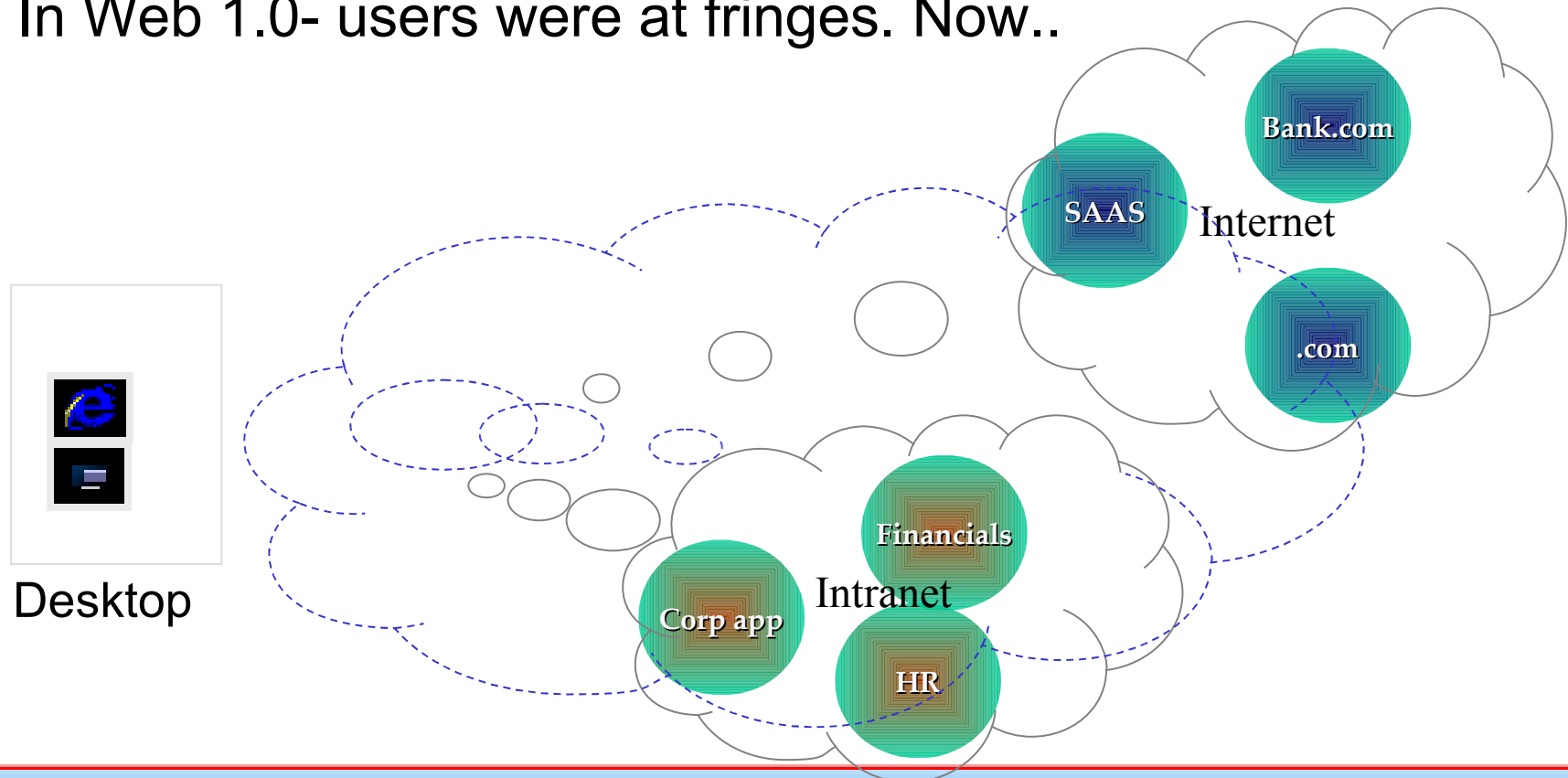
Services, in a SaaS mode, in the



Services
integrated in the cloud

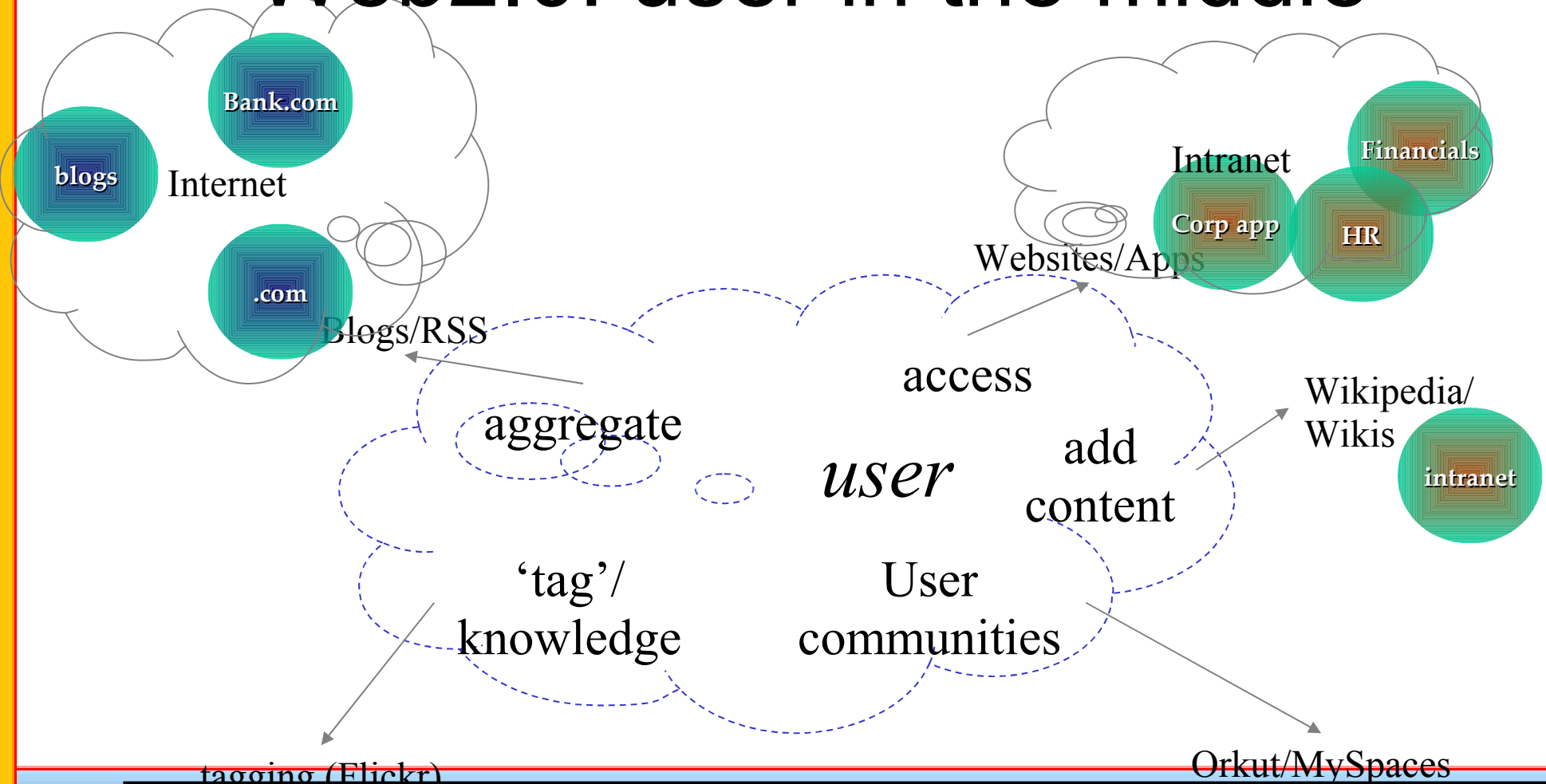
Get the 'user' into the mix..

In Web 1.0- users were at fringes. Now..



Web 2.0 changed user's expectations from the web.
User is now in the "middle" and actively engaging!

Web2.0: user in the middle

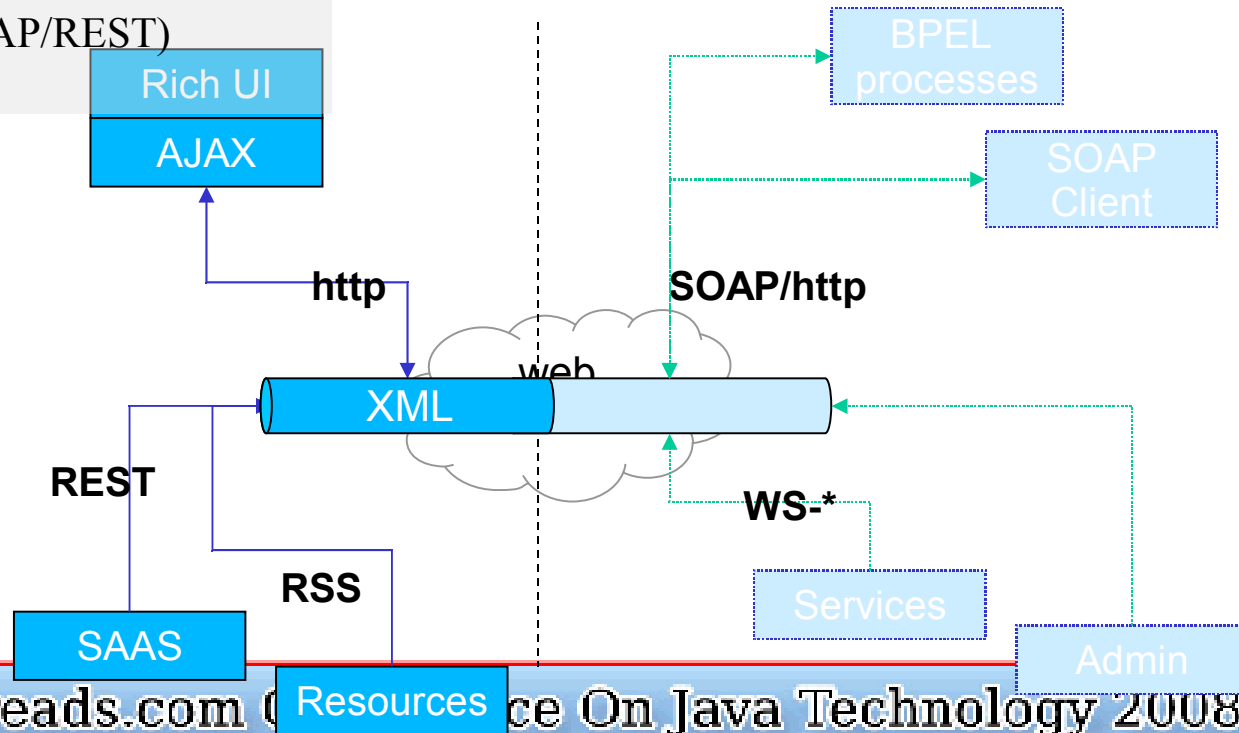


**Users expect to participate more actively.
What does this mean for SOA/SaaS.....**

With SOA on the cloud, Web2.0 now nearer

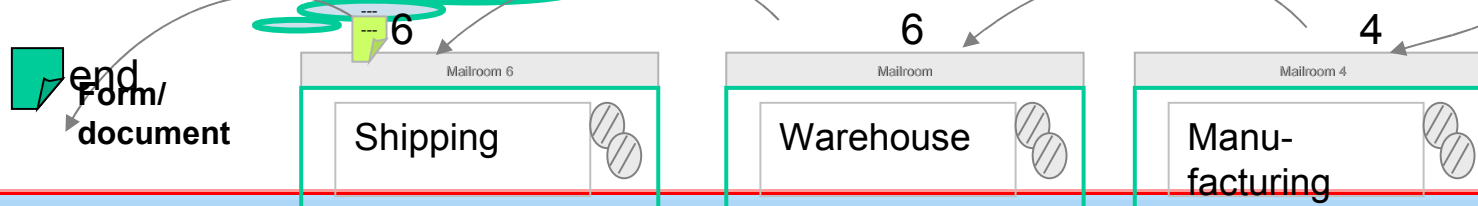
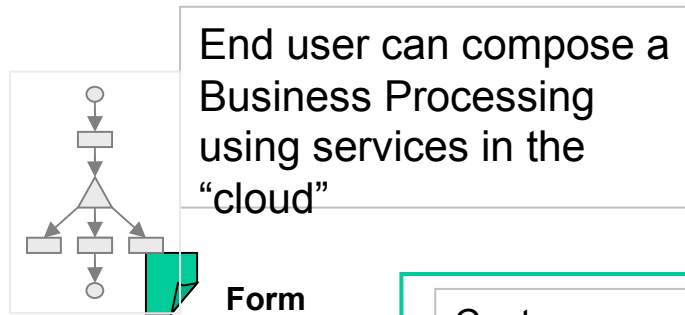
Enablers:

- XML based eco-system
- Access data as XML (RSS/WS)
- Services over web (SOAP/REST)
- Easy to access from UI



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Enables, Orchestrate 'on demand'

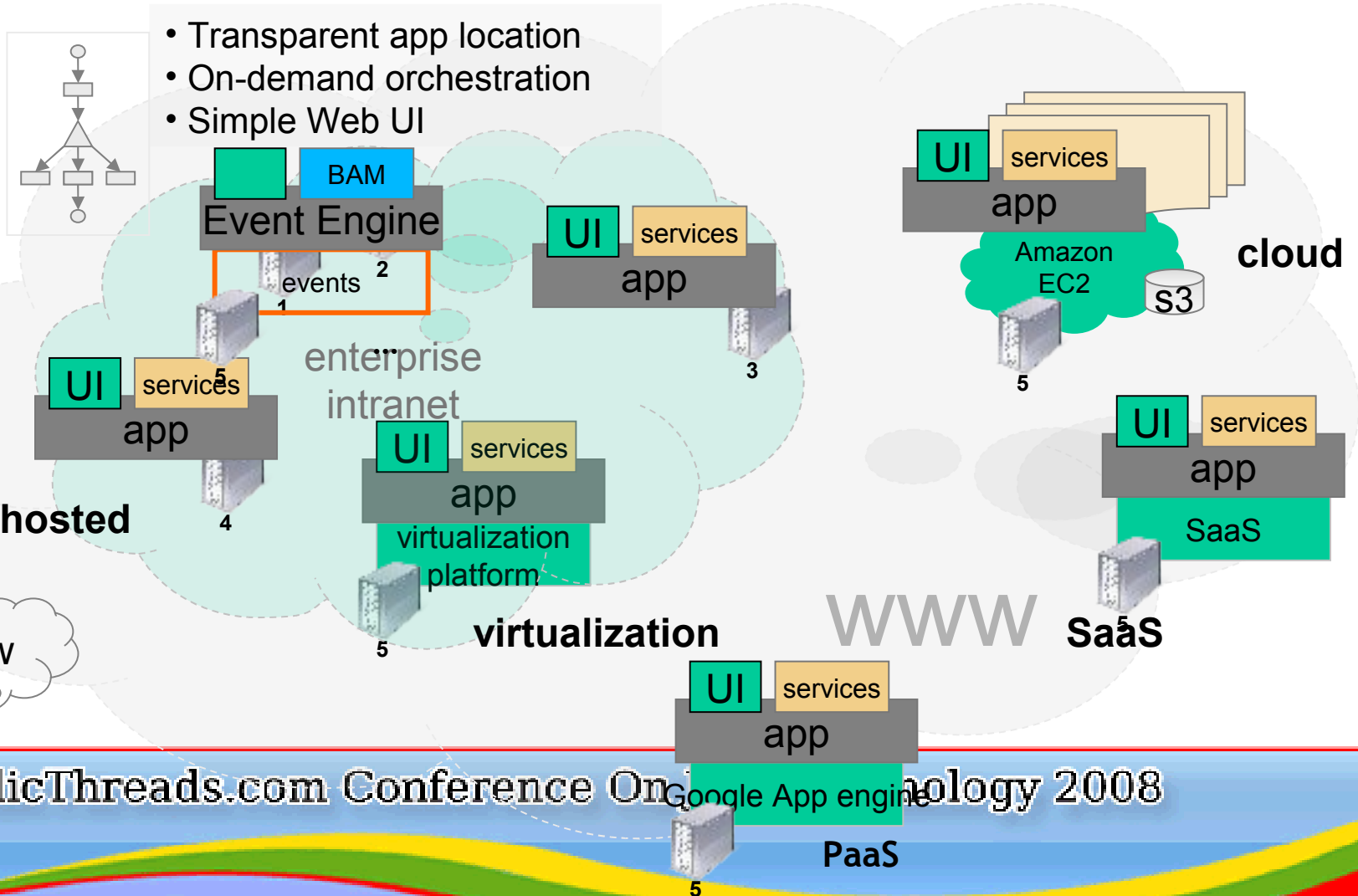


Services available in the "cloud" in a SaaS model

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The SOA enabled cloud

- Transparent app location
- On-demand orchestration
- Simple Web UI



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A little about us...

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PUNE, INDIA

Progress Software

OUR BUSINESS

Application Infrastructure Software

We provide the software application developers use to build, deploy and integrate their business applications.

INNOVATION

- ▶ **Sonic: World's First Ent. Service Bus**
- ▶ **Market Leading Event Processing Platform – Apama**
 - Bloor Research
- ▶ **InfoWorld Top 100 IT Projects**
 - Volvo Cars Belgium
 - Boekhandels Groep Nederlands
- ▶ **Most Influential Software Vendors**
 - Intelligent Enterprise Magazine

GLOBAL

Headquarters: Bedford, MA

Offices: 90 Worldwide

Employees: 1,600

Revenues: \$494 million

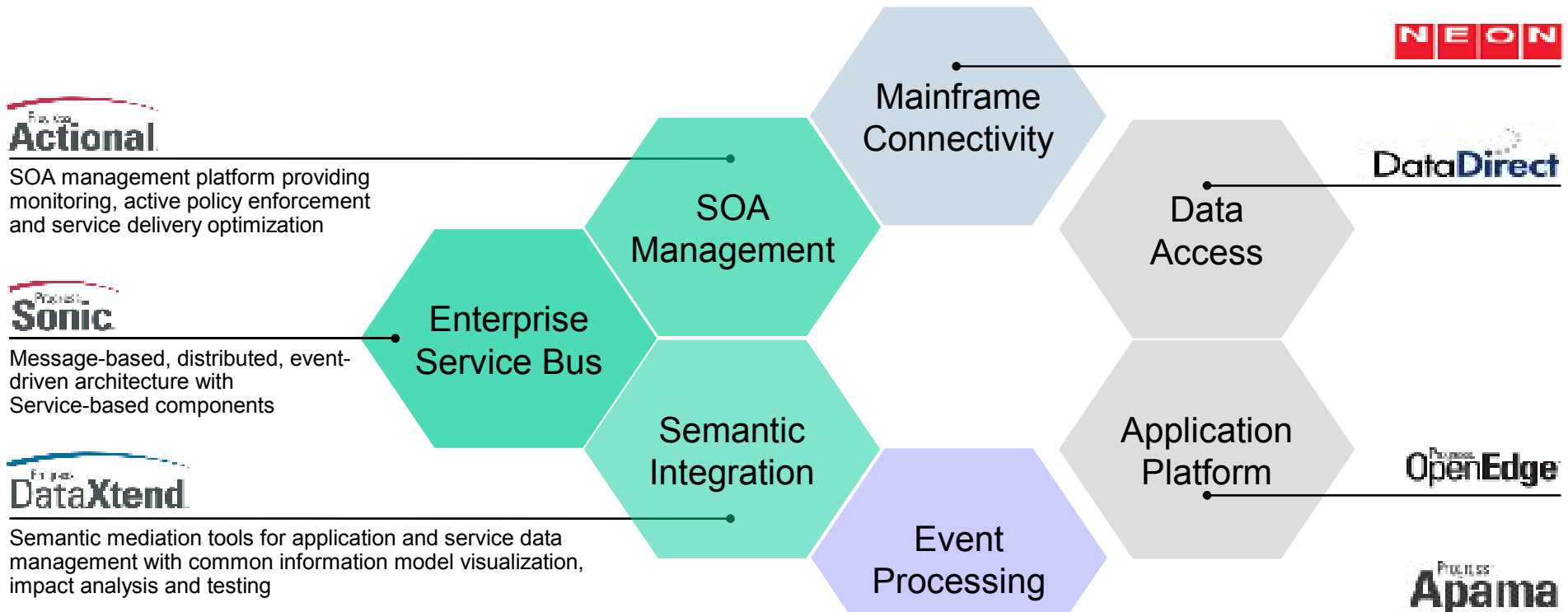
EXPERIENCE

- ▶ **Deployed at 120,000 customer sites in 140 countries**
- ▶ **2,000 Partners deliver 5,000 unique business applications**
- ▶ **Over 600,000 new users acquire Progress-based technology annually**

In India, we have the Product Development center at Hyderabad (the largest outside of the HQ near Boston)

Progress SOA Product Lineup

Best-in-Class Infrastructure for the Business Challenges of SOA



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Progress Software: Market Recognition for Our Products

Actional
SOA & Web Services Management Leader



Sonic ESB
Best Enterprise Service Bus



Apama
Event Processing Platform Market Leader



OpenEdge
40% Savings vs. Alternative Platforms



DataXtend SI
IndicThreads.com Conference On Java Technology
2007 Excellence Award for Best New Product



Thanks

rameshl@progress.com
<http://jroller.com/rameshl>

A bit about me

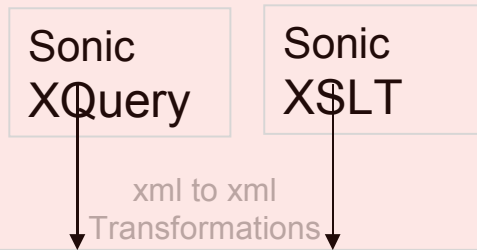
- Middleware evangelist
- Head Product dev
- Adjunct Faculty at IIIT



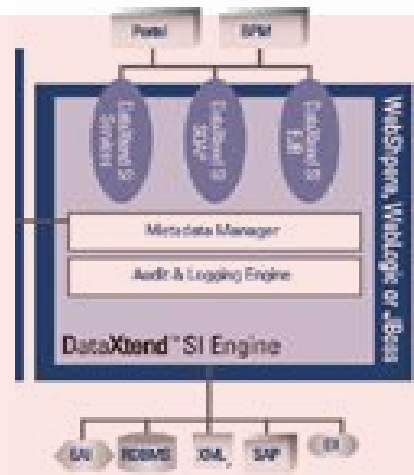
SOA Approach to Integration

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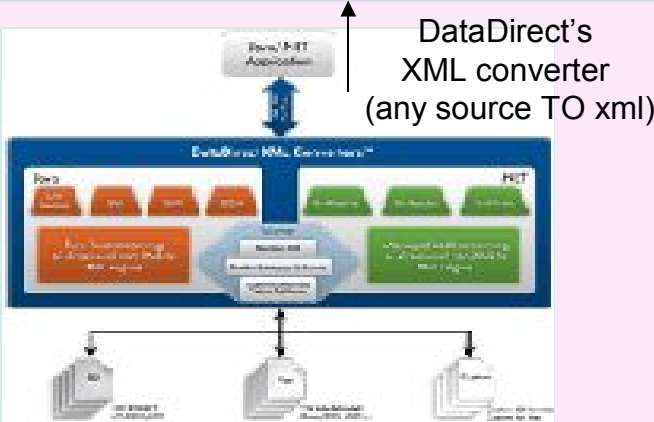
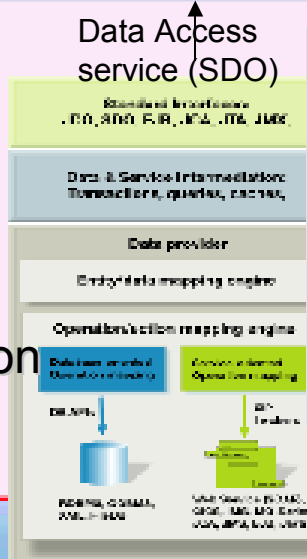
XML Transformations



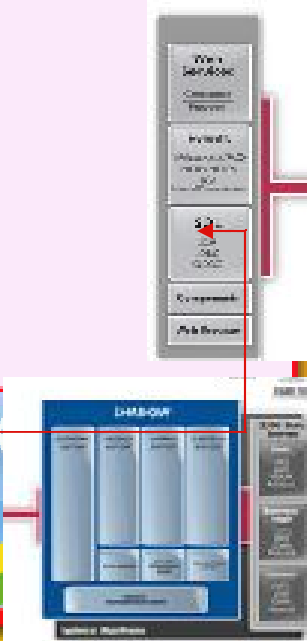
DXSI: Xml to xml Transformations based on common models



Data Integration

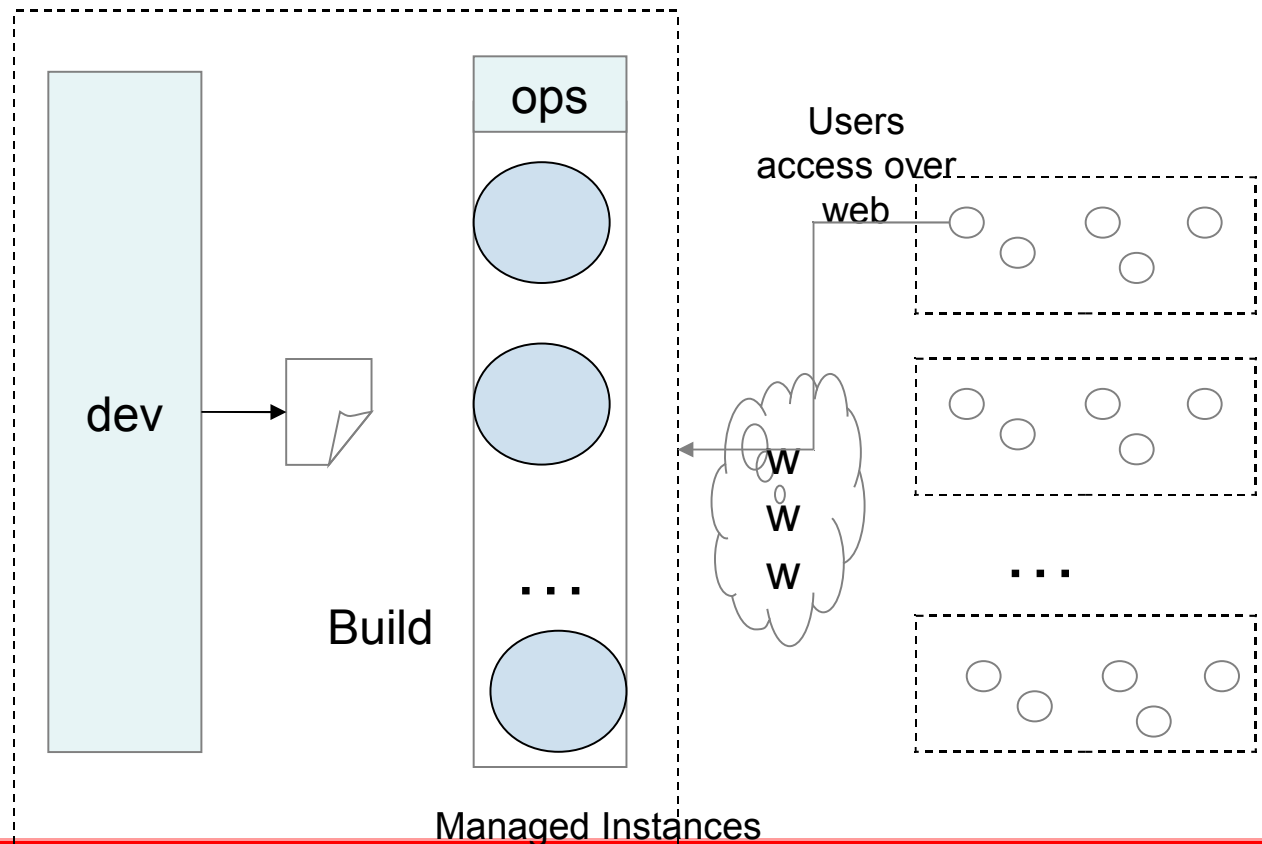


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From hosting, to a 'solution service'

- Light weight UI over web
- App can be broken into parts
- Distributed over the web
- Remote web based admin

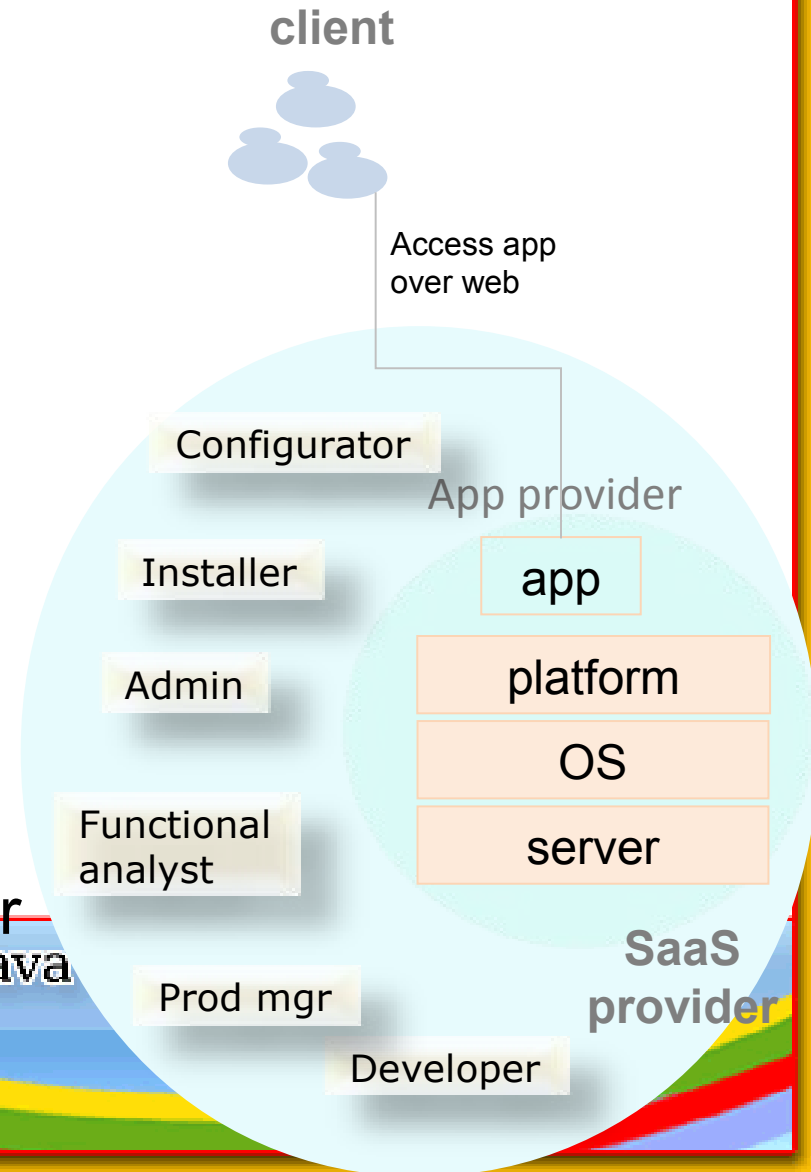


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Solution provider

SaaS

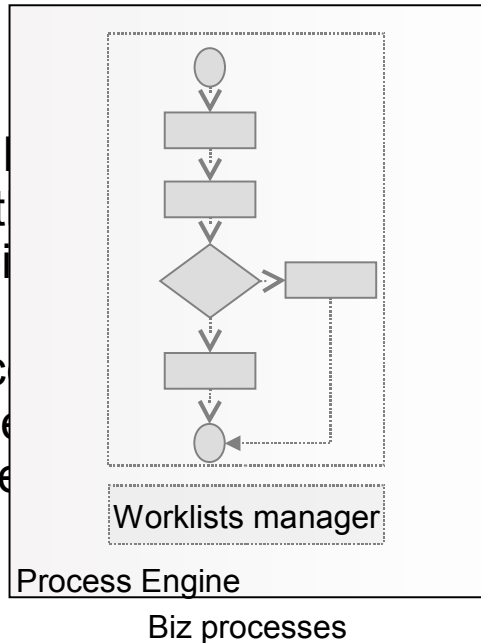
- Software as a service
 - Definitions very elusive
- Apps now delivered as a managed service
 - Web based application
 - End client just asks and gets it
 - No h/w or s/w to buy
 - No installation, setup of configuration
 - No administration, monitoring or tuning

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SOA-Events link

Processes result in biz-operations that could trigger business events
("new order placed", "product shipped from warehouse")



Events can trigger processes

Any biz function that needs to do some post-processing after this event can subscribe to this event.

Get notified when it occurs, and process as needed

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