Web 2.0 versus SOA: Converging Concepts Enabling Seamless Cross-Organizational Collaboration

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Executive Summary

Introduction: SOA and Web 2.0

Comparative Analysis

Implications for Cross-Organizational Collaboration

Conclusion
“Web 2.0 and SOA: Where do they meet?”

“Web 2.0: The Global SOA”

“Enterprise Web 2.0 Solves the Last Mile of SOA”

“SOA and/or Web 2.0?”

“When the worlds of SOA and Web 2.0 collide”

“The SOA with reach: Web Oriented Architecture”

“The Web 2.0 Mashup Ecosystem Ramps Up”

“Microsoft Seeks to Bridge Web 2.0 and SOA”

“Web 2.0 and SOA are not related”

“The Merging of Web 2.0 and SOA”

“Web 2.0 lacks the business impact of SOA”
Summary

Similar concepts: Web 2.0 & SOA

- Loose coupling of different resources
- Composition/aggregation of resources
- Complexity reduction for increased agility

Different characteristics

- Private users (Web 2.0) <-> Enterprise context (SOA)
- Social orientation <-> machine-to-machine connections
- Lightweight <-> Complex technologies

Synergies facilitating cross-organizational collaboration

- Both concepts are not equal, but complementary
- Avoid trade-off between „Richness“ and „Reach“
- Basis for the „Internet of Services“
Both SOA and Web 2.0 represent abstract concepts

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**SOA**

“...a paradigm for organizing and utilizing distributed capabilities that may be under the control of different ownership domains. It provides a uniform means to offer, discover, interact with and use capabilities to produce desired effects consistent with measurable preconditions and expectations”*

**Web 2.0**

“Web 2.0 is defined as the philosophy of mutually maximizing collective intelligence and added value for each participant by formalized and dynamic information sharing and creation” **

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The MCM Business Model Framework*

Web 2.0 and SOA: Features of the specific product (1/2)

**Web 2.0**

- **Community***
  Open community which follows a common goal

- **Platform/ Tool**
  Users as co-developers of applications

- **Online Collaboration**
  Closed Community with a specific goal

**SOA**

- **Cross-organizational integration**
  Service coupling between organizations

- **Application integration**
  Company-internal harmonization of applications

- **Application development**
  Composition of services as application development approach

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* XING.com
** Yahoo! Pipes, Kapow Technologies, Google gadgets, Wikis
*** Brainstorming/ Brainreactions

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### Similarities
- Re-use and composition of existing resources
- Collaboration and coupling of resources
- High agility of applications which can be easily adapted to changing requirements

### Differences
- SOAs lack social component of Web 2.0-applications (mere machine-to-machine communication)
- Web 2.0-applications “visible” (not “mute and autistic”)
- SOA-applications are mostly defined “ex-ante” and are subject to governance mechanisms
<table>
<thead>
<tr>
<th>Similarities</th>
<th>Differences</th>
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<tbody>
<tr>
<td>- Coupling of heterogeneous resources via standardized interfaces</td>
<td>- Syndication &lt;-&gt; Coordination</td>
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<tr>
<td>- Complexity-hiding and reduction of programming efforts</td>
<td>- Web 2.0: Functional restrictions to reduce the scope of possible interpretations</td>
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<td></td>
<td>- SOA: Lacking semantic interoperability</td>
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### Potential Customers, Value Chain, Financial Flow, Flow of Goods and Services

<table>
<thead>
<tr>
<th>Potential Customers</th>
<th>Value Chain</th>
<th>Financial Flow</th>
<th>Flow of Goods and Services</th>
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<tbody>
<tr>
<td><strong>Web 2.0</strong></td>
<td></td>
<td></td>
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<tr>
<td>“The Long Tail”*</td>
<td>Loose networks of consumers and providers</td>
<td>Number of users influences value proposition</td>
<td>“Software as a Service”</td>
</tr>
<tr>
<td>of Internet users</td>
<td>m:n- modell</td>
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<td><strong>SOA</strong></td>
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<tr>
<td>Medium-sized or large firms</td>
<td>One Expert serves several clients</td>
<td>License fees for software artefacts</td>
<td>Traditional production and marketing of Software-artefacts</td>
</tr>
<tr>
<td></td>
<td>1:n- model</td>
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</tbody>
</table>

*C. Anderson: The Long Tail: Why the Future of Business Is Selling Less of More, Hyperion Books, 2006*
Web 2.0 und SOA: Societal environment

**Web 2.0**

- Legal frameworks reduce development freedom (however, to a minor degree)

- Provision and consumption of services is rarely subject to binding agreements (e.g., SLAs)

- Impact on environment: Increase of the number of active Web-participants

**SOA**

- Legal frameworks (e.g., SOX) reduce design freedom

- Impact on environment: Service-Orientation may strongly influence operating mode of the single in the near future
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Traditional Trade-off between “Richness” und “Reach”*

**Richness**
- Customizability
- Currency
- Interactivity
- High information processing capabilities

**Reach**
- Percentage of potential business partners who are able to use the solution

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The Internet of Services: Global infrastructure facilitating a networked services economy and building on Web 2.0 and SOA

Emerging design principles and technologies increase “Richness” and “Reach”

**Richness**

- Novel technologies for quickle composing and customizing resources
- Rich navigators which allow for automated queries (based on semantic resource annotations)

**Reach**

- Standardization (Resource interfaces, message structure and semantics)
- Intuitive user/service interaction via gadgets
- Independent institutions fostering governance and transparency
The Internet of Services: “Richness” and “Reach” for cross-organizational collaboration

The Internet of Services

- Proprietary Point-to-Point- Connections, based on EDI or Web Services
  (Wal-Mart/ Toyota, EDIFACT-Systems)

- Website- Portals,
  Trade- Platforms,
  E-mail/ Fax

“Richness”

“Reach”

Significantly reduced transaction costs through new intermediaries, simplified user/service-interaction and a resulting, global mesh of interoperable services
Web 2.0 and SOA are similar concepts

- Web 2.0 and SOA show paramount similarities with respect to their fundamental principles

Different characteristics

- They still have some different characteristics which are about to vanish: The Internet of Services (IoS) is approaching

Enabling seamless collaboration

- The Internet of Services abandons the trade-off between richness and reach of cross-organizational collaboration
Thank you for your attention!

Christoph.Schroth@sap.com
Cross-organizational Service-Oriented Architecture

Composition of services

Cross-organizational business process

Commonly comprehensible business data

SOA system landscape and document exchange

WS-Interf.

Commonly comprehensible business document

MSG

Composition of services

WS-Interf.

Registry

Commonly comprehensible business data

MSG

WS-Interf.

Web 2.0: Technologies

AJAX

User Interface

Lufthansa

Mashup

Singapore Airlines

Andere

RSS, REST

RSS, REST

RSS, REST

RSS, REST

RSS, REST
SOA Paradigms (1/2)

- **Composition**: Composition of existing services to new, more powerful services.
- **Coordination**: Definition of a “bird’s eye view” service call sequence (choreography) to realize business processes.
- **Collaboration**: Services exchange messages and are built to follow a common goal.
- **Loose coupling**: Services are loosely coupled to allow for fast adaptations according to actual business requirements.
SOA Paradigms (2/2)

- **Reuse**: Services are considered reusable resources that shall be leveraged by different other services.
- **Agility**: As a consequence of loose coupling, operational agility is ensured.
- **Decentralization**: Services are operated and controlled decentrally.
- **Information hiding**: Only information that is relevant to the outside is made available via uniformly defined interfaces.

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Enterprise Mashups*

- Mashups on Presentation- data and application level
- Composition of business logic without requiring programming efforts
- Involves technologies from the fields Web 2.0 and SOA (AJAX, SOAP, RSS, REST)

“Social Standardisierung”

- Current SOA implementations show a lack of semantic interoperability
- UN/CEFACT** Wikis shall facilitate the collaborative definition of semantics for B2B- SOA systems
- Integration of service-oriented architectures with the social Web 2.0 approach

** United Nation Center for Trade Facilitation and Electronic Business (UN/CEFACT)
New Ways of Resource Consumption enable “User Self-Service”

1. Google Gadgets
   - Aggregation/Syndication of content/simple functionality
   - Gadget repository
   - Template for building own gadgets (“De-facto standard”)
   - No interaction between the resources (mere syndication)

2. Yahoo! Pipes
   - Pipes can be defined that read in certain RSS-based “feeds”
   - Filters can be applied on the pipes (to sort out information that is relevant for the individual user)
   - The pipes’ outputs can be aggregated and displayed to the user

3. Kapow Technologies
   - Mash-ups can be setup on the basis of a visual modeling interface
   - “Stateful” interaction between different resources can be defined and published