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SYSTEMATIC THOUGHT LEADERSHIP FOR INNOVATIVE BUSINESS

Brave New Web: Emerging Design Principles and Technologies as Enablers of a Global SOA

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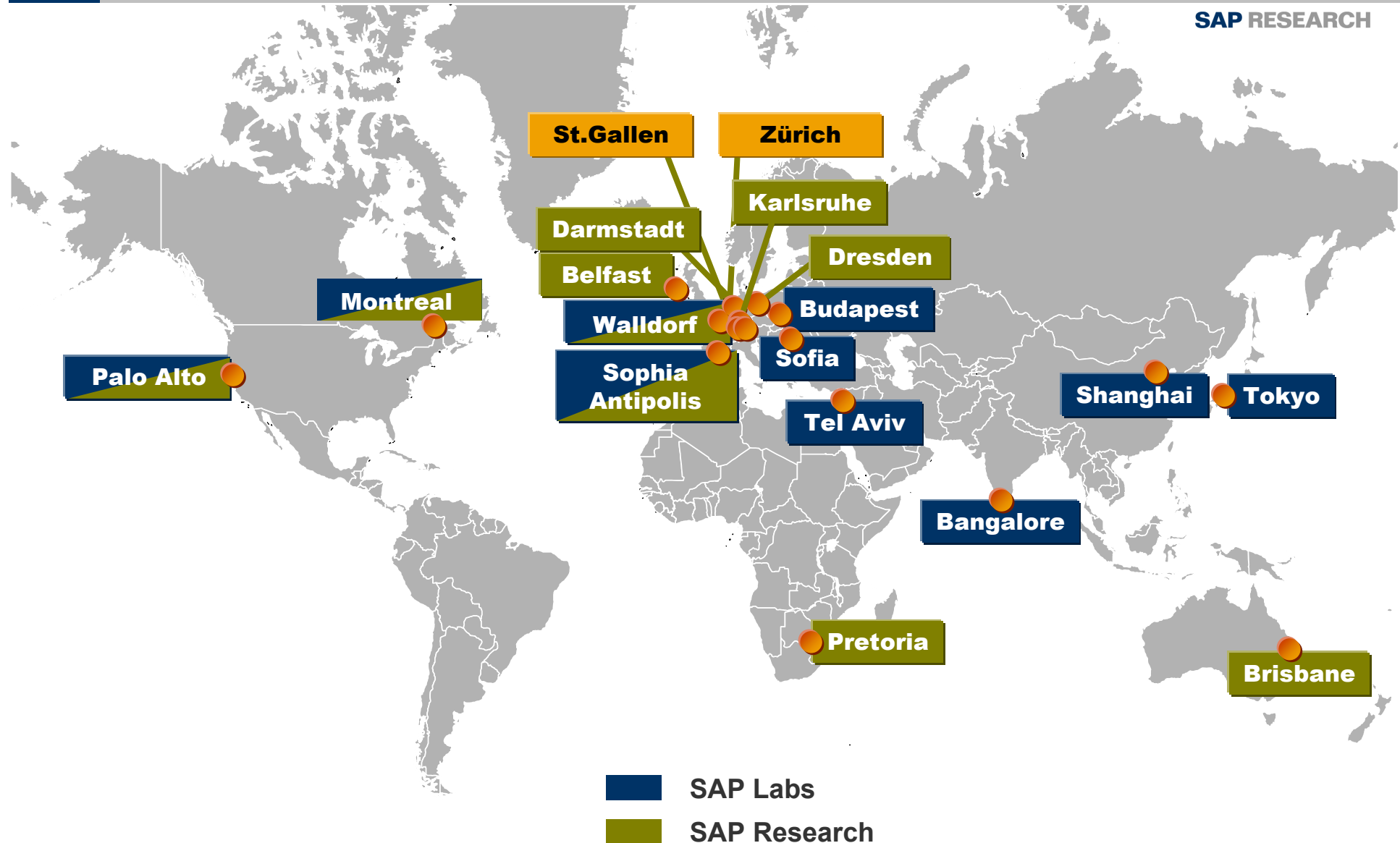
University of St. Gallen, MCM Institute,
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Executive Summary

Vision and shortcomings of the traditional Web Services stack to enable a global SOA

Emerging principles and technologies

Outlook: The Internet of Services

Conclusion

SOA Shortcomings

- Lack of service interoperability
- Lack of widely accepted intermediaries
- „Mute and autistic“

Emerging Principles and Technologies

- Resource provision: „Face to the users“
- Novel, rich intermediaries that improve transparency, navigation and service governance
- Resource consumption: Mash-up platforms and tools that facilitate user „self-service“

The Internet of Services

- Disruptions in the dimensions stakeholders, applications and technical architecture
- A global infrastructure fostering the industrialization of information intensive services

Executive Summary

**Vision and shortcomings of the traditional Web
Services stack to enable a global SOA**

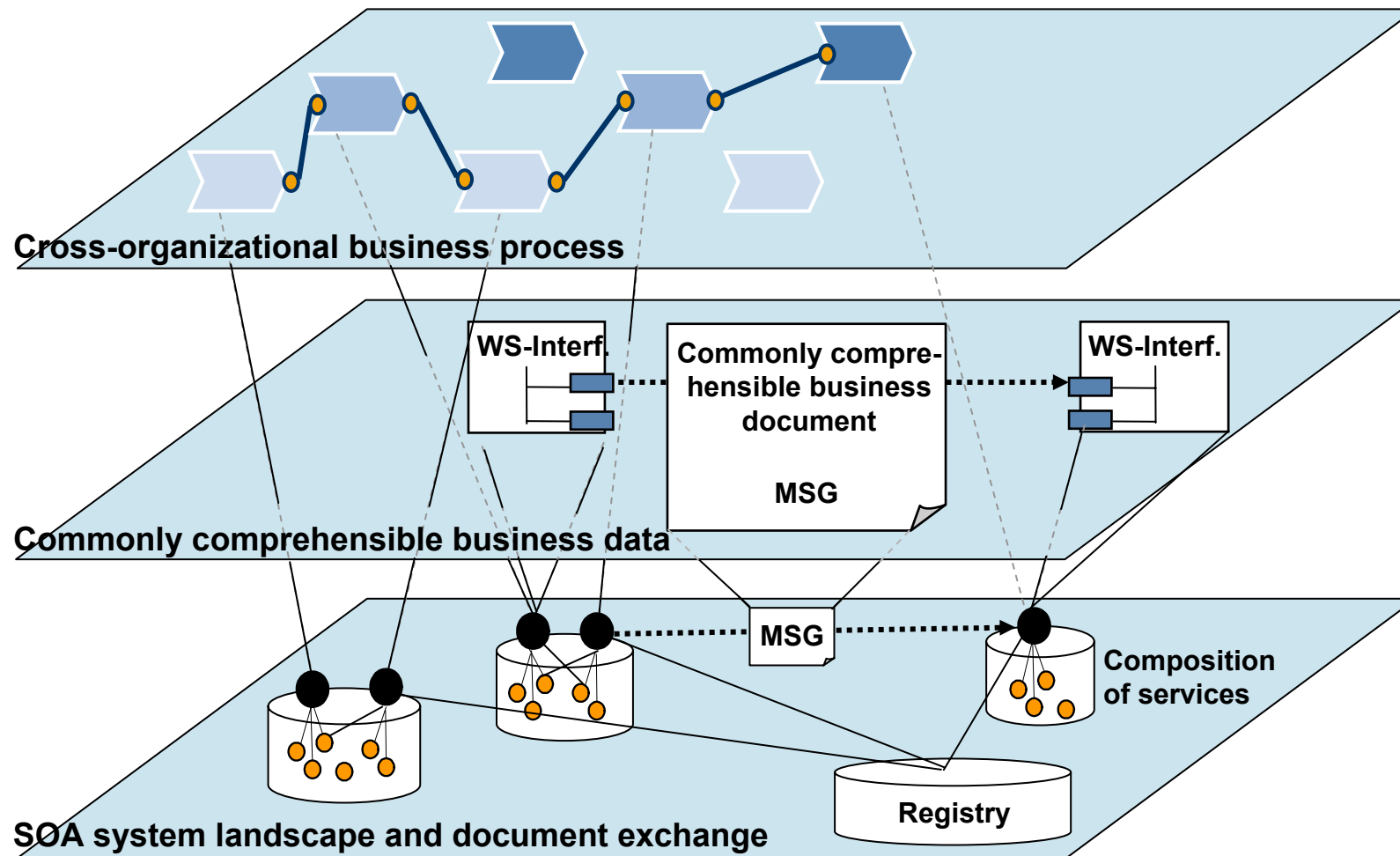
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Cross-organizational Service-Oriented Architecture*

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*C. Schroth, T. Janner: Web 2.0 and SOA: Converging Concepts Enabling the Internet of Services, IEEE IT Professional Magazine, Vol. 9, No. 3, 2007

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

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

The Web Services Stack Does not Suffice to Support a “Global SOA”

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Lack of interoperability

- The “corporate household problem” prevents from seamless interoperability across company boundaries (data structure as well as semantics differ significantly)

Lack of service registries

- Lack of comprehensive, trustworthy and widely accepted service registries prevents global SOAs

„Mute and autistic“

- The “Web Services stack aims at supporting the setup of loosely coupled application interconnections especially in a professional context and assumes users to be technically sophisticated

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Wide take-up of resource provision

- Large companies such as Google, Amazon and Microsoft start to successfully provide Web-based resources which are leveraged by numerous users

Resource provision in private and corporate context

- Professional services as well as applications that aim at the long tail of private Internet users are emerging

Light-weight, highly standardized protocols and styles

- Ligth-weight and highly standardized messaging protocols such as SOAP as well as architectural styles such as REST are quickly gaining momentum on a global scale

Mash-up Scorecard*

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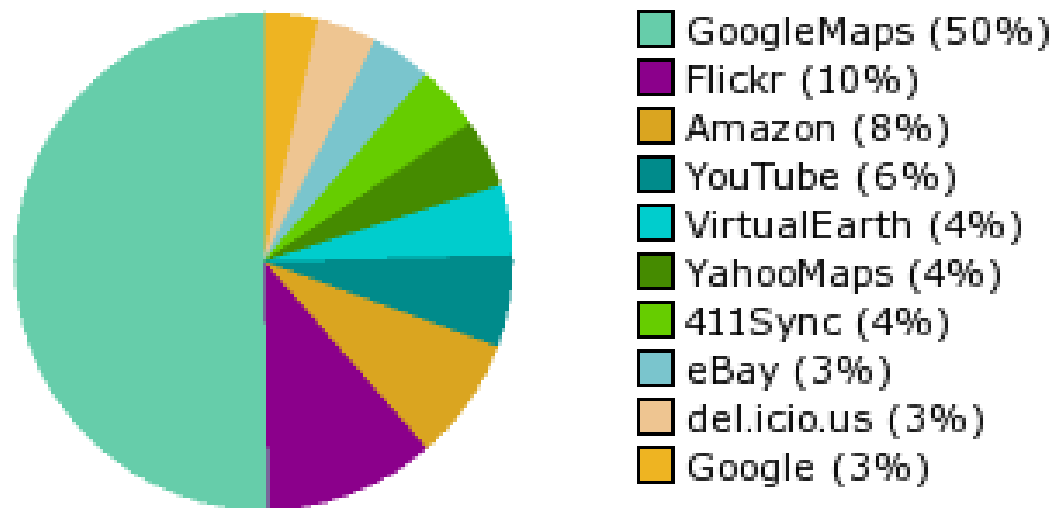
	Google	amazon.com	Microsoft	ebay	YAHOO!	AOL	Other APIs
Advertising	• 17		• 0		• 3		•
Answers					• 9		
Blogs	• 12		• 0				•
Bookmarks					• 78		•
Chat	• 3		• 17	• 15	• 2	• 4	•
Classifieds	• 14		• 3				
Desktop	• 8		• 3		• 7		
Events	• 17				• 21		•
Hosting		• 10					
Identity	• 0				• 2		
Mapping	• 1041		• 92		• 91	• 3	•
Music					• 0	• 1	•
Office							•
Photo					• 227	• 0	•
Present						• 0	
Search	• 21	• 0	• 21		• 76		•
Shopping	• 4	• 166		• 81			•
Storage		• 15					•
Video	• 129				• 14	• 4	•
Voice	• 3			• 15	• 2	• 1	
Widgets	• 23		• 4		• 7		•
All	23/1381	11/217	18/152	4/125	24/396	10/15	463/2067

Google Maps
1041 mashups listed here
Click the cell for details.

* <http://www.programmableweb.com/scorecard>

“API Dashboard”*: The different companies’ share in the overall resource provision

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ProgrammableWeb.com 07/06/07

* <http://www.programmableweb.com/scorecard>

Rich Intermediaries Improve Transparency, Navigation and Governance

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Transparency

- Intermediaries gather information about published resources over their whole lifecycles and thus improve transparency in a global resource market

Navigation

- Novel intermediaries provide navigation functionality and help user find desired services and content in the global mesh of resources

Governance*

- The reduction of uncertainty plays a relevant role in achieving a reliable, global SOA which is adopted by enterprises to execute mission-critical services over the Web**

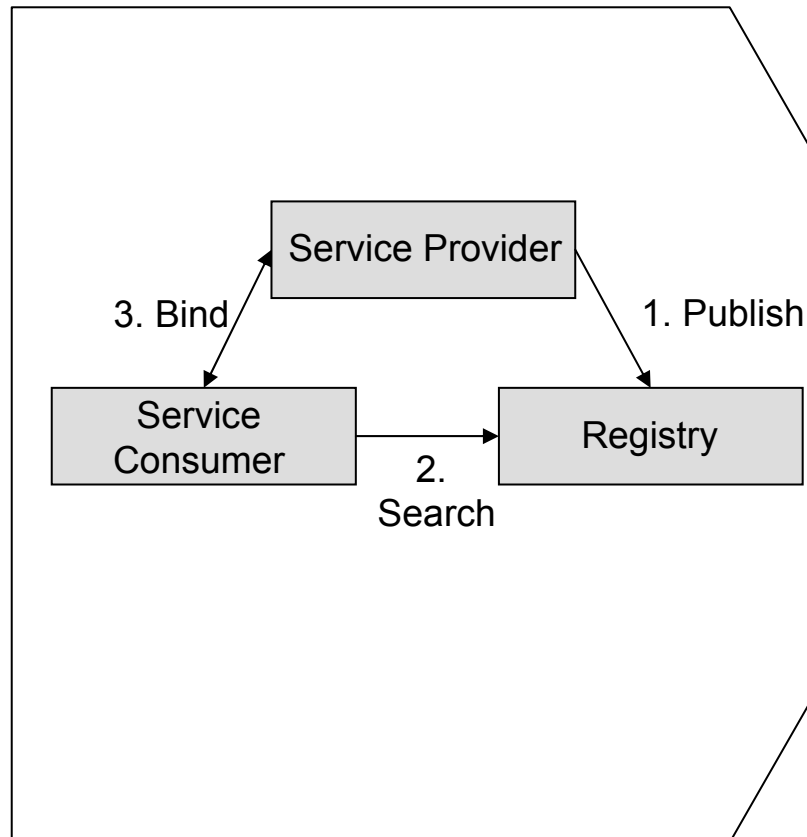
* P. Weill and J.W. Ross: IT Governance: How Top Performers Manage IT Decision Rights for Superior Results, Harvard Business School Press, May 2004

** Networked European Software & Services Initiative (NESSI). NESSI Homepage.
available online at: <http://www.nessi-europe.com/Nessi/>

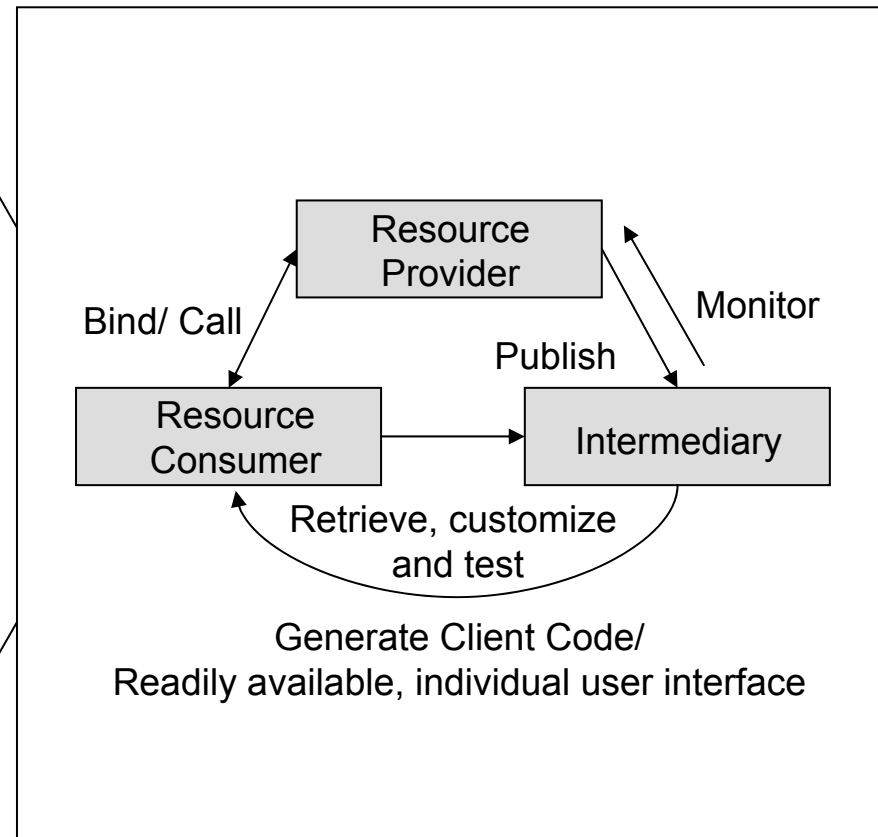
From Conventional Service Registries to Rich Intermediaries

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From conventional service registries...



...to rich intermediaries*



*Example: WebRPC.com

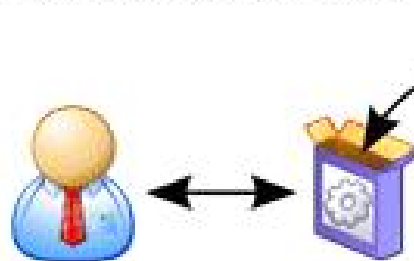
1 Find Services



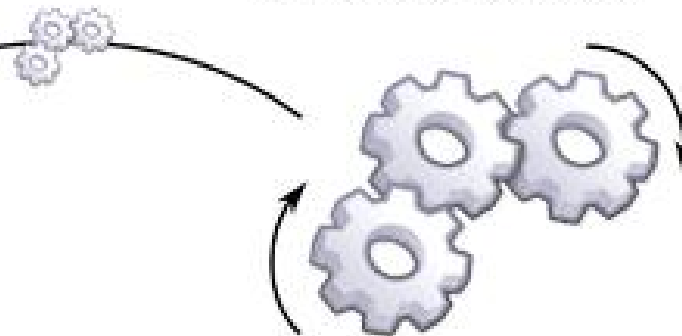
2 Select Services



4 Consume Services



3 Bundle Services



* <http://www.aleph-webservices.com>

New Ways of Resource Consumption enable “User Self-Service”

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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

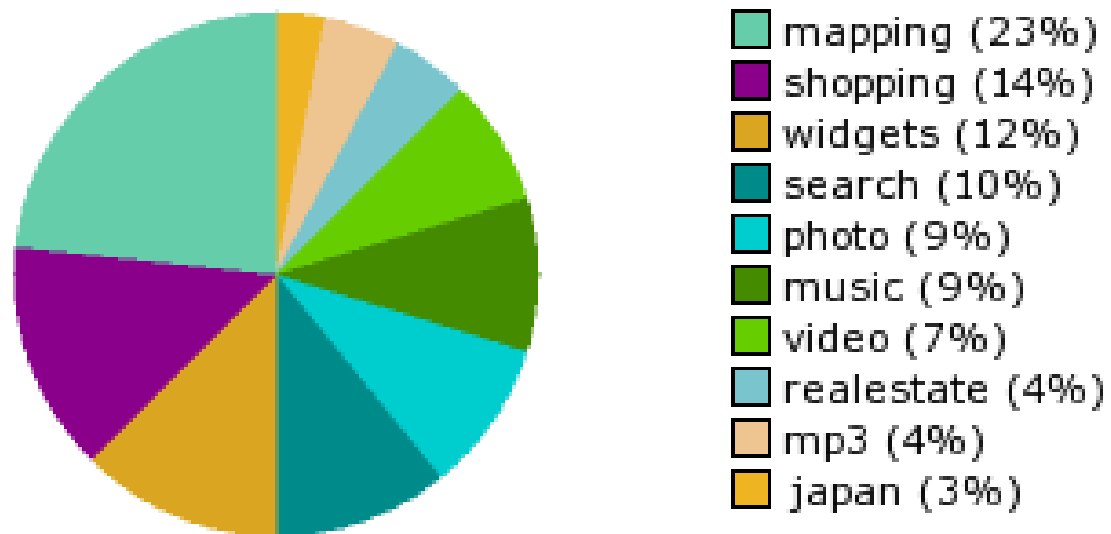
3

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

Mash-ups by category*

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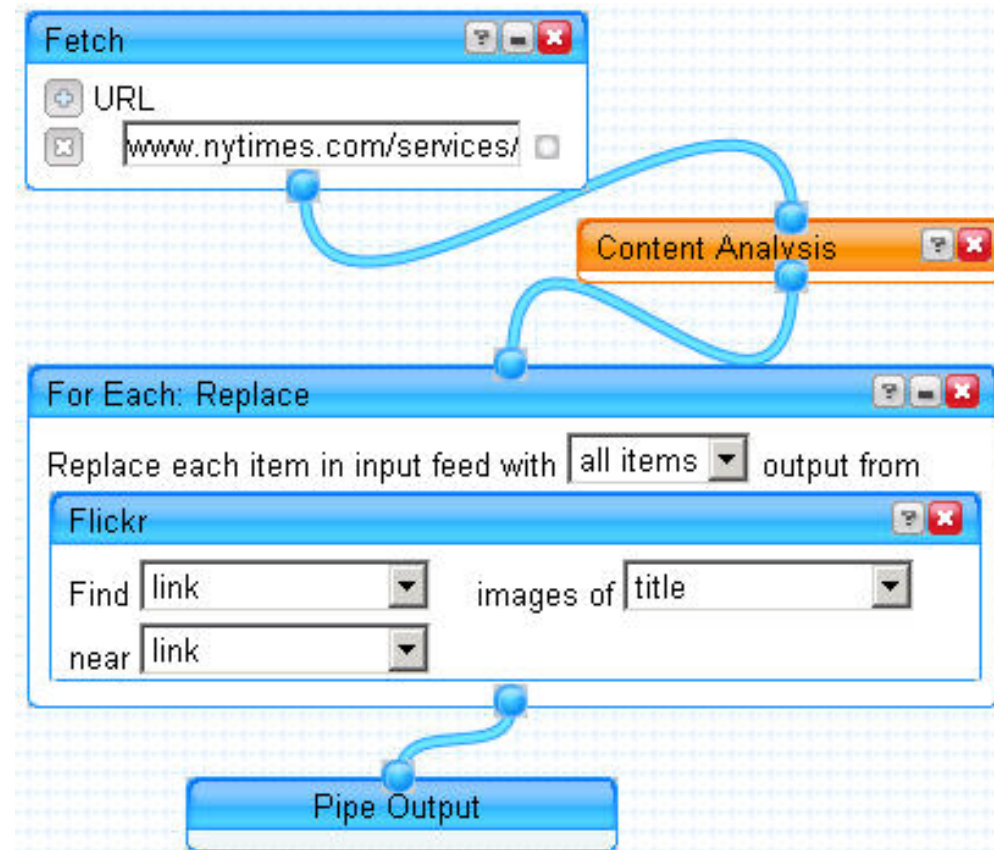


ProgrammableWeb.com 07/06/07

* <http://www.programmableweb.com/scorecard>

Yahoo! Pipes allow for creating “Information Mash-ups”*

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* <http://pipes.yahoo.com>

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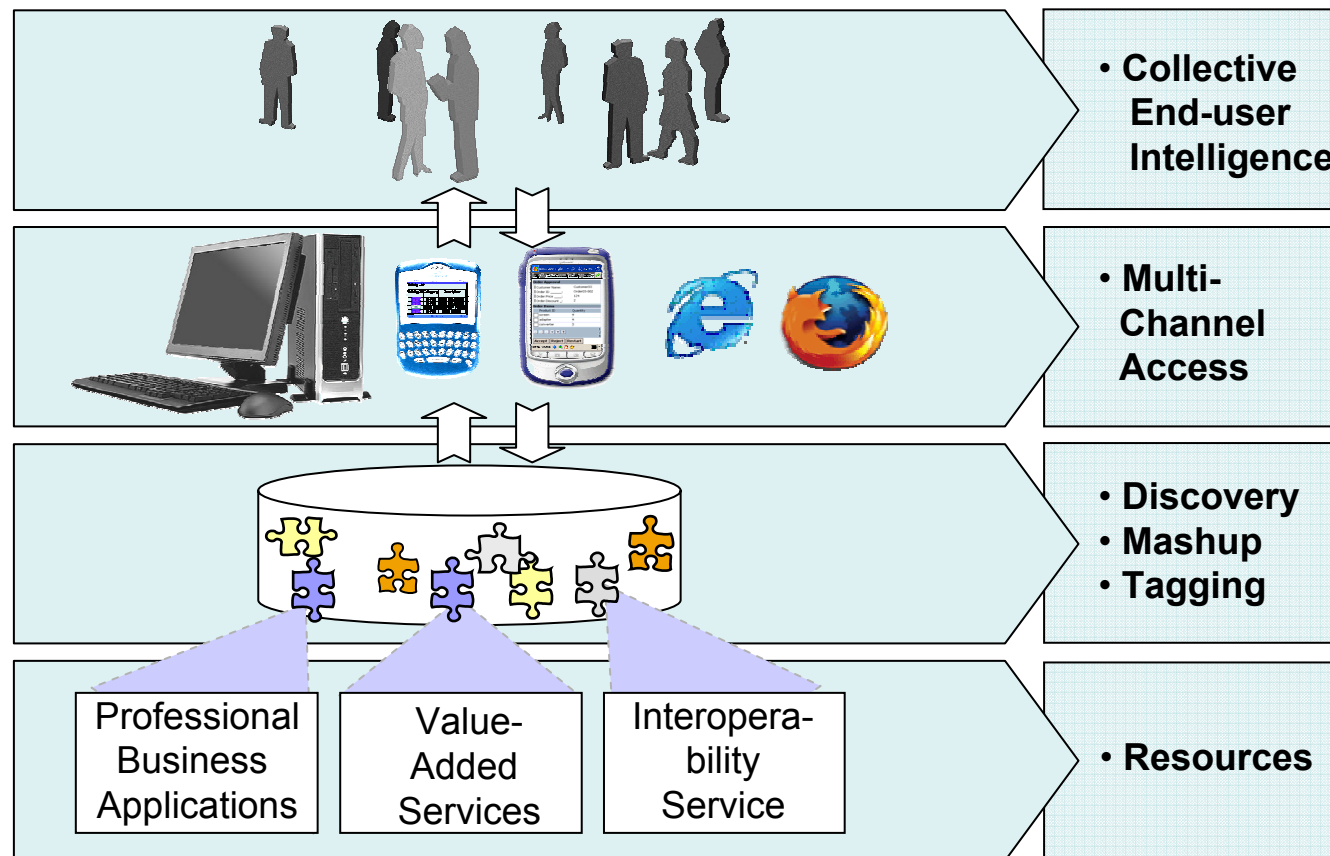
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The Internet of Services: Global infrastructure facilitating a networked services economy

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Web Services do not suffice

- The conventional Web Services stack **does not suffice to enable a global SOA** (interoperability issues, lack of service registries, “mute and autistic”)

Disruptions underway

- New ways of **resource provision** (lightweight, highly standardized APIs and protocols), **intermediaries** (transparency, navigation and governance) and **consumption** (Rich mash-up platforms and tools)

The Internet of Services is approaching

- The **Internet of Services** is about to emerge: It will act as a global infrastructure for publishing, finding and using interoperable resources



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Thank you for your attention!

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