Framing the Conversation:
Ontologies within Semantic Interoperability Ecosystems

CO-CHAIRS
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CLOUD SERVICES
& ENGINEERING
APPLICATIONS

CLOUD SERVICES TRACK 1

MARK UNDERWOOD
TODD SCHNEIDER
TRACK 1 SPEAKERS

PEIO POPOV – ONTOTEXT
DAVID PRICE – TOP QUADRANT

MARK UNDERWOOD - KRYPTON BROTHERS

GLIMPSE OF OFFERINGS BY SAS, ALCHEMYAPI, COGNITIVE SCALE, ISERVE
QUESTIONS

• What is the shape of existing cloud service design patterns?
• Are ontologies part of these patterns?
• If so, what does it look like?
• Which enterprise influencers are at work?
• Which tools are being used? (Artifacts?)
• Who are the people to watch?
Two important consequences of the “cloudification” of computing are DevOps and an API-first (espoused by Intel’s Brian Krzanich) design philosophy. While SOA and “composable services” introduced many of the same concepts in earlier generations (indeed, both DevOps and API-first steal from well-burnished concepts), the level of adoption across software and data providers is unprecedented. Computing environments for large scale projects can be stood up in minutes, tested and disposed of the following day. Products like Zapier and IFTTT allow for orchestration of cloud services across providers. The Zapier App Directory offers around 100 integrations. Interop exists across platforms (as in hybrid cloud storage), applications (e.g., between QuickBooks and a telephony app like DialMyCalls), and also what some are calling “cognitive services.” Cloudify suggests using TOSCA (a cloud orchestration standard) to connect resources like OpenStack or VMware using open source tools.)

Github repositories can store ontologies, but can this be scaled up to build applications, sharing ontologies within or across domains? Will developers tempted to use ontologies be able to gain the same productivity benefits they experience elsewhere with cloud services? We ask a few vendors.
API-first design is a result of ubiquitous cloud services and DevOps, but its impact is not limited to that: IoT development is inspired by the same design patterns. Ontologies could / should be similarly ubiquitous to deploy. Are they?
WHY API-FIRST?

Browse cloud service integrations at Zapier and IFTTT

Make your app stickier than honey
With a single integration to over 500 other popular services.

INCREASE ENGAGEMENT
Extend your app with over 500 integrations

ONGOING SYNC
Not a one-time import or export

NO HASSLES OR HEADACHES
Don’t babysit errors on external APIs

WORKS FOREVER
We handle ongoing maintenance of all APIs
Connect the apps you love

We connect your favorite apps, so they work best for you.

Connect Your Home  Keep in Touch

Be More Productive  News Alerts

Stay Healthy  Shop Smarter

Works great with:

Evernote  Facebook  Philips Hue  Pocket  Twitter

View all 287 services
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- Presenter not authorized to speak officially on behalf of projects, products or organizations
- Information may be dated
- Seek out latest information on primary sources
- Hype-filters should be enabled
CLOUD SOLUTIONS: COMMERCIAL TRACTION

CognitiveScale Awarded Multi-Year Contract to Deploy Cognitive Solutions Across the Enterprise

CognitiveScale’s machine intelligence powered Cognitive Cloud Fabric to aid patient experience, employee engagement, and enterprise operations.
Build your app with Watson services

Get access to the full suite of speech, vision, and data APIs plus developer tools, demos, and documentation

Get started free

Watson Developer Cloud

Bring the power of cognitive computing to your apps. From analyzing images and video to gaining insights from text, discover how language, vision, speech and data APIs from Watson Developer Cloud can help you solve complex problems. Here is a sample of Watson Developer Cloud offerings. View all services to see all the Watson APIs available now on Bluemix.
IBM WATSON: “ONTOKENGY ANALYSIS”
Cognitive data and the thinking enterprise

FEBRUARY 19, 2016

by John C. Vaughan
Senior Managing Consultant, Cognitive Watson Solutions, IBM
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unless someone actually does something with it.

So what happens if we flip the script, and create an enterprise in which a business’s computers aren’t just watching, but thinking and acting on those aforementioned missed opportunities? Imagine a world where you incorporate the best way to “think” about your business and processes within the computer. Instead of just collecting data and not doing much with it, cognitive solutions can read the data, understand it, make decisions tell others and create a social mini-movement to drive action.

Cognitive architecture can drive automated decisions and improve business results. The thinking businesses of tomorrow will be empowered by computers reinvented to do more than just watch; they’ll also work.

Are cognitive businesses for real?

Is the cognitive enterprise a fanciful notion, stranger than fiction? Or is it absolutely a reality and not just the musings of futurists? Through surveys, the latter appears to be true: over 89 percent of telecom executives believe cognition will have a critical impact on their future business. In insurance? 96 percent of insurers plan or investing in cognition capabilities.

Knowledge graphs, ontologies, deep learning algorithms, dialog systems, data availability, open APIs and the development of cognitive computing systems (like IBM Watson) are fusing to enable the rise of thinking businesses. Such businesses leverage every opportunity to interact with data, to reason, adapt and continuously learn.

What does this mean in practice?
SAS: ONTOLOGY FOR ANALYTICS & BI


SAS® Ontology Management
Define and manage semantic terms for better categorization

Easily organize and process content from different systems, silos and repositories across your organization. Our sophisticated ontology software provides a secure, centralized environment for managing and defining semantic terms to ensure consistency and standardization. By creating and administering collaborative
SAS: ONTOLOGY MANAGEMENT STUDIO

Includes class editing, XML import, RDF formats
OASIS TOSCA

**TOSCA**: Topology and Orchestration Specification for Cloud Applications

**TOSCA & YANG - The Big Picture**

NFV APPS (vRouter, vFW, vLDAP, vDNS)  
(IMS, EPC, CDN,...)

TOSCA  
Application Orchestration & Configuration  
Logging, Monitoring  
Policy, Workflow MGT

YANG  
Network Orchestration and Configuration

Cloudify

PUBLIC CLOUD  
BYON  
VMWARE  
OpenStack  
Network

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SDN MEETS ONTOLOGY?
SAP RESEARCH

Via: Florian Probst (c. 2012) “SAP Research: An Industry Perspective on Semantic Technologies”

- Probst walks through several use cases and prototypes, including EMS, oil & gas
- Lessons learned:
  - Establish role for “ontology engineer”
  - Improved browsers for ontology editors, help, & visualization metaphors
  - “Ontologies are still hard to use for software engineers while the benefit is not directly obvious”
  - There are performance issues
  - Need new mechanisms for semantic annotations
PROGRESS WITHIN THE DOMINANT DESIGN PATTERN? HTTP://ISERVE.KMI.OPEN.AC.UK/
ISERVE (CONT’D)

Open Source: https://github.com/kmi/iserve

• Web Application - iServe Browser
• Read&Write RESTful API
• Linked Data principles
• SPARQL endpoint
• Content negotiation (RDF, HTML)
## iServe RESTful API

<table>
<thead>
<tr>
<th>Service</th>
<th>Method</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>List Services</td>
<td>GET</td>
<td><a href="http://iserve.kmi.open.ac.uk/data/services">http://iserve.kmi.open.ac.uk/data/services</a></td>
</tr>
<tr>
<td>Add a Service</td>
<td>POST</td>
<td><a href="http://iserve.kmi.open.ac.uk/data/services">http://iserve.kmi.open.ac.uk/data/services</a></td>
</tr>
<tr>
<td>Get a Service</td>
<td>GET</td>
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</tr>
<tr>
<td>Remove a Service</td>
<td>DELETE</td>
<td><a href="http://iserve.kmi.open.ac.uk/data/services/%7Bserviceld%7D">http://iserve.kmi.open.ac.uk/data/services/{serviceld}</a></td>
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<tr>
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</tr>
</tbody>
</table>
ISERVE ON SWAGGER + GITHUB

“By this all people will know you are my discipline.”  
(refactoring of John 13:25)
“Swagger is a simple yet powerful representation of your RESTful API. With the largest ecosystem of API tooling on the planet, thousands of developers are supporting Swagger in almost every modern programming language and deployment environment. With a Swagger-enabled API, you get interactive documentation, client SDK generation and discoverability. We created Swagger to help fulfill the promise of APIs. Swagger helps companies like Apigee, Getty Images, Intuit, LivingSocial, McKesson, Microsoft, Morningstar, and PayPal build the best possible services with RESTful APIs.”
CLOUD SERVICES FOR ONTOLOGIES

PROGRESS?
WHERE ARE ONTOLOGIES?

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CURRENT STATUS

• Too few initiatives (search Github, Swagger)
• Some of the few are industry giants
• Adoption is being pushed from top (SAS), bottom (Nakina Systems), and middle (SAP)
• There are clear use cases (e.g., CRM ↔ marketing automation)
• Competing software development life cycle models still prevail
• Among semantically rich alternative development models, even they have light traction (model-driven development, domain-specific development)
• Roll-your-own (without ontologies) must get harder.
• iServe is a potential influencer.
CLOUD SERVICES & ENGINEERING APPLICATIONS

CLOUD SERVICES TRACK 2
ENGINEERING APPLICATIONS

TRACK CHAMPIONS

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