

BEST Practices in **REST**

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Linking Assets, Products and People For Societal Benefits

*Human Assistance
Disaster Relief*



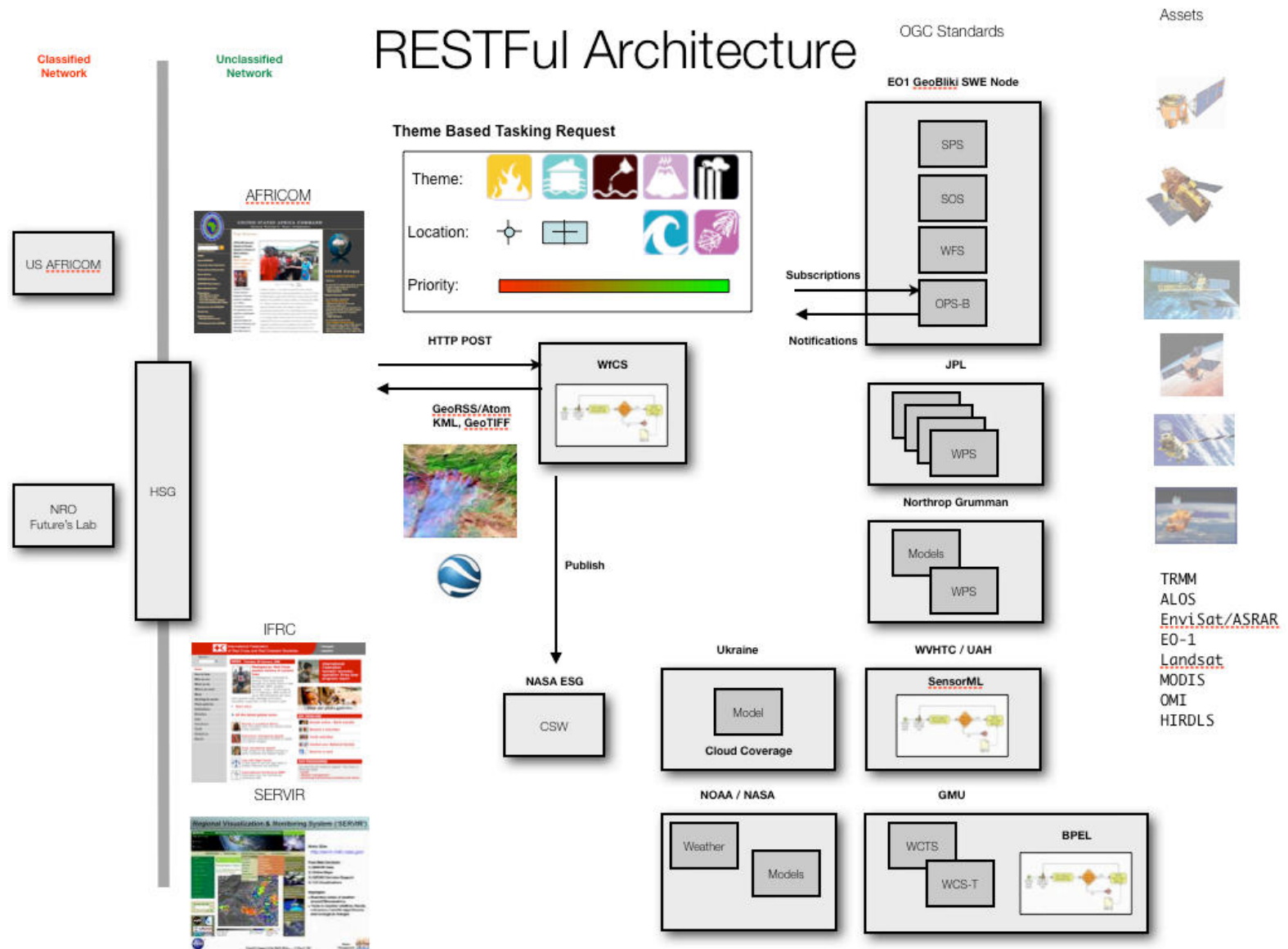
NASA SensorWeb



- Many Loosely Coupled Organizations
 - NASA GSFC, Ames, JPL
 - Universities: UMD, UAH, GMU...
 - Com: NGIT, Vightel, Joyent...
- Many Assets
 - EO-1, TERRA, AQUA, TRMM, IKHANA
 - SPOT-5...
- Many Web Services
 - SPS, SOS, WFS, WPS, WfCS, OPSB
- Diverse User Communities
 - NASA Science, RSAC, Red Cross, SERVIR, NRO, DIA, USAFRICOM



RESTFul Architecture



Standards & Interoperability Climbing Path

2009 ?

Mt Fuji

— 2008

- R&D 100 Award
- EC '08
- OWS-5

• 2007

- Architecture Selected for GEOSS Pilot
- OWS-4

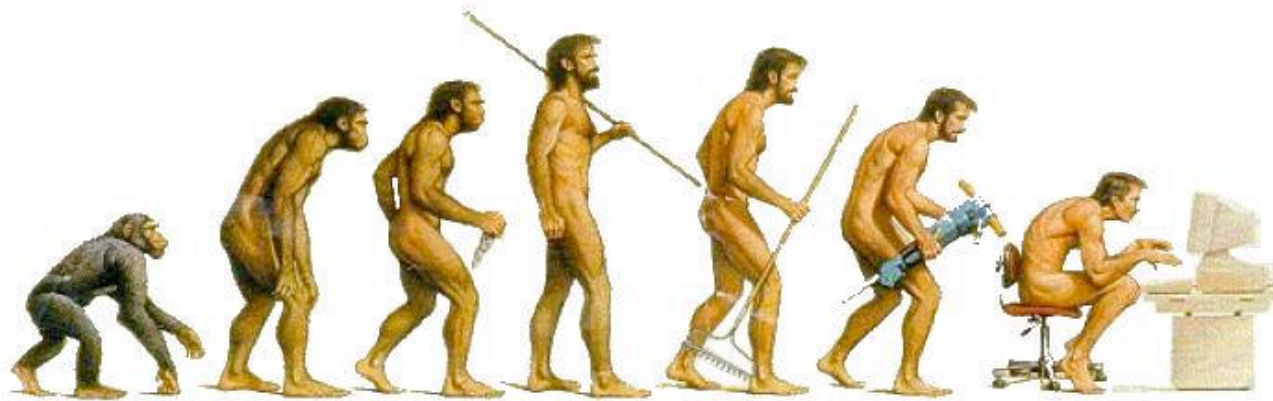
Observations



195



Evolution



(OR IS IT?)

Circa 1994-1995

KVP Bindings

REST RPC-Style

`http://host?request=GetFeasibilities`

`http://host?request=GetRequest`

`http://host?request=DescribeProcess`

`http://host?request=Submit`

`http://host?request=GetObservation`

Circa 2005

SOAP Bindings: Optional Requirements

REST-RPC to SOAP

WSDL 2.0

and WS-* Layers...



$$\begin{array}{r} \$205,000,000 \\ + \$145,000,000 \\ \hline \end{array}$$





Think Different



1984 Superball



1985 Lemmings



RESTFUL RENAISSANCE ARCHITECTURE



2007

Richardson & Ruby

HTTP Reduced Instruction Set

POST

GET

PUT

DELETE

CREATE

READ

UPDATE

DELETE

The REST that you know

Atom Publishing Protocol (APP)

From Atom to AtomPub

A Consistent Pattern For All Web Services

Discovery Via APP Service Document

Describe Resources Instead of the Methods

ROA: Where is the Cheese?

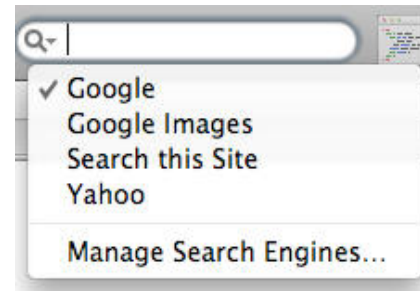


The Cheese Is The Resource

Accessing Workflows

- GET /wfcs/workflows Retrieve all available workflows
- GET /wfcs/workflows.xml Retrieve all available workflows in xml output
- GET /wfcs/workflows.html Retrieve all available workflows in html output
- GET /wfcs/workflows.atom Retrieve all available workflows in atom output
- GET /wfcs/workflows/23 Retrieve specific workflow by id
- GET /wfcs/workflows/eo1-tasking Retrieve specific workflow by name

RESTFuI = REST + APP + ...

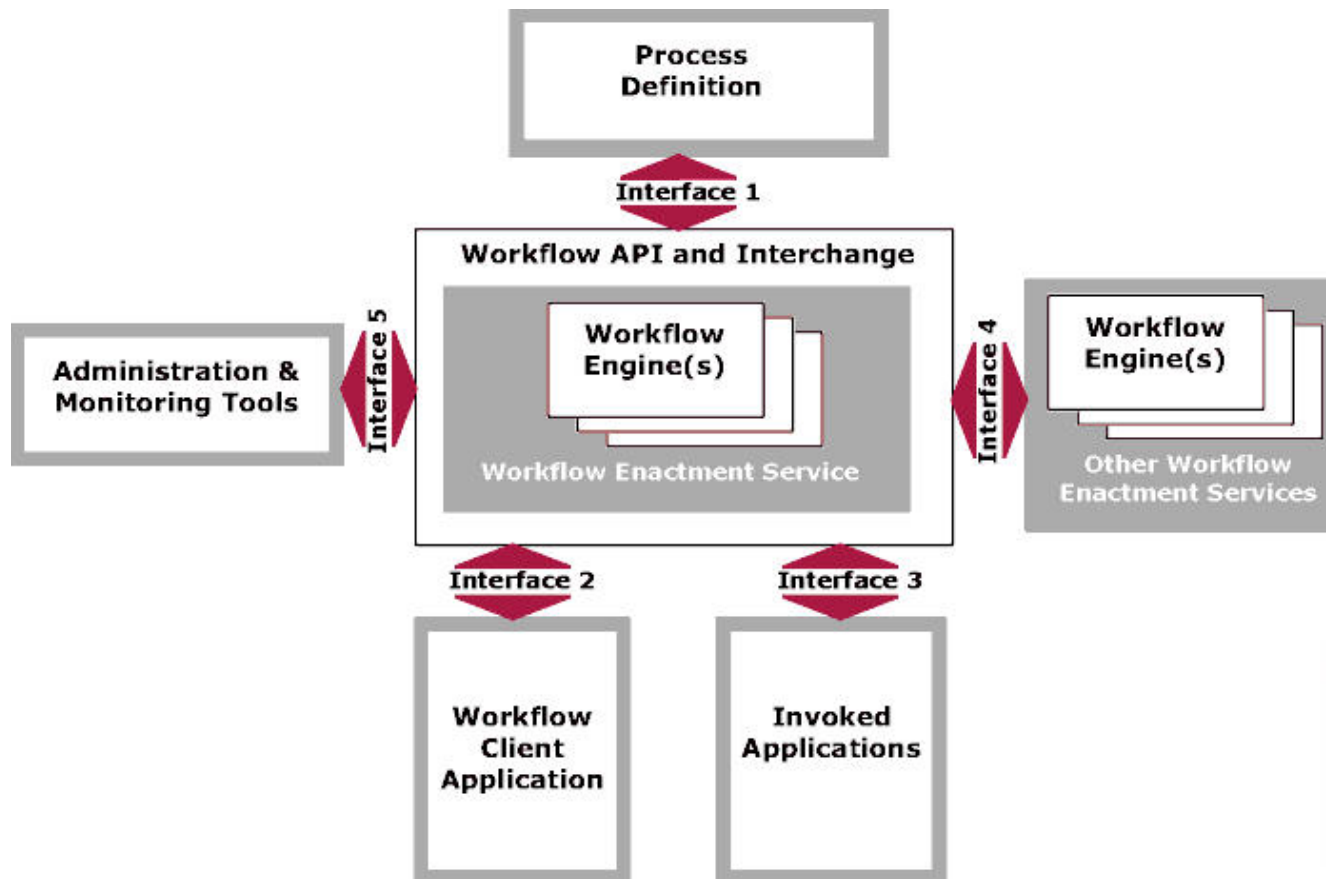


WfCS

An OGC RESTFul Workflow Chaining Service

3

Workflow Reference Model



From SOAPy WfXML 2.0 to **WfXML-R**

June 16, 2008

OGC and WfMC Partner to Advance Standards Goals

"It took strong interoperable standards to deliver the geo-enabled Web that is critical to all business today. The next step is a 'flow-enabled web' to support both mass market and enterprise processes".

Nathaniel Palmer, WFMC.

Lessons Learned

Security is achievable using REST

Workflows Can Be Discovered Easily!

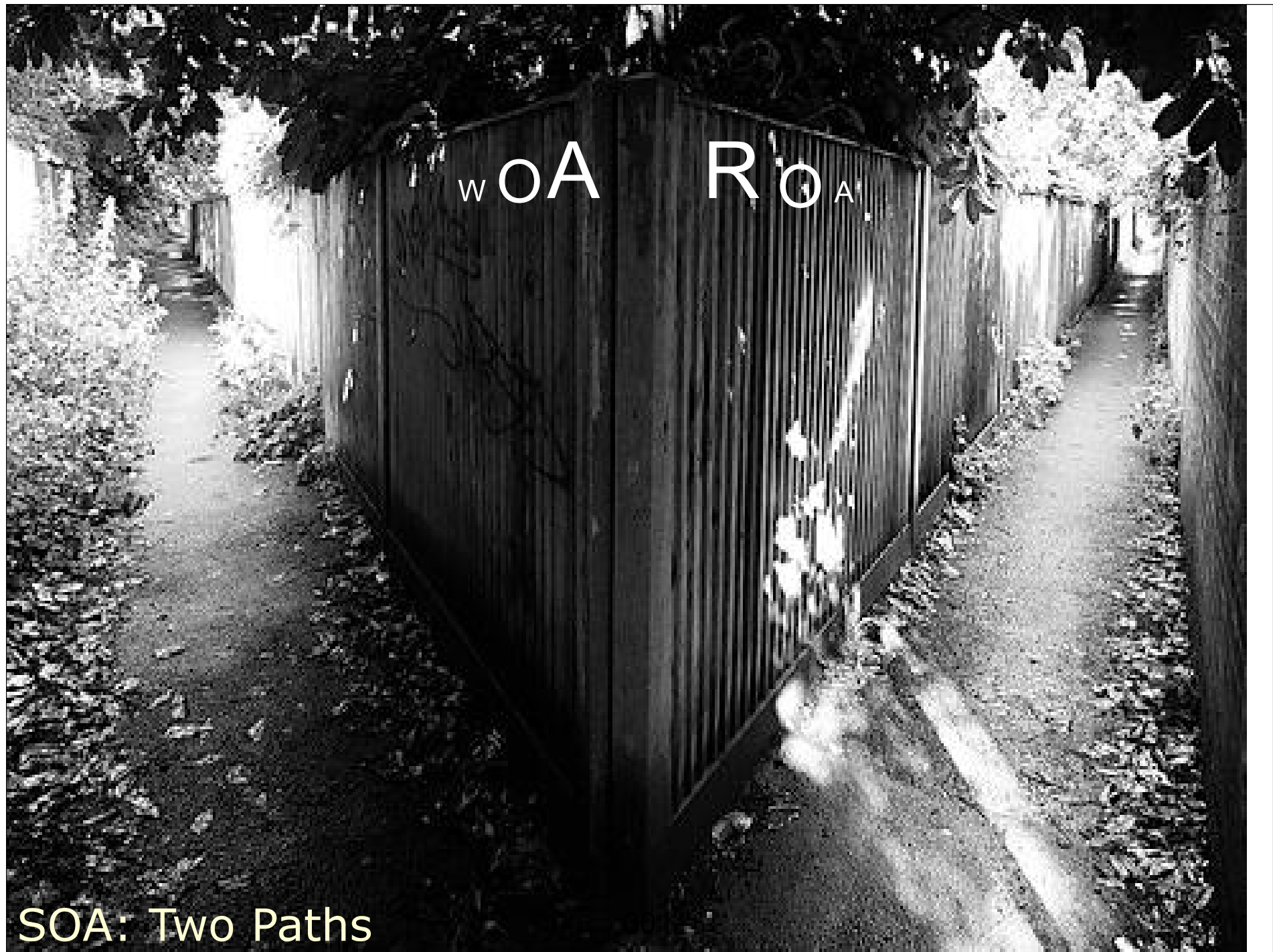
Everything is a **Workflow!**

OPEN QUESTIONS?

Do We Still Need an OGC SPS Specification?

Do We Still Need a OGC WPS Specification?

Can We Mandate RESTFul Bindings for all OGC Services ?



WOA

ROA

SOA: Two Paths

The RESTFul Way

安らぎの道



Featured on gaileguevara.blogspot.com/
Architecture & Interiors by SCDA ARCHITECTS
Photography provided by www.scdarchitects.com/

SensorWeb 2.0: Symphonic



May 2008: Honda's Asimo Robot conducting the Detroit Symphony Orchestra

SensorWeb 3.0: iSensorWeb



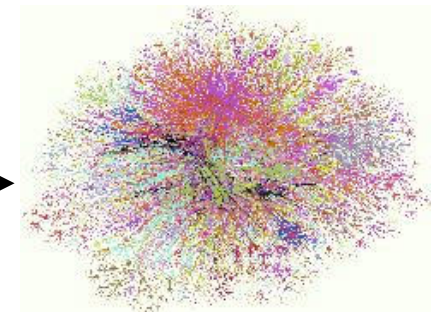
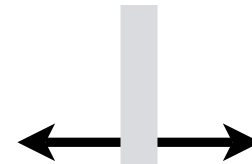
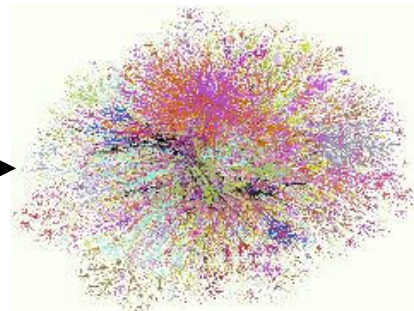
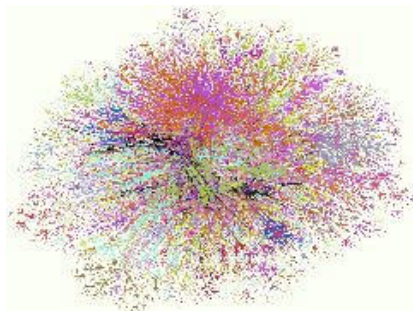
Horizontal Expansion of the SensorWeb



SCI

GENSER

Open



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Vertical Expansion Of the SensorWeb



Thank You!

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