OBJECT MANAGEMENT GROUP®

OMG Past – And SDA Future?

Richard Mark Soley, Ph.D.
Chairman and CEO
23 May 2017

No Magic World Conference 2017

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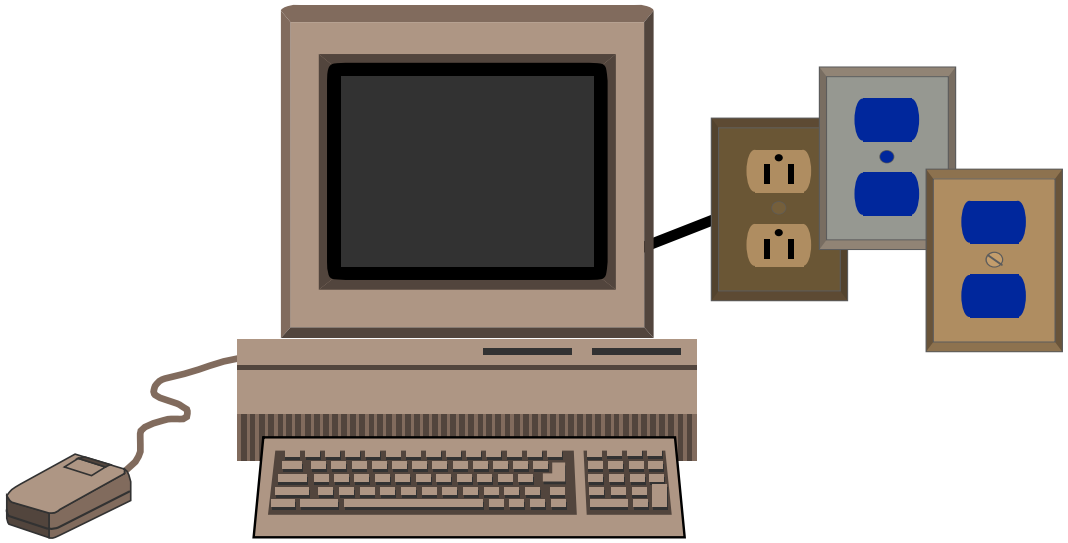

OMG VISION

The Global Information Appliance

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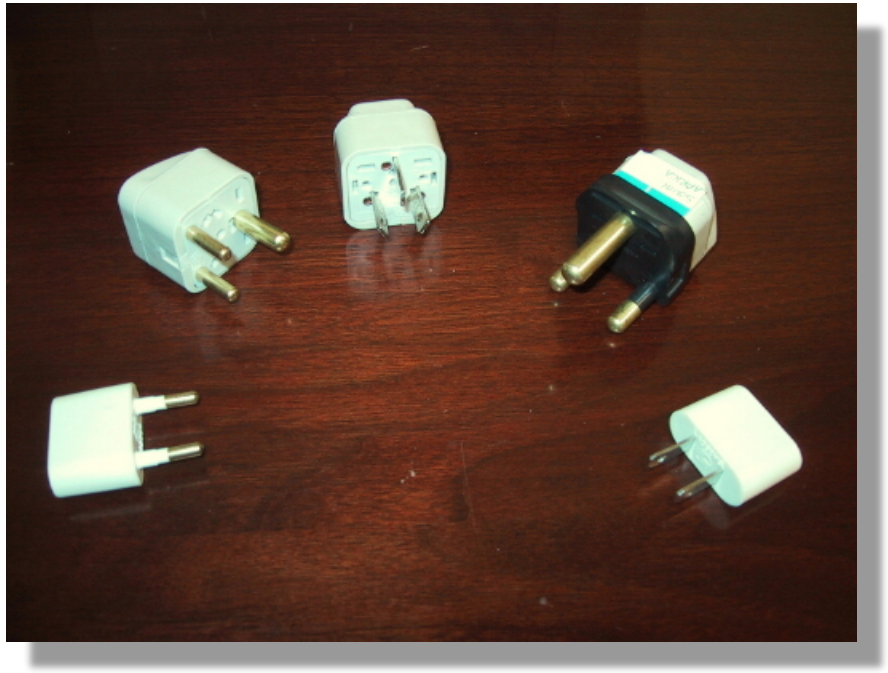

OMG VISION

N+1 is the Wrong Solution

OMG'S MISSION

- Focused on rapidly developing markets based on open, international, rapidly-developed standards
- Develop an architecture, using appropriate technology, for modeling & distributed application integration, guaranteeing:
  - reusability of components
  - interoperability & portability
  - basis in commercially available software
- Specifications freely available
- Implementations exist
- Member-controlled not-for-profit

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OMG'S FOCUS

- Three key "infrastructure" standards foci:
  - Modeling
  - Middleware
  - Real-time & other specialized systems
- More than 20 "vertical market" foci:
  - Civil & Military Government
  - Financial Services
  - Healthcare
  - etc.
- Focused working groups
  - Business Architecture
  - Cloud Computing
  - Software Quality Initiative

SOME OF OUR STANDARDS DOMAINS

OMG C4I

OMG Government

OMG Systems Engineering

OMG Space

OMG Finance

OMG Robotics

OMG Healthcare

OMG Telecom

OMG Business Modeling & Integration

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TIMELINE

OMG

omg!

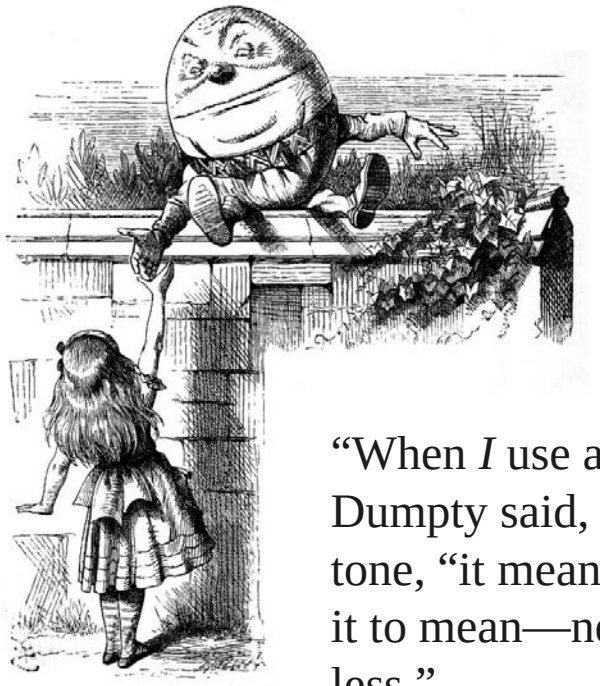
O-M-G
OUR MOB'S GYM

OMG!

OMG
MOTORWORKS

OMG
OM Group

OMG



What Does it Mean?

“When *I* use a word,” Humpty Dumpty said, in rather a scornful tone, “it means just what I choose it to mean—neither more nor less.”

“The question is,” said Alice, “whether you *can* make words mean so many different things.”

“The question is,” said Humpty Dumpty, “which is to be master—that's all.”

9 September 1917 letter from Admiral John Arbuthnot Fisher to the First Lord of the Admiralty (*that would be Winston Churchill*)

OMG! OMG!

"I hear that a new order of Knighthood is on the tapis -- O.M.G (Oh! My! God!) Shower it on the Admiralty!!"

http://www.huffingtonpost.com/2012/08/08/omg-history-winston-churchill_n_1753735.html

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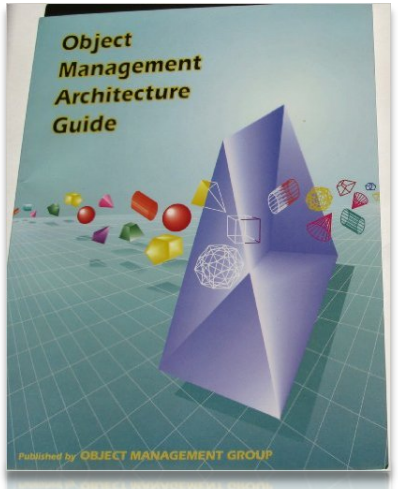
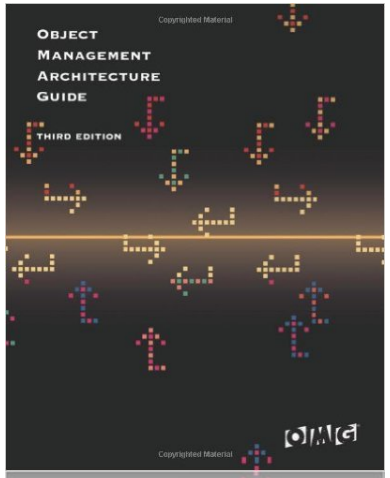

Object
Management
Architecture
Guide
Published by OBJECT MANAGEMENT GROUP


OBJECT
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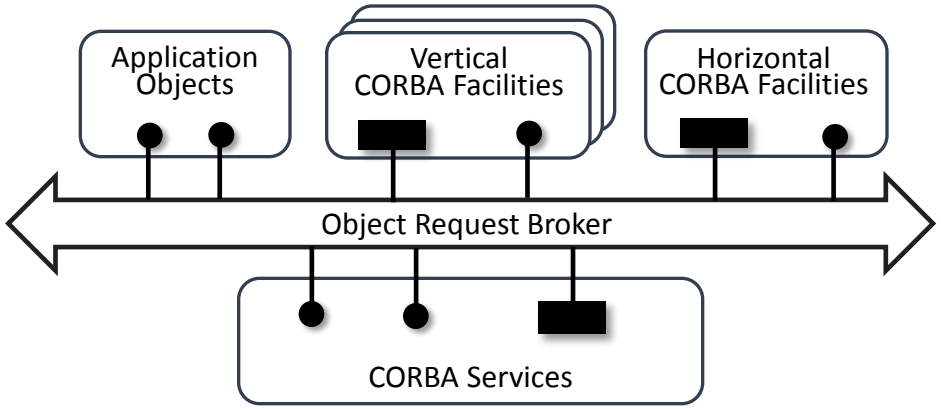
THIRD EDITION


Application Objects
Vertical CORBA Facilities
Horizontal CORBA Facilities
Object Request Broker
CORBA Services

ORB OR ORM ?

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REQUEST BROKER

- RFI (Request for Information) period closed August 15, 1990 with 8 responses.
- RFP (Request for Proposals) period closed December 31, 1990; 10 Letters of Intent.
- Seven proposals presented March 1991: APM, Bull, Digital, DSET, HP/Sun, HyperDesk, & NCR/ODI.
- Field narrowed to two (HyperDEC & HP/Sun/NCR/ODI for May 15 demos.
- Merged proposals presented September 1991.
- Proposal accepted October 1991.

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TIMELINE

CORBA como un estándar para objetos distribuidos

- CORBA 2.0 añade interoperabilidad como una meta en la especificación.
- En particular, CORBA 2.0 define un protocolo de red, llamado IIOP (Internet Inter-ORB Protocol), que permite a los clientes usar un producto CORBA de cualquier vendedor para comunicarse con objetos usando un producto CORBA de cualquier otro vendedor.
- IIOP funciona a través de Internet, o más precisamente, a través de cualquier implementación.

CORBA INTEROPERABILITY

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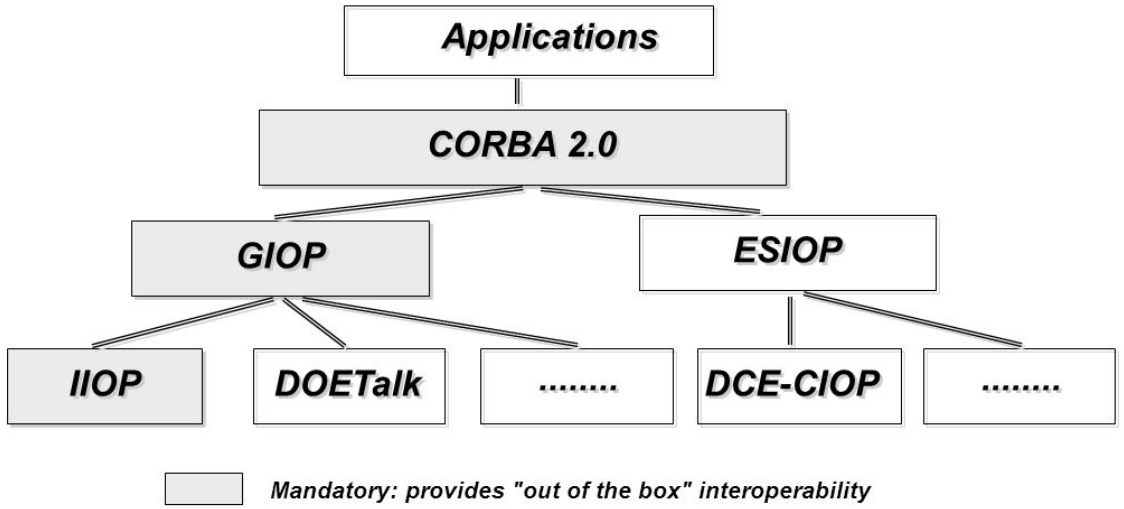
OK, CORBA INTEROPERABILITY



DON'T FORGET DDS

- The Data Distribution Service is highly successful
  - 1.0 version came out June 2003
  - Currently on 1.4
- Found in finance, healthcare, weapon systems, command & control, communications, …
- Uses CORBA's IDL and on-the-wire format CDR!

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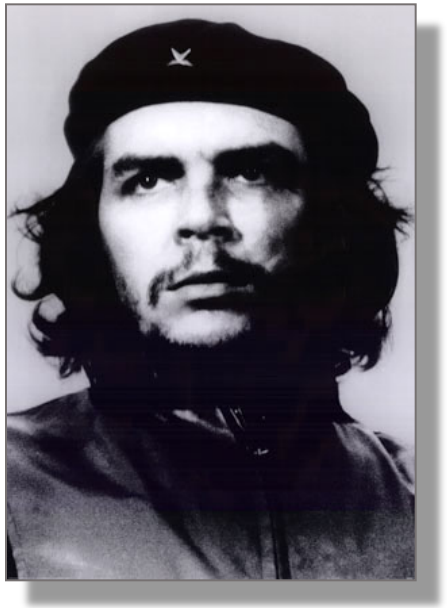

IT'S A REVOLUTION!

MODELING CHANGES EVERYTHING!

- Throw out those pesky objects!
- Toss away your silly compilers!
- No more boring coding!
- All your software pain gone forever!

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EVERYTHING OLD IS NEW AGAIN

- Unfortunately I'm old enough to remember
  - Artificial Intelligence
  - Object Technology
  - Distributed Computing
  - XML
  - Web Services
  - Enterprise Service Bus
  - Service Oriented Architecture
  - Cloud Computing & Virtualization
- This technology does everything! It makes miracles, changes water to wine…

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MOVE TO MODEL DRIVEN EVERYTHING!

That's a model, driving, get it?

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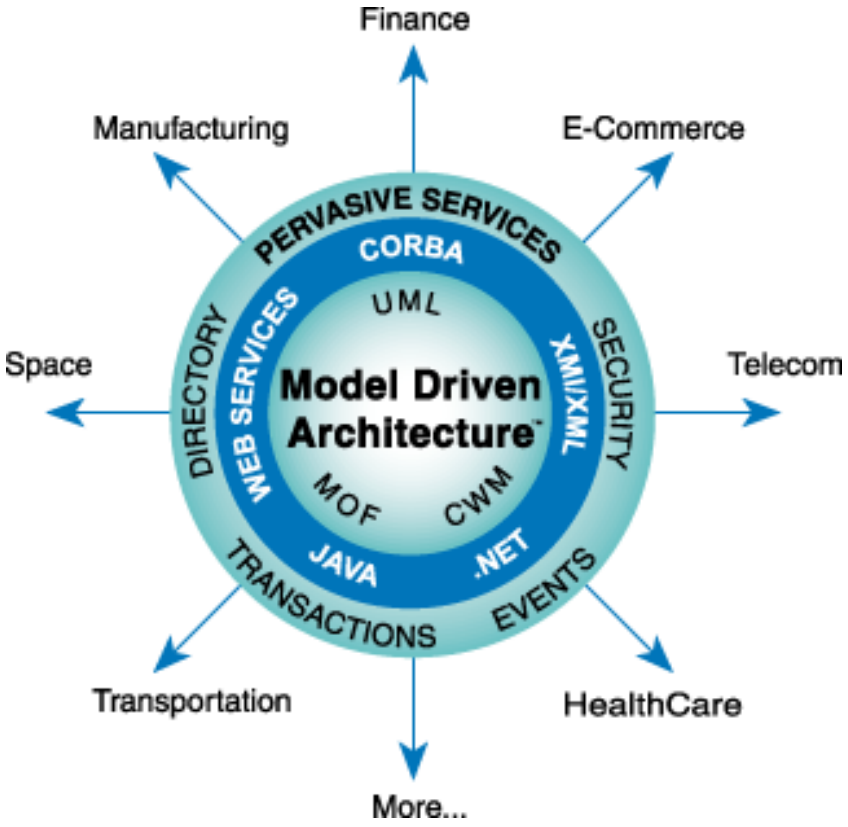
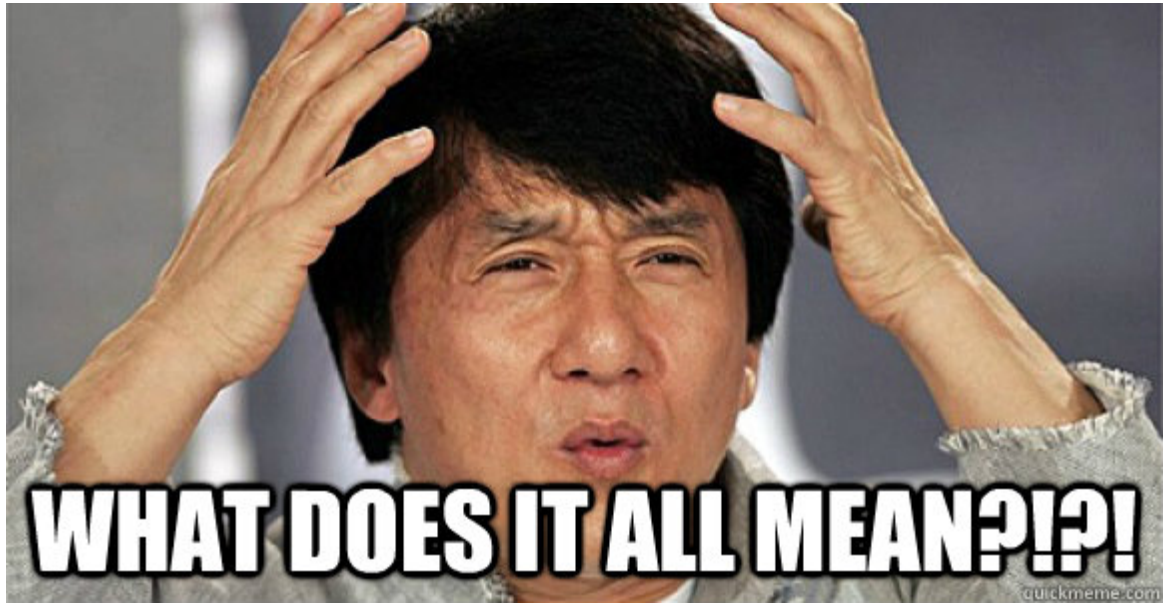


WAS IDL THE POOR MAN'S UML?

What Does it Mean?



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OMG IS ABOUT COMMUNITIES

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"We don't have many standards and we don't know what standards we want.”

“But we know we want them!”

INDUSTRIAL INTERNET STANDARDS

Standards are the most important enabler for innovation in the world today.

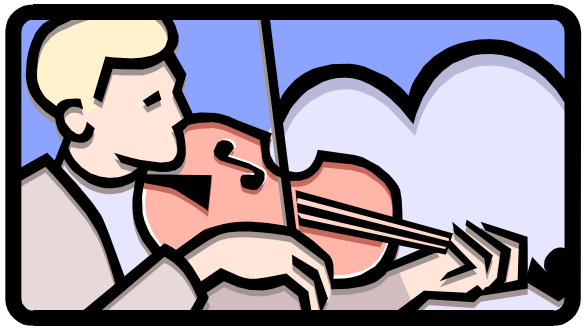
industrial internet® CONSORTIUM

WHERE ARE THE STANDARDS OPPORTUNITIES?

- **Terminology**
  - "Industrial Internet" vs. "Cyber-Physical Systems" vs. "Internet of Things" vs. "Machine-to-Machine"
- **Middleware**
  - There will be many connection regimes with different requirements (transactional, performance, connectedness, reliability, etc.): but DDS is key
- **Modeling (well, that's obvious) & *Semantics***
- **Vertical markets**
  - Energy, Transportation, Communications, etc. etc.

WHERE DOES OMG PLAY?

- At the bottom of the stack
  - Data Distribution Service (DDS)
- In the middle of the stack
  - Dependability assurance framework
  - Threat modeling
  - Structured assurance case metamodel
  - Unified component model for embedded
- At the critical top of the stack
  - Vertical markets: oil & gas, healthcare, finance, etc.
  - Semantics/ontology: definition, translation, integration



http://www.omg.org/hot-topics/iot-standards.htm

MODELING IS THE CORE

- These are large, complex systems of systems
- Nothing works better for large, complex systems of systems than modeling
- Languages like UML (for software), SysML (for complex systems), BPMN (for business processes) will be core to designing Industrial Internet systems
- You hold the key!

What Does it Mean?

The Meaning Of Semantics

se·man·tics

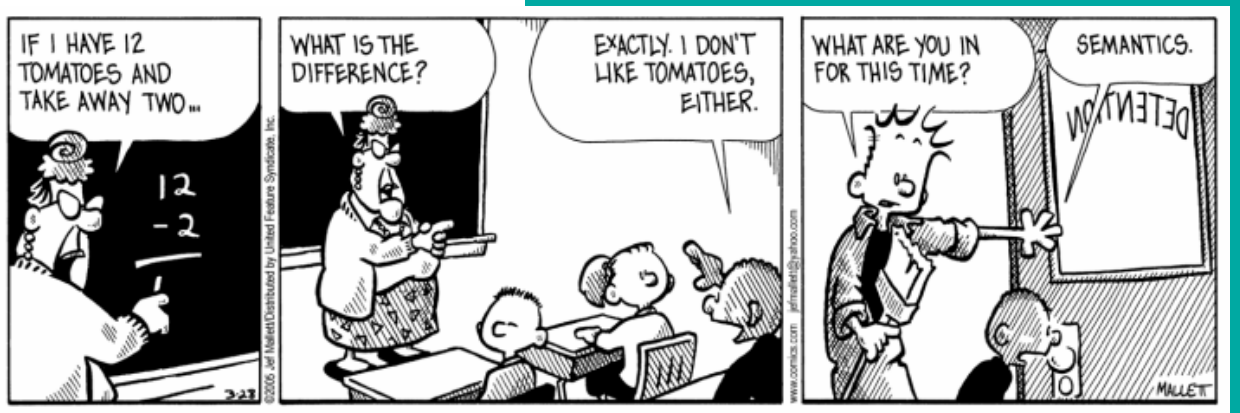
/səˈman(t)iks/

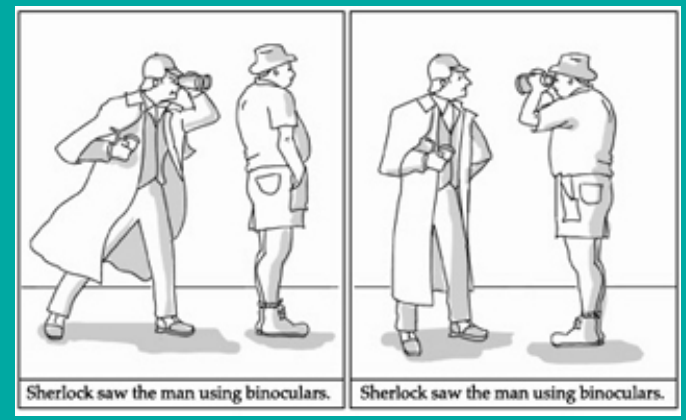
noun

the branch of linguistics and logic concerned with meaning. There are a number of branches and subbranches of semantics, including *formal semantics*, which studies the logical aspects of meaning, such as sense, reference, implication, and logical form, *lexical semantics*, which studies word meanings and word relations, and *conceptual semantics*, which studies the cognitive structure of meaning.

- the meaning of a word, phrase, sentence, or text.
  plural noun: **semantics**
  "such quibbling over semantics may seem petty stuff"

The Meaning Of Semantics





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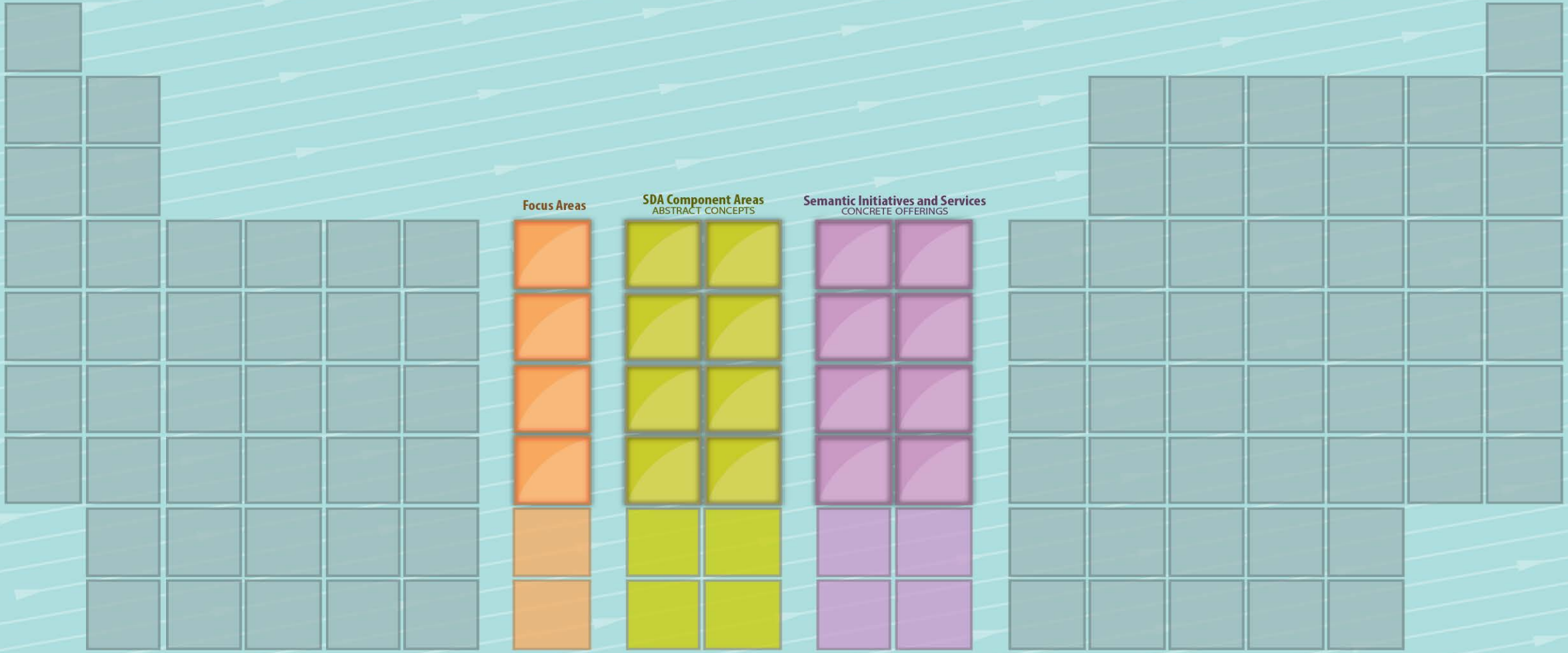
SEMANTICS DRIVEN ARCHITECTURE ™



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SEMANTICS DRIVEN ARCHITECTURE™

Focus Areas

- Business Architecture and Modeling
- Industrial Internet of Things
- Systems Modeling Environment
- Sovereignty and Security

SDA Component Areas
ABSTRACT CONCEPTS

- Conceptual Modeling
- Analytics / Data Science
- Business Rules
- Machine Inferencing / Learning
- Knowledge Representation
- Linguistics
- Decision Support
- Natural Language Processing

Semantic Initiatives and Services
CONCRETE OFFERINGS

- Business Architecture
- Interoperability Standards
- Transformation Services
- Terminology and Ontology
- Decision Support Standards
- Modeling Languages
- Process Standards
- Formal Logic

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SEMANTICS DRIVEN ARCHITECTURE ™

Focus Areas	SDA Component Areas (ABSTRACT CONCEPTS)		Semantic Initiatives and Services (CONCRETE OFFERINGS)	
Business Architecture and Modeling	Conceptual Modeling	Analytics / Data Science	Business Architecture	Interoperability Standards
Industrial Internet of Things	Business Rules	Machine Inferencing / Learning	Transformation Services	Terminology and Ontology
Systems Modeling Environment	Knowledge Representation	Linguistics	Decision Support Standards	Modeling Languages
Sovereignty and Security	Decision Support	Natural Language Processing	Process Standards	Formal Logic

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The Industrial Internet of Things

Comprises many different requirements:

- Middleware (communications)
- Sensor fusion
- Realtime data analysis
- Delivery of results to decision-makers
- …or real-world actuation.

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Modeling Languages

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Whither MDA?

- Modeling becomes more important than ever; we have to be able to model semantics at every level
  - We will depend more than ever on the common modeling core, MOF
- We will increase our focus on vertical markets
  - Already 85% share of standards processes; likely to increase
  - We are already defining semantics in verticals
    - Languages
    - Protocols
    - API’s
- Our semantics activities take on a much higher level of importance

Semantics Focus

- Looking at our highest priorities right now, semantics represents our biggest problem *and biggest opportunity*
  - Industrial Internet of Things
  - Business Architecure and Modeling
  - Systems Modeling Environment
  - Sovereignty & Security
- We already have the strongest possible base for a new focus
  - Robust middleware
  - Powerful and broad family of modeling languages
  - Large and growing collection of vertical market standards from software communications to financial services

TM

OBJECT MANAGEMENT GROUP®

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