SOA IN HEALTHCARE CONFERENCE
SOA Roadmap to Integration:
Architecting Interoperability in Healthcare
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Addressing Systemic Complexity with SOA and Cloud

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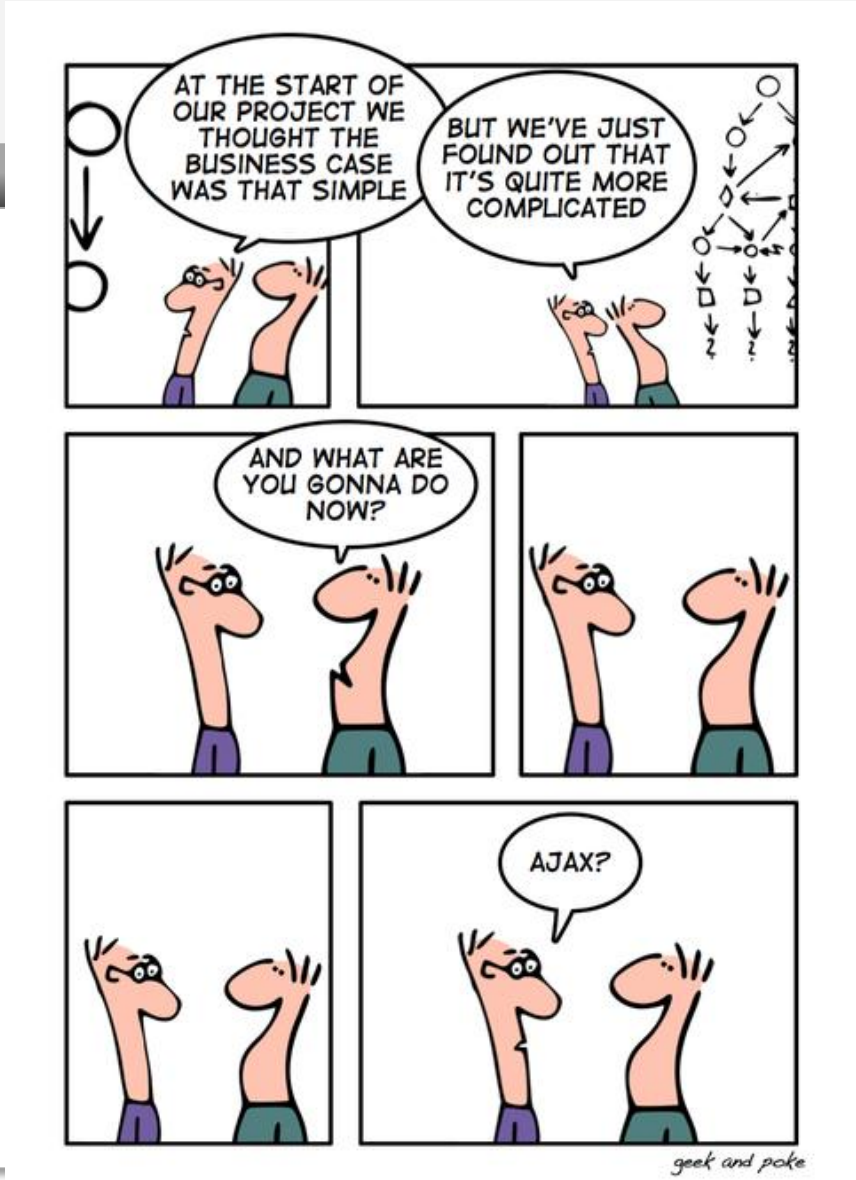
Introduction



Concept of SOA

The Open Group

- Service-Oriented Architecture (SOA) is an **architectural style** that supports service orientation, which is a way of thinking in terms of services and service-based development and the outcomes of services.

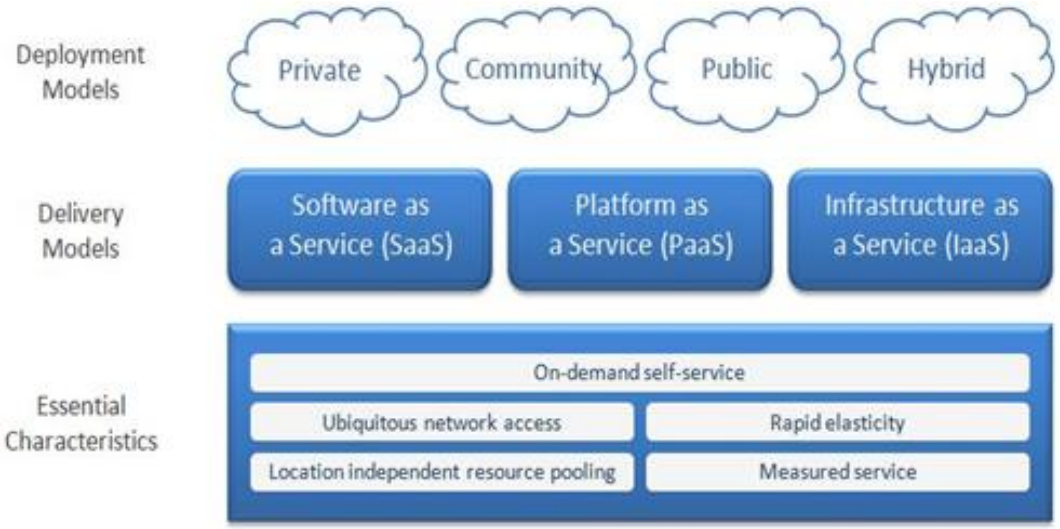
OASIS

- SOA is 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.

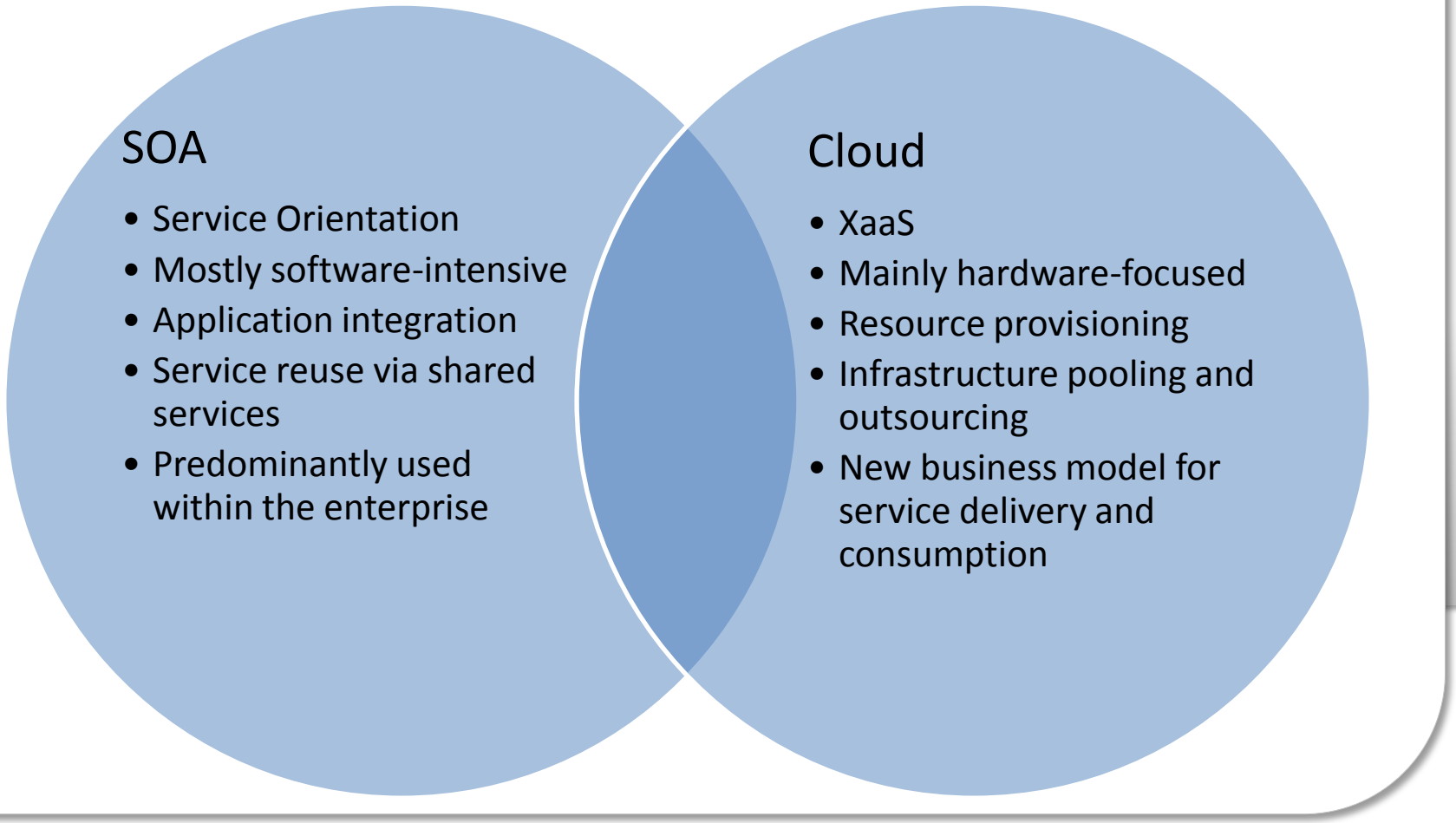
Definition of Cloud Computing

Cloud Computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. This cloud model promotes availability and is composed of five essential characteristics, three service models, and four deployment models.

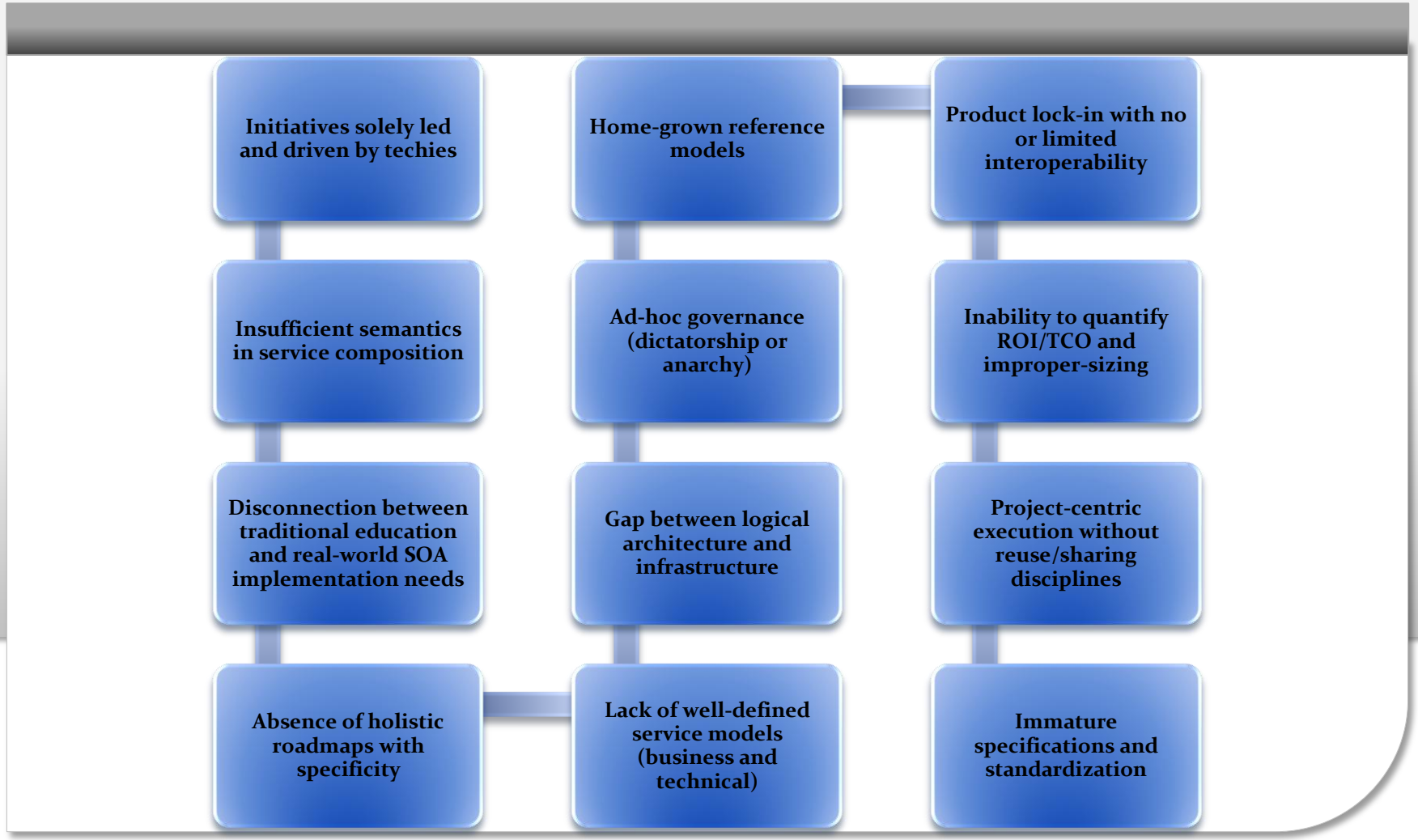
-- NIST Definition, V15



Why SOA+Cloud Combined?



Barriers to Successful SOA



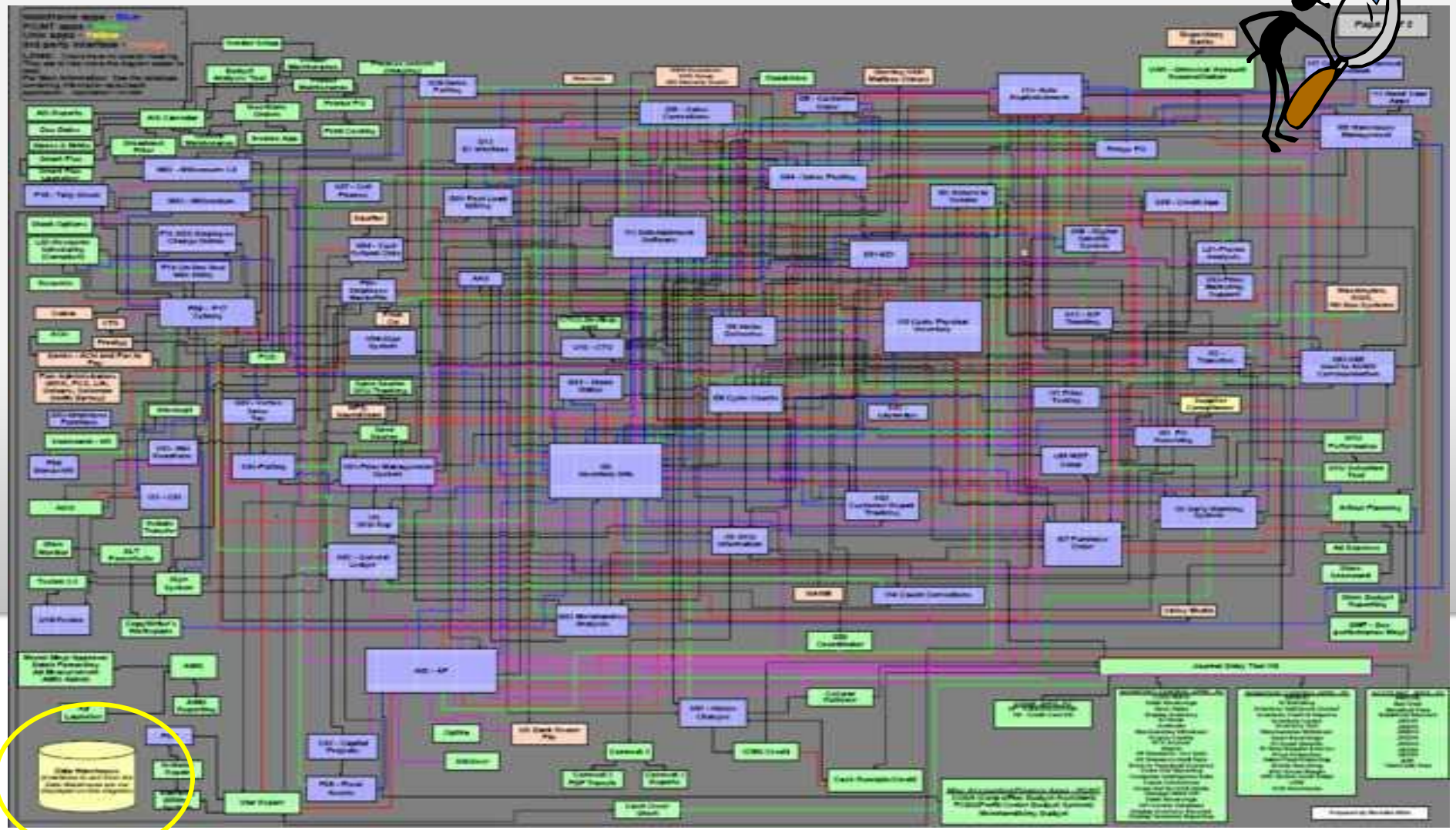
Top 10 Cloud Adoption Inhibitors

Risk-Testing	Data Location	Data and Code Portability	Data Loss	Data Privacy
•How is the cloud computing vendor managing risk?	•Where is the data being stored? In-country or out of the country? What restrictions and laws are placed upon the data dependent on location of stored data?	•Once the data has been put onto the cloud computing system, how difficult will it be to get the data back out?	•Does the cloud computing system back-up and restore data?	•Does the data become more vulnerable when it is located on an external cloud computing system?

Vendor Viability	Performance	ROI	Security	Control
•What will happen if the cloud computing vendor goes out of business?	•How can SLA guarantee performance?	•Does operational expense always trump capital expense, at least in technology investment?	•What are the vulnerabilities in the Cloud architecture?	•How can a cloud provider be trusted that they care about your IT processing as much as you do?

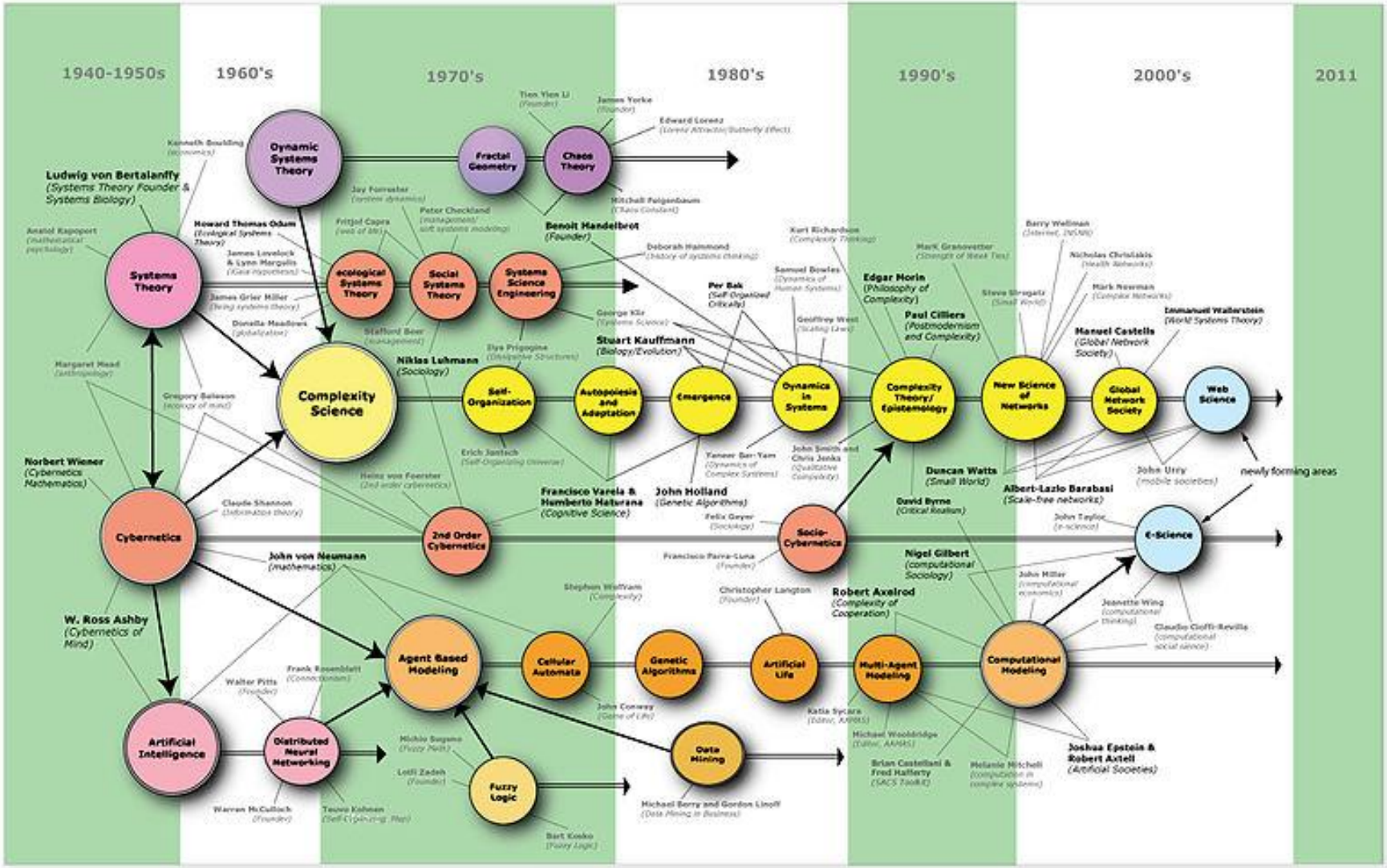
Source: Adapted and extended from Gartner and InformationWeek reports in 2009 and 2010.

What these lead to…



How to Effectively Deal with Complexity?

State of Art

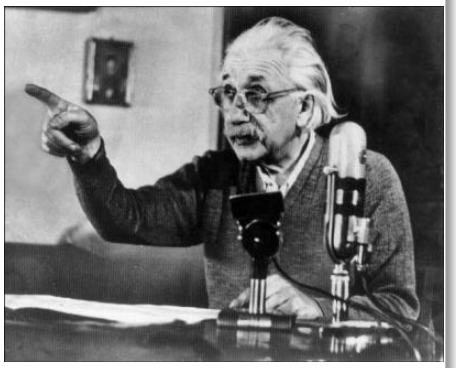


Source: Wikipedia

In Search for a Pragmatic Approach

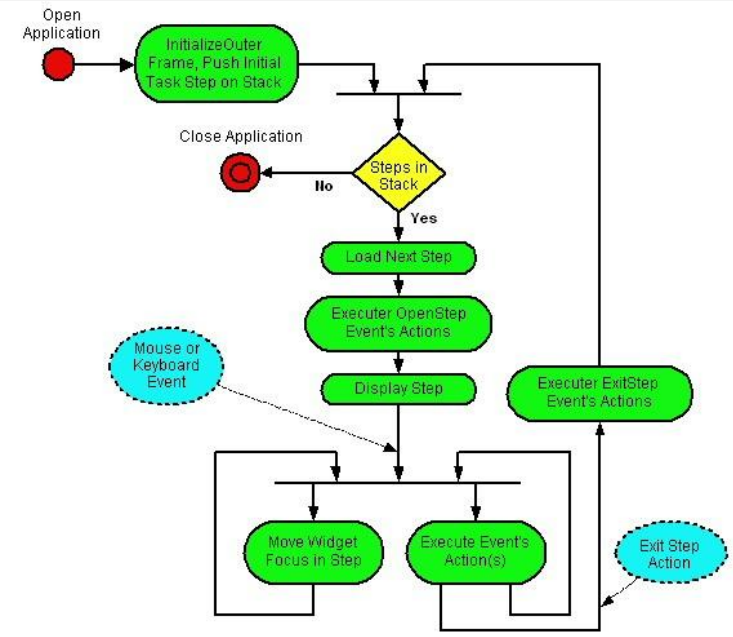
Tomorrow's computing systems cannot be built using methods of today. [Computing Research Association (CRA) report]

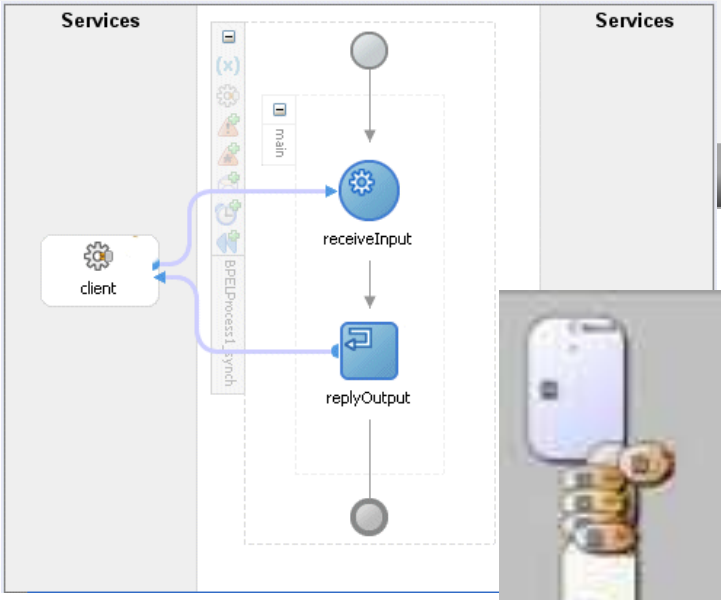
We can't solve problems by using the same kind of thinking we used when we created them. [Albert Einstein]

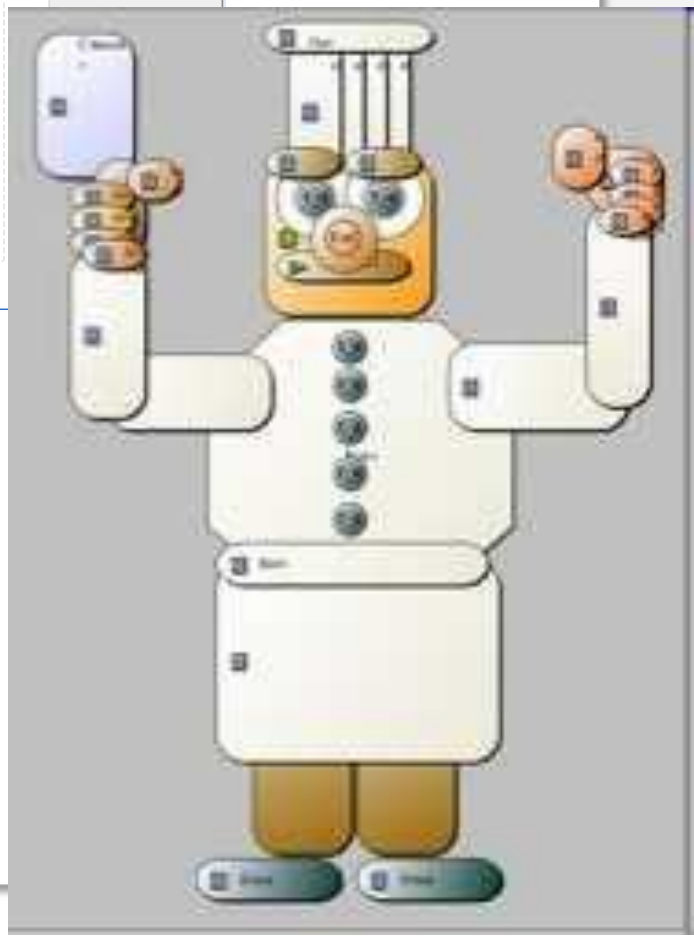


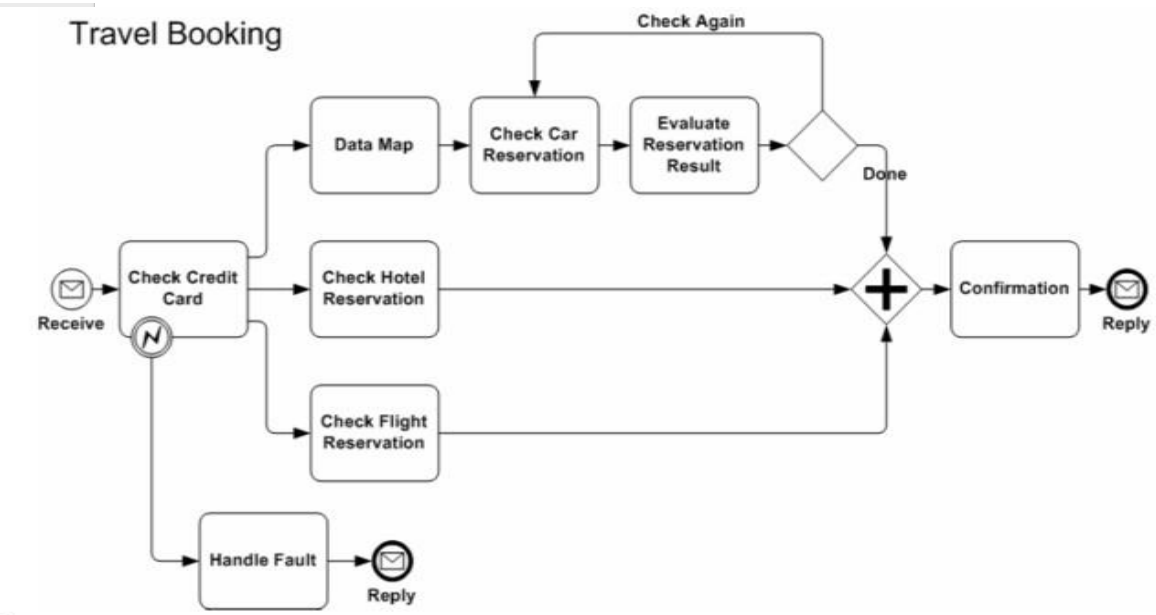
Conquering Complexity – one of five "deliberately monumental" research challenges, each requiring "at least a decade of concentrated research in order to make substantive progress". ["Grand IT Research Challenges" report supported by NSF]

Increasing Disparate Representations

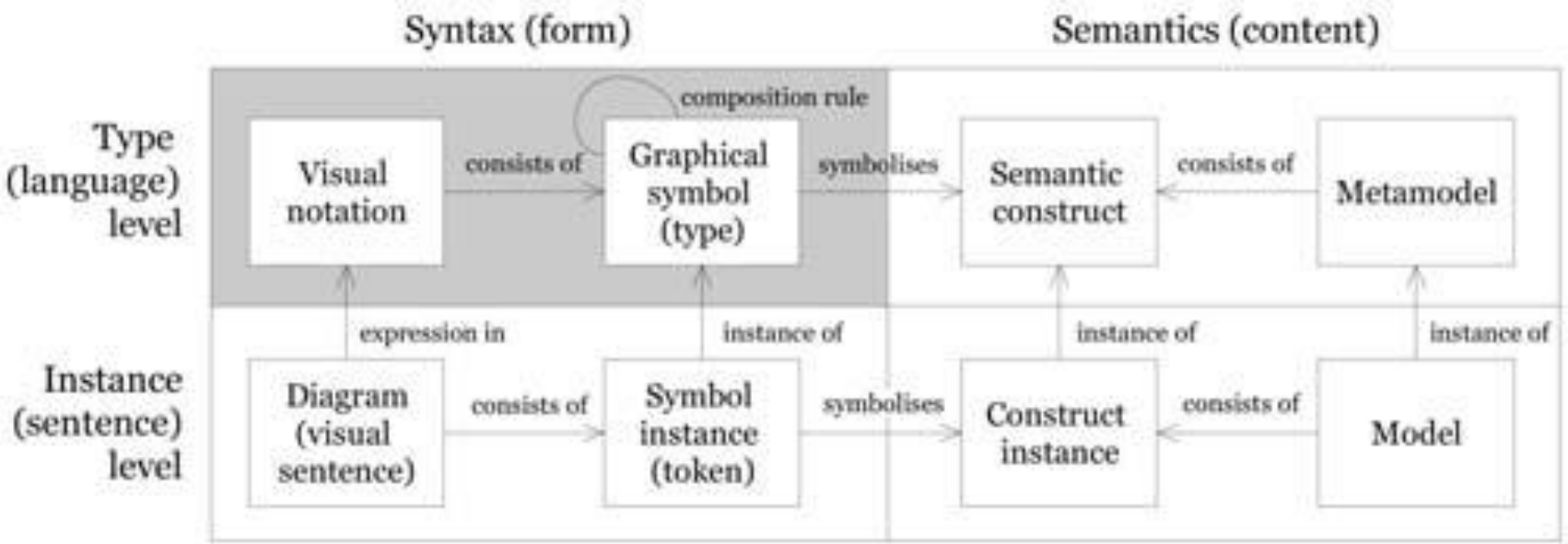






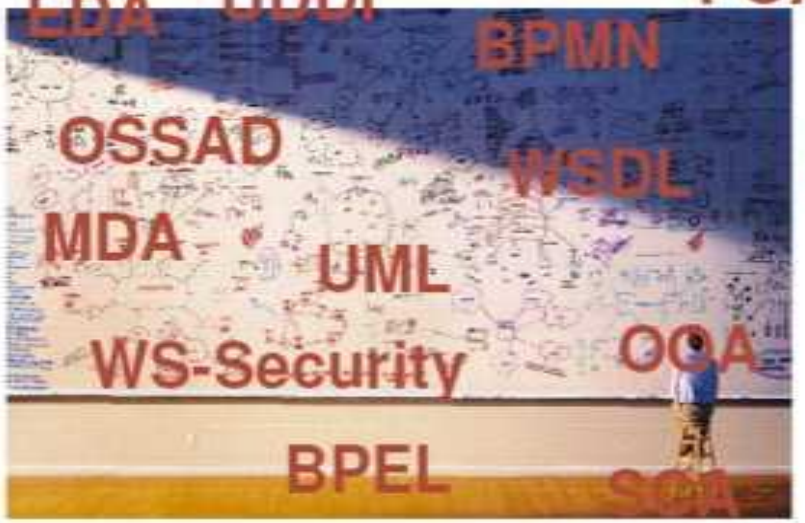


Semantic Notations



Source: The "Physics" of Notations

Increasing Dynamics



PaaS ITIL CMM EIP ESP

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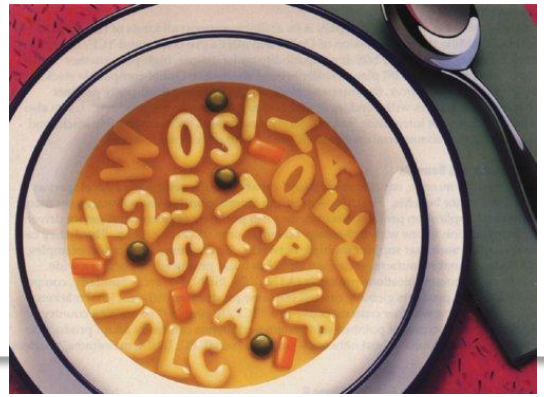
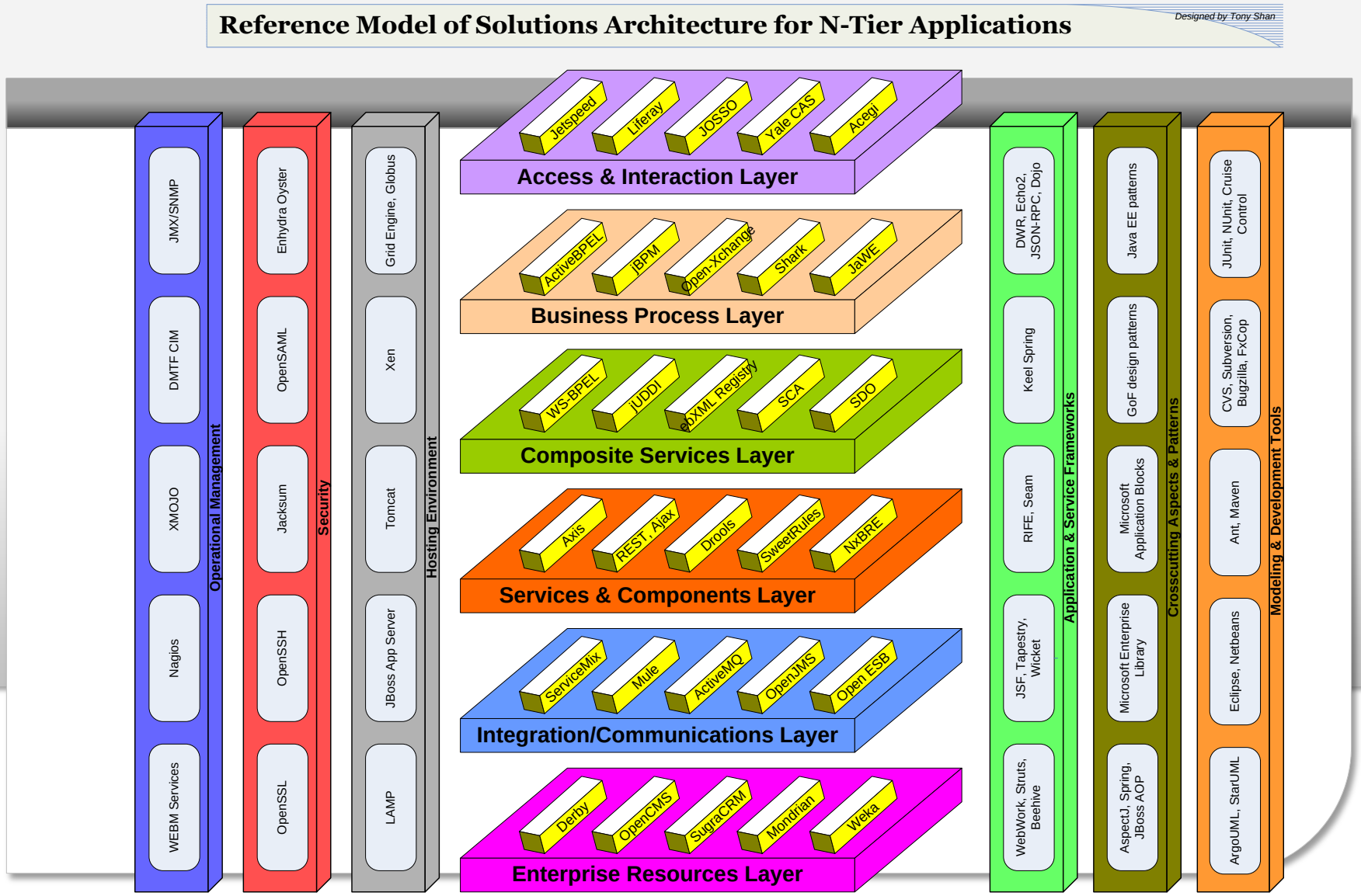
SOAP JEE BAM SAM AJAX SIP .NET IaaS DSL



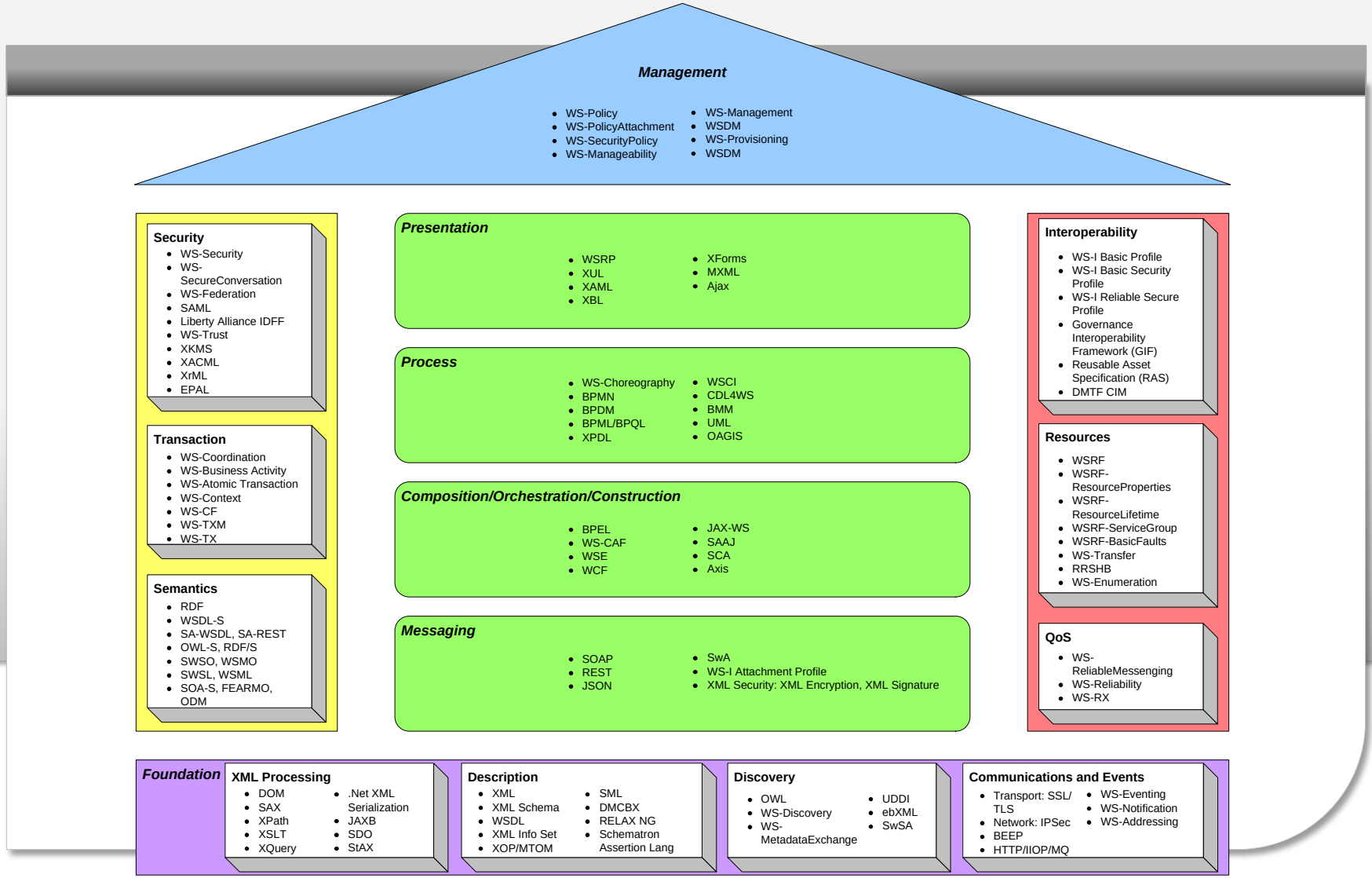
MTOM REST SCA XOP COBIT POX XPATH WOA

Service-Oriented Design Accelerator



Increasing Fragmented Activities on Specifications

Stack of Standards



Increasing Components

Mapping SOA Reference Architecture to the Enterprise SOA Maturity Model

Traditional Development	Develop Web Applications	Composite Applications	Automate BP

Enterprise Service Bus: Route services to the appropriate destination; receive and transmit messages in any protocol, provide message transformation, routing, validation, auditing, security, monitoring and reporting services.

Enterprise Services: Basic services required across the enterprise. Examples: Directory Service, Content Management, Search, eMail, Calendar, IM, Discussion Forum, White Board, etc.

Business Process Manager: Configure and automate business process. Provide business users the capability to modify the business process & policies.

Shared Data Services: Extract, Transform & Load (ETL), Electronic Data Interchange (EDI), Enterprise Information Integration Data Quality (Matching Engine, Master Data Management)

Enterprise Application Integration: Traditional enterprise integration approach. Provide Application Adapters, Business Process, Messaging, Security, etc. capabilities. Mostly proprietary in nature and application integration generally implemented as a point-to-point integration on a Hub..

Packaged Applications: These are the best of the breed packaged application that also act as the system of record for a particular business function.

Custom Applications: These are either built on an App Server, Portal or proprietary thick client. Application Framework required to leverage reuse. Examples: Logging, Exception handling, data services, application configuration, monitoring, search framework, notification framework, service proxy, Single Sign-On

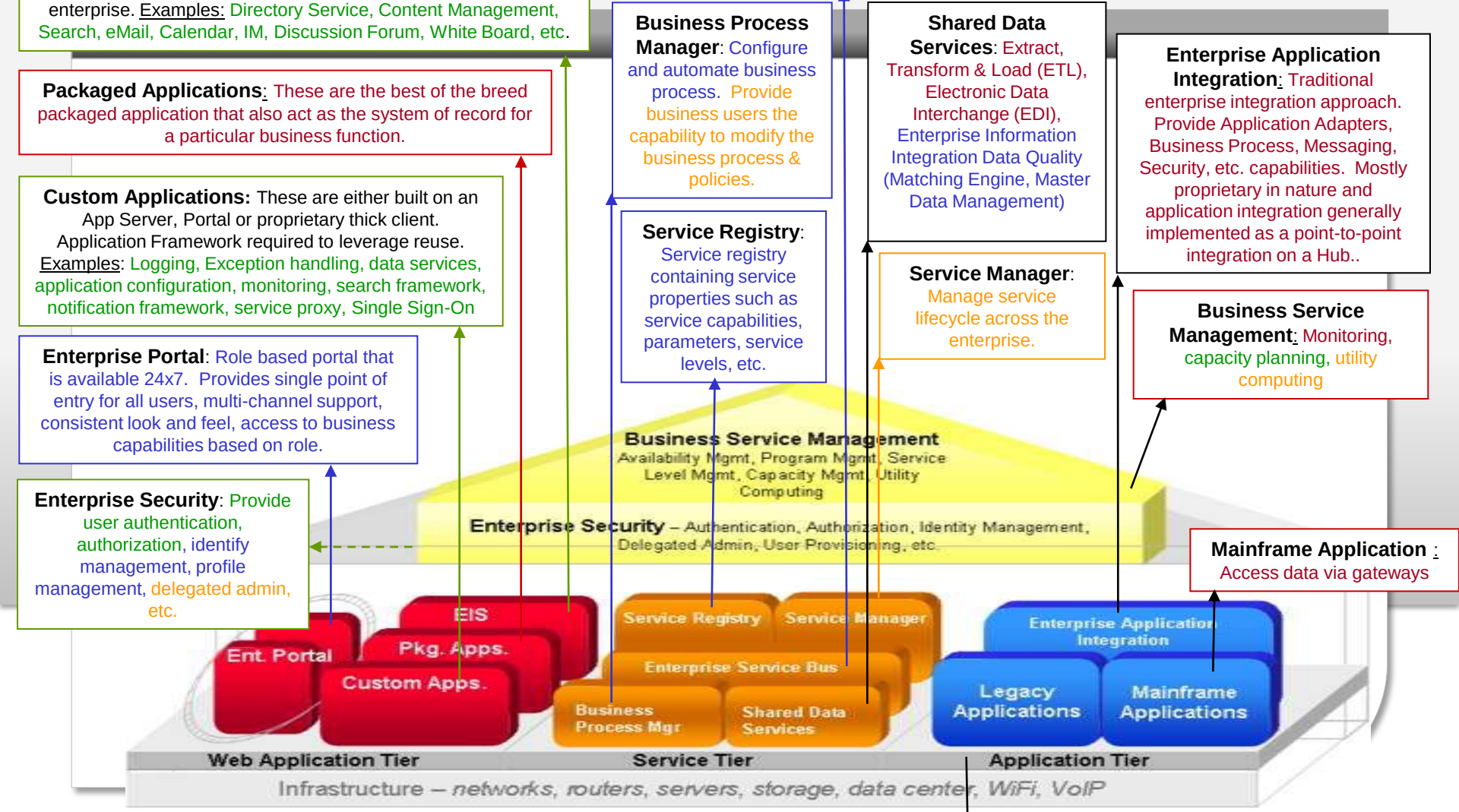
Service Registry: Service registry containing service properties such as service capabilities, parameters, service levels, etc.

Service Manager: Manage service lifecycle across the enterprise.

Business Service Management: Monitoring, capacity planning, utility computing

Enterprise Portal: Role based portal that is available 24x7. Provides single point of entry for all users, multi-channel support, consistent look and feel, access to business capabilities based on role.

Enterprise Security: Provide user authentication, authorization, identify management, profile management, delegated admin, etc.

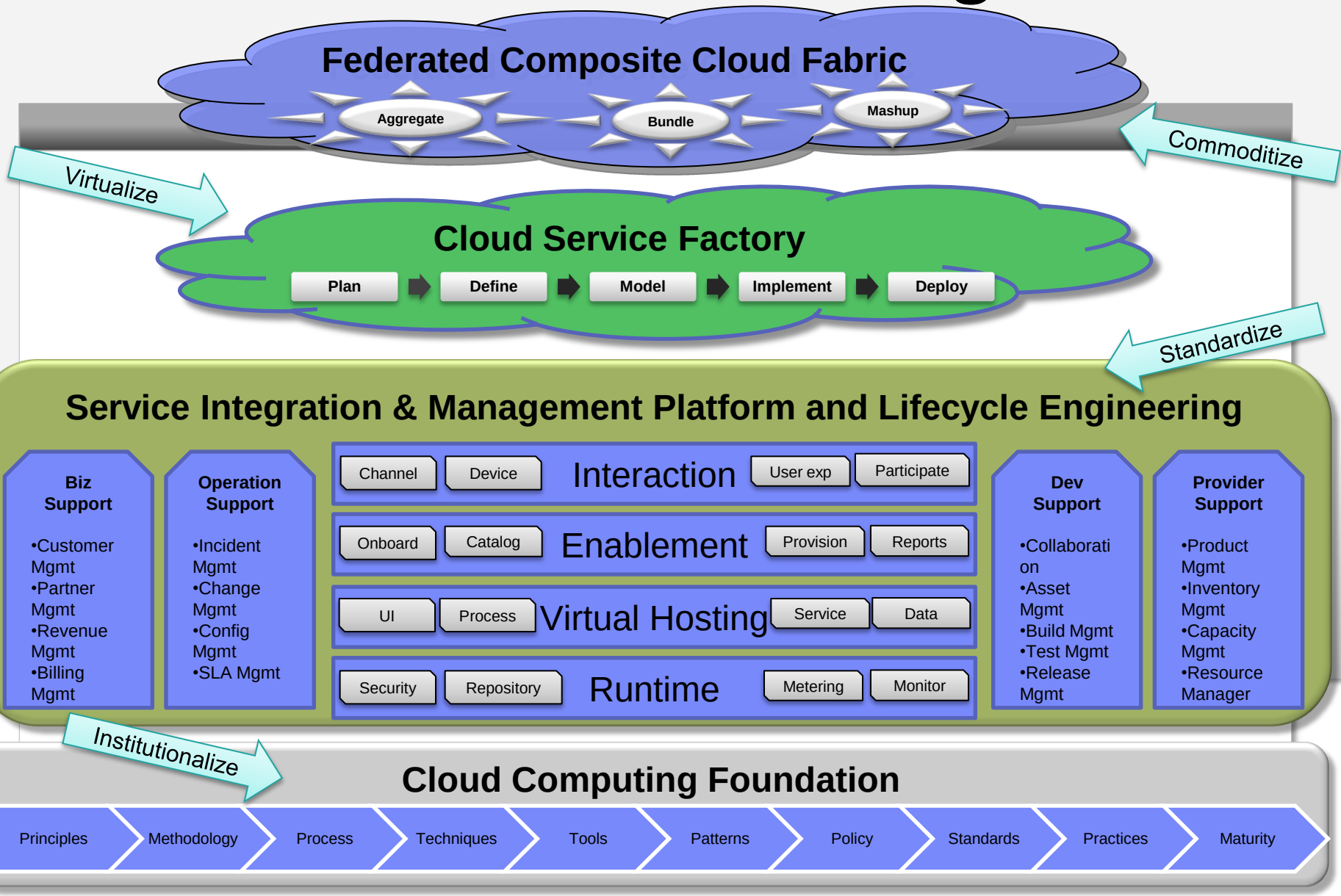


Mainframe Application : Access data via gateways

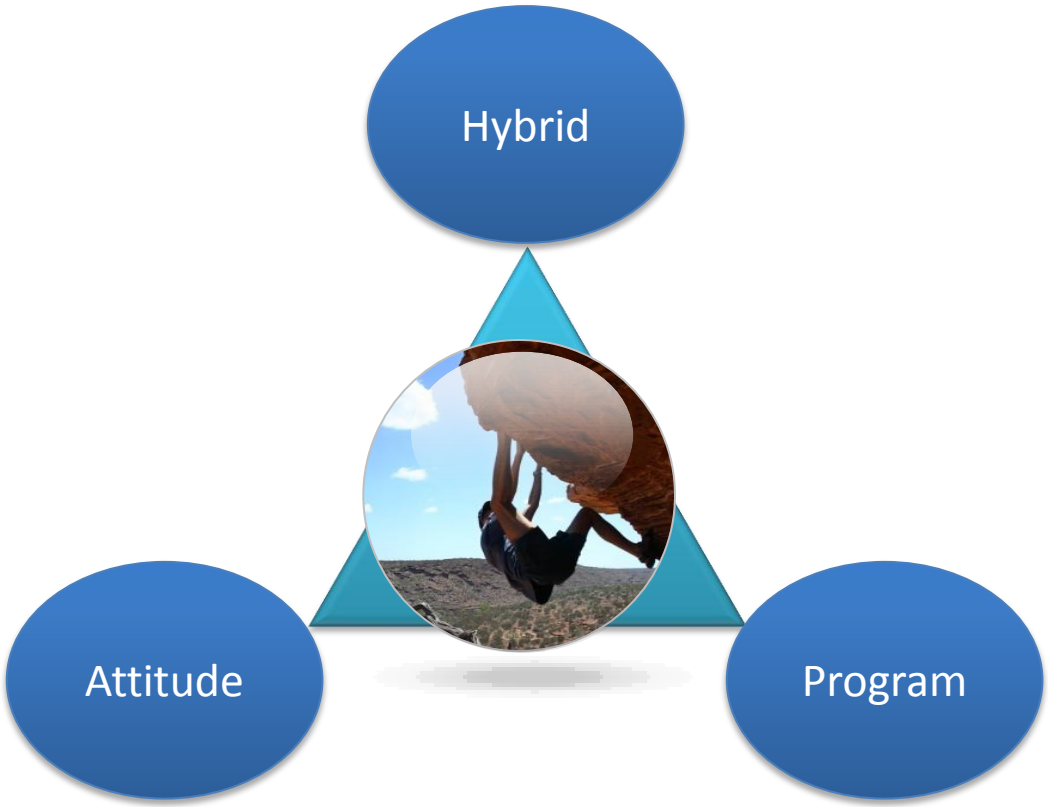
Legacy Application: Applications that do not have open APIs & are not web based

Source: SOA Practitioners' Guide

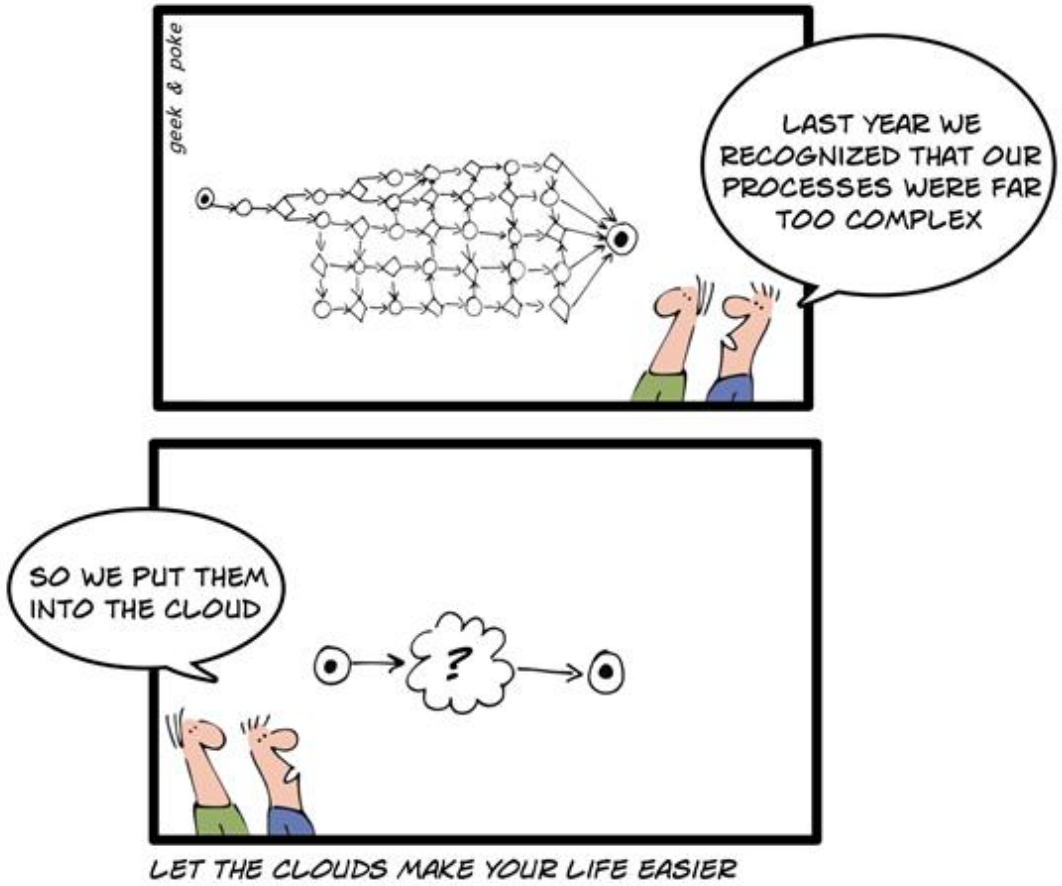
Cloudonomic Paradigm



Best Practices



Case Study of Healthcare Vertical



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धन्यवाद
Hindi

Спасибо
Russian

多謝
Traditional Chinese

多谢
Simplified Chinese

ขอบคุณ
Thai

شكرا
Arabic

Thank You

Obrigado
Brazilian Portuguese

ありがとうございました
Japanese

Grazie
Italian

Danke
German

감사합니다
Korean

Multumesc
Romanian

Merci
French

Gracias
Spanish