A Resource Oriented Framework for Context-Aware Enterprise Applications

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Presentation Flow

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- Out-of-Band Context
- Connectedness - It's a Small World After All
- READ-WRITE-EXECUTE
- Emergent Process
- Implementations

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- Distributed
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A Resource-Oriented Framework

A Context-Aware Information System implemented as a RESTful Intermediary.

All system communications are based on a Uniform Interface.

Clients traverse links consistent with HATEOS.

Generative - all payloads, including generalized next steps, are generated dynamically

No Domain Specific Languages, just generalized capabilities from coordinated Resources.

A Framework for Situationally-Aware Composite Applications and Emergent Process.

Out-of-Band Context

The System exploits out-of-band context to return targeted responses that optimize business relevance and support precise in-flight application of policies (i.e. business rules; system governance; transaction controls).

Out-of-Band context includes any URI accessible to the system via its virtual information layer (e.g. data; business entities; program code; RESTful Services; RESTfully encapsulated legacy systems; etc.).

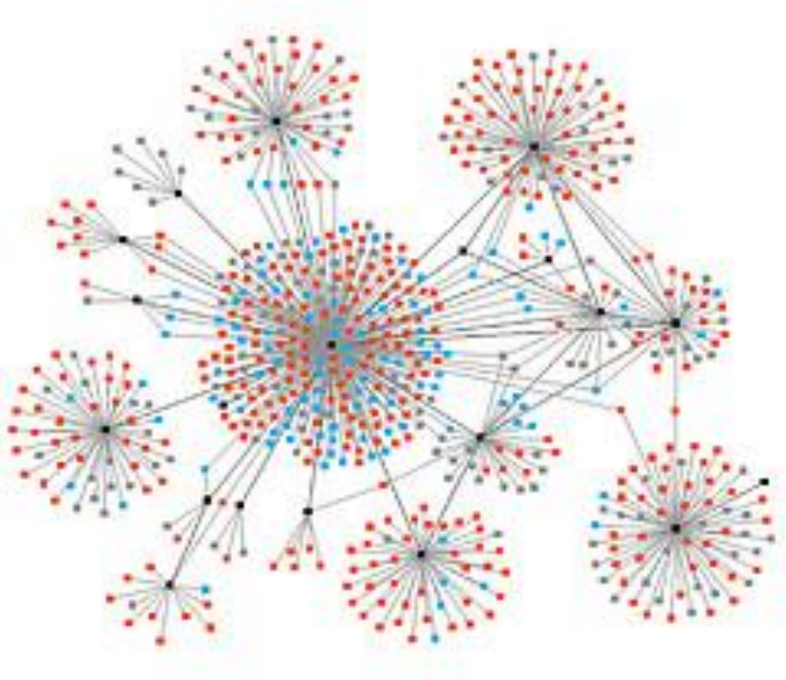
Since context is temporal URIs are volatile; responses are run-time constructions – clients cannot cache.

The System provides Lifecycle Management of all system Resources with automatic version control and roll-back capability. Version is part of context, applications co-evolve with their constituent Resources.

Connectedness - It's a Small World After All

Virtual Information layer induces a graph information model, the system is a 'Small World Network'.

An Agent fetches Out-of-Band Context based on machine and user generated metadata tags as guided by Metaprograms and policies.



READ-WRITE-EXECUTE

Coordinates loosely-coupled Resources (Nouns) to act like Services (Verbs) without the cost, indirection, or latency of middleware-centric approaches (i.e. no ESB, BPEL, BPMN, CEP, etc).

Interoperability with the opportunity to consolidate patterns by devolving capabilities from middleware to generalizable capabilities of a system of systems.

Moves web from Read/Write (CRUD) to Read/Write/Execute, where execute is RESTful coordination of loosely-coupled distributed Resources.

	Read	Write	Execute
Web 1.0	Yes	No	No
Web 2.0	Yes	Yes	No
Web 3.0	Yes	Yes	Yes

Emergent Process

Interaction-driven system supports emergent processes without limitations of finite state map.

The degree of structure (i.e. control logic) is a runtime variable. The system balances interests, as flexible as possible for business relevance and as procedural as necessary for compliance.

Addresses a gap in process collaboration technologies; current product offerings are either structured/procedural (e.g. ERP; Expert Systems; BPMS; etc.) or unstructured/ad hoc (e.g. activity streams; email; case management) that offer flexibility, but cannot provide for reporting or compliance.

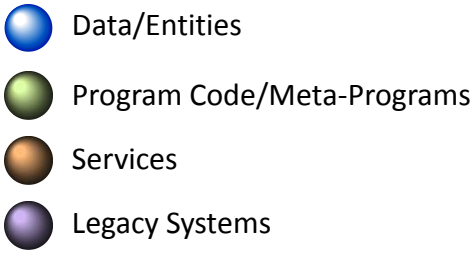
Implementations

Targeted at complex, long-running, human-centered, indeterminate goal-driven work that are impacted by events and characterized by exceptions – ‘knowledge-work’.

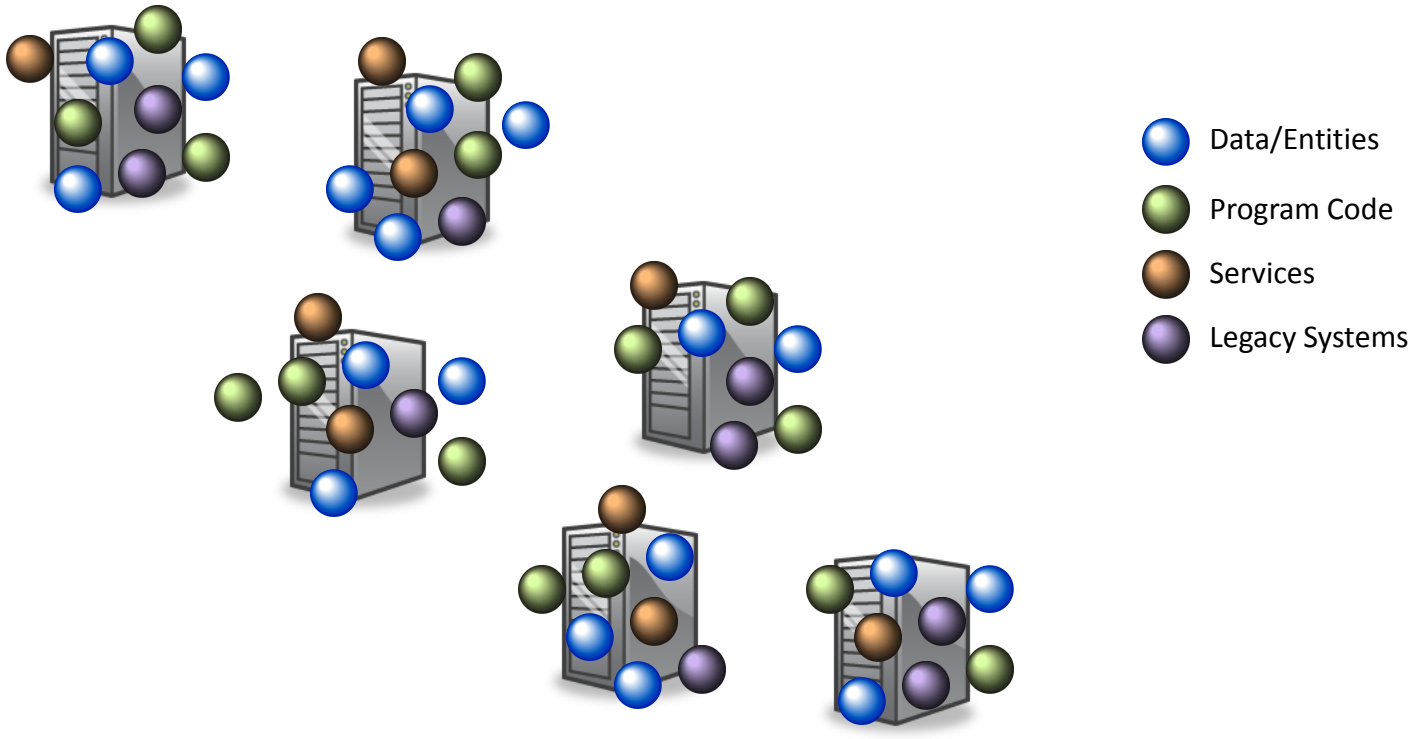
Initially focused on R&D sector with deployments and test sites around the world, and in discussions with Enterprise Architects at Financial Companies, Hotel Chains, and other Industries.

Everything is a Resource

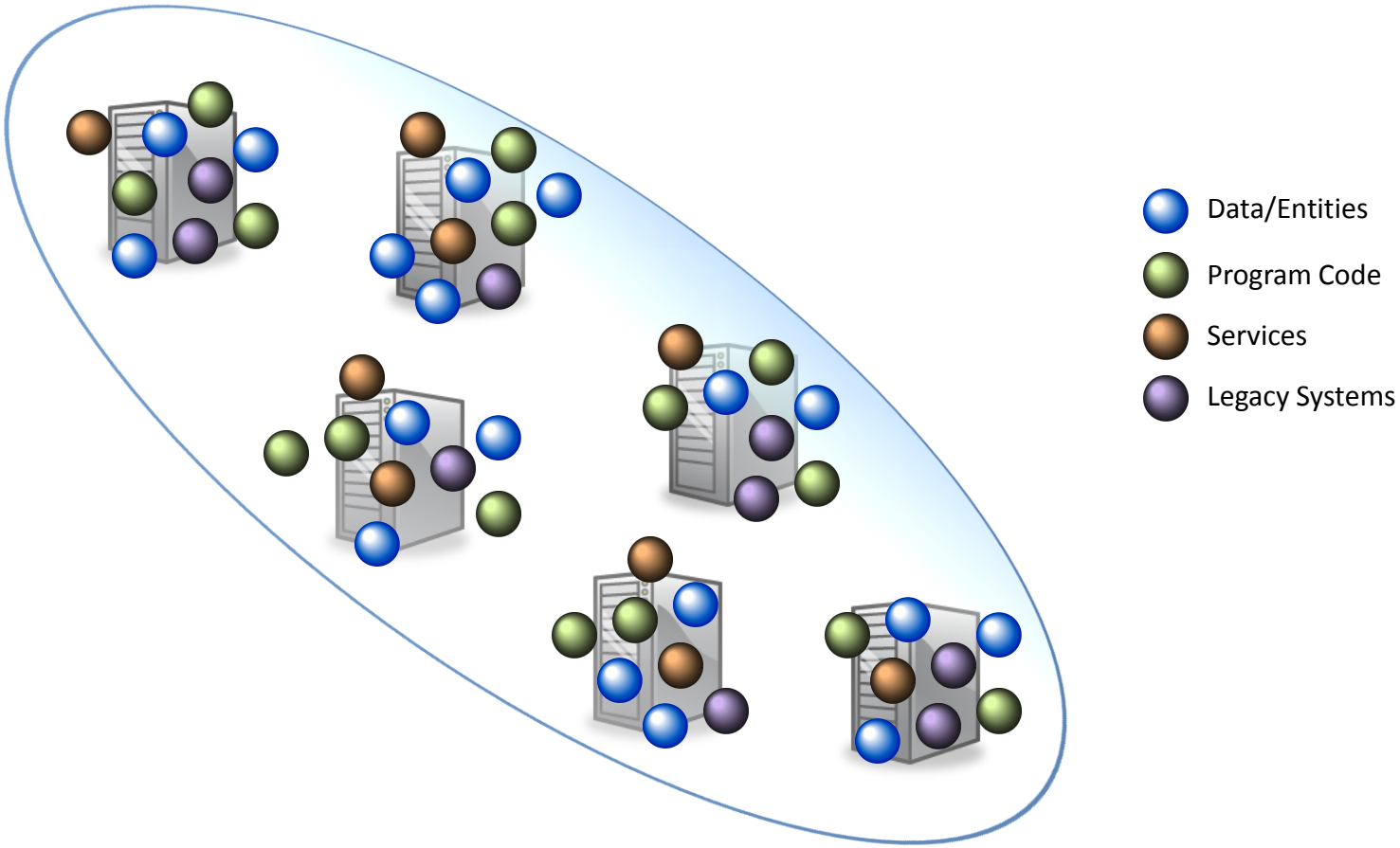
A Sole First-Class Citizen



Distributed

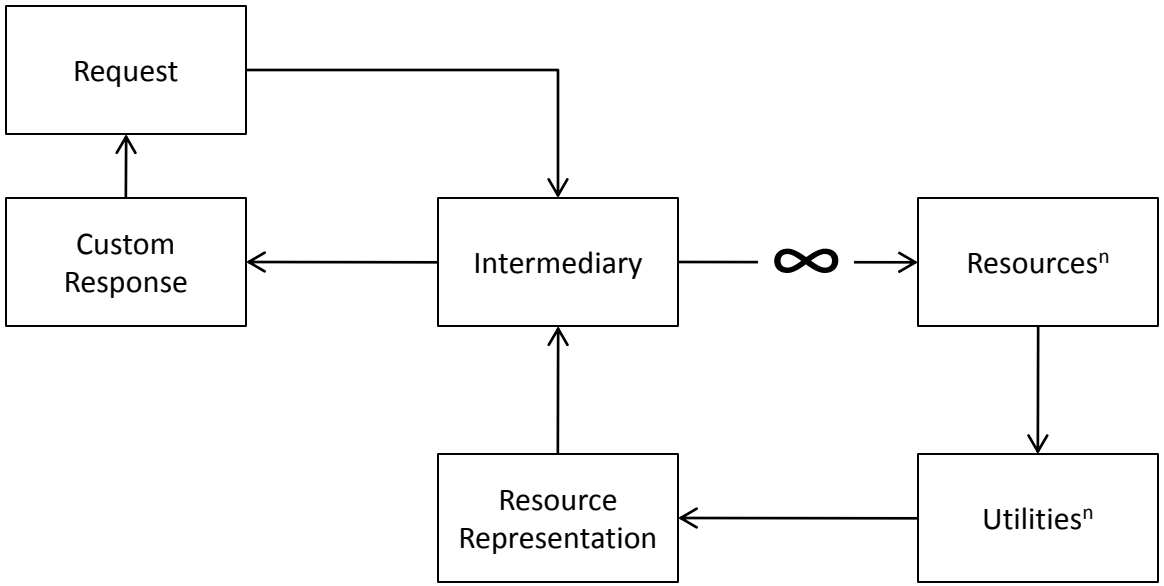


Virtualized Information Layer



A Canonical Method

Mashup as Information Integration Model



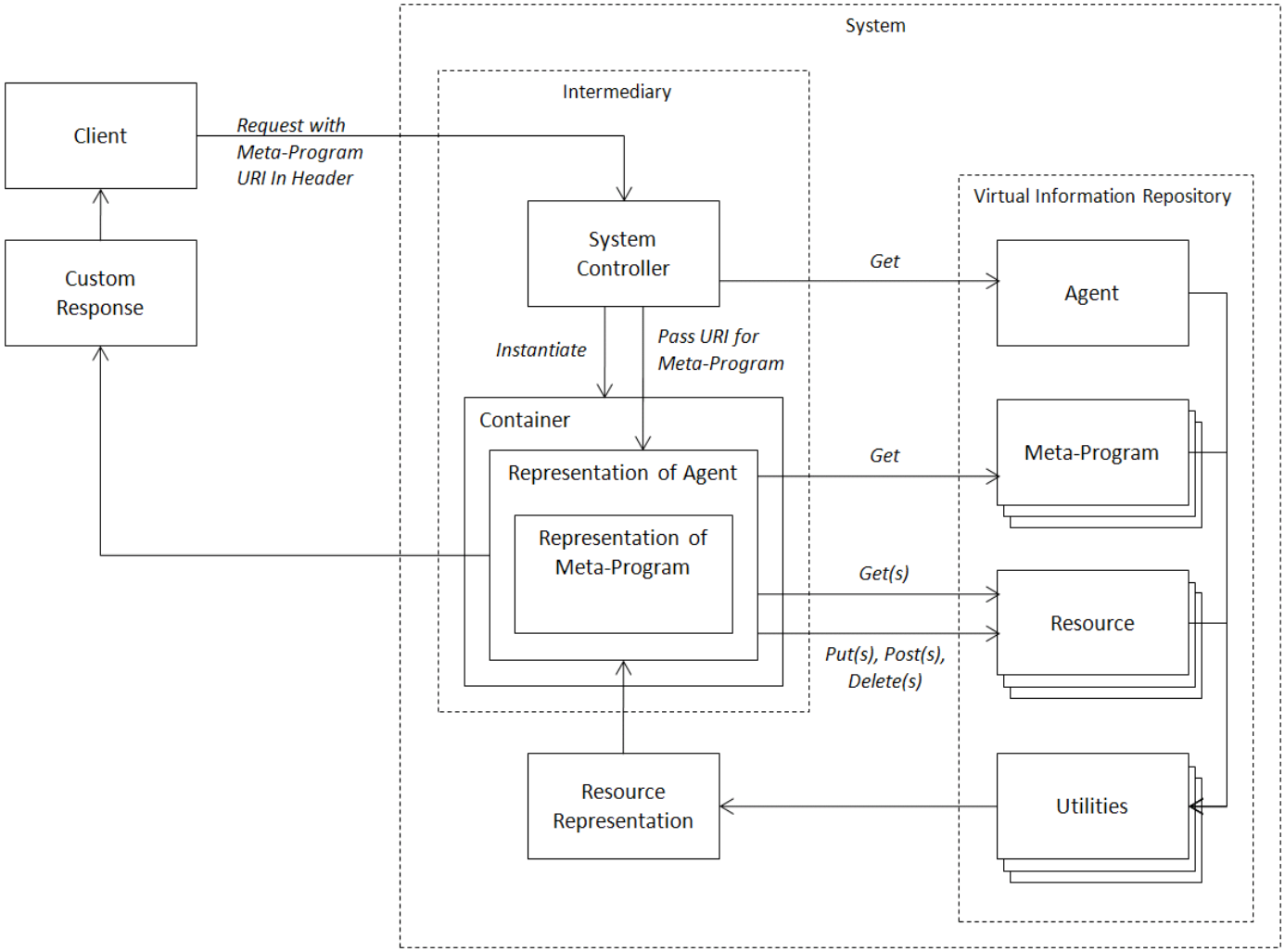
Step 1: Serial Mash-up to Progressively Evaluate what Generalized Action is Required

Step 2: Serial Mash-up to Progressively Customize Generalized Action

Step 3: Serial Mash-up to Identify Valid Transitions (Next Possible Generalized Actions)

Deliver Custom System Response, Update Resource Lifecycles, Dissolve Container

Conceptual Architecture



Alignment with REST Constraints

Constraint	Support	Notes
Client-Server (5.1.2)	Full	
State-less (5.1.3)	Partial	All state is maintained as Resource state. Application state is not separately persisted by server or client. System uses Out-of-Band context to enrich system response.
Cache-ability (5.1.4)	Partial	Intermediary can cache during execution, but no client caching due to volatility of URIs.
Uniform Interface (5.1.5)	Full	
Identification of Resources	Full	All Resources addressed by URIs.
Manipulation of Resources through Representations	Full	
Self-descriptive messages	Full	
Hypermedia as the engine of application state	Full	All state is maintained in Resources. Application state is not separately persisted by server or client. Client does not maintain application state. Client is supplied with a set of next valid transitions as part of the payload of each interaction.
Layered System (5.1.6)	Full	The agent acts as a client to any additional intermediaries required.
Code-On-Demand (5.1.7) optional	Full	

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