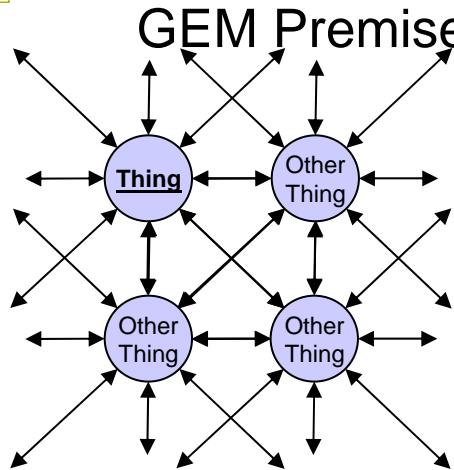


RR1



GEM Premise 1. Connection: A Fishing Net = Knots and Strings

Think of the world as being a collection of different knots, each connected to other knots by multiple strings, like layers of interwoven fishing nets.

Knots are nouns/things, and strings are verbs/relations.

- FACT: Every Thing is Directly Connected to Every Other Thing
 - [David Bohm's Implicate Order](#) (2)
 - [Bell's Interconnection Theorem](#) (2)
 - [Aspect's Non-Locality Laboratory](#) Proof
 - [Zero Point Field/Energy Mathematical Proofs](#) (2) (3) (4)
 - [Consciousness and Reality](#) (2)
- The Readiness of People to Accept the Science of Connection Varies from Person to Person
 - Connection is the Basis for Our Physical Universe
 - Connection is the Basis for Cause and Effect phenomena
 - Connection is the basis for the “systems” and “object” engineering views
- Everyone mentally does architecture and ontology as their connection method. Everyone builds a personal world view by: sensing/perceiving their world, identifying/distinguishing distinctive things in it; naming things, describing things, relating things, and tracking past and projected changes in things. This world view is also called an “ontology”, and also called an “architecture”.
- Sharing world views/ontologies/architectures to establish interpersonal, organizational and global group communication, coordination, and collaboration requires a structured means of storing and transferring signals, data, information, knowledge, awareness, decisions, and actions.
- Prior to electronic communication our means to transfer world views was limited to our physical senses. With electronic communication we are now able to transfer world views at a distance. We can now effectively communicate, coordinate, and collaborate while at different locations.
- Prior to electronic data processing (e.g., IT) our means to share world views was limited to the single receiving person or group currently anywhere on a communication circuit with us (e.g., across the room or on the other end of the telegraph, radio, or telephone). With electronic data processing we are now able to transfer world views to multiple persons and groups at different times. We can now effectively communicate, coordinate, and collaborate with all persons and groups on the network at different locations and times.
- As a result of the global Internet and our ontology and architecture modeling processes and technology, we can now provide the means for all persons and groups anywhere to know everything they need to know, when they need to know it, from those with the greatest expertise or situational information, knowledge, and awareness.
- Everyone can now be connected, knowledgeable, and aware of the whole world around them, from their own local vantage point and decisions, including both the world within their control and that beyond their control.

<http://www.one-world-is.com/beam>

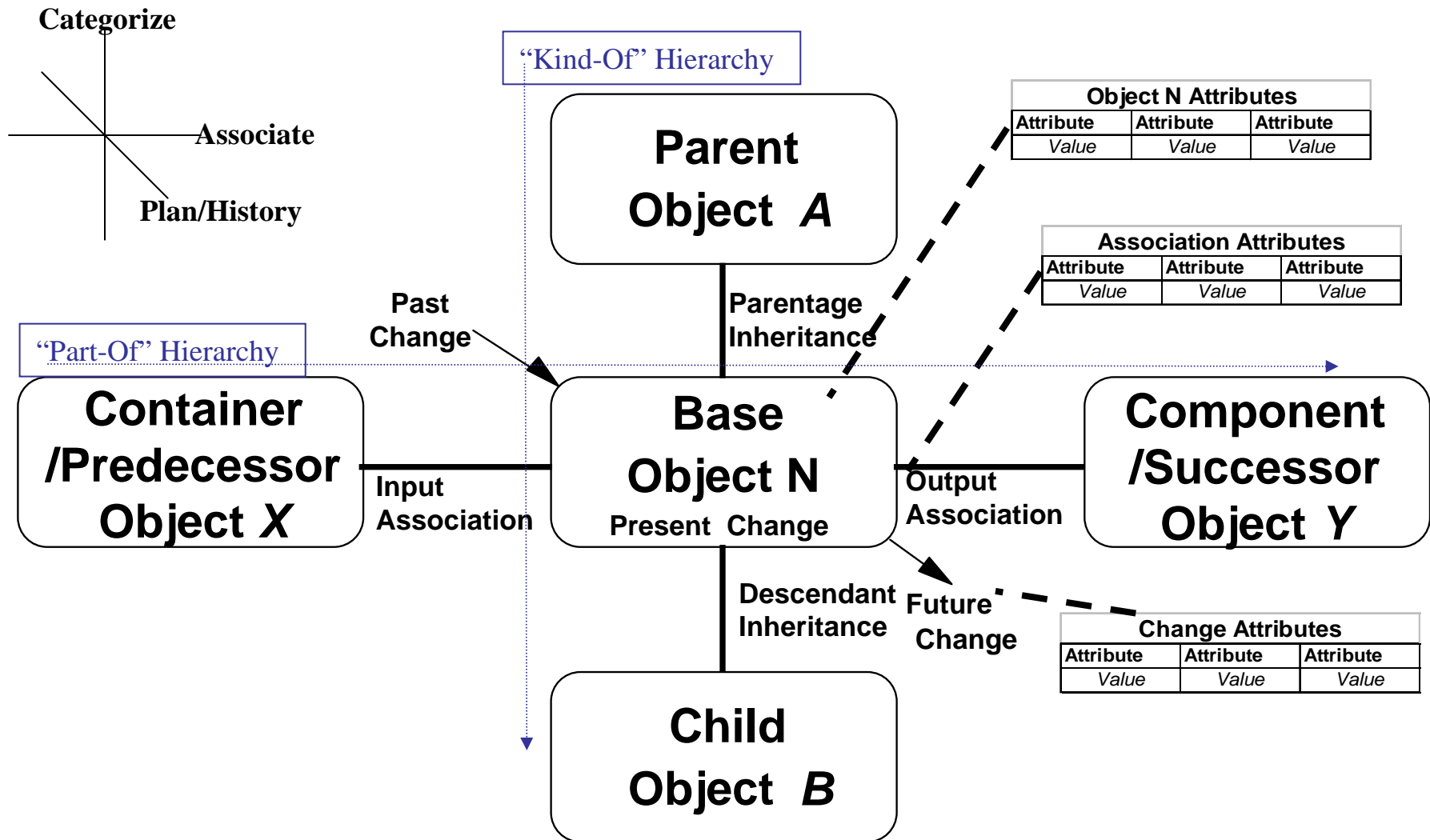
Slide 1

RR1

This diagram took form from 1957, starting with a dream about a fishnet.

Roy Roebuck, 1/20/2006

An Object Model (For A Connection View)



Slide 2

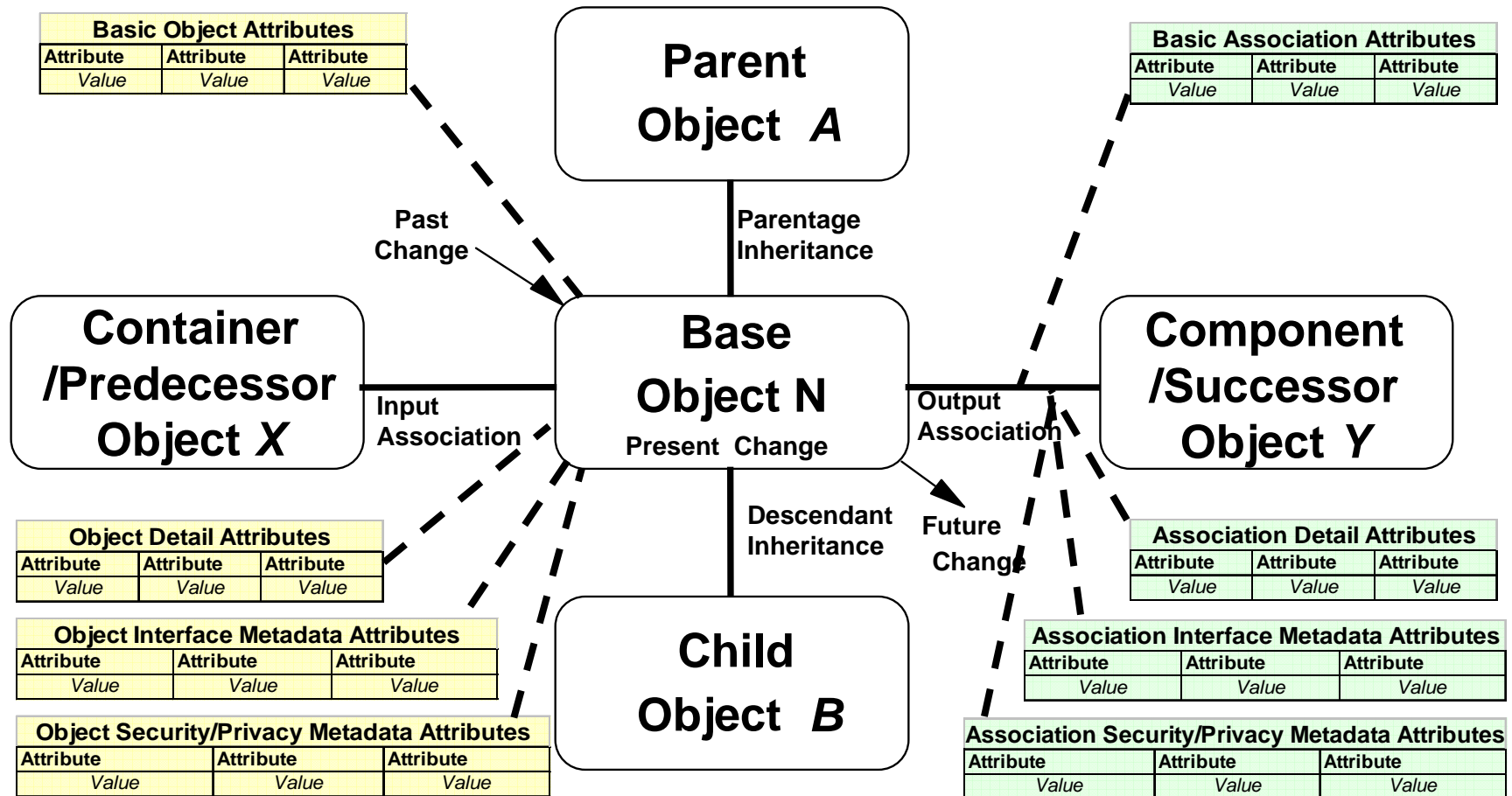
RR2

Here's a 1984 variant that evolved from the fishnet concept, which eventually took form as a generalized object model.

Roy Roebuck, 1/20/2006

A Dynamic Object

(For An Information System To Manage Any Thing, And Every Thing)



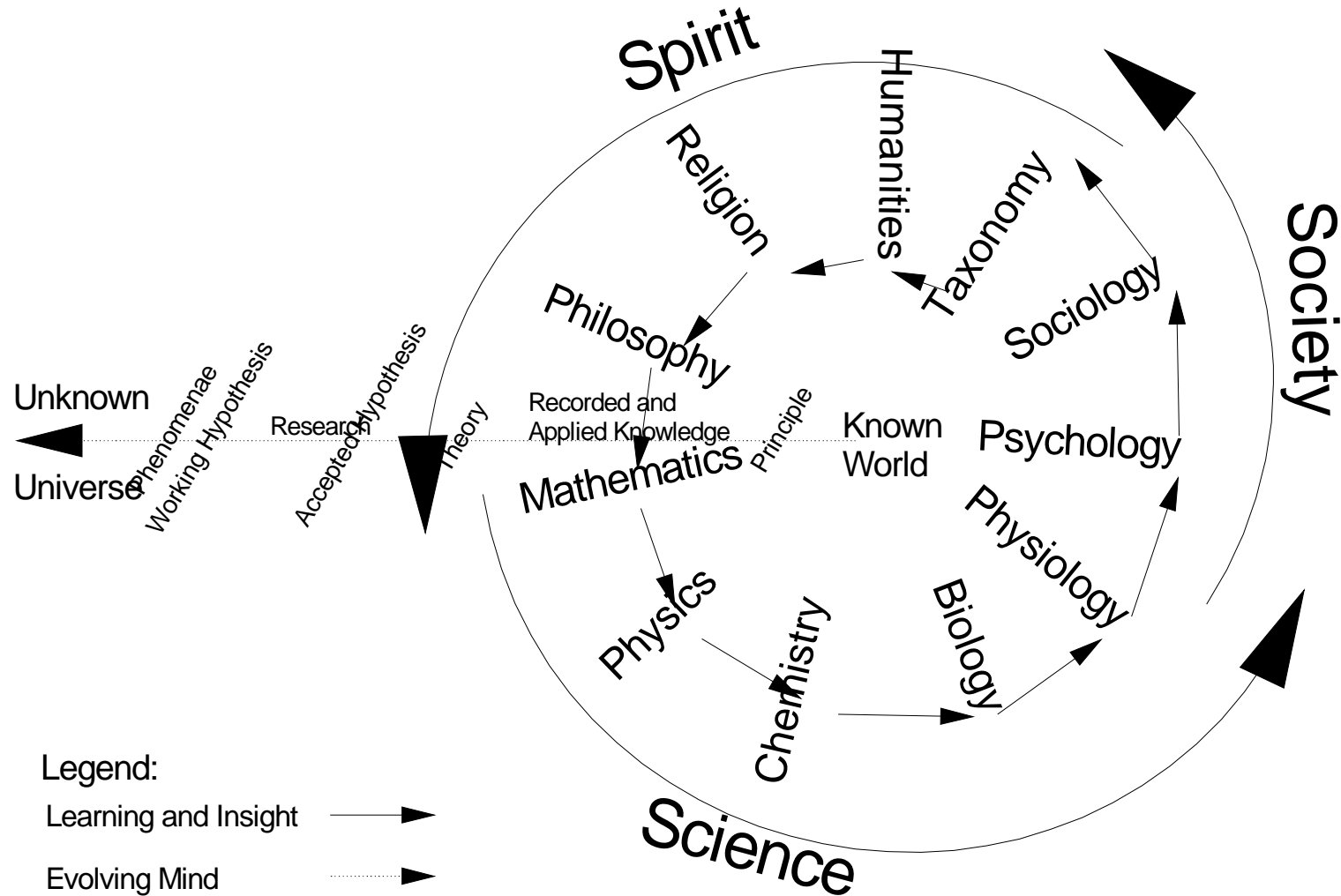
Slide 3

RR3

Here's another 1988 variant on the generalized object model, representing the idea that it could serve as the foundation for any MIS. This idea has been called dynamic data structures since the mid 90's.

Roy Roebuck, 1/20/2006

The Spiral of Knowledge



Slide 4

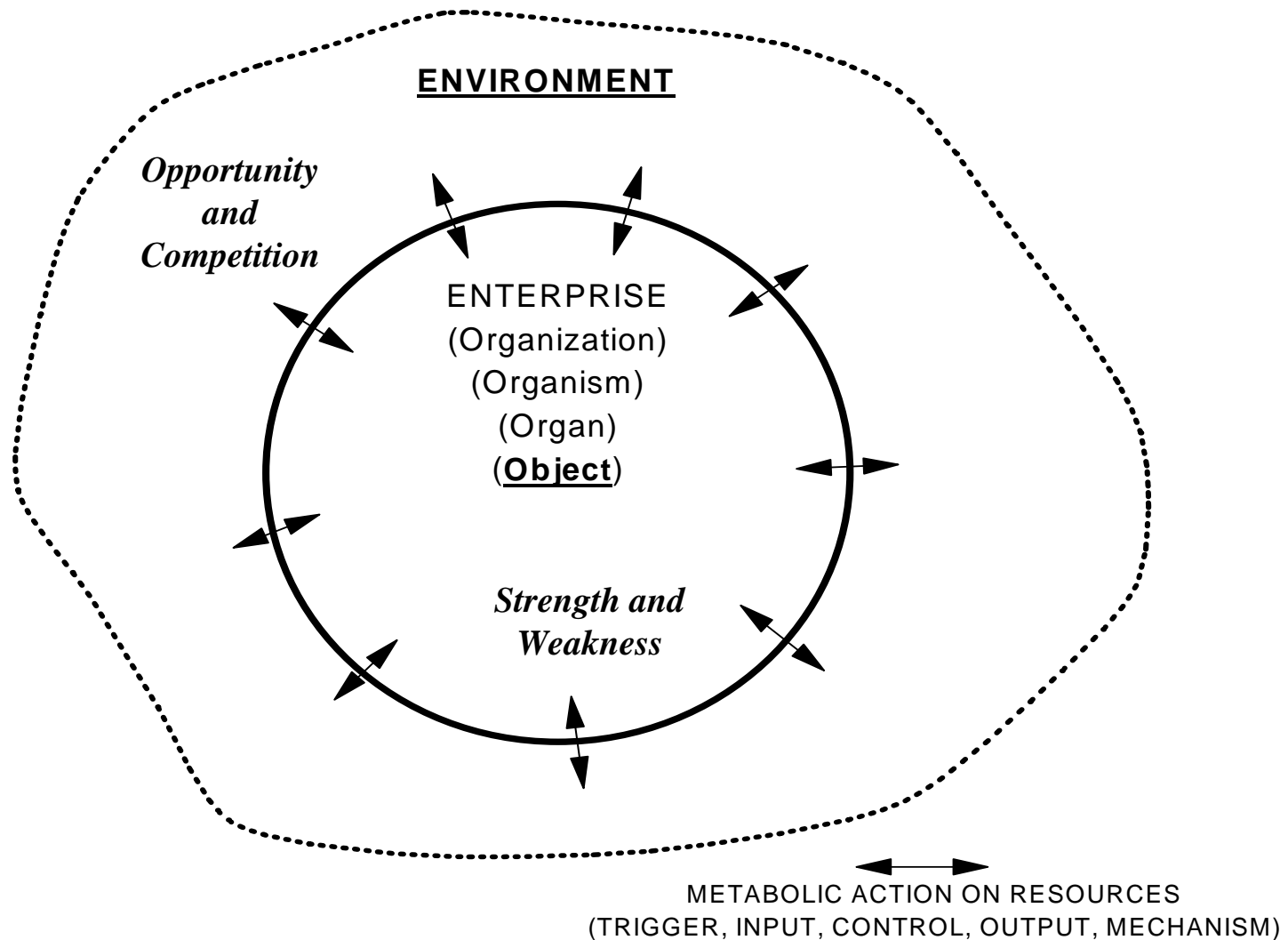
RR4

Here's a virtually unchanged model of my 1965 wheel of knowledge that I used to plan my educational and career focus.

Roy Roebuck, 1/20/2006

An Enterprise Is An Object

(In Its Dynamic Environment)



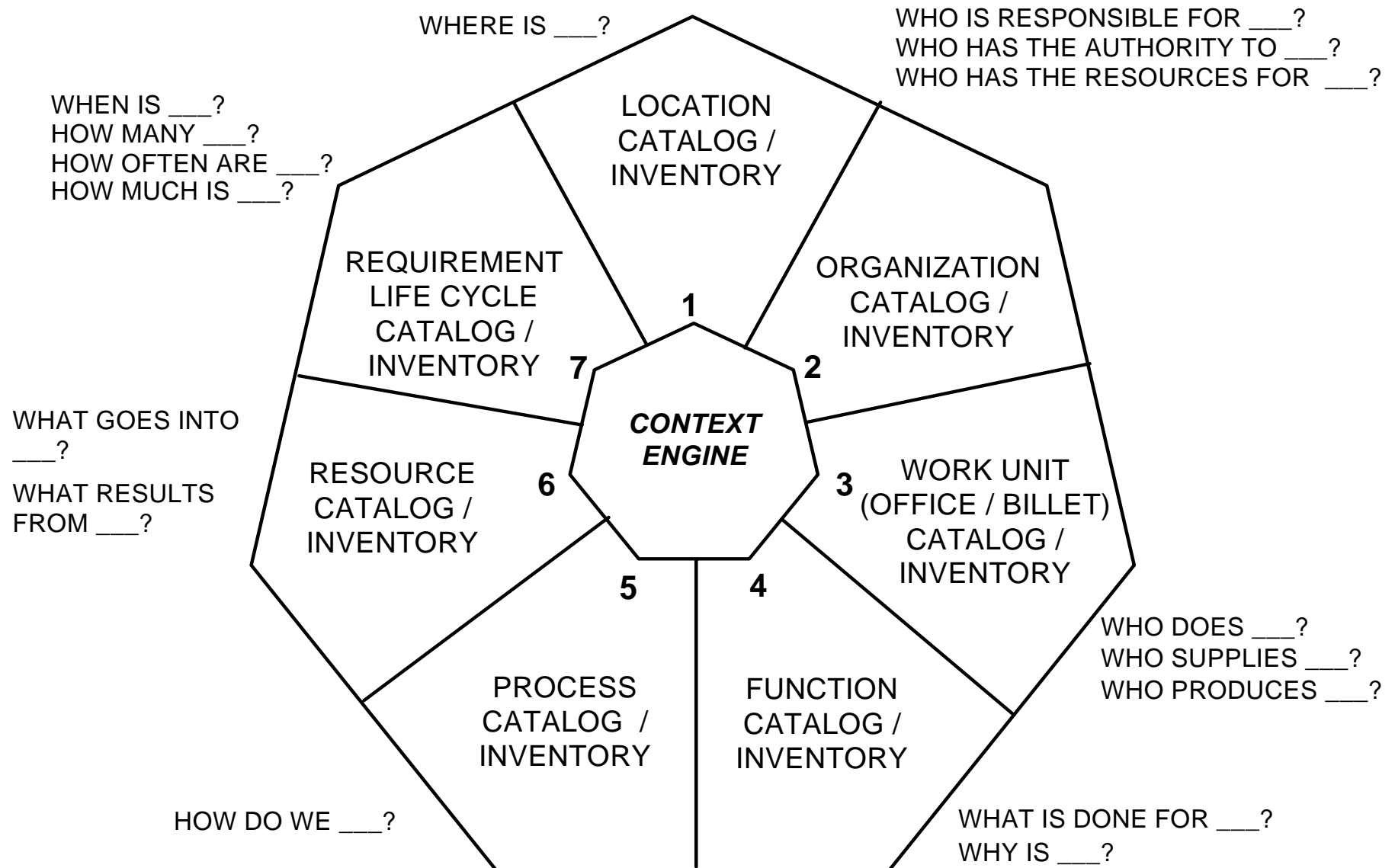
Slide 5

RR5

This is my 1982 concept for managing the enterprise as a single entity, as part of my Master's program (i.e., Masters of Science in Systems Management from Univ. of Southern Cal.)

Roy Roebuck, 1/20/2006

32. GEM Basic Questions



Slide 6

RR6

My 1982 model of the General Enterprise Management subject categories and how they'd be related through the "context engine". Each wedge would now be called a taxonomy or thesaurus. The context engine would now be called a 2nd order logic strong ontology.

Roy Roebuck, 1/20/2006

7. GEM Context/Intelligence Functions

Context Functions (for Subjects and Relationships):

- Create
- Update
 - Move
 - Copy
 - Modify
 - Merge
- Deactivate (Never Delete)
- Read
- Characterize
 - Relations
 - Properties
 - Methods
 - Qualifiers
 - Security

GEM Subject Categories (Tree)

- Locations (e.g., Physical, Virtual, Conceptual)
- Organizations (e.g., Private, Commercial, Government)
- Organization Units (e.g., Offices, Teams, Projects)
- Functions (e.g., Executive, Production, Support)
- Processes (e.g., Manual, Automated, Mechanical, Electrical)
- Resources (e.g., Persons, Intelligence, Funds, Skills, Materiel, Facilities, Services, Space, Energy, Time)

GEM Relationship Types (Noun – Verb – Noun)

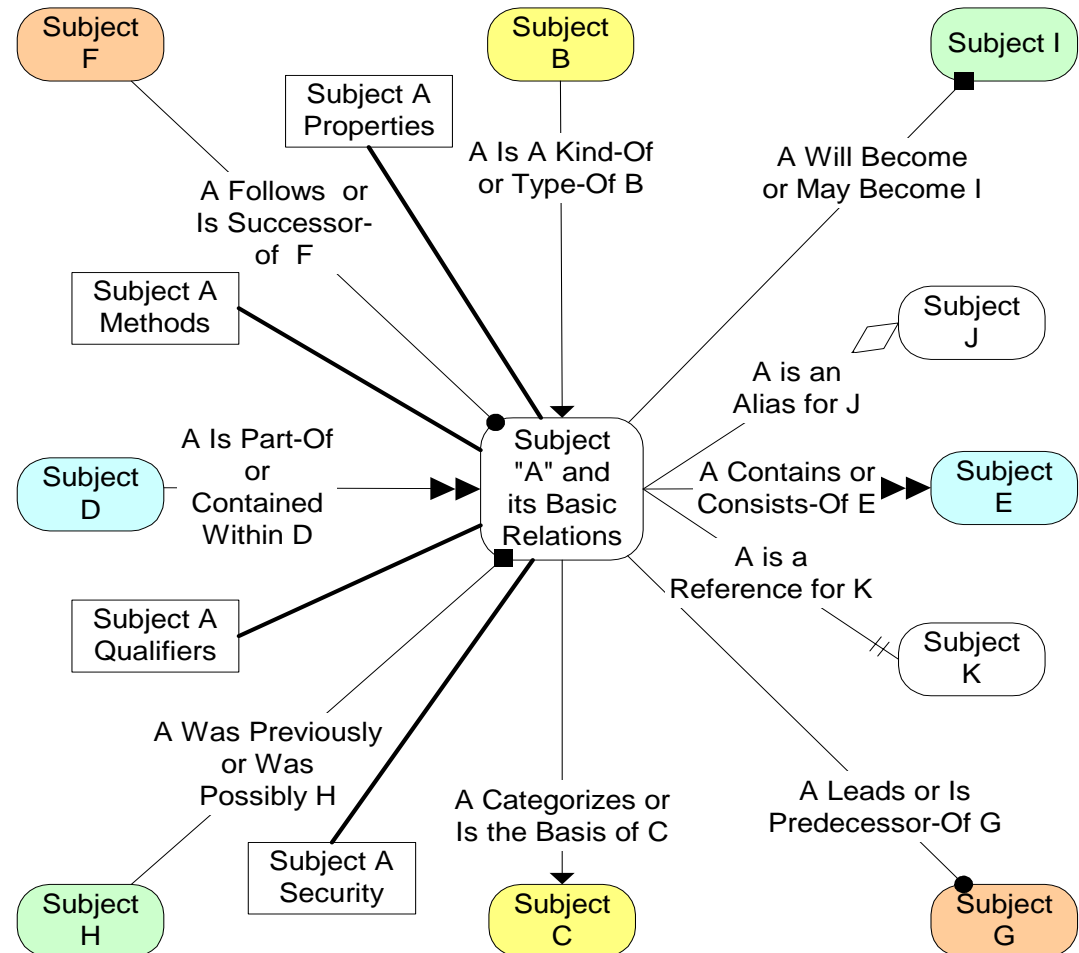
- Class (Parent/Child, Class/Subclass, Class/Instance)
- Containment (Master/Detail, Container/Component)
- Sequence (Predecessor/Successor, Cause/Effect)
- Change (Previous/Current, Current/Future)
- Reference
- Alias
- Architecture/Structure (Multiple Relations Types, showing Component-Interface-Component)

Context Meaning

- Concepts (Keywords, Words)
- Semantic (noun – verb – noun, Subject-Verb-Predicate)
- Ontology (Semantic-Verb-Semantic)
- Knowledge (Ontology-Verb-Ontology)

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To Manage Enterprise Context (1.2), Manage Enterprise Subjects and Their Relationships



Properties = Object Attribute/Value Pairs, Inheritable from Class Type

Methods = Behaviors performed by Object

Qualifiers = Filters, Rules, Facts, and Roles Constraining Object

Security = Combination of Properties, Methods, and Qualifiers defining the need for a person or process to see, show, or know some aspect of an object, or to do or avoid doing some action with or affecting an object. Also known as Role-Based Access Control - RBAC.

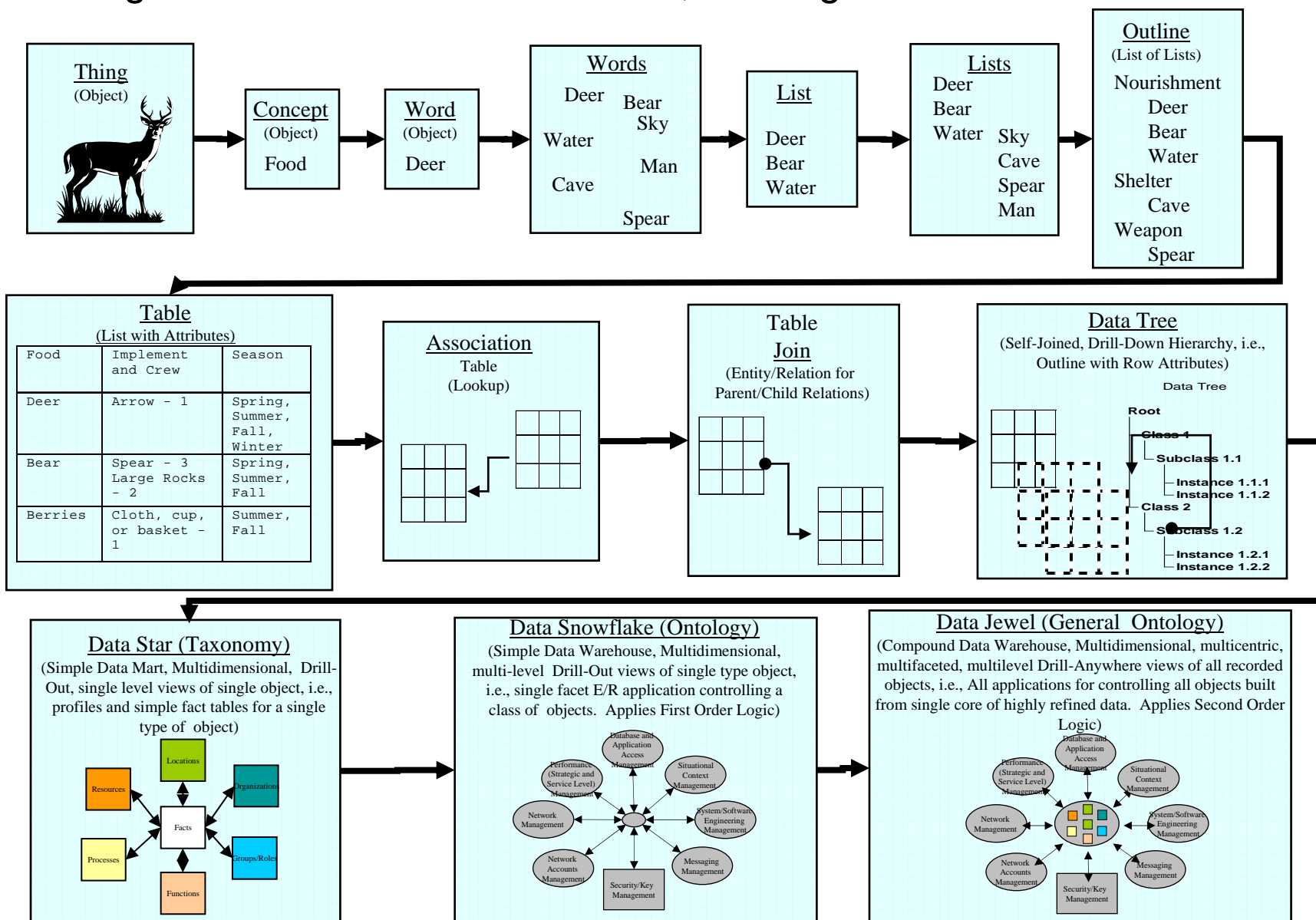
Slide 7

RR7

This is the model that extends the basic object model to encompass more of the relationships I discovered in my 1982-85 Master's work and my "enterprise-level" manager and analyst assignments since 1982. The relationships around the object model provide the GEM "knowledge-representation model", which I document as the M3 layer of the GEM four-layer metamodel architecture.

Roy Roebuck, 1/20/2006

Progression of Written Information, Adding Structure and Order



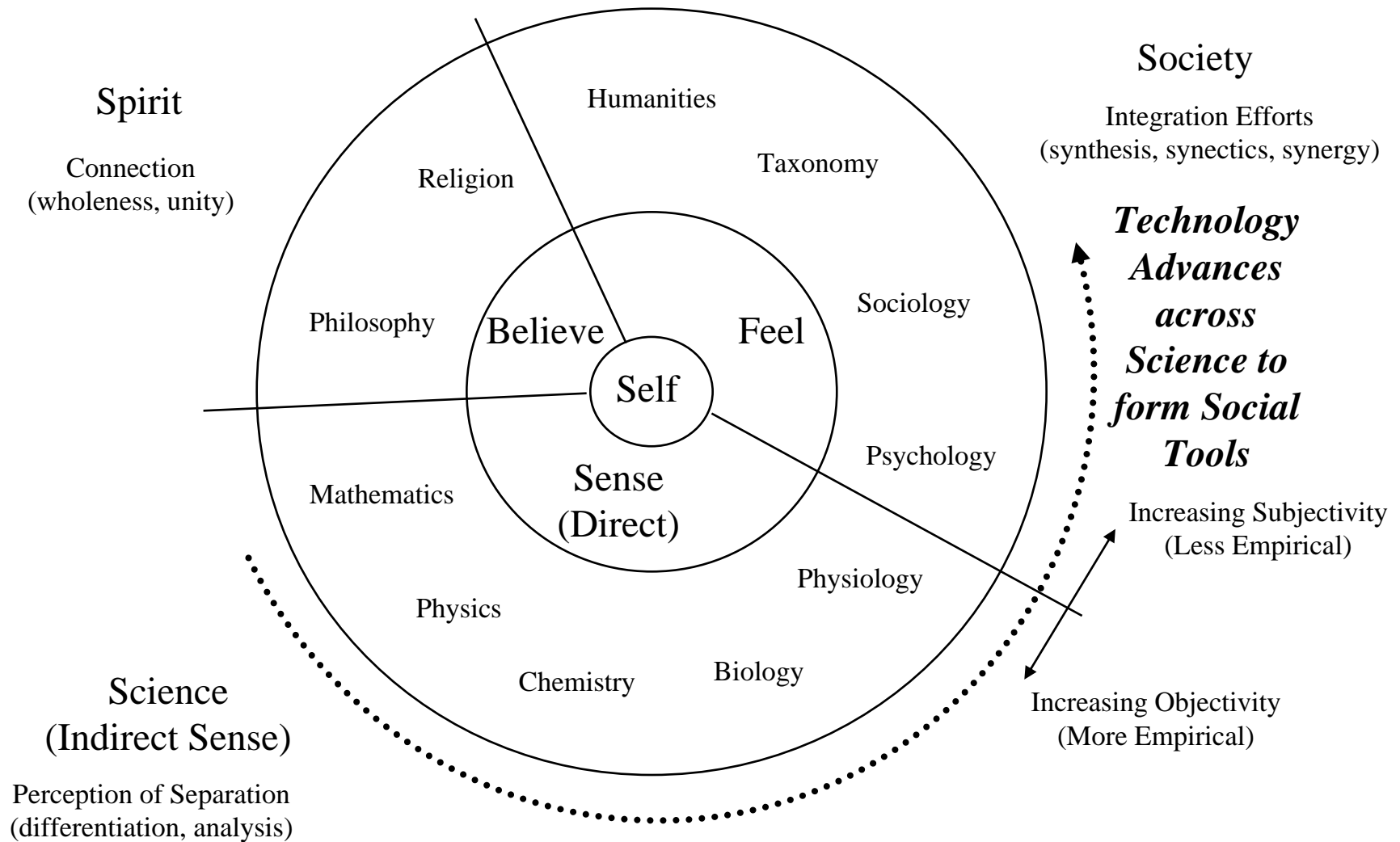
Slide 8

RR8

This is my model representing the progression of our technology and conceptual readiness to add structure to our recorded knowledge. The "thing" node corresponds to the "pragmatics" label briefed by Dr. Orbst over the past week, the "concept" node corresponds to the "semantics", and the "word" node corresponds to the "syntax" and "term" labels.

Roy Roebuck, 1/20/2006

A Model of Technology



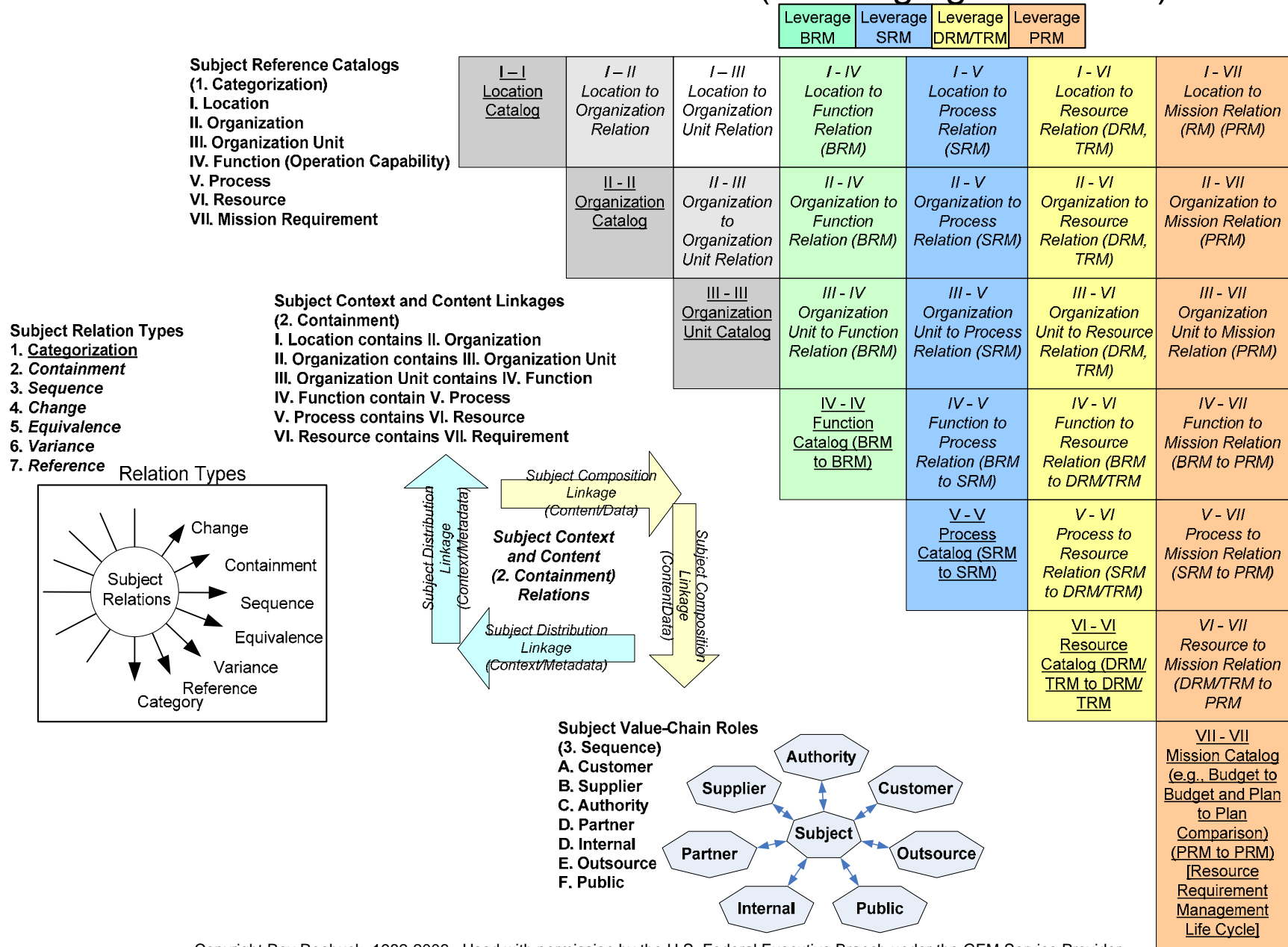
Slide 9

RR9

This is a model I put together around 1985 to extend the wheel of knowledge into a form that could be used to explain where technology fit and how it evolved.

Roy Roebuck, 1/20/2006

Team CommIT GEM Framework (Leveraging OMB FEA)



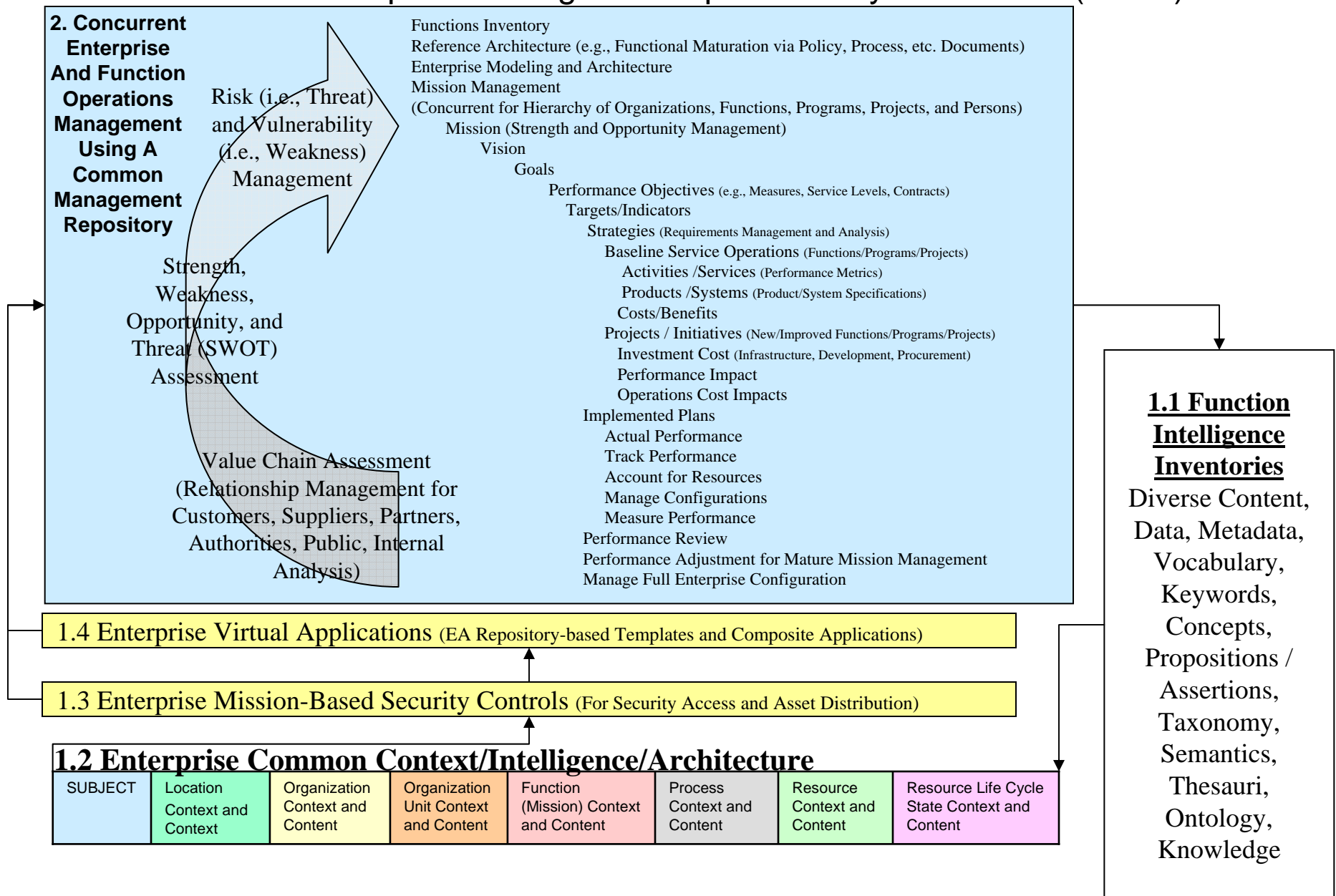
Slide 10

RR10

This is the GEM framework, first used in 1987, for organizing enterprise general subject taxonomies, a general ontology of subject relationships over time, and the value-lattice of the totality of enterprise subjects and their relations.

Roy Roebuck, 1/20/2006

RR11 Team CommIT Enterprise Management Spiral Life Cycle Process (SLCP) Model



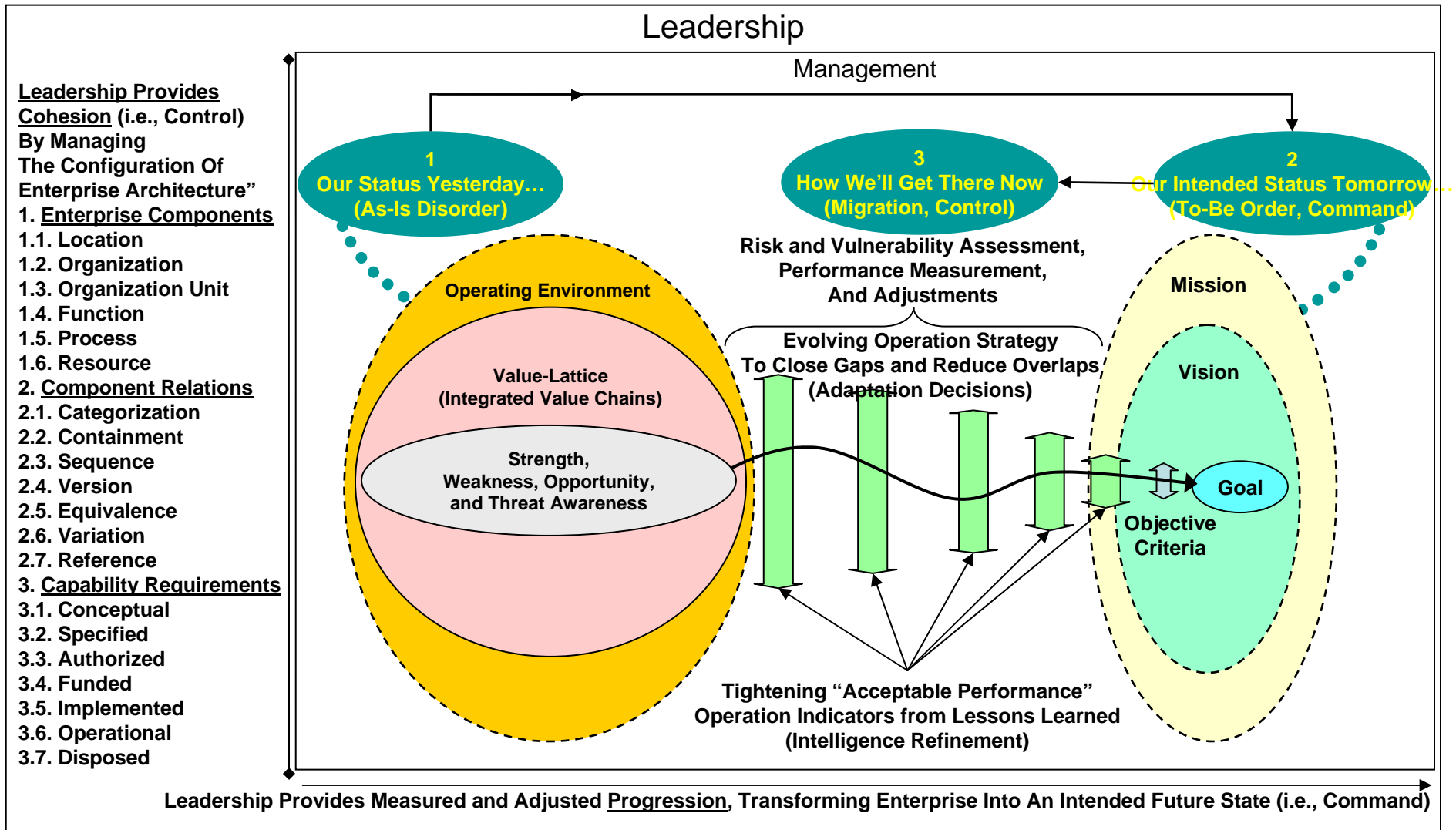
RR11

This is a variant of my 1987 strategic management process flow-model that represents evolving operations supported by dynamic operational and analytical data. The #2 item represents the strategic management process, which is a spiral life cycle that provides to the enterprise and all of its functions a concurrent and integrated superset of what is now known as a "balanced scorecard", plus strategy/portfolio/program/project management, performance tracking/reporting/assessment and adjustment, value-chain relationship management, and strength/weakness/opportunity/threat assessment. (Weakness = vulnerability, threat = risk). The GEM ontology in item 1.2 integrates the diverse functional (i.e., middle) ontologies from 1.1, which in turn provides the data needed to associate resources with user access authority in 1.3 and to virtualized knowledge-base functional applications in 1.4. All of this operates from a non-fragmented repository containing or linking to the totality of enterprise management information, providing a wholistic view of the dynamic enterprise in its dynamic environment.

Roy Roebuck, 1/20/2006

Enterprise Leadership and Management Functions

- Progression from Current Disorder to New Order, With Cohesion



Leadership and Management of the "Operational Part of Architecture" Both Depend On Organization of Data (i.e., "the Intelligence Part of Architecture") About The Enterprise and Its Environment

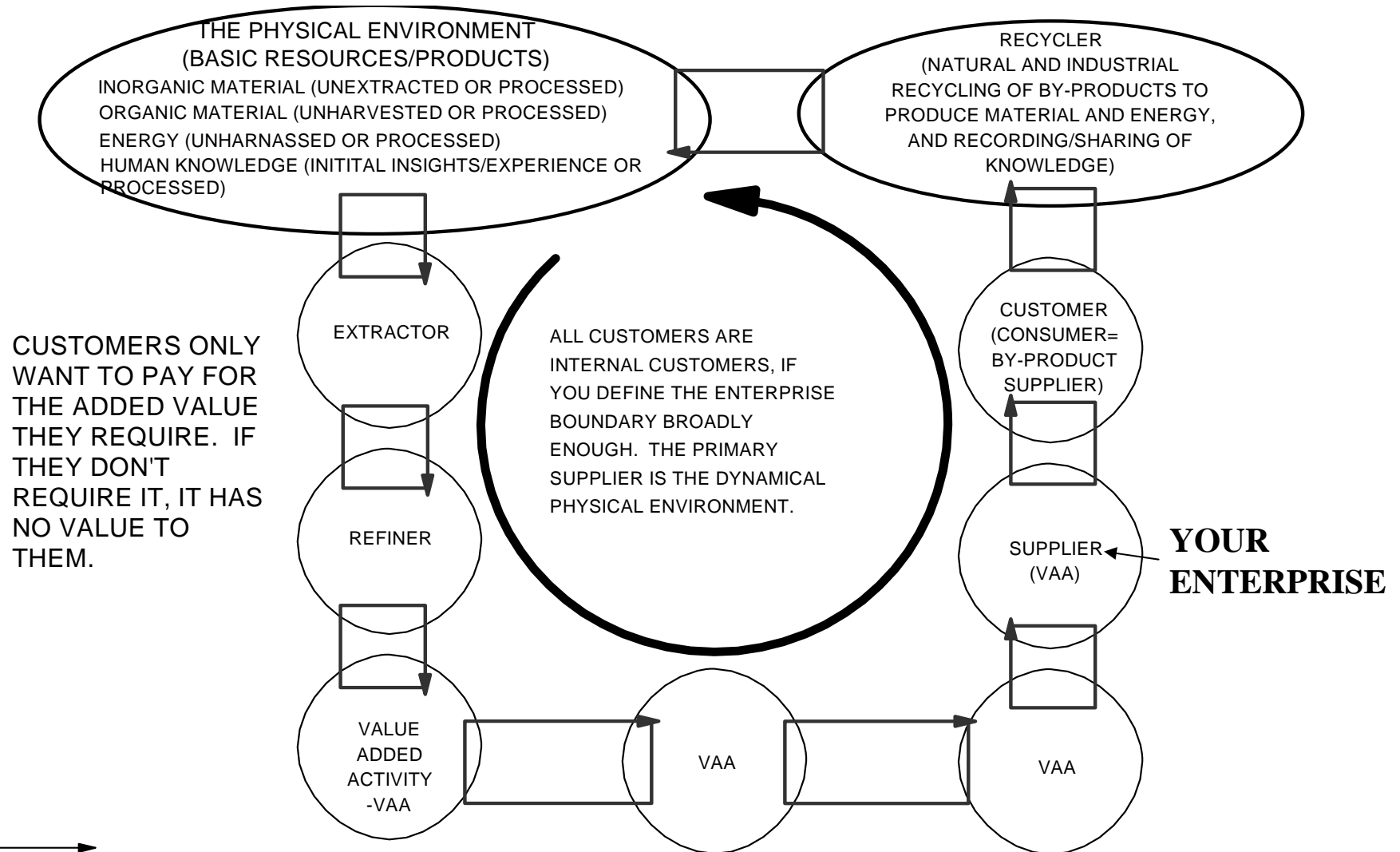
Slide 12

RR12

This is my 1991 leadership and management model that realigns the strategic management spiral life cycle to illustrated the concepts of command, control, strategy, performance, etc. supported by the enterprise architecture.

Roy Roebuck, 1/20/2006

Nature's Value-Chain



NOTE: INTERCHANGE OF INFORMATION, AND EXCHANGE OF MATERIAL, ENERGY, AND/OR CURRENCY

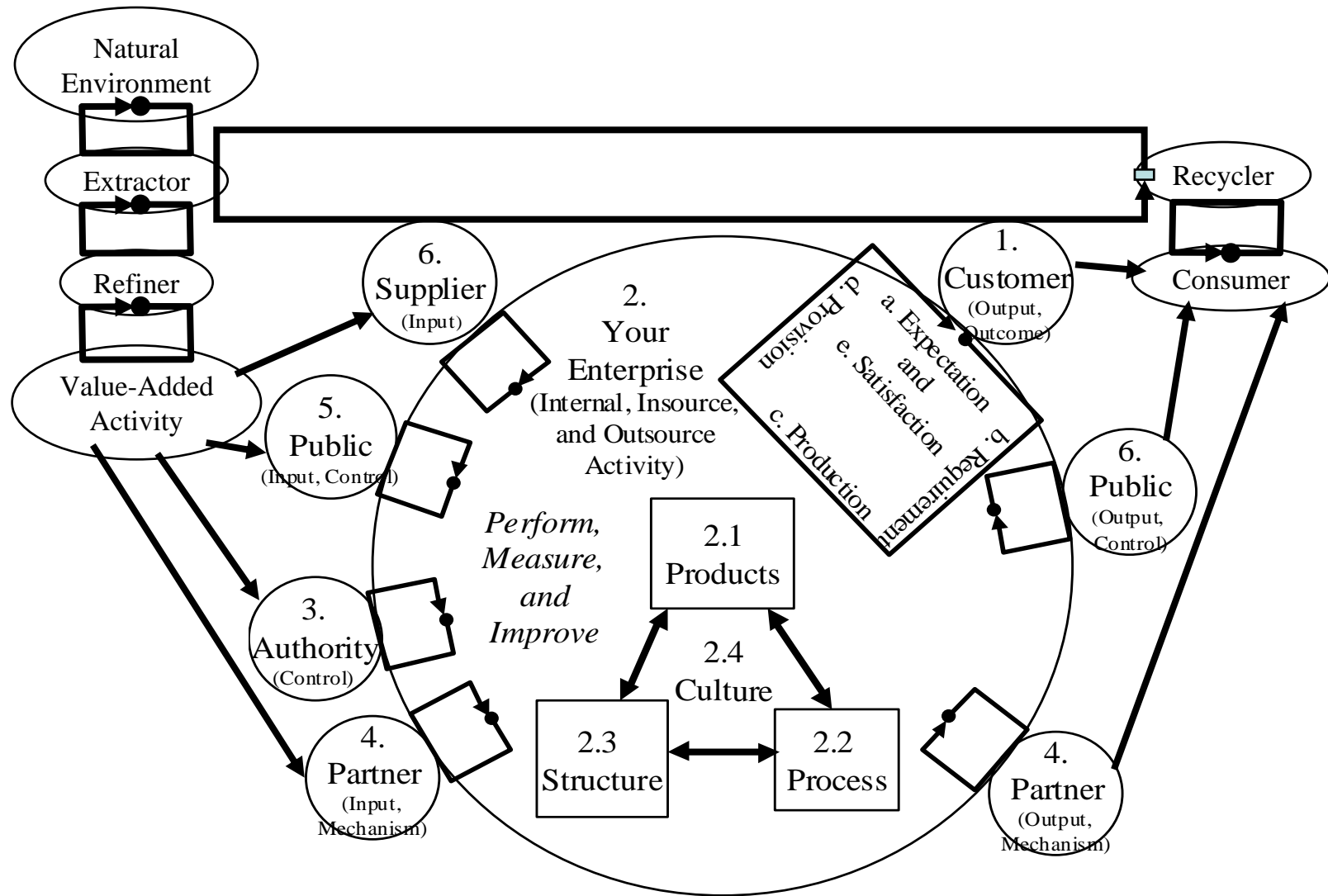
Slide 13

RR13

This is my 1992 model representing the value-chain aspects subsequently included in the GEM approach. Prior to this time I was focusing more on the "reduction of cycle time", from an operational and management-engineering perspective. This was when I was subsuming TQM and BPR (e.g., IDEF0) concepts and processes into the GEM approach.

Roy Roebuck, 1/20/2006

Enterprise Value Chain



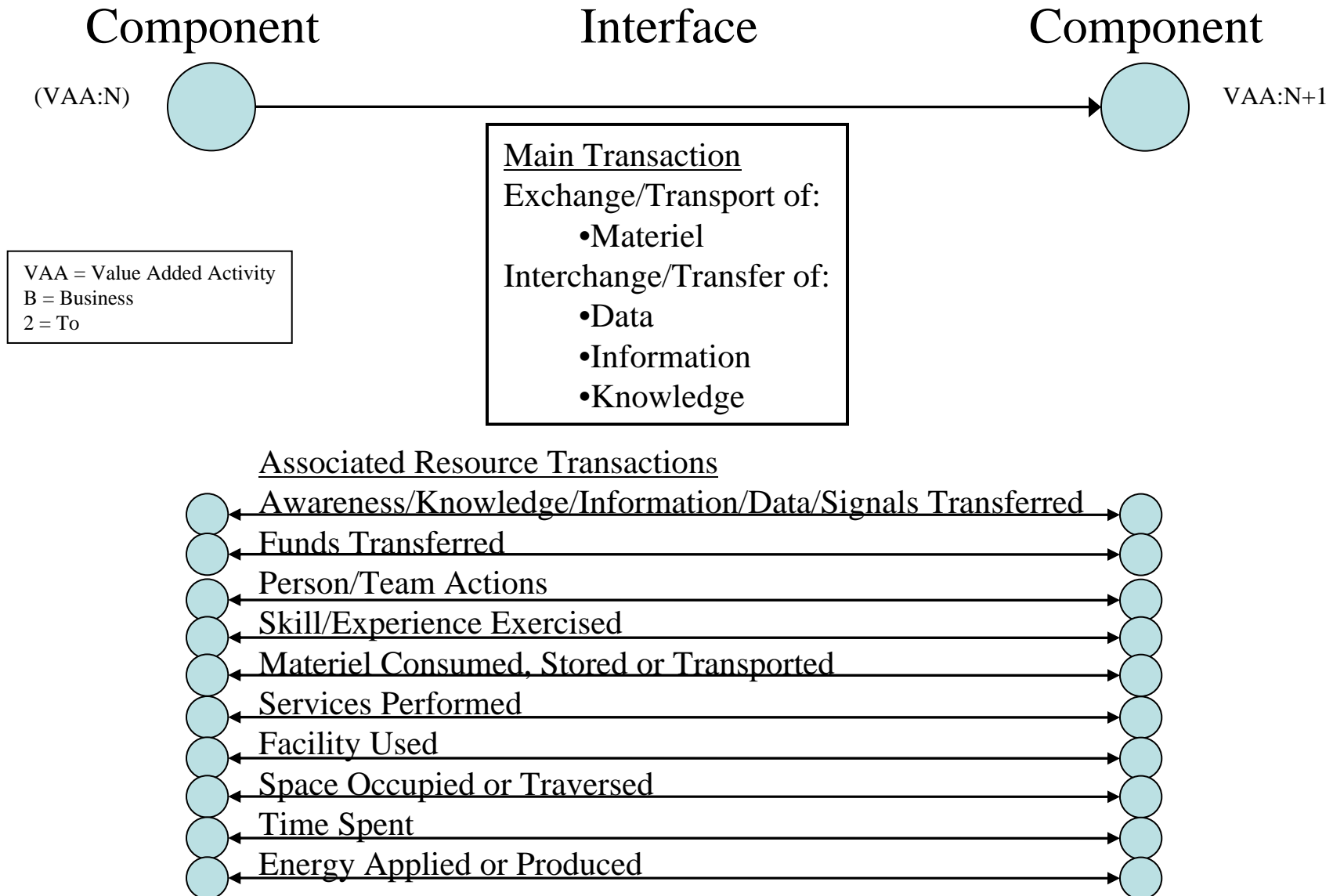
Slide 14

RR14

This is another 1992 variant of the previous value-chain model.

Roy Roebuck, 1/20/2006

A Transaction Is More Than It Appears - The Value Lattice



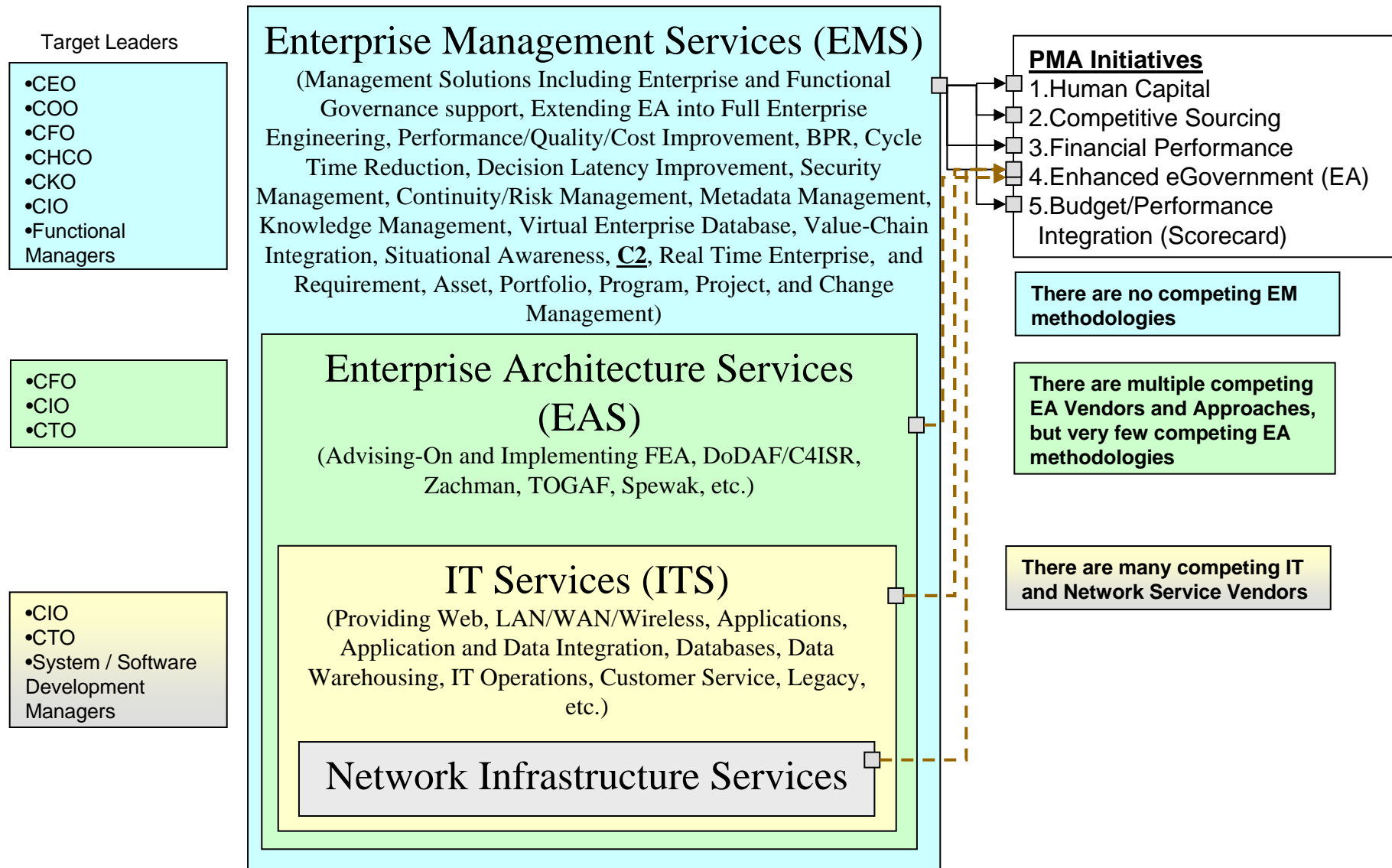
Slide 15

RR15

This 1996 model represents business to business interactions, in the GEM context, in one of my first commercial/contractor efforts to support an early B2B technology firm.

Roy Roebuck, 1/20/2006

Service Categories Needed to Support The President's Management Agenda (PMA)



Slide 16

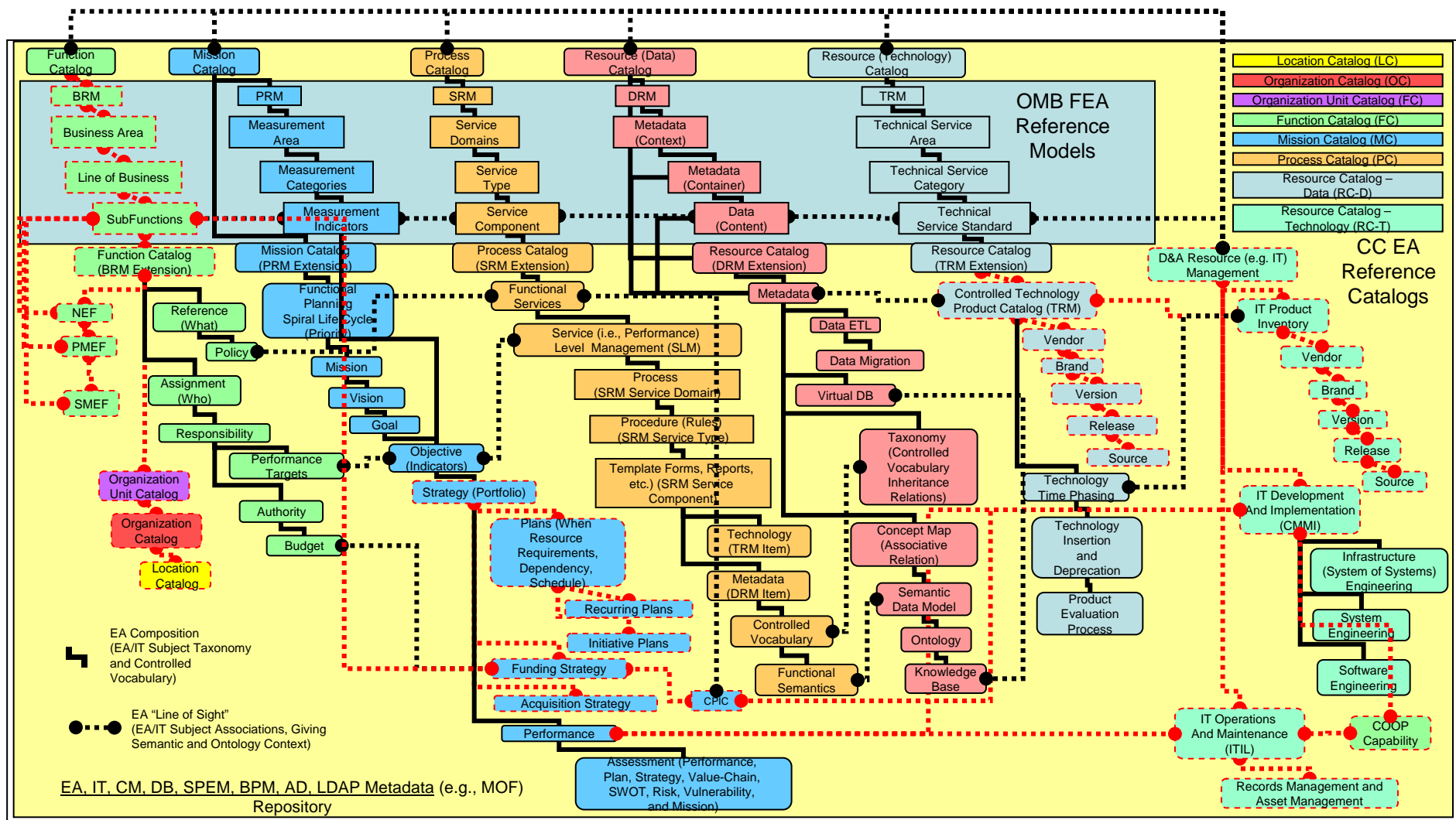
RR16

This 2000 model was assembled as marketing material to present the "consulting services" that could be enabled by the GEM approach. It was then extended to encompass the PMA and FEA as they became prominent in government contracting. GEM has encompassed what is now called EA since its 1982 inception.

Roy Roebuck, 1/20/2006

FEA Extension For Operations Management And Architecture Integration

EA as Whole-Enterprise System Analysis, Requirement Analysis, and Operational Model



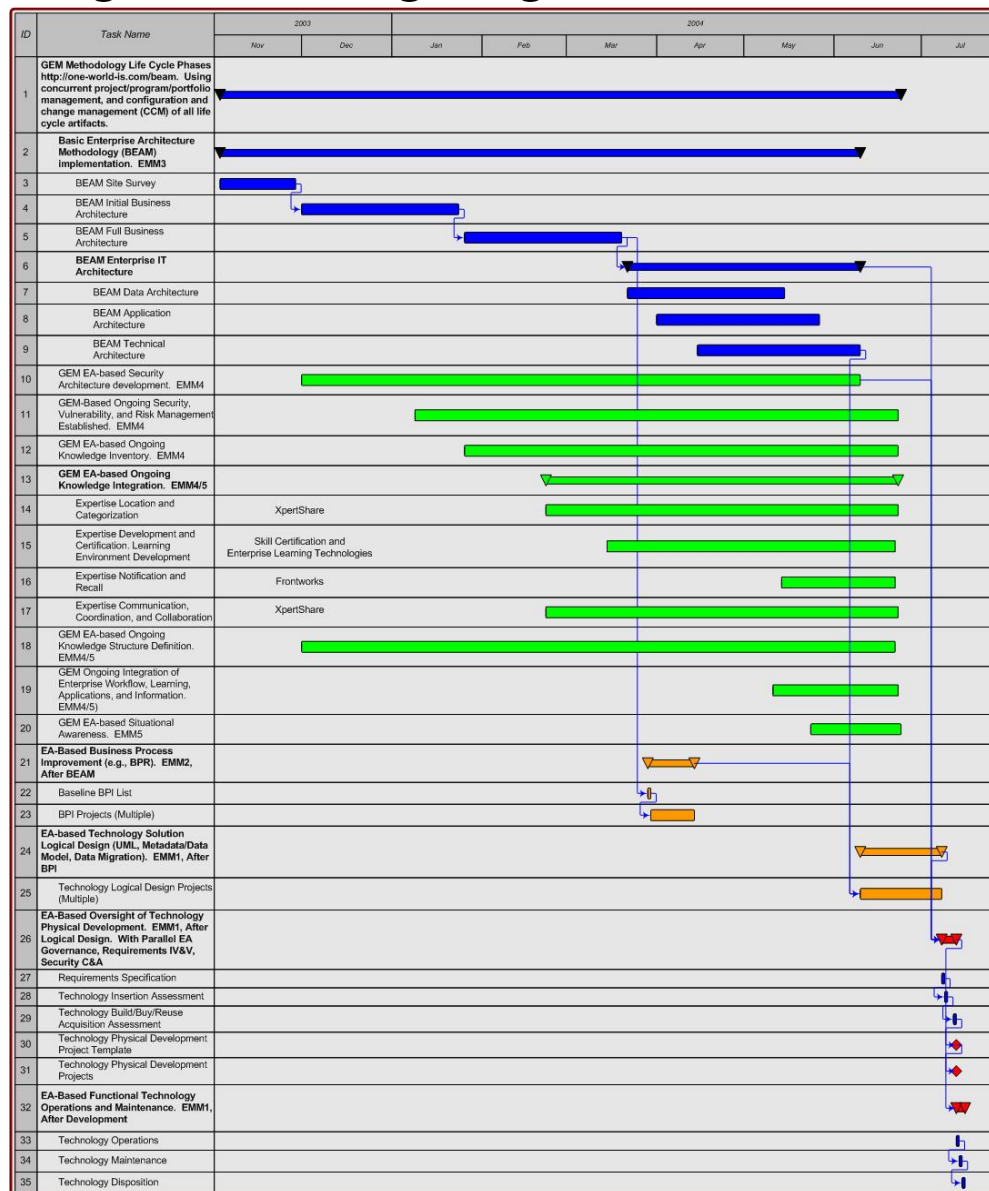
Slide 17

RR17

This is a 2002 variant of the GEM metaschema that has been re-aligned to show the mapping-to and extension-of the OMB FEA. It was subsequently included as part of the offering in a DOE ITSS contract, a DoD Encore win for a small business prime contractor, a DOI EA support contract, a Navy BUMED R&D EA contract, the Fed CC EA contract, and a Navy SPAWAR Engineering Support contract.

Roy Roebuck, 1/20/2006

Implementing GEM: Aligning Mission, Function, and IT



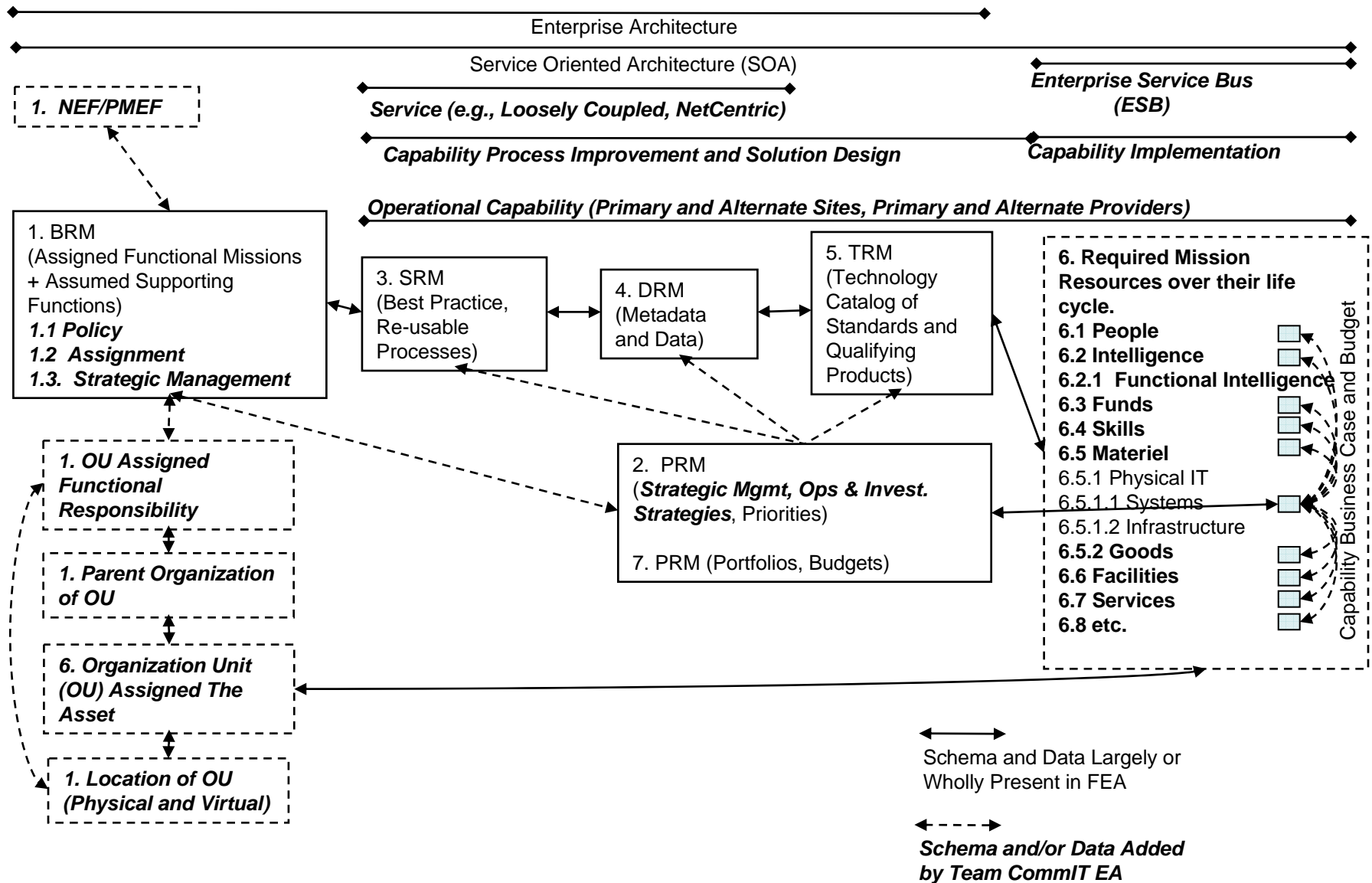
Slide 18

RR18

This is a model represent the cycle of development of an EA in blue, development of the EA-based enterprise management capabilities in green, implementation of EA-based BPR (ToBe process) and EA-governed IT Design (ToBe IT), EA-governed oversight of the IT implementation, EA-based IV&V and C&A of the IT implementation, EA-governed process and IT deployments, and EA-based oversight and tracking of IT and other functional operations.

Roy Roebuck, 1/20/2006

CommIT EA Has An Extended OMB FEA Structure



Slide 19

RR19

This 2003 model represents the OMB FEA in relation to capability design, SOA, and GEM. With the 2005 CCEA project, the National Essential Functions (NEF) and Priority Mission Essential Functions (PMEF) elements were added as variants of the OMB FEA BRM.

Roy Roebuck, 1/20/2006