
A Forward-Looking Perspective for Enterprise Architecture

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Agenda

- ❑ Three Unrelenting Pressures and How We Deal with Them
- ❑ What this Means for Enterprise Architecture
- ❑ Making It Happen
 - Changing the way we think about the enterprise
 - Changing the way we think about architecture
 - Changing the way we think about enterprise architecture

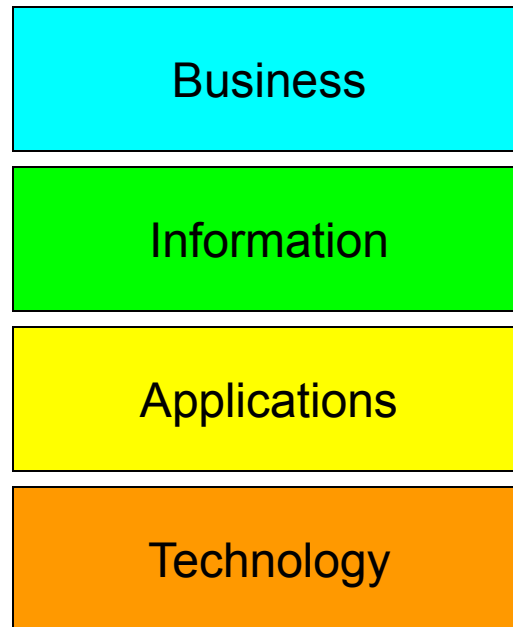
Three Unrelenting Pressures

- The need to increase efficiency (specifically, reduce capital and operational expense)
 - Eliminate needless replication
 - Eliminate needless diversity
 - Simplify operations and support
- The need to increase effectiveness (value realization)
 - “Alignment”
 - Integration
- The need to be agile
 - Decrease response time
 - Increase scope of adaptability

Three Common Strategies

- Consolidation
 - The elimination of needless replication
- Standardization
 - The elimination of needless diversity
- Commoditization
 - The replacement of differentiation by strategic value by differentiation by price/performance

A Typical Enterprise (IT) “Stack”



What This Means for Enterprise (IT) Architecture

- ❑ Consolidation, standardization and commoditization move up the stack, driven by the three unrelenting pressures.
- ❑ “Buy, don’t build” moves up the stack.
- ❑ Competitive differentiation moves up the stack.
 - Commoditization moves differentiation by excellence in design and implementation to differentiation by excellence in configuration management and operations.
- ❑ Valued skills and capabilities move up the stack.
 - Commoditized skills and capabilities get outsourced.
- ❑ In consequence, the way we think about EA must move up the stack.

But...

- ❑ These pressures and responses apply to the enterprise as a whole, not just the IT function.
- ❑ In consequence, if we don't reconsider some of the conventional wisdom about enterprise architecture, the enormous potential of this discipline will remain confined to the “back office” of IT.

What in the Conventional Wisdom Gets in the Way?

- ❑ Over-reliance on structural models as the substance of architecture.
- ❑ Over-reliance on metaphors and similes (“enterprise architecture is [just] like ...”) as the basis for a theory of EA.
- ❑ An entrenched IT-centric perspective
- ❑ The conflation of multiple other distinct disciplines with EA in order to appear relevant to “the business”.

Changing the Way We Think About Enterprise Architecture

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Change the Way We Think of the Enterprise

- ❑ An enterprise is not a “system” (**Heresy!!!**).
- ❑ An enterprise is not IT + “the business”.

Beware the “Slippery Slope”

- ❑ Applying “systems thinking” (integrative and holistic as opposed to reductionist, treating relationships as importantly as components) to the enterprise
 - can lead to
- ❑ Modeling the enterprise as a system, particularly with simplifications that make the model tractable
 - which can in turn lead to
- ❑ Thinking of this model as reality, rather than the enterprise as reality.

The Enterprise as a “System”

- ❑ The “everything is a system” metaphor is powerful, but it’s still only a metaphor.
- ❑ Calling something a “system” may confer an unwarranted sense of tractable and deterministic behavior.
 - “Soft Systems Methodology” (Peter Checkland et al) was developed specifically to deal with this consequence of misuse of the system metaphor.
- ❑ Thinking of the enterprise as a system can lead one to think of the enterprise/system as an end in itself rather than as a means.

“People Intensive Systems”

- ❑ The relationship of people to an enterprise is fundamentally different from their relationship to any other architected system.
- ❑ People do not just use or interact with the enterprise, they **are** the enterprise.
- ❑ People are not “components”, and their behavior cannot be modeled in the same way we model the behavior of artifacts.

The Faulty Partition

The conventional wisdom is to think of the enterprise, for the purpose of enterprise architecture, as comprising IT and “the business”.

“The Business” really deserves a more thoughtful characterization than “whatever isn’t IT”.



Saul Steinberg: “View of the World from 9th Avenue”, cover drawing for *The New Yorker*, 29 March 1976. Used without permission.

Some Numbers

- From a Gartner research report* of December 2006:
 - IT Spend as % of Revenue
 - Cross industry average: 4.05%
 - Range: 0% to ~29%
 - Middle quartiles: ~2% to ~5%
 - IT Spend as % of Operational Expense
 - Cross industry average: 5.52%
 - Range: 0% to ~35.5%
 - Middle quartiles: ~2% to ~6.5%
 - IT Employees as % of Total Employees
 - Cross industry average: 6.43%
 - Range: 0% to ~43%
 - Middle quartiles: ~2% to ~8%

* ID Number G00151933

Observations

- ❑ Regardless of how you measure it, IT typically accounts for about 5% of the enterprise; in half of the organizations studied it falls within a range of 2% to 8%.
- ❑ This strongly suggests that enterprise architects' conventional wisdom that the enterprise, for the purpose of enterprise architecture, comprises IT and “the business”, is a gross oversimplification.
- ❑ Surely the other ~ 90% of the enterprise is not a “black box”, and surely IT is part of “the business”?
- ❑ Finally, what about enterprises that are not “businesses”?

What Makes Up a Business Enterprise?

- Strategy
- Finance
- Legal
- Marketing
- Sales
- Manufacturing
- Shipping
- Purchasing
- Receiving
- Engineering
- Research
- Product/Project/Program Management
- Facilities
- Human Resources
- IT
- ...

Which of these, or what part of all of these, is “the business”?

Note also that there are many other kinds of enterprises besides businesses, which will have a different internal structure.

Don't Lose Sight of What “Enterprise” and “Business” Mean to non-IT people

- ❑ Enterprise:
 - Any concerted activity of one or more people directed to the achievement of some outcome.
 - It is not just a synonym for “organization”
- ❑ Business:
 - The exchange of goods and services for some form of compensation for the costs and risks of doing so.
 - It does not mean “that part of an organization that is not IT”.
- ❑ They're called “schools of business”, not “schools of enterprise” or “schools of organization”, for a reason.
- ❑ The words we use and the meanings we assign to them do matter.

A Non-IT-Centric View of “The Business”

- It is every bit as important that all these non-IT constituents "align with the business" as it is that IT "align with the business".
 - If they don't, it won't really matter how well IT aligns with the business, because the enterprise is a lot more than just IT.
 - I.e., it doesn't matter if the hole is not in your end of the boat.
- Each therefore has an architecture (just as IT does) that aligns its assets, processes, capabilities, etc., with its role in the enterprise's mission, regardless of whether these architectures are acknowledged, explicitly represented, and consciously designed.

Change The Way We Think of Architecture

- ❑ Architecture is about more than structure
- ❑ Architecture is about more than models
- ❑ We need a concept of architecture that serves our needs (ensuring value realization), not one that mimics another that applies to a completely different kind of artifact.

Design and Constraints

- ❑ The process of design entails making decisions that impose a succession of constraints on the decisions that remain to be made.
- ❑ Identifying a design activity (e.g., architecting) as a specific discipline requires that we:
 - Specify the criteria used to select the constraints imposed by this design activity
 - Specify the criteria used to select the concerns to which these constraints will be applied
- ❑ If you don't or can't specify these criteria, this purported design activity is arbitrary, and not a legitimately distinct discipline.

Is Structure the Only Thing that Determines Success?

- ❑ If an activity is successful, it must, by definition, include everything necessary to be successful – if it didn't, it wouldn't be successful. This may be by chance or by design.
- ❑ A successful activity may (will likely?) also include things that are not necessary, unless they are deliberately excluded.
- ❑ This suggests that a useful criterion for selecting and applying design constraints would be necessity and sufficiency for success.
- ❑ There is no reason to believe that such constraints will only be structural in nature.

Modeling and Structural Thinking

- ❑ Most architectural models are represented using “box and line” diagrams.
- ❑ It is virtually impossible not to think about such representations as structures.
- ❑ It is unavoidably tempting to extrapolate that what is being modeled is therefore also a structure.
- ❑ If we only use structural models to represent architectures, it is unavoidably tempting to conclude that architecture is primarily, if not solely, about structure.
- ❑ Thinking of architecture in structural terms is reinforced by analogies with other architectural disciplines.

The Siren Song of Models

- ❑ The focus on models causes most architects to neglect a more important way of expressing constraints – principles.
- ❑ There is a natural tendency to model the solution rather than the problem.
- ❑ Solution models are also usually models of the implementation of a particular solution, not of the solution as it ought to be seen by the “user”.
- ❑ This “user model” or “user view” may be very different from the “implementation model” or “implementation view”, especially when the latter is focused on internal structure.

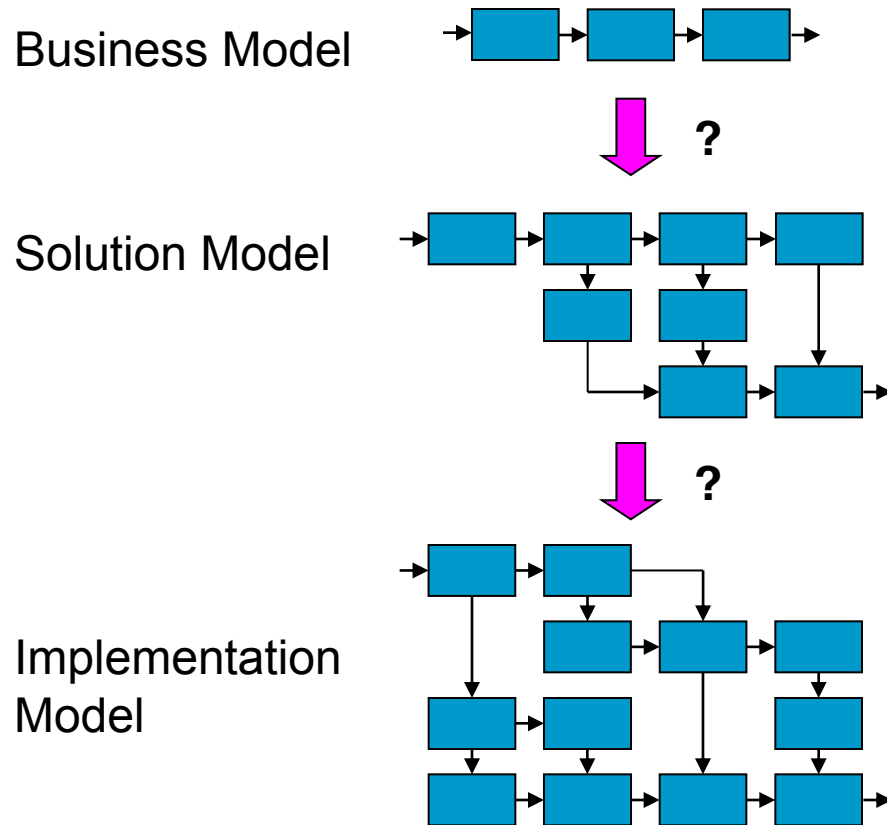
Why We Build Models

- ❑ Models are a special case of analogies; they are stand-ins for the “real thing”.
- ❑ We build models of something because as simplifications they allow us to discover or confirm things about that something with considerably less effort (and hence time and cost) than it would take to do so with the real thing.
- ❑ The simplifications we make in building a model will depend on exactly what we want to learn or confirm.

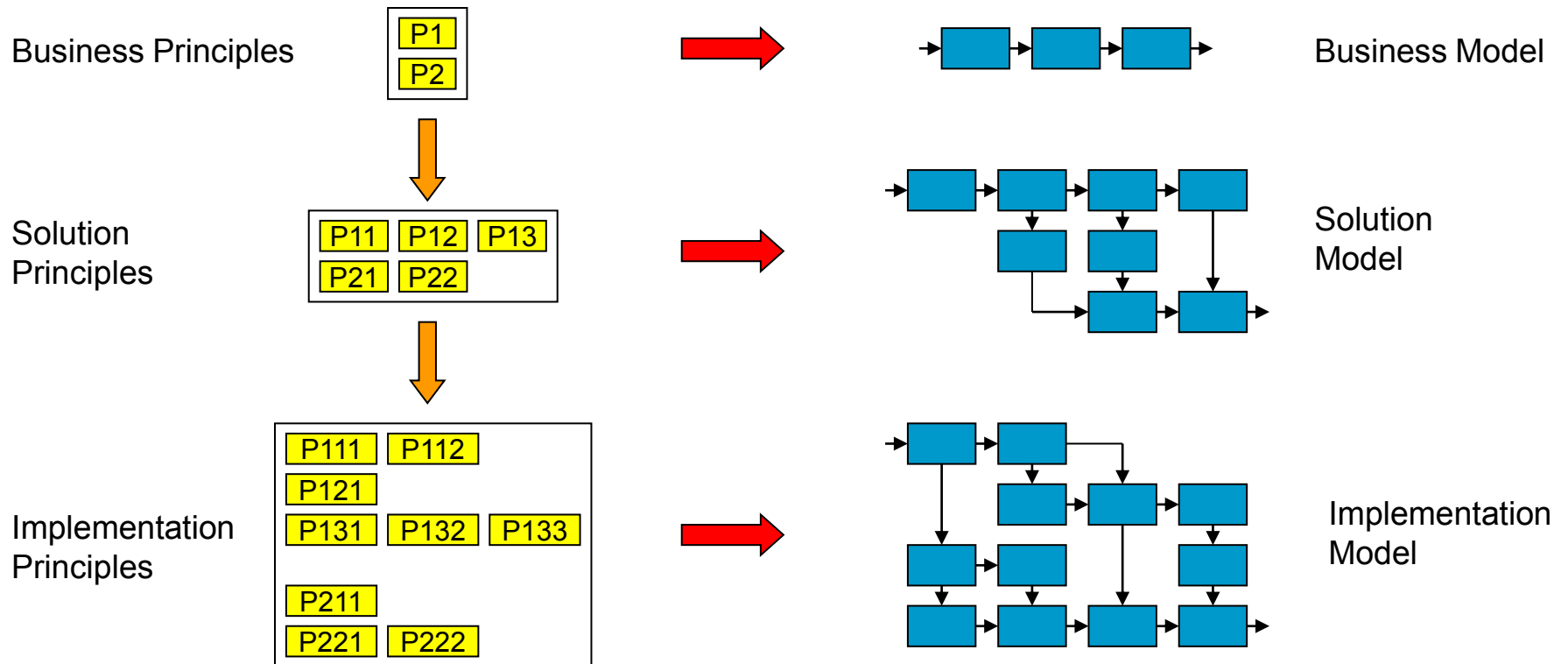
Principles, Models and Governance

- ❑ Because the things we choose to focus a model on at any given level of abstraction are chosen specifically to be useful at that level of abstraction, models are often not hierarchically decomposable.
- ❑ Principles, however, by their very nature, must be hierarchically derived via inheritance, refinement, and decomposition.
- ❑ The ability to construct a continuous chain of principles expressing motivation and justification from the vision, mission and strategy levels to the implementation and operation levels dramatically simplifies the challenge of governance.

Can Models be Hierarchically Derived?



Using A Hierarchy of Principles to Derive a Succession of Models



Change the Way We Think of EA

- What most people call Enterprise Architecture is really Enterprise IT Architecture.
 - The implementation of such architectures is almost entirely in the IT domain.
 - The IT community has a demonstrated propensity for naming things more grandly than is warranted.
- Remember that the enterprise does not simply comprise IT and “the business”.

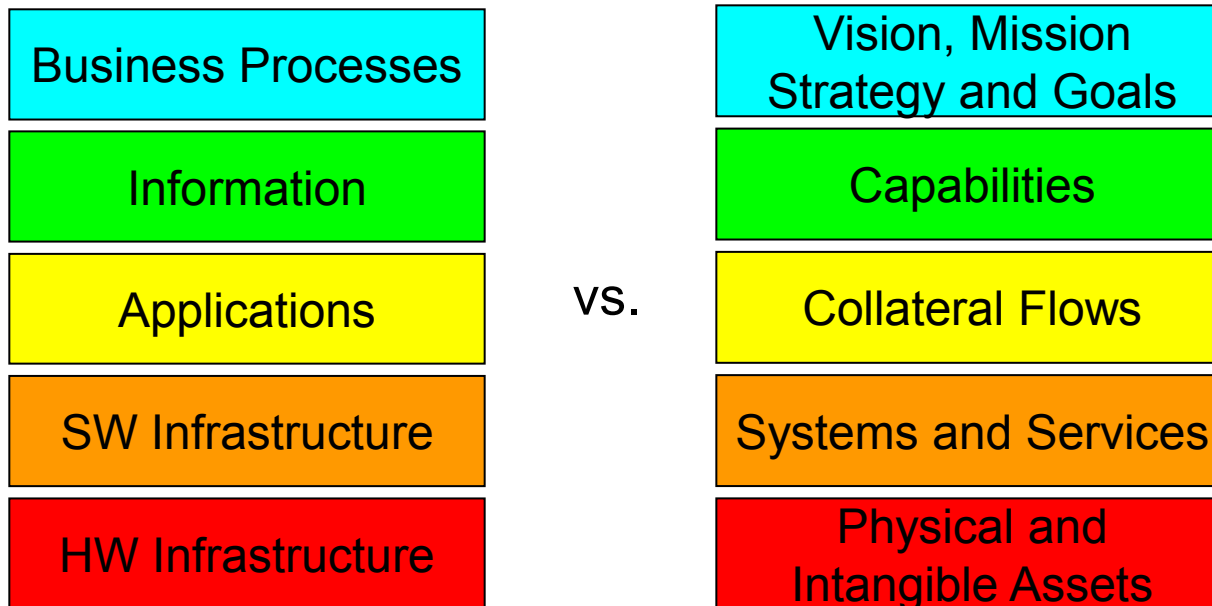
Remember:

Everything which is not IT includes, among others (for an enterprise which is a business):

- Strategy
- Finance
- Legal
- Marketing
- Sales
- Manufacturing
- Shipping
- Purchasing
- Logistics
- Receiving
- Engineering
- Research
- Development
- Product/Project/Program Management
- Facilities
- Human Resources
- ...

Each of these domains must also be “aligned with the business” and as such has an architecture.

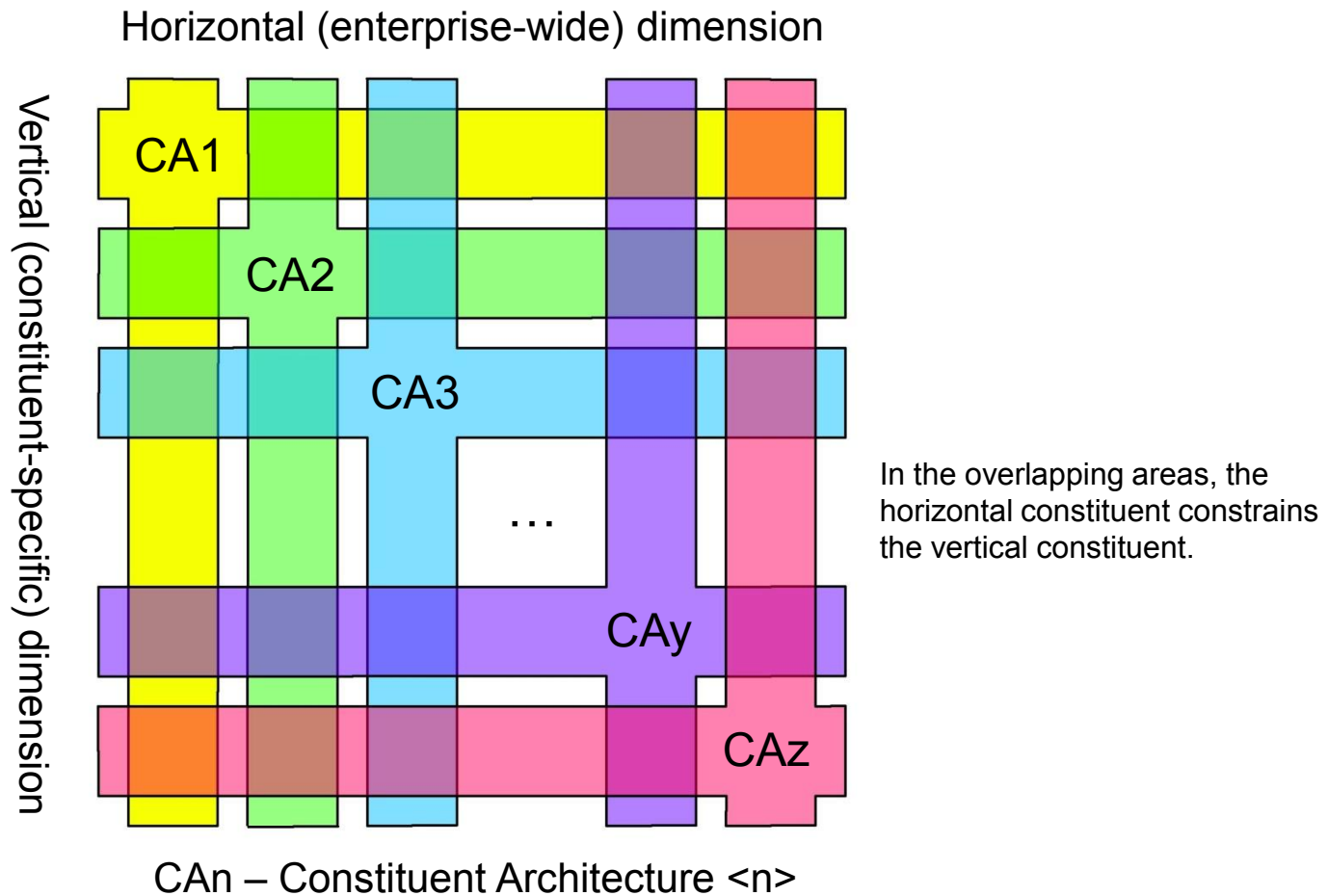
Adopt a Non-IT-Centric Perspective



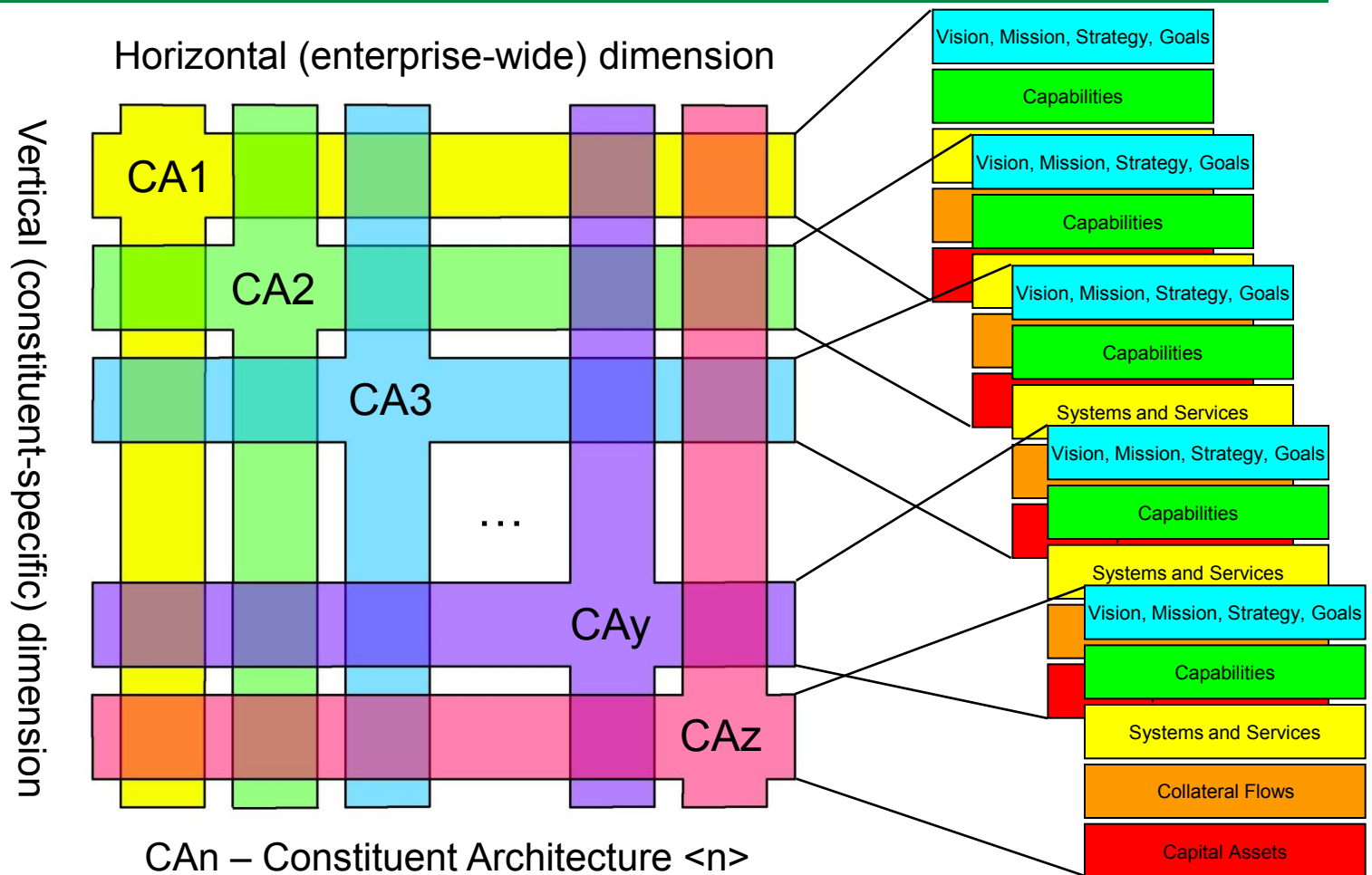
A Generic Model of Enterprise Architecture

- ❑ These architectures have horizontal and vertical dimensions.
- ❑ The horizontal dimension comprises constraints that must be observed by all other constituents in the enterprise for this constituent to effectively play its role.
- ❑ The vertical dimension comprises constraints that must be observed within this constituent for it to effectively play its role.
- ❑ The relative balance of the horizontal and vertical dimensions may vary considerably from constituent to constituent.

A Generic Model of Enterprise Architecture



Where Does the Architecture of “The Business” Fit in this Model of Enterprise Architecture?



What are the Constituents of an Enterprise?

- ❑ Some clearly correspond to functional units.
- ❑ Some clearly correspond to “nonfunctional” concerns shared by all functional units.
- ❑ The proper level of resolution is a design problem for any given enterprise.
 - This suggests that an enterprise architecture, as an artifact itself, has an architecture that determines its fitness for purpose.
- ❑ Each of these constituent architectures has its own internal structure.

Conflation

- ❑ Enterprise Architecture is not about change management.
- ❑ Enterprise Architecture is not about enterprise transformation.
- ❑ Enterprise Architecture is a means to enterprise transformation, which also requires change management.
- ❑ The value of EA comes from architecture, and making EA about anything else can only do so at the expense of this value.

Reprise

- ❑ Broaden the concept of architecture to be about more than structure and models.
- ❑ Stop using misleading metaphors and similes (“enterprise architecture is [just] like ...”) as the basis for a theory of EA.
- ❑ Adopt a truly enterprise-wide perspective.
- ❑ Stop conflating multiple other distinct disciplines with EA.