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Architecture Description Framework for Enterprise Systems - A Layered Approach

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Acronyms used in this document

- *AD / M – Application Development / Maintenance*
- *BU – Business Units*
- *EA – Enterprise Architecture*
- *LOB – Line of Business*

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Our Views on Enterprise Architecture

Enterprise Architecture – Definition & Drivers

- Enterprise architecture is defined as “the set of architectural concepts, principles, guidelines, blueprints, standards, and other enterprise-wide deliverables that guide an enterprise through acquiring, outsourcing, integrating, connecting, developing, modifying, operating, and retiring the elements (internal and external to the enterprise) of an IT portfolio.

  - *Cutter Consortium*

- Why Enterprise Architecture?
  - Need for an efficient, faster, consistent, flexible and predictable technology support to the businesses
  - Need for faster time to market
  - Complex integration issues due to inconsistent and unsound technology
  - Chaotic technology landscape due to mergers and acquisitions
  - Lack of processes (architecture definition, technology selection, EA team funding, IT procurement etc.)
  - Lack of proper technology strategy planning in line with business planning

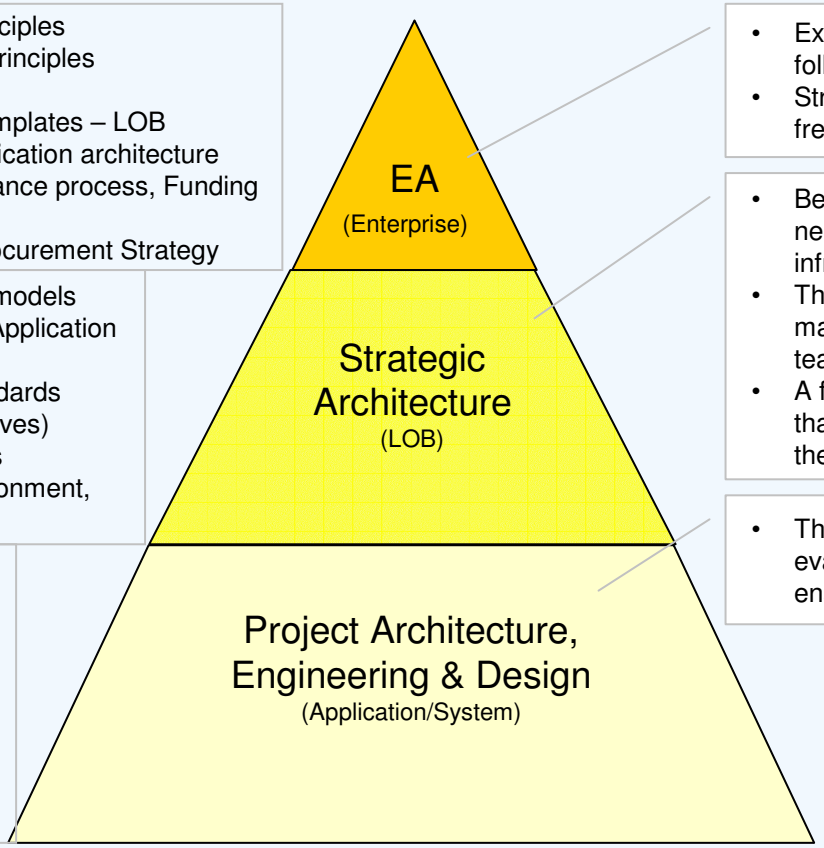
Architecture in an Enterprise can be viewed in 3 Layers

Components of Architectures

- Enterprise Business Vision and Principles
- Enterprise Technology Vision and Principles
- Technology / Product standards
- Process definition and document templates – LOB architecture definition process, Application architecture definition process, Strategic governance process, Funding process etc.
- Business and IT investment and Procurement Strategy

- As-Is and To-Be Business process models and Process-Application Mapping (Application Portfolio Rationalization)
- LOB level technology / product standards
- Technology Roadmap (List of Initiatives)
- Architecture Blueprint / Components (Software, Standard operating environment, Integration, Security, Global data)

- Application architecture based on Enterprise and LOB architecture blueprints
- Strong adherence to defined technology standards and principles
- Integration of architecture and software development (e.g. RUP) processes



Critical Success Factors

- Existence of a Governance model that is followed across the organization.
- Striking the balance between degrees of freedom and standardization

- Besides models and guidelines, there needs to be specific reusable and infrastructure components delivered
- The speed of the deliverables needs to match the expectations from the project teams that need them.
- A funding model needs to be in place that can charge-back the development of the reusable components to Projects.

- The Governance model needs to be evangelized and audited formally to ensure adherence

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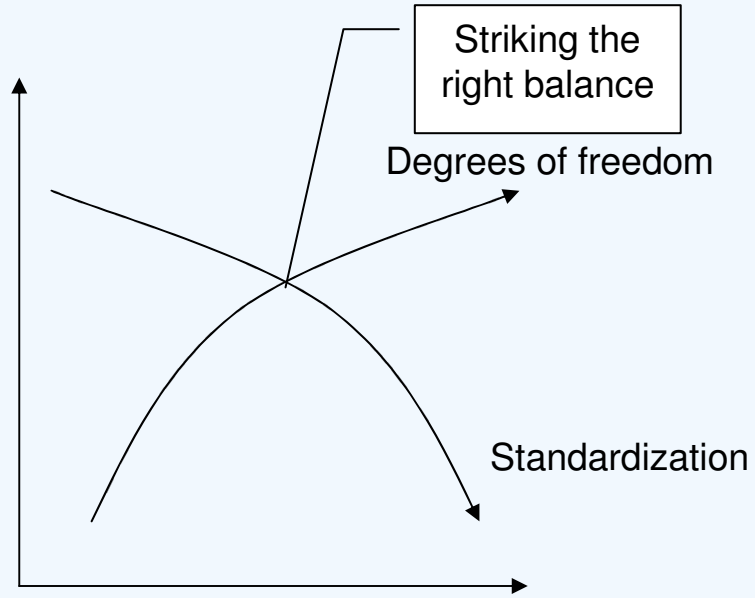
Degrees of freedom Vs Standardization



- At EA level, there should be multiple but finite number of paths to be selected by the LOBs
- At LOB architecture level, the degrees of freedom should be minimal
- At project architecture level, the degree of freedom should be very much constrained

Example

- EA level
  - Different types of technology stacks with specific products in each – (ex) Microsoft stack, IBM J2EE stack, Open source stack
- LOB level
  - An LOB can adopt only one among the above stacks as its technology goal and strive to rationalize its existing systems towards the defined stack
- Project level
  - Could select one among multiple reference architectures defined at LOB level

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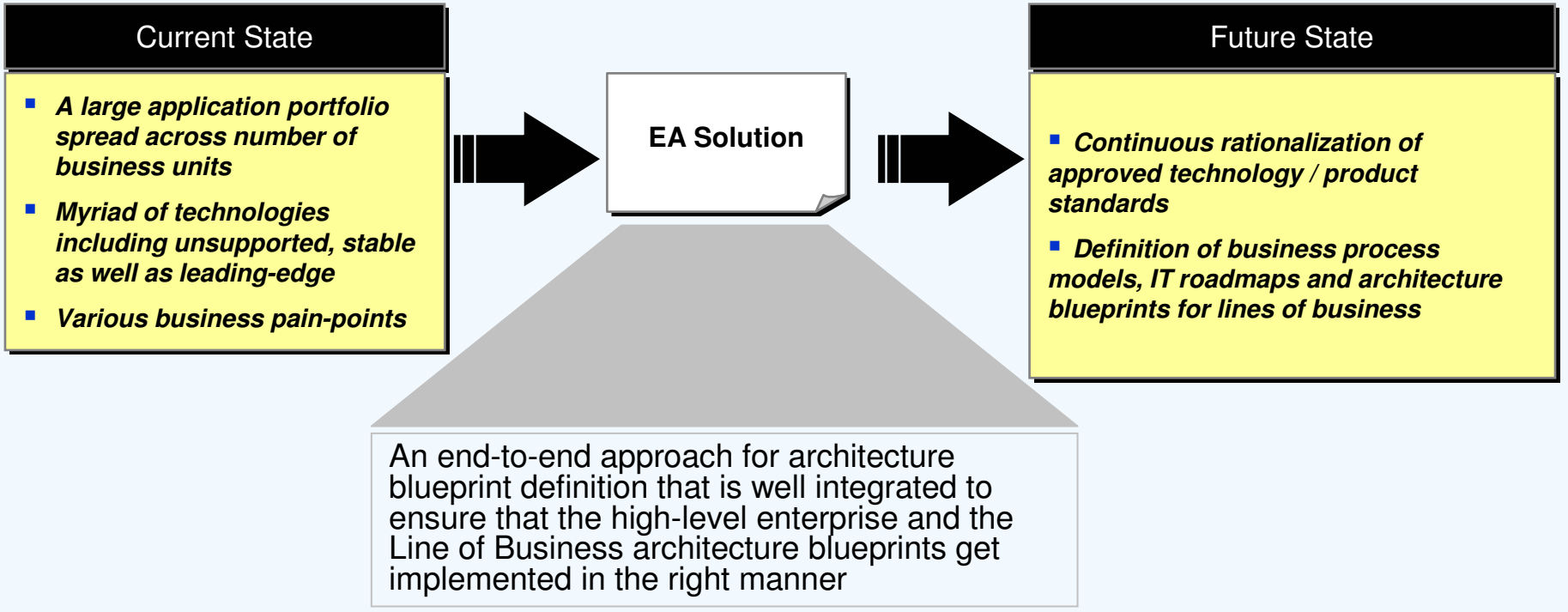
Our Proposition on Enterprise Architecture

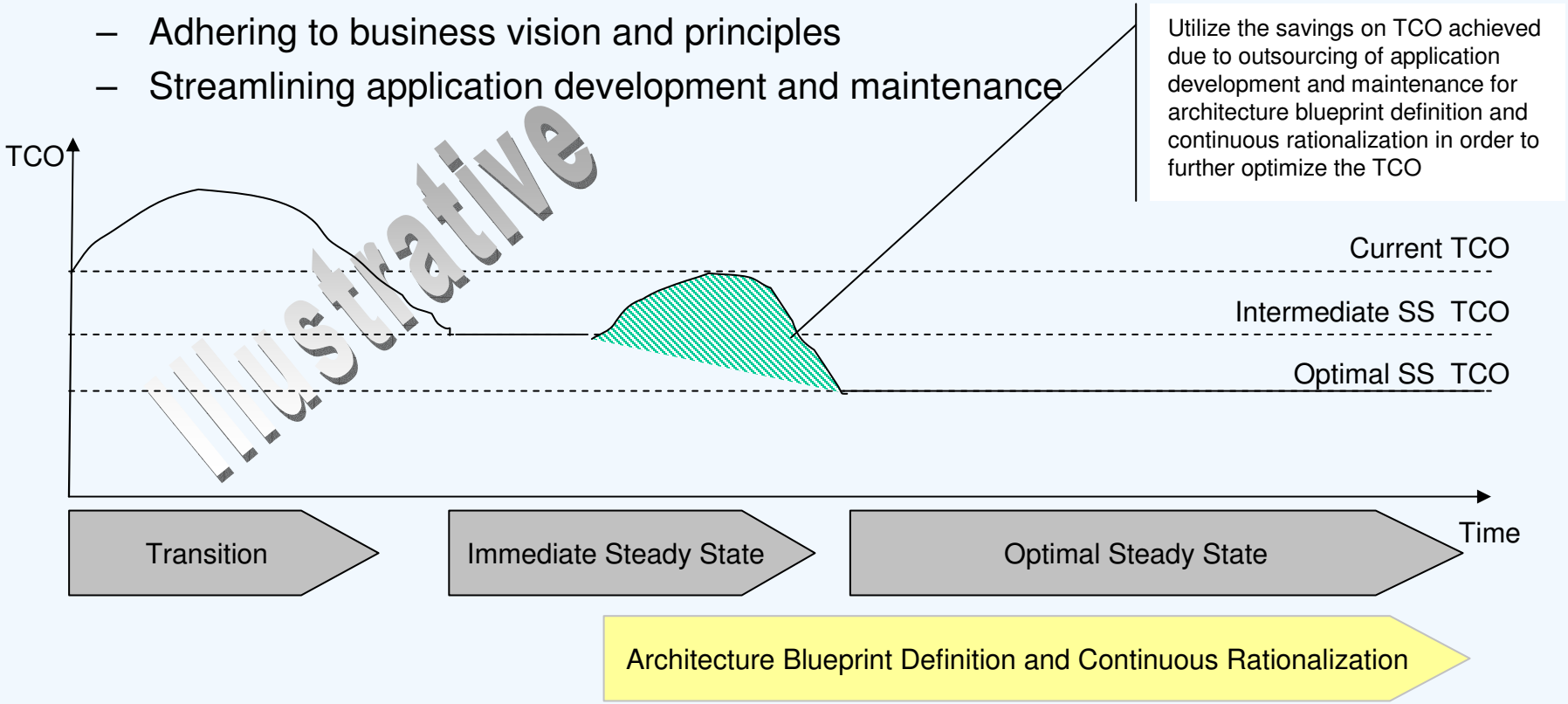
Key Focus

- Focus on the rationalization of the gamut of old technologies as well as the large application portfolio to a more manageable and efficient set of new technologies and applications
- Provide a future direction for the architecture and technologies to be adopted and a roadmap to achieve that from the current state.



Benefits

- Client would be able to optimize the TCO to a level lower than what is achieved through outsourcing of application development and maintenance
- Helps in
  - Standardizing technology / products
  - Rationalizing application portfolio
  - Adhering to business vision and principles
  - Streamlining application development and maintenance



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Architecture Description Framework (ADF) for Enterprise Applications

Among the various steps in EA definition, the focus is to prescribe the right description framework for project architecture and LOB architecture

- Business Case preparation involves carrying out a cost-benefit analysis of the architecture blueprint definition initiative and showing how it can help further optimize the TCO for the enterprise
- The organization set-up for Enterprise Architecture and LOB architecture needs to have the agreement from all stakeholders without which the success of initiative is under question
- This is followed by the Enterprise Architecture and LOB architecture blueprint definitions. The project architecture is defined in adherence with the defined enterprise / LOB architecture blueprints.

Focus of this presentation

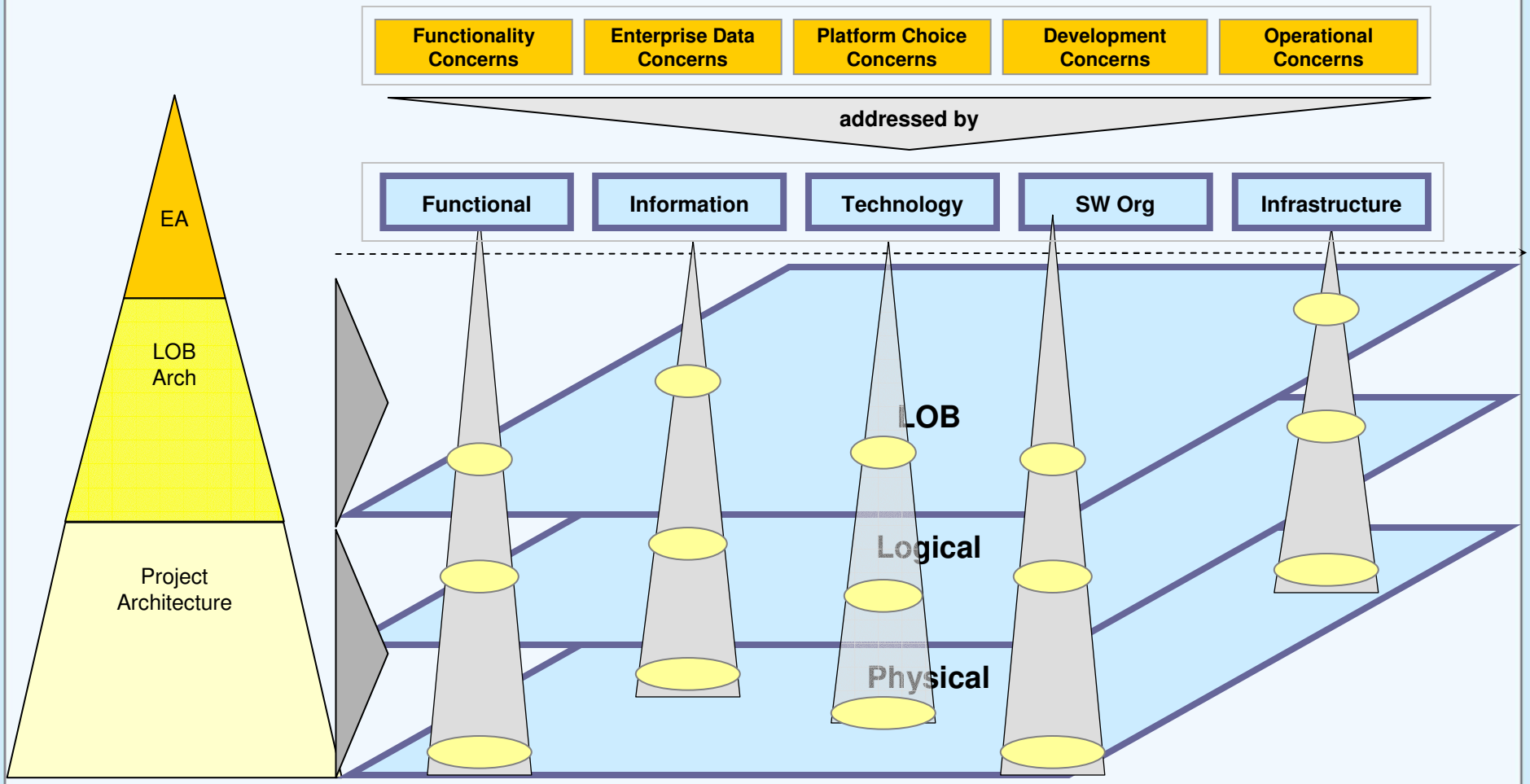
- **Layered description for project architecture of enterprise applications**
- **Synergy between project architecture and enterprise /LOB level architectures**

Need for the “right” description of architecture of enterprise applications

- The architecture should describe the whole system at different levels of granularity depending on the hierarchy level of stakeholder
- The architecture should describe different architectural aspects of the system focusing one at a time so as to help separate concerns of the stakeholders
- The software architecture of the system should take into account the enterprise and LOB level standards as well as architectural principles.

- To achieve the above, the Architecture Description Framework (ADF) should
  - Provide guidelines and best practices for easy adoption
  - Provide tight coupling between the LOB target architecture and project architectures

Architecture Description Framework



- The project architecture is
  - represented in 2 layers of abstraction (Logical and Physical)
  - traceable to different LOB architecture models

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LOB Architecture Models

Viewpoint	Models
Functional	Process Application Map (PAM), High level business process models
Information	Standard entity definition, Entity to Application CRUD (Create, Read, Update, Delete) matrix
Technology	Technology / product blueprint
Software organization	N/A
Infrastructure	Standard operating environment for different types of applications (intranet, internet, extranet)

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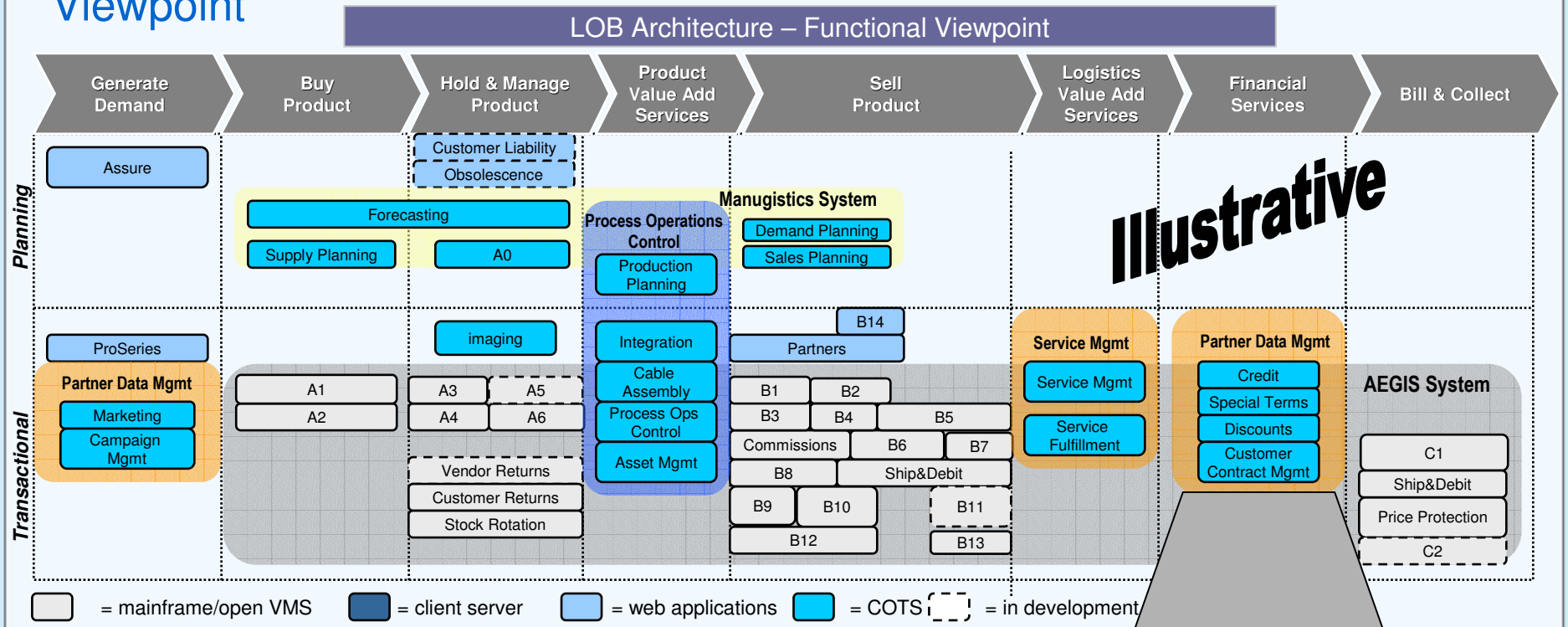
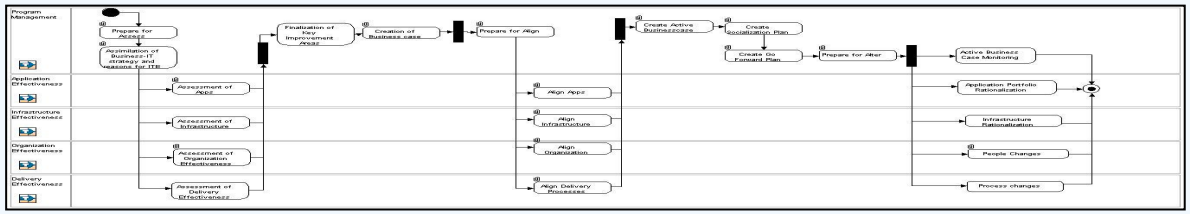
Coupling between project architecture and LOB architecture – Functional Viewpoint



Project Architecture – Functional Viewpoint



Detailed business process models for the application
Business use cases

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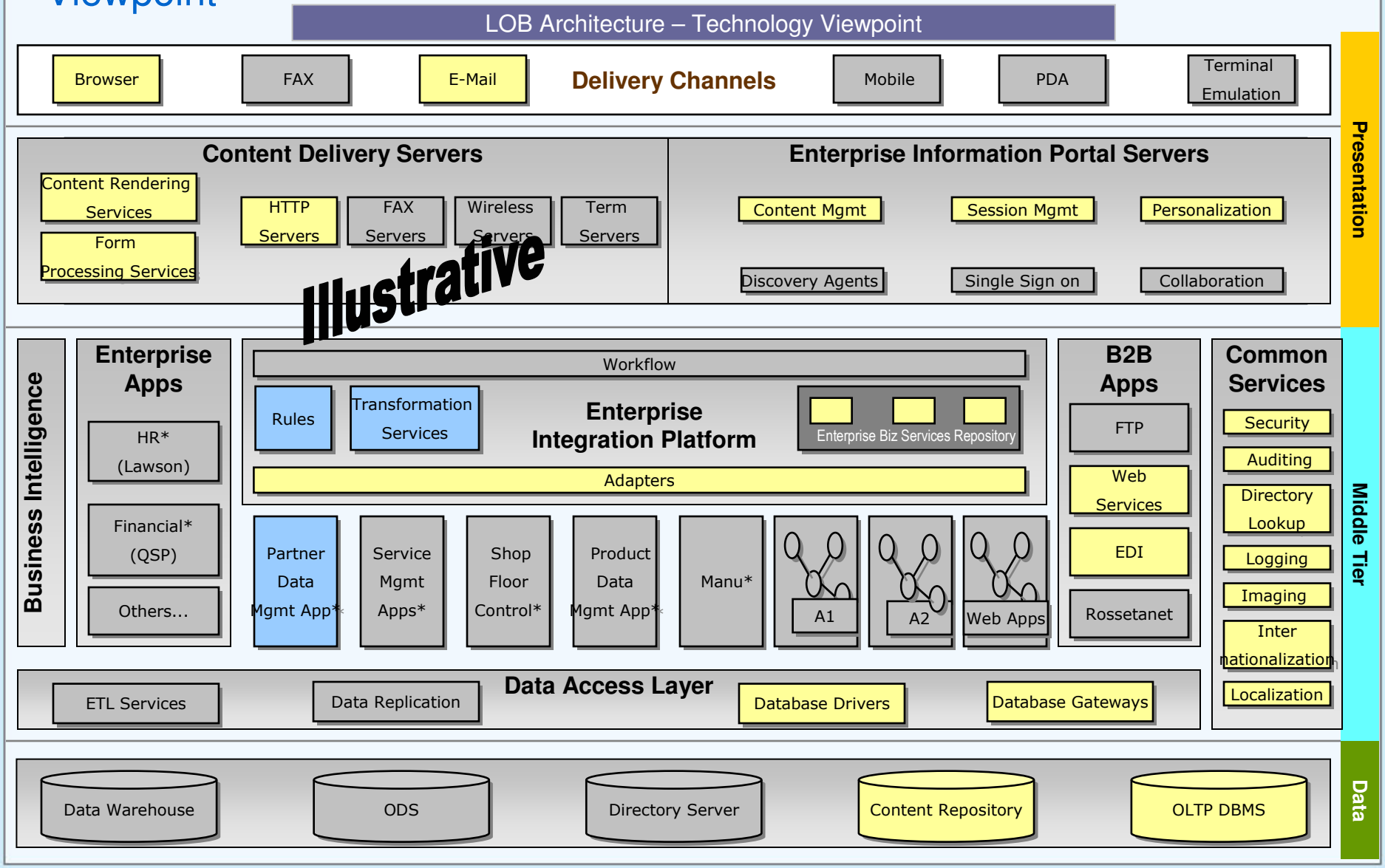
Coupling between project architecture and LOB architecture – Information Viewpoint

- The LOB architecture's information viewpoint has
  - Standard entity descriptions across functional areas
  - Create, Read, Update and Delete (CRUD) matrix (Entities Vs applications)
- The project architecture's information viewpoint
  - Selects all the data entities that the application uses (creates, reads, updates or deletes)
  - Checks if the data entities are already owned by other applications; resolve any ownership conflicts
  - Elaborate data entities that are owned by this application
  - Arrive at the logical data model
  - Provide inputs to physical data model

Coupling between project architecture and LOB architecture – Technology Viewpoint



Conclusions

- ADF provides a simple yet powerful framework to ensure the architecture of critical enterprise applications are represented to the right type of audience at the right granularity
- ADF also helps in providing a tight coupling between the target LOB architecture and the project architectures
- The notations currently have not been formalized at LOB level. This is an area of future work.

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Thank You!