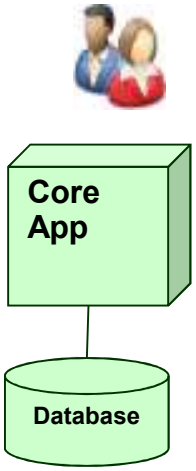
Enterprise Architecture for Digital Transformation

Danairat T.
Line ID: Danairat
FB: Danairat Thanabodithammachri
danairat@gmail.com, +668-1559-1446

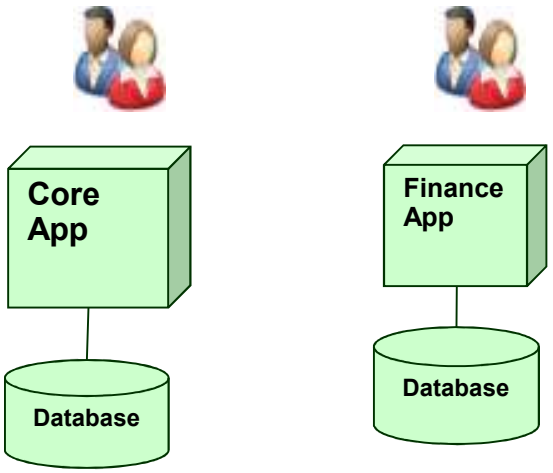
Agenda

- Why we need an Enterprise Architecture
- What is an Enterprise Architecture
- Enterprise Architecture Maturity Model
- Architecture Principles
- How to build an Enterprise Architecture
  - Business Architecture
  - Application Architecture
  - Data Architecture
  - Technology Architecture
- Digital Transformation Master Plan
- Summary

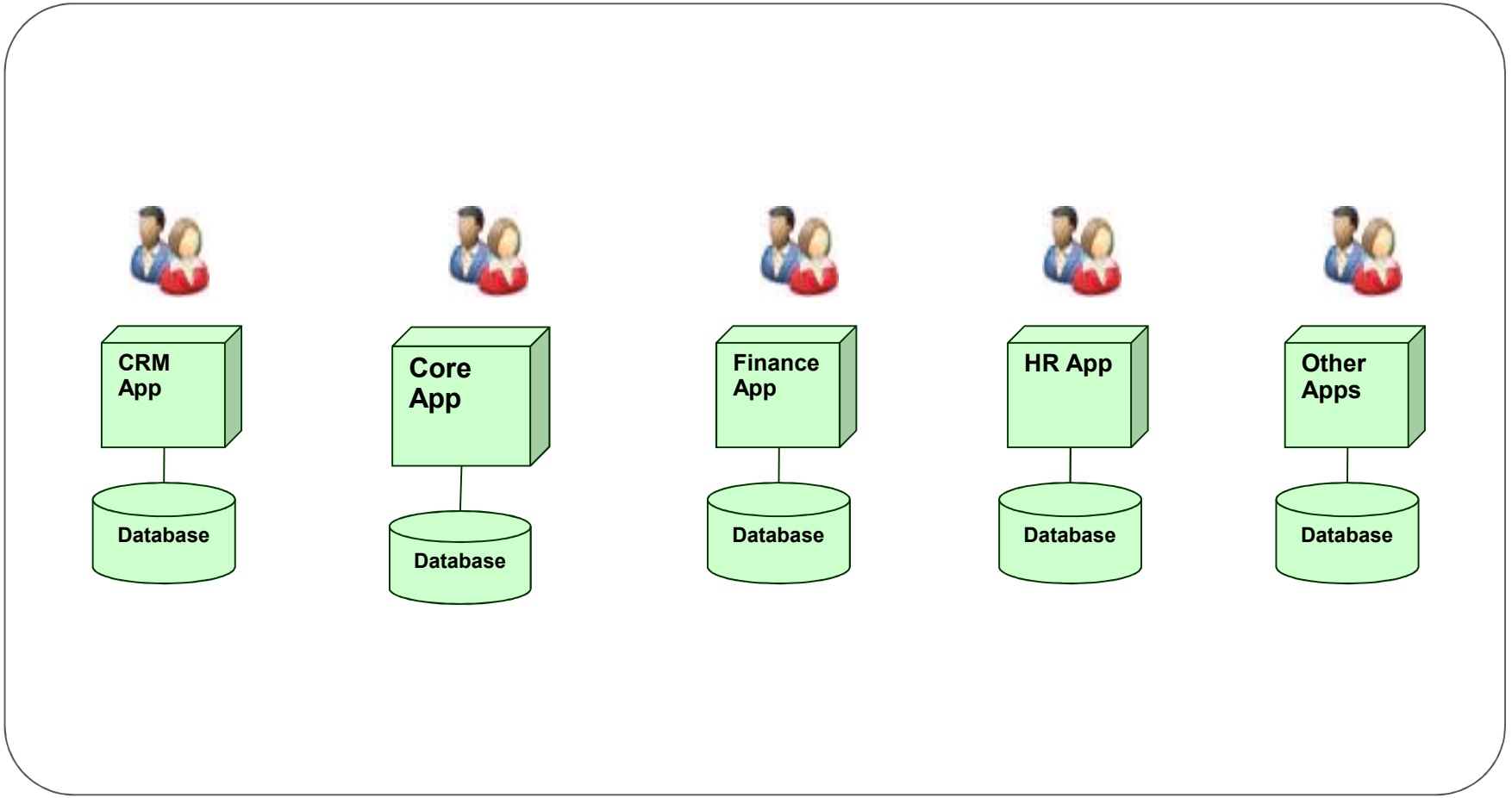
IT Silos



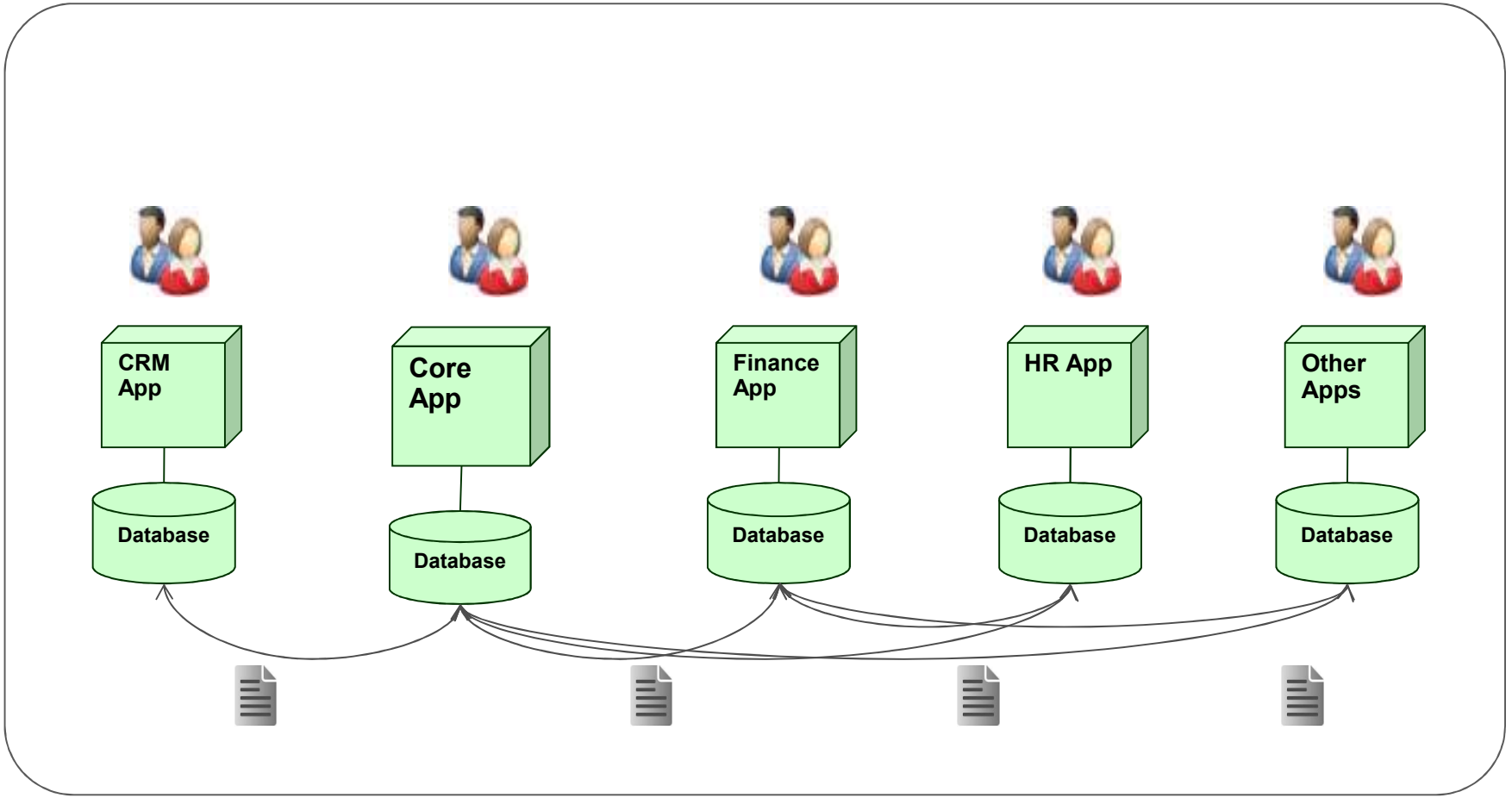
IT Silos



IT Silos

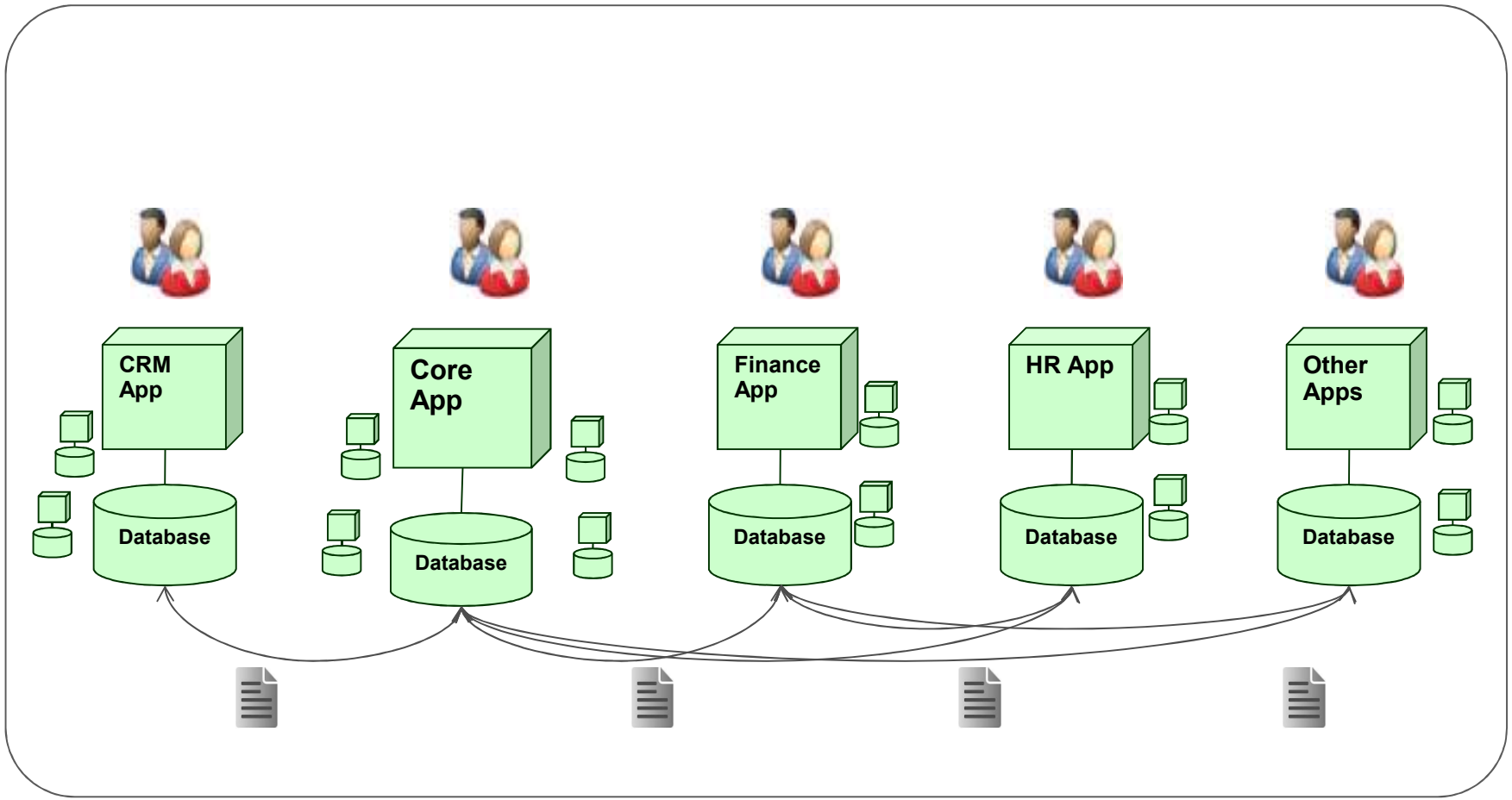

CRM App
Database
Core App
Database
Finance App
Database
HR App
Database
Other Apps
Database

IT Silos



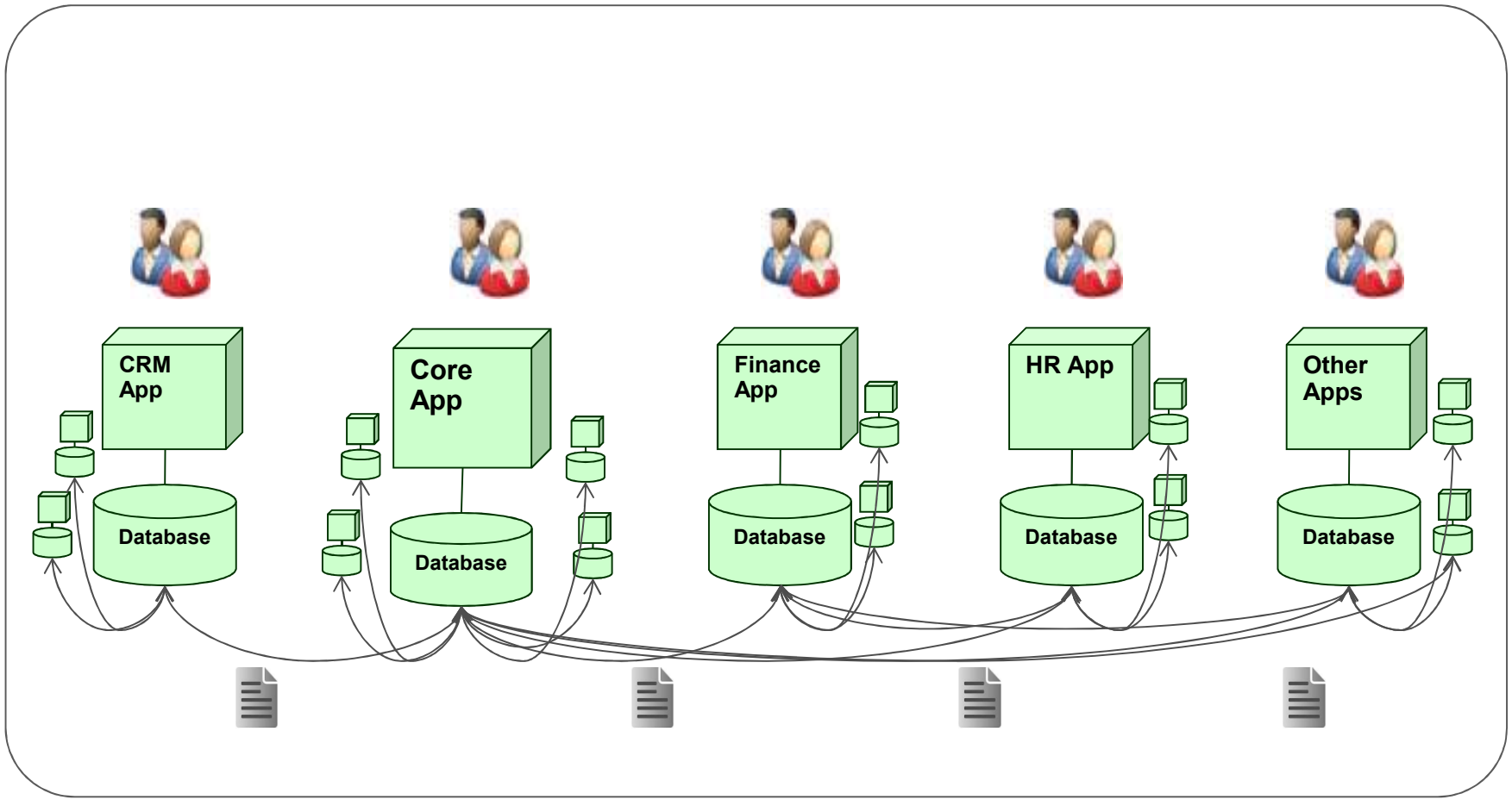
IT Silos make inefficient to scale the business

IT Silos



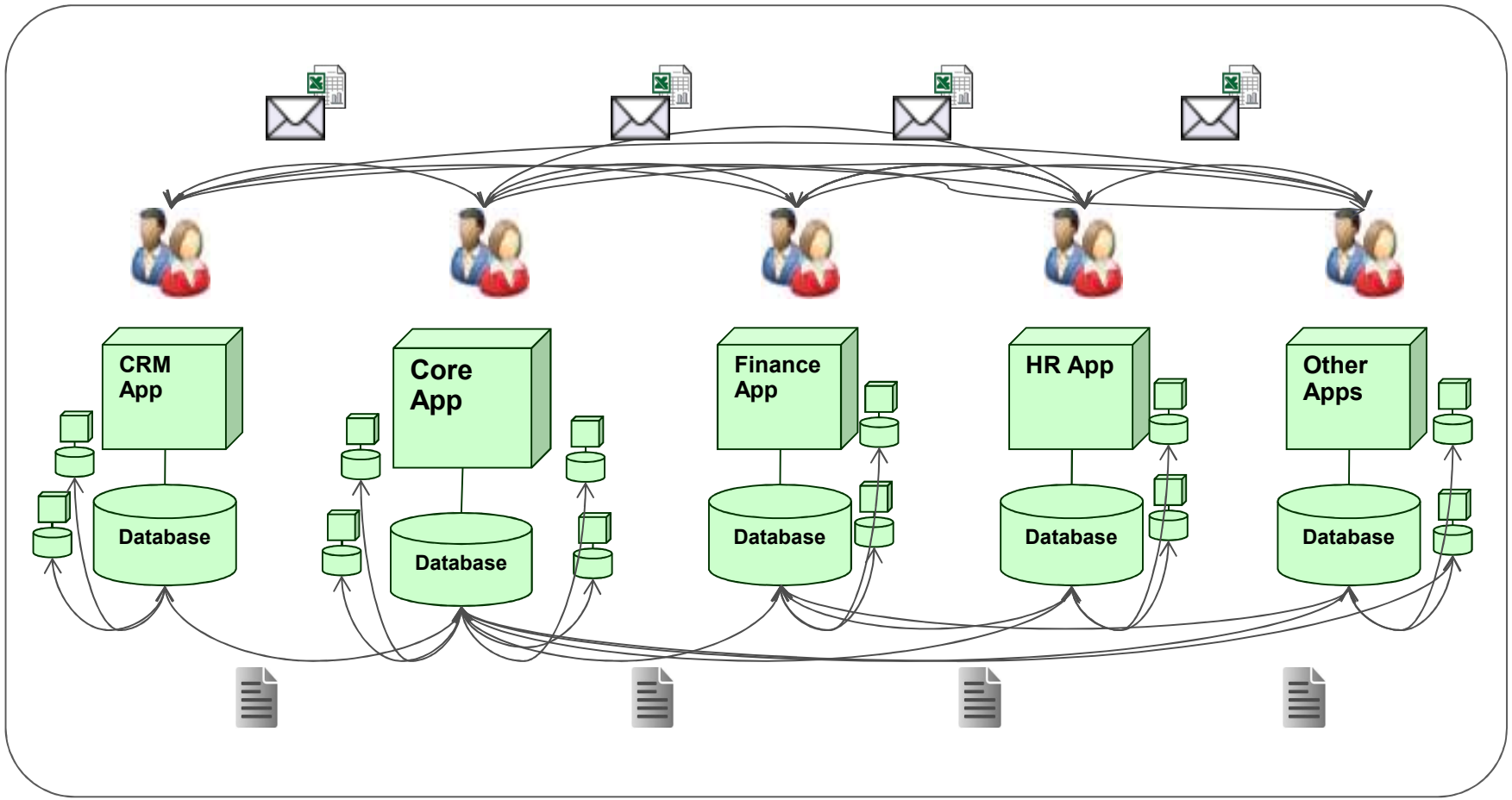
IT Silos make inefficient to scale the business

IT Silos



IT Silos make inefficient to scale the business

IT Silos

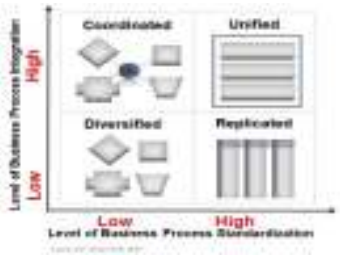
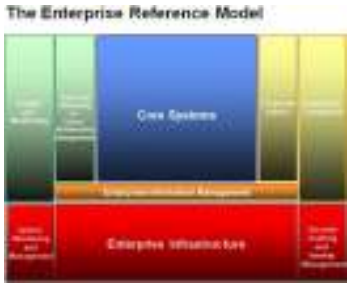
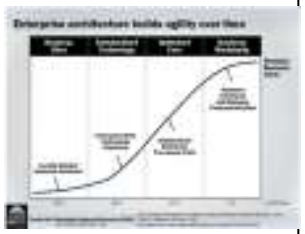
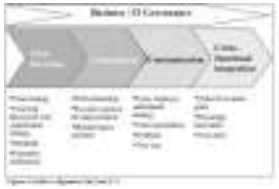


IT Silos make inefficient to scale the business

Top Concerns from IT Silos

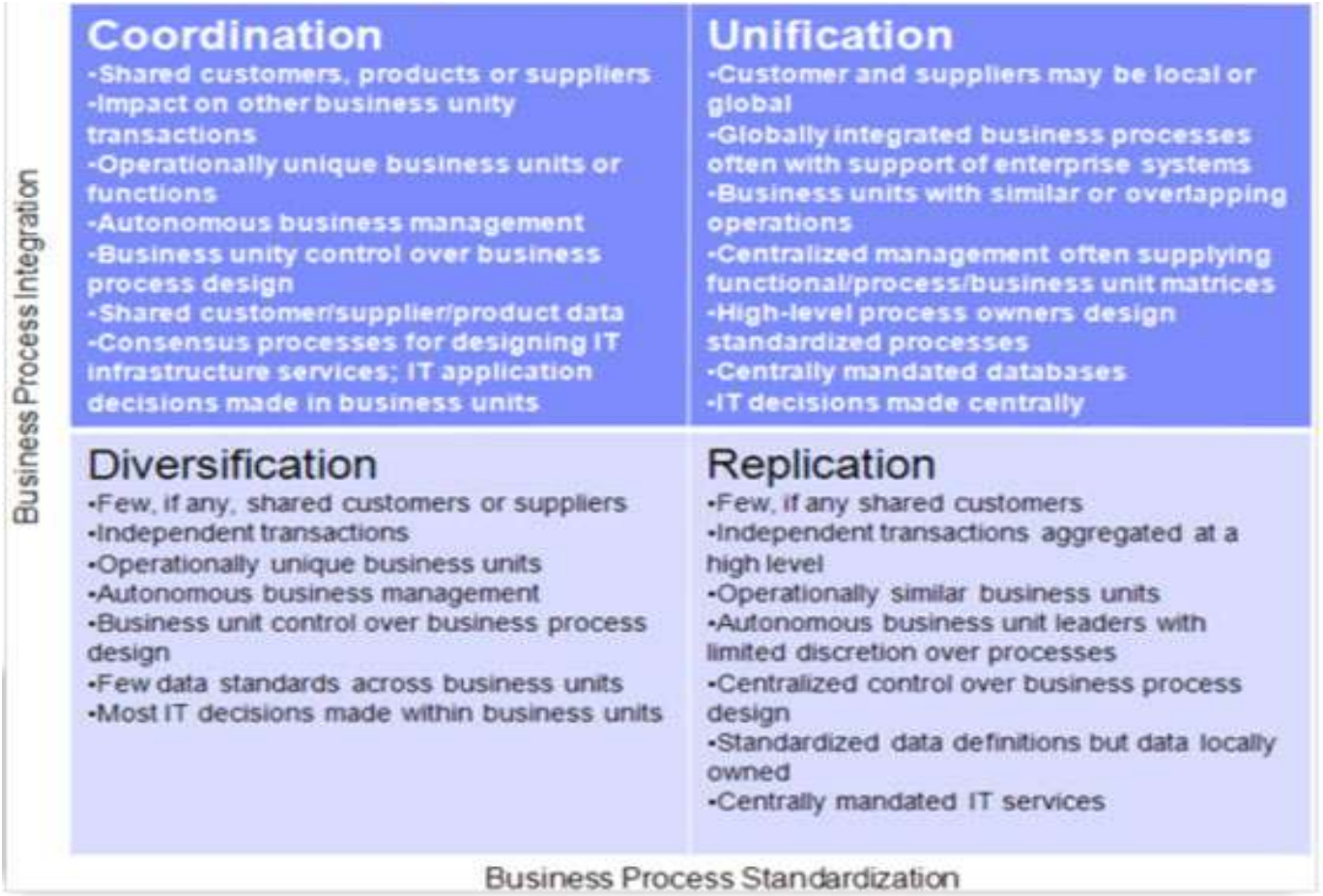
- แต่ละหน่วยงานในองค์กรให้ข้อมูลที่ไม่ตรงกันแก่ลูกค้าผู้รับบริการ
- ข้อมูลรายงานผิดพลาดเมื่อต้องใช้ในการตัดสินใจด้านธุรกิจ
- มีหลายกระบวนการทำงานที่ซ้ำซ้อนกัน
- ขาดความคล่องตัว และใช้เวลามากเมื่อต้องปรับปรุงเพื่อรองรับบริการใหม่ๆ
- ต้องใช้ความพยายามอย่างหนักในการทำให้ทุกๆระบบผ่านการตรวจสอบด้าน **IT Audit, Regulatory Compliance,** หรือ **ISO** ต่างๆ
- ต้องใช้ทักษะด้าน **IT** หลากหลายเกินความจำเป็นต่อการดำเนินธุรกิจ
- **IT** เป็น **Bottleneck** ต่อการขับเคลื่อนธุรกิจ

A Foundation for Business Execution

Key Components	Reference Models/ Artifacts / Guidelines
Operating Model The necessary level of business process integration and the necessary level of business process standardization	
Enterprise Architecture The Reference Models, Relationships, Maturity Model with Guiding Principles for Business and IT Alignment	  
Engagement Model The Development Process, Governance and Project Management	  

Operating Model

"The operating model is an abstraction representation of the necessary level of business process integration and the necessary level of business process standardization"

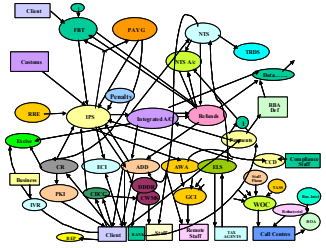


Enterprise Architecture

- What is an Enterprise Architecture?
  - a structure design to ensure alignment between the business and IT strategies

พัฒนาการของการใช้ไอทีในองค์กร

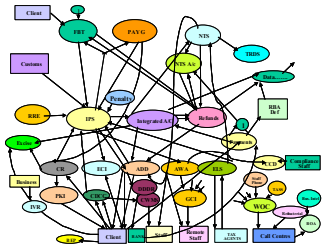
Silo

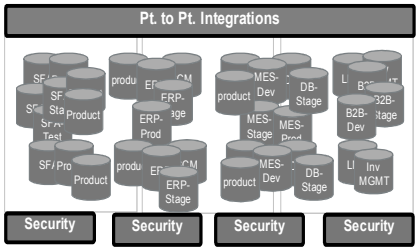


- ต่างคนต่างทำ แล้วมาเชื่อมกันทีหลัง
- ระบบงานกระจัดกระจาย เชื่อมต่อกันขาดมาตรฐาน
- เปลี่ยนแปลงยาก
- ขยายระบบยาก
- ใช้เวลามากในการจัดการ และแก้ปัญหา
- มีความเสี่ยงสูง

พัฒนาการของการใช้ไอทีในองค์กร

Silo → Standardization



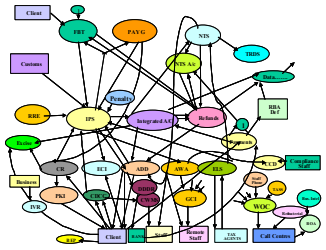


- ต่างคนต่างทำ แล้วมาเชื่อมกันทีหลัง
- ระบบงานกระจัดกระจาย เชื่อมต่อกันขาดมาตรฐาน
- เปลี่ยนแปลงยาก
- ขยายระบบยาก
- ใช้เวลามากในการจัดการ และแก้ปัญหา
- มีความเสี่ยงสูง

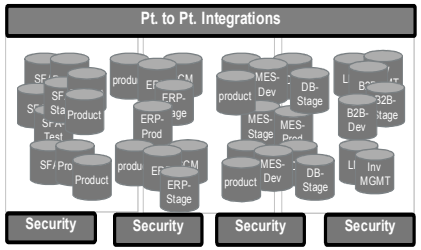
- จัดกลุ่มกระบวนการทำงาน และทรัพยากรไอที
- มีมาตรฐานในการรับส่งข้อมูล
- ประหยัดค่าใช้จ่ายด้าน SW License และ support
- ลดต้นทุนด้าน IT project time/costs/risks

พัฒนาการของการใช้ไอทีในองค์กร

Silo → Standardization → Optimization



- ต่างคนต่างทำ แล้วมาเชื่อมกันทีหลัง
- ระบบงานกระจัดกระจาย เชื่อมต่อกันขาดมาตรฐาน
- เปลี่ยนแปลงยาก
- ขยายระบบยาก
- ใช้เวลามากในการจัดการ และแก้ปัญหา
- มีความเสี่ยงสูง

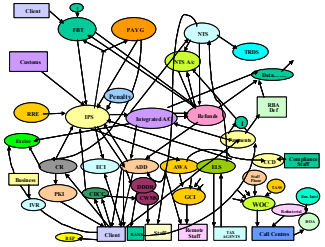


- จัดกลุ่มกระบวนการทำงาน และทรัพยากรไอที
- มีมาตรฐานในการรับส่งข้อมูล
- ประหยัดค่าใช้จ่ายด้าน SW License และ support
- ลดต้นทุนด้าน IT project time/costs/risks

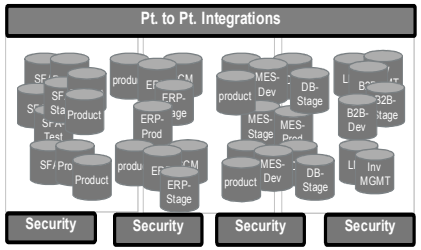
- ตัดกระบวนการทำงานที่ซ้ำซ้อน
- ลดทรัพยากรทางไอทีที่ไม่จำเป็น
- ผลิตบริการด้านไอทีได้เร็วขึ้น
- เพิ่มความปลอดภัยด้านไอที

พัฒนาการของการใช้ไอทีในองค์กร

Silo → Standardization → Optimization → Modularity

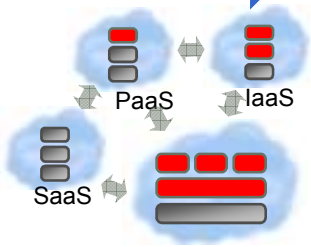


- ต่างคนต่างทำ แล้วมาเชื่อมกันทีหลัง
- ระบบงานกระจัดกระจาย เชื่อมต่อกันขาดมาตรฐาน
- เปลี่ยนแปลงยาก
- ขยายระบบยาก
- ใช้เวลามากในการจัดการ และแก้ปัญหา
- มีความเสี่ยงสูง



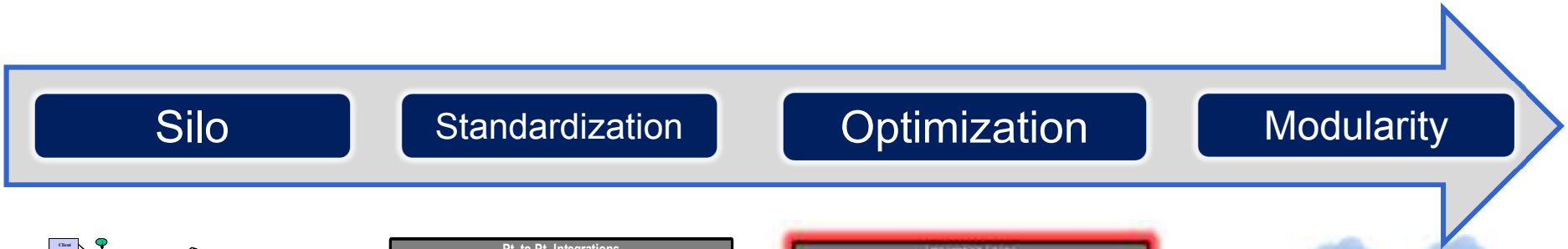
- จัดกลุ่มกระบวนการทำงาน และทรัพยากรไอที
- มีมาตรฐานในการรับส่งข้อมูล
- ประหยัดค่าใช้จ่ายด้าน SW License และ support
- ลดต้นทุนด้าน IT project time/costs/risks

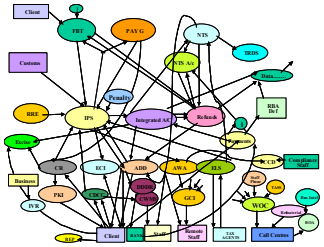
- ตัดกระบวนการทำงานที่ซ้ำซ้อน
- ลดทรัพยากรทางไอทีที่ไม่จำเป็น
- ผลิตบริการด้านไอทีได้เร็วขึ้น
- เพิ่มความปลอดภัยด้านไอที

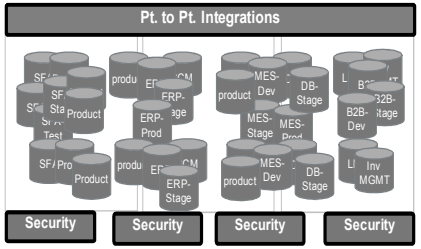


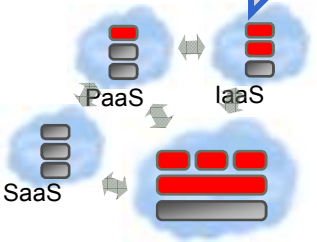
- แบ่งกลุ่มบริการทางด้านไอทีโดยมุ่งการต่อยอดบริการใหม่ๆ ให้เร็วที่สุด
- ผลิตบริการได้เร็วและปลอดภัย
- การวางแผนทาง IT ทำควบคู่ไปกับการวางแผนทางธุรกิจ
- เจ้าหน้าที่ไอทีทำงานได้เต็มประสิทธิภาพ

Enterprise Architecture Maturity – Details









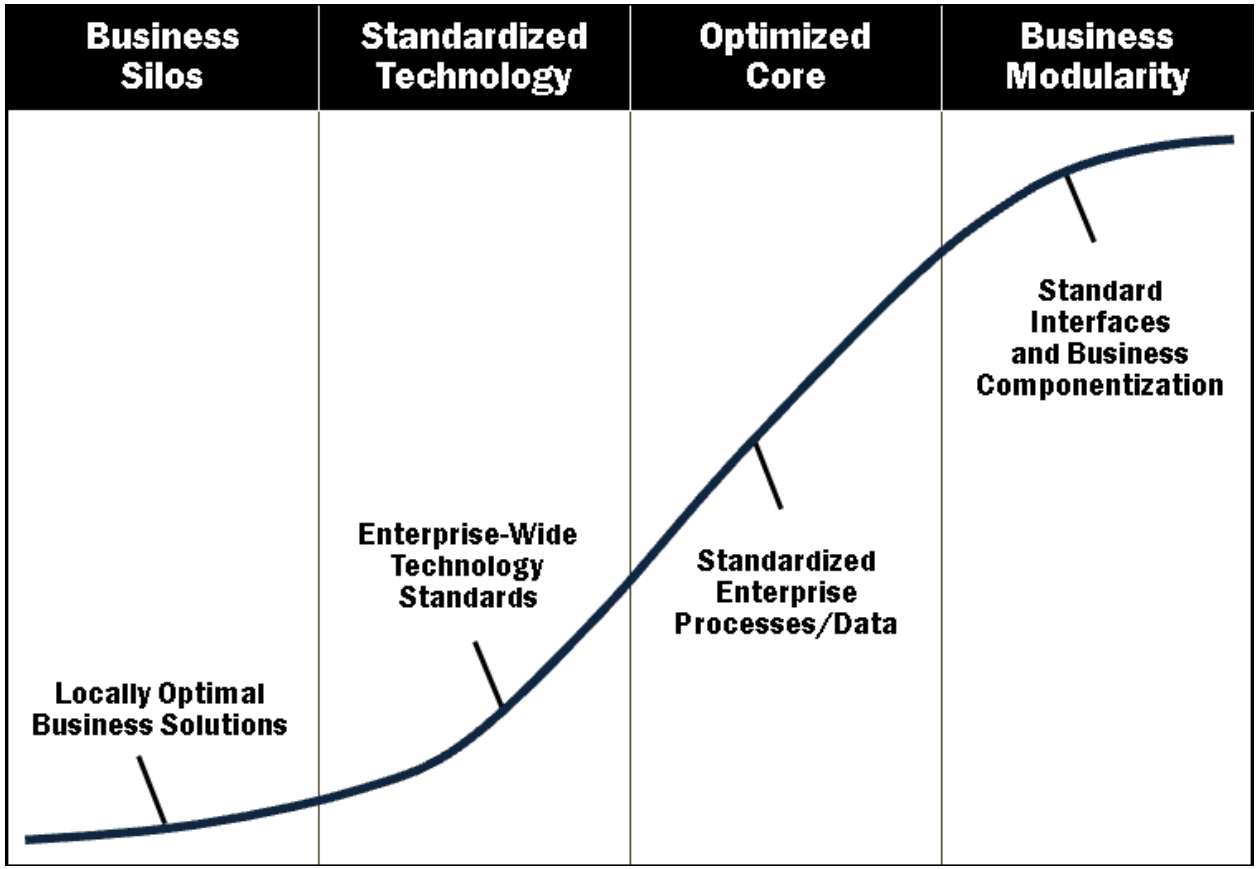
- Local IT silos
- Peak load sized
- Difficult to scale
- Difficult to change
- Expensive to manage
- Complexity driven risk

- Standardized interfaces/systems
- Lower license and support costs
- Increased utilization of IT skills
- Reduced IT project time/costs/risks

- Pools of resources
- Consolidated
- Better productivity
- Higher QoS
- Improved IT agility
- Improved security and management

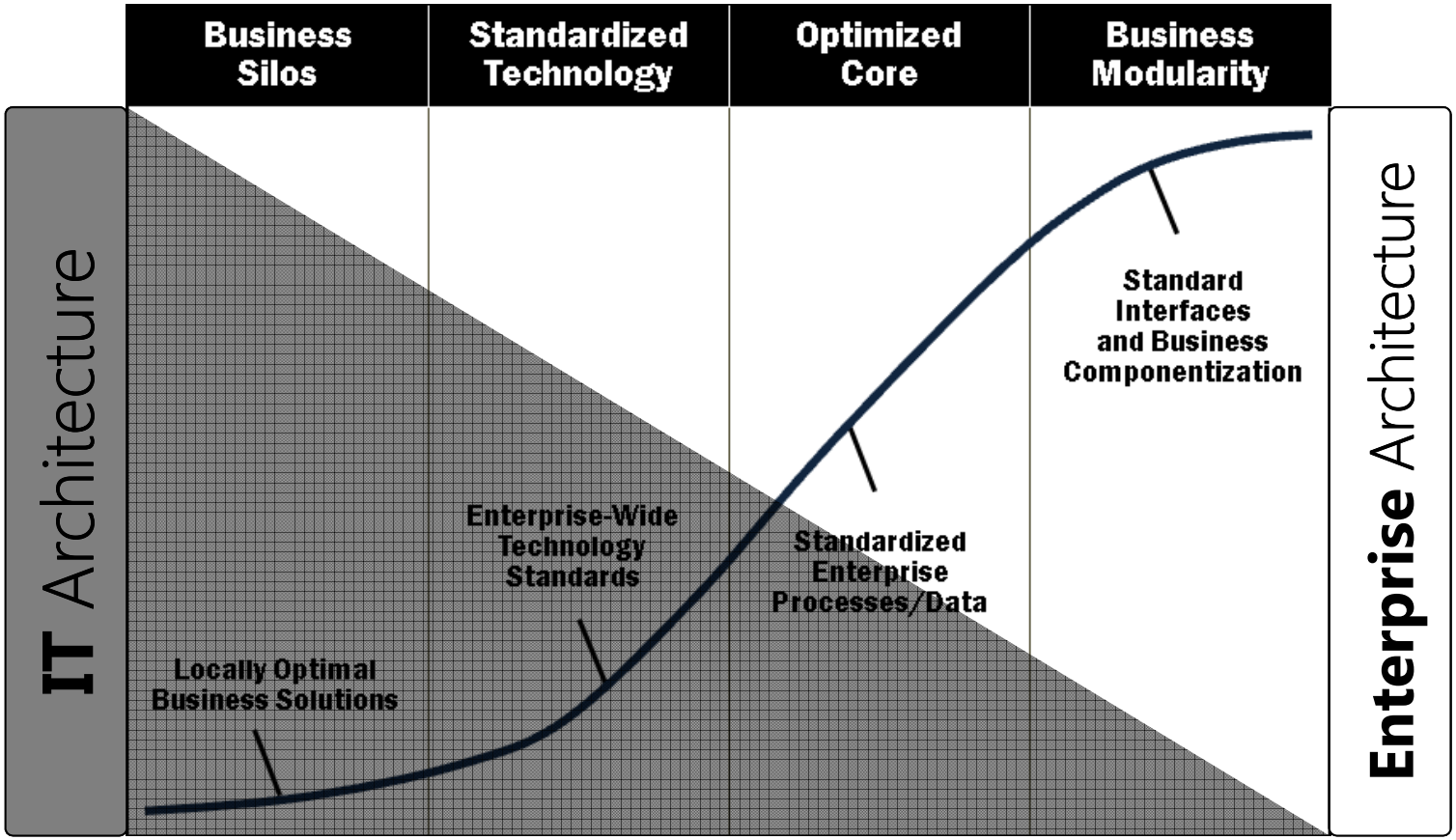
- Rapid provisioning
- Lower costs
- IT as a “Business”
- Faster project turnaround
- Greater focus on business

Enterprise Architecture Maturity Model



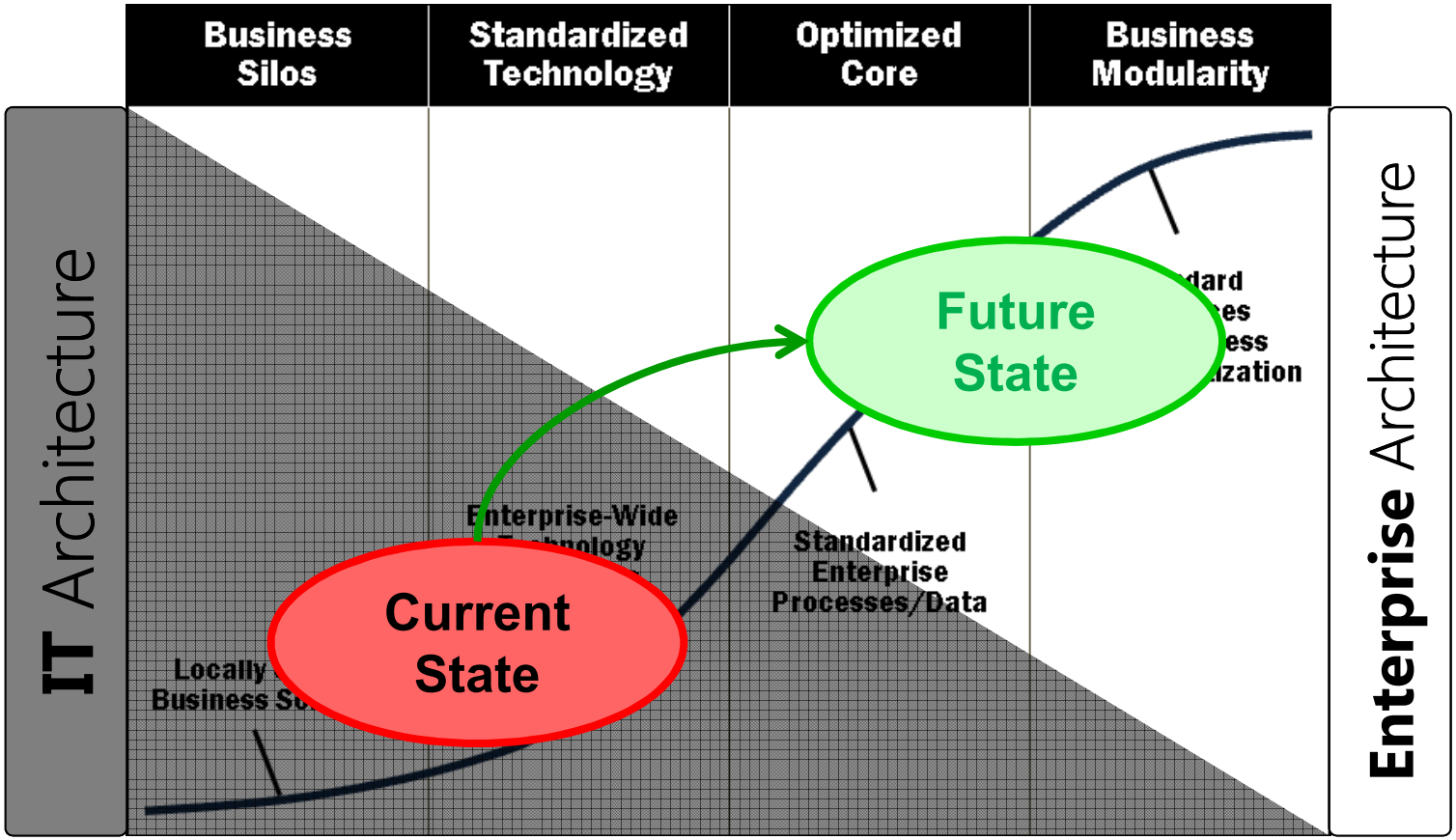
Center for Information Center Systems Research (CISR)
2009 MIT Sloan CISR – Ross
Source: Enterprise Architecture as Strategy: Creating a Foundation for Business Execution, J. Ross, P. Weill, D. Robertson, HBS Press, 2006

Enterprise Architecture Maturity Model



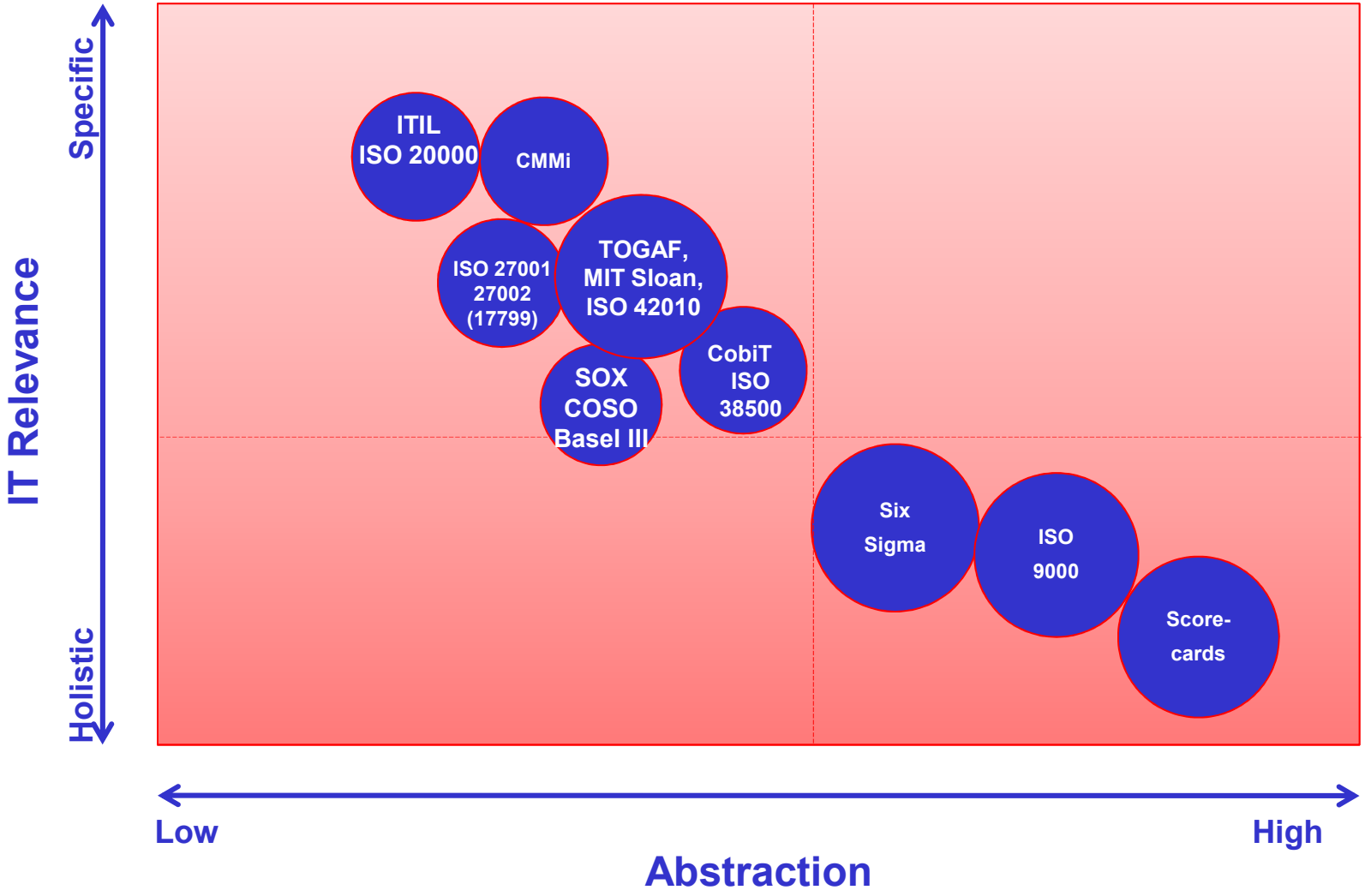
Center for Information Center Systems Research (CISR)
2009 MIT Sloan CISR – Ross
Source: Enterprise Architecture as Strategy: Creating a Foundation for Business Execution, J. Ross, P. Weill, D. Robertson, HBS Press, 2006

Enterprise Architecture Maturity Model



Center for Information Center Systems Research (CISR)
2009 MIT Sloan CISR – Ross
Source: Enterprise Architecture as Strategy: Creating a Foundation for Business Execution, J. Ross, P. Weill, D. Robertson, HBS Press, 2006

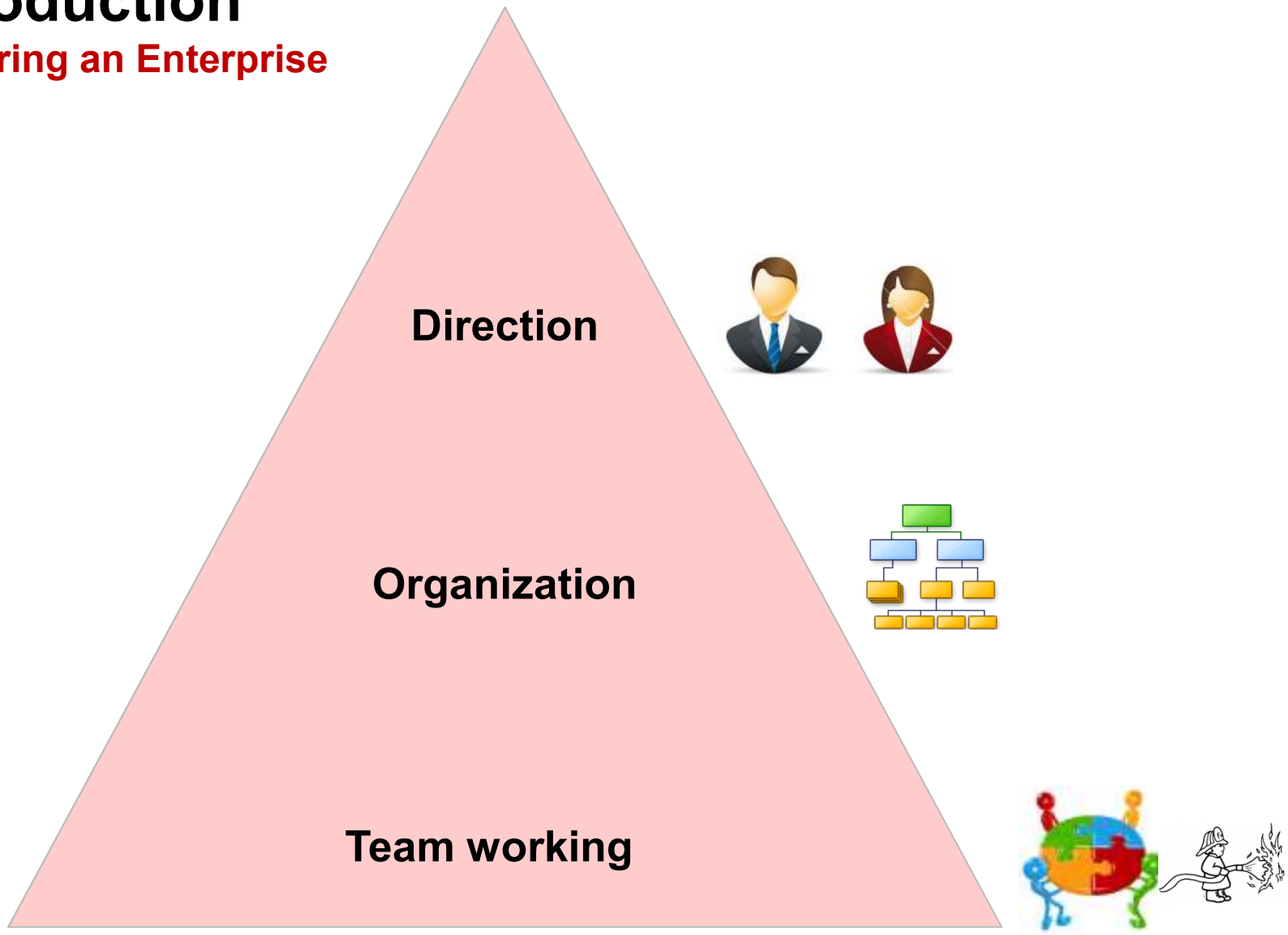
There are many of related standards/guidelines



Building Enterprise Architecture

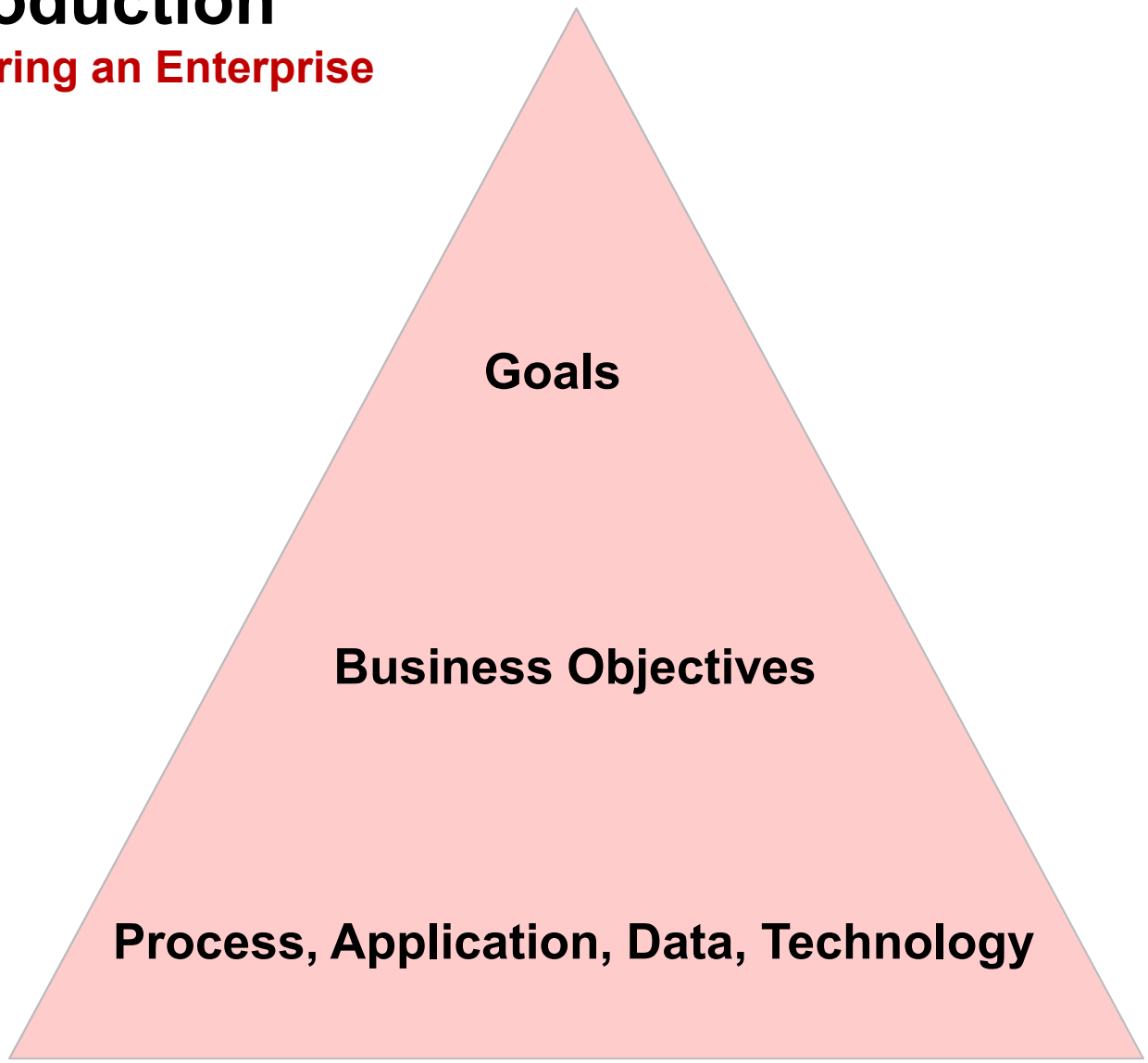
Introduction

Exploring an Enterprise



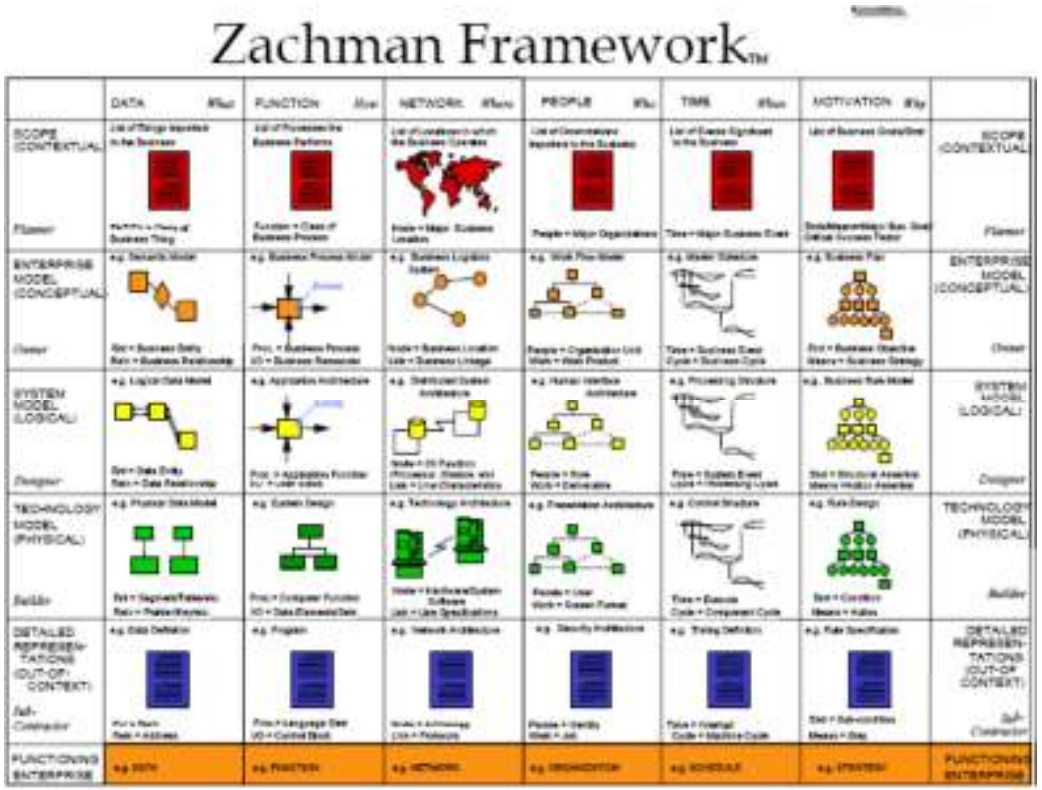
Introduction

Exploring an Enterprise



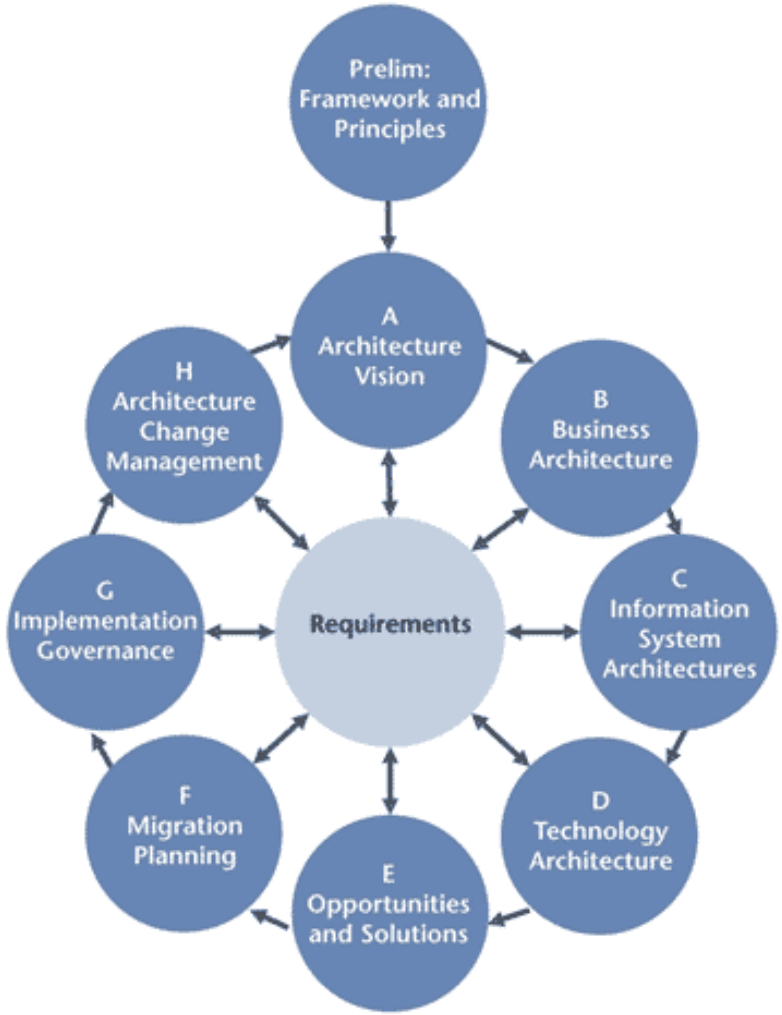
Zachman Framework

- Zachman developed a structure or framework for defining and capturing an architecture
- This framework provides for 6 perspectives or “windows” from which to view the enterprise.



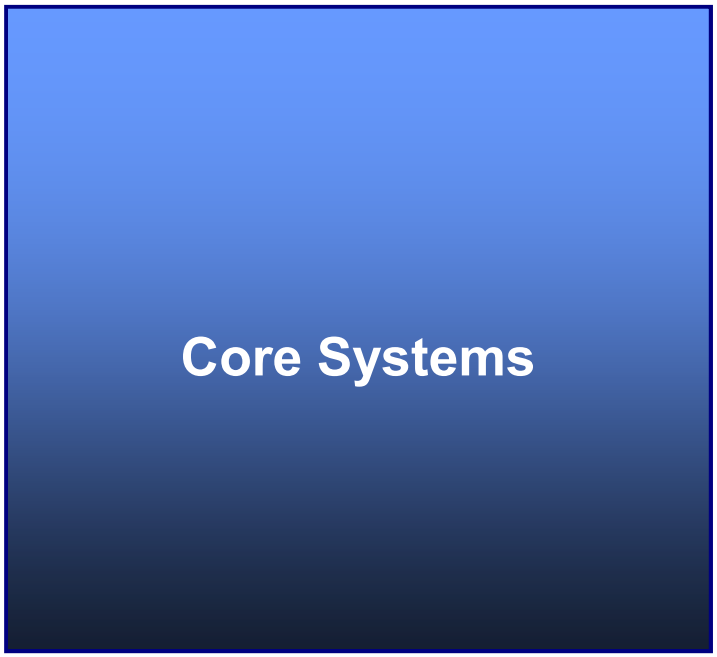
TOGAF Architecture Development Method

The ADM method consists of eight main phases. As preliminary work, the enterprise architecture framework and architecture principles are fixed for the effort. In the following, a short description of the phases.
A. Architecture vision is the analysis phase of EA project. The project is organized; the scope and domain requirements and constraints are stated. Business scenarios can be used for this.
B. In the Business architecture phase, the current baseline architecture is stated, target architecture is designed and a gap analysis between the two takes place.
C. Information systems architecture consists of the parts Data and Applications. For Data architecture, the types and sources of data needed in the enterprise are defined and a data model is created. A gap analysis is conducted and data model is compared with the business architecture. As to the applications, the applications needed to meet the specified business requirements and data model are turned into an applications architecture and are checked back with the business architecture.
D. For Technology architecture, the previous phases deliver inputs. In this phase, a baseline architecture is stated, and the target technology architecture is designed.
E. Opportunities and solutions is the evaluation phase, where the solutions are selected.
F. Migration planning is the point for checking dependencies in the environment and preparing for implementation of the target architecture.
G. Implementation and Governance is about the administration of implementation and deployment phase of the development project.
H. Architecture change management is the maintenance phase. A new baseline is created and changes in business environment are monitored as well as new technology opportunities.

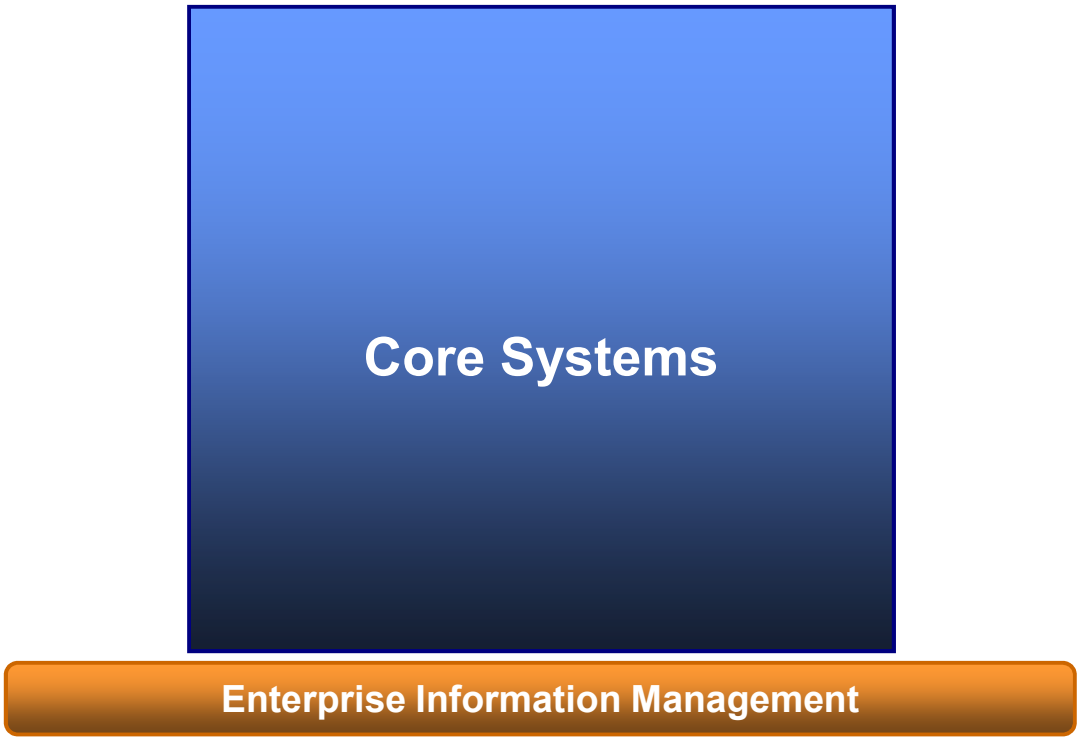


www.opengroup.org

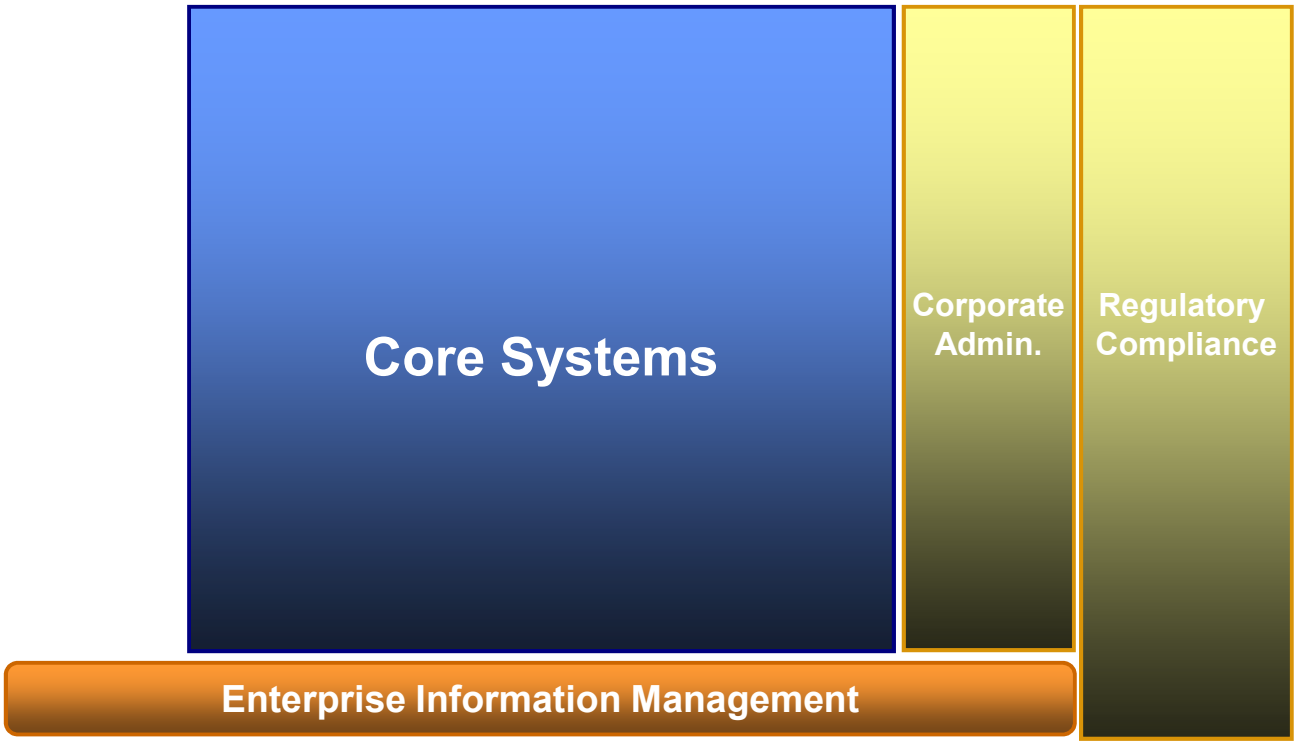
The Enterprise Reference Model



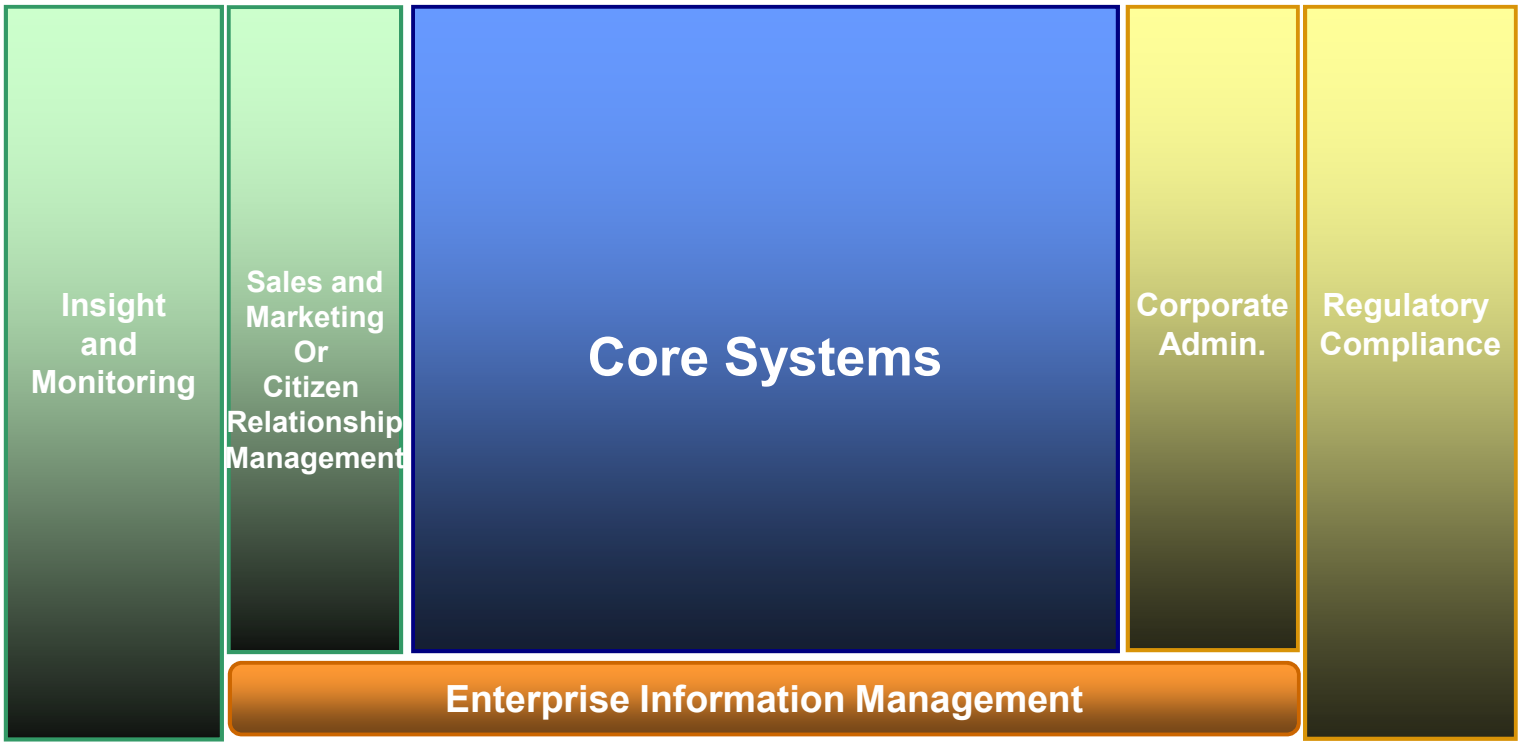
The Enterprise Reference Model



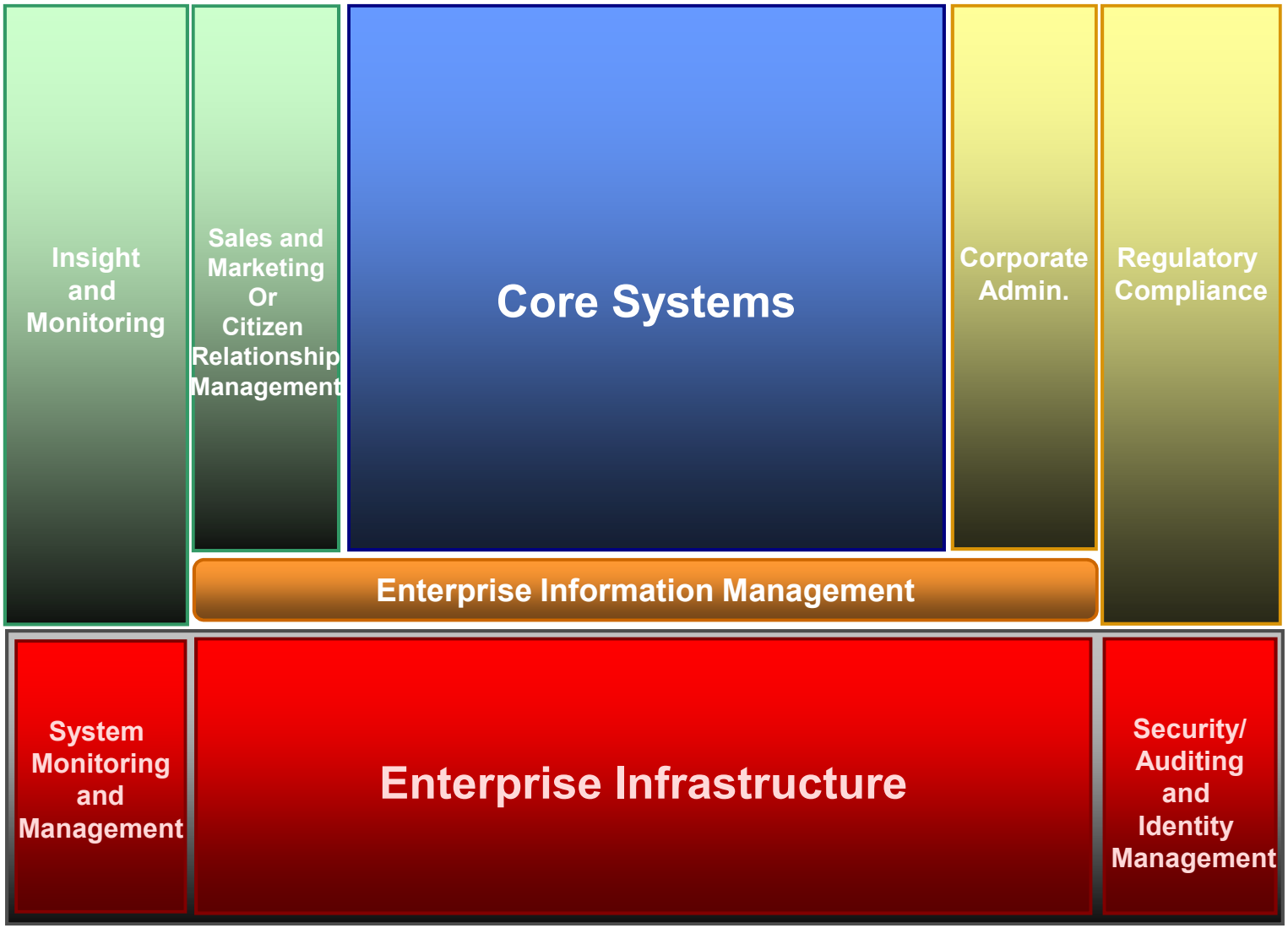
The Enterprise Reference Model



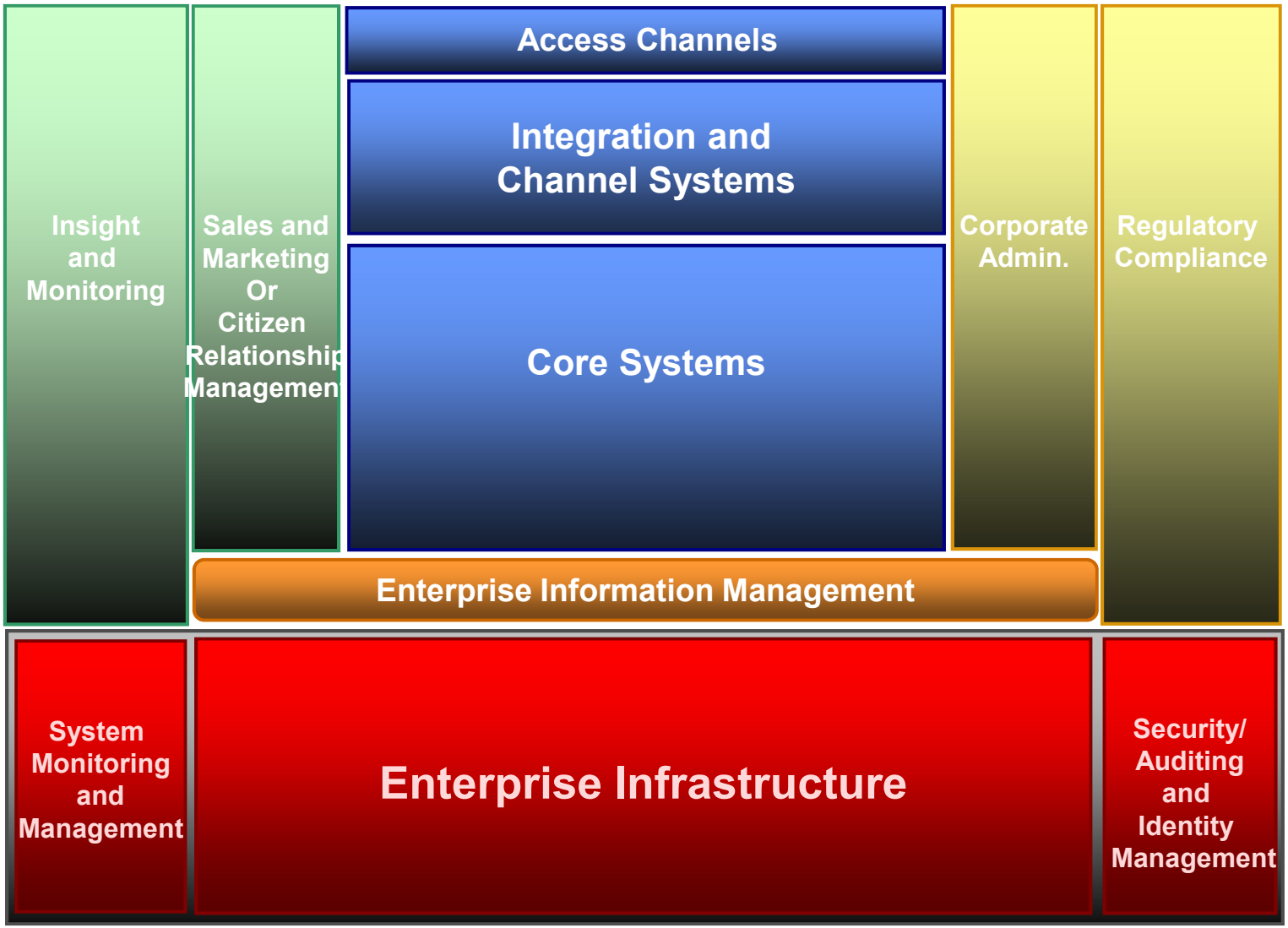
The Enterprise Reference Model



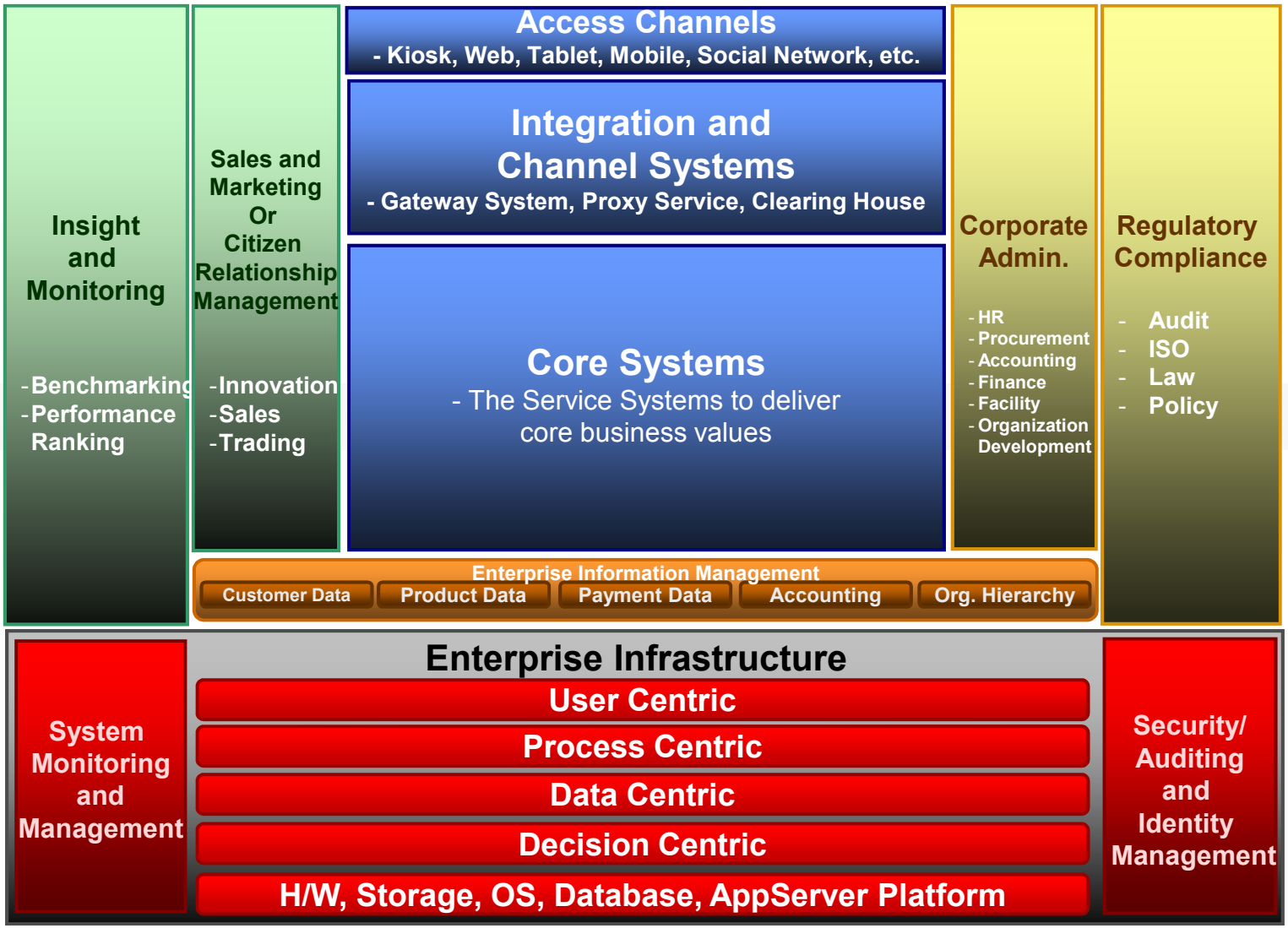
The Enterprise Reference Model



The Enterprise Reference Model

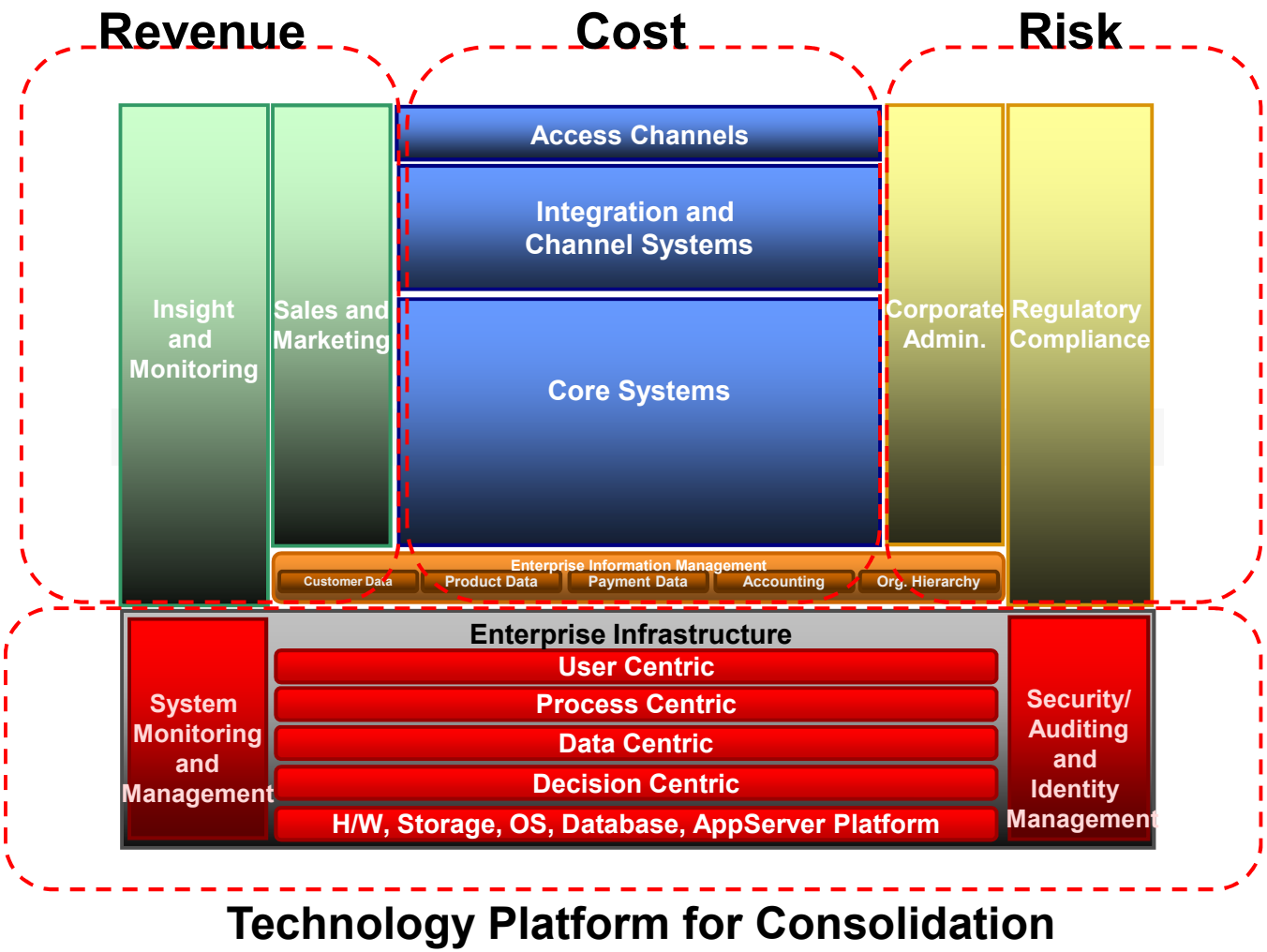


The Enterprise Reference Model



The Enterprise Reference Model

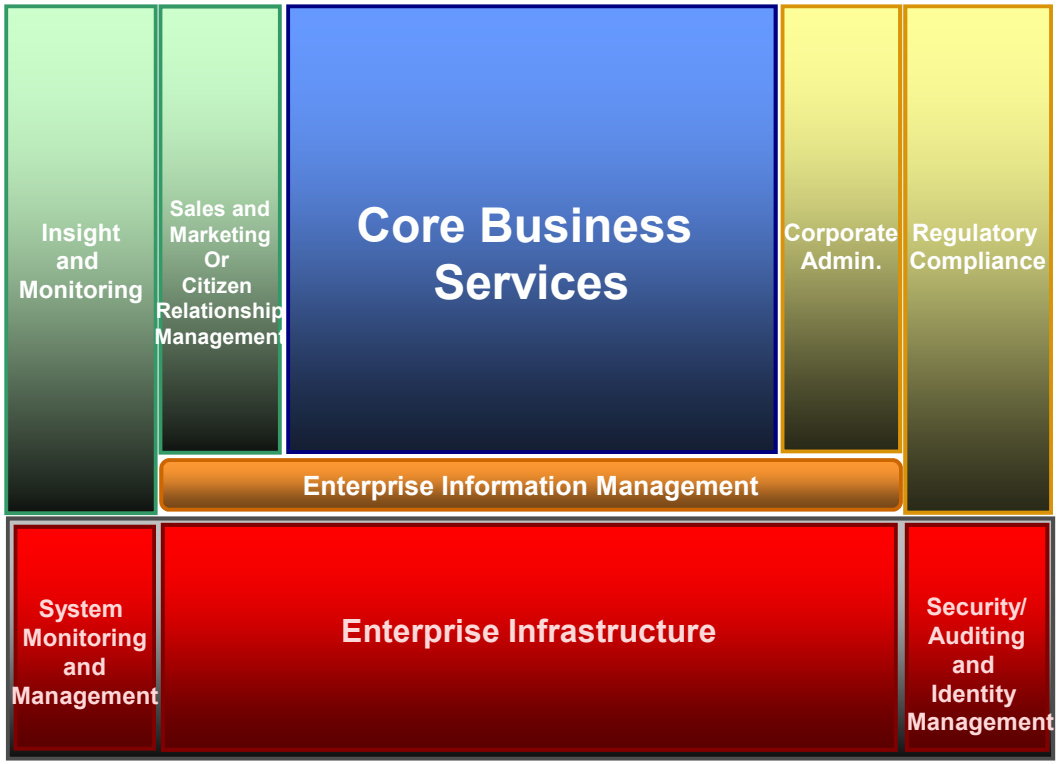
Three Pillars of Organization and Technology Platform



Enterprise Reference Model (ERM)

ERM ช่วยทำให้การมองภาพความสอดคล้องระหว่าง Business และ IT ในระดับ High Level เพื่อ:-

1. ช่วยทำให้การมอง IT จากภาพของธุรกิจ
2. ช่วยทำให้มองเห็นบริการและกระบวนการทำงานทางธุรกิจได้อย่างครอบคลุมและเป็นระบบ
3. ช่วยทำให้มองเห็นความสอดคล้องระหว่าง Business กับ IT ได้ในระดับ Strategic View
4. เป็นจุดเริ่มต้นของการทำรายละเอียดในระยะต่อไป



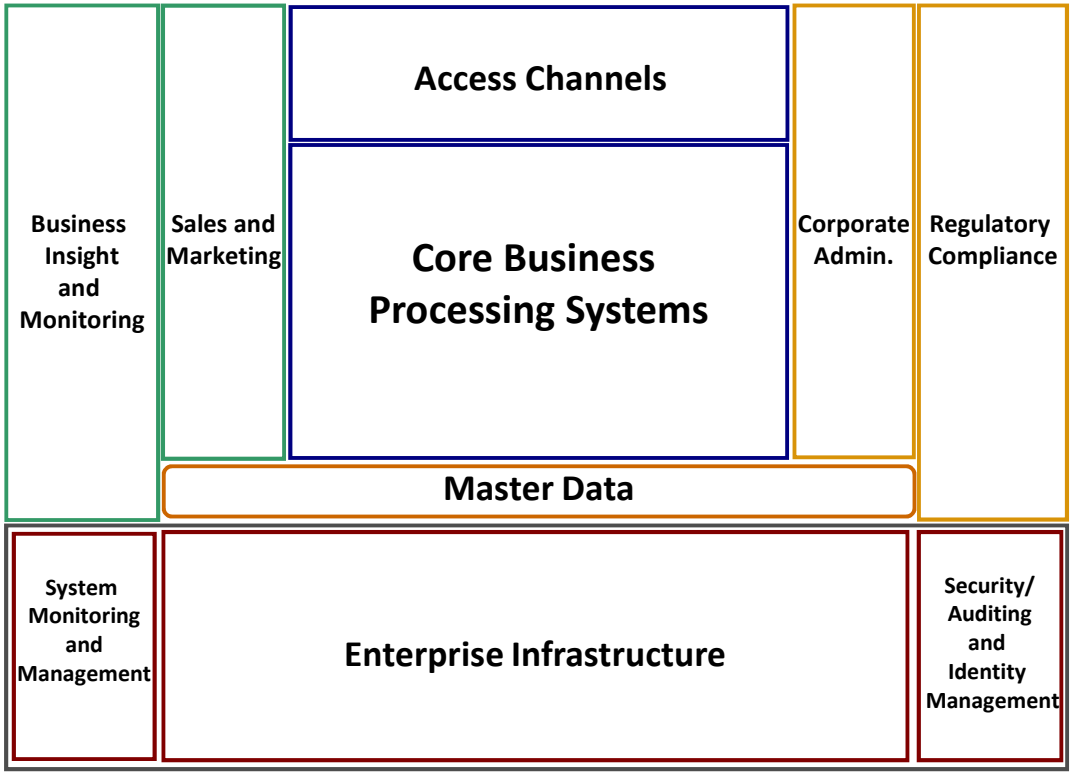
Group Workshop - The Current Enterprise Architecture

Write down your existing enterprise architecture foot print

Team Name: ***xxx***

1. Name, Company, E-mail
2. Name, Company, E-mail
3. Name, Company, E-mail
4. Name, Company, E-mail

Enterprise Reference Model



Architecture Principles

No.	Name	Statement
1	Primacy of Principles	These principles of information management apply to all organizations within the enterprise.
2	Maximize Benefit to the Enterprise	Information management decisions are made to provide maximum benefit to the enterprise as a whole.
3	Information Management is Everybody's Business	All organizations in the enterprise participate in information management decisions needed to accomplish business objectives.
4	Business Continuity	Enterprise operations are maintained in spite of system interruptions.
5	Common Use Applications	Development of applications used across the enterprise is preferred over the development of similar or duplicative applications which are only provided to a particular organization.
6	Compliance with Law	Enterprise information management processes comply with all relevant laws, policies, and regulations.
7	IT Responsibility	The IT organization is responsible for owning and implementing IT processes and infrastructure that enable solutions to meet user-defined requirements for functionality, service levels, cost, and delivery timing.
8	Protection of Intellectual Property	The enterprise's Intellectual Property (IP) must be protected. This protection must be reflected in the IT architecture, implementation, and governance processes.
9	Data is an Asset	Data is an asset that has value to the enterprise and is managed accordingly.
10	Data is Shared	Users have access to the data necessary to perform their duties; therefore, data is shared across enterprise functions and organizations.
11	Data is Accessible	Data is accessible for users to perform their functions.
12	Data Trustee	Each data element has a trustee accountable for data quality.
13	Common Vocabulary and Data Definitions	Data is defined consistently throughout the enterprise, and the definitions are understandable and available to all users.
14	Data Security	Data is protected from unauthorized use and disclosure. In addition to the traditional aspects of national security classification, this includes, but is not limited to, protection of pre-decisional, sensitive, source selection-sensitive, and proprietary information.
15	Technology Independence	Applications are independent of specific technology choices and therefore can operate on a variety of technology platforms.
16	Ease-of-Use	Applications are easy to use. The underlying technology is transparent to users, so they can concentrate on tasks at hand.
17	Requirements-Based Change	Only in response to business needs are changes to applications and technology made.
18	Responsive Change Management	Changes to the enterprise information environment are implemented in a timely manner.
19	Control Technical Diversity	Technological diversity is controlled to minimize the non-trivial cost of maintaining expertise in and connectivity between multiple processing environments.
20	Interoperability	Software and hardware should conform to defined standards that promote interoperability for data, applications, and technology.

Building Enterprise Architecture

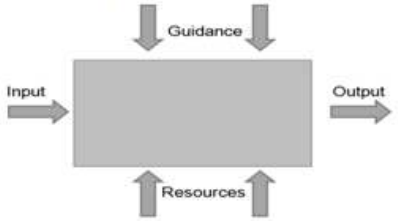
The Digital Business Transformation Guideline

1. Select program or project to start (NOT high risk) supported by C-Level
2. Establish Virtual Team maintain standard architecture development method
3. Acquire and Maintain Knowledge of Enterprise Architecture Development with change and feed back communication system
4. Create architecture reference based on current deployments
5. Develop new architecture layered model from current deployment with business alignment and operation life cycle consideration
6. Replicate to new program or project development

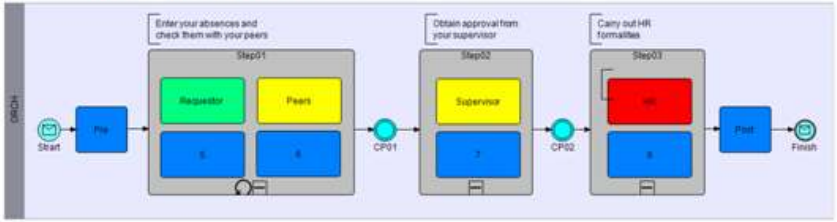
Business Architecture and BPMN

4 phases of business process development

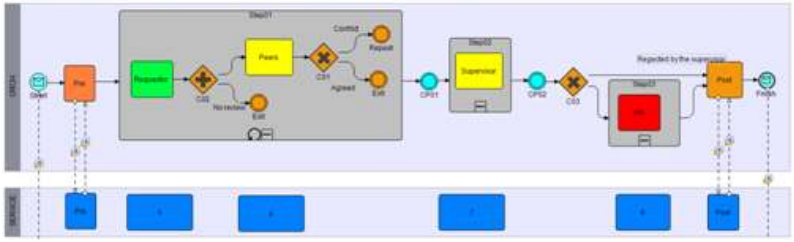
1. Blackboxing phase



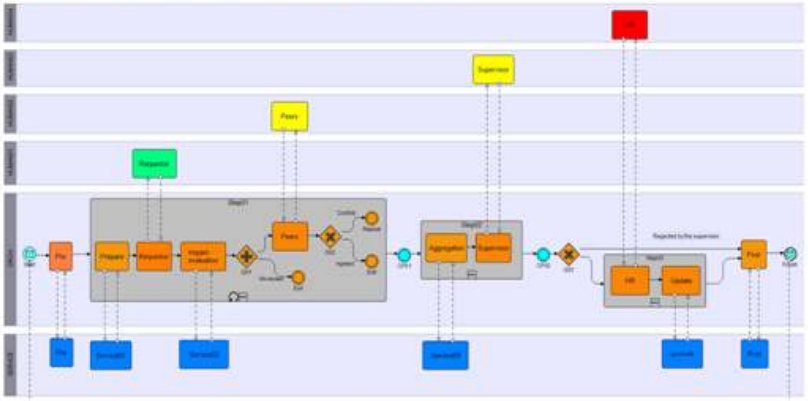
2. Structuring phase



3. Re-construction phase

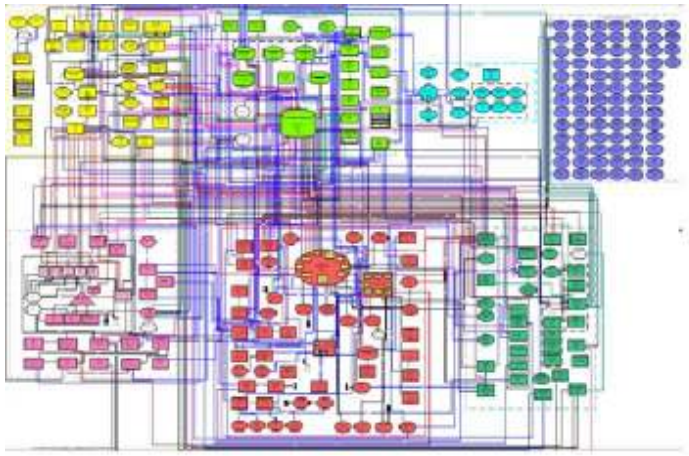


4. Instrumentation phase



การปรับปรุงด้าน Business Process

Current and Target State

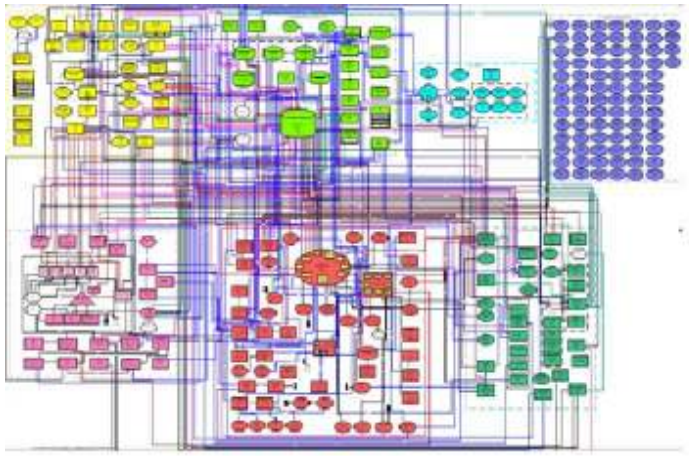


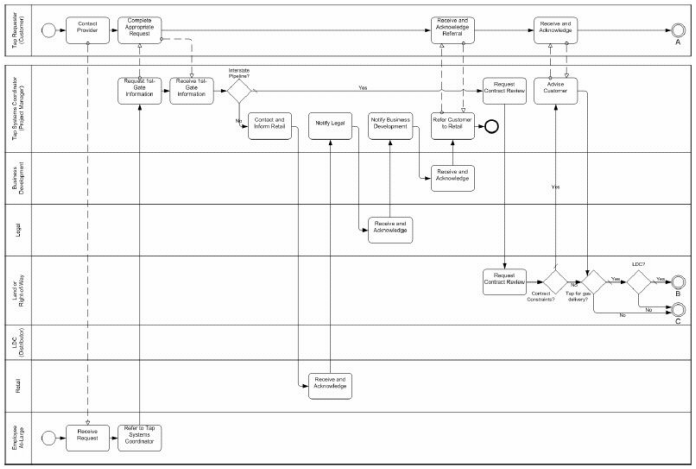
Current

- กระบวนการทำงานซ้ำซ้อน
- การทำงานล่าช้า
- ยากต่อการเพิ่มบริการใหม่ๆ
- ต้นทุนการดูแลสูง
- เกิดความเสี่ยงต่อความผิดพลาด

การปรับปรุงด้าน Business Process

Current and Target State





Current

- กระบวนการทำงานซ้ำซ้อน
- การทำงานล่าช้า
- ยากต่อการเพิ่มบริการใหม่ๆ
- ต้นทุนการดูแลสูง
- เกิดความเสี่ยงต่อความผิดพลาด

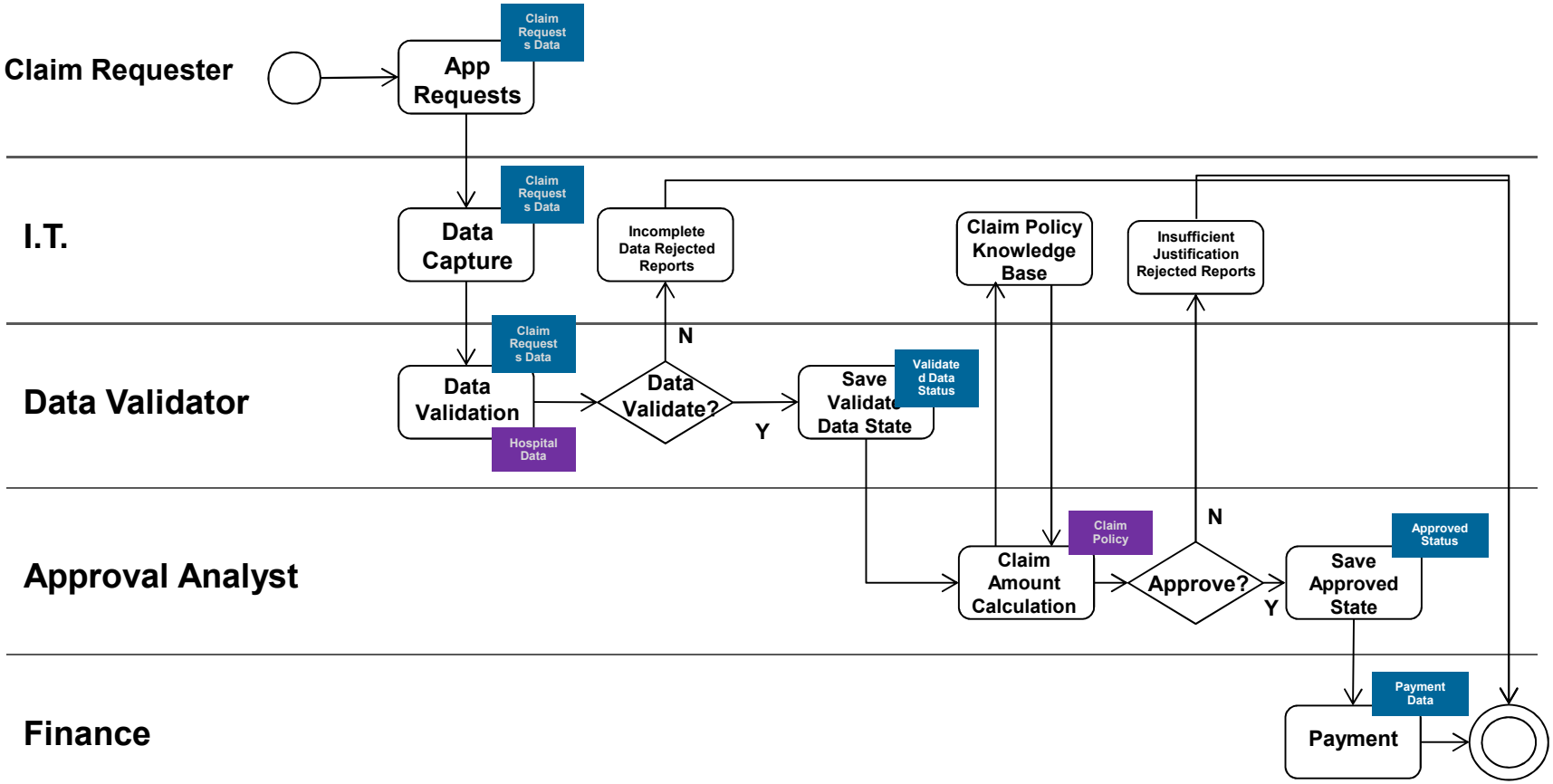
Target

- เพิ่มความเร็วของบริการ โดยตัดงานที่ซ้ำซ้อน
- ใช้ระบบไอทีเข้าช่วยในการตรวจสอบข้อมูล
- เพิ่มความถูกต้องของข้อมูล
- ง่ายต่อการต่อยอด

การปรับปรุงด้าน Business Process

Sample Case: Request Approval Process

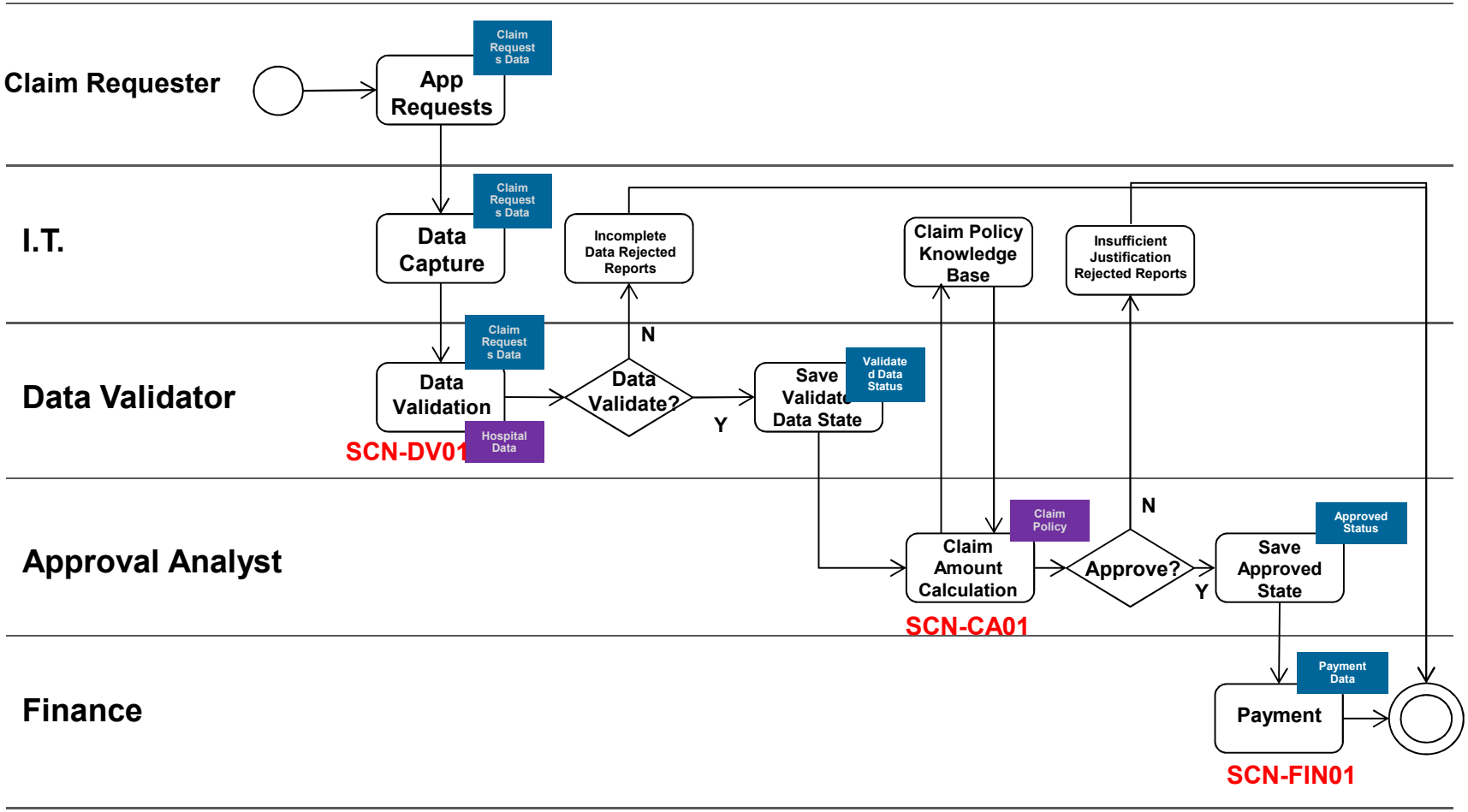
1. Complete End-to-end Business Process Level-3 with Data In and Out of each activity



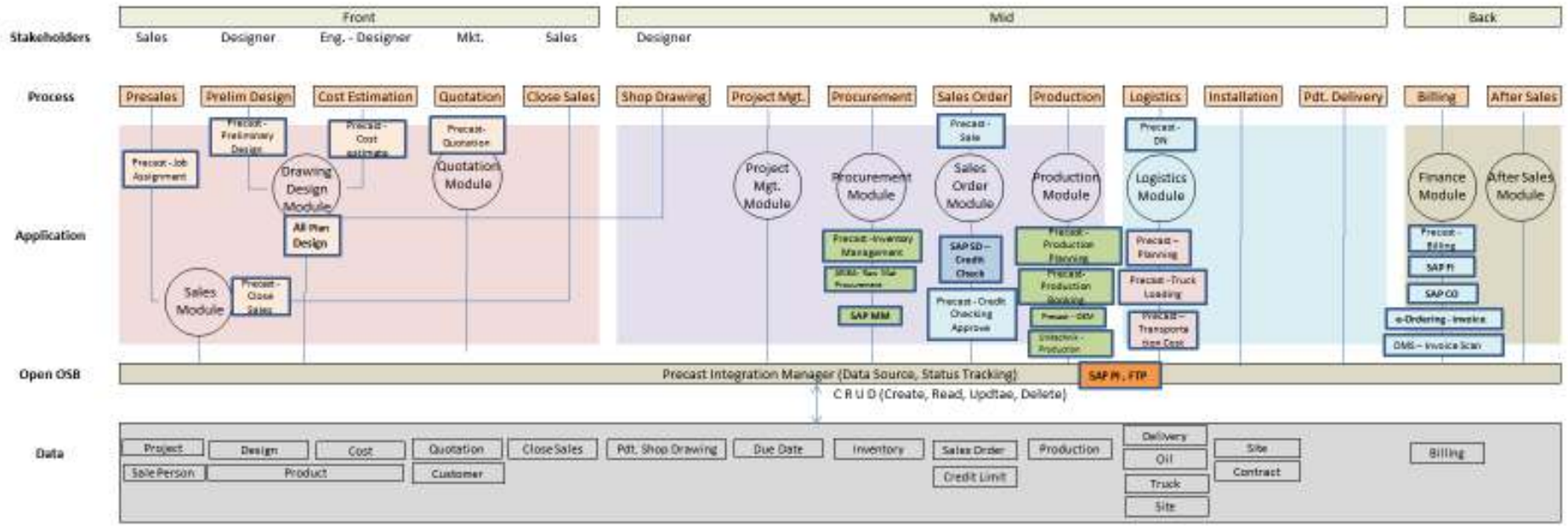
การปรับปรุงด้าน Business Process

Sample Case: Request Approval Process

2. Tag Screen ID to the activities which required user interaction



Sample: Business Process Consolidation



การปรับปรุงด้าน Business Process

Sample Case: BPM Application

3. Build All User Interaction Screens

3.1. หน้าจอของ Data Validator

Data Received Date: 15-May-14 Branch ID: CHOL-0003

Data Validation User: dvuser001 SCN-DV01

Claim Date	Short Desc	Amount	Details	Select
12-May-14	xxxxxxxxx	5,000	Details	☐
12-May-14	xxxxxxxxx	80,000	Details	☐
14-May-14	xxxxxxxxx	120,000	Details	☐
14-May-14	xxxxxxxxx	12,000	Details	☐
14-May-14	xxxxxxxxx	24,000	Details	☐

Reject Submit

3.2. หน้าจอของ Approval Analyst

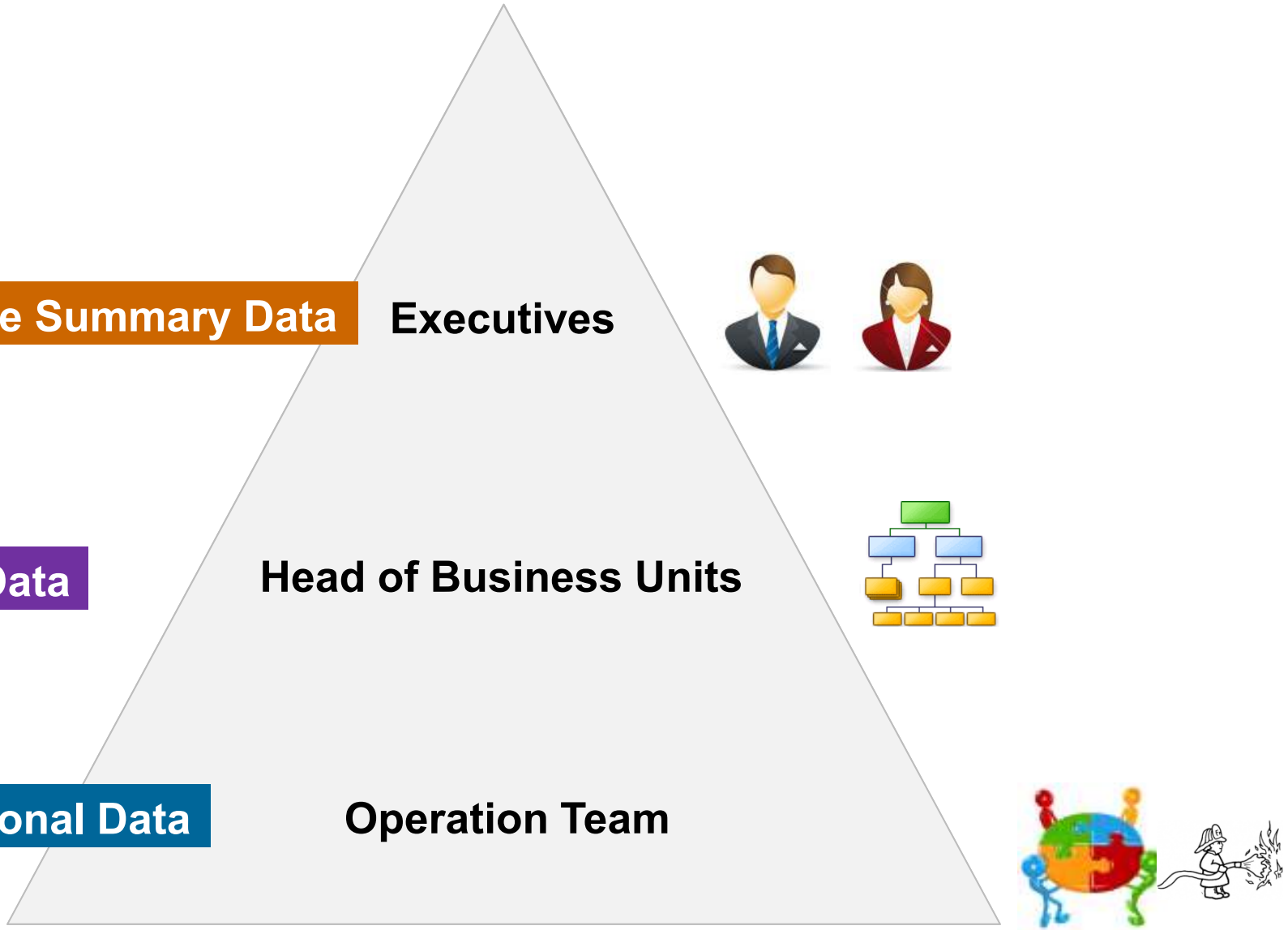
Data Received Date: 15-May-14 Branch ID: CHOL-0003

Claim Analyst User: causer001 SCN-CA01

Claim Date	Short Desc	Amount	Details	Select
12-May-14	xxxxxxxxx	80,000	Details	☐
14-May-14	xxxxxxxxx	120,000	Details	☐

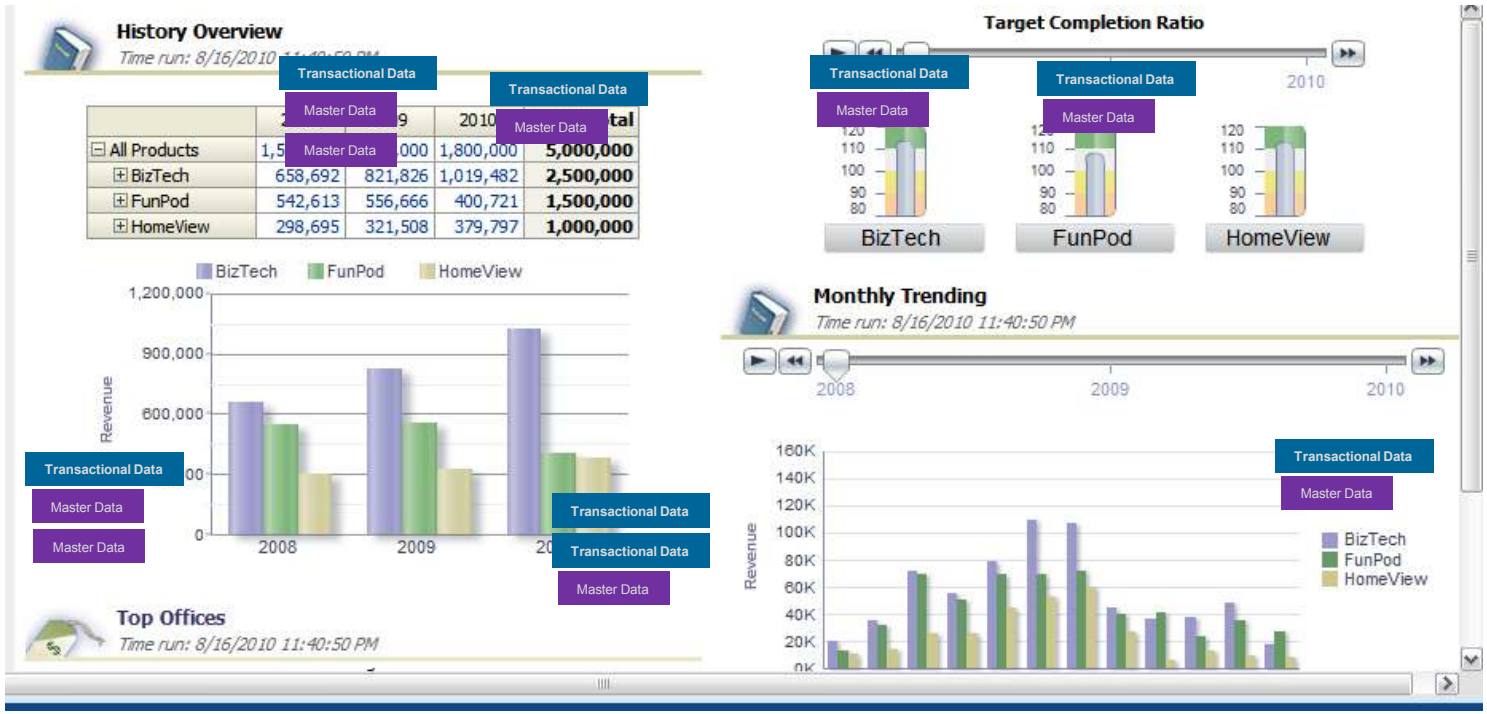
Reject Submit

Discovering the Enterprise Data

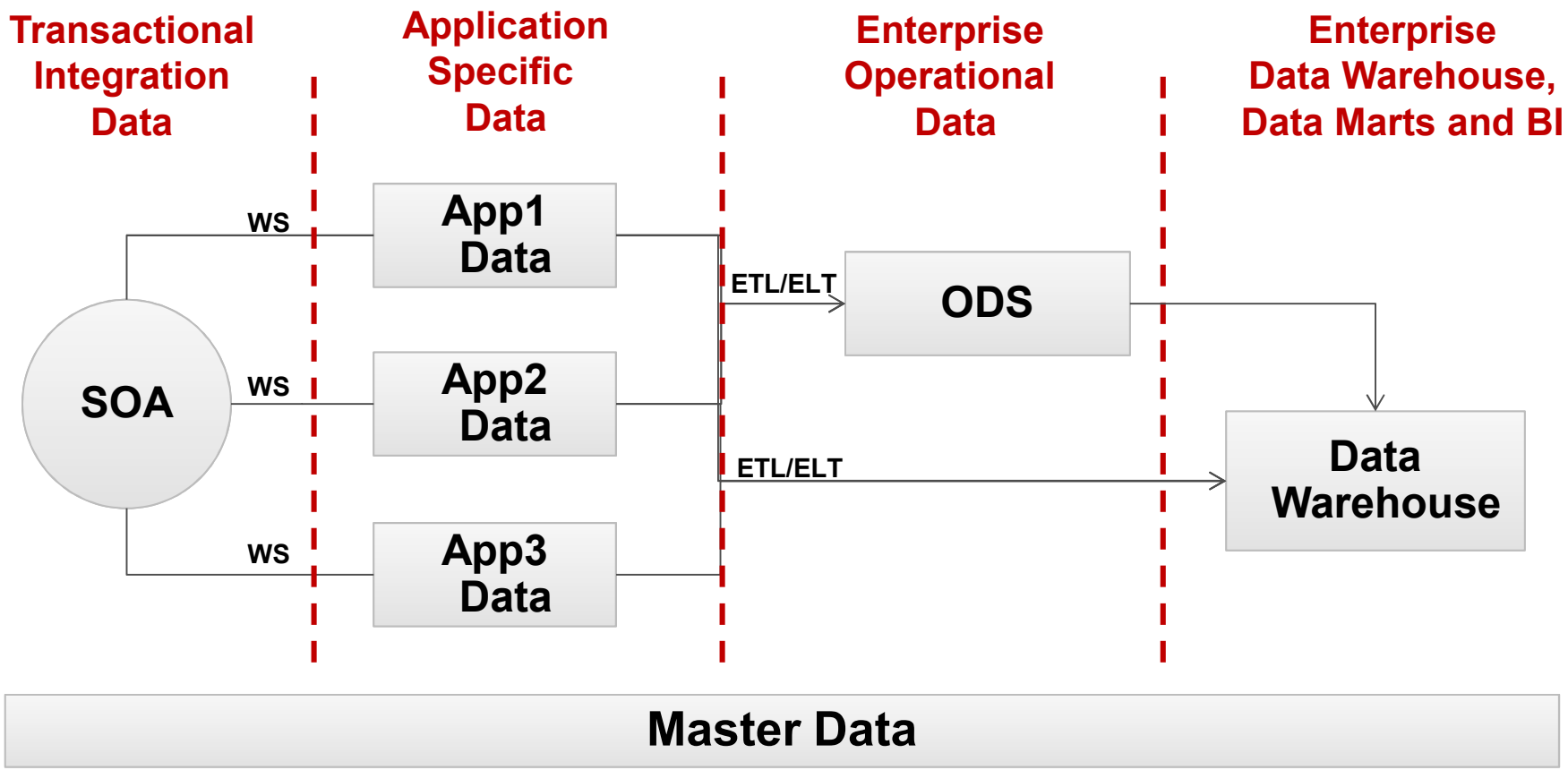


Discovering The Enterprise Data

Drill in the Executive Reports



Enterprise Data Flow



Data Governance, Data Architecture Management, Data Modeling, Data Quality, DW/BI, Metadata Management, Document/Content Management

Data Quality

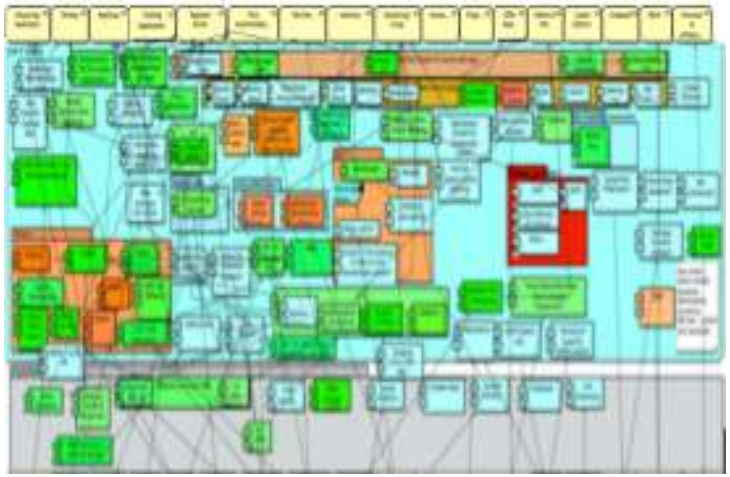
The state of completeness, validity, consistency, timeliness and accuracy that makes data appropriate for an enterprise use

Three Main Data Quality Metrics

- Business Relevance
  - Executive Reports/Critical Business Process
- Accountability
- Controllability and Track-ability

IT Architecture Improvement

Sample Case: Current and Target State

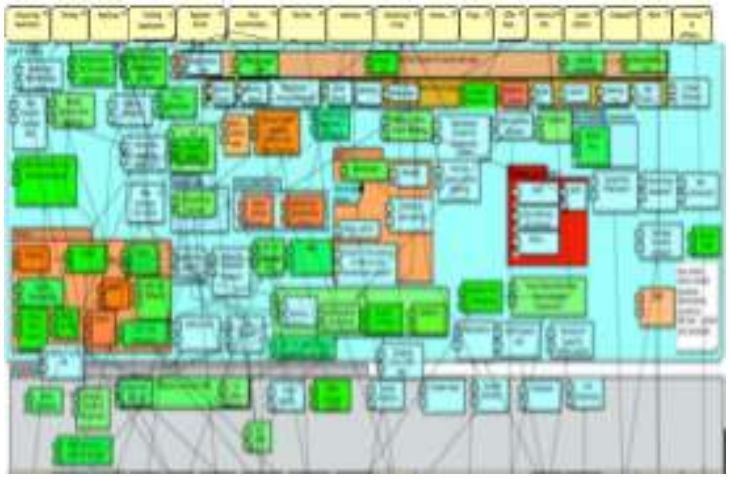


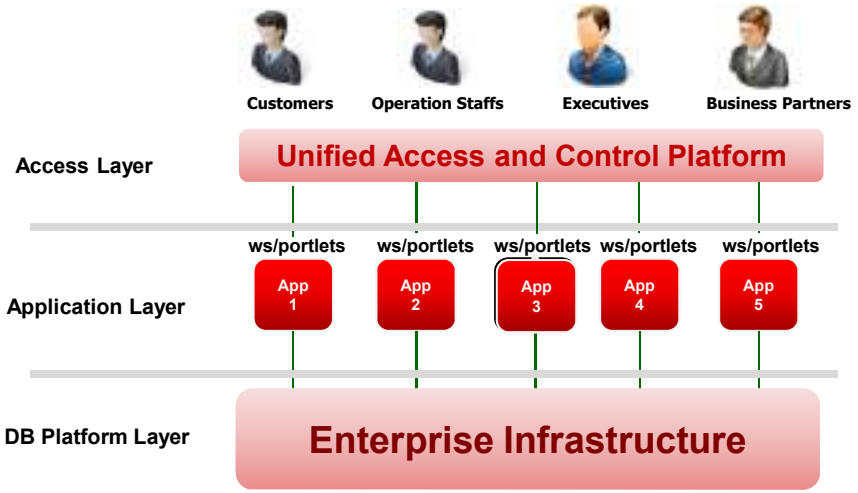
Current IT Architecture

- เพิ่มบริการใหม่ๆยาก
- ต้องใช้ตุ้นทุนสูงในการขยายระบบ
- ใช้เวลามากในการแก้ปัญหา
- เกิดความเสี่ยงสูงต่อการดำเนินธุรกิจ

IT Architecture Improvement

Sample Case: Current and Target State





Current IT Architecture

- เพิ่มบริการใหม่ๆยาก
- ต้องใช้ตุ้นทุนสูงในการขยายระบบ
- ใช้เวลามากในการแก้ปัญหา
- เกิดความเสี่ยงสูงต่อการดำเนินธุรกิจ

Target IT Architecture

- สร้าง common platform
- เพิ่มความยืดหยุ่นให้กับเงื่อนไขบริการใหม่
- สามารถผลิด application ได้เร็วขึ้น
- ลดความเสี่ยงต่อการดำเนินการ

Enterprise Architecture Repository

Owner: Business Units

Business Objectives

#	Business Goals	Business Objectives	Owner	Business Services	Business Processes	Remarks

Business Processes

#	Business Process Name	Owner	Strategic Business Process (Y/N)	Main Service Description	Main Business Users (Sales,Marketing, Core Processing, Corp Admin)	High Level Business Process (Please attach up-to-date document)	Expected Transaction Complete Duration (hr,day,week)	Actual Transaction Complete Duration (hr,day,week)	Total of Transaction / year	% of Transaction Duration done by automated system	Supported by Application(s)	Current Issues	Remarks

Enterprise Architecture Repository

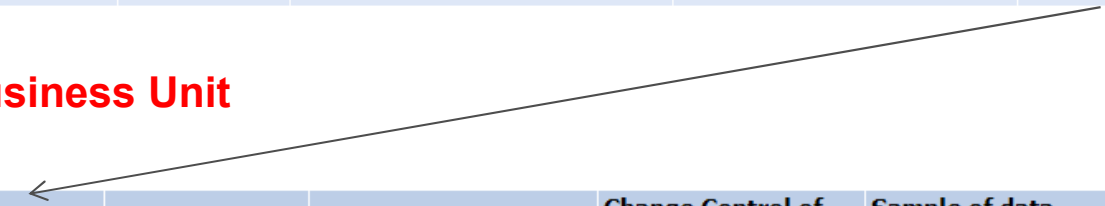
Owner: Technology Unit

Applications

#	Application Name	Owner	High Level Application Flow with User (SOD) Roles Partitioning (please attach up-to-date document)	Application Integration Details (Online/Batch) to which systems	Data Required	Current Issues	Remarks

Owner: Business Unit

Data



#	Master Data Name	Owner	Description	Change Control of master data (Y/N)	Sample of data structure if any	Current Issues	Ramarks

Enterprise Architecture Repository

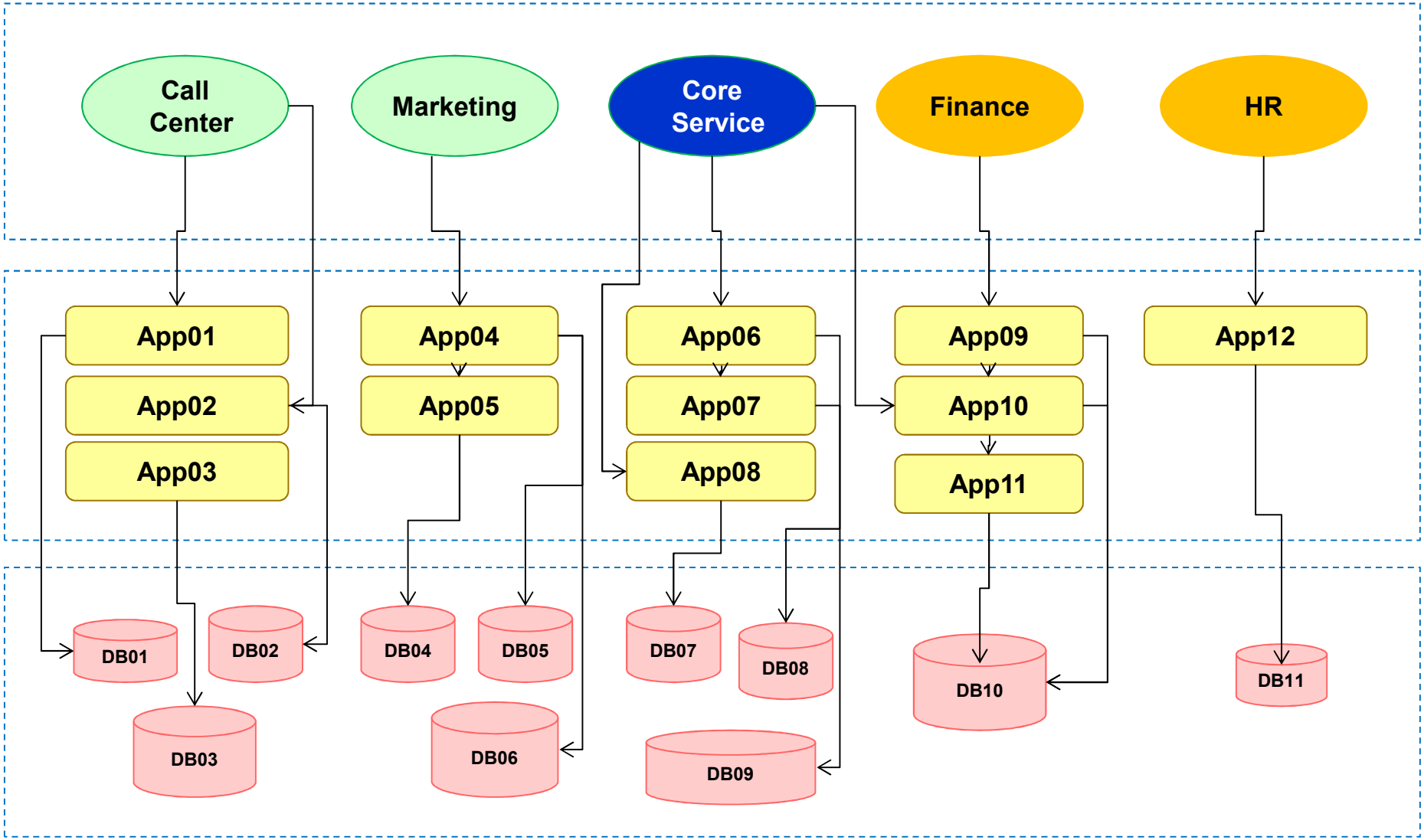
Owner: Technology Unit

Technology

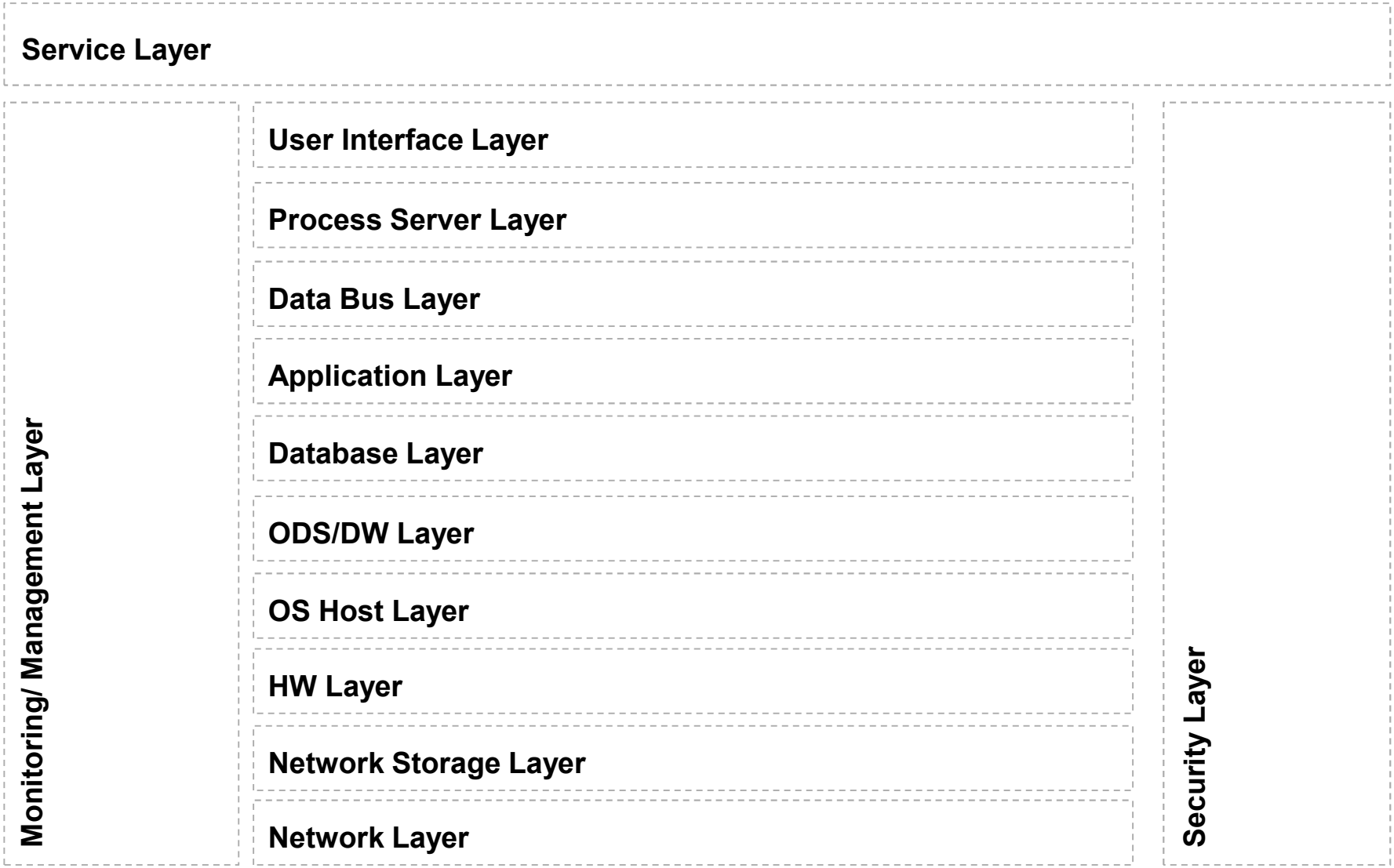
#	Application Name	Total Users/Concurrent Users	Average End User Response Time (sec.)	Application Software Language	Application Custom Built / Application Vendor	Application Operating System	Application OS Virtualization (Y/N) if yes, please provide product name	Single sign-on (Y/N) if yes, please provide product name	Single User Dashboard Portal (Y/N) if yes, please provide product name	Application Availability Monitoring Tool (Y/N) if yes, please provide product name	% of Application system growth / year	Application Maintainance Cost /year	Database Vendor-Version	Database Operating System	Database OS Virtualization (Y/N) if yes, please provide product name	% of Database system growth /year	Database System Maintainance Cost / year

Group workshop - Business Services and IT Alignment

1.5 hrs. brainstorm and 15 mins. presentation

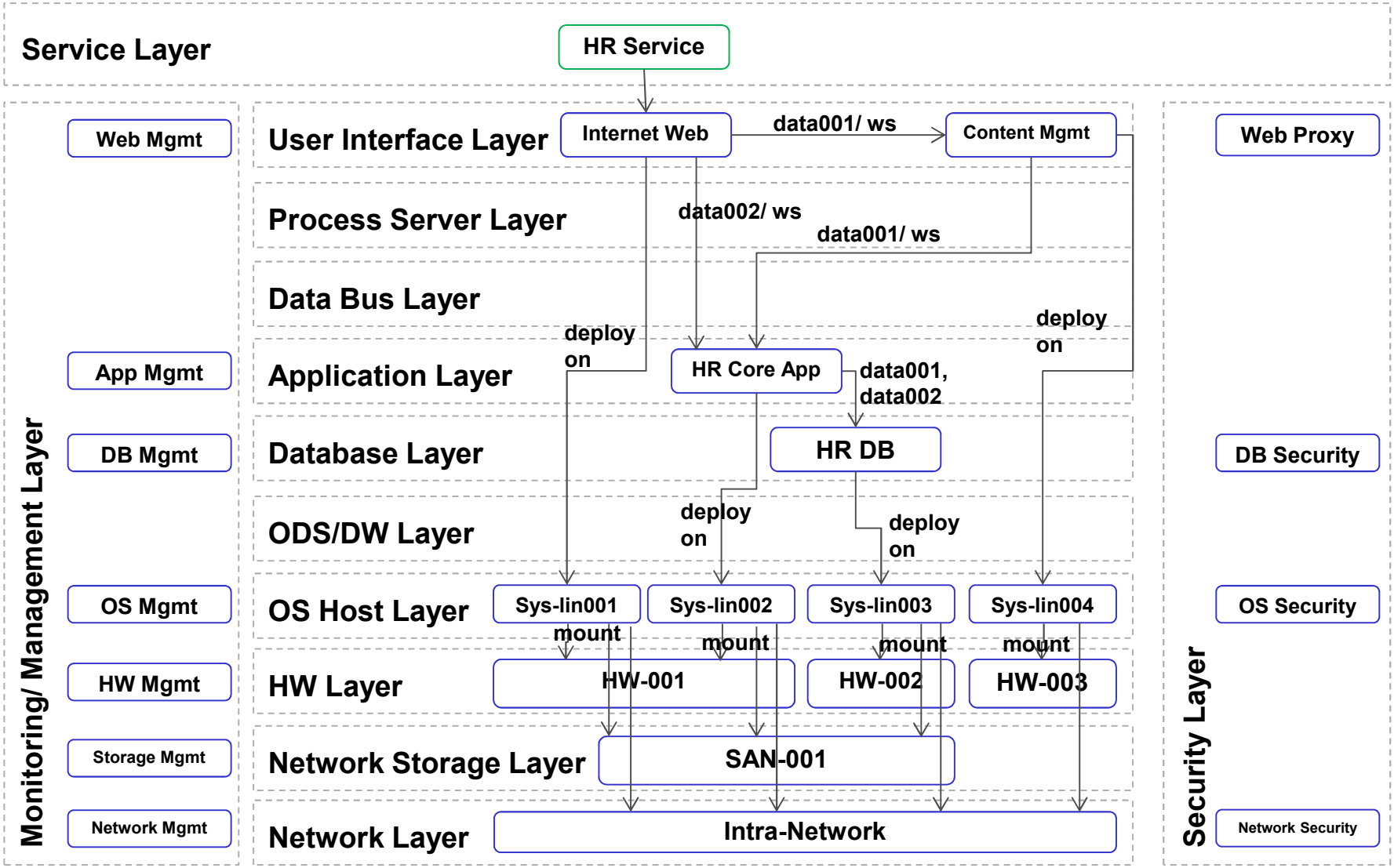


Logical Configuration Management Model



Logical Configuration Management Model

Example – HR Service

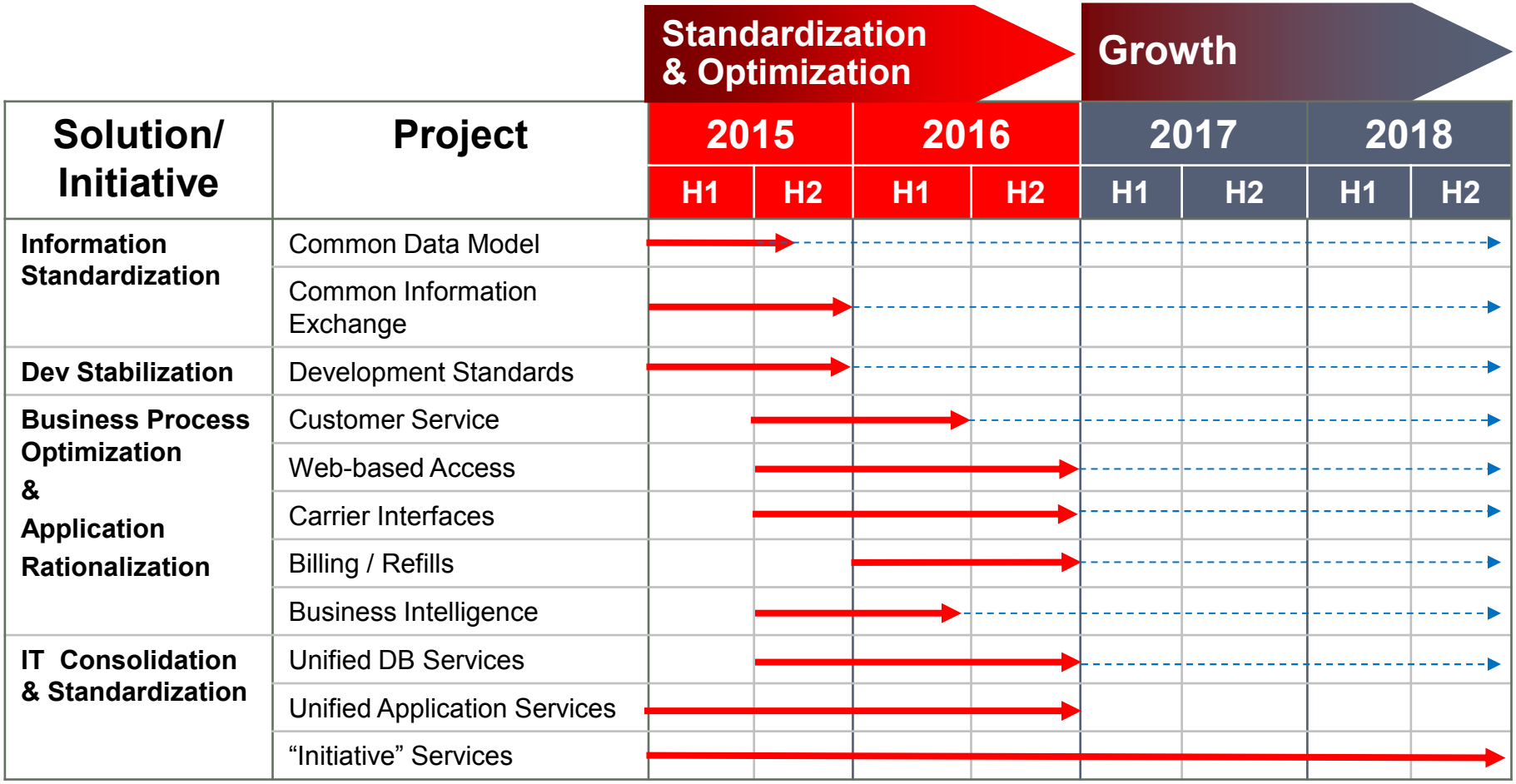


Strategic Roadmap

<Sample>

		Current State	<Named Transition>	<Named Transition>	Future State
Business Architecture	***Business Objectives***	**Maximize ROI of local business initiatives**	**Optimize IT efficiency and lower IT costs**	**Standardize cost, quality & consistency of business ops. Leverage knowledge across BUs**	**Increase speed to market and strategic agility**
	Bus Op Model	**Diversified**	**Coordinated**	**Replicated**	**Unified**
	Business / IT Strategy	**Maximize local business unit agility by maintaining full autonomy**	**Share IT infrastructure across business units for IT efficiency**	**Share core processes and/or data for business operational efficiency**	**Provide plug-and-play business process modules for strategic agility across enterprise**
	EA Maturity	**Business Silos**	**Standardized Technology**	**Optimized Core**	**Business Modularity**
Application Architecture	***Architecture Strategy***	Customize & optimize local apps for BU needs	Provide shared infrastructure services via apps rationalization	Rationalize, standardize and optimize core business processes. Deploy enterprise apps.	Create/deploy/reuse plug-and-play business process components
Information Architecture	***Architecture Strategy***	Maintain data for BU needs	Rationalize data used by shared services	Standardize data assets and interchanges. Integrate and share info across BUs and COIs	Provide real time BI and implement predictive models
Technology Architecture	***Architecture Strategy***	Optimize platform for individual applications & data access via tuning configurations	Standardize tech; provide shared infrastructure platform	Optimize platform for shared core business apps/processes & data via virtualization	Fully leverage a service-oriented architecture

Digital Transformation Master Plan
(DT Master Plan)

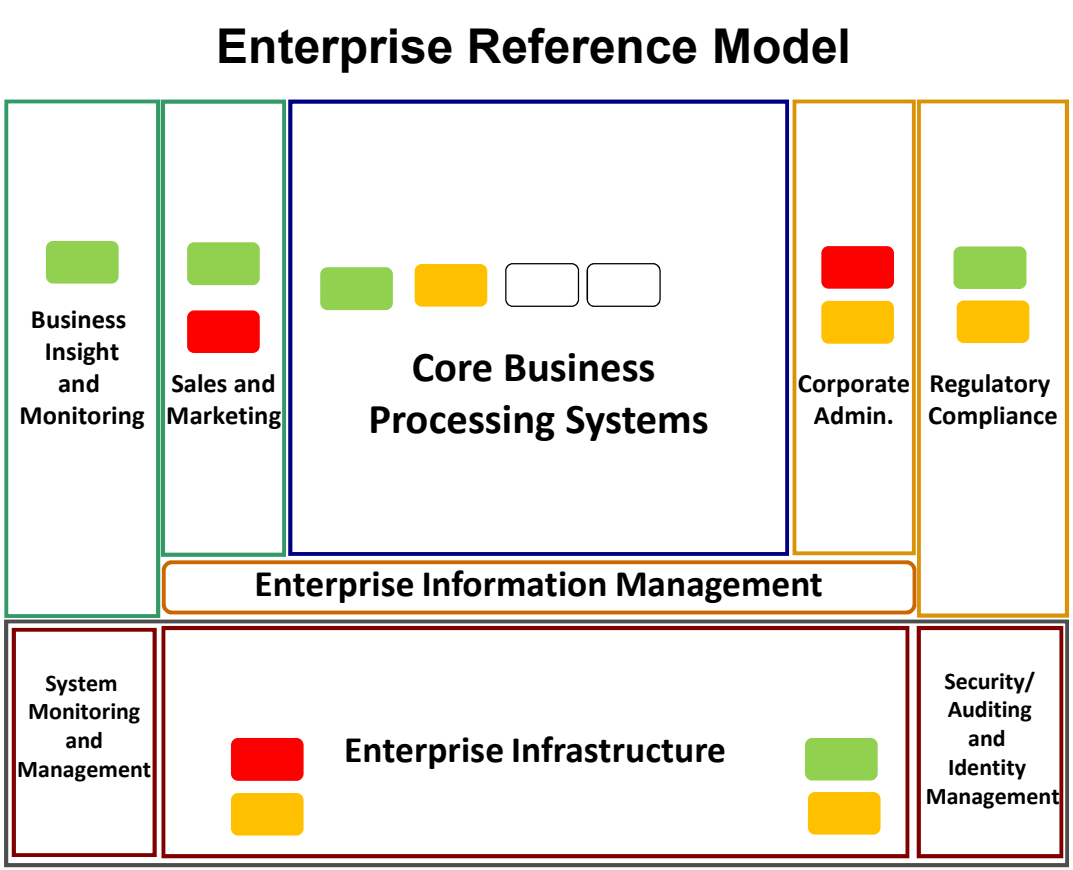


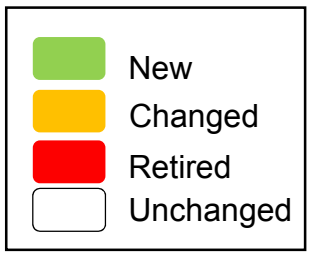
Enterprise Reference Model – Target State

Write down your future state

Team Name: ***xxx***

1. Name, Company, E-mail
2. Name, Company, E-mail
3. Name, Company, E-mail
4. Name, Company, E-mail





Digital Transformation Roadmap Activities

Phase	*Objective*	*Who*	*Start Date*	*Expected Duration*	*Remark*
Architecture Vision and Business Architecture	Build Future State Architecture Vision that captures key view of Future State Business Architecture	**Customer Team** **Consultant Team**		2 days	
Application and Data Architecture	Capture baseline Current State and Building Target State of Application and Data Architecture	**Customer Team** **Consultant Team**		5 days	
Technology Architecture	Capture baseline Current State and Building Target State of Technology Architecture	**Customer Team** **Consultant Team**		5 days	
Strategic Roadmap	Build Strategic Roadmap, Define EA Governance focus areas and programs	**Customer Team** **Consultant Team**		3 days	
Business Case	Build Business Case	**Customer Team** **Consultant Team**		3 days	

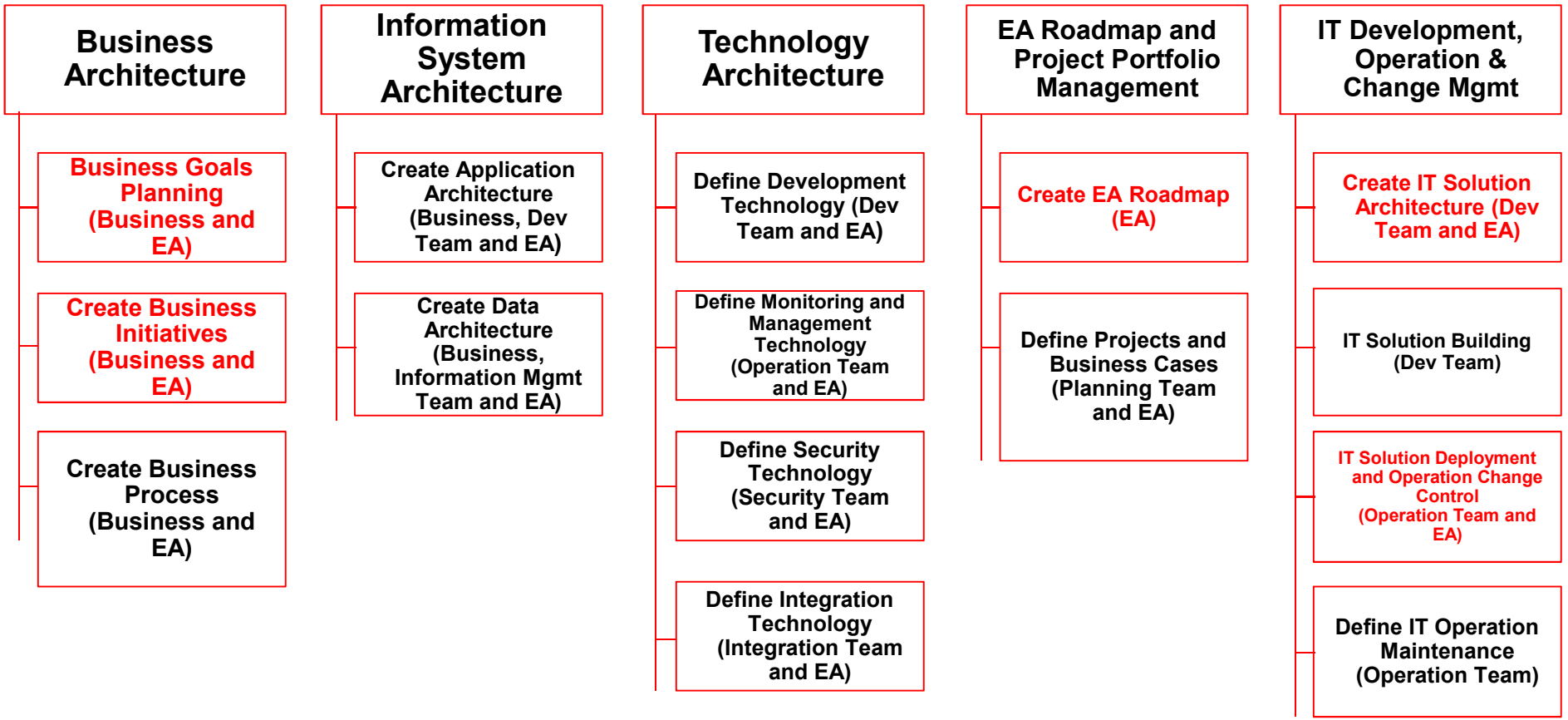
Thank you very much

EA Governance – RACI Chart

The Roles and Responsibilities

Danairat T.
Oracle Enterprise Architect, ASEAN
Certified Java Programmer, TOGAF – Silver
danairat@gmail.com, +66-81-559-1446

Enterprise Architecture Governance Process



Red Color is EA main involve process

Business Goals Planning and Business Initiatives

Activities and Deliverables	Business Executives	Business Process/Development Owner	CIO	Enterprise Architect	IT Audit and Control	Head of IT Development	Head of IT Operation
Create Business Goals	A/R	R	C	I	I	I	I
Business Operation Model/ Business and IT Capability	A/R	R	C	C	C	I	I
Business Objectives	A/R	R	C	I	I	I	I
Create Business Initiatives	C	A/R	C	C	C	I	I

Responsible, Accountable, Consulted, Informed

Create Business Processes

Activities and Deliverables	Business Executives	Business Process/ Development Owner	CIO	Enterprise Architect	IT Audit and Control	Head of IT Development	Head of IT Operation
Develop Baseline Business Process Description	C	A/R	C	I	I	I	I
Develop Target Business Process Description	C	A/R	C	I	I	I	I
Perform Gap Analysis	C	A/R	C	I	I	I	I
Provide requirements to the Data, Application, and Technology Architectures	C	A/R	C	C	C	I	I
Finalize the Business Process	C	A/R	C	I	I	I	I

Responsible, Accountable, Consulted, Informed

Create Application Architecture

Activities and Deliverables	Business Executives	Business Process/Development Owner	CIO	Enterprise Architect	IT Audit and Control	Head of IT Development	Head of IT Operation
Application Architecture Strategy (Consolidate, Plug and Play Strategy)	I	R	C	C	C	A/R	C
Create Application Portfolio Baseline (Application Landscape)	I	R	C	C	R	A/R	R
Business Processes and Application Dependencies	I	A/R	I	I	I	R	I
Relationship to Application Capability Increments Transitioning	I	R	C	C	C	A/R	C

Responsible, Accountable, Consulted, Informed

Create Data Architecture

Activities and Deliverables	Business Executives	Business Process/Development Owner	CIO	Enterprise Architect	IT Audit and Control	Head of IT Development	Head of IT Operation
Data Architecture Strategy (Consolidate, Information as a Service)	A	R	C	C	C	R	C
Create Enterprise Data Platform (Data Landscape)	A	R	C	C	C	R	R
Application and Data Dependencies	I	R	I	I	I	A/R (IT Data Management Team)	C
Relationship to Data Capability Increments Transitioning	I	R	C	C	C	A/R (IT Data Management Team)	C

Responsible, Accountable, Consulted, Informed

Define Development Technology

Activities and Deliverables	Business Executives	Business Process/Development Owner	CIO	Enterprise Architect	IT Audit and Control	Head of IT Development	Head of IT Operation
Create Standard Development Technology (Open, Unify Tool Set)	I	I	C	C	C	A/R	R
Create Standard User Interaction Development Technology	I	I	C	C	C	A/R	R
Create Standard Business Process Management Development Technology	I	I	C	C	C	A/R	R
Create Standard Application Server and Database Technology	I	I	C	C	C	A/R	R

Responsible, Accountable, Consulted, Informed

Define Monitoring and Management Technology

Activities and Deliverables	Business Executives	Business Process/Development Owner	CIO	Enterprise Architect	IT Audit and Control	Head of IT Development	Head of IT Operation
Create Standard Monitoring and Management Technology	I	I	C	C	C	R	A/R
Create Standard Network/ Operating System Monitoring and Management Technology	I	I	C	C	C	R	A/R
Create Standard Database and Application Server Monitoring and Management Technology	I	I	C	C	C	R	A/R
Create Standard Application Monitoring and Management Technology	I	I	C	C	C	R	A/R

Responsible, Accountable, Consulted, Informed

Define Security Technology

Activities and Deliverables	Business Executives	Business Process/Development Owner	CIO	Enterprise Architect	IT Audit and Control	Head of IT Development	Head of IT Operation
Create Standard Security Technology	I	I	C	C	C	R	A/R
Create Standard Network/ Operating System Security Technology	I	I	C	C	C	R	A/R
Create Standard Database and Application Server Security Technology	I	I	C	C	C	R	A/R
Create Standard Application Security Technology	I	I	C	C	C	R	A/R

Responsible, Accountable, Consulted, Informed

Define Integration Technology

Activities and Deliverables	Business Executives	Business Process/Development Owner	CIO	Enterprise Architect	IT Audit and Control	Head of IT Development	Head of IT Operation
Create Standard Integration Technology	I	I	C	C	C	R	A/R
Create Standard Business Transaction Integration Technology	I	I	C	C	C	R	A/R
Create Standard Batch Integration Technology	I	I	C	C	C	R	A/R
Create Standard External Integration Technology	I	I	C	C	C	R	A/R

Responsible, Accountable, Consulted, Informed

Create EA Roadmap

Activities and Deliverables	Business Executives	Business Process/Development Owner	CIO	Enterprise Architect	IT Audit and Control	Head of IT Development	Head of IT Operation
Business and IT Dependencies	I	I	C	A/R	C	R	R
Relationship to capability increments transitioning	C	I	C	A/R	C	C	C
Relationship to opportunity	C	I	C	A/R	C	C	C

Responsible, Accountable, Consulted, Informed

Define Projects and Create Business Cases

Activities and Deliverables	Business Executives	Business Process/Development Owner	CIO	Enterprise Architect	IT Audit and Control	Head of IT Development	Head of IT Operation
Identify IT Projects	I	C	A	C	R	R	R
Provide Business Cases and Business Value	I	C	A	C	R	R	R
Provide Business Value Measurements	C	A/R	C	C	C	I	I
Identify Risks and Issue	C	A/R	C	R	R	I	I
Provide Migration Strategy	C	A/R	C	C	C	C	R

Responsible, Accountable, Consulted, Informed

Create IT Solution Architecture (ABB, SBB)

Activities and Deliverables	Business Executives	Business Process/Development Owner	CIO	Enterprise Architect	IT Audit and Control	Head of IT Development	Head of IT Operation
Architecture Building Block (ABB)	I	I	C	A/R	I	I	I
Solution Building Block (SBB)	I	I	C	C	R	A/R	R
Monitoring and Management Architecture	I	I	C	C	C	C	A/R
Security Architecture	I	C	C	C	A/R	R	R

Responsible, Accountable, Consulted, Informed

IT Solution Deployment and Operational Change Control

Activities and Deliverables	Business Executives	Business Process/Development Owner	CIO	Enterprise Architect	IT Audit and Control	Head of IT Development	Head of IT Operation
Develop Solution Change Deployment Description and Instruction	I	I	I	I	C	A/R	R
Review and Approve The Changed Solution for Data Center	I	I	A	R	R	C	C
Perform Solution Deployment to Data Center	I	I	I	I	C	R	A/R
Rollback Solution Deployment from Data Center	I	I	I	I	C	R	A/R

Responsible, Accountable, Consulted, Informed