

TOGAF 9

Fundamental:

6. TOGAF Case Study

Romi Satria Wahono

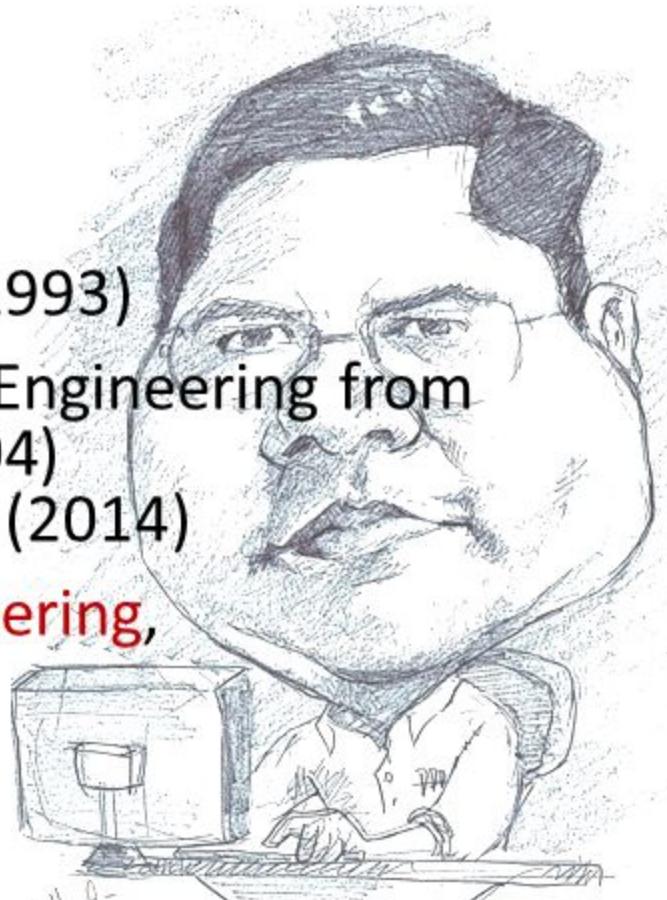
romi@romisatriawahono.net

http://romisatriawahono.net/tfu

WA/SMS: +6281586220090

Romi Satria Wahono

- SD Sompok Semarang (1987)
- SMPN 8 Semarang (1990)
- SMA Taruna Nusantara Magelang (1993)
- B.Eng, M.Eng and Ph.D in Software Engineering from Saitama University Japan (1994-2004)
Universiti Teknikal Malaysia Melaka (2014)
- Research Interests: Software Engineering,
Machine Learning
- Founder IlmuKomputer.Com
- PNS di PDII LIPI (1994-2007)
- Founder dan CEO PT Brainmatics Cipta Informatika





Course Outline

1. Introduction
2. TOGAF Concepts
3. TOGAF Architecture Development Method
4. BPMN Overview
5. UML Overview
- 6. TOGAF Case Study**



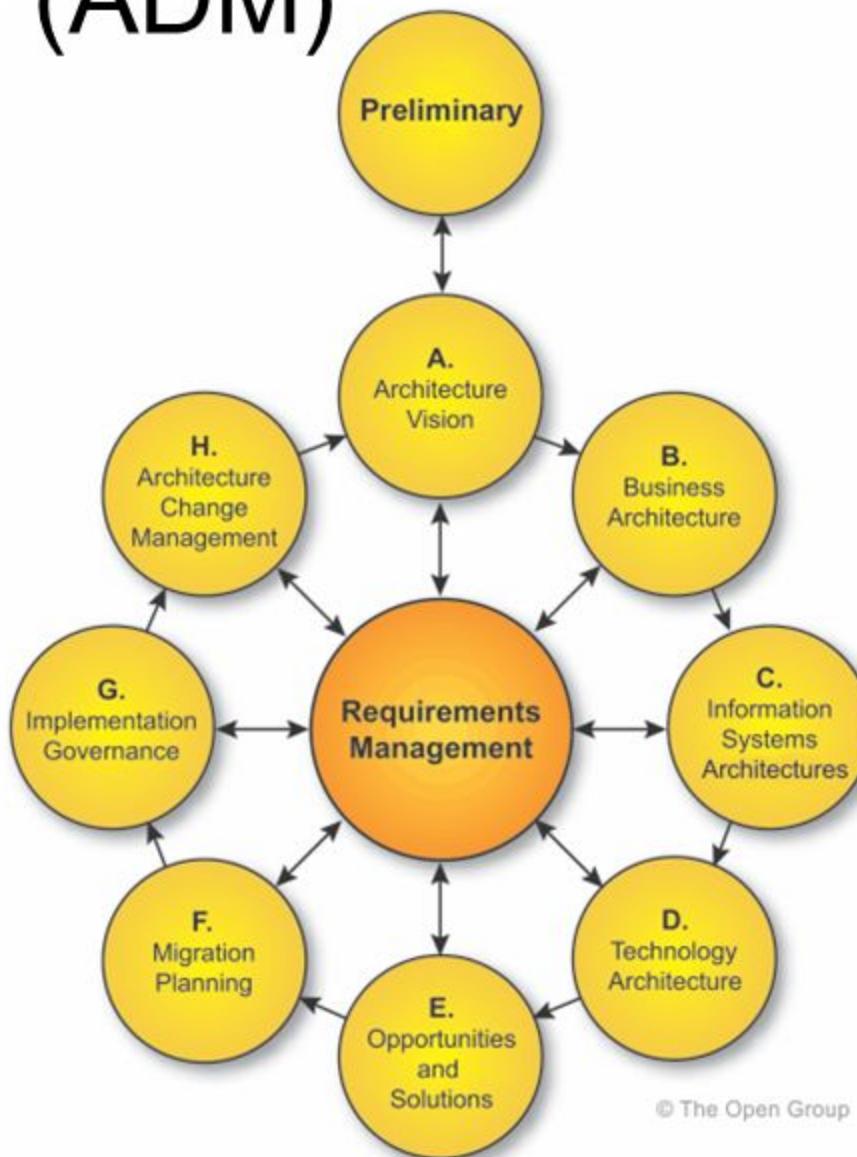
6. TOGAF Case Study

1. Romi Satria Wahono – Brainmatics Enterprise Architecture - 2015
2. Balasubramanian - EA Child Wear Pte Ltd - 2013
3. Open Group -World Class EA Framework Guidance & TOGAF 9 Example
4. Enterprise Architecture Blueprint Cancer Care Ontario – 2011



6.1 Romi Satria Wahono – Brainmatics Enterprise Architecture - 2015

TOGAF Architecture Development Method (ADM)



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Case Study: PT Brainmatics Cipta Informatika

BRAINMATICs | Progressive, Customizable and Based on Experience

Course Update Administration Application Database Development Management

Java Standard Edition (Java SE) 22 Nov '14 OCNA BAS I - Introduction to Oracle Database 08 Nov '14

Weekend Gedung Binanstra 2 Person Instruktur: Ibu Rina

Weekend Gedung Binanstra 8 Person Instruktur: Indradi Achar

Course	Type	Duration	Cost	Start Date	Registered	Confirmed
PHP and MySQL Fundamentals	Weekday	32 hours	Rp 3.900.000,-	15 Dec '14 Free!	8 Person	5 Person
	Weekend	32 hours	Rp 3.900.000,-	10 Jan '15	-	-
Oracle Database: SQL Fundamentals I	Weekday	24 hours	Rp 3.900.000,-	15 Dec '14 Free!	8 Person	6 Person
	Weekend	24 hours	Rp 3.900.000,-	03 Jan '15	8 Person	-
Certified Information Systems Auditor (CSA) Exam Preparation	Weekday	40 hours	Rp 7.900.000,-	15 Dec '14 Free!	12 Person	5 Person
ITIL® V3 Foundation (ITIL® Preparatory Course)	Weekday	40 hours	Rp 7.900.000,-	15 Dec '14 Free!	12 Person	5 Person
MySQL Database Administrator	Weekday	40 hours	Rp 7.900.000,-	15 Dec '14 Free!	12 Person	5 Person
HTML5 & CSS3	Weekday	40 hours	Rp 7.900.000,-	15 Dec '14 Free!	12 Person	5 Person

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EA Tools Yang Digunakan

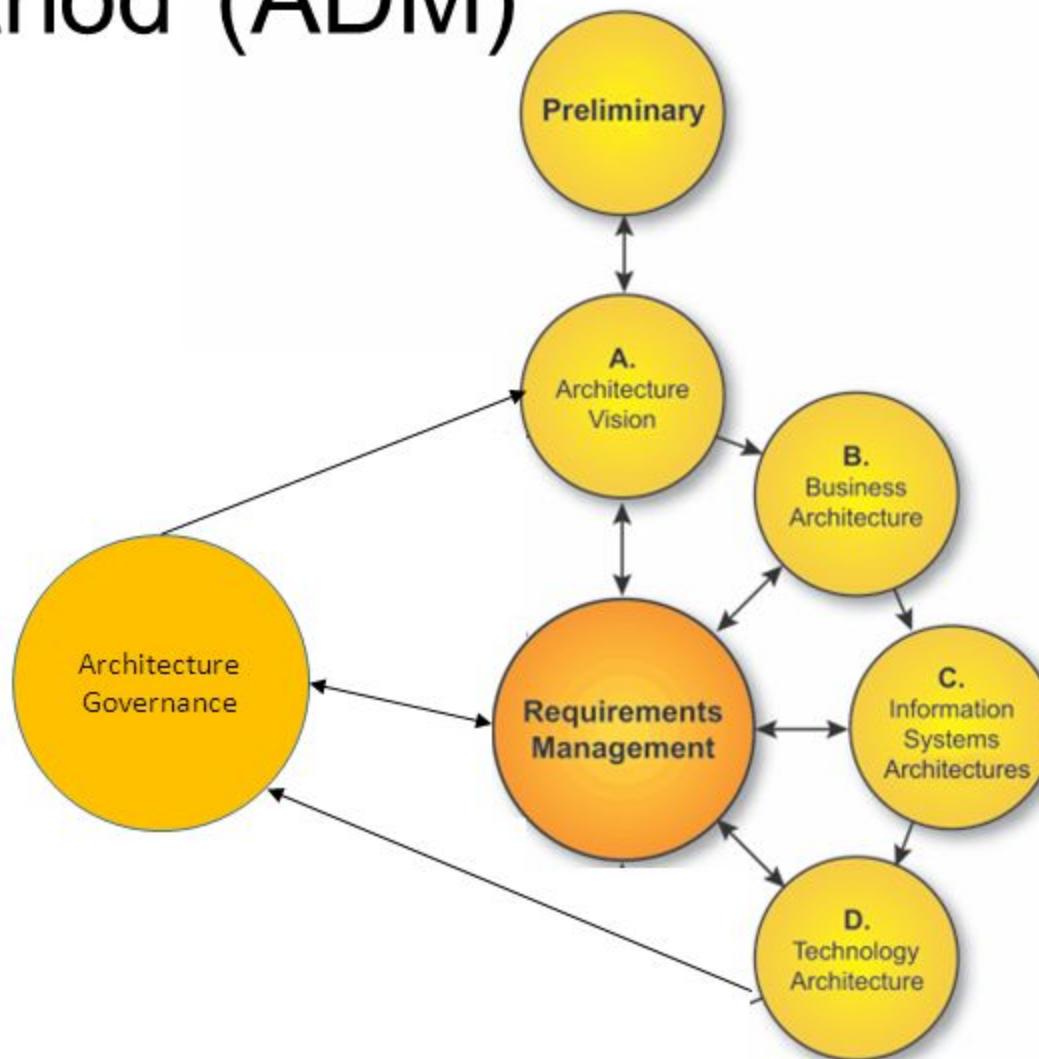
- Sparx **Enterprise Architect**
 - Use Case Diagram
 - Logical Data Diagram
- **Bizagi Modeler**
 - Business Process Model and Notation (BPMN)
- **MS Power Point**
 - Text, Catalog dan Matrix
 - Presentation
- **Avolution Abacus**
- **No Magic MagicDraw**



Key Competencies to Create an Enterprise Architecture

1. Enterprise Architecture **Framework**
2. Enterprise Architecture **Tools**
3. **Business Strategy** and Organization Analysis → **Business Model Canvas**
4. Business Process Model and Notation (**BPMN**)
5. **Data Modeling** and Mining
6. Unified Modeling Language (**UML**)

TOGAF Architecture Development Method (ADM)



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TOGAF Artifacts

Preliminary		Architecture Vision	
Catalogs		Core Diagrams	
Catalogs	Principles Catalog	Matrices	Value Chain Diagram
Business Architecture		Core Diagrams	
Catalogs	Stakeholder Map Matrix	Solution Concept Diagram	
Organization/Actor Catalog			
Driver/Goal/Objective Catalog			
Role Catalog			
Business Service/Function Catalog			
Location Catalog			
Process/Event/Control/ Product Catalog			
Contract/Measure Catalog			
Matrices			
Business Interaction Matrix			
Actor/Role Matrix			
Core Diagrams			
Business Footprint Diagram			
Business Service/Information Diagram			
Functional Decomposition Diagram			
Product Lifecycle Diagram			
Extension Diagrams			
Goal/Objective/Service Diagram			
Business Use-Case Diagram			
Organization Decomposition Diagram			
Process Flow Diagram			
Event Diagram			
Data Architecture		Application Architecture	
Catalogs		Catalogs	
Data Entity/Data Component Catalog		Application Portfolio Catalog	
Matrices		Interface Catalog	
Data Entity/Business Function Matrix			
Application/Data Matrix			
Core Diagrams			
Conceptual Data Diagram			
Logical Data Diagram			
Data Dissemination Diagram			
Extension Diagrams			
Data Security Diagram			
Data Migration Diagram			
Data Lifecycle Diagram			
Requirements Management			
Catalogs			
Requirements Catalog			
Technology Architecture		Opportunities and Solutions	
Catalogs		Core Diagrams	
Technology Standards Catalog		Project Context Diagram	
Technology Portfolio Catalog			
Matrices			
Application/Technology Matrix			
Core Diagrams			
Environments and Locations Diagram			
Platform Decomposition Diagram			
Extension Diagrams			
Processing Diagram			
Networked Computing/ Hardware Diagram			
Communications Engineering Diagram			
Core Diagrams			
Benefits Diagram			

Brainmatics Enterprise Architecture (Customized)

Preliminary

Architecture Principles

Architecture Goals

Architecture Vision

Vision and Mission

Value Chain Diagram

Business Model Canvas

Solution Concept Diagram

Organization Decomposition Diagram

Stakeholder Map Matrix

Business Architecture

Business Principles

Functional Decomposition Diagram

Business Interaction Matrix

Organizational/Actor Catalog

General Business Process Diagram

Business Process Diagram

Data Architecture

Data Principles

Data Entity/Business Function Matrix

Application/Data Matrix

Logical Data Diagram

Application Architecture

Application Principles

Application Portfolio Catalog

Application Use Case Diagram

Technology Architecture

Technology Principles

Technology Standard Catalog

Application/Technology Matrix

Environment and Location Diagram

Text

Diagram

Matrix

Catalog



Preliminary

Architecture Principles

- **Rangka Kerja Terbuka.** Pengembangan arsitektur menggunakan rangka kerja terbuka sehingga memudahkan dalam pemahaman dan pengembangan ke depan
- **Mudah Dipahami.** Arsitektur menggambarkan perusahaan secara umum dalam bentuk *helicopter view* yang mudah dipahami oleh semua pihak yang terkait
- **Diperbarui Berkala.** Arsitektur akan direview dan diupdate secara berkala setiap 2 tahun sekali untuk menjamin mengikuti perkembangan organisasi yang dinamis
- **Dikembangkan Bersama.** Arsitektur dengan melibatkan seluruh SDM yang ada, sehingga arsitektur ini adalah milik bersama dan akan diterapkan secara gotong royong bersama-sama
- **Mengikuti Kapabilitas Organisasi.** Arsitektur yang dikembangkan akan diterapkan dengan mengikuti kemampuan perusahaan, baik secara organisasi maupun ekonomi

Architecture Goals

- **Peningkatan Performa.** Meningkatkan performa perusahaan dalam menjalankan visi dan misi dengan memaksimalkan pemanfaatan teknologi informasi
- **Pedoman Terpadu.** Menjadi pedoman yang konsisten dan terpadu dalam mengembangkan dan memilih solusi teknologi informasi, yang dapat digunakan untuk mengotomasi proses bisnis di perusahaan dengan lebih efektif dan efisien
- **Penggambaran Menyeluruh.** Menggambarkan perusahaan secara menyeluruh, dari aspek bisnis, data, aplikasi dan teknologi, dalam bentuk yang mudah dipahami oleh semua pihak yang terkait
- **Solusi Tingginya Turn-Over.** Keluar masuknya SDM membuat berhentinya beberapa proses bisnis perusahaan. Arsitektur ini didesain untuk menjadi solusi masalah turn-over pegawai yang tinggi di perusahaan ABC
- **Peningkatan Kolaborasi.** Kolaborasi antar divisi yang selama ini terkendala karena kurangnya pemahaman proses bisnis global dapat diatasi dengan arsitektur ini



A. Architecture Vision

Brainmatics Enterprise Architecture (Customized)

Preliminary

Architecture Principles

Architecture Goals

Architecture Vision

Vision and Mission

Value Chain Diagram

Business Model Canvas

Solution Concept Diagram

Organization Decomposition Diagram

Stakeholder Map Matrix

Business Architecture

Business Principles

Functional Decomposition Diagram

Business Interaction Matrix

Organizational/Actor Catalog

General Business Process Diagram

Business Process Diagram

Data Architecture

Data Principles

Data Entity/Business Function Matrix

Application/Data Matrix

Logical Data Diagram

Application Architecture

Application Principles

Application Portfolio Catalog

Application Use Case Diagram

Technology Architecture

Technology Principles

Technology Standard Catalog

Application/Technology Matrix

Environment and Location Diagram

Text

Diagram

Matrix

Catalog

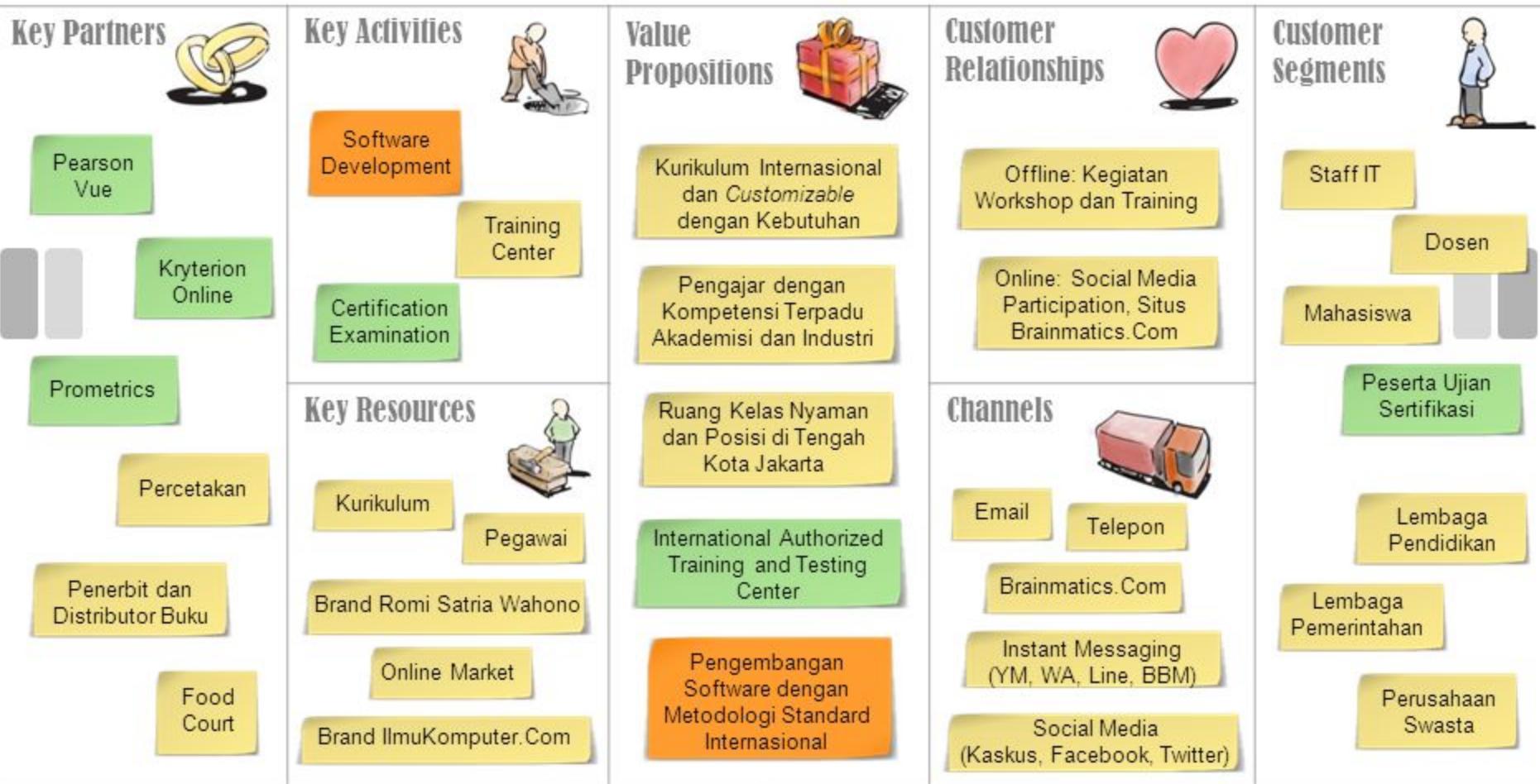


Vision and Mission

- Visi:
 - Menjadi perusahaan penyedia jasa **training** dan **pengembang software** dengan kualitas terbaik di Indonesia
- Misi:
 - Menyediakan layanan jasa **training** dan **sertifikasi** di **bidang teknologi informasi** dengan kurikulum internasional yang berkarakter *progressive, customizable* dan berbasis *experience*
 - Menyediakan layanan **pengembangan software** *custom* dan *generic* dengan metodologi standard internasional dan berbasis pengalaman industri

Business Model Canvas

PT Brainmatics



Value Chain Diagram (Function) Baseline

Financial
Management

Training
Service

Marketing
Activities

SUPPORTING ACTIVITIES

PRIMARY ACTIVITIES

Value Chain Diagram (Function) Target



Value Chain Diagram (Organization) Baseline

Finance
Division

Training
Division

Marketing
Division

SUPPORTING ACTIVITIES

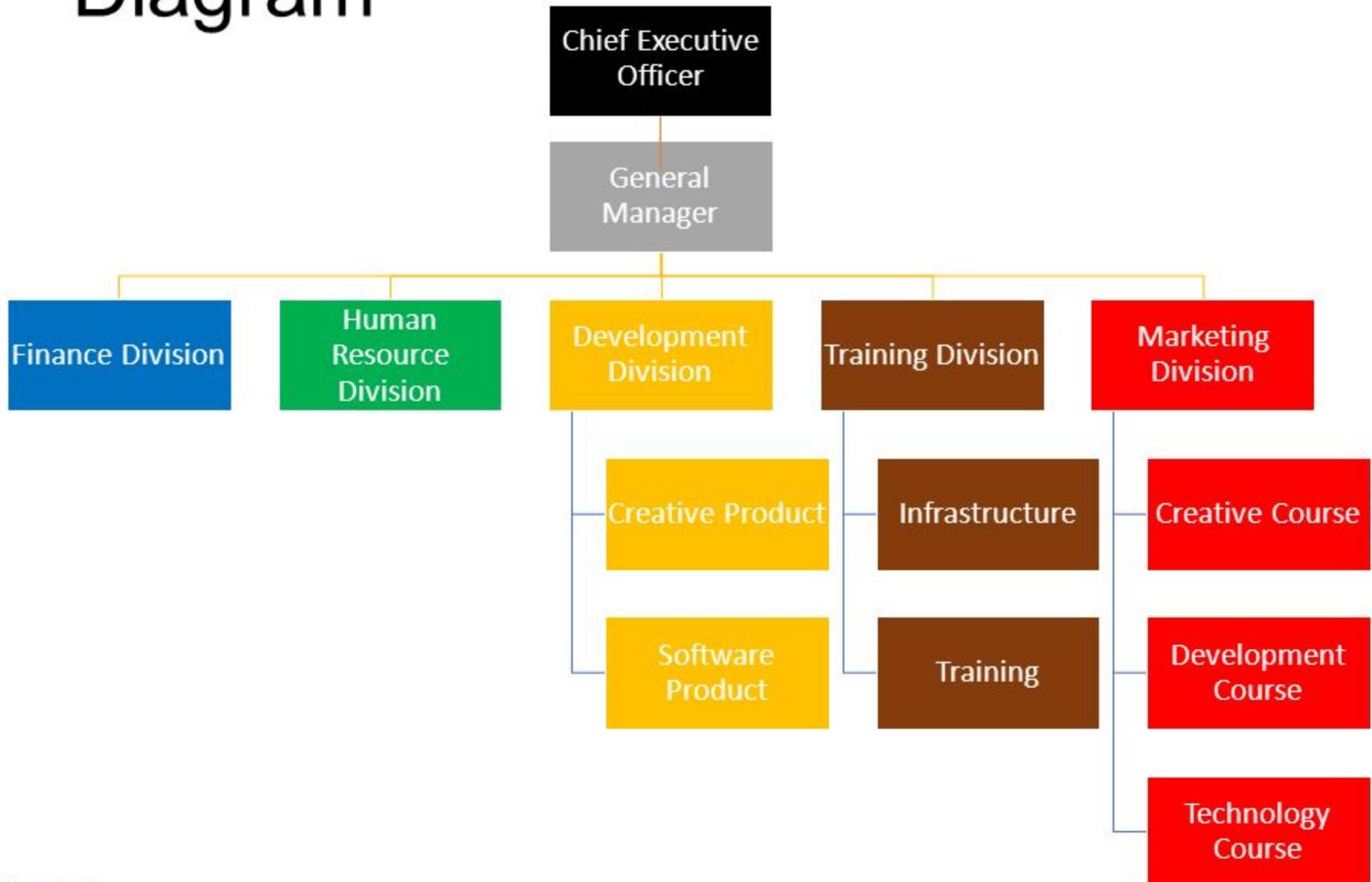
PRIMARY ACTIVITIES

Value Chain Diagram (Organization)

Target

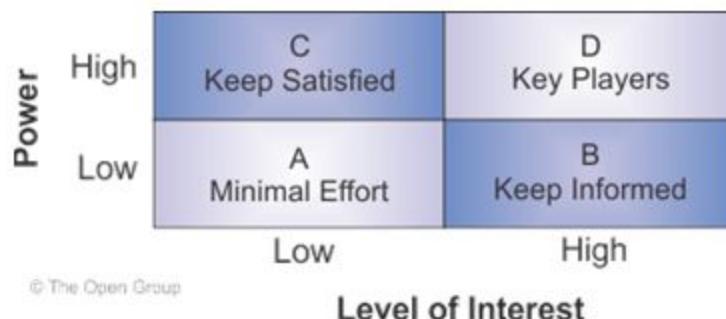


Organization Decomposition Diagram



Stakeholder Map Matrix

Stakeholder	Key Concern	Class	Artifacts
Chief Executive Officer	The high-level drivers, goals, and objectives of the organization, and how these are translated into an effective business process to advance the business	Keep Satisfied	1. Value Chain Diagram 2. Functional Decomposition Diagram
General Manager	General business process monitoring and maintenance	Key Players	1. Functional Decomposition Diagram 2. Business Interaction Matrix 3. General Business Process Diagram
* Manager	Business process monitoring and maintenance	Key Players	1. General Business Process Diagram 2. Business Process Diagram
Head of *	Business process implementation	Key Players	Business Process Diagram
Assistants	Assisting the business process implementation	Keep Informed	Business Process Diagram



Solution Concept Diagram (Baseline)

Desktop

Brainmatics Portal

Aplikasi Tidak Terintegrasi

Finance
Module

Training Management
Module

Customer Relationship
Module

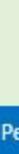


Internet Low Speed

Penggajian Karyawan

Pelaksanaan Training

Pemasaran Training



Business Process Automation

Pelaksanaan Ujian

Penagihan Pembayaran



KPI
Finance Division

1. Keseimbangan Neraca Keuangan
2. Keteraturan Administrasi

KPI
Training Division

1. Kuantitas dan Kualitas Pelaksanaan Training
2. Kuantitas dan Kualitas Kurikulum

KPI
Marketing Division

1. Pendapatan dari Penjualan Training
2. Pendapatan dari Penjualan Software

Solution Concept Diagram (Target+)

Mobile

Desktop

Brainmatics Portal

Brainmatics ERP System

Single Sign On

Finance Module

Human Resource Module

Project Management Module

Training Management Module

Customer Relationship Module

High Speed Broadband Network

Business Process Automation

Penggajian Karyawan

Penerimaan Magang

Pengembangan Custom Software

Pelaksanaan Training

Pemasaran Training

Belanja Bulanan

Penerimaan Pegawai

Maintenance Custom Software

Pelaksanaan Ujian

Monitoring Tender

Pembayaran Honor Instruktur

Pengajuan Cuti

Pengembangan Generic Software

Maintenance Infrastructure

Penagihan Pembayaran

Pengunduran Diri

Maintenance Generic Software

KPI
Finance Division

1. Keseimbangan Neraca Keuangan
2. Keteraturan Administrasi

KPI
Human Resource Division

1. Disiplin Pegawai
2. Kesejahteraan Pegawai

KPI
Development Division

1. Kuantitas dan Kualitas Software Generic
2. Kuantitas dan Kualitas Software Custom

KPI
Training Division

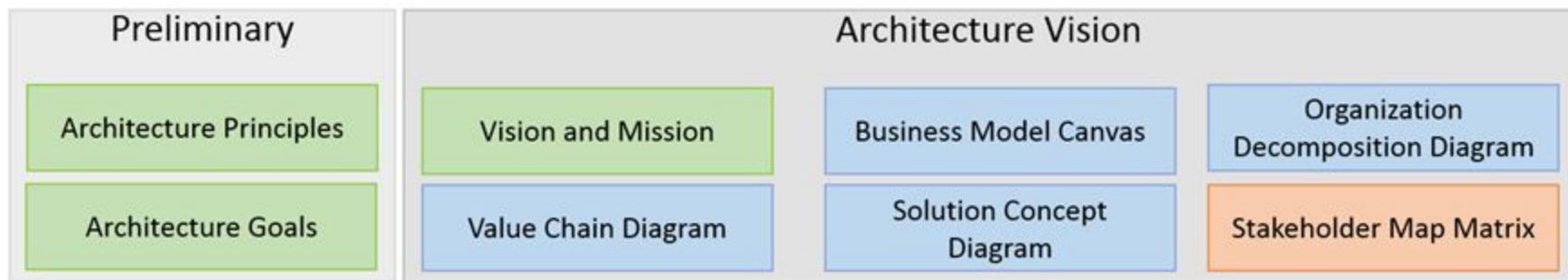
1. Kuantitas dan Kualitas Pelaksanaan Training
2. Kuantitas dan Kualitas Kurikulum

KPI
Marketing Division

1. Pendapatan dari Penjualan Training
2. Pendapatan dari Penjualan Sofware

Tugas

- Seandainya kita menjadi project manager (CIO) untuk pengembangan EA di perusahaan kita
- Lakukan fase Preliminary dan Phase A: Architecture Vision
- Susun artifak berikut untuk direktorat kita:





B. Business Architecture

Brainmatics Enterprise Architecture (Customized)

Preliminary

Architecture Principles

Architecture Goals

Architecture Vision

Vision and Mission

Value Chain Diagram

Business Model Canvas

Solution Concept Diagram

Organization Decomposition Diagram

Stakeholder Map Matrix

Business Architecture

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Business Interaction Matrix

Organizational/Actor Catalog

General Business Process Diagram

Business Process Diagram

Data Architecture

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Data Entity/Business Function Matrix

Application/Data Matrix

Logical Data Diagram

Application Architecture

Application Principles

Application Portfolio Catalog

Application Use Case Diagram

Technology Architecture

Technology Principles

Technology Standard Catalog

Application/Technology Matrix

Environment and Location Diagram

Text

Diagram

Matrix

Catalog



Business Principles

- **Fleksibilitas Organisasi.** Memperhatikan kebutuhan organisasi jangka pendek, menengah dan panjang sehingga KPK memiliki kemampuan untuk beradaptasi dan berubah
- **Standard Proses Bisnis.** Proses kerja, kegiatan dan aturan bisnis yang terkait harus dipahami dan didokumentasikan dengan baik dengan standar pemodelan yang baku
- **Kesamaan Pemahaman.** Mengurangi resiko multitafsir terhadap ketentuan proses bisnis tertentu sehingga semua pihak yang terkait di KPK mempunyai pemahaman yang sama terhadap proses bisnis yang telah ditentukan

Functional Decomposition Diagram

Finance Division

Human Resource Division

Development Division

Training Division

Marketing Division

SUPPORTING ACTIVITIES

Pinjaman Karyawan

Penerimaan Magang

Penggajian Karyawan

Penerimaan Pegawai

Belanja Bulanan

Pengajuan Cuti

Pembayaran Honor Instruktur

Pengunduran Diri

PRIMARY ACTIVITIES

Pengembangan
Custom Software

Maintenance
Custom Software

Pengembangan
Generic Software

Maintenance
Generic Software

Pelaksanaan Training

Pelaksanaan Ujian

Maintenance Infrastruktur

Pemasaran Training

Monitoring Tender

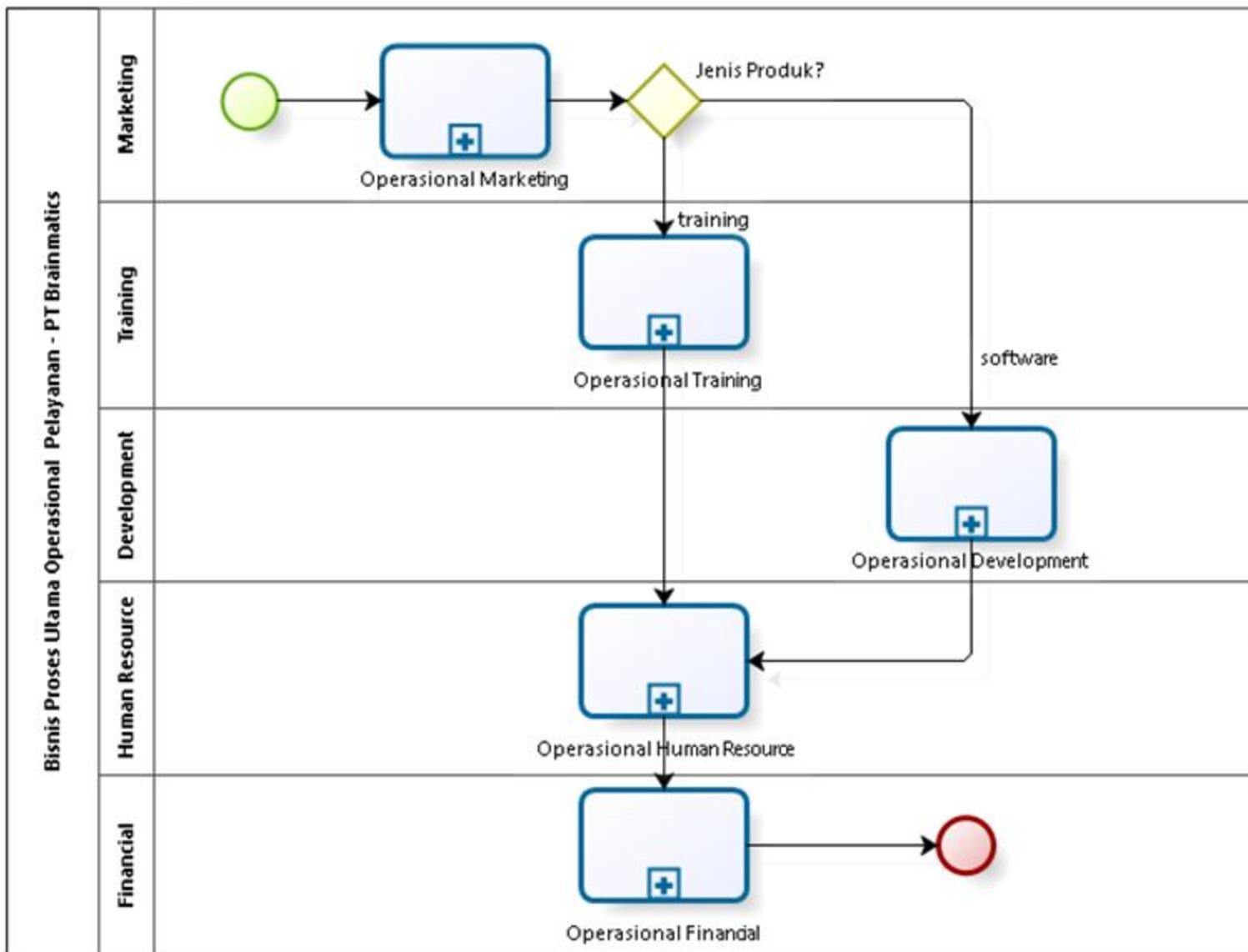
Business Interaction Matrix

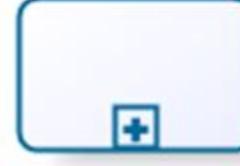
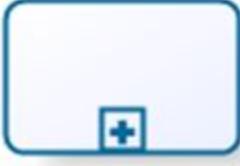
	Finance Division	Human Resource Division	Development Division	Training Division	Marketing Division
Finance Division		Request budget	Request budget	Request budget	Request budget
Human Resource Division	Apply for staffing issues		Apply for staffing issues	Apply for staffing issues	Apply for staffing issues
Development Division	Request systems and maintenance	Request systems and maintenance		Request systems and maintenance	Request systems and maintenance
Training Division	Request infrastructure maintenance	Request infrastructure maintenance	Request infrastructure maintenance		Request product knowledge
Marketing Division			Apply for software product marketing	Apply for training product marketing	

Organization/Actor Catalog

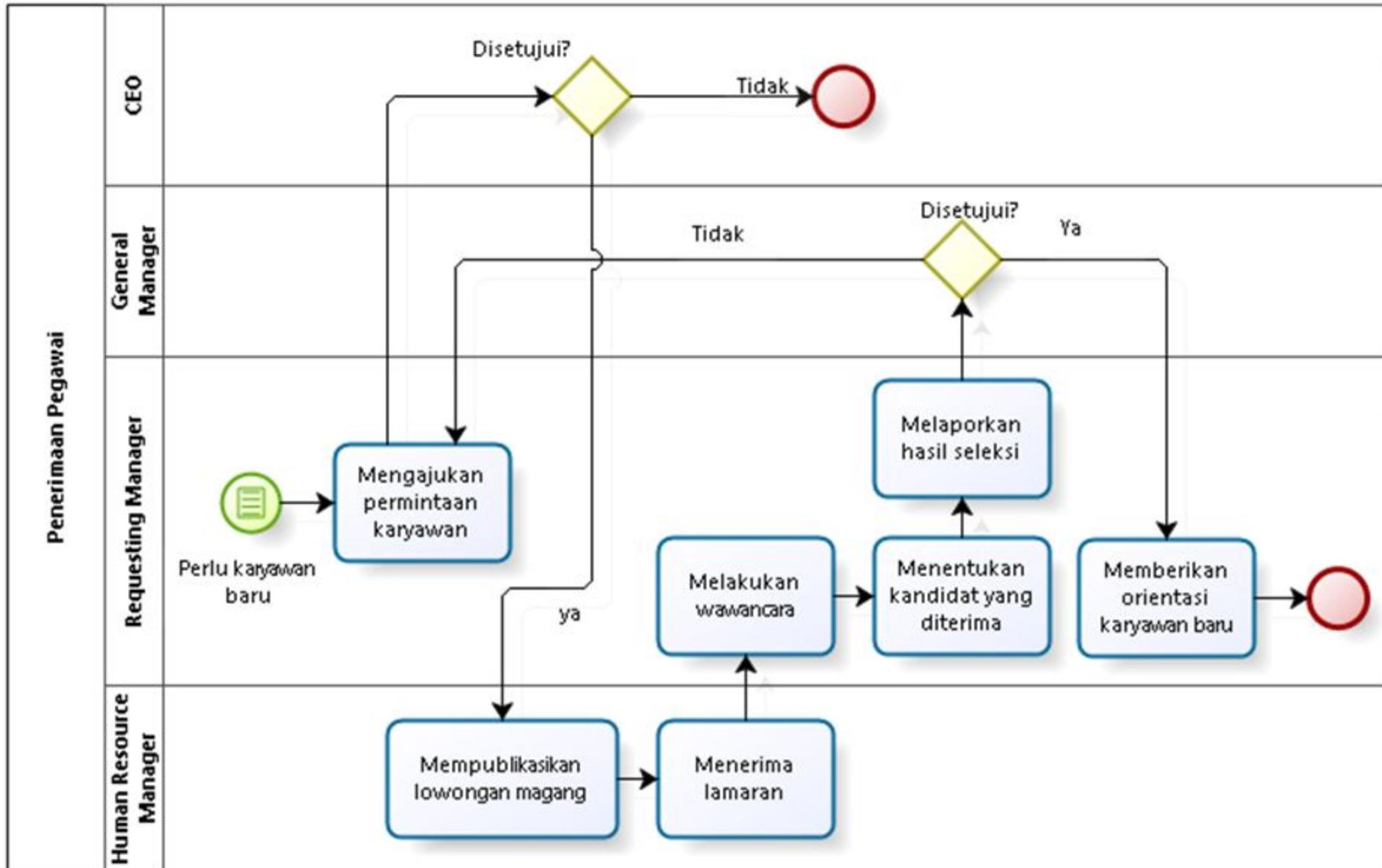
Organization	Actor
Board	CEO
	General Manager
Finance Division	Financial Manager
Human Resource Division	Human Resource Manager
	Employee
	Assistant
Development Division	Development Manager
	Project Manager
	Programmer
Training Division	Training Manager
	Trainer
	Participant
Marketing Division	Marketing Manager
	Marketer
	Customer

General Business Process Diagram (level 1)



Proses Bisnis Utama PT Brimatics	Marketing Division				
	Training Division				
		Pelaksanaan Training	Pelaksanaan Ujian Sertifikasi	Pemeliharaan Infrastruktur	
	Software Division				
		Pengembangan Software Custom	Pengembangan Software Generik	Maintenance Software Custom	Maintenance Software genetik
Human Resource Division					
		Penerimaan Pegawai	Penerimaan Magang	Pengajuan Cuti	Pengajuan Pengunduran Diri
Financial Division					
		Pembayaran Gaji Karyawan	Pembayaran Honor Instruktur	Belanja Bulanan	Penagihan Pembayaran

HRD Level 1: Penerimaan Pegawai





C. Application Architecture

Brainmatics Enterprise Architecture (Customized)

Preliminary

Architecture Principles

Architecture Goals

Architecture Vision

Vision and Mission

Value Chain Diagram

Business Model Canvas

Solution Concept Diagram

Organization Decomposition Diagram

Stakeholder Map Matrix

Business Architecture

Business Principles

Functional Decomposition Diagram

Business Interaction Matrix

Organizational/Actor Catalog

General Business Process Diagram

Business Process Diagram

Data Architecture

Data Principles

Data Entity/Business Function Matrix

Application/Data Matrix

Logical Data Diagram

Application Architecture

Application Principles

Application Portfolio Catalog

Application Use Case Diagram

Technology Architecture

Technology Principles

Technology Standard Catalog

Application/Technology Matrix

Environment and Location Diagram

Text

Diagram

Matrix

Catalog



Application Principles

1. **Keselarasan Kebutuhan Aplikasi.** Aplikasi harus dikembangkan berdasarkan kebutuhan pengguna dan harus memiliki manfaat yang dapat diukur secara kuantitatif untuk mencapai tujuan perusahaan
2. **Independensi Aplikasi.** Aplikasi harus independen terhadap pilihan teknologi tertentu, mengikuti standar industri, arsitektur terbuka, dan oleh karenanya dapat dioperasikan pada beragam platform terbuka
3. **Penggunaan Kembali Aplikasi.** Pengembangan aplikasi harus mempertimbangkan kembali penggunaan aplikasi, sistem dan infrastruktur yang ada sebelum berinvestasi kepada solusi baru. Re-use sebelum membeli, membeli sebelum membangun.
4. **Dokumentasi Aplikasi.** Aplikasi harus memiliki dokumentasi yang menyeluruh dimulai dari tahapan planning, analisis, desain dan implementasi, sehingga memudahkan modifikasi dan pengembangan di masa depan



Application Portfolio Catalog

Organization	Application
Finance Division	Finance Module
Human Resource Division	Human Resource Module
Development Division	Project Management Module
Training Division	Training Management Module
Marketing Division	Customer Relationship Module

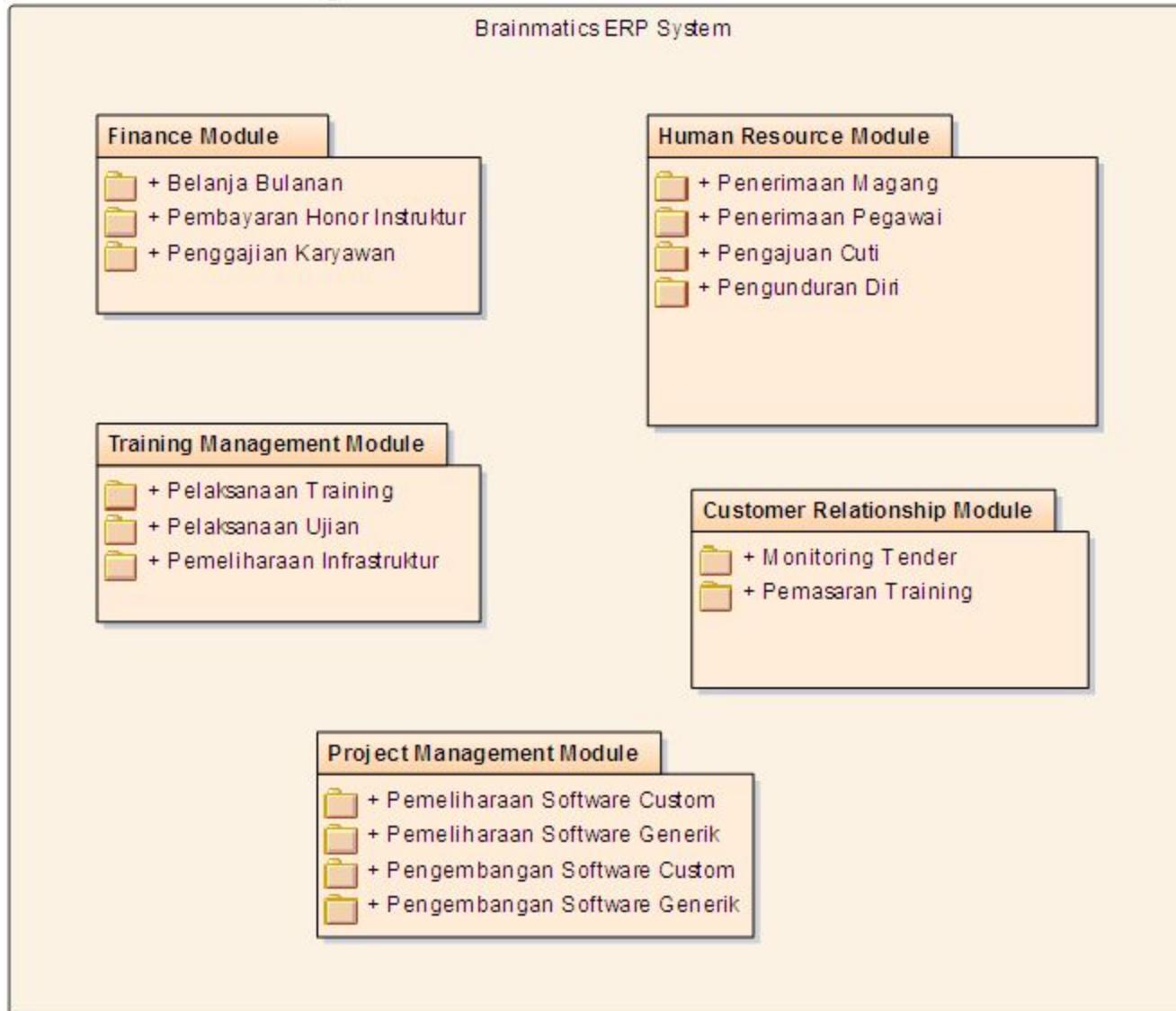
Application Portfolio Catalog

Organization	Application	Nilai Kelayakan	Komentar dan Saran
All Units	App 1	1	Banyak bug dan ga dibutuhkan
	App 2	4	Ribet pakainya
	App 3	3	Sebaiknya ditambahi fitur abc
Unit A	App 4		
	App 5		
	App 6		
Unit B	App 7		
Unit C	App 8		
	App 9		
Unit D	App 10		

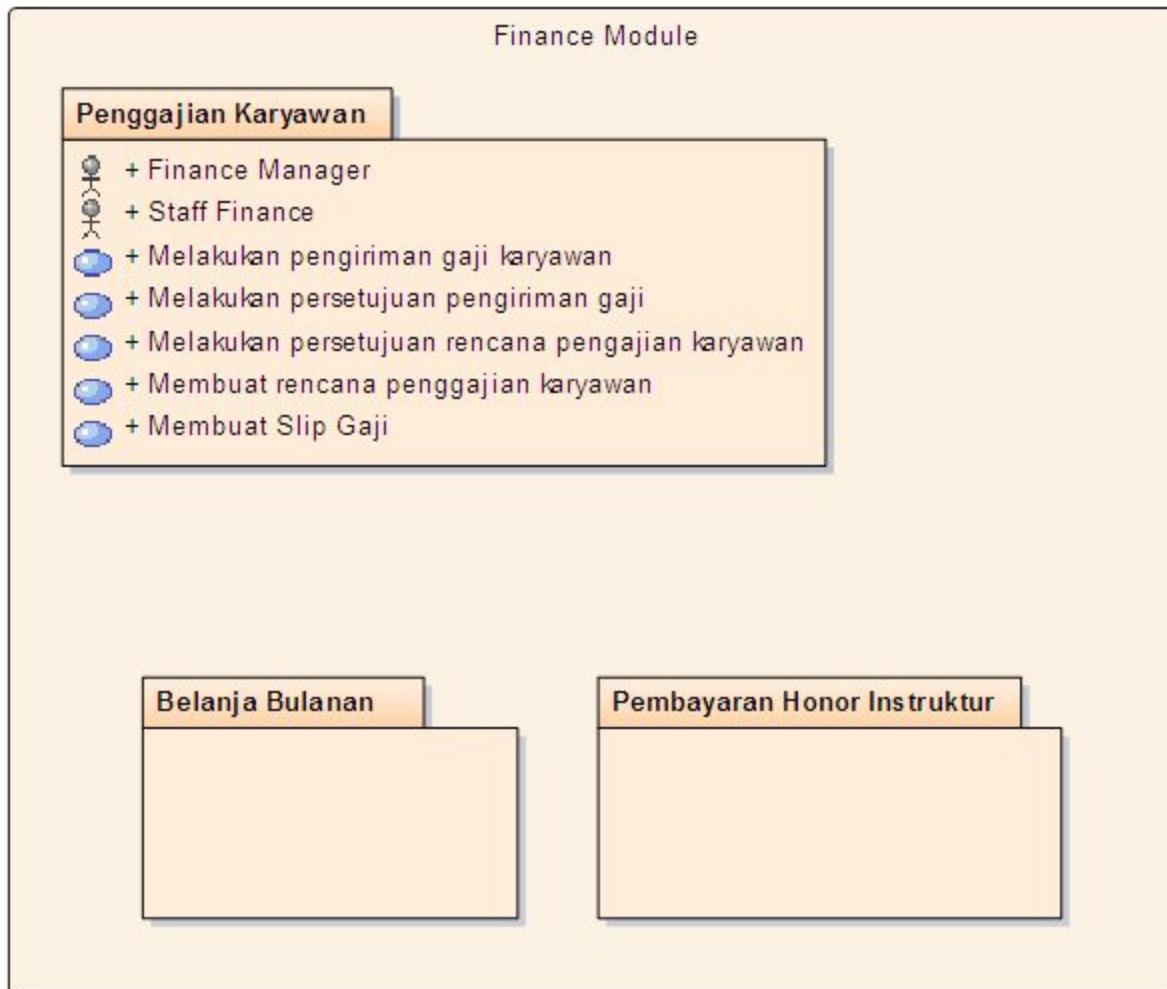
Gap Analysis

Target → Architecture Baseline Architecture ↓	Video Conferencing Services	Enhanced Telephony Services	Mailing List Services	Eliminated Services ↓
Broadcast Services				Intentionally eliminated
Video Conferencing Services	Included			
Enhanced Telephony Services		Potential match		
Shared Screen Services				Unintentionally excluded - a gap in Target Architecture
New →		Gap: Enhanced services to be developed or produced	Gap: To be developed or produced	

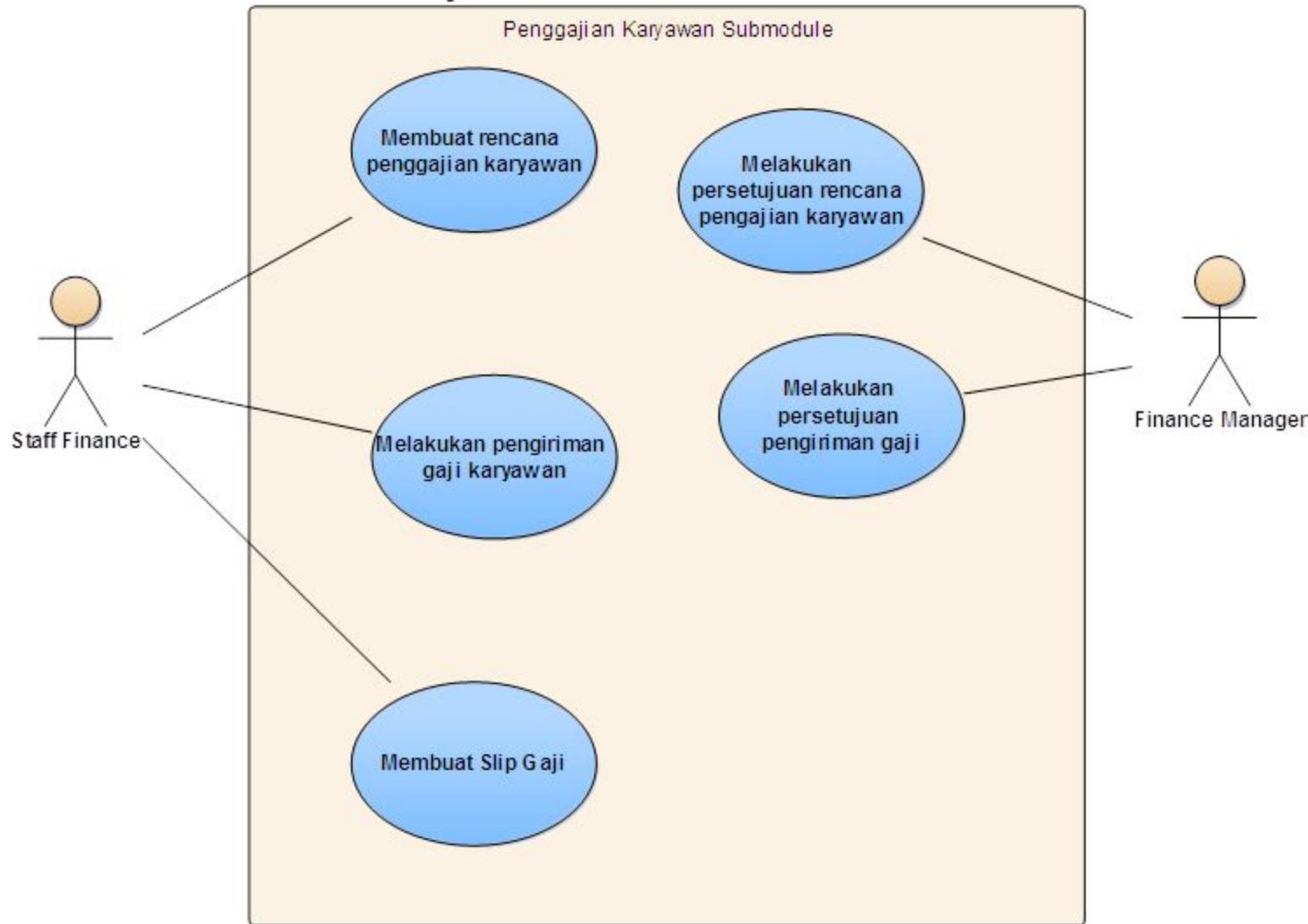
Application Use Case Diagram: Global Package



Finance Module



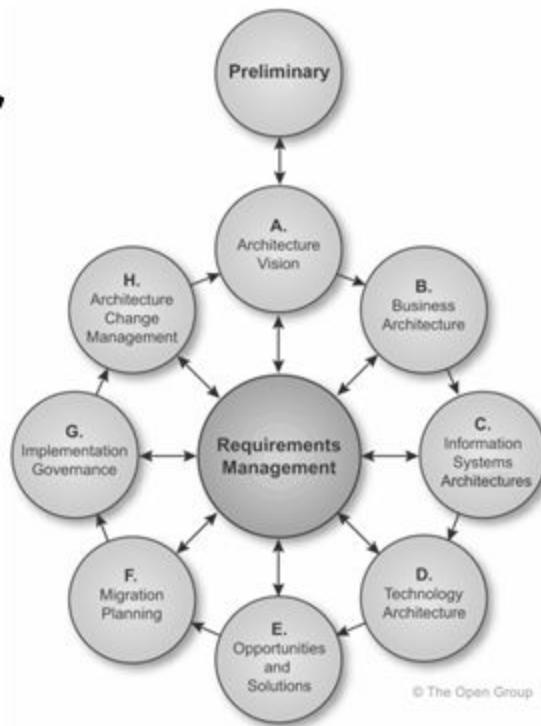
Penggajian Karyawan (Submodule)



Tugas

- Rapikan lagi **proses bisnis utama** dari direktorat kita
- Bisa menggunakan Adhoc proses atau proses biasa (Lihat General Business Process Diagram)
- Selesaikan beberapa proses bisnis yang kita pahami dengan menggunakan berbagai notasi BPMN yang sudah kita pelajari
- Prioritaskan proses bisnis utama dan yang menurut kita relatif sulit digambarkan dengan BPMN → untuk direview bersama-sama

C2. Data Architectur



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Data Principles

1. **Data Creation:** All enterprise data should be captured once at the point of its creation
2. **Data Identifiers:** Every object in the enterprise will contain a globally unique identifier. That identifier will be in the form of the Universally Unique Identifier (UUID)
3. **Standard Data Elements:** The use of standard data elements of universal fields will be used across the Enterprise for new development and system enhancements
4. **Spatial Information is a valued investment and asset:** Spatial information can accelerate and improve decision-making, increase accountability, and improve services. Information must be shared to maximize effective decision making
5. **Information Access based on access levels:** Easy and timely access to data and information based on the access levels for various authorized personnel needs to be the rule rather than the exception

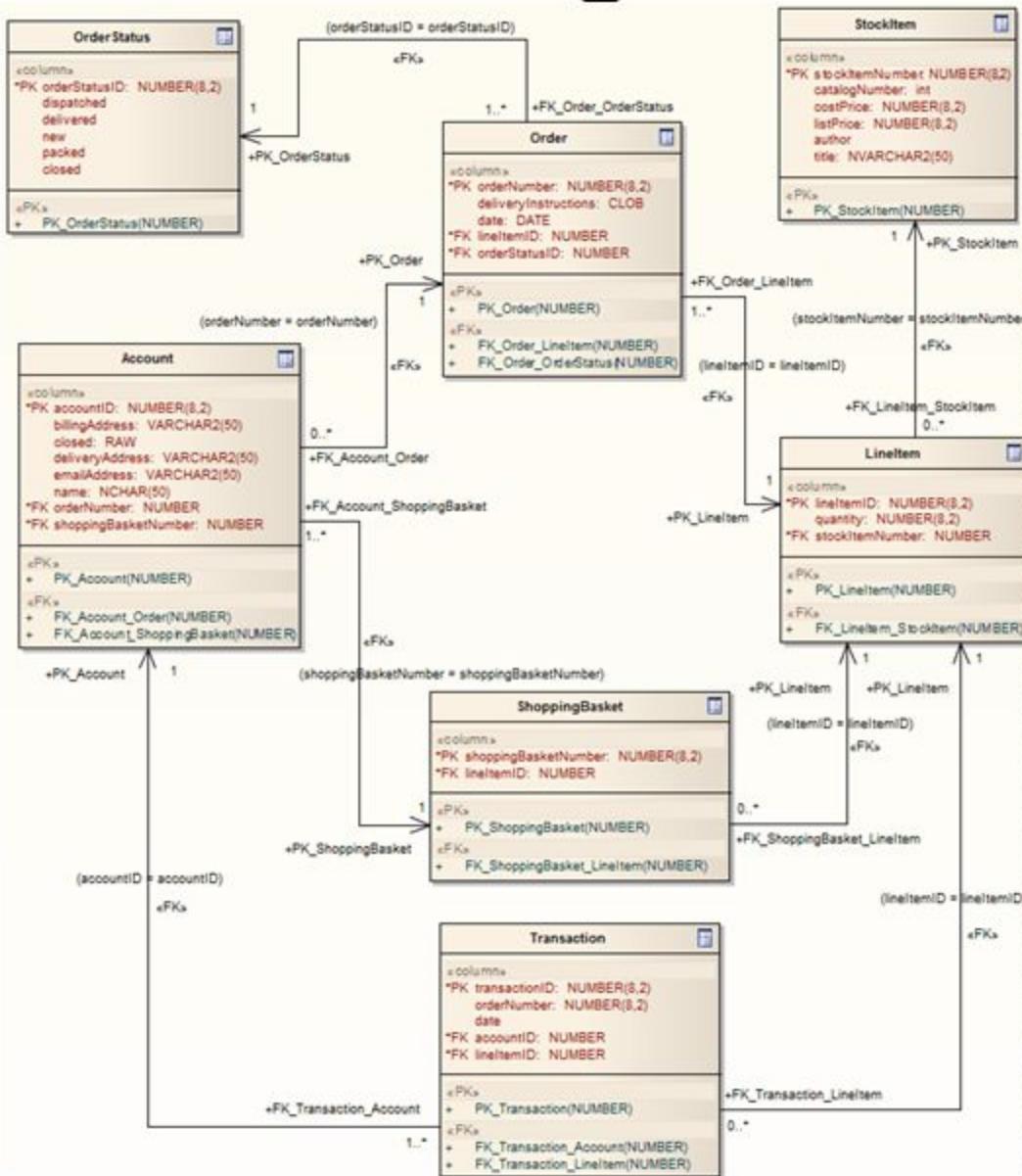
Application/Data Matrix

Module	Finance Module	Human Resource Module	Project Management Module	Training Management Module	Customer Relationship Module
DB - Entity					
HRM - Karyawan	R	CRUD	R		
PM - Project			CRUD		
TM - Peserta	R			CRUD	R
TM – Instruktur	R	R		CRUD	R
.....

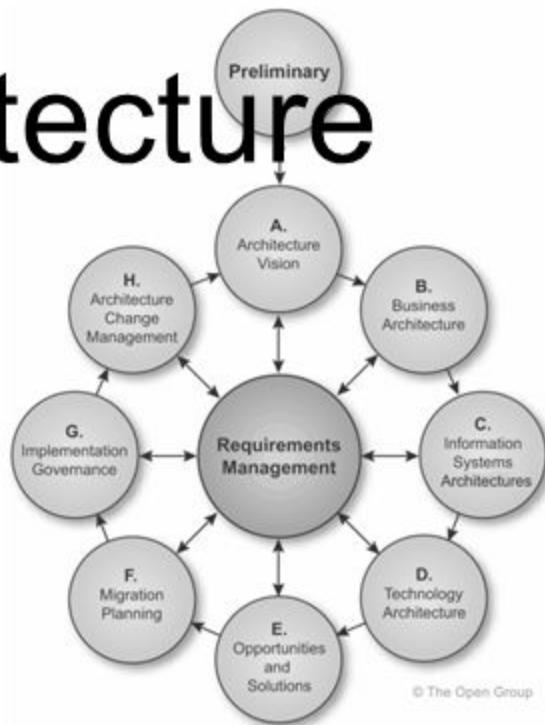
Data Entity/Business Function Matrix

Module	Business Process	Organization
DB - Entity		
HR - Karyawan	Pengajuan Cuti	Human Resource Division
PM - Project	Maintenance Software Custom	Development Division
TM - Peserta	Pelaksanaan Training	Training Division
TM – Instruktur	Persiapan Training	Training DIvision
.....

Logical Data Diagram



D. Technology Architecture



Brainmatics Enterprise Architecture (Customized)

Preliminary

Architecture Principles

Architecture Goals

Architecture Vision

Vision and Mission

Value Chain Diagram

Business Model Canvas

Solution Concept Diagram

Organization Decomposition Diagram

Stakeholder Map Matrix

Business Architecture

Business Principles

Functional Decomposition Diagram

Business Interaction Matrix

Organizational/Actor Catalog

General Business Process Diagram

Business Process Diagram

Data Architecture

Data Principles

Data Entity/Business Function Matrix

Application/Data Matrix

Logical Data Diagram

Application Architecture

Application Principles

Application Portfolio Catalog

Application Use Case Diagram

Technology Architecture

Technology Principles

Technology Standard Catalog

Application/Technology Matrix

Environment and Location Diagram

Text

Diagram

Matrix

Catalog



Technology Principles

1. **Separation of Concerns:** Following the “Modularity” and “Abstraction” approach for the developing the technical features
2. **Systems and Network:** All the system and network management application within Brainmatics should be consolidated and integrated for effective and efficient usage. Should ensure business continuity
3. **Usability & Look-Feel:** The look and feel must be easy to use and consistent among all applications
4. **Security:** The computing system's assets can be read only by authorized parties and each of the transaction must be traceable. All the resources / services available within Brainmatics must be registered and maintained with Location and Directory service
5. **Business Continuity:** Transactions must roll back when the transaction fails and ensure business continuity. Also, monitor performance of the system and network continuously

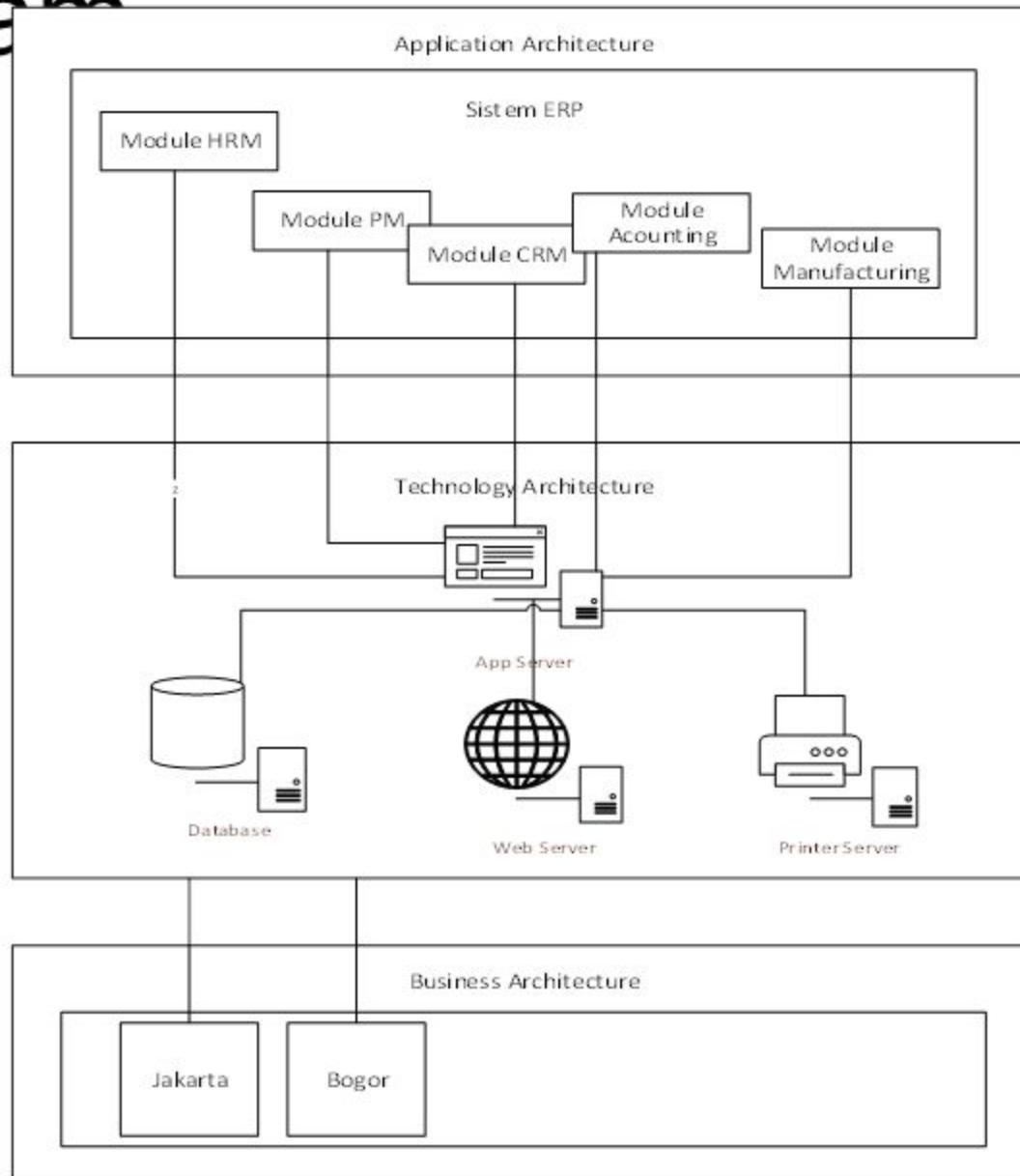
Technology Standard Catalog

No	Technology
1	RUP shall be used as the formal methodology for Brainmatics
2	UML shall be used as the standard notation
3	Sparx EA shall be used to facilitate the software engineering processes
4	Java shall be the programming language
5	Use JBoss 5.0 as the Application Server
6	Browser: IE 4.0 +, Mozilla Firefox 1.0 HTML: 4.0 + Web 2.0
7	Script Support: JavaScript 1.1
8	Use IBM System x3850 M2 as the host server
9	Symantec Network Security and Symantec AntiVirus for Security
10	Oracle 10g for Database
11	Hibernate Framework
12	XML for Web Services
13	Lightweight Directory Access Protocol (LDAP)
14	SSL,PKI, Single Sign On

Application/Technology Matrix

Module	Finance Module	Human Resource Module	Project Management Module	Training Module	Customer Relationship Module
Technology					
JBOSS App Server	X				
Oracle DBMS	X	X	X	X	X
Web Server		X			X
Javascript		X			X
OpenERP	X	X	X	X	X
.....

Environment and Location Diagram



Tugas

- Asumsikan bahwa kita diminta untuk **mengembangkan enterprise architecture** di organisasi tempat kita bekerja
- Kita memutuskan menggunakan TOGAF sebagai framework
- Mulai lakukan tahapan TOGAF ADM dengan dimulai dari tahapan **Preliminary** dengan menyusun artifact:
 1. Architecture Principle
 2. Architecture Goal
- Lanjutkan dengan tahapan **Architecture Vision** dengan artifact:
 1. Organization Decomposition Diagram
 2. Value Chain Diagram
 3. Business Model Canvas
 4. Solution Concept Diagram

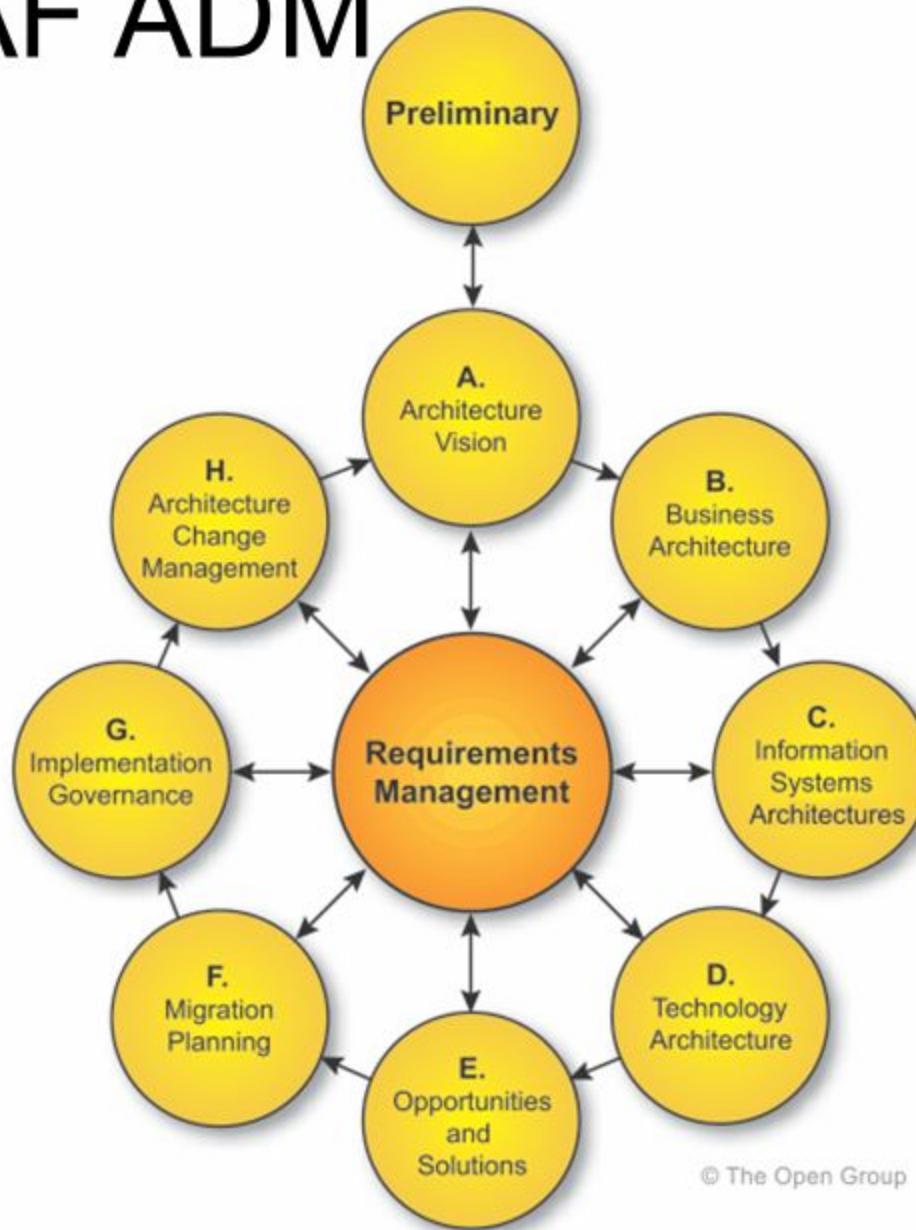
Tugas

- Lanjutkan dengan tahapan pembuatan **Business Architecture** dengan artifact:
 1. Business Principle
 2. Functional Decomposition
 3. Business/Interaction Matrix
 4. Organizational Actor Catalog
 5. General Business Process Diagram
 6. Business Process Diagram



6.2 Balasubramanian - EA Child Wear

TOGAF ADM



Preliminary		Architecture Vision	
Catalogs		Core Diagrams	
Principles Catalog	Stakeholder Map Matrix	Value Chain Diagram	Solution Concept Diagram
Business Architecture	Data Architecture	Application Architecture	Technology Architecture
Catalogs	Catalogs	Catalogs	Catalogs
Organization/Actor Catalog	Data Entity/Data Component Catalog	Application Portfolio Catalog	Technology Standards Catalog
Driver/Goal/Objective Catalog		Interface Catalog	Technology Portfolio Catalog
Role Catalog			
Business Service/Function Catalog			
Location Catalog			
Process/Event/Control/ Product Catalog			
Contract/Measure Catalog			
Matrices	Matrices	Matrices	Matrices
Business Interaction Matrix	Data Entity/Business Function Matrix	Application/Organization Matrix	Application/Technology Matrix
Actor/Role Matrix	Application/Data Matrix	Role/Application Matrix	
Core Diagrams			
Business Footprint Diagram	Conceptual Data Diagram	Application Communication Diagram	Environments and Locations Diagram
Business Service/Information Diagram	Logical Data Diagram	Application and User Location Diagram	Platform Decomposition Diagram
Functional Decomposition Diagram	Data Dissemination Diagram	Application Use-Case Diagram	
Product Lifecycle Diagram			
Extension Diagrams	Extension Diagrams	Extension Diagrams	Extension Diagrams
Goal/Objective/Service Diagram	Data Security Diagram	Enterprise Manageability Diagram	Processing Diagram
Business Use-Case Diagram	Data Migration Diagram	Process/Application Realization Diagram	Networked Computing/ Hardware Diagram
Organization Decomposition Diagram	Data Lifecycle Diagram	Software Engineering Diagram	Communications Engineering Diagram
Process Flow Diagram		Application Migration Diagram	
Event Diagram		Software Distribution Diagram	
Requirements Management		Opportunities and Solutions	
Catalogs		Core Diagrams	
Requirements Catalog		Project Context Diagram	
		Benefits Diagram	

Infrastructure
Consolidation Extension

Governance
Extension

Motivation
Extension

Process Modeling
Extension

Data Modeling
Extension

Services Extension

Core Content



TOGAF ADM and Artifacts

1. Preliminary

1. Architecture Principles
2. Architecture Goals
3. Solution Concept Diagram

2. Architecture Vision

1. Organization Decomposition Diagram
2. Stakeholder Map Matrix
3. Value Chain Diagram
4. Solution Concept Diagram

3. Business Architecture

1. Business Principles
2. Functional Decomposition Diagram
3. Business Interaction Matrix
4. Organization/Actor Catalog
5. Business Use Case Diagram

4. Data Architecture

1. Data Principles
2. Data Entity/Business Function Matrix
3. Application/Data Matrix
4. Logical Data Diagram

5. Application Architecture

1. Application Principles
2. Application Portfolio Catalog
3. Application Use Case Diagram

6. Technology Architecture

1. Technology Principles
2. Technology Standard Catalog
3. Application/Technology Matrix
4. Environment and Location Diagram

7. Opportunities and Solution

1. Opportunities and Solution Catalog



1. Preliminary



Architecture Principles

1. Deliver the most good to the broadest range of IT users
2. Implement Enterprise-wide EA. EA compliance for every program and project
3. The planning and management of Enterprise Architecture must be unified and have a planned evolution that is governed across the enterprise.
4. Information Is an Enterprise Asset. Focus on Boundaryless Information Flow.
5. Facilitate the sharing of information to accelerate and improve overall decision-making
6. Reduce integration and interoperability complexity and increase agility for enterprise change
7. Reuse common solutions. Practice Modular Solutions



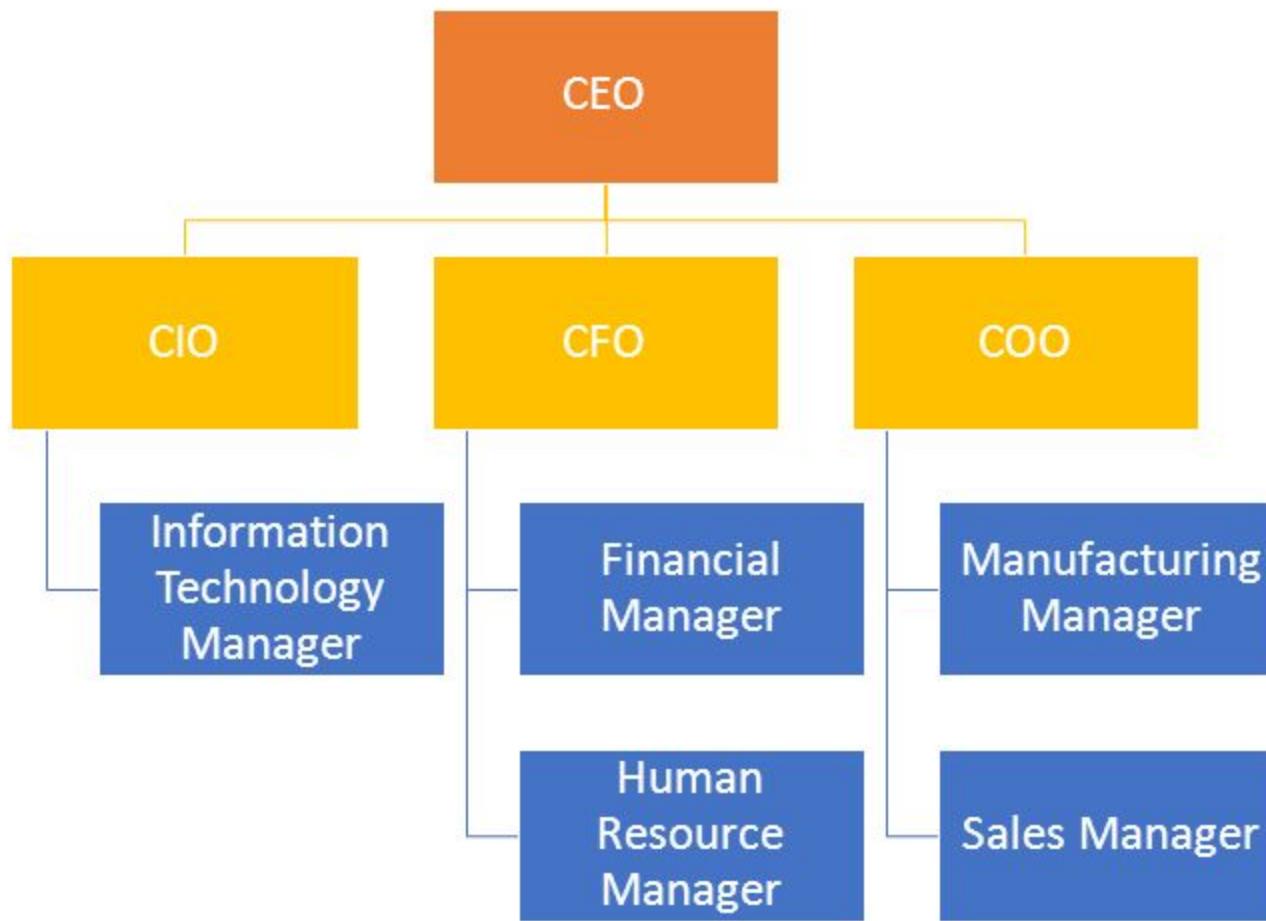
Architecture Goals

1. Enable effective and efficient communication with the users/ management/customers/ suppliers
2. To leverage the existing business processes
3. Reduce overall cost – Production & Overhead
4. Use the power of internet to widen existing customer base
5. To improve service levels to the customers
6. Improvise Supply Chain Management Process
7. Minimize processes and system redundancies



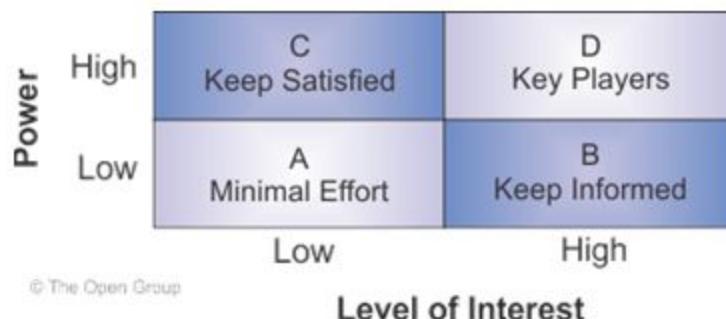
2. Architecture Vision

Organization Decomposition Diagram



Stakeholder Map Matrix

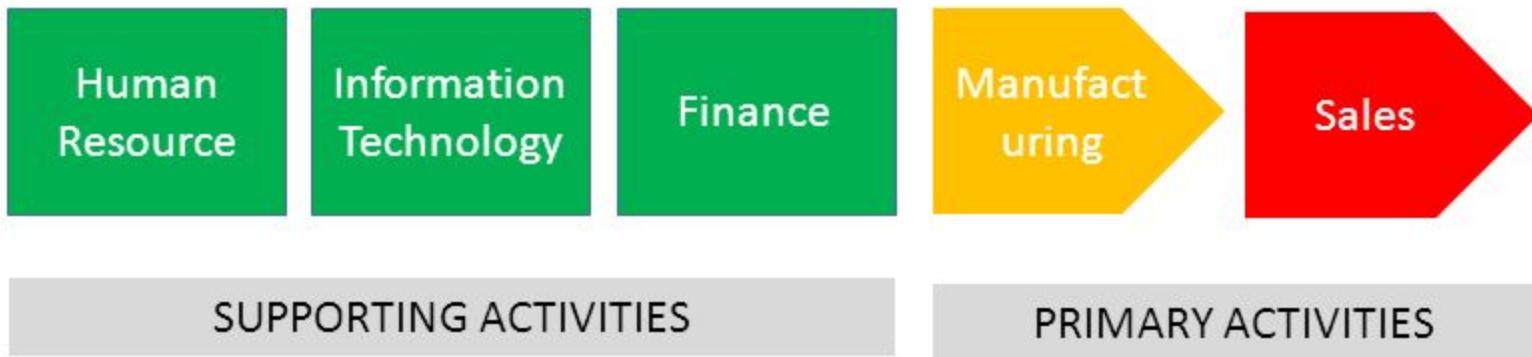
Stakeholder	Key Concern	Class	Artifacts
CxO	The high-level drivers, goals, and objectives of the organization, and how these are translated into an effective process and IT architecture to advance the business.	Keep Satisfied	1. Value Chain Diagram 2. Functional Decomposition Diagram
Human Resource Manager		Keep Satisfied	
Information Technology Manager		Key Players	
Financial Manager		Keep Satisfied	
Manufacturing Manager		Keep Informed	
Sales Manager		Keep Informed	



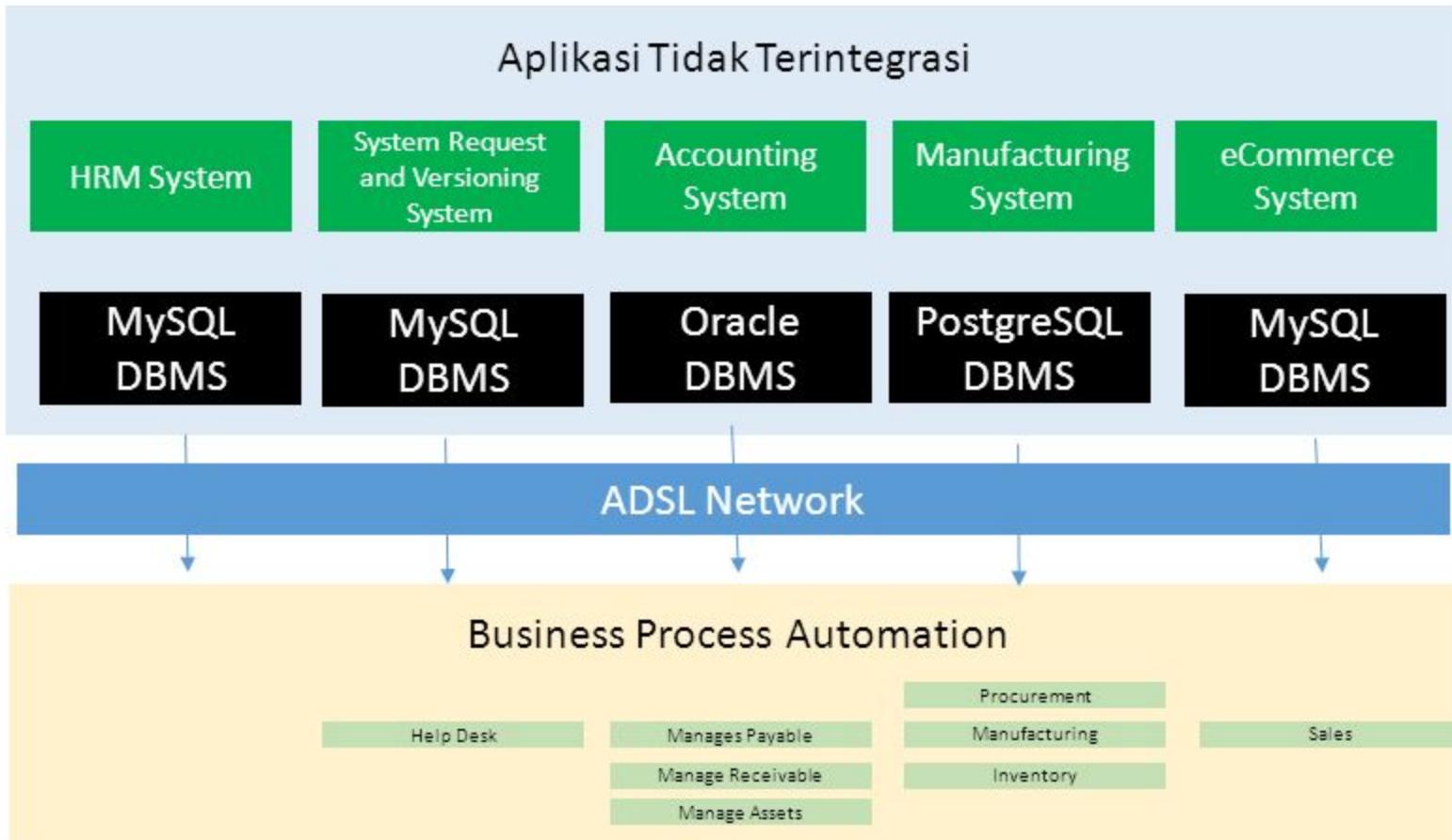
Baseline Value Chain Diagram



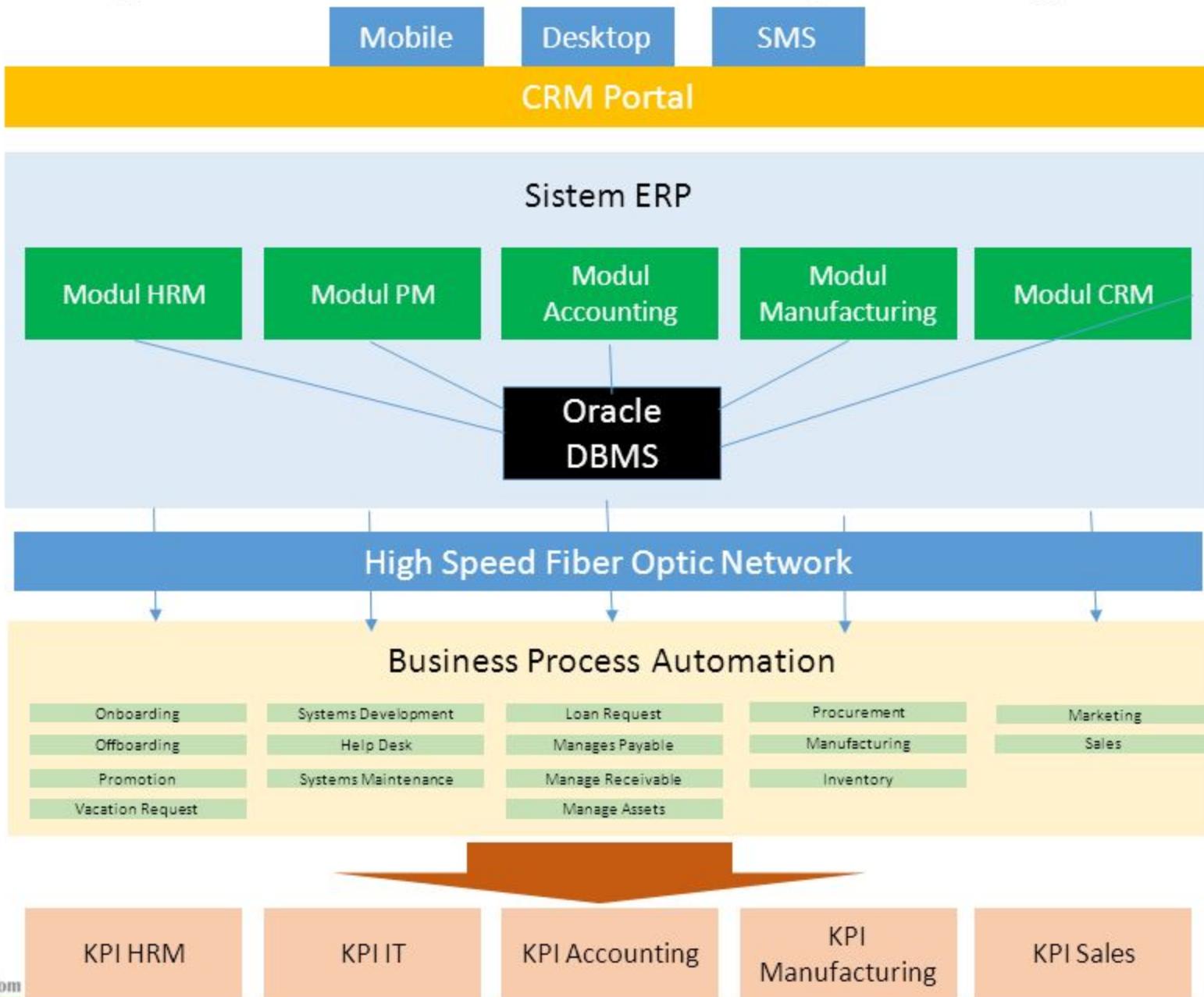
Target Value Chain Diagram



Baseline Solution Concept Diagram



Target Solution Concept Diagram





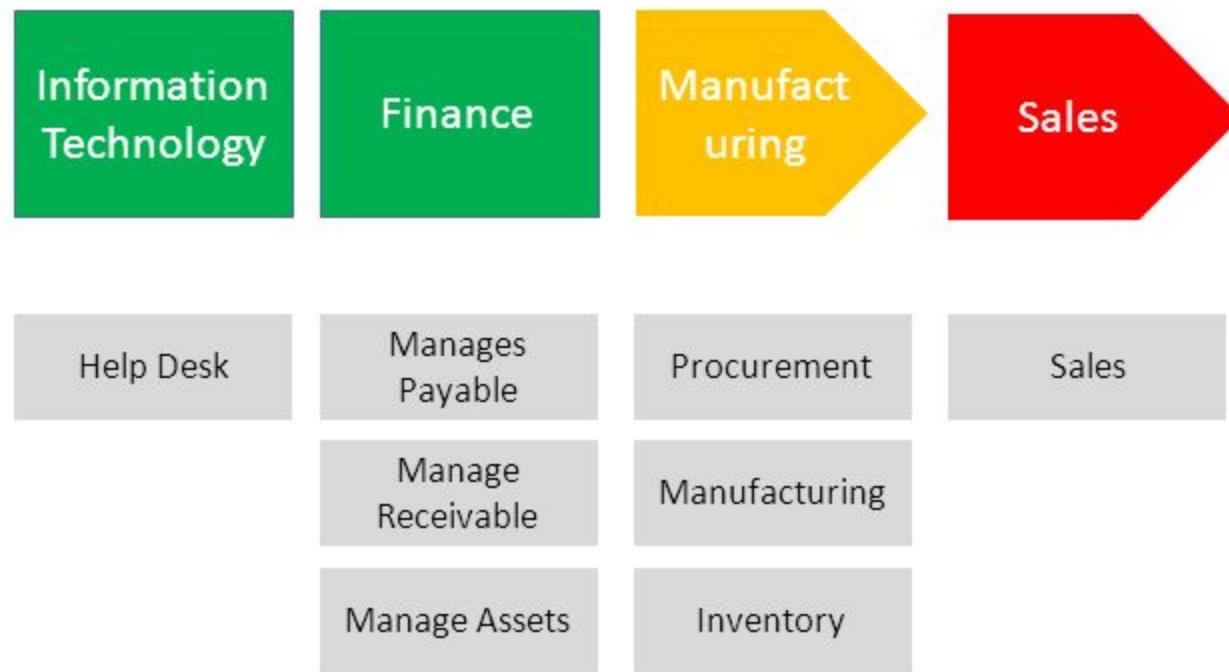
3. Business Architecture



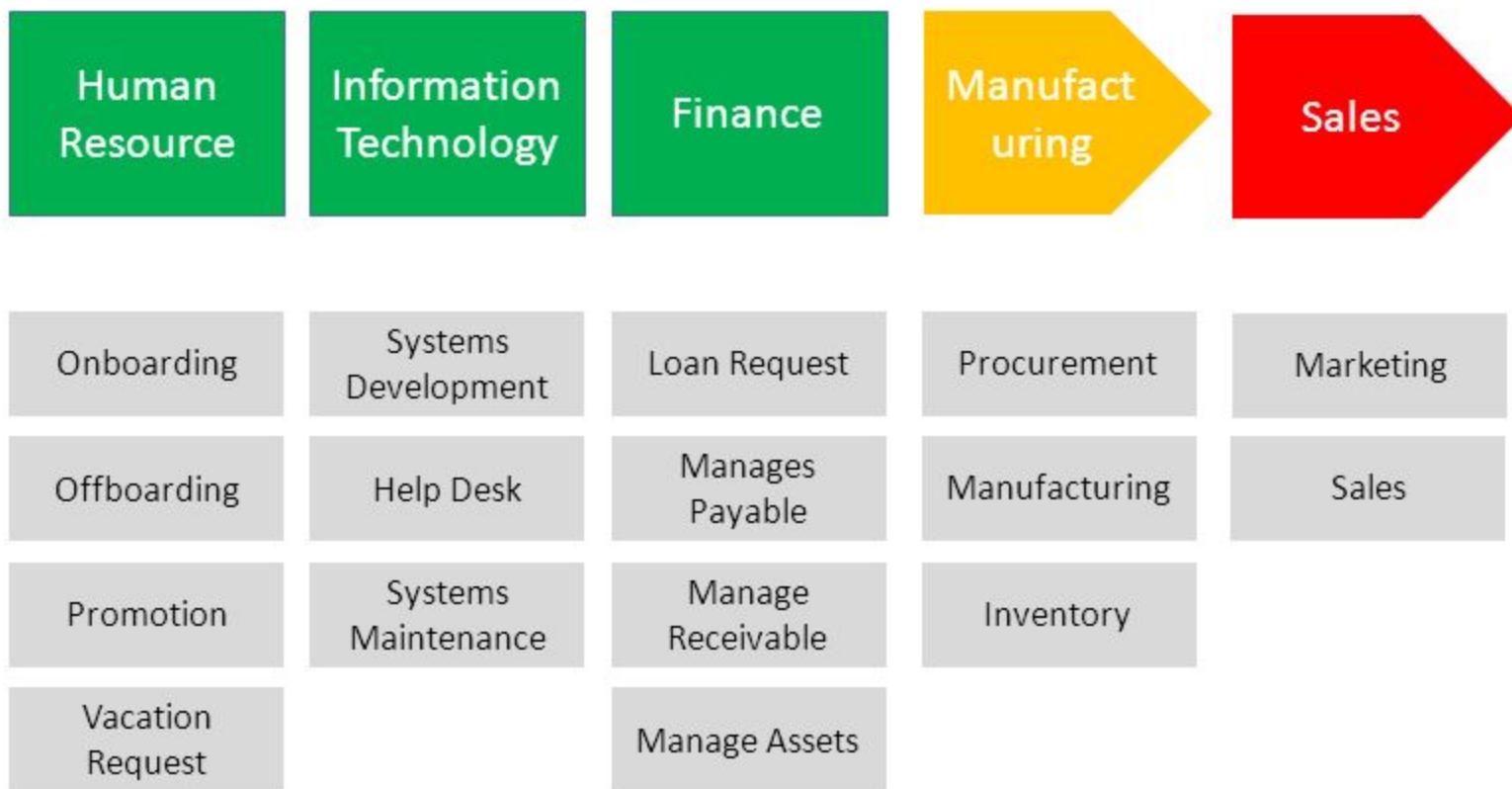
Business Principles

1. The entire organization own and implements business processes and the IT systems that supports them.
2. Business strategy, supported by well-defined business objectives and justified business value, shall drive the IT investments of Child-Wear.
3. Business process re-engineering should be easily possible through appropriate use of technology.
4. Business processes shall be automated where technology allow, to reduce processing time and cost and increase per process throughput.
5. Child-Wear provides secure "anytime / anywhere" business services to its customer community.
6. Child-Wear operations are maintained in spite of any system disruption.
7. Information management processes must comply with all relevant laws, policies and regulations.
8. Enable Interoperability with suppliers.
9. Provide effective and efficient customer services.

Functional Decomposition Diagram (Baseline)



Functional Decomposition Diagram (Target)





Business Interaction Matrix

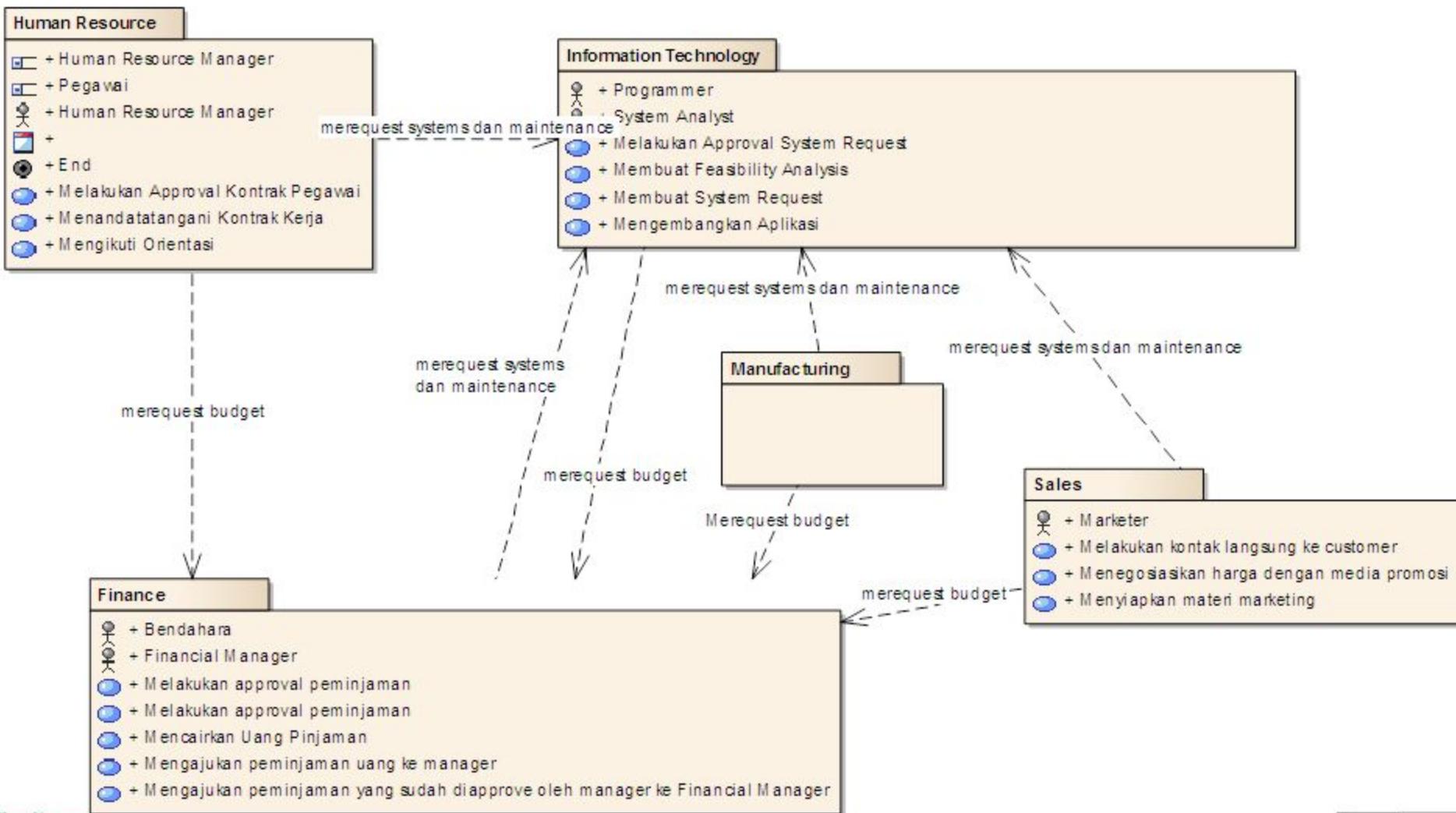
	Human Resource	Information Technology	Finance	Manufacturing	Sales
Human Resource					
Information Technology	Request systems and maintenance		Request systems and maintenance	Request systems and maintenance	Request systems and maintenance
Finance	Request budget	Request budget		Request budget	Request budget
Manufacturing					Request product knowledge
Sales					



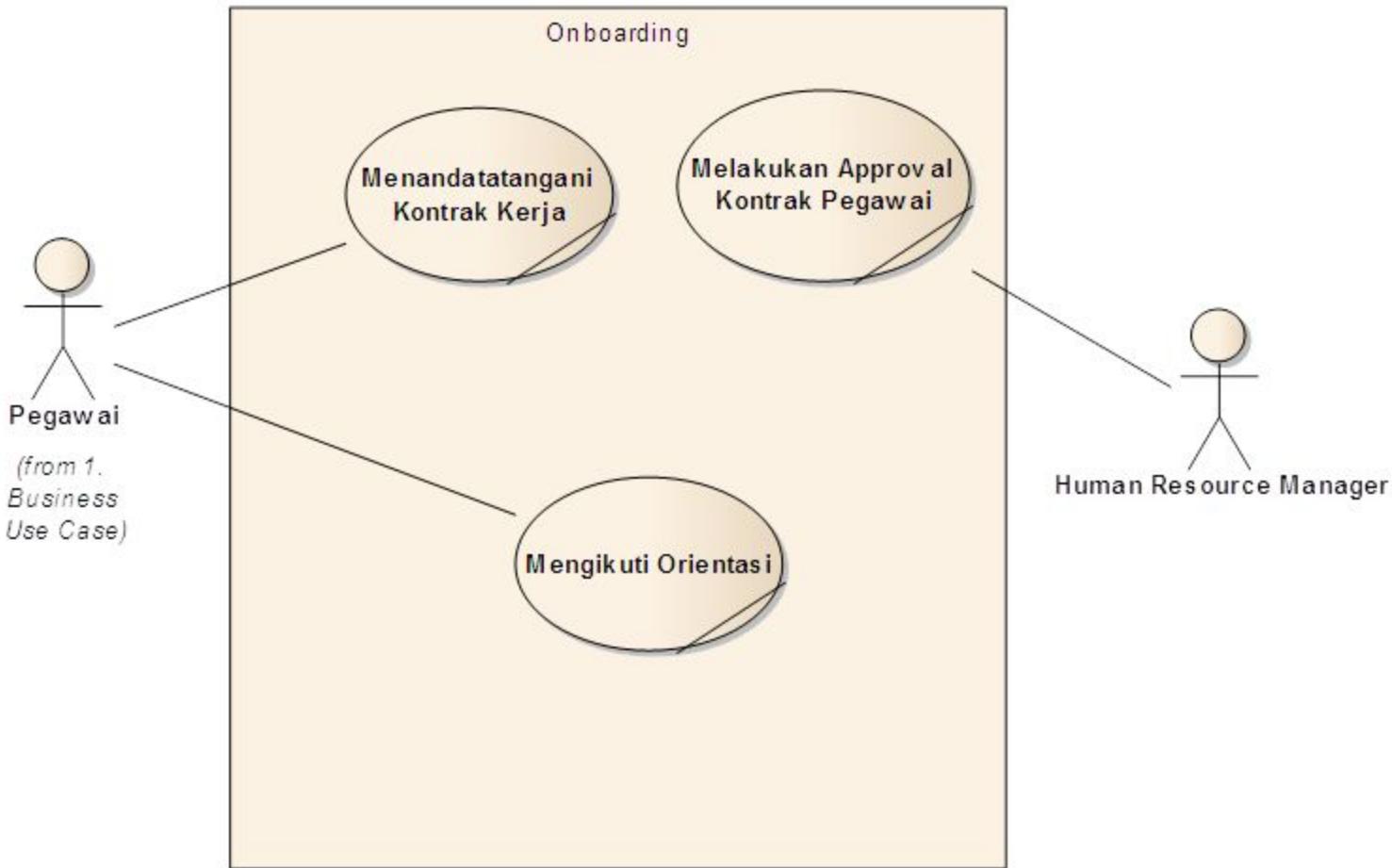
Organization/Actor Catalog

Organization	Actor
Human Resource	Human Resource Manager
	Trainer
	Psycholog
Information Technology	Information Technology Manager
	System Analyst
	Programmer
	Tester
	Teknisi
Finance	Financial Manager
	Bendahara
Manufacturing	Manufacturing Manager
	Engineer
Sales	Sales Manager
	Marketer

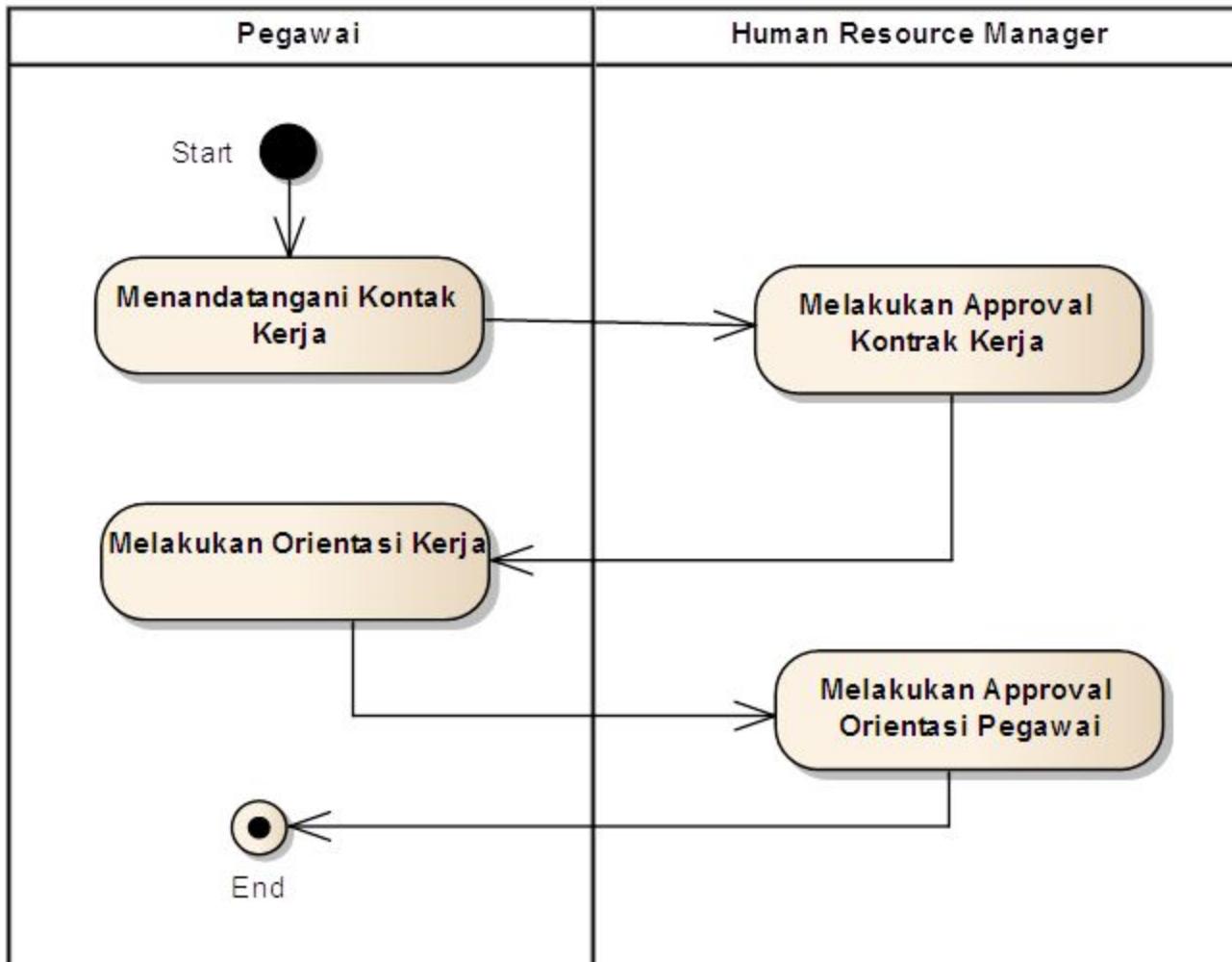
Business Use Case Diagram: Global Package



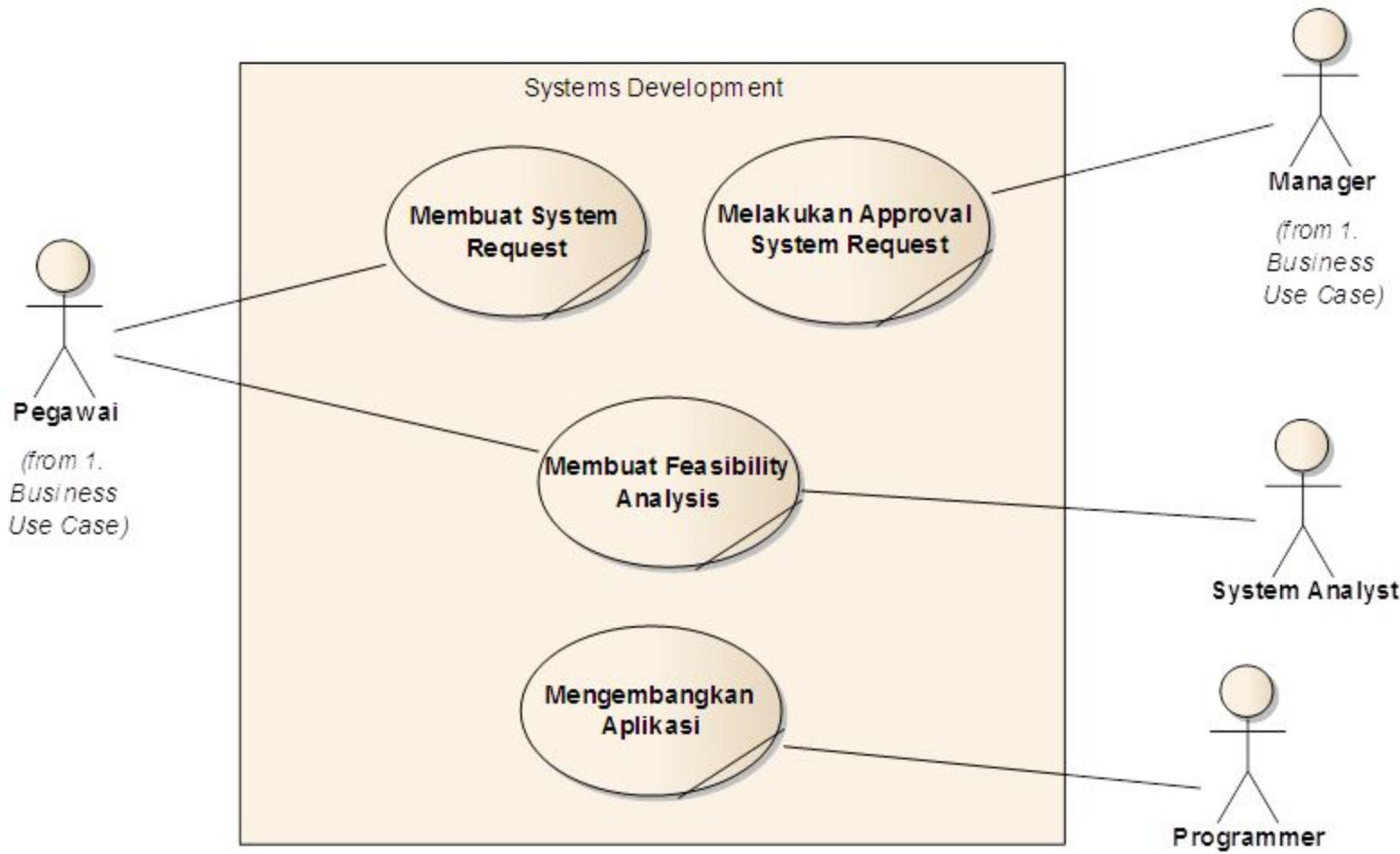
Business Use Case Diagram: Human Resource - Onboarding



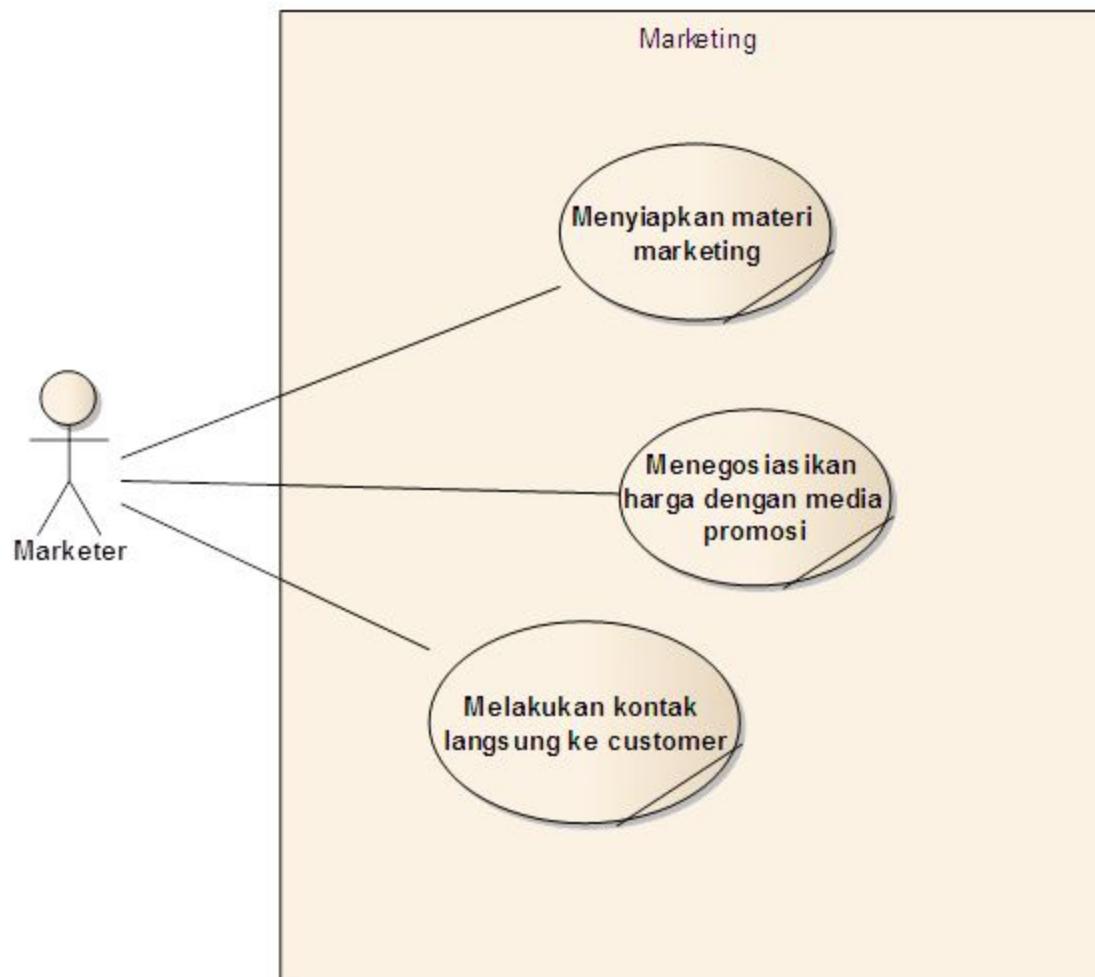
Business Use Case Diagram: Human Resource - Onboarding



Business Use Case Diagram: Information Technology – Systems Development



Business Use Case Diagram: Sales - Marketing





4. Application Architecture



Application Principles

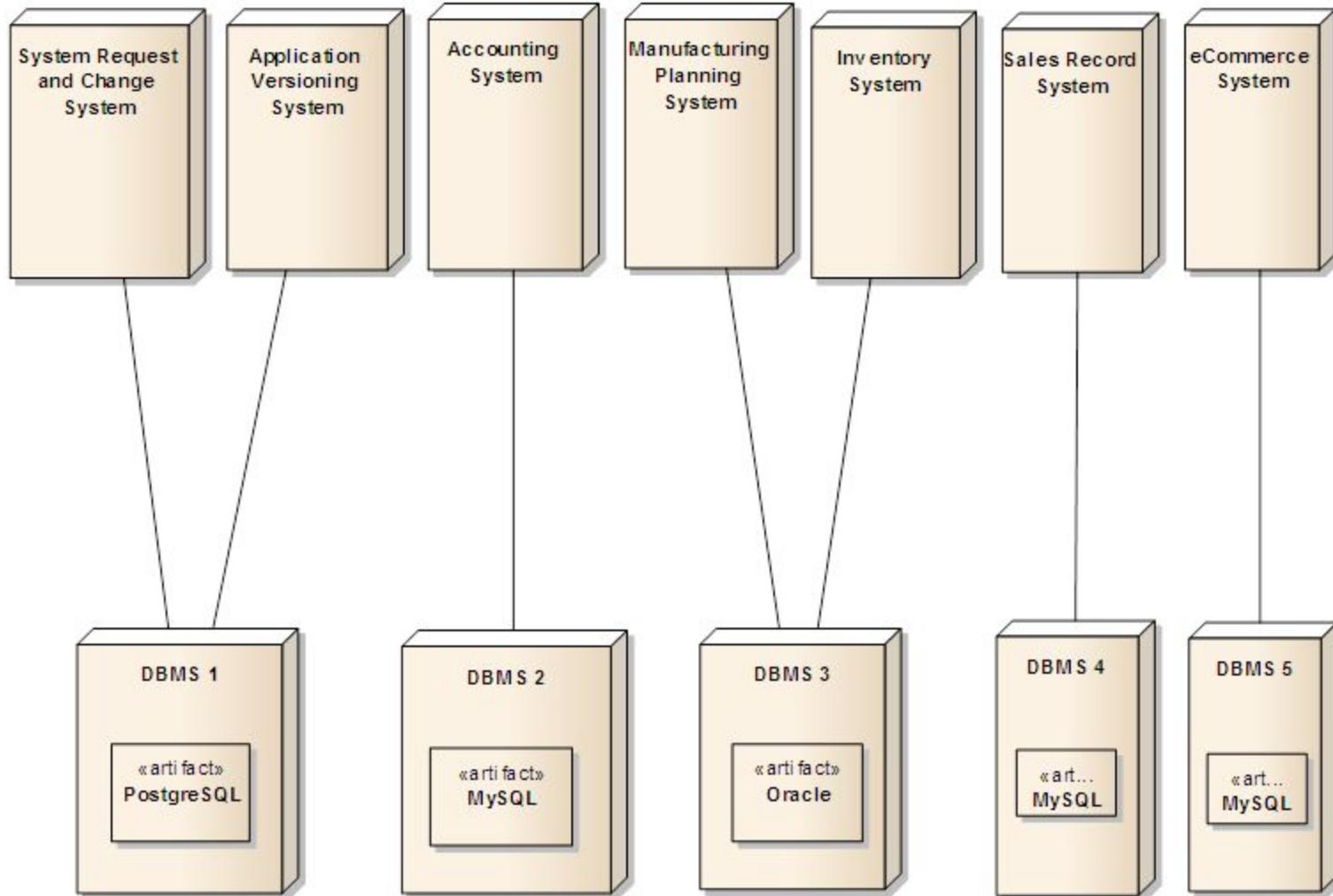
1. All Applications should align with the business vision and requirements.
2. Cost effectiveness and Operational Effectiveness - Reduction of TCO (Total Cost of Ownership)
3. Reduced integration complexity by adhering to industry standards
4. Ease of use to enable the users to work without any dependencies.
5. Component-based model and reuse – all functions, modules, tools and services will be designed such that they support reusability.
6. Changes to Application are to be made only based on Business Need
7. Software and Hardware conform to defined standards to promote interoperability of data, applications and technology.



Application Portfolio Catalog (Baseline)

Organization	Application
Information Technology	System Request and Change System
Finance	Application Versioning System
Manufacturing	Accounting System
	Manufacturing Planning System
Sales	Inventory System
	Sales Record System
	Child-Wear eCommerce System

Baseline Application Architecture

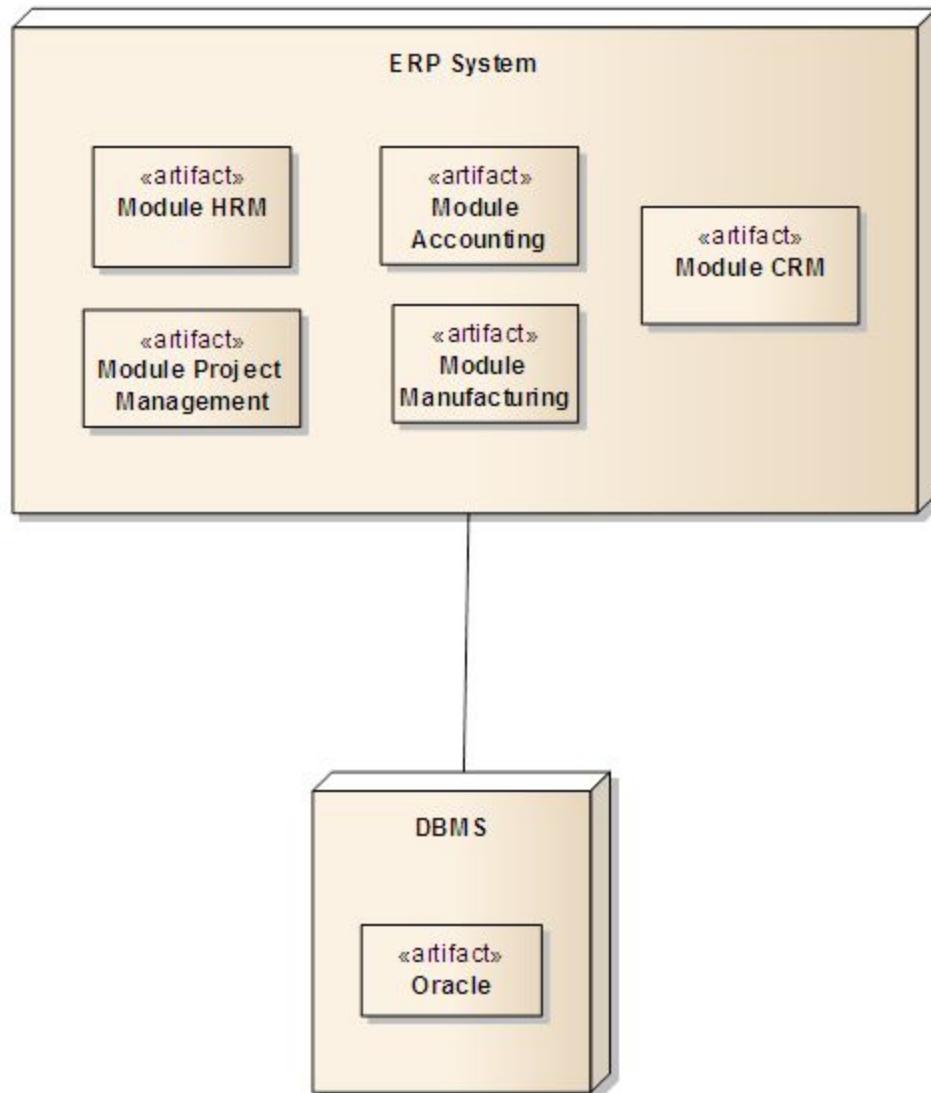




Application Portfolio Catalog (Target)

Organization	Application
Human Resource	ERP Module HRM
Information Technology	ERP Module Project Management
Finance	ERP Module Accounting
Manufacturing	ERP Module Manufacturing
Sales	ERP Module CRM

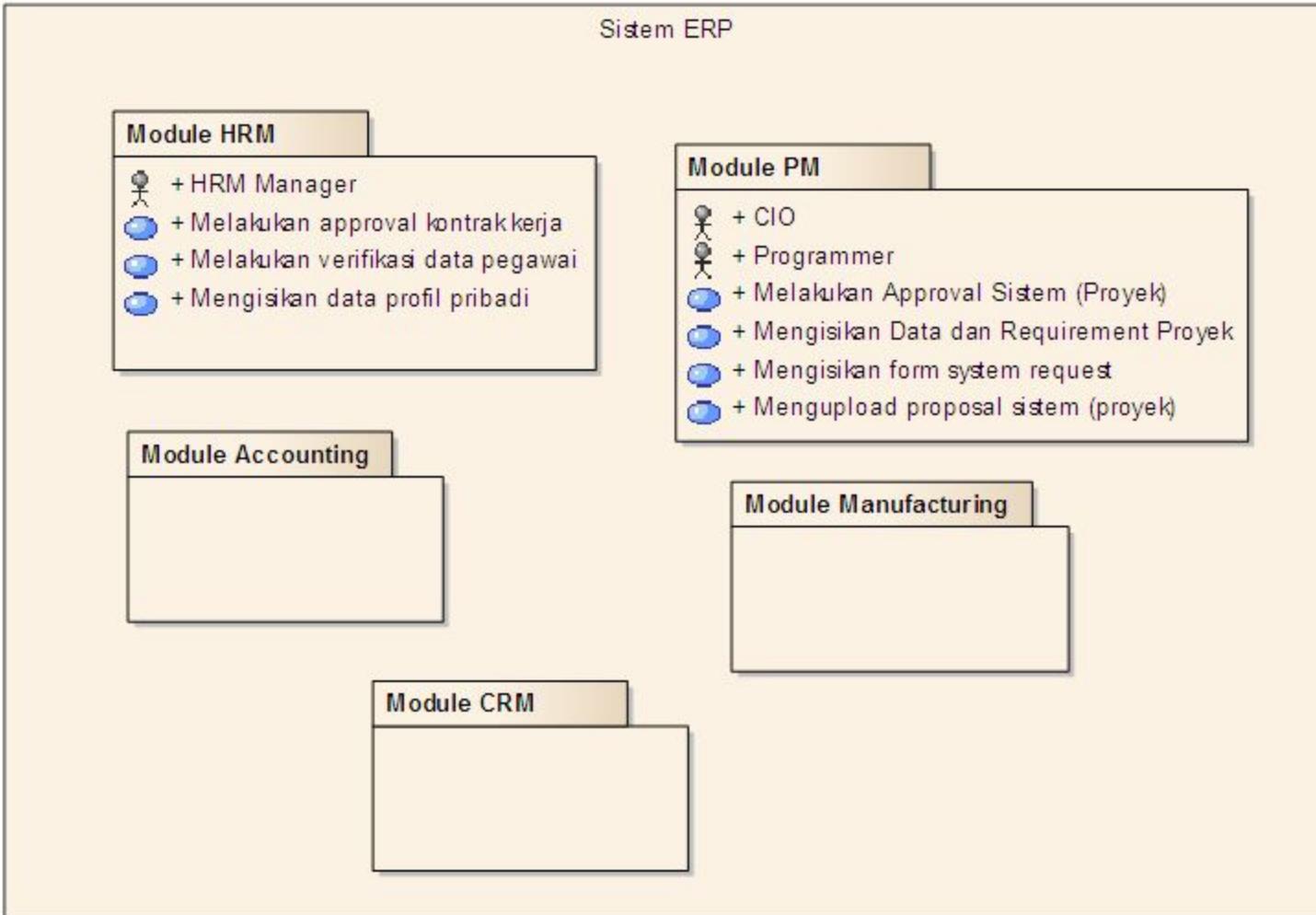
Target Application Architecture



Gap Analysis

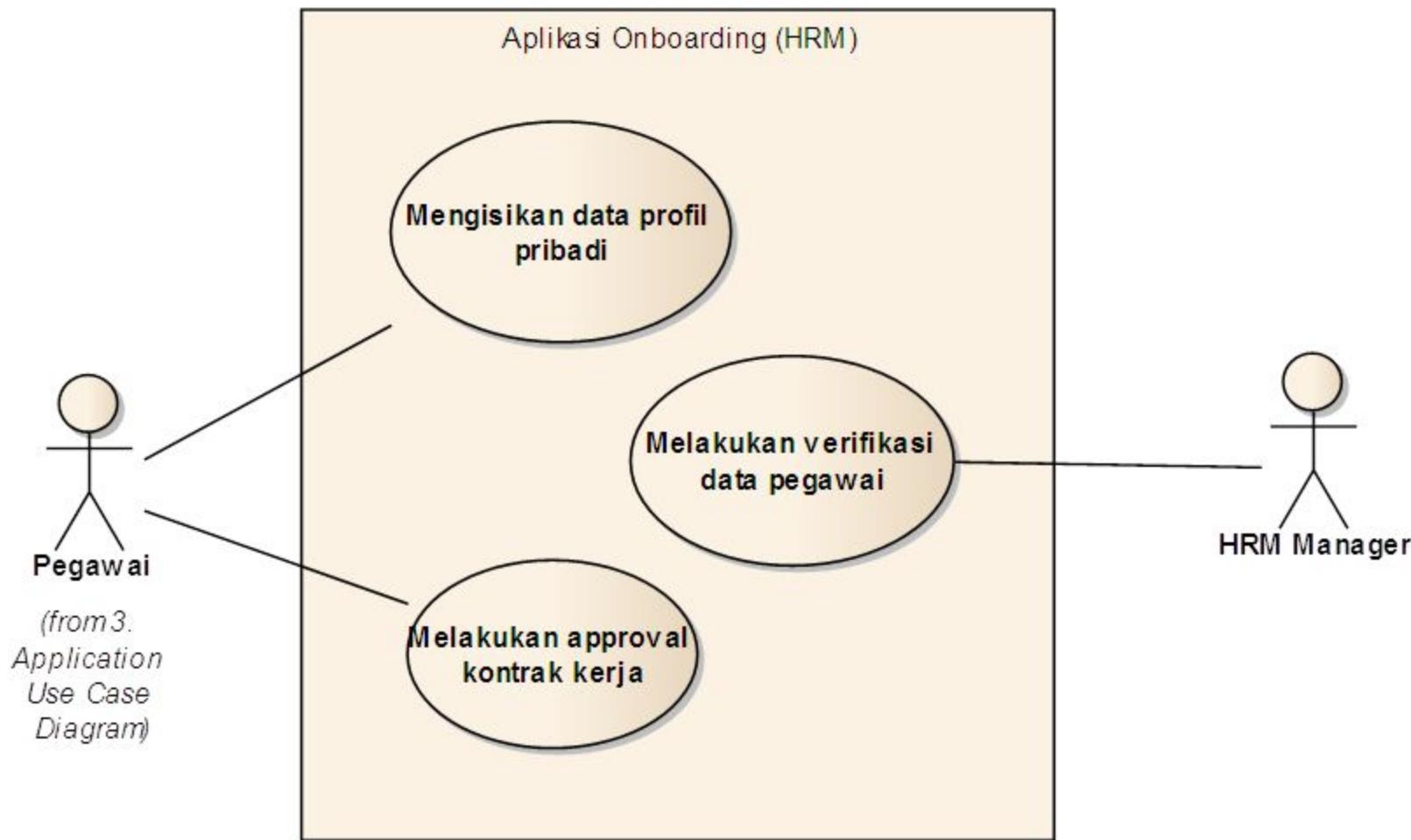
Target	ERP Module HRM	ERP Module PM	ERP Module Accounting	ERP Module Manufacturing	ERP Module CRM
Baseline					
System Request and Change System		included			
Application Versioning System		included			
Accounting System			potentially match		
Manufacturing Planning System				potentially match	
Inventory System				gap: enhanced service to be developed	
Sales Record System					included
eCommerce System					included

Application Use Case Diagram: Global Package



Application Use Case Diagram:

Module HRM – Aplikasi Onboarding





5. Data Architecture



Data Principles

1. Data Creation: All enterprise data should be captured once at the point of its creation.
2. Data Identifiers: Every object in the enterprise will contain a globally unique identifier. That identifier will be in the form of the Universally Unique Identifier (UUID).
3. Standard Data Elements: The use of standard data elements of universal fields will be used across the Enterprise for new development and system enhancements.
4. Spatial Information is a valued investment and asset: Spatial information can accelerate and improve decision-making, increase accountability, and improve services. Information must be shared to maximize effective decisionmaking.
5. Information Access based on access levels: Easy and timely access to data and information based on the access levels for various authorized personnel needs to be the rule rather than the exception. This needs to be accomplished without compromising security, confidentiality, and privacy.

Application/Data Matrix

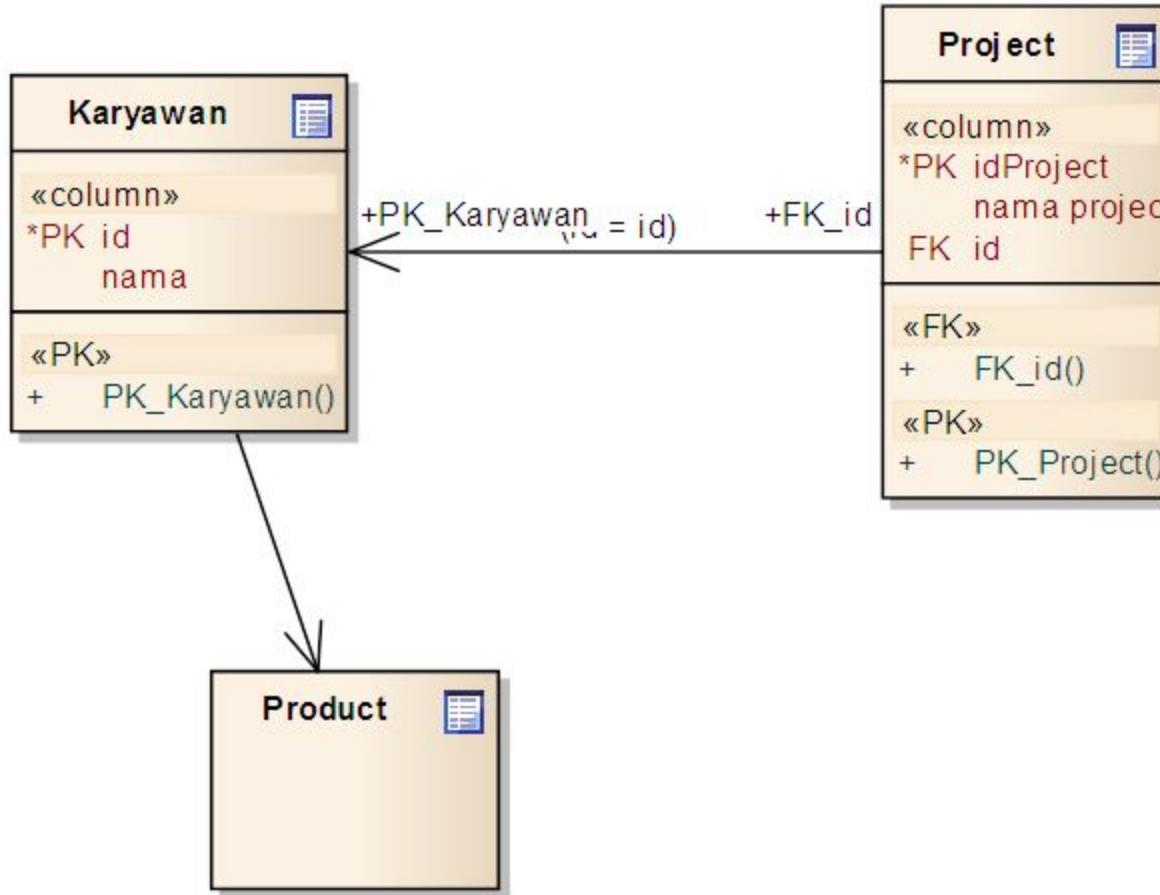
Module	ERP Module HRM	ERP Module PM	ERP Module Accounting	ERP Module Manufacturing	ERP Module CRM
DB - Entity					
HRM - Karyawan	CRUD	R	R		
PM - Project		CRUD			



Data Entity/Business Function Matrix

Module	Business Function	Organization
DB - Entity		
HRM - Karyawan	Onboarding	HRM

Logical Data Diagram





6. Technology Architecture



Technology Principles

- Separation of Concerns: Following the “Modularity” and “Abstraction” approach for the developing the technical features.
- Systems and Network: All the system and network management application within Child-Wear should be consolidated and integrated for effective and efficient usage. Should ensure business continuity.
- Usability & Look-Feel: The look and feel must be easy to use and consistent among all applications.
- Security: The computing system's assets can be read only by authorized parties and each of the transaction must be traceable. All the resources / services available within Child-Wear must be registered and maintained with Location and Directory service.
- Business Continuity: Transactions must roll back when the transaction fails and ensure business continuity. Also, monitor performance of the system and network continuously.



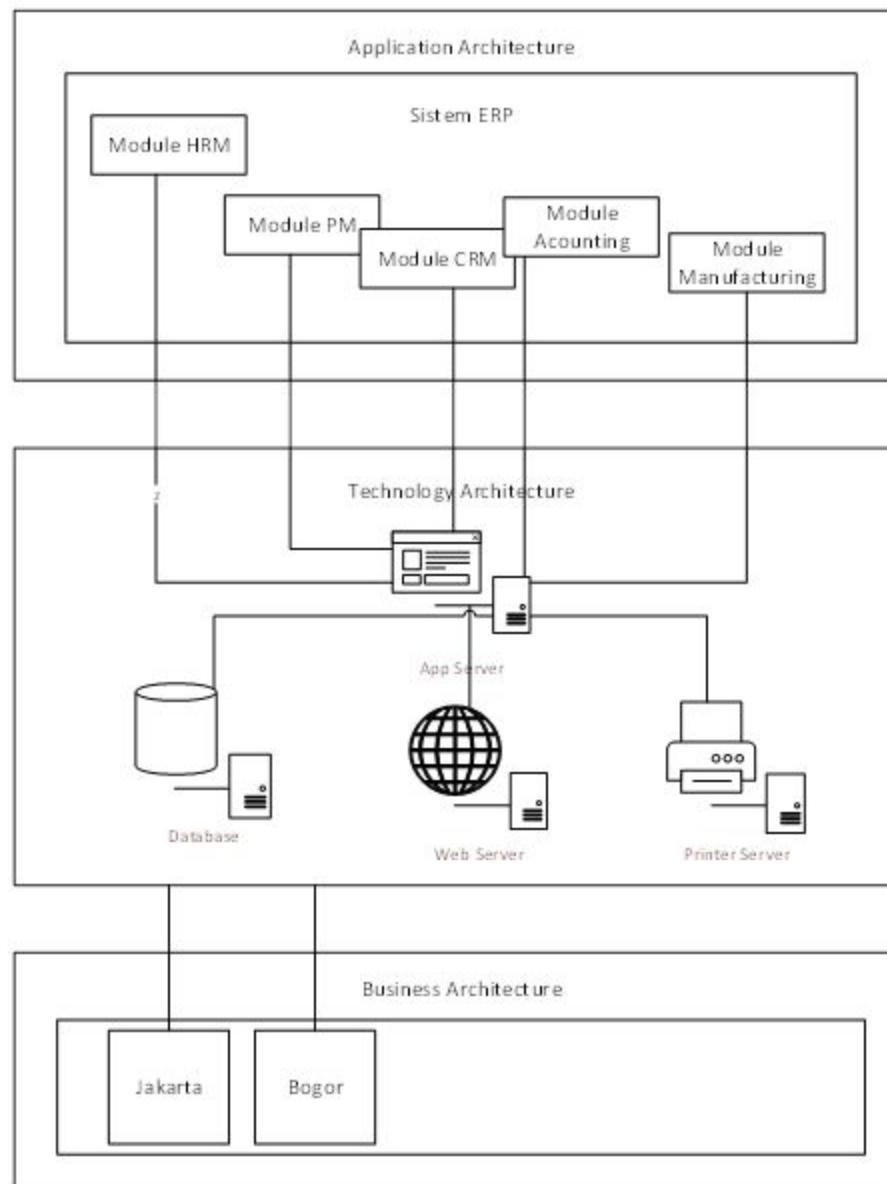
Technology Standard Catalog

1. RUP shall be used as the formal methodology for Child-Wear.
2. UML shall be used as the standard notation.
3. Java shall be the programming language.
4. Use JBoss 5.0 as the Application Server
5. Browser: IE 4.0 +, Mozilla Firefox 1.0 HTML: 4.0 + Web 2.0
6. Script Support: JavaScript 1.1
7. Use IBM System x3850 M2 as the host server.
8. Sparx EA shall be used to facilitate the Software Engineering processes.
9. Symantec Network Security and Symantec AntiVirus for Security
10. Oracle 10g for Database
11. Hibernate Framework
12. XML for Webservices
13. Java Naming and Directory Interface (JNDI)
14. Lightweight Directory Access Protocol (LDAP)
15. SSL,PKI, Single Sign On
16. OpenERP

Application/Technology Matrix

Module	ERP Module HRM	ERP Module PM	ERP Module Accounting	ERP Module Manufacturing	ERP Module CRM
Technology					
JBOSS App Server	X				
Oracle DBMS	X	X	X	X	X
Web Server		X			X
Javascript		X			X
OpenERP	X	X	X	X	X

Environment and Location Diagram





7. Opportunities and Solution

Opportunities and Solution Catalog

Initiative	Priority	Category
New Centralized Sales and Billing System(SBS)	HIGH	BA,AA
New Centralized Manufacturing and Inventory System (MIS)	HIGH	BA,AA
Integrated System Authentication and Authorization for all systems	HIGH	IA,AA,TA
Oracle Servers to ensure 24x7 Data Availability	HIGH	TA
Web Store for retail and corporate customers for Ordering.	HIGH	BA/IA/AA/TA
Web Services for integrating with Customers from SBS	MEDIUM	BA, AA
Web Services for integrating with Suppliers from MIS	MEDIUM	BA, AA
IT Infrastructure to enhance business needs(PDA's for sales team, Laptop's, Workstation's etc)	MEDIUM	TA
Implement Enterprise Service Bus (ESB) to integrate all IT Systems	HIGH	BA/IA/AA/TA



8.3 Open Group -World Class EA Framework Guidance & TOGAF 9 Example



8.4 Enterprise Architecture Blueprint Cancer Care Ontario – 2011



References

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2. Rachel Harrison, **Study Guide TOGAF® 9 Certified 2nd Edition**, *The Open Group*, 2011
3. Open Group Standard, **TOGAF® Version 9.1 (G116)**, *The Open Group*, 2011
4. Open Group Standard, **TOGAF® Version 9.1 – A Pocket Guide (G117)**, *The Open Group*, 2011
5. Daniel Minoli, **Enterprise Architecture A to Z: Frameworks, Business Process Modeling, SOA, and Infrastructure Technology**, *Taylor & Francis*, 2008
6. Jon Holt and Simon Perry, **Modelling Enterprise Architectures**, *The Institution of Engineering and Technology*, 2010
7. Alan Dennis et al, **Systems Analysis and Design with UML 4th Edition**, *John Wiley and Sons*, 2013