**The
Organizational Structure
Needed to Make
Enterprise Architecture
Work in Large IT Organizations**

A Framework that Relates the

Enterprise Architecture Group (EAG)

And the

Enterprise Project Management Office (PMO)

To Decentralized IT Groups
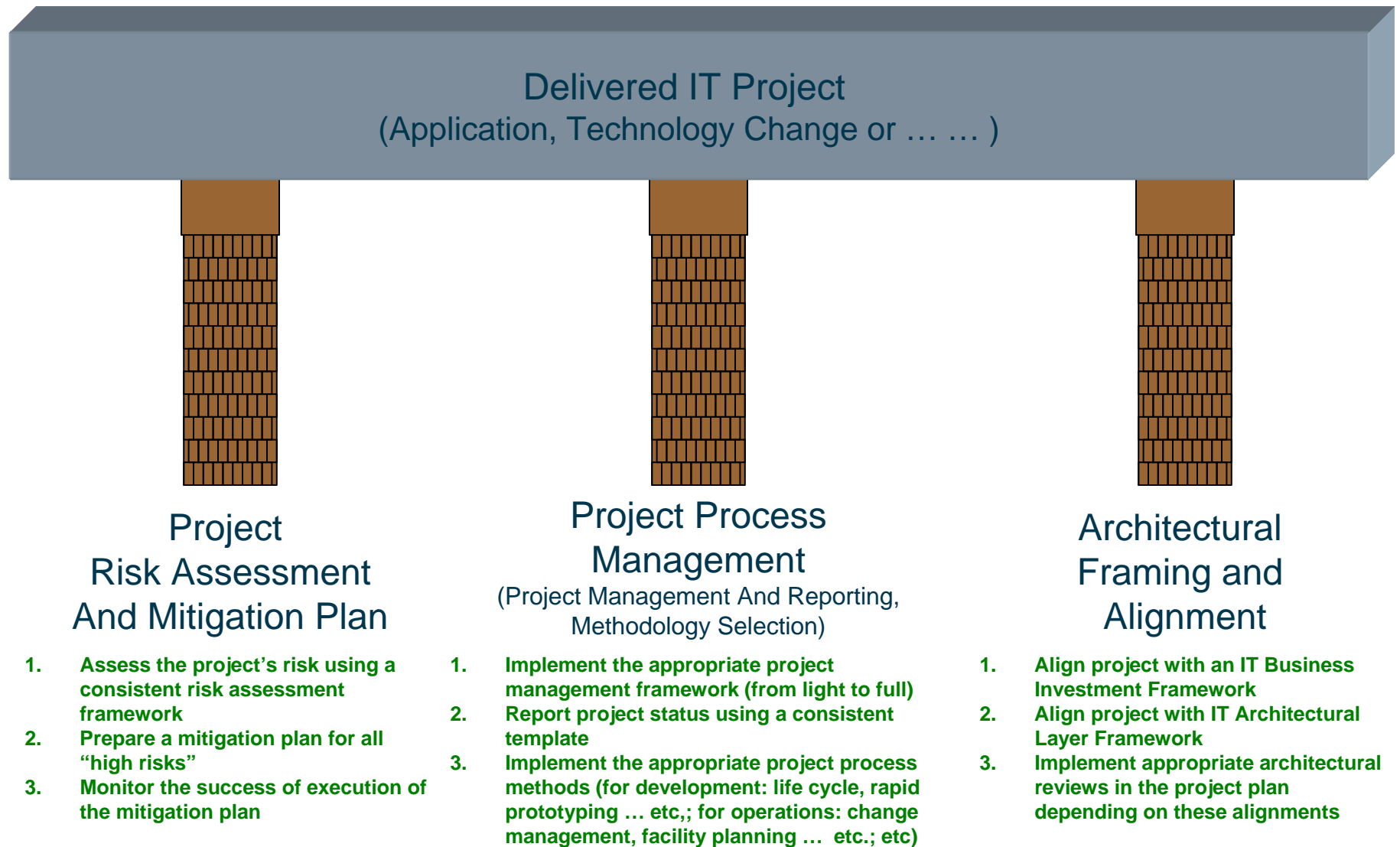
**Roelf Woldring
WCI (Workplace Competence
International Limited)
Hillsburgh, Ontario, Canada
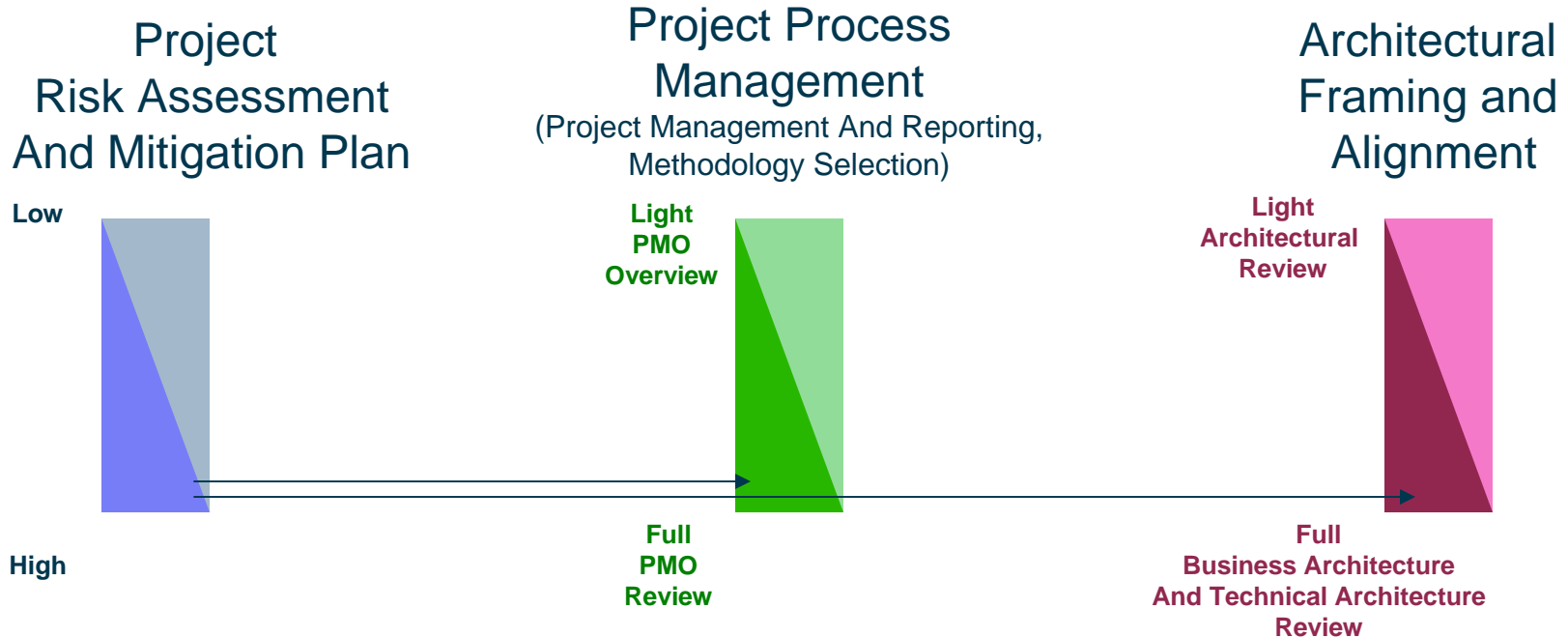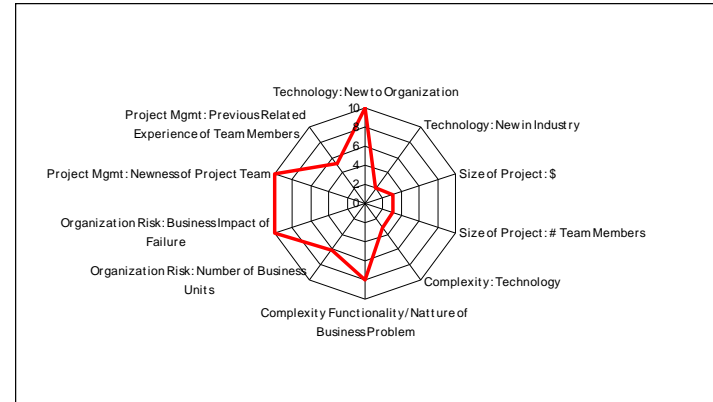© 2007 to 2010
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Objective

- **Present a framework that defines the role of the Enterprise Architecture Group and the Enterprise Project Management Office in large IT organizations**

    - **Abbreviations used in the following slides**
        - **EAG = Enterprise Architecture Group**
        - **EA = Enterprise Architect**
        - **SA = Solutions Architect**
        - **BA = Business Architect**
        - **AA = Application Architect**
        - **DA = Data Architect**
        - **SA = Security Architect or Engineer**
        - **TA = Technology Architect (or Engineer)**
        - **PMO = Enterprise Project Management Office**

The 3 Pillars of Effective IT Project Delivery

Delivered IT Project
(Application, Technology Change or … …)

Project Risk Assessment And Mitigation Plan

1. Assess the project's risk using a consistent risk assessment framework
2. Prepare a mitigation plan for all "high risks"
3. Monitor the success of execution of the mitigation plan

Project Process Management
(Project Management And Reporting, Methodology Selection)

1. Implement the appropriate project management framework (from light to full)
2. Report project status using a consistent template
3. Implement the appropriate project process methods (for development: life cycle, rapid prototyping … etc,; for operations: change management, facility planning … etc.; etc)

Architectural Framing and Alignment

1. Align project with an IT Business Investment Framework
2. Align project with IT Architectural Layer Framework
3. Implement appropriate architectural reviews in the project plan depending on these alignments

The 3 Pillars of Effective IT Project Delivery

- A larger and the more extensive project risk profile

  ➔ deeper Project Management

  ➔ greater Architectural Review

Radar chart with axes: Technology: New to Organization, Technology: New in Industry, Size of Project: $, Size of Project: # Team Members, Complexity: Technology, Complexity Functionality/Natture of Business Problem, Organization Risk: Number of Business Units, Organization Risk: Business Impact of Failure, Project Mgmt: Newness of Project Team, Project Mgmt: Previous Related Experience of Team Members

Project Risk Assessment And Mitigation Plan

Low

High

Project Process Management
(Project Management And Reporting, Methodology Selection)

Light PMO Overview

Full PMO Review

Architectural Framing and Alignment

Light Architectural Review

Full Business Architecture And Technical Architecture Review

The 3 Pillars of Effective IT Project Delivery

- Each pillar has its own associated frameworks that allow BNC IT staff to "assess" where they are, and structure their interaction with others
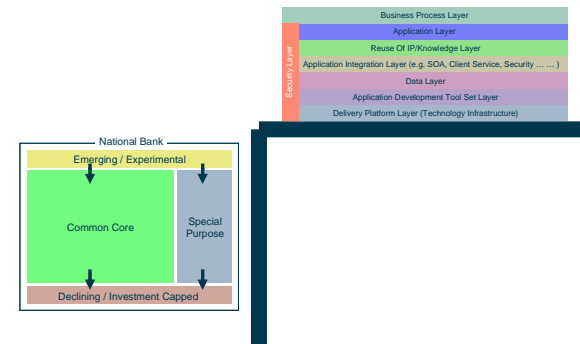
Project Risk Assessment And Mitigation Plan
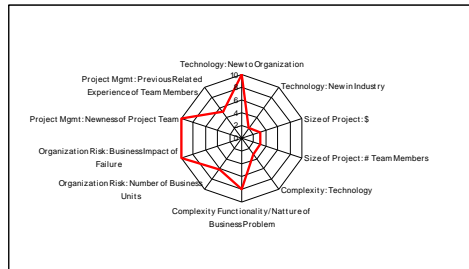
Project Process Management
(Project Management And Reporting, Methodology Selection)

Architectural Framing and Alignment

- **Project Gating**
- **Project Status Reporting Template**
- **Project Management Process Framework**

Developed, maintained and communicated by PMO

Developed, maintained and communicated by PMO

Developed, maintained and communicated by Enterprise Architecture Group

An IT Business Investment Framework for Talking About Applications and Technology Infrastructure

- Business Application investment dialogues are categorized in one of these categories

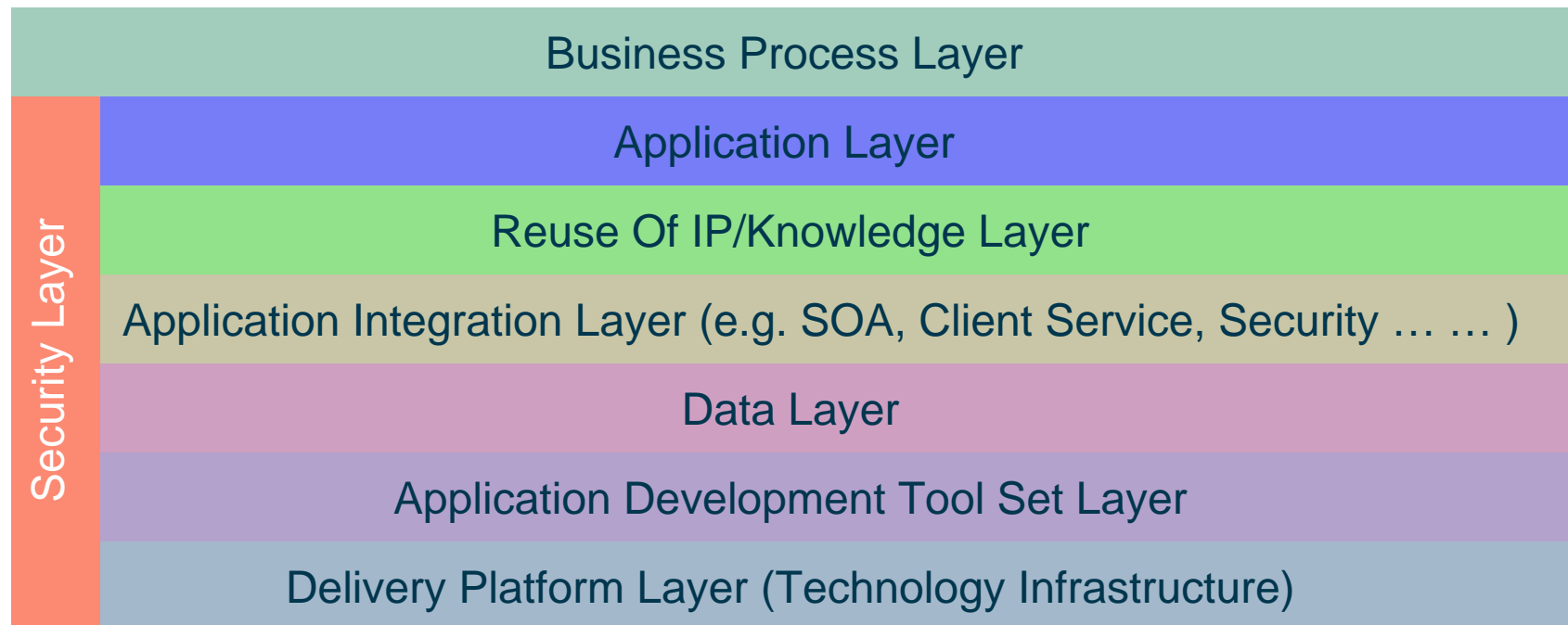- Technology Infrastructure investment dialogues are also categorized in one of these categories

The Firm

Emerging / Experimental

Common Core

Special Purpose

Declining / Investment Capped

External IT Vendors and Suppliers
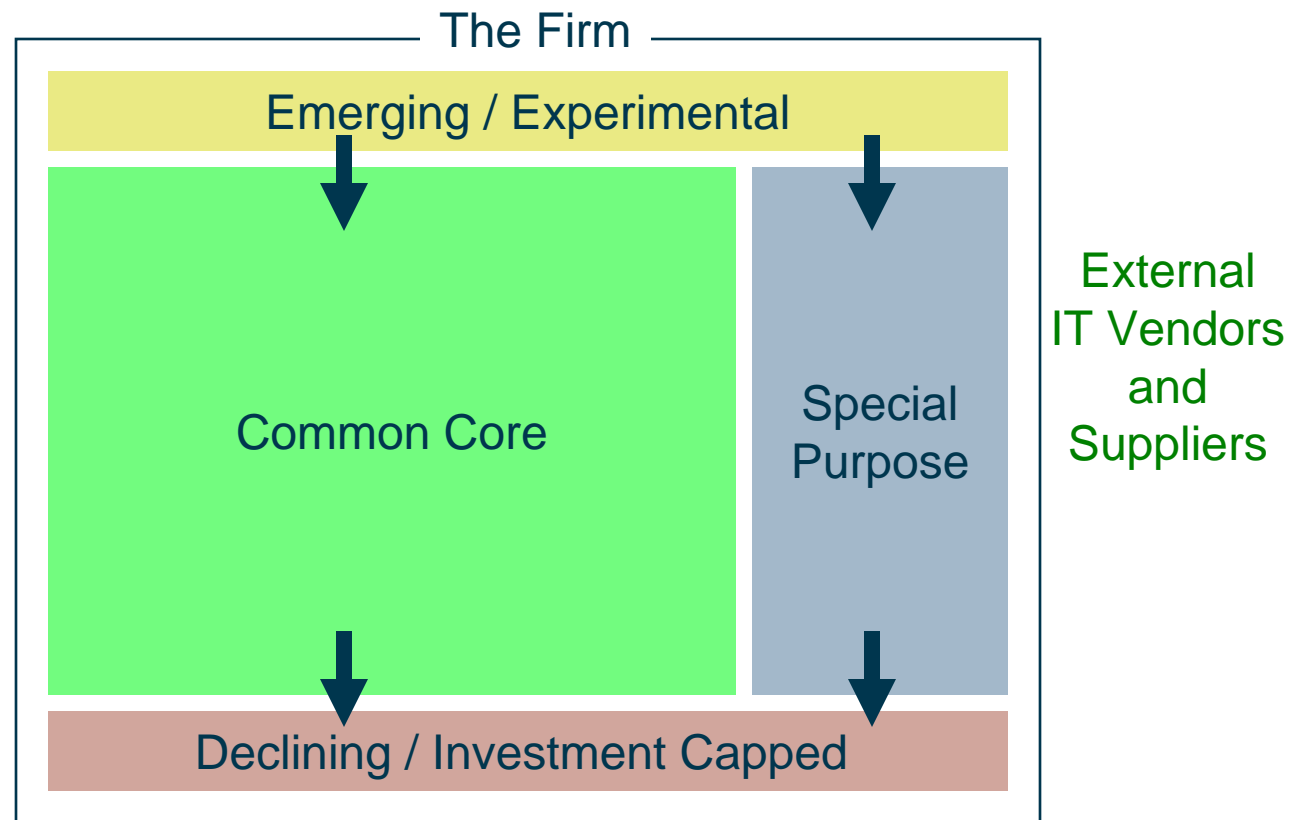
The main IT Business Investment Framework principles

- IT Investment decisions on all layers of the IT architecture are structured by this framework

- All applications and components in the IT Delivery Platform and the Application Development Tools Set have a PROJECT LIFE SPAN

- The IT Investment Framework is presented in business terms **so that IT and the Business from a common frame of reference for talking about IT investments**

- Generally speaking

  - The investment in Emerging / Experimental is one time and limited
    - once the project is over, no further investment happens unless a business case migrates the application or the technology to Common Core or Special Purpose
  - The investment in Special Purpose is restricted to the original business case
    - no expansion of technology use or functional enhancement of the applications outside the original business boundaries
  - The investment in Declining / Investment Capped is negligible
    - No expansion of technology use or functional enhancement of application – only strictly necessary break fix
    - New Dollars should be directed towards replacing the application or the technology platform
  - The Investment in Common Core is structured
    - Initial feasibility study – review by Enterprise Architecture Group
    - Functional enhancement or expansion of use during project life span
      - Notification to rather than review by Enterprise Architecture Group Board provided this adheres to the Common Core architecture
    - Further Investment at end of projected life span
      - Review by Enterprise Architecture Group similar to initial review

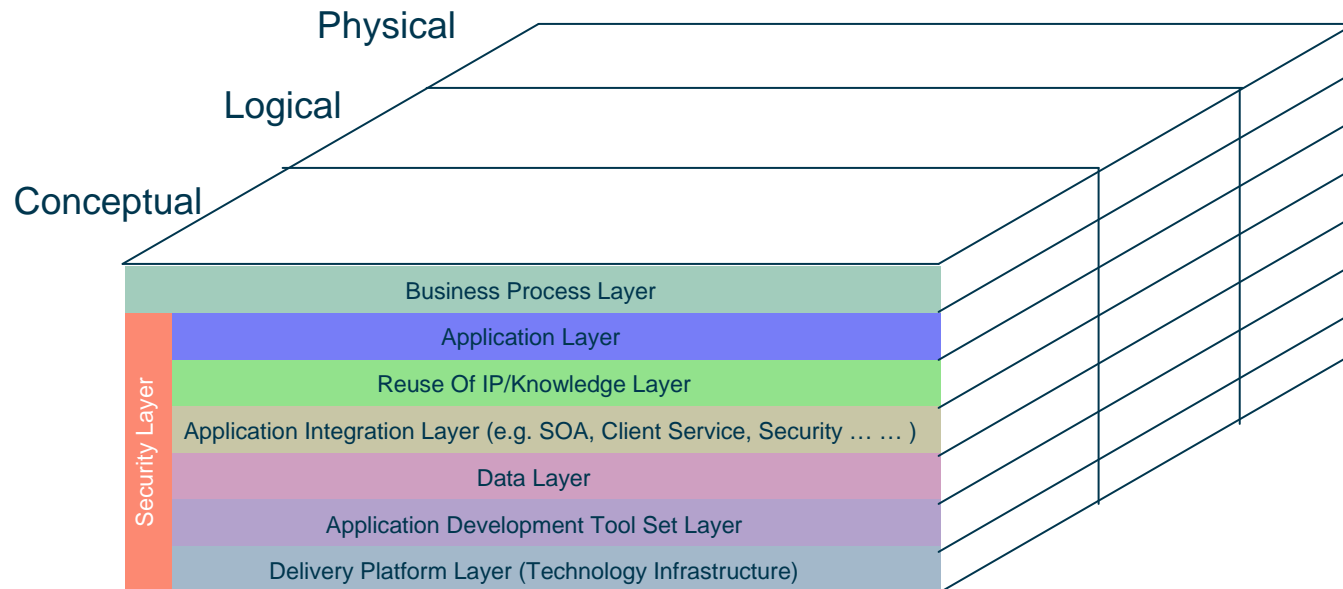# The IT Investment Framework works hand in hand with the IT Architectural Layer Framework

- IT Architecture breaks down into a number of layers – one depiction of the Architectural Layer Framework is:
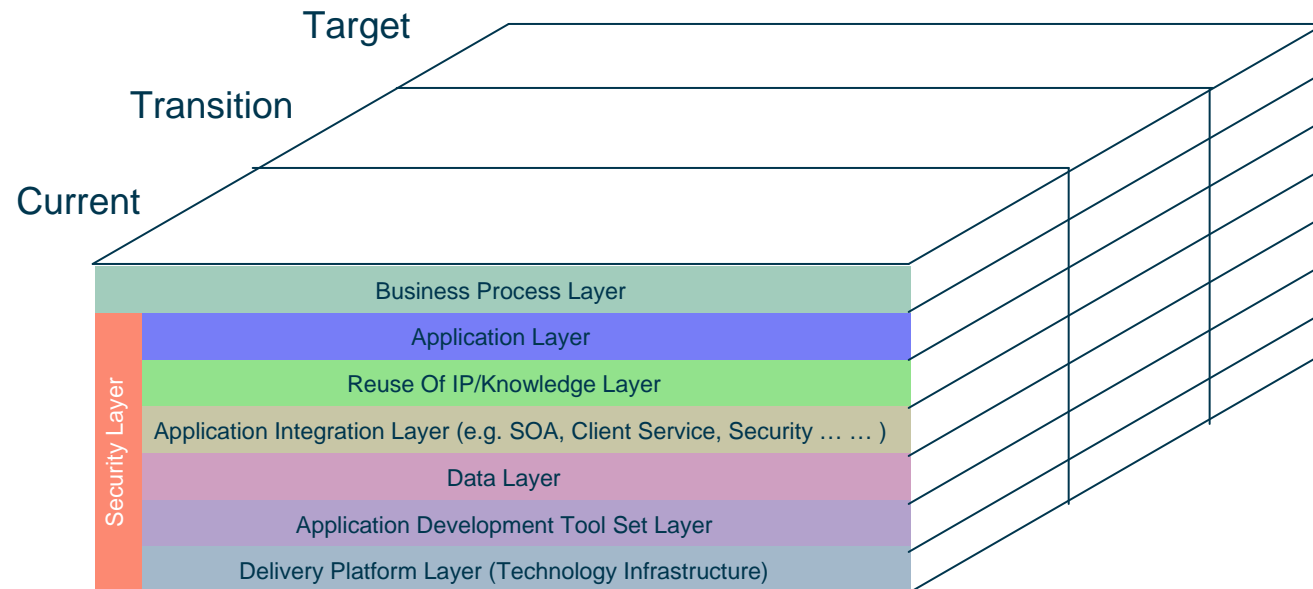
Security Layer	Business Process Layer
	Application Layer
	Reuse Of IP/Knowledge Layer
	Application Integration Layer (e.g. SOA, Client Service, Security … …)
	Data Layer
	Application Development Tool Set Layer
	Delivery Platform Layer (Technology Infrastructure)

- Each layer of made of related components
  - Conceptual explosions of each layer show the components and their relationships to one another

Depictions of the components of each Layer of the IT Architecture Layer Framework may document various states of that layer… … (1)
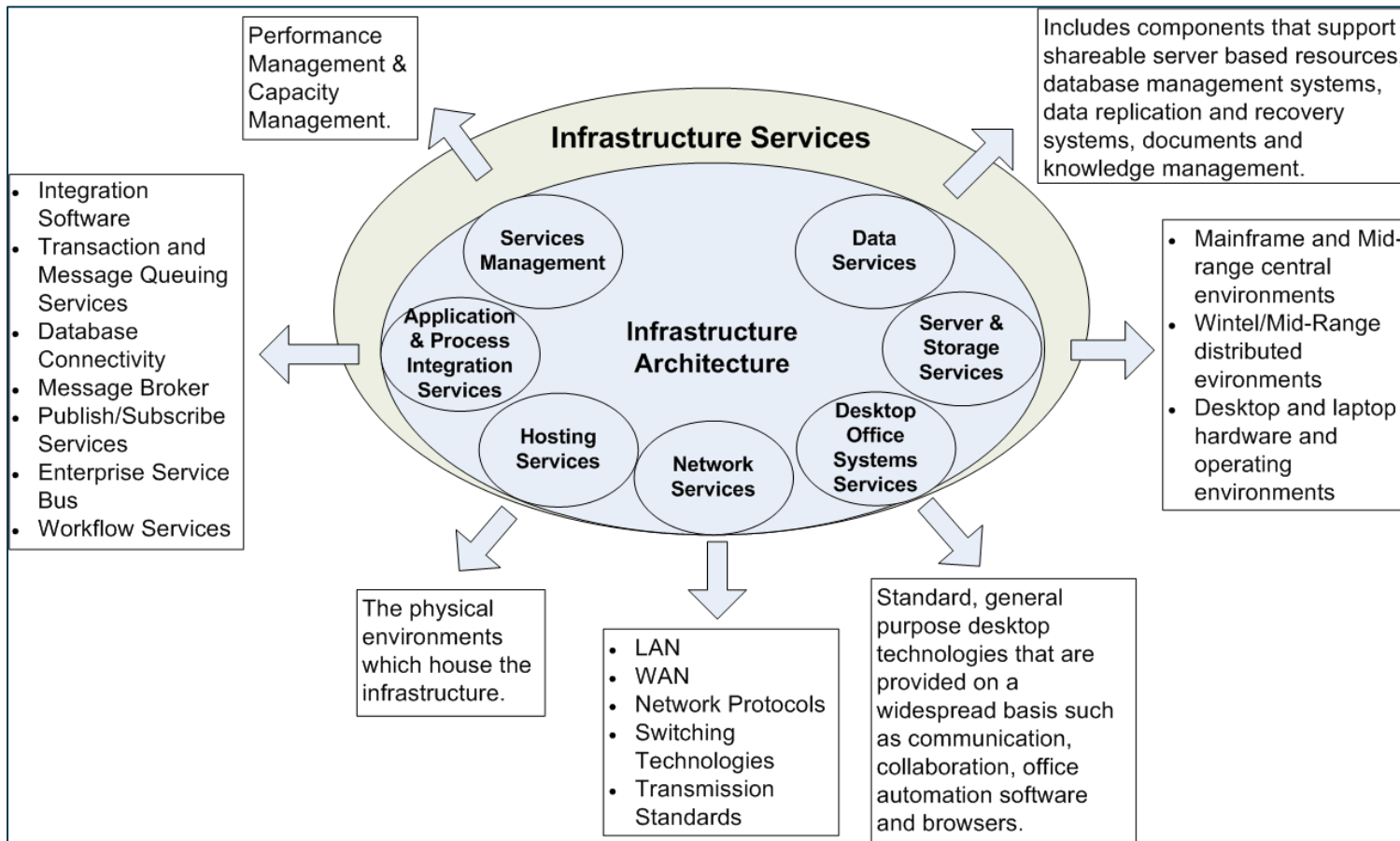

Physical

Logical

Conceptual

| Business Process Layer |
| Application Layer |
| Reuse Of IP/Knowledge Layer |
| Application Integration Layer (e.g. SOA, Client Service, Security … …) |
| Data Layer |
| Application Development Tool Set Layer |
| Delivery Platform Layer (Technology Infrastructure) |

Security Layer

Depictions of the components of each Layer of the IT Architecture Layer Framework may document various states of that layer… … (2)
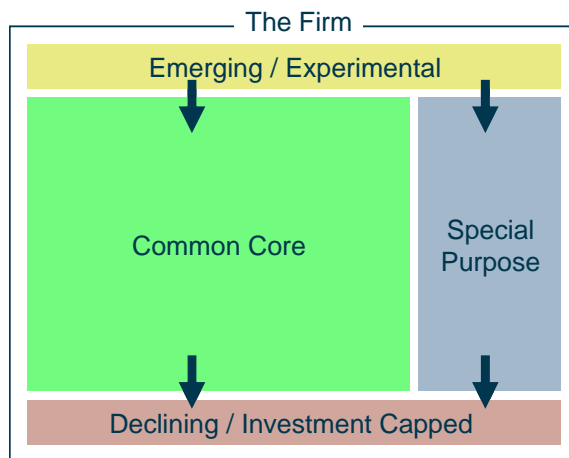
Target

Transition

Current

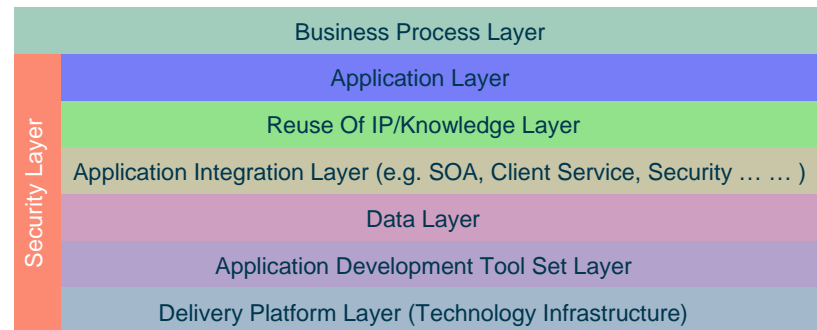| Business Process Layer |
|---|
| Application Layer |
| Reuse Of IP/Knowledge Layer |
| Application Integration Layer (e.g. SOA, Client Service, Security … …) |
| Data Layer |
| Application Development Tool Set Layer |
| Delivery Platform Layer (Technology Infrastructure) |

Security Layer

Each layer of the IT Architectural Layer Framework has its own components … …   an example

Delivery Platform Layer (Technology Infrastructure)

Performance Management & Capacity Management.

Includes components that support shareable server based resources, database management systems, data replication and recovery systems, documents and knowledge management.

- Integration Software
- Transaction and Message Queuing Services
- Database Connectivity
- Message Broker
- Publish/Subscribe Services
- Enterprise Service Bus
- Workflow Services

Infrastructure Services

- Services Management
- Data Services
- Application & Process Integration Services
- Infrastructure Architecture
- Server & Storage Services
- Hosting Services
- Network Services
- Desktop Office Systems Services

- Mainframe and Mid-range central environments
- Wintel/Mid-Range distributed evironments
- Desktop and laptop hardware and operating environments

The physical environments which house the infrastructure.

- LAN
- WAN
- Network Protocols
- Switching Technologies
- Transmission Standards

Standard, general purpose desktop technologies that are provided on a widespread basis such as communication, collaboration, office automation software and browsers.

Evaluation of a particular IT investment need both frameworks to frame the decision

Security Layer	Business Process Layer
	Application Layer
	Reuse Of IP/Knowledge Layer
	Application Integration Layer (e.g. SOA, Client Service, Security … …)
	Data Layer
	Application Development Tool Set Layer
	Delivery Platform Layer (Technology Infrastructure)

The Firm

Emerging / Experimental	
Common Core	Special Purpose
Declining / Investment Capped	

Where does this project fit in both of these frameworks?

Let's explore the IT Investment Framework … …

- Each of the 4 categories will be twice in the following slides

  - First in the context of Business Application Investment decisions

  - Then in the context of Technology Delivery Platform decisions

The Firm

Emerging / Experimental

Common Core

Special Purpose

Declining / Investment Capped
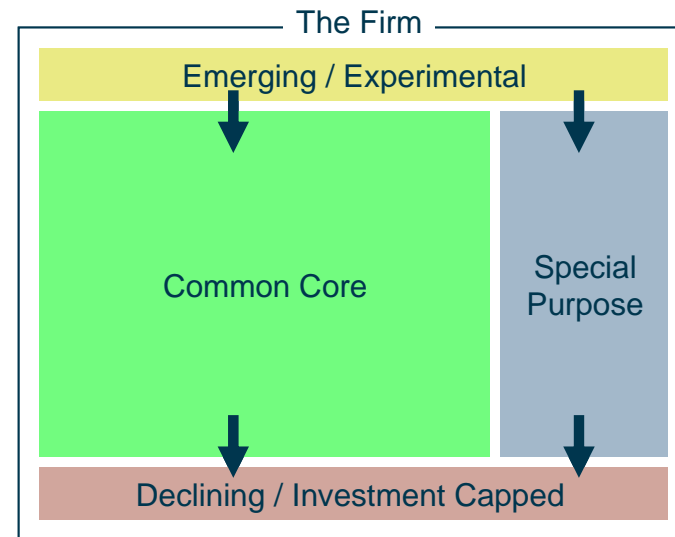
Business Rules for Each Category:
Business Application View
Emerging / Experimental

Category	Who Defines the Rules For This Category?	What must the initial business case and application approach cover?	What are the Limits to Development / Deployment of This Application?	Can further investment occur without Enterprise Architecture Group review?
Emerging / Experimental	EAG Intent: to provide opportunities for testing, learning about or evaluating new business functionality that COULD make a potential contribution to the firm's business in the future	There must be a clear commitment to "**NOT FOR REAL**" → no "for real" revenue generating or cost generating business transactions are IRREVOCATABLY handled during the project life Since the learning or experiment could lead to the conclusion: DO NOT PROCEED	1. Must be capable of being removed if experiment fails or evaluation is no; implies **no commitment of real business functionality during this period**	1. No – the application life must have a defined calendar end point, and no further time or $ can be invested without EAG approval 2. No further deployment → abandon application at calendar end point, unless there is a business case which recommends: – Move to Common Core: requires full common core EAG review – Move to Special Purpose: requires EAG sign-off

Business Rules for Each Category:
Business Application View
Special Purpose

The Firm
Emerging / Experimental
Common Core
Special Purpose
Declining / Investment Capped

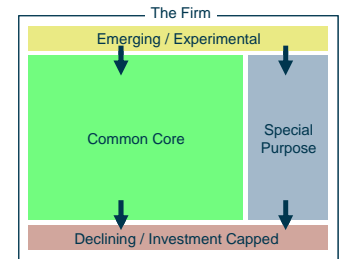| Category	Who Defines the Rules For This Category?	What must the initial business case and application approach cover?	What are the Limits to Development / Deployment of This Application?	Can further investment occur without Enterprise Architecture Group review?
Special Purpose	EAG Intent: To allow applications that use approaches that are not "common core" compatible, when there is a clear business case that provides a return to the Bank from the implementation of this application	The Business Case must include the **full cost of operating and maintaining the application, including the cost of accessing the special skills and the knowledge needed to maintain and to operate the application over its full projected life span** The projected positive return must be based on the anticipated total cost of ownership for the application.	1. Real business transactions can be handled by this application 2. Decentralized development team can build, maintain and enhance application as long as functional boundaries specified in business case are not exceeded 3. Development team must maintain data bridges / interfaces to common core Data Architecture that were included in the business case / approach	1. At the end of the projected life span, a new business case must be submitted to allow further investment in application: • migrate to Common Core • continue as Special Purpose with a new projected life span 2. Without such a business case, application is automatically re-categorized as Declining / Investment Capped

Business Rules for Each Category:
Business Application View
Common Core

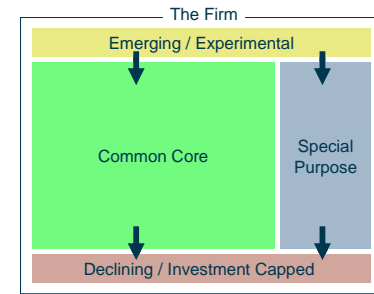| Category	Who Defines the Rules For This Category?	What must the initial business case and application approach cover?	What are the Limits to Development / Deployment of This Application?	Can further investment occur without Enterprise Architecture Group review?
Common Core	EAG Intent: To provide a consistent business application environment for the core of the firm's business applications	New application: 1. Initial business case and approach must describe how application will interface with / build with architectural standards 2. Business case must include a projected application life span Existing application: At end of projected life span, a renewal business case must be presented	1. Real business transactions can be handled by this application 2. **Decentralized Development team can build, maintain and enhance application as long as common core architectural boundaries are not exceeded, and work is done within projected life span period**	1. At the end of the projected business life, a new business case must be submitted to allow further investment in application: • continue in Common Core • continue as Special Purpose with a shorter projected life span 2. Without such a business case, application is automatically re-categorized as Declining / Investment Capped

Business Rules for Each Category:
Business Application View
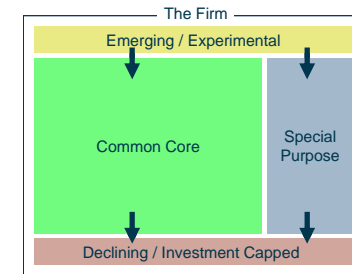# Declining / Investment Capped

Category	Who Defines the Rules For This Category?	How does an application enter this category?	What are the Limits to Development / Deployment of This Application?	Can further investment occur without Enterprise Architecture Group review?
Declining / Investment Capped	EAG Intent: To limit the future of applications whose cost of maintenance is excessive because they employ technologies or functional approaches which have become out of date or obsolete	It comes to the end of its projected life span and no renewal business case is approved A projected "termination" date is set for the application and a "migration/ replacement" business case must be presented by some reasonable date prior to the termination date Failing such a business case, the application is retired at its termination date	1. Real business transactions can continue to be handled by this application until its termination date. 2. Since the cost of maintenance is increasing on this application, no further enhancement is allowed. **Maintenance is restricted to "fix" what is broken. This includes no maintenance driven by outside regulatory or other organizations.**	1. No

Business Rules for Each Category:
Technology Delivery Platform View
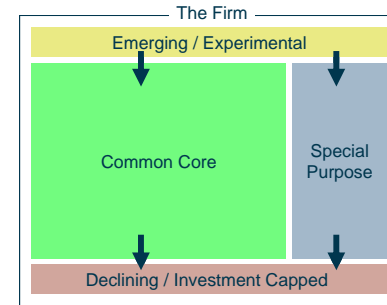## Emerging / Experimental

Category	Who Defines the Rules For This Category?	What must the initial business case and application approach cover?	What are the Limits to Development/ Deployment of Applications running on this platform?	Can further investment occur without Enterprise Architecture Group review?

Emerging / Experimental	EAG
	
	Intent: to provide opportunities for testing, learning about or evaluating new technology that COULD make a potential contribution to the Bank's business in the future
		There must be a clear commitment to "NOT FOR REAL" ➔ no "for real" revenue generating or cost generating business transactions are IRREVOCATABLY handled during the project life
		
		Since the learning or experiment could lead to the conclusion: DO NOT PROCEED
			1. Technology must be capable of being removed from the Bank if experiment fails or evaluation is no; implies **no commitment of real business functionality during this period**	1. No – the technology use must have a defined calendar end point, and no further time or $ can be invested without ARB approval
				
				2. No further deployment ➔ abandon technology at calendar end point, unless there is a business case which recommends:
				  – Move to Common Core: requires full common core ARB review
				  – Move to Special Purpose: requires ARB sign-off

Business Rules for Each Category: Technology Delivery Platform View
# Special Purpose

The Firm — Emerging / Experimental — Common Core — Special Purpose — Declining / Investment Capped

Category	Who Defines the Rules For This Category?	What must the initial business case and application approach cover?	What are the Limits to Development / Deployment of Applications running on this platform?	Can further investment occur without Enterprise Architecture Group review?
Special Purpose	EAG Intent: To allow restricted use of technology delivery platforms outside the "common core" compatible, when there is a clear business case that provides a return to the Bank from the use of this technology	The Business Case must include the full cost of operating and maintaining the technology, including the cost of accessing the special skills and the knowledge needed to maintain and to operate the technology over its full projected life span The projected positive return must be based on the anticipated total cost of ownership for the technology.	1. Real business transactions can be processed on this platform 2. Decentralized Development team can build, maintain and enhance **only the applications that are approved for use of this delivery platform** as long as functional boundaries specified in original business case are not exceeded.	1. **At the end of the projected life span, a new business case must be submitted to allow further use of the special purpose delivery platform**. The preferred option is to migrate the application to the Common Core Delivery Platform. The less preferable option is to continue using it as Special Purpose with a new projected life span.

Business Rules for Each Category: Technology Delivery Platform View
Common Core

Category	Who Defines the Rules For This Category?	What must the initial business case and application approach cover?	What are the Limits to Development / Deployment of Applications running on this platform?	Can further investment occur without Enterprise Architecture Group review?
Common Core	EAG Intent: To provide a consistent technology platform that can be used to delivery business application functionality to the Bank.	Applications that run on the Common Core technology platform, and conform to the Common Core Architectural Standards, do not need detailed architectural review by the EAG.	1.Within the project life span of the application, functional enhancements can be made. 2.**At the end of the projected life span, the application must migrate to the "current version" of the Common Core delivery platform, if on-going investments have not kept it up to date, otherwise it will automatically be categorized as "Declining / Investment Capped".**	1.Yes, **within the projected life span. Enhancement / functional upgrade investment should take into account changes in the common core delivery platform architecture if the intent is to renew the application at the end of its projected life span.**

Business Rules for Each Category: Technology Delivery Platform View
Declining / Investment Capped

The Firm
Emerging / Experimental
Common Core
Special Purpose
Declining / Investment Capped
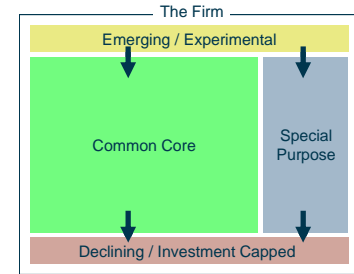
Category	Who Defines the Rules For This Category?	How does an technology delivery platform enter this category?	What are the Limits to Development / Deployment of Applications running on this platform?	Can further investment occur without Enterprise Architecture Group review?
Declining / Investment Capped	EAG Intent: To steward technology delivery platforms so that there is a managed progression which ensures that the Bank stays reasonable current to the industry, and does not make "unit cost increasing" investments in dying (from the firm's point of view) technologies	EAG determines, through an appropriate consultation process, that a common core delivery technology is "dying" and that the Bank needs to migrate to something more current (i.e. something in the common core is replaced)	1. Applications that run on dying technology delivery platforms are limited to "only necessary break fix" investments. 2. Since technologies in the common core should have a "projected life span", there should be "realistic notification / awareness" of this possibility. **Functional enhancement investments during the life of the application should aid in keeping applications in reasonable sync with the common core delivery platform architecture.**	1. No

VVCI

The relationship between the Framework and the Enterprise Architecture Group

- **EAG is responsible for defining the Common Core Architecture at each of the architectural layers, but particularly at the:**

  - Delivery Platform (Infrastructure)
  - Application Development Tool Set
  - Data
  - Application Integration (SOA, Client / Server Protocols)
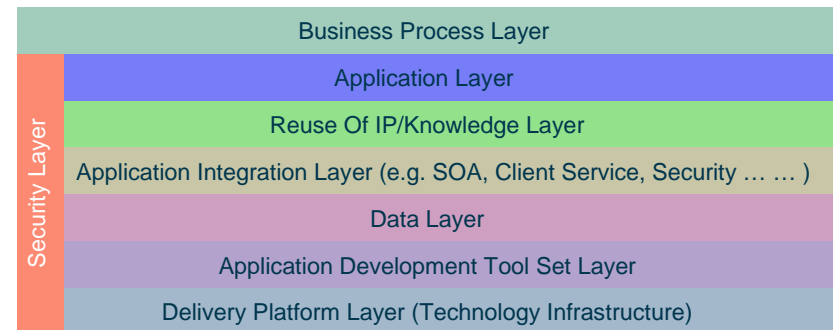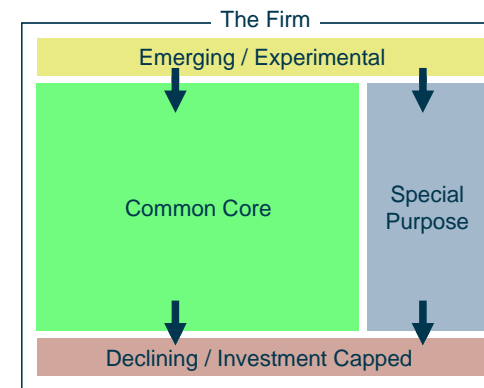 - Reuse
  - Application
  - Security

  levels.

  Therefore, EAG implicitly defines the:

  Emerging / Experimental

  Special Purpose

  Declining / Investment Capped

  boundaries.

The Firm

Emerging / Experimental

Common Core

Special Purpose

Declining / Investment Capped

| Business Process Layer |
| Application Layer |
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| Data Layer |
| Application Development Tool Set Layer |
| Delivery Platform Layer (Technology Infrastructure) |

Security Layer

The relationship between EAG and architects on decentralized Project Teams is mediated by these two frameworks and the business rules set in the IT Investment Framework

- **Enterprise Architecture Group**

  - **Staffed with Enterprise Architect (EAs) who may work on 1 or more of the Architectural layers**
  - **Accountable for defining the architecture, i.e. clarifying what components in each of the architectural layers fit into Common Core, Special Purpose, Emerging / Experimental, and Declining / Investment Capped.**
  - **Accountable for communicating this to the decentralized IT groups**
  - **Accountable for completing TIMELY architectural reviews of IT projects being done by decentralized IT groups**

Security Layer	Business Process Layer
	Application Layer
	Reuse Of IP/Knowledge Layer
	Application Integration Layer (e.g. SOA, Client Service, Security … …)
	Data Layer
	Application Development Tool Set Layer
	Delivery Platform Layer (Technology Infrastructure)

The Firm

- Emerging / Experimental
- Common Core
- Special Purpose
- Declining / Investment Capped

Where does this project fit in both of these frameworks?

IT Project Teams In Decentralized IT Groups will have project level architects who work within the boundaries and business rules defined by these frameworks.

The individuals in these project level architecture roles are accountable to understand the definition of the Enterprise Architecture and respect its boundaries as they work on the project. To ensure this, the EAG has the right to input into their performance appraisals.

Regular movement of EAs into project roles and vice versa helps accomplish this.
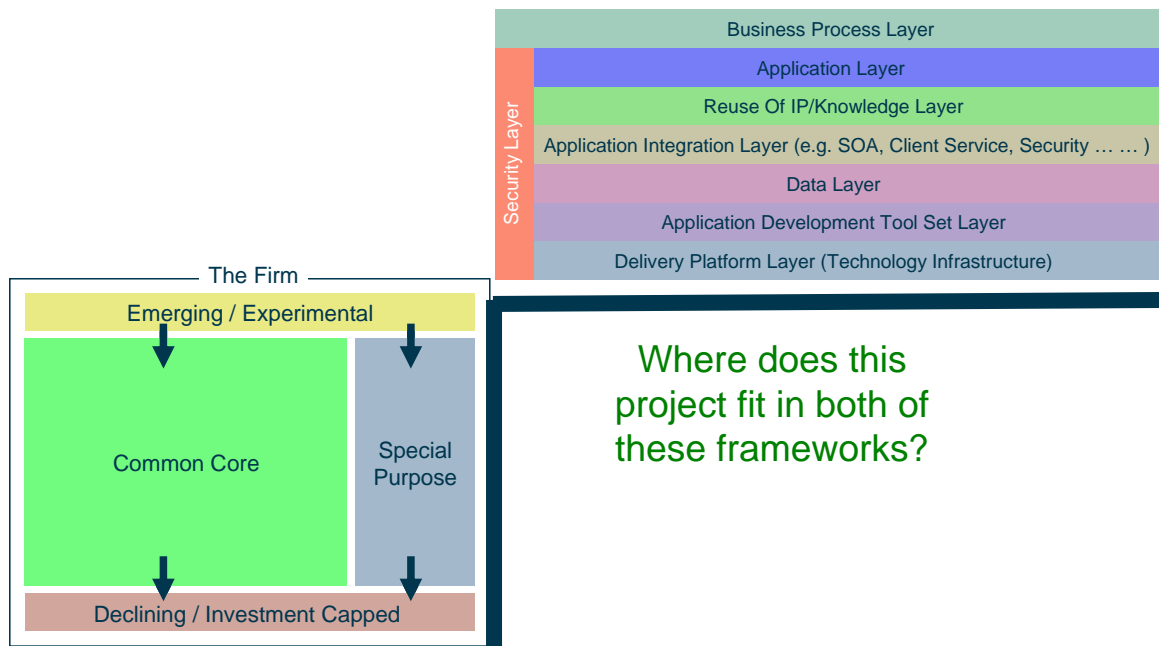
In the same way, the relationship between the Enterprise PMO and the Project Managers in the Decentralized IT Groups is mediated by Project Management frameworks, methodology and reporting

- **Project Management Office**

  - **Staffed by PMs who may be assigned to decentralized IT Group projects**

  - **Accountable for defining PM Frameworks, methodologies, and standardized reporting**

    - **Need to define both PM Lite and PM Heavy versions of these so that decentralize IT project Project Managers can pick the right ones for their project given its Business Impact and Project Risk Factor assessment**

  - **Accountable for communicating PM frameworks to decentralized IT groups**

  - **Accountable for doing TIMELY PMO reviews of high Business Impact / High Project Factor Risk projects**

  - **May be accountable for doing centralized PM reporting using data submitted by decentralized IT group Project Managers**