



Collaborative Problem-Solving using Enterprise Architecture Frameworks

framework-thinking to handle complexity

Prepared by Dr Barbara Lauridsen

Spring 2019 TCC conference THU 10:30A (20 min) 1:30 PCT

Collaborative Problem-Solving using Enterprise Architecture Frameworks

TCC Session Description: This session shares successful experiences with "framework-thinking" for designing an enterprise architecture. Based upon wisdom of understanding problems before seeking solutions, a Problem-Based Learning (PBL) approach guided brainstorming, enabled handling complexity by adapting frameworks. Learners gained a perspective that meaningful next-step actions achieved a solution **at an "Edge of Chaos"**. Teams delivered a case study that analyzed a real-world enterprise that either succeeded or failed based on having an architecture strategy.



CIS421 Collaborative Enterprise Architecture <*>

Course Description: “Explores the design, selection, implementation and management of enterprise IT solutions. The focus is on applications and infrastructure and their fit with the business. Students learn frameworks and strategies for infrastructure management, system administration, data/information architecture, content management, distributed computing, middleware, legacy system integration, system consolidation, software selection, total cost of ownership calculation, IT investment analysis, and emerging technologies.”

<*> **Accronym Enterprise Architecture (EA)**



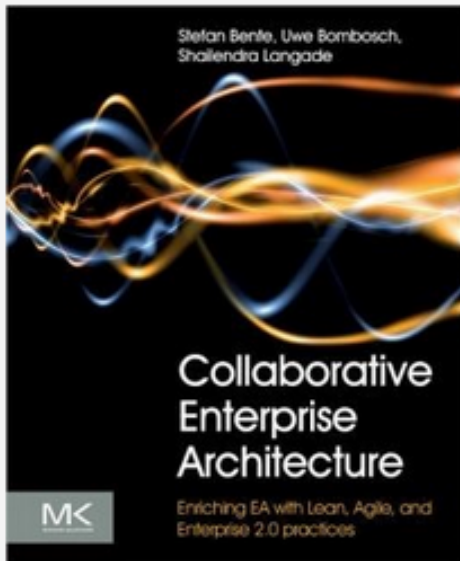
CIS421 Collaborative Enterprise Architecture

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School: Barbara.lauridsen@natuniv.edu

Website: www.barbaralauridsen.com or <http://barbaralauridsen.com/>



Textbook

Bente, S., Bombosch, U., & Langade, S.(2012). *Collaborative Enterprise Architecture*. (3rd ed). Amsterdam, Netherlands: Elsevier Science.

ISBN: 978-0-12-415934-1



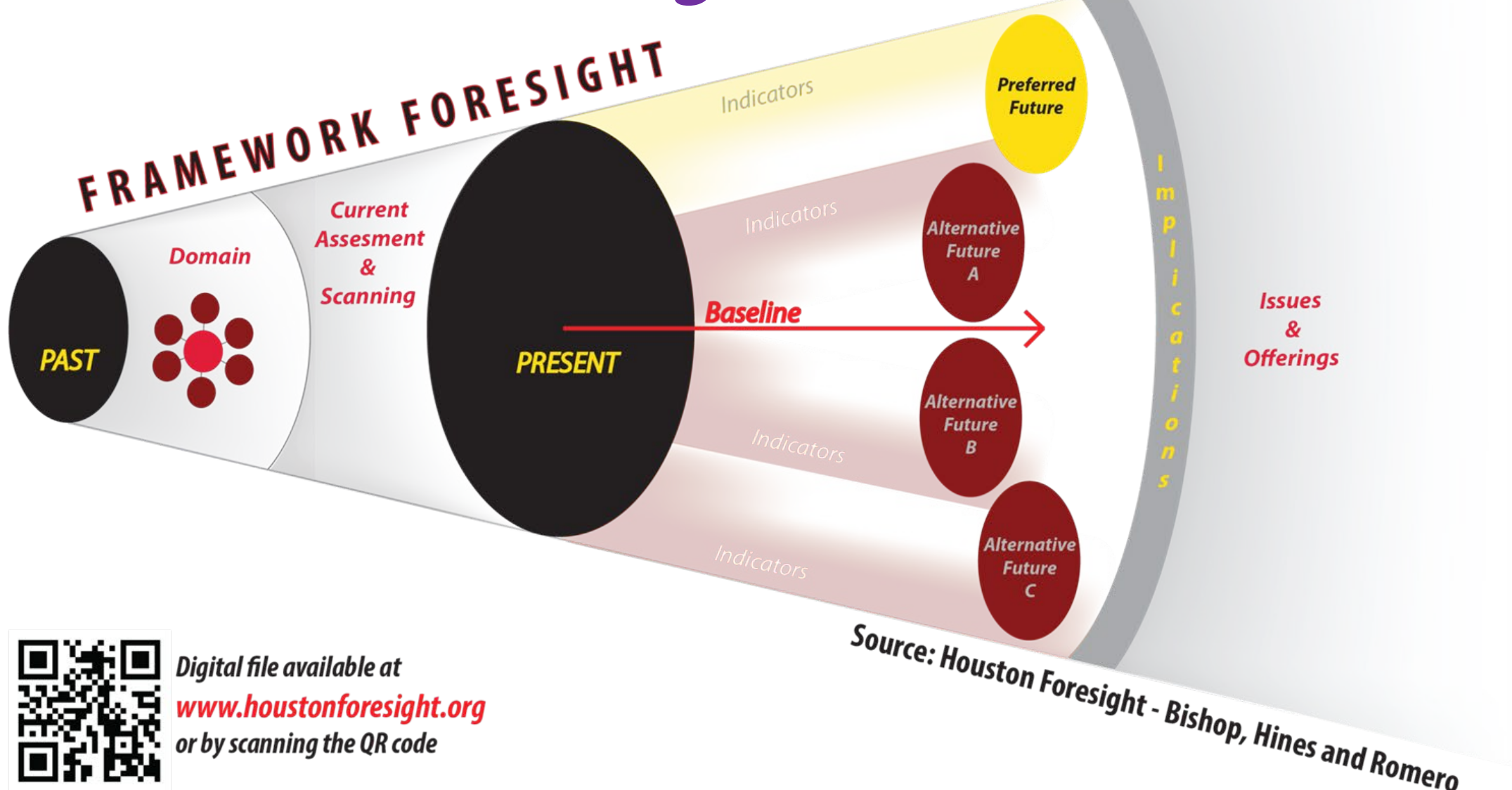
CIS421 Collaborative Enterprise Architecture

January 2019 – **on-campus**

Course Learning Outcomes (CLO):

- • Utilize *techniques* for assessing and managing risk *across the portfolio of the enterprise.*
- Evaluate and plan for the integration of emerging technologies
- Describe the benefits and risks of Service Oriented Architecture.
- • Analyze the *integration of enterprise systems* with **inter-organizational partners** such as suppliers, government, etc.

“framework thinking”

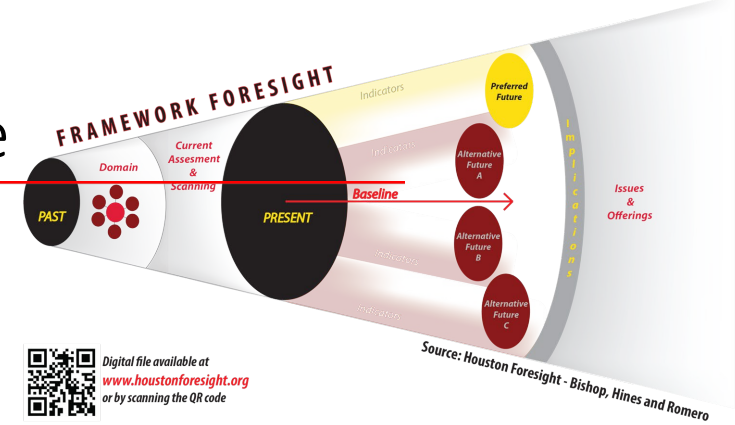


Source: Houston Foresight - Bishop, Hines and Romero



Digital file available at
www.houstonforesight.org
or by scanning the QR code

“framework thinking” ... timeline baseline



From Framework Forecasting



Framing

Scoping the project:
audience; work environment; purpose & objectives; team



Focal issue

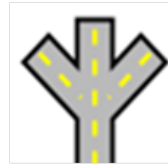


Scanning

Collecting information:
the system; history; context; scan for signals of change



Research & Scan Hits



Forecasting

Describing baseline and alternative futures: drivers & uncertainties; diverging and converging



Baselines & Alternative Futures

To Framework Foresight

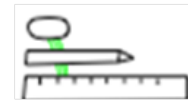


Visioning

Choosing a preferred future: implications of forecasts; envisioning desired outcomes



Implications & Preferred Future



Planning

Organizing to achieve the vision: strategies, options, and plans



Plans



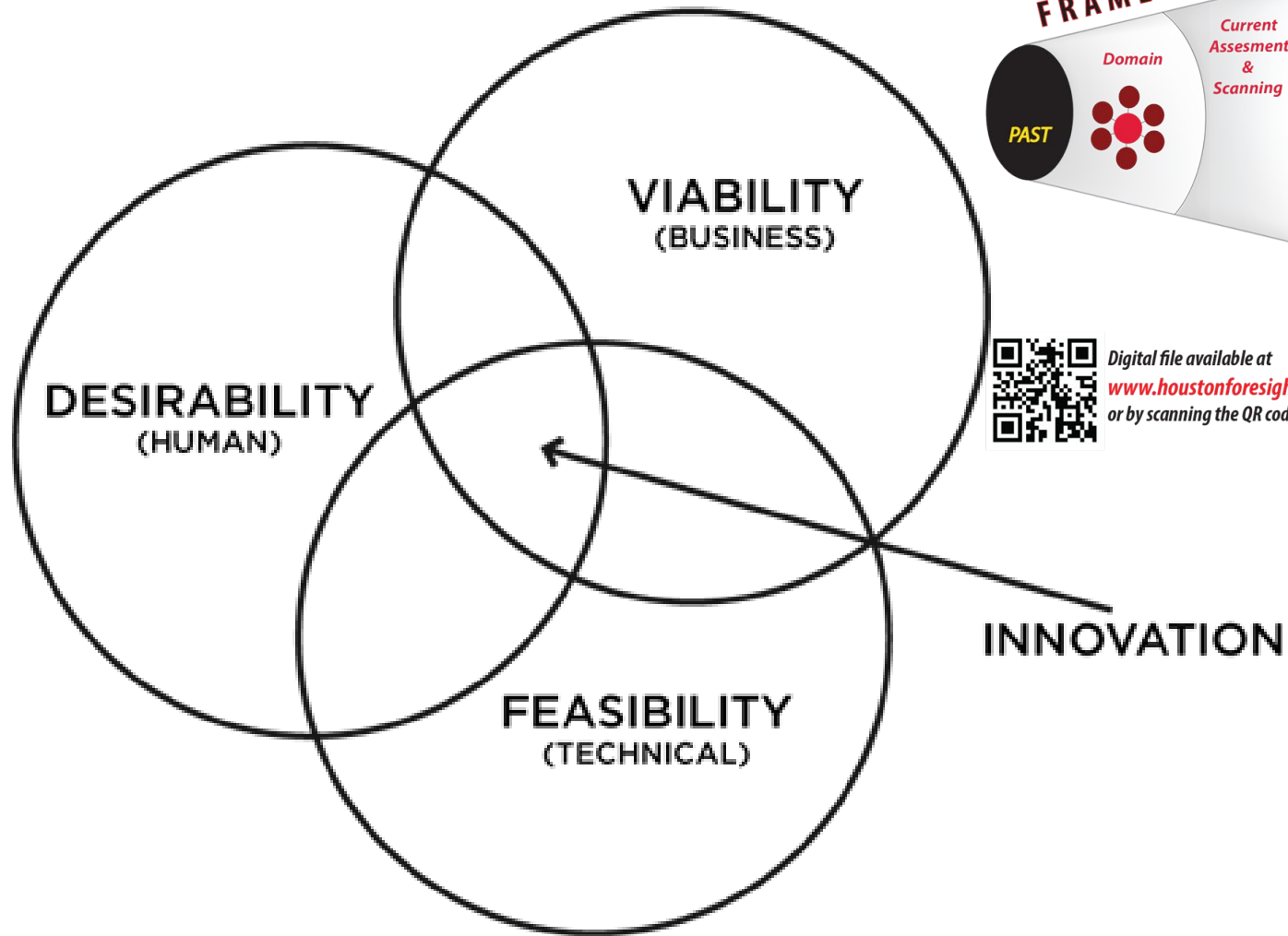
Acting

Implementing the plan: communicating results; action agendas; indicators; institutionalizing

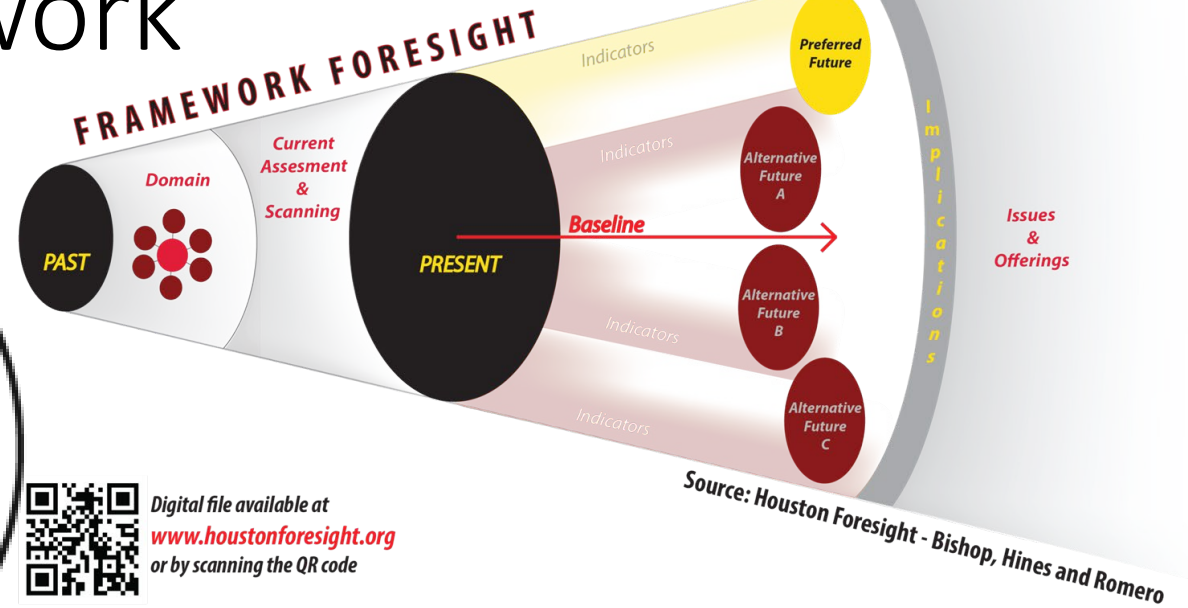


Actions

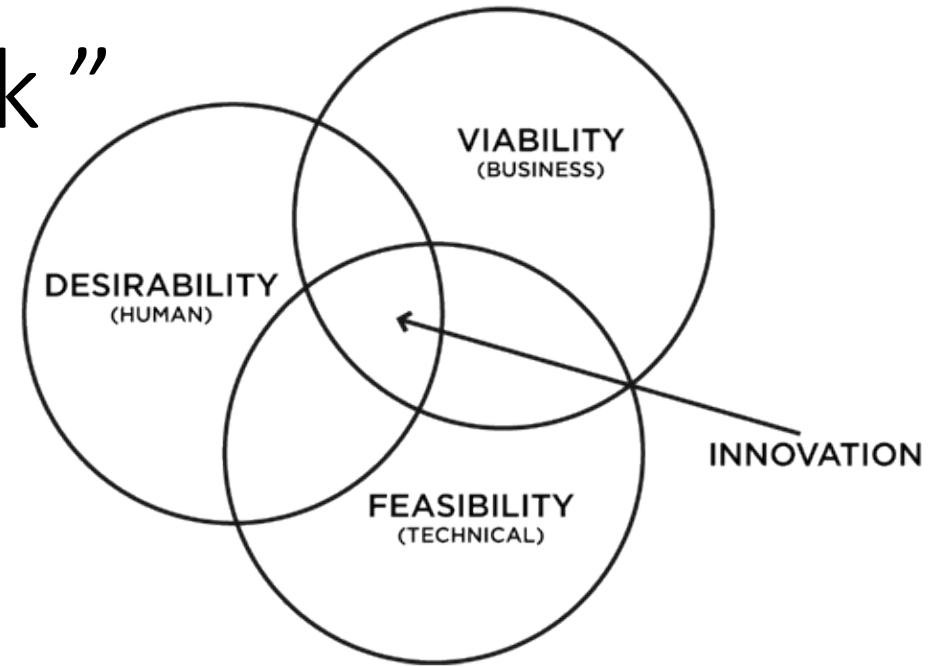
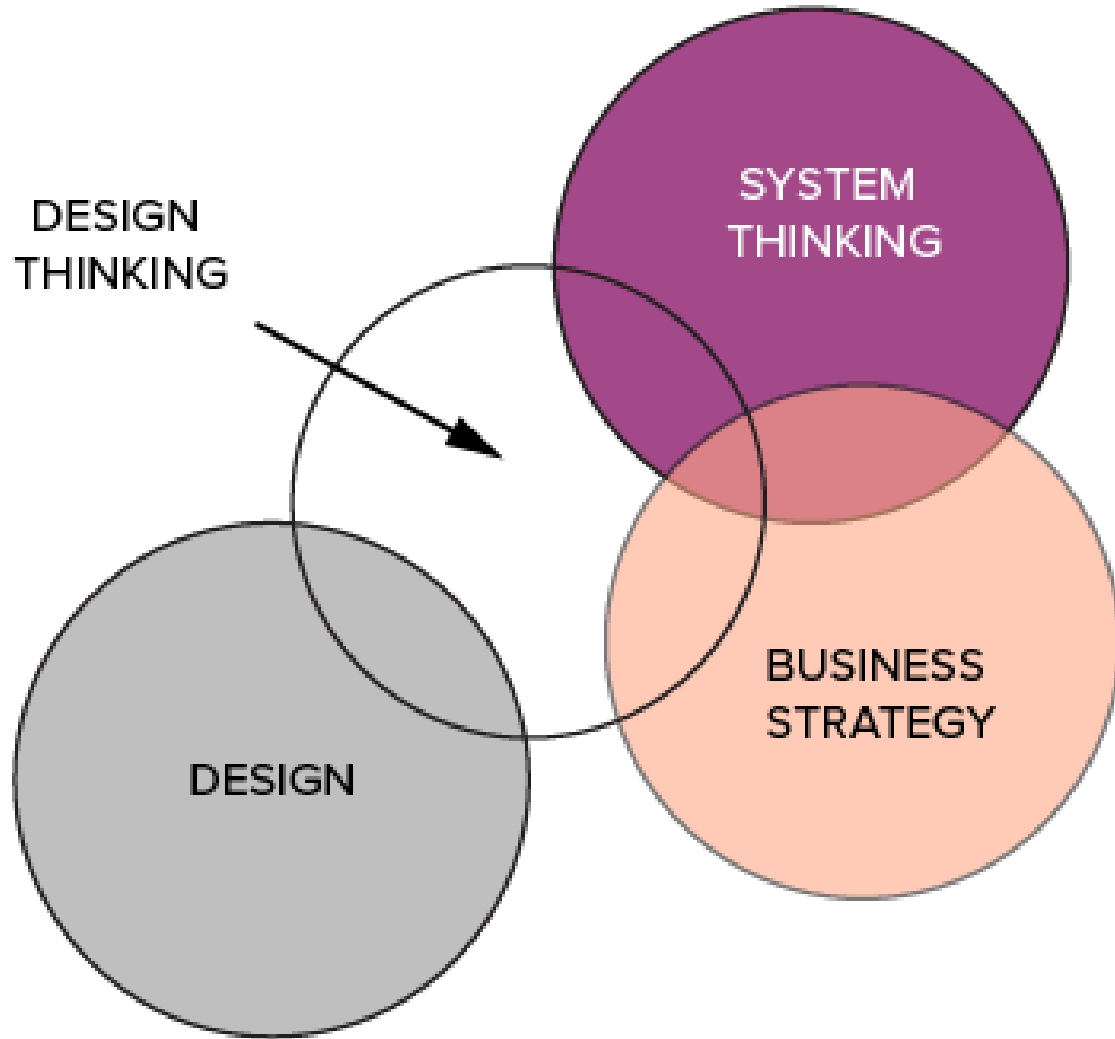
“design thinking framework”



Digital file available at www.houstonforesight.org or by scanning the QR code

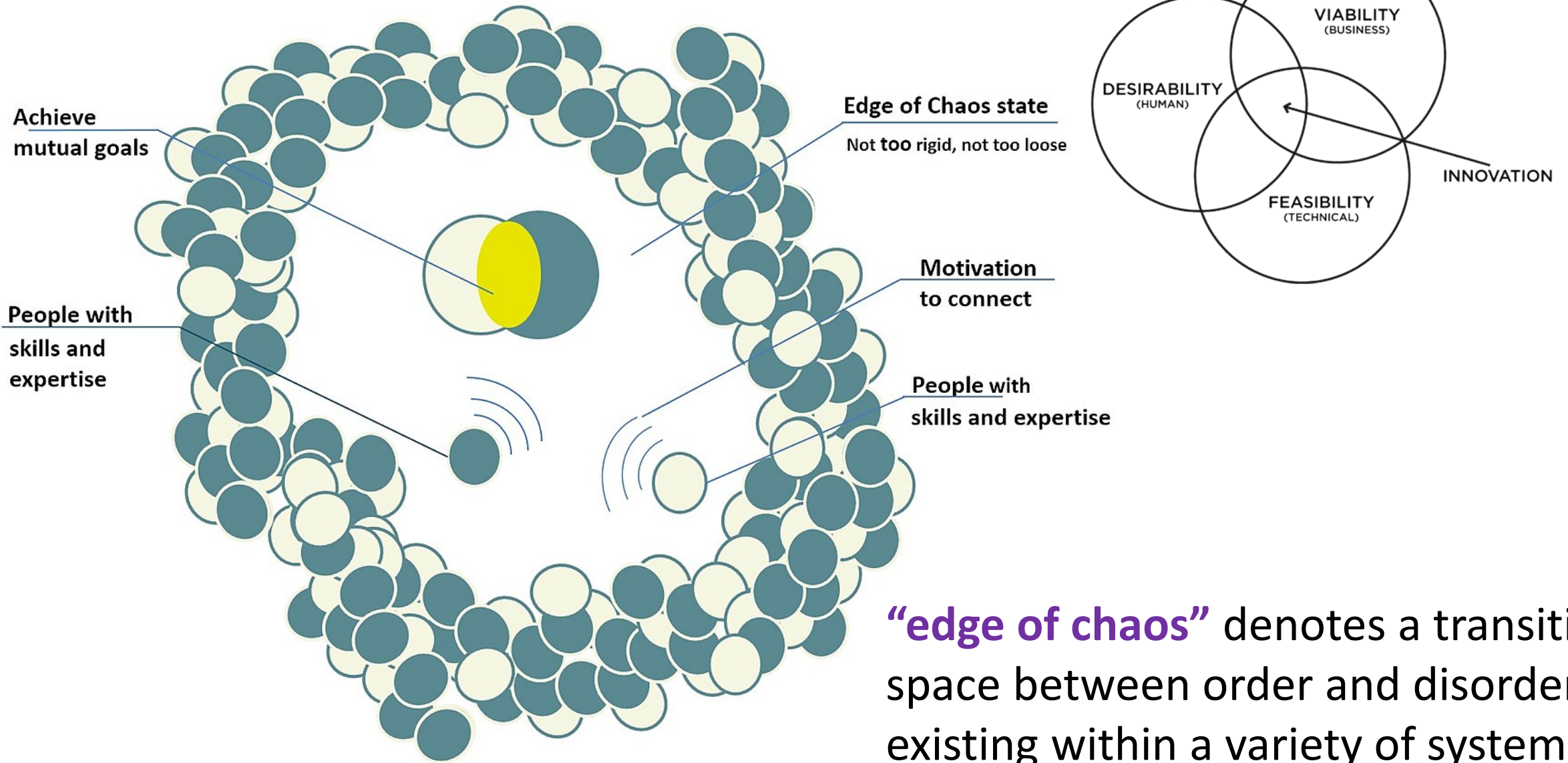


“design thinking framework”



“5 Insightful Design Thinking Frameworks”

Social collaboration happens at the Edge of Chaos



“edge of chaos” denotes a transition space between order and disorder existing within a variety of systems.

“enterprise architecture framework”

ENTERPRISE ARCHITECTURE - A FRAMEWORK™

	DATA #Box	FUNCTION #Box	NETWORK #Flow	PEOPLE #Box	TIME #Flow	MOTIVATION #Box	
SCOPE (CONTEXTUAL)							SCOPE (CONTEXTUAL)
Planner	Entity = Class of Business Thing	Process = Class of Business Process	Node = Major Business Location	People = Major Organization Unit	Time = Major Business Event/Cycle	End/Mean = Major Business Goal/Strategy	Planner
BUSINESS MODEL (CONCEPTUAL)							BUSINESS MODEL (CONCEPTUAL)
Owner	Ent = Business Entity Rel = Business Relationship	Proc = Business Process FD = Business Resource	Node = Business Location Link = Business Linkage	People = Organization Unit Work = Work Product	Time = Business Event Cycle = Business Cycle	End = Business Objective Means = Business Strategy	Owner
SYSTEM MODEL (LOGICAL)							SYSTEM MODEL (LOGICAL)
Designer	Ent = Data Entity Rel = Data Relationship	Proc = Application Function FD = User Views	Node = I/O Function Processor, Terminal, etc. Link = Data Characteristics	People = Role Work = Job Variable	Time = System Event Cycle = Processing Cycle	End = Structural Assumption Means = Action Assumption	Designer
TECHNOLOGY MODEL (PHYSICAL)							TECHNOLOGY MODEL (PHYSICAL)
Builder	Ent = Segment/Module Rel = Port/Key/Link	Proc = Computer Function FD = Data Elements/sets	Node = Hardware/Systems Software Link = Link Specifications	People = User Work = Screen Panel	Time = Execute Cycle = Component Cycle	End = Condition Means = Action	Builder
DETAILED REPRESENTATION (OUT-OF- CONTEXT)							DETAILED REPRESENTATION (OUT-OF- CONTEXT)
Self- Contractor	Ent = Field Rel = Address	Proc = Language Statement FD = Control Block	Node = Address Link = Protocol	People = Identity Work = Job	Time = Interval Cycle = Machine Cycle	End = Sub-condition Means = Flow	Self- Contractor
FUNCTIONING ENTERPRISE	e.g. DATA	e.g. FUNCTION	e.g. NETWORK	e.g. ORGANIZATION	e.g. SCHEDULE	e.g. STRATEGY	FUNCTIONING ENTERPRISE

Original Framework- simple static graphic.

© John A. Zachman, Zachman International 2001

<https://www.zachman.com/ea-articles-reference/54-the-zachman-framework-evolution>

The Zachman Framework for Enterprise Architecture™

The Enterprise Ontology™

Version 2.0



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NOT a new Framework- it is a new Framework graphic.

2011



Barbara Lauridsen

2 months ago

Z Framework Rows. What are they?

Written by John A. Zachman on Thursday, 19 March 2015. Posted in [Zachman International](#)

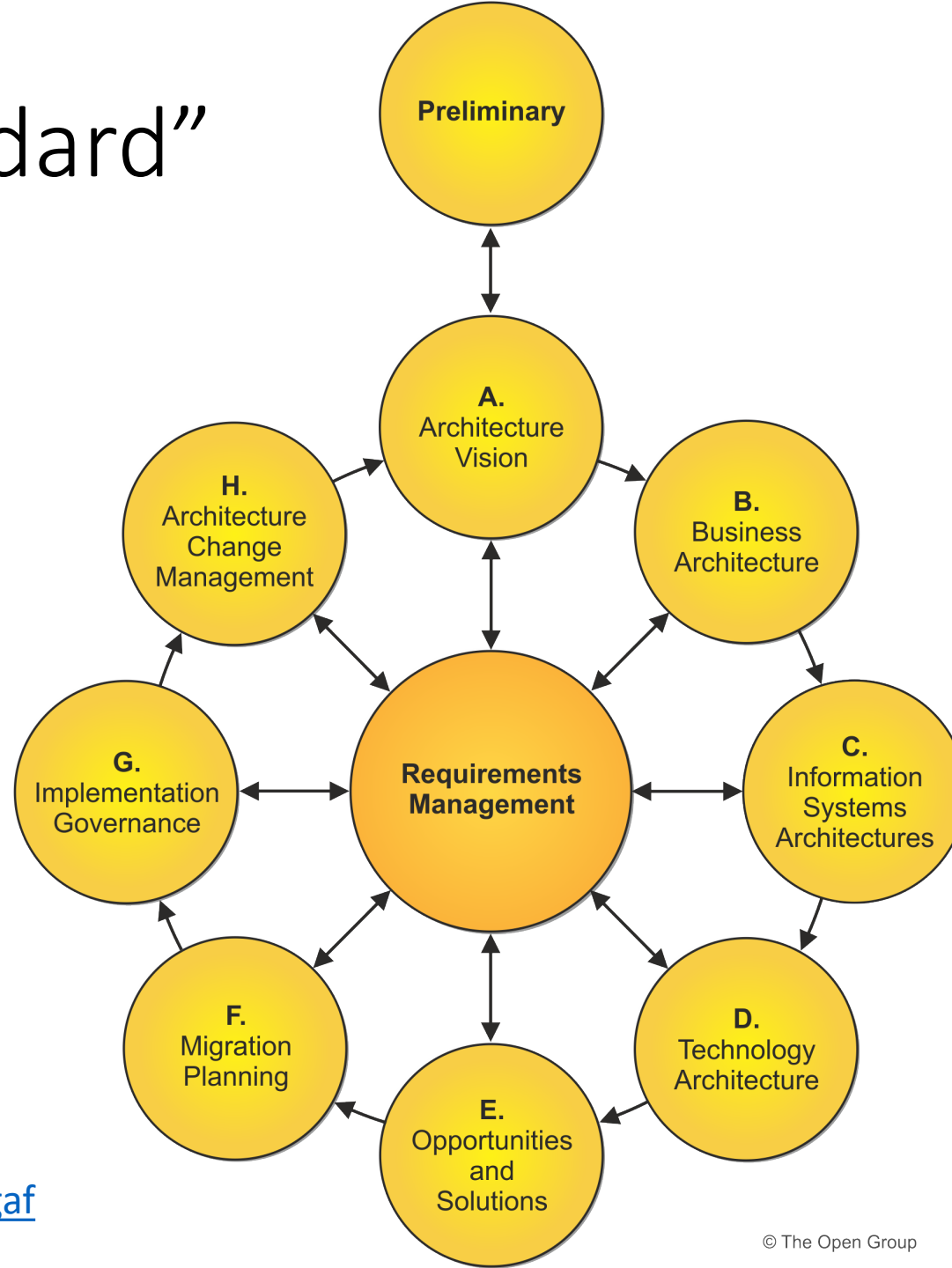


Reification (Rows of the Zachman Framework):

- Row 1: First you have to Identify it, name it so you can have some discussion about it.
- Row 2: Next you have to Define it, the semantic intentions. The meaning, the structural definitions of the Enterprise components. The elements of Row 1 did not get more detail, they were transformed into a different perspective.
- Row 3: Then you Represent it as all engineering is done with representations, not physical material.
- Row 4: Next you Specify it based on the implementation technologies available.
- Row 5: Next you Configure it based on the tooling to be used.
- Row 6: Then, you Instantiate it- it becomes reality.

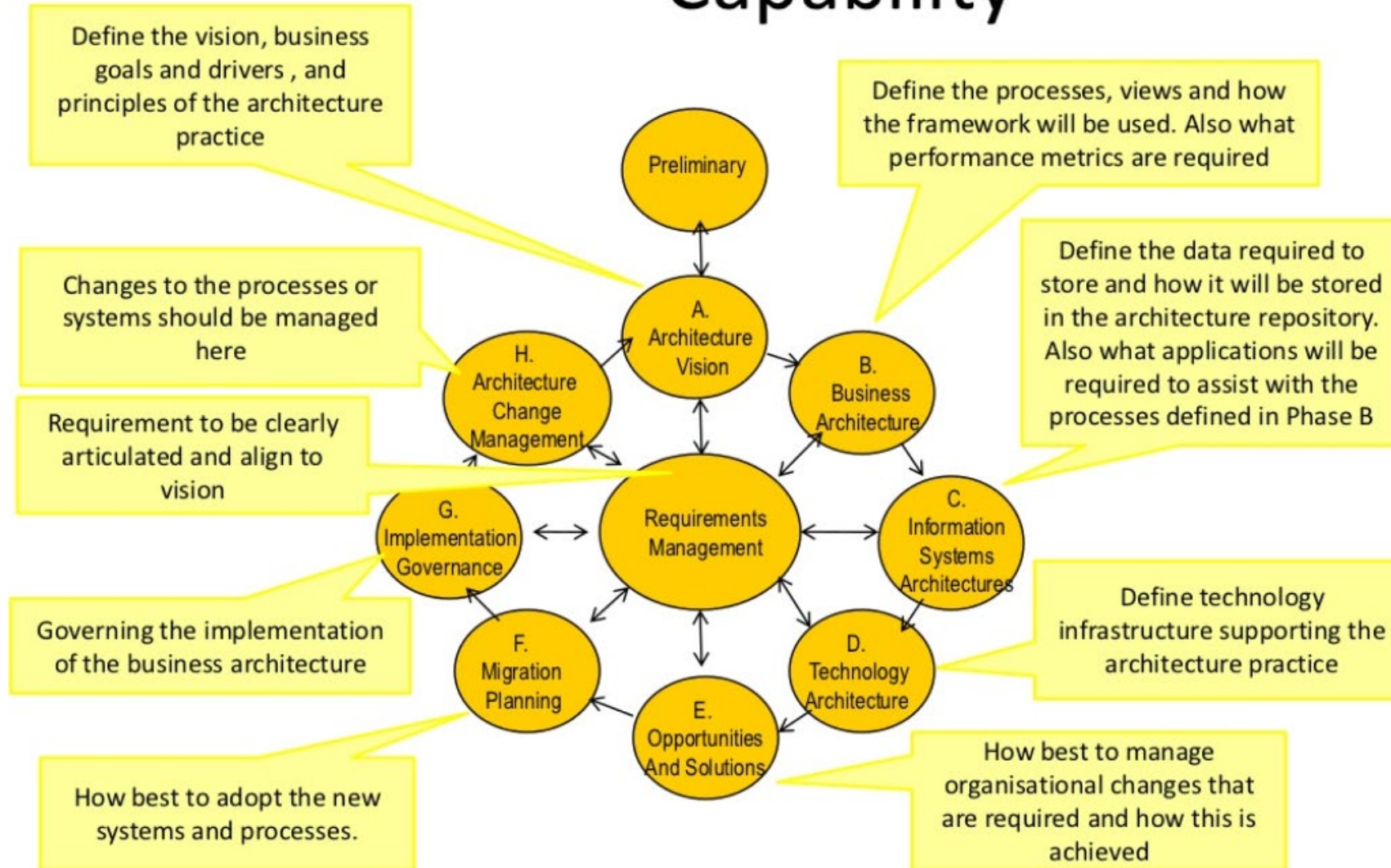
Zachman's website <https://www.zachman.com/resources/zblog/item/zachman-framework-rows-what-are-they>

“TOGAF Standard”

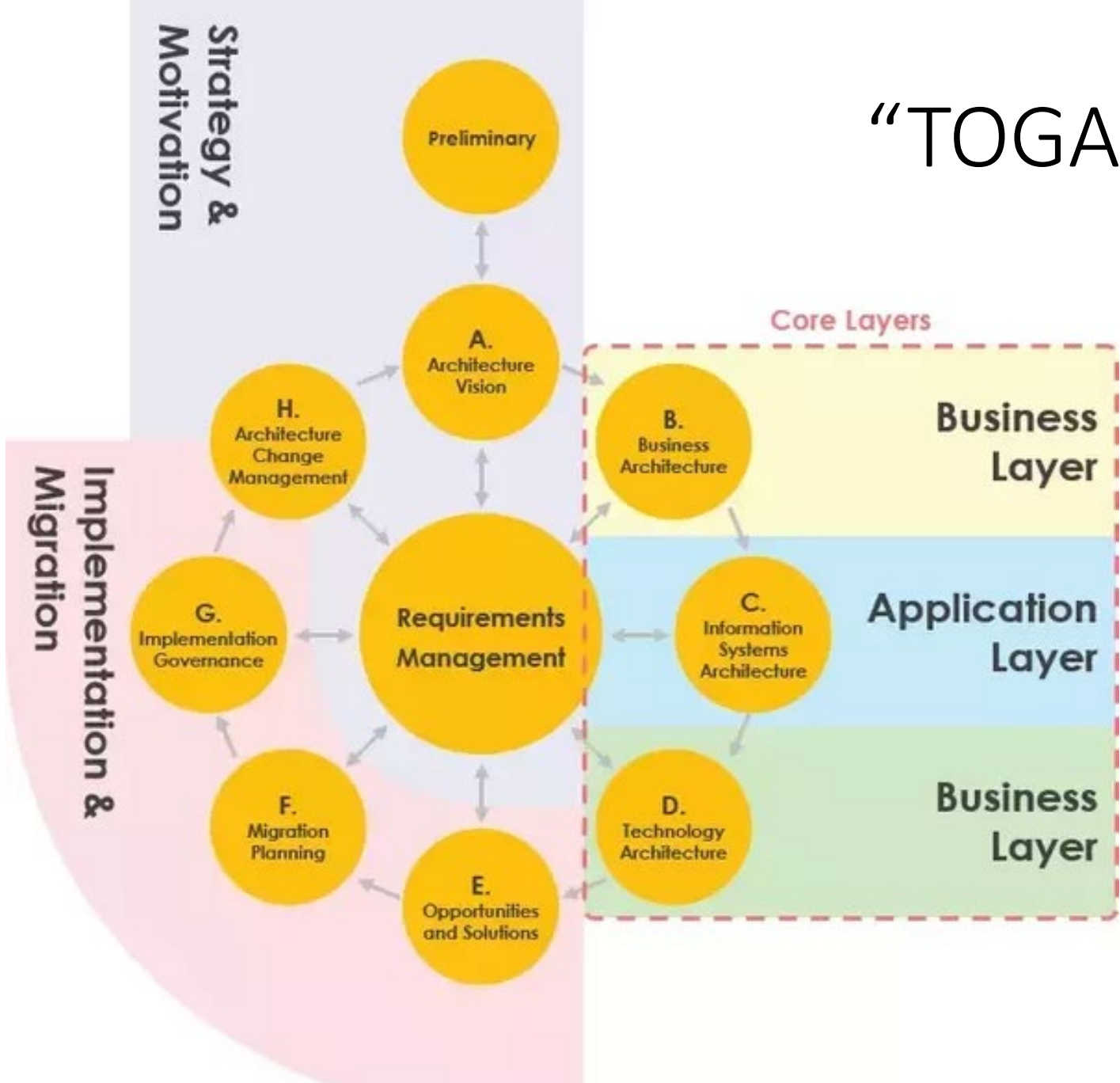


Using ADM to establish architecture capability

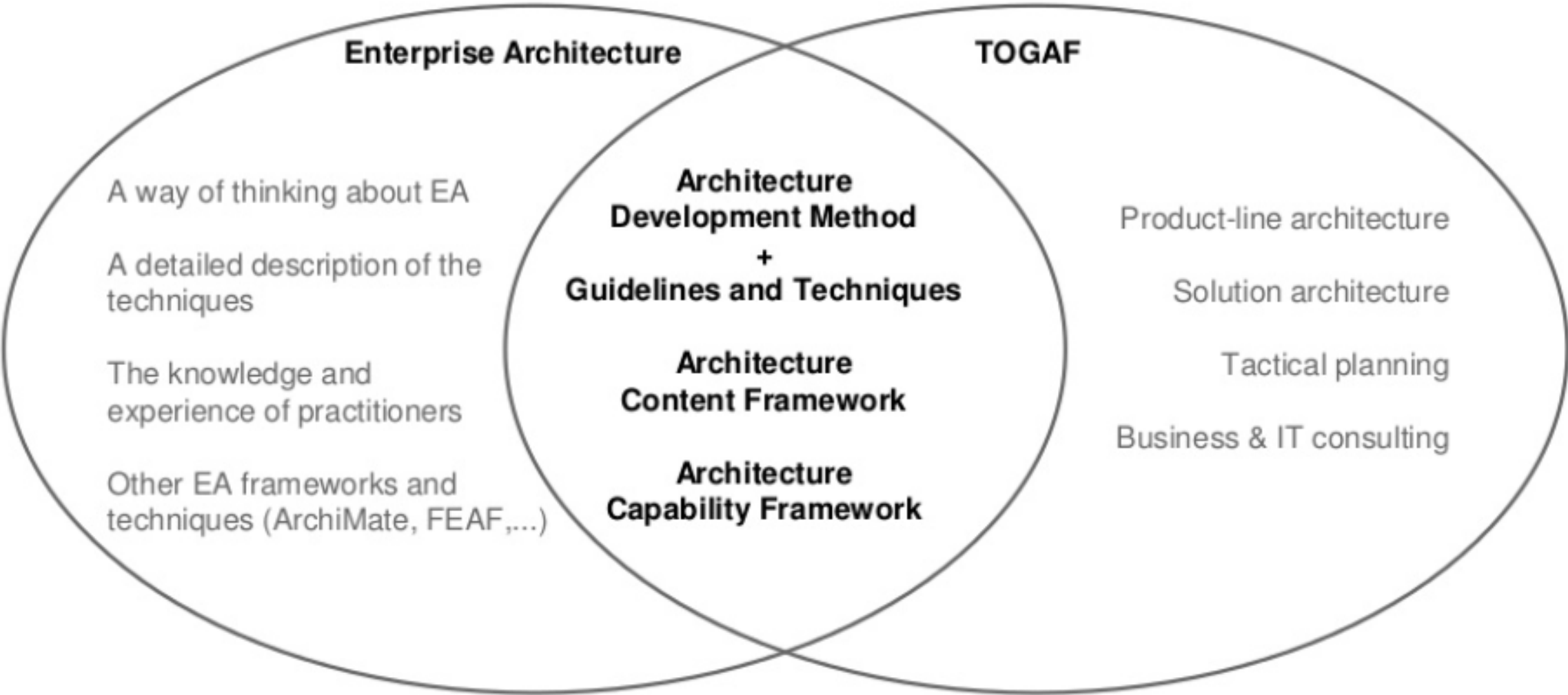
Establishing a Architecture Capability



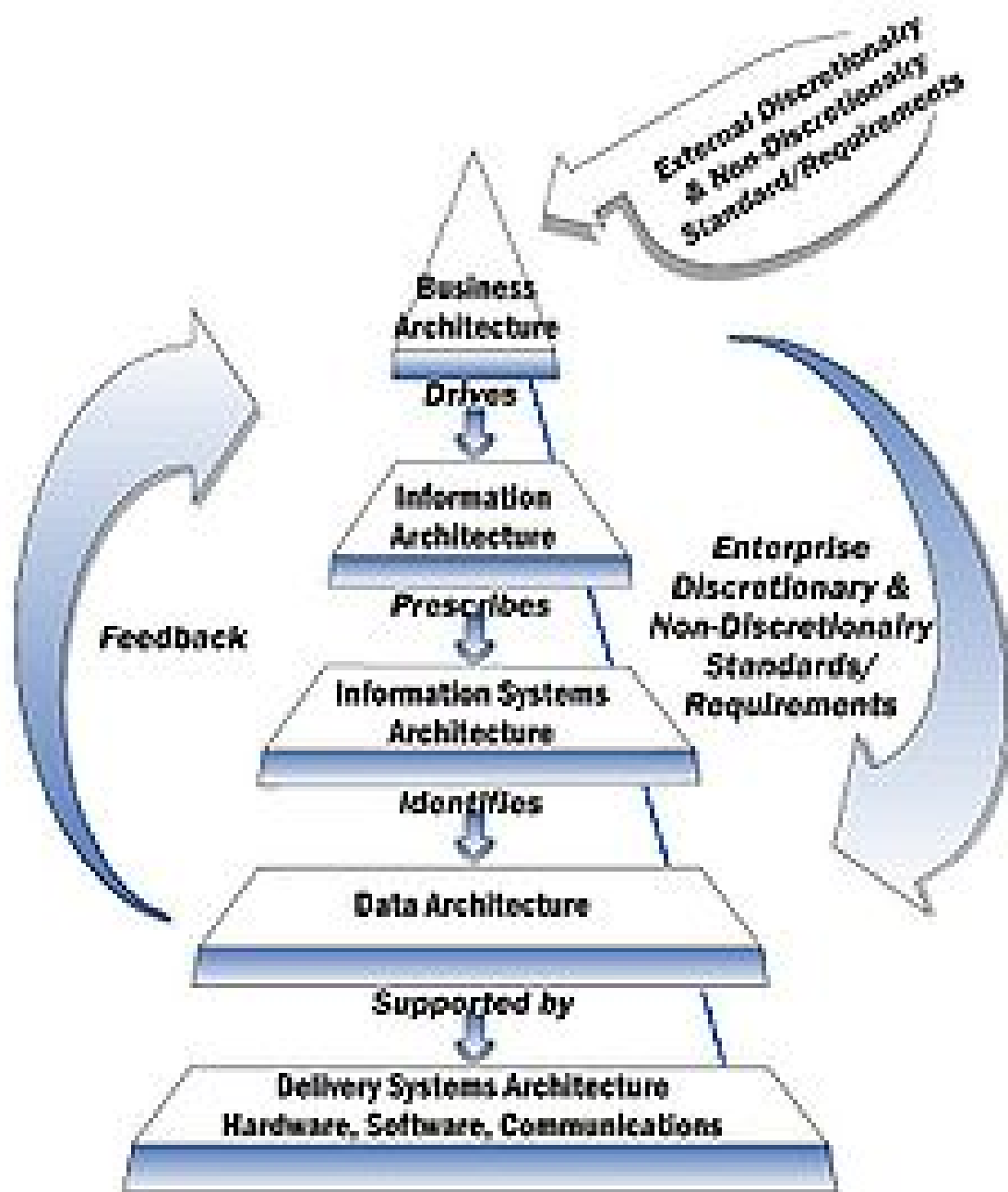
“TOGAF and ArchiMate”



How Enterprise Architecture relates to TOGAF



“NIST enterprise architecture model”



1989

[National Institute of Standards and Technology](https://en.wikipedia.org/wiki/NIST_Enterprise_Architecture_Model) (NIST) is a reference model ...

1989, an early EA framework

Posting within a team thread: offering ways to scope an EA approach...

Van der Vliet

Human Rights within an overall achitecture

Framework can entail many representations. In a traditional view, it may look like this:

TOGAF

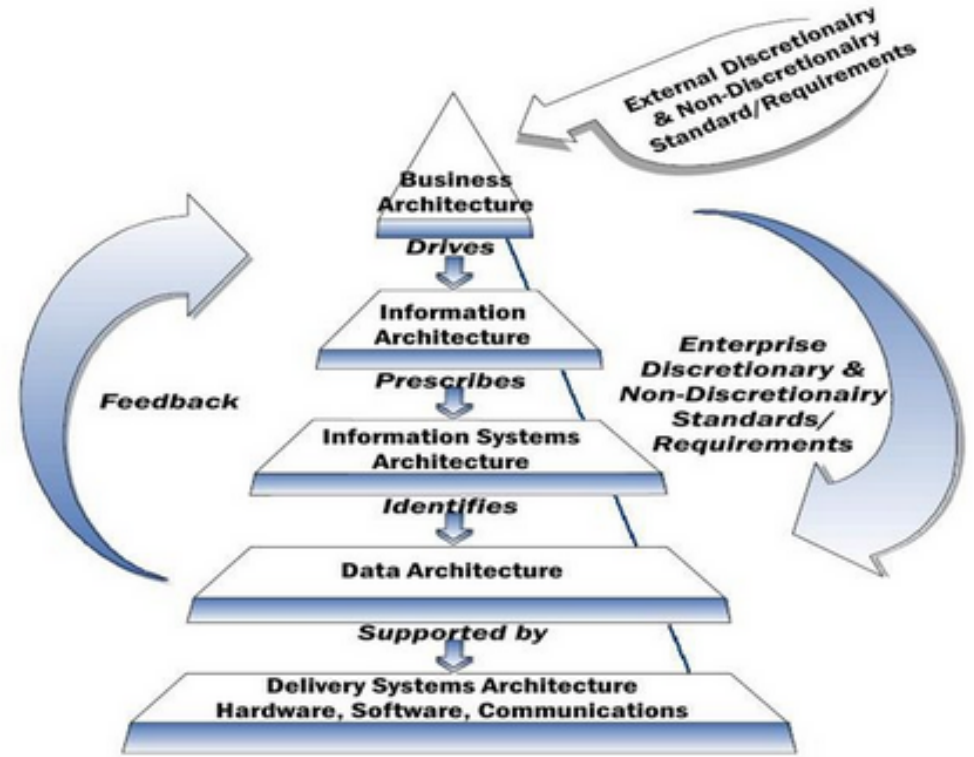


Image is "clickable"



The Open Group Architecture Framework (TOGAF) is a framework a detailed method and a set of supporting tools for developing an enterprise architecture.

-It may be used freely by any organization wishing to develop an enterprise architecture for use within that organization

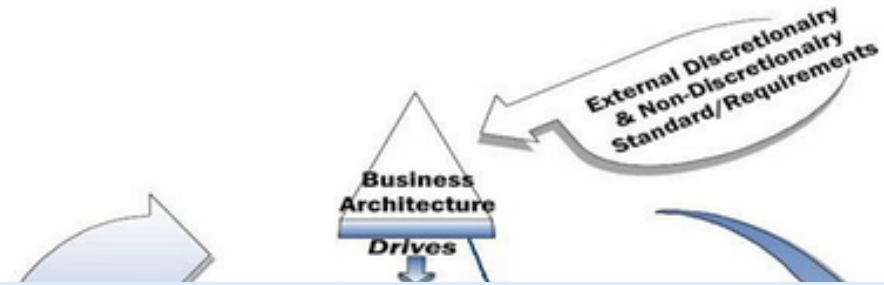
Posting within a team thread:
individual's post
...to extend an idea

Van der Vliet

Human Rights within an overall architecture

Framework can entail many representations. In a traditional view, it may look like this:

TOGAF



However, it can also encompass a wider spectrum such as:

Image result for ea framework examples companies

As one can see, the latter representation contains a mission. The mission may be human rights amongst others.

Posting into a thread: sharing research in support of “framework thinking”

My A... x Bb Thread: Coca Cola's EA Fra... x +

rd/do/message?action=list_messi 120% Search

This is EA Framework in general.



SUSTAINABLE FRAMEWORK FOR LOW CARBON CITIES & GREEN TOWNSHIPS



Low Carbon City is a **place where people want to live and work, now and in the future.**

They **meet the diverse needs** of existing and future residents, are sensitive to their **environment**, and contribute to a **high quality of life.**

They are **safe and inclusive, well planned, built and managed**, and offer **equality in opportunity and good urban services** for all.

Bristol Accord, 6-7 December 2005

Copyright Reserved GreenTech Malaysia

Image is “clickable”

Example architecture model

Scrum is also an architecture



Next, a guide to a PBL group

Copyright © 2015 ITpreneurs. All rights reserved.

exercise about framework thinking

<https://www.slideshare.net/dannygreefhorst/agile-togaf-and-enterprise-architecture-will-they-blend/32>

source: neon rain interactive

... a "best" EA Framework? or more than 1?

Architecture Frameworks

Source

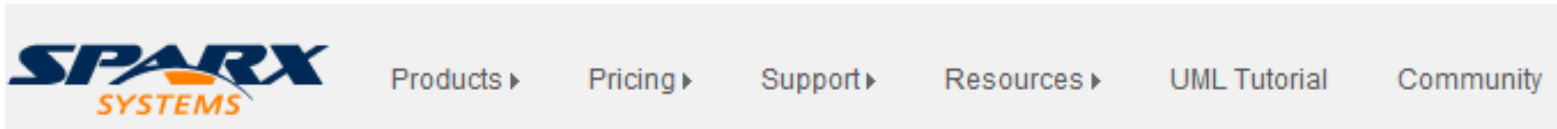
https://sparxsystems.com/enterprise_architect_user_guide/14.0/model_domains/enterprise_architecture.html



Enterprise Architecture is becoming an important discipline, as organizations need to understand the fundamental aspects of their business in order to keep pace with the global market in a continually evolving world. Enterprise Architect has built-in support for all of the important enterprise architecture frameworks and enterprise modeling languages, allowing an enterprise to be modeled from the business goals and drivers down to Cloud-based infrastructure services.

... a "best" EAF? or more than 1?

https://sparxsystems.com/enterprise_architect_user_guide/14.0/model_domains/enterprise_architecture.html 



 TOGAF

 UPDM

 The Zachman Framework

 ArchiMate



..."best" EAF?

https://sparxsystems.com/enterprise_architecture/



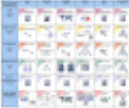

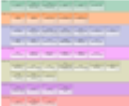

 TOGAF

 UPDM

 The Zachman Framework

 ArchiMate

Frameworks and Modeling Languages

Framework/Language	Description
The Zachman Framework 	The Zachman Framework is a widely used approach for engineering Enterprise Architecture. The Framework is a simple, logical structure that helps in organizing the information infrastructure of the Enterprise.
TOGAF 	The Open Group Architecture Framework (TOGAF) is one of the most widely accepted methods for developing Enterprise Architecture, providing a practical, definitive and proven step-by-step method for developing and maintaining Enterprise Architecture.
UPDM 	The MDG Technology for UPDM tightly integrates with Sparx Systems Enterprise Architect and provides a model-based framework for planning, designing and implementing the Unified Profile for DoDAF and MODAF (UPDM) architectures.
ArchiMate 	ArchiMate® is a common language for describing the construction and operation of business processes, organizational structures, information flows, IT systems and technical infrastructure.

... "best" EAF?

Zachman framework... as a template

The Zachman Framework Interface Diagram

The Zachman Framework is a predefined model in Enterprise Architect. The structure is the Zachman Framework Interface diagram, which serves as a template for the development of Enterprise Architecture based on the Zachman classification framework.



Each cell links to the relevant Zachman Framework diagram in the child Packages in the base model.

The Zachman Framework	DATA What	FUNCTION How	NETWORK Where	PEOPLE Who	TIME When
SCOPE (Contextual) Planner	Things Important to the Business 	Processes the Business Performs 	Locations in which the Business Operates 	Organizations Important to the Business 	Events/Cycles Significant to the Business
BUSINESS MODEL (Conceptual) Owner	Conceptual Data Model 	Business Process Model 	Business Logistics 	Work Flow Model 	Master Schedule
SYSTEM MODEL (Logical) Designer	Logical Data Model 	Application Architecture 	Distributed System Architecture 	Human Interface Architecture 	Processing Structure
TECHNOLOGY MODEL (Physical) Builder	Physical Data Model 	System Design 	Technology Architecture 	Presentation Architecture 	Control Structure
DETAILED OF PRESENTATIONS	Data Definition 	Program 	Network Architecture 	Security Architecture 	Timing Definition

... "best" EAF?
getting started...

Z framework Template SPARX

http://sparxsystems.com/enterprise_architect_user_guide/12.1/enterprise_architecture/zf_diagram_types_and_toolboxes.html

The MDG Technology for Zachman Framework extends the Enterprise Architect diagram types to support the Framework, with **diagram types** appropriate to each cell of the Zachman Framework.



ZFI Zachman Framework

<i>The Zachman Framework</i>	What Data	How Function	Where Location	Who People	When Time	Why Future
Planner Objective/Scope	Business Data	High Level Business Process	Business Locations	Organization Chart	Business Events	Business Motivation
Owner Conceptual	Data Map Add-In Generated Process Map	Process Analysis	Business Logistics	BPMN	Event Schedule	Strategy Map Mind Mapping
Designer Logical	Class - (Platform Independent Model)	Activity	Data Distribution Architecture	Use Case	State Transition	Business Rule Model Requirements
Builder Physical	Physical Data Model	Class - (Platform Specific Model) Component	Deployment	User Interface	Interaction Communication	Rule Design
Sub- Constructor Out-of-Context	Data Definition Enterprise Architect DDL Generation	Enterprise Architect Code Generation	Network Architecture	Security Architecture	Timing	Rule Specification
FUNCTIONING ENTERPRISE						

Legend

- UML Diagrams
- UML Profile for Zachman Framework
- Enterprise Architect extension

Bb “blogging” as crowd-sourcing

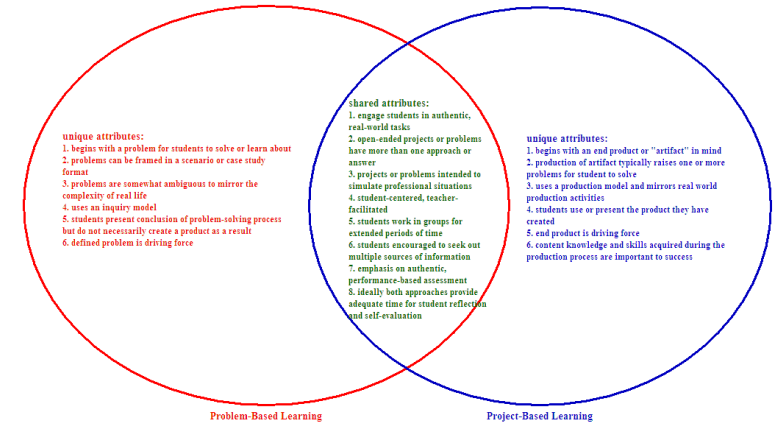
Interactivity of blog-style posts encourages active participation.

Tutor led PBL sessions end by group posting ideas with “clickable” links to sources, providing *enhanced P2P learning*

Next, an example Tutor pkg to guide weekly PBL group exercises



CIS421

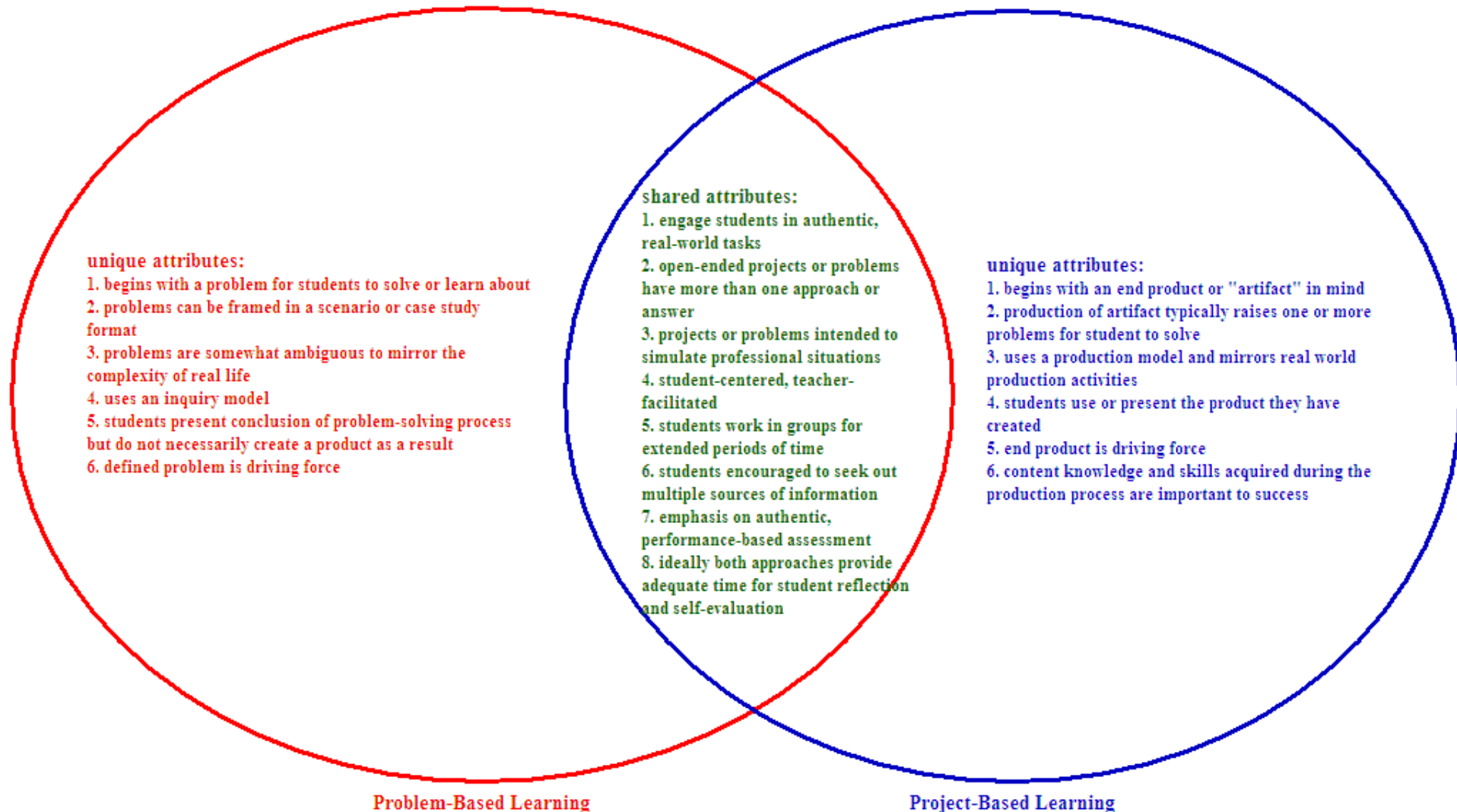


tutor's guidance for Problem-Base Learning (PBL), transitioning into Project-based Learning (PBL) in-class discussion

Week2 S4 Blog5

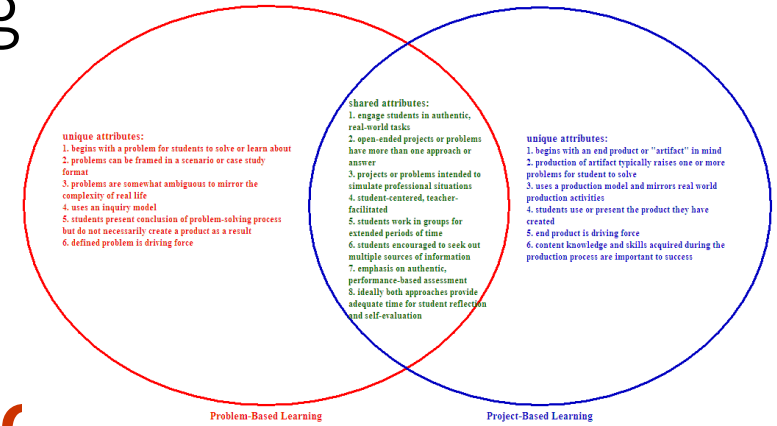
Problem vs Project-based learning

diagram by: Julia Osteen



Problem vs Project-based learning

diagram by: Julia Osteen

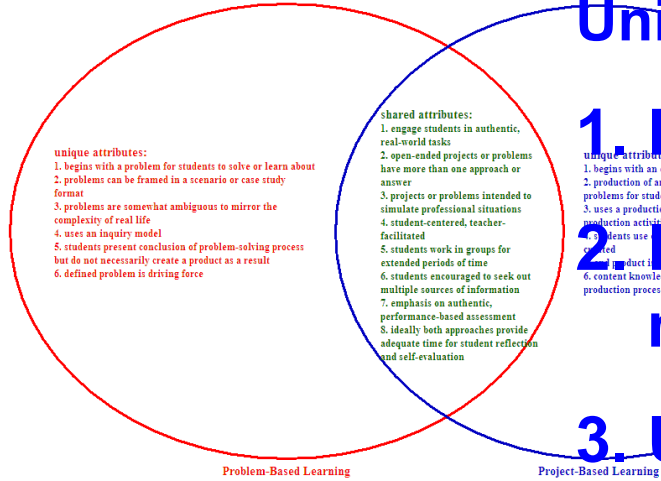


Unique attributes:

1. Beings with a problem to solve or learn about
2. *Problems can be framed in a scenario or case study format*
3. *Problems are somewhat ambiguous, to mirror the complexity of real life*
4. Uses an inquiry model
5. Students present conclusion of problem-solving process but do not necessarily create a product as a result
6. *Defining a problem is the driving force*

Problem vs Project-based learning

diagram by: Julia Osteen



Unique attributes:

1. Begins with an end product or "artifact" in mind

2. Production of artifacts typically raises one or more problems for student to solved

3. Uses a production model and mirrors real work production activities

4. Students use or present the product they have created

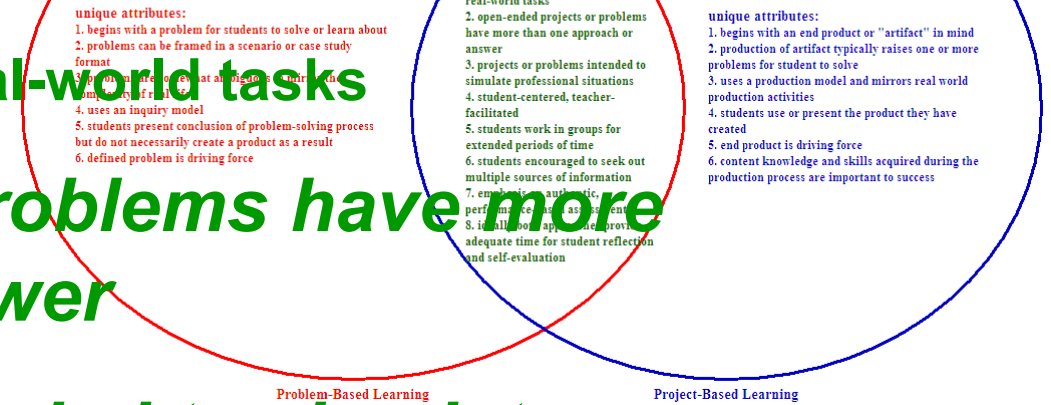
5. *An end product is the driving force*

6. Content knowledge and skills acquired during the production process are important to success

Problem vs Project-based learning

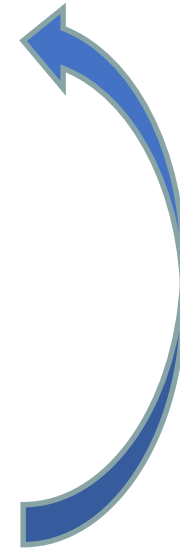
Shared attributes:

1. Engage students in authentic, real-world tasks
2. Open-ended projects or problems have more than one approach or answer
3. Projects or problems intended to simulate professional situations
4. Student-centered, teacher-facilitated
5. Students work in groups for extended periods of time
6. Students encourages to seek out multiple sources of information
7. Emphasis on authentic, performance-based assessment
8. Ideally both approaches provide adequate time for students reflections and self-evaluation



PBL Model 7 Steps

1. Analyze the problem scenario. *Roadmap for an architecture for an enterprise*
2. List what is known.
3. Develop/*refine* a problem statement.
4. List what is needed, *to gain EA maturity.*
5. List possible actions, *to integrate “framework thinking” with a roadmap*
6. Analyze information
7. Present findings (summary of experience)...
a group post to Wk2Blog5



Finding an EA *Roadmap*

- Open a WebCrawler session, start a query for EA a roadmap
- Notice but ignore ads, set a direction for further research

Are you looking for?

[Enterprise Architecture Software](#)

[Enterprise Architecture Training](#)

[Enterprise Architecture Maturity Model - NASCIO](#)

www.nascio.org/...lications/documents/NASCIO-EAMM.pdf

EA MATURITY MODEL Introduction Adaptive enterprise architecture consists of characteristics necessary to support the information technology infrastructure of an ...

[Enterprise Architecture : What is an EA maturity model?](#)

www.quora.com/...nterprise-Architecture/What-is-an-EA

An EA maturity model is a capability maturity model applied to enterprise architecture. Like all the other capability maturity models, there are 5 levels ranging in ...

[Architecture Maturity Models - The Open Group](#)

pubs.opengroup.org/...ure/togaf8-doc/arch/chap27.html

This chapter provides techniques for evaluating and quantifying an organization's maturity in enterprise architecture. Overview. Organizations that can manage change ...

Finding an EA.. *roadmap*

Links to
other
sources



Enterprise Architecture roadmap

Search


WebCrawler

web

images

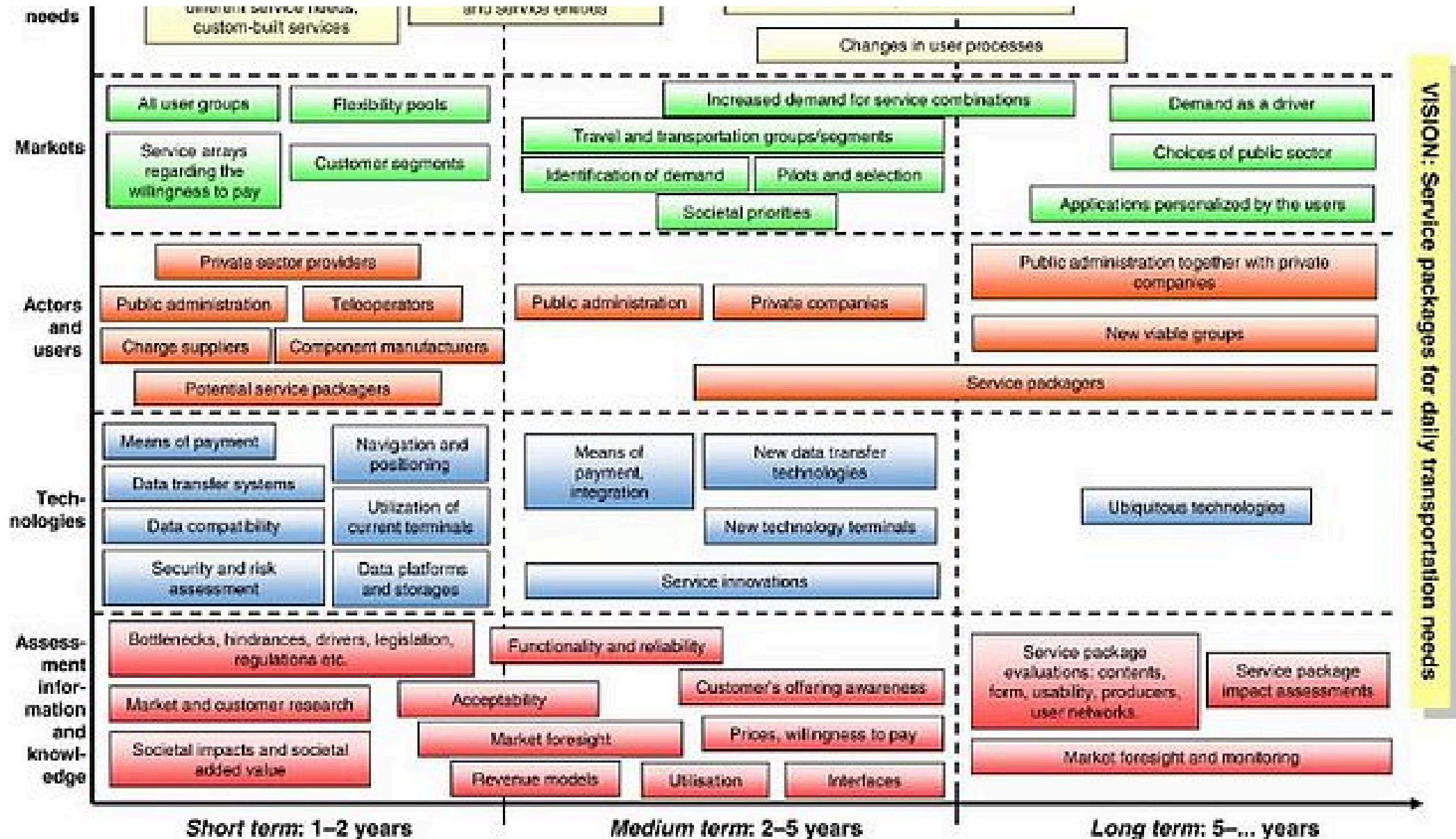
videos

news

Enterprise Architecture roadmap

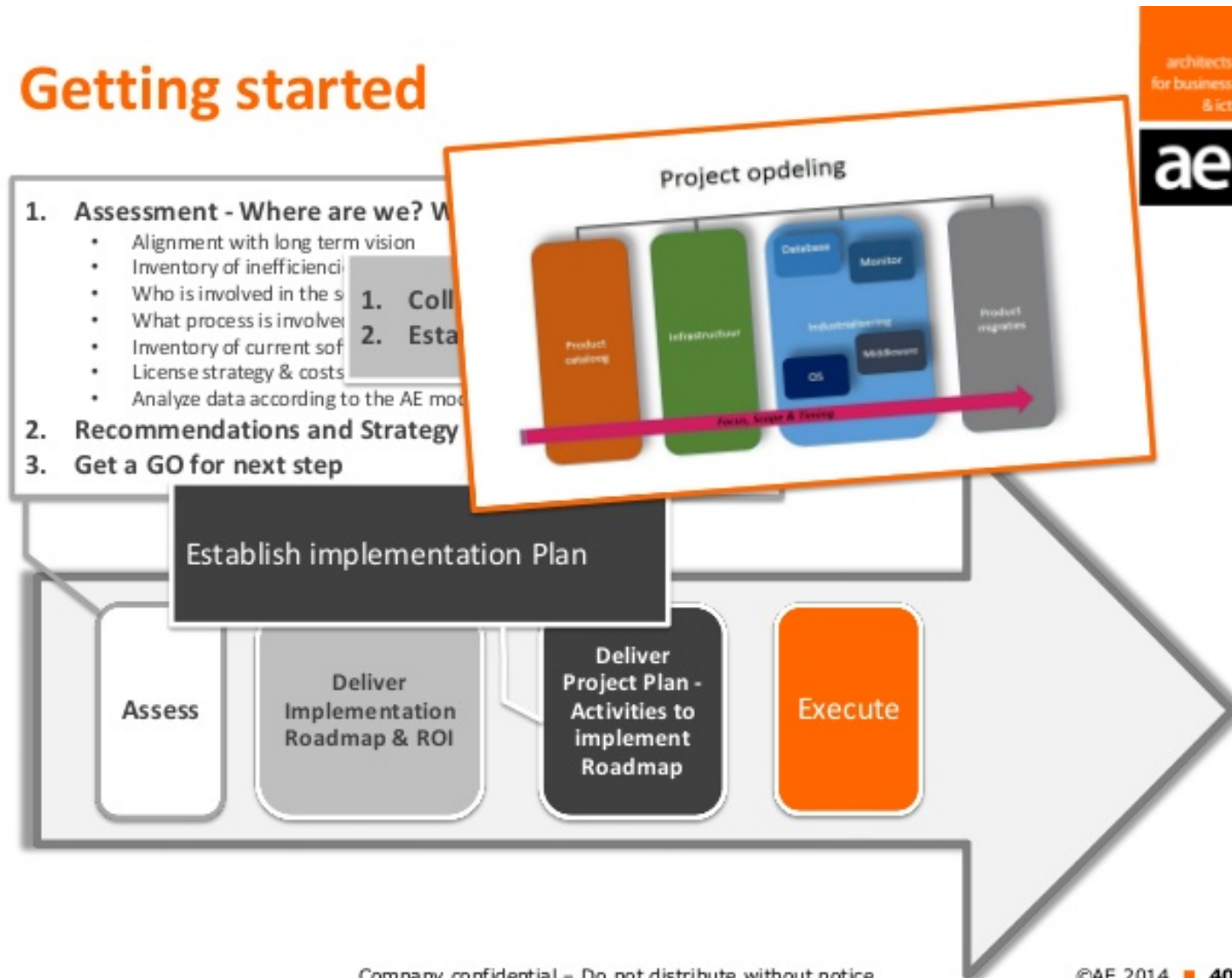
<http://www.webcrawler/>

Group inquiry discussion about *roadmaps*



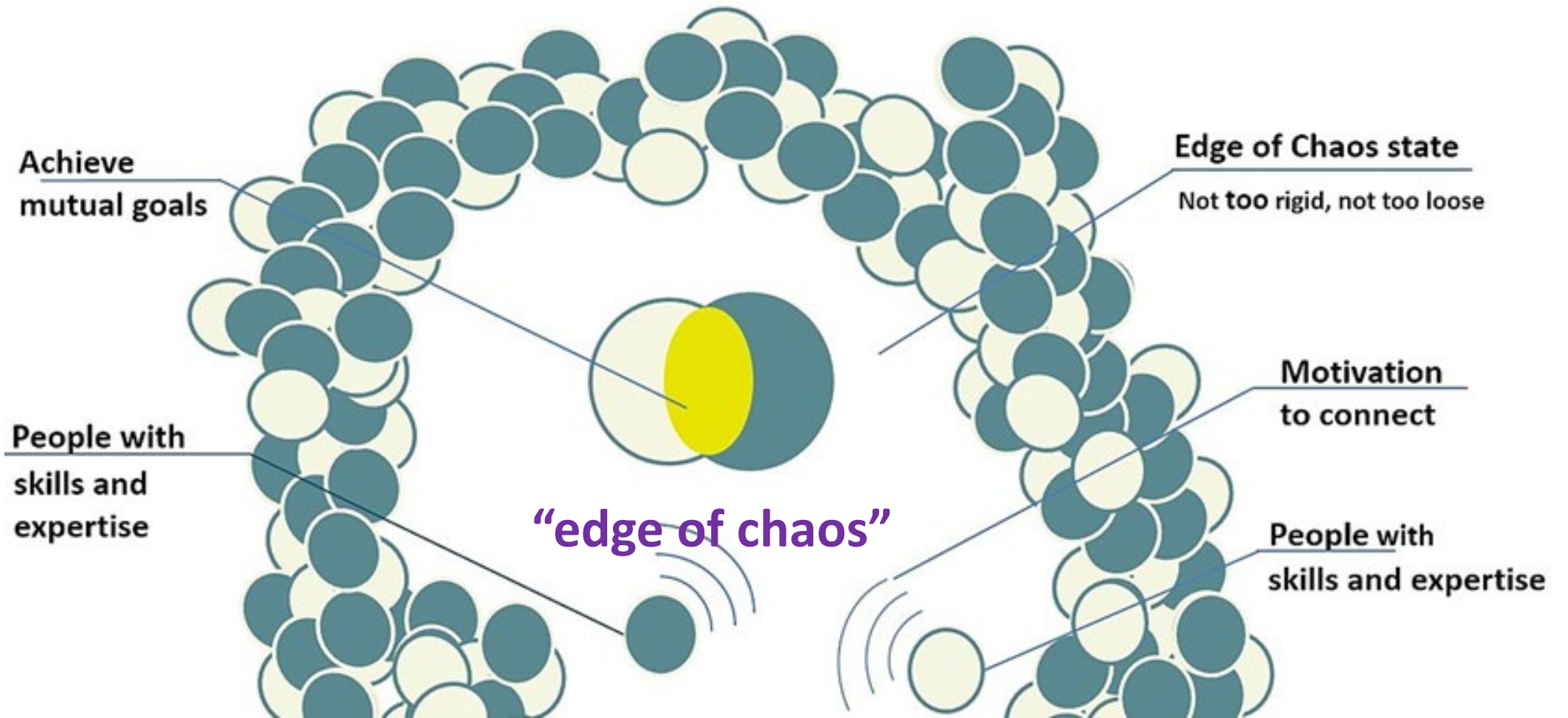
Discussion about PBL experience: defining problem(s) first... then a product

Getting started



Bb discussion threads redefined as “blogs”?
An incentive is to ***enhance*** learning objectives.

Social collaboration happens at the Edge of Chaos



Team's DQ
thread:
bringing
forward earlier
learning,
tolerating silly
moments

11:11

2 months ago

RE: human rights important in EA

First and for most, "great" post Matt! Of course human rights is very important in EA. Working too long on a diagram might make your eyes go crossed eyed. It's board line torture. I remember in database class, it took forever to try to connect two elements together with the arrows.

Who wants to walk around with crazy looking eyes!



Team's DQ
thread:
sharing
perspective
& wisdom



Barbara Lauridsen 🌟

(last edited 0 minutes ago)

RE: "conjuring your posts" ...

"... comedic relief was prized above course relevance" ...

Humor does often convey an idea that shares a perspective about a situation that gets attention, so that those talking about topic understand it better. Often a statement that has a perspective or conveys a metaphor that **clarifies a complex idea**, can add value. Sometime humor goes along for the ride... being relevant is nevertheless very important,

... share learning and insights

Image is "clickable"



“As one can see, this doesn't involve a mission statement. However, it is represented in another framework” (VNV, 2017).

RE: Zachman is the man...

To piggyback off the other group's post, here is a diagram done in Zachman's style:



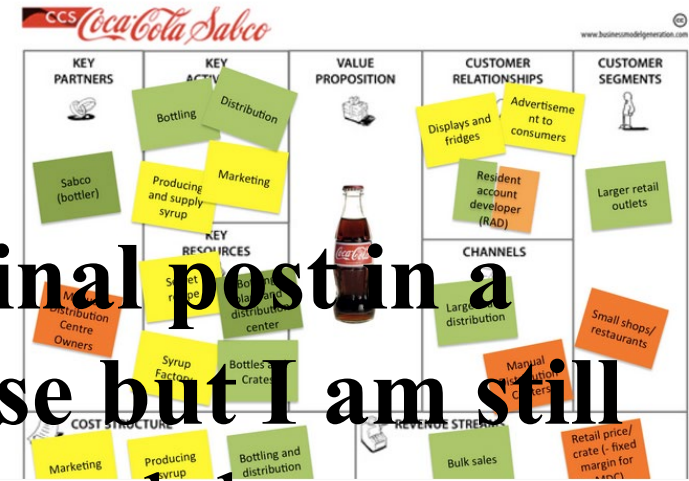
... sharing insights

RE: Zachman is the man...

Hey Vxx, this is a good comparison of our original post in a different view. I don't know about anybody else but I am still trying to get a grasp on the whole EA concept and the purpose of all the models. *I am noticing that EA can be looked at in a lot of different ways* and be called many different things. Every business has to have a plan and an end goal to be successful. **Models such as TOGAF and the Zachman framework seem to be ways to put a name and a standard to making these business plans**" (KG, 2017).

RE: Zachman is the man...

To piggyback off the other group's post, here is a diagram done in Zachman's style:



... share insights,
challenging an idea

RE: Zachman is the man...

Your sticky notes concept is definitely good for our post. But is this the draft stage of building an EA system for a company? (LP, 2017)

RE: Zachman is the man...


To piggyback off the other group's post, here is a diagram done in Zachman's style:



... sharing insights,
validating a shared
idea

*Imbedding a live link
within a word*



Barbara Lauridsen 

2 months ago

"sticky note concept"

It is reasonable and interesting metaphor to recognize that cells in a framework each present a concept that has been done, or is now being justified for action.

Source for many similar images is service to purchase image for those who are subscribed. I allowed Kapersky to open it as a resource, once after seeing the warning. I snagged these two images from the search google images pallet but could not secure the JPG name.

"Sticky Notes as a Concept "



... share insights,
confirming relevant
ideas

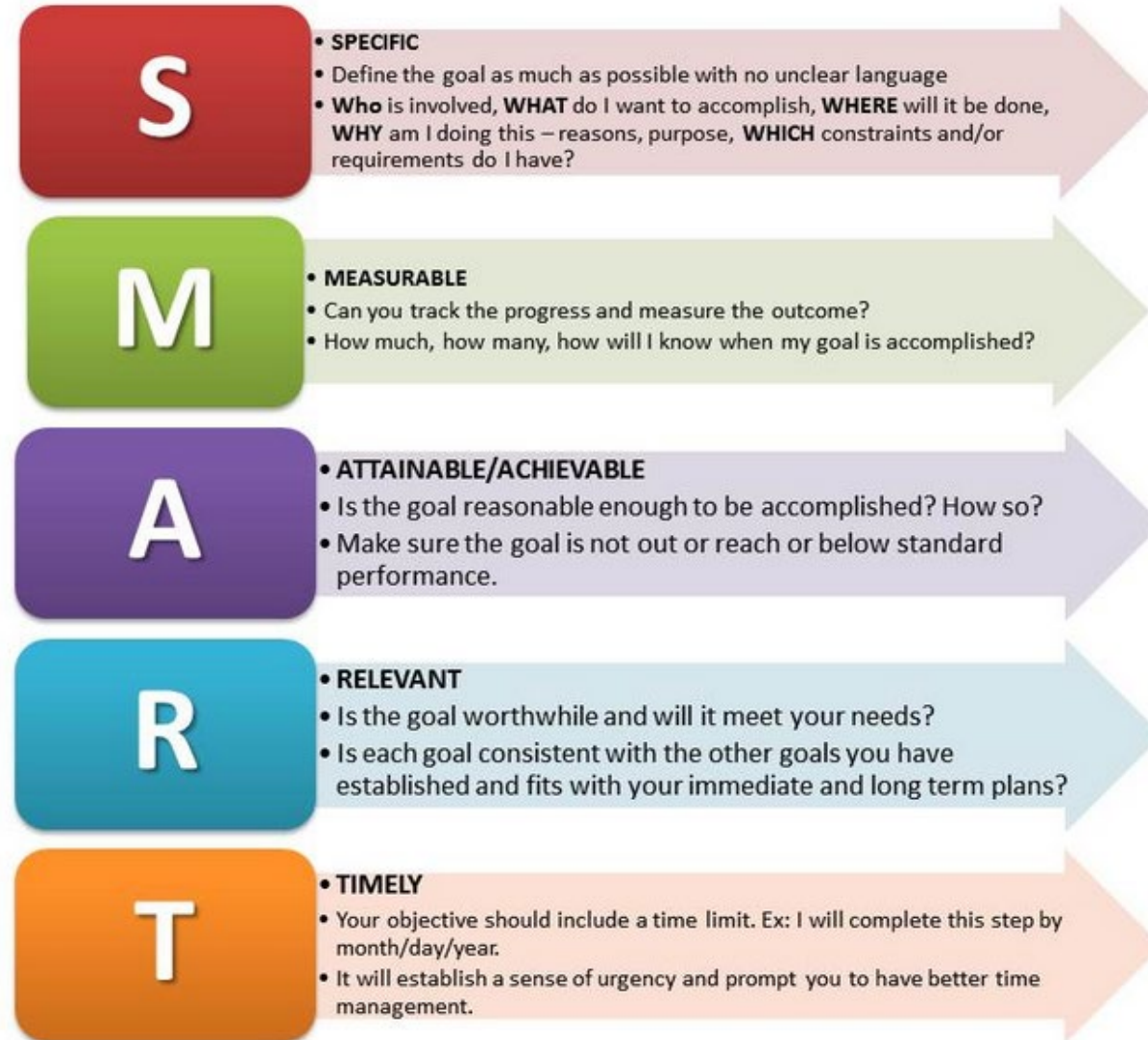
navigating live link



... becoming S. M. A. R. T.

RE: S.M.A.R.T "method"

from Edward Martinez(May 2018) SMART



... becoming S. M. A. R. T.

RE: S.M.A.R.T "method"

from Edward Martinez(May 2018) SMART



<http://www.vocfm.co.za/wp-content/uploads/2015/12/SMART-Goals.jpg>

Specific, **M**eaningful/Measurable, **A**chievable/Attainable, **R**elevant, **T**imely allows EA to have direction. It allows employees, management, architects, IT, CIOs, CEOs, & all involved to understand the baseline of where the organization is, and what the goals are to get the organization where it wants to be. Along with how it will achieve those specific goals. SMART can also work in one's everyday life, examples: setting career goals, dieting goals, educational goals.

How to focus a team on becoming S M A R T ?

- **Specific** - *Why: Specific reasons, purpose or benefits of accomplishing the goal.*
- **Measurable** - *How much? How will I know when it is accomplished?*
- **Attainable/Achievable** - *How can the goal be accomplished?*
- **Relevant** - *Does this match our other efforts/needs?*
- **Time bound** - *What can I do today?*

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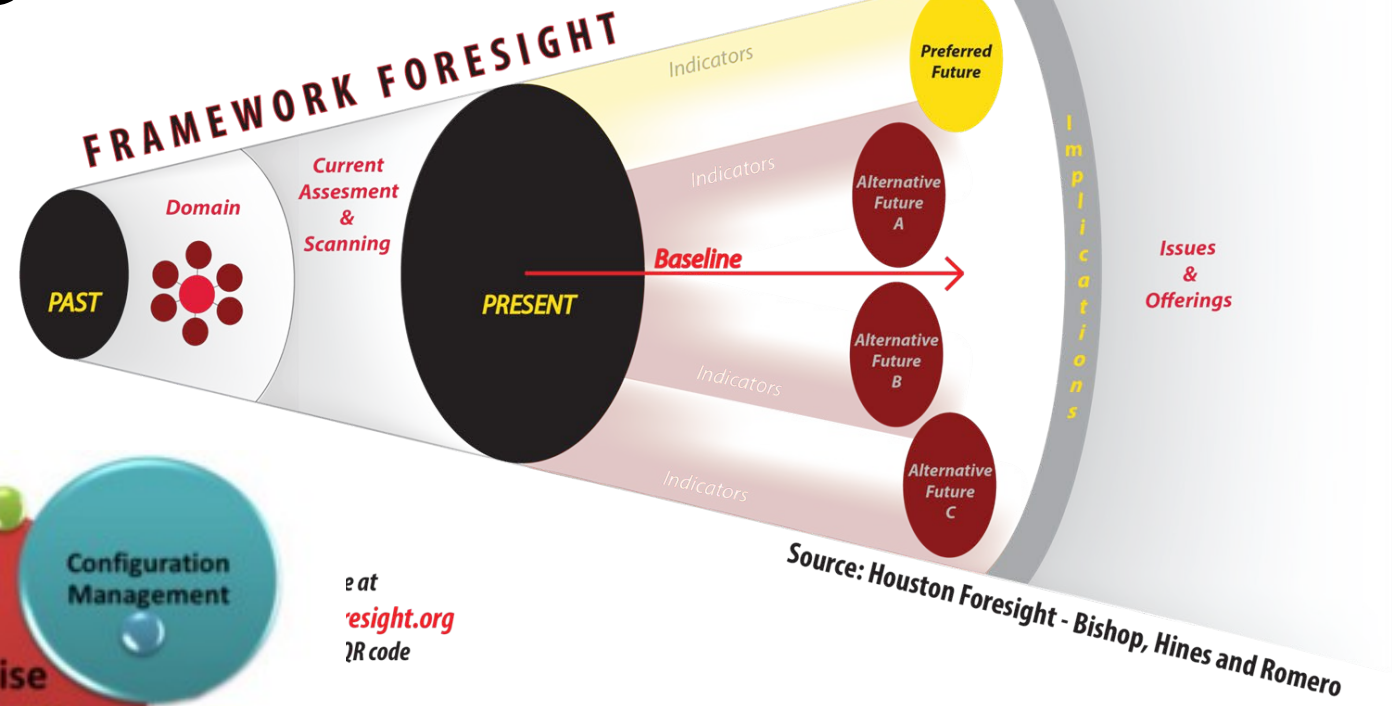
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