



# Continuous Architecture

THE AGE OF COMPLEXITY

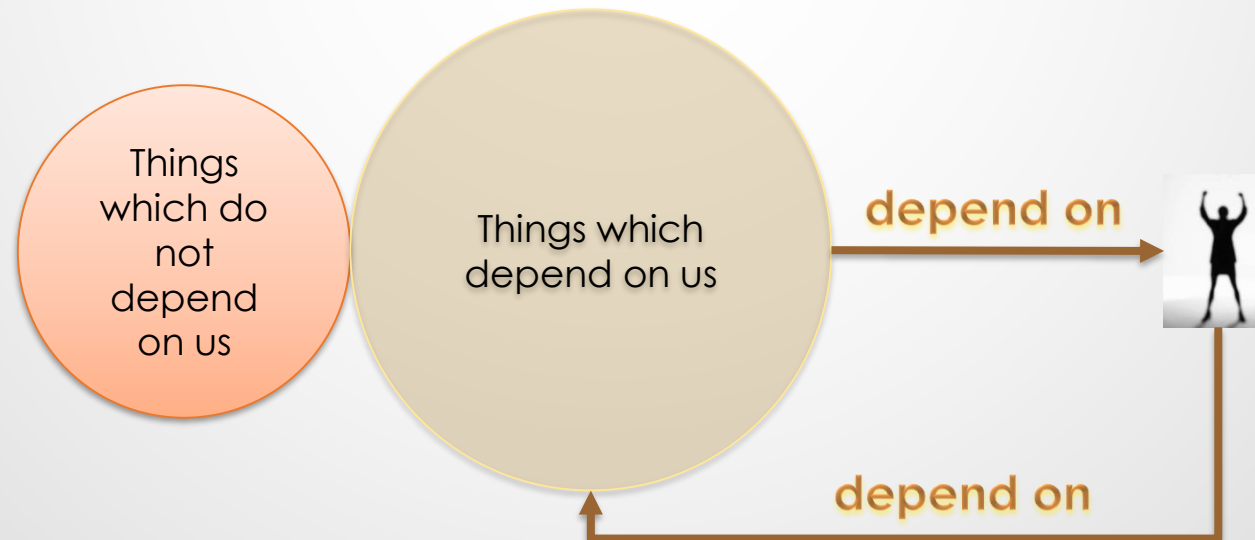
# Enterprise System Architecture Challenges

- Systems of systems raise many challenges as they seek to provide additional capabilities through the interoperability of existing autonomous systems.
- How adding capabilities without breaking the existing independent ones?
- How shared management shall be organized?
- How enough autonomy and independency shall be maintained?
- Guidance of traditional engineering practices is not enough to handle these challenges. The emerging discipline of continuous architecture attempts to provide a first answer.

# Michel Serres: mastery of mastery

⇒ We are entering a period where :

- ✓ We depend on things which depend on us.
- ✓ How will we master our mastering of things?
  - The interaction loop between our actions and the things on which we act is becoming the focal point.



⇒ The software industry has had an early experience of :

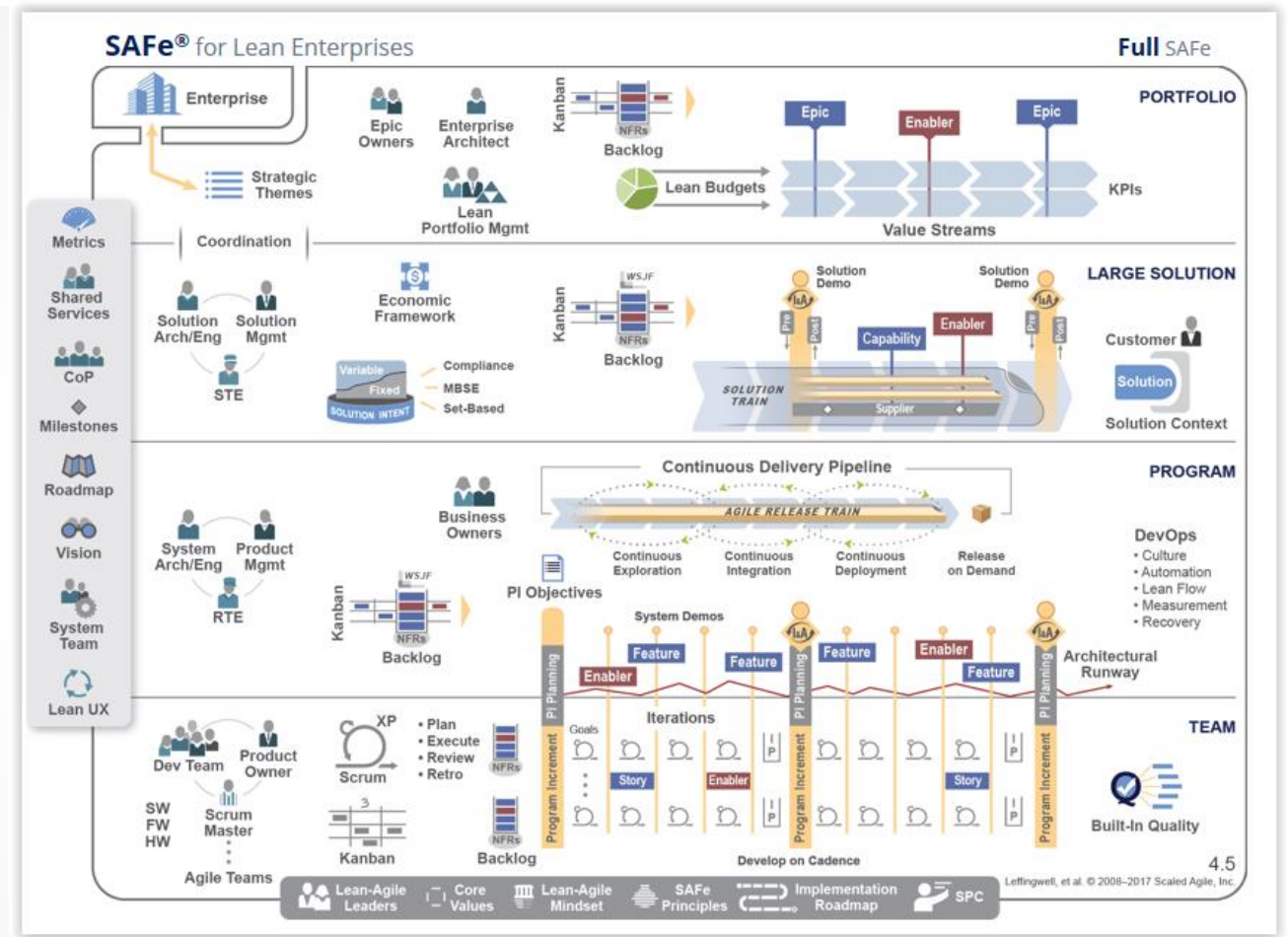
- ✓ Very large systems that are not under the control of a single authority: the internet.
- ✓ Need for rapid adaptation : continuous delivery.

⇒ It is no surprise that the “agile” trend as emerged from this industry.



# Architecture and agile in the software industry

- ⇒ The need for continuous adaptation has raised the hype on continuous delivery: DevOps.
- ⇒ The agile world has produced comprehensive frameworks, such as SAFe, leveraging on Value Streams and EA.
- ⇒ To stay relevant, EA Methods must hook themselves to the adaptive world.



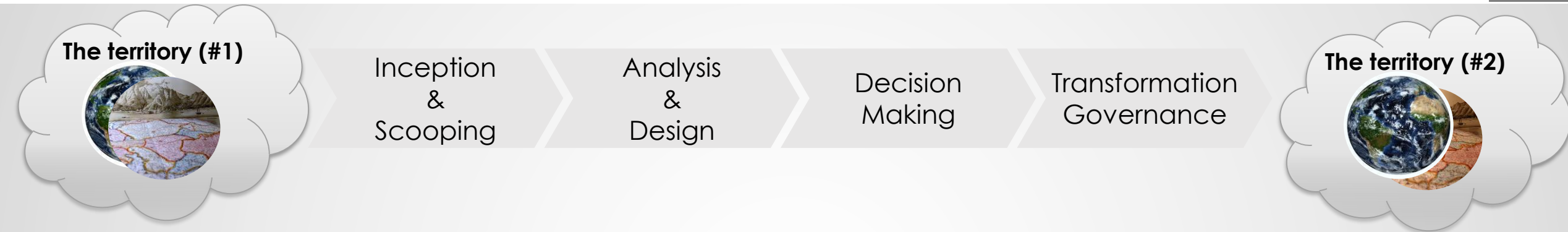
“ A system must be managed. It is management's job to direct the efforts of all components toward the aim of a system.

—W. Edwards Deming



What about when the system is yourself and beyond yourself?

# The architecture method

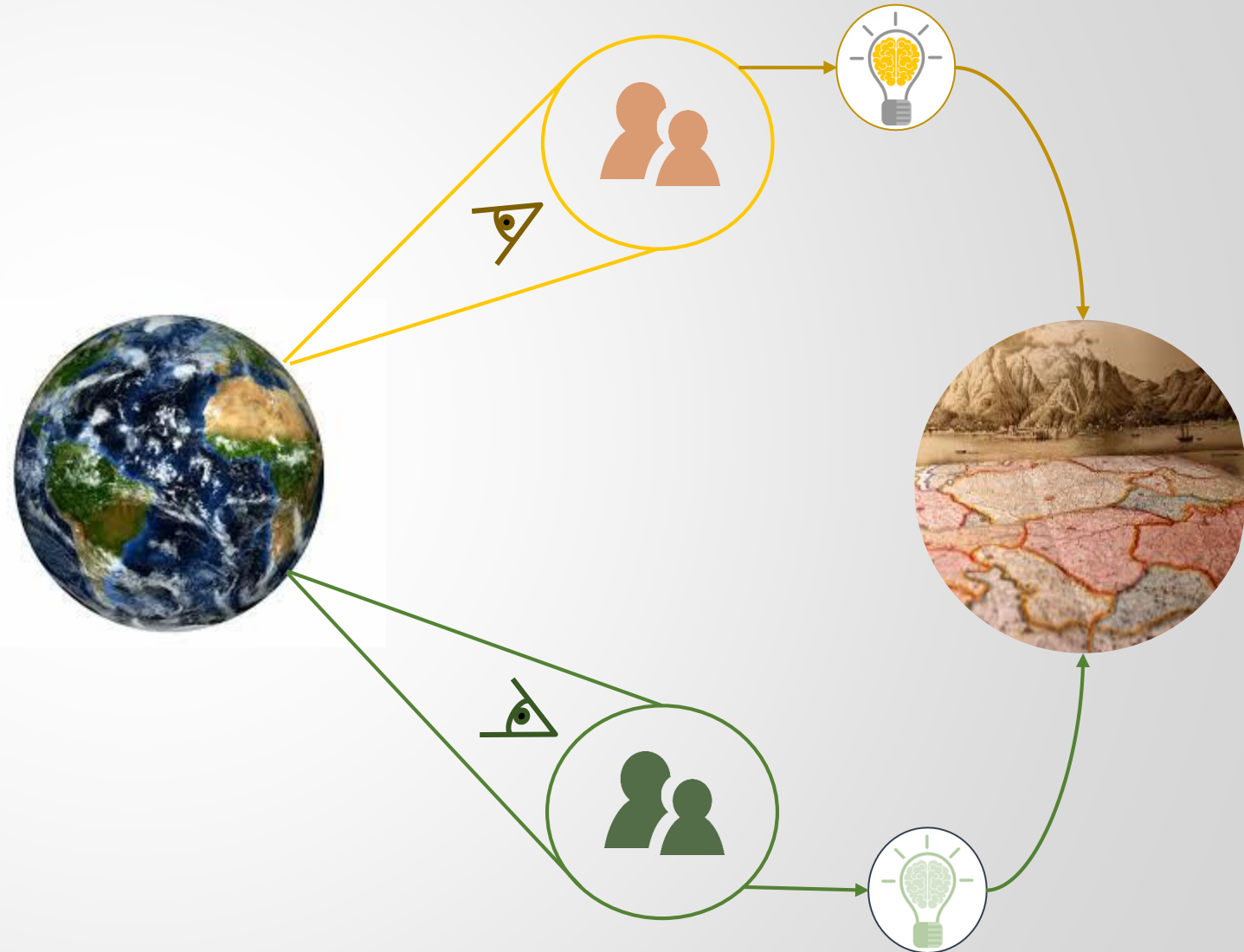


➤➤ Continuous architecture through:

- ✓ Modular description of purposes and solution architectures.
- ✓ Team organization, based on subsidiarity, where each stakeholders can contribute to descriptions, decision making and transformations.

# Knowing that ..

- ⇒ Models are constructed representation of the world,
- ⇒ ... made by group of people,
- ⇒ .. which usually have different ways of thinking.
- ⇒ .. but shall have common purposes.



Model driven understanding of the enterprise

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**What kind of understanding?**





# Systems and their purposes

⇒ Russell Ackoff has proposed a classification of systems according to their “purposes”.

⇒ Organizations/System-of systems are the most advance purposeful kind of system.

Type of System	Behavior of System	Outcome of Behavior
State-Maintaining	Variable but determined (reactive)	Fixed
Goal-Seeking	Variable and chosen (responsive)	Fixed
Multi-Goal-Seeking and Purposive	Variable and chosen	Variable but determined
Purposeful	Variable and chosen	Variable and chosen

⇒ An organization is a purposeful system that contains at least two purposeful sub-systems which have a common purpose.

⇒ An organization has a functional division of labor in pursuit of the common purpose(s) of its elements that define it.

⇒ The functionally distinct sub-systems can respond to each other's behavior through observation or communication

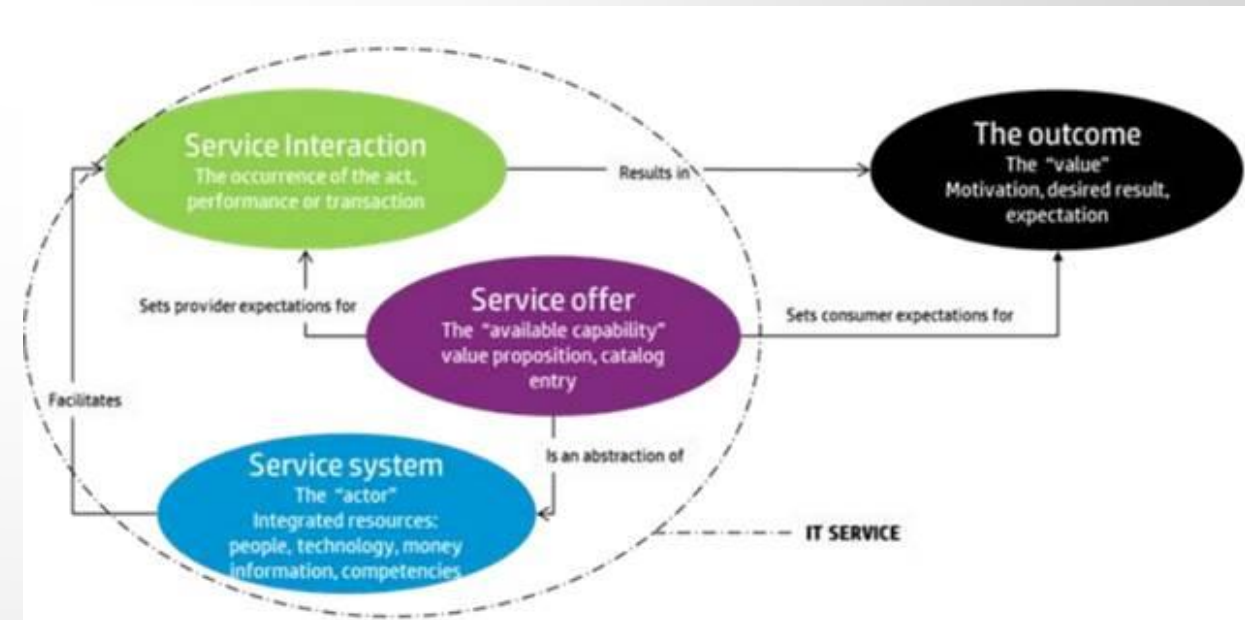
# Agile and Purposes

- Interestingly, agile methods have integrated a “purpose based” perspective through their notion of “Feature”:
  - ✓ *SAFe 4.5: A Feature is a service that fulfills a stakeholder need.*
- ... *organized with a time/benefit horizon in mind,*
  - ✓ *Each feature includes a benefit hypothesis and acceptance criteria, and is sized or split as necessary to be delivered by a single Agile Release Train (ART) in a Program Increment (PI).*
- ... *that can fit into project organization,*
  - ✓ *Minimum Marketable Feature (MMF) should be the minimum functionality that the teams can build to learn whether the benefit hypothesis is valid or not.*

# Purposes, Services and System Architectures

⇒ The OpenGroup “W161” white paper, is an example how Purposes, Services and System architecture shall be brought together.

- Service Offer :
  - the purpose
- Service System:
  - the solution architecture
- Service Interaction:
  - the integration glue.



Model driven understanding of the enterprise

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**What kinds of decision making?**



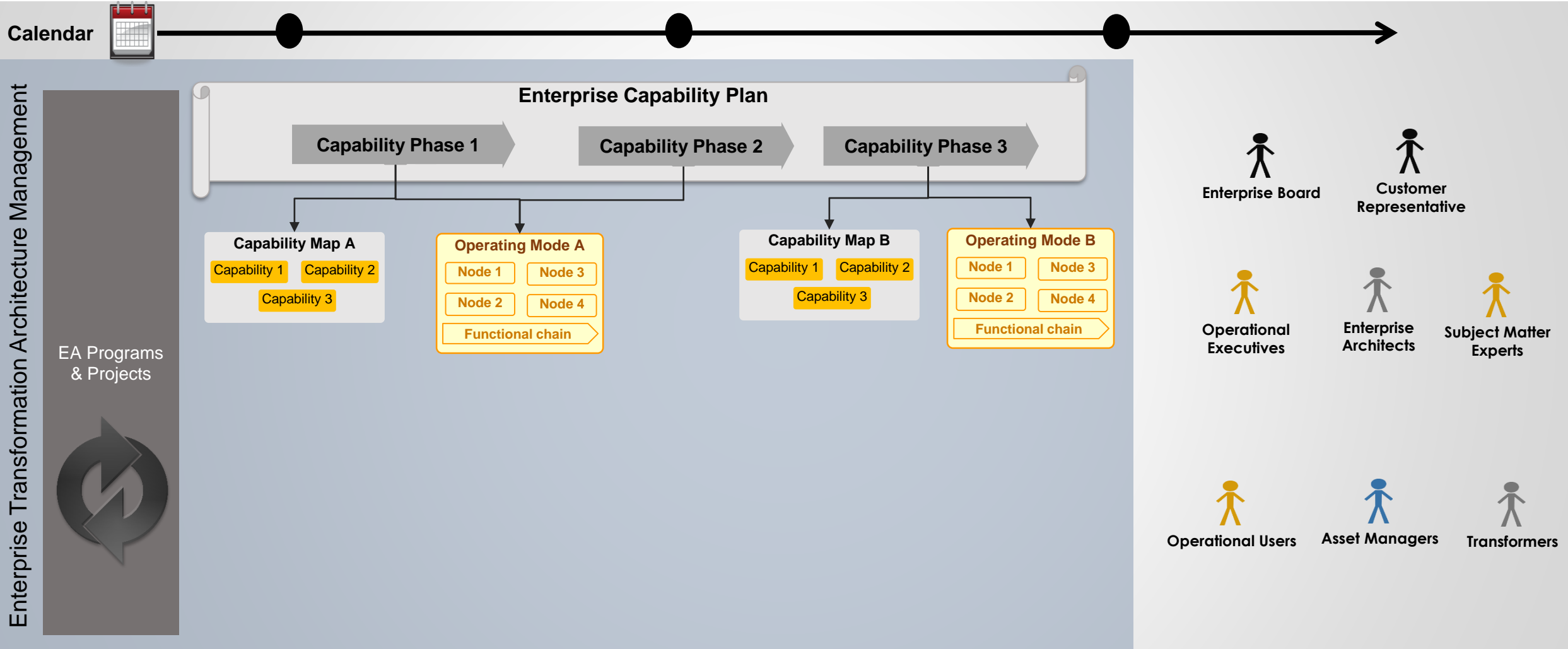
# Decisions and time horizons

- ⇒ Need to select purposes (the destinations)
  - ⇒ Need to arbitrate solutions (the future “beings”)
  - ⇒ Need to arbitrate the various transformation paths (the journey).
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- ⇒ All this overtime :
    - ✓ In an incremental and learning based approach.
    - ✓ .. while taking into account legacy systems and solutions.

# Transformation time horizons

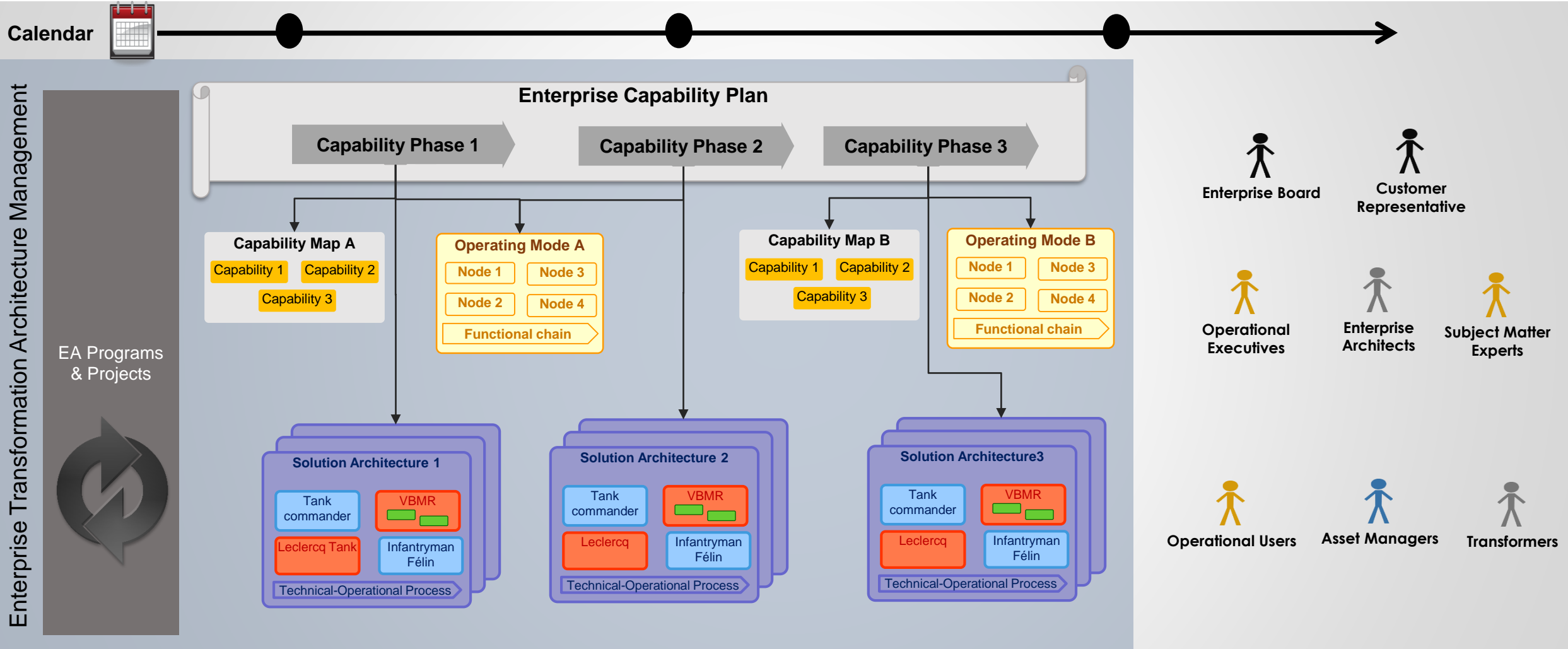
- Capability/Purpose planning encompasses three distinct time horizons:
  - ✓ 1. Capability plans which defines expected capabilities over time along with their prescribed architecture solutions.
  - ✓ 2. Lifecycles of architecture solution building blocks.
  - ✓ 3. Transformation project plans.
- The global capability approach consists in the design and governance of these three time horizons required to conduct enterprise transformations and distributed purposes based operations over time.

# The capability Plan : what we want to be



➤ Intended Enterprise Purposes overtime, with expected outcomes.

# The capability Plan : what we want to be

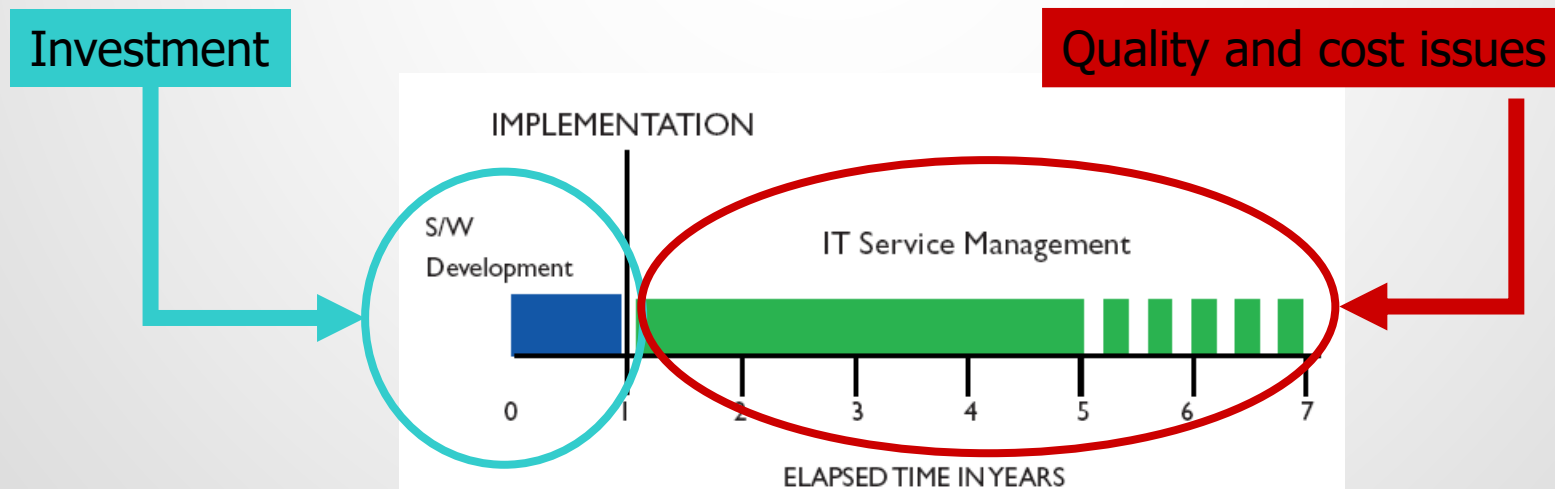


⇒ Overarching Solution Architectures, overtime – Patterns for solution implementations

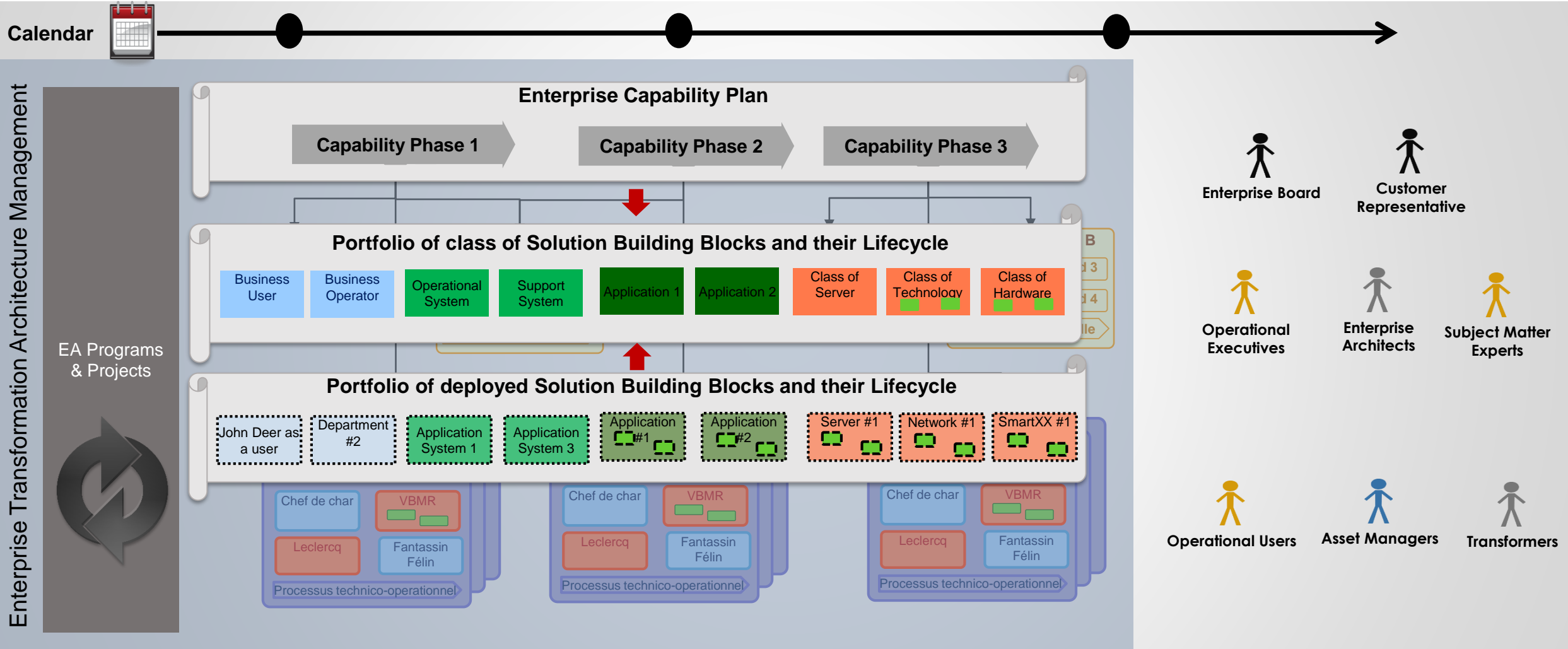


# Mastering Solution Building Blocks

- Mastering existing operating solutions
- Operational Maintenance of solution account for 80% of IT costs on the long run (Source ITIL).

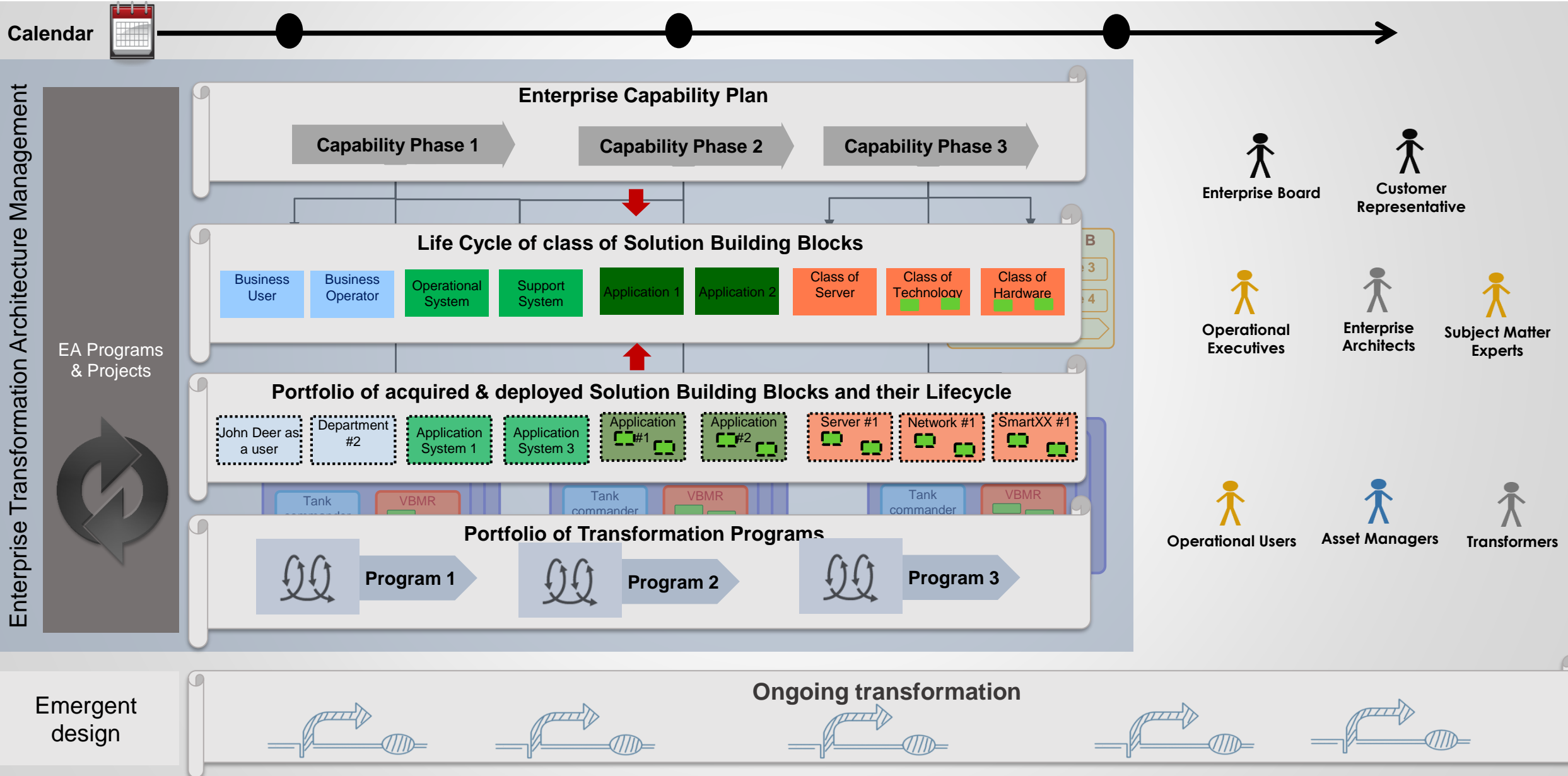


# Life Cycle of Solution Building Blocks



⇒ Ongoing mastering of existing assets

# “Agile Train” actual transformation



Model driven understanding of the enterprise

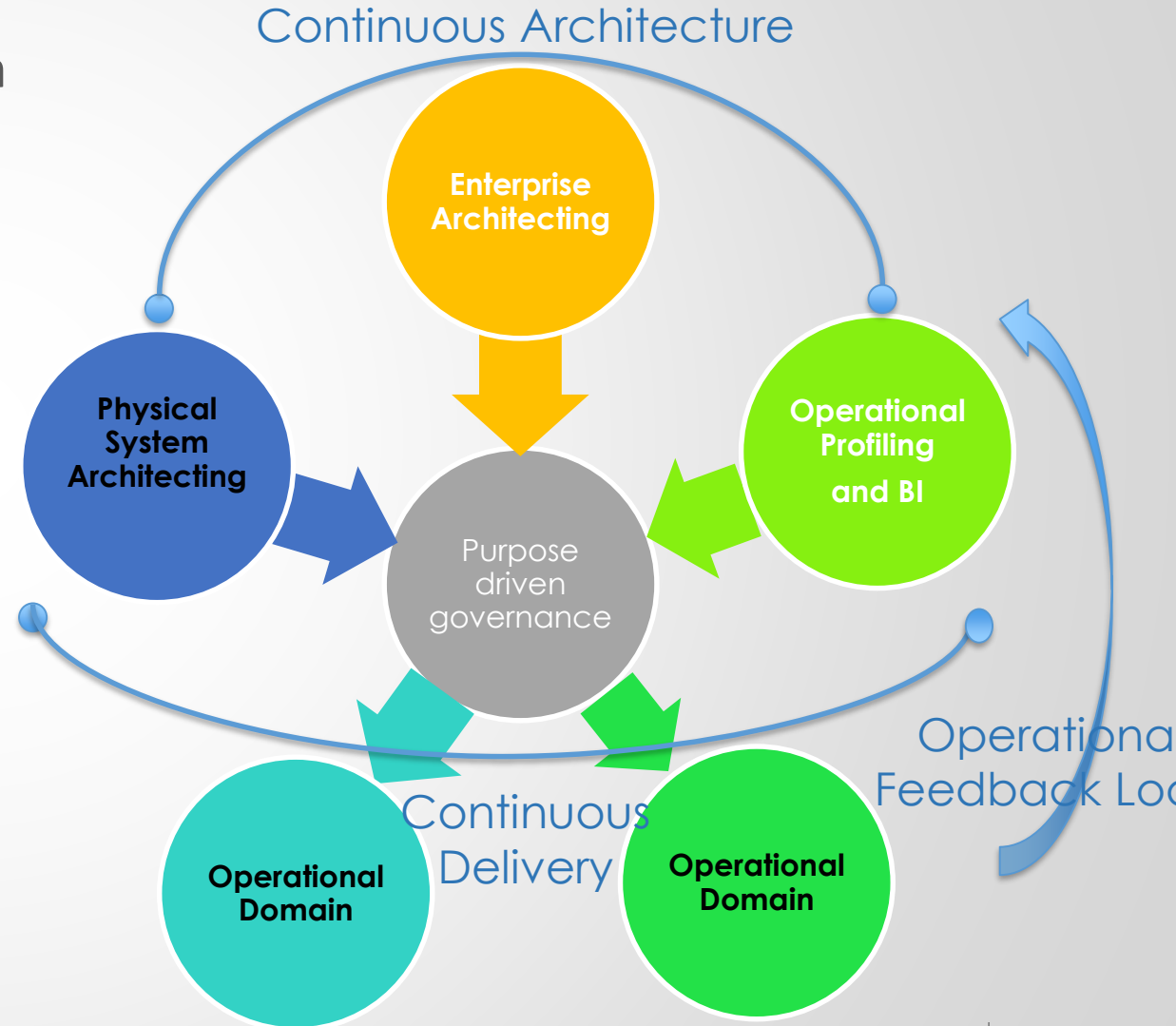
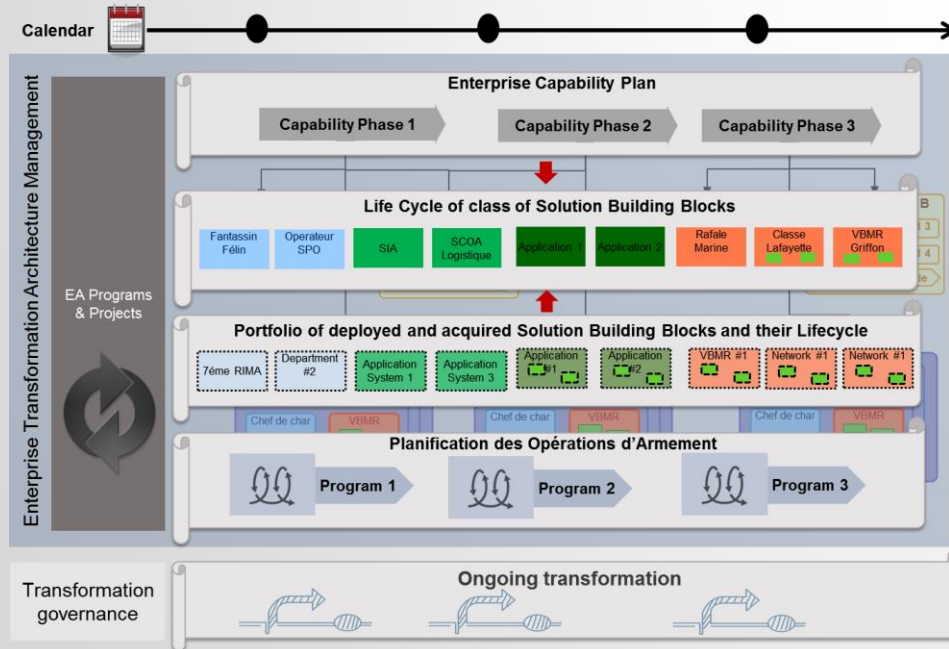
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**What kind of feedback loops?**



# Purpose based Architecture in its eco-system

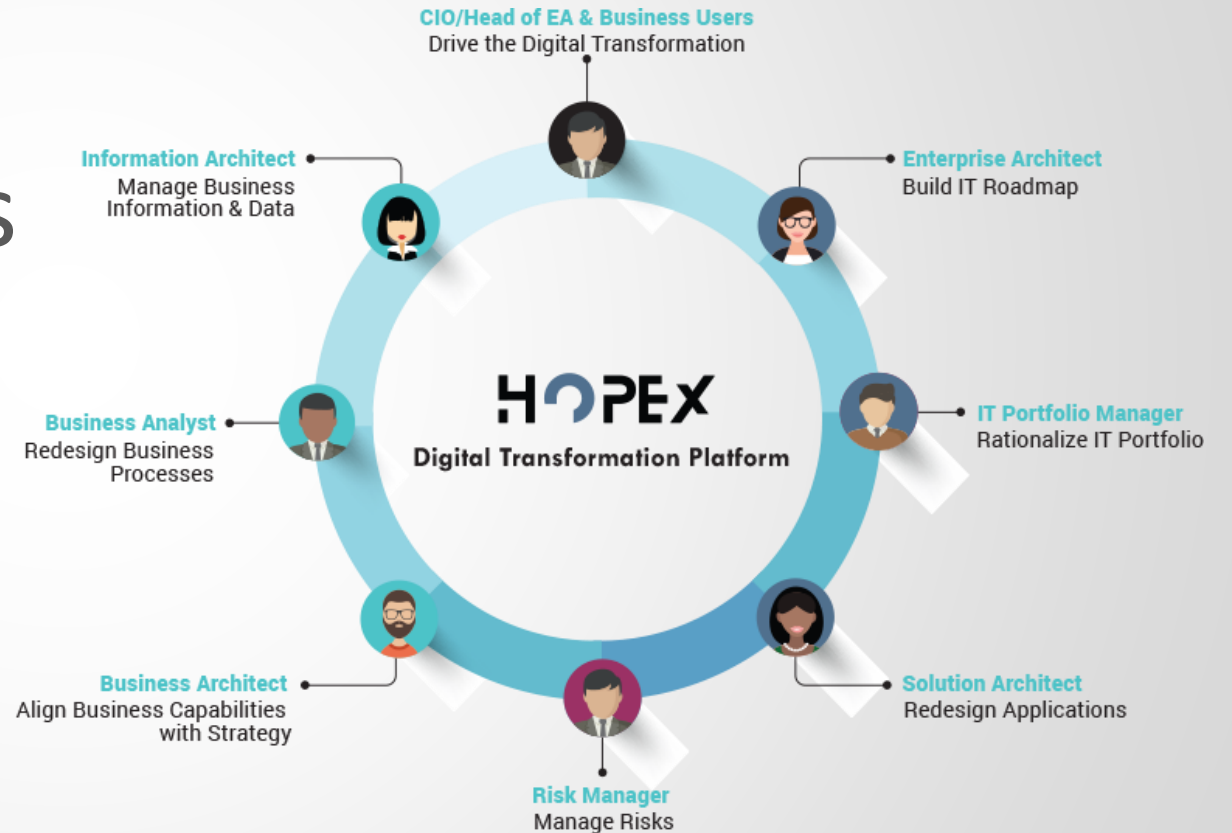
- Continuous Architecture provides a time based framing approach for purposes/solution architectures.
  - ✓ Intentional design
- Continuous delivery provides a hook to the actual transformations.
  - ✓ Emergent design



## ⇒ Requirements for Architecture Solutions

- ✓ Provide arbitration between Purposes and Solution Architectures.
- ✓ Introduce Time in Architecture Descriptions.
- ✓ Inject collaboration across architecture endeavors.
- ✓ Add measurable indicators to help in decision making.

⇒ Comes and see how  
HOPEX solutions  
encompass continuous  
architecture principles



# Purpose based – Providing perspectives

⇒ Maintaining a purpose perspective helps Enterprises keep their vision and values alive in the choices they make and the actions they take.





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# Thank you

