Avancier Reference Model

Migration Planning (ESA 10) PART ONE

10.1 Migration planning concepts

- **Architecture state**
- [An architecture] at a point in time.

- A baseline architecture
  - describes a system to be reviewed and/or revised.
- A target architecture
  - describes a system to be created and implemented in the future.
- An intermediate or transition architecture
  - defines a system between baseline and target.

Migration planning

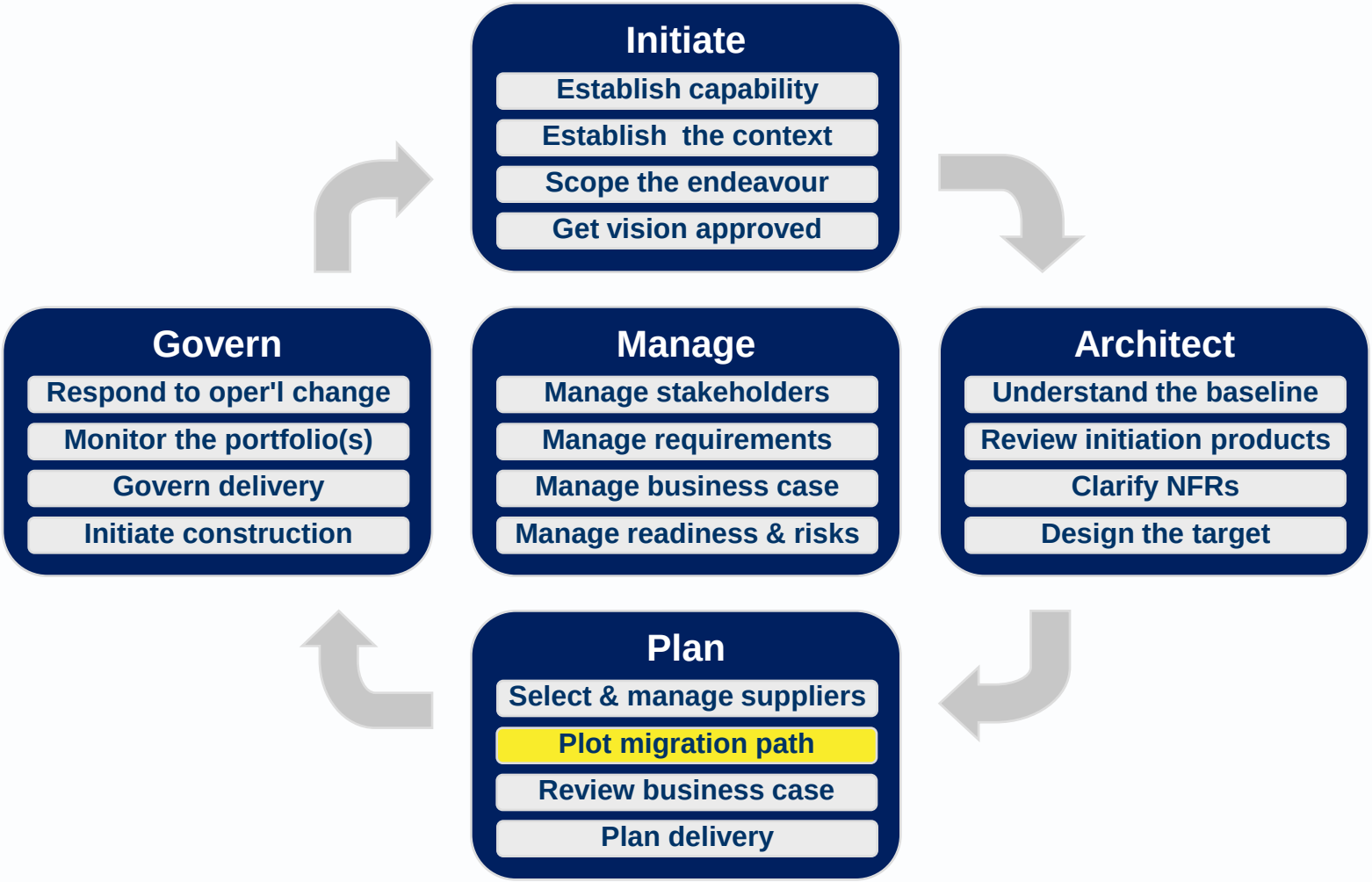
- [A work process] for turning architectures into a programme or project plan.
- Architects should integrate the process into local programme/project management approaches such as MSP, PRINCE2 or PMI.

Use gap analysis to find the changes

- **Gap analysis (baseline-target)**
- [A technique] to find items in one list or structure not in a comparable list or structure.
- It is used in architecture frameworks to compare the elements of a baseline system with those of a target system, where each gap implies work to be done.

Migration Business to IT	Baseline	Target Gaps
Business	Process Organisation Locations	Process Organisation Locations
Information Systems	Data Applications	Data Applications
Technology	Infrastructure Technologies	Infrastructure Technologies

Plot migration path (in AM)



Plot migration path (in AM)

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- **List changes**
- **Identify risks, costs and values**
- **Prioritise changes**
- **Plot migration path**

List business changes (for business change management)

- Buildings
  - opening and closing
- Machines
  - buying and selling equipment
- Suppliers
  - engaging, contracting
- Roles
  - job descriptions and procedures
- Employees
  - hiring, firing and retraining
- Sales and marketing

Migration Business to IT	Baseline	Target
	Changes	
Business	Process Organisation Locations	Process Organisation Locations
Information Systems		
Technology		

List IS changes

- Apps
  - Web sites
  - Application use cases
  - Application integration
    - Replacement of interfaces
- Data
  - Data cleansing to enable data migration
  - Data migration
    - Source(s) and target(s)
    - Data volume(s) to be migrated
    - Migration options include
      - Big bang migration (ETL)
      - Continuing transformers (EAI)
      - On the fly migration

Migration Business to IT	Baseline	Target Changes
Business		
Information Systems	Data Applications	Data Applications
Technology		

List IT changes

- Client –side hardware and software
  - browsers
  - other
- Server-side hardware and software
  - web, app, data servers,
  - DBMS, OS, middleware
- Networks
- Security
- ITSM resources

Migration Business to IT	Baseline	Target
	Changes	
Business		
Information Systems		
Technology	Infrastructure Technologies	Infrastructure Technologies

Plot migration path (in AM)

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- List changes
- **Identify risks, costs and values**
- Prioritise changes
- Plot migration path

Identify risks

See risk management technique in AM

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- **Risk analysis**
- [A technique] analysis of vulnerabilities that threaten the ability of a target system to meet requirements, especially non-functional requirements, including security.
- Necessary before architecture starts in earnest, at several times in the process, and at several levels of design.

  - Different businesses – different risks
    - A stock trading system moving £100M/day.
    - A SME dealing with auto-parts.
    - A government department logging claims for grants from farmers.
  - Consider security especially.
    - Security requirements need to be stated and analyzed just as much as any other functional requirement.
    - Security functionality should be tested.
    - *See template for security risk analysis in the training manual*

Record risks

See risk management technique in AM

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- **RAID catalogue**
- [An artifact] that lists risks, assumptions, issues and dependencies, which may be cross-referred to elements in requirements and/or solution documentation. Cf. Risk Register in PRINCE2.

  - **Risk**
    - [An influence] a variation from what is expected or assumed.
    - It is usually a potential problem; an event that causes an issue if it occurs.
  - **Assumption**
    - [An influence] a belief or understanding that, if not true, could turn into a risk or issue.
  - **Issue**
    - [An influence] a problem that needs resolution.
    - It may be the realisation of a pre-identified risk.
    - It may be an assumption that turned out to be false.
  - **Dependency (risk sense)**
    - [An influence] a dependency upon an external actor or deliverable that is not under the management of the programme or project manager.

Assess risks

See risk management technique in AM

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- Classify risks and prioritise them.
- A matrix of 9, 16 or 25 cells is commonly used
- Risk quantification may be to imprecise for more than 9 cells.
- A 100% likely risk is an issue - to be dealt with now

Likelihood / Impact	Low	Medium	High
High	3 + 1	3 + 2	3 + 3
Medium	2 + 1	2 + 2	2 + 3
Low	1 + 1	1 + 2	1 + 3

Identify costs & values

See business cases in AM

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- ROI = benefits – costs over a time period

We'll return to business cases later

Prioritise changes

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- List changes
- Identify risks, costs and values
- **Prioritise changes**
- Plot migration path

- Define target scope: hard or soft
- Define change characteristics: value, cost, risk
- Prioritise changes

Define target scope: soft or hard

- The further away the target in time, and the less certainty or control the customer has,
- the more likely
  - things will change
  - the target scope is soft and
  - the migration path will be defined incrementally.

- A service provider may prefer a hard scope
  - since it yields a large and long term programme of work.
  - will want to demonstrate some quick wins
  - to establish the credibility of a longer term plan.

Identify relative strategic value

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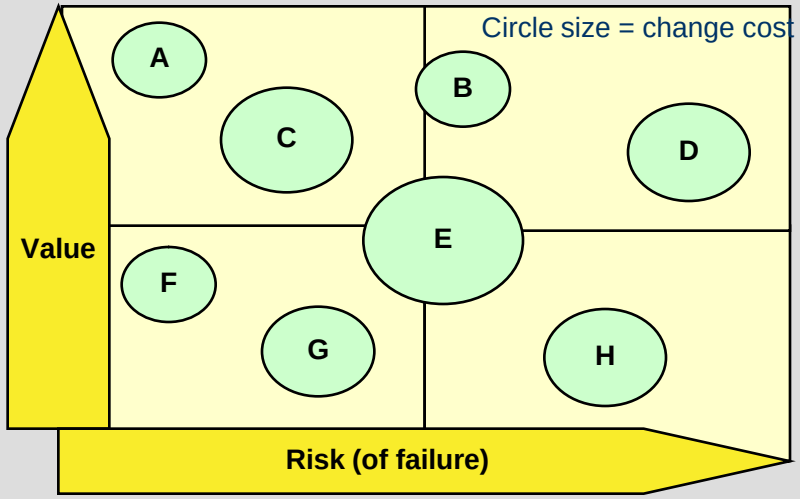
- "Given a stack of potential projects, compare accounting for their business **value** as well as **cost** and **risk**."

- "Many develop their own evaluation and ranking tools, which help them focus on the factors that matter most to their organization."

Quoted from research by Alice Dragoon © 1994 - 2011 CXO Media Inc. a subsidiary of IDG Enterprise

E.g.



Draw a Value, Cost and Risk Grid (as in TOGAF)

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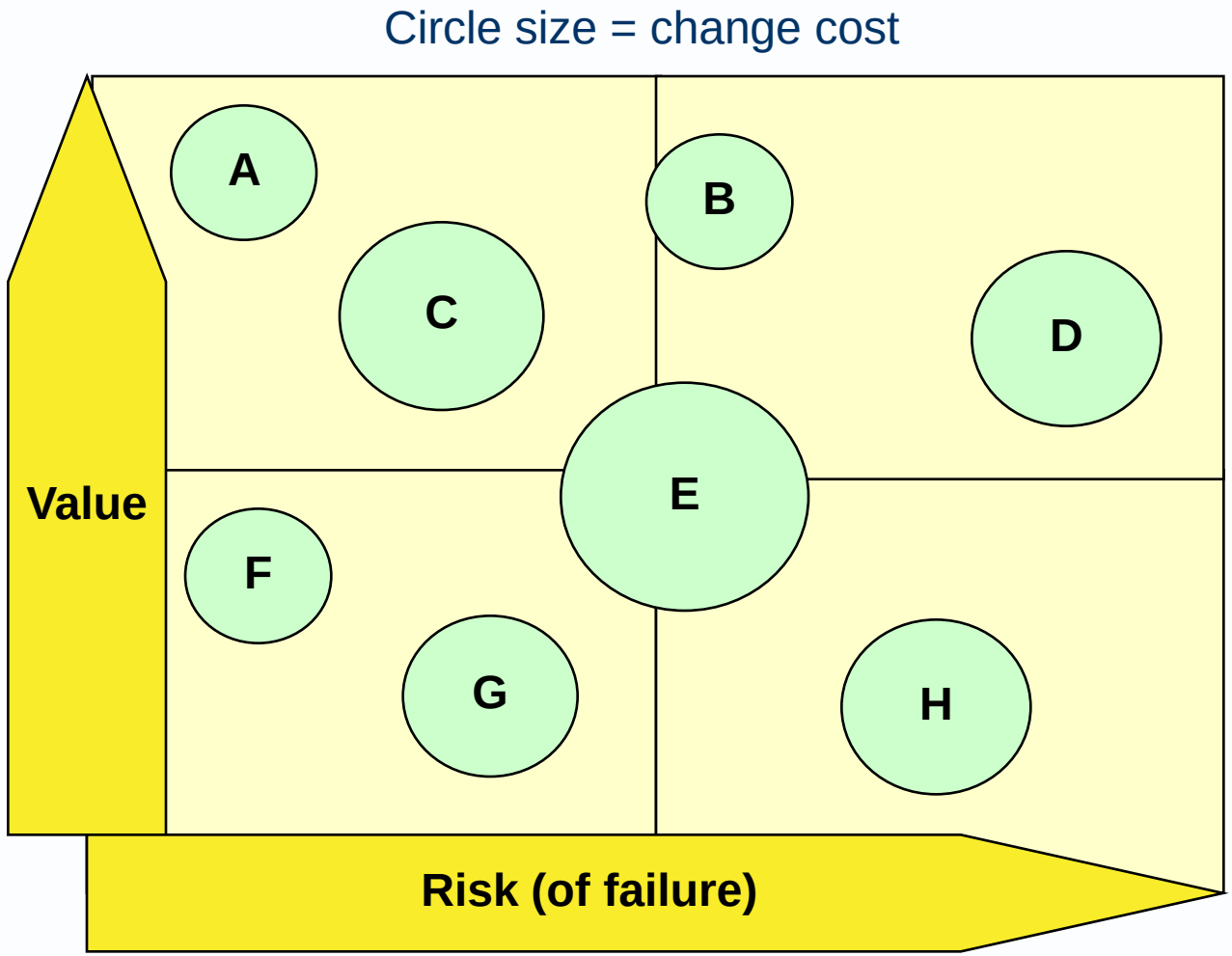
Exercise:

- **List projects A-H in order of completion or delivery**

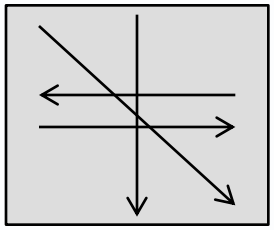
- E.g. Quick wins (LHF)?

Consultant speak



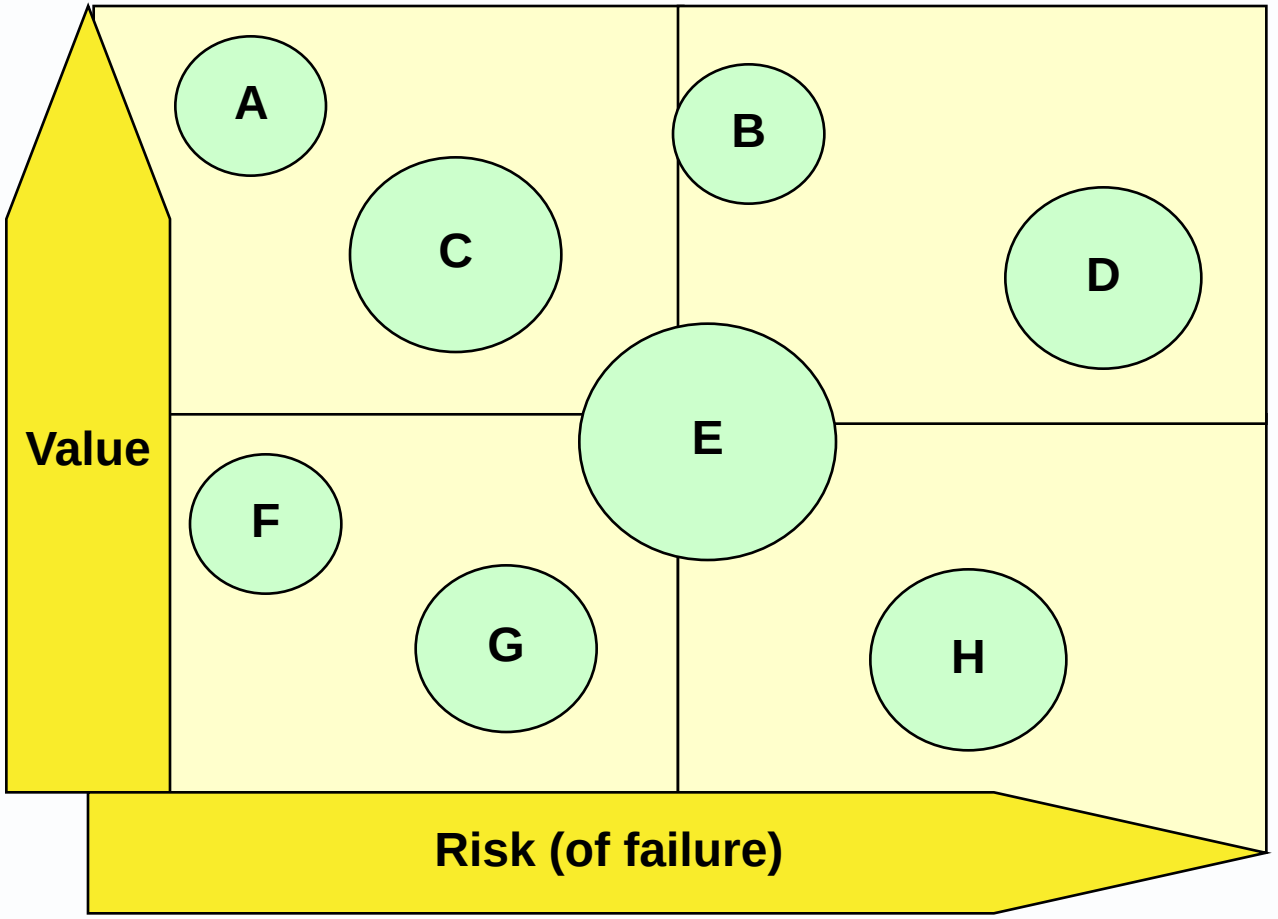
Four approaches

- 1. Value-driven
- 2. Risk averse
- 3. Comprise of above
- 4. Risk-tackling



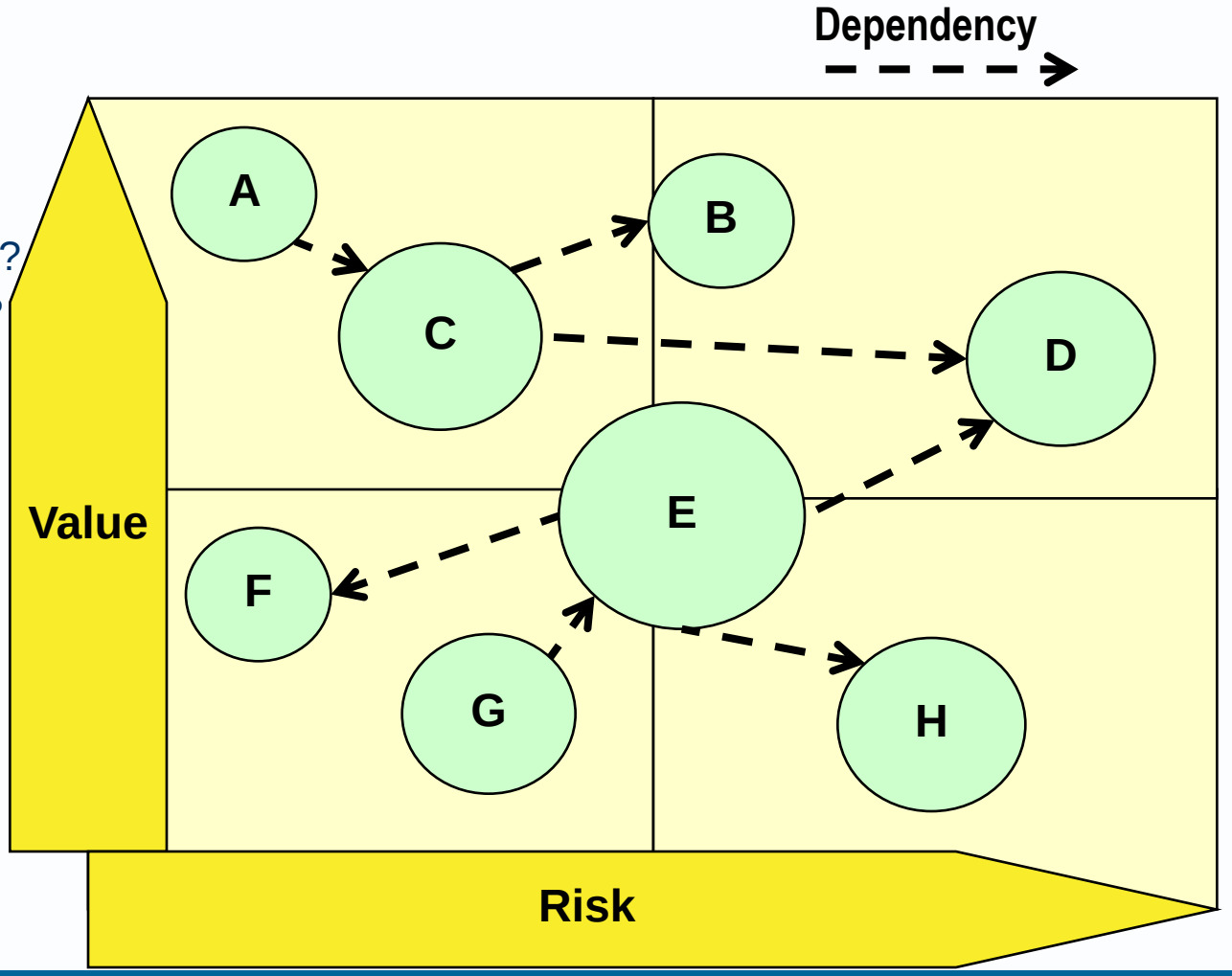
- To decide: What else do you want to know?

- Circle size = change cost



Define change characteristics

1. **Value**
2. **Cost**
3. **Risk**
4. **Dependencies**
5. **Scope**
   - Hard scope: High risk first?
   - Soft scope: High risk last?
6. **Time – duration**
7. **Time – urgency**
8. **Resources**
9. **Minimise waste**



Prioritise changes

- Prioritise changes
  - H/M/L or MoSCoW

- Data
  - Kick off a data migration project as early as possible.
  - Do data clean up before data migration
  - Do data migration before replacement applications
  - Follow CURD: Data entry apps before read/report-only apps

- Applications
  - Use the application portfolio classification (MURDeR)
  - Implement depended on apps before dependent apps
  - Use the sequence of the business process or value stream?

Communicate priorities and progress clearly

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- “Once IT and business unit leaders have established priorities, they must communicate them clearly to the rank and file.
- Good communication sets the proper tone and ensures that people understand how your governance processes work.”

Quoted from research by Alice Dragoon

Divide the transformation into stages

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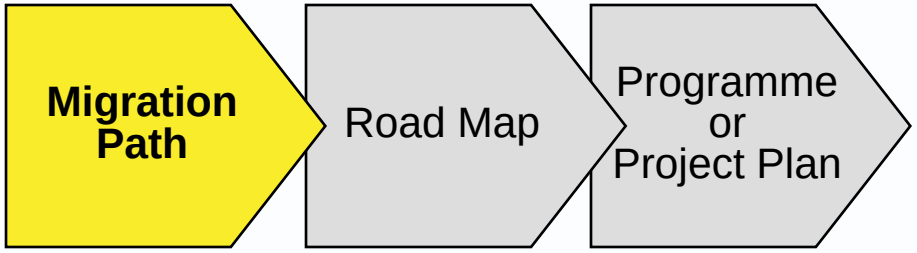
- List changes
- Identify risks, costs and values
- Prioritise changes
- Plot migration path

- **Migration path**
- [An artifact] a progressive series of architectures, each related to different state of an enterprise or system.

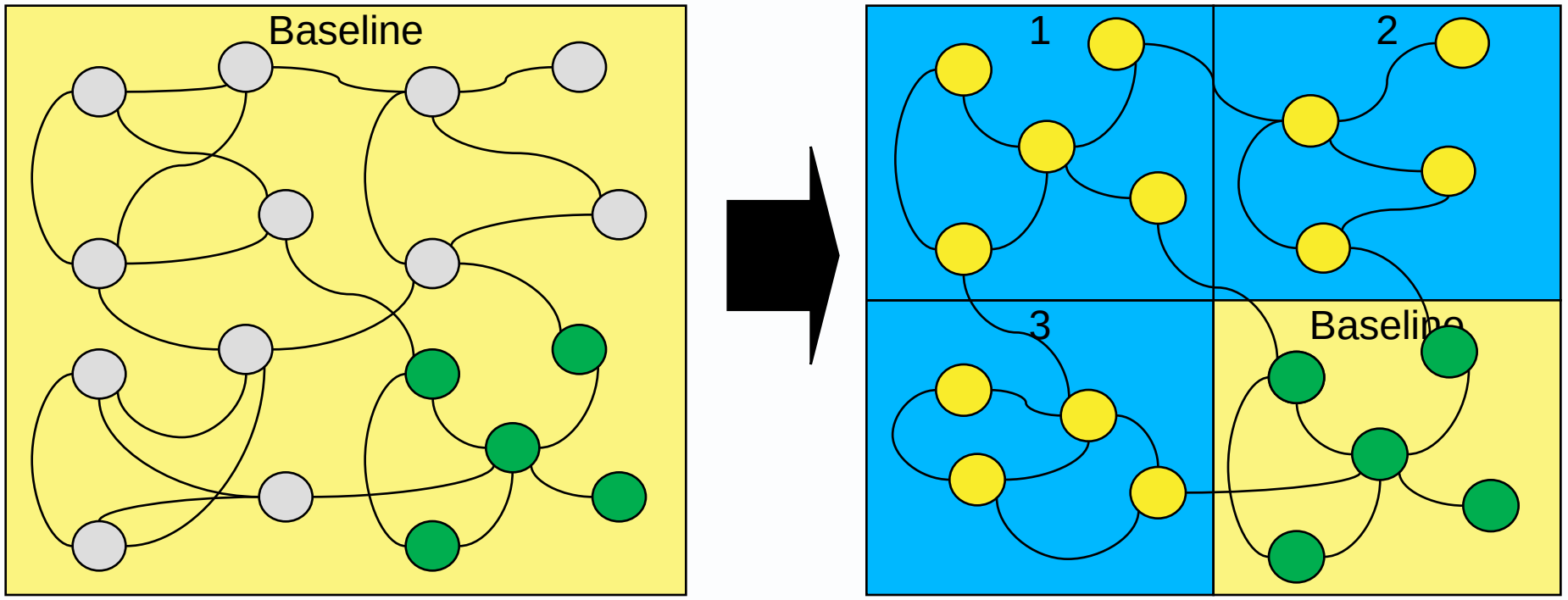


- Baseline (as is)
  - Current state, where the customer is now
- Target (to be)
  - Future state, where the customer wants to go
- Pipeline
  - States or milestones the customer already has in sight
- Transition states
  - Zero, one or intermediate stages

Transition states add complexity

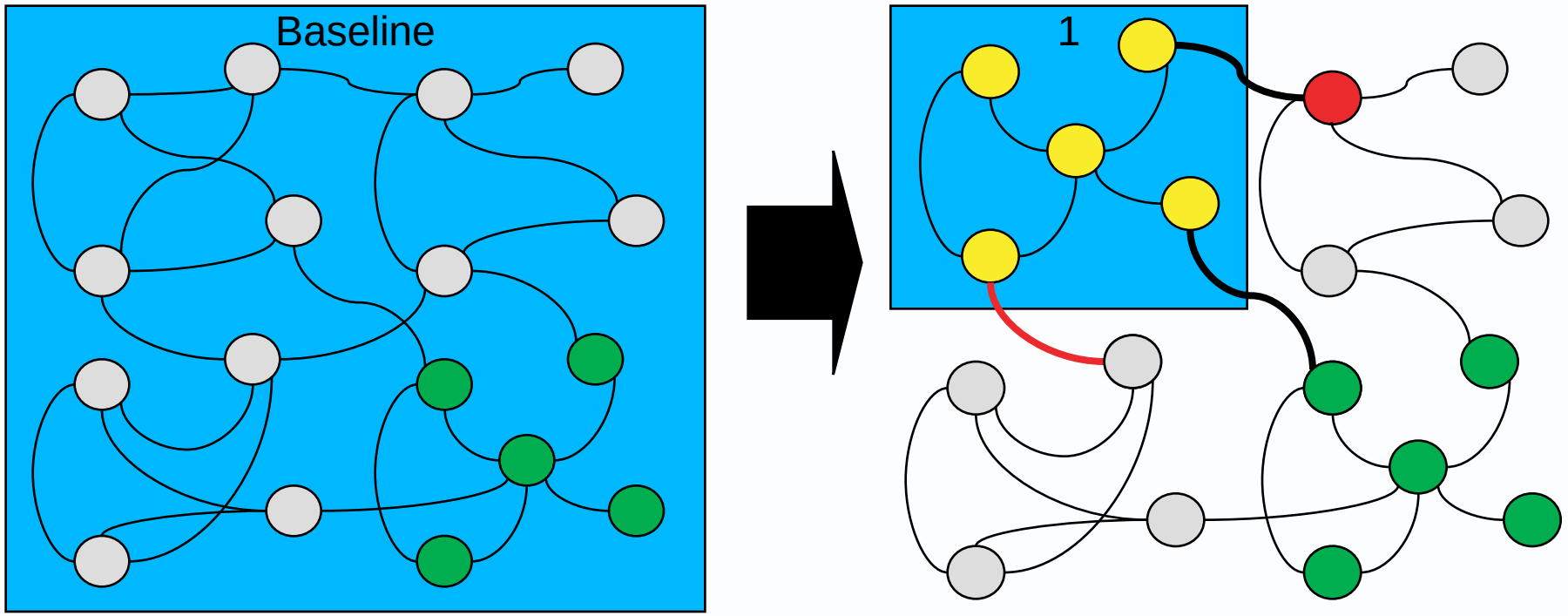
- Baseline
  - Replace grey
  - Keep green

- Target – with 3 transition states and retaining some baseline



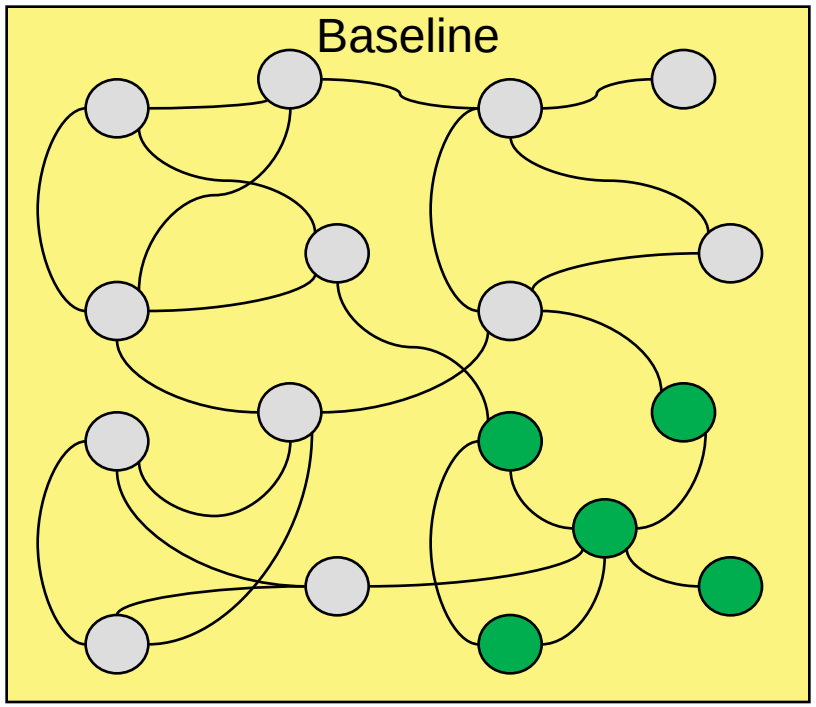
Include any intermediate or transition deliverables

- Baseline
- Transition state 1 will need
  - Temporary interface to baseline system
  - Permanent interface to baseline system
  - Interface to temporary system in scope of state 2

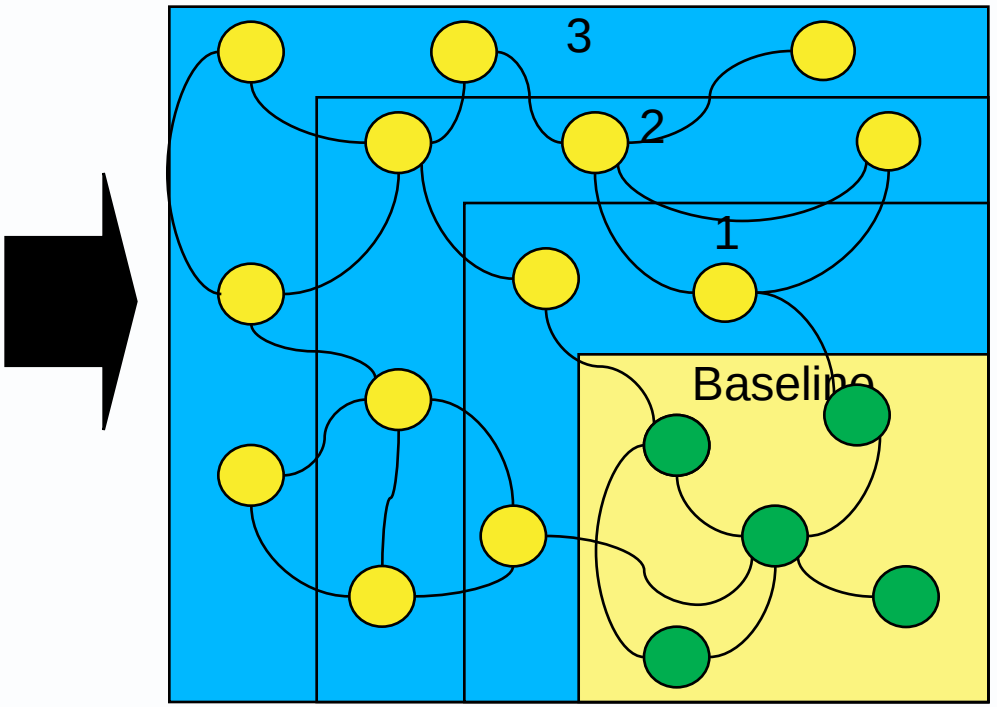


Minimising wasteful changes?

- Baseline



- Target – growing around the baseline – but might not work as a plan



Plot the migration path

- Divide the transformation into stages
- Assign deliverables and dates to each stage
  - Include any temporary deliverables
- Define interfaces for each transition state
  - Temporary interfaces to baseline systems
  - Permanent interfaces to baseline systems
  - Interfaces to temporary system in scope of state
- *Convince your stakeholders it is workable*

Stages	Deliverables and changes	Temporary deliverables?
Stage 1: date A	Deliverable/change Deliverable/change Deliverable/change	
Stage 2: date B	Deliverable/change Deliverable/change Deliverable/change	
Stage 3: date C	Deliverable/change Deliverable/change Deliverable/change	

Migration path - Baseline state

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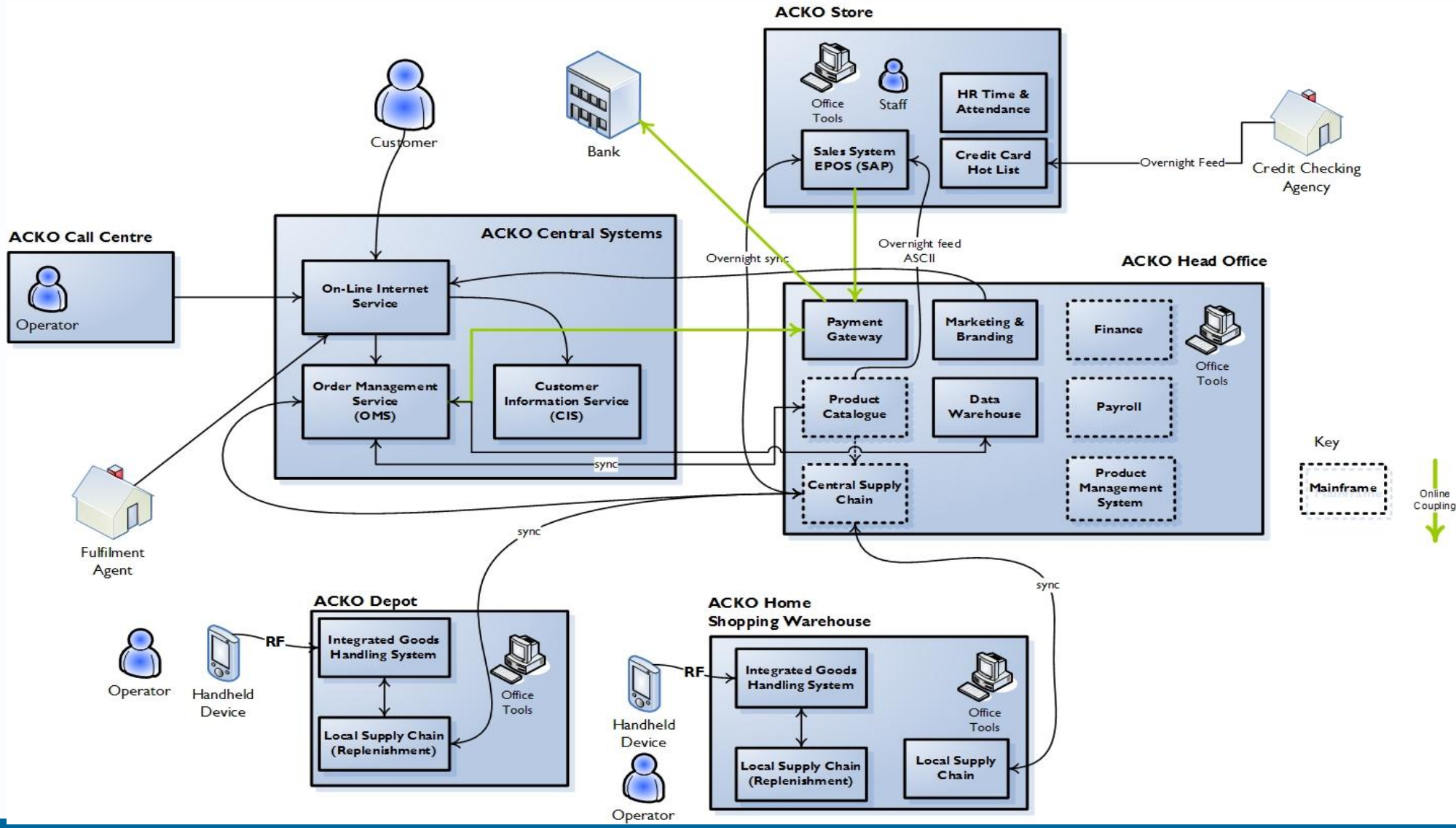

Migration path - Transition state 1

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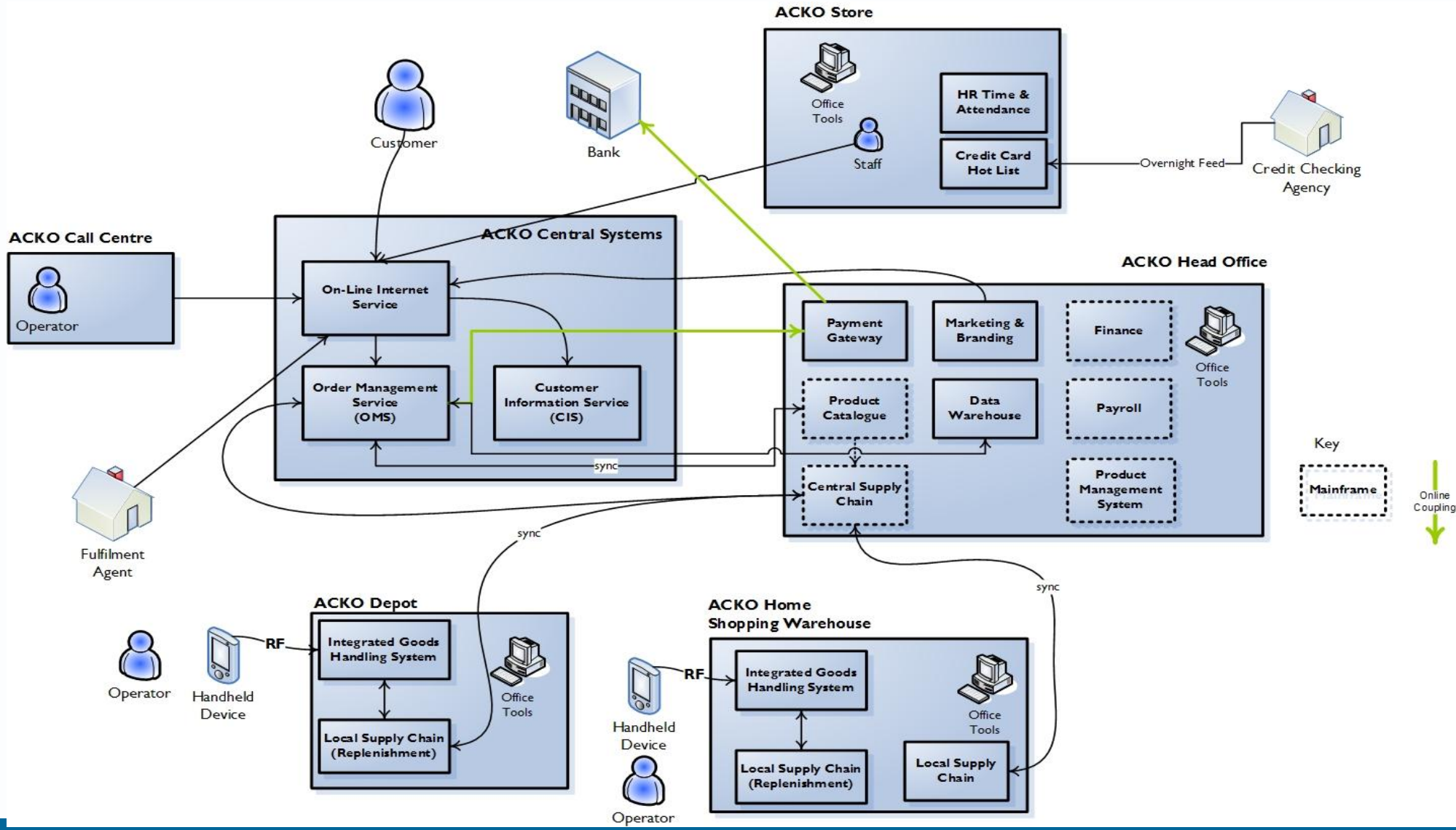

Plot migration path (in AM)

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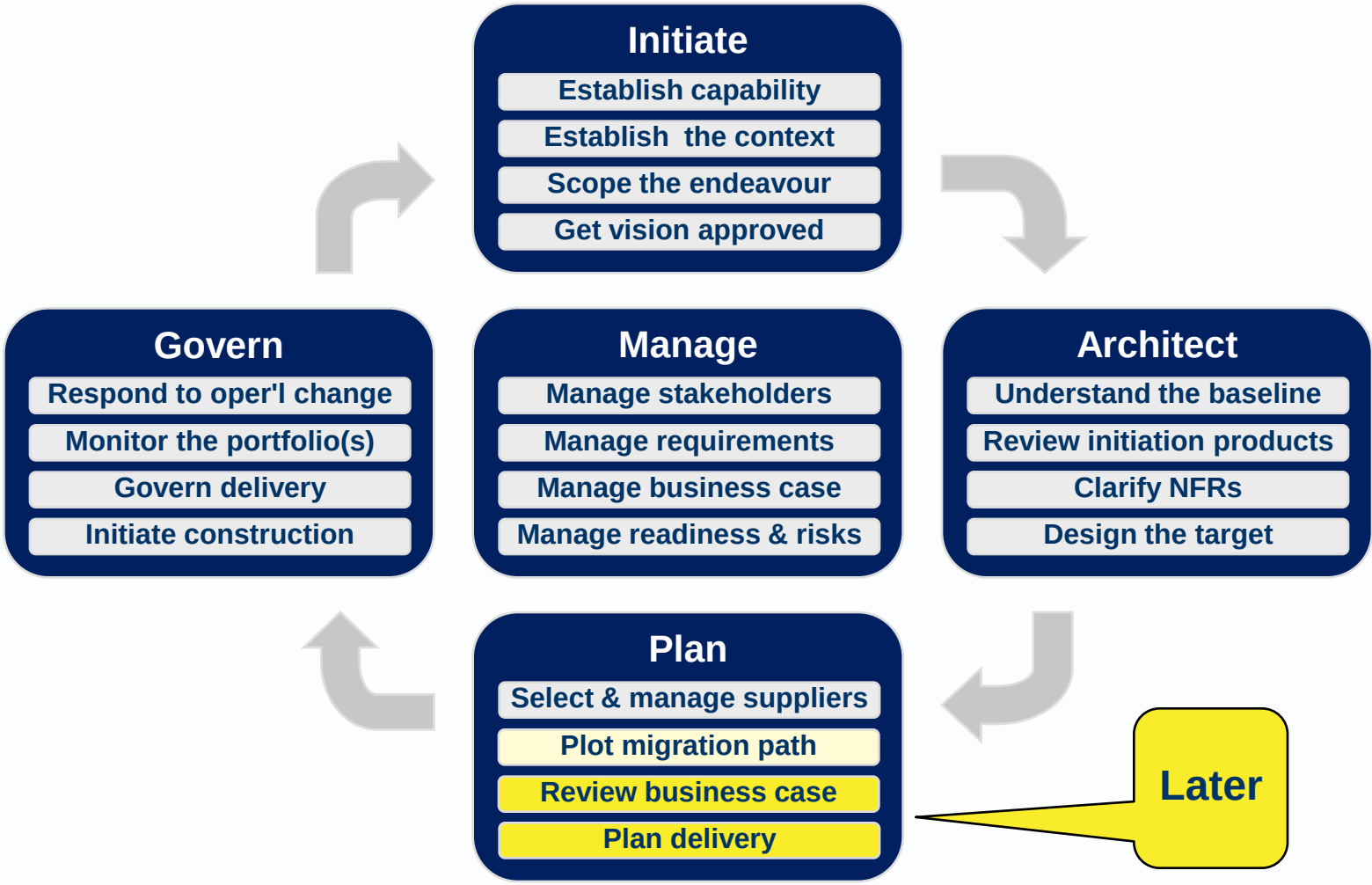
- List changes
- Identify risks, costs and values
- Prioritise changes
- Plot migration path



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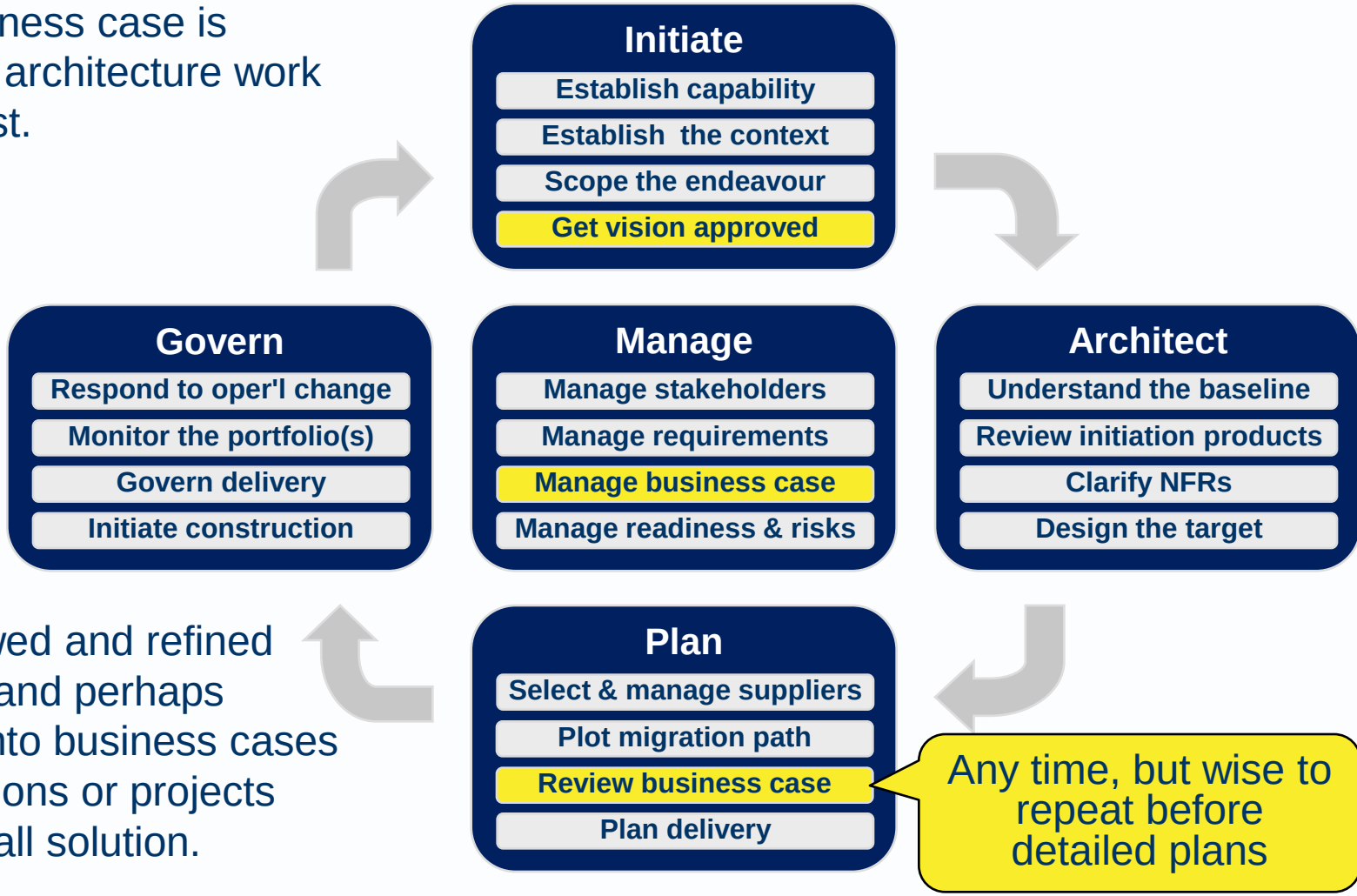
Migration Planning (ESA 10) PART TWO

There should be a business case

- An outline business case is needed before architecture work starts in earnest.



- It will be reviewed and refined several times, and perhaps decomposed into business cases for specific options or projects within the overall solution.

10.2 Business cases

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- List changes
- Identify risks, costs and values
- Prioritise changes
- Plot migration path
- **Outline or review business case**
- Chart initial roadmap
- Help managers complete plan
- Plan implementation governance

- [A document] a rationale for spending time and money.
- Generally speaking, the essential elements are
  - ROI
  - Options
  - Impacts (work to be done and changes to be made) and
  - Risks.

Return on Investment (ROI)

- [An artifact] a statement of benefits gained minus costs spent – over a defined time period.
- Costs must cover development, implementation, operation and maintenance.
- Benefits may include money saved or regulations complied with.
- E.g. the benefit of data integrity is to save the cost of data disintegrity.

Analyse Solution Options

- **Solution option**
- [An artifact] a design which can be compared with another, at any stage or level.
- It may be presented using a business scenario.
- The choice between options can be guided by four techniques
  - cost-benefit analysis
  - risk analysis
  - gap analysis
  - trade-off analysis.

Cost-benefit analysis

- [A technique] to assess the costs and the benefits of a course of action and/or a proposed system.

Or, how soon do we get the money back?

Risk management

See risk management technique in AM

Avancier

- The identification, analysis, mitigation and containment of risks.
- Discussed earlier

Gap analysis (options)

- [A technique] for comparing two similar structures, to find items in one that are not in another.
- It is used in a business cases to compare optional solutions.
- It helps if the options are presented under the same structure as each other, or with reference to a more general structure.

Solution 1 (buy)	Solution 2 (build)
A	A
B	B
C	Gap
Gap	D

Architecture trade-off analysis

- [A technique] for comparing system options and trade offs between them with a view to selecting one option.
- It may employ a technique such as a Pugh Matrix.

- Architecture Trade-off Analysis Method (ATAM)
  1. Presentation
  2. Investigation and Analysis
  3. Testing
  4. Reporting
- Software Engineering Institute of Carnegie Mellon University.

The Pugh Matrix (after Six Sigma)

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1 List criteria that the options must meet	*2 Attach a weight to each criteria (say 1/3/5/7/9)*	*3 List the options and rate how well (say 1/3/5/7/9) each option meets each criterion.*	
Criterion	**Weight**	**Option 1**	**Option 2**
Response time	**5**		
Throughput	**5**		
Security	**3**		
Cost	**3**		
Supplier stability	**1**		
4 For each option, multiply the weights by the ratings			

The Pugh Matrix (after Six Sigma)

Avancier

1 List criteria that the options must meet	*2 Attach a weight to each criteria (say 1/3/5/7/9)*	*3 List the options and rate how well (say 1/3/5/7/9) each option meets each criterion.*	
Criterion	**Weight**	**Option 1**	**Option 2**
Response time	**5**	**3**	**3**
Throughput	**5**	**3**	**5**
Security	**3**	**5**	**1**
Cost	**3**	**1**	**1**
Supplier stability	**1**	**3**	**7**
4 For each option, multiply the weights by the ratings	**Total**	**51**	**53**

Prioritising selection criteria

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- Pairwise comparison - matrix

Confirm chosen option

- Confirm chosen option
  - Along with the best explanation you can make of how it
    - makes the business money, or
    - saves the business money, or
    - meets a legislative/regulatory imperative, or
    - reduce business risks

Other numbers managers care about

- ROI
  - Benefits – Costs (over a time period), or
  - Date when benefits > costs, or
  - Profit / Investment
- Other
  - Margin = Price – Cost
  - Profit = Sales Volume * Margin
  - P/E ratio = Share price / Earning per share
- Assets
  - Fixed
    - Plant & equipment
    - Buildings and land
  - Net Current
    - Stock, Debtors and Cash
    - Less Current liabilities

Trading profit (Sales – Costs)

Sales

Prices

Estimating accuracy

Competitive prices

Product costs

Product

Quality

Design

Range

Services

Tech support

Representative effectiveness

Delivery

Market conditions

Variable costs

Labor

Cost per hour (rates, overtime)

Productivity (methods, turnover)

Efficiency (work methods)

Services

Fuel

Power

Materials

Purchase price

Quality

Wastage

Fixed costs

Research

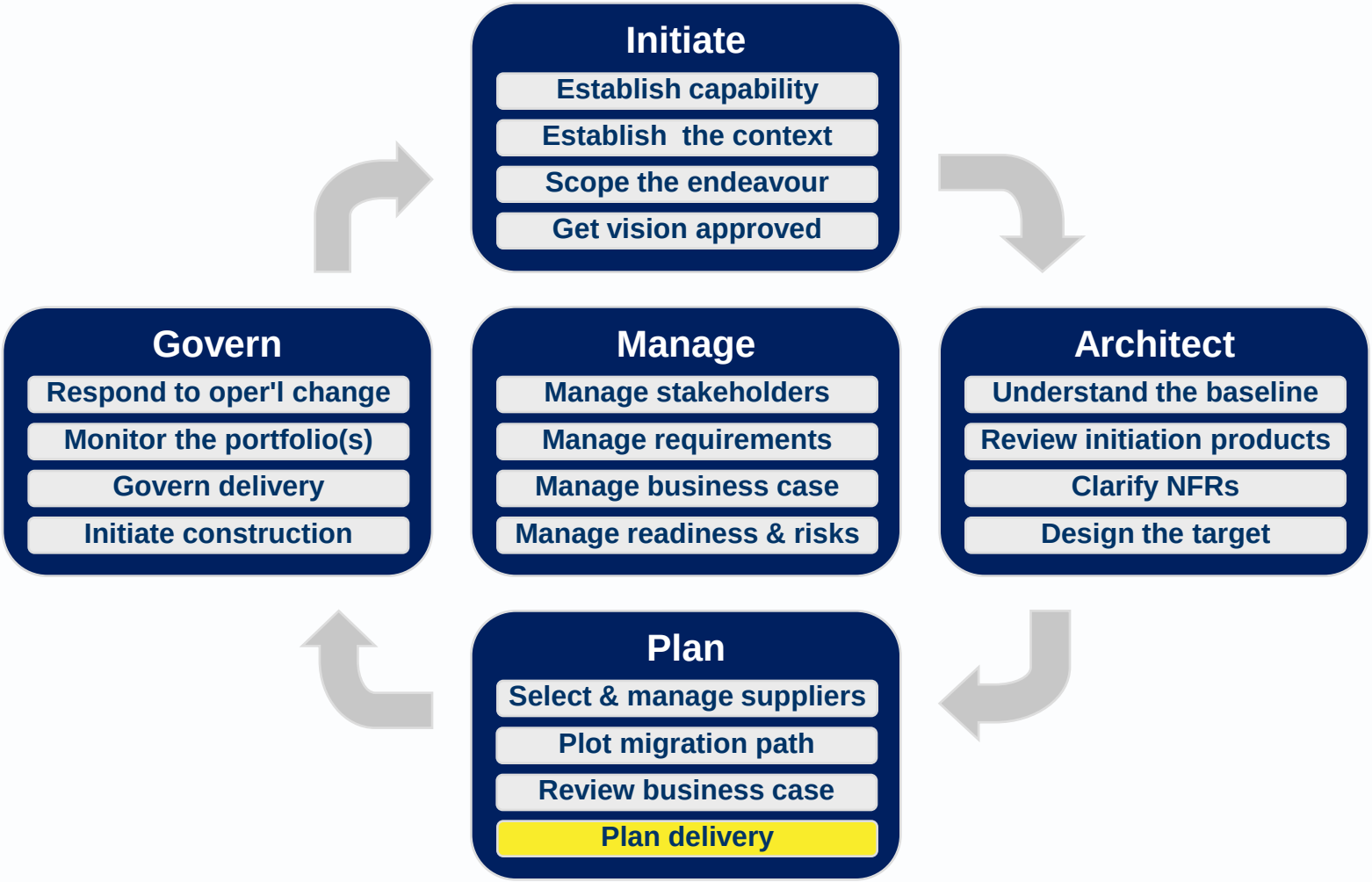
Selling

Maintenance

Works

(From the pyramid principle, by Barbara Minto)

Plan delivery (in AM)



Plan delivery (in AM)

Avancier

- List changes
- Identify risks, costs and values
- Prioritise changes
- Plot migration path

- Outline or review business case
- Chart initial roadmap
- Help managers complete plan
- Plan implementation governance

Roadmap

- A work plan that adds timescales to a migration path, so sits half-way between a migration path and detailed project plans

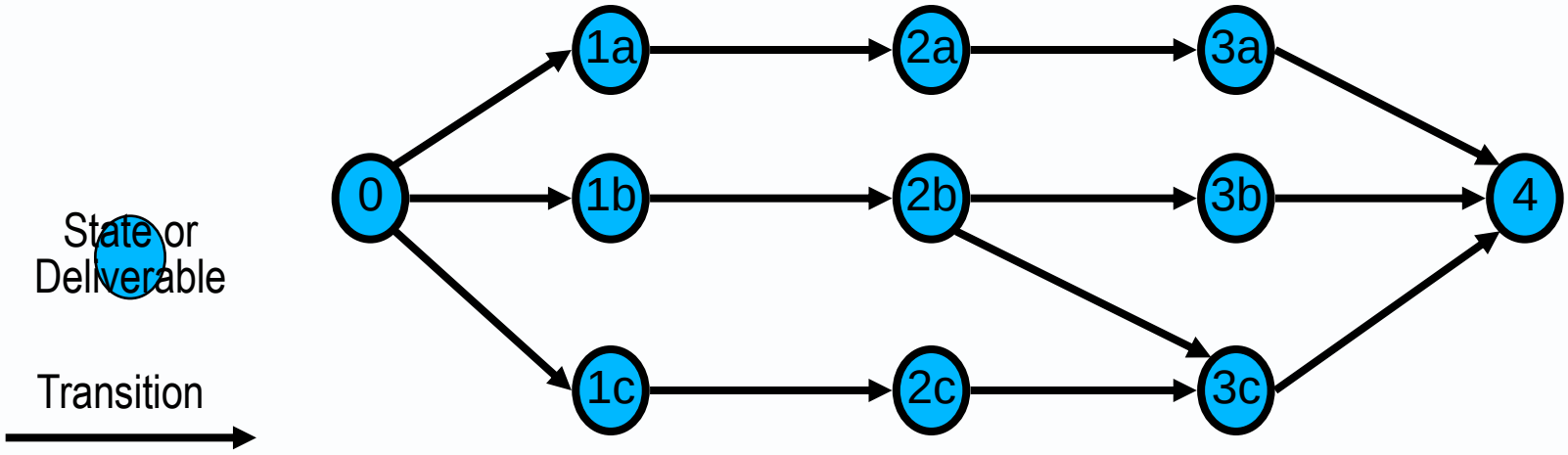
- A plan for how a resource (application or technology) will be updated, which may cut across several work plans.

Emerging	E
Standard	S
Contain	C
Retire	R
Unsupported	U
Archived	A

Tech Category	TAF Product	2010				2011				2012				2013			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
"Application Servers"	"Application Servers"																
	RedHat x.y		S														
	Tomcat		S														
	WebLogic App Server 10.x	S															
	WebLogic App Server 9.x	S							C								R
	WebLogic App Server 8.x	C						R									
"Web Servers"	"Web Servers"																
	Apache 1.x		S														
	Apache 2.0	S				C											
	Apache 2.2x		S														
Portals	Portals																
	Accordant Media Management System																

Chart initial roadmap

- Convert the migration path into a road map
  - Decompose changes into tasks
  - Define dependencies between tasks



Define dependencies between tasks

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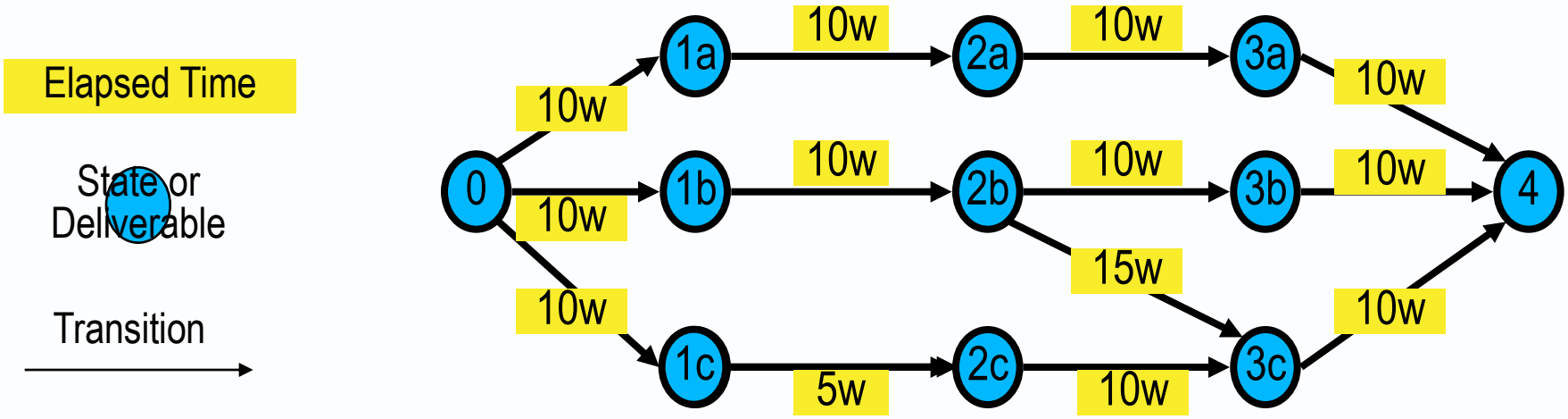
- **Critical path analysis**
- [A technique] to construct a model of the project that includes:
- a list of activities required to complete a project (aka work breakdown structure)
- the duration of each activity
- the dependencies between the activities.



Architecture evolution table

- [an artefact] a table that shows when architectural entities are created, changed and removed through a series of transition states.

Migration path				
Architecture entity Or solution element	**Phase 1**	**Phase 2**	**Phase 3**	**Phase 4**
A	V. 1	V. 2		
B	V. 1			
C		V. 1	V. 2	V. 3
D (temporary)		V. 1	Retire	
E			V. 1	
F			V. 1	V. 2
G				V. 1
H				V. 1

Work or product evolution table

- [an artefact] a table that shows when work units start and stop through a series of transition states.

Work or product evolution table				
Work or product element	**Version**	**Description**	**Phase created**	**Phase retired**
A	V. 1		Phase 1	Phase 2
	V. 2		Phase 2	
B	V. 1		Phase 1	
C	V. 1		Phase 1	Phase 2
	V. 2		Phase 2	Phase 3
	V. 3		Phase 3	
D	V. 1		Phase 2	Phase
E	V. 1		Phase 3	
F	V. 1		Phase 3	Phase 4
	V. 2		Phase 4	
G	V. 1		Phase 4	
H	V. 1		Phase 4	

Plan delivery (in AM)

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- List changes
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- Outline or review business case
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- **Help managers complete plan**
- Plan implementation governance

Migration Path → Road Map → Programme or Project Plan

10.3 General planning concepts (not to be examined)

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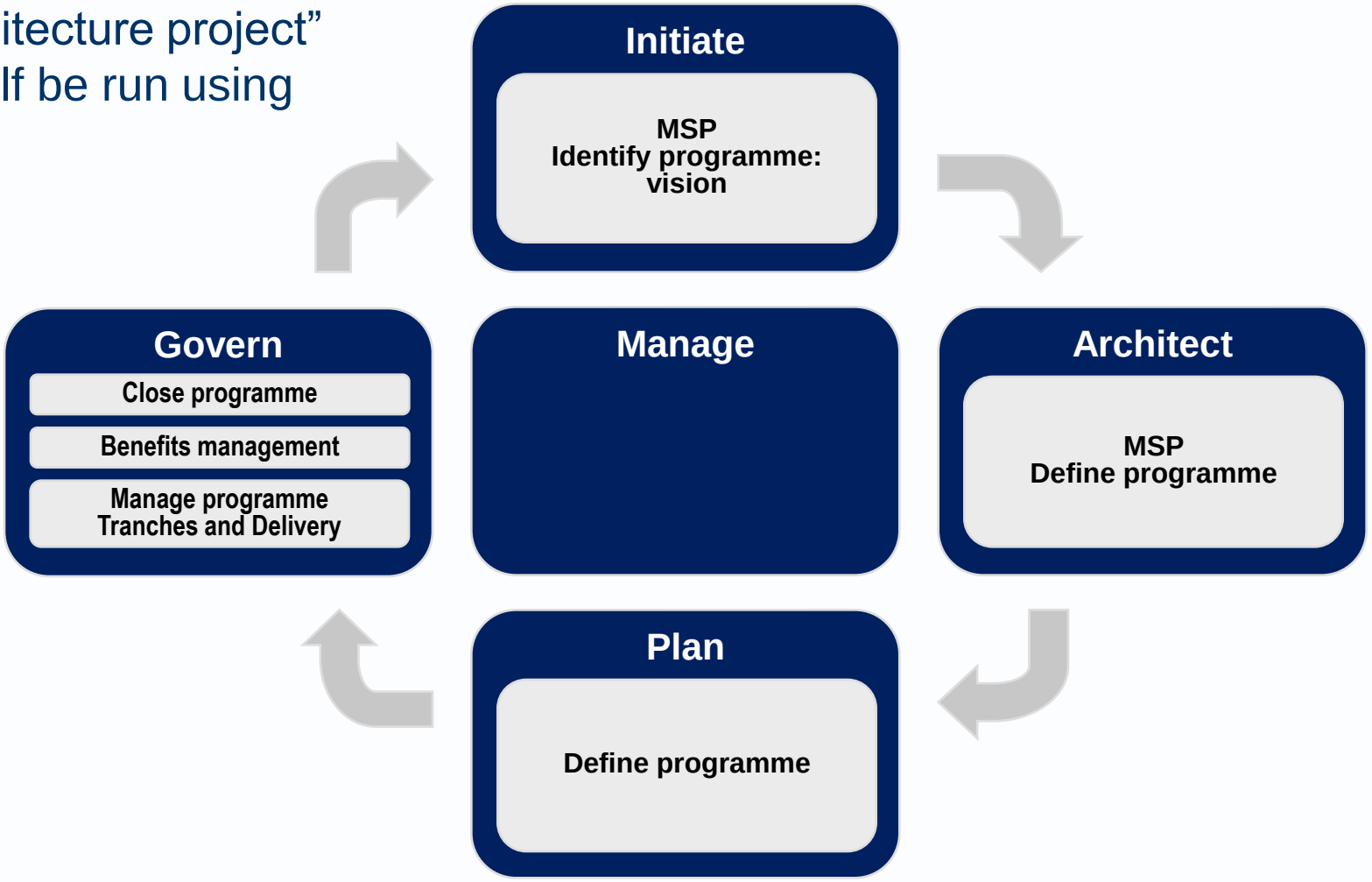
- **Course of action**
- [A work process] or plan that directs and focuses work to change a business to meet strategic goals and objectives and/or deliver the value proposition conveyed in a business model.
  - **Programme**
  - [A work process] a set of projects that are related by a common goal or shared budget, usually under one manager.
  - **Project**
  - [A work process] with defined start and finish criteria undertaken to create a product or service in accordance with specified resources and requirements.
  - Given a time span and a budget, it uses resources to deliver a required outcome, usually under one manager.
  - **Work package**
  - [A work process] a subset of a project's work breakdown structure, defined to yield defined deliverables.
  - May itself be decomposed into tasks assigned to different project roles.

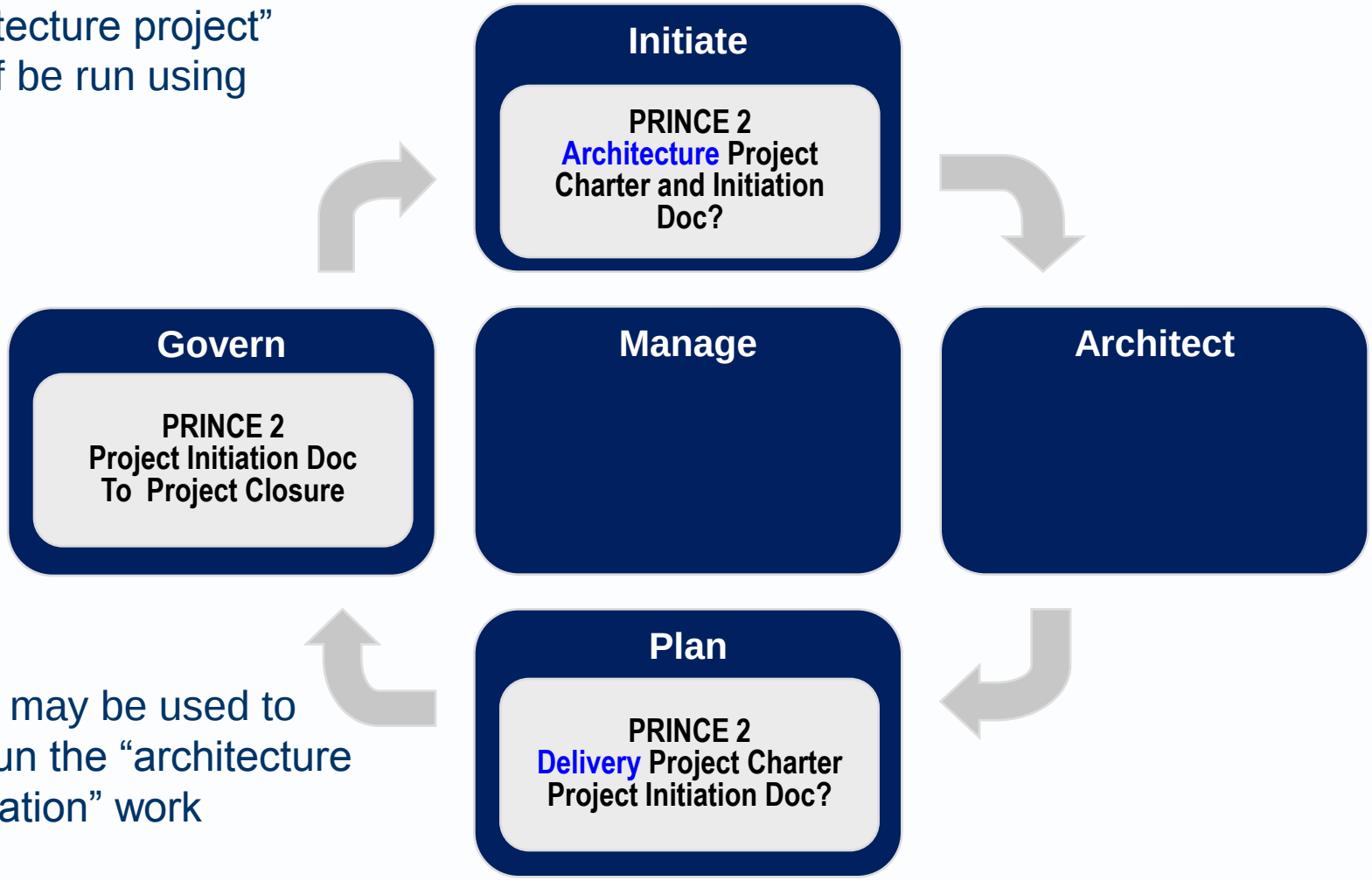
Managing Successful Programmes <> Avancier Methods

- The “architecture project” might itself be run using MSP



PRINCE 2<> Avancier Methods

- The “architecture project” might itself be run using PRINCE 2



- PRINCE 2 may be used to plan and run the “architecture implementation” work

Plan delivery (in AM)

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- List changes
- Identify risks, costs and values
- Prioritise changes
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- Outline or review business case
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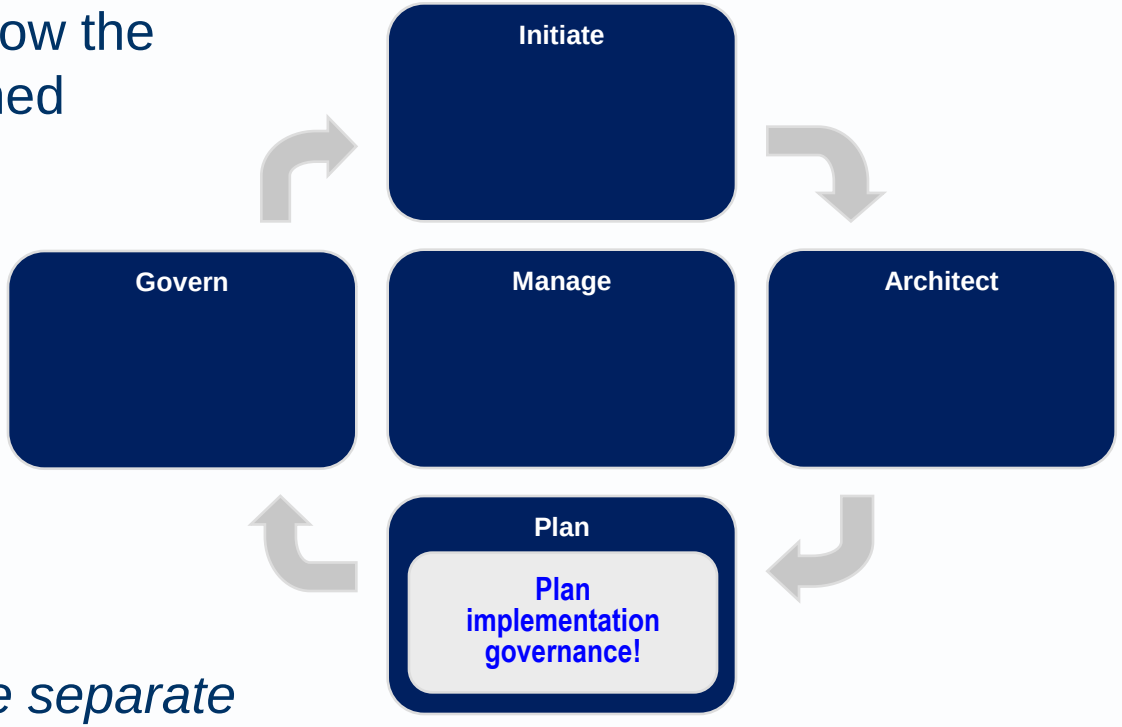
- Help managers complete plan
- Plan implementation governance

Plan implementation governance

- For each project, determine how the implementation will be governed



- Define
  - **architecture contracts**
  - **project compliance plan**
- *These two documents may be separate or combined*

Rules of engagement: agreed with programme, project or business managers, perhaps part of a PID

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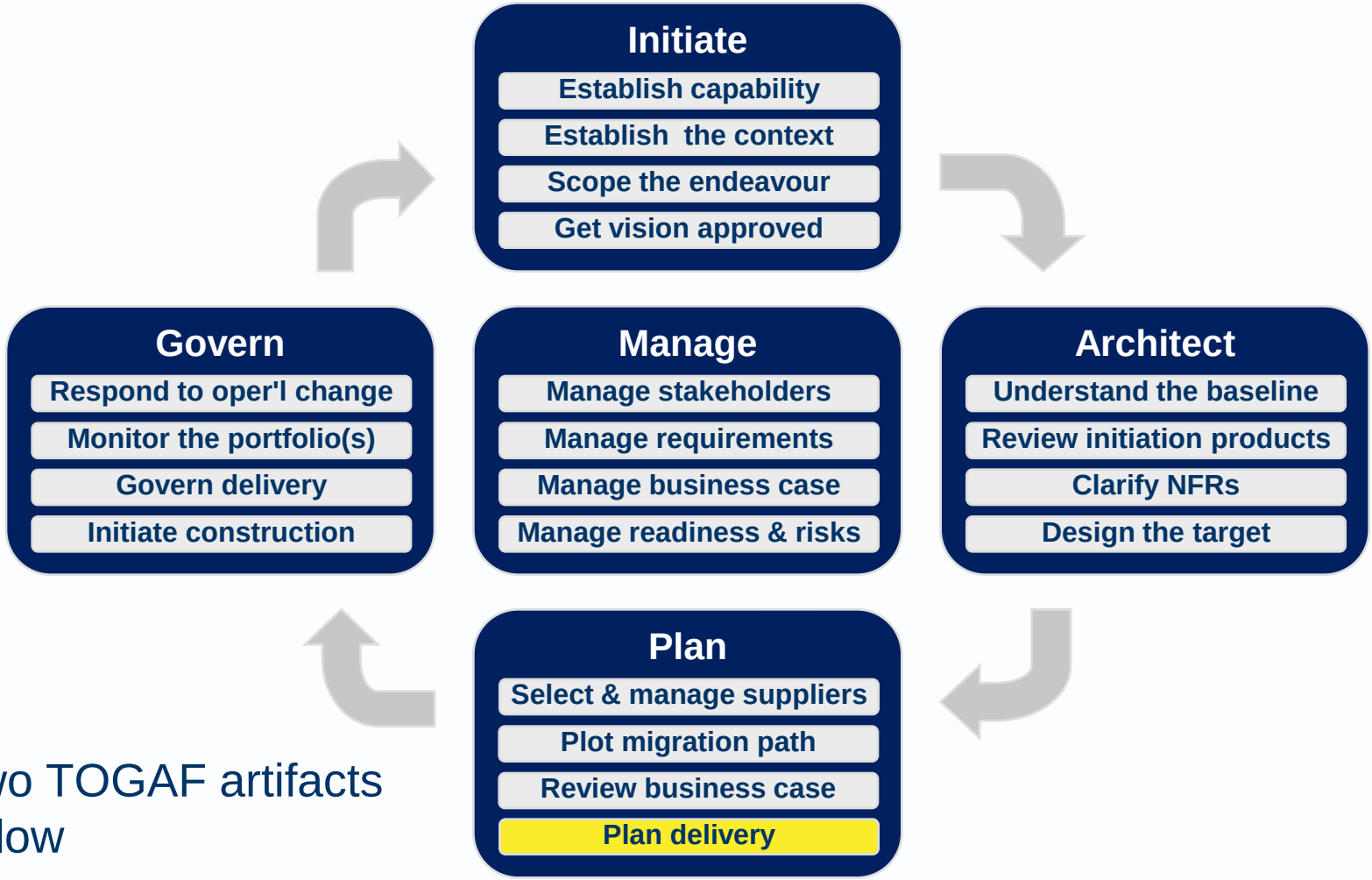
Architecture contract

- Used by governing architects to test the compliance of what is going on
  - Solution description (vision/outline/build-ready)
  - Operational system under construction
  - Operational system change request
- Against “architecture collateral”
  - Goals, objectives , requirements, *especially NFRs*
  - Principles, reference models and standards
  - Earlier and higher level architecture descriptions
  - Factors listed in more general compliance review checklists

Project compliance plan

- A plan that schedules
- When reviews will take place
  - Regular intervals and/or
  - Define milestones
- Kinds of review to be carried out
- What each kind of review will test compliance against
  - Compliance review checklists
  - Architecture contracts
  - Other defined inputs

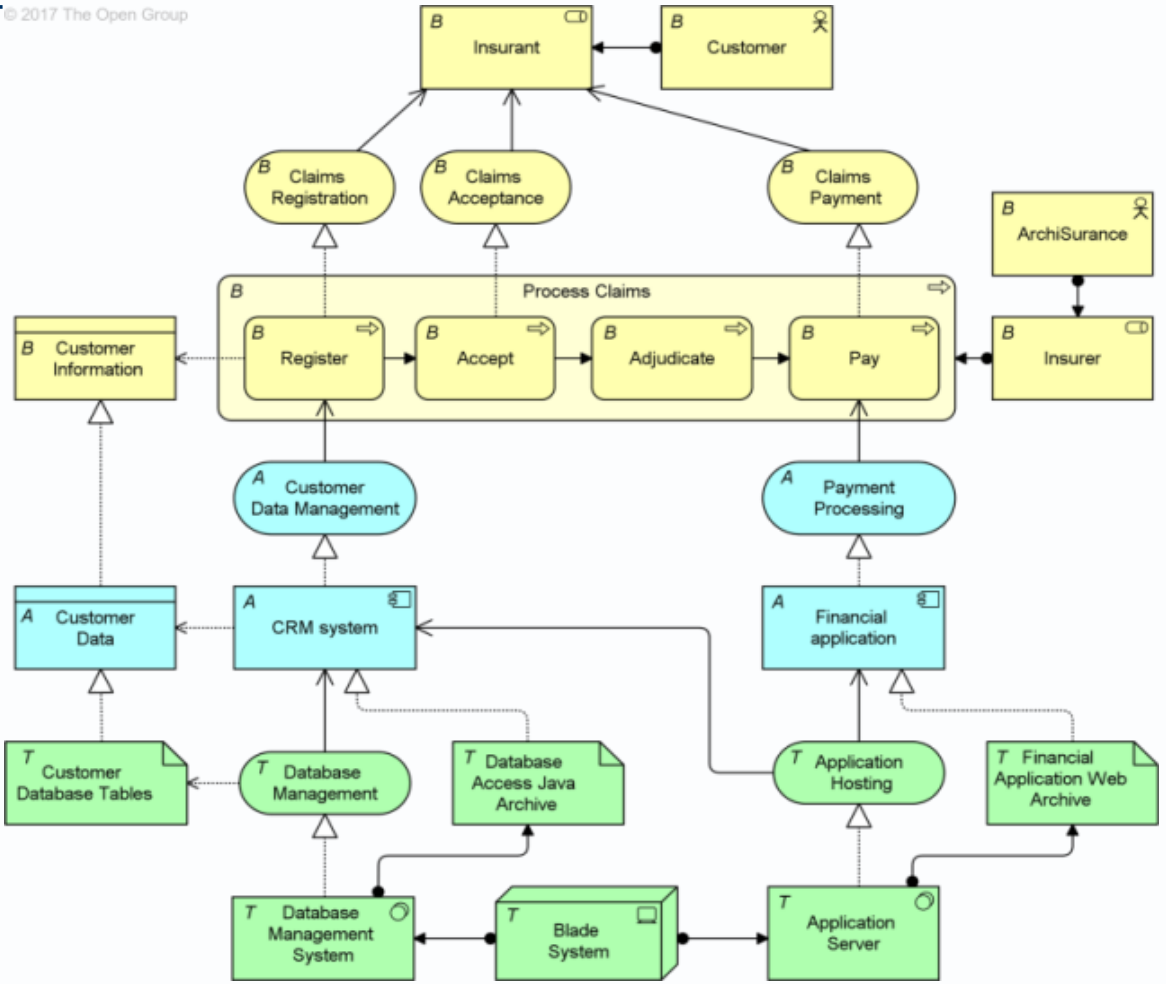
Plan delivery (in AM)



- Two TOGAF artifacts follow

Project Context Diagram

- To show the “big picture” of a project.
- To assist project portfolio management and project mobilization
- To identify change impacts and resources needed.



This diagram uses ArchiMate symbols

Benefits Diagram

- To assist selection and prioritization of components and/or work packages.

This diagram is informal

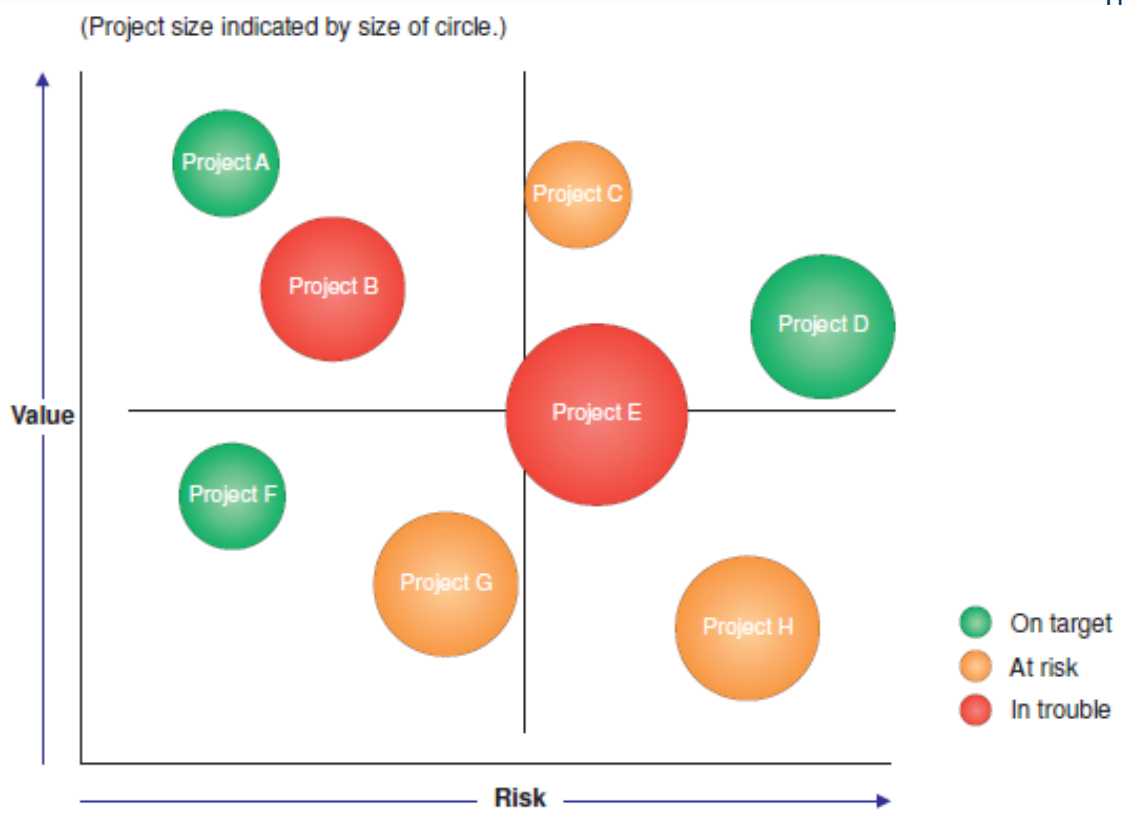


Figure 24-5 Sample Project Assessment with Respect to Business Value and Risk