Software development process methodologies

Methodology is a set of models, methods, practices and tools.

The methodologies classified as

- «Heavy»/«Formal» : Rational Unified Process (RUP), Microsoft Solution Framework (MSF)
- «Light»/«Flexible» : Scrum, Agile, eXtreme Programming

Rational Unified Process

RUP — approach, which is

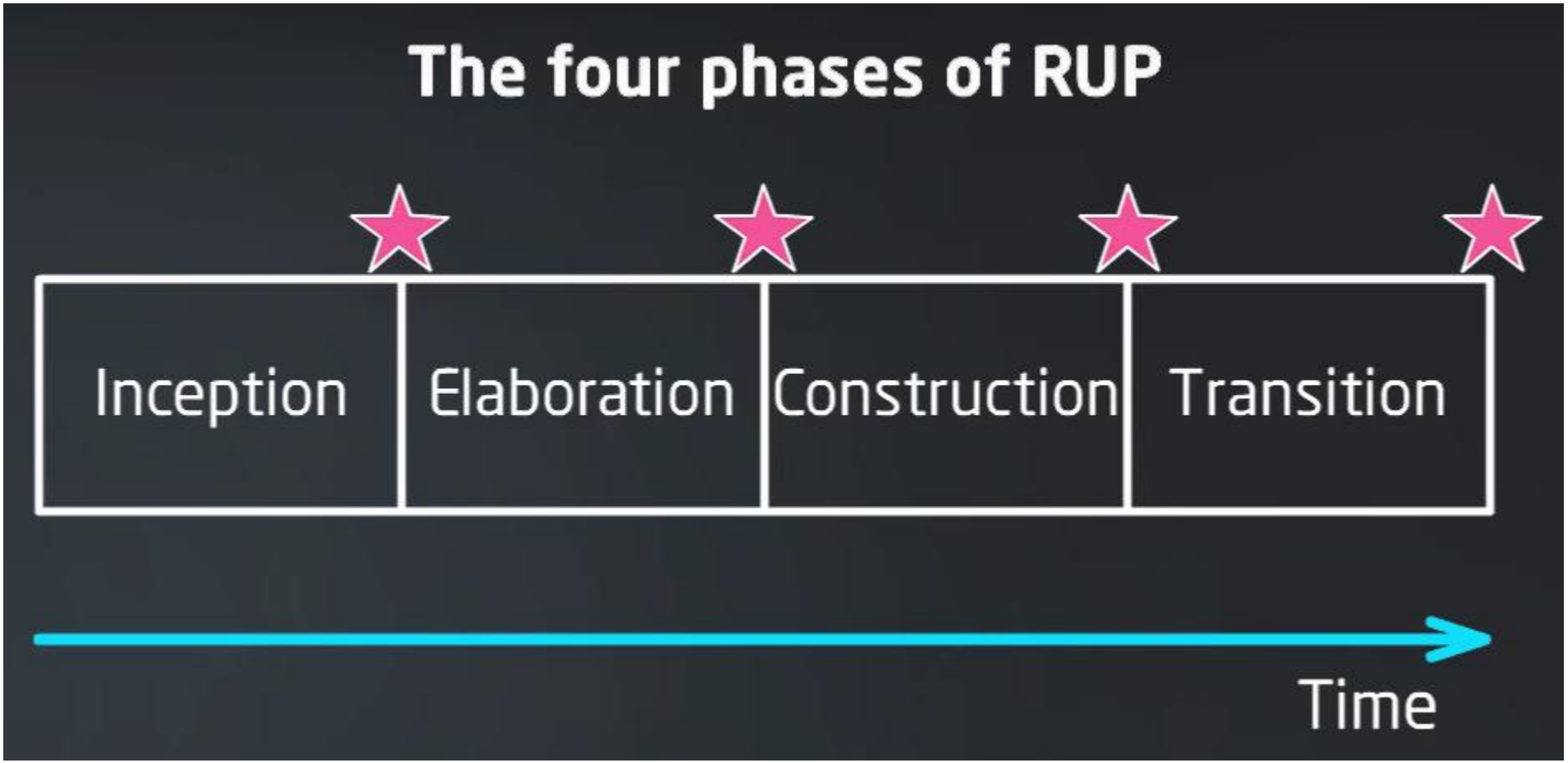
- Iterative
- Architecture centered
- Use-case based

The four phases of RUP

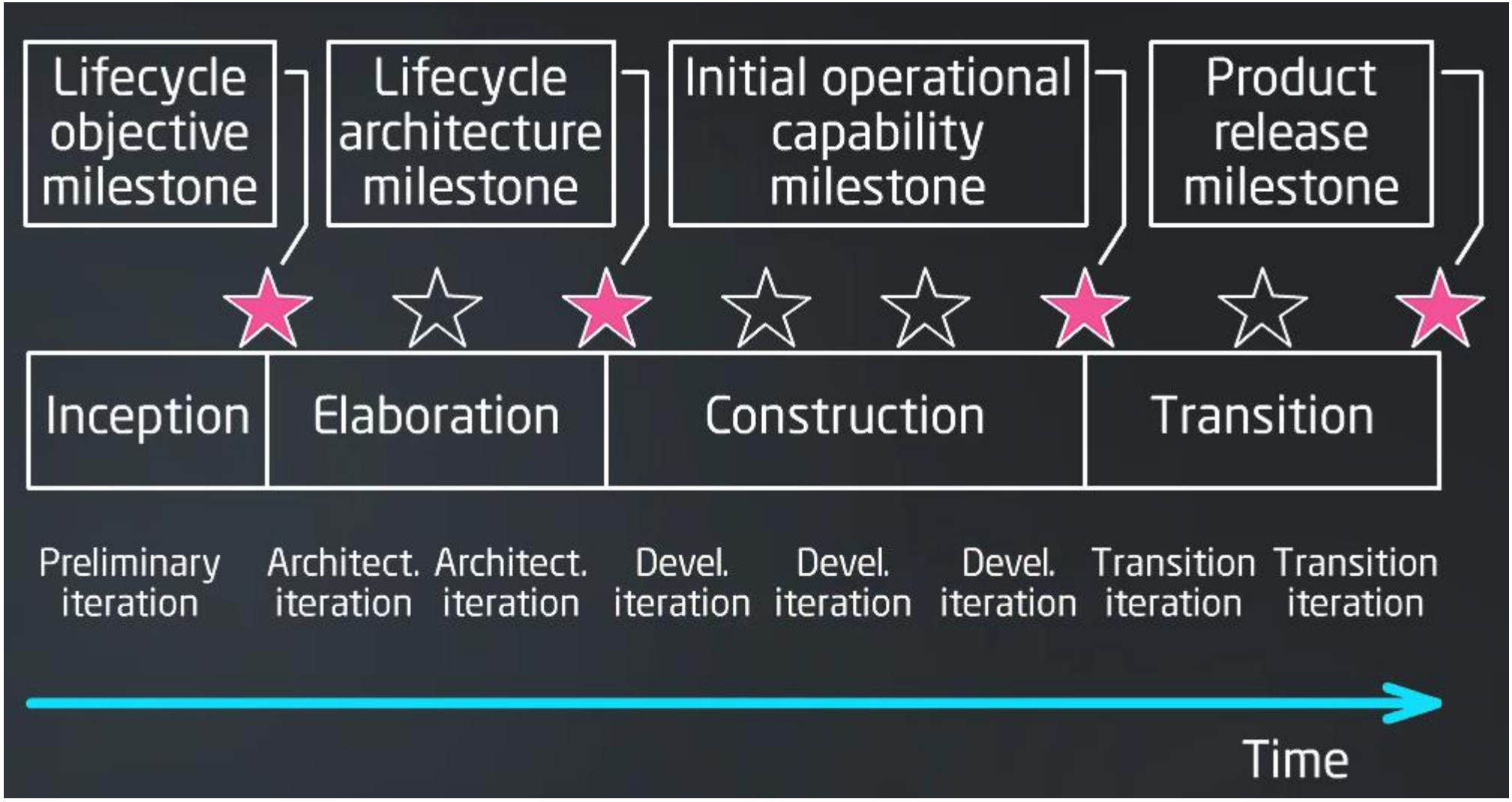
- Inception (What will be developed?)
- Elaboration (How it will be developed?)
- Construction (Product development)
- Transition (Product delivery)

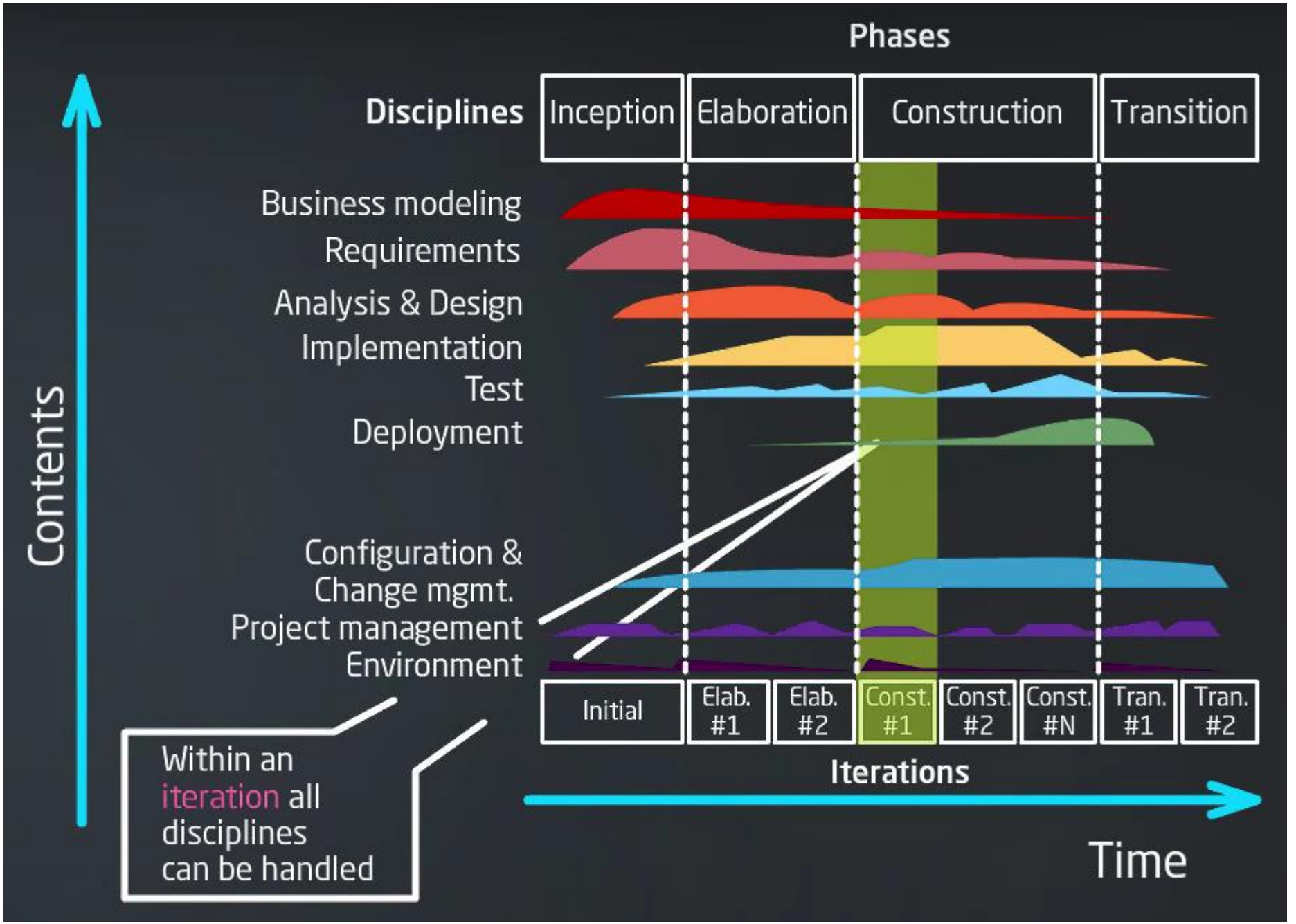
https://courses.edx.org/courses/course-v1:MEPhIx+MEPHI001x+2T2016

The four phases of RUP



The four phases of RUP

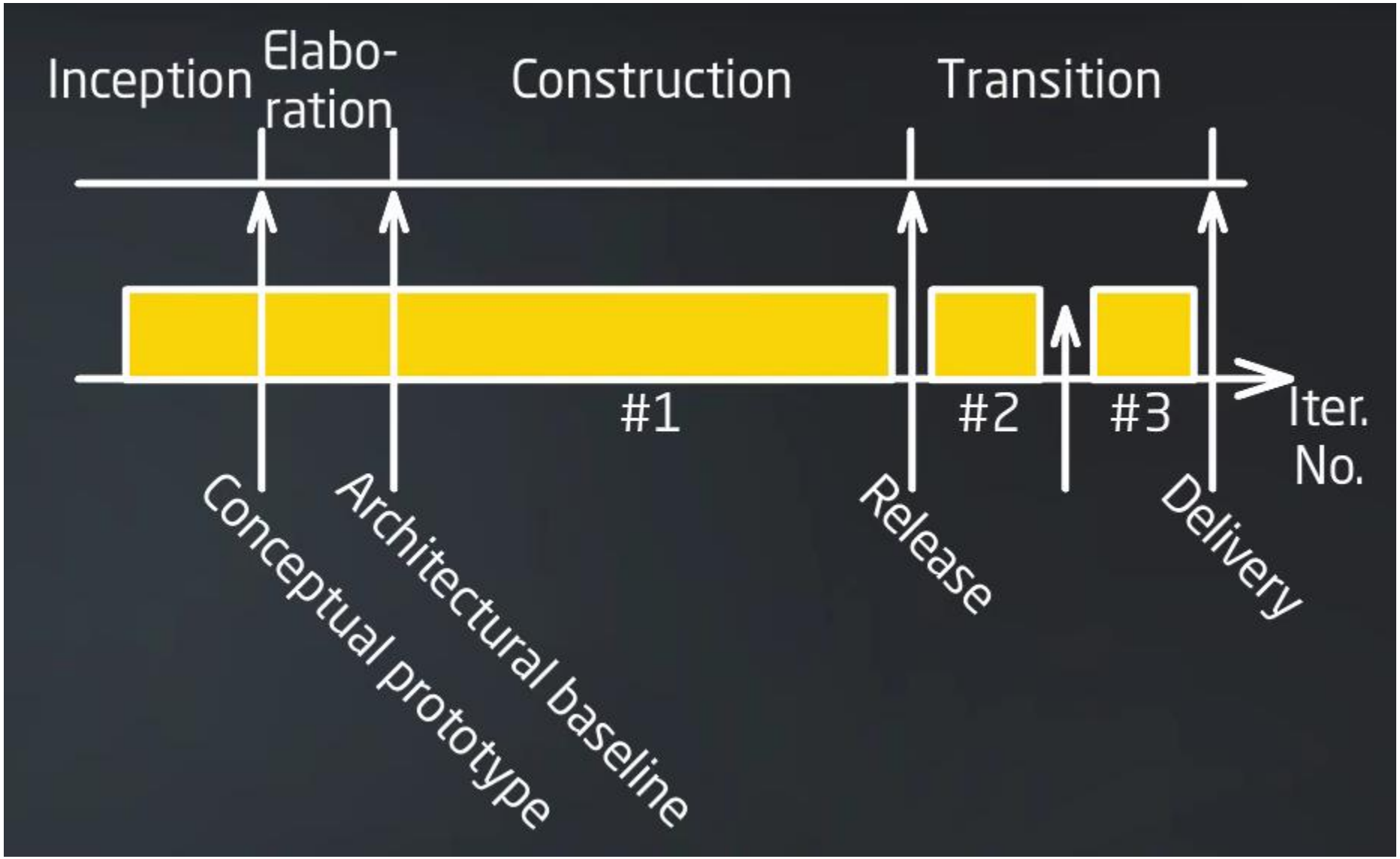



Phases
Disciplines
Inception
Elaboration
Construction
Transition
Business modeling
Requirements
Analysis & Design
Implementation
Test
Deployment
Configuration &
Change mgmt.
Project management
Environment
Contents
Initial
Elab. #1
Elab. #2
Const. #1
Const. #2
Const. #N
Tran. #1
Tran. #2
Iterations
Time
Within an iteration all disciplines can be handled

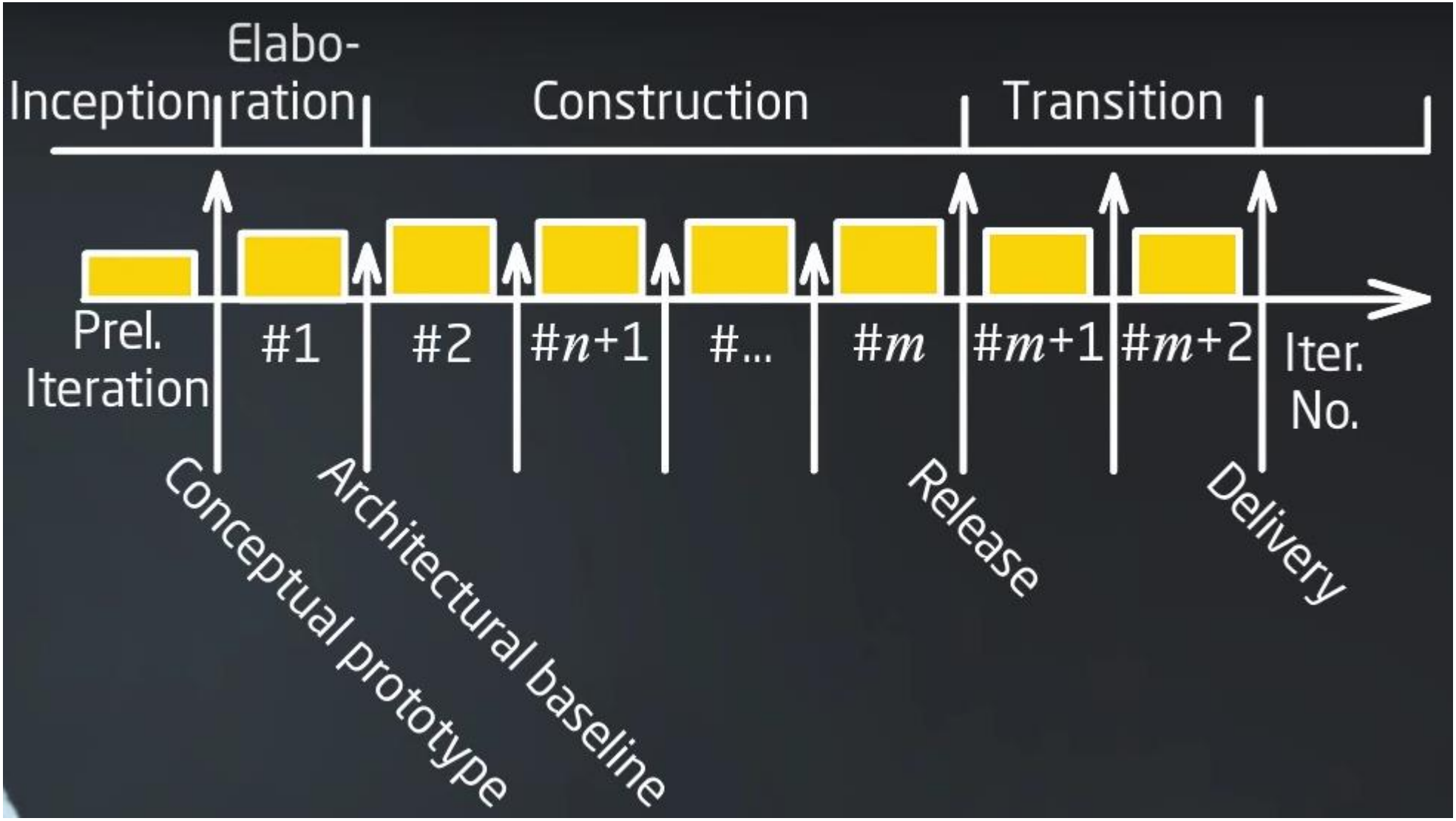
RUP practices

- Provide cutomer requirements satisfaction
- Concentrate on the program implemented
- Adjust to changes since project start
- Build a commponent system
- Build the foundation of implementable architecture ASAP
- Make quality a lifestyle

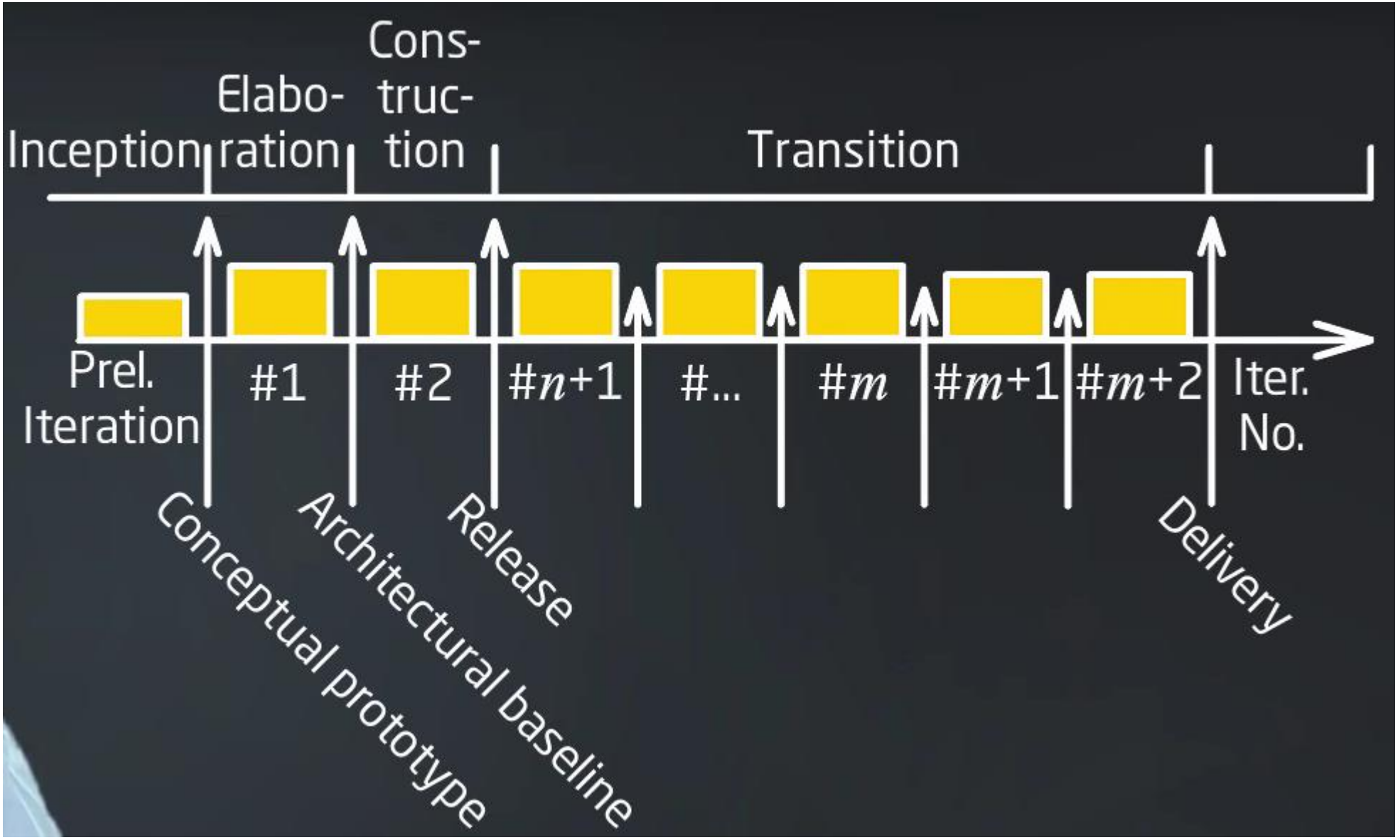
RUP waterfall lifecycle



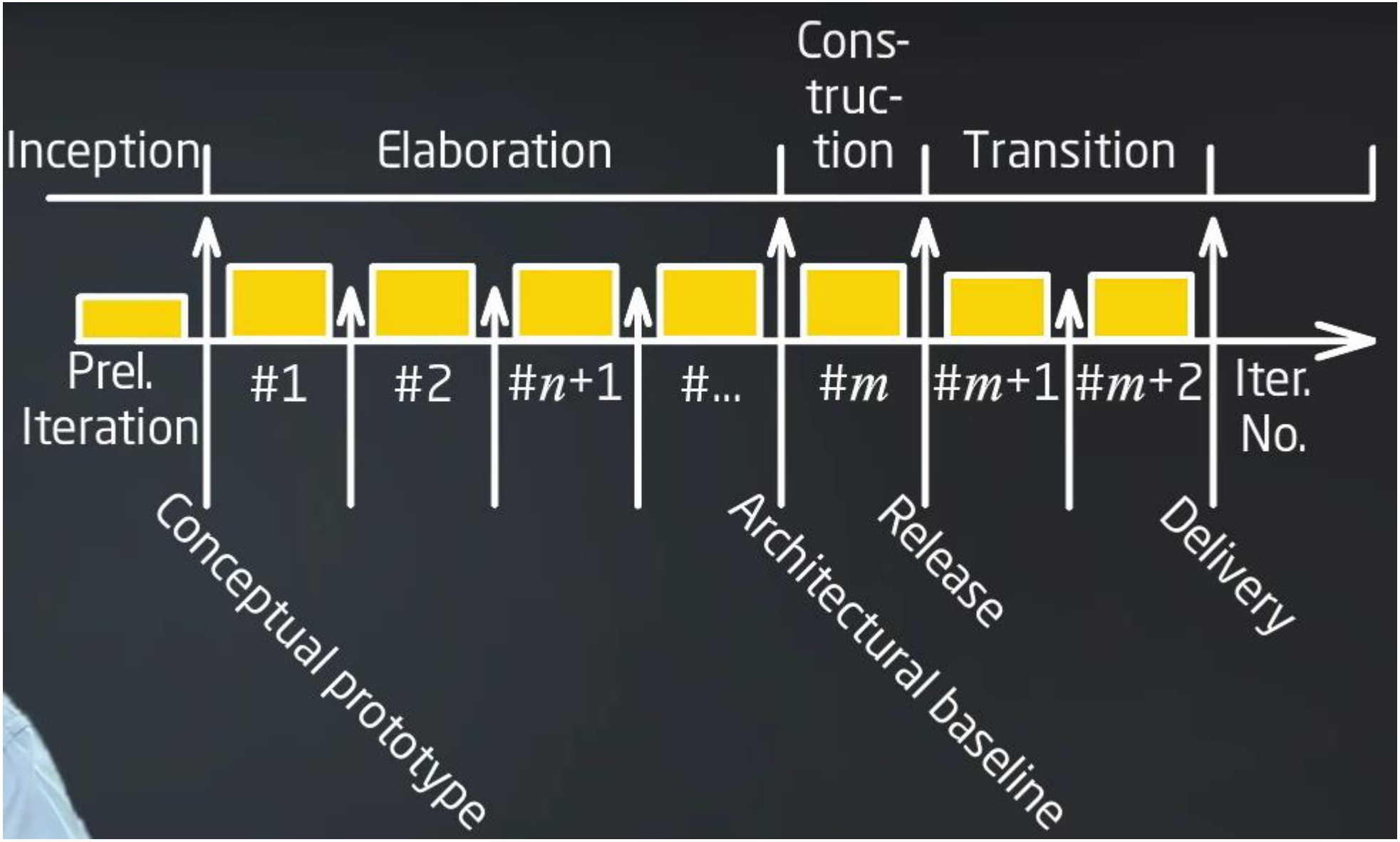
RUP: incremental lifecycle



RUP: incremental lifecycle 2

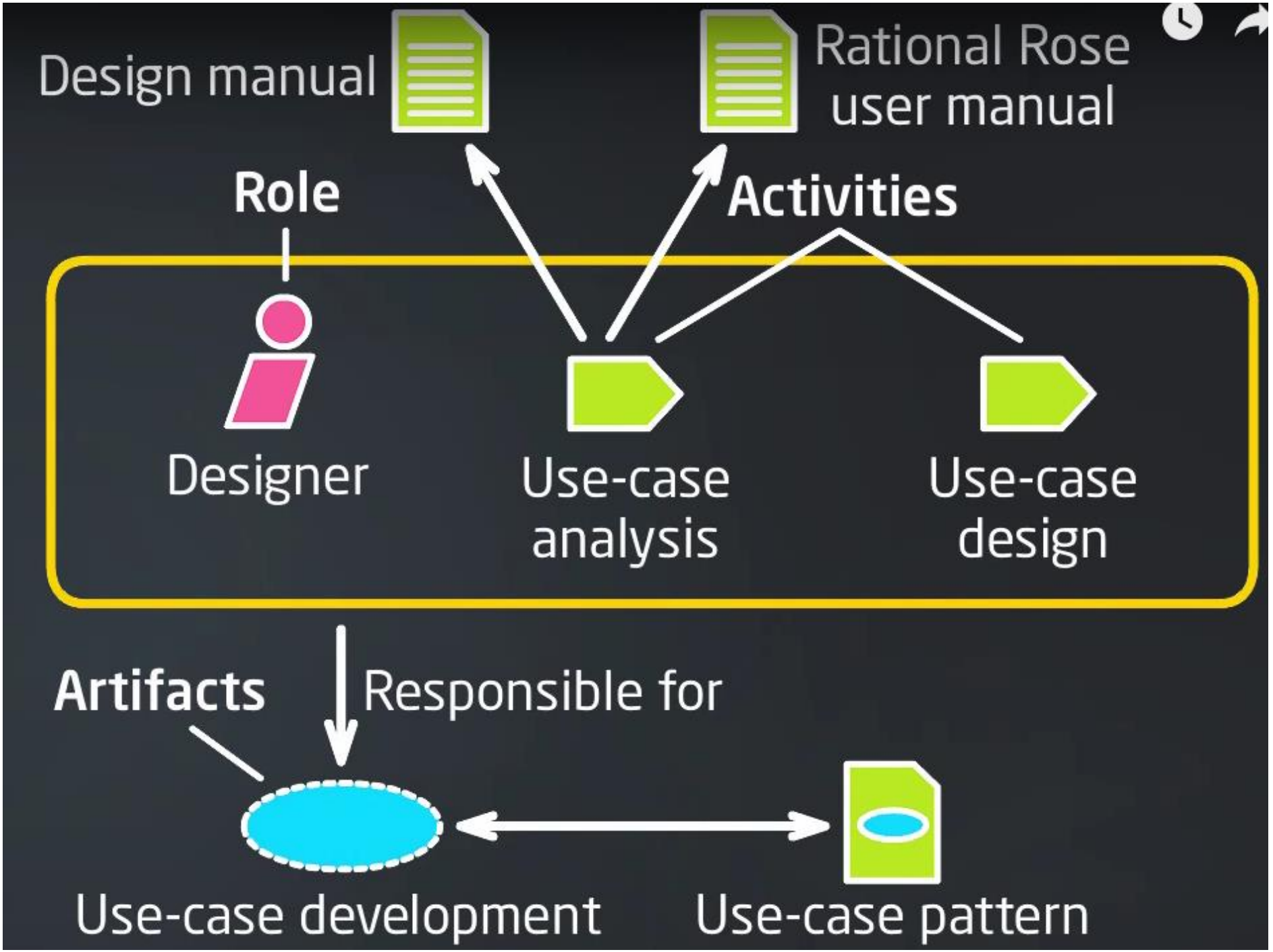


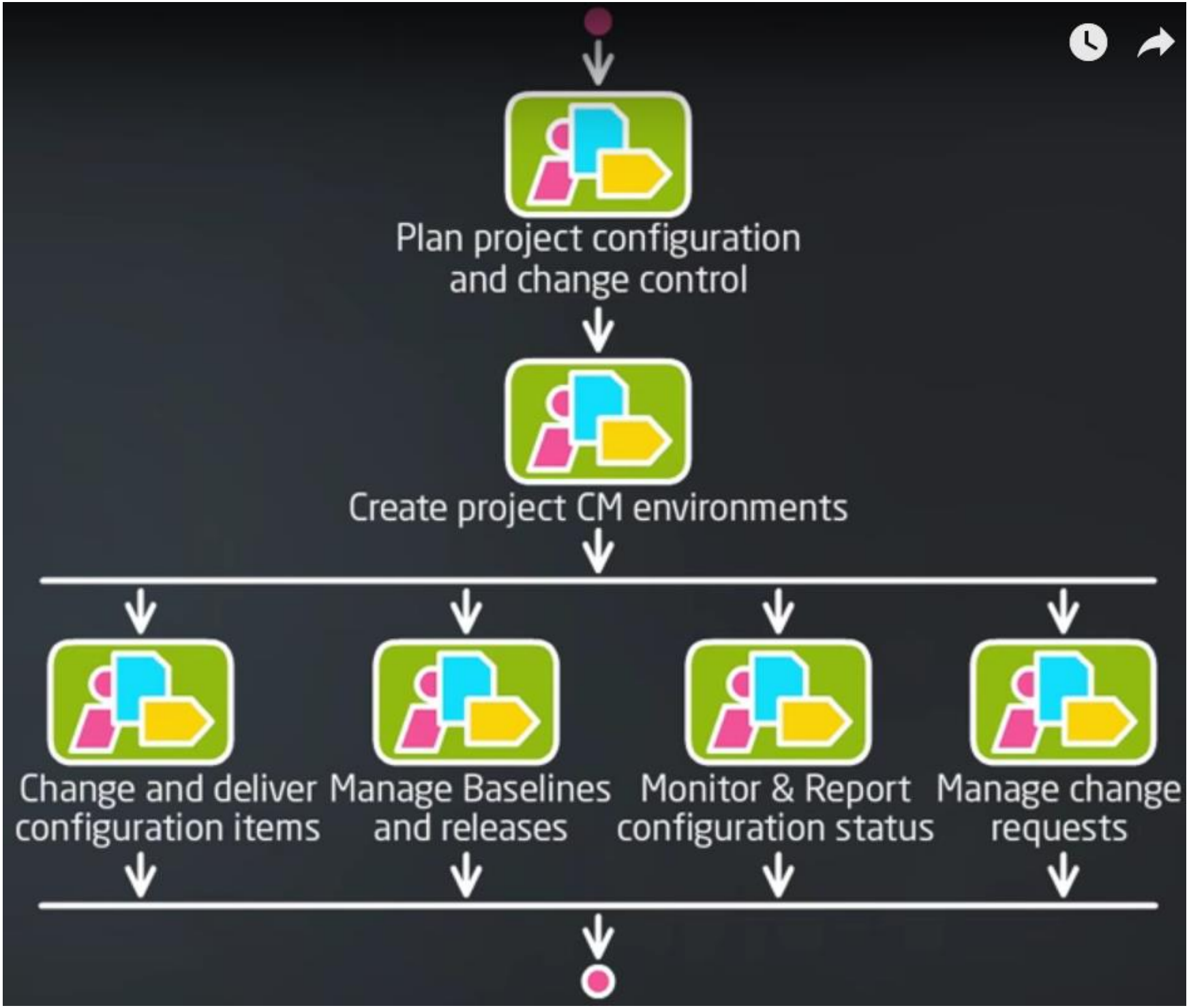
RUP: evolution lifecycle

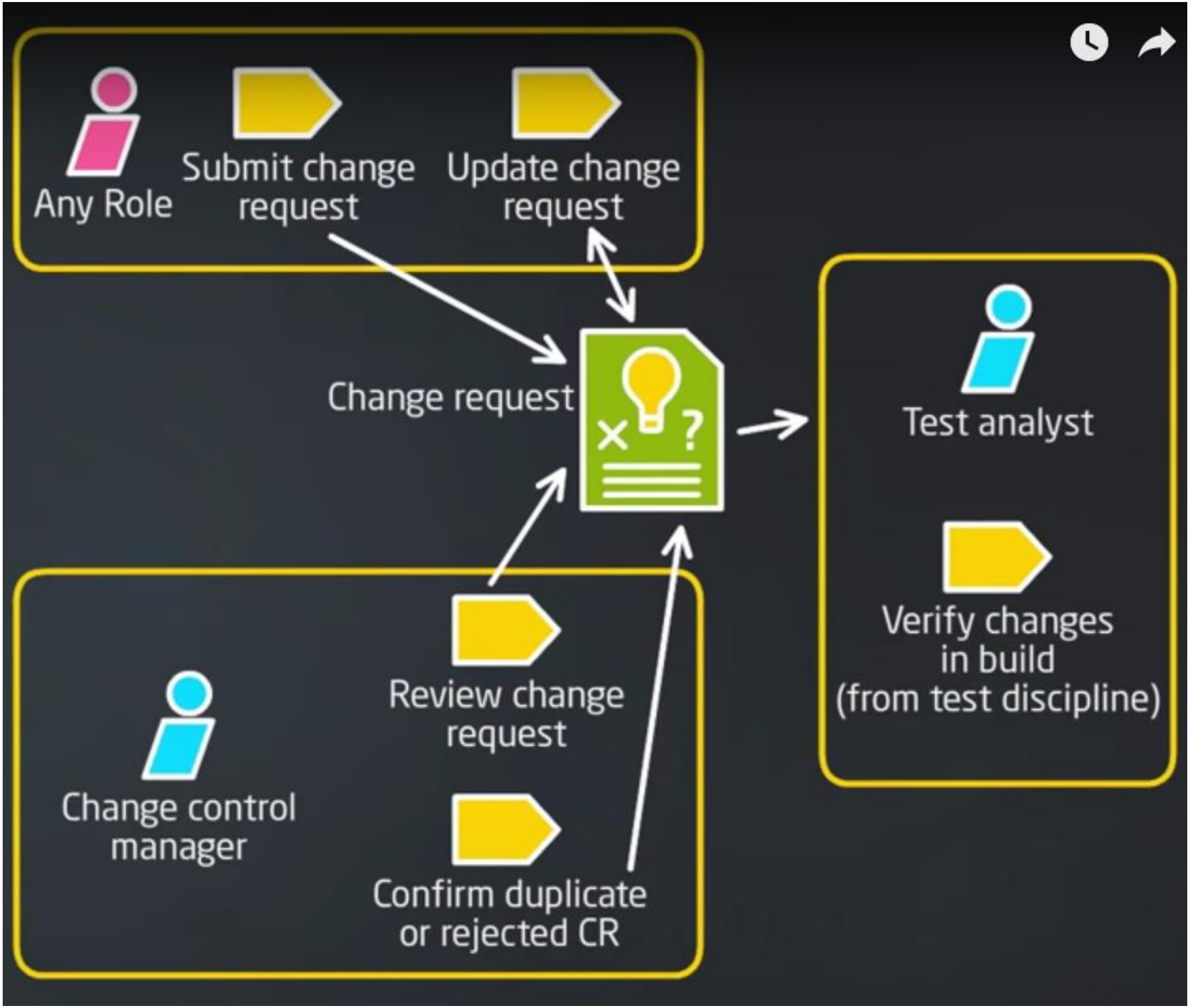


RUP: organization

- RUP is iterative software (SW) development process framework
- RUP is organized in phases, iterations and workflows
- RUP structure includes roles, activities and artifacts
- RUP processes use manuals, patterns and SW user manuals
- RUP structure uses workflows of activities
- RUP includes a set of best practices


Design manual
Rational Rose user manual
Role
Activities
Designer
Use-case analysis
Use-case design
Artifacts
Responsible for
Use-case development
Use-case pattern


Plan project configuration
and change control
Create project CM environments
Change and deliver
configuration items
Manage Baselines
and releases
Monitor & Report
configuration status
Manage change
requests


Any Role
Submit change request
Update change request
Change request
Test analyst
Verify changes in build (from test discipline)
Review change request
Change control manager
Confirm duplicate or rejected CR

Microsoft Solution Framework

MSF has two implementations:

- MSF Agile
- MSF Formal

Microsoft Operations Framework (MOF) is an addition

MSF = Build it right

MOF = Run it right

MSF elements

- Basic principles
- Models for teams and processes
- Disciplines of managing
- Key concepts (mindsets)
- Practices
- Recommendations
- Meta-model
- Implementation for MSF Agile
- Implementation for MSF Formal

MSF basic principles

- Partnership with client
- Foster open communication
- Work toward a shared vision
- Quality is everyday work for everyone (invest in quality)
- Stay agile, expect change
- Make implementation a habit
- Create value (focus on delivering business value)

MSF basic principles-2

- Distribution of responsibility, fixed statements
- Empower team members
- Focus on business priorities
- Single vision of the project
- Be flexible - be prepared for change
- Encourage free communication

https://ru.wikipedia.org/wiki/Microsoft_Solutions_Framework

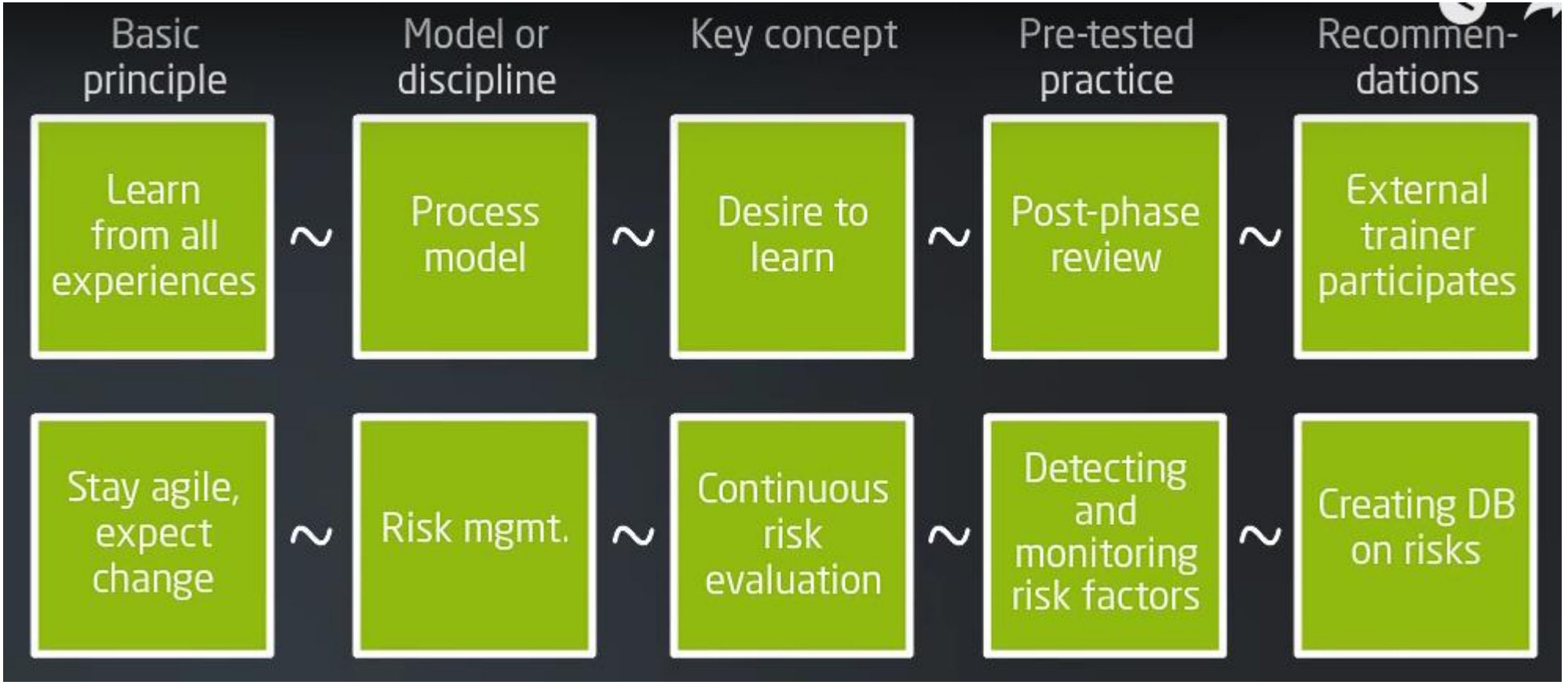
MSF roles

- Program management
- Product management
- Development
- Testing
- Release management
- Customer satisfaction

MSF project group

- Program manager
- Product manager
- Developer
- Quality Assurance
- Release manager
- User experience

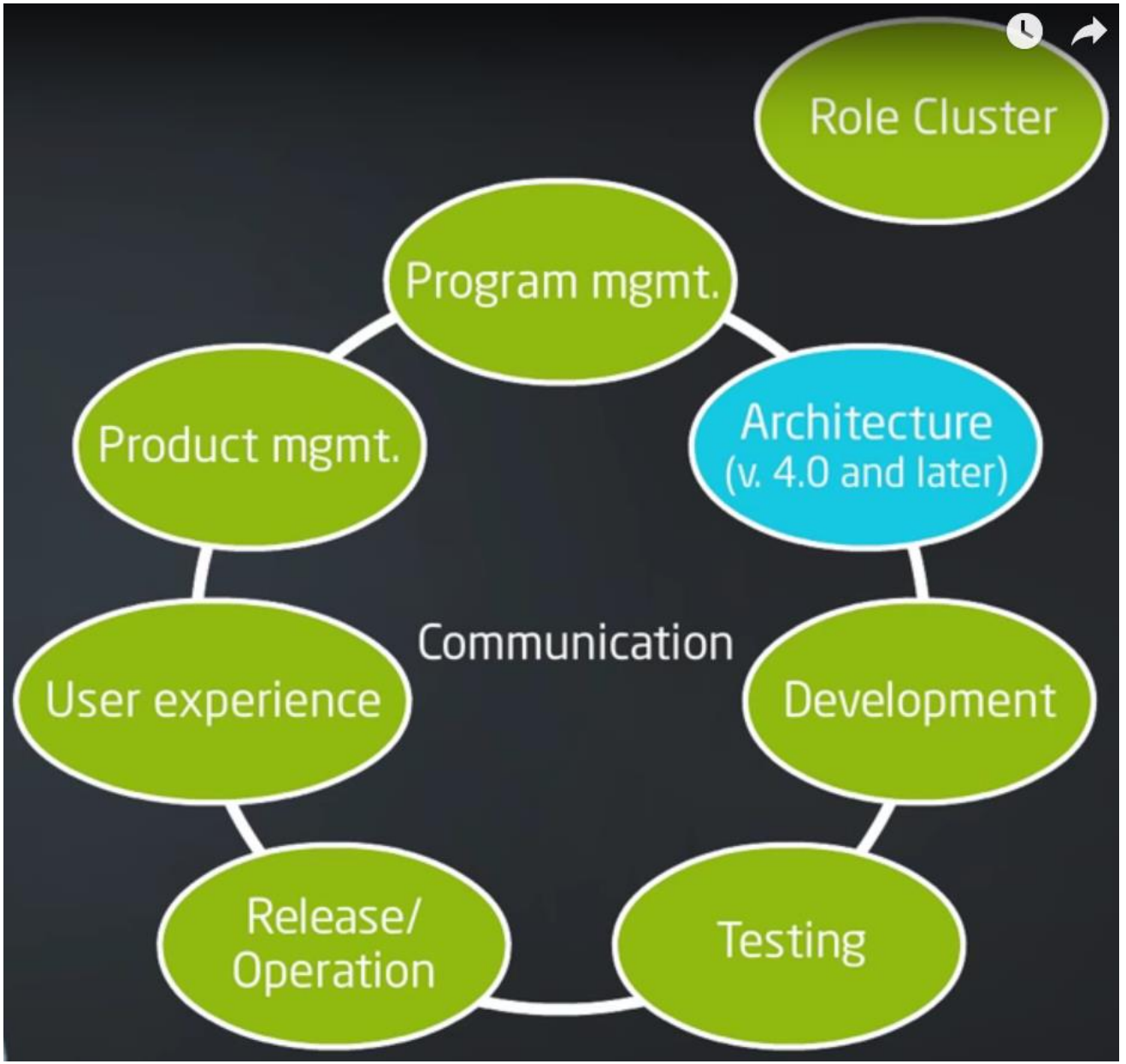
MSF: Elements and Relationships



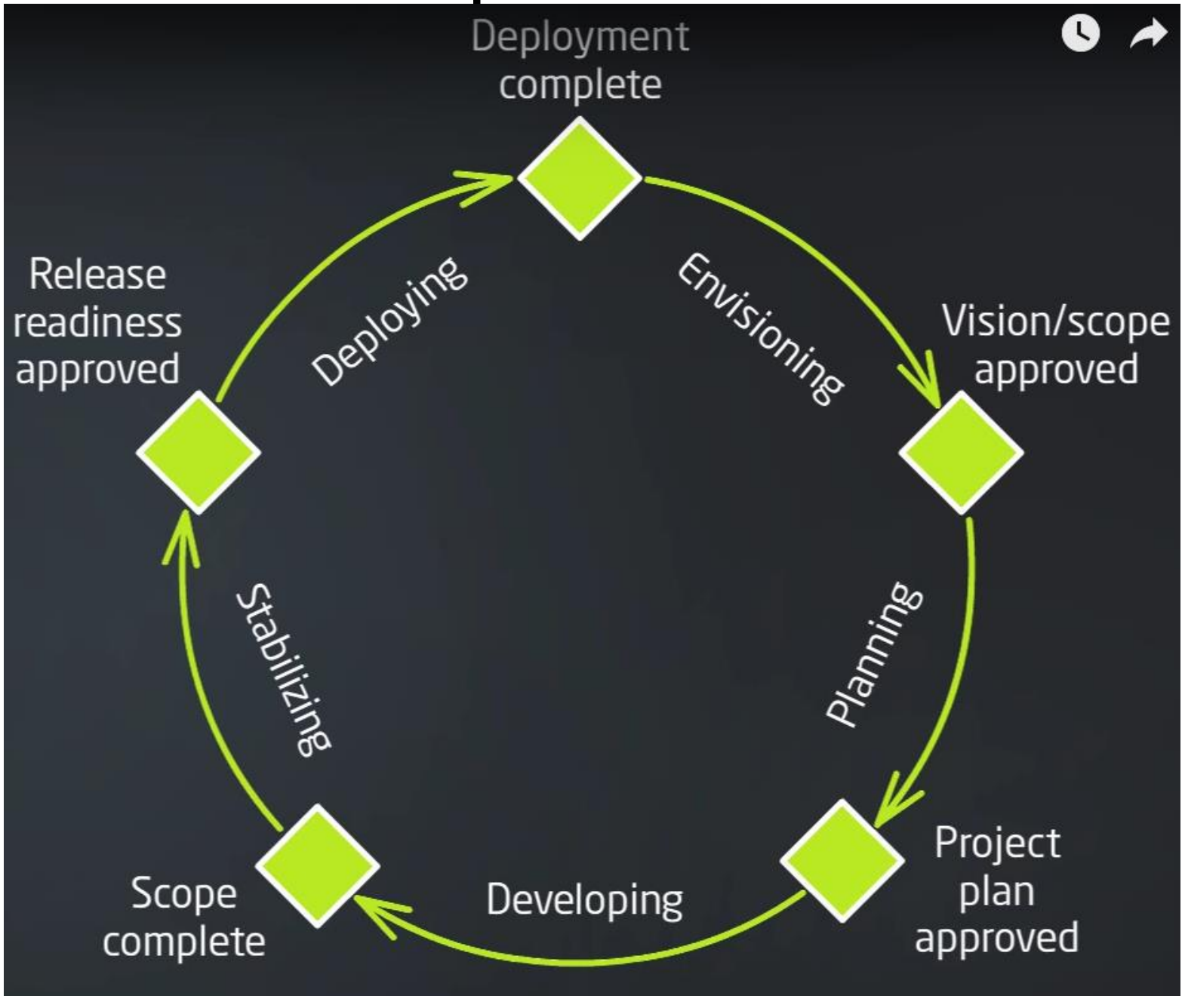
MSF: teamwork principles

- A team of equal
- Representing interests of all interested sides
- Adjust to match project scale («teams of teams»)

MSF: team model



MSF: process model



MSF: Role Compatibility Matrix

	Arc	MPrd	MPrg	Dev	Tst	UX	RM
Architecture		N	P	P	L	L	L
Product mpmt.			N	N	P	P	L
Program mpmt.				N	L	L	P
Development					N	N	N
Testing						P	P
User experience							L
Release mgmt.							

N – not recommended; P – possible; L – low probability