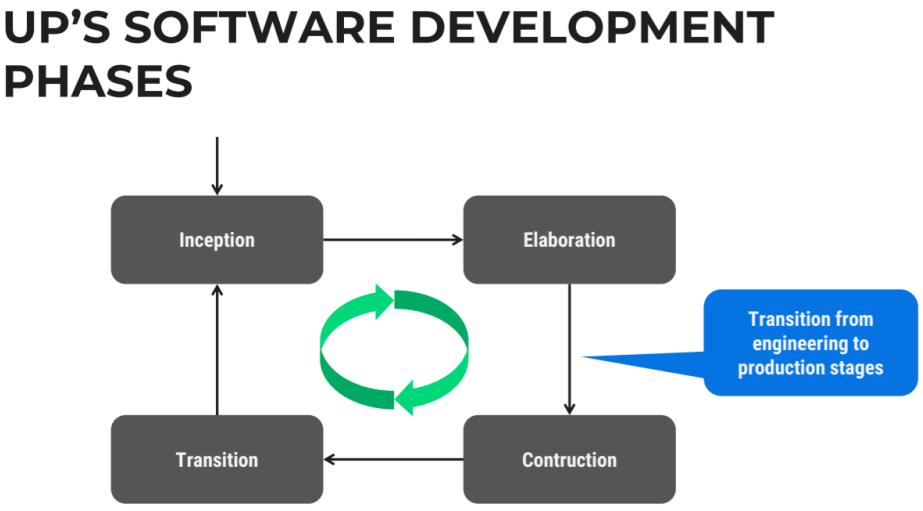
Unified Process(UP)

- RUP - Rational Unified Process

UP Stages

- `Engineering Stage` : focusing on design and synthesis activities
    - Inception phase
    - Elaboration phase
- `Production Stage` : focusing on construction, test and deployment activities
    - Construction phase
    - Transition phase



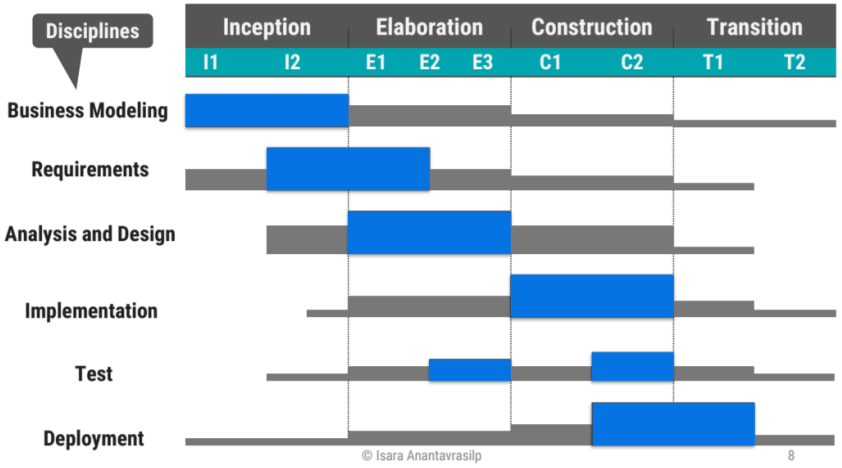
Unified Process Iteration

- Each of the four phases consists of one or more iterations
- Iteration :
    - A set of milestone activities
    - A well-defined intermediate event
- The scope and results of each iteration are captured via work products (or `artifacts`)

UP'S PHASE VS. ITERATION

- A **phase** creates a formal, stake-holder approved version of artifacts
  - It leads to a **major milestone**
  - Phase to phase transition: Triggered by a significant business decision (not by the completion of a software development activity)
- An **iteration** creates an informal, internally controlled version of artifacts
  - It leads to a **minor milestone**
  - Iteration to iteration transition: Triggered by a specific software development activity

EACH ITERATION CYCLES THROUGH DISCIPLINES (WORKFLOWS)



Inceptive Phase

Inceptive Phase : OBJECTIVES

- `Establish` the project scope
  - Web app? Mobile app?
- `Identify` the critical `use cases` and `scenarios` ,
- Define acceptance criteria
- Demonstrate at least one candidate software architecture
- Estimate the cost and schedule for the project
- Define and estimate potential risks

Rember UML

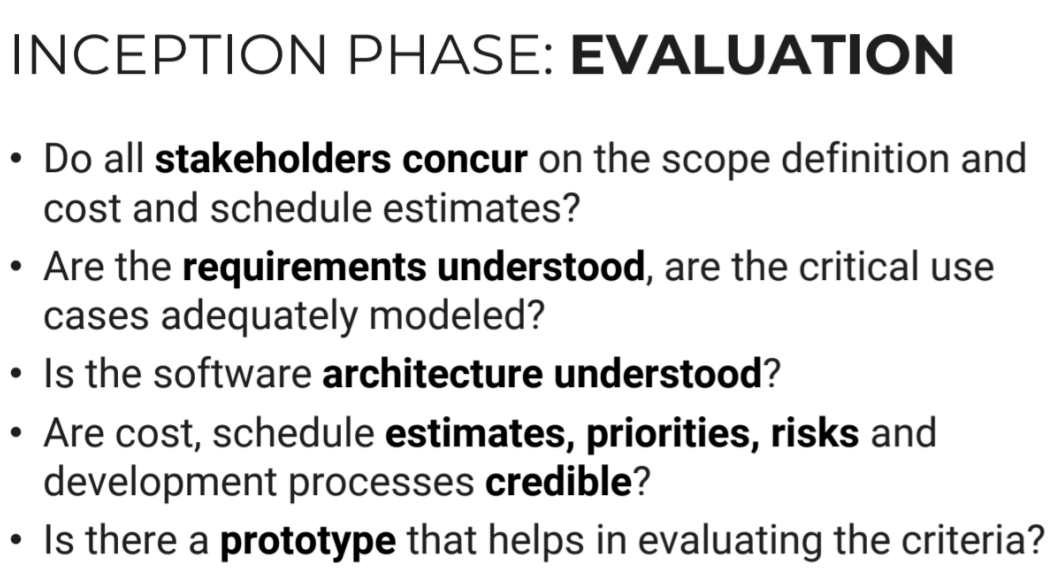
```
In UML, dependancies association
A - - - - > B
A depends on B
If there's no B, A is useless

A - - - - > B
C - - - - > B
D - - - - > B
E - - - - > B
Everyone depends on B but B doesn't care
```

Inceptive Phase : Activities

- Formulate the scope of the project
    - Capture requirements
    - Result: problem space and acceptance criteria are defined
- Design the software architecture
    - Evaluate design trade-offs, investigate solution space
    - Result: Feasibility of at least one candidate architecture is explored, initial set of build vs. buy decisions
- Plan and prepare a business case
    - Evaluate alternatives for risks, staffing problems, plans.

Inceptive Phase : Evaluation



Elaboration Phase

Elaboration Phase : OBJECTUVES

- Base(An agreed-to description of the attributes of a product, at a point in time, which serves as a basis for defining change) of SW Architecture
- Base of Problem Statement
- Base of SW project management plan
- Demonstrate that the architecture supports the requirements at a reasonable cost in a reasonable time

Elaboration Phase : Activities

ELABORATION PHASE: **ACTIVITIES**

- **Elaborate** the ***problem statement*** (***vision***) by working out the critical use cases that drive technical and managerial decisions
- **Elaborate** the ***infrastructure***
- **Tailor** the ***software process*** for the construction stage, identify tools
- **Establish** intermediate ***milestones*** and evaluation ***criteria*** for these milestones
- **Identify** buy/build ("make/buy") problems and make decisions
- **Identify** ***lessons learned*** from the inception phase to redesign the software architecture if necessary
  - It is always necessary

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### Build or Buy, is it better to build this component, or buy an ex
- Have I seen this in the market
- Maybe you should buy it
- How big is the scale? 30 users?, 1000 users?
- How much do they pay
- If it's small, you can just buy an existing product. Better than h
```

Elaboration Phase : Evaluation

ELABORATION PHASE: **EVALUATION**

- Is the **problem statement stable**?
- Is the **architecture stable**?
- Does the executable demonstration show that the major **risk** elements have been **addressed** and credibly resolved?
- Is the construction **plan credible**? By what claims is it backed up?
- Do all **stakeholders** (project participants) **agree** that the vision expressed in the problem can be met if the current plan is executed?
- Are actual **resource expenditures** versus planned expenditures so far **acceptable**?

Construction Phase

Construction Phase : Objective

- Minimize cost by optimizing resources
- cheap and make it work
- Achieve adequate quality as rapidly as practical
- Achieve useful version (alpha, beta, and other test releases) as soon as possible

Construction Phase : Activities

CONSTRUCTION PHASE: **ACTIVITIES**

- Resource management, control and process optimization
- Complete component development and testing against evaluation criteria
- Assessment of product releases against acceptance criteria

Construction Phase : Evaaluation

CONSTRUCTION PHASE: **EVALUATION**

- Is the **product** baseline **matured** enough to be deployed in the user community?
  – Existing faults are not obstacles to do the release
- Is the **product** baseline **stable** enough to be deployed in the user community?
  – Pending changes are not obstacles to do the release
- Are the **stakeholders ready** for the transition of the software system to the user community?
- Are actual resource **expenditures** versus planned expenditures so far **acceptable**?