MUNI
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Triple Constraint Theory

MDA402 Project Management

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Lecture Overview

1. Triple Constraint Theory
   - Definition
   - Project Triangle
2. Project Manager & Project Triangle
   - Relationship
   - Tips & Tools
3. Agile vs. Predictive
   - Comparison

Triple Constraint Theory

Definition

Definition 7.1

Triple Constraint Theory is a critical project management concept:

- it is primary **building block** of the project plan
- it consists of three key variables:
  - **TIME** - "What is the deadline for project delivery?"
  - **SCOPE** - "What are we delivering?"
  - **COST** - "How much it will cost to deliver it?"
- every project must operate **within boundaries** of these variables [8]

Triple Constraint Theory

Project Triangle

Definition 7.2

Visual representation of three variables of Triple Constraint Theory is called **Project Triangle** or **Iron Triangle**.

- **useful** and **easy to understand** model
- simply illustrates **consequences** of changes
- clearly shows the need for **trade-offs** in case of any change

Triple Constraint Theory

Project Triangle

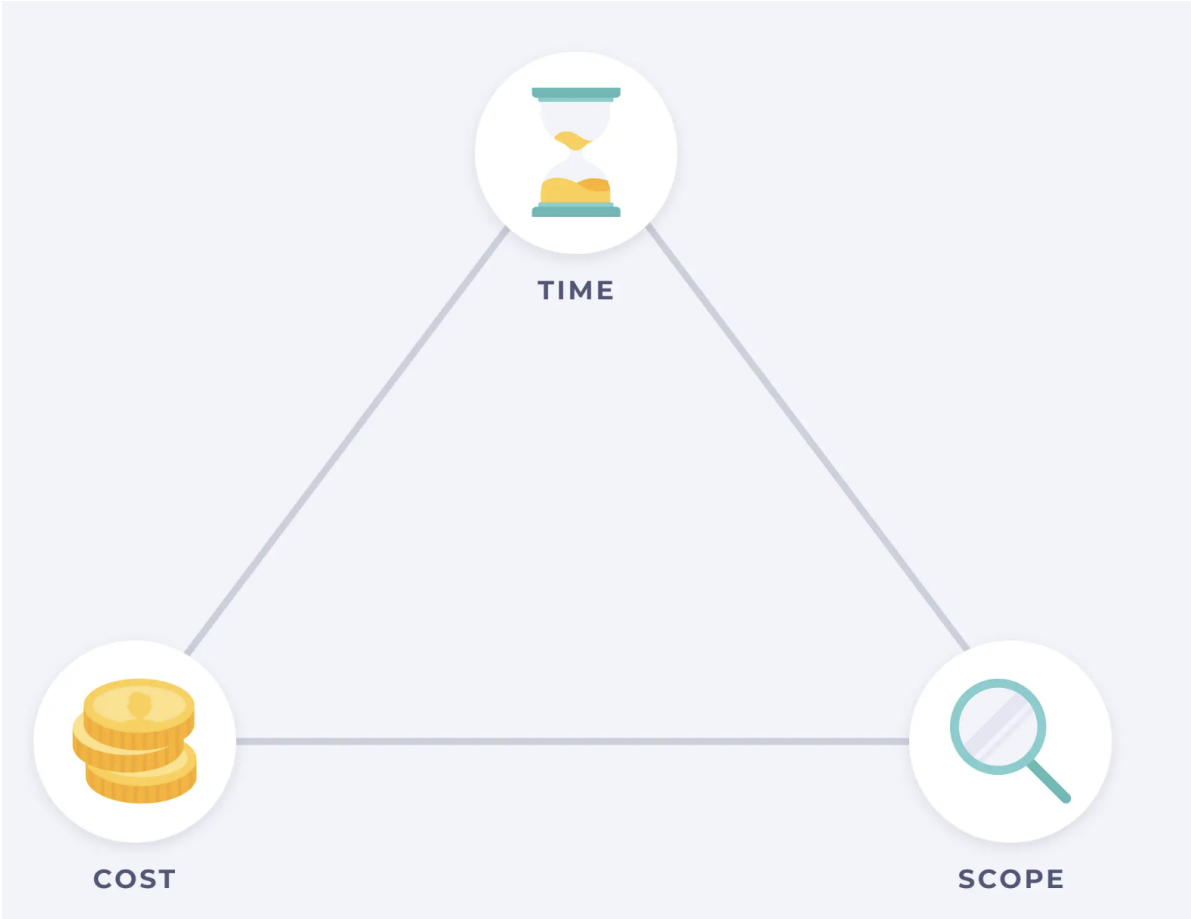

Figure: Project Triangle [1]

Triple Constraint Theory

Project Triangle

Dynamics in Project Triangle can be characterized as a **function** of three key variables and explained based on "**Pick Two**" rules:

$\downarrow$ COST & $\uparrow$ SCOPE $\Rightarrow \uparrow$ TIME

- having **cheap** and **high quality** service means it will **take time**

$\downarrow$ TIME & $\uparrow$ SCOPE $\Rightarrow \uparrow$ COST

- having **high quality** service delivered **quickly** means it will be **expensive**

$\downarrow$ TIME & $\downarrow$ COST $\Rightarrow \downarrow$ SCOPE

- having **cheap** service delivered **quickly** means it will be **poor quality**

Project Manager & Project Triangle

Relationship

- **Project Triangle** is central point of project management → its **day-to-day** responsibility of project manager to **BALANCE** and **MANAGE** all three constraints
- project manager must have **deep** knowledge in all three constraints to correctly **respond** to changes and make **adjustments**
- crucial responsibility of project manager is to keep key stakeholders always **informed** about the constraints and also about adjustments and trade-offs applied
- no matter how dedicated project manager is, project triangle and its rules within constraints stands **unchanged** → project manager cannot bent it to their will [2]

Project Manager & Project Triangle

Tips & Tools

Project managers have several **tools** that can be used in the day-to-day work to help them successfully manage and balance project triangle.

We will talk about tools in categories by managing each constraint individually:

Managing SCOPE

Managing TIME

Managing COST and BUDGET

Project Manager & Project Triangle

Managing SCOPE

- **scope** = **size** of the project deliverables
- scope elements are:
  - features complexity
  - output quality
  - performance
- **scope creep** $\rightarrow$ demands and deliverables exceeds agreed & pre-set project scope [3]

Tips

- finalize **plan** as soon as possible
- agree on **scope** and sign it off at the beginning of the project understand

Project Manager & Project Triangle

Managing SCOPE

Tips

- define clear and realistic project **objectives**
- thorough **communication** with key stakeholders
- communicate **trade-offs** clearly and swiftly
- proper **documentation** of requirements
- create **scope management plan** that is easy to read and understand

Tools

- **JIRA / Asana** $\rightarrow$ PM tools managing scope by allowing to track requirements, work items, tasks, changes, ...

Project Manager & Project Triangle

Managing SCOPE

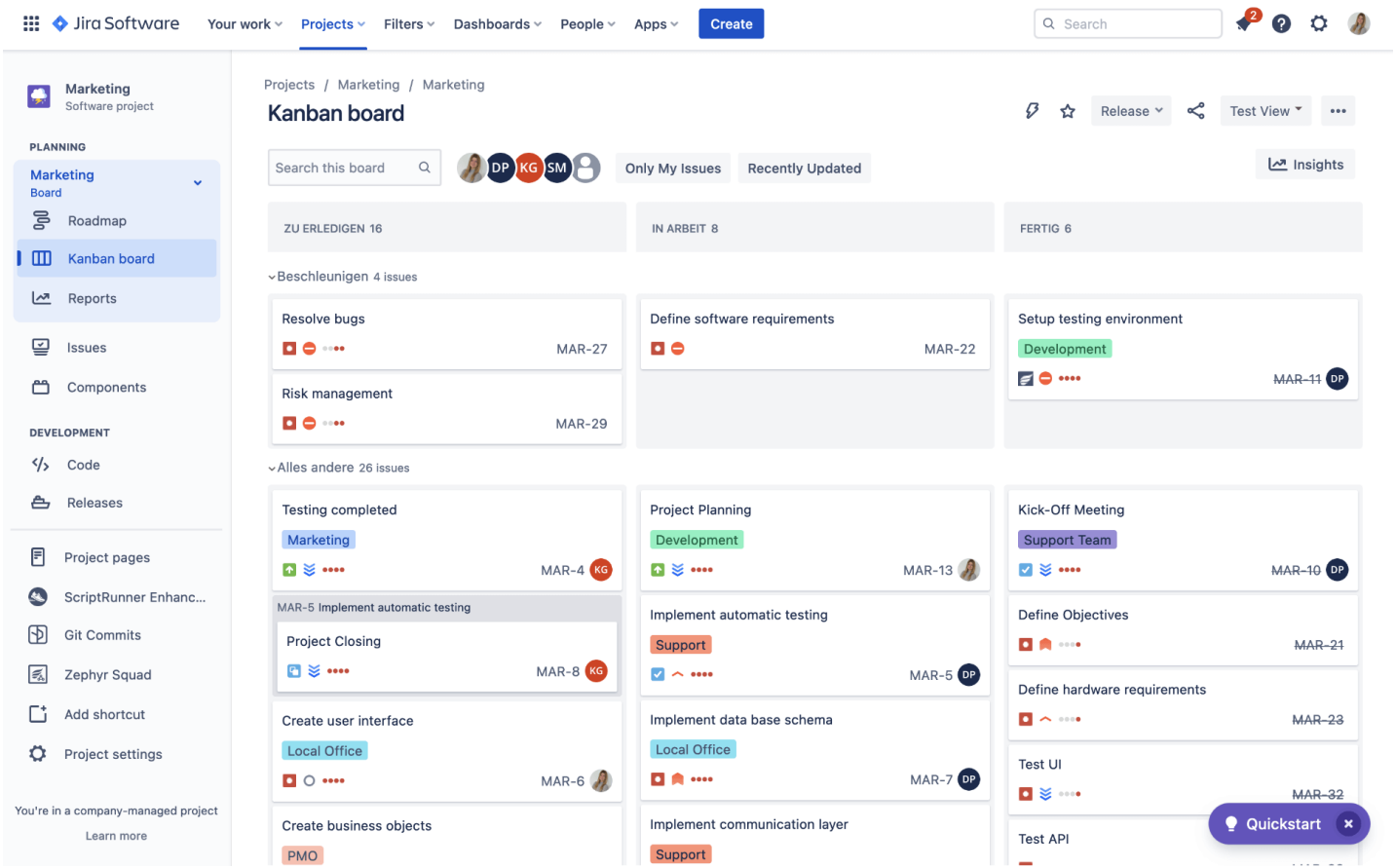

Figure: JIRA [4]

Project Manager & Project Triangle

Managing SCOPE

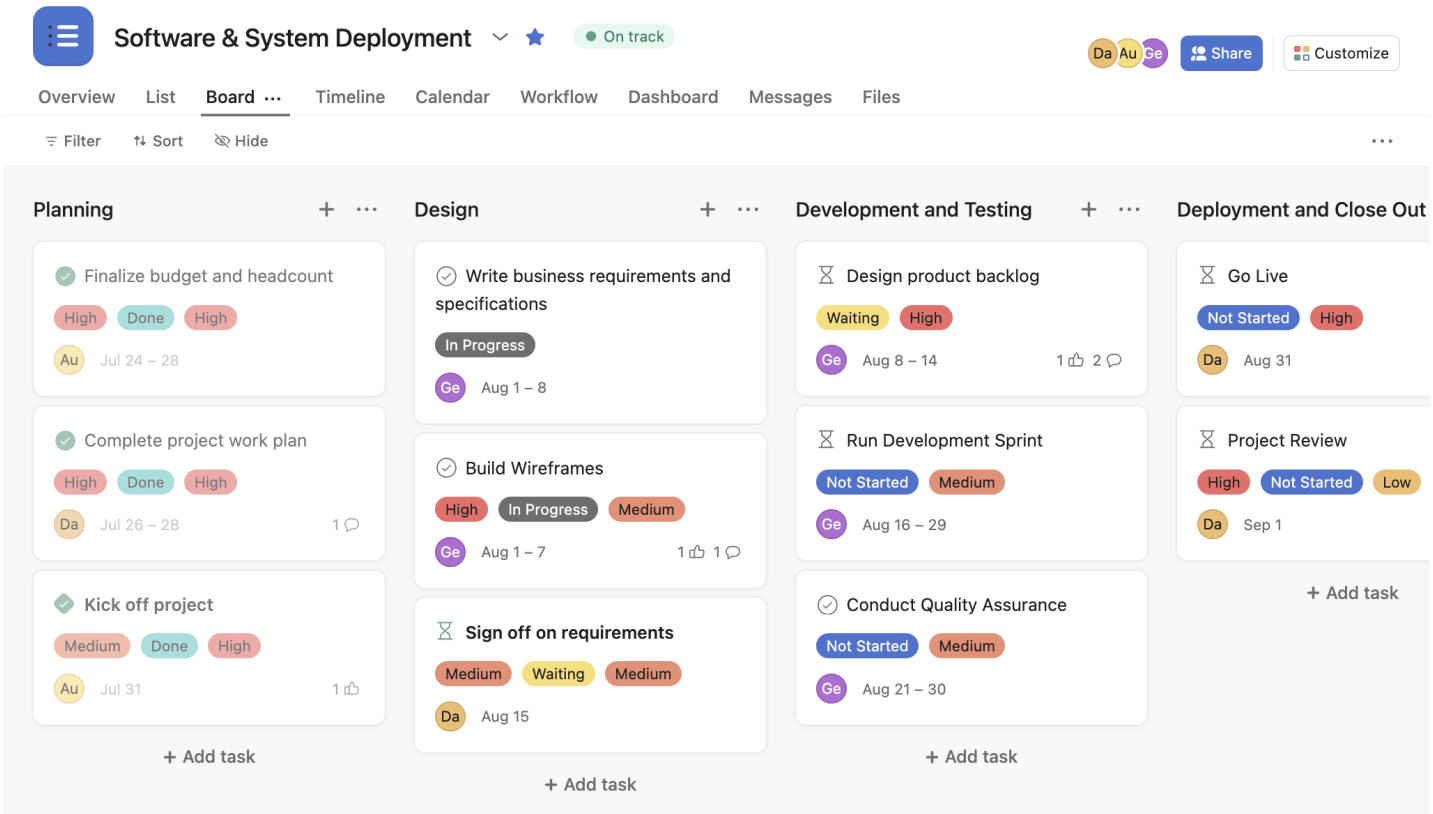

Figure: Asana [5]

Project Manager & Project Triangle

Managing TIME

- **time** = **schedule** of project delivery with agreed **deadlines**
- time elements are:
  - project timeline
  - hours worked on project
  - planning time
  - number of project phases

Tips

- create **project estimate** and manage it in **details** → update frequently in case of changes
- rely on **prioritization** → priority & severity

Project Manager & Project Triangle

Managing TIME

Tips

- define reasonable **controls** → **KPIs** (key performance indicators)
- keep track of **risks** → use **risk register** or **risk matrix**

Tools

- **WBS** → work breakdown structure
- **Critical Path**
- **Gantt chart**

Project Manager & Project Triangle

Managing COST and BUDGET

- **cost** = **resources** needed to deliver the project
- cost elements are:
  - financial budget
  - size of the delivery team
  - equipment and team facilities
- crucial constraint $\rightarrow$ **empowering** team to deliver outstanding work
- correct cost management allows:
  - to **see** the whole picture
  - to **distribute** work consistently
  - to **set** realistic goals [6]

Project Manager & Project Triangle

Managing COST and BUDGET

Tips

- apply correctly available **resource management techniques**:
  - resource **allocation** $\rightarrow$ process of assigning right resources to right tasks and projects
  - resource **utilization** $\rightarrow$ capacity planning technique to determine team's capacity over period of time
  - resource **forecasting** $\rightarrow$ proactively predicting resource requirements for the future
  - resource **leveling** $\rightarrow$ process of balancing between over-allocation and under-utilization among available resources
- **monitor** and **track** resources pro-actively
- rely on detailed **documentation** of resources

Agile vs. Predictive

Comparison

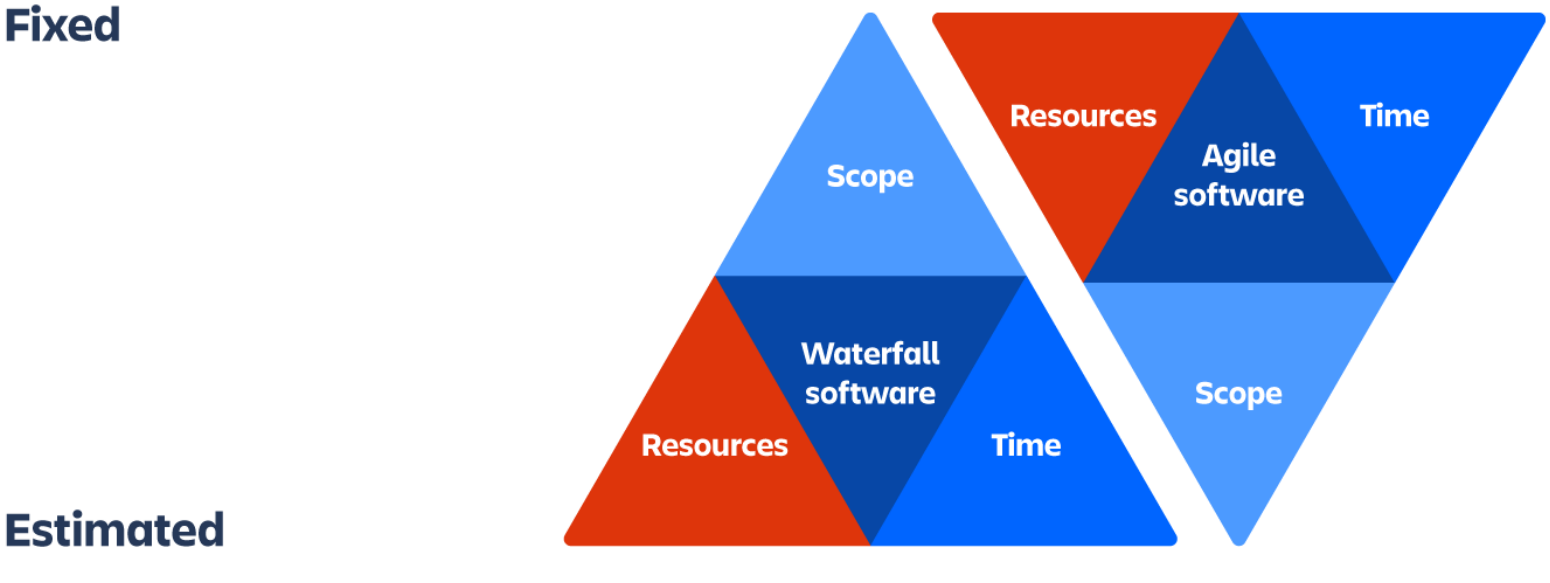

Figure: Agile vs. Predictive project triangle [7]

Agile vs. Predictive

Comparison

Agile

SCOPE:

- change to the scope is **accepted** and **embraced**

TIME:

- usually **fixed** timeline $\rightarrow$ e.g. number of sprints in SCRUM

COST:

- **consistency** in resources and agreed budget

Predictive

SCOPE:

- **fixed** scope agreed and planned in advance

TIME:

- **established** in advance, but **adjusted** based on the real progress against initial plan

COST:

- **agreed** before, but available to **adjustment** later

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Thank You for Your Attention!