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Project Management

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SoftRobotics Laboratory

Why do we need project management?

PhD + Postdoc
@ MIT, USA (‘13-’18)

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I) Introduction

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What is a Project?

Temporary endeavour undertaken to create a unique product, service, or result

Why Project Management?

On-time delivery
of project

Meeting goals
(all stakeholders)

Coordinating effort

Task prioritization

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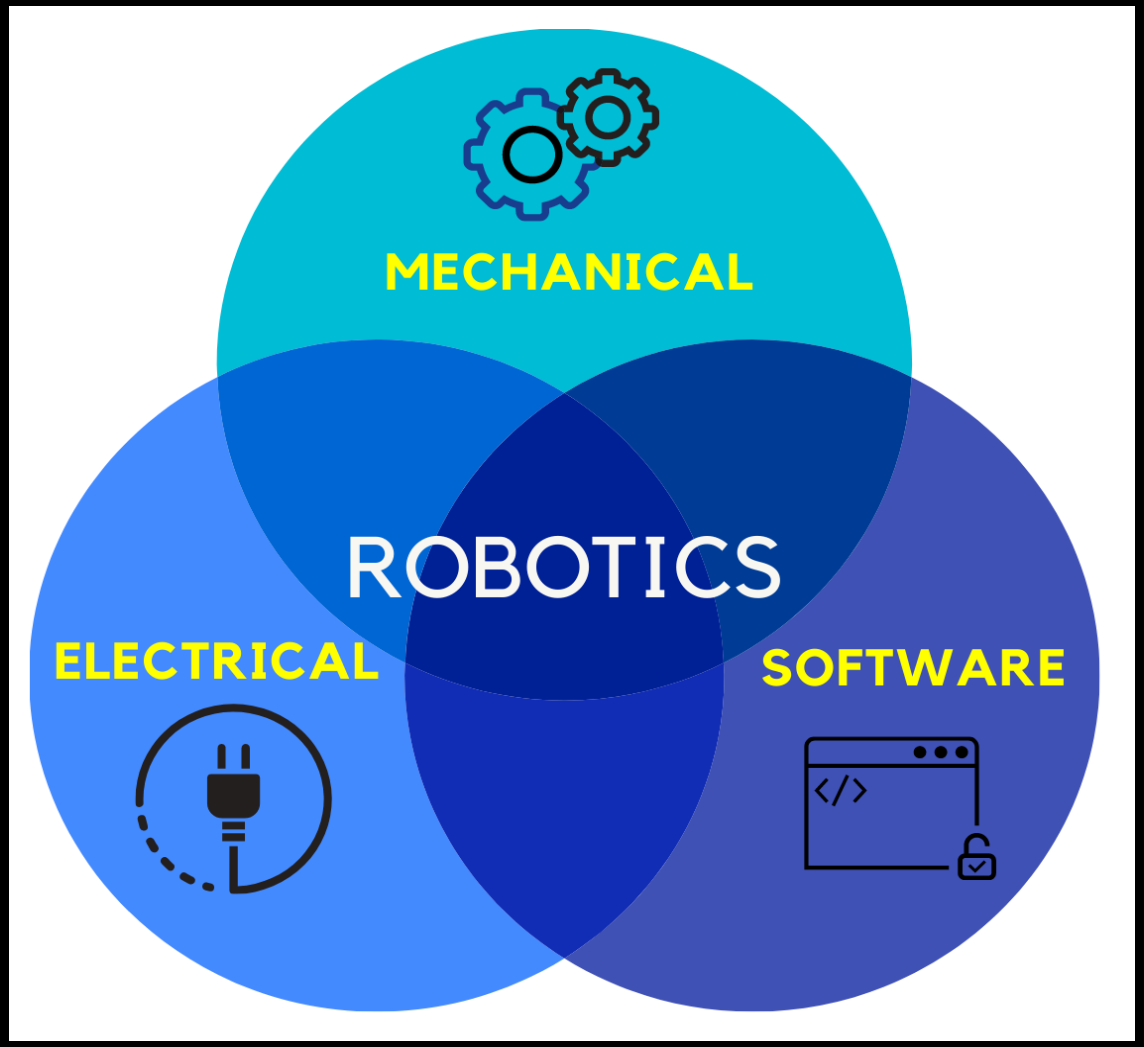
Interdisciplinary Nature of Robotics



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II) Components

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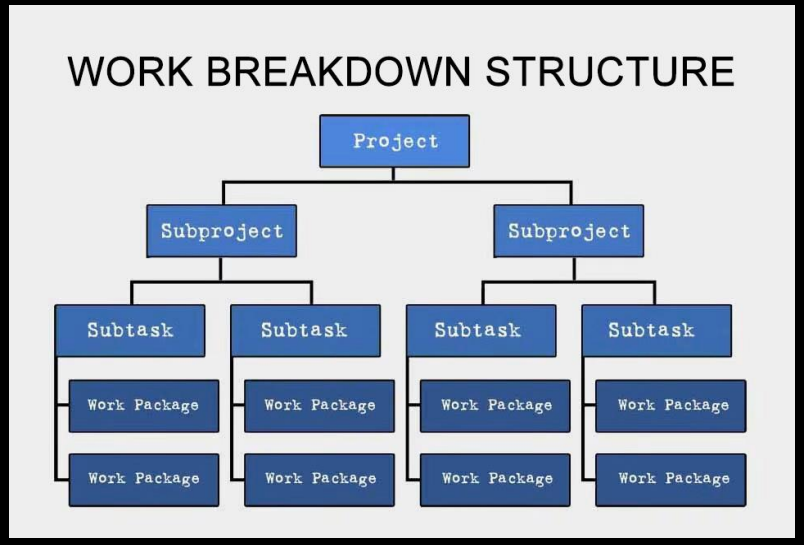
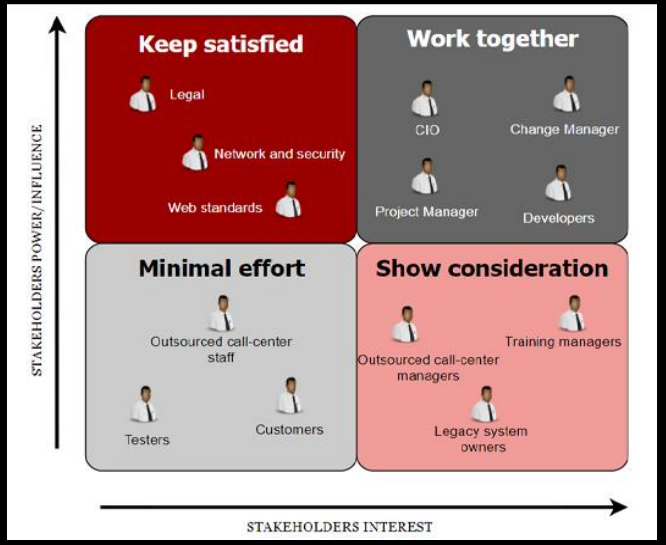
Components of Project Management



Work Breakdown Structure

Risk Management



Stakeholder Analysis

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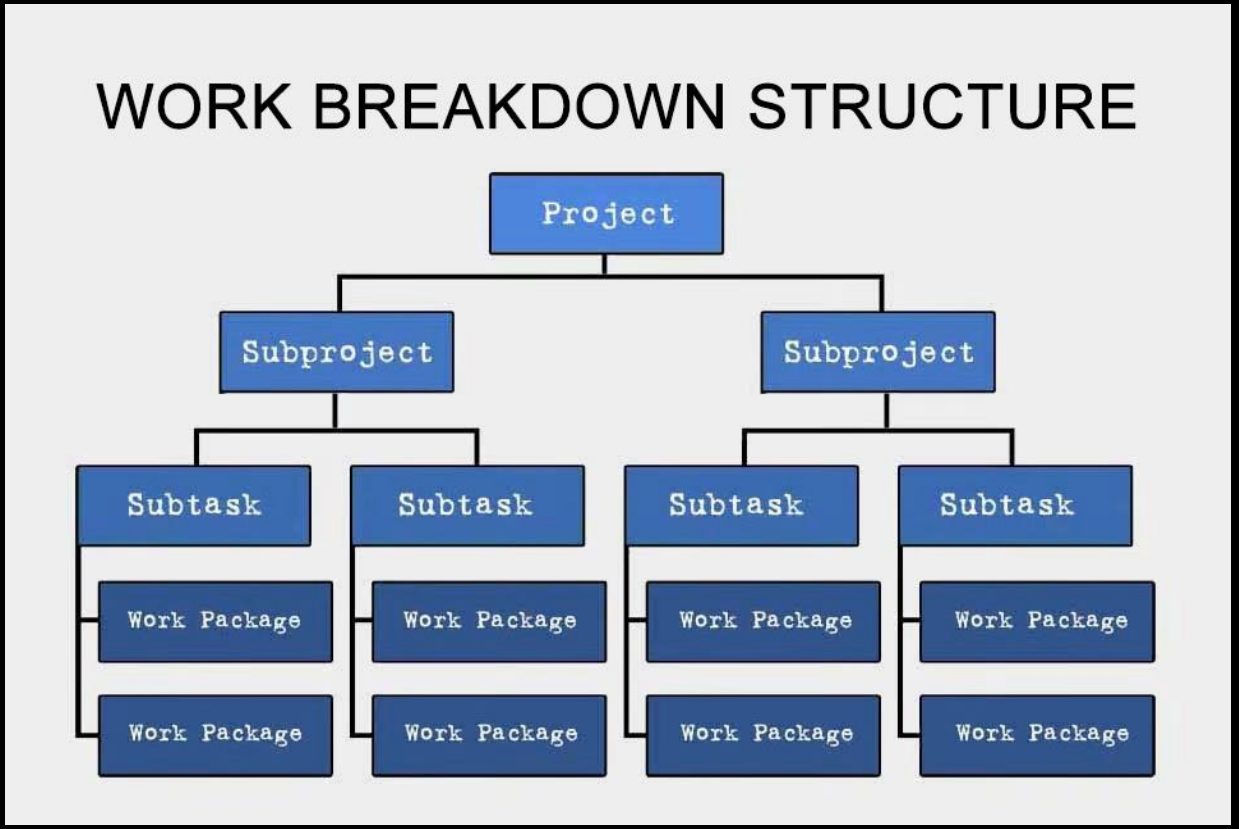
II) Components

Work Breakdown Structure



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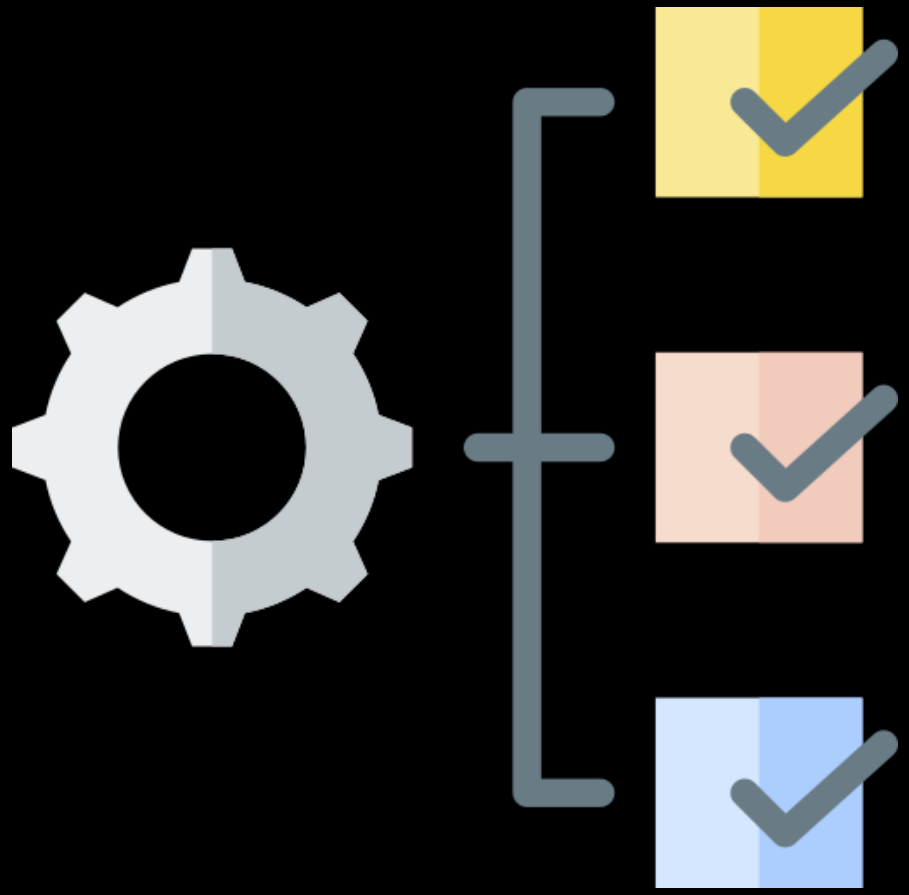
Work Breakdown Structure (WBS)

- Core of project management
- Definition:
  - Deliverable oriented
  - Hierarchical decomposition of work to be executed
  - Each level defines greater detail of project work
- Objective
  - Organize and define total scope of project

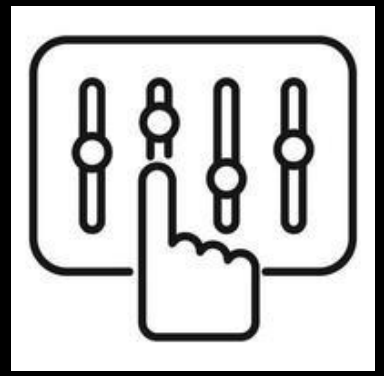


Properties of Work Package

Scheduled

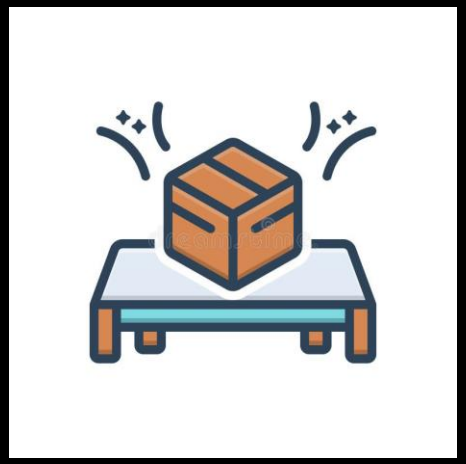
Cost-Estimated

Monitored



Controlled

Composition of Work Package



Product Breakdown Structure
(noun/product)

+

Activity Breakdown Structure
(verb/activity)

Example of a work package

Applied Scientist
@ Amazon Robotics, USA (‘18-’19)

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II) Components

Risk Management

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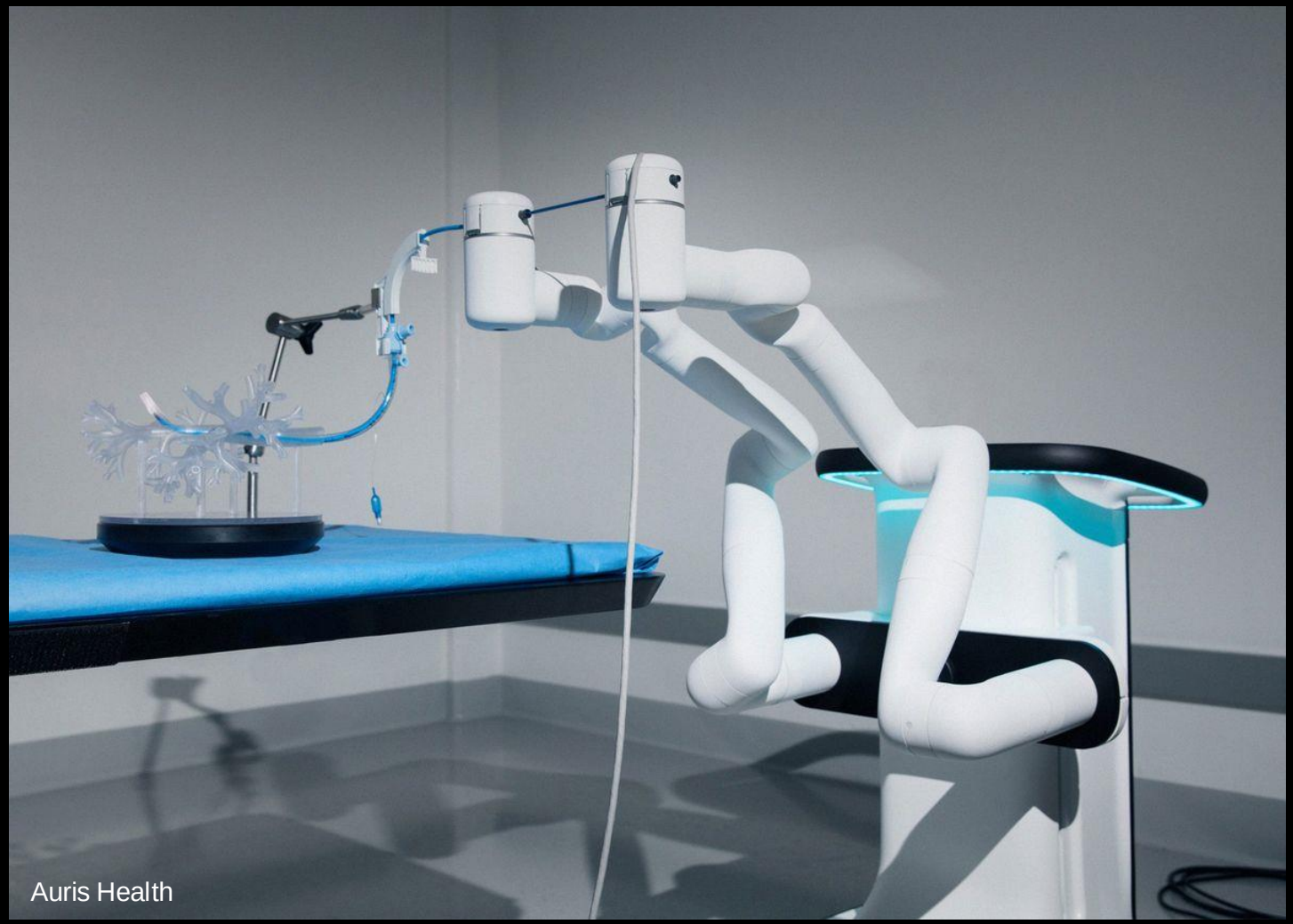
Risk Management

- Process of identifying, assessing, and controlling for potential problems that could impact successful completion of project
- Why
  - Minimizes surprises
  - Protects resources
- *Relevant for innovative and R&D projects*

Real World Example



Systems Engineer
@ Auris Health, USA (‘12-’13)

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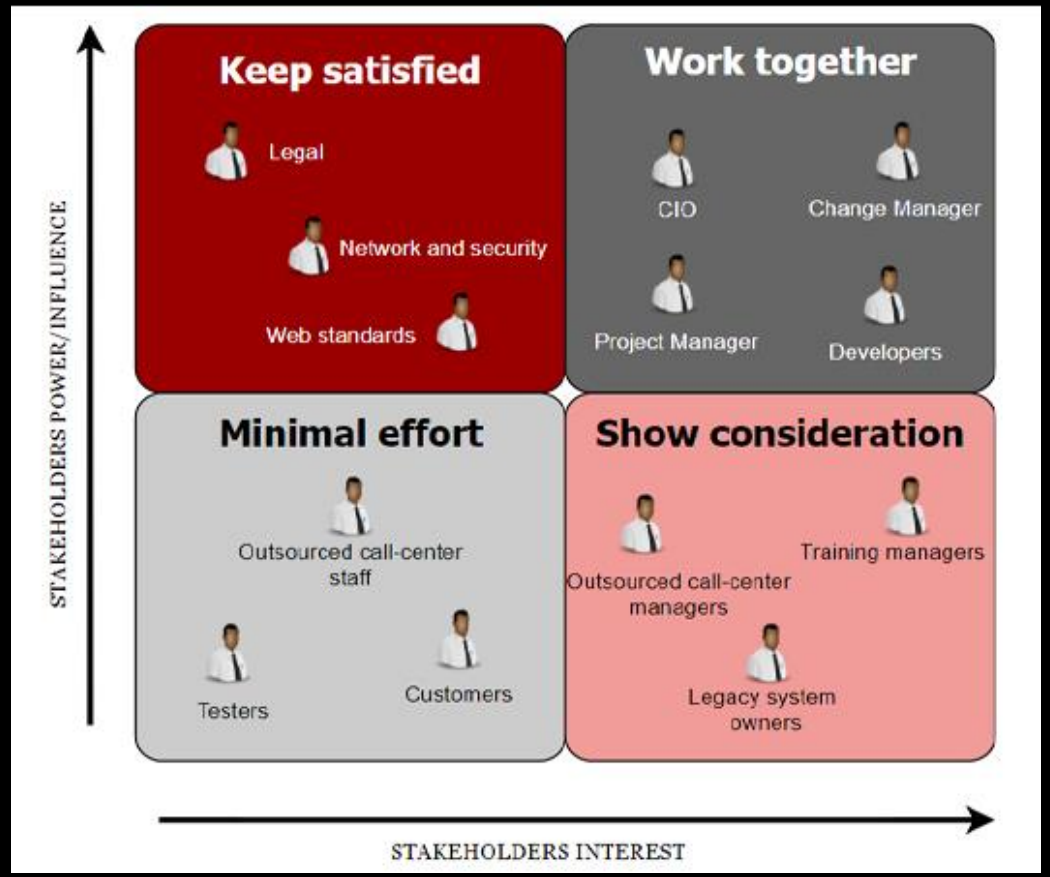
II) Components

Stakeholder Analysis



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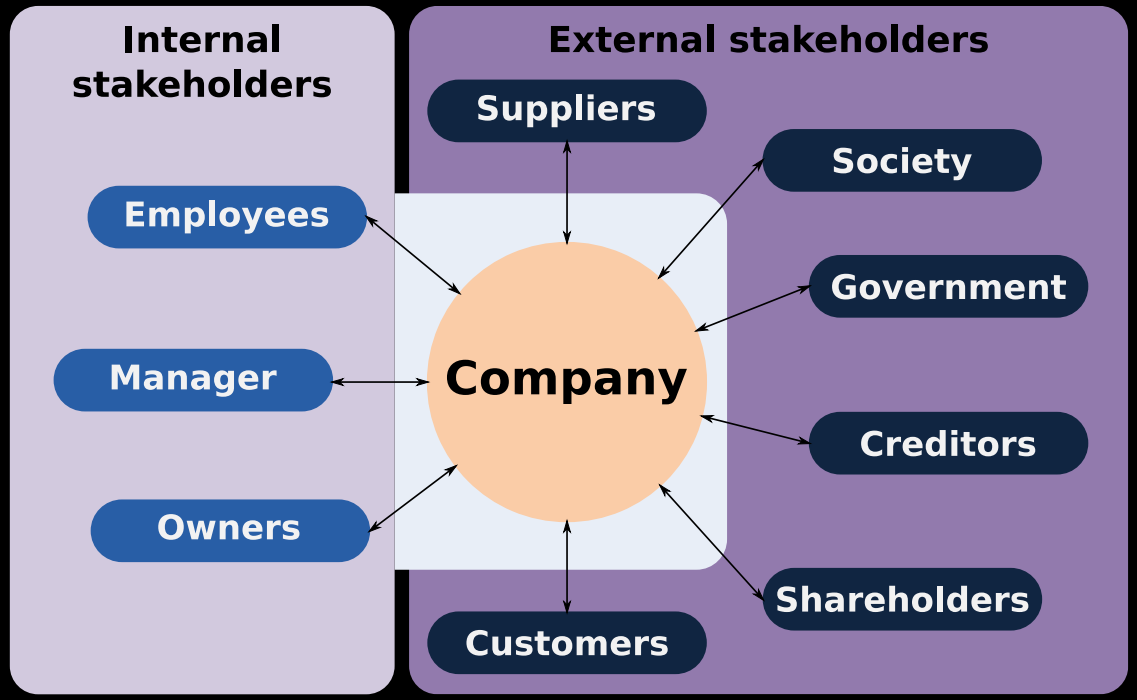
Stakeholder Analysis

- Identifying and understanding people, groups, or organizations that can or are affected by outcomes of a project and addressing their needs and concerns
- Why
  - Manages expectations
  - Enhances support
  - Reduces risks



Real World Example

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@ Dexai Robotics, USA (‘19-’20)

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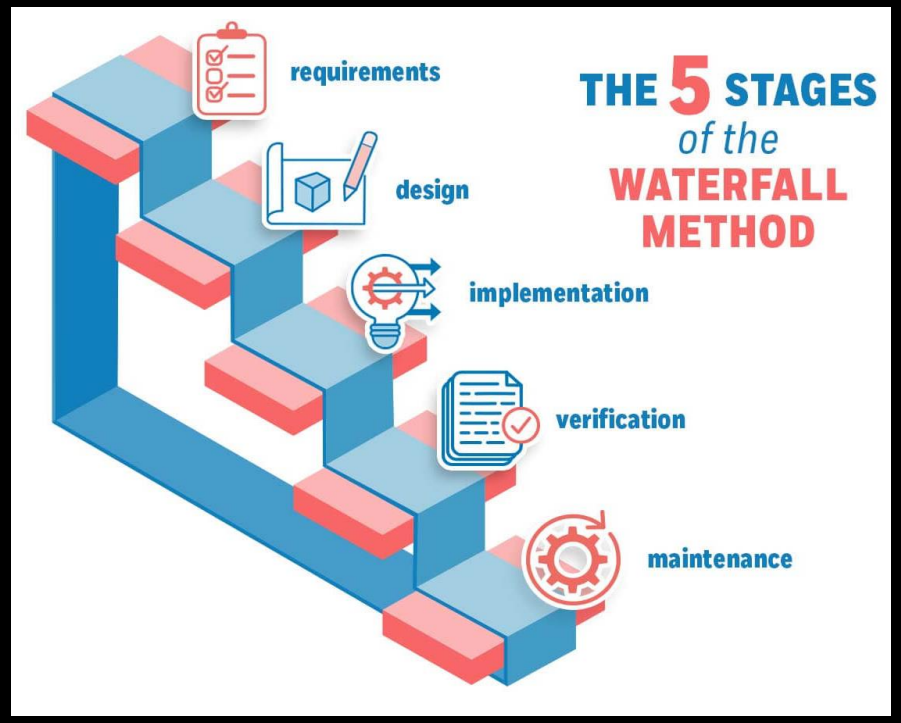
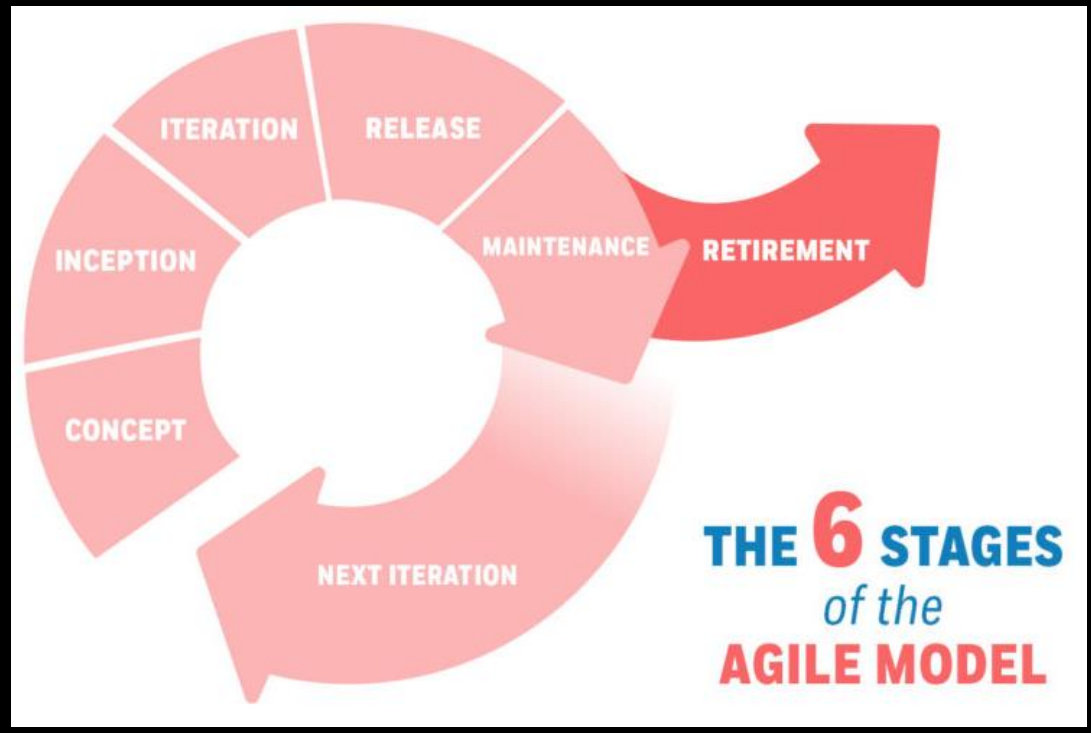
III) Methodologies

Methodologies



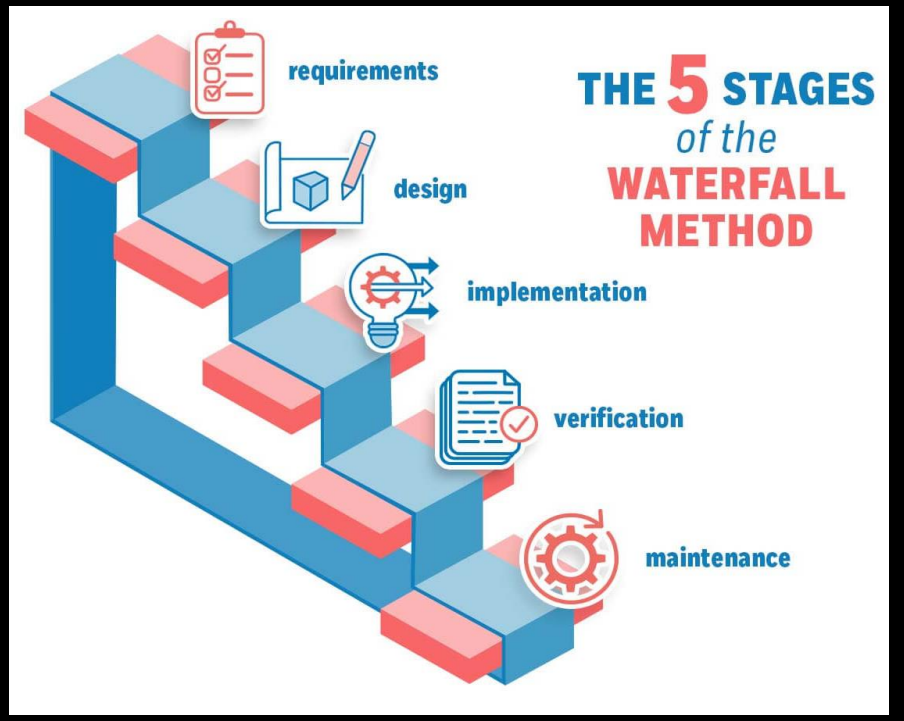
Waterfall



Agile

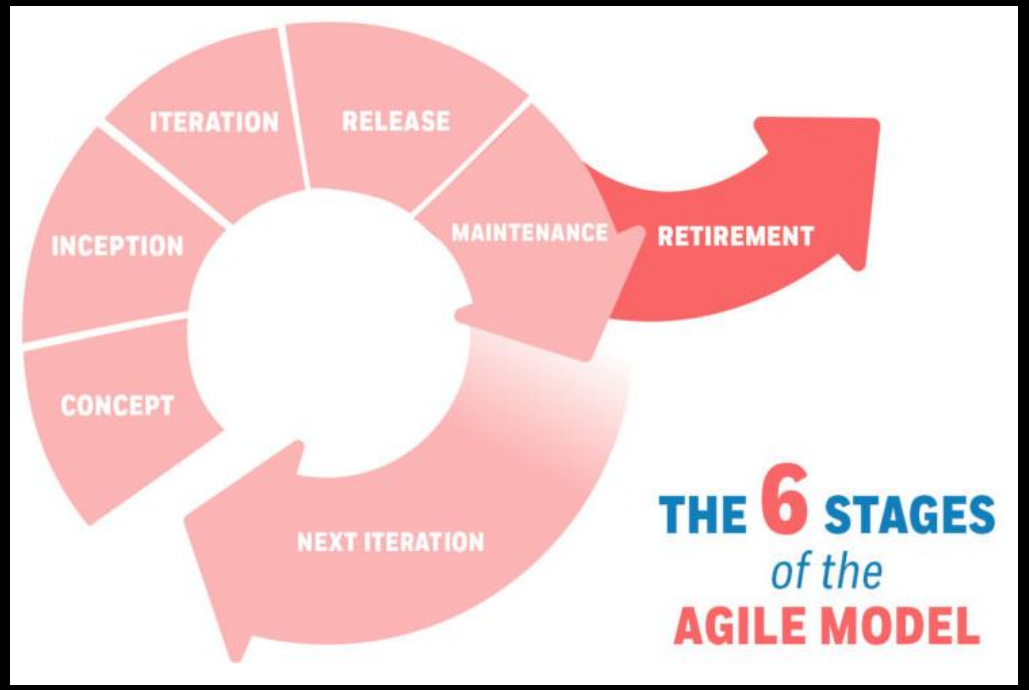
Waterfall

- Linear and sequential
- Use cases:
  - Construction
  - Defense and space projects



Agile

- Incremental and interactive
- Use cases:
  - Software Development
  - R&D projects



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Real World Example on Agile

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III) Implementation in Real World

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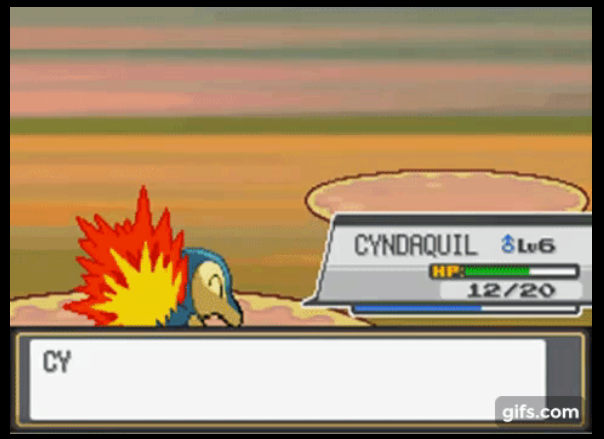
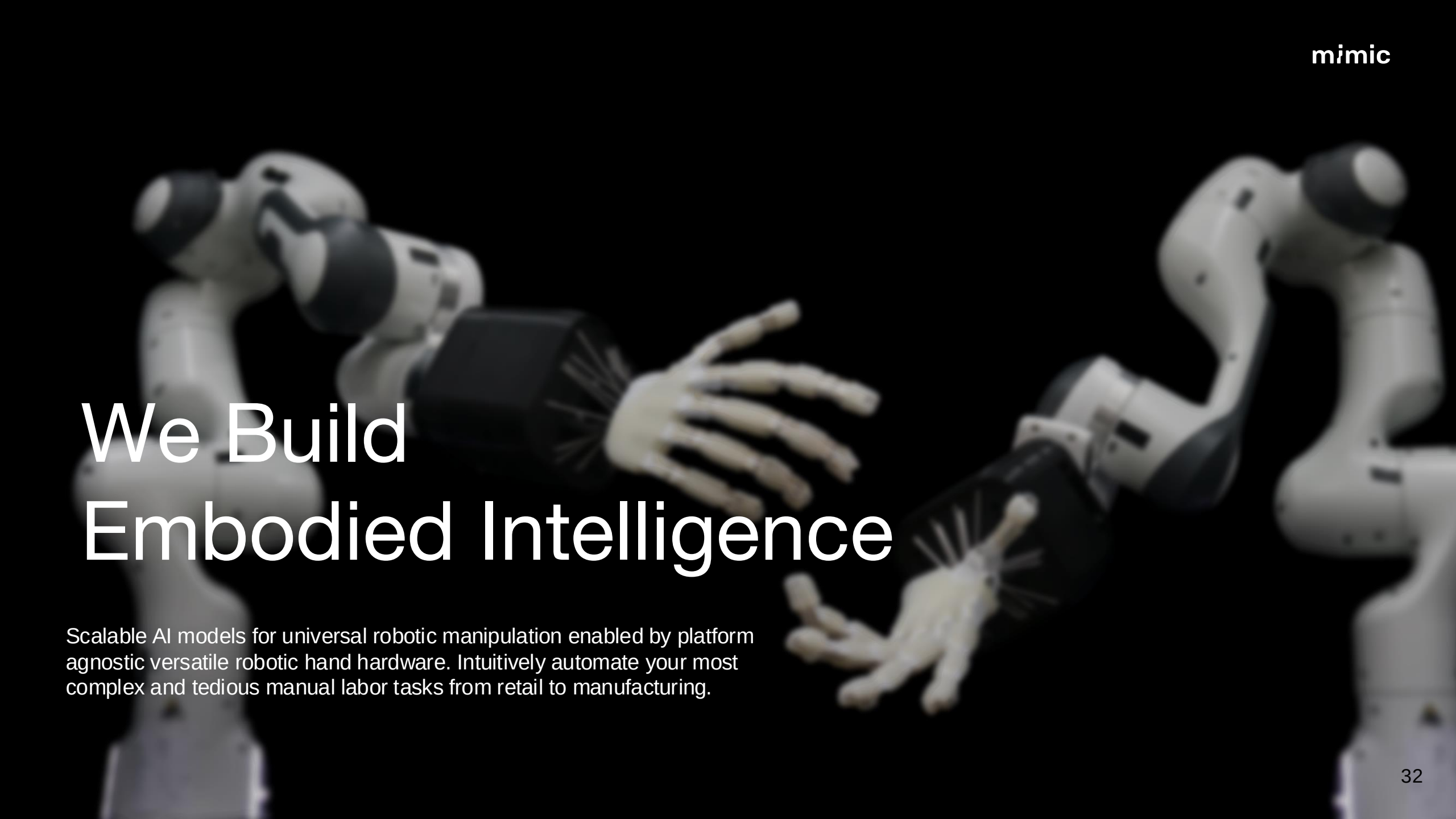
Project Management: "More Art than Science"

Randomness and Uncertainty



Experience matters

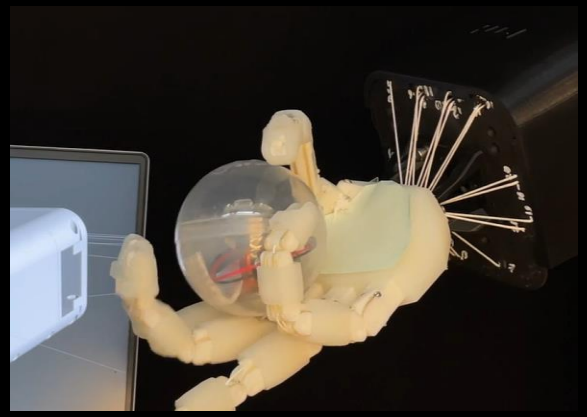
Dealing with people



We Build Embodied Intelligence

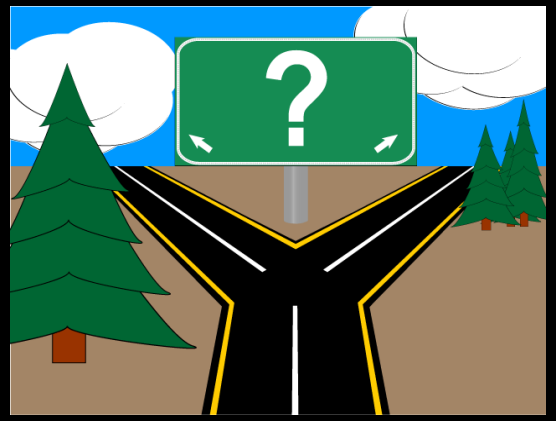
Scalable AI models for universal robotic manipulation enabled by platform agnostic versatile robotic hand hardware. Intuitively automate your most complex and tedious manual labor tasks from retail to manufacturing.

Factors to Consider

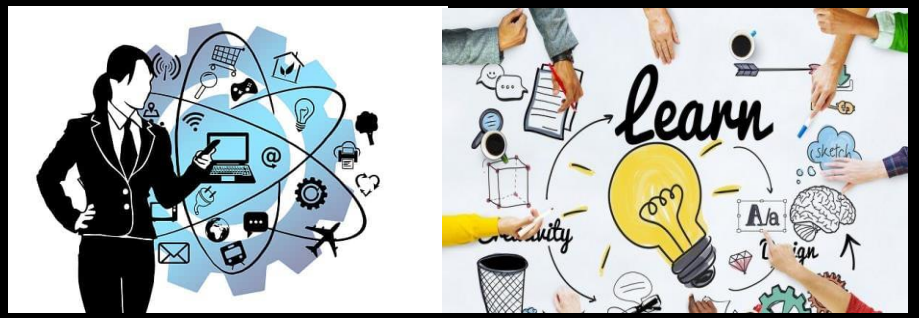


The Challenge

Constraints



Uncertainties



Skillsets

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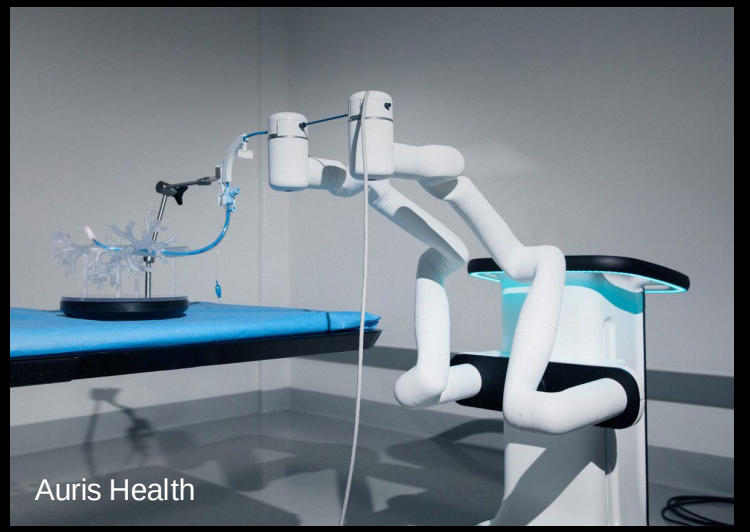
My project experience as an individual contributor

Mechanical Engineering
@ KIT, Germany (‘07-’12)

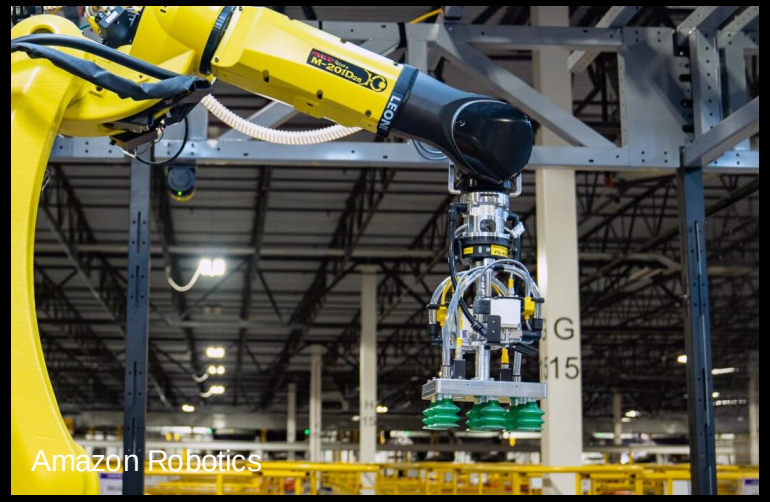
Master Thesis on Robotics
@ Stanford, USA (‘12)

Systems Engineer
@ Auris Health, USA (‘12-’13)



PhD + Postdoc
@ MIT, USA (‘13-’18)

Applied Scientist
@ Amazon Robotics, USA (‘18-’19)



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IV) Additional Material/Misc.

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Remarks

- Many thanks to lecturer Jeffery Hoffman (D-BAUG, Infrastructure Management group, retired) for providing the foundational material that was used!
    - Material was based off his course *Project Management for Construction Projects*
- Some content was generated by ChatGPT to help provide clearer and alternative explanations.

Additional Resources

- *How to Run Successful Projects III* by Fergus O'Connel
- *The Art of Project Management* by Scott Berkun
- *Project Management Absolute Beginner's Guide* by Greg Horine
- *Agile Project Management for Dummies* by Mark C. Layton, Steven J. Ostermiller, and Dean J. Kynaston
- *Project Management for the Unofficial Project Manager* by Kory Kogon

Note: These books are what popped up in the most recommended based on Reddit and LinkedIn.
https://www.linkedin.com/pulse/18-project-management-books-succeed-manager-fichtner-pmp-csm-gcyae/
https://www.reddit.com/r/projectmanagement/comments/jqlkyc/must_read_pm_books/