
# SWEN90016

# Software Processes & Project Management

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2021 – Semester 2

Lecture 1

# Lecture 1 – Intended Learning Objectives

## Module 3: Projects

1. An initial look at (some) Project Management Methodologies / Standards.
2. Explore the key drivers of why projects fail / succeed.
3. Understand how organisations select the best / right projects (Project Screening).
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5. Explore various investment techniques and financial models.
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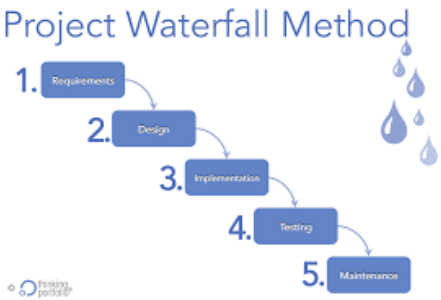
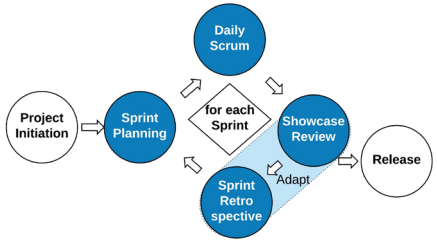
# Module 3.1 – PM Methodologies / Standards

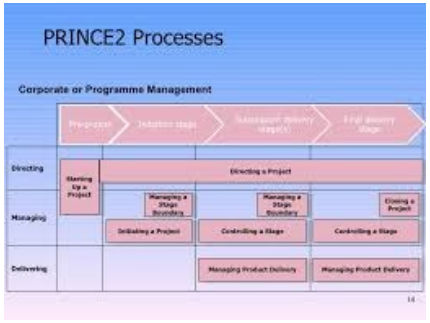
## Waterfall



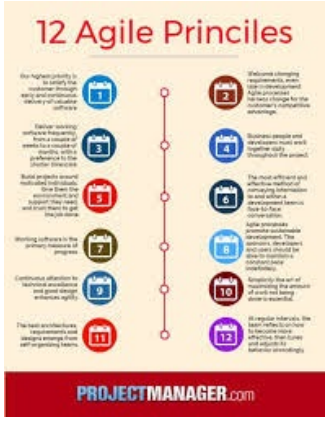

## SCRUM




## Prince2




## Agile



# Module 3.1 – Key Elements of Project Management Methodologies / Standards

**Waterfall**

- Traditional approach used for over 40 years
- Requirements must be defined at the start
- Little / no alternations
- Sequential - Complete 1 task and then the next
- Used in large scale SW development where thorough planning and predictability is required

***Pros***

- Extensive planning, this thoroughness often results in more accurate timelines and budgets

***Cons***

- Difficult to apply changes or modify / correct previous steps (water can't run backwards), need to be proactive in anticipating problems

# Module 3.1 – Key Elements of Project Management Methodologies / Standards

**Agile**

- Focuses on adapting to changing situations
- Reliant on constant and regular feedback
- Focuses on iterative outcomes delivering value as quickly as possible & collaboratively
- Small manageable actions and activities
- Involvement & ownership across the team – Team members self select work
- Customer focus over formalised sign-offs

***Pros***

- Retains flexibility while continually producing outcomes – less rework
- Greater communication & engagement – increased buy in across the team of the end outcome

***Cons***

- Difficult to do without experience – especially an experienced Scrum Master
- Large projects co-location a problem
- Difficult to contract suppliers

# Module 3.1 – Key Elements of Project Management Methodologies / Standards

**Structured Project Management Methodologies e.g. PRINCE 2 etc**

- Widely used and accepted - Consulting, Private and Government
- Process orientated approach
- Divides projects into multiple stages
- Detailed and thorough
- Must have a clear need, a target customer, realistic benefits, and a thorough cost analysis

***Pros***

- Extensive documentation is helpful with corporate planning & tracking

***Cons***

- Difficult and untimely to adapt changes and apply these to all documentation

# Module 3.1 – Project Methodologies – Which on is the right one?

- They all have a place and all can be appropriate
- It is like selecting the best recipe – *it all depends on your ingredients*
- Items (ingredients) to consider include:
  - Clarity and stability of scope
  - Timelines
  - Tools to support / drive the process
  - People / knowledge
  - Organisational maturity
  - Stakeholder buy-in
  - Experience in the various approaches

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# Lecture 1- Failure or Success?

## Module 3.2 – Project Success / Failure – You decide

**Original estimate**

- $1.2m
- 12 months

**Final outcomes**

- $2m (60% increase)
- 18 months (50% longer)

FAILURE----------SUCCESS

# Lecture 1- Failure or Success?

Redefined the market in Tracking, Pricing, Staff Pay, Customer Flexibility and Transparency

**Original estimate**

- $1.2m
- 12 months

**Final outcomes**

- $2m (60% increase)
- 18 months (50% longer)



FAILURE----------SUCCESS

# Module 3.2 – Project Success / Failure – You decide

**Failure or Success?**

- Original estimate
  - $5 million
- Final outcomes
  - $1.52 billion
  - > 5 years

FAILURE----------SUCCESS

# Module 3.2 – Project Success / Failure – You decide

**Failure or Success?**

- Original estimate
  - $500million
- Final outcomes
  - $1.5billion
  - >5 years


FAILURE----------SUCCESS

# Module 3.3 – Project Success / Failure – You decide

**Failure or Success?**

- Original estimate
  - $7m
  - 6 years
- Final outcomes
  - $102m (1,357% more)
  - 16 years (10 years longer)

FAILURE----------SUCCESS

# Module 3.3 – Project Success / Failure – You decide

**Failure or Success?**

- Original estimate
  - $7m
  - 6 years
- Final outcomes
  - $102m (1,357% more)
  - 16 years (10 years longer)

# Module 3.2 – Software Projects

## History tells us we have failed.

| ALL IT PROJECTS | | | | | |
|---|---|---|---|---|---|
| | **2011** | **2012** | **2013** | **2014** | **2015** |
| **Successful** | 29% | 27% | 31% | 28% | 29% |
| **Challenged** | 49% | 56% | 50% | 55% | 52% |
| **Failed** | 22% | 17% | 19% | 17% | 19% |

- ***Successful:*** project is completed on-time and on-budget, with all features and functions as initially specified.
- ***Challenged:*** completed and operational but over-budget, over the time estimate or offers fewer features and functions than planned.
- ***Failed:*** project is cancelled at some point during the development cycle.

*Standish Group Chaos Reports: Source: Standish Group 2015 Chaos Report www.projectsmart.co.uk/white-papers/chaos-report.pdf*

# Module 3.2 – Software Projects - What determines success?

| Success Factors | % |
|---|---|
| 1. Executive Sponsorship | 15% |
| 2. Emotional Maturity | 15% |
| 3. User Involvement | 15% |
| 4. Optimisation – Statement of Requirements | 15% |
| 5. Skilled Resources | 10% |
| 6. Standard Architecture | 8% |
| 7. Agile Process | 7% |
| 8. Modest Execution | 6% |
| 9. Project Management Expertise | 5% |
| 10. Clear Business Objectives | 4% |

- Factors have remained relatively constant
- If we know the reasons why can't we fix / improve it?
- 60% (first 4) are non technical items and difficult to change
- Broader organisational context and system at play

*Standish Group Chaos Reports: www.projectsmart.co.uk/white-papers/chaos-report.pdf*
*www.infoq.com/articles/standish-chaos-2015*

# Module 3.2 – Digital transformation projects - some stories about why projects failed

- GE created a new digital business unit but was focused on size instead of quality
- Ford started a new digital service that was separate from the rest of the company instead of integrating digital solutions
- Procter & Gamble didn't consider the competition or impending economic crash

Forbes: Companies That Failed At Digital Transformation And What We Can Learn From Them https://www.forbes.com/sites/blakemorgan/2019/09/30/companies-that-failed-at-digital-transformation-and-what-we-can-learn-from-them/?sh=7bfac7ec603c. Accessed 29 July 2021

# Lecture 1

| Financial Landscape as of May 2021 | | | | | | |
|---|---|---|---|---|---|---|
| | | Market cap $ billion | 5 year growth in stock price | Sector | Founded | 000 employees |
| | S&P 500 | | +101% | | | |
| **First generation 'digital giants': aka 'the Four'** | | | | | | |
| | Apple | 2,080 | +409% | multi-sector | 1976 | 132 |
| | Amazon | 1,630 | +384% | multi-sector | 1996 | 1,300 |
| | Facebook | 884 | +165% | social media | 2004 | 59 |
| | Google (Alphabet) | 1,540 | +215% | technology | 1998 | 135 |
| **Second generation 'digital giants'** | | | | | | |
| | Microsoft | 1,830 | +380% | multi-sector | 1975 | 166 |
| | Tesla | 542 | +1,188% | automotive | 2003 | 71 |
| | Netflix | 216 | +437% | movies, video | 1997 | 9 |
| **'Digital upstarts'** | | | | | | |
| | Shopify | 152 | +4185% | e-commerce | 2006 | 7 |
| | Doordash | 45 | -21% | food delivery | 2013 | 4 |
| | Spotify | 42 | [+49%]* | media streaming | 2006 | 6 |
| | Etsy | 21 | +1,874% | e-commerce | 2005 | 1 |
| | Zoom | 91 | +369% | video conference | 2011 | 3 |
| | BionTech | 48 | +1340% | pharmaceuticals | 2008 | 1 |
| | Moderna | 63 | +960% | pharmaceuticals | 2010 | 2 |
| **Firms 'transitioning to digital'** | | | | | | |
| | John Deere | 112 | +361% | equipment | 1837 | 74 |
| | Target | 109 | +200% | retail | 1962 | 368 |
| | Haier Smart Home | 42 | 236% | smart home | 1984 | 100 |

https://www.forbes.com/sites/stevedenning/2021/05/23/why-digital-transformations-are-failing/?sh=319ac8437617 Accessed 29 July 2021

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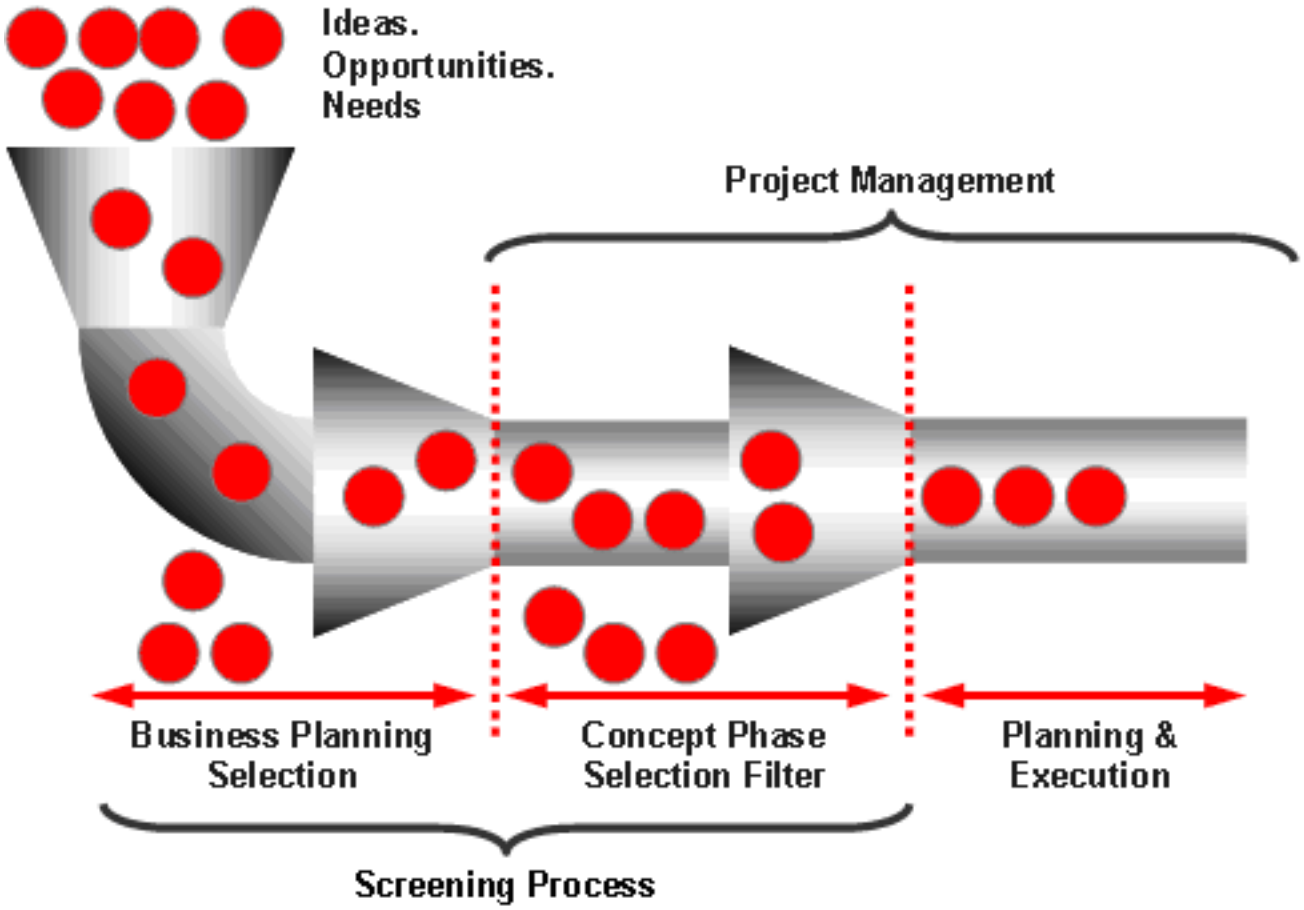
# Module 3.3 – Project Screening and where to start

"*If you don't know where your going any road will take you there*". *Any Road by George Harrison – The Beatles*

- The place to start is at the beginning!
- Organisations need a formal, structured approach to:
  - Select;
  - Prioritise;
  - Have oversight; and
  - Drive accountability across all projects.

# Module 3.3 – Project Screening and where to start

- Transformational
- Regulatory
- Risk
- Refresh
- BAU



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# Module 3.4 – Project Initialization

There are many approaches and methodologies that are widely used across industry with organisations favoring standard industry ones (PRINCE2, PMBOK, Agile etc) or usually a modified version of these they make their own.

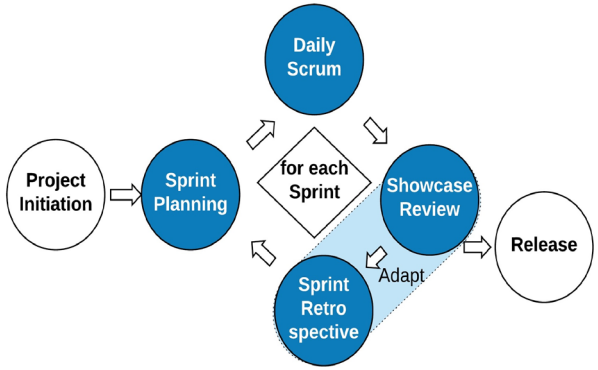
They all have Pro's & Con's.

## *Software PM Activities*


http://blog.zilicus.com/software-project-management-activities-roles/

## *Prince2*


## *AGILE*



# Module 3.4 – Setting up a project for success. A Business Case is the key.

*The purpose of the Business Case is to establish mechanisms to judge whether the project is (and remains) desirable, viable and achievable as a means to support decision making in its initial and continued investment.*

- Provides a factual base for key decisions makers to decide if the project should be undertaken
- Demonstrates how the project adds value to the organisation
- Has a set of pre-defined standard organisational characteristics (costs, benefits, risk, etc.)
- It is not all about size - size depends on the cost / benefit
- It is a living document throughout the project that should be reviewed and signed off at key stages

# Module 3.4 – Setting up a project for success. The Business case is key

Business case contains:

- Executive summary
- Reasons / explanation of why it is required
- Business options
- Expected benefits
- Expected dis-benefits
- Timescale
- Costs
- Investment appraisal
- Major risks

*Source: www.prince2.com*

# Module 3.4 - Business Case. Who's is responsible for what?

| Role | Responsibilities |
|---|---|
| Corporate | 1. Provides Mandate / The go ahead.<br>2. Holds Senior Users accountable for benefits realisation.<br>3. Responsible for conducting post projects benefits validation. |
| Executive / Sponsor | 1. Owns the Business Case.<br>2. Responsible for reviewing the benefits throughout the project. |
| Senior Users | 1. Responsible for accepting the benefits and delivering them.<br>2. Responsible for ensuring the delivered products are to the appropriate quality standard.<br>3. Provides on-going actual V forecasted benefit realisation. |
| Project Manager | 1. Prepares the Business Case.<br>2. Conducts Risk assessment and impact analysis.<br>3. Assess and updates the Business Case at each defined stage. |
| Project Assurance / QA | 1. Assists in developing the Business Case.<br>2. Ensure value for money and risks are continuously managed.<br>3. Monitors change to the Business Case and validates it. |
| Project Support | 1. Responsible for capturing data and preparing management reports.<br>2. Key support point for all project stakeholders – schedules, cost analysis, minutes, actions, supplier liaison etc. |

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# Module 3.5 – It is all about the money!

- For non mandatory projects, the primary benefit is financial
- Multiple investment techniques are used to analyse the investment required / financial benefit
- Some (there are many more) techniques include:
  - Return On Investment
  - Net Present Value
  - Payback period
  - Rough Order of Magnitude
- However, it is not always about the best return – organisations need to invest in all parts of their business

# Module 3.5 – Investment Techniques – Return On Investment (ROI)

- ROI is income divided by investment
  - ROI = (total discounted benefits – total discounted costs) / total discounted costs
- The higher the ROI % or higher the ratio of benefits to costs, the better it is
- Many organisations have a required rate of return or minimum acceptable rate of return on investment for projects (11% to 14%)

# Module 3.5 – Investment Techniques – Net Present Value (NPV)

- NPV is one of the most often used quantitative/financial models for project selection
- NPV is a method of calculating the expected net monetary gain or loss from an investment (project) by discounting all future costs and benefits to the present time
- Projects with a positive NPV should be considered if financial value is a key criterion
- Generally, the higher the NPV, the more favourable a project is

# Module 3.5 – Investment Techniques – Payback period

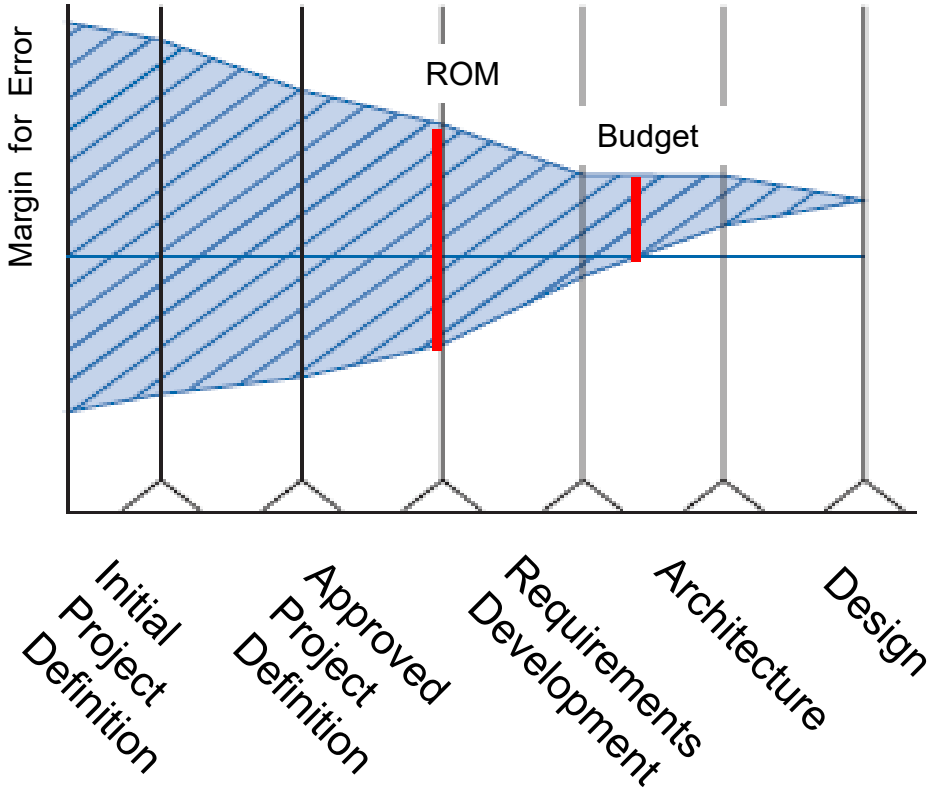
- The payback period is the amount of time it takes a project before the accrued benefits surpass accrued costs or how much time an investment takes to recover its *initial cost*
- Based on tracking the net cash flow across each year to determine the year that net benefits overtake net costs (not discounted cash flows)
- Many organizations want IT projects to have a fairly short payback period (< 1 year) due to the changing nature of technology

# Module 3.5 – Investment Techniques – Project Estimation Rough Order of Magnitude (ROM)

The ***Cone of Uncertainty*** for cost estimates

Limited accuracy:

- ROM: -25% … +75%
- Budget: -10% … +25%




*Reference: Kathy Schwalbe, Information Technology Project Management, pg 280*

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# Module 3.6 – It all begins with a Project Charter


http://blog.zilicus.com/software-project-management-activities-roles/

# Lecture 1 - Simple Project Charter



## Project Name

Target Date: [Date]

### Project Description

Write out the project description here. Write out the project description here. Write out the project description here. Write out the project description here. Write out the project description here. Write out the project description here.

**Costs**

| Item | Quantity | Rate | Total |
|---|---|---|---|
| Resources | | | |
| Equipment | | | |
| Budget | | | |
| **Total** | | | |

**Gains**

| Item | Quantity | Rate | Total |
|---|---|---|---|
| Cost Savings | | | |
| Time Savings | | | |
| Revenue Gain | | | |
| **Net Total** | | | |

### Project Team

- Person 1 – Project Manager
- Person 2 – Team Lead
- Person 3 – Analyst
- Person 4 – Developer
- Person 5 – Quality
- Person 6 – Trainer
- Person 7 – Other
- Person 8 – Other
- Person 9 – Other
- Person 10 – Other

### Milestone 1

[Date]

[Description of what will be accomplished on this milestone]

### Milestone 2

[Date]

[Description of what will be accomplished on this milestone]

### Milestone 3

[Date]

[Description of what will be accomplished on this milestone]

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