CMPUT 401 Software Process and Product Management

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Introduction to the course

Fall 2020

WE ARE ALL IN THIS TOGETHER… :-(

But really – where are we now?!

Let’s find out!

https://bit.ly/2EO1Uly

A bit about Ildar…

- Ph.D. in Computing Science
- Graduated from Baikal State University – it's far, far away!
- Teaching for 10+ years and enjoying it!
- My favorite courses:
  - Formal Systems and Logic in Computing Science
  - Database Design
  - Web Development
  - Software Process and Product Management
- Running two businesses
- Love travel, running, outdoors, languages…

From 1997…

- 1C
- AWS
- Assembly
- Brainfuck
- Clarion
- Dart
- Django
- Flask
- Flutter
- FoxPro
- Google Cloud
- Heroku
- HTML/CSS
- JavaScript
- Linux
- Lisp
- MariaDB
- MATLAB
- Microsoft SQL Server
- MySQL
- MongoDB
- Object Pascal
- PHP
- Pandas
- Pascal
- Perl
- Prolog
- Python
- R
- React.js
- Regex
- Scratch
- Small Basic
- Sh/Bash
- T-SQL
- VBA
- ZPL

The Teaching Team

TAs will assist in advising and monitoring projects

Kalvin Eng

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Daniel Chui

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COURSE GOAL

To provide students with an ***authentic experience*** of working with a ***client***, as a member of a ***team***

Course Objectives

- Apply your knowledge in:
  - Analyzing requirements
  - Designing software
  - Developing software
  - Documenting software
  - Testing software
- Develop new technical skills (working with new programming languages and tools)
- Learn how to work with others
  - How to interact with clients
  - How to negotiate task sharing
  - How to manage your own tasks
  - How to plan and mitigate risks

Big picture outline

1. Personality and Teamwork
2. Requirements
3. Software Development Process
4. Software Architecture
5. Estimation and Planning
6. Project Management
7. User-Interaction Design
8. Testing
9. Measurement
10. Case Studies

Key Ingredients

Real clients, real projects!

Teamwork

"Complete" software process

Evolutionary software development

Quality and management

- Estimation
- Project planning and management
- Testing
- DevOps

Communication!

401 vs 301

- I assume that you know, and I expect you to use, what you learned in 301
- The projects are open-ended
  - you **negotiate** the MVP, in collaboration with your client; the deliverable of the first sprint is your "contract"; it can be updated up until the end of the second sprint
- The projects are different
  - deliverable expectations will be tailored to each project
- You work with your clients closely
  - you should impress them
- The project will provide you with opportunities to learn new technologies

Syllabus, calendar etc.

https://eclass.srv.ualberta.ca/course/view.php?id=65080

eClass

Google Drive

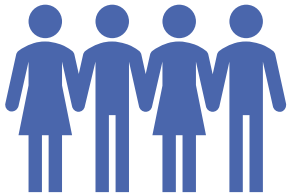
Slack

Communication

- eClass Discussion forums
- Slack
- Email
- Appointments arranged by email

Projects!

Links on eClass



Teams

6 members each

September 8

11:59 pm

A variety of proposals

Read all of them

Choose your favorites

Ask questions to the clients

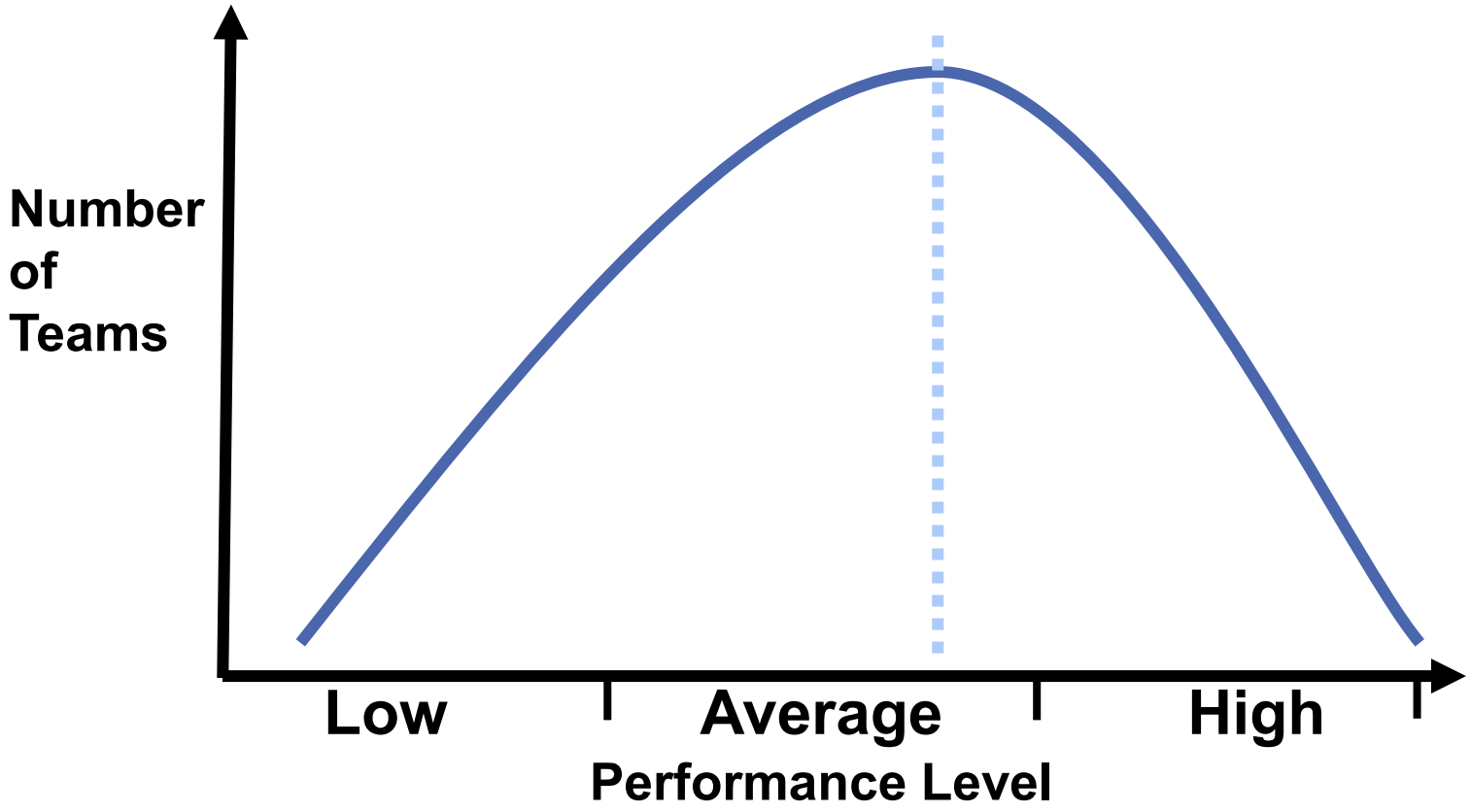
Declare your preferences

September 11

11:59 pm

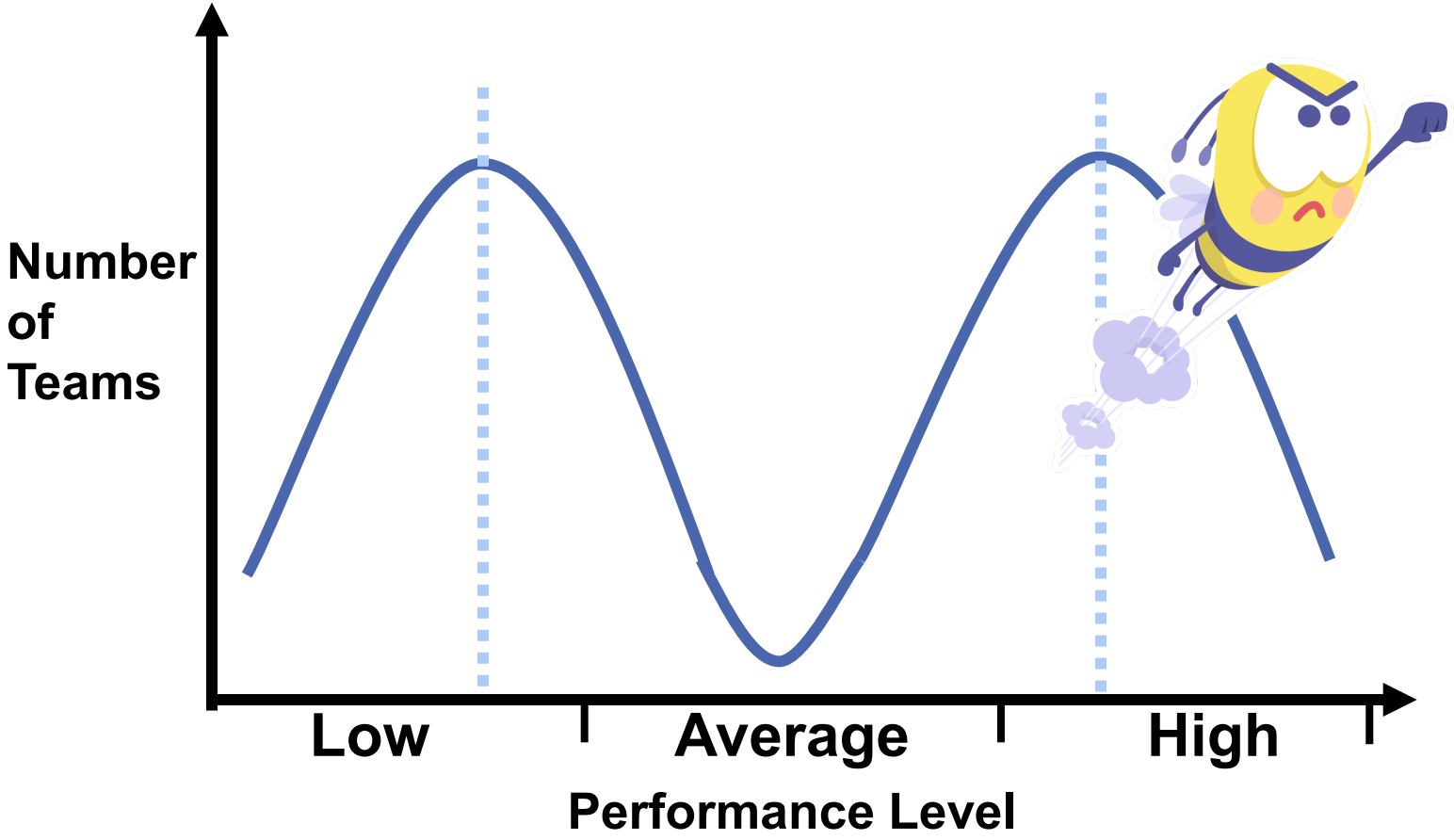
Team Performance

Co-located, culturally similar, mono-functional



Team Performance

Distributed, culturally diverse, cross-functional



Ely, Robin and David Thomas “Cultural Diversity at Work: The Effects of Diversity on Work Group Processes and Outcomes” (2001)

Kochan, Thomas, et al. “The Effects of Diversity on Business Performance” (2002)

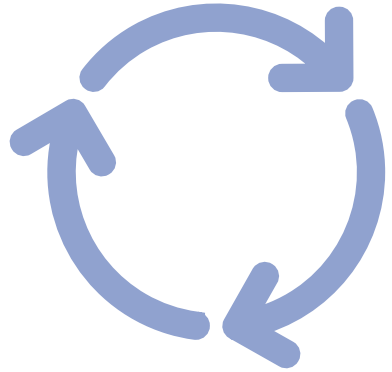
Student Code of Conduct

A Common Sense Approach

- **Read and Understand**
  - https://www.ualberta.ca/governance/resources/policies-standards-and-codes-of-conduct/code-of-student-behaviour
- Software Engineering is a collaborative activity.
  - You are working as a team (peer-review form)
  - You must make sure that you can describe your individual contribution to the project and the product (final reflection form)
- Always give credit to your sources and collaborators.
  - Reuse software (the more the better because you will be able to develop smarter/better/more useful increments)
- **Unethical and academic plagiarism is "to use the efforts of others without attribution"**

Wearing multiple hats

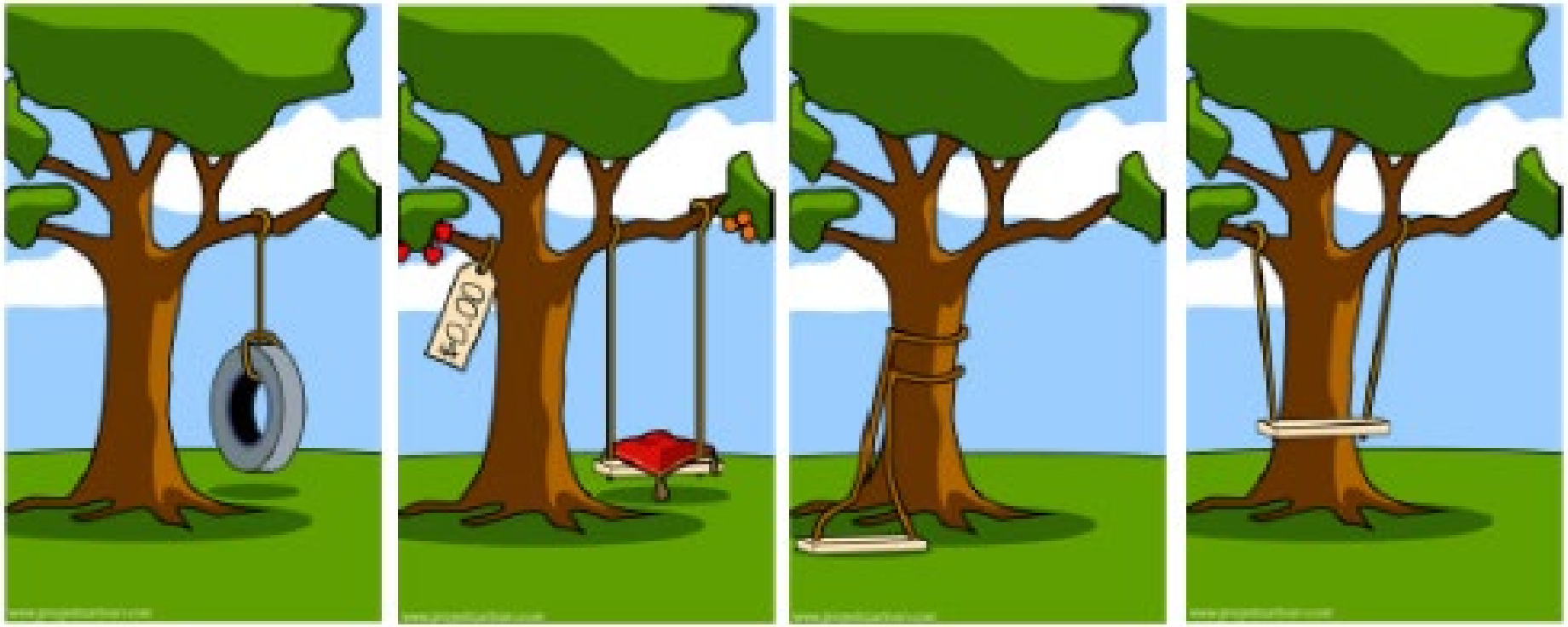
Developer



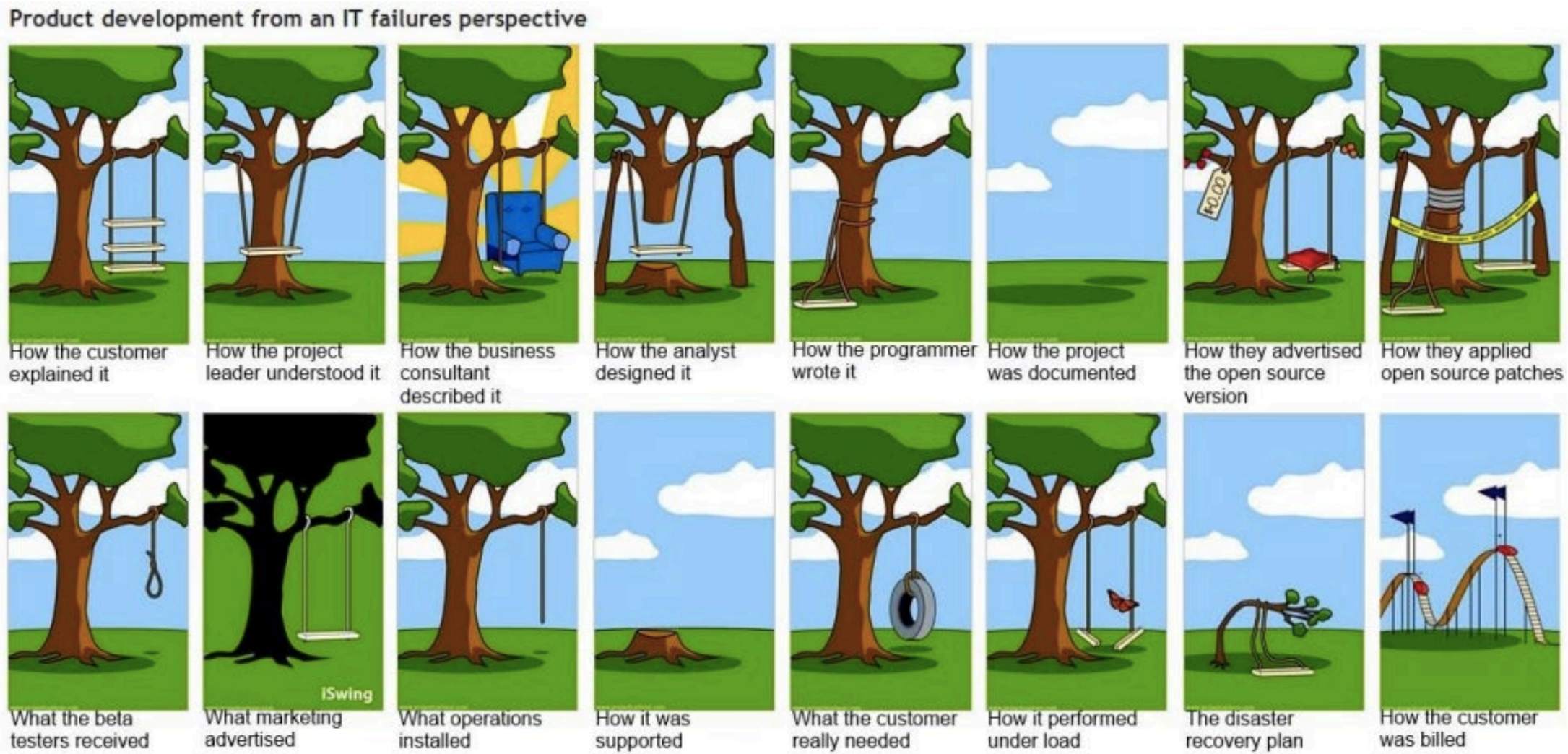
Client

User

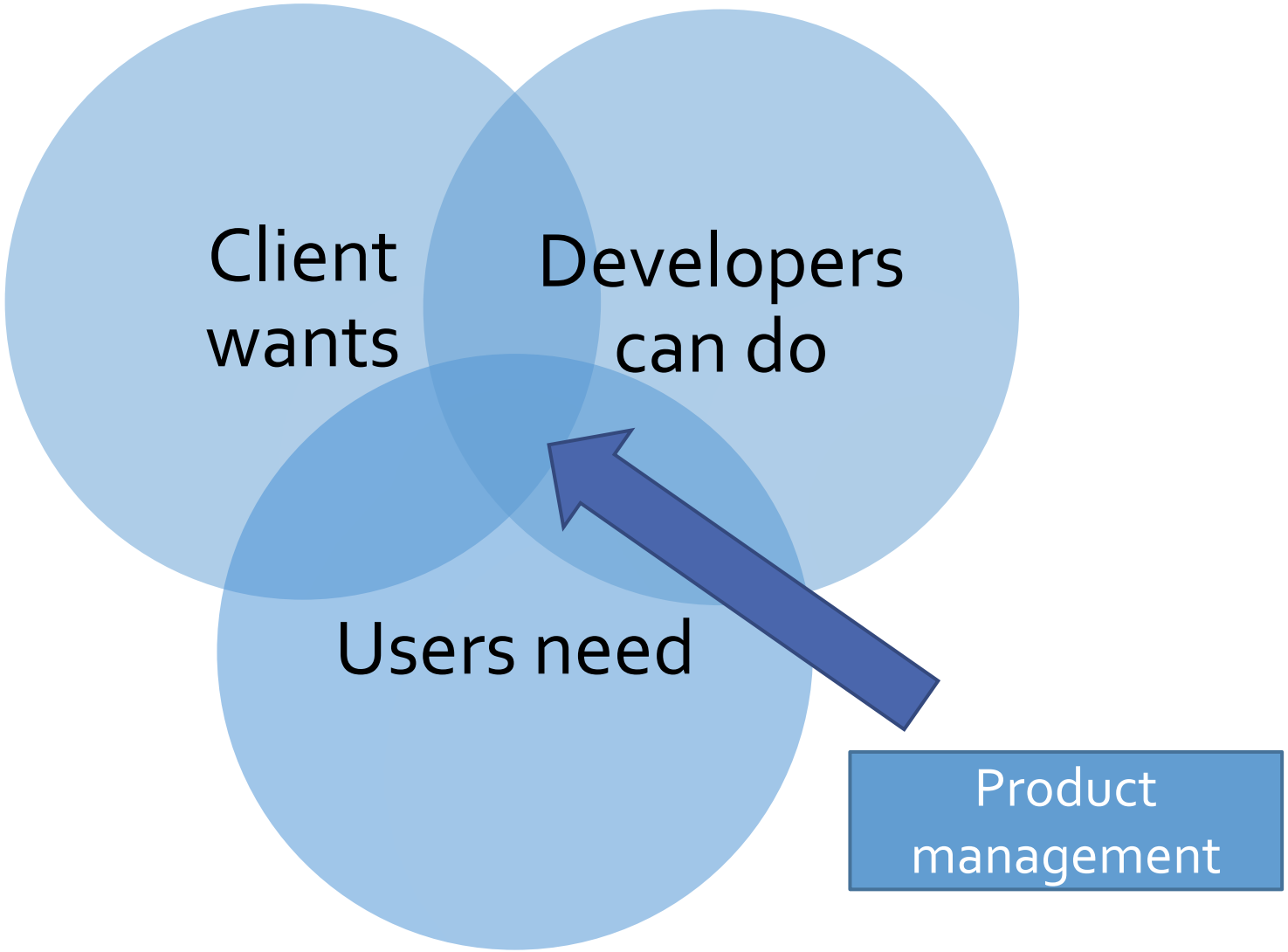
The Essence of Product Management

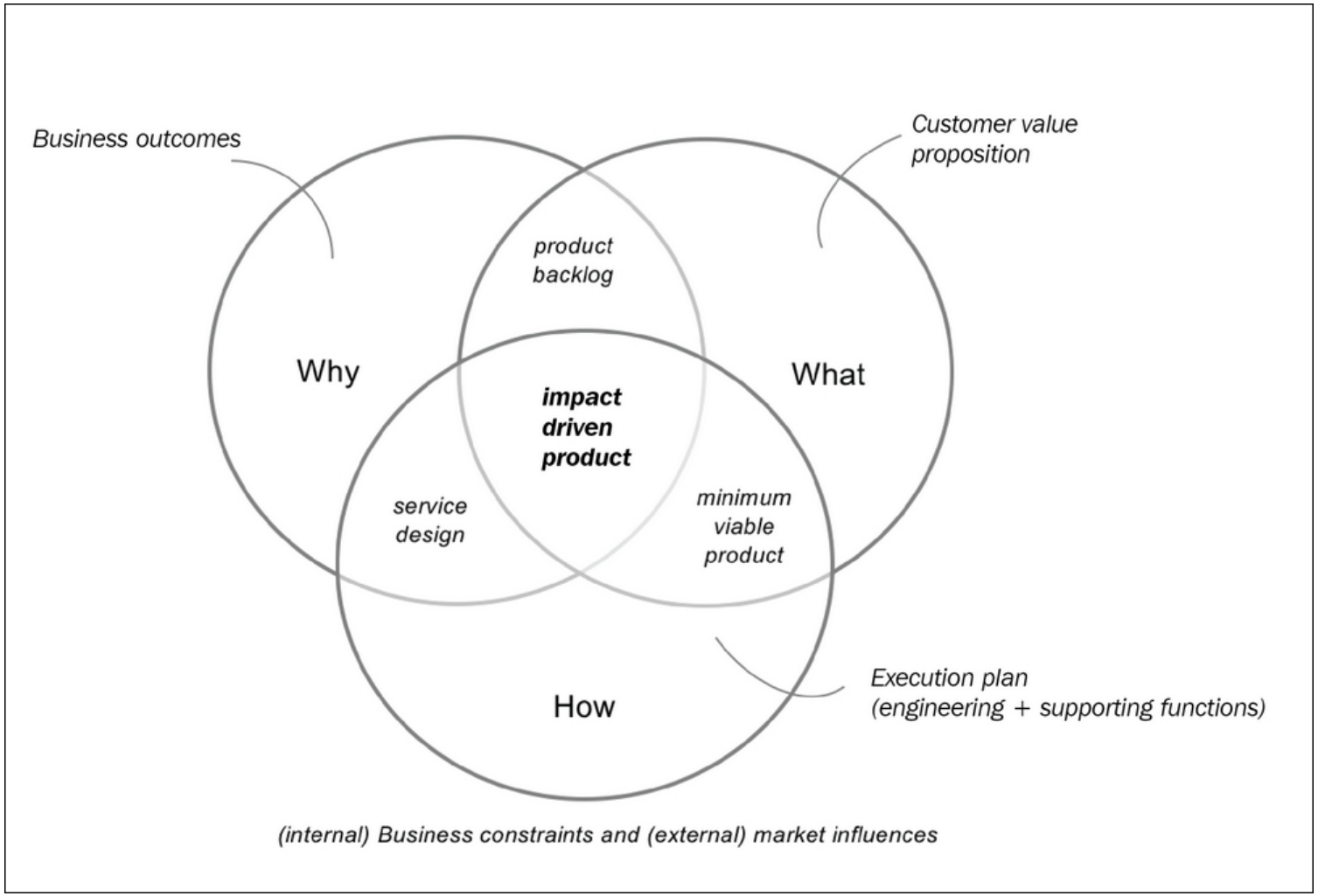


…or even like this



The Essence of Product Management





IN OTHER WORDS…

Wagenblatt, T. (2019). *Software Product Management*. Springer International Publishing.

EVEN MORE COMPLEX IN REAL WORLD!

Wagenblatt, T. (2019). *Software Product Management*. Springer International Publishing.

MANY TRACKS OF OUR COURSE

Tracks

Software product management theory

Hard skills

Soft skills

Tools

Best practices

Team Project

LET’S START!

“The gap between the best software engineering practice and the average practice is very wide—perhaps wider than in any other engineering discipline.”
— Fred Brooks

Software Productivity is NOT Consistent

The “Standish Reports” Saga

- The CHAOS reports published by the Standish group (in 1994 and 2004, and then up to 2020) described a rather abysmal state of our profession: many software projects are either “challenged” or plain “failures”. *http://www.infoq.com/articles/Interview-Johnson-Standish-CHAOS*

- A rebuttal study attempted to examine the software-engineering industry performance more systematically, more precisely classifying success and failure. *http://www.zdnet.com/blog/projectfailures/new-it-project-failure-metrics-is-standish-wrong/513*

“The Roman bridges of antiquity were very inefficient structures. By modern standards, they used too much stone, and as a result, far too much labour to build. Over the years we have learned to build bridges more efficiently, using fewer materials and less labour to perform the same task.”

Tom Clancy (The Sum of All Fears)

Successful and Failed Projects

MODERN RESOLUTION FOR ALL PROJECTS

	2011	2012	2013	2014	2015
SUCCESSFUL	29%	27%	31%	28%	29%
CHALLENGED	49%	56%	50%	55%	52%
FAILED	22%	17%	19%	17%	19%

The Modern Resolution (OnTime, OnBudget, with a satisfactory result) of all software projects from FY2011–2015 within the new CHAOS database. Please note that for the rest of this report CHAOS Resolution will refer to the Modern Resolution definition not the Traditional Resolution definition.

https://www.standishgroup.com/sample_research_files/CHAOSReport2015-Final.pdf

- **Successful.** The project is completed on time and on budget, offering all features initially specified.
- **Challenged.** The project is completed and operational but overbudget and overtime, and offers fewer features than originally specified.
- **Failed.** The project is cancelled during the development cycle.

IMAGINE EVERY
PRODUCT IS A TREE

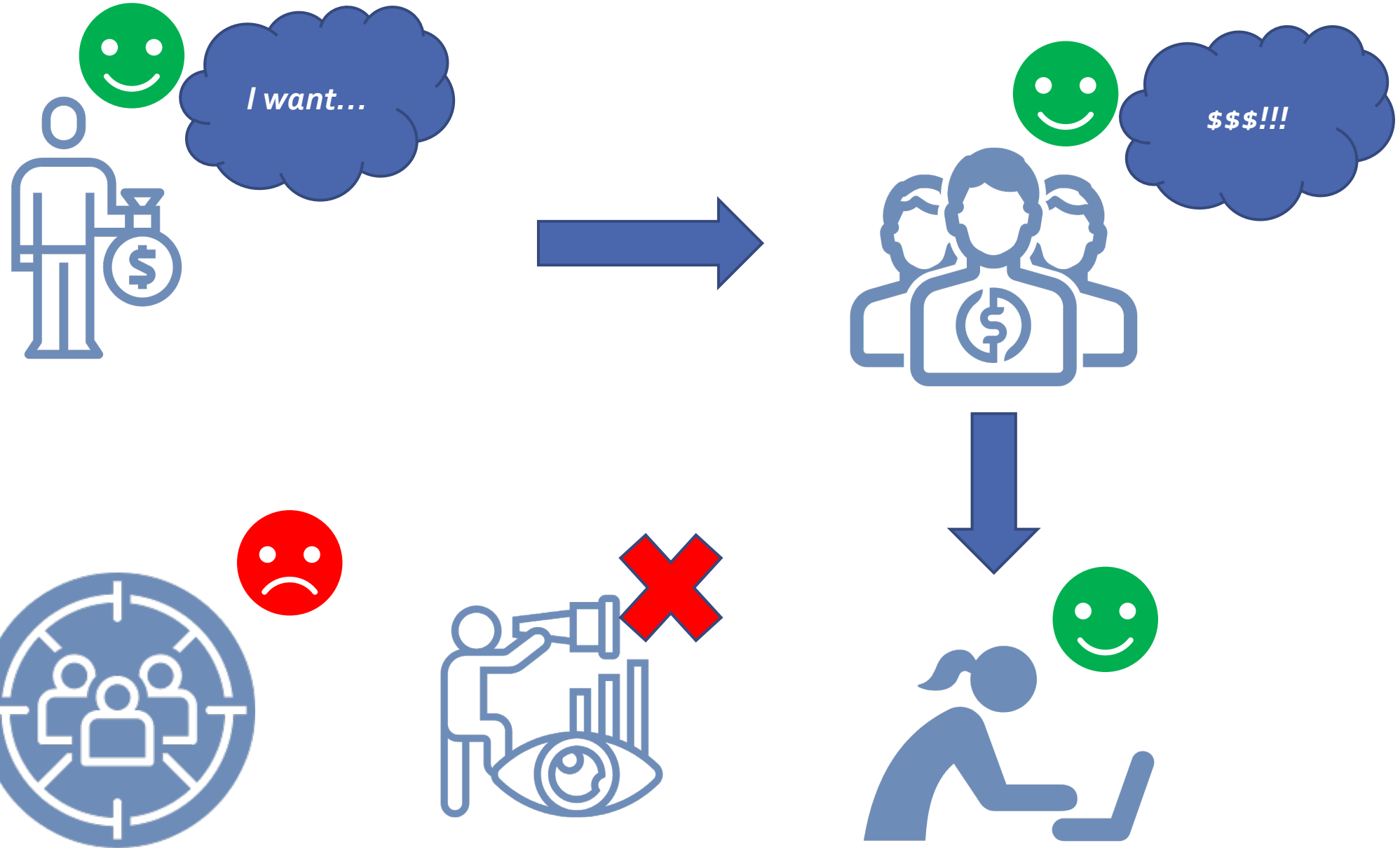
Where is Software Product Management?

Products face risks

"Like trees in the forest, products face equally great risks if no one nurtures and protects them. If there is no one dedicated to and responsible for the product —timber!

Products might not survive for a multitude of reasons even if the idea was great and a market exists. Any product failure comes with a reason."

Wagenblatt, T. (2019). *Software Product Management*. Springer International Publishing.


I want...
$$$!!!

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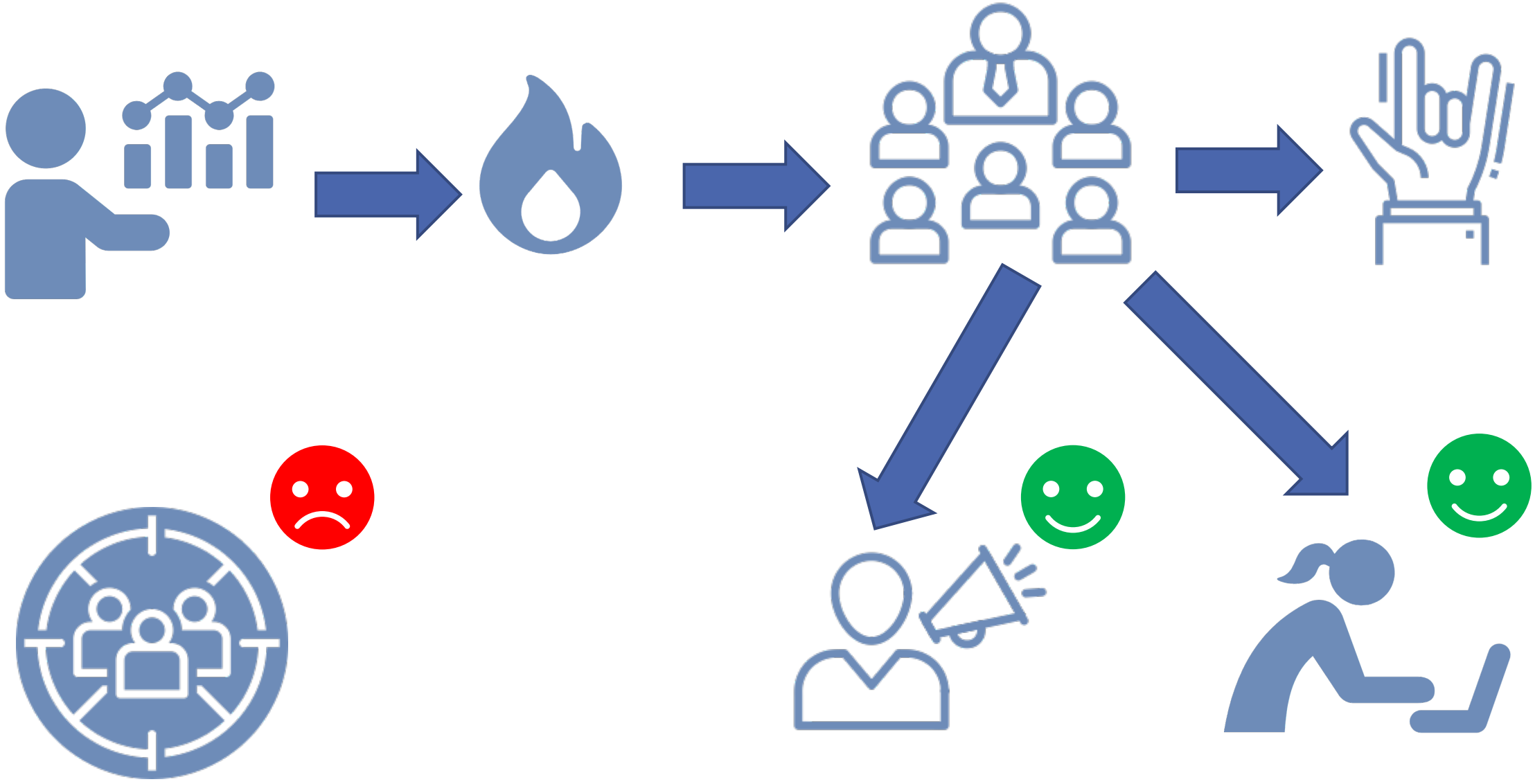

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SAD PILE OF LUMBERED PRODUCTS (AND OPPORTUNITIES)

Wagenblatt, T. (2019). *Software Product Management*. Springer International Publishing.

Things to Think About

Who should decide whether a project is successful?

Is there a single definition of success?

How does it correlate with estimation deviation?

FACTORS OF SUCCESS	POINTS	INVESTMENT
Executive Sponsorship	15	15%
Emotional Maturity	15	15%
User Involvement	15	15%
Optimization	15	15%
Skilled Resources	10	10%
Standard Architecture	8	8%
Agile Process	7	7%
Modest Execution	6	6%
Project Management Expertise	5	5%
Clear Business Objectives	4	4%

THE ROAD TO SUCCESS

How many of the factors are NON-technical?!

The Road to 401 Success

Do not choose to learn every new technology under the Sun

Be careful with your choice of team lead

Be regularly and continuously productive

Consult with your TAs: ask advice on the project tasks and the technologies!

Work with your clients: make sure that you are all on the same page!

Your TODOs

Details and links will be sent via email

1	2	3	4	5
Fill out the Professional Profile Survey	Do the Socionics (or MBTI) Test	Study reading materials	Form a team	Review and bid for projects
This Friday	**This Friday**	**This Friday**	**Sep 8, 11:59 pm**	**Sep 11, 11:59 pm**

QUESTIONS?!