

# Software Architecture and People

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# Outline



ARCHITECTING  
**WITH** THE PEOPLE



ARCHITECTING  
**FOR** THE PEOPLE



MY RESEARCH



ASSIGNMENT

# What is Software Architecture?



STRUCTURE



DECISIONS



BIG PICTURE

# Software Architecture and People

- Who takes decisions?
- Who implements decisions?

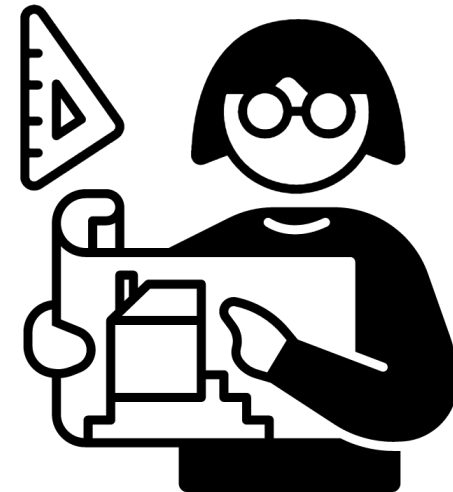
# Architecting with the people

# Architecting with the people

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Developer



Software designer

# Software designer



[Individual] personal bias in design solutions

e.g. Why Facebook is blue?<sup>1</sup>



[Team] composition

e.g. group think



[Process]

E.g. Who speaks first? – Anchoring bias

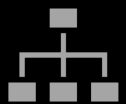
[1] <https://edition.cnn.com/2010/TECH/social.media/09/20/zuckerberg.facebook.list/index.html>

# Design to code: community structure



Architecture hood – architects far away from devs. and ops.

no accountability; uncooperative behavior



Organization silo – high decoupled tasks

waste resources; duplicate code



Radio silence – formal organization structure

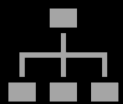
refrain from asking questions; time intensive

# Design to code: context and interactions



Shared Villany - No incentive for knowledge sharing or meetings

information outdated, unconfirmed or wrong



Organizational Skirmish – culture mismatch in devs. And ops.

cause delay



Prima donnas – legacy product unreceptive to change

uncooperative behavior

# Consequences: not immediately visible



[Architecture] erosion



[Input] time and cost



[Code] quality



[Process] development and operations

# Solutions



Social Wiki - Organization silo, prima donnas



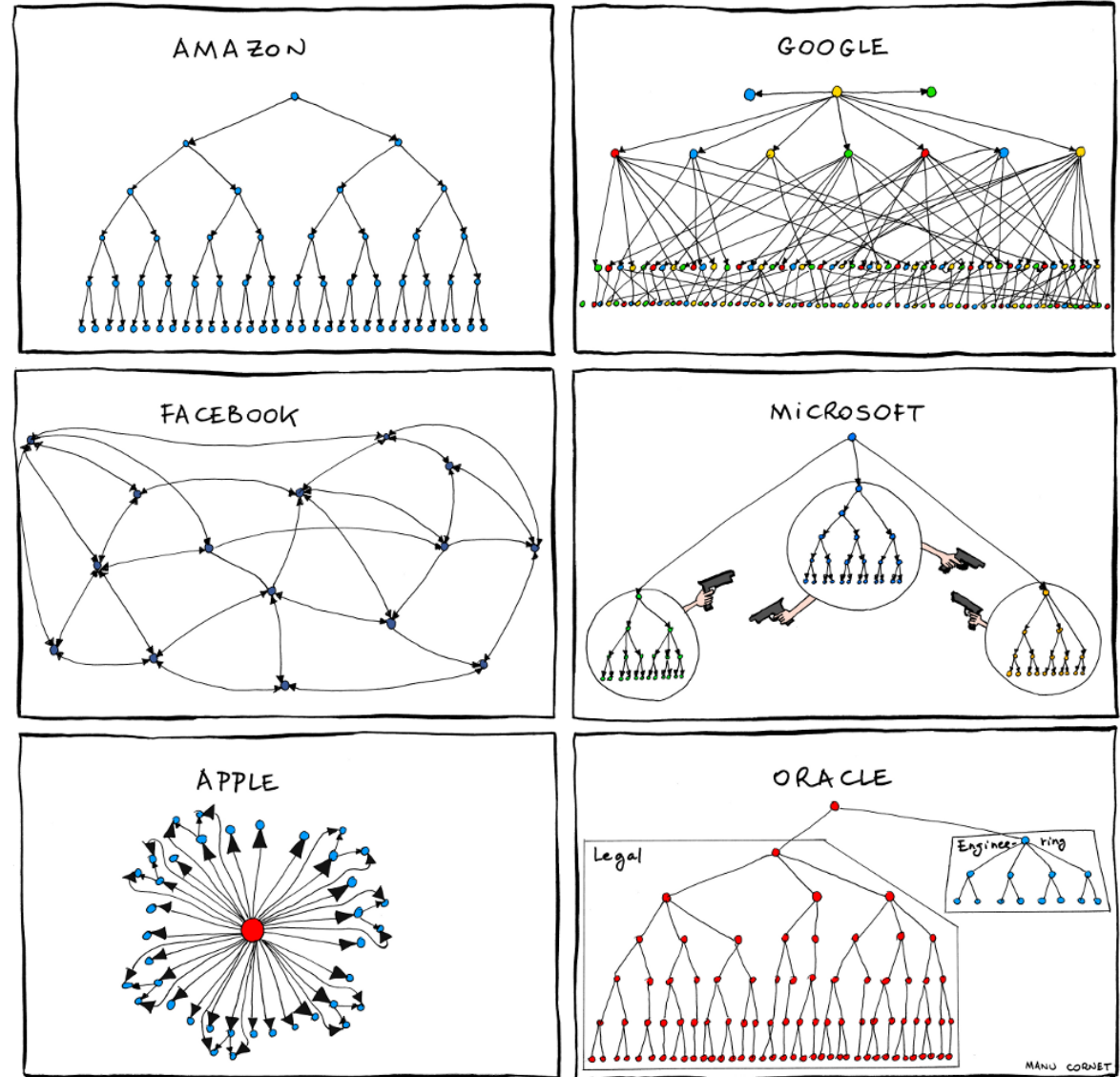
Cultural conveyors - Shared villany, prima donnas



Effect: 40% of the mitigations adopted did not yield positive outcomes and, in some cases, they made things worse.

# Conway's law

Software mimics  
organizational-social structure



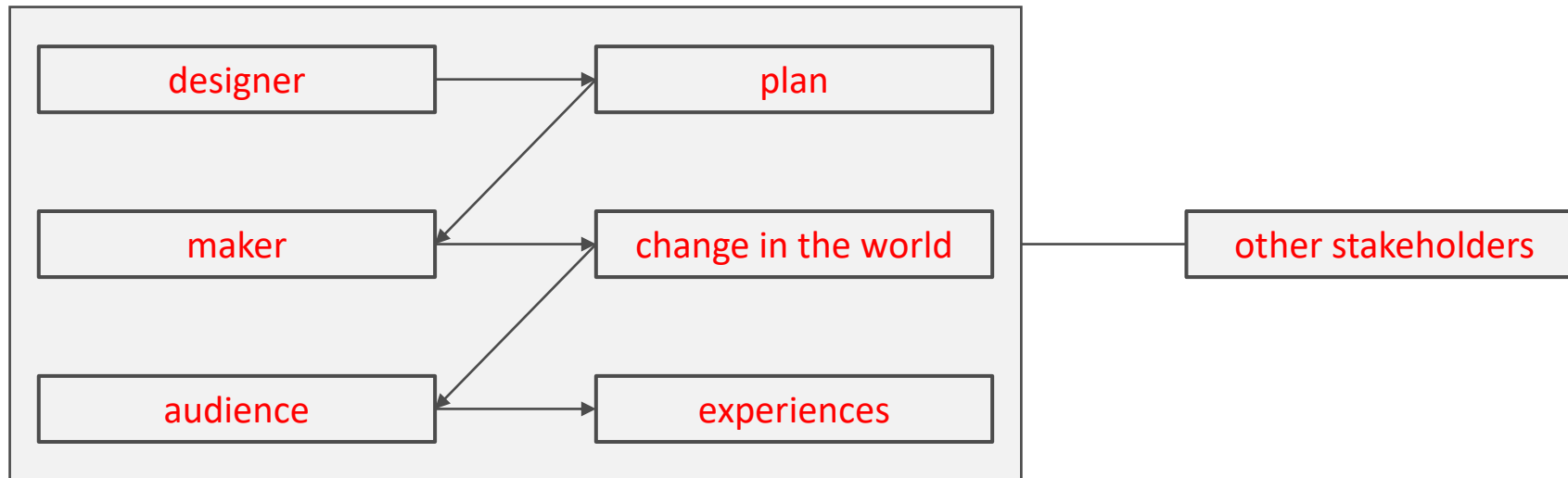
How Do Committees Invent?

<https://www.noahbrier.com/archives/tag/tim-harford/>

<https://www.forbes.com/sites/danwoods/2017/08/15/how-platforms-are-neutralizing-conways-law/>

# Architecting for the people

# Stakeholders



Scenario:  
design a  
classroom

Scenario:  
Messaging  
app



# Design for value



## Tradeoff b/w security and privacy

E.g. chatting applications



## Design for digital rights

E.g. say in terms and conditions



## Cultural valence

E.g. values for one nation may not translate to another

# References

# Good reads: architecting with the people



[DESIGNER] SOFTWARE DESIGN  
DECODED: 66 WAYS EXPERTS  
THINK



[TEAM] SOCIAL DEBT  
IN SOFTWARE ENGINEERING:  
INSIGHTS FROM INDUSTRY



THE INFLUENCE OF  
ORGANIZATIONAL STRUCTURE  
ON SOFTWARE QUALITY



PUTTING IT ALL TOGETHER:  
USING SOCIO-TECHNICAL  
NETWORKS TO PREDICT  
FAILURES

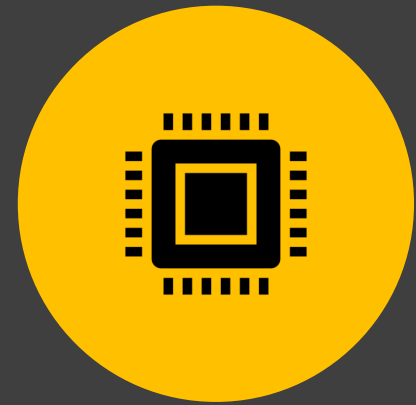
# Good reads: architecting for the people



COMPUTING ETHICS: VALUES IN  
DESIGN



THE POLITICS OF DESIGN,  
DESIGN AS POLITICS



WHEN THE IMPLICATION IS NOT  
TO DESIGN (TECHNOLOGY)

# My research

# Team personality and effectiveness



Who works best together?

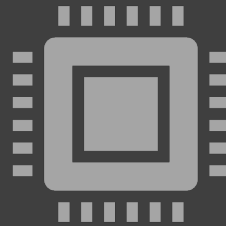


What makes a good software team?

# Unfairness in software engineering



Manifestations of unfairness  
in software engineering



How does it impact software  
and its development?



Solutions to improve

# Assignment

# Relation of team structure to code structure

e.g.

1. Select highly coupled and loosely coupled components in your project
2. How developers participating in the two pairs of components interact?

- [Reflections] within your team

# Design decisions catering to user need

- List up to 3 design choices in the selected software project that caters to its user need.
- How would the design choices change for a different audience?
  - Aspects: international, inclusion

e.g.

[Everyday] size of chair in classroom (for kid vs. adult)

[Software] size of fonts in applications (for elder vs. young)

# Discuss

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