

Software Architecture and Techniques

What is **Agile Architecture**?

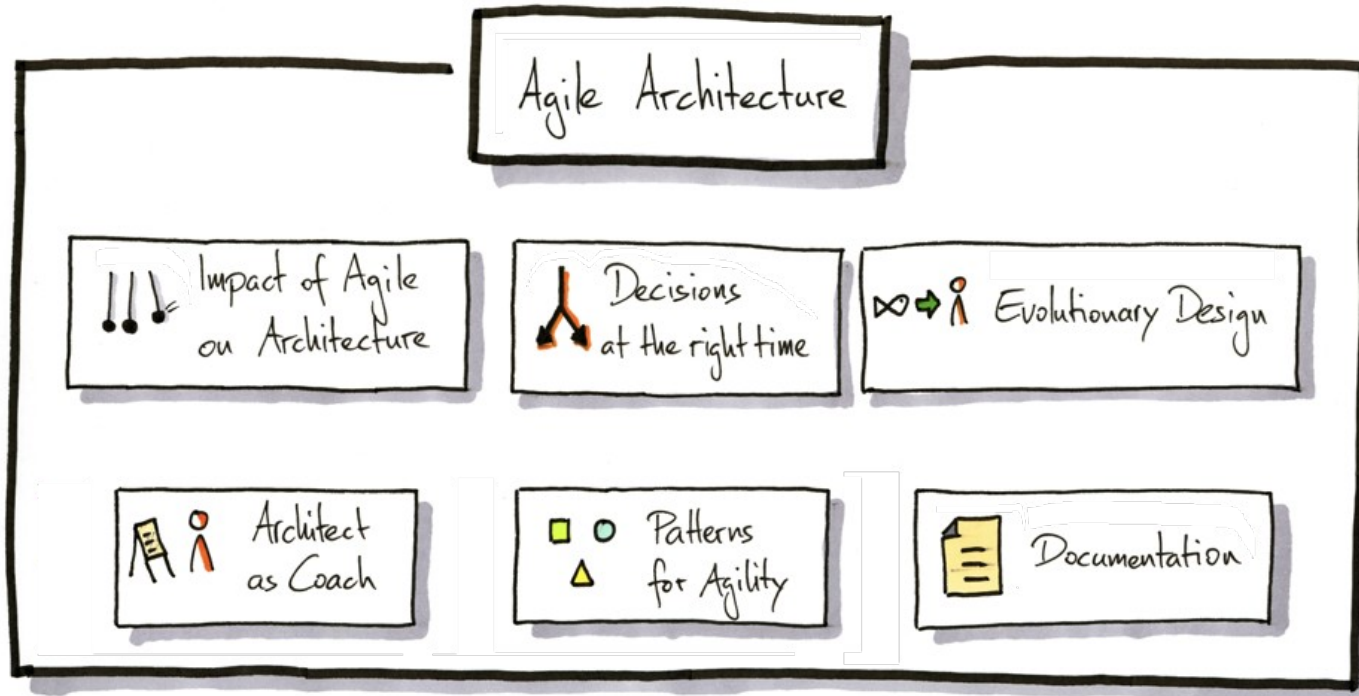
Observations

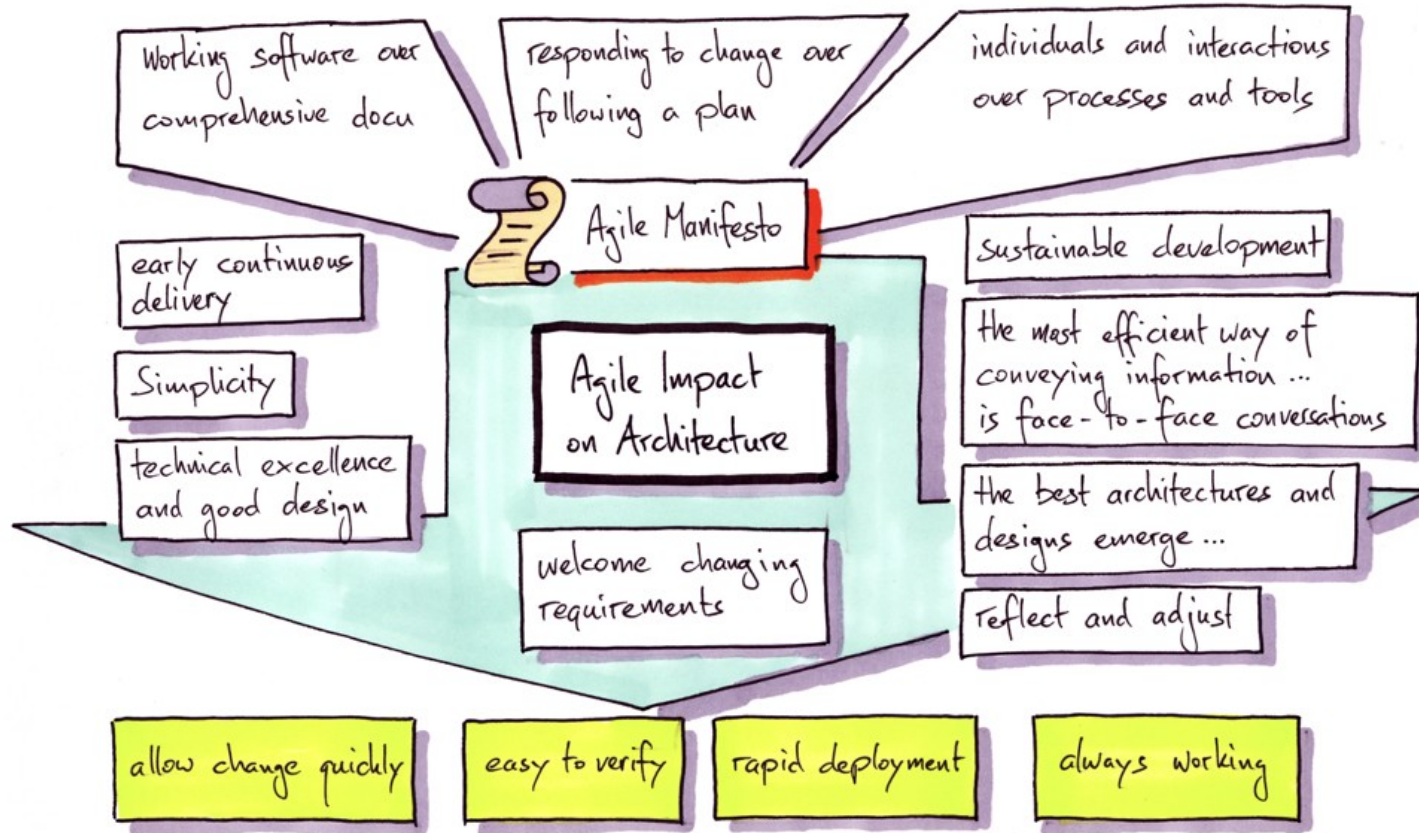
Every software developer is also a designer, every software developer is also an architect.

- 1) The sum of all the source code is the **true** design blueprint or software architecture.
- 2) The real software architecture **evolves** (better or worse) **every day** of the product, as people do programming.
- 3) The real living architecture needs to be grown every day through acts of programming by **master programmers**.
- 4) A software architect who is not in touch with the evolving source code of the product is **out of touch with reality**.
- 5) **Every programmer is some kind of architect** –whether wanted or not. Every act of programming is some kind of architectural act – good or bad, small or large, intended or not –.

Agile Architecture Principles (SAFe)

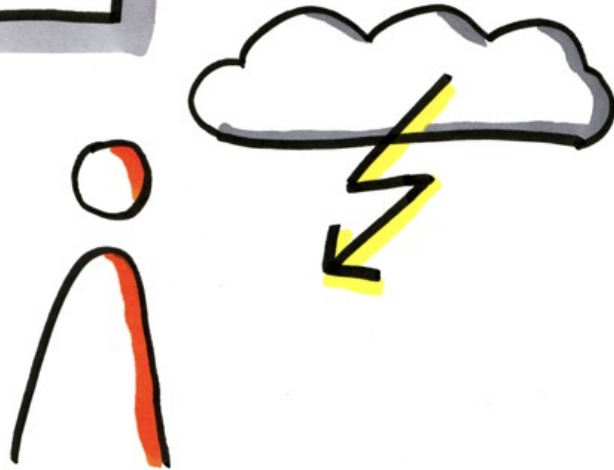
- 1) Design **emerges**. Architecture is a **collaboration**.
- 2) The bigger the system, the longer the runway.
- 3) Build the **simplest** architecture that can possibly work.
- 4) When in doubt, **code** or model it out.
- 5) They build it. They test it, They run it.
- 6) There is no monopoly on **innovation**.
- 7) Implement architectural flow.

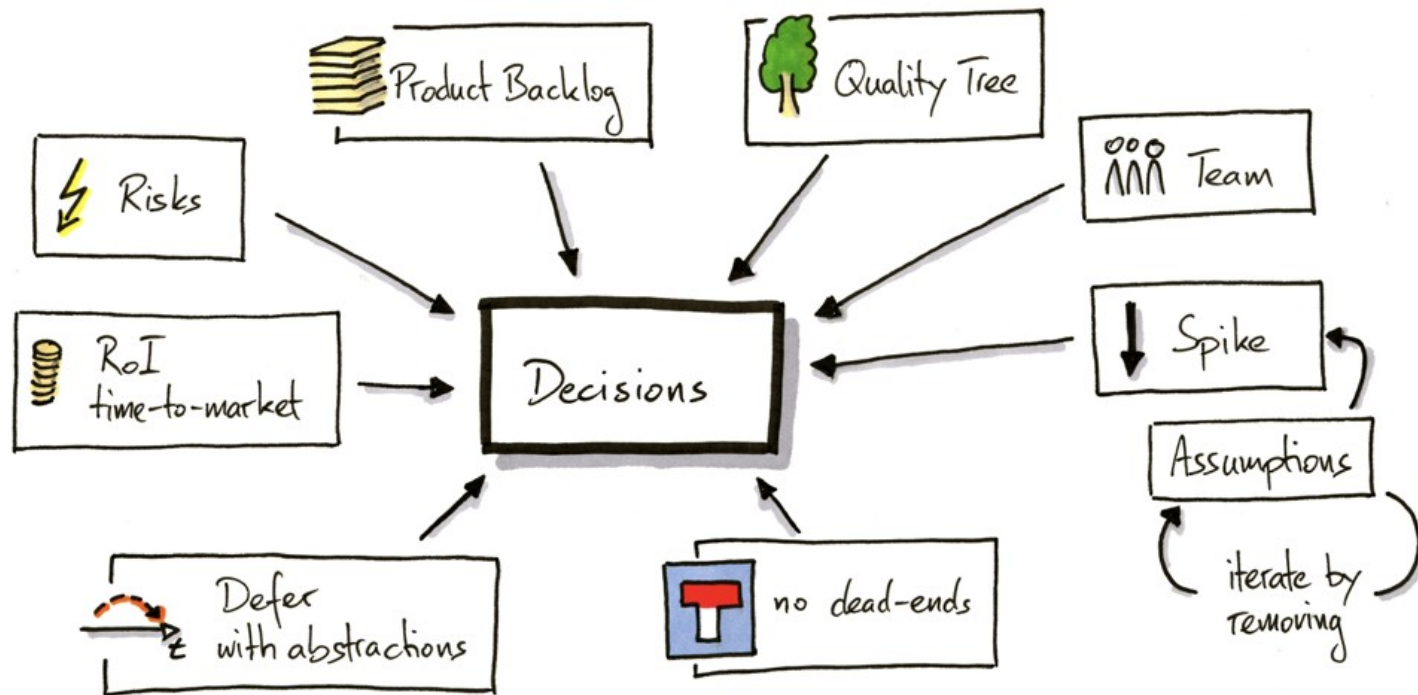


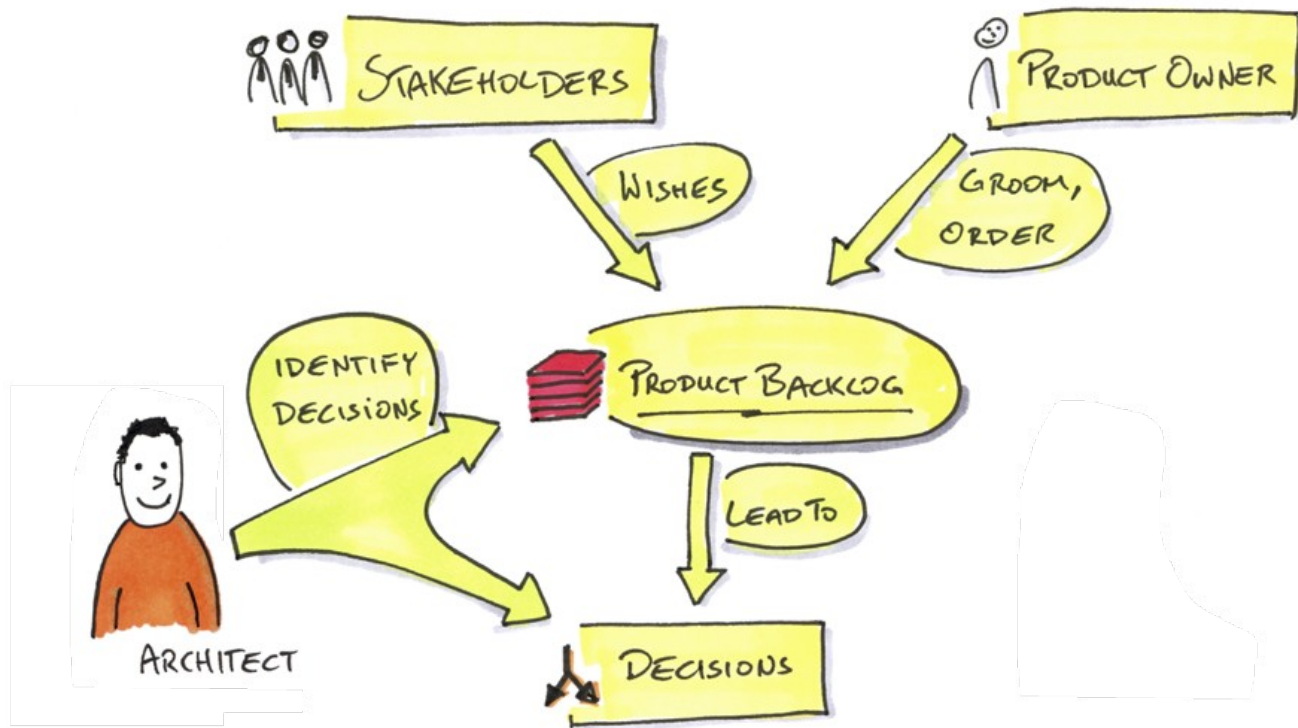


What are your pain points?

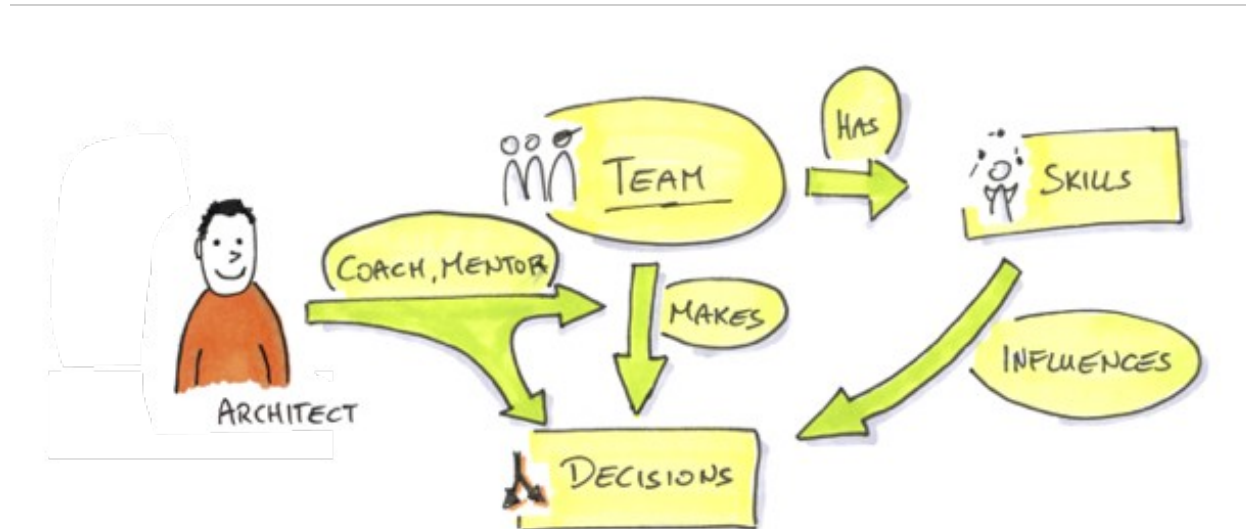
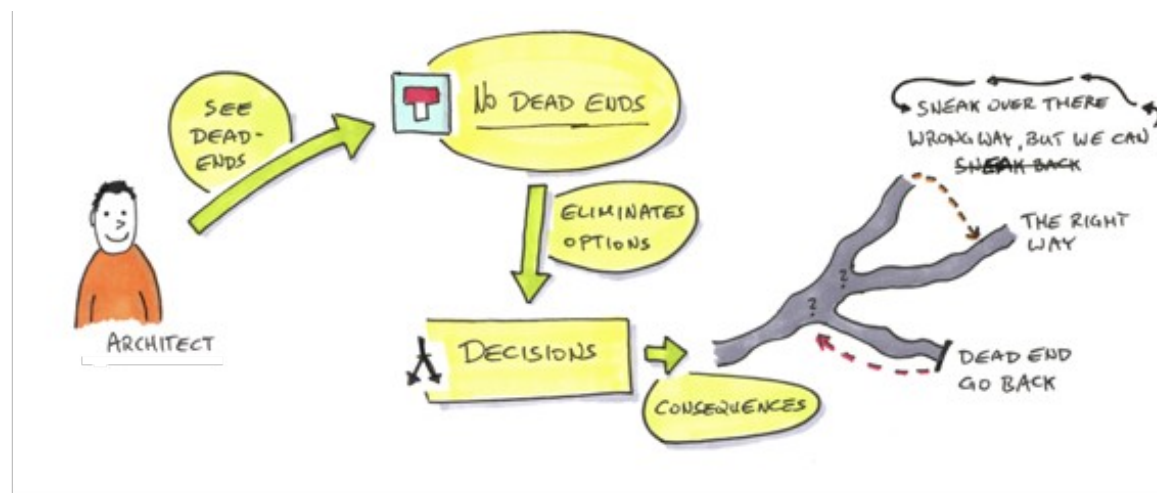
allow change quickly
easy to verify
rapid deployment
always working

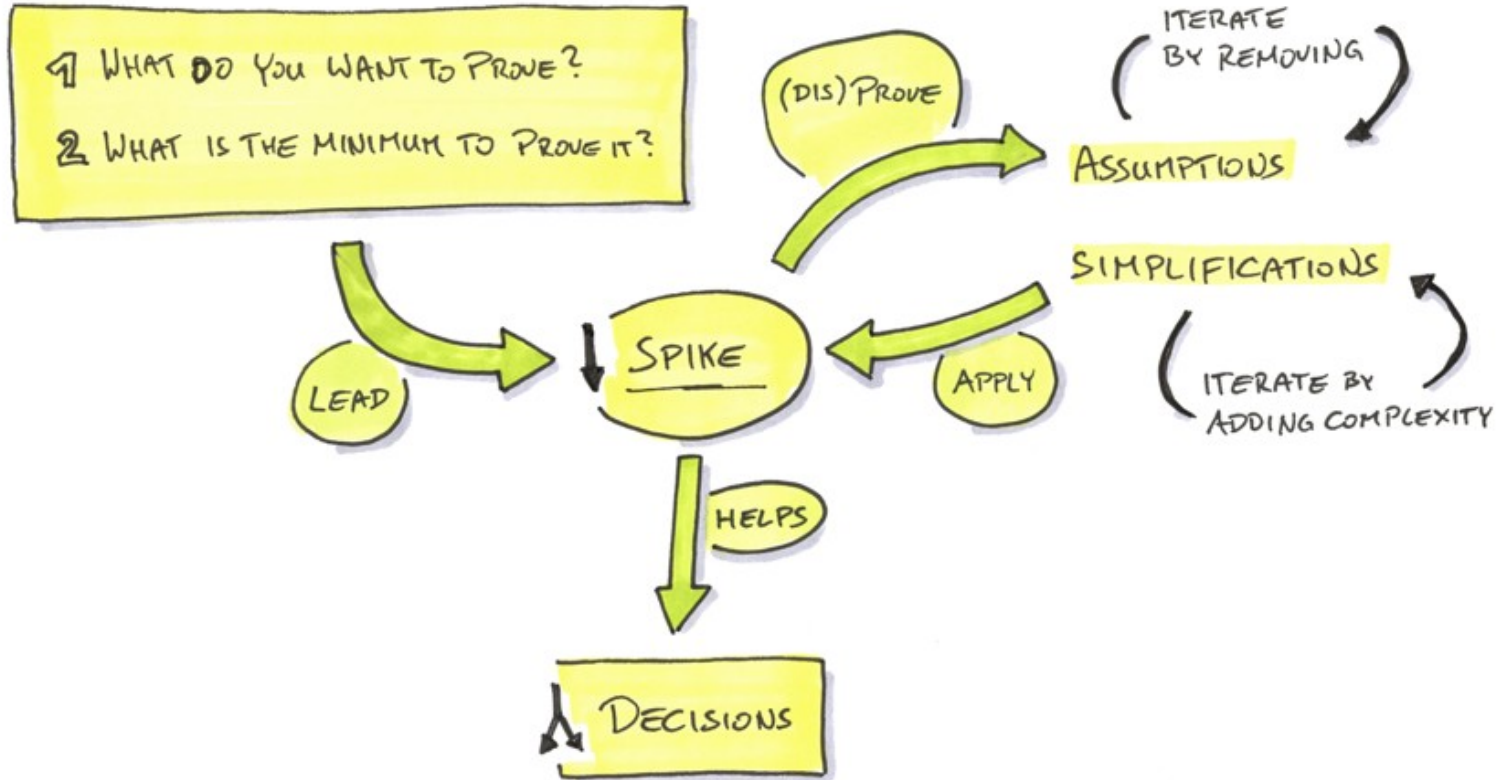


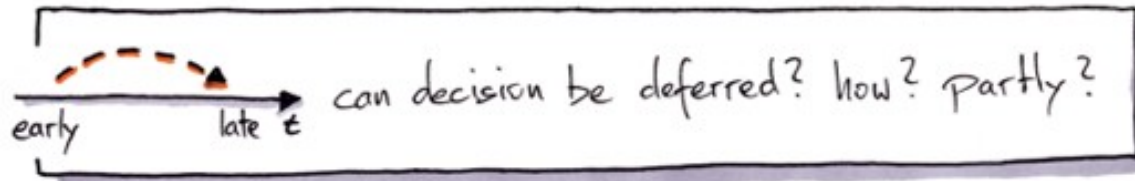






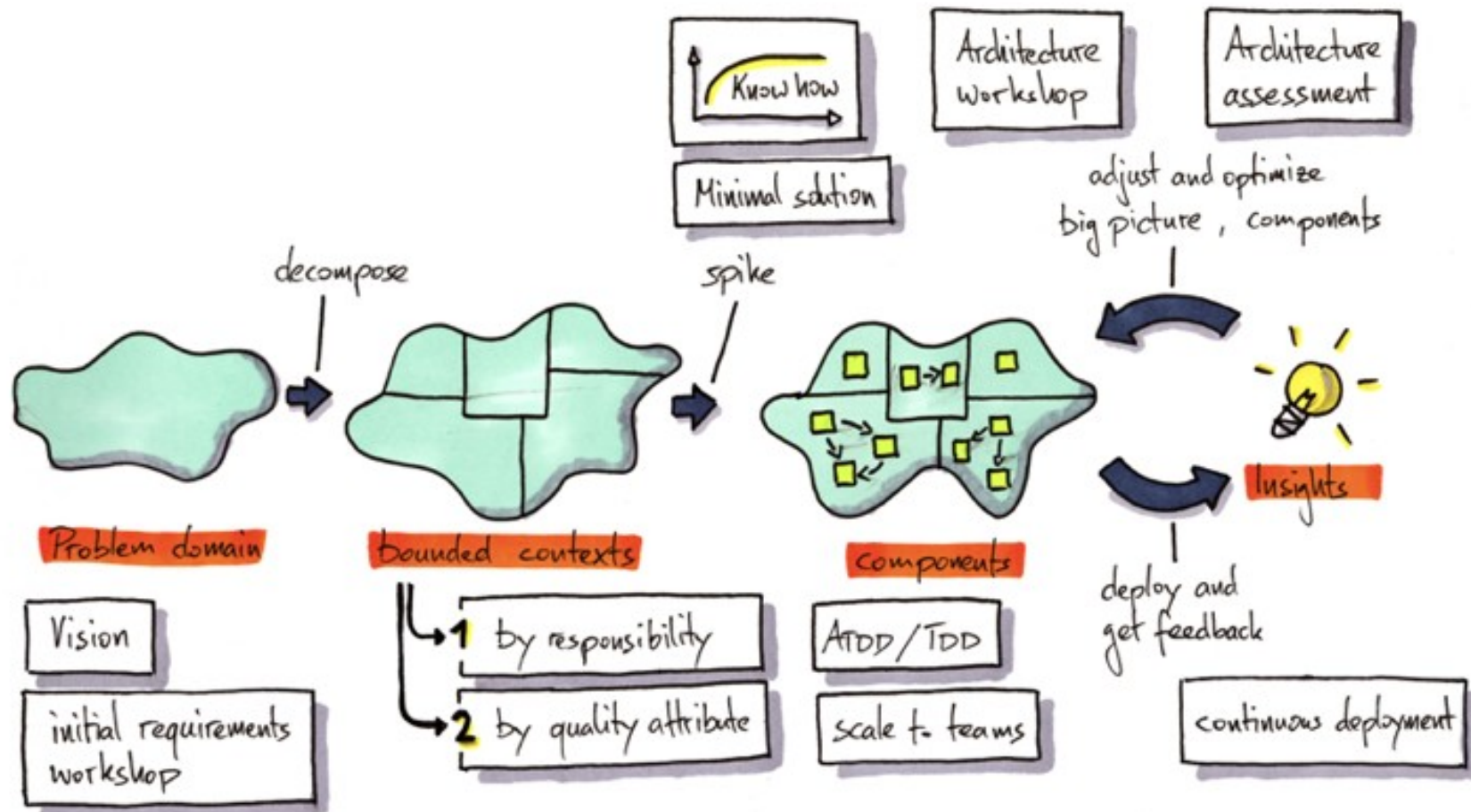






- persist data of your system to survive restart
- how to translate UI and data
- communication between parts of your system
- scaling (run on multiple threads, processes, machines)
- security (how to authenticate, authorize)
- journaling (Activities, data)
- reporting
- data migration / data import
- releasability
- backwards compatibility
- response times
- Archiving data

design to be independent
on decision





BOUNDED CONTEXTS

1 RESPONSIBILITY

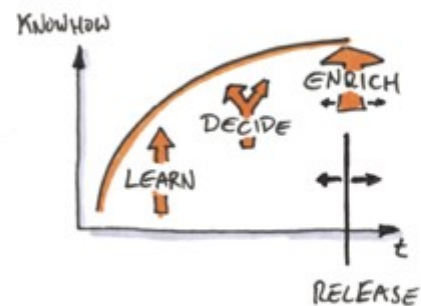
- DIFFERENT USERS
- DIFFERENT TASKS

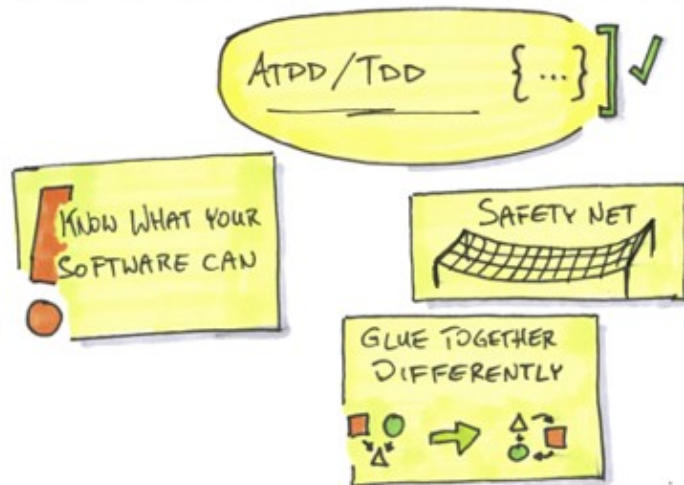
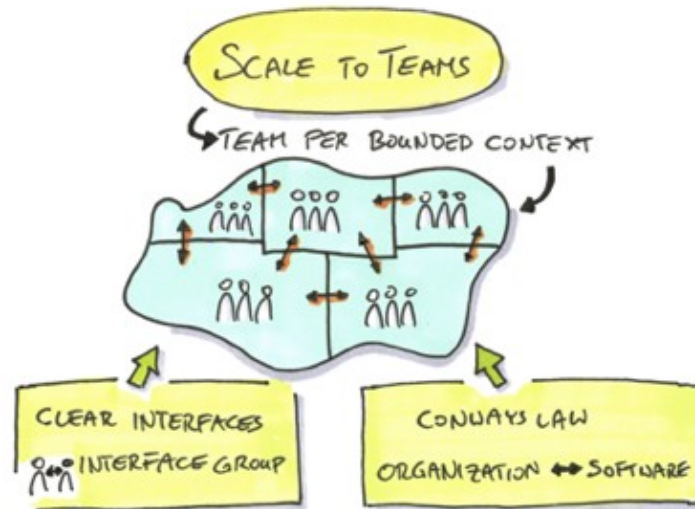
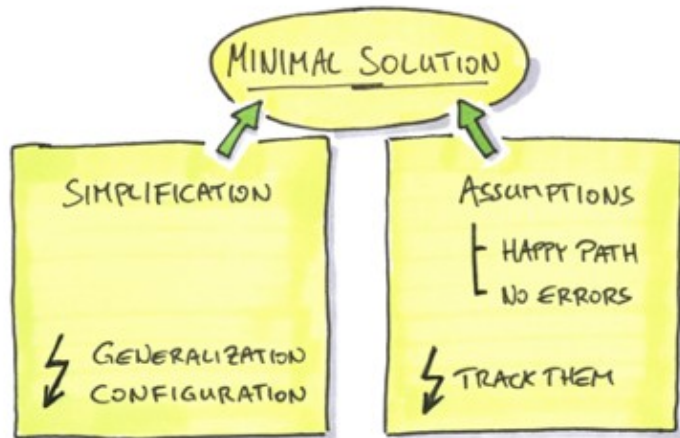
2 QUALITY ATTRIBUTE

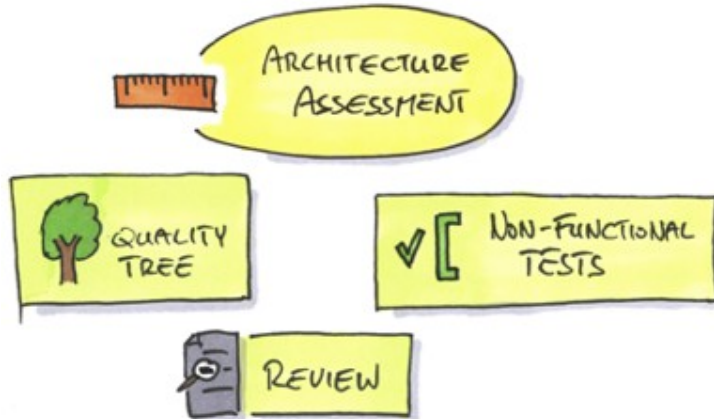
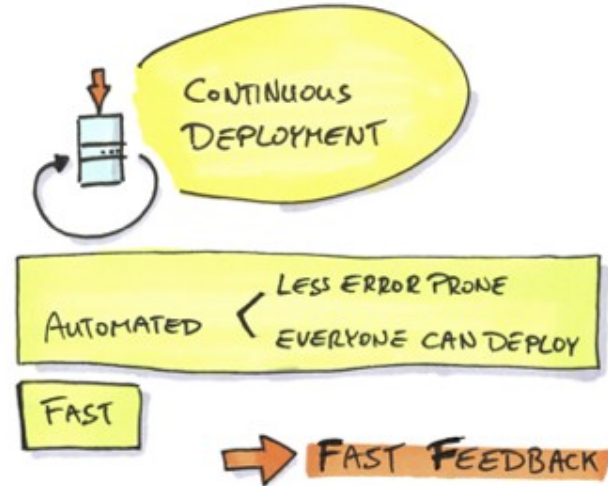
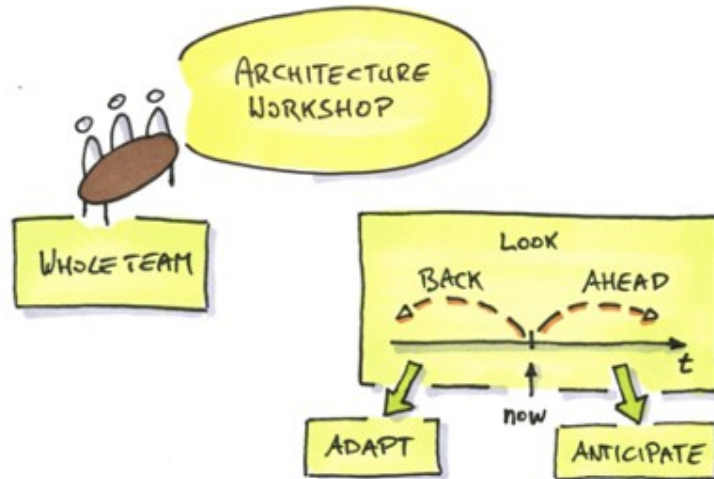
- PERFORMANCE
- RELIABILITY
- AVAILABILITY

COMMUNICATION

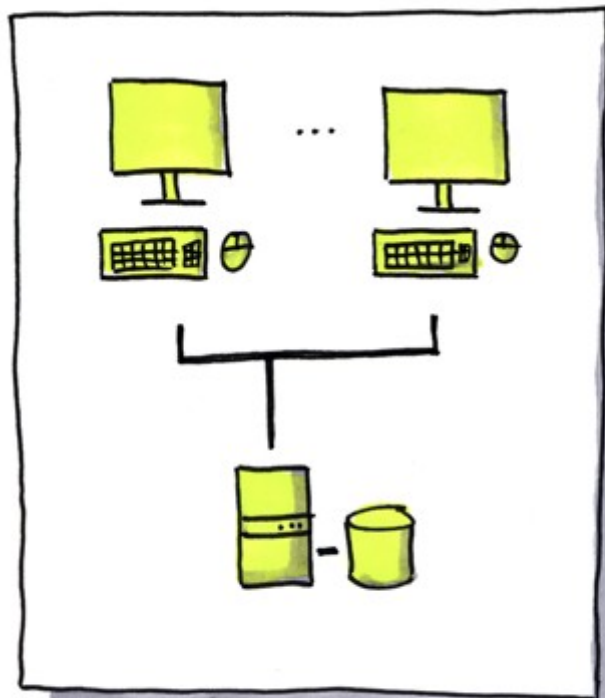
- WHAT
- HOW







define evolution steps



Sirius Cybernetics

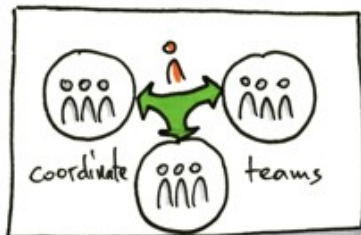


Druid Resources Department (DRD)

Step I manage data of all druids

- assembly date
- retirement date
- serial number
- jobs
 - work place
 - from/to date
 - customer feedbacks

Step II journaling



lead technically



technology evangelist
engineering practises
technical spikes
non-functional specs
write code

understand stakeholders



big picture
talk to all stakeholders
learn about all view points
understand the user
help the PO

coach the team



architecture is team work
coordinate
pair program
educate
support SM



communicate



use effective tools



be part of the team



learn to be a good designer



make sure decisions are made

what do you do as an architect?

compare with Agile Architect checklist

Agile Architecture Patterns



Modularity

exchangeability
clear interfaces
clear responsibilities

fits in my head
risk and cost of
local change is low

duplication ↔
modularity vs. integration

coupling ← space
time ⚡
split brain



Clean Architecture

direction of dependencies
no tangles
concrete → abstract

decouple from environment
testable
scenario driven

inversion of control

passing data over
boundaries ⚡



Deployability

fast
frequent

versioning
agnostic of
target platform

one branch for
all customers ⚡

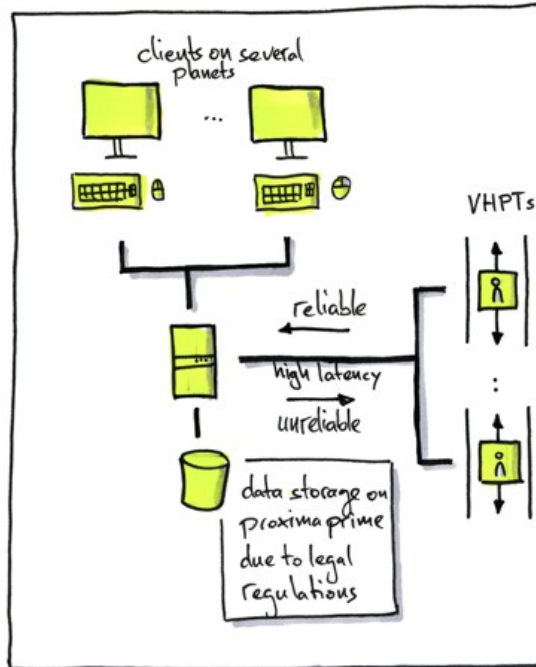


Software reflects user's mental model

ubiquitous language



- 1) identify bounded contexts
- 2) define evolutionary architecture steps



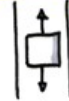
Maintenance ■ see activities of VHPTs



filters: · VHPT name
· period
· kind of event

- run diagnostics program on VHPT
- receive warning when VHPT out-of-order

VHPT



- sends data in "real" time
 - door opened/closed
 - movement
 - out-of-order notification
 - mood of person

Sales ■

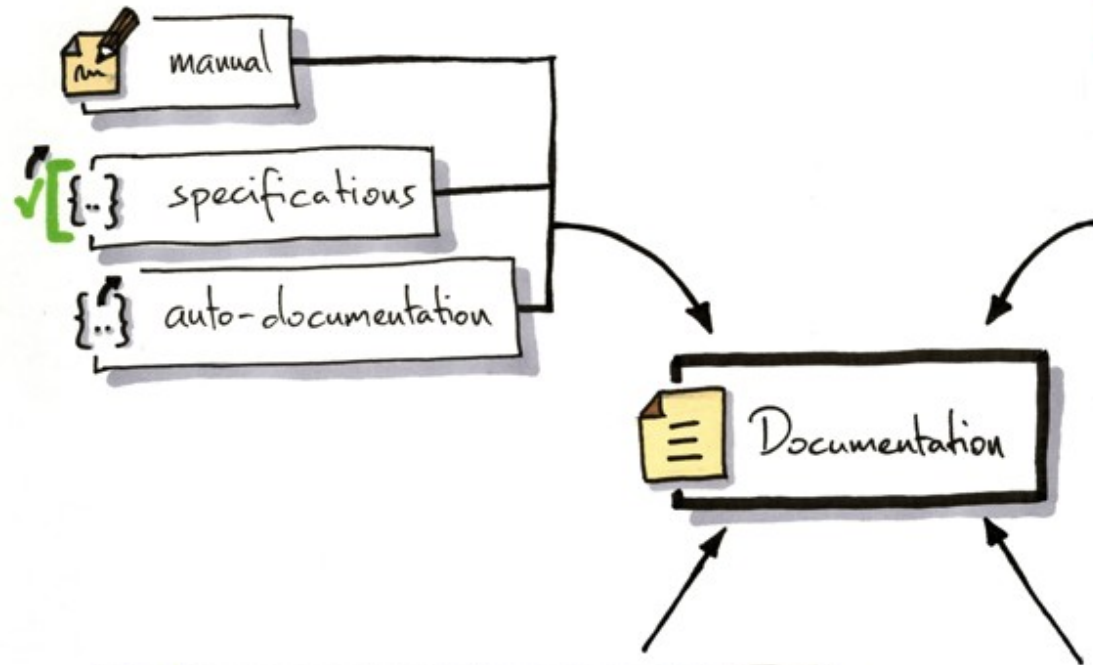


- report about mood of passengers

Accounting

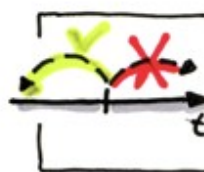


- see out-of-order data
- set a random VHPT to out-of-order



Questions: (by Michael Nygard)

- who is the consumer?
- what do they need?
- how do you deliver it to them?
- how do you know when they are ready for it?
- how do you produce it?
- what input do you need to produce it?



only document what you did,
not what you want to do



shared
whole team participates

Links

- Blog *Agile Architecture with Scrum*
- Blog *Introducing DevOps Ideas*

Exercises

- Read cheat sheet “Agile Architecture”
- Apply the learnt principles to your actual product
 - Improve one Java class following clean code
 - Build it through your CI/CD pipeline

Define actions to make your
Architecture more agile

