



CONTEXT SWITCHES IN SOFTWARE ENGINEERING

Chris Hill
15th November 2017

WHO WE ARE AND OUR ECOSYSTEM



- 42,000 EMPLOYEES
- £22.208B REVENUE (2016)
- 135 SOFTWARE GROUPS
- 5000 SOFTWARE ENGINEERS

VEHICLE ENGINEERING

INFOTAINMENT (IVI)

CHRIS HILL
SYSTEMS ENGINEERING

ECU

ECU

ECU

ECU

IVI

ECU

ECU

ECU

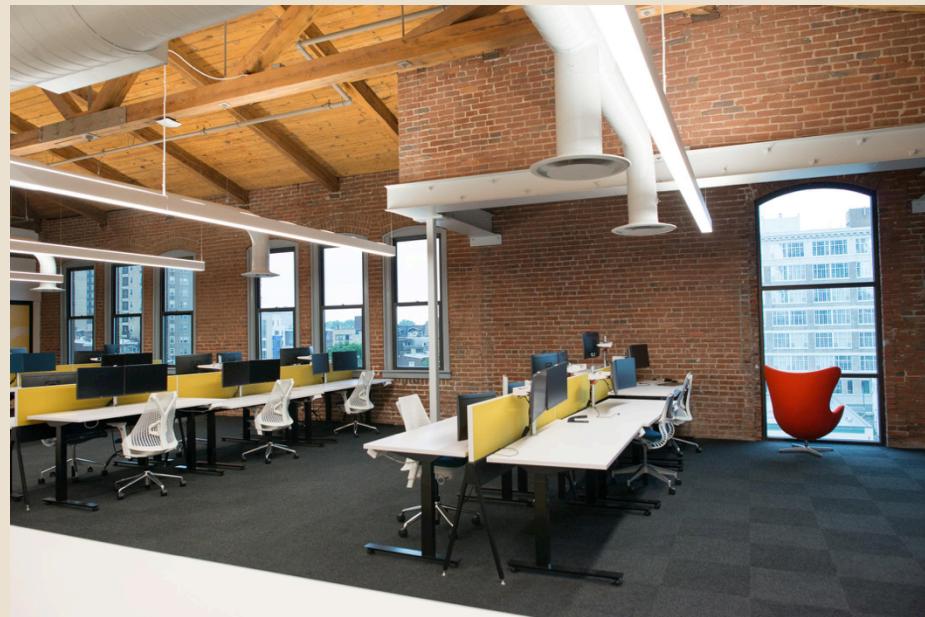


- 1 - Context switches at Jaguar Land Rover
- 2 - Penalties associated with types of context switches
- 3 - Analysis of interactions between software specialties

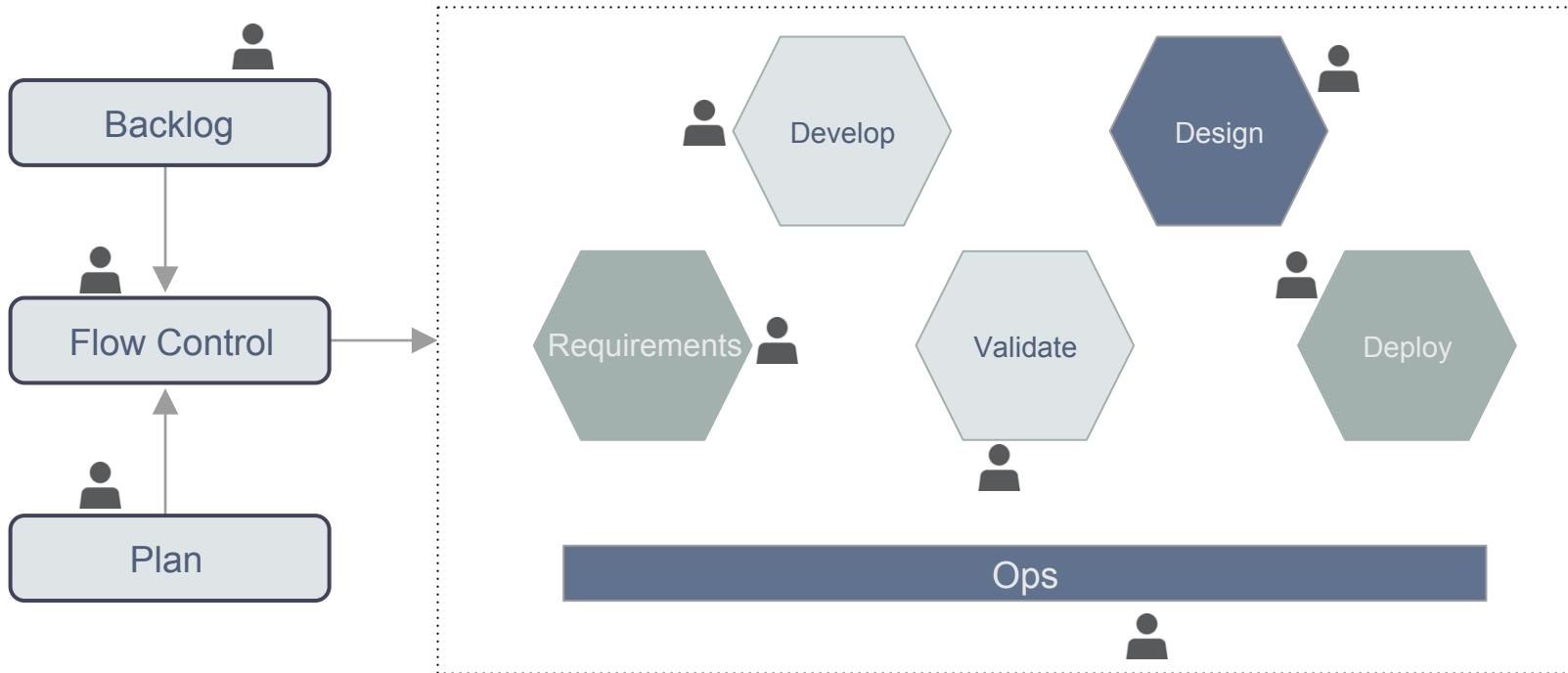
WAY BACK WHEN....



Ten years ago... I joined a start-up!



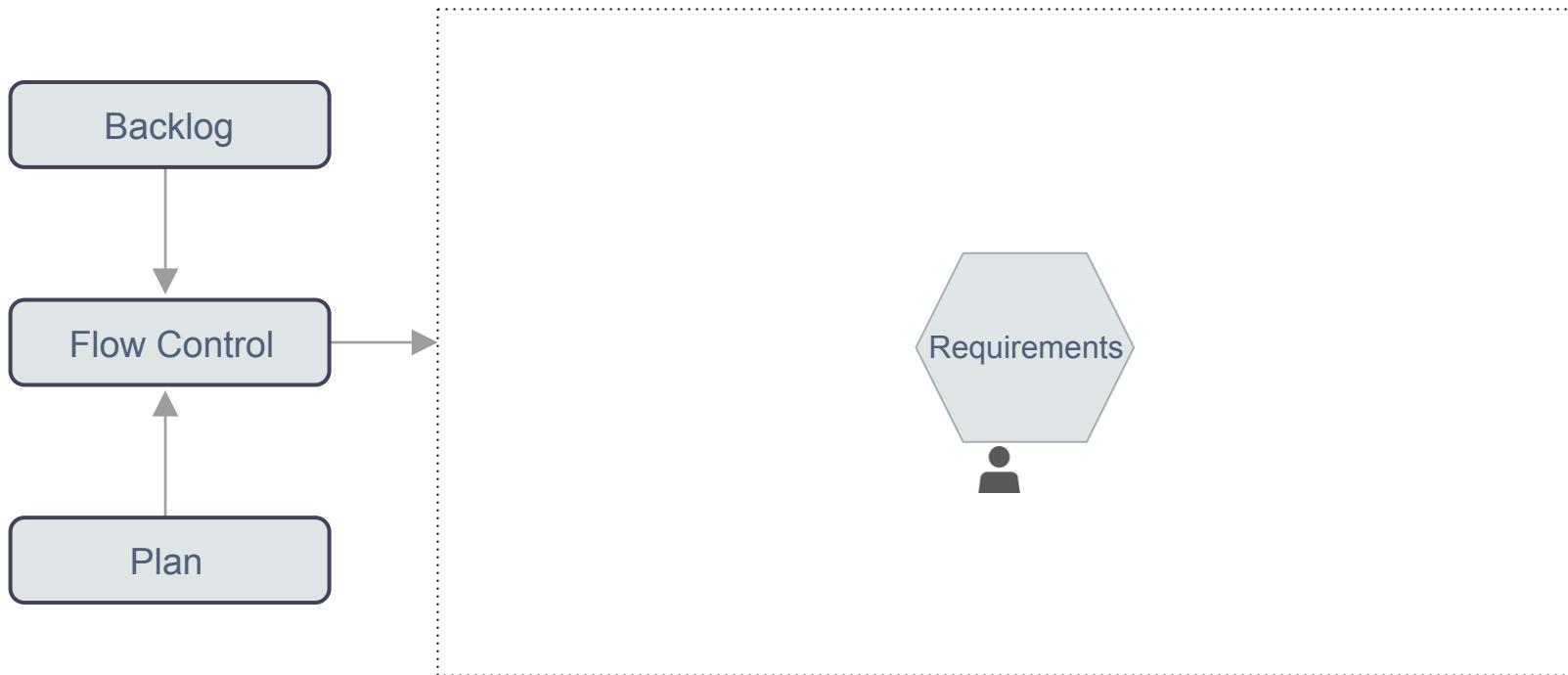
SOFTWARE AS A FACTORY



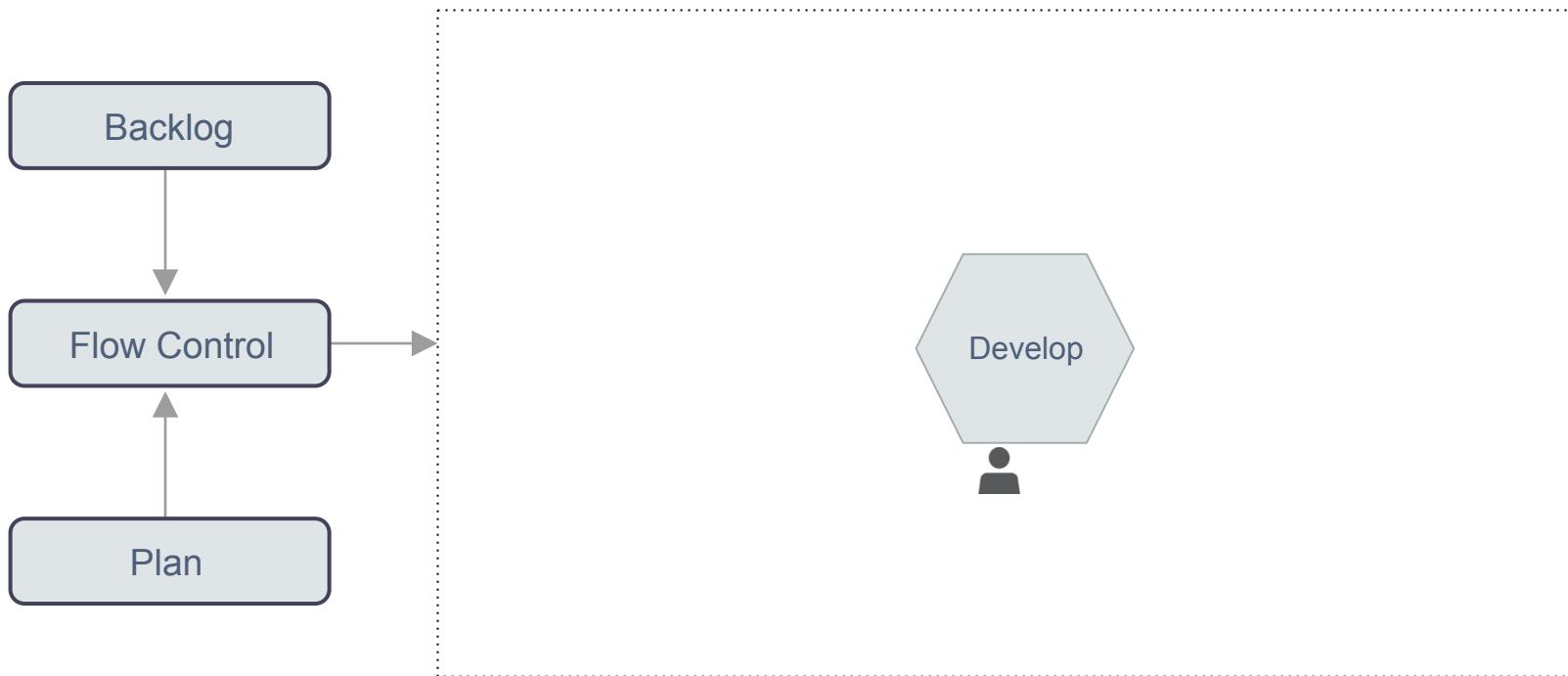
SOFTWARE AS A FACTORY



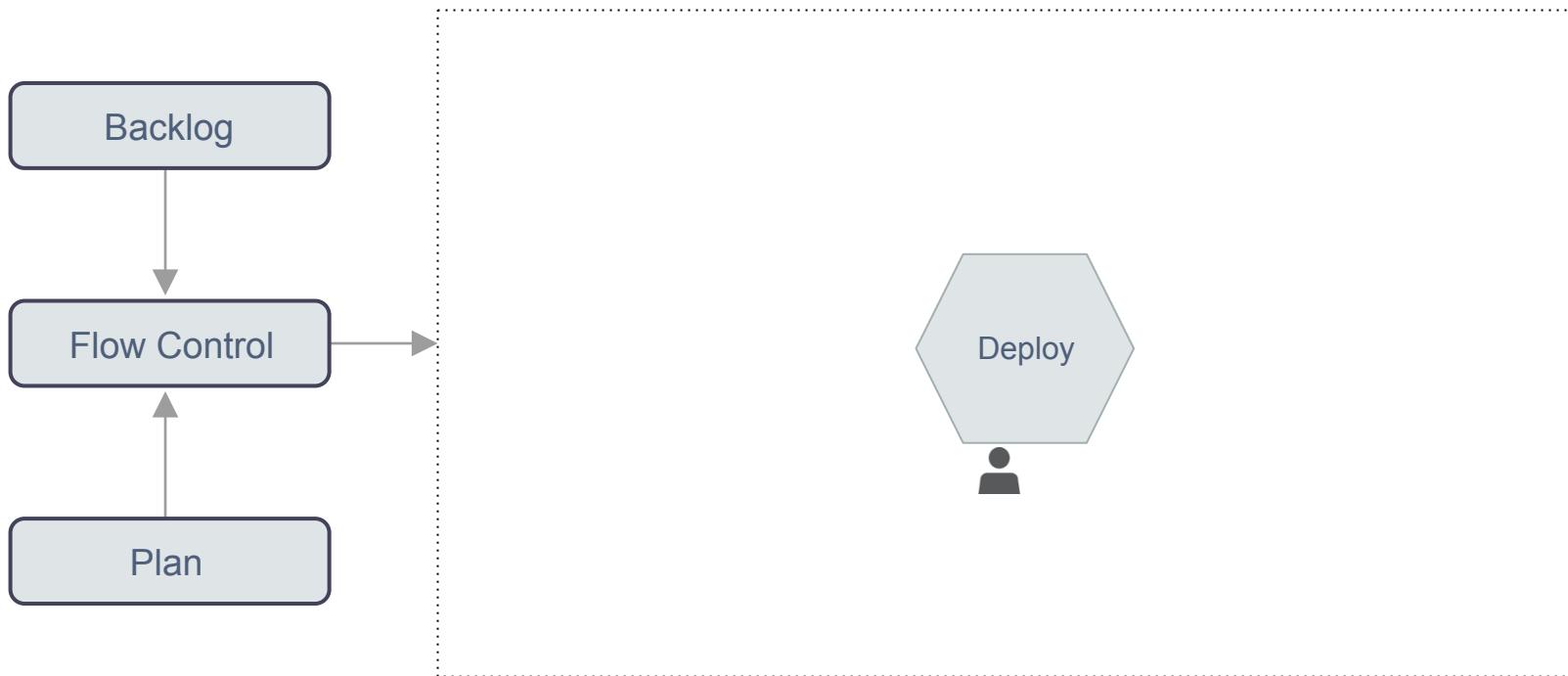
SOFTWARE AS A FACTORY



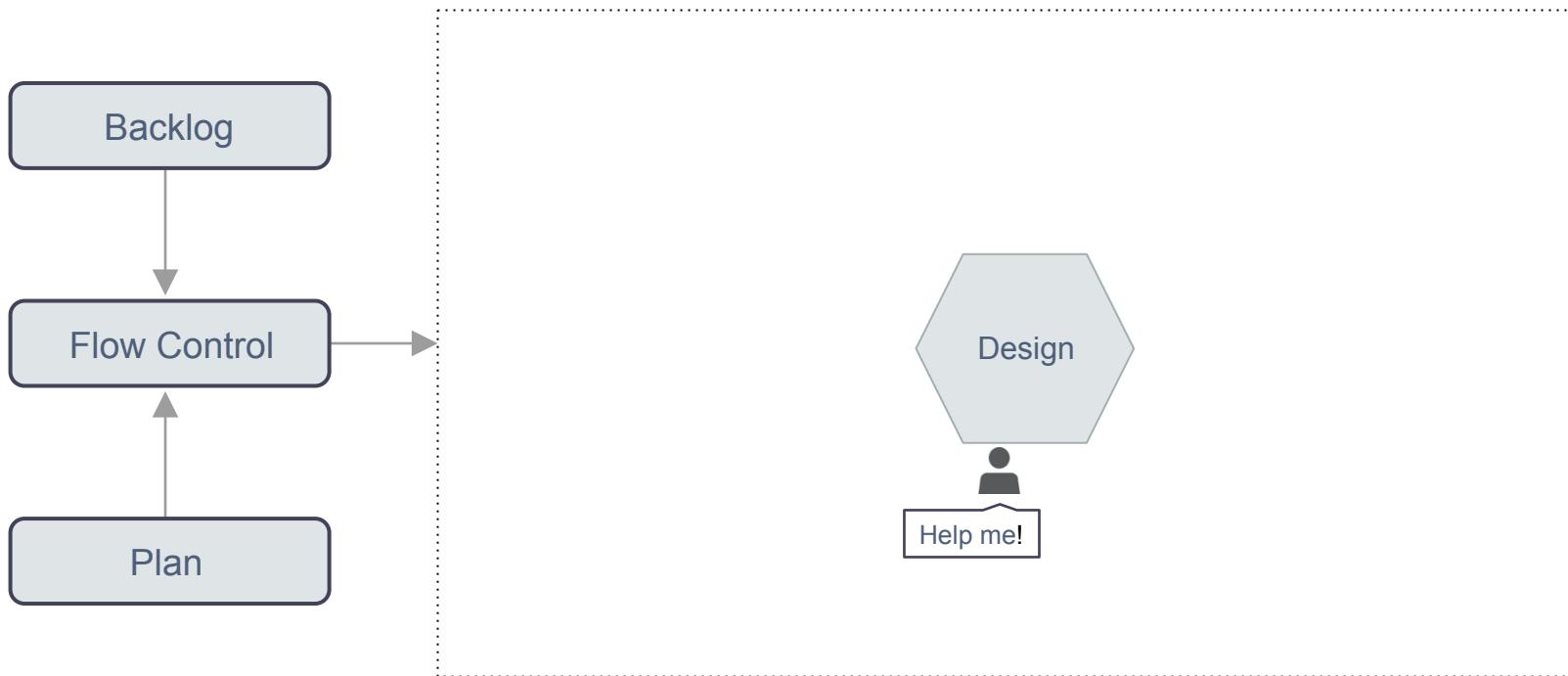
SOFTWARE AS A FACTORY



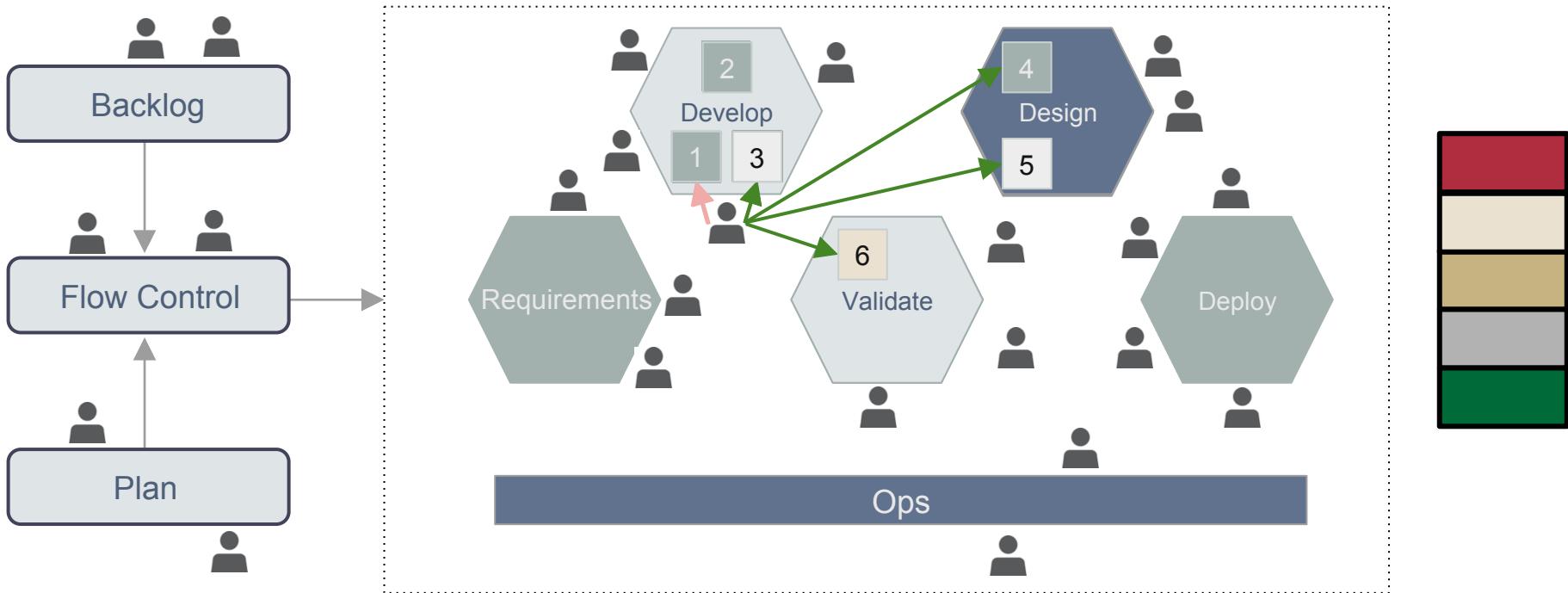
SOFTWARE AS A FACTORY



SOFTWARE AS A FACTORY



CONTEXT SWITCHES DEFINED



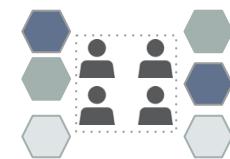
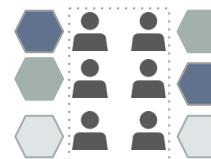
WE'VE GOT QUESTIONS



Should we eliminate all higher penalty context switches?



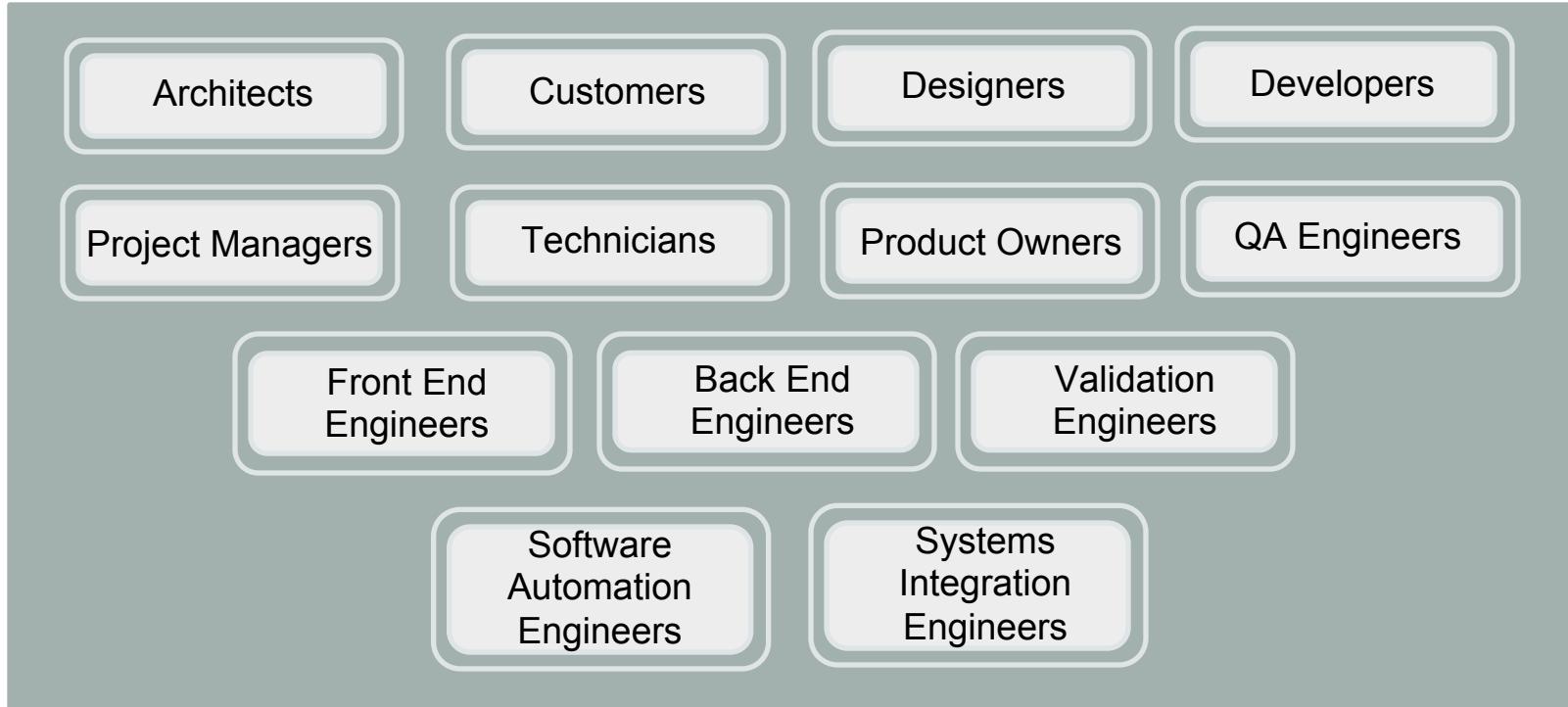
Should we train cross-functional teams or train cross-functional people?



Are some stations and roles easier to switch to than others?

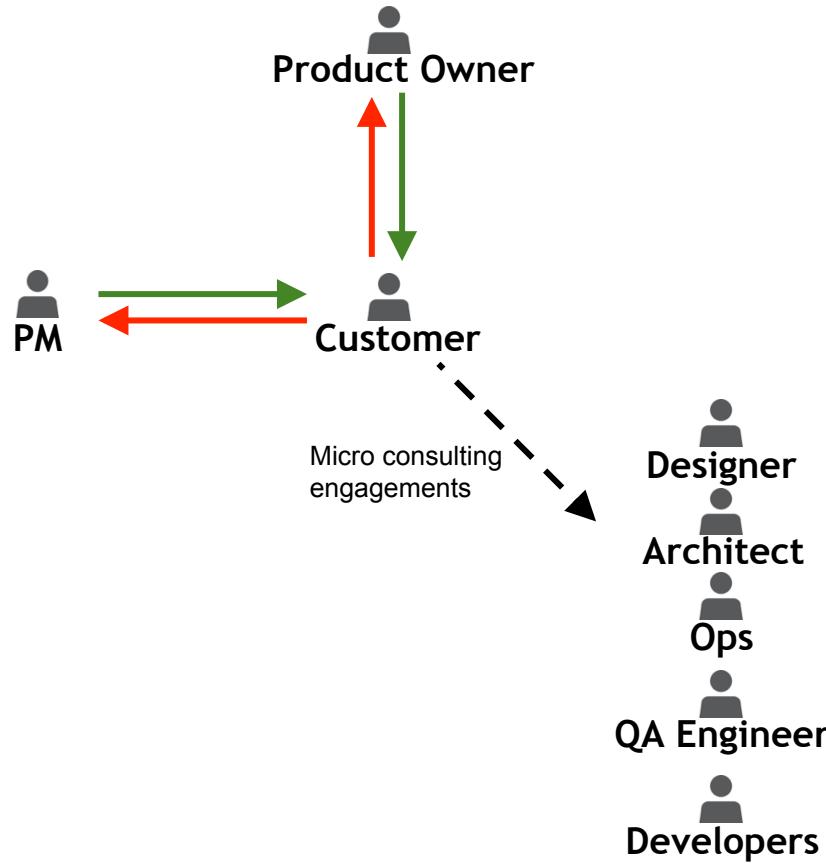
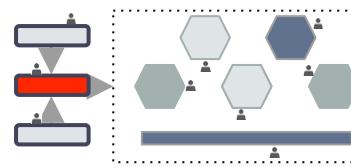
Do some roles understand other roles better than others?

OUR ROLES FOR OUR SOFTWARE INFOTAINMENT (IVI)



FLOW CONTROL STATION

IDEA TO WIP

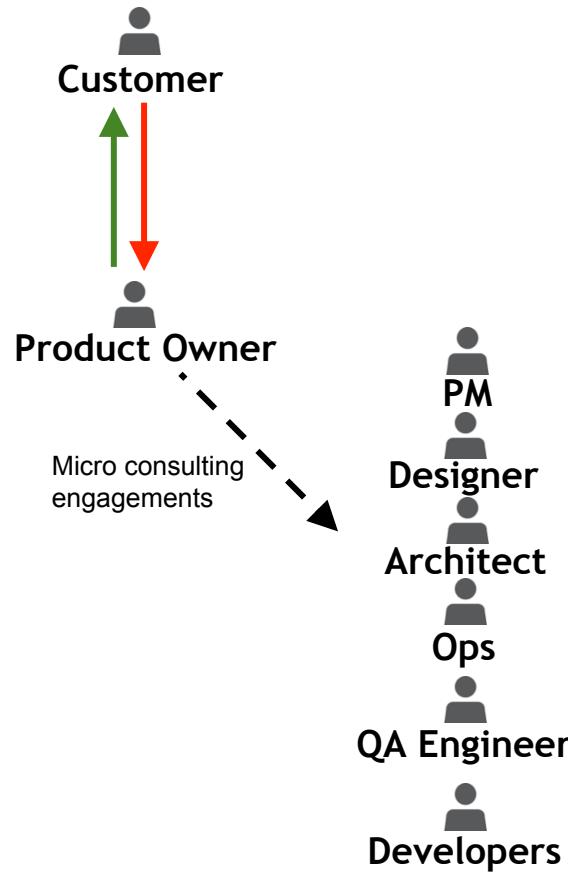
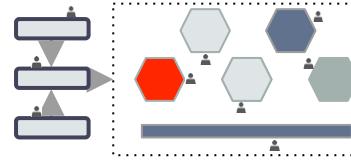


TO DO:

- Procure Budget
- Procure Environments
- Procure Resources
- Price Negotiations
- Release WIP
- ROI Calculation

REQUIREMENTS STATION

NEEDS/WANTS

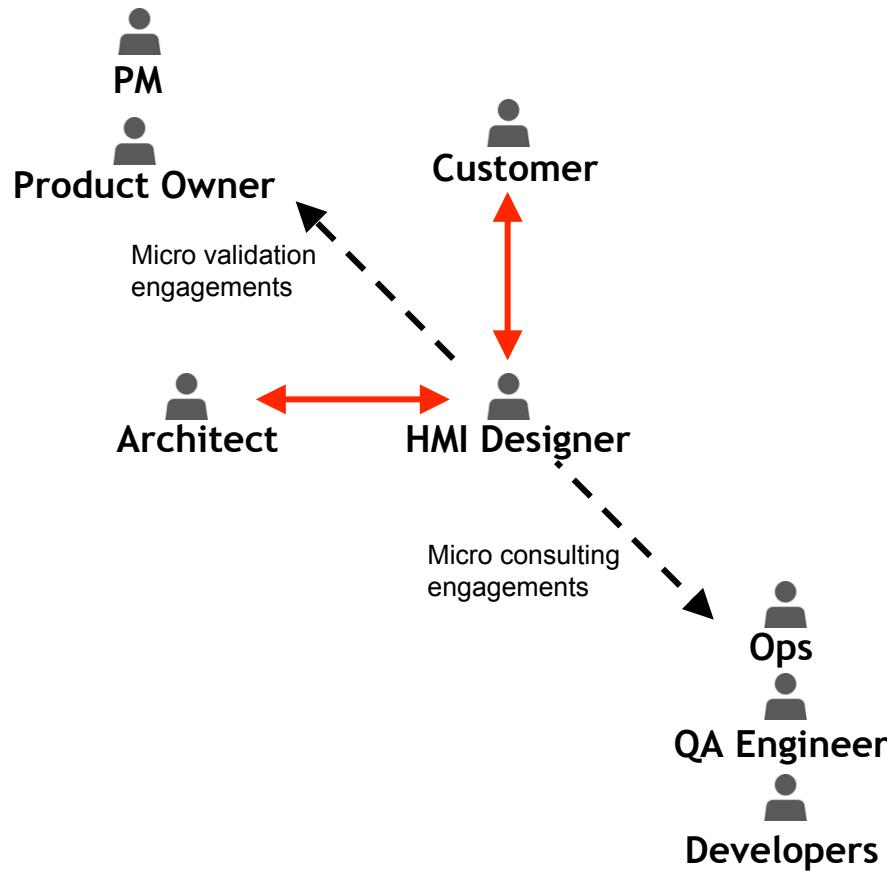
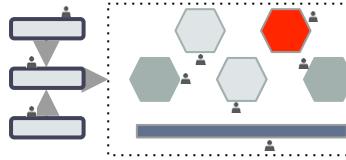


TO DO:

- Determine Functionality
- Determine Use Cases
- Determine User Stories
- Record all the things
- Capture Needs/Wants

DESIGN STATION

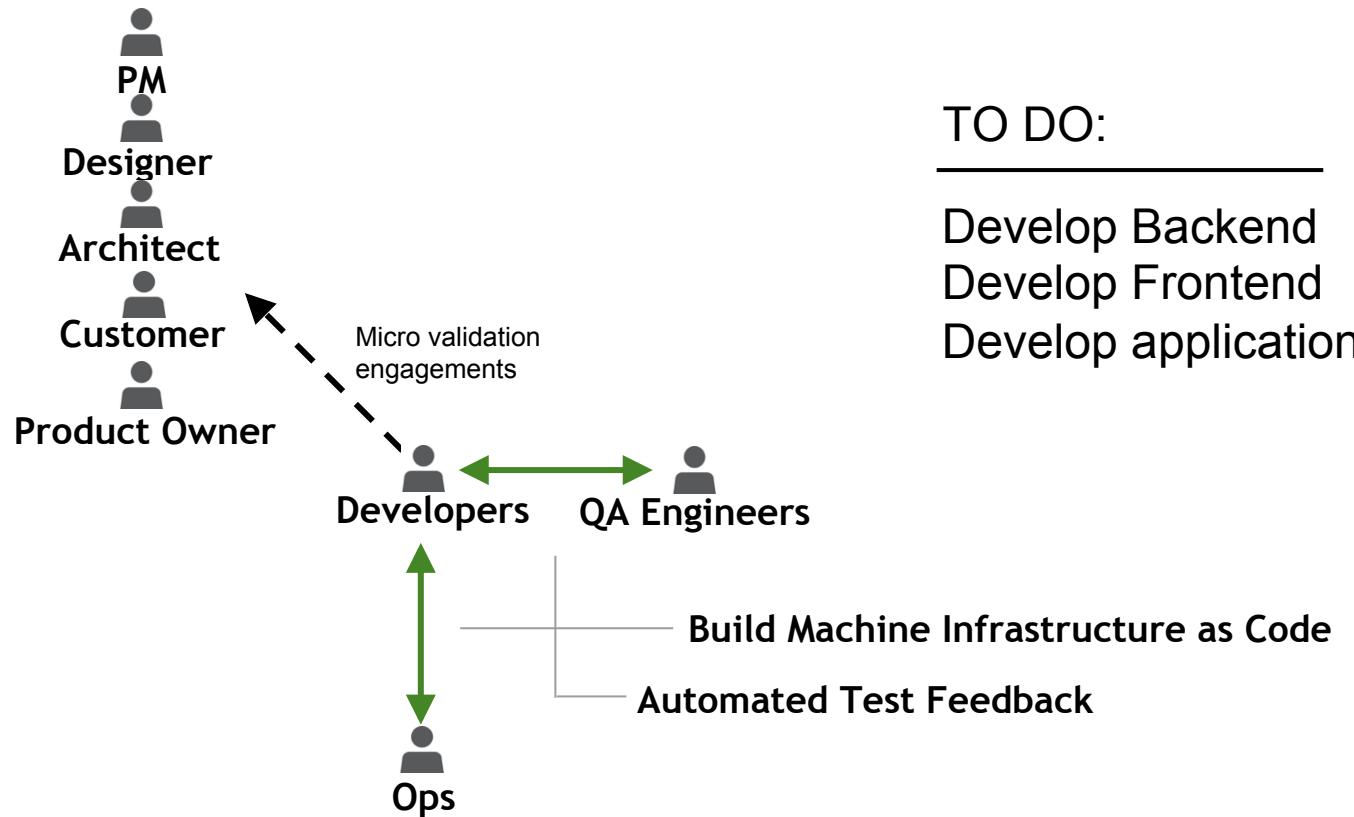
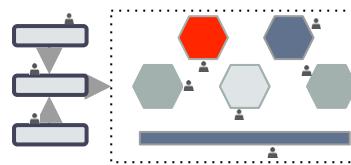
HOW SHOULD WE BUILD THIS



TO DO:

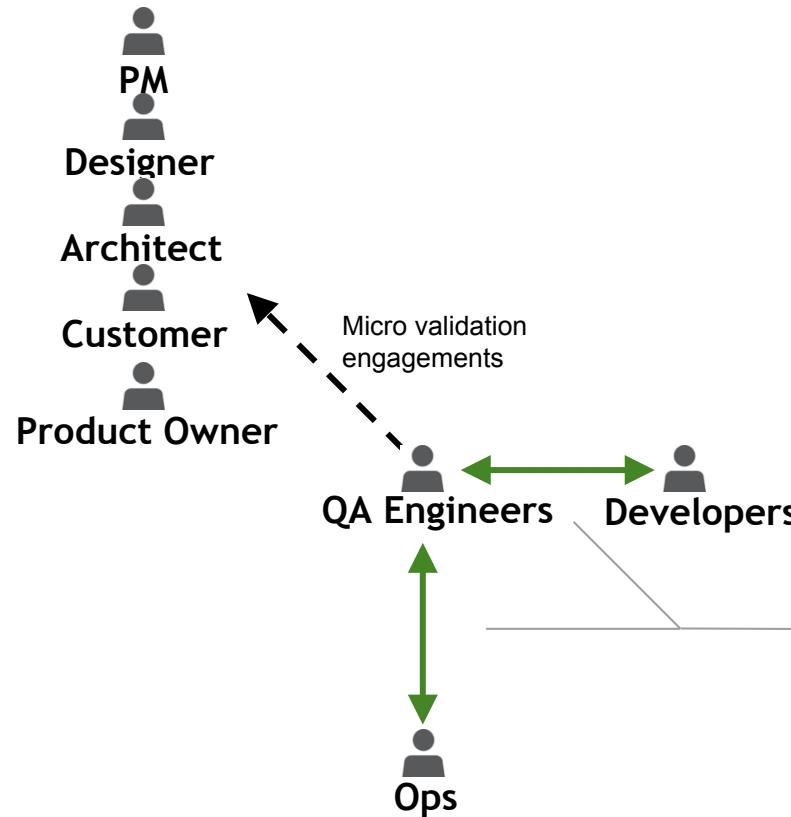
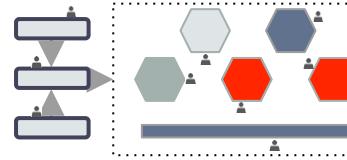
Sketch Wireframes
Usability Studies
Platform Architecture
App Architecture

DEVELOPMENT STATION THEORY TO IMPLEMENTATION



VALIDATE AND DEPLOY STATIONS

CAN WE SHIP THIS?

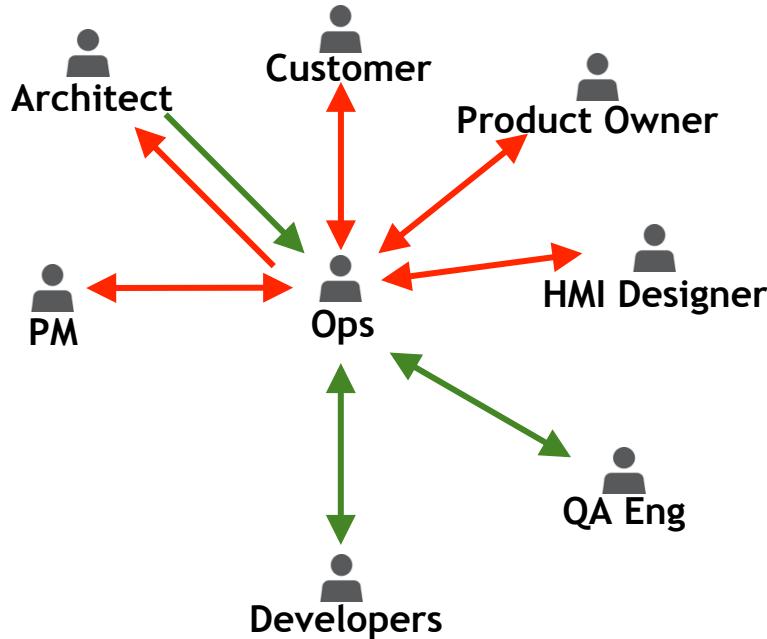
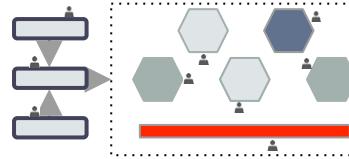


TO DO:

- Ensure Requirements are satisfied
- Verify rules were followed
- Ensure no deviations from quality thresholds
- Deploy Product

Virtualize and simulate production environment

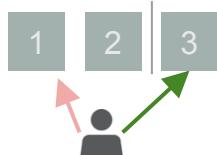
OPS STATION GOT SERVICES?



TO DO:

- Create Environments
- Ensure High Availability
- Workflow Automation
- Enable others to work efficiently

LESSONS LEARNED



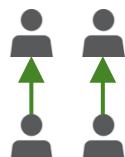
- Context switched tasks are mostly unplanned which should factor into capacity.
- Project maturity stage reflects on levels of engagement
- Some roles are in a perpetual state of higher priority interruptions or engagements



- Empathy increases if a close team member has an impediment they can fix (physical emotion)
- Cross-functional teams are more fruitful in team objectives and priority alignment



- Using the same or closely coupled toolset will create less friction in the more expensive switches
- Automation of manual tasks ease high penalty switches



- A culture of mentoring and training will increase the throughput of cross-functional teams
- Teams who factor into their capacity training will be more successful

**WE HAVE MORE PROBLEMS TO SOLVE
WE NEED YOUR HELP**



- ▷ Software embedded automation engineers
- ▷ ALM engineers
- ▷ Enterprise architects
- ▷ Solution engineers

Chris Hill
chill9@jaguarlandrover.com
linkedin.com/chrishillpdx



Thank you!