Industrial DevOps

"What are the barriers?"

Robin Yeman
Catalyst Campus
Robin.Yeman@catalystcampus.org

Dr. Suzette S. Johnson
Northrop Grumman Corporation
Suzette.Johnson@ngc.com

Robin Yeman

Chief Technical Officer
Catalyst Campus

Advisory Board
Project&Team

Suzette S. Johnson

NG Senior Fellow
Enterprise Lean-Agile Strategy
Northrop Grumman

Introductions

Robin Yeman

Suzette Johnson

Industrial DevSecOps Principles

1. **Visualize and organize around the value stream**
2. Multiple Horizons of Planning
3. **Base decisions on objective evidence of system state and performance**
4. **Architect for Scale, Modularity, and Serviceability**
5. Iterate / Reduce batch size / Get fast feedback
6. Cadence and Synchronization
7. Continuish Integration
8. Test Driven Development

"DevOps is a mixture of people, process, and technologies that provides a delivery pipeline enabling organizations to move both responsively and efficiently from concept to business outcome." - Robin Yeman

Alset's Current Situation

Alset Transport is fictitious company who produces vehicles to support assisted and autonomous driving in both the commercial and consumer markets.

New Federal DevOps Program Awarded to Alset

Autonomous Transportation Communication System (ATCS)

$5B in federal funding

Why
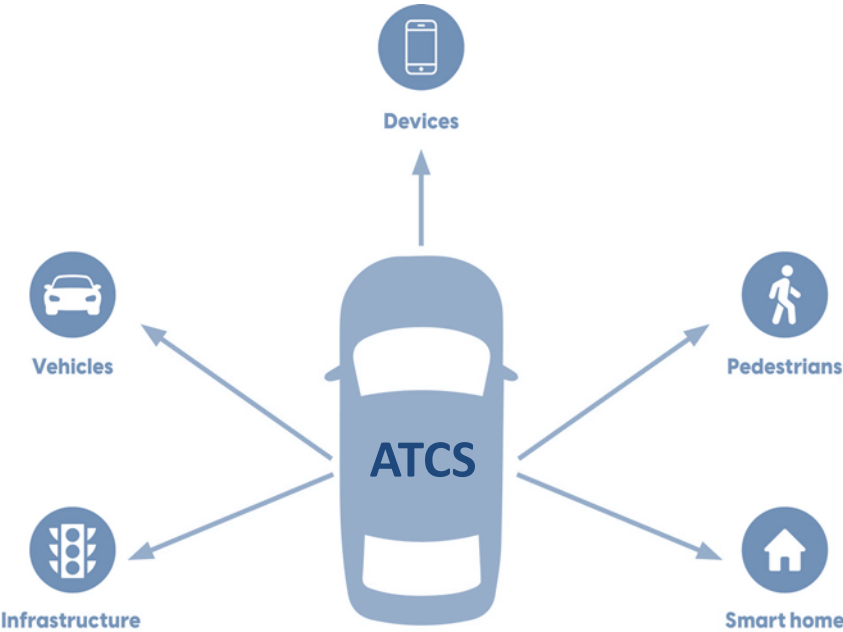
Decisions Made

Use Alset's existing functional org structure

We must get started quickly, we can't reorganize the entire company, but we will use IPTs for cross functional teams

Engineers to allocate all requirements to functions

We need to identify how much work we have by function to staff correctly

Use sprints to build architectural artifacts

We must understand the whole system and show progress, so we do not lose funding

Develop a detailed Integrated Master Schedule

The customer wants to know when we will be done, and we must bring together products from multiple suppliers

Hold a hiring event to staff 500 – 1000 positions

We must go fast to keep funding, domain knowledge is not that important

Create Detailed Statements of work for suppliers

We must hold feet to fire and manage scope

Start all features in program at once

We hired a lot of staff and need to keep everyone busy

Alset's Industrial DevSecOps Challenge

➢ What are barriers to Alset's transformation?

➢ What are recommended tactics?

Six Barriers

1. Challenges with the existing organizational structure

2. Lack of common language in the new way of working

3. Not understanding the Value Stream

4. Access to patterns to break down the system

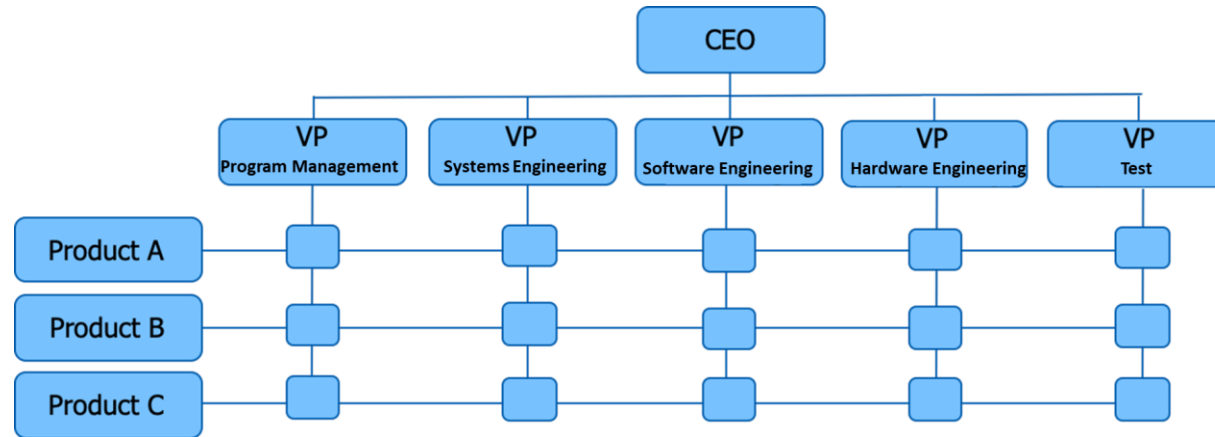5. Valuing exclusivity over inclusivity

6. Lack of Psychological Safety

Challenges with the existing organizational structure

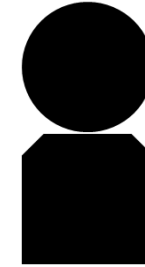*Barrier*

DevOps Coach
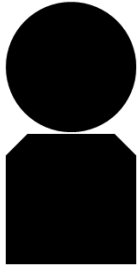
- Conway's Law
- Incentive mismatch
- Handoffs cause delays
- Reduce dependencies

Executive

- Specialization creates efficiency
- Clear roles and responsibilities
- Existing role descriptions
- Schools educate by function

Organizational chart:
- CEO
  - VP Program Management
  - VP Systems Engineering
  - VP Software Engineering
  - VP Hardware Engineering
  - VP Test
- Product A
- Product B
- Product C

Recommendation to the business

- Decide if you want to optimize for product delivery or individual specialization and efficiency
- Consider a dual operating structure to build synergies within the organization
- Conduct an impact analysis as part of the decision-making process
- Involve technical people in organization design of the team structure

Lack of common language in the new way of working
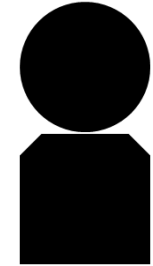
Barrier

DevOps Coach
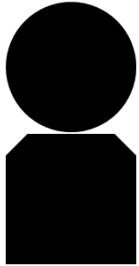
- Cross-functional teams reduce handoffs
- Working together drives innovation

Executive

- Cross-functional teams don't understand each other
- Language barrier reduces trust

Recommendation to the business:
- Agree upon a common language
- Identify terminology and lexicon
- Map them together and make it visible and accessible
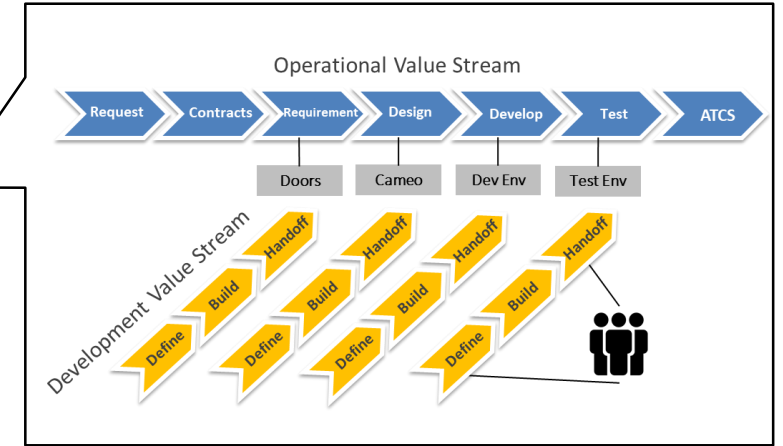- Create a Rosetta Stone when you need to align process to tools

Not understanding the Value Stream

Barrier

DevOps Coach
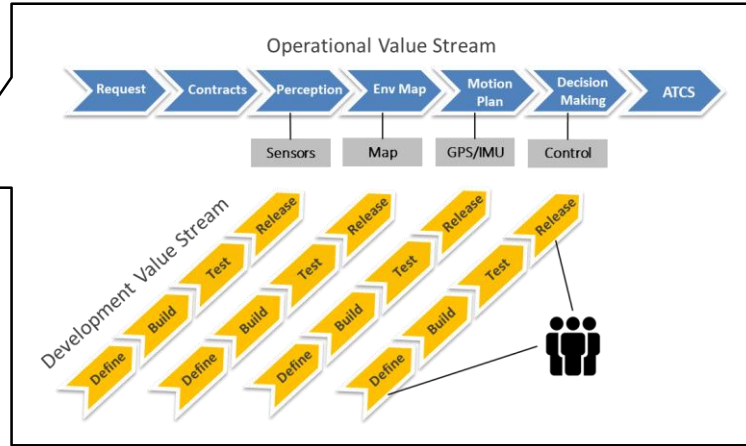
Executive

- Organize teams around value stream
- Make improvement metrics visible

- Organize Teams around value stream
- Use metrics to make decisions

Recommendation to the business

- Hold training and workshops on value stream mapping, this is often misunderstood
- Identify bottlenecks in your value stream and create improvement items (Current state, Improvement, New State)
- Use metrics to understand the impacts of change
- Use a modeling tool make the value stream visible
- Revisit regularly

How well do you understand your portfolio and value streams?

Access to patterns to design system

Barrier

DevOps Coach

Executive
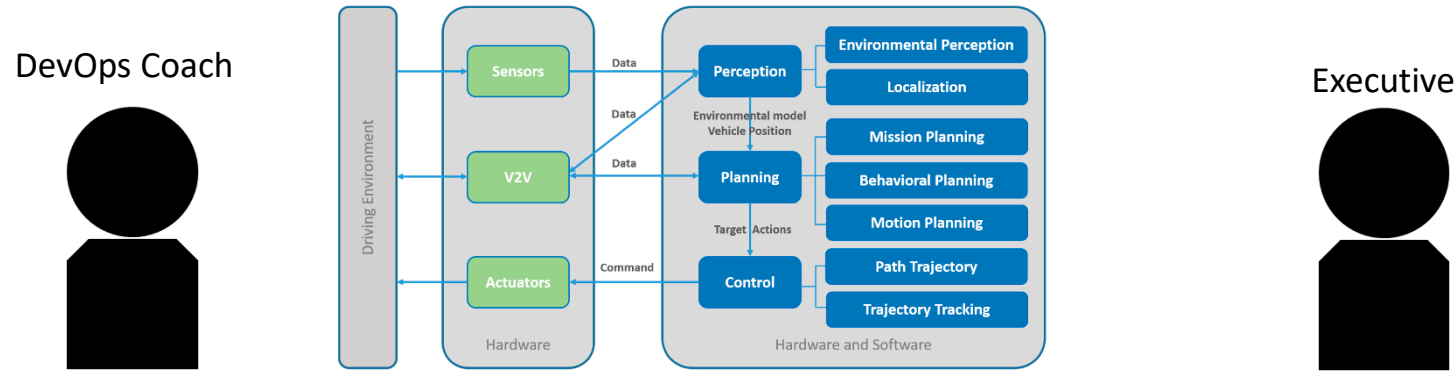
"Any organization that designs a system will inevitably produce a design whose structure is a copy of the organizations communication structure"

Conway's Law
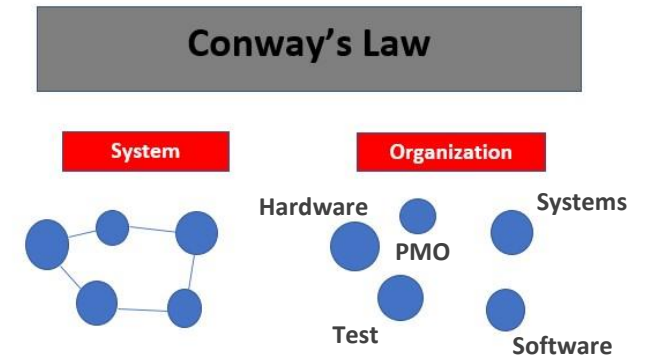
- Design systems around products and services

- If we have good documentation and clear roles and responsibilities functional based teams should work fine

Recommendations to the business
- Decompose your system into outcome-based products not by functional roles
- Shift to product teams versus project teams
- Architect to reduce handoffs
- Create small, cross functional, persistent teams that share a common set of practices and rules of engagement

Valuing exclusivity over inclusivity

Barrier

DevOps Coach
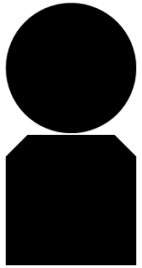
Executive

- Diverse culture, skills, and experience produce better products
- Inclusive environments have happier employees

- I have earned my position
- I have more knowledge
- I'm special

Recommendation to the business

- Apply a growth mindset
- Use a model for Decentralized Decision making
- Build safe environments where ideas are shared openly
- Ask questions and practice active listening
- Access to tools where teams can brainstorm and exchange ideas easily

"Diversity produces greater proportion of revenue from innovation than companies with below average diversity."   Forbes, 2020

Barrier Lack of Psychological Safety

DevOps Coach
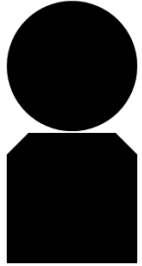
- Transparency is critical
- Failure needs to be an option

Executive

- We need to keep funding
- People want to see success
- Success allows you to move up

Recommendation to the business

- Lead by example. Be present.
- Assess your culture
- Build a Generative Culture
- Intent based leadership
- Consider re-evaluating performance appraisals from top down to bottom up and build leader competencies

"Psychological safety is a belief that one will not be punished or humiliated for speaking up with ideas, questions, concerns, or mistakes."   Amy Edmondson, Harvard Business School

Create an intentional culture

As Alset transitioned to apply Industrial DevOps across the ***organization***, it came to understand that many of the barriers to implementation stemmed from ***Alset's organizational culture***.

1. Mind-set Validation
2. Org Surrounding Support Structure
3. Technical Competency
4. Active Role-modeling

Alset Organizational Behavior Roadmap
Owner: Lean-Agile Leaders

	Q1	Q2
Mind-sets	Provide relevant external case-studies that drive the point to change	Develop and publish Internal case-studies to share internally (localized outcomes/success)
Structures	Permission to fail (ie provide awards for failure)	Team-based performance awards
Competency	Role based learning– acknowledge the gaps and build learning plans	Brown-bag lunch & learns
Role-modeling	Leadership commits and uses Lean-Agile language	Leadership participates in an Lean-Agile book club

QUESTIONS?