


# Failure Happens:

## Improving Incident Response In Enterprises

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Damon Edwards

RUN DECK

Ops Tools

dto SOLUTIONS

Ops Improvement

DevOps Consulting

DevOps Cafe With John Willis Damon Edwards

DEVOPS ENTERPRISE SUMMIT

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# Please note….

1. This is not a talk about monitoring

2. This talk is about the *enterprise*

**Let’s look at an (unfortunately) typical incident…**

[Get PDF here: https://rundeck.co/incident_lisa2017]

# Let’s condense that…

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# Take a DevOps approach to improvement…

RUNDECK

# 1. Use Lean thinking and analyze like any process

# What got in the way? (Wastes)

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Structured analysis building on DevOps adaptation of “7 deadly wastes” from Lean / Agile:

***PD - Partially Done***
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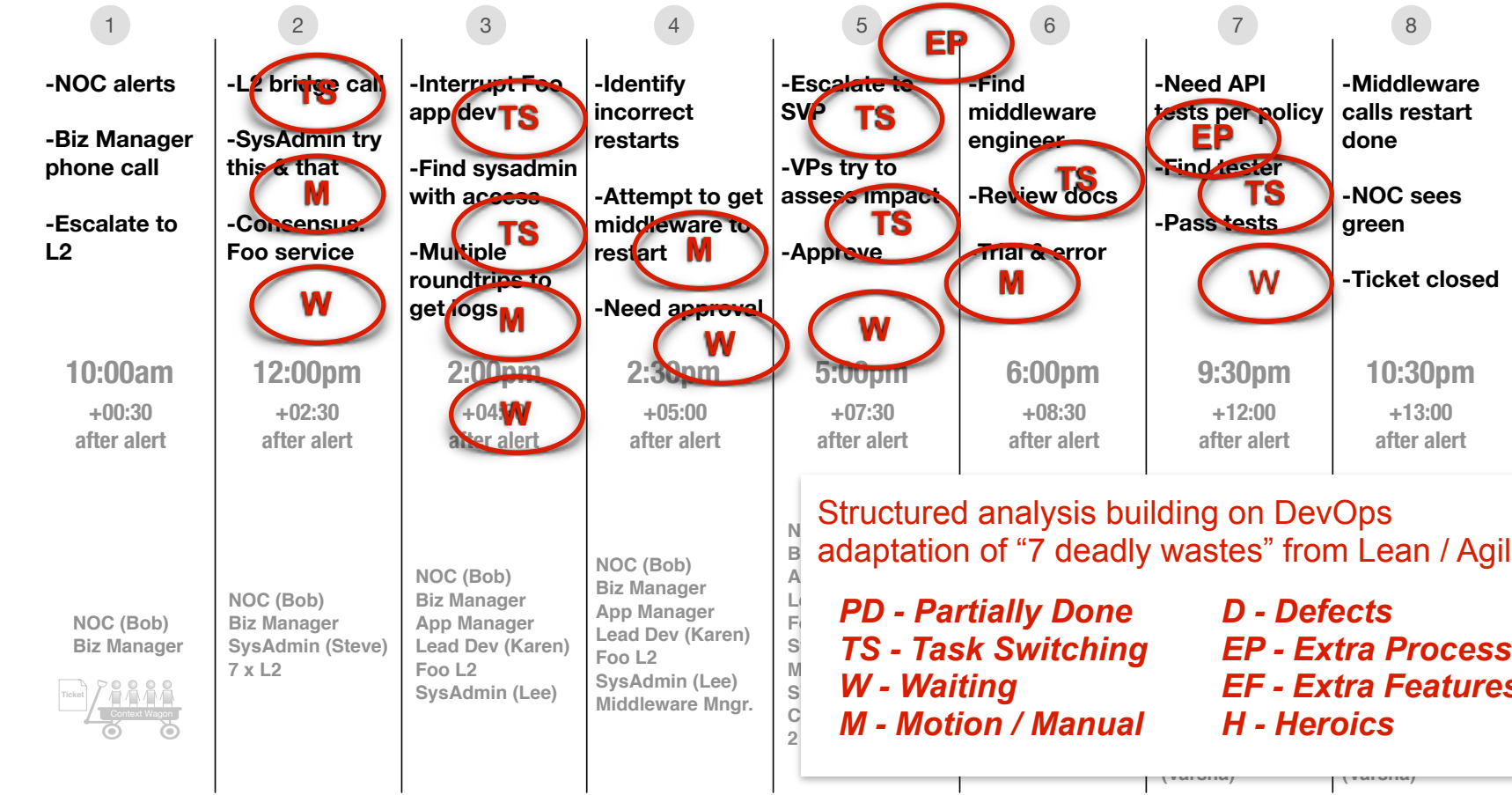
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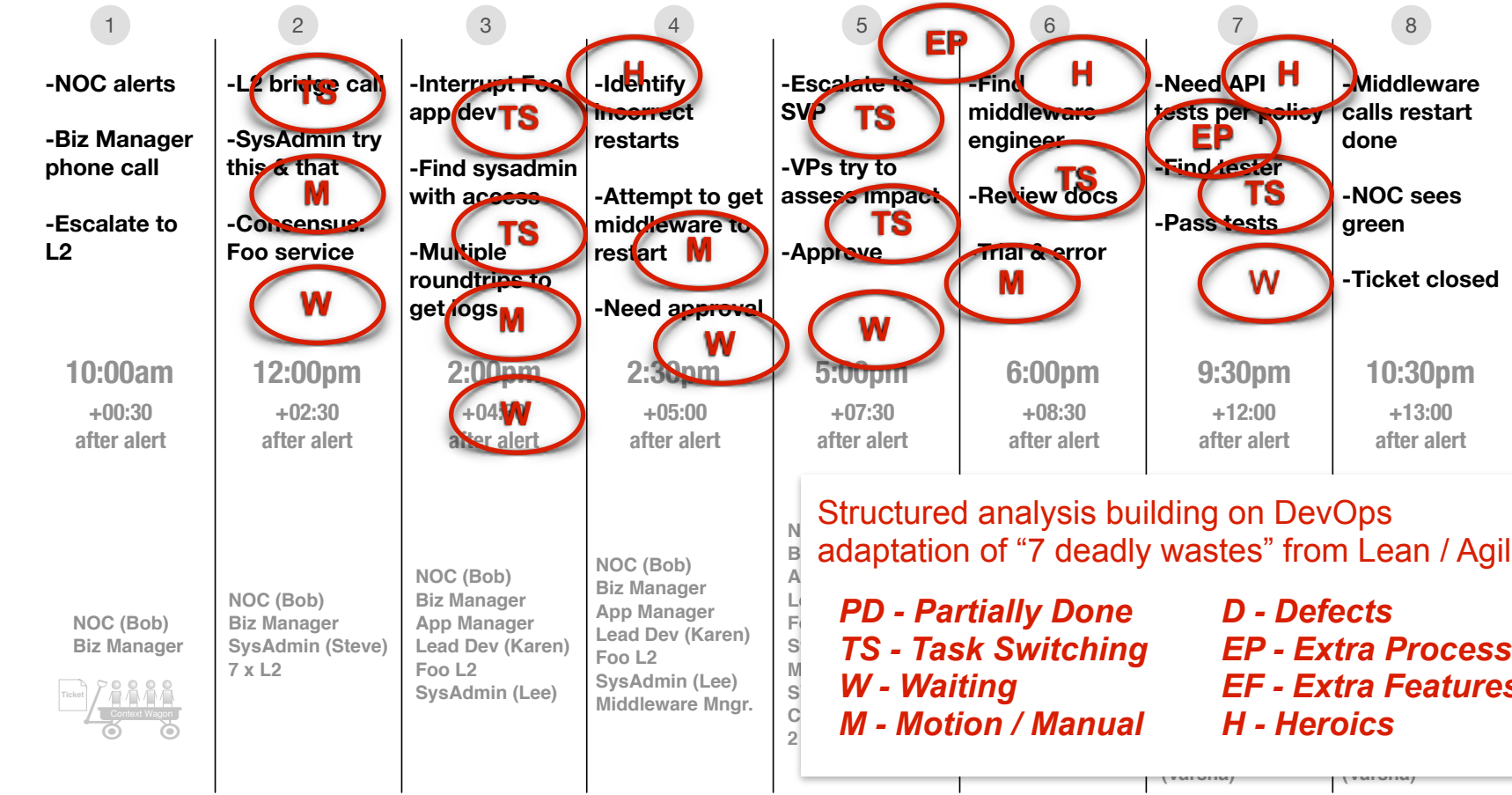
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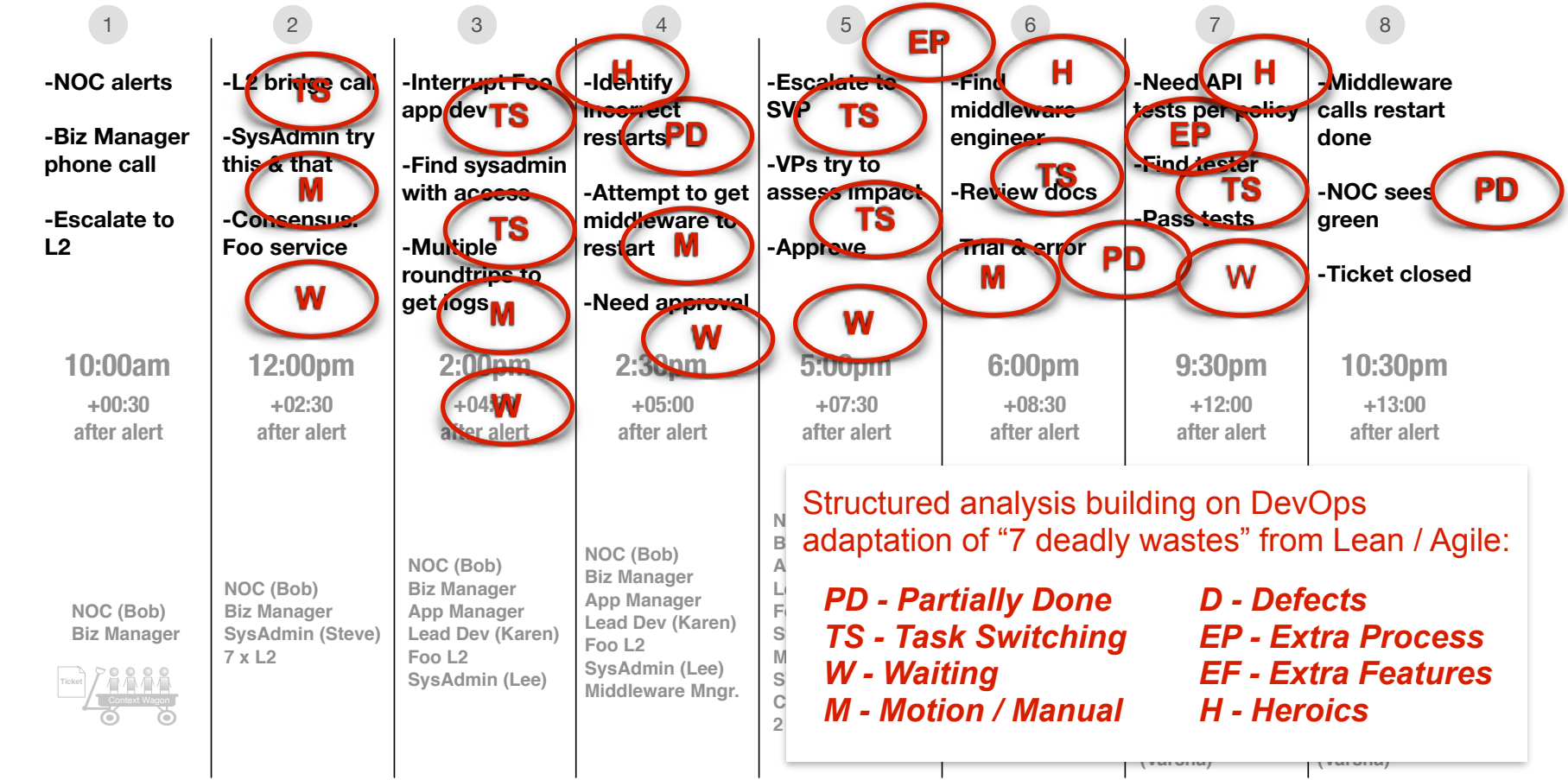
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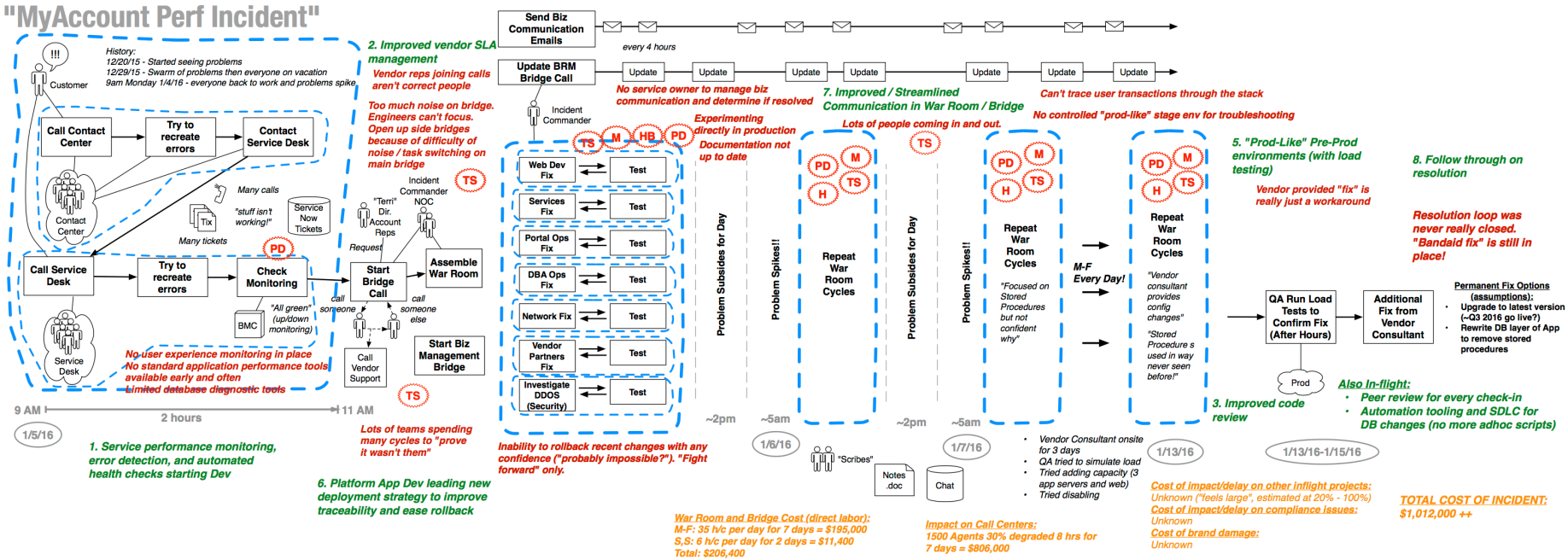

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# Tip: Try techniques like Value Stream Mapping



1. Use Lean thinking and analyze like any process
2. **Make sure you are measuring the right things**

# MTTD?

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| NOC (Bob)<br>Biz Manager<br> | NOC (Bob)<br>Biz Manager<br>SysAdmin (Steve)<br>7 x L2 | NOC (Bob)<br>Biz Manager<br>App Manager<br>Lead Dev (Karen)<br>Foo L2<br>SysAdmin (Lee) | NOC (Bob)<br>Biz Manager<br>App Manager<br>Lead Dev (Karen)<br>Foo L2<br>SysAdmin (Lee)<br>Middleware Mngr. | NOC (Bob)<br>Biz Manager<br>App Manager<br>Lead Dev (Karen)<br>Foo L2<br>SysAdmin (Lee)<br>Middleware Mngr.<br>SVP<br>Chief of Staff<br>2 x Tech VP | NOC (Bob)<br>Biz Manager<br>App Manager<br>Lead Dev (Karen)<br>Foo L2<br>SysAdmin (Lee)<br>Middleware Mngr.<br>SVP<br>Chief of Staff<br>2 x Tech VP<br>Middleware (Scott) | NOC (Bob)<br>Biz Manager<br>App Manager<br>Lead Dev (Karen)<br>Foo L2<br>SysAdmin (Lee)<br>Middleware Mngr.<br>SVP<br>Chief of Staff<br>2 x Tech VP<br>Middleware (Scott)<br>Cust. Engage. (Varsha) | NOC (Bob)<br>Biz Manager<br>App Manager<br>Lead Dev (Karen)<br>Foo L2<br>SysAdmin (Lee)<br>Middleware Mngr.<br>SVP<br>Chief of Staff<br>2 x Tech VP<br>Middleware (Scott)<br>Cust. Engage. (Varsha) |

# MTTR?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
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Restore?



# MTTR?

DEV

Repair!

Restore?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
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# MTTR?

## Restore is good. Repair (fix) is ultimate measure.

DEV

**Repair!**

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**Restore?**



# Cost?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
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| HC: 2 | HC: 9 | HC: 2 | HC: 3 | HC: 4 | HC: 1.5 | HC: 1.5 | HC: 1.5 |
| NOC (Bob)<br>Biz Manager | NOC (Bob)<br>Biz Manager<br>SysAdmin (Steve)<br>7 x L2 | NOC (Bob)<br>Biz Manager<br>App Manager<br>Lead Dev (Karen)<br>Foo L2<br>SysAdmin (Lee) | NOC (Bob)<br>Biz Manager<br>App Manager<br>Lead Dev (Karen)<br>Foo L2<br>SysAdmin (Lee)<br>Middleware Mngr. | NOC (Bob)<br>Biz Manager<br>App Manager<br>Lead Dev (Karen)<br>Foo L2<br>SysAdmin (Lee)<br>Middleware Mngr.<br>SVP<br>Chief of Staff<br>2 x Tech VP | NOC (Bob)<br>Biz Manager<br>App Manager<br>Lead Dev (Karen)<br>Foo L2<br>SysAdmin (Lee)<br>Middleware Mngr.<br>SVP<br>Chief of Staff<br>2 x Tech VP<br>Middleware (Scott) | NOC (Bob)<br>Biz Manager<br>App Manager<br>Lead Dev (Karen)<br>Foo L2<br>SysAdmin (Lee)<br>Middleware Mngr.<br>SVP<br>Chief of Staff<br>2 x Tech VP<br>Middleware (Scott)<br>Cust. Engage. (Varsha) | NOC (Bob)<br>Biz Manager<br>App Manager<br>Lead Dev (Karen)<br>Foo L2<br>SysAdmin (Lee)<br>Middleware Mngr.<br>SVP<br>Chief of Staff<br>2 x Tech VP<br>Middleware (Scott)<br>Cust. Engage. (Varsha) |



# Cost?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
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| <br>**Context: 2** | **Context: 10** | **Context: 6** | **Context: 7** | **Context: 10** | **Context: 12** | **Context: 13** | **Context: 13** |

# Cost? Don't underestimate the expense of context switching!

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
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| NOC (Bob)<br>Biz Manager | NOC (Bob)<br>Biz Manager<br>SysAdmin (Steve)<br>7 x L2 | NOC (Bob)<br>Biz Manager<br>App Manager<br>Lead Dev (Karen)<br>Foo L2<br>SysAdmin (Lee) | NOC (Bob)<br>Biz Manager<br>App Manager<br>Lead Dev (Karen)<br>Foo L2<br>SysAdmin (Lee) | NOC (Bob)<br>Biz Manager<br>App Manager<br>Lead Dev (Karen)<br>Foo L2<br>SysAdmin (Lee)<br>Middleware Mngr.<br>SVP<br>Chief of Staff<br>2 x Tech VP | NOC (Bob)<br>Biz Manager<br>App Manager<br>Lead Dev (Karen)<br>Foo L2<br>SysAdmin (Lee)<br>Middleware Mngr.<br>SVP<br>Chief of Staff<br>2 x Tech VP<br>Middleware (Scott) | NOC (Bob)<br>Biz Manager<br>App Manager<br>Lead Dev (Karen)<br>Foo L2<br>SysAdmin (Lee)<br>Middleware Mngr.<br>SVP<br>Chief of Staff<br>2 x Tech VP<br>Middleware (Scott)<br>Cust. Engage. (Varsha) | NOC (Bob)<br>Biz Manager<br>App Manager<br>Lead Dev (Karen)<br>Foo L2<br>SysAdmin (Lee)<br>Middleware Mngr.<br>SVP<br>Chief of Staff<br>2 x Tech VP<br>Middleware (Scott)<br>Cust. Engage. (Varsha) |
| **Context: 2** | **Context: 10** | **Context: 6** | **Context: 7** | **Context: 10** | **Context: 12** | **Context: 13** | **Context: 13** |

1. Use Lean thinking and analyze like any process
2. Make sure you are measuring the right things
3. **“Shift Left” control and decision making**

RUNDECK

# Shift-Left

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| -NOC alerts<br><br>-Biz Manager phone call<br><br>-Escalate to L2 | -L2 bridge call<br><br>-SysAdmin try this & that<br><br>-Consensus: Foo service | -Interrupt Foo app dev<br><br>-Find sysadmin with access<br><br>-Multiple roundtrips to get logs | -Identify incorrect restarts<br><br>-Attempt to get middleware to restart<br><br>-Need approval | -Escalate to SVP<br><br>-VPs try to assess impact<br><br>-Approve | -Find middleware engineer<br><br>-Review docs<br><br>-Trial & error | -Need API tests per policy<br><br>-Find tester<br><br>-Pass tests | -Middleware calls restart done<br><br>-NOC sees green<br><br>-Ticket closed |
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# Shift-Left

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| **Solve here** | **or here** | | | | | | |
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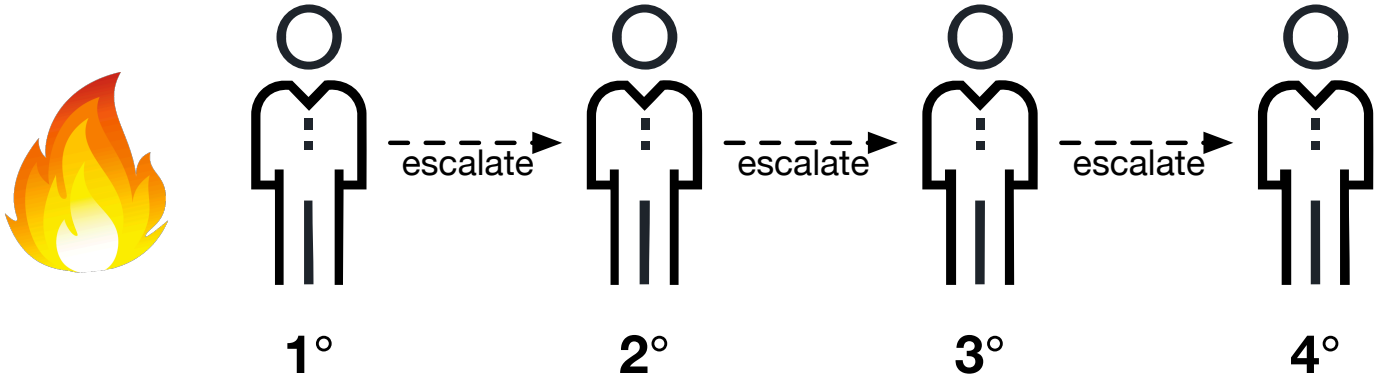


# Shift-Left

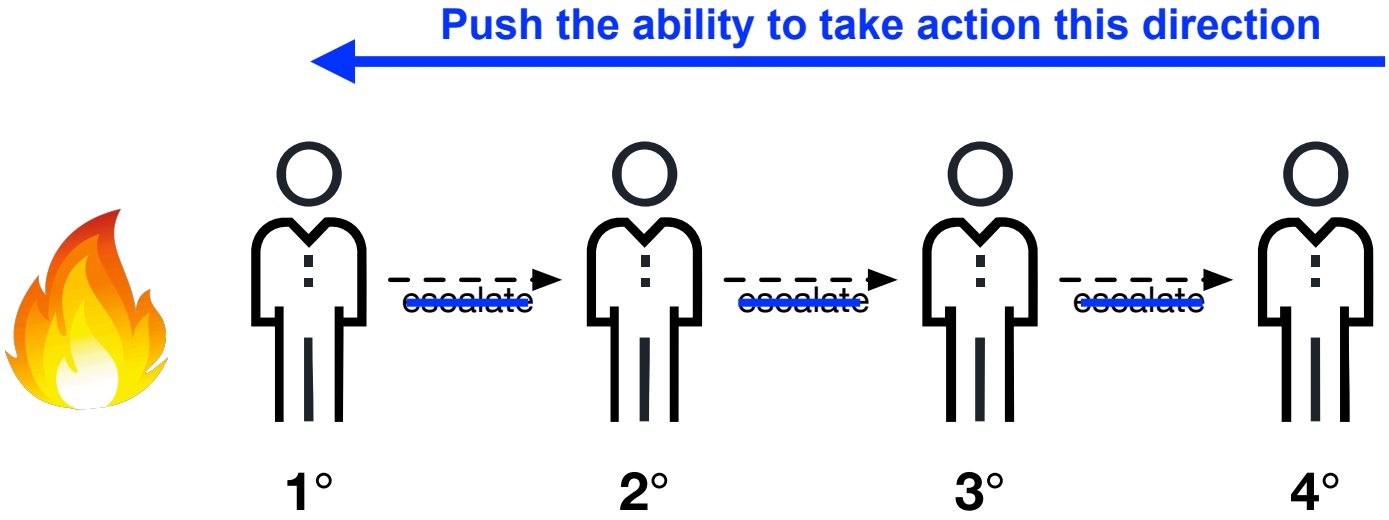
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| **Solve here** | **or here** | | | | **NOT HERE** | | |
| 10:00am<br>+00:30<br>after alert | 12:00pm<br>+02:30<br>after alert | 2:00pm<br>+04:30<br>after alert | 2:30pm<br>+05:00<br>after alert | 5:00pm<br>+07:30<br>after alert | 6:00pm<br>+08:30<br>after alert | 9:30pm<br>+12:00<br>after alert | 10:30pm<br>+13:00<br>after alert |
| NOC (Bob)<br>Biz Manager | NOC (Bob)<br>Biz Manager<br>SysAdmin (Steve)<br>7 x L2 | NOC (Bob)<br>Biz Manager<br>App Manager<br>Lead Dev (Karen)<br>Foo L2<br>SysAdmin (Lee) | NOC (Bob)<br>Biz Manager<br>App Manager<br>Lead Dev (Karen)<br>Foo L2<br>SysAdmin (Lee)<br>Middleware Mngr. | NOC (Bob)<br>Biz Manager<br>App Manager<br>Lead Dev (Karen)<br>Foo L2<br>SysAdmin (Lee)<br>Middleware Mngr.<br>SVP<br>Chief of Staff<br>2 x Tech VP | NOC (Bob)<br>Biz Manager<br>App Manager<br>Lead Dev (Karen)<br>Foo L2<br>SysAdmin (Lee)<br>Middleware Mngr.<br>SVP<br>Chief of Staff<br>2 x Tech VP<br>Middleware (Scott) | NOC (Bob)<br>Biz Manager<br>App Manager<br>Lead Dev (Karen)<br>Foo L2<br>SysAdmin (Lee)<br>Middleware Mngr.<br>SVP<br>Chief of Staff<br>2 x Tech VP<br>Middleware (Scott)<br>Cust. Engage. (Varsha) | NOC (Bob)<br>Biz Manager<br>App Manager<br>Lead Dev (Karen)<br>Foo L2<br>SysAdmin (Lee)<br>Middleware Mngr.<br>SVP<br>Chief of Staff<br>2 x Tech VP<br>Middleware (Scott)<br>Cust. Engage. (Varsha) |



# Empower those closest to the issue

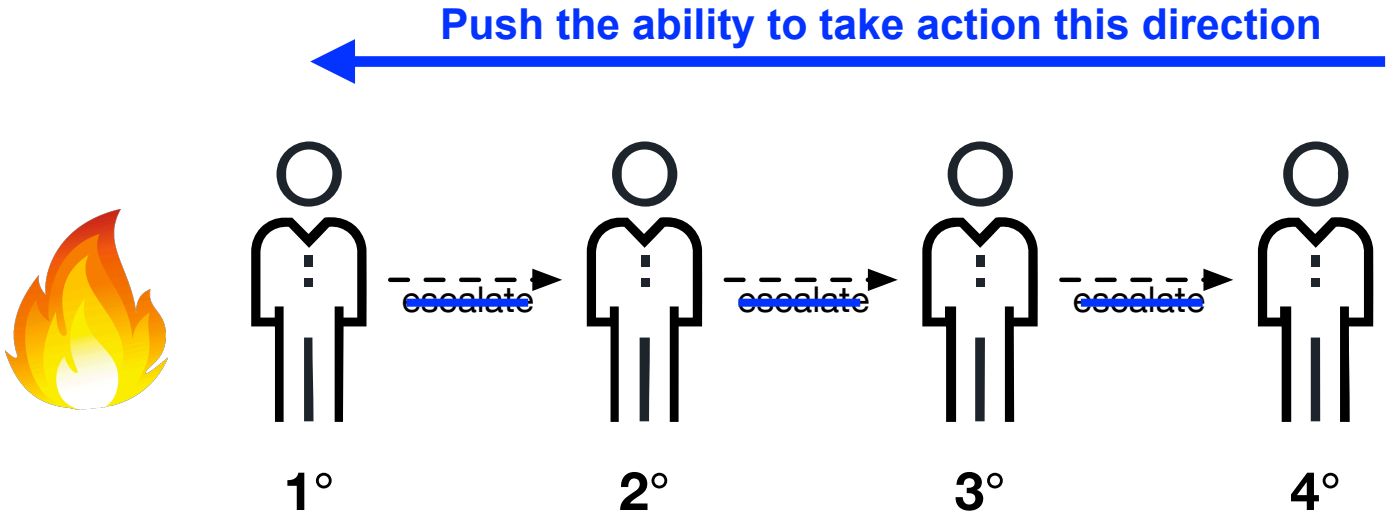


# Empower those closest to the issue




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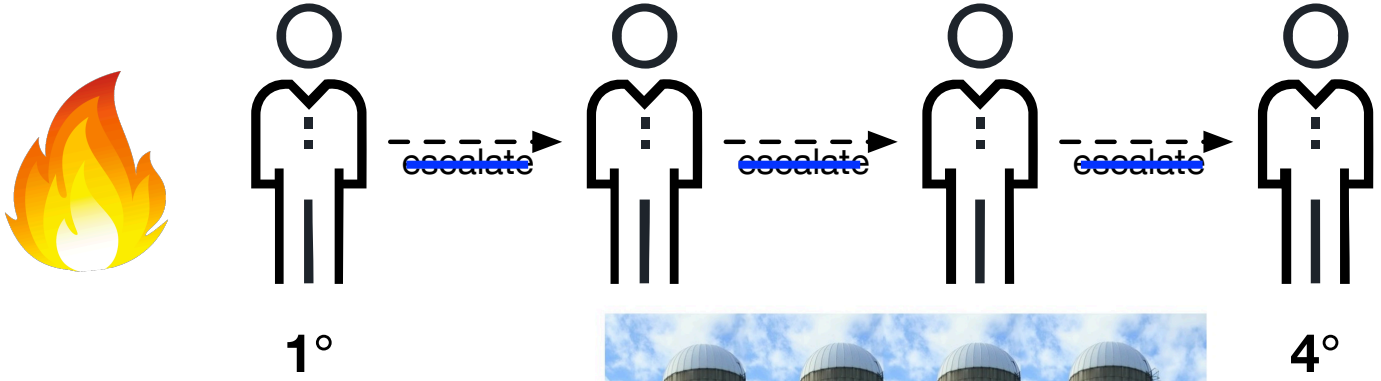



**But what gets in the way?**

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# Empower those closest to the issue

Push the ability to take action this direction



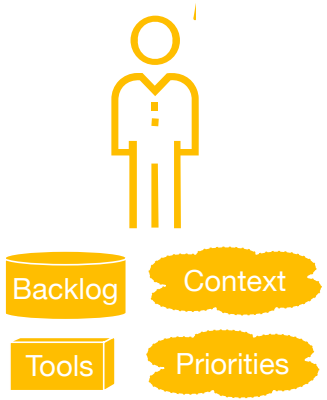

But what gets in the way?




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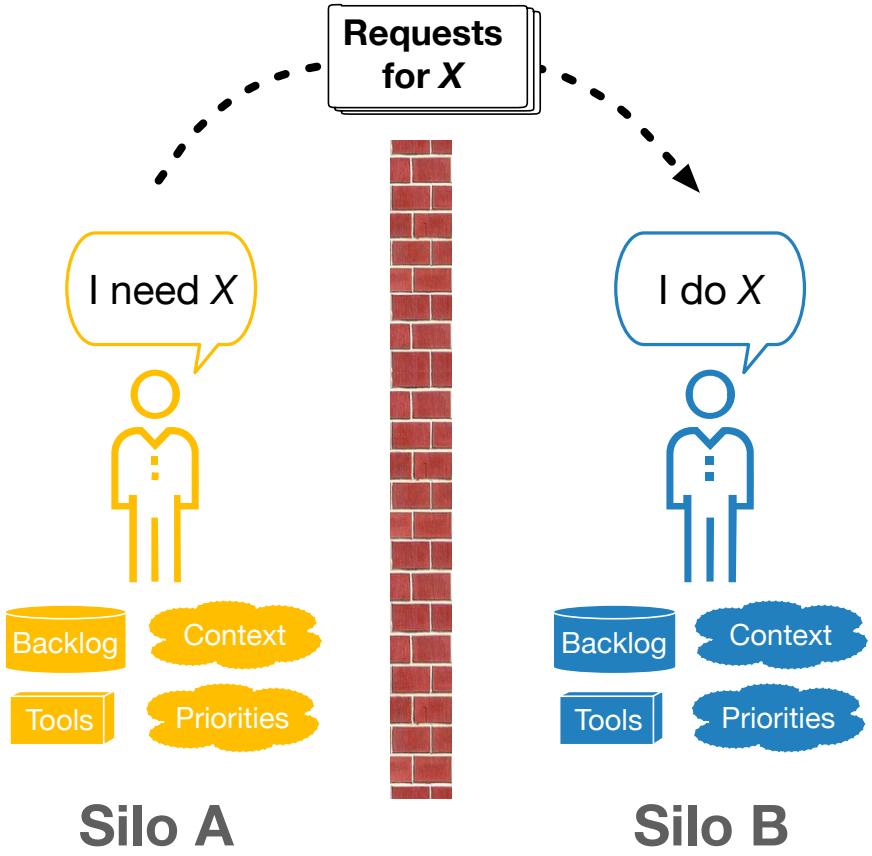
1. Use Lean thinking and analyze like any process
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3. “Shift Left” control and decision making
4. **Get rid of silos**

# Silos ruin everything



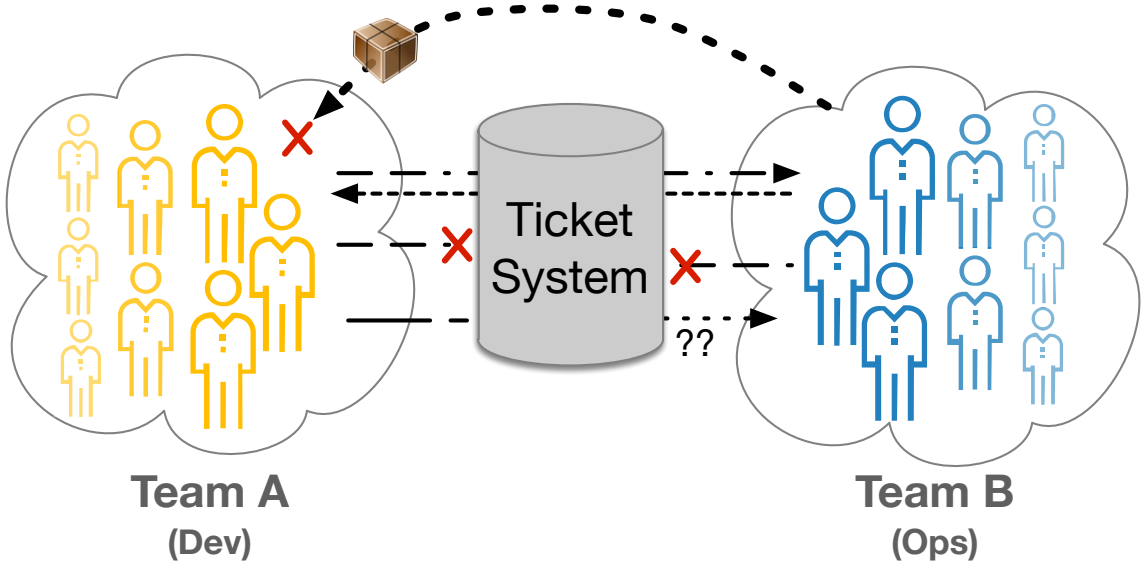

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# Silos ruin everything

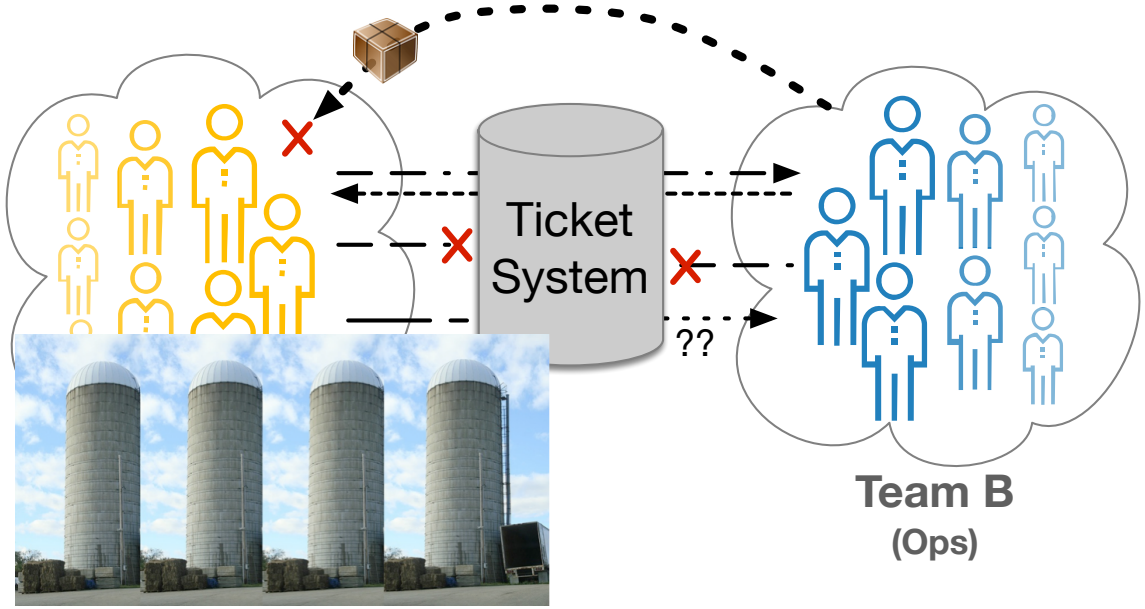



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# Ticket-Driven Request Queues Are Best Indicator of Silos



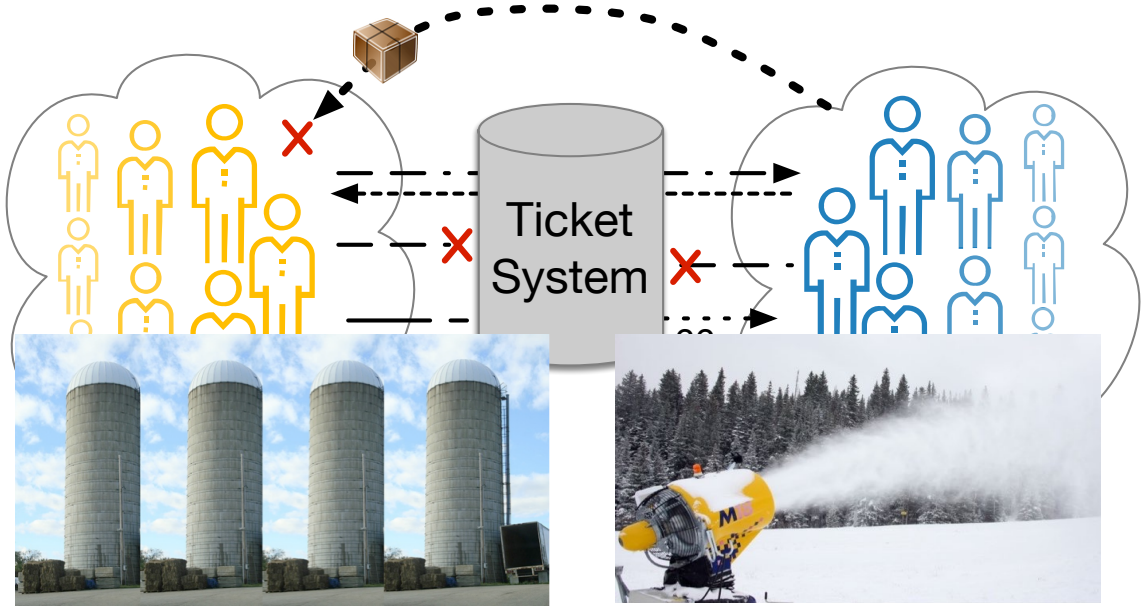
# Ticket-Driven Request Queues Are Best Indicator of Silos






***Silo Builder***

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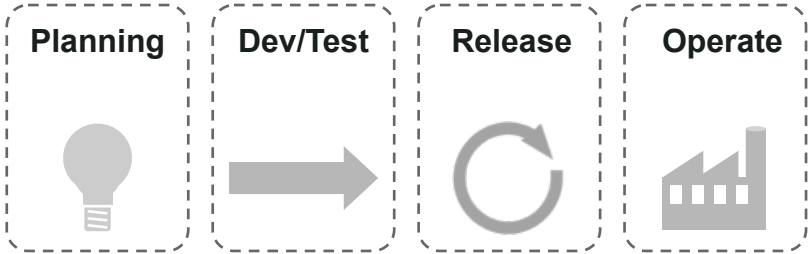



***Silo Builder***

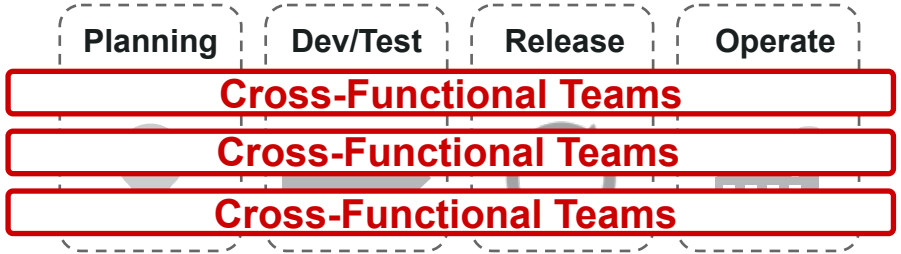


***Snowflake Maker***

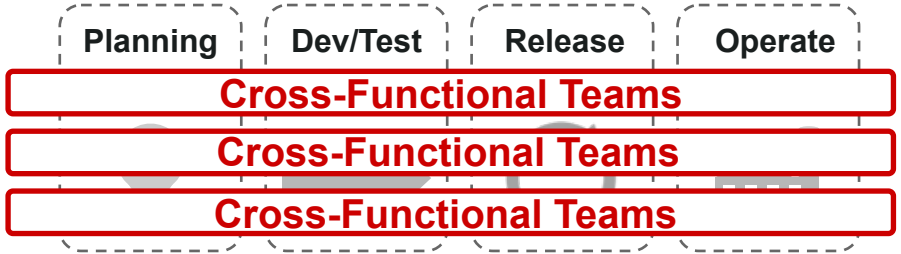
# Popular: Replace Silos with Cross Functional Team



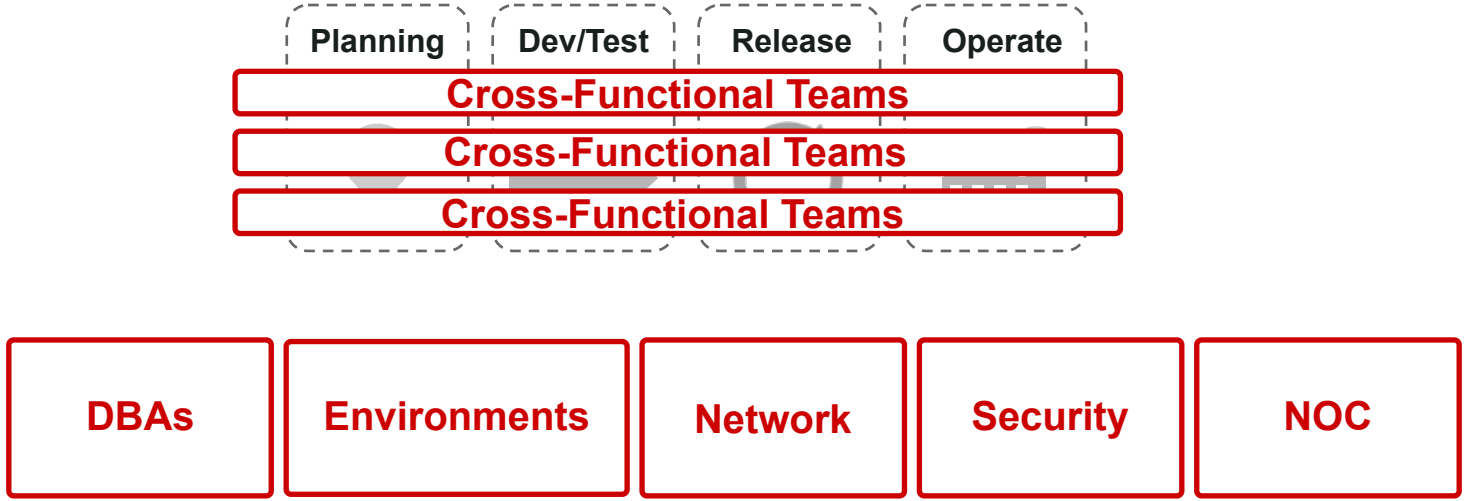
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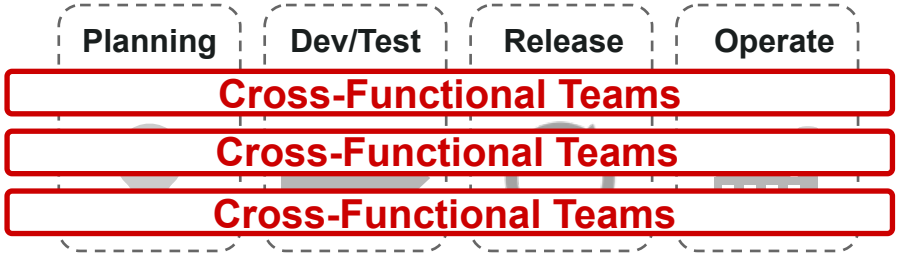
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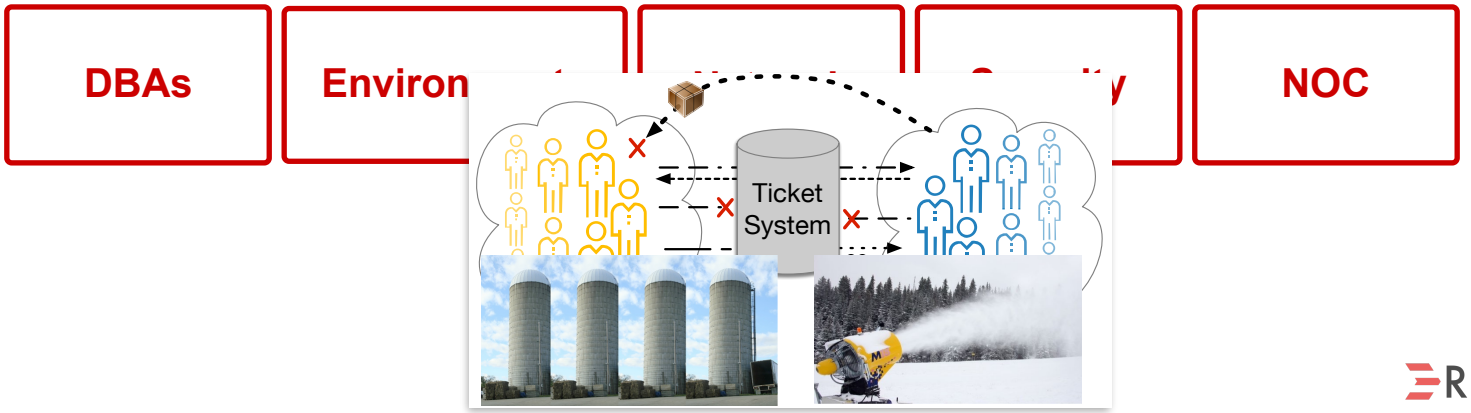


# Popular: Replace Silos with Cross Functional Team



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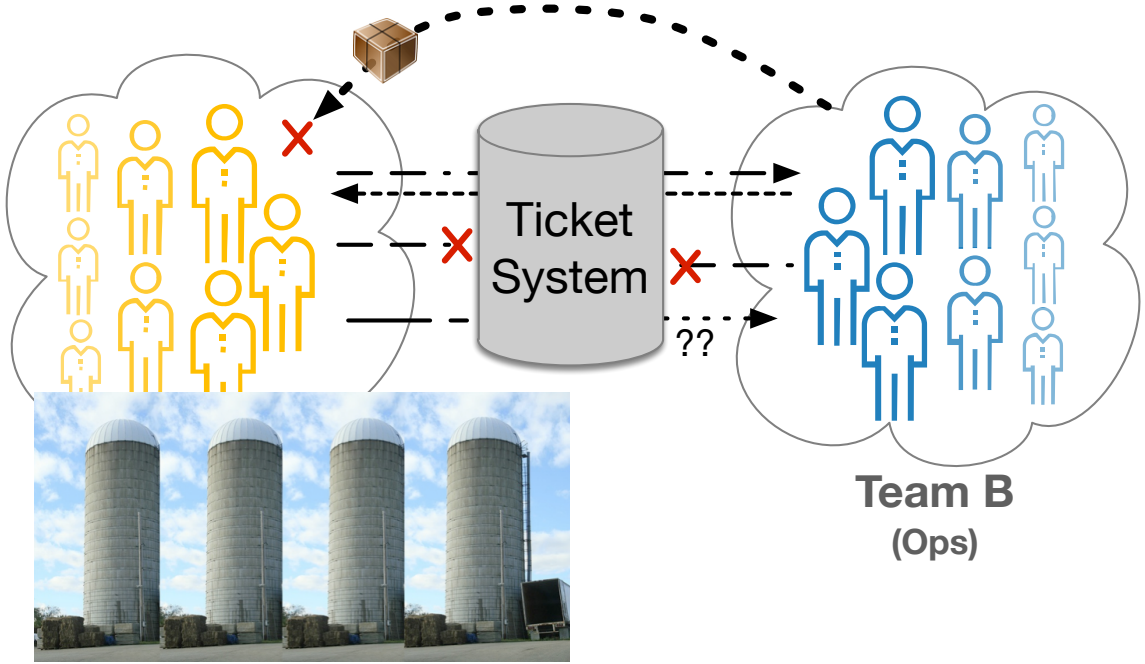



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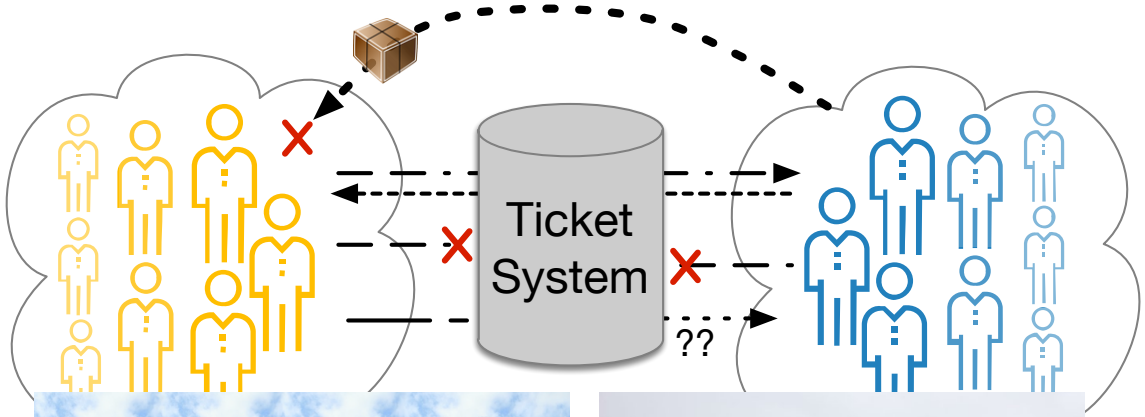
1. Use Lean thinking and analyze like any process
2. Make sure you are measuring the right things
3. “Shift Left” control and decision making
4. Get rid of silos
5. **Establish Operations as a Service**

# Get rid of as many ticket-driven request queues as possible



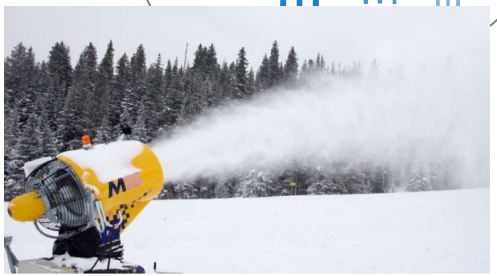

***Silo Builder***

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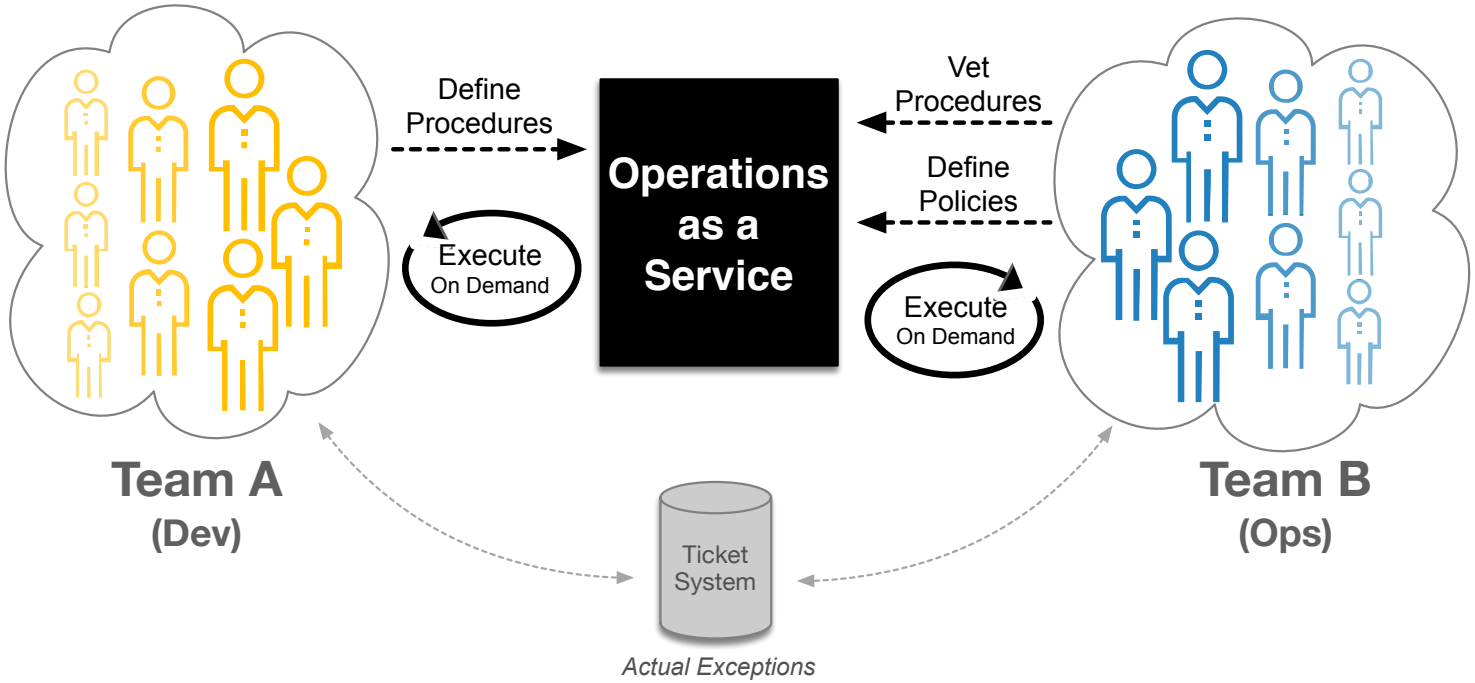



***Silo Builder***



***Snowflake Maker***

# … replace with Operations as a Service design pattern




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**Changes how your organization thinks about automated procedures…**

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# Automated procedures are comprised of three parts




Definition of the automated procedure




Execution of the automated procedure




Governance of the automated procedure

RUNDECK

# Automated procedures are comprised of three parts




Definition of the automated procedure




Execution of the automated procedure




Governance of the automated procedure

*(security, oversight, compliance, etc.)*

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# Traditional Ops Silo



**“Consumers of Ops”**

**(Dev, QA, Release, NOC, Security, etc.)**



Define

Execute

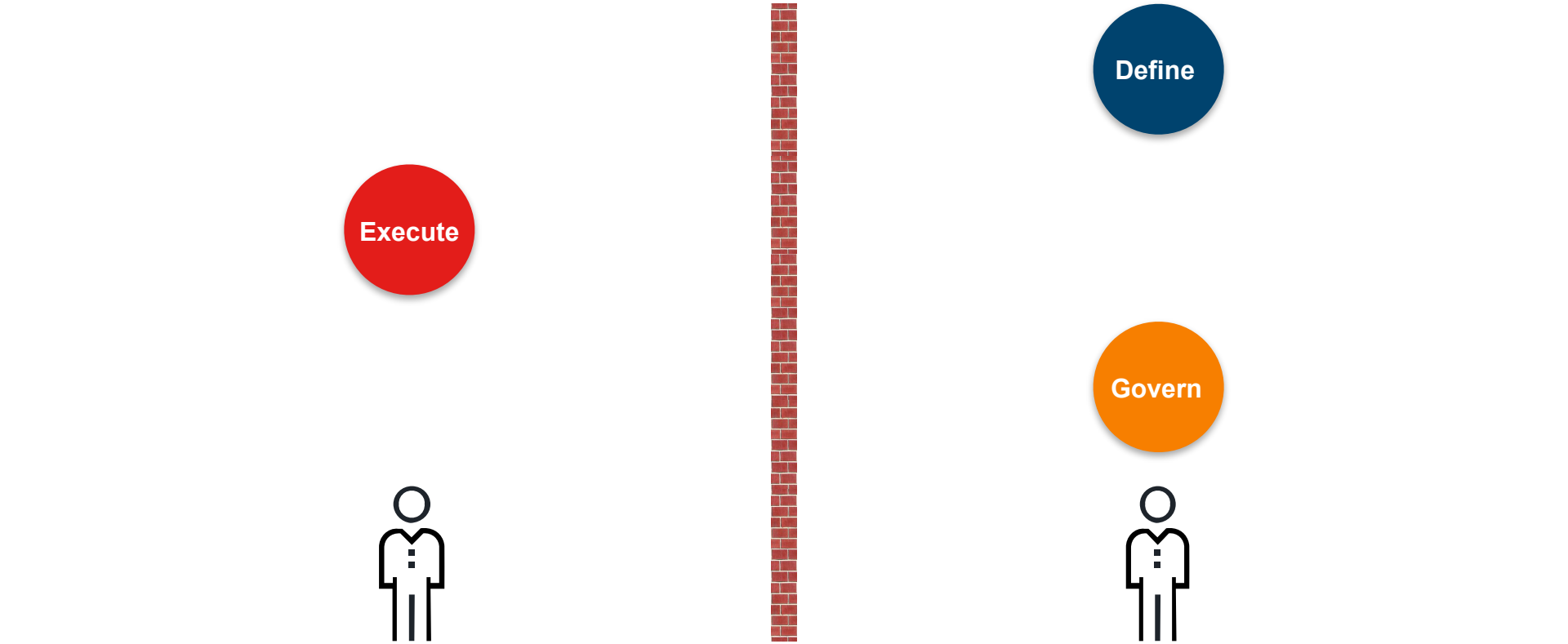
Govern



**Ops**

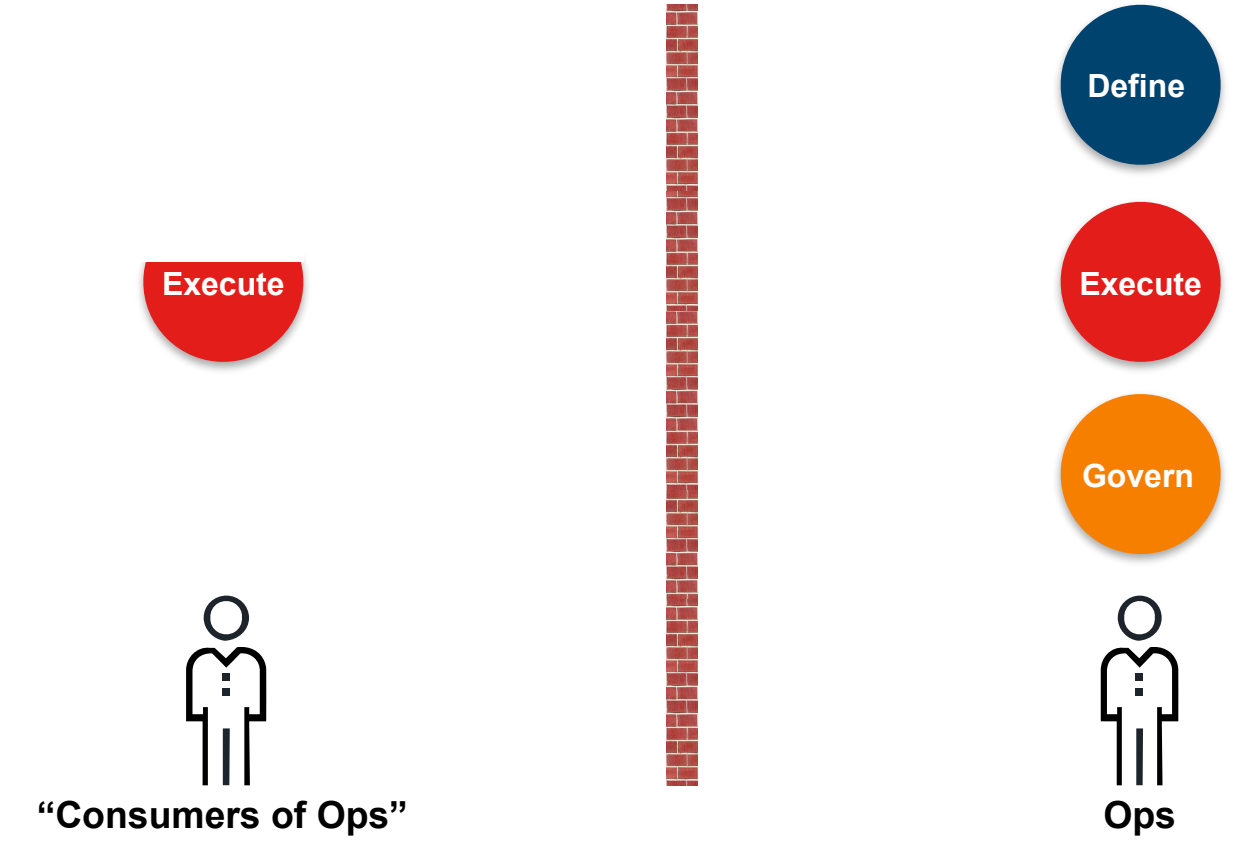
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# Rigid Self-Service



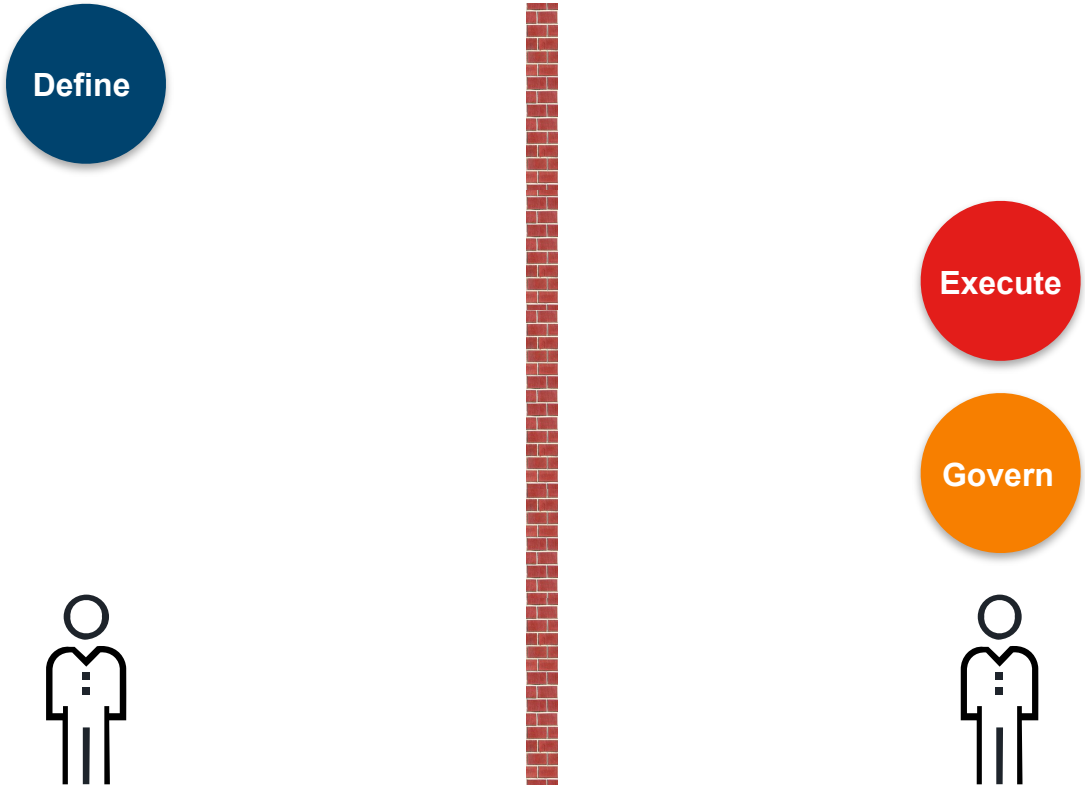

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# Rigid Self-Service (limited)



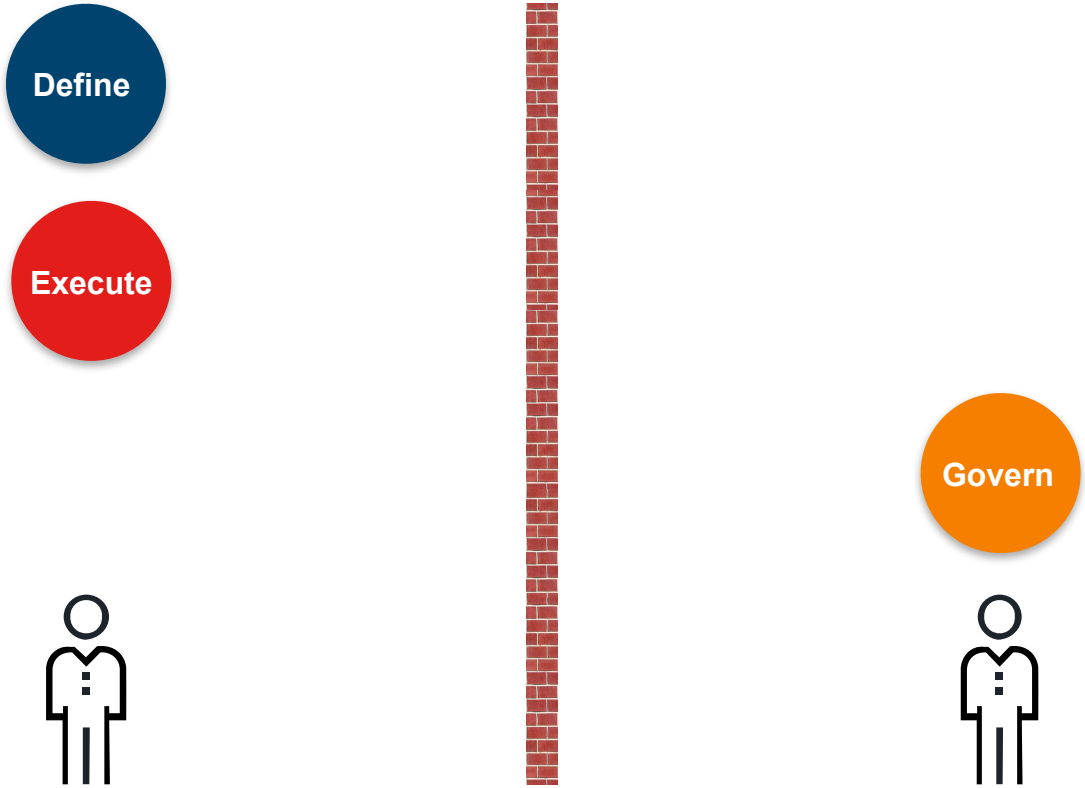

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# High-Velocity Handoffs



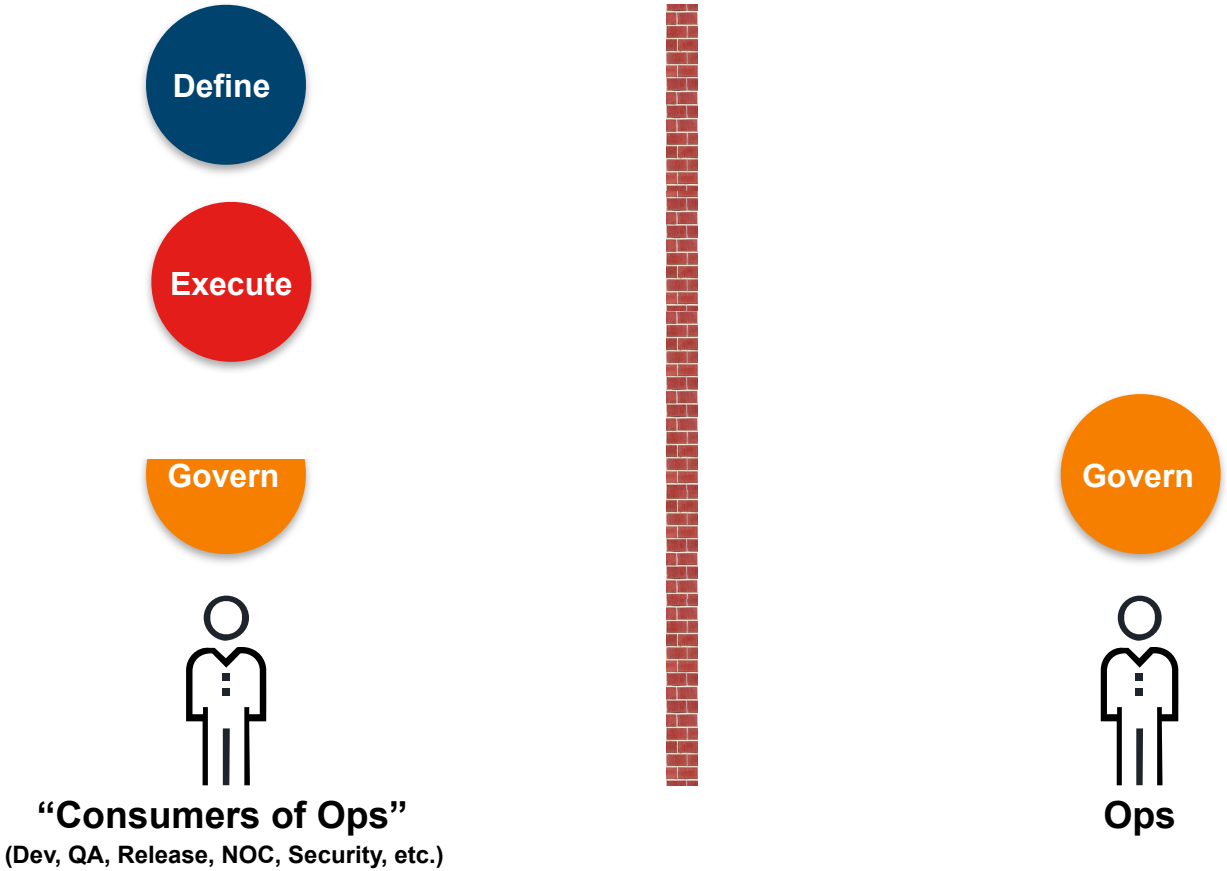

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# Self-Service Operations



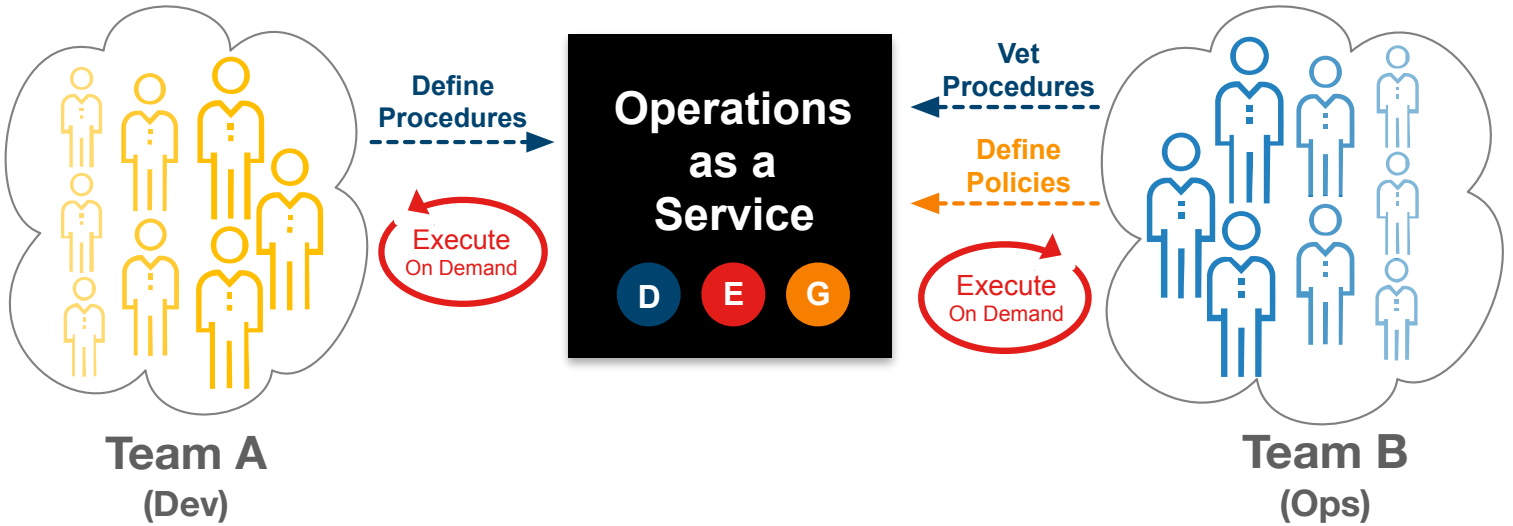

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# Self-Service Operations




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# Operations as a Service

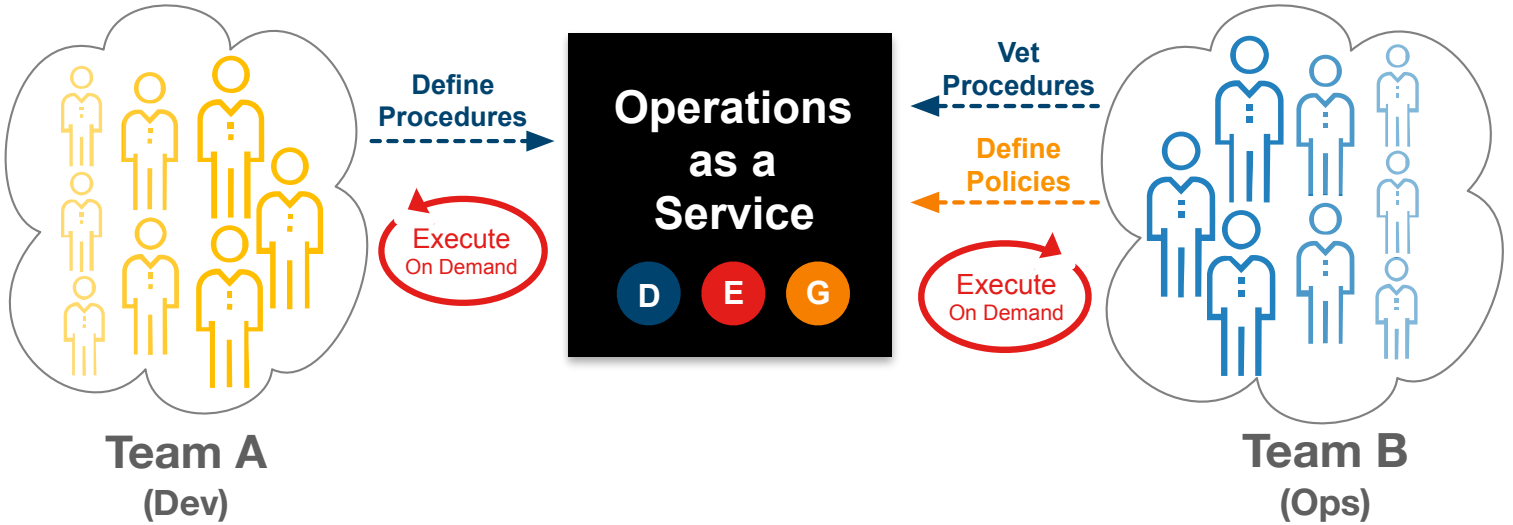



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# Operations as a Service

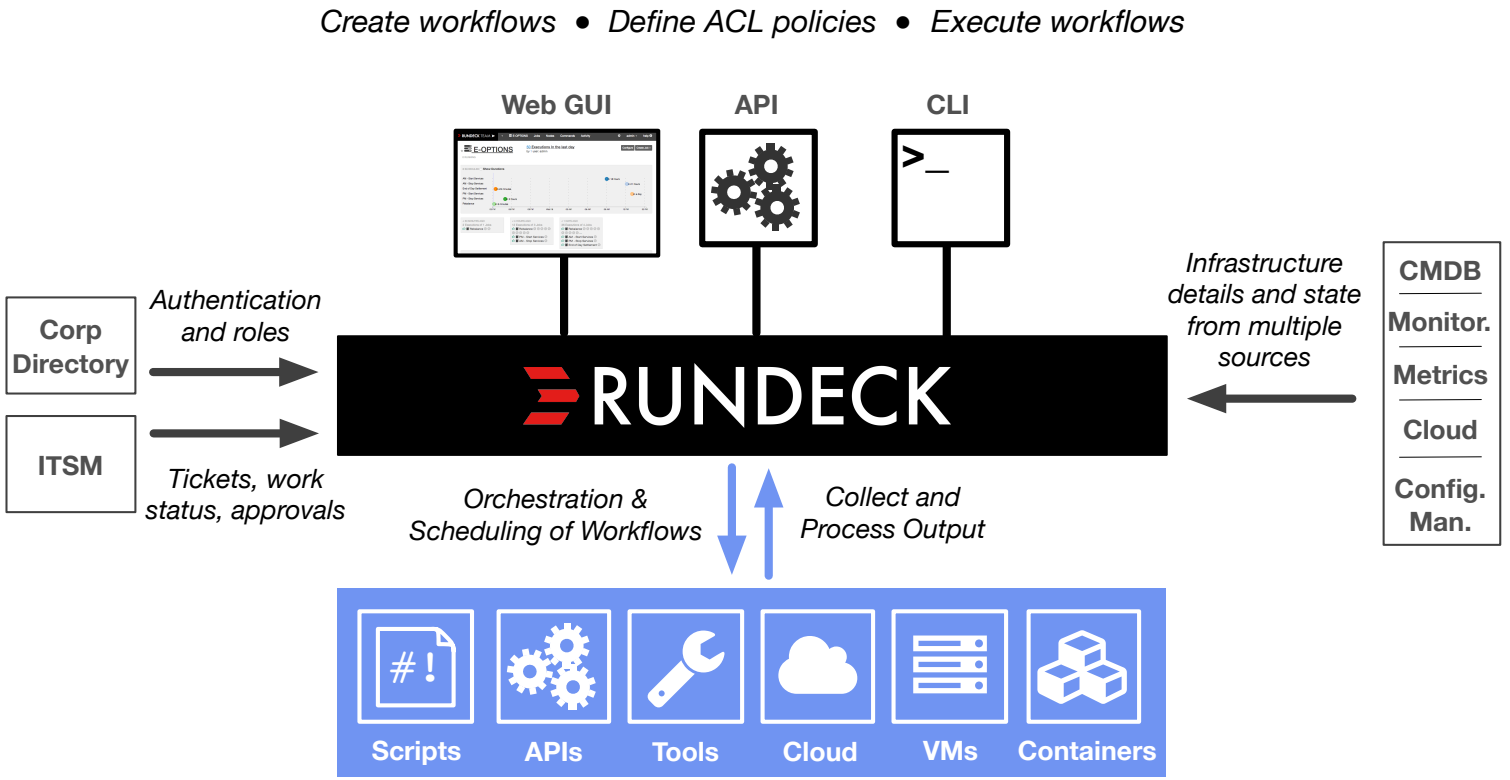


Move *definition*, *execution*, and *governance* to where you get the most effective use of labor and best flow of work




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# Rundeck: Open Source Platform For Operations as a Service

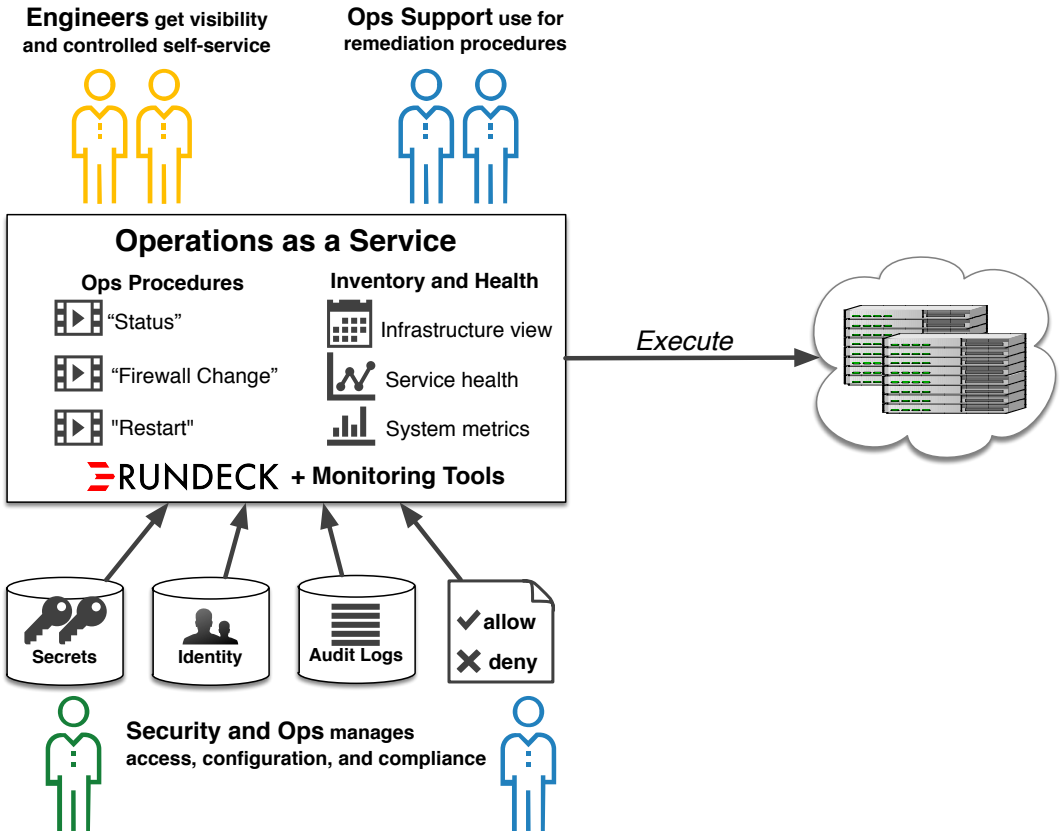



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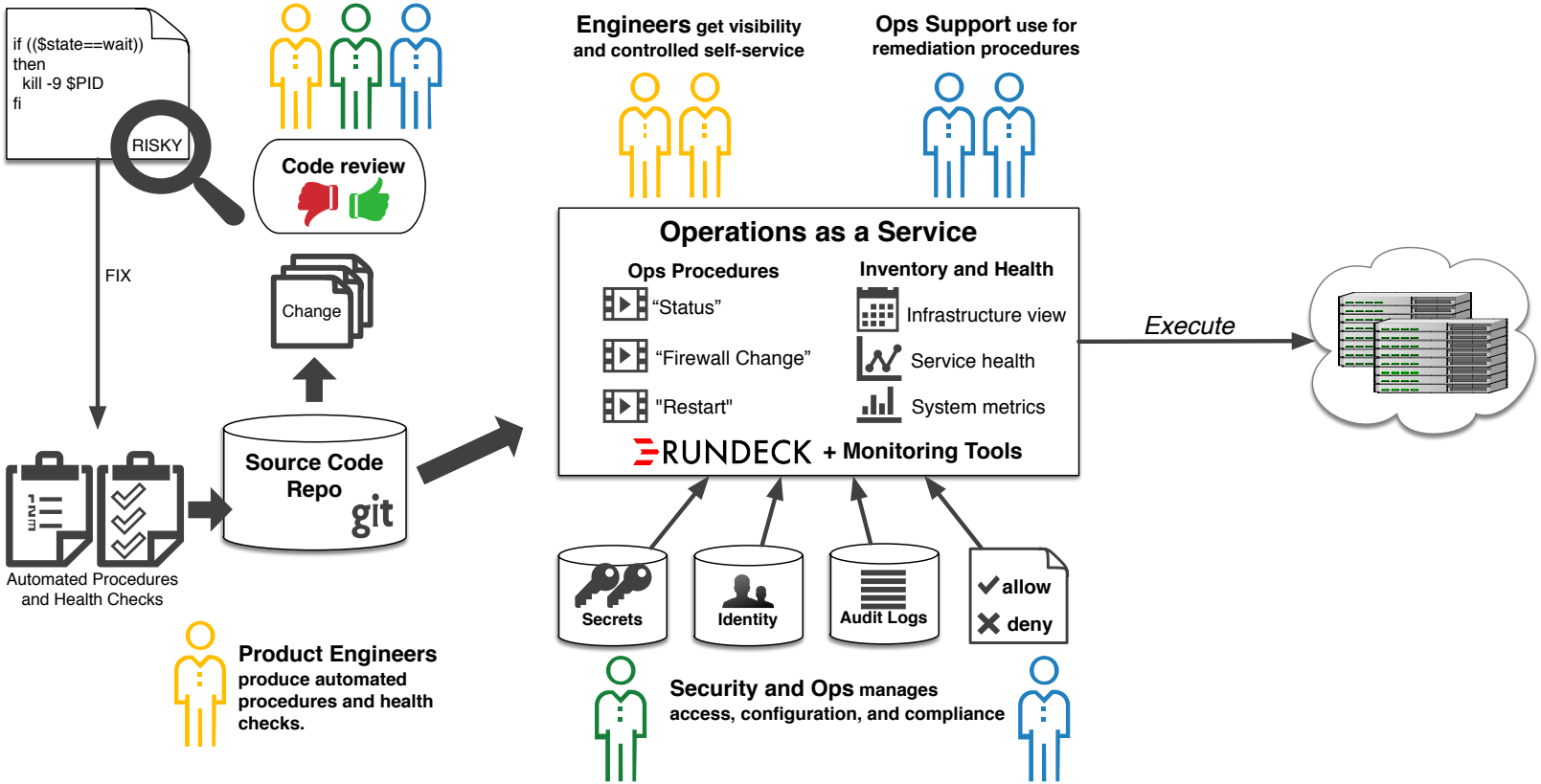
# Common implementation pattern for Operations as a Service…

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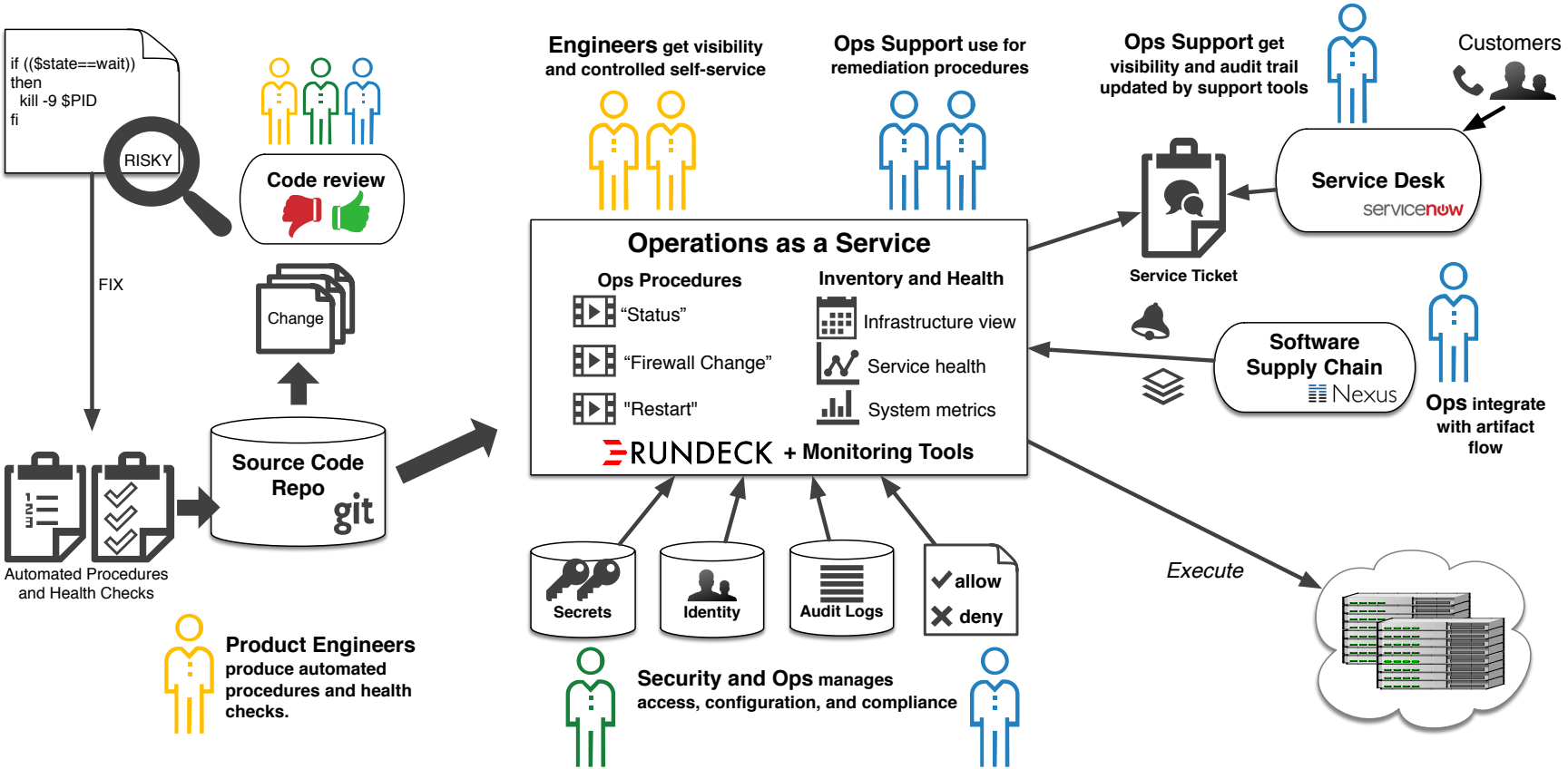
# Step 1: Establish a Secure Ops Hub



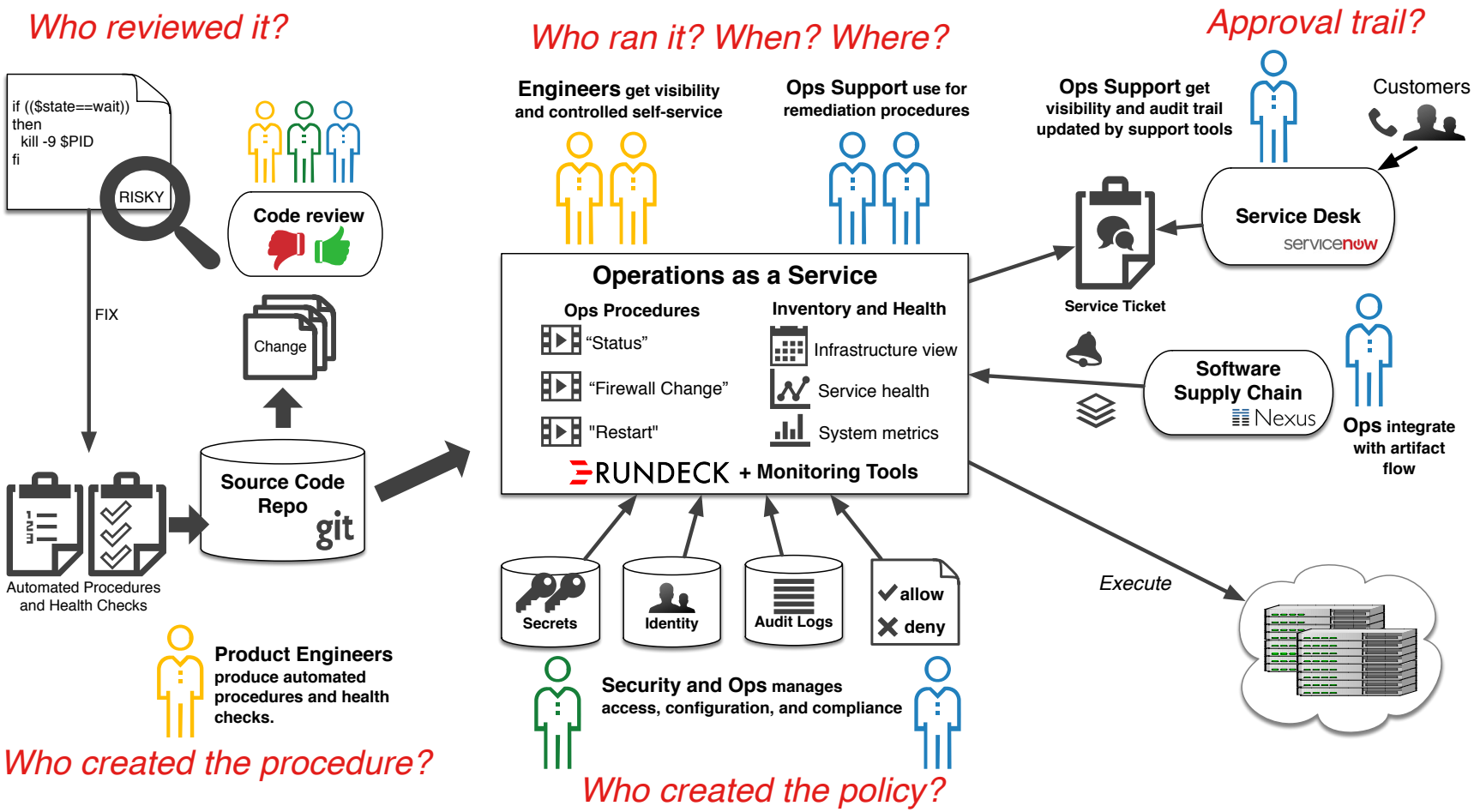
# Step 2: Establish a SDLC for Ops Procedures



# Step 3: Connect with Enterprise Management Systems



# Step 4: Make Compliance Really Happy



1. Use Lean thinking and analyze like any process
2. Make sure you are measuring the right things
3. “Shift Left” control and decision making
4. Get rid of silos
5. Establish Operations as a Service
6. **Encourage Developers to think “Operable First”**

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☑ **Operations is the business** (unless you literally sell packaged software)

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- ☑ **Create immutable versioned artifacts and use standard packaging**
- ☑ **Integration tests over unit tests**

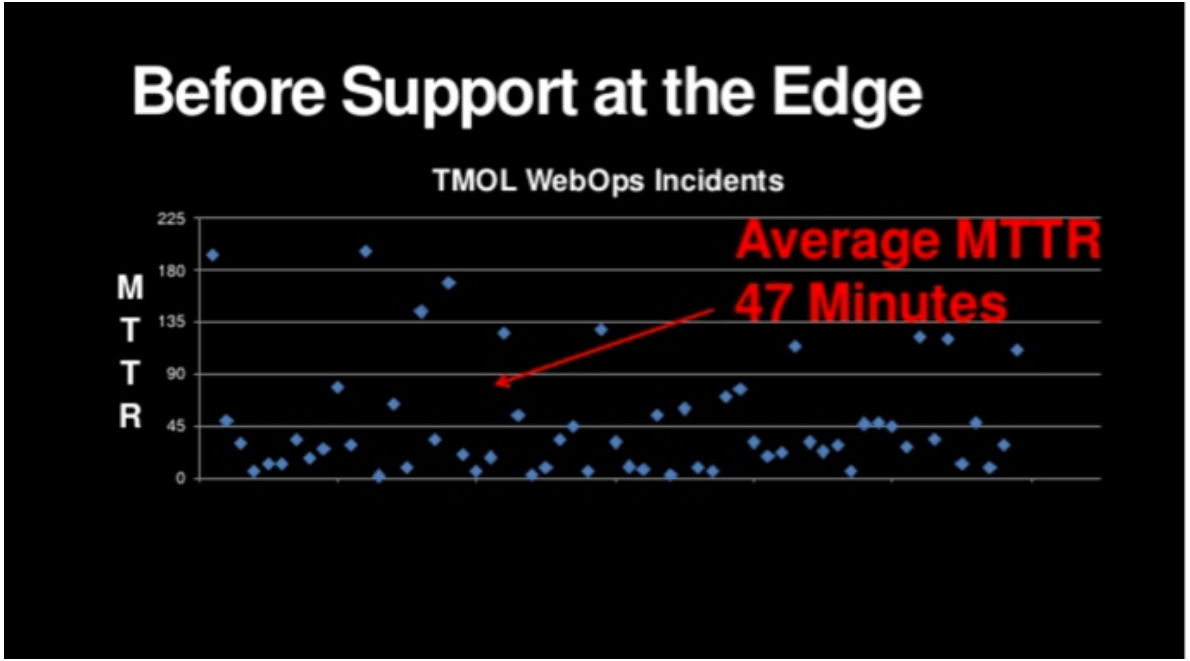
**Let’s look at a company improving it’s incident response capability…**

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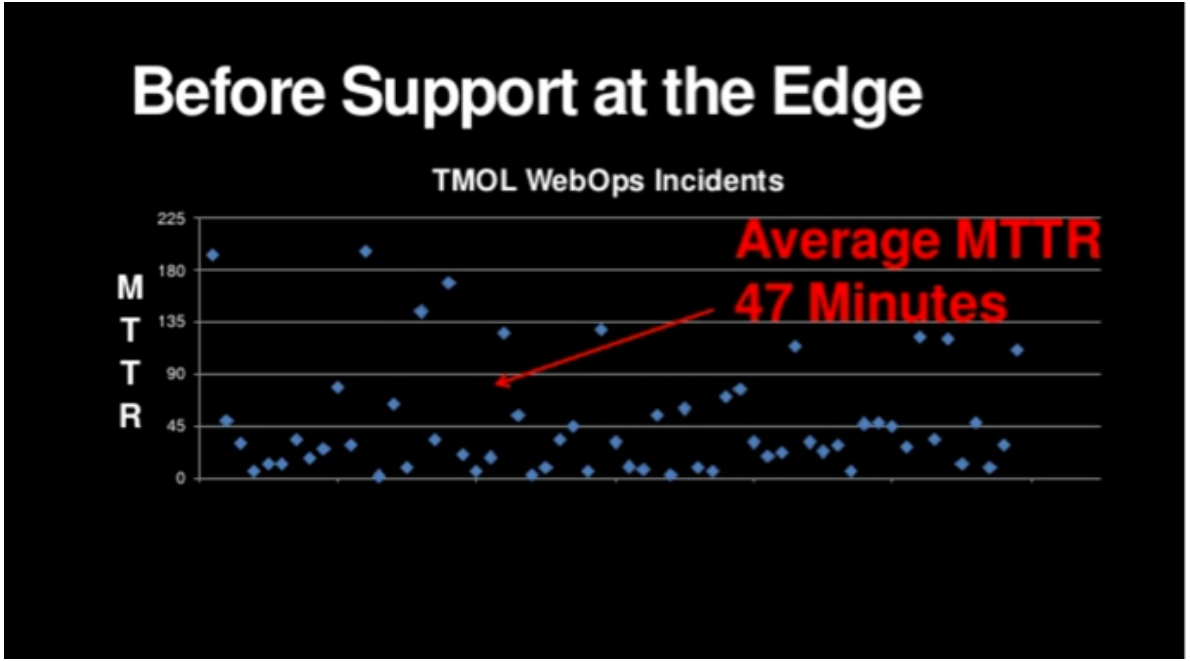
Jody Mulkey



Justin Dean

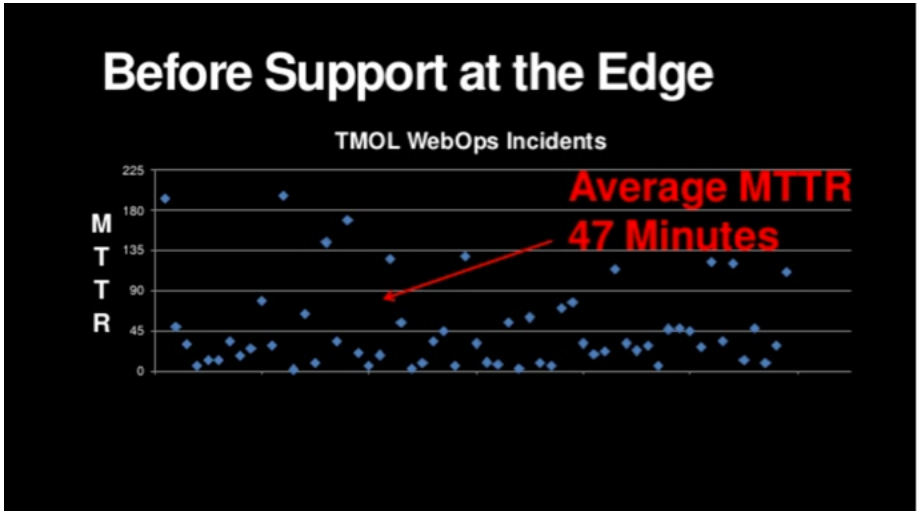


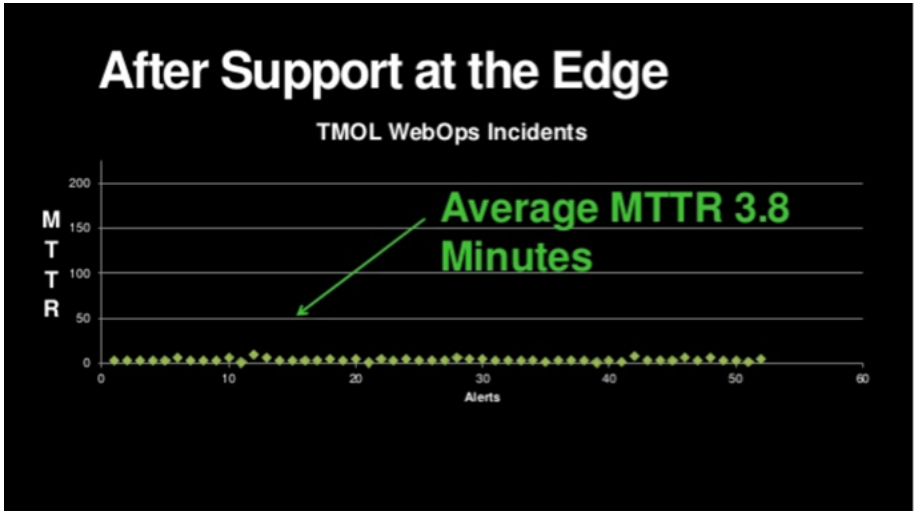
Mark Maun




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**90% Reduction in MTTR**
**50% Reduction in escalations**
**55% Reduction of overall support costs**

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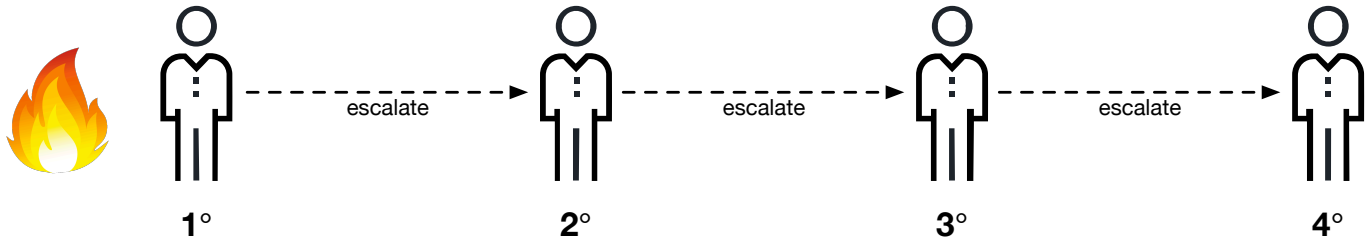
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# 1. New org, support, and escalation model

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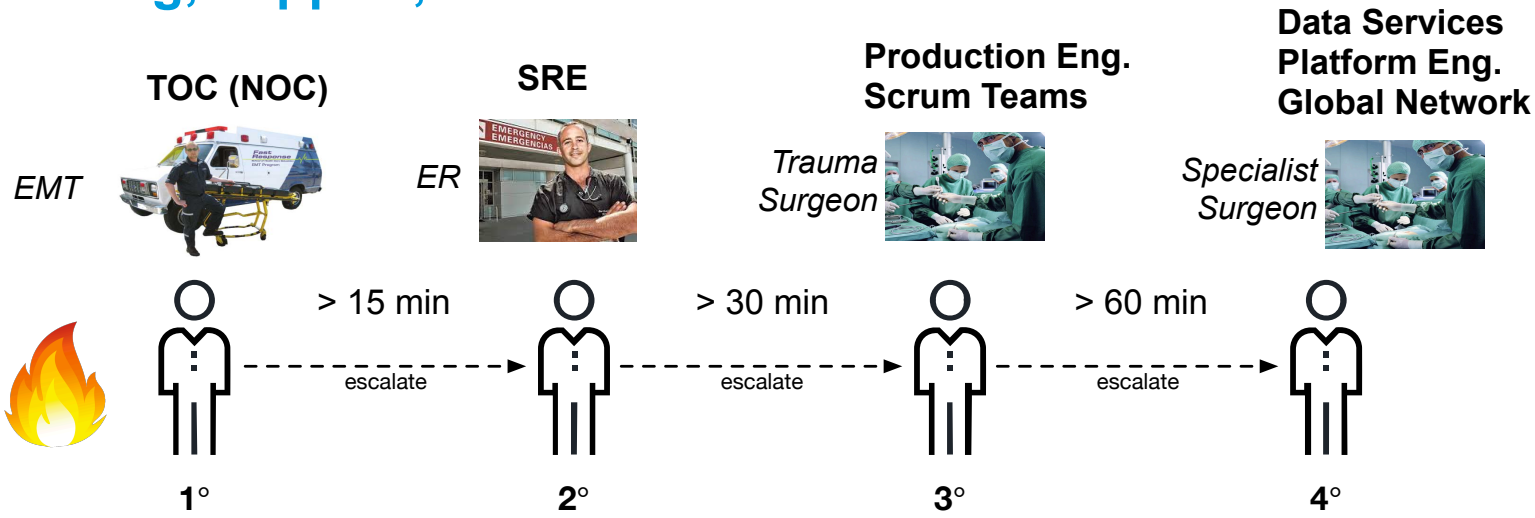
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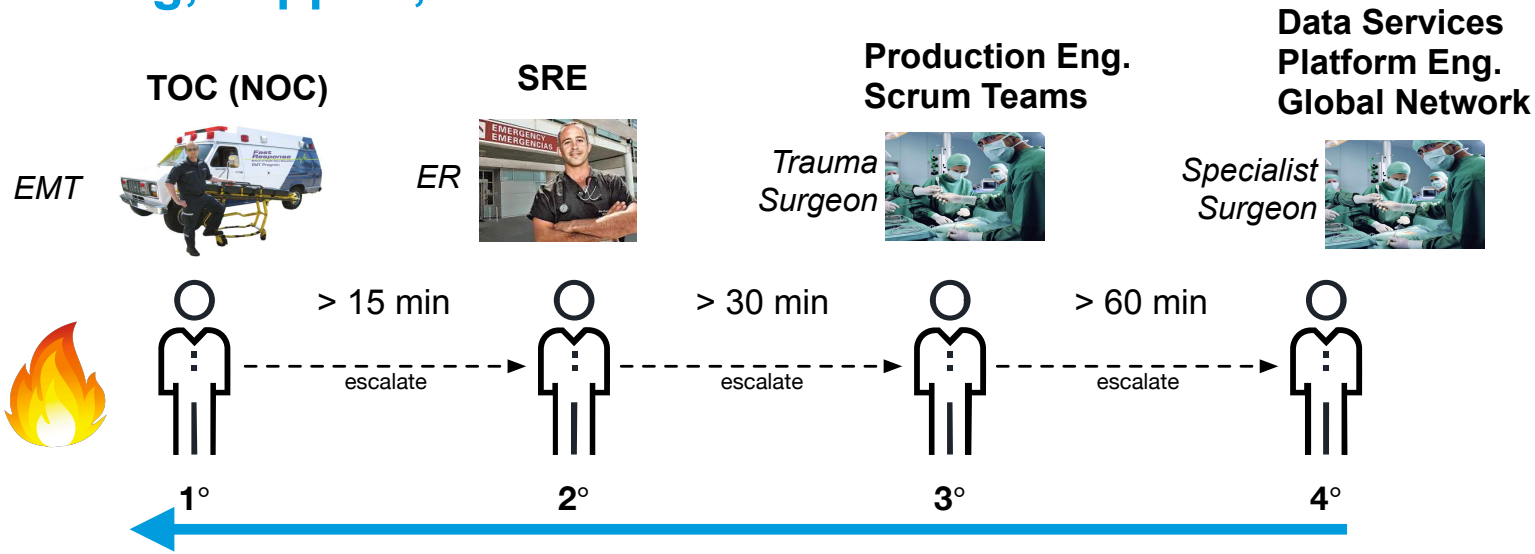
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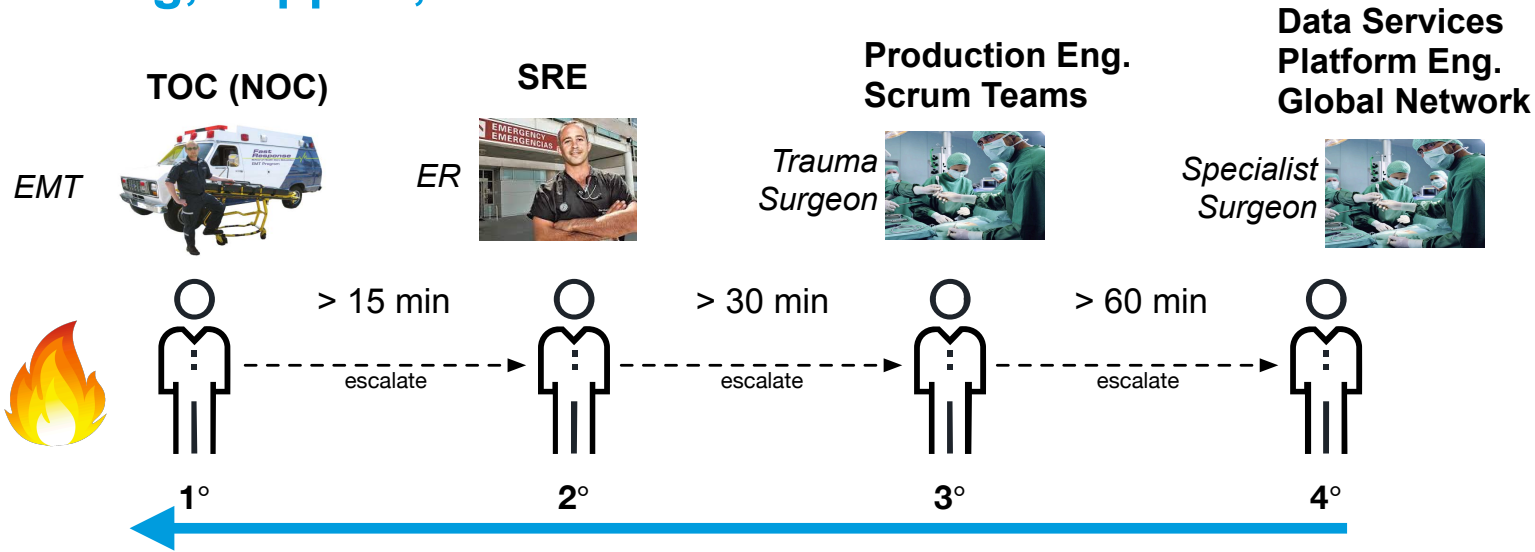



## 2. Key: Push the ability to take action closest to the problem

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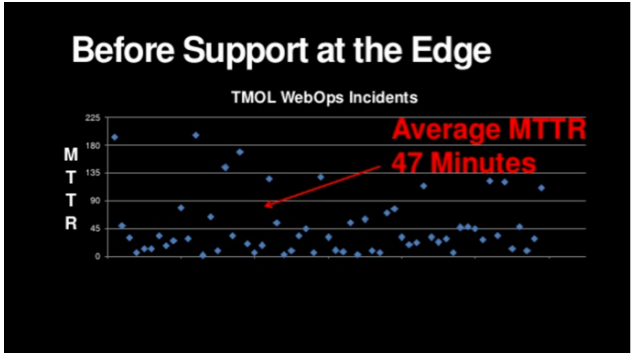


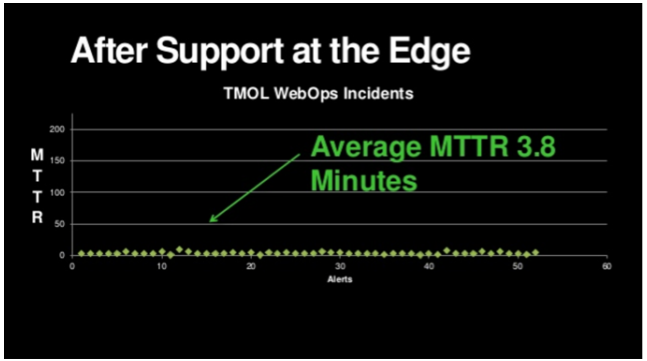

## 2. Key: Push the ability to take action closest to the problem

## 3. Longterm investment in operability
(deployment, configuration, monitoring, automated runbooks)

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# ticketmaster® “Support at the Edge”



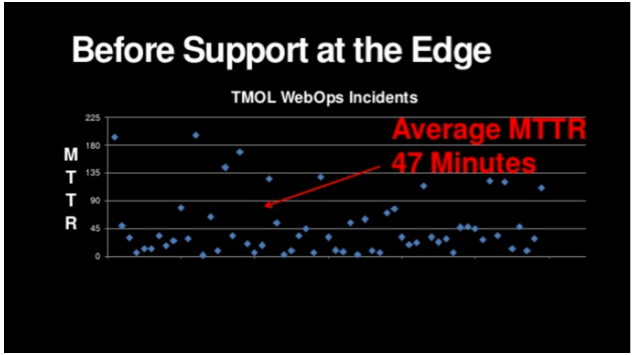



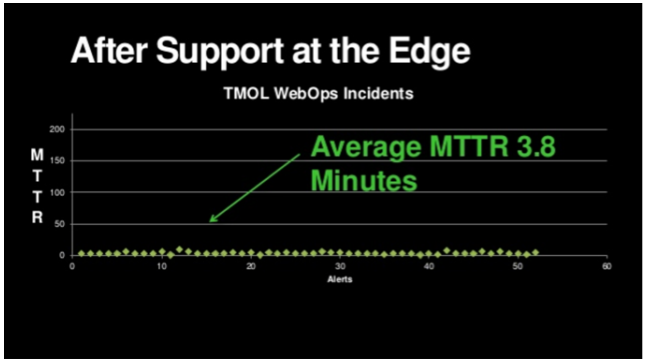

Sources: https://www.youtube.com/watch?v=_hr4KiB19bQ
http://rundeck.org/stories/mark_maun.html

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# ticketmaster® "Support at the Edge"

- **Automated Ops procedures written/ vetted by the delivery teams**



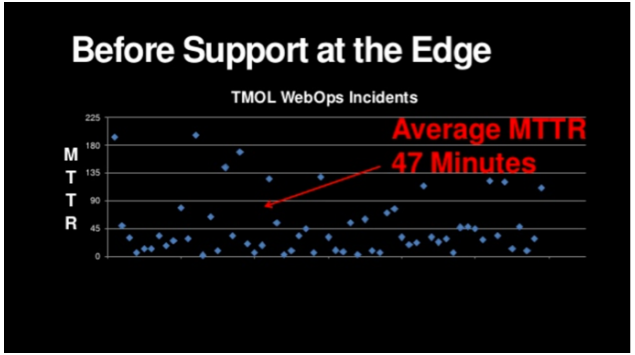



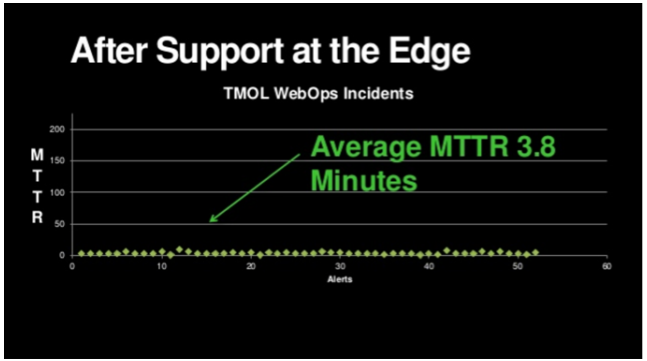

Sources: https://www.youtube.com/watch?v=_hr4KiB19bQ
http://rundeck.org/stories/mark_maun.html

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# ticketmaster® "Support at the Edge"

- Automated Ops procedures written/ vetted by the delivery teams
- Ops remained in full control of what can run and security policy



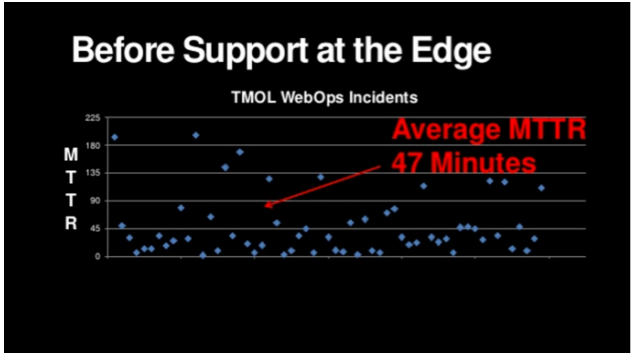



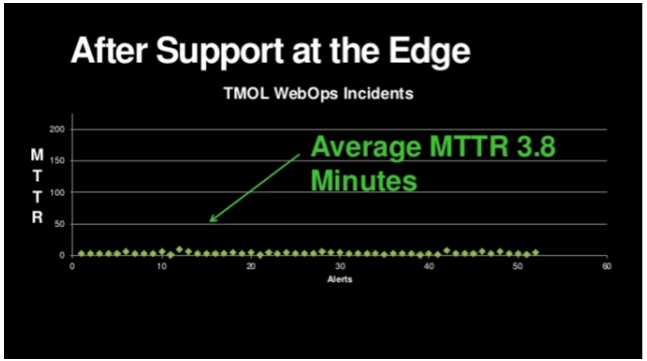

Sources: https://www.youtube.com/watch?v=_hr4KiB19bQ
http://rundeck.org/stories/mark_maun.html

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# ticketmaster® "Support at the Edge"

- Automated Ops procedures written/ vetted by the delivery teams
- Ops remained in full control of what can run and security policy
- Empowered NOC and other support teams with self-service ops tasks



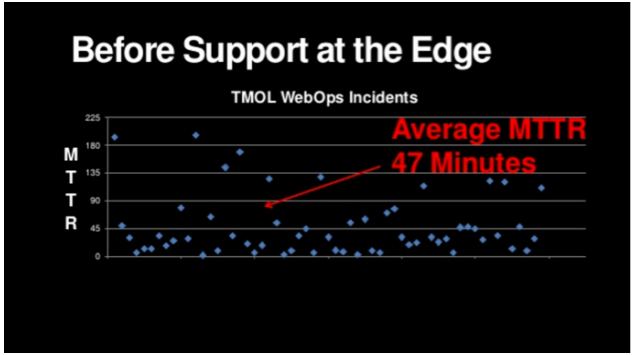



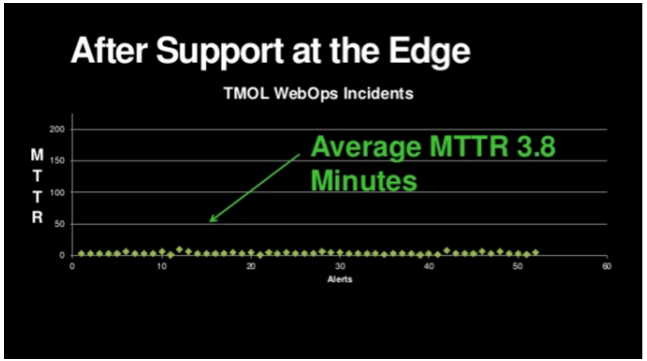

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- Automated Ops procedures written/ vetted by the delivery teams
- Ops remained in full control of what can run and security policy
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- Empowered developers with limited self-service operations



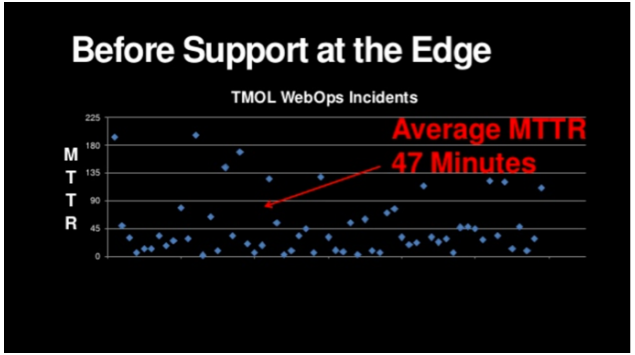



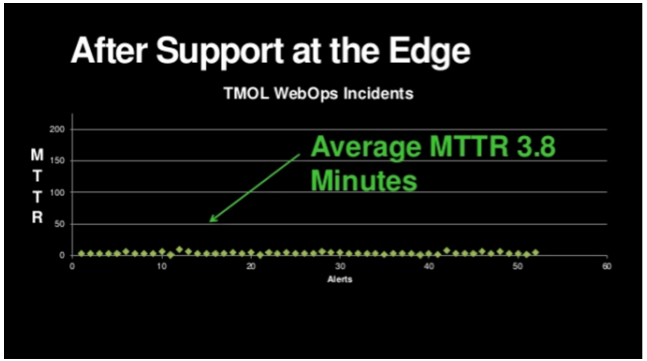

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# ticketmaster® "Support at the Edge"

- Automated Ops procedures written/ vetted by the delivery teams
- Ops remained in full control of what can run and security policy
- Empowered NOC and other support teams with self-service ops tasks
- Empowered developers with limited self-service operations
- Combined with new incident response and escalation model




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# Recap!

1. Use Lean thinking and analyze like any process
2. Make sure you are measuring the right things
3. “Shift Left” control and decision making
4. Get rid of silos
5. Establish Operations as a Service
6. Encourage Developers to think “Operable First”

# Let’s talk…



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