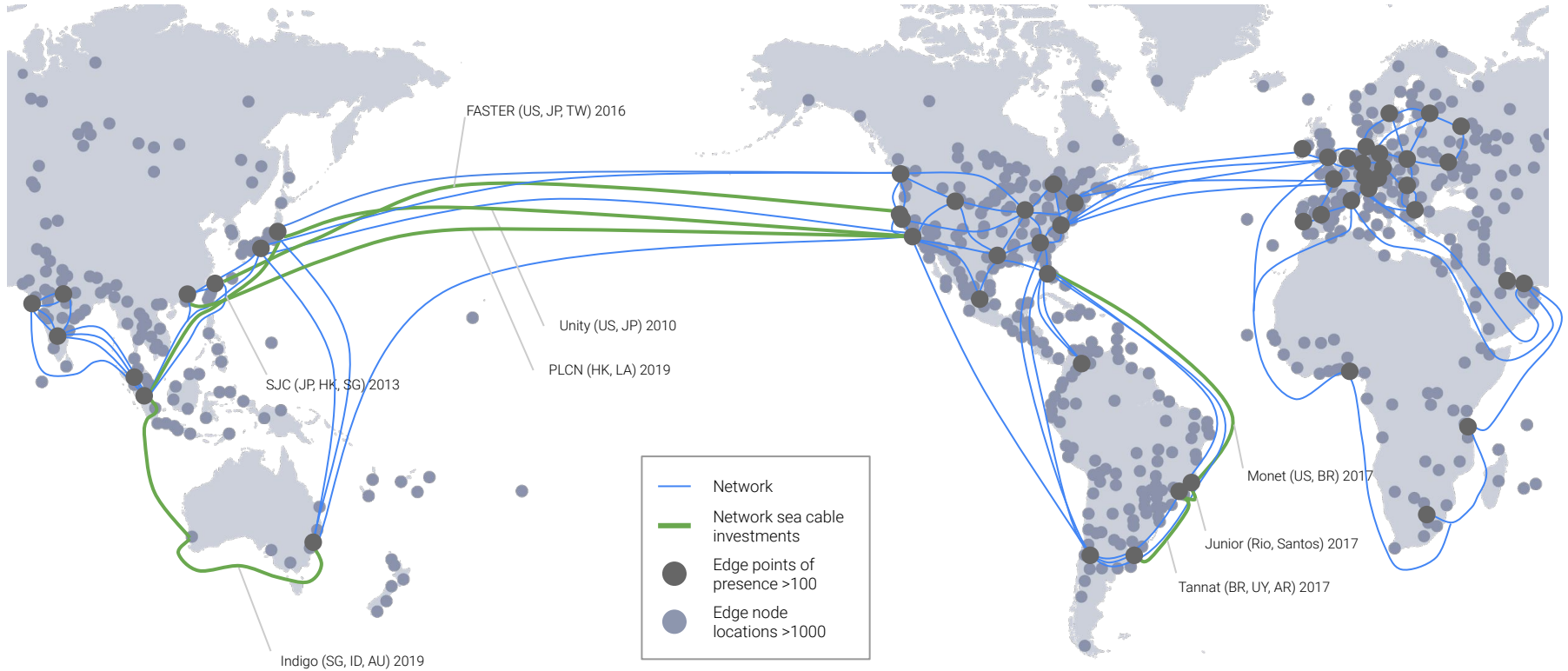




# Google Cloud Network







Outage on the network

Material Arrival Authorized

Resource Identification

Site Access Provided

Part & Technician Arrive at Site

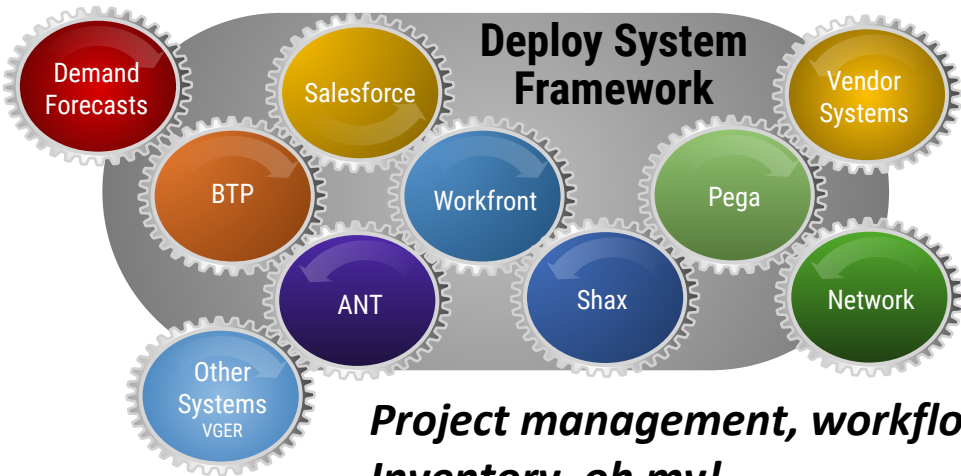
Work Complete

# How we decide what voodoo, we do...so well....

- Increase Scale, 10x that thing!
- Reduce Operating Expense, -10x that thing!
- Improve Quality & Adoption
- Reduce Cycle Time

## 2019 Google Priorities

- Work Bundling
- Robotic Portal Interactions
- G-suite Integrations
- End-to-End Orchestration



***Project management, workflow and Inventory, oh my!***



## Delivery Systems

**ORCHESTRATION**

	Purpose
<b>BTP</b>	Demand consolidation into actionable build to plans with concrete deliverables
<b>ANT</b>	Automation layer - topology review - network design - materials - project creation
<b>Salesforce</b>	Assets acquisition - fiber - infrastructure - optical spectrum
<b>Workfront</b>	Coordination and scheduling - task management - dependencies
<b>Shax</b>	Production network interaction and workflow mgmt - optical inventory - externally facing
<b>Pega</b>	3rd party transactions & dispatch - field resourcing - contract delivery - Vendor delivery

# Data Structures for Tickets and Resource



Field Resource



Ticket



Site

Availability to complete ticket within SLA

Metro Area

Cost

Resource Group

Whitelisted Sites

Skills\*

Working Hours

Holidays/PTO

Work Type

Priority

SLA

Number of Tasks

Skills\*

Project ID

Site Access Needed

Work Duration (Quantity)

Site Location / POP Code

MFS resources that rejected the ticket

Physical Site Address

Metro Code

Location / POP Code

Allows Photos

Site Access Needed

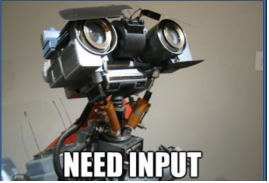
Vendor

GPS Coordinates

Must have "Like" Factor

Nice to have "Like" Factor





# Defining "like" tickets

## How would we prioritize?

 Bundling Candidate



Field Resource



Existing Ticket



Incoming Ticket

Must Match

Location / Metro Area

Metro Area

GPS 

Metro Area

GPS 

Availability to complete ticket within SLA

SLA

SLA

Skills / Proficiency

Skills / Proficiency

Skills / Proficiency

Nice to Match

POP code

Work Type

Project ID



# Scenario 1

Happy path: resource found with appointment that matches of all like characteristics

Run Fibers



Run Fibers  
OTDR



Like Characteristics  
Must Match

Incoming Ticket

Metro Area      SLA

Skills              GPS

LAX01  
SLA: 6/1  
Run Fibers  
GPS 3

Nice-to match

WorkFront  
Project ID

Outcome  
Assign to resource 1

	6/1	6/2
8	LAX02 SLA: 6/1 Run Fibers Patching GPS 1	
9		
10		
11	LAX01 SLA: 6/1 Run Fibers GPS 3	
12		
1		
2		
3		
4		
5		

	6/1	6/2
	LAX03 SLA: 6/1 Run Fibers Patching GPS 2	

# Scenario 2

Alt path1: 1 resource found with appointment that does not match must-have characteristics

Run Fibers



Run Fibers  
OTDR



Like Characteristics Must Match

Metro Area SLA Skills ~~S~~

Incoming Ticket

LAX02  
SLA: 6/1  
OTDR  
GPS 4

Nice-to match

WorkFront Project ID

Outcome Assign Tech 2 -

	6/1	6/2
8	LAX02 SLA: 6/1 Run Fibers Patching GPS 1	
9		
10		
11		
12		
1		
2		
3		
4		
5		

	6/1	6/2
	LAX03 SLA: 6/1 Run Fibers Patching GPS 2	
	LAX02 SLA: 6/1 OTDR GPS 4	

# Here is where the demo begins!



Google Cloud Platform

# Scenario 2

Alt path1: 1 resource found with appointment that does not match must-have characteristics

Run Fibers



Run Fibers OTDR



Like Characteristics

Must Match

Metro Area

SLA

X

X

Nice-to match

WorkFront Project ID

Incoming Ticket

LAX  
SLA: 6/1  
OTDR  
GPS 1

	6/1	6/2
8	LAX SLA: 6/1 Run Fibers Patching GPS 1	
9		
10		
11		
12		

	6/1	6/2
	SFO SLA: 6/1 Run Fibers Patching GPS 2	

Route to external resource- Google Field Outsourced Integrated Service

2		
3		
4		
5		

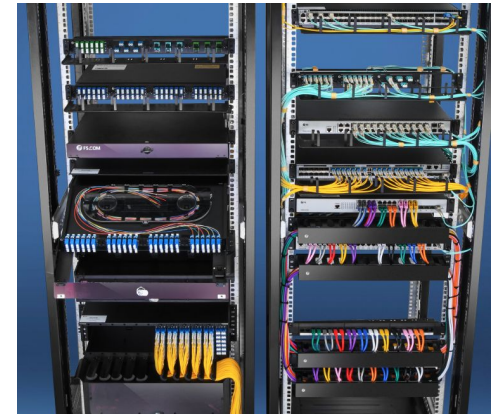

# Vendor Integration Pega & Google Cloud



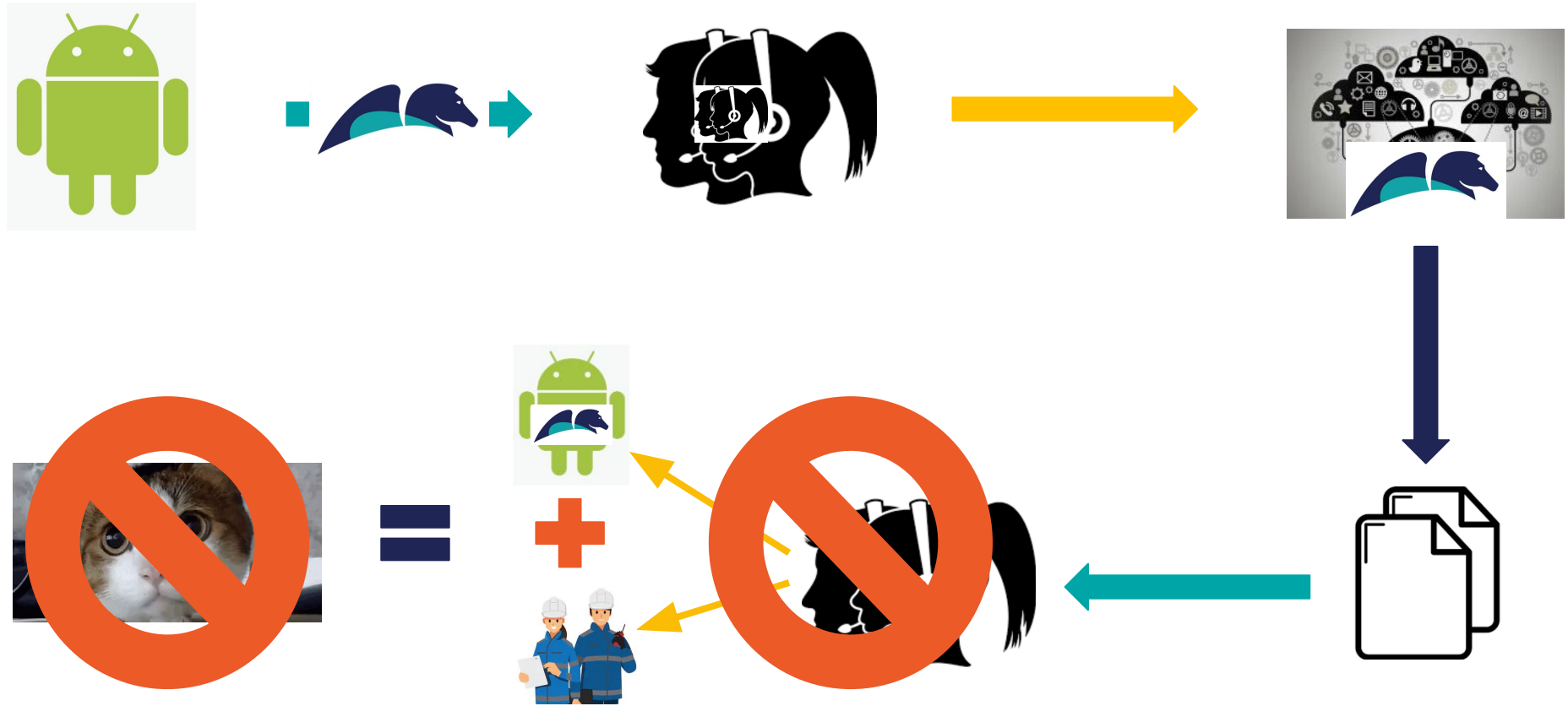
# FIELD OPERATIONS INTEGRATED SERVICES (FOIS)



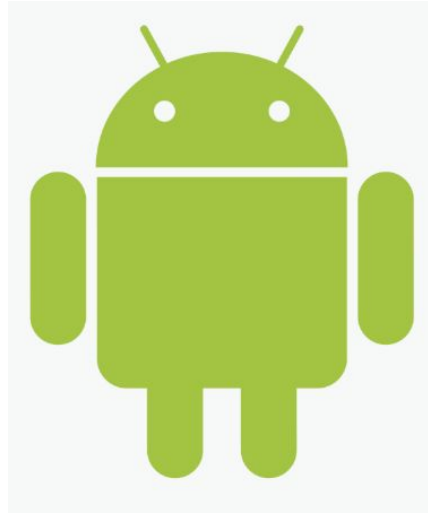
- Managed Service: third party field technicians
- All work is ticket driven
- Transactional remote hands needs:
  - Patching, testing, small deployments, site maintenance, troubleshooting, etc.



# FOIS Tech Dispatch Workflow applying PEGA



# Google and Vendor Systems Integration





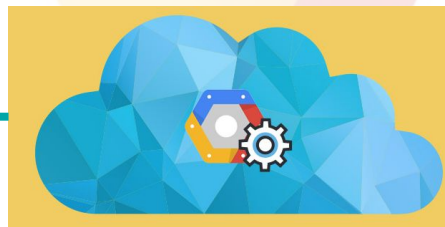
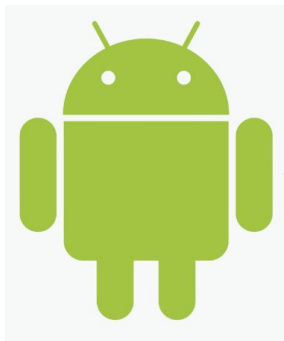
# Utilizing GCP for *Outbound* Connectivity



# Utilizing GCP for *Inbound* Connectivity



- Project VPC's function as distributed firewall, network level
- Connections allowed/denied on per-instance basis
- Drag and drop firewall policies at scale



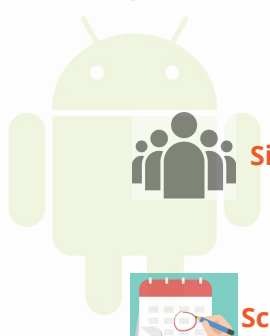
# Streamlining Workflow and Communication



Initial Order Entry



Confirmed Receipt



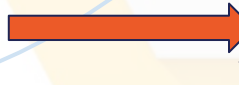
Site Access Confirmation



Potential Tech List



Scheduled Work Adjustments



Acknowledge Reschedule



Resolution Measures

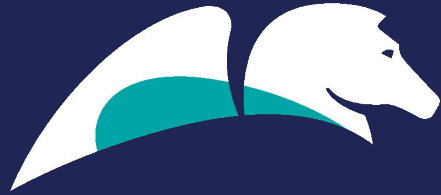


Work Stoppage or Constraints



# Portal Integrations

- Hundreds of vendor portals
- Varied volume
- API development complexity or availability
- Robotic portal interactions speed up cycle time to delivery
- Reduce OpEx
- Reduce system training and user errors



**PEGA<sup>®</sup>**

Build for Change<sup>®</sup>