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OFFICE OF THE CHIEF INFORMATION OFFICER

# From Flashlight to Floodlight Using the Kanban Lens A Government Case Study

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U.S. DEPARTMENT OF HOMELAND SECURITY  
OFFICE OF THE CHIEF INFORMATION OFFICER (OCIO)  
SOLUTIONS DEVELOPMENT DIRECTORATE (SDD)

**Kanban works really well for government services\***



\*but we didn't actually tell people they had to use Kanban



We just asked them to make their work visible, apply WIP limits, and not start more than they can finish





Nate Conroy

Contractor

Accredited Kanban Trainer

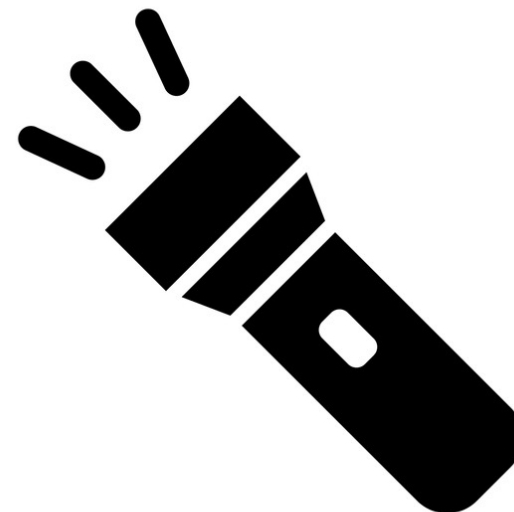
Kanban Management Professional

Let me introduce you to the  
Solutions Development  
Directorate the way I first  
came to know them, through  
their Kanban boards, teams,  
and data





- Start where Kanban practices are already in use, even if they go by different names
- Look for patterns and trends in the data
- Validate sources of dissatisfaction





Over 1000 individuals

Created 140,067 cards



Culture of Making Work Visible



- Team Kanban
- Full workflow Kanban
- Interconnected boards
  - Upstream
  - Downstream
  - Shared services

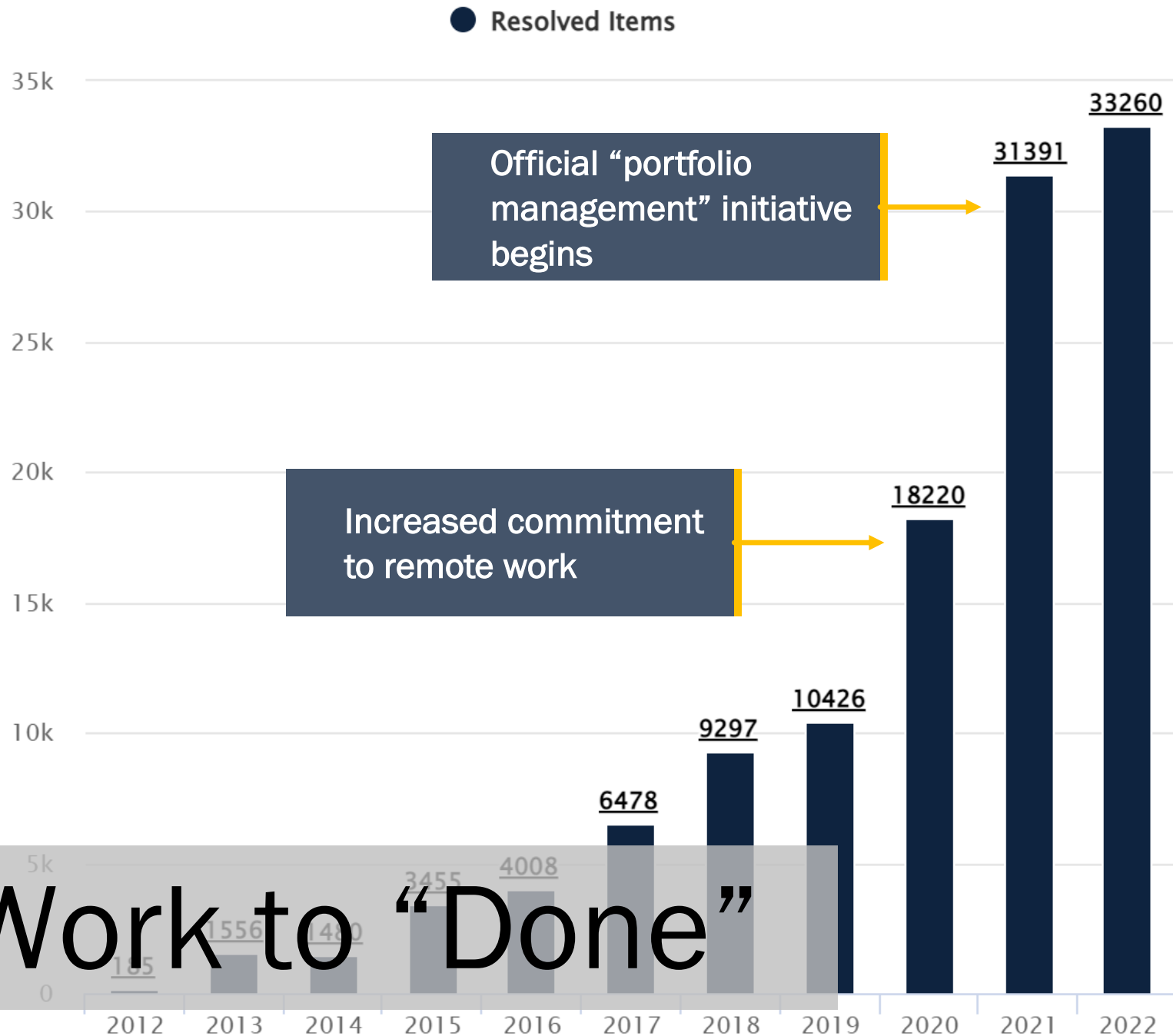


# Modeling Workflow Steps



We found records of cards moving to done for over 10 years

# Tracking Work to “Done”

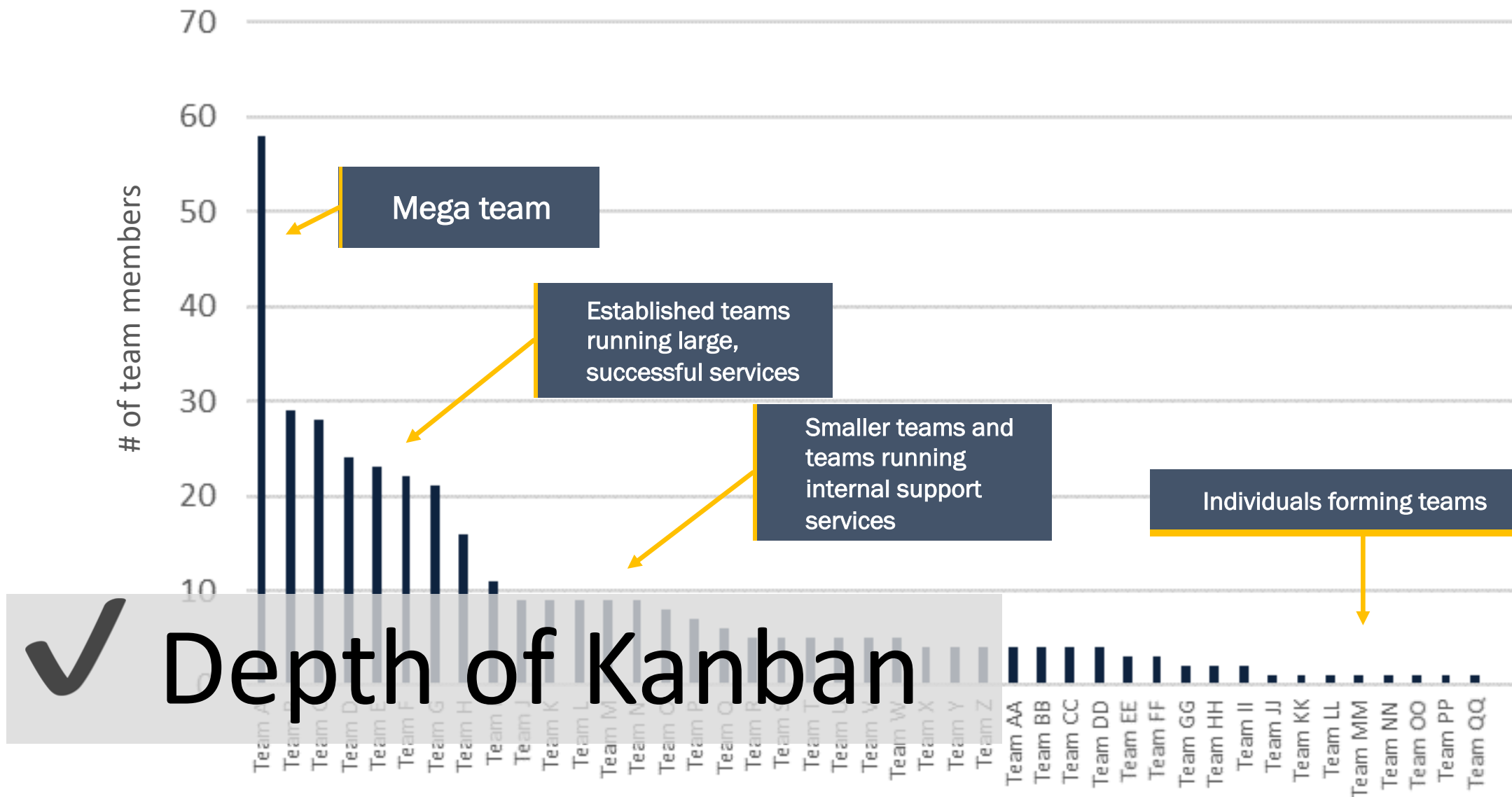




- Day feedback loops (tasks/stories)
- Week feedback loops (epics)
- Month feedback loops (projects)
- Risks and POA&Ms operating on longer cycles



# Scaled Flow Management



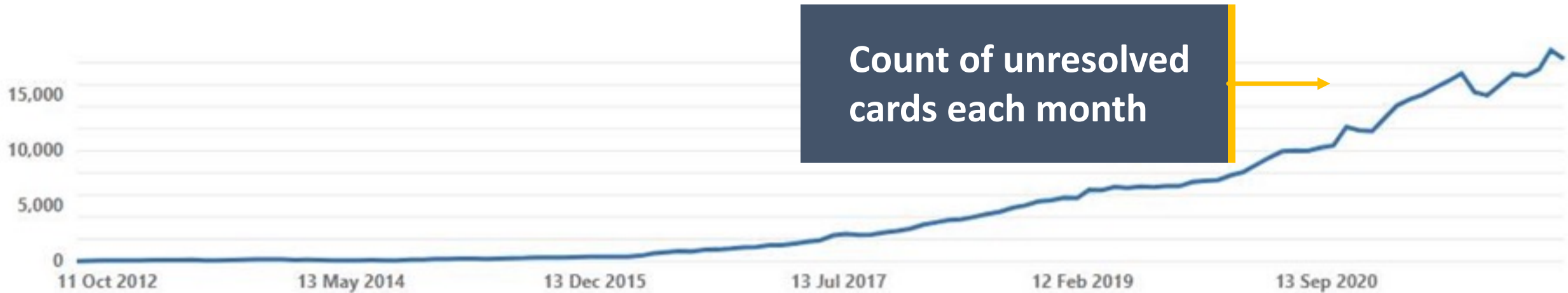


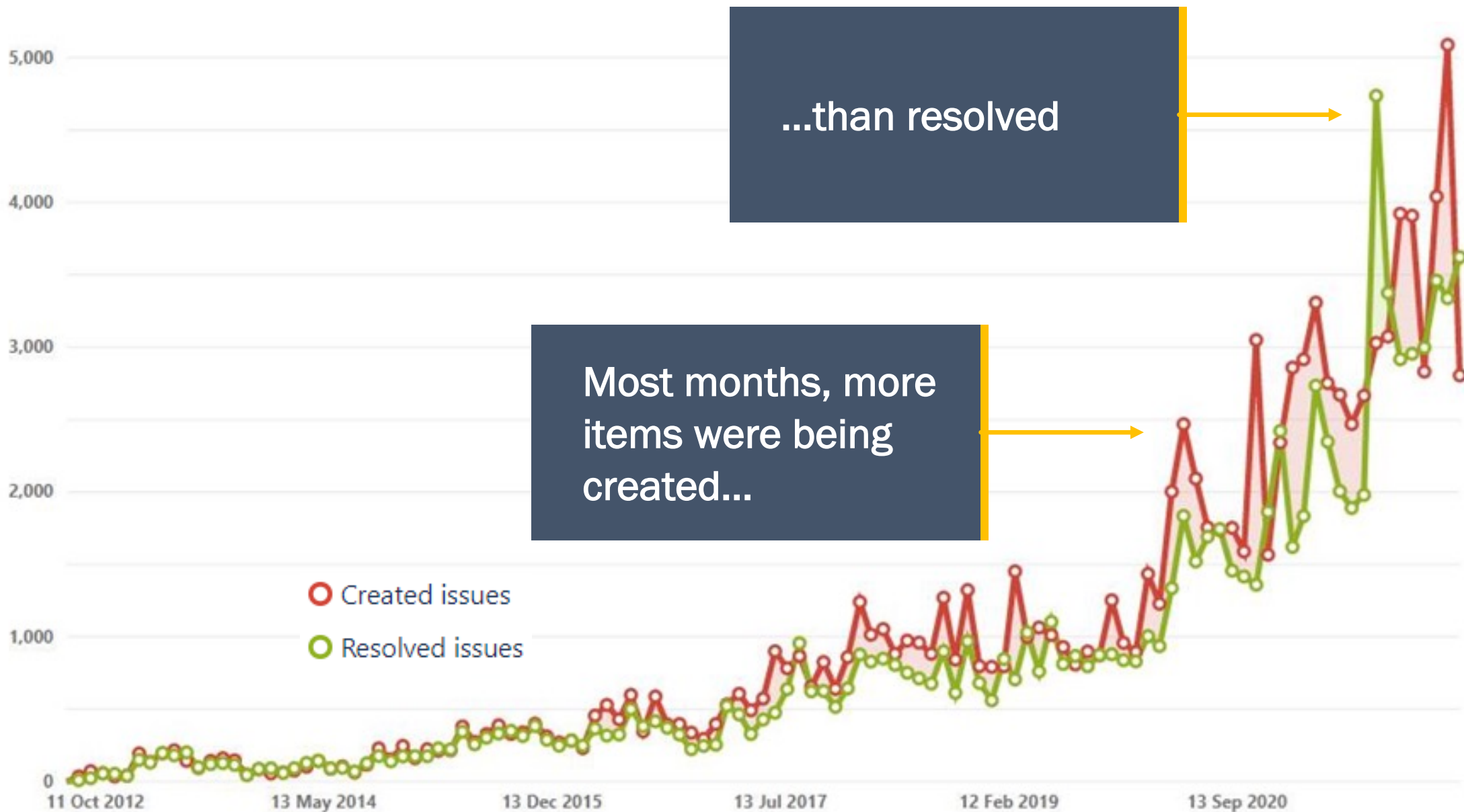


How did these pieces look  
when assembled into a  
larger whole?



In aggregate, we found signals of overburdening that suggested meeting commitments could become difficult as the work grew









Successful delivery created more demand, which was becoming harder to manage





Leaders at all levels noticed these trends, which validated a feeling that some of the work had grown out of balance, and they began pursuing evolutionary change



✓ Motivation for Change



Marigny Boyd

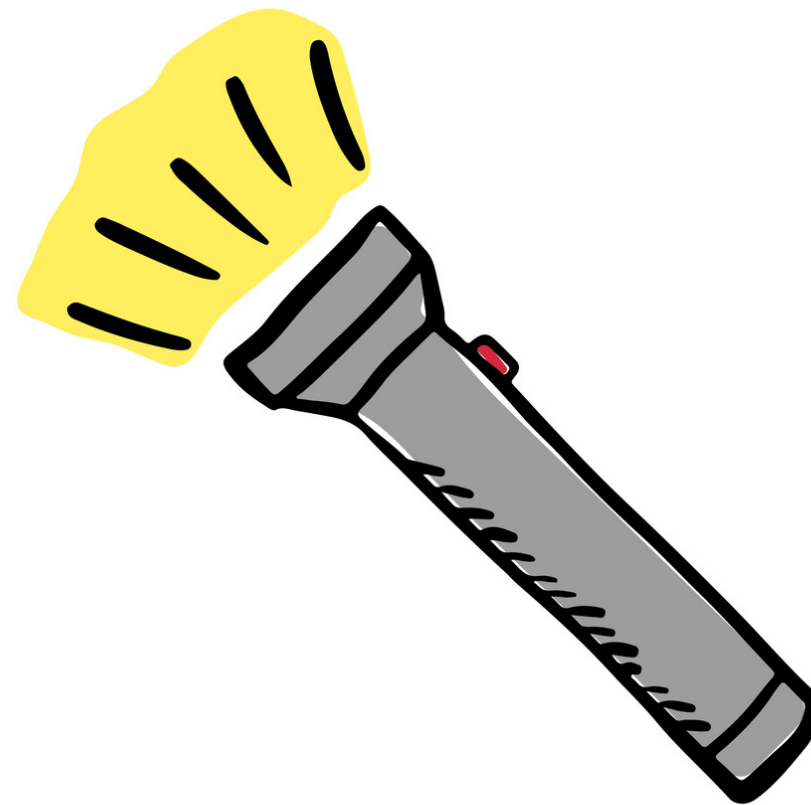
Agile Methods Team Lead |  
Strategy and Governance |  
Solutions Development  
Directorate (SDD)

Department of Homeland  
Security Office of the Chief  
Information Officer (OCIO)





- Our Kanban systems should make work being performed for customers visible
- A customer-driven view helps us understand “fit for purpose”
- Our sources of demand include customers receiving services but also oversight authorities





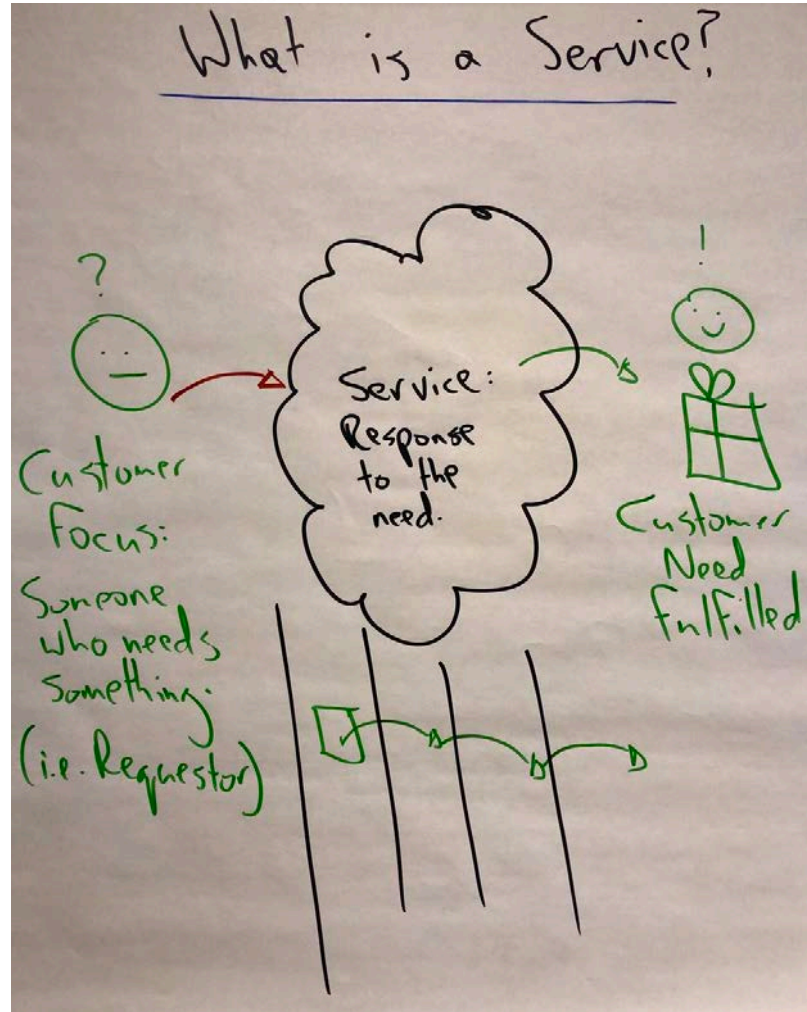
- Real time information
- Directly from source systems
- Justify costs

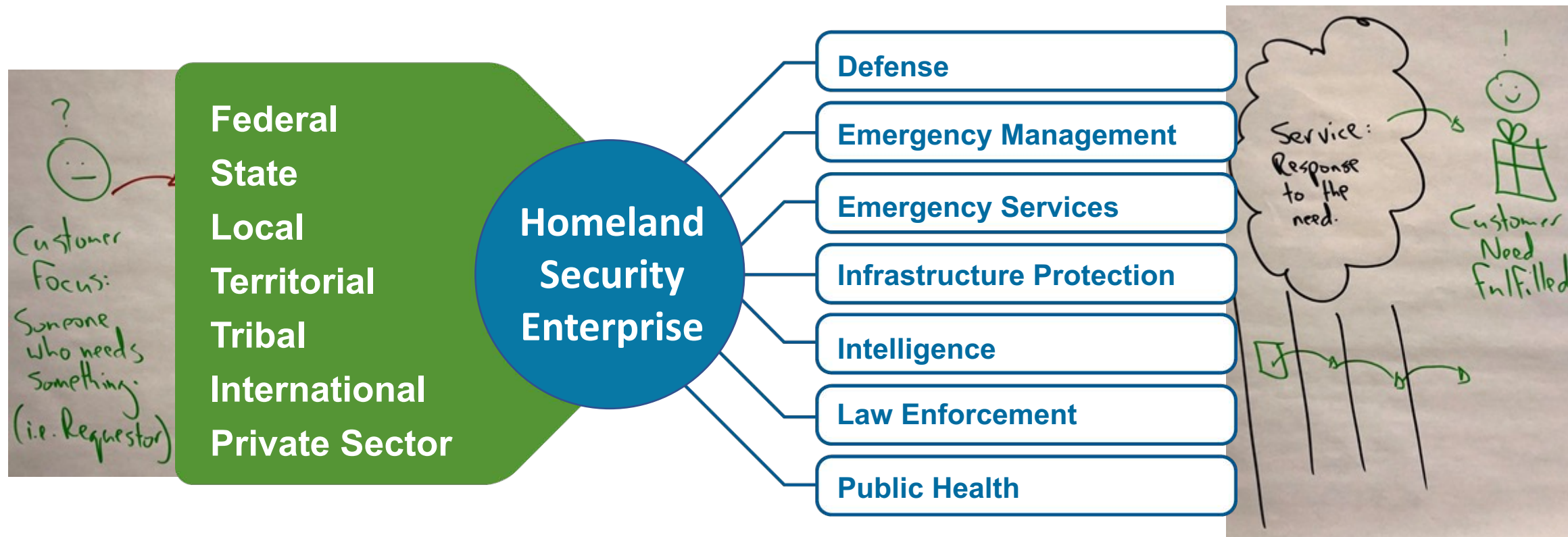
# KANBAN VIEW OF SERVICES



Travis Birch

@xroadstree







HQCloud Scalable cloud



Trusted identity



HSIN  
Homeland Security  
Information Network

Information sharing



InfraOps



Apps for day-to-day  
operations, event  
security, public safety,  
and disaster recovery

Understanding the  
nature of customer  
demand helps “fit for  
purpose” emerge for  
each service

# ADDITIONAL SOURCES OF DEMAND

We comply with

- 17 governance bodies
- 3 joint collaboration groups

And fulfill

- 5 goals
- 15 Chief Information Officer objectives
- 47 fiscal year objectives





And understanding what makes each service fit for purpose helps us design our network of Kanban systems







- Support both simple and advanced board design, upstream and downstream, for services at different maturity levels
- A clear policy on commitment points enables custom workflows to be included in enterprise lead times

Start where you are





Column max

Tracking blockers  
via column

Commitment point  starts

TO DO 13

MAX 14

IN PROGRESS 5

MAX 9

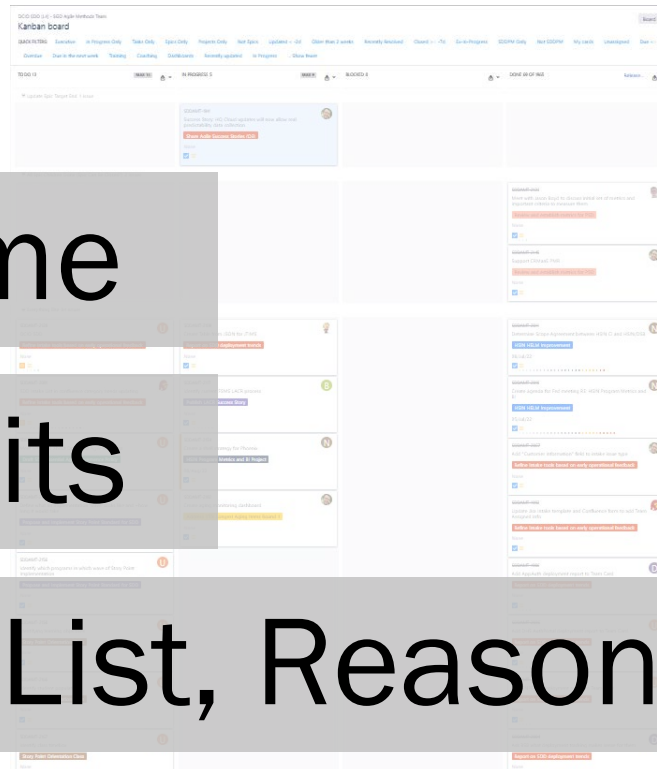
BLOCKED 0

DONE 69 OF 1965

✓ Lead Time

✓ WIP Limits

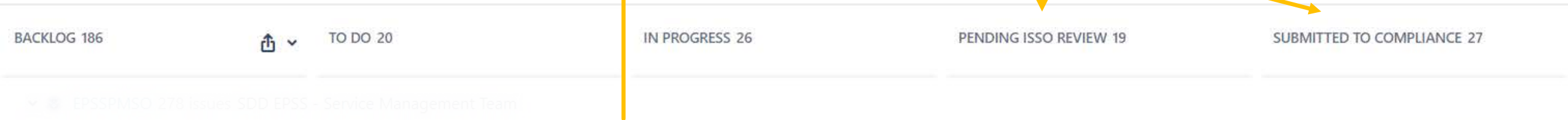
✓ Blocker List, Reasons, and Total Time





Commitment point  starts

Custom workflow steps,  
mapped to “in progress”  
status category



All custom steps map to “status categories” – To Do, In Progress, Done

The first “In Progress” column is always the commitment point, so we can calculate consistent enterprise lead times

✓ **Model Workflow as Actually Practiced**

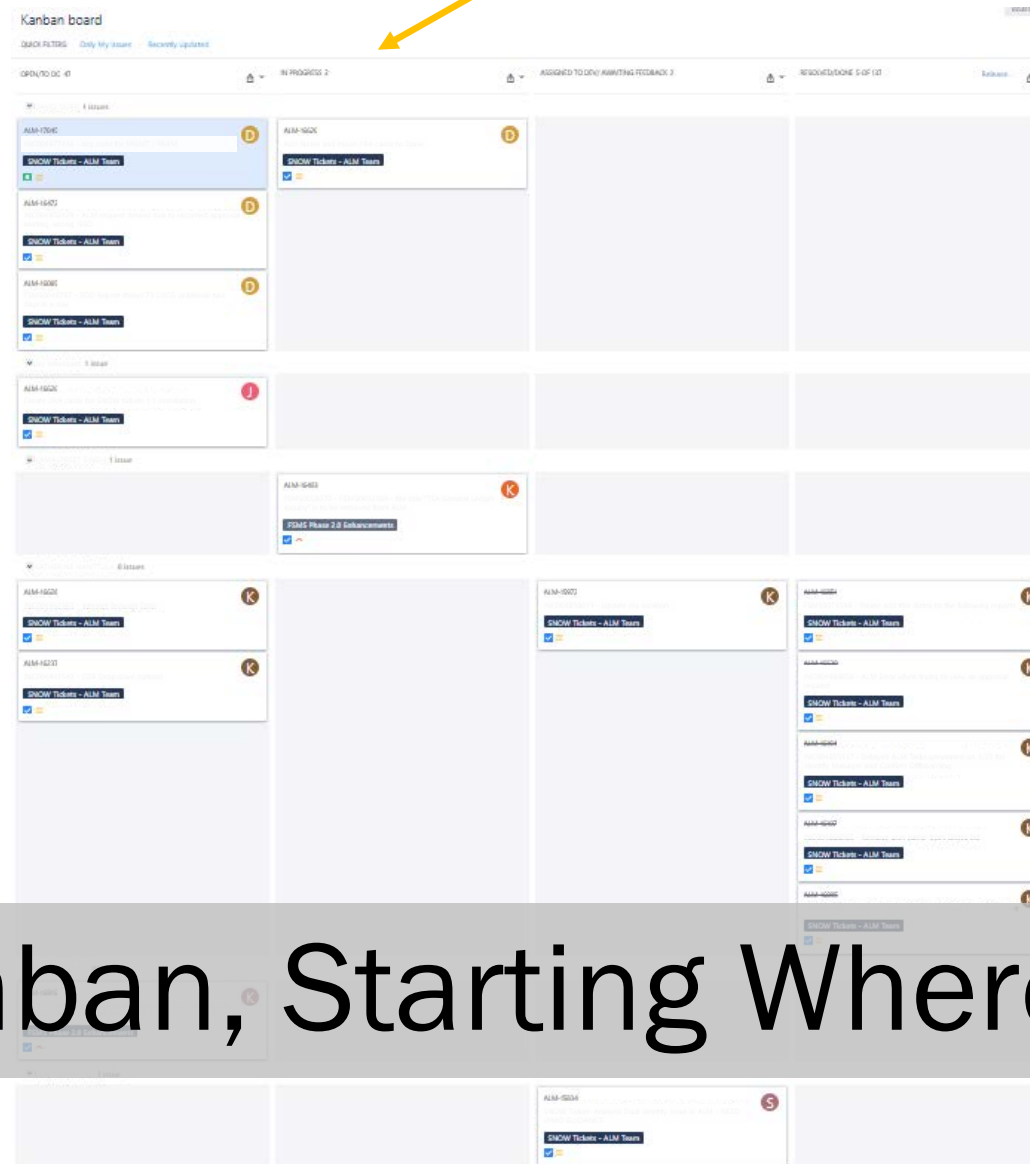




No WIP limits

TEAMS GETTING STARTED

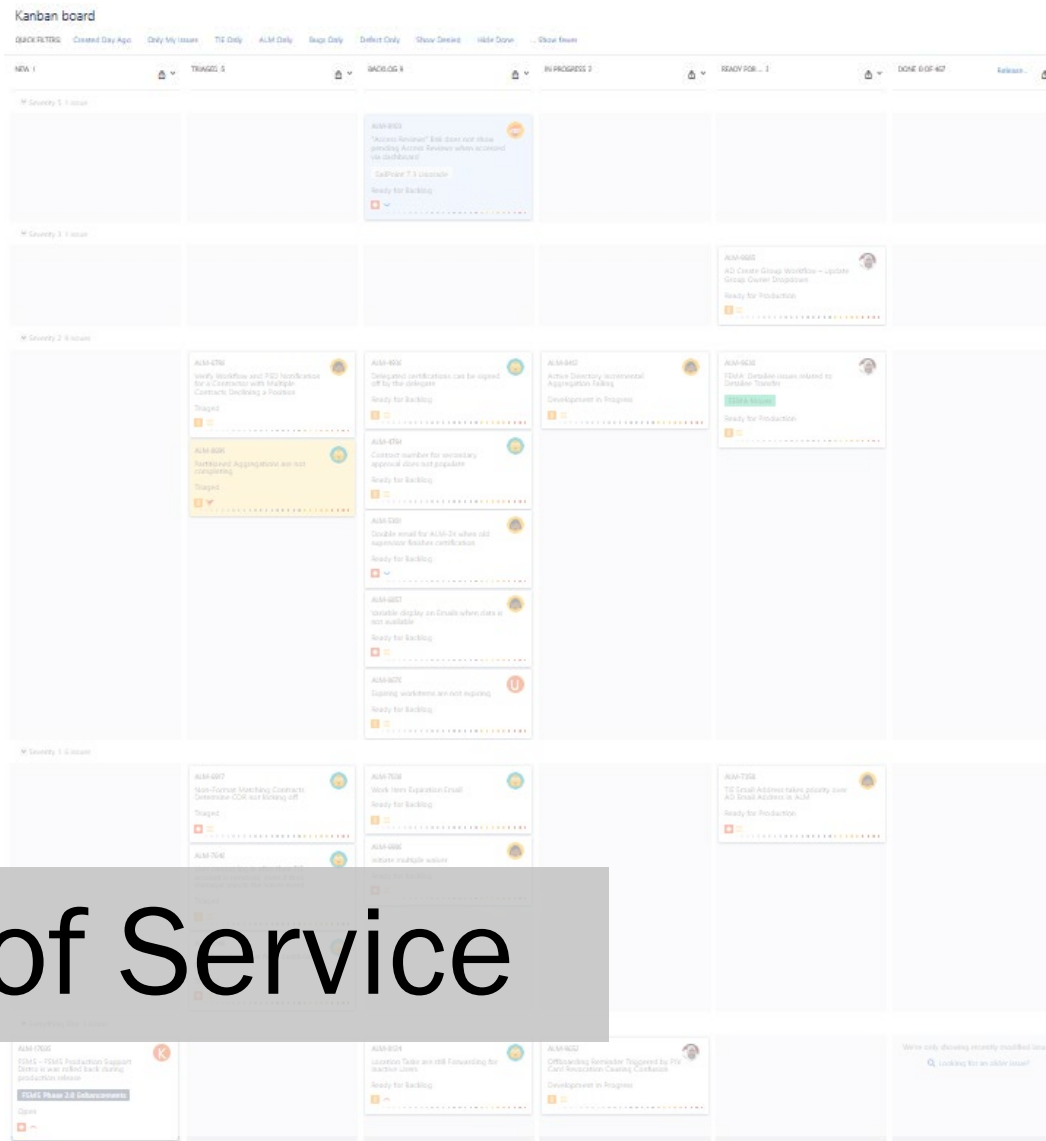
Swimlanes by person





Expedite swimlane,  
highest severity

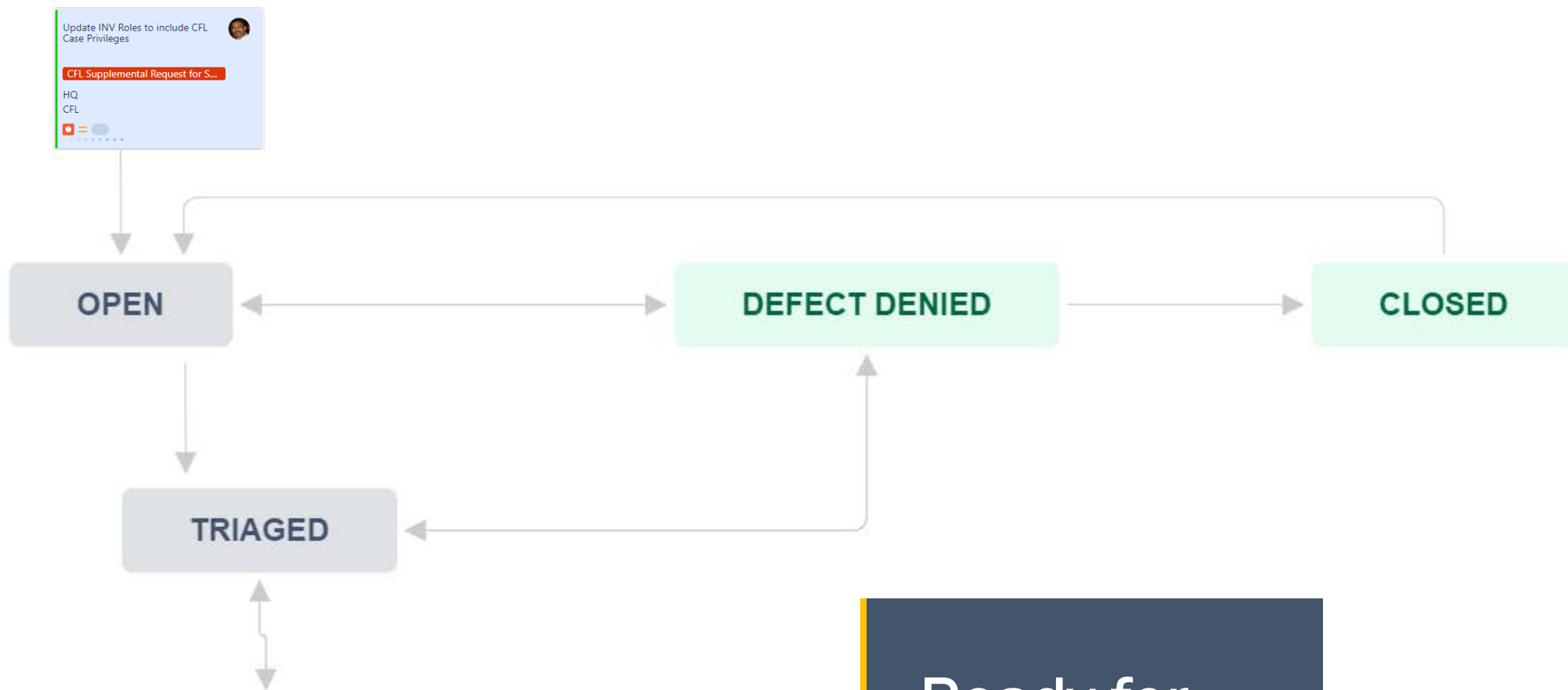
Additional classes of  
severity



- Defects
- Incidents
- Triage workflows



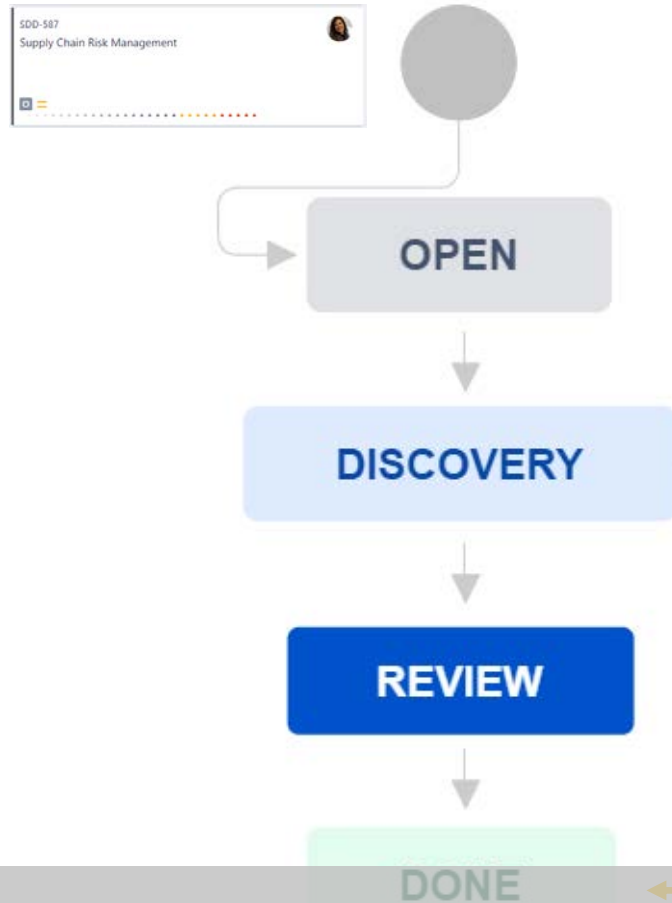
## Classes of Service



Upstream Kanban

Ready for  
commitment





Major projects, using many resources and creating a large amount of WIP, seem to start themselves all the time

Ready for

commitment  
or declined



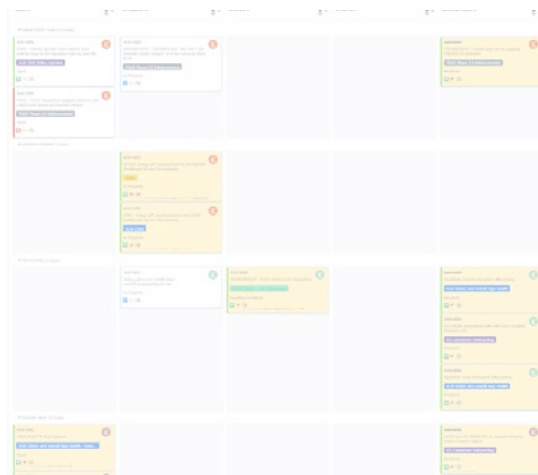
## Upstream Kanban at Project Level



OPEN/TO DO 47 → IN PROGRESS 2 → ASSIGNED TO DEV/ AWAITING FEEDBACK 2 → RESOLVED/DONE 137



TO DO 27    IN PROGRESS 3    IN REVIEW 6    IN TESTING 0    DEPLOYED / DONE 21



Work tracked on a triage board becomes demand on a software development board for a team using sprints and Scrum

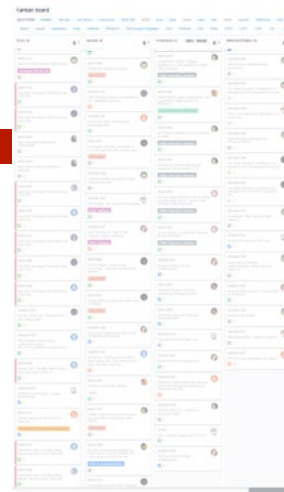


## Networked Interdependent Services



Each customer interacts  
with a board showing  
their requests

	To Do	In Progress	Done
MGMT-OCIO-SDD-WCM Tenant Projects	21	92	439
DHS.gov	15	48	79
NICCS	2	22	247
NIEM	0	9	4
CBP	0	4	0
US-CERT Public Website	0	4	0
EMERALD in Drupal	1	3	46
Inspector General	1	1	19
TSA	2	1	0
DHS TSA PreCheck	0	0	2
FLETA	0	0	20
FLETC	0	0	20
GovDelivery User Agreement	0	0	2

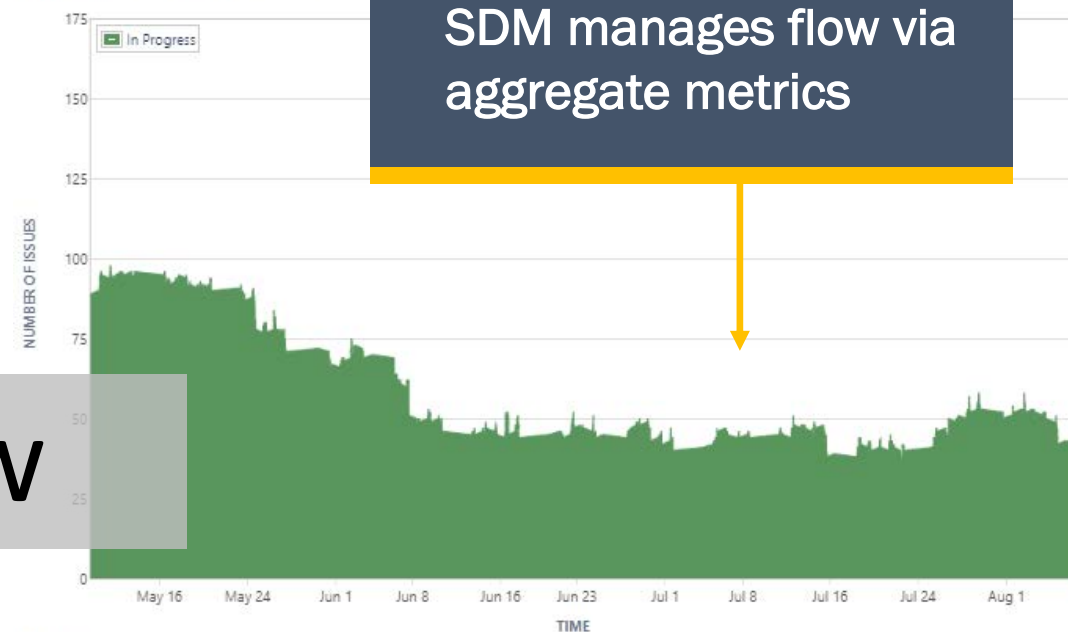


## AGGREGATE BOARDS

Service Delivery  
Manager (SDM) views  
cards on aggregate  
board

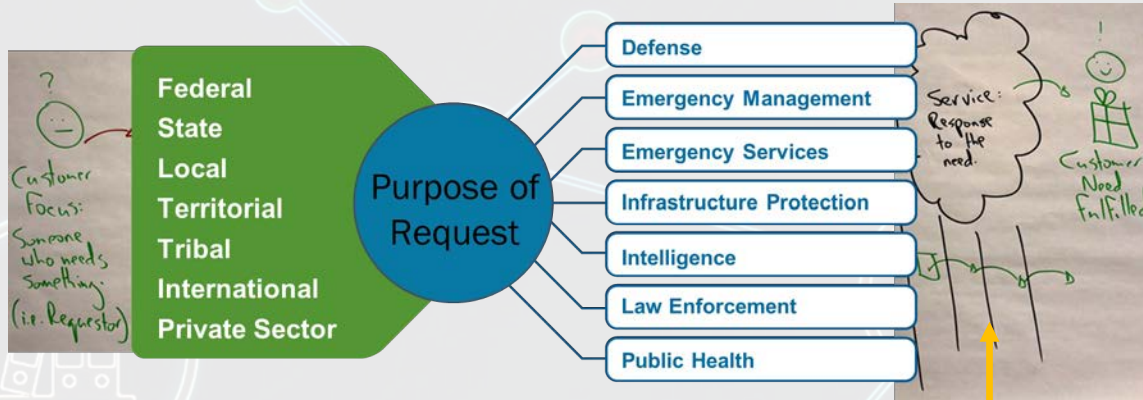
Cumulative Flow Diagram

9/May/22 to 7/Aug/22 (Past 3 Months)



# Service Delivery Review





Enterprise content delivery

Access lifecycle management

Business intelligence

Correspondence

Cloud hosting

Customer relationship management

Platform as a service

Authorization, single sign-on, identity

Directory services

140k cards  
over 10 years,  
now 47 teams

Application and infrastructure monitoring

Public key infrastructure

License management

Community of interest hosting

Information exchange

Learning management system

Research library

Application development on several platforms

Low code / no code application platforms

Survey tools

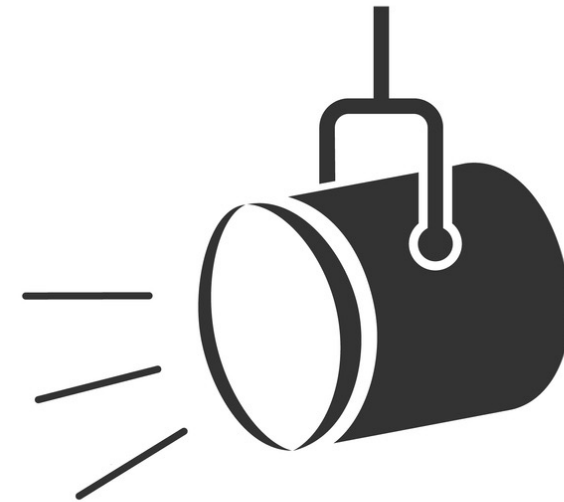
Data visualization

Web content platform as a service

Web content professional services



- Reviewing flow metrics changes our decisions, and results in more predictable lead times
- In many cases, Kanban systems can replace activity reporting and presentation slides
- Automatic validations are helpful with electronic Kanban boards and a remote team





# Our Experience with Remote Kanban







My week starts with a combined  
flow review and replenishment  
meeting





## REVIEWING THROUGHPUT

Vertical bars show  
completed cards per  
week

Week with low  
throughput

● Cards Completed

Average Cards Completed: 20.2

Average throughput





- We base WIP limits on past throughput
- Also, we check WIP limits against the number of available team members





	🔥 Card Count	Avg Duration In Progress	85% Duration SLA	95% SLA	100% SLA (Max Time)
▼ 🇺🇸 <b>SDD - Agile Methods Team</b>	1,502	6d 4h 47m	1w 4d 36m	2w 6d 21h 20m	23w 2d 7h 49m
▶ 📁 FY20	20	3w 2h 41m	5w 5d 23h 35m	5w 6d 3h 35m	6w 2d 2h 48m
▶ 📁 FY21	572	1w 1d 10h 14m	1w 6d 22h 39m	3w 4d 23h 45m	23w 2d 7h 49m
▼ 📁 FY22	910	4d 11h 19m	1w 2d 8h 34m	2w 1d 3m	5w 26m
▶ 📁 (01) Oct	93	5d 7h 35m	1w 4d 45m	2w 25m	3w 3d 23h 44m
▶ 📁 (02) Nov	105	5d 6h 4m	1w 3d 17h 32m	2w 2d 22h 55m	5w 26m
▶ 📁 (03) Dec	93	5d 11h 32m	1w 3d 6h 30m	3w 6h 17m	4w 5d 22h 20m
▶ 📁 (04) Jan	78	6d 8h 50m	1w 4d 18m	3w 5d 9h 34m	3w 6d 6h 59m
▶ 📁 (05) Feb	87	4d 14h 38m	1w 3d 24m	1w 4d 13h 14m	4w 6d 17h 31m
▶ 📁 (06) Mar	101	4d 16h 12m	1w 3d 26m	2w 3d 11h 32m	3w 4d 34m
▶ 📁 (07) Apr	82	3d 28m	6d 23h 16m	1w 3d 11m	2w 23h 59m
▶ 📁 (08) May	100	2d 14h 31m	5d 8h 52m	1w 1d 41m	1w 5d 6h 40m
▶ 📁 (09) Jun	79	3d 15h 9m	1w 2h 5m	1w 5d 3h 12m	4w 23h 18m
▶ 📁 (10) Jul	67	3d 19h 50m	1w 11h 41m	2w 1d 5h 57m	3w 1d 4h 22m
▶ 📁 (11) Aug	17	3d 17h 26m	6d 7h 8m	1w 2d 22h 19m	1w 4d 3h 10m
▶ 📁 Open Items	8	3d 15h 10m	5d 12h 43m	1w 1d 1h 9m	1w 2d 8h 5m



## CHECKING AVERAGE LEAD TIME

We're the "Agile Methods Team" so we need to model data-driven replenishment

We can see lead time for full history of our team

		Duration In Progress		100% SLA (Max Time)	
		Card Count	Avg Duration In Progress		
SDD - Agile Methods Team		1,502	6d 4h 47m		
FY20		20	3w 2h 41m		
FY21		572	1w 1d 10h 14m		
FY22		910	4d 11h 19m		
(07) Apr	82	3d 28m	6d 23h 16m	1w 3d 11m	2w 23h 59m
(08) May	100	2d 14h 31m	5d 8h 52m	1w 1d 41m	1w 5d 6h 40m
		3d 15h 9m		2m	4w 23h 18m
		3d 19h 50m		7m	3w 1d 4h 22m
		3d 17h 26m		19m	1w 4d 3h 10m
Open Items		8	3d 15h 10m	5d 12h 43m	1w 1d 1h 9m
					1w 2d 8h 5m

We started in fiscal year 2020 and made more task cards visible each year

Our lead times have decreased each year



# DISCARDING AND DROPPING CARDS







	📌 Card Count	Discard %	Dropped %
▼ 🇺🇸 <b>SDD - Agile Methods Team</b>	1,995	9%	6%
▶ 📁 FY20	20		
▶ 📁 FY21	761	11%	8%
▶ 📁 FY22	1,214	8%	5%



- Learning to trim the tail is challenging
- We would like to deliver “epic level” value and in 2 to 8 weeks
- The timeframe is also influenced by accomplishment writing cycles
- We enter epic target dates but they can be changed



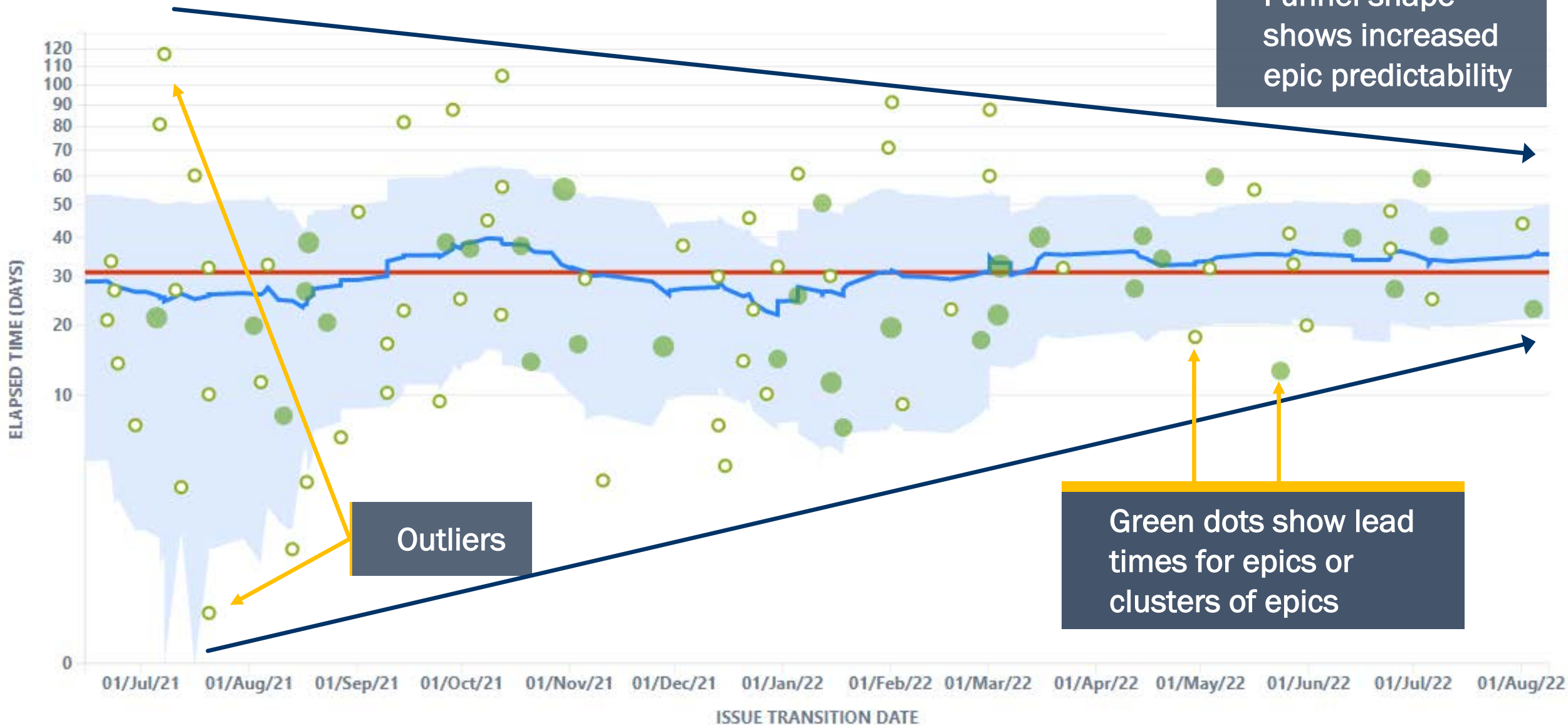


## CHECKING EPIC PREDICTABILITY

Funnel shape  
shows increased  
epic predictability

Outliers

Green dots show lead  
times for epics or  
clusters of epics







Trusting our system makes replenishment choices clearer  
and eliminates a lot of status reports



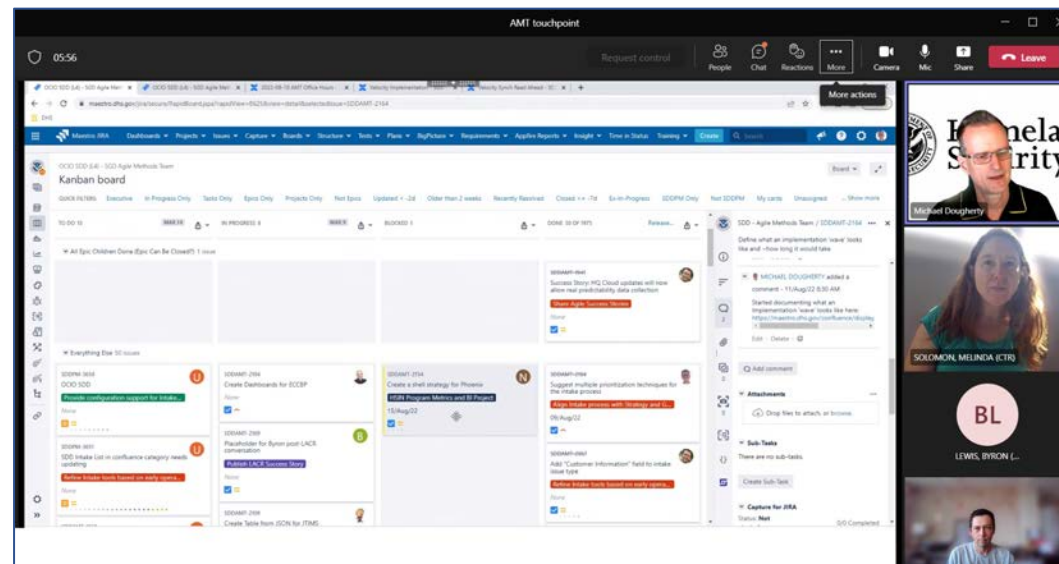


Our  
organization  
has 5+  
contractors  
for every “fed”





- Review board from right to left
- Rotate facilitation
- Automation validates our policies







- Aging items
- Card in progress but nobody assigned
- Target date has passed
- Status mismatch between connected project card, epic cards, and task/story cards
- Card hasn't been updated in 4 days (our average cycle time), please add a comment
- All tasks/stories done, can the epic be closed?
- All epics done, can the project be closed?
- Card assigned to inactive user, did they leave? Please reassign
- No activity in epic's tasks/stories (is this truly in progress?)





Briefings must be done directly  
from the visual system, no  
presentation slides allowed





- Deep dive on a project
- Articulate emerging problems to be solved in the next 1-3 months
- Time to think strategically





- Coaching, training, and tooling support are essential
- Provide starter policies to address common questions, such as which columns count as WIP
- Gold stars for clean data!
- Predictability unifies the agendas of workers, mid-level managers, and senior leaders







“If too many things are in progress,  
very little will get done”



“We need to be able to see when  
commitments and delivery are out of  
balance, and understand why”





## PROVIDE TRAINING AND COACHING

- We created a new Kanban-based “Creating Balanced Systems” training class
- We offered coaching services and hands-on tooling support

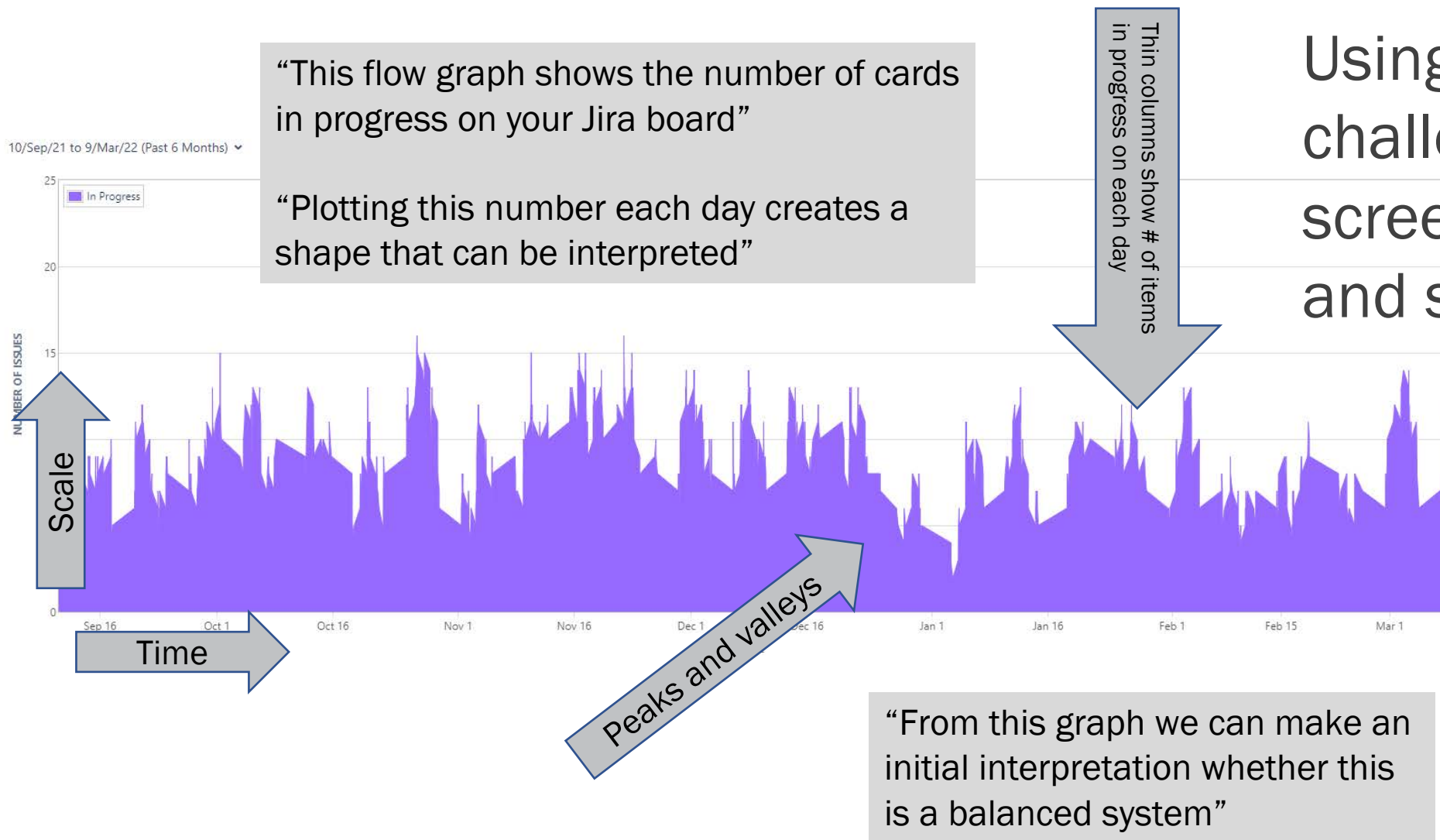






- Make all work visible on a board, including previously hidden items
- All work not in the backlog and not yet done is WIP
- Blocked cards and cards with dependencies on your board are WIP
- Avoid work moving backwards









- Teach hands-on
- Invite others to share their screen and navigate
- Resolve all permissions and technical obstacles
- Pick an existing meeting in which people will review boards and flow





## Recognizing Unbalanced Systems

Dramatic WIP increase; daily updates (jagged lines)



Steady WIP increase; daily updates



Steady WIP increase; updates on a regular cadence (blocky lines)



Increase in WIP; card status rarely updated (stairstep shape); many cards move in progress on same day (waterfall)



SDD

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## Visualizing Decreasing WIP

Dramatic WIP decreases



Steady WIP decrease



Work item "clean out" followed by closures on a regular cadence



Remember these graphs only represent one signal of system health, and all measurements can be gamed!

SDD

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## Graphing Steady Flow in Balanced Systems

WIP appears to fall within a consistent range; ends at same point it started; stays roughly in the same range



WIP appears steady; check that outliers aren't throwing off scale of y axis



If the low point and highest point are close together, the graph may appear thicker due to the scale of the y-axis



SDD

29

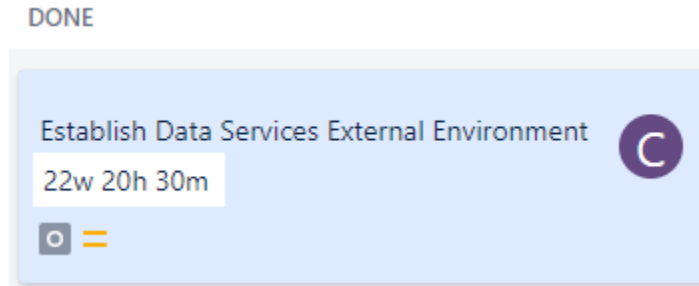


Keeping electronic cards orderly is challenging but necessary for a clean portfolio

When all data inconsistencies are resolved, the service gets a full slate of gold stars

Type	Service 1	Service 2	Service 3	Service 4	Service 5
Projects with Target End Past Due	★	1	★	1	2
Projects with no Target End	★	★	★	★	★
Projects with no Objectives	3	4	1	★	3
Projects In Progress with no Epics	★	★	★	★	★
Projects with No Description	★	3	★	★	1
Projects In Progress with No Assignee	★	1	★	★	★
Projects To Do with child items In Progress	1	3	★	1	5
Projects Done with child items Open	★	★	★	2	★
Projects In Progress with all Epics Done	★	★	★	★	★
Projects with Target Start mismatch	1	1	★	1	6





- The flow of a project card to done signals delivery of significant value
- Currently, 85% of projects were in progress for **28w 6d**
- Leaders can expect significant value accomplishments to be produced at this rate

Emergent standard



Summary

Card Count

Business Intelligence as a Service

FY22 835

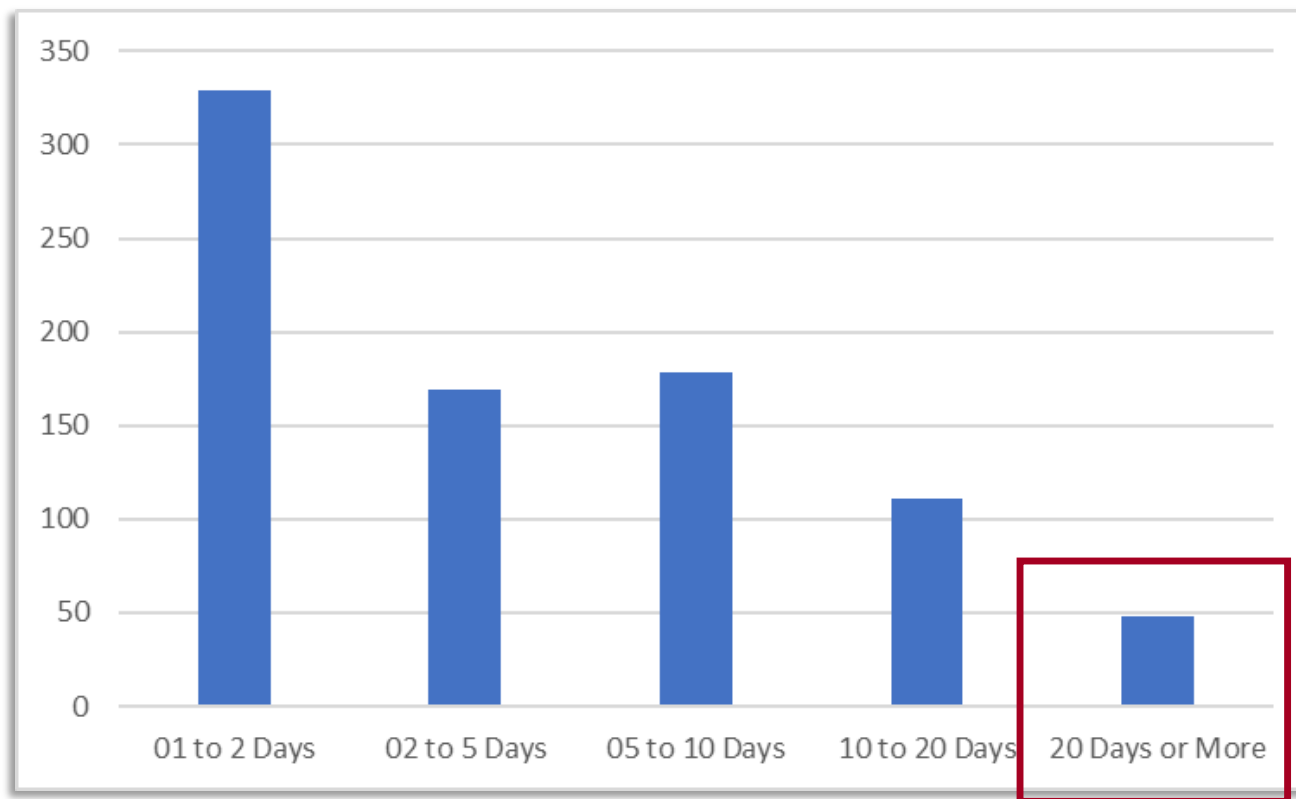
01 to 2 Days 329

02 to 5 Days 169

05 to 10 Days 178

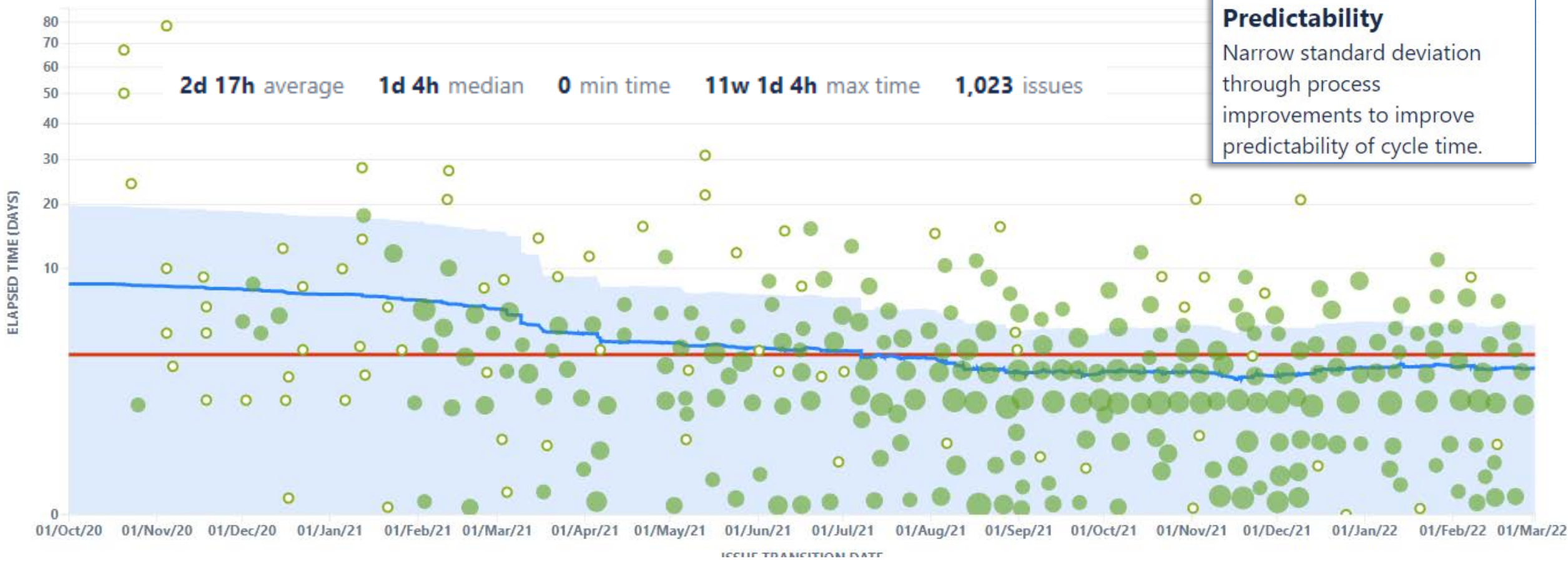
10 to 20 Days 111

20 Days or More 48





Predictability unifies the agendas of workers,  
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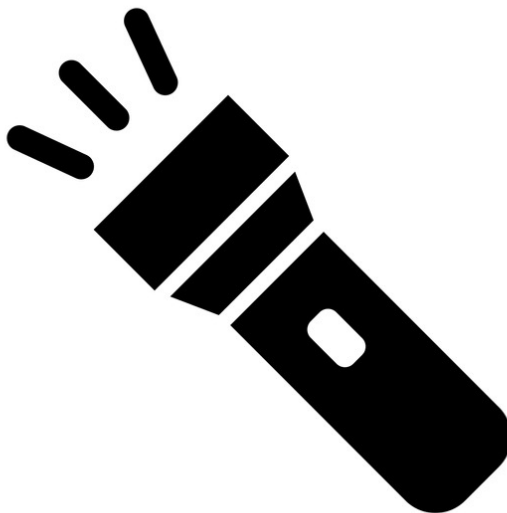




# From Flashlight to Floodlight Using the Kanban Lens

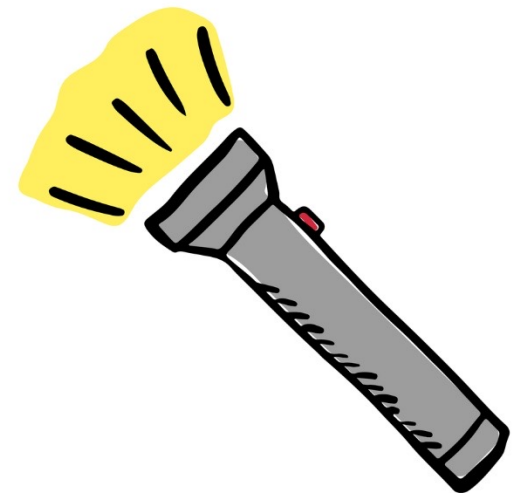
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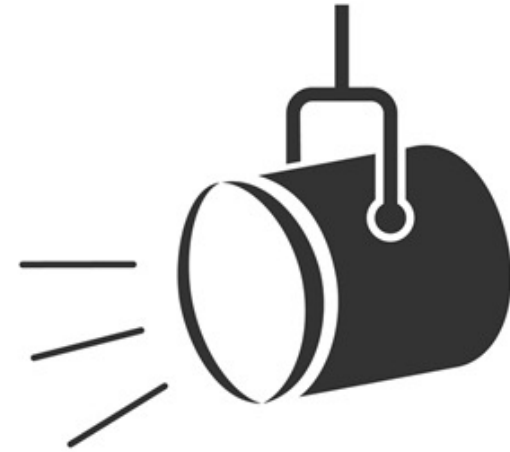


- ✓ Make work visible
  - ✓ Model workflow steps as actually practiced
  - ✓ Set WIP limits
  - ✓ Manage flow of work to done
  - ✓ Measure flow (lead time, blockers)
  - ✓ Set policies for clean data, WIP, commitment point, and forward flow
  - ✓ Scale flow management (projects, epics, tasks/stories)
  - ✓ Manage options with upstream Kanban
  - ✓ Network interdependent boards
  - ✓ Aggregate boards to manage service delivery
- ✓ Apply classes of service
  - ✓ Trim the tail





- ✓ Throughput
- ✓ Lead Time (Average, 85%)
- ✓ Predictability
- ✓ Discard and drop rate
- ✓ Blocker reasons
- ✓ Blocked time
- ✓ Count of data health issues (accuracy)
- ✓ Count of unresolved items
- ✓ Cumulative flow
- ✓ Control chart
- ✓ Lead time distribution
- ✓ Created vs resolved
- ✓ Data health dashboard (gold stars)
- ✓ Reports organized by fiscal year/month
- ✓ Enterprise metrics







- ✓ Replenishment
- ✓ Flow Review
- ✓ Workflow Kanban Meeting
- ✓ Retrospective
- ✓ Program Management / Service Delivery Review
- ✓ Roadmapping







- ✓ Service orientation
- ✓ Customer-driven view
- ✓ Analyze demand
- ✓ Understand fit for purpose
- ✓ Sources of dissatisfaction
- ✓ Obtaining agreement to pursue evolutionary change
- ✓ Manage work, not people
- ✓ Starting where we are, increase depth of Kanban





Questions?