

The Shape of Uncertainty

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The New Yorker

July 20, 2015

The next full-margin rupture of the Cascadia subduction zone will spell the worst natural disaster in the history of the continent.



Our house

Year built:
1962

Foundation:
Cinder
blocks with
no rebar



Our house

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Types of Metrics

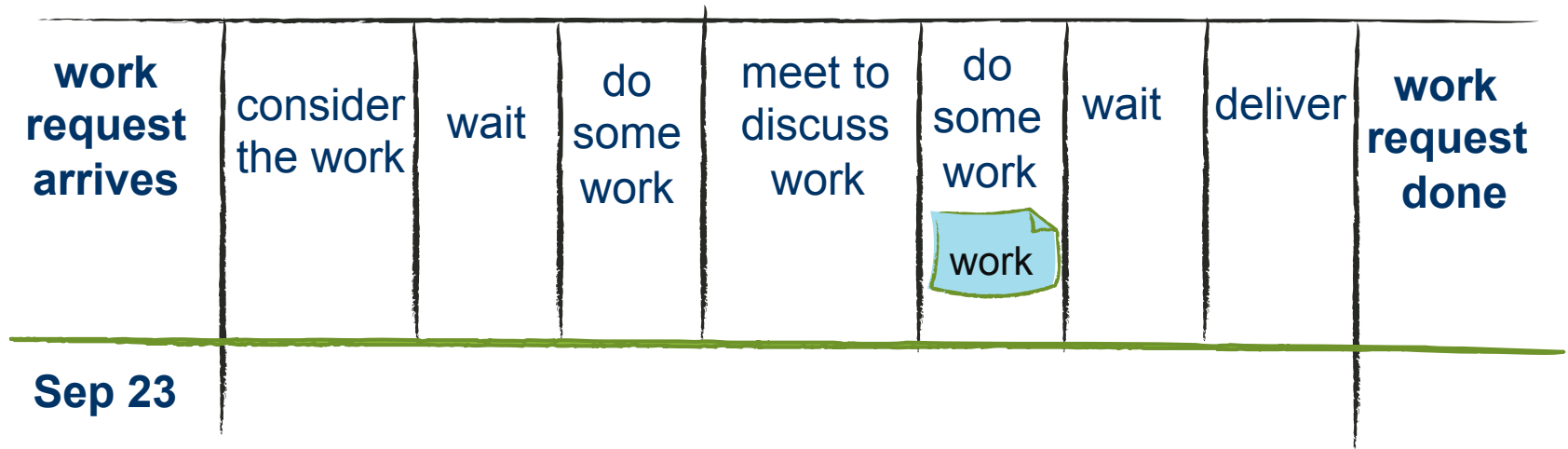
Descriptive

Predictive

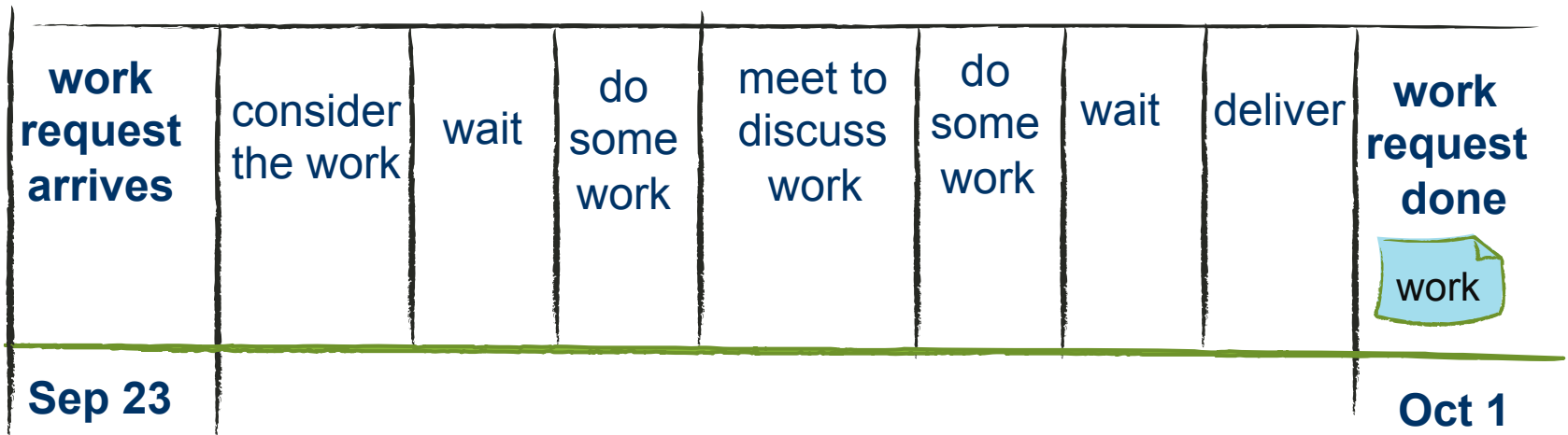
Prescriptive

We are trying to be approximately right instead of exactly wrong.

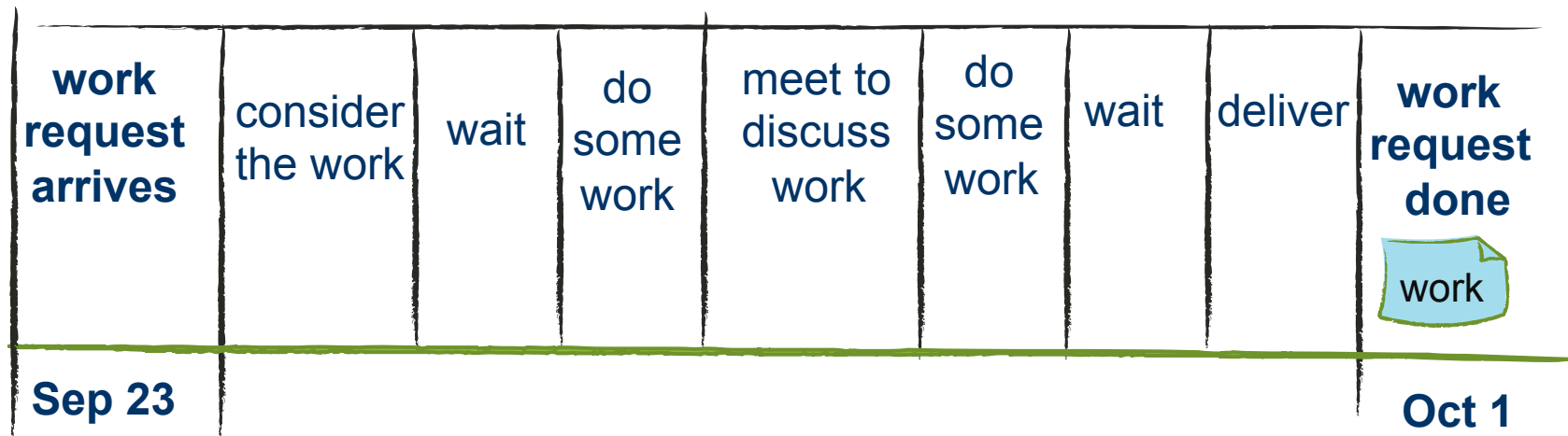
When will work be done?



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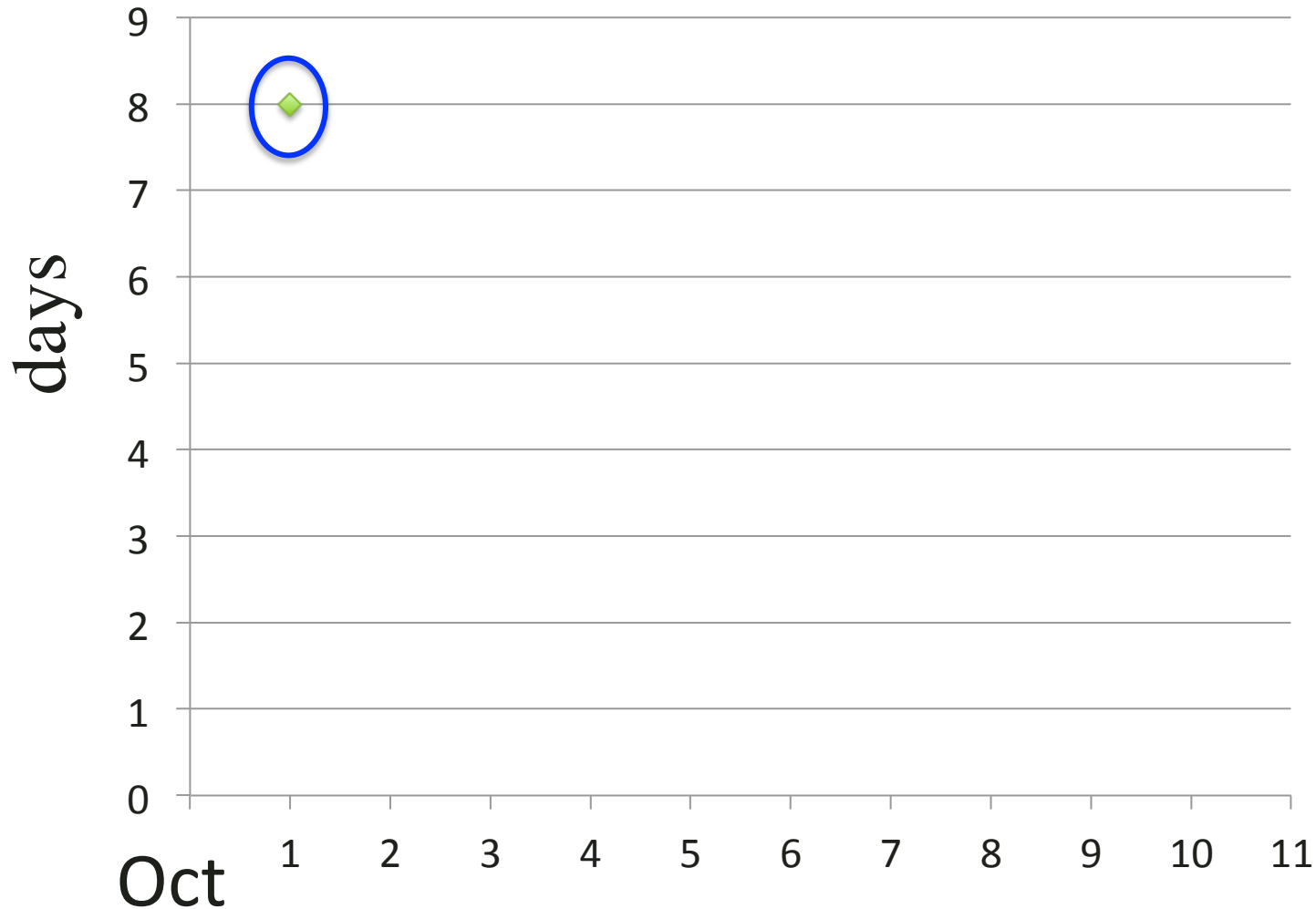


The elapsed time for the work to get done is 8 days

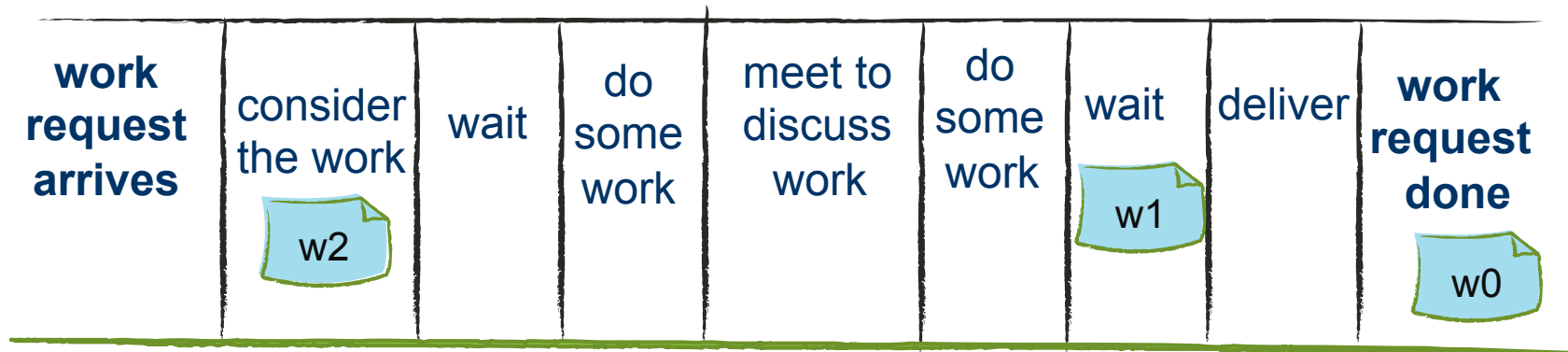


Flow time (Process time + wait time) = 8 days

Plotting elapsed work Flow time



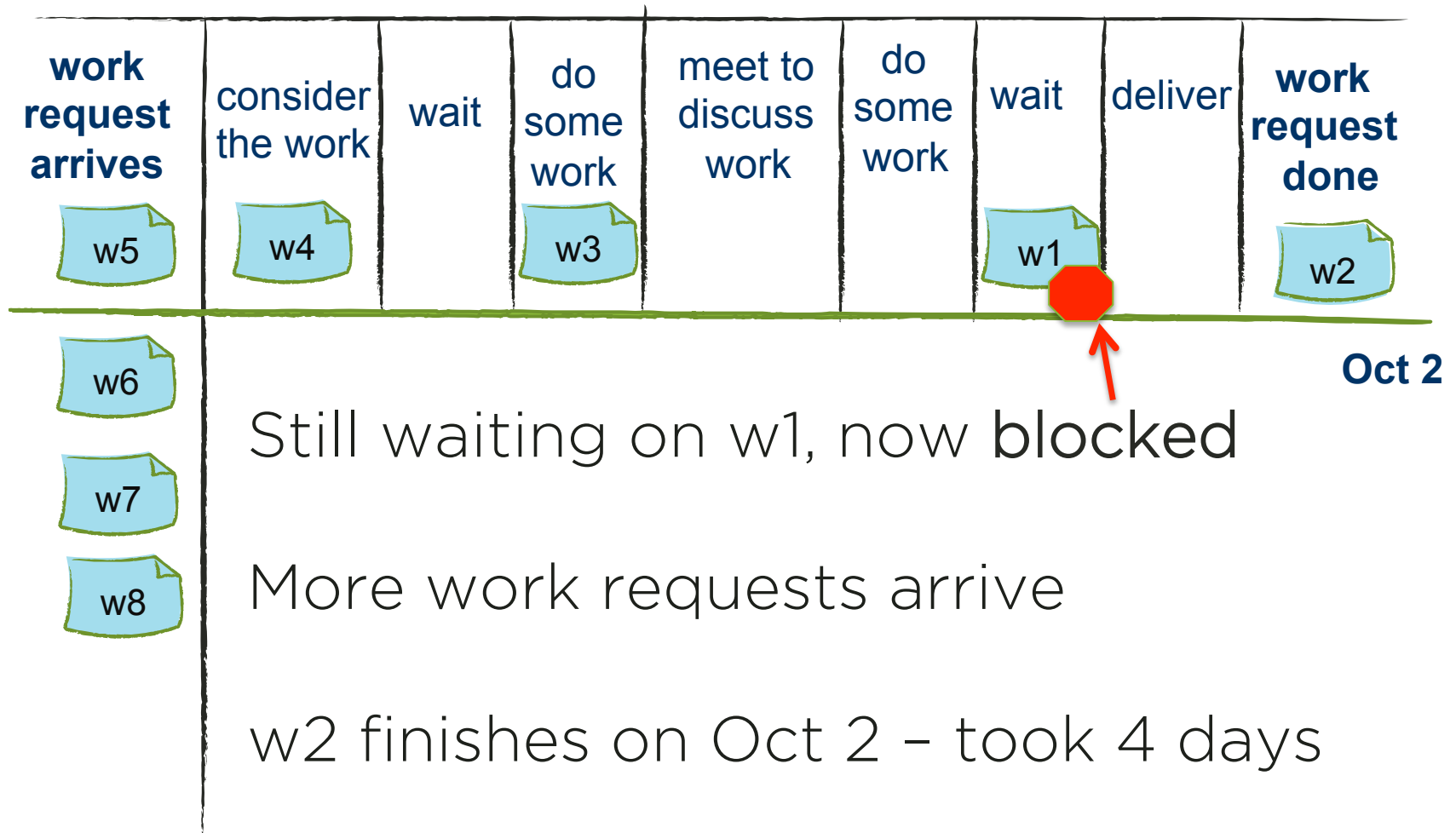
More work gets started



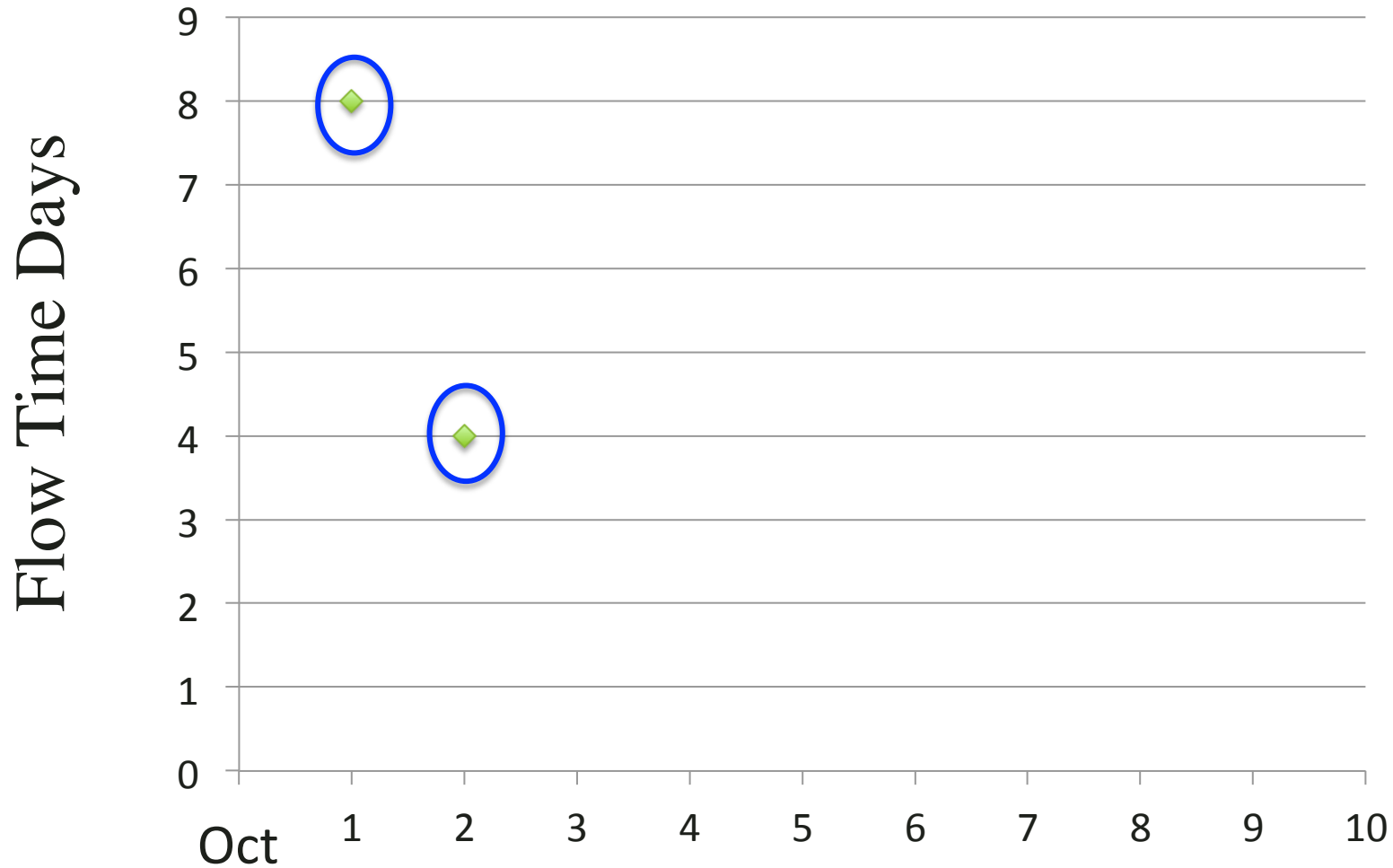
w1 comes in and makes it almost all the way to done, but gets hung up waiting on vendor.

While we're waiting, we pull in work item w2.

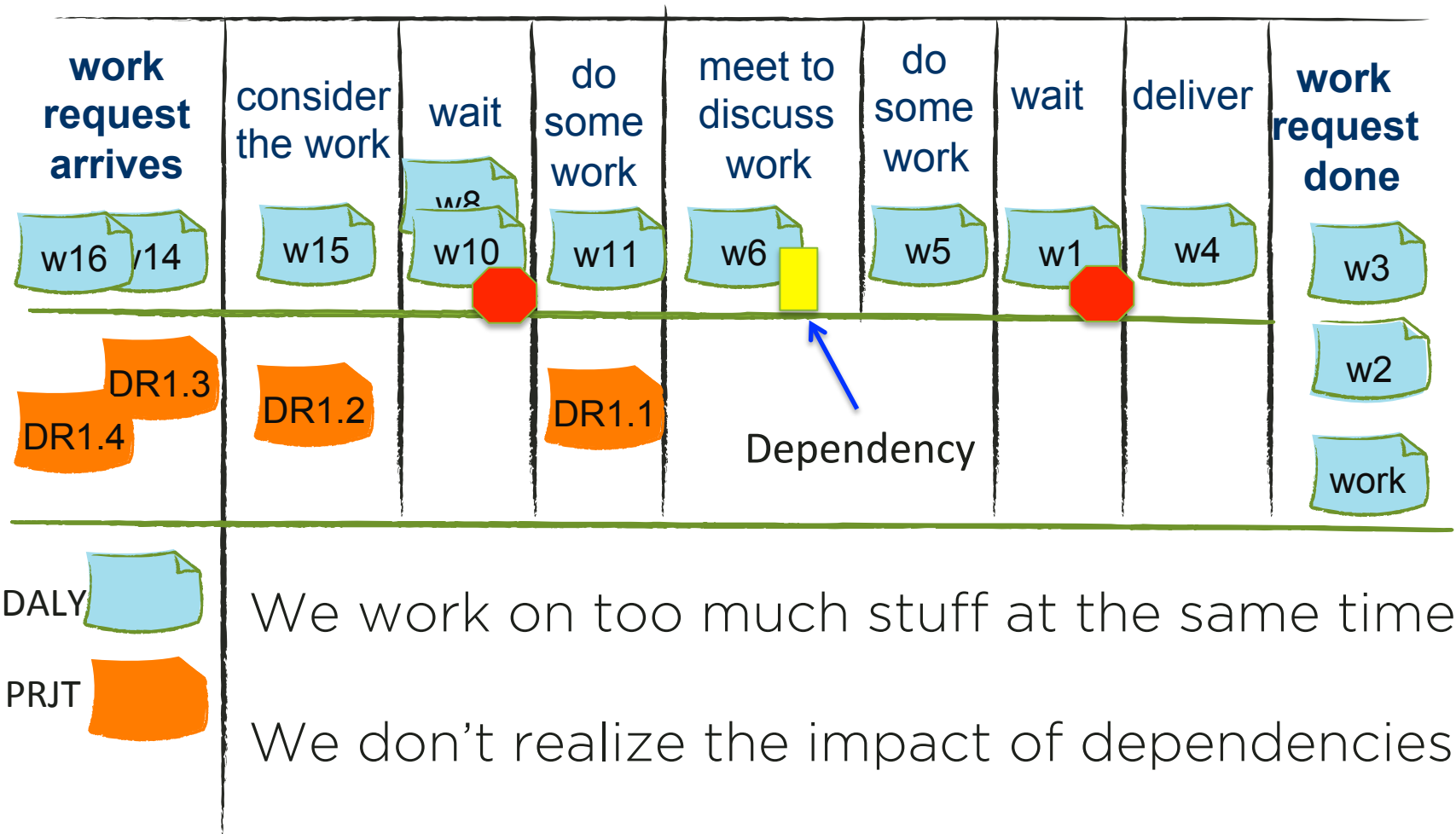
The problem in knowledge work is delayed feedback



Plotting elapsed work Flow time



Starting new work faster than finishing prior work = No flow



Dependency x 2

| you | friend |
|-----|--------|
| X | |
| | X |
| | |
| X | X |

What's the likelihood of Arriving on time?

Dependency x 2

| you | friend |
|-----|--------|
| X | |
| | X |
| | |
| X | X |

What's the likelihood of Arriving on time?

1 chance in 4 = 25%
of arriving on time

Dependency x 3

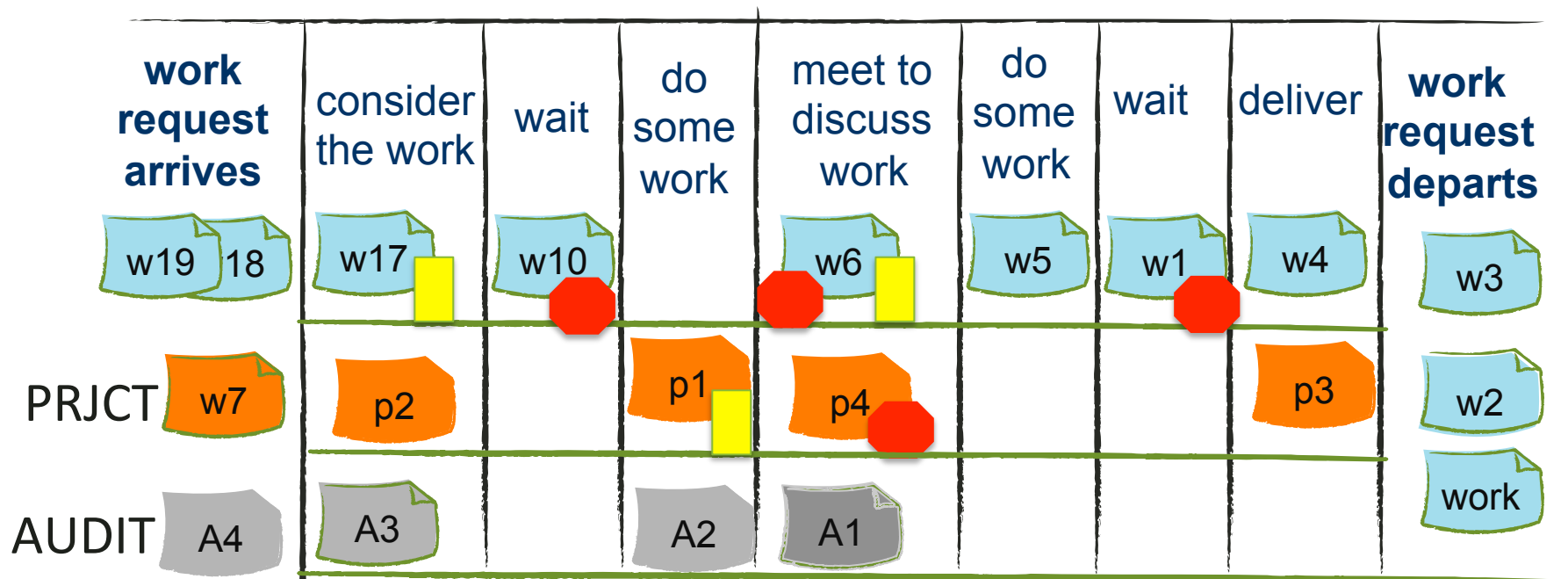
| you | friend | brother |
|-----|--------|---------|
| X | | |
| | X | |
| | | |
| X | X | |
| | | X |
| X | | X |
| | X | X |
| X | X | X |

Dependency x 3

| you | friend | brother |
|-----|--------|---------|
| X | | |
| | X | |
| | | |
| X | X | |
| | | X |
| X | | X |
| | X | X |
| X | X | X |

1 chance in 8
= 12.5% of
arriving on time

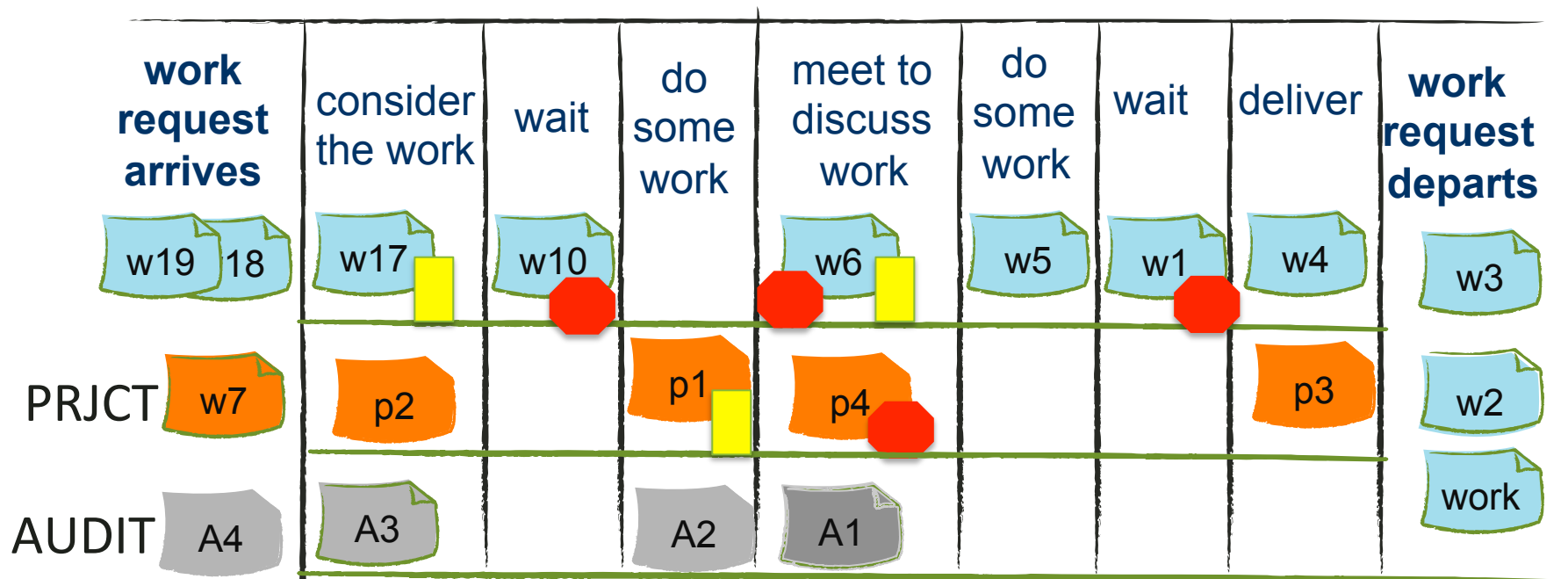
Flow - the movement & delivery of value through the pipeline



That point when we said it would only take 2 days, but it actually took 2 weeks.

We have become unpredictable.
And our fellow workers don't trust us anymore.

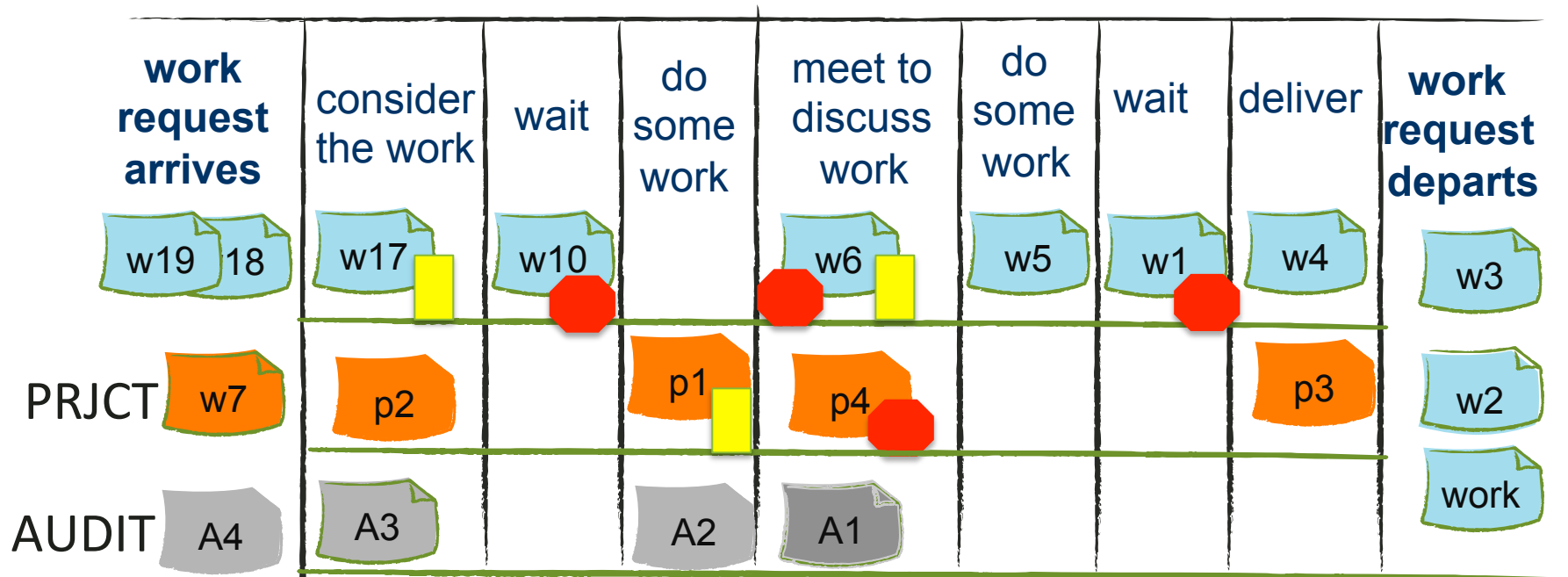
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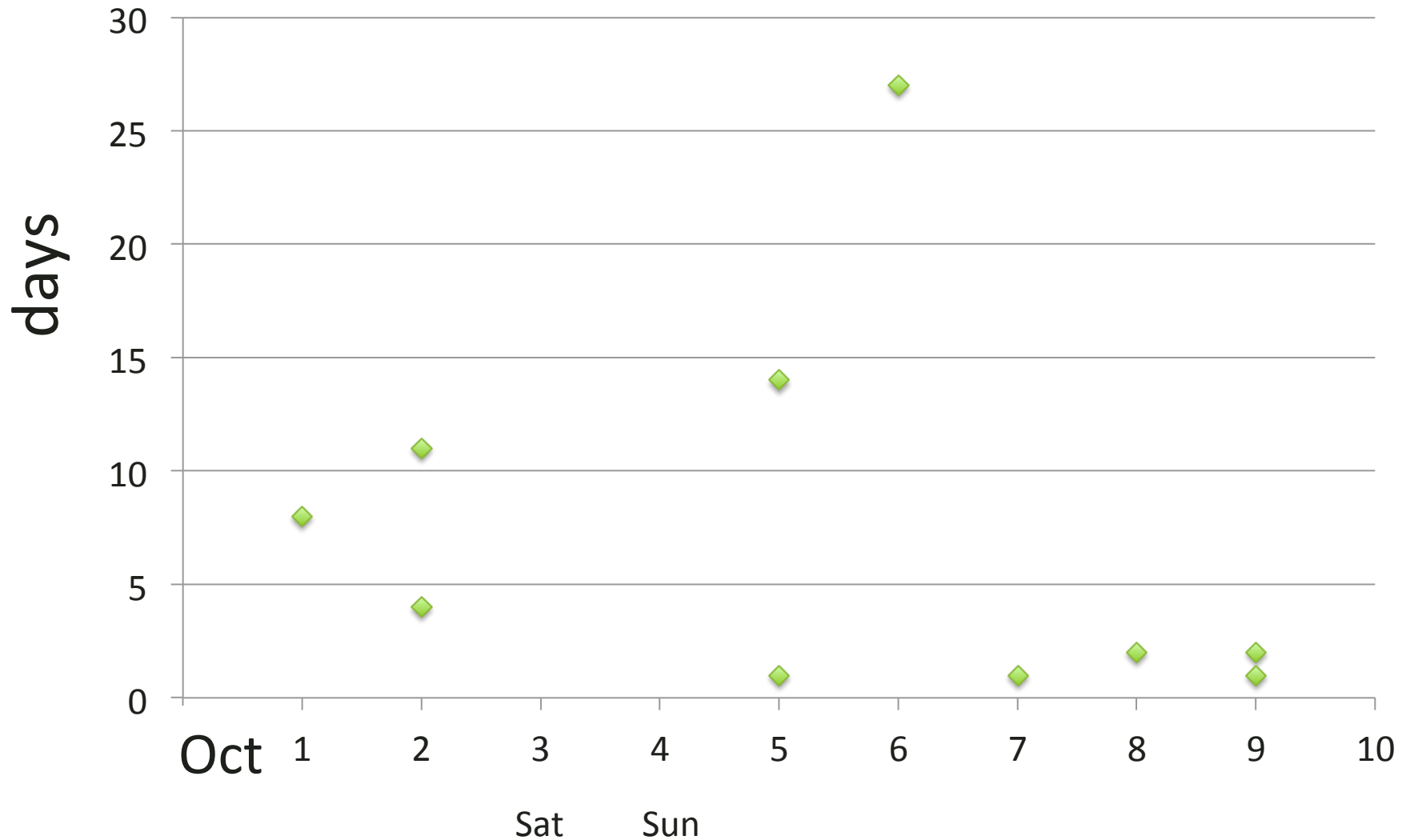
Flow - the movement & delivery of value through the pipeline



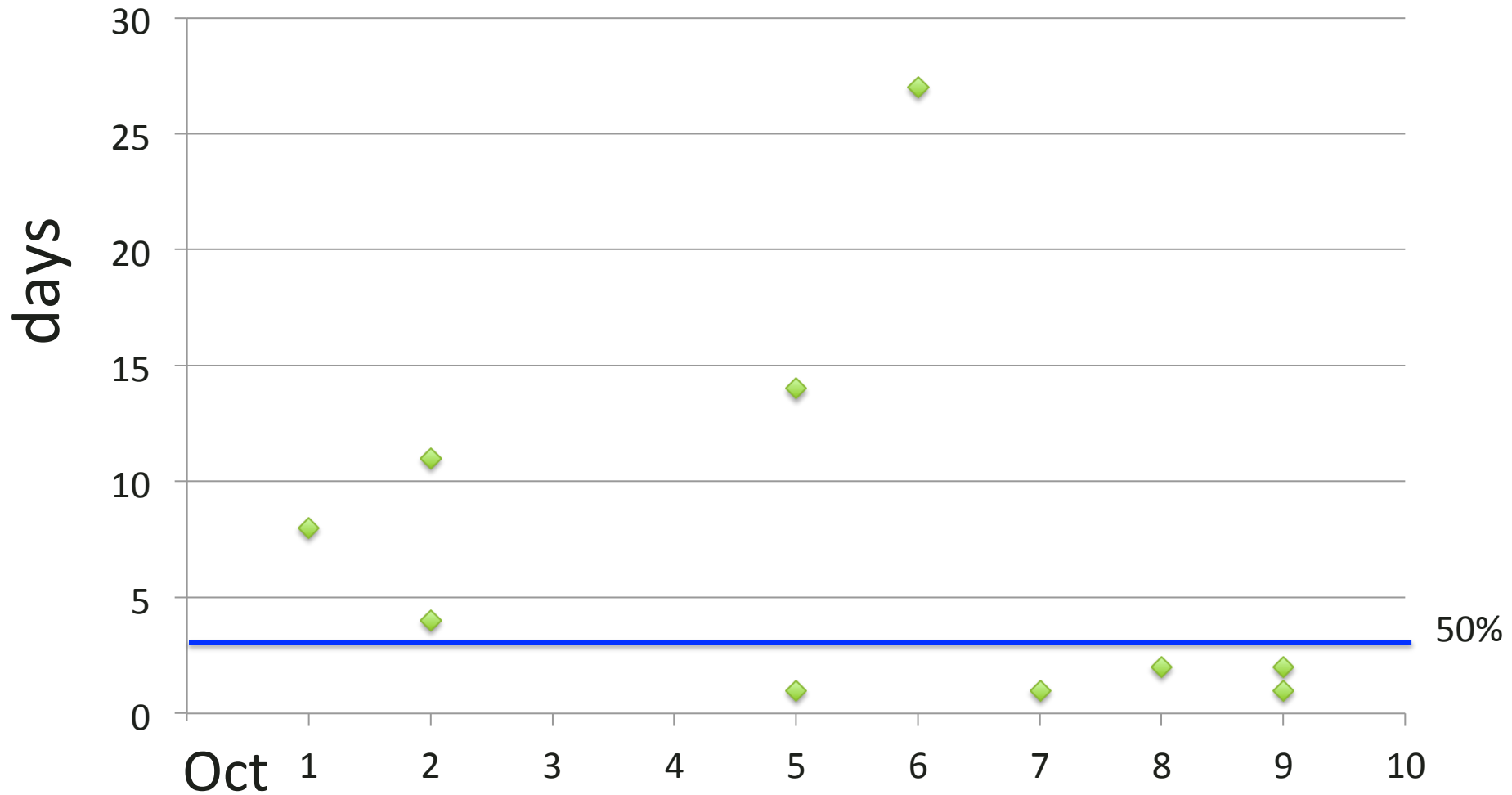
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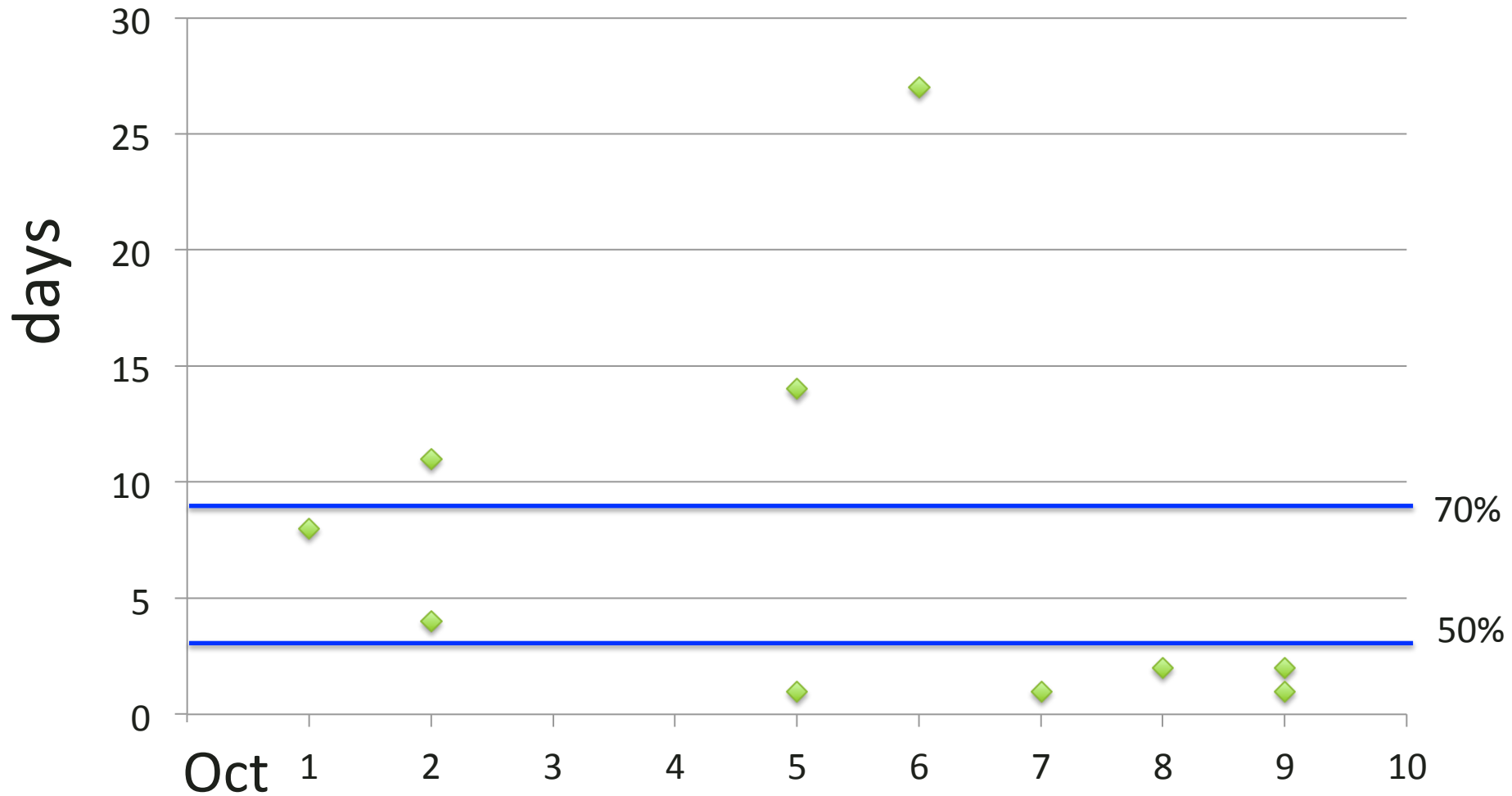
Time series plot for completed work



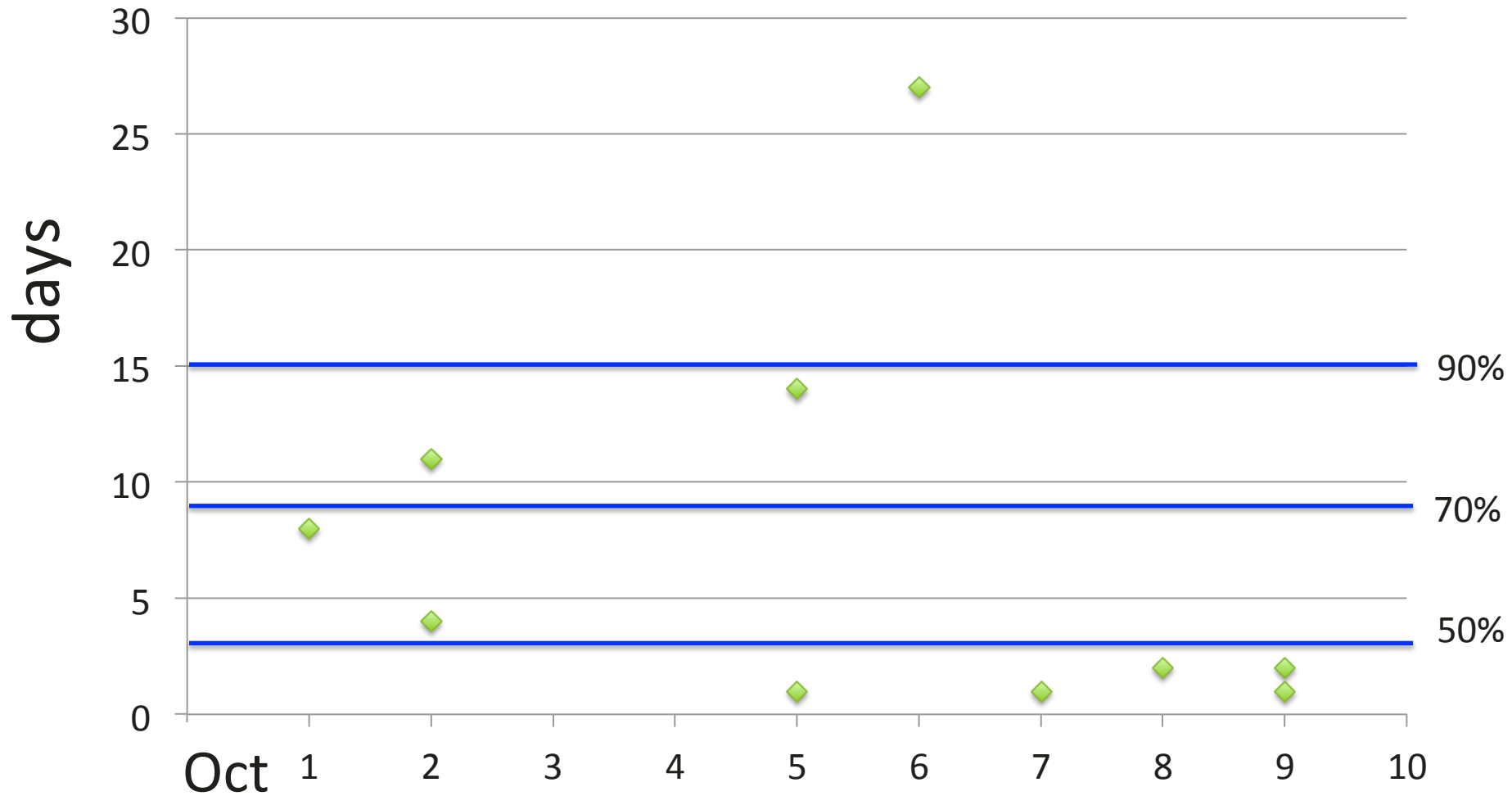
Percentile line - 50%



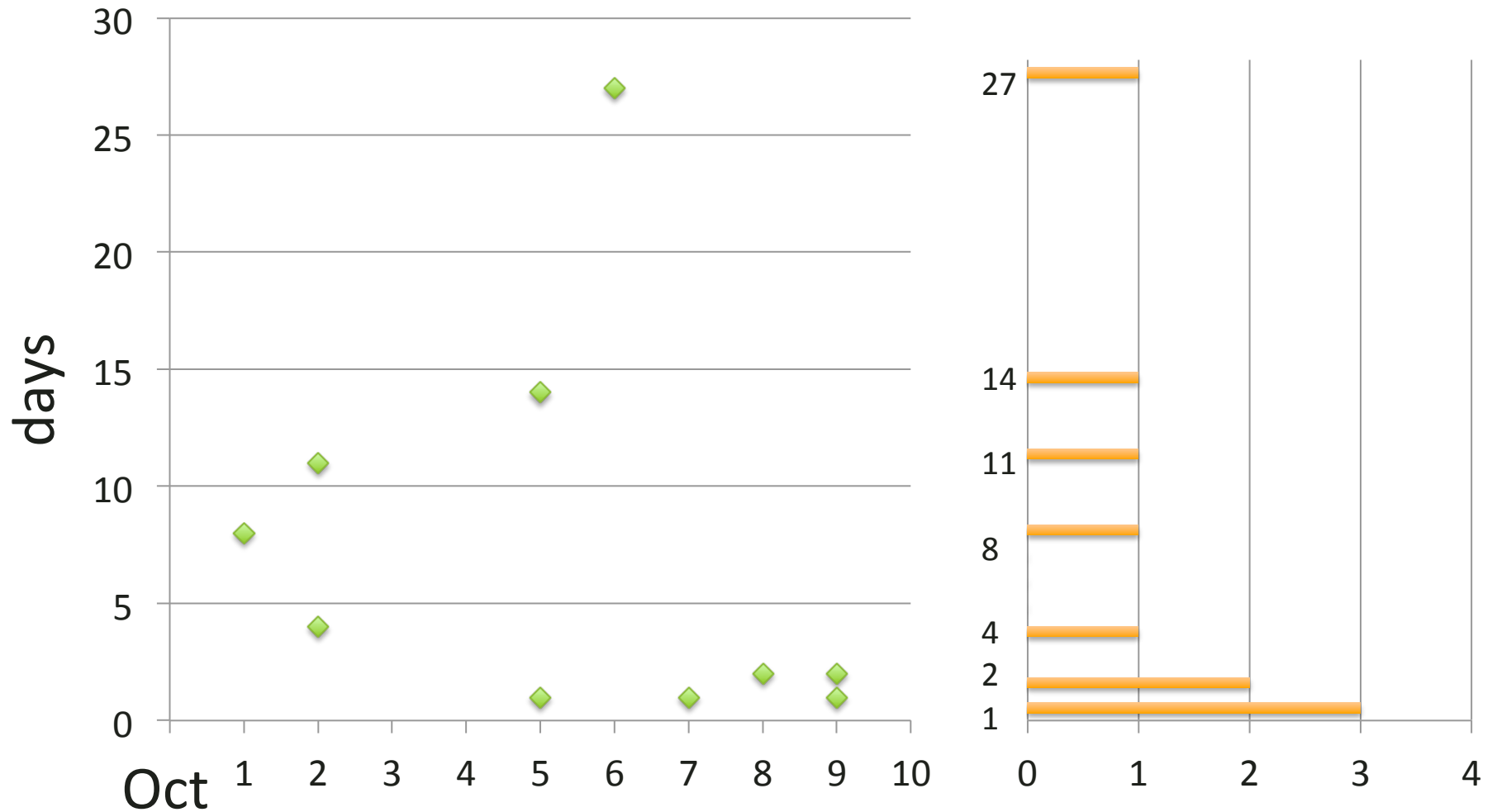
Percentile lines - 50% and 70%



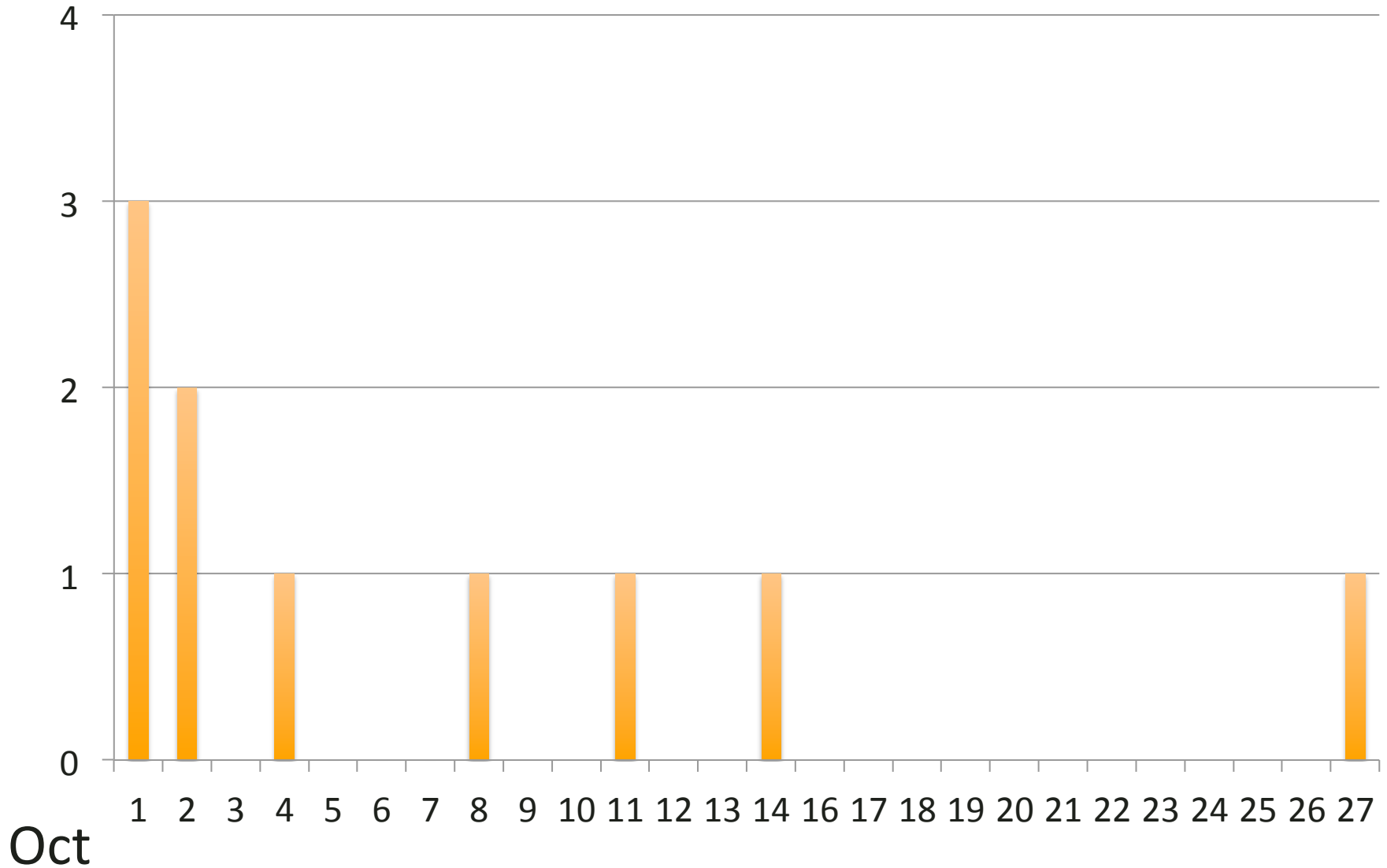
Percentile lines - 50%, 70%, 90%



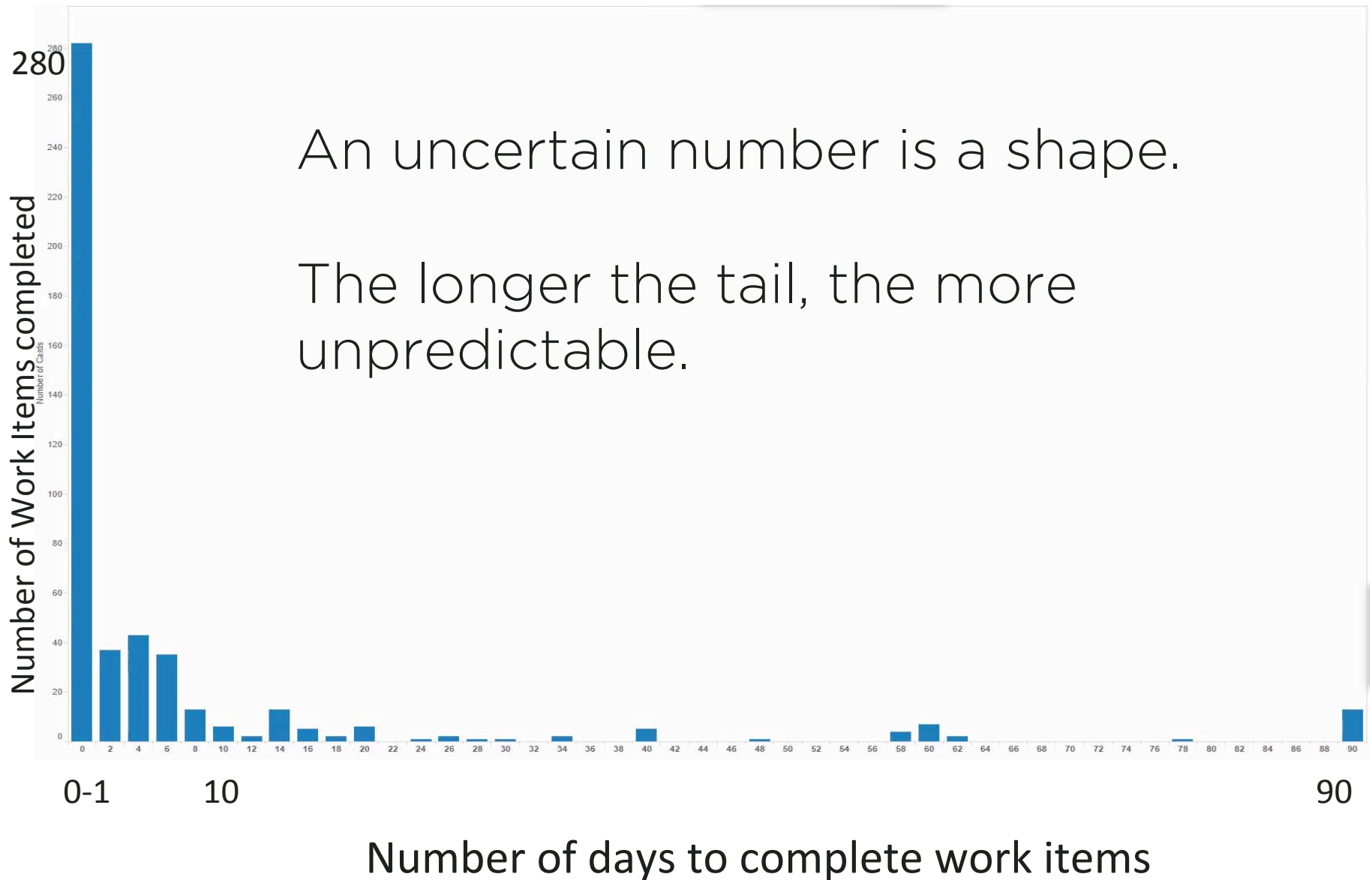
Map time series plot to histogram



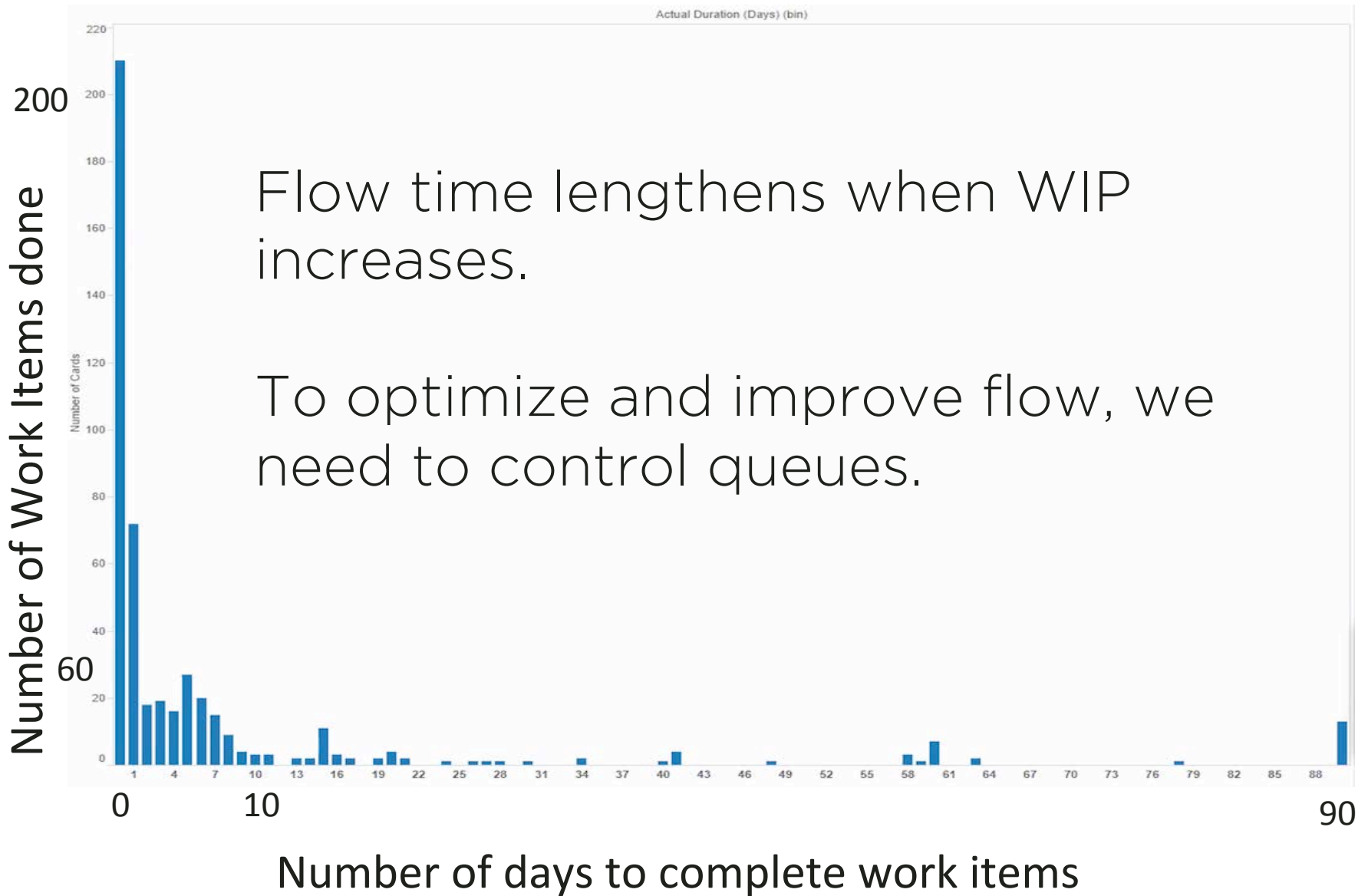
Histogram – the shape of uncertainty



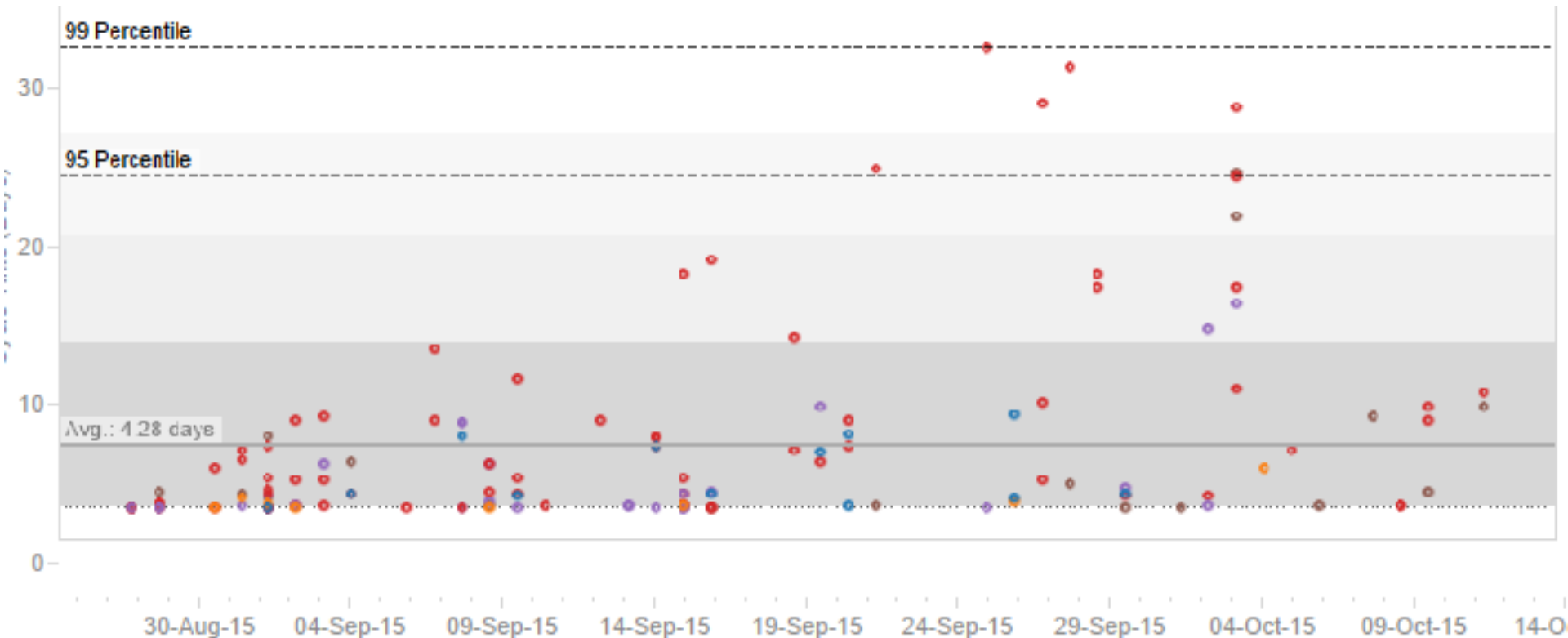
Visualizing Uncertainty



Control Queues Instead of Timelines



All Ops Work completed Aug 28 - Oct 12

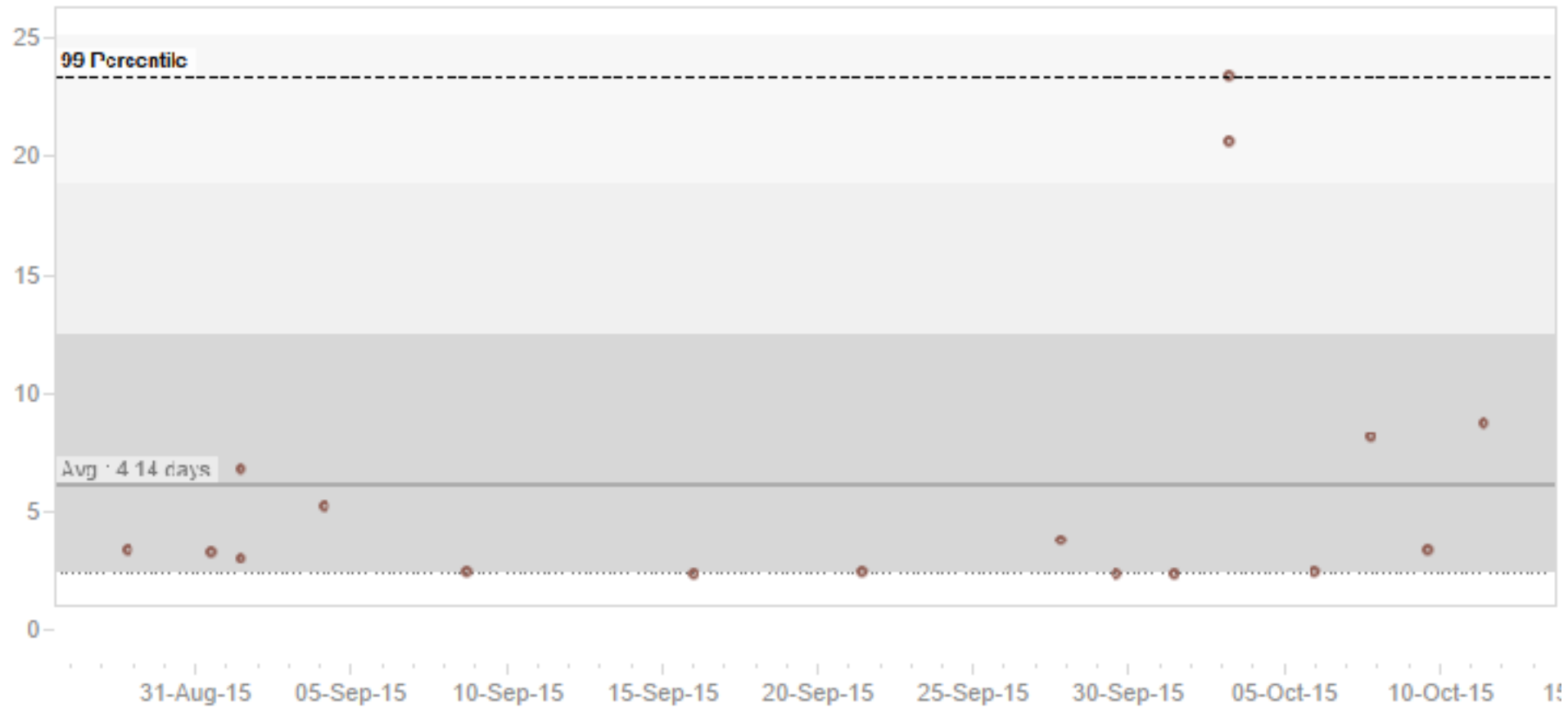


Average FT 4.3 days.
95% work done < 23 days.

Use this graph to quantify the probability of completing X% of the work within Y days.

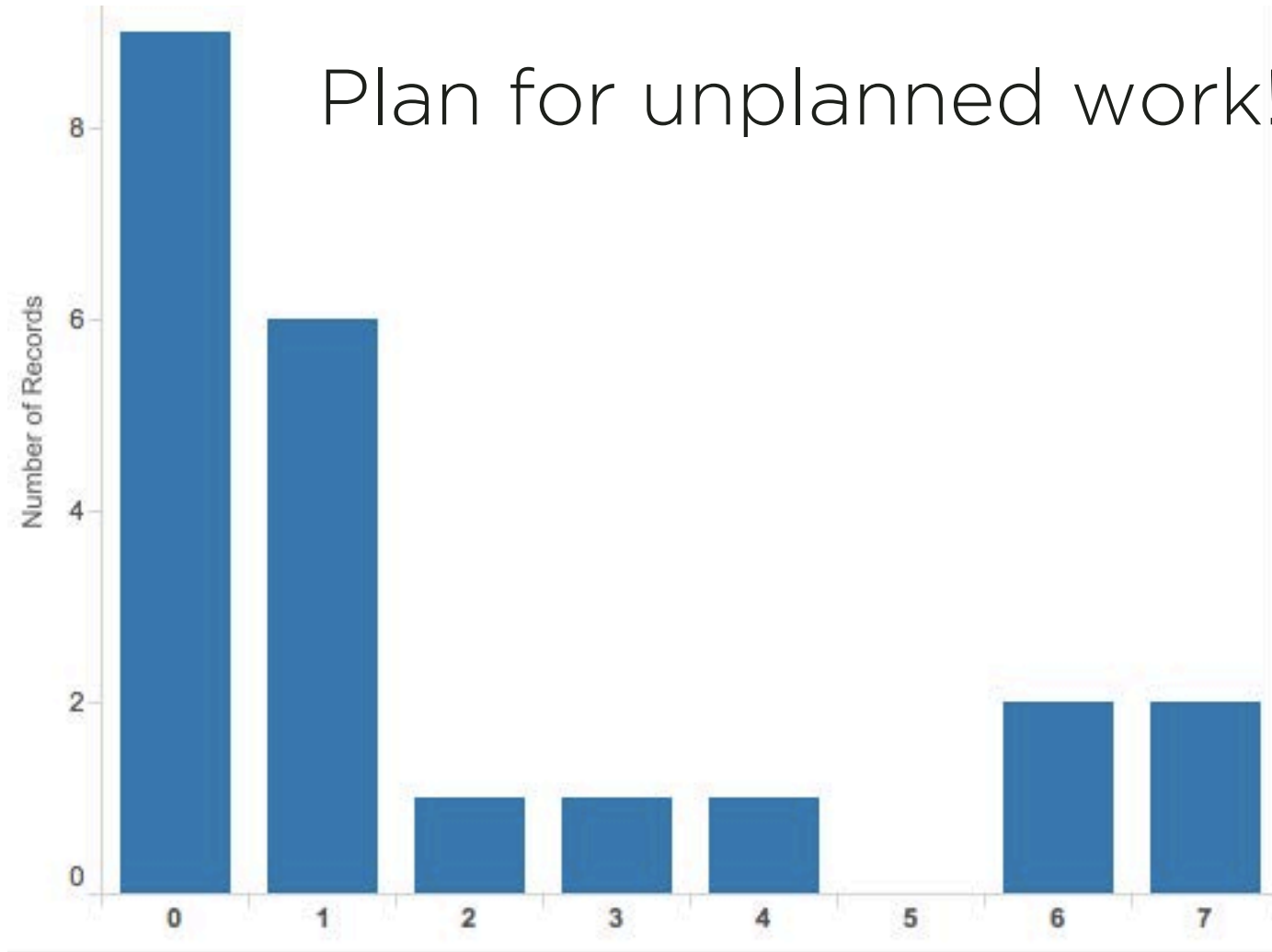
Unplanned Work

Aug 28 - Oct 12



Unplanned Work

Aug 28 - Oct 12



“If we have data, let’s look at data. If all we have are opinions, let’s go with mine.”

Jim Barksdale
former Netscape CEO

5 Take Aways:

1. Consider being approx. right vs. precisely wrong.
2. Adding work to your plate faster than completing prior work increases WIP.
3. The odds of being predictable decrease when WIP increases & FlowTimes elongate
4. Control queues, not timelines to improve flow.



@dominicaad



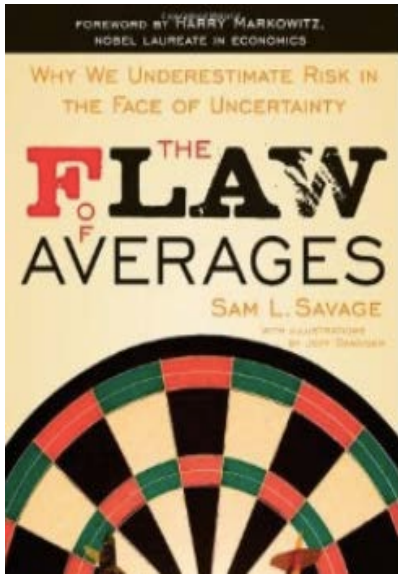
*“If predictability is your goal,
the best thing you can do
as a leader is reserve capacity”*

Troy Magennis

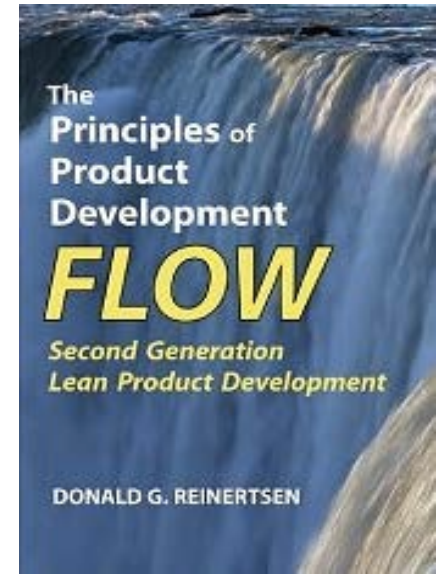
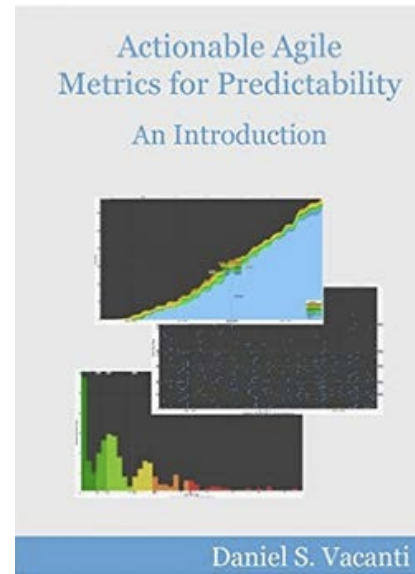
Founder, Focused Objective

Where is the costliest
uncertainty in your
organization?

References



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