When will it be done?

An alternative to estimates

Scrum Alliance Webinar Series
March 21st 2024
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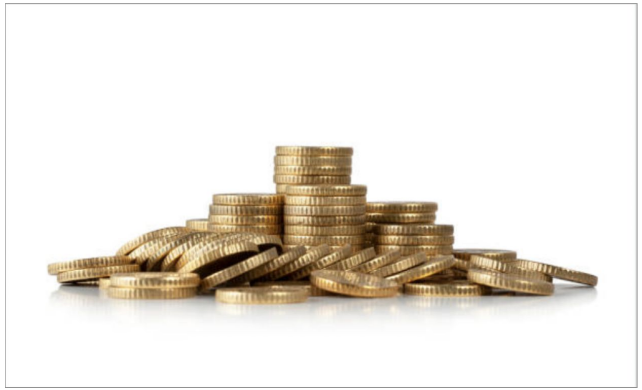
Why estimate?

Date



Budget

Priority

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What's in an estimate?

Images: © iStockPhoto

Amount of work

- # features
- # widgets
- complexity

➔ predict duration

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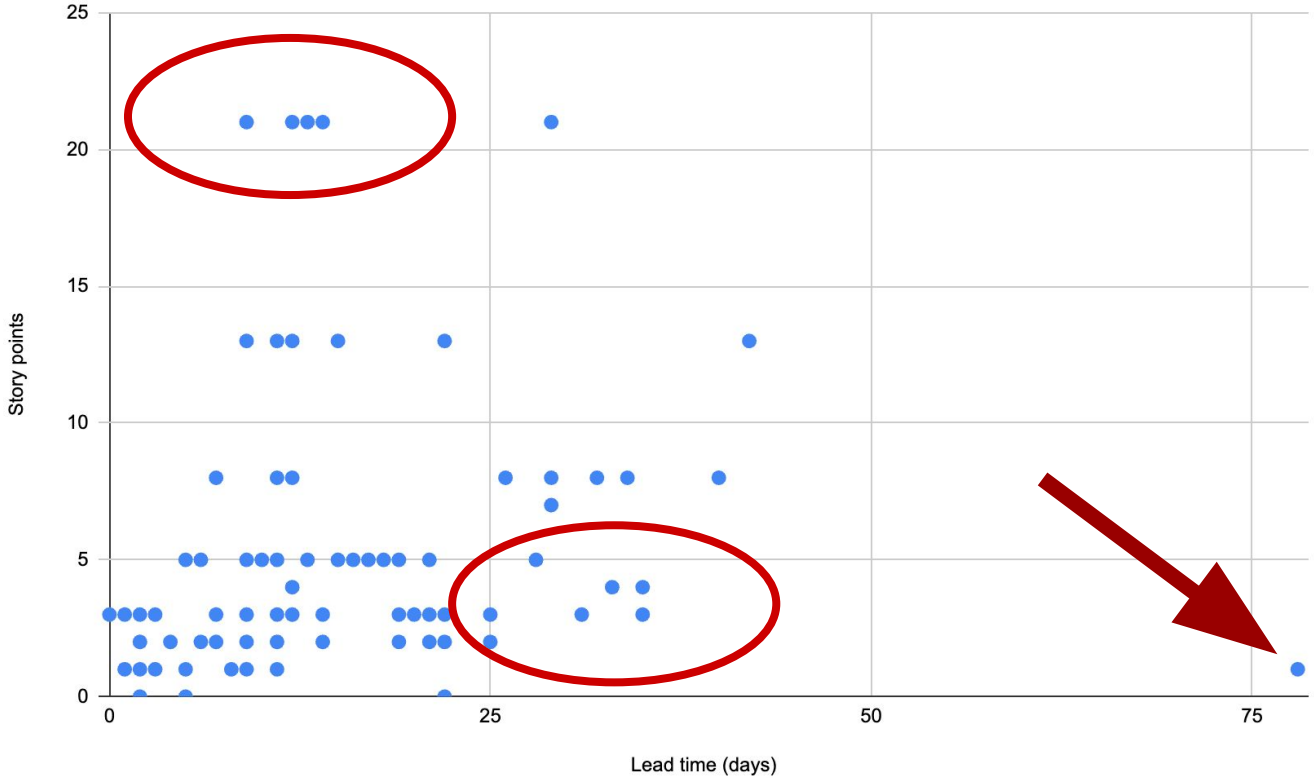
Do estimates influence the lead time?



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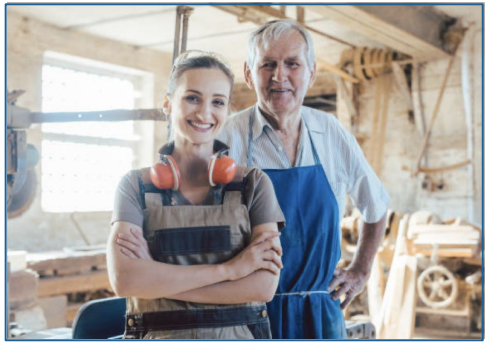
If not, what does?

Amount of work

Tools available



Assignment

Additional tasks

Waiting for info / clearance

Blockers

There are dozens of variables influencing work duration.

Our estimates typically cover one of them.

Why are estimates lacking?

- We include only one out of many variables.
- Estimates have a fixed value and don’t include a probability.
- Estimates are frequently read as a commitment.
- We estimate early, when things are still uncertain, and rarely update when certainty increases.
- We hardly ever get feedback re: our estimates, and if we do, it’s hard to integrate in future estimates.
- Estimates take up much time.

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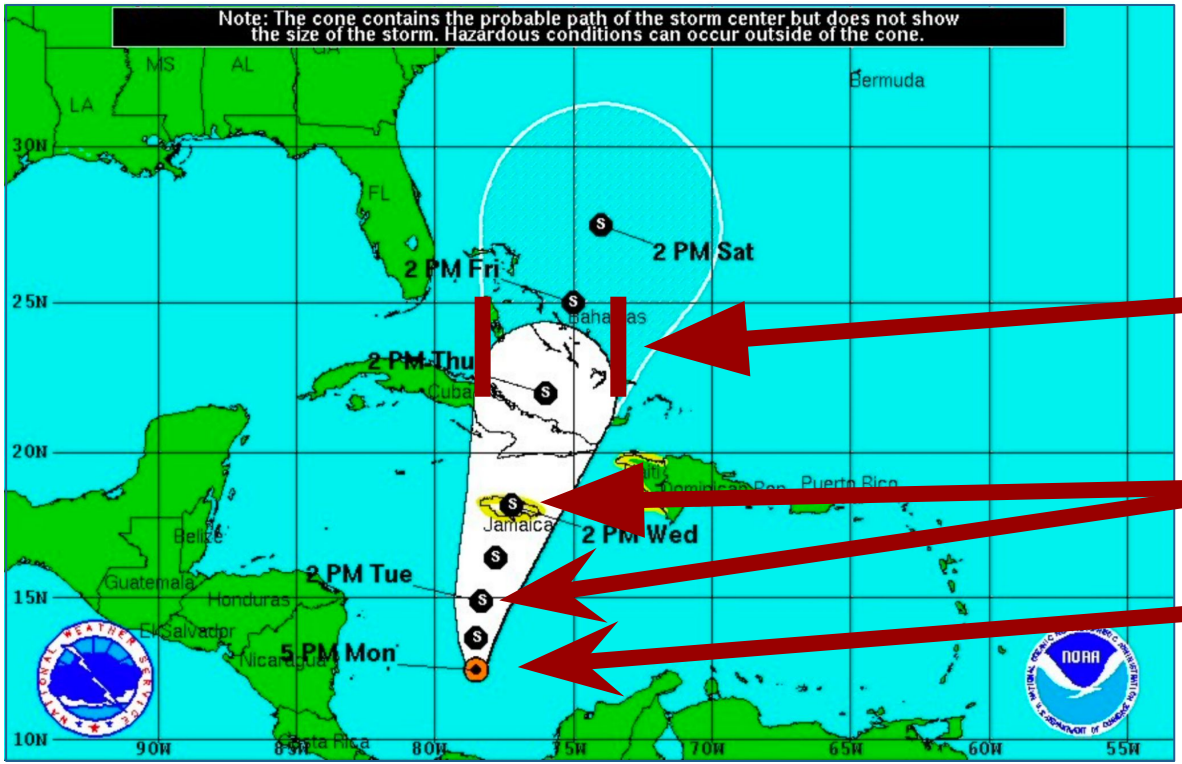
Is there another way?

What do weather people do?

Hurricane forecast

Hurricane ‘Sandy’, October 2012



Potential track area
(The storm center will be in this area with a probability of 70 %.)

Most probable path

Current position

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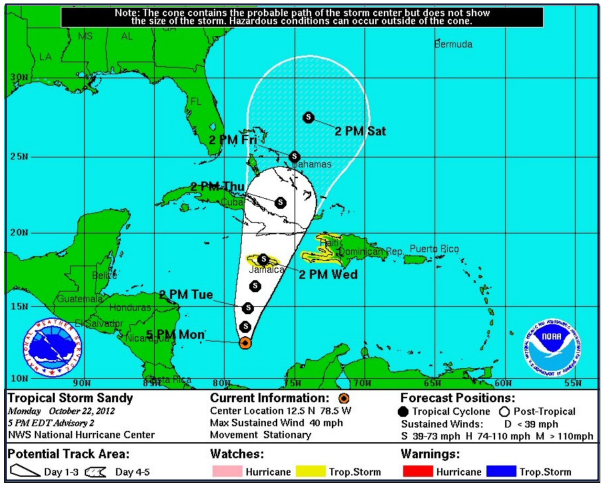
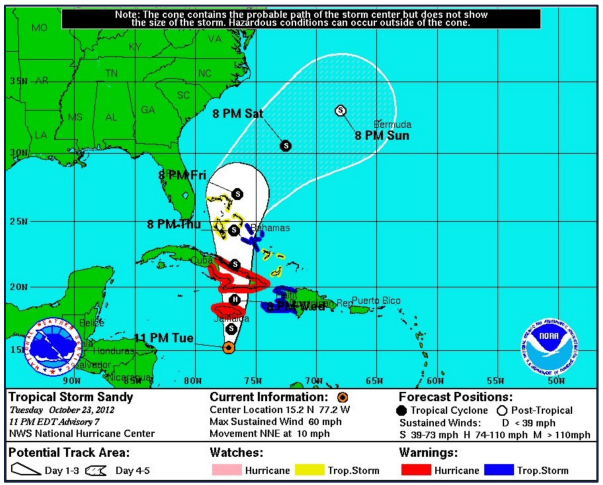
Hurricane forecast

Hurricane ‘Sandy’, October 2012



22.10.2012



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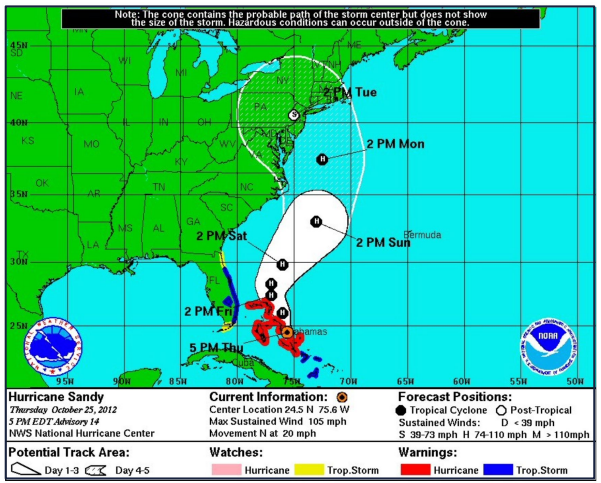

25.10.2012

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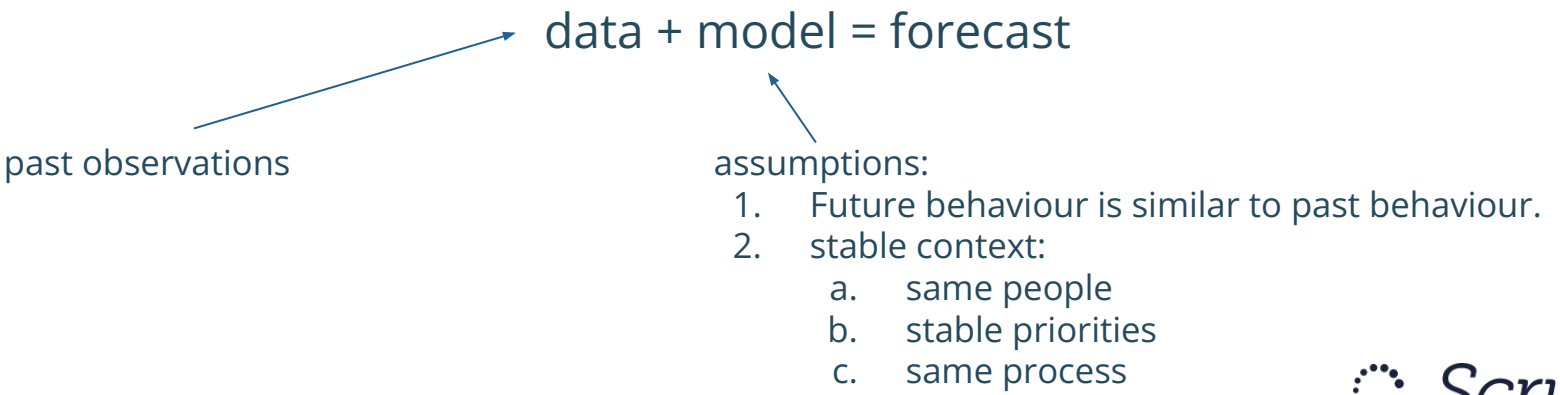
What is forecasting?

- Forecasting is a probabilistic approach.
- Probability increases with shorter forecasting horizons.
- New information is integrated into the forecast once available.



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Single Item Forecast

How long to complete a single task?

My daily commute (back then…)

Day	Departure from home	Arrival at the office	Travel time (Minutes)
1	07:01	08:41	100
2	07:02	08:43	101
3	07:04	08:40	96
4	07:08	09:41	153
5	06:57	08:40	103
6	07:25	09:40	135
7	06:31	07:37	66
8	07:10	08:31	81
9	07:06	08:42	96
10	07:08	08:58	110

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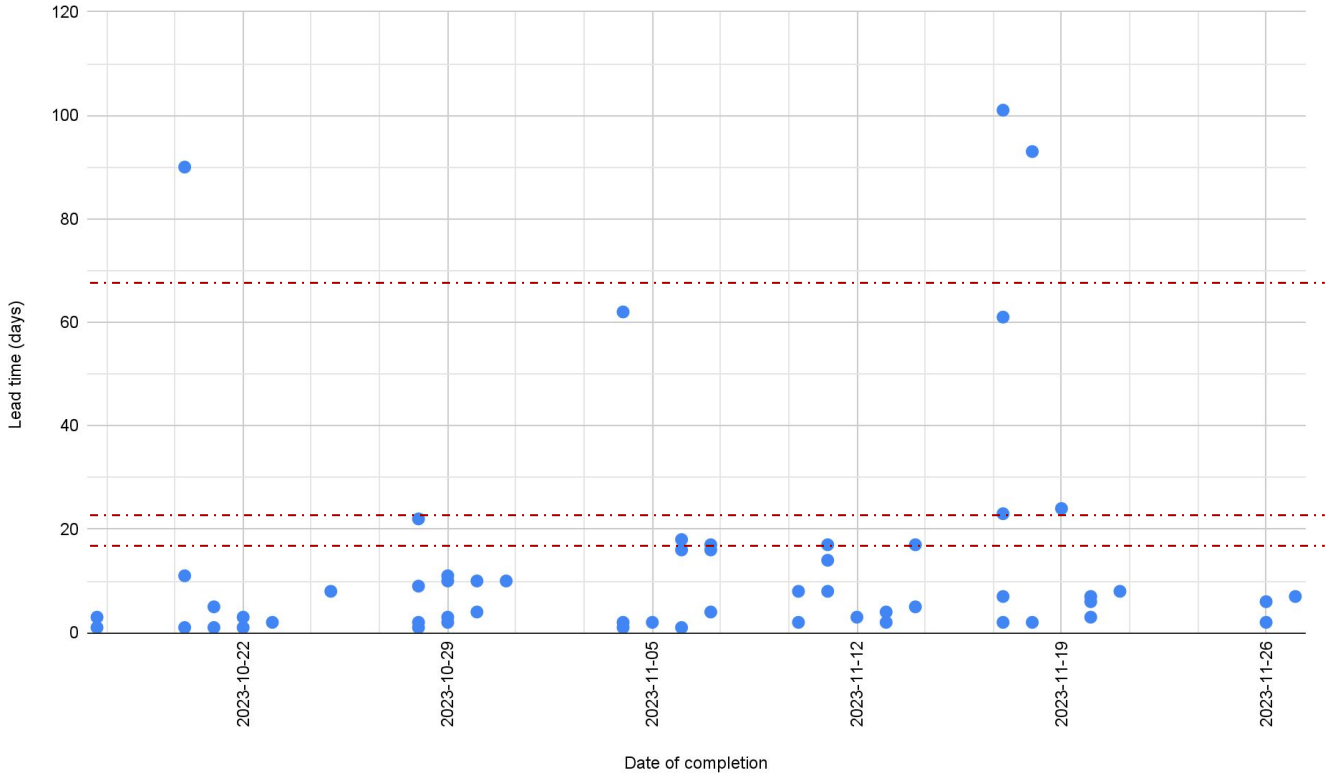
Lead time inspection



Control chart

95 %: 68 days

90 %: 23 days

85 %: 18 days

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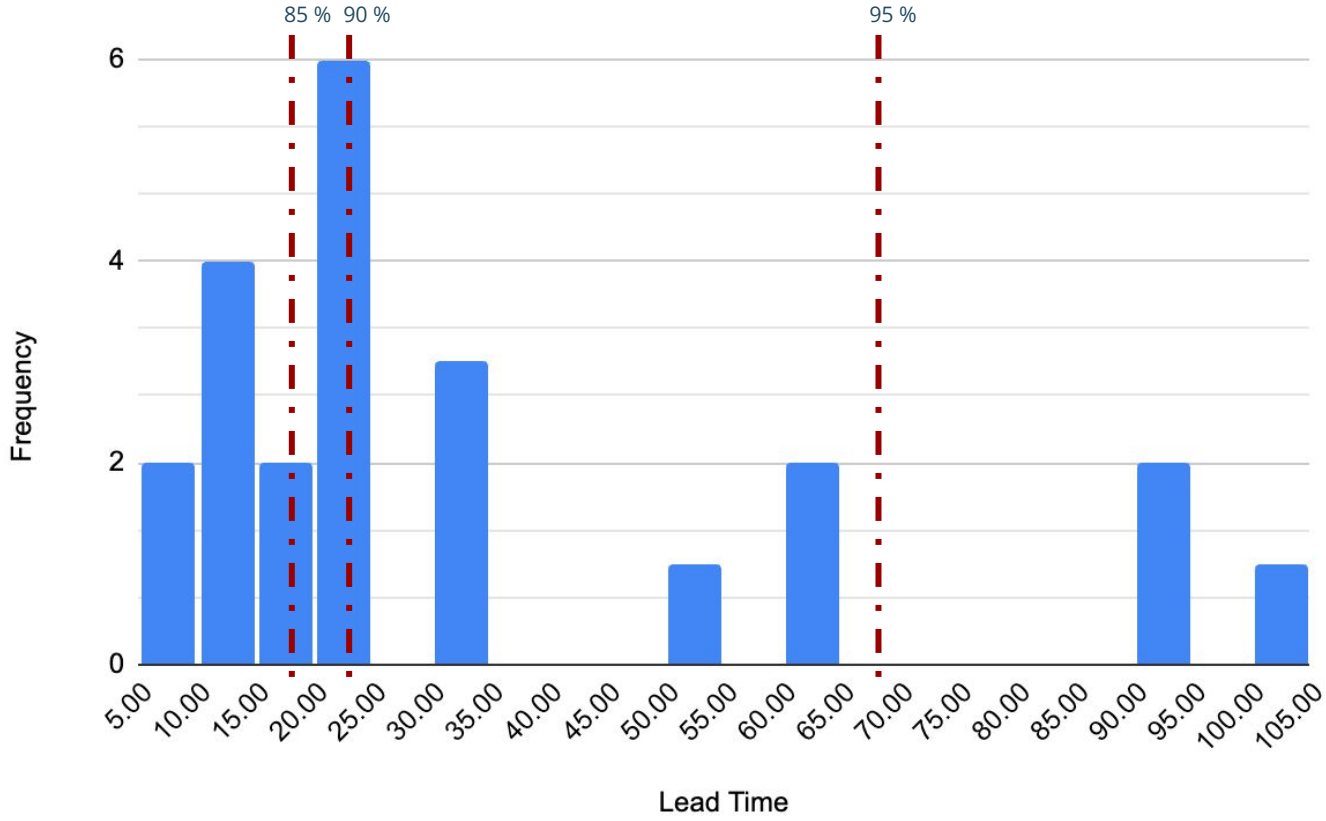
Frequency analysis



Histogram

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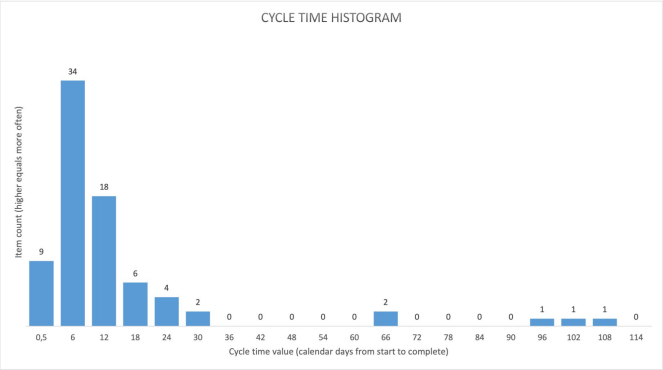
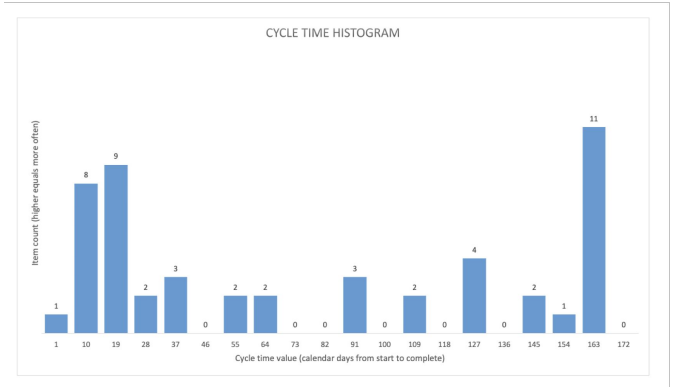
Predictability

thin tailed



- monomodal
- limited amount of work in progress
- focus on getting things done
- mostly similar types of work

fat tailed



- Multimodal
- uncoordinated work
- frequent shifts in priorities
- very different types of work

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In Summary: Single Item Forecasting

- Lead time is the time elapsed between committing to a task and completing it.
- All it takes is keeping track of start and end times.
- Understanding lead time distribution is important for predictions.
- To make work predictable, strive for thin tailed distribututions.
- Forecasting is done via percentiles (e.g. 85 % -> 6 out of 7)
- We do not consider unfinished work.

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Multiple Item Forecast

How long to build a product?

Breaking it down

- How much work is it?
- How quickly can we complete it?

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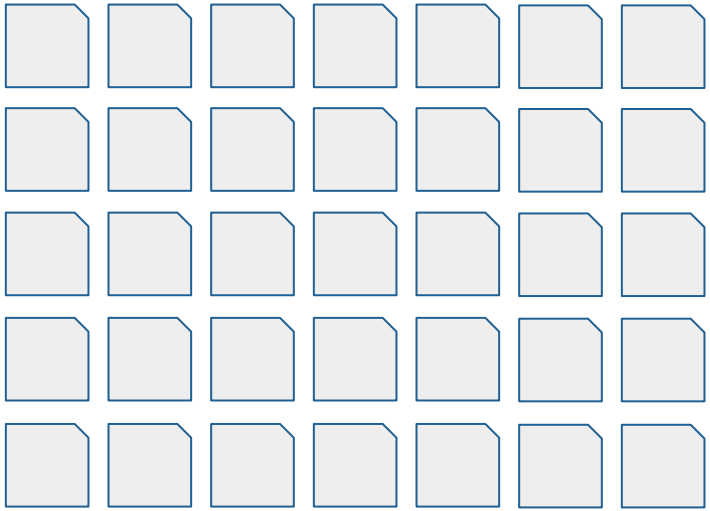
How much work is it?

- 35 epic-level features to complete
- How many backlog items in total?



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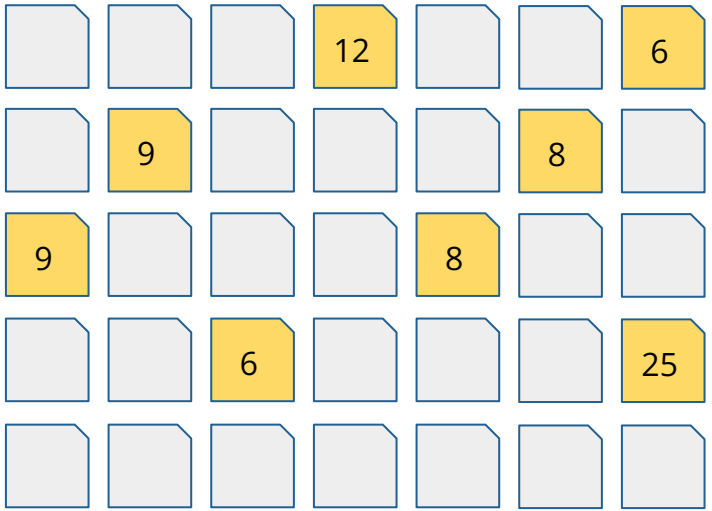
First, take some samples

- Break down some of the features.
- Randomly select them to rule out bias.
- Possibly use similar work from from the past for verified results.



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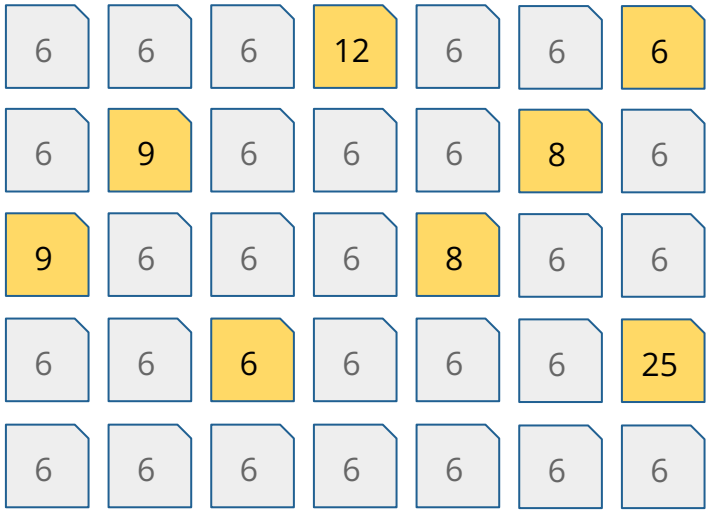
Best case scenario

- minimal sum
- 245 backlog items



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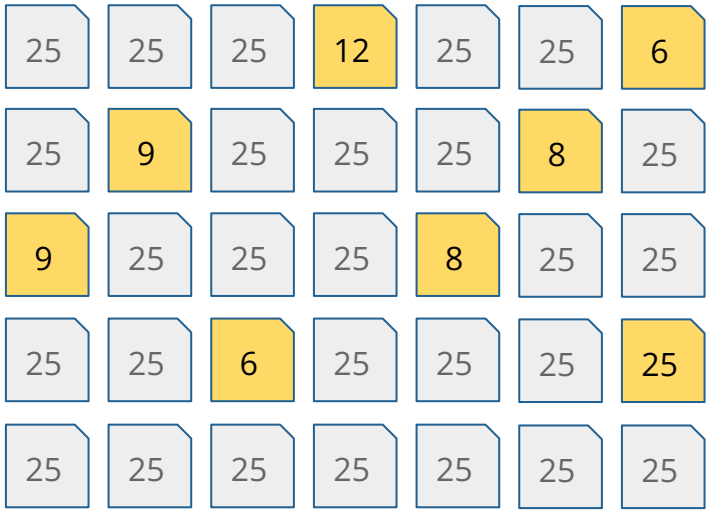
Worst case scenario

- maximal sum
- 758 backlog items



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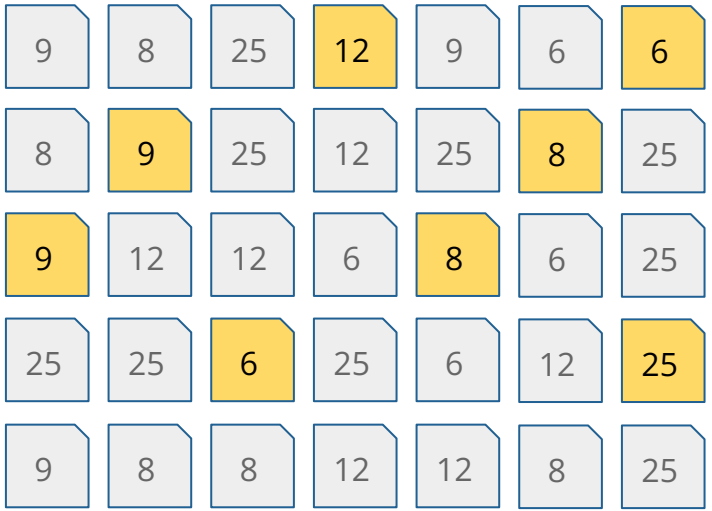
Random scenario

- random samples assigned
- this case: 471



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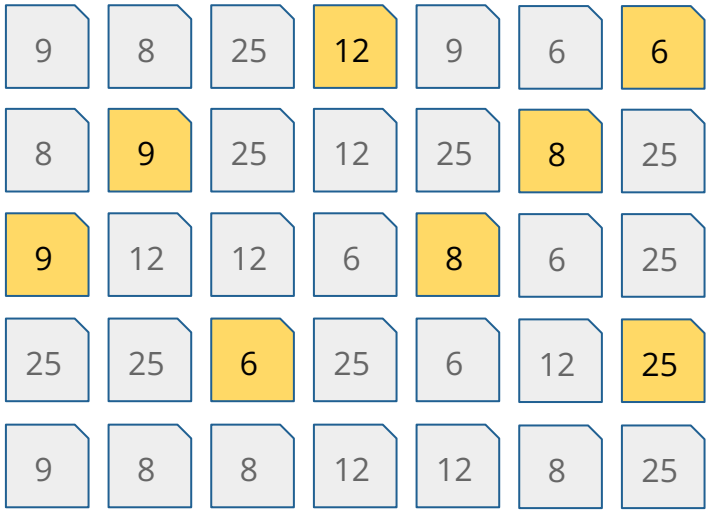
Extrapolate

- Repeat random assignments ~1000 times.
- Note down the totals.
- “Monte Carlo simulation”



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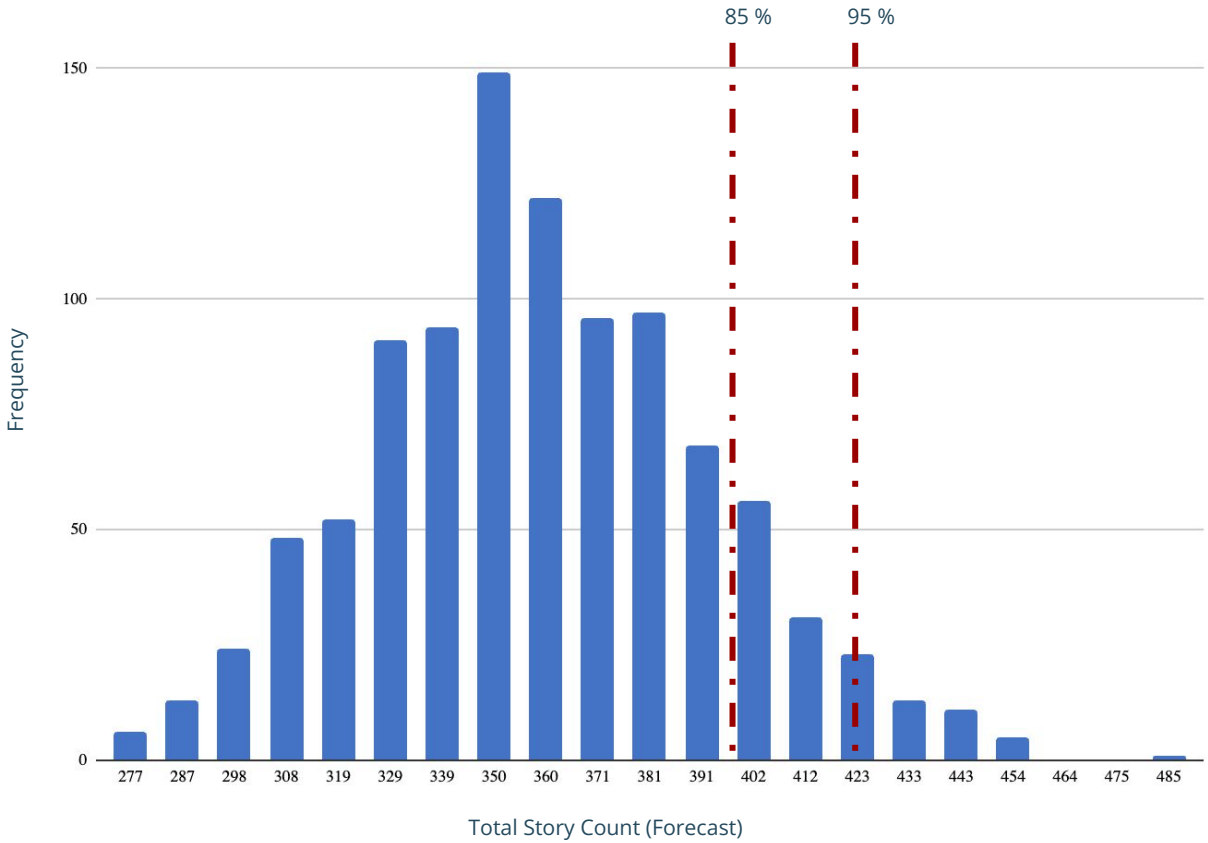
Inspect the distribution



With 85 % probability, we are facing 400 *or less* backlog items total.

With 95 % probability, we are facing 423 *or less* backlog items total.

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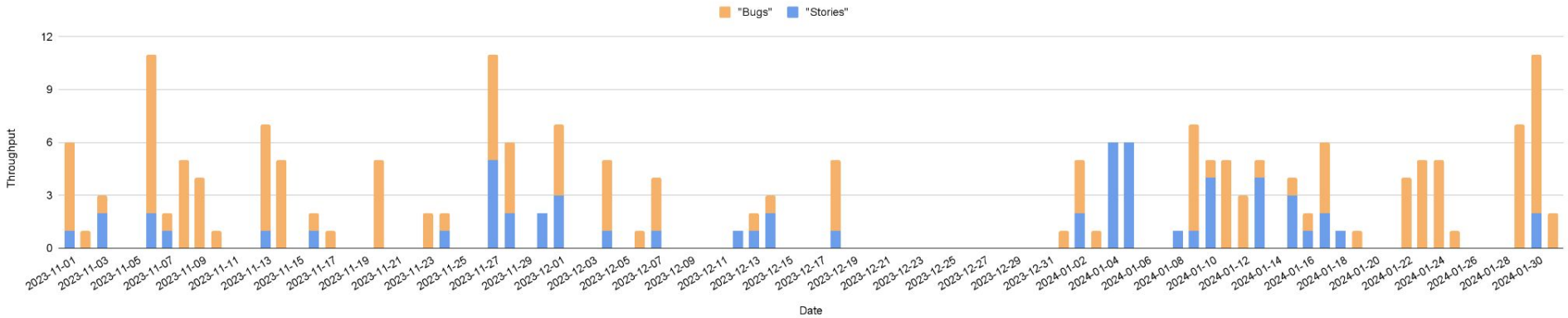
How long does it take?



- Look at your daily throughput of backlog items.
- Consider only ‘stories’ not ‘bugs’.
- Use data from the past 3 months.
- Draw random samples from your daily throughput until you have reached the predicted number of backlog items.
- Repeat ~1.000 times

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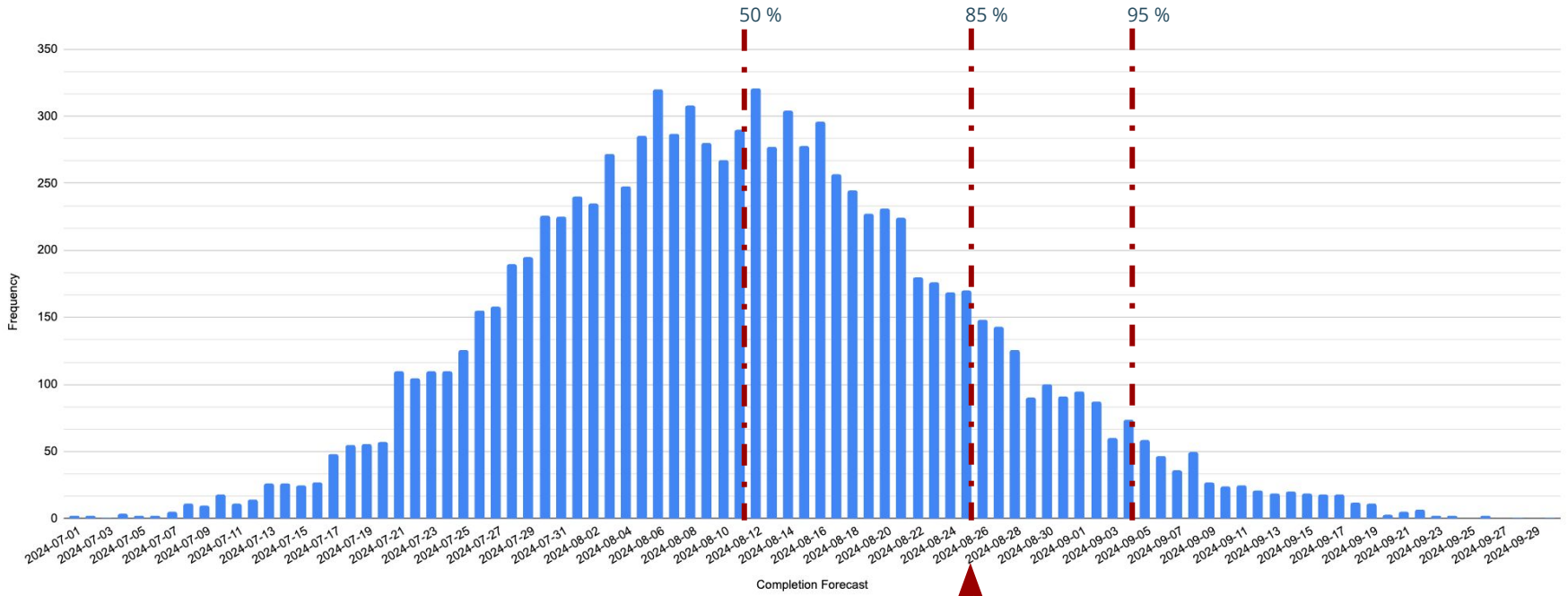
Finally, how long to build a product?



"Given a start on February 1st, we will be **done by week 35** with **85 % probability**."

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How to: Multiple Item Forecast

- Take random samples from past or upcoming features.
- Simulate the features not sampled via the Monte Carlo method.
- Forecast amount of work using the 85th percentile.
- Measure your throughput for the past 3 months.
- Simulate future throughput until reaching the forecasted item count.
- Forecast completion date using the 85th percentile.

- Re-forecast when new data becomes available.

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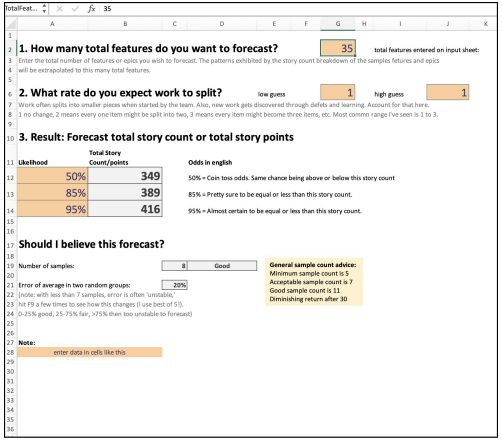
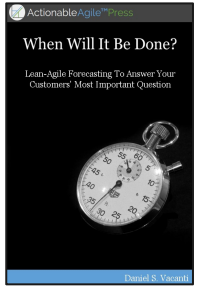
Tools & Resources

- Troy Magennis' cornucopia of forecasting spreadsheets
  - focusedobjective.com
  - github.com/FocusedObjective/FocusedObjective.Resources
  - especially 'Story Count Forecaster' and 'Throughput Forecaster'
- Nave
  - getnave.com
- Business Map
  - businessmap.io
- Dan Vacanti: 'When will it be done?'





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Get in touch!

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