

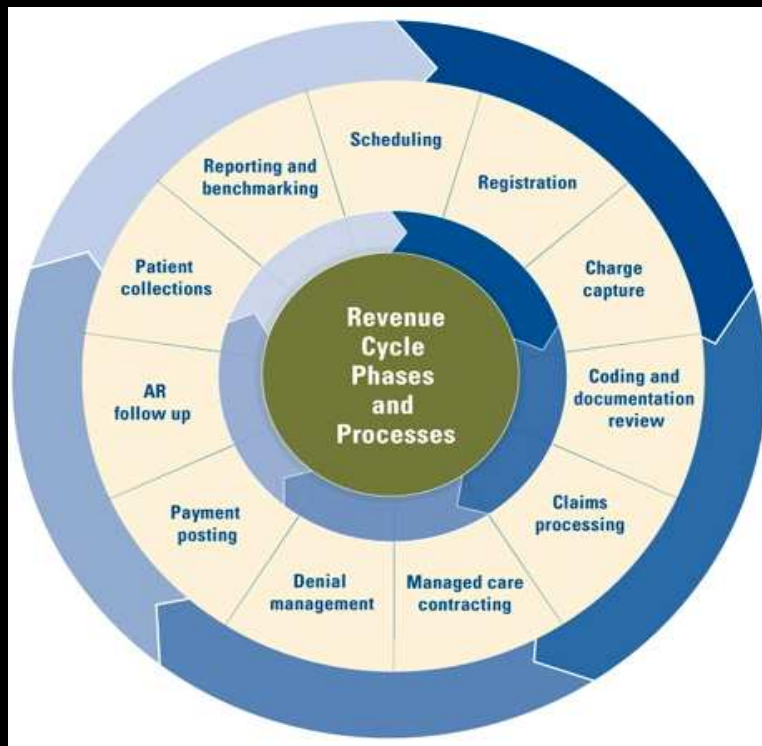
SIEMENS



**Kanban At Scale:
Actionable Metrics
Bennet Vallet and Daniel Vacanti**

Health Services, a Global Provider of Healthcare Information Technology Solutions

Soarian Financials was our first Kanban implementation



Org. of about 500 people

- 15 cross-functional teams
- 3 continents
- Software deployed to hundreds of Healthcare facilities
- Highly regulated
- Mission Critical

Agile Journey Began in 2005

- 30 day sprints
- Stable feature teams
- Agile Roles
- Release Cycles about every 12 months
- Agile XP practices

Adoption of Agile Led to Benefits; but we were challenged in key areas

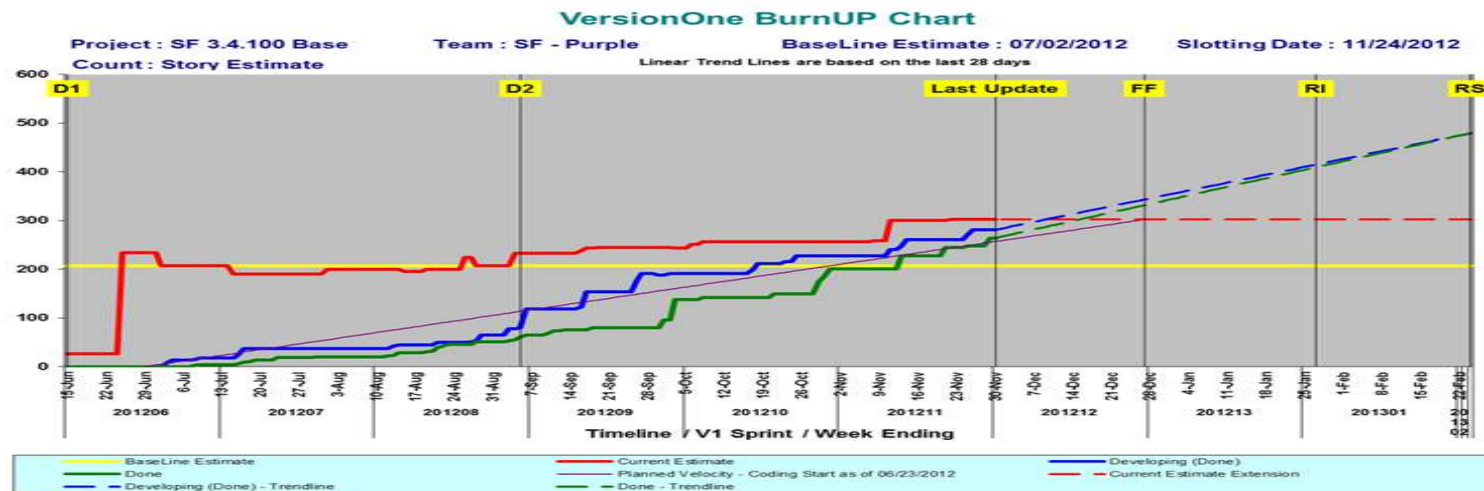
Difficulties to estimate scope, required resources

Quality issues

Operational in-efficiencies and speed of development

Predictability

Traditional Metrics Failed Us !!



While velocity rates at sprint reviews often seemed okay, reality pointed to a large number of stories blocked or incomplete and multiple features in progress with few, if any, features completing until end of the release.

People normally associate Kanban with the visibility that the board provides

However, the “metrics of flow” (WIP, Cycle Time, Throughput) are tangible, provide a deep level of transparency, and are highly actionable

No more estimation!!

By using historical metrics we are able to forecast feature and release completion timeframes

Predictability

Predictability

Predictability

Predictability is the degree to which we can **correctly forecast** a system's (process') future state

A **predictable** process is one that behaves the way it is **expected** to

$$\text{Avg Cycle Time} = \frac{\text{Avg WIP}}{\text{Avg Throughput}}$$

UNDERSTANDING CUMULATIVE FLOW DIAGRAMS

Cumulative Flow

Scatterplot

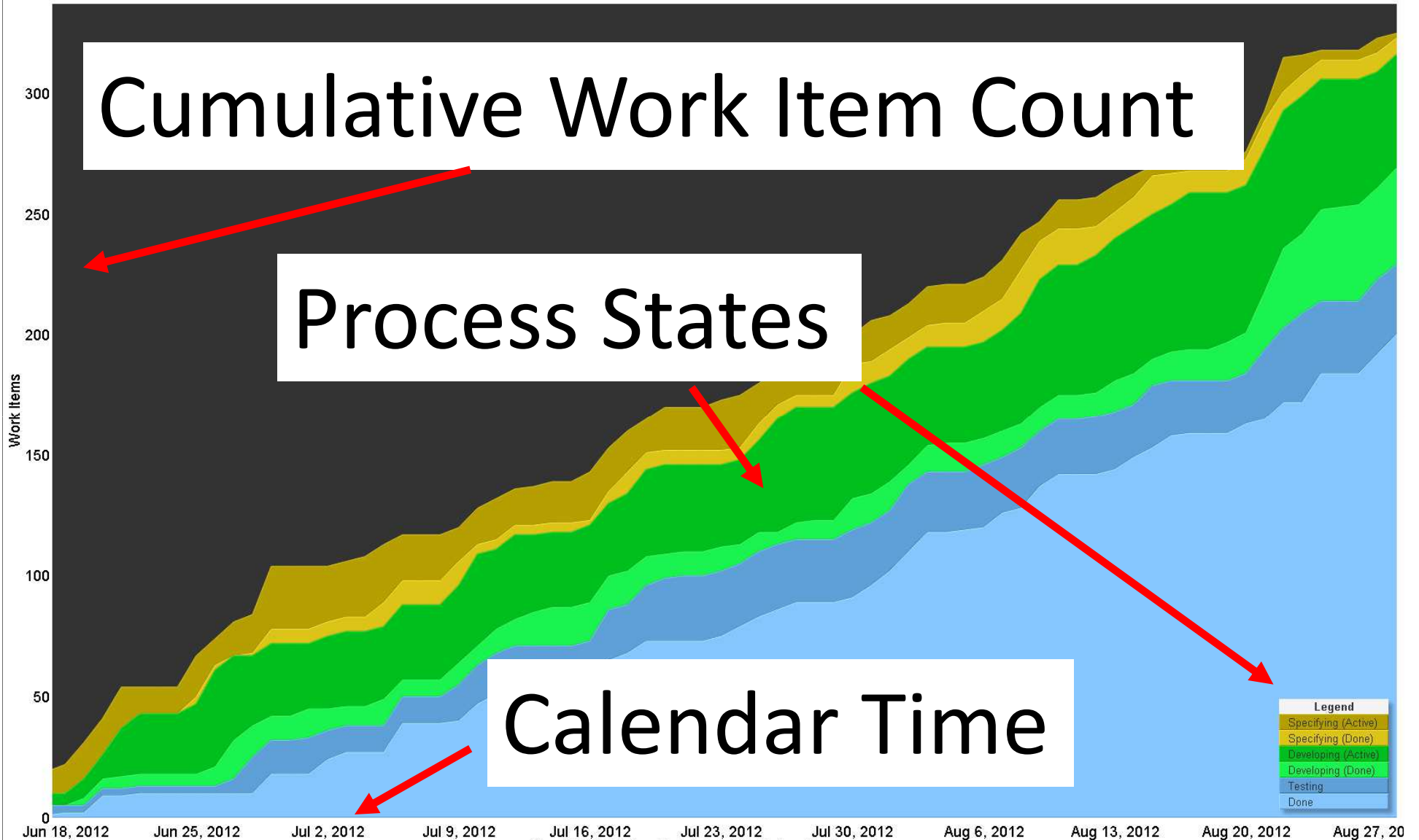
Projection

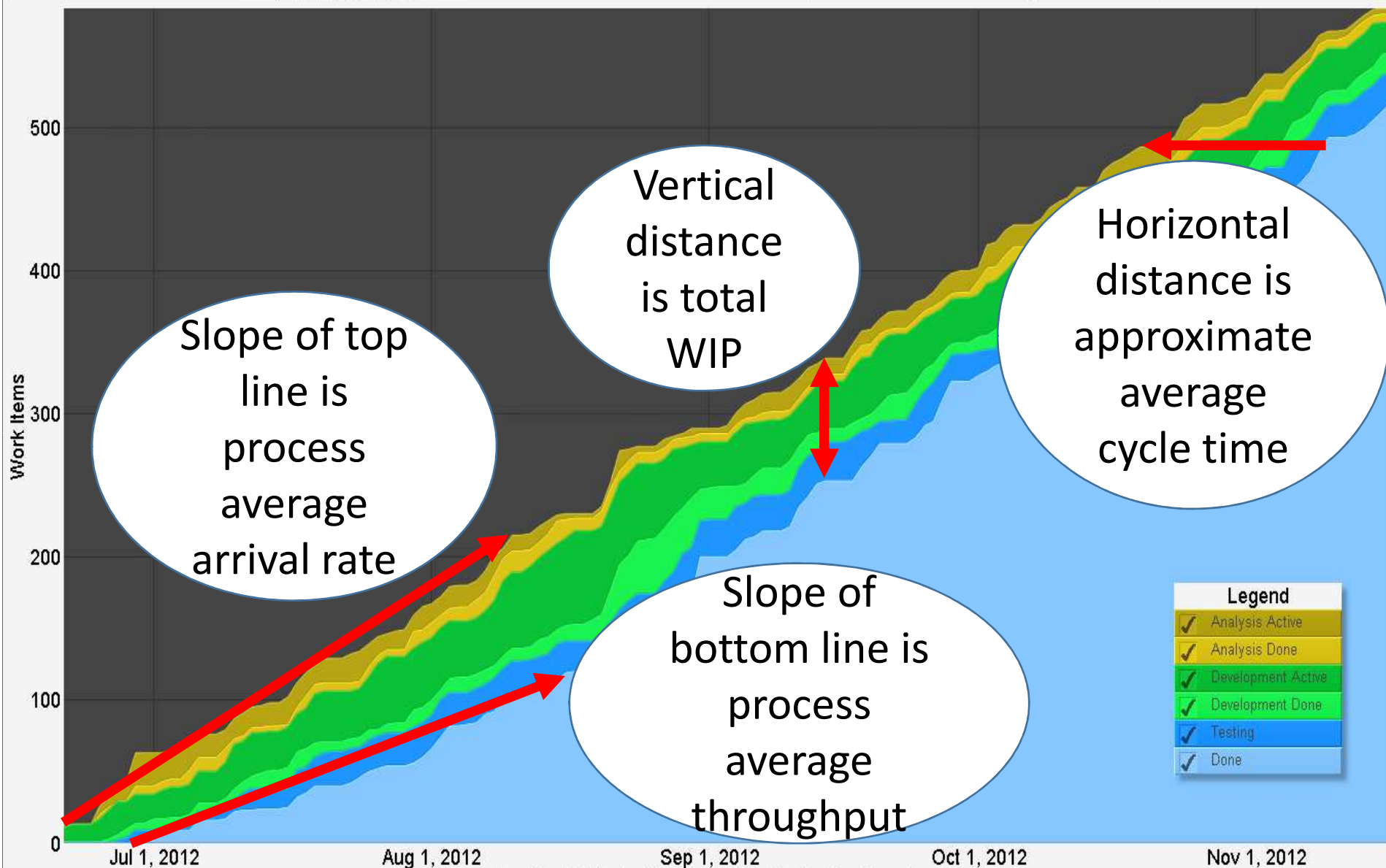
Source Data

Cumulative Work Item Count

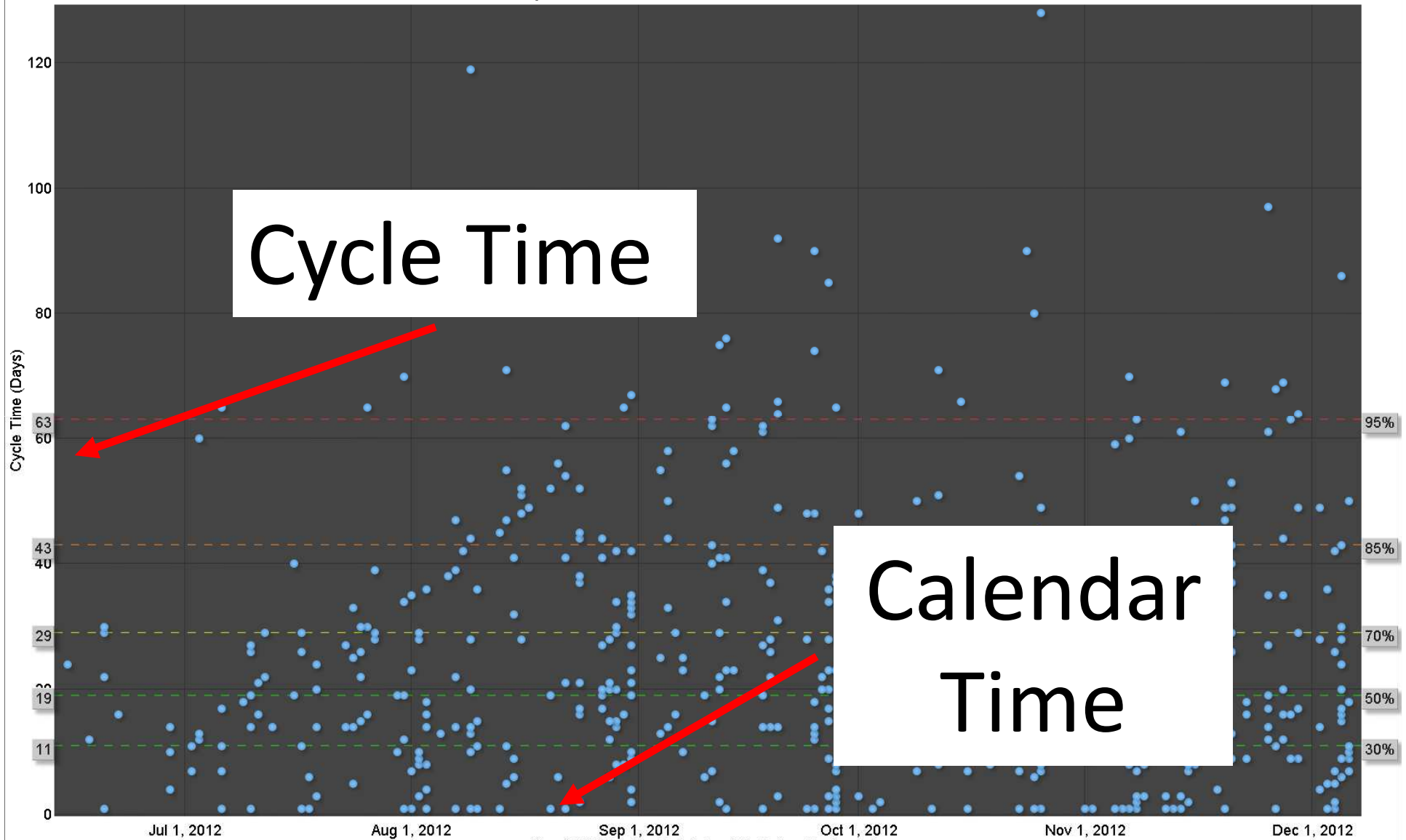
Process States

Calendar Time





UNDERSTANDING SCATTERPLOTS



Cycle Time

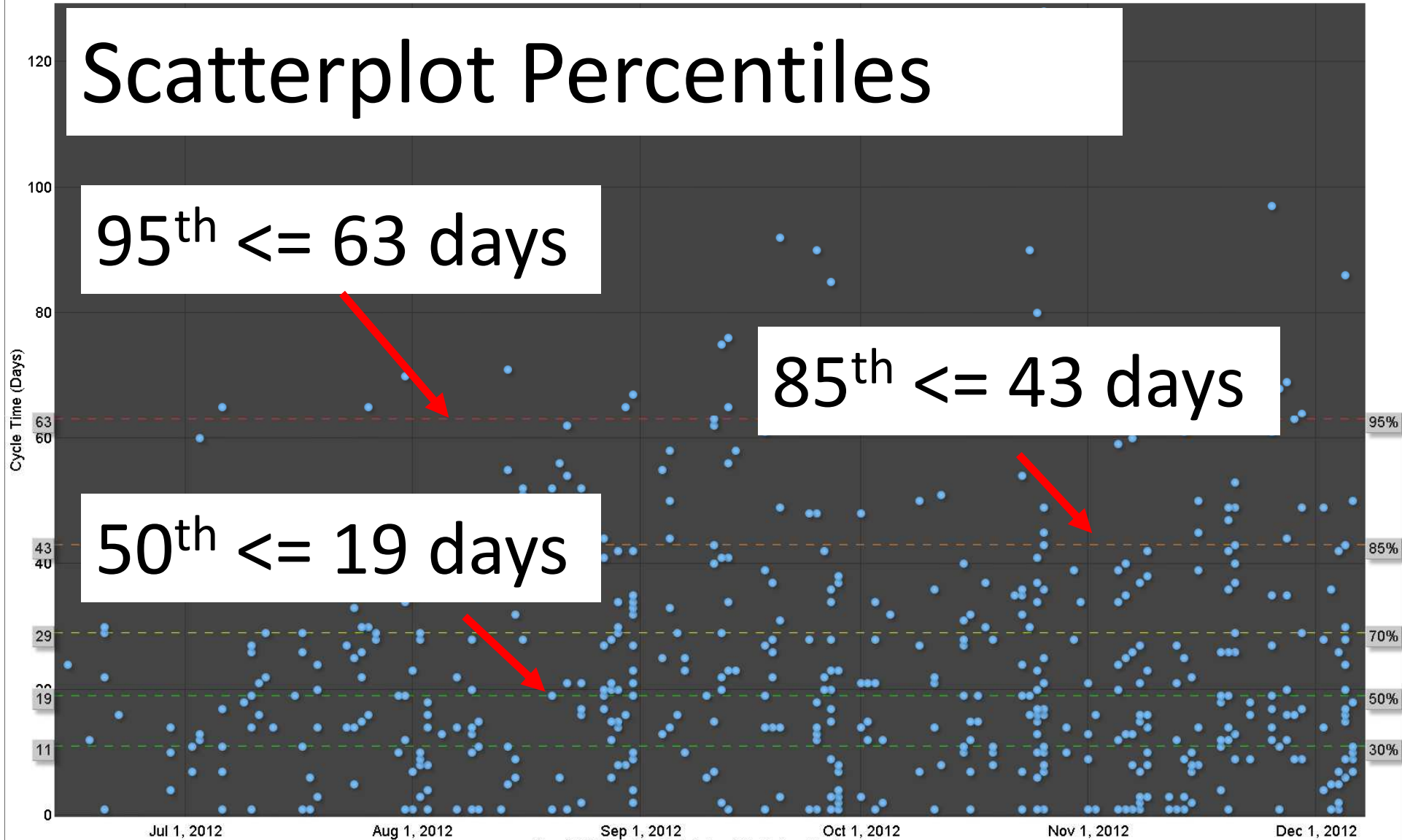
Calendar Time

Scatterplot Percentiles

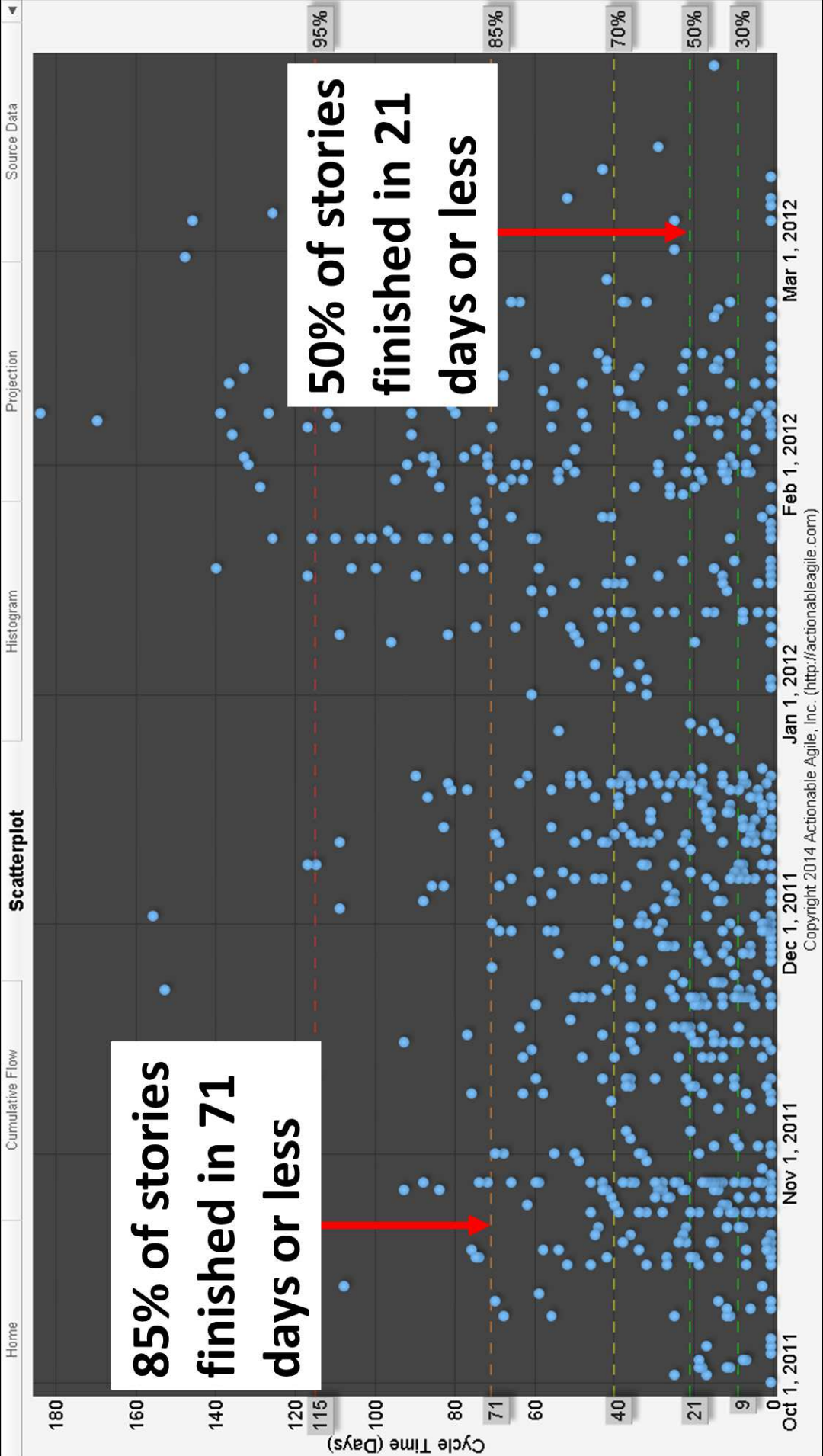
95th ≤ 63 days

85th ≤ 43 days

50th ≤ 19 days



Release before limiting
WIP



85% of stories finished in 71 days or less

50% of stories finished in 21 days or less

Source Data

Projection

Histogram

Scatterplot

Cumulative Flow

Home

Mar 1, 2012

Feb 1, 2012

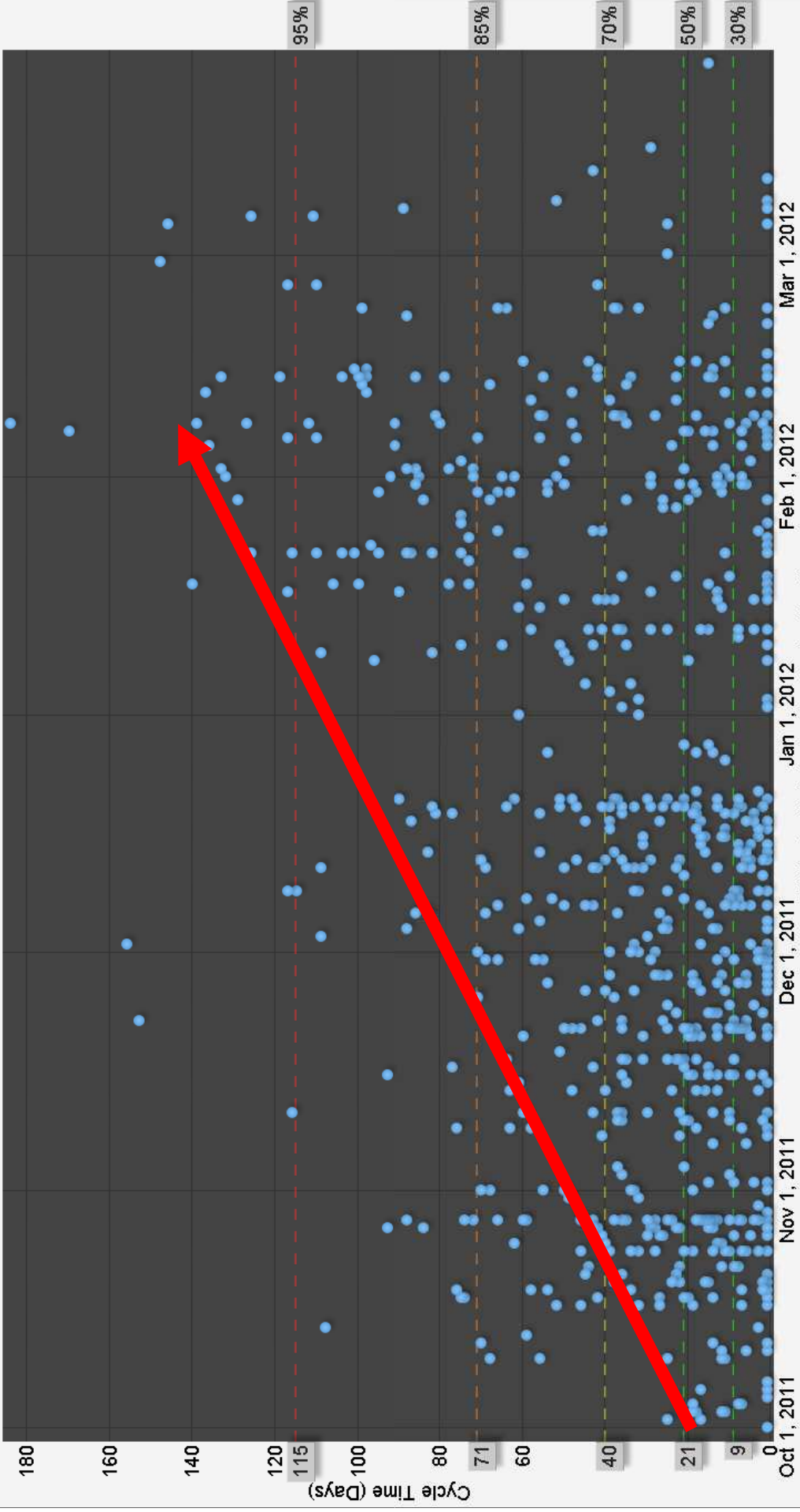
Jan 1, 2012

Dec 1, 2011

Nov 1, 2011

Oct 1, 2011

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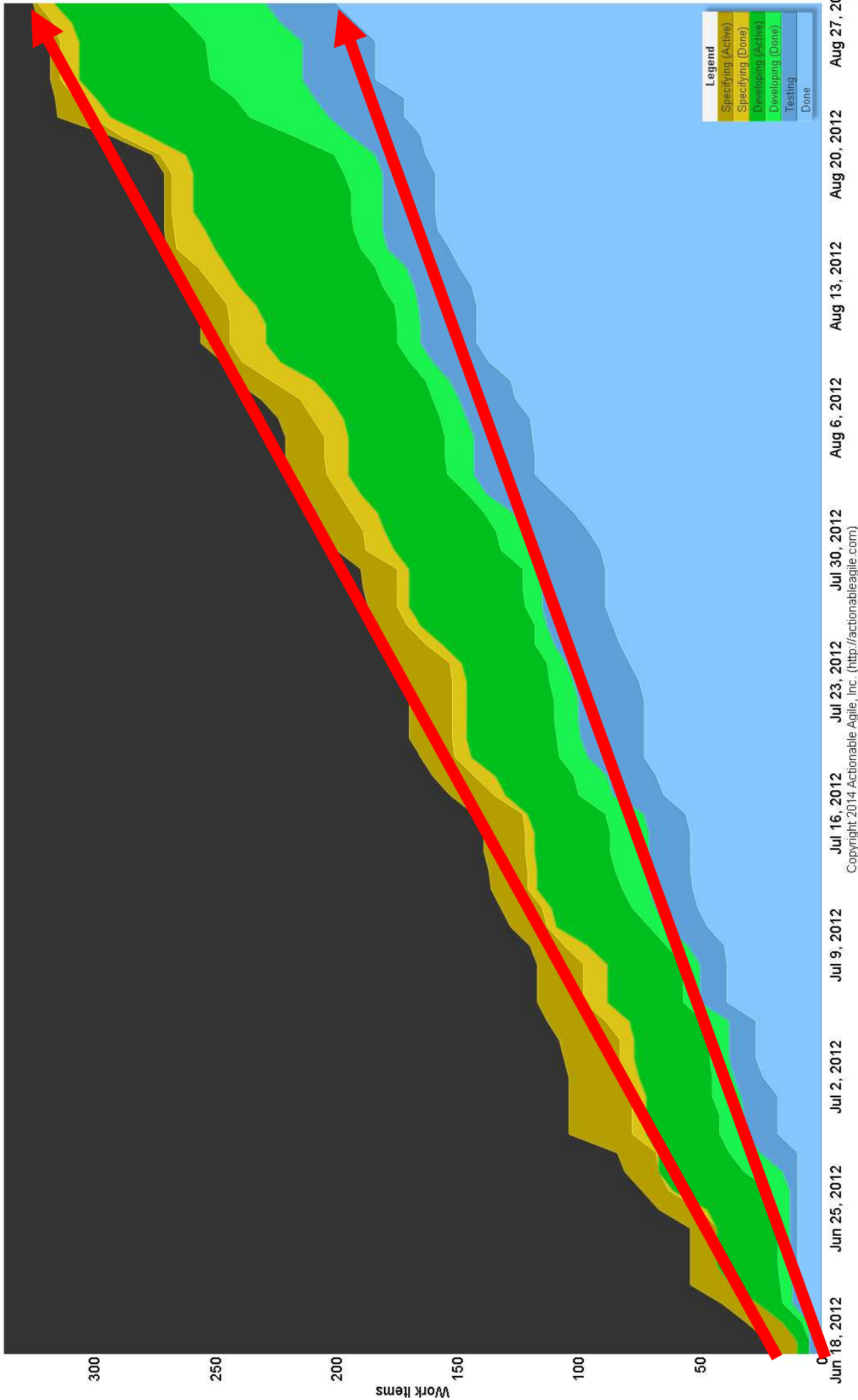
What about
the next release?

Cumulative Flow

Source Data

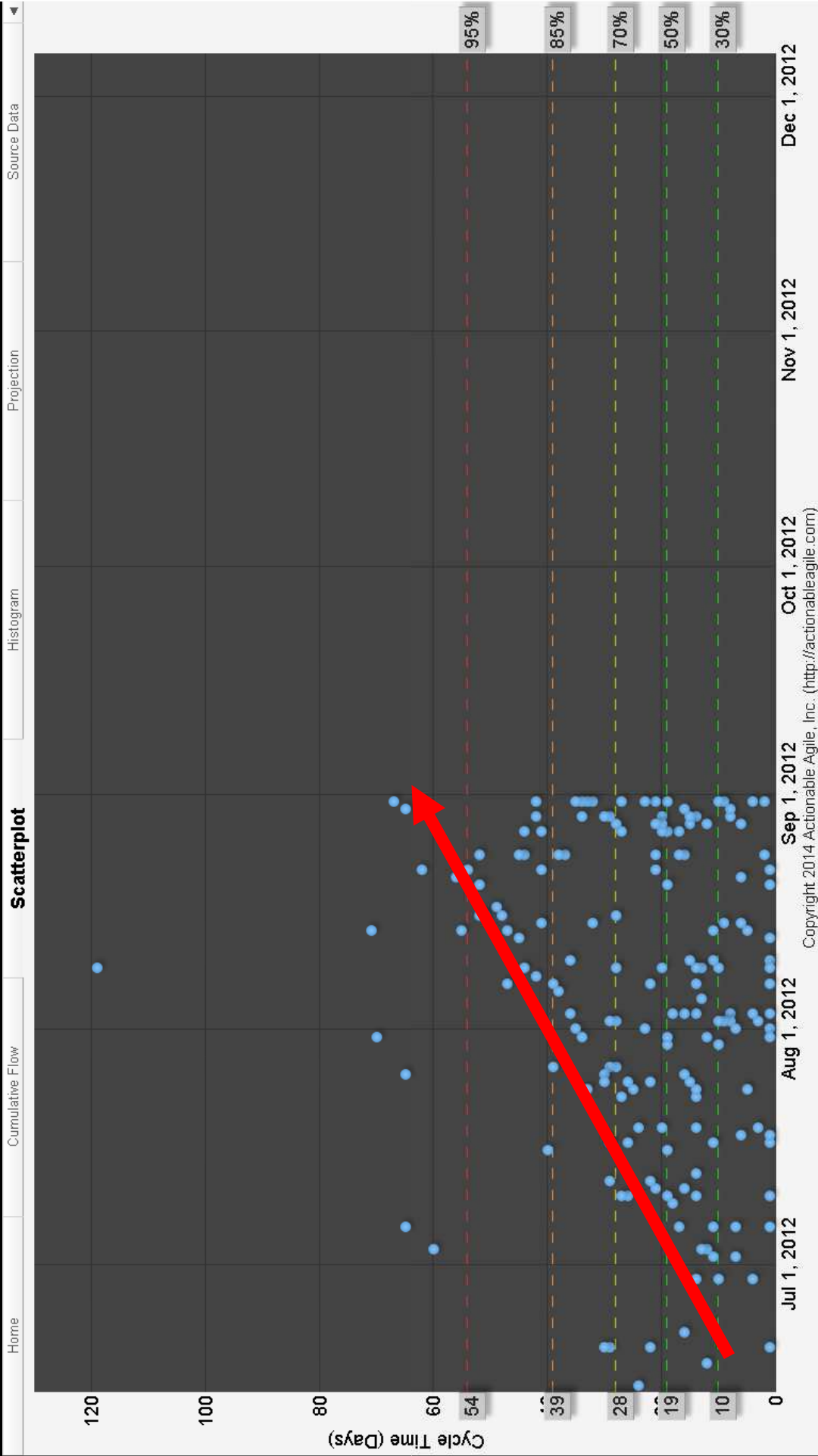
Projection

Scatterplot



Legend

- Specifying (Active)
- Specifying (Done)
- Developing (Active)
- Developing (Done)
- Testing
- Done



When we finally Limited
WIP

Cumulative Flow

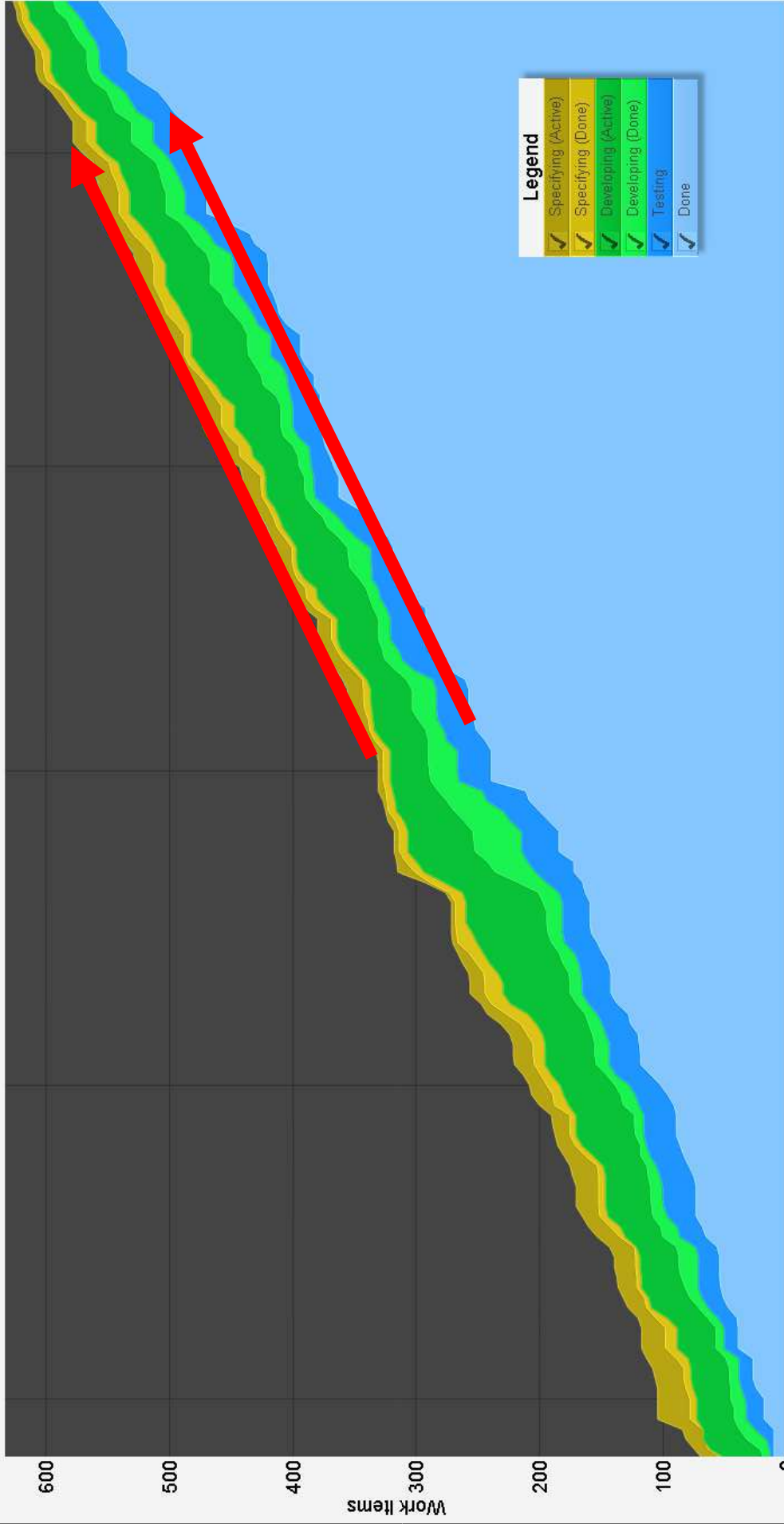
Home

Scatterplot

Histogram

Projection

Source Data



Jul 1, 2012

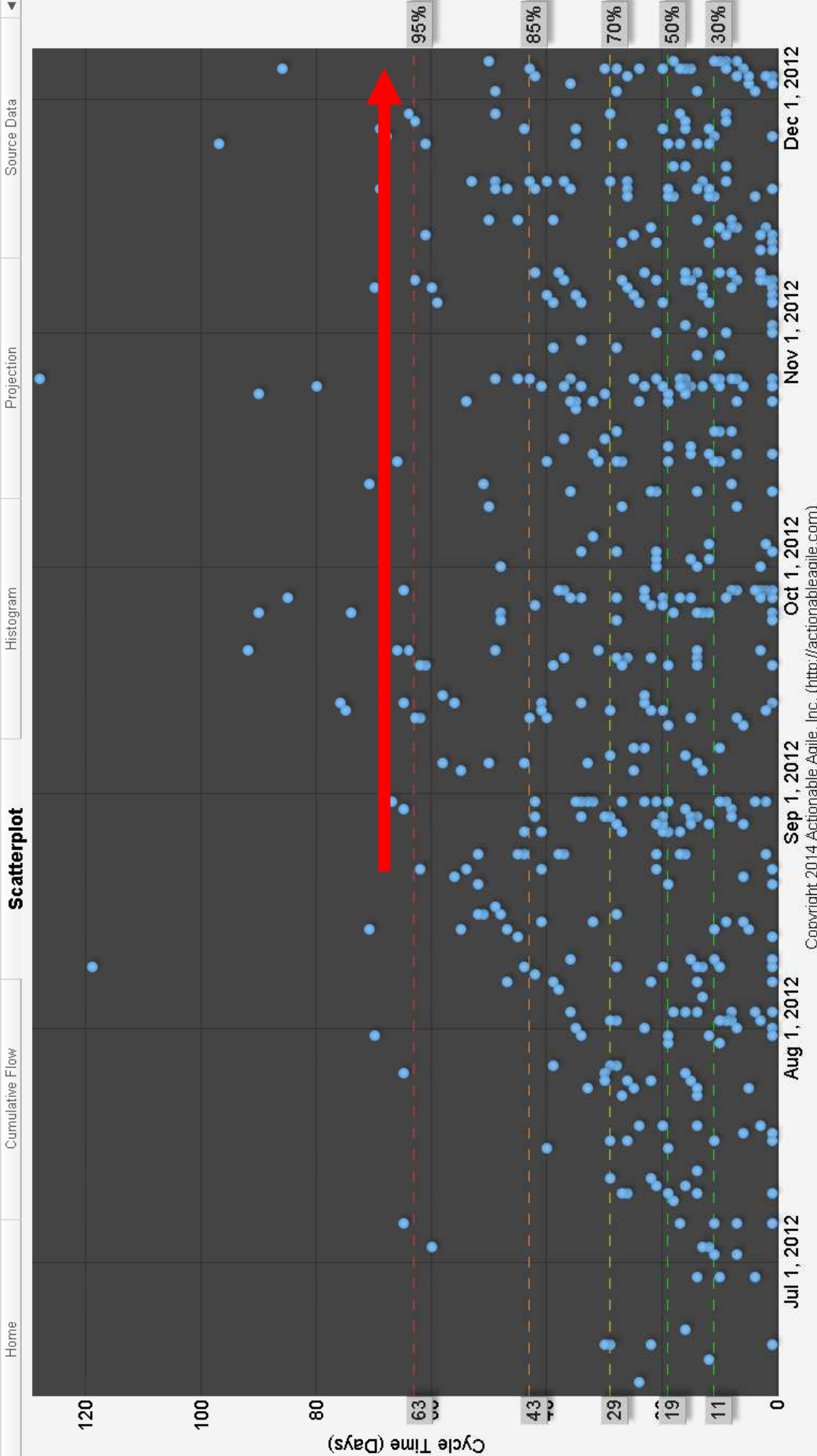
Aug 1, 2012

Sep 1, 2012

Oct 1, 2012

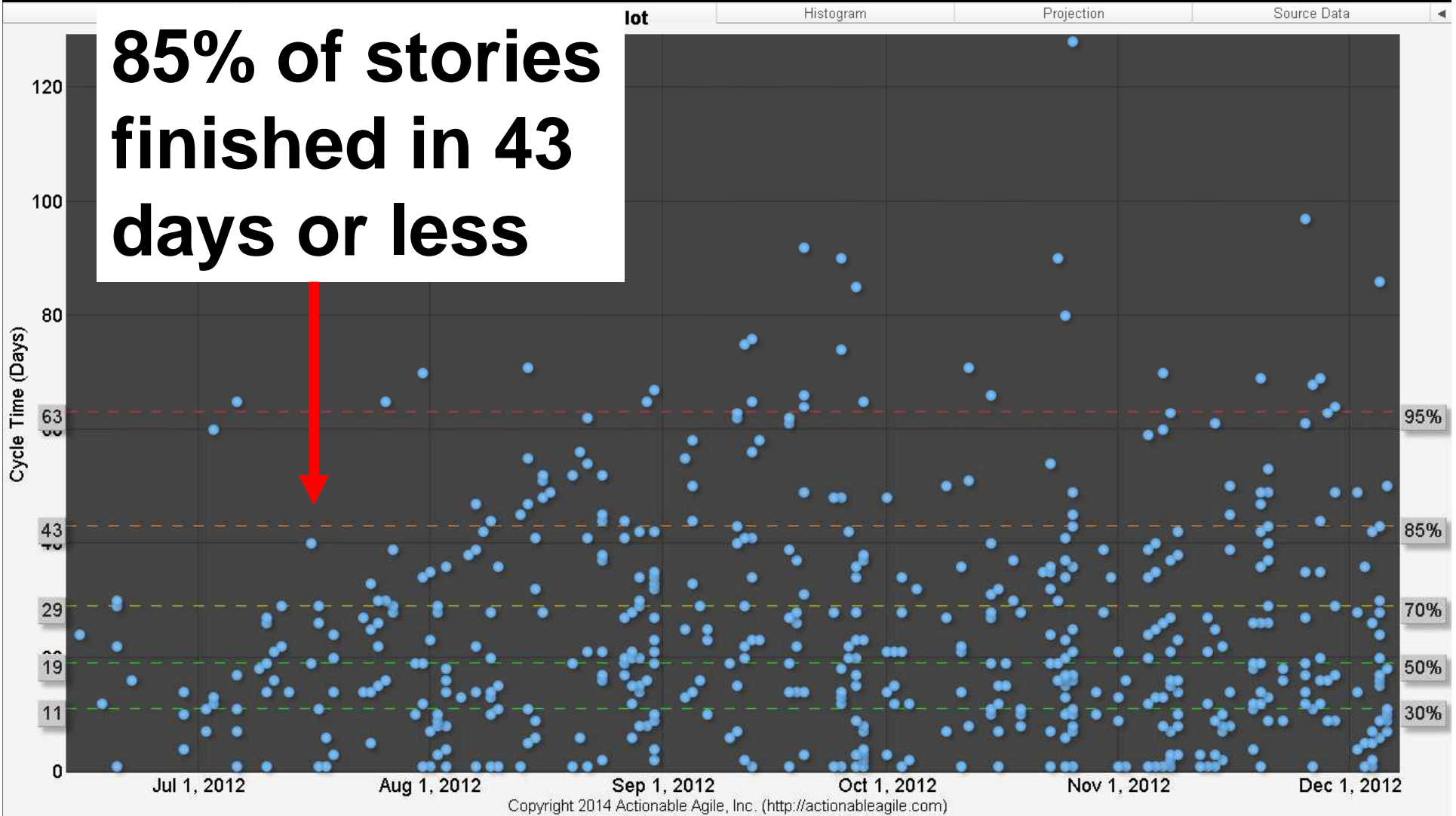
Nov 1, 2012

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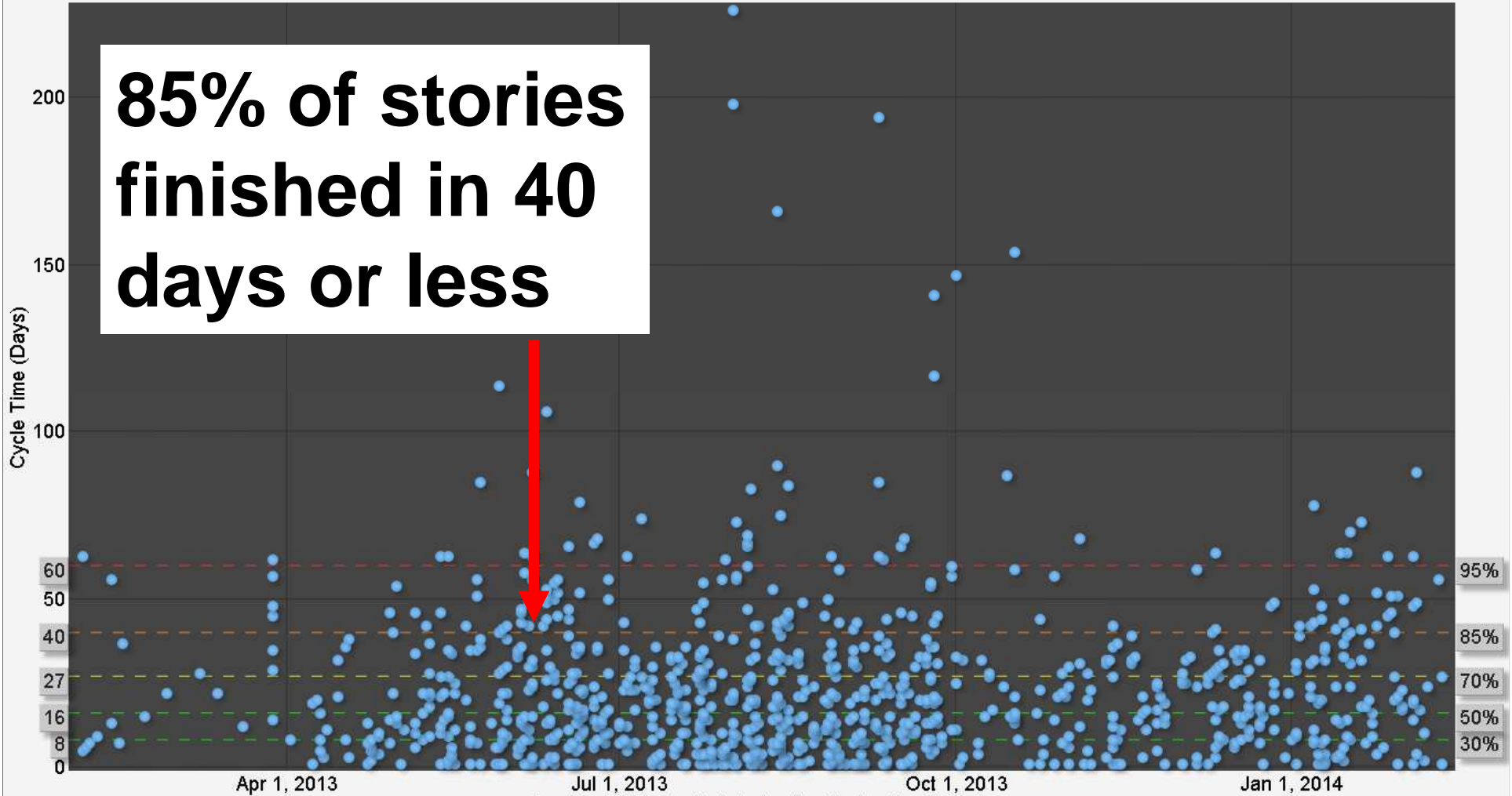
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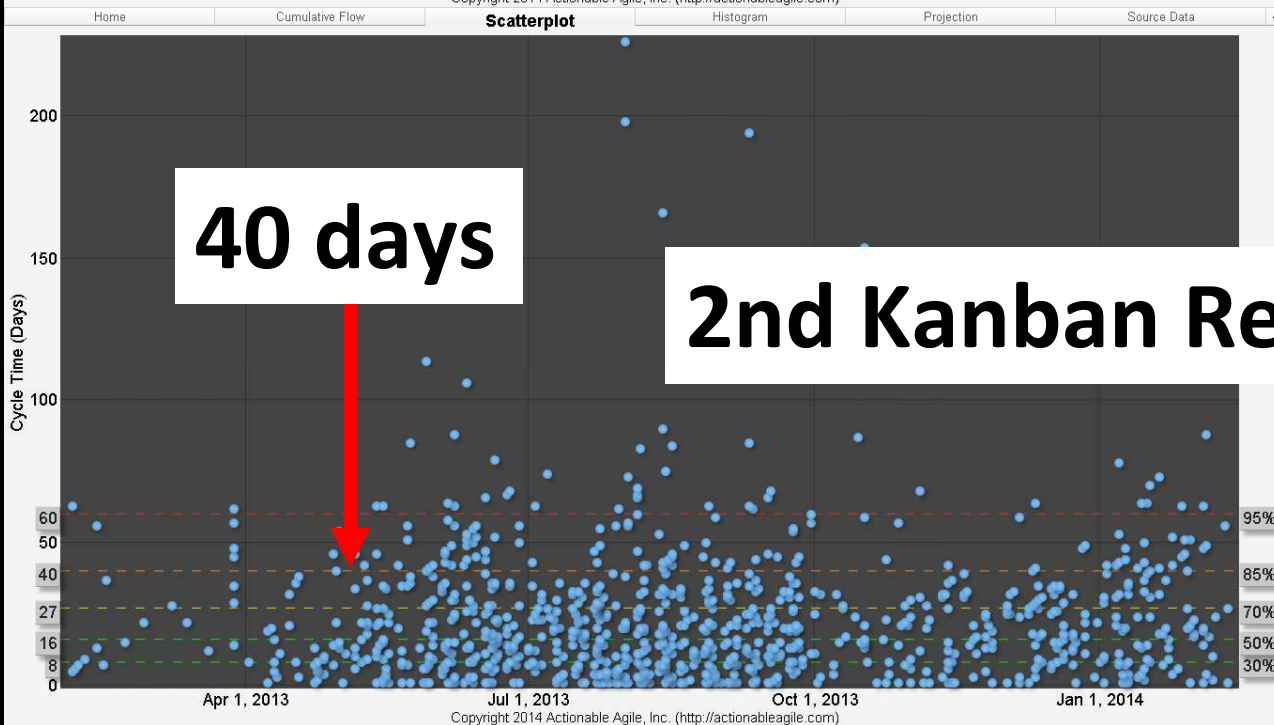
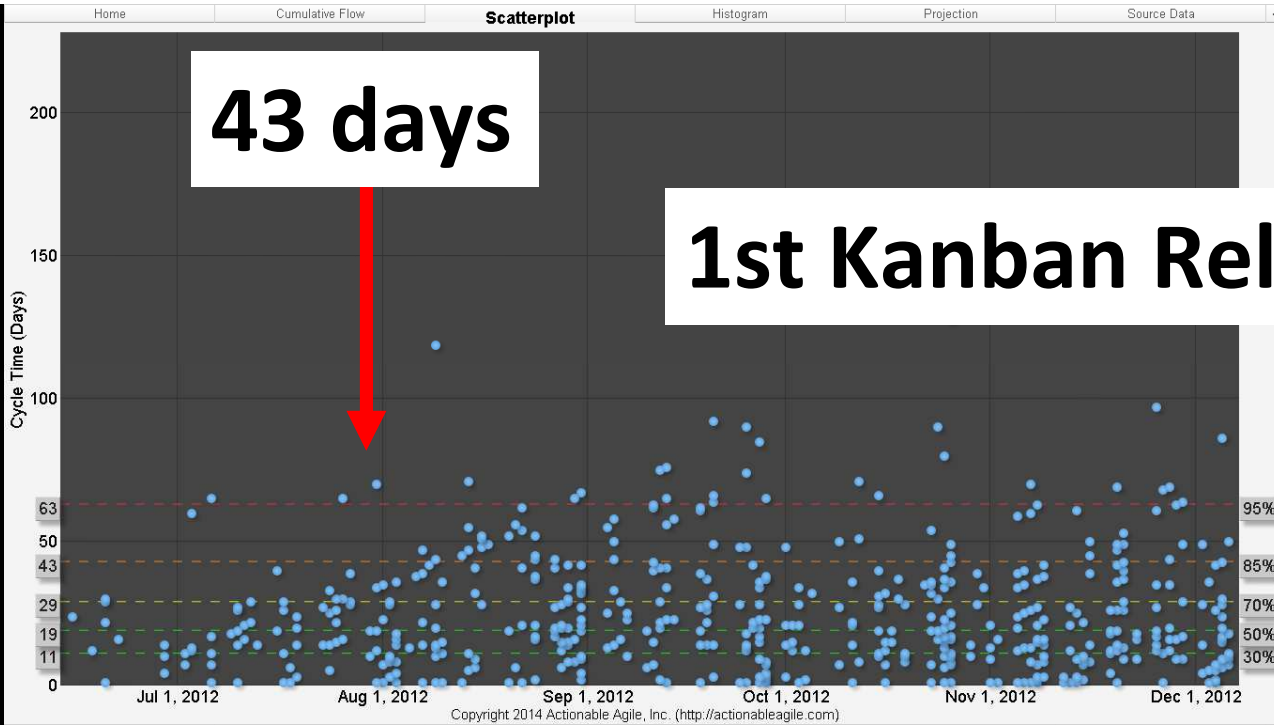
85% of stories finished in 43 days or less



And the release after that?
(still limiting WIP)

85% of stories finished in 40 days or less





RESULTS!!

Improved Quality

First Pass Yield By Phase - Soarian Financials



Improved Speed and Operational Efficiency

Decreasing CT Increased TH

Percentile	Cycle times prior to Kanban	After Kanban	Improvement
50%	21	15	28.57%
70%	40	26	35.00%
85%	71	40	45.07%
97%	126	66	47.62%

Release	Median Cycle Time	Throughput per /day	Stories completed*
1 st Kanban	19	3.52	525
2 nd Kanban	15	5.28	787
Improvement	-21.05%	+33%	+33%

We have a problem?

If you want to learn more...

All CFDs and Scatterplots were
generated by the tool available at:

<http://www.actionableagile.com>

Case Studies

<http://www.infoq.com/articles/kanban-siemens-health-services>

<http://www.agilealliance.org/files/8213/9819/0015/ActionableMetricsAtSiemensHealthServices.pdf>

THANK-YOU!

Bennet Vallet

bennet.vallet@siemens.com

Daniel S. Vacanti

daniel@corporatekanban.com