Dr.-Ing. Klaus Krogmann

Manager Quality Engineering

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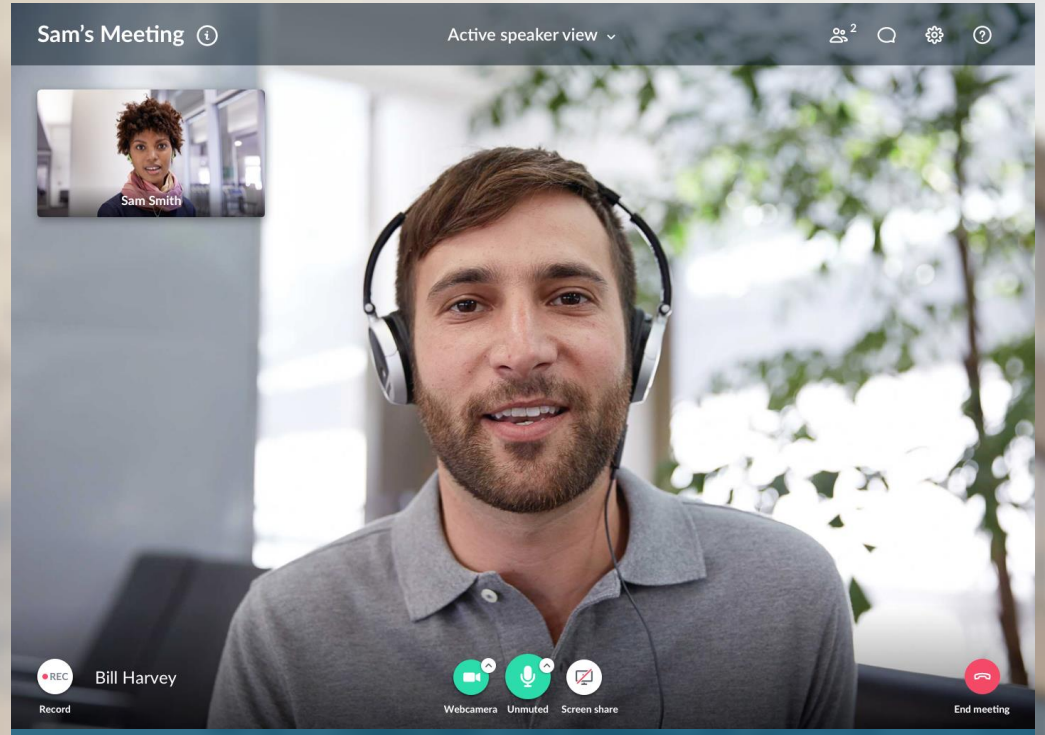
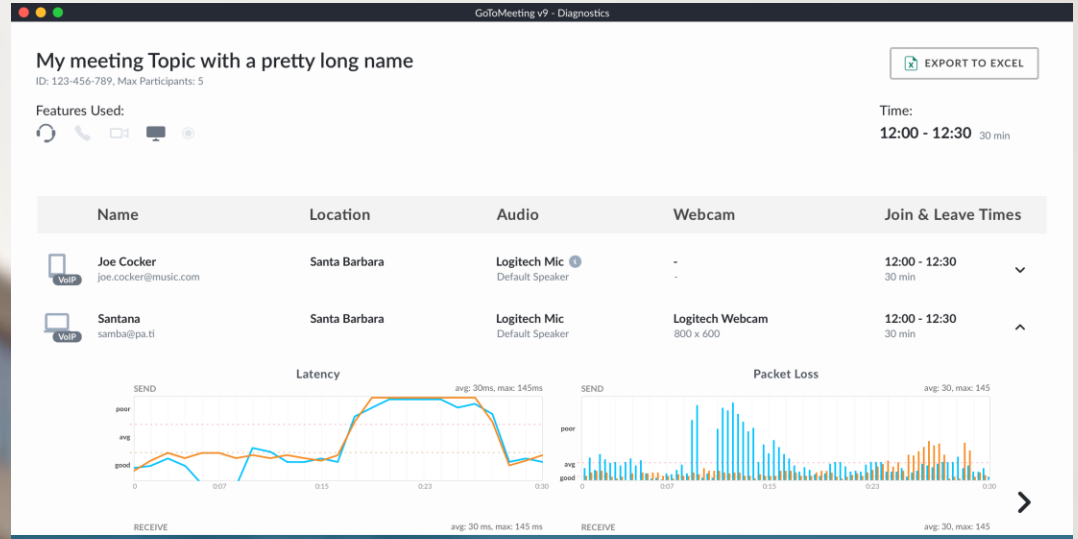
LogMeIn
Karlsruhe
Alter Schlachthof
4,100+ employees
800+ engineers
San Francisco, Santa Barbara, Jersey City, Boston, Karlsruhe, Dresden, Montreal, ...



Example Products

GoToMeeting
GoToConnect
GoToWebinar



Characteristics

SaaS products (+ installed parts)
World wide usage
24/7 usage
Frequent usage:
Millions of interactions per day

Complicated

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Complex

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Our today's software systems as a whole are complex

Complexity indicators

- No single human does understand the system as a whole
- Grew over a period of 15+ years
- Worldwide distributed infrastructure and development
- Interacts with millions of individual users per day (i.e. local networks, local machines, …)
- "😳 This is the way some people use/operate our product…"

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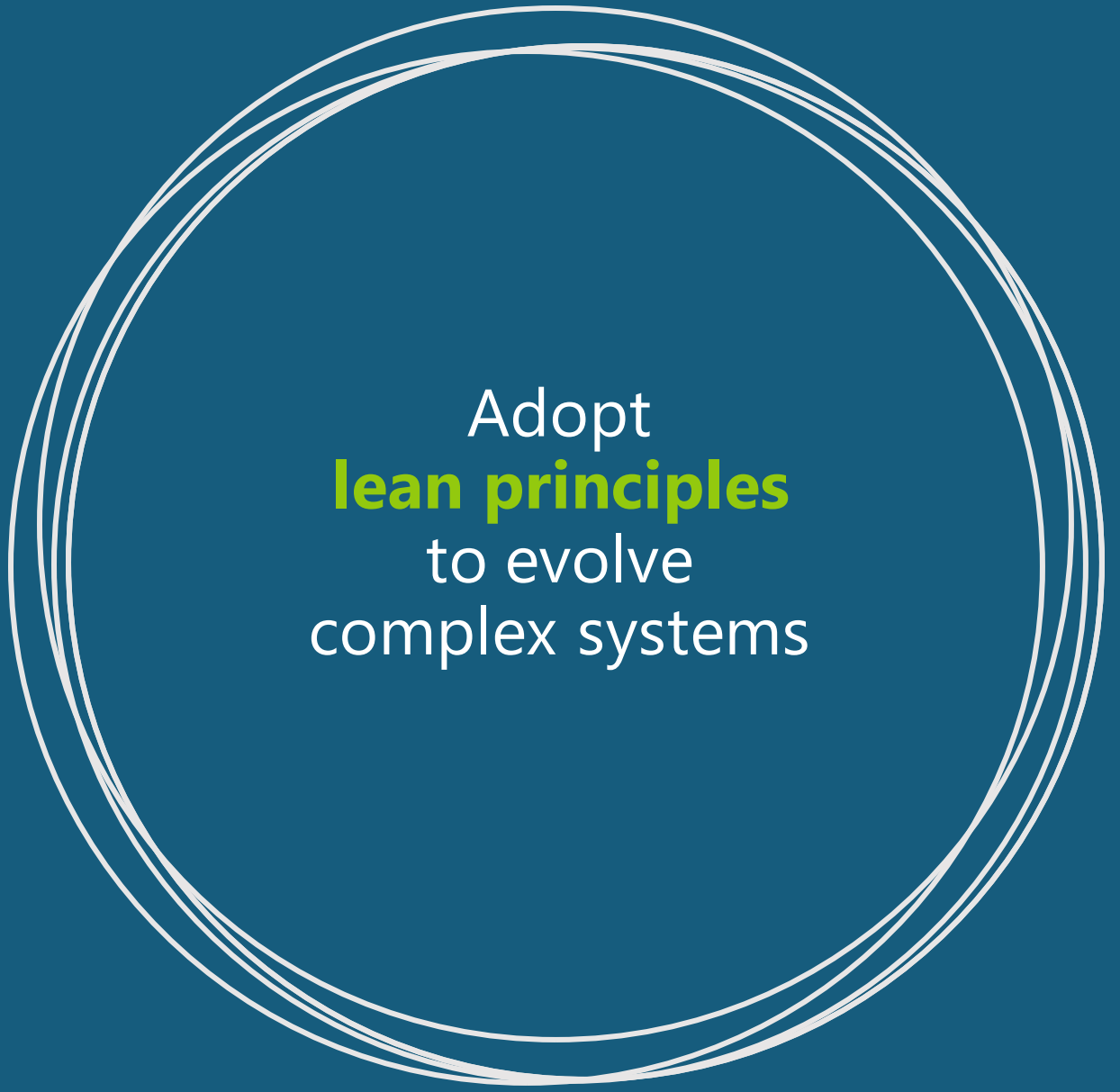
Conclusion #1



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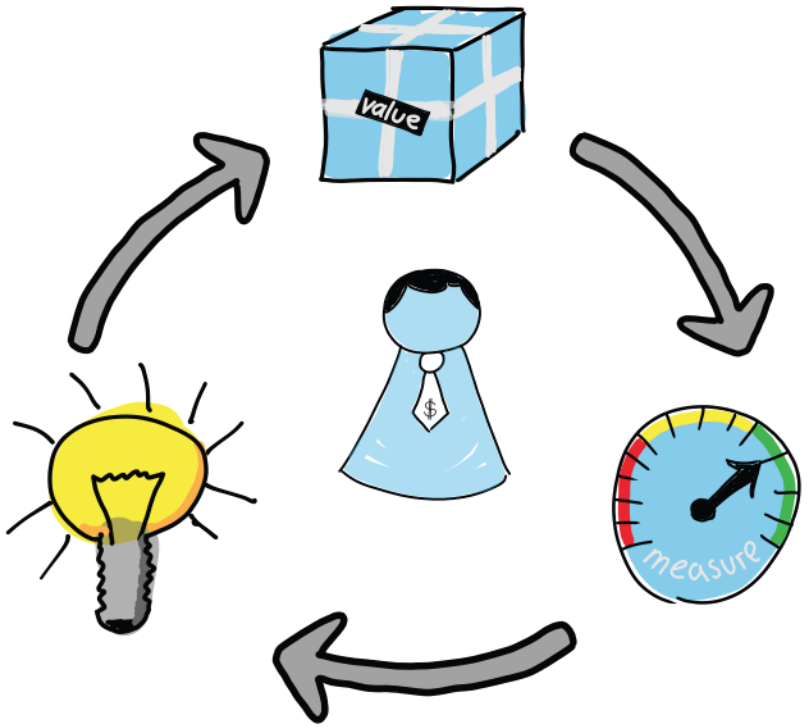
Lean Cycle

Implement lean principles to learn fast

- Build, measure, learn
- Frequent small incremental steps and early frequent feedback



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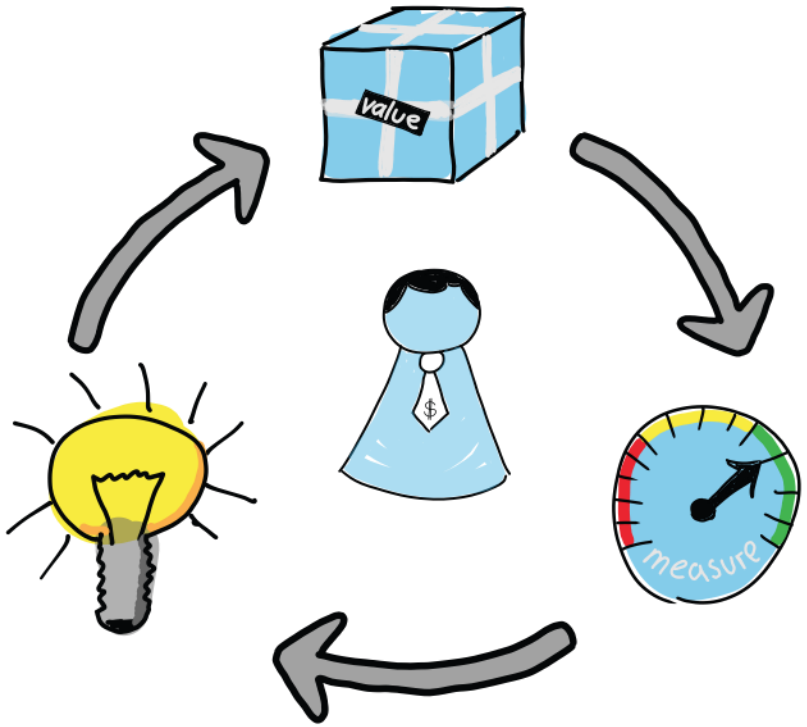
Lean Cycle

Break evolution down to small increments to learn from

Per increment

- Construct / Design with reduced complexity, small time invest
- Build
- Measure
- Learn



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Conclusion #2

Take small architecture and project risks and learn from actual system behavior. But make sure to learn.

Learn from feedback. There cannot be full knowledge upfront construction.

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How to Learn?

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Continuously & Early!

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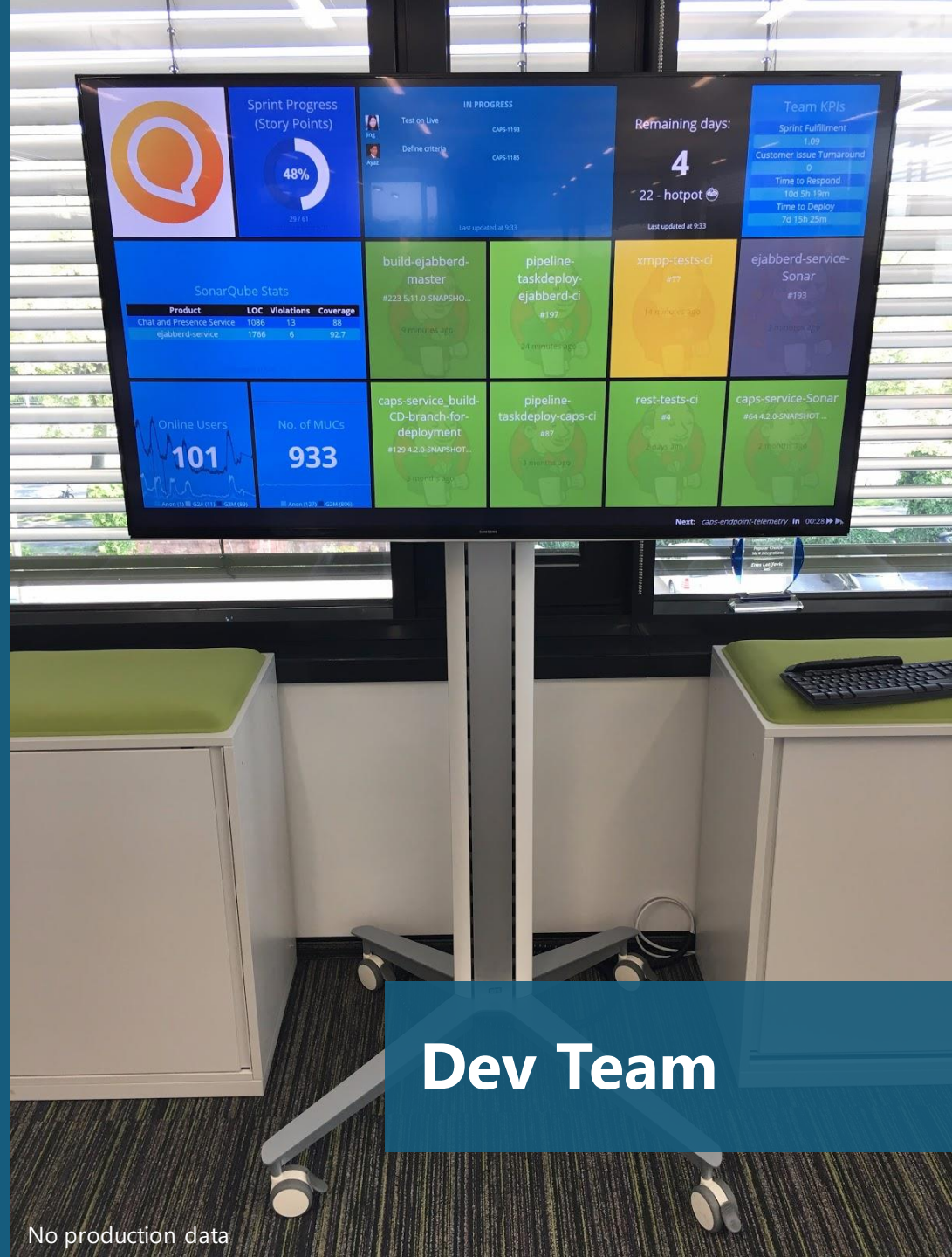
Continuous feedback in working context

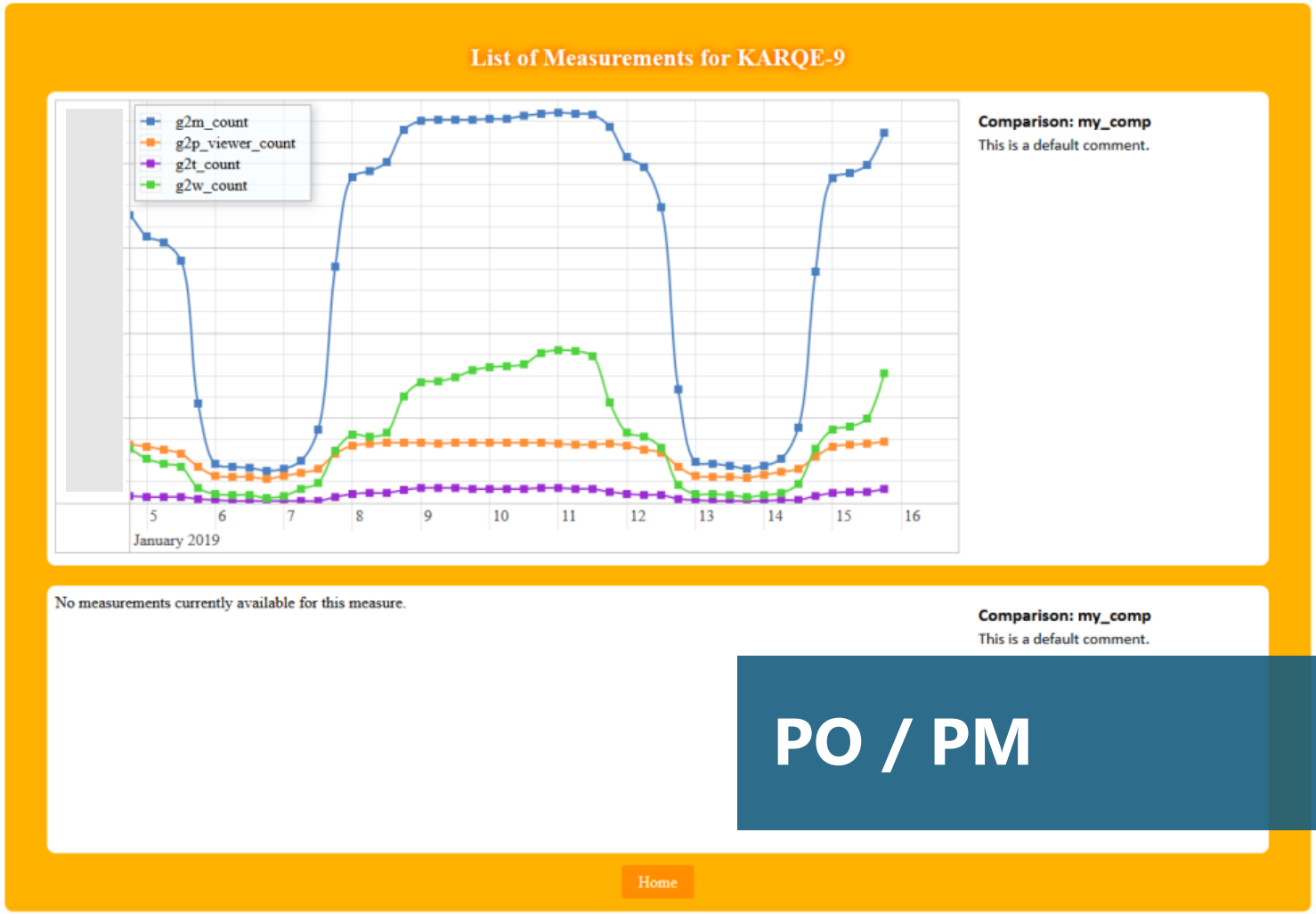
Research cooperation project between
KIT, Robert Heinrich, Maximilian Wagner and LogMeIn



No production data

Continuous feedback in working context

Research cooperation project between
KIT, Robert Heinrich, Maximilian Wagner and LogMeIn



PO / PM

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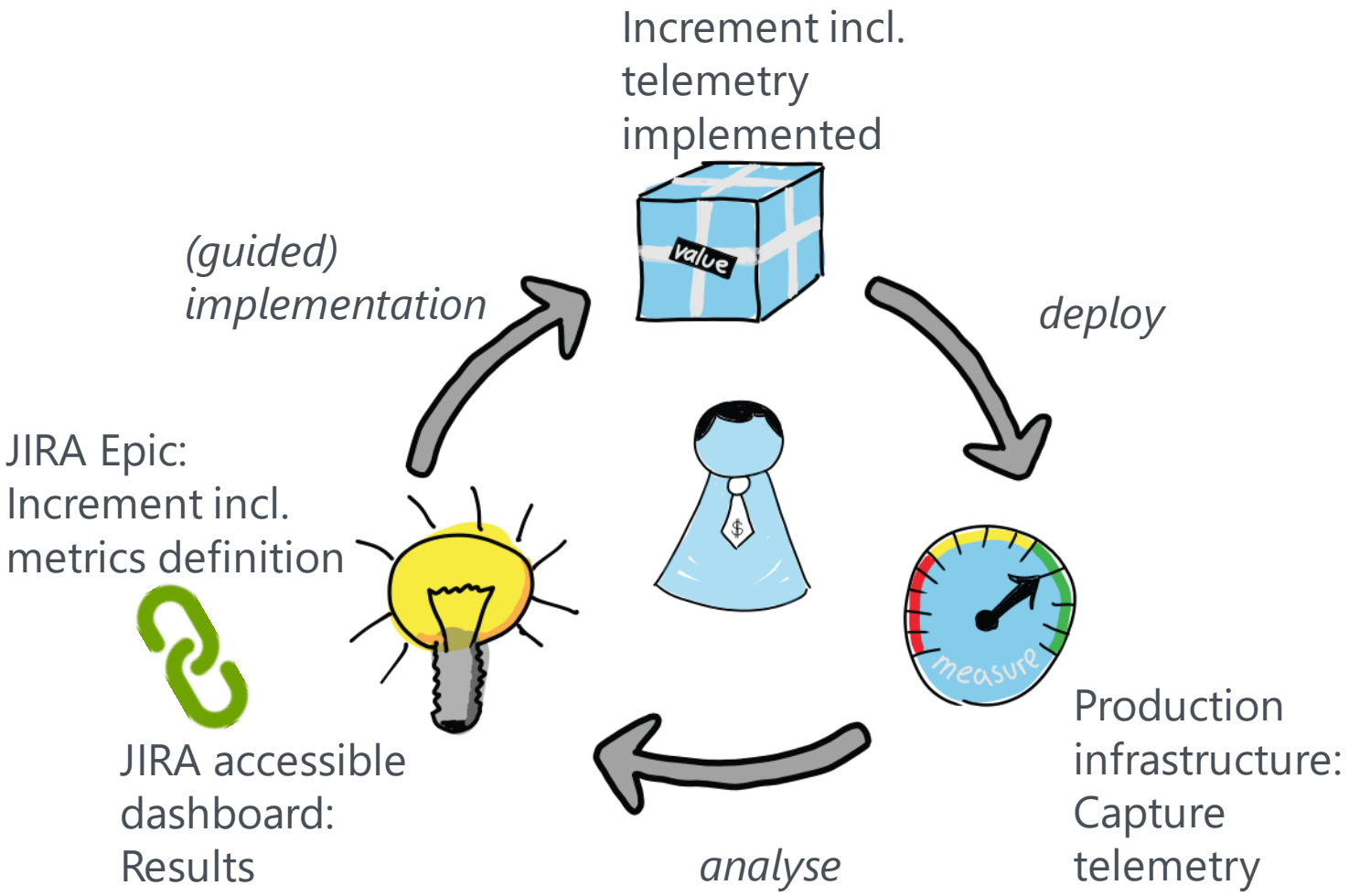
Approach Overview



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Jira Dashboards Projects Issues Capture Boards Tests Portfolio TestRail eazyBI Create

Edit Comment Assign More Start Progress Resolve Issue

Details

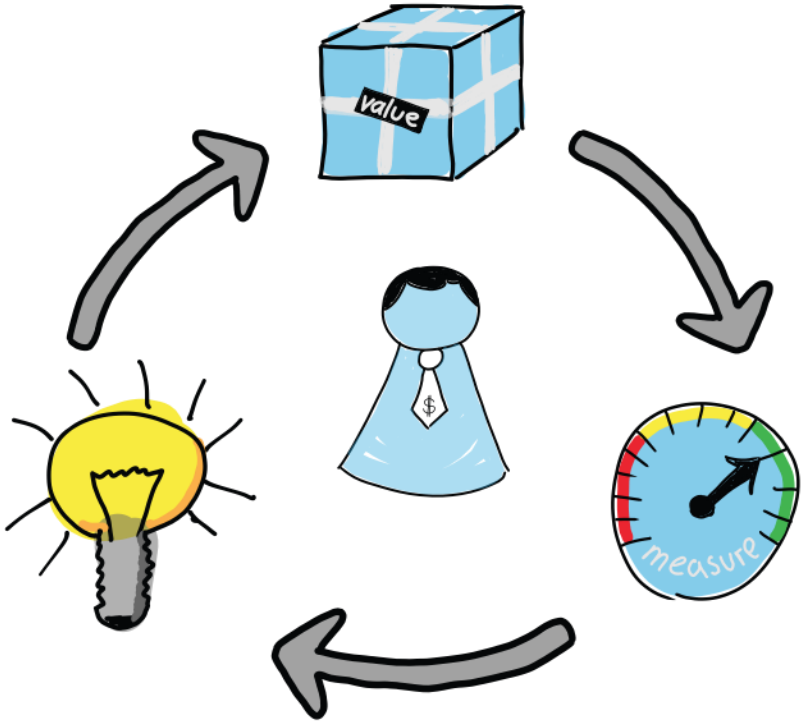
Our awesome new feature

Type:	Epic	Status:	OPEN (View Workflow)
Priority:	- Unprioritized	Resolution:	Unresolved
Component/s:	None		
Labels:	None		

Main Clarizen (Ops Only)

Acceptance Criteria:

- We want at least 1,300 daily active users by August 31, 2019 for this feature.
- Each user request is processed at the server at latest after 300ms; median: 173 ms.



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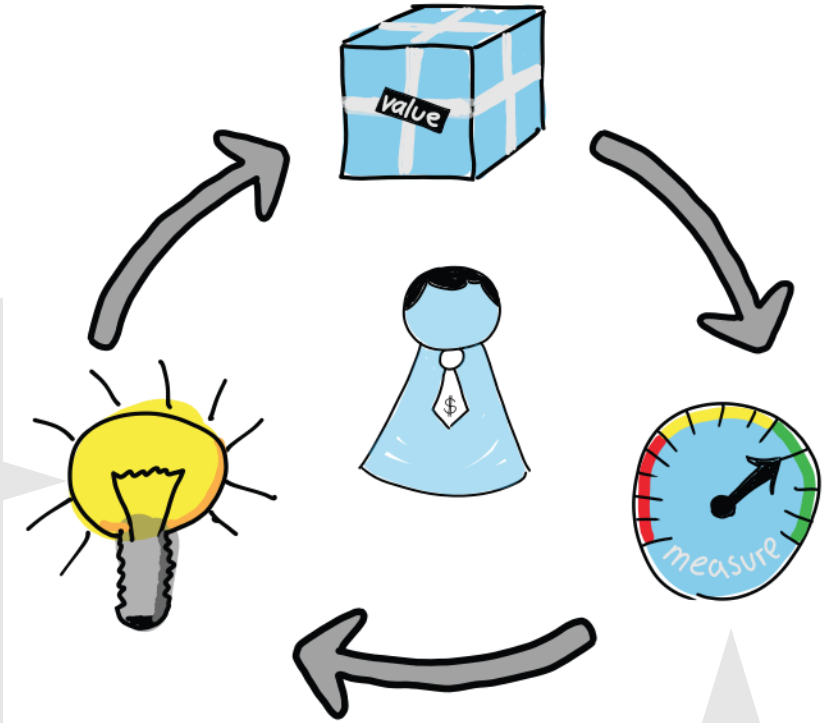
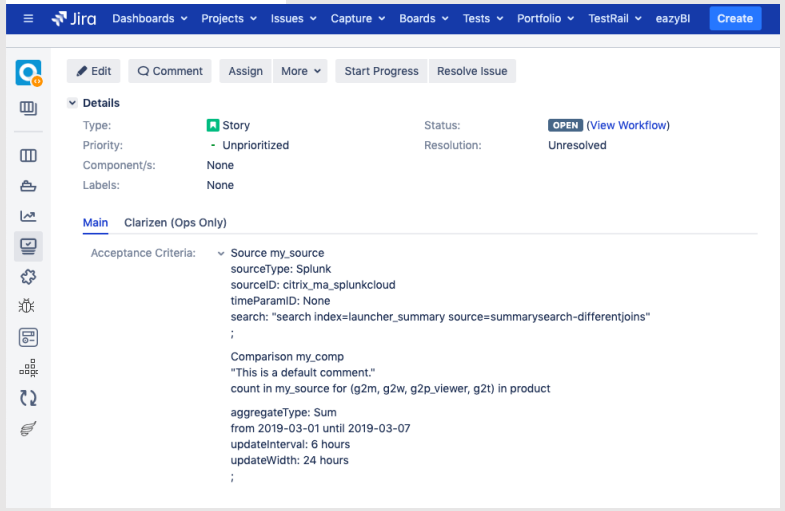
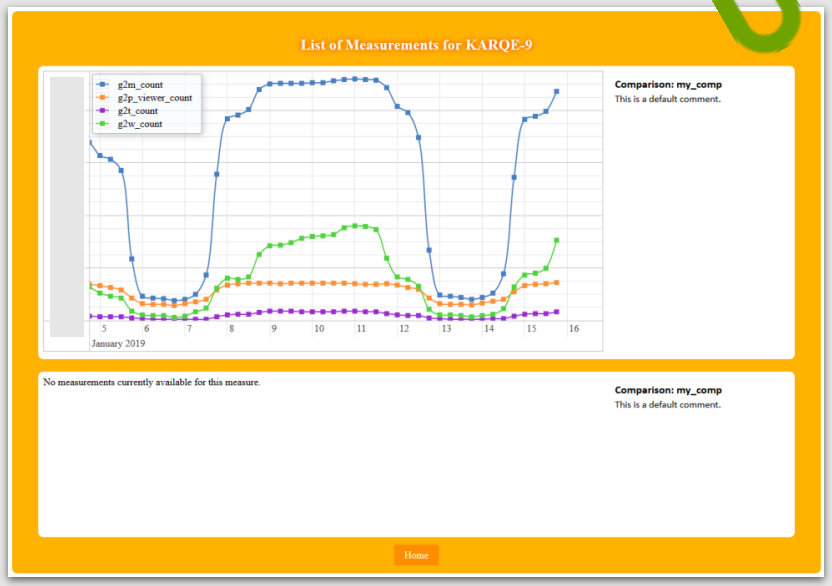



```
Comparison <compName>
    "Comment"
    <fieldName> in <sourceName>
    for (<val, val>) in <compParameter>

    aggregateType: <aggOperation>
    from YYYY-MM-DD until YYYY-MM-DD
    updateInterval: <val> <unit>
    updateWidth: <val> <unit>
;
```

Jira





splunk>

presto

HIVE

ELK Stack

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Example Query on Product Usage

```
Source my_source
sourceType: Splunk
sourceID: citrix_ma_splunkcloud
timeParamID: None
search: "search index=launcher_summary source=summarysearch-differentjoins"
;

Requirement my_requirement
     "An example comment to illustrate how comments are used."
     response_time in my_source <= 300

     from 2019-10-01 until 2019-10-03
     updateInterval: 6 hours
     updateWidth: 24 hours
;
```

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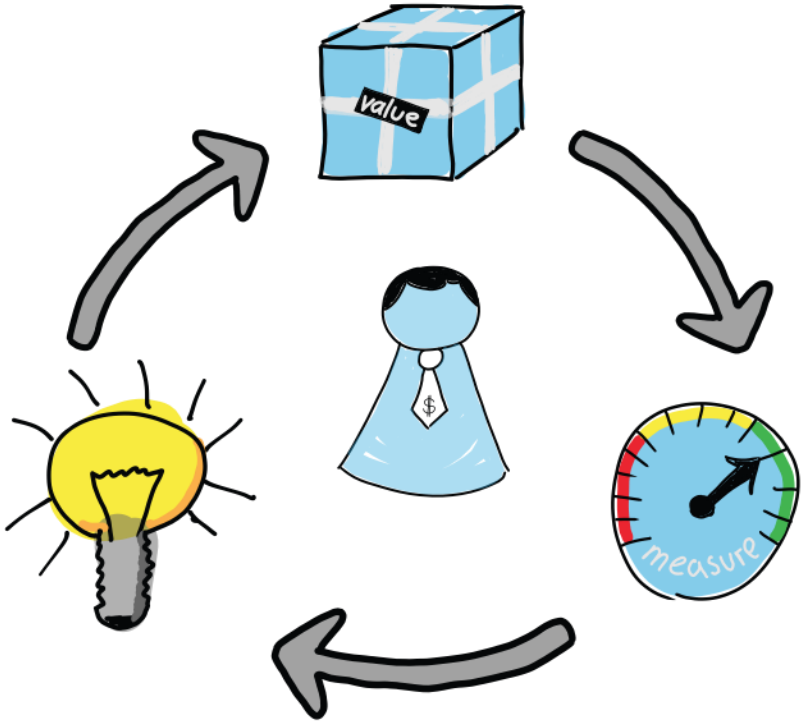
Yesterday Test Driven Development (TDD)

New Metric-driven Development (MDD) 😀



Drivers

Little overhead upfront – eliminating follow-up work
Lead design and implementation through hypotheses
Immediate feedback loop

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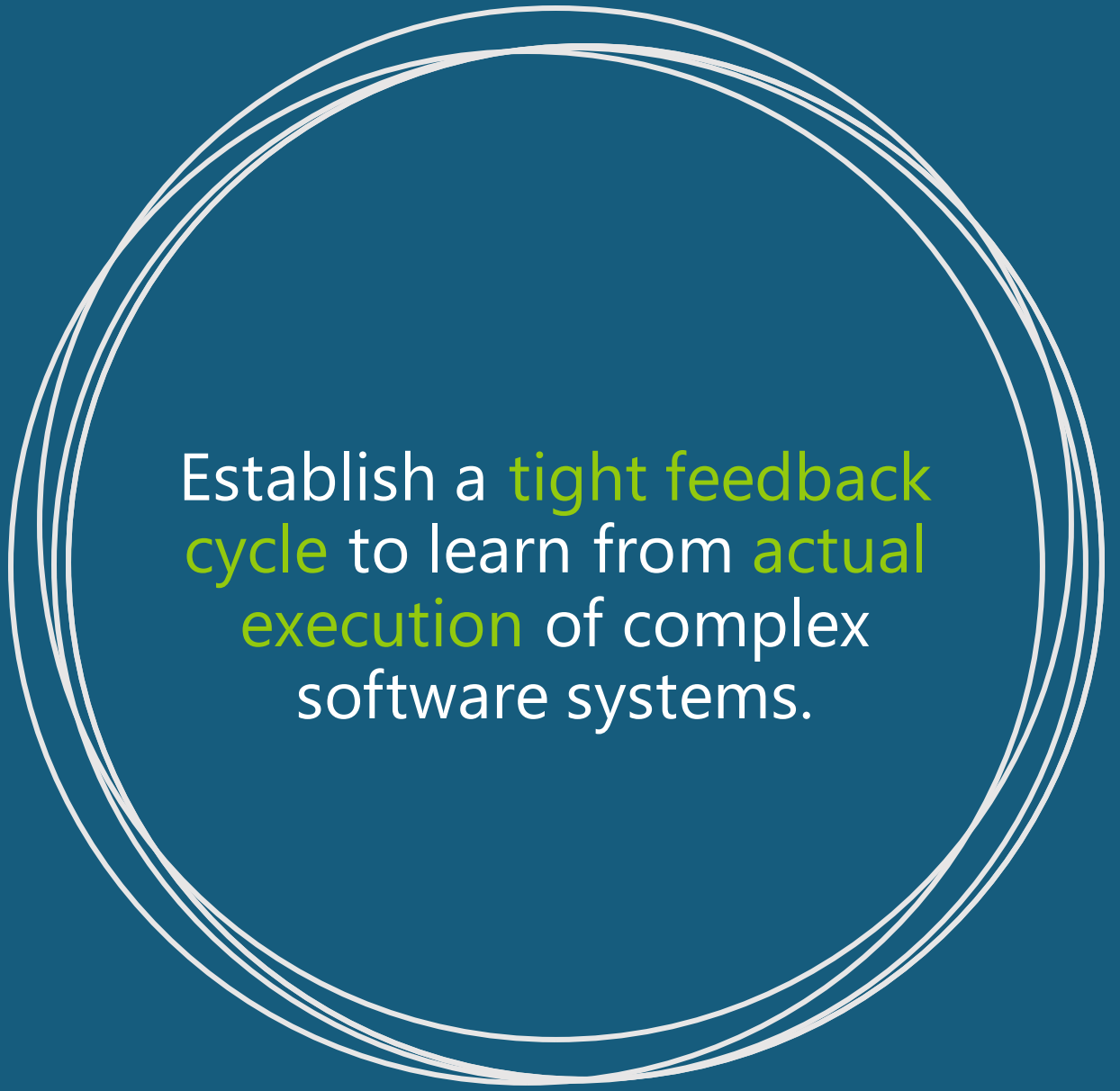
Conclusion #3



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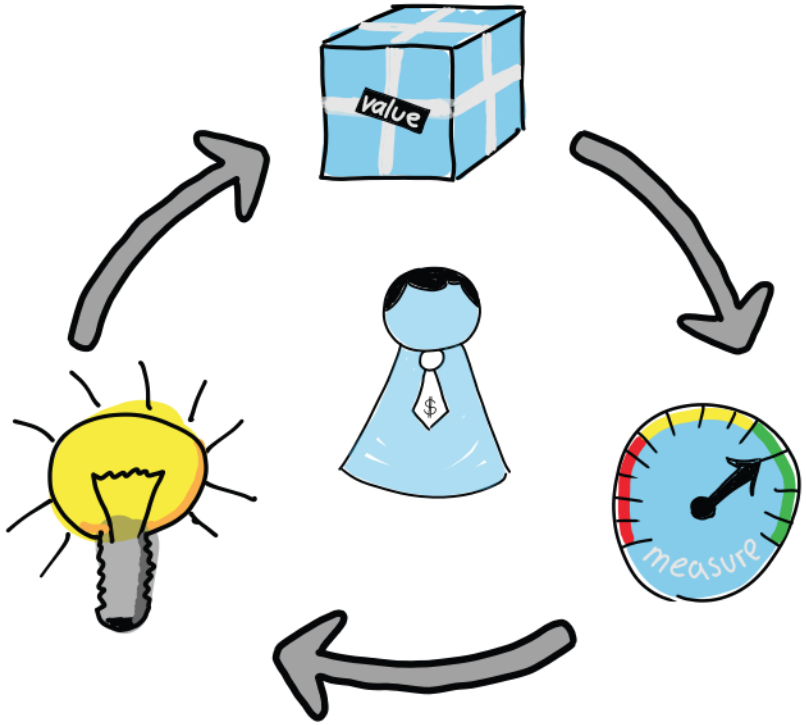
Taking Risks

"So we plan, execute and observe.
We execute!
What about risk mitigation?"



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Making Risks Calculatable

Built-In

- Small changes
- Fast feedback (i.e. short duration of feedback cycles)

Rollout strategy

Limit blast radius

- Phased rollout
- Canary releases
- A/B testing

User feedback

- Customer Effort Score (CES)
- Transactional Net Promoter Score (tNPS)

Conclusion #4

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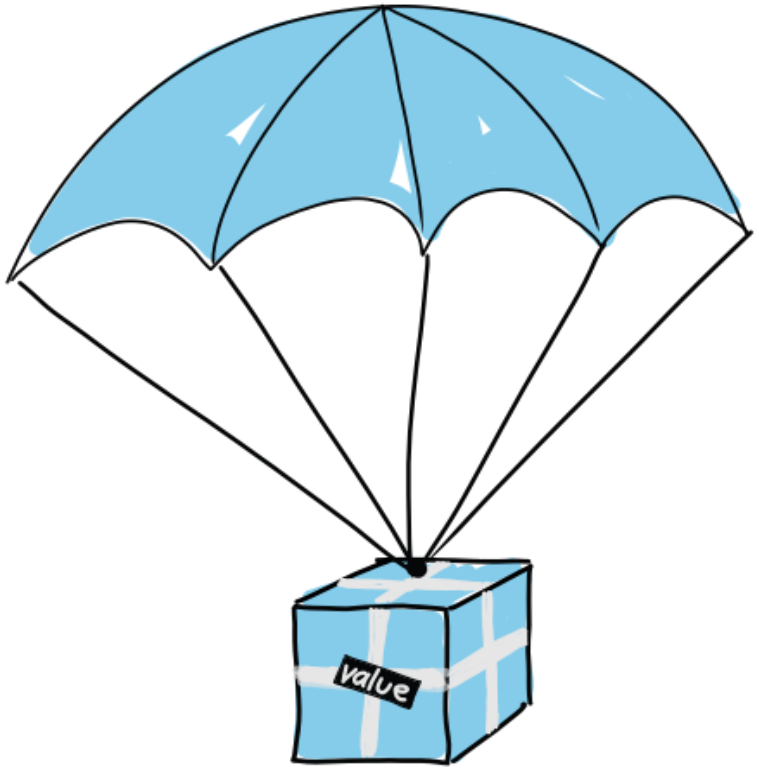
Adopt Continuous Delivery



- Implement continuous delivery as a competitive differentiator
- **Continuous**: at the cadence required by business, achieved through agility in all areas
- **Value**: small incremental changes to reduce complexity and risk vs. Big Bang
- **High quality**: based on rock solid test automation including automated regression, integration, load tests as well as tests in production
- **Goal:** increase velocity of the feedback loop between customers and companies that serve them

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Most today's software systems are complex.

Learn from actual system behavior.
Automate.

Learn from customer feedback.
Validate.

Take small risks.
Do change.

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Appendix

Example Query on Product Usage

```
Source my_source
sourceType: Splunk
sourceID: citrix_ma_splunkcloud
timeParamID: None
search: "search index=launcher_summary source=summarysearch-differentjoins"
;

Comparison my_comp
      "This is a default comment."
      count in my_source for (g2m, g2w, g2p_viewer, g2t) in product

      aggregateType: Sum
      from 2019-03-01 until 2019-03-07
      updateInterval: 6 hours
      updateWidth: 24 hours
;
```

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End