

Lean tools in production test development

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VAISALA

Content

There are several LEAN tools used in manufacturing and r&d. In this presentation a few examples are handled and briefly explained how they are being used in Vaisala product test development.



Observations for a Better World

Vaisala

VAISALA

Employs
1600
professionals
worldwide



EMEA
69%

Americas
23%

APAC
8%

Has over
30 offices in **16** countries



38%
of Vaisala
people work
outside Finland



Serves
customers
in over
150
countries
annually

2016 net sales
319.1 million
euros

EMEA
29%

Americas
44%

APAC
27%

2016 R&D
investments
over
11%
of net
sales

20%
of employees
work in R&D
activities

Committed to using
100%
renewable
energy by
2020





Leading Technologies

Discovering novel techniques and technologies in sensing, analysis, prediction and information delivery

Thin-film technologies

Silicon micromechanics

Optics

Radio and Microwaves

Acoustics and Ultrasonics

Software

Numerical Modeling

Artificial Intelligence and Statistics



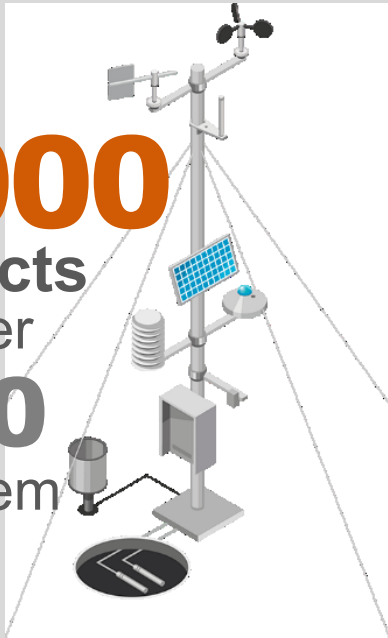
Vaisala Production System

Excellence in high-mix low-volume

VAISALA

We Deliver.

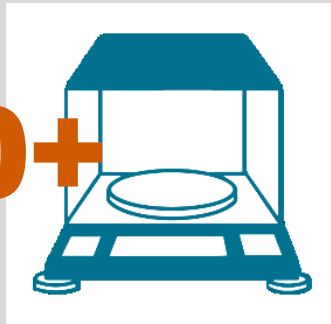
More than **6,000** Products and over **50,000** items in them



900 engineering changes in products annually



year-long product life cycles



500+ Production machines

BOULDER CO, USA

2

Factories

400

Employees

HELSINKI FINLAND

400+

Suppliers

More than



shipments weekly

Serving Customers in over

150

countries annually



Production Testing Development Team

- Develop and implement
Scientifically proven – operationally optimized
production testing
- ~ 20 Test Engineers
- ~ 60 testers under development

Product Development

3P Standard work

Daily standup

SCRUM

Visual Control

Kanban

Manufacturing

PDCA

JIT

Poka-Yoke

5S

Visual Control

Standard work

Kanban

Gemba

Value Stream Mapping

Daily management

Kaizen

One piece flow

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One piece flow

”Standard work” in test development

- Processes
 - Defined steps, templates



- Good old Waterfall, is this LEAN?
 - It is our standard way to implement production testing to LEAN manufacturing
 - Includes standard requirements, standard deliverables, standard review practices, ...










PDCA in test development

- Visual continuous improvement tool for improving the performance
- Weekly 15 minute meeting
 - Priority, escalation, assignment, follow-up, closing
- Good for small fixes and improvements, important to escalate bigger ones, limit max 10h of work
- Makes also "this will not be done" visual
- Examples
 - Updates in the "recommended equipment list"
 - Creating a common list of useful links

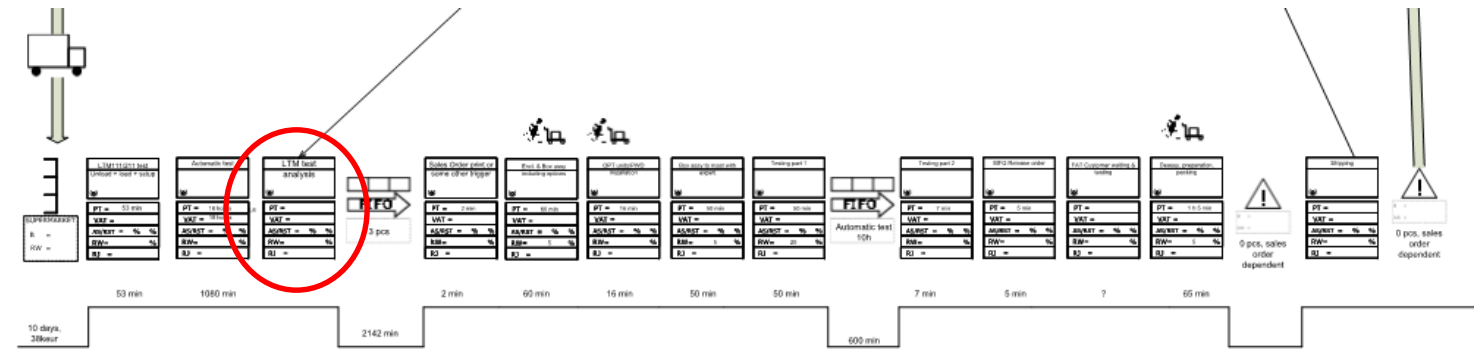


”SCRUM” in test development

- Testing platform sw developed in sprints
- 5 members of the test development team
 - No other tasks during the sprint
- Select – Fix – Validate
- Theme sprints

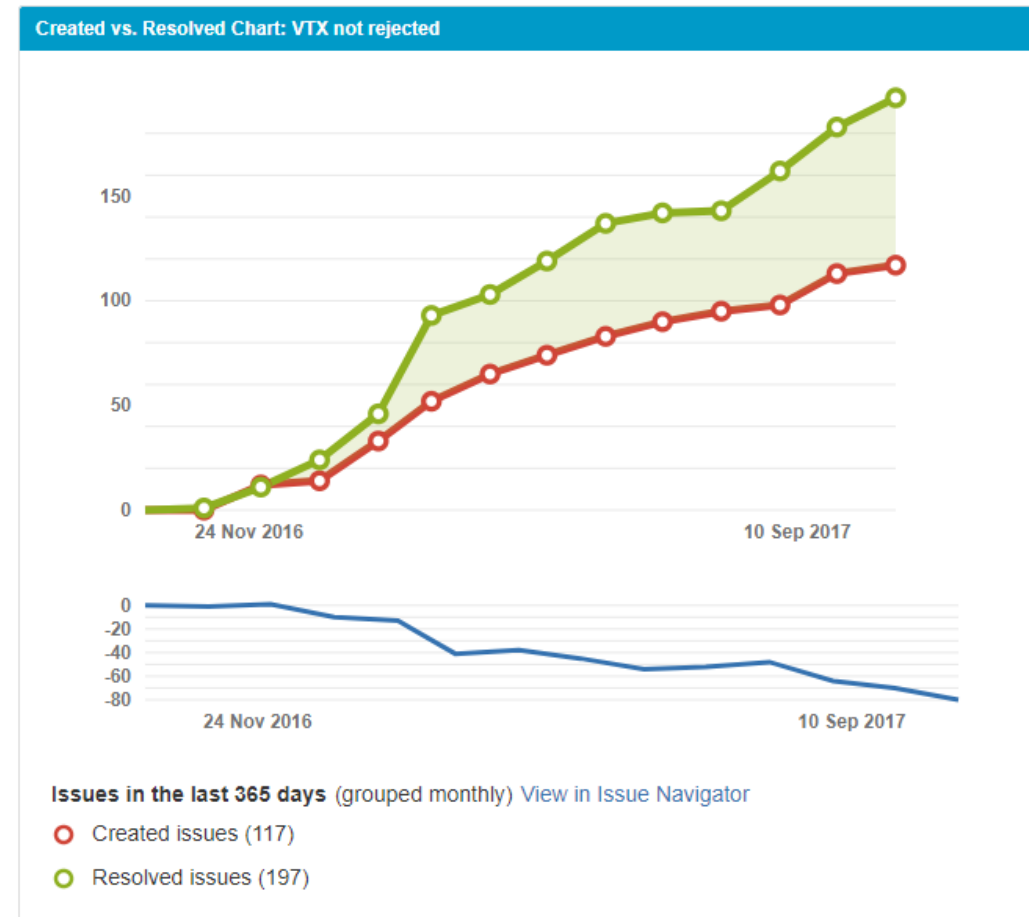
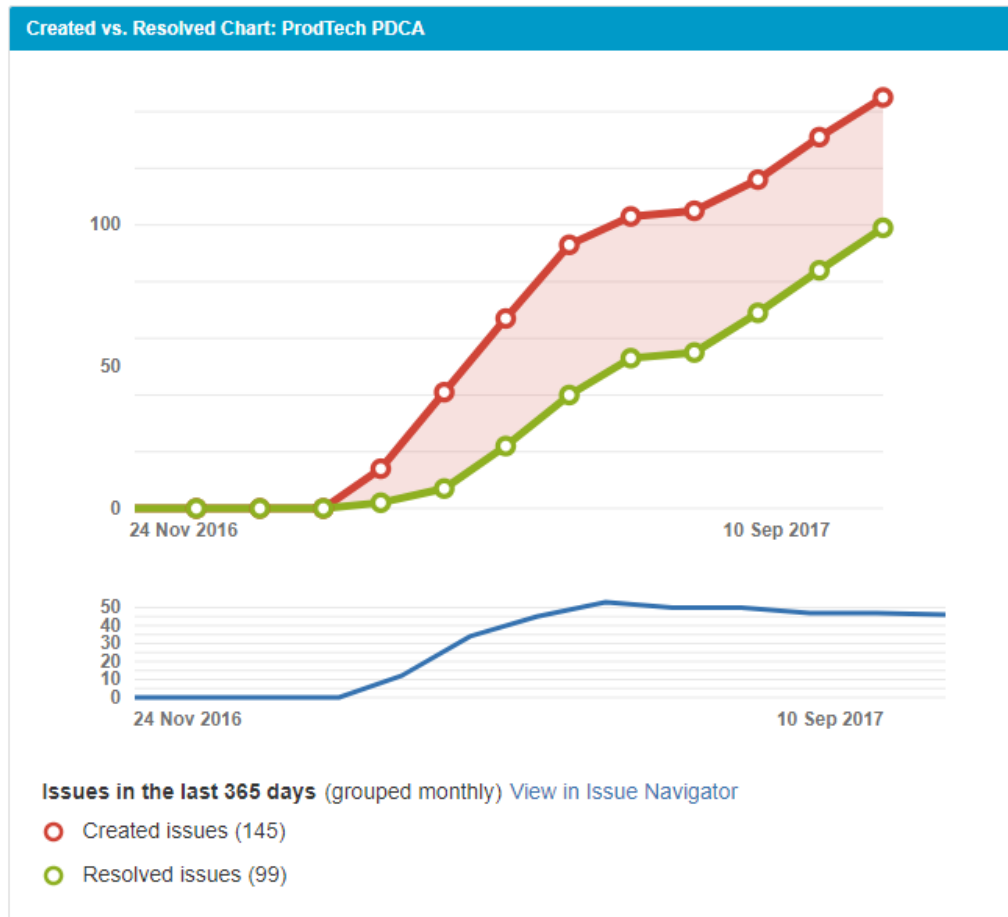
 VTX-739 [SOS] Cancelled ItemStatus	 Mä lOM i A5	 CLOSED Fixed
 VTX-738 Modbus Device identification objects read loses ID numbers and keeps only ID description strings	 Kärnen sten Jussi Jänkä	 CLOSED Done
 VTX-726 [SOSEditor] Fix solution errors	 Kad lo Ja s ID	 CLOSED Fixed

”VSM” in test development



- Value Stream Mapping done for the manufacturing flow
 - Typically testing phases are handled as boxes
 - Define manufacturing flow → Integrate testing to get best flow
- Digging deeper to that ”box”, making a new value stream map has proven to be very useful in several cases
 - Splitting the phase to several phases, removing steps, improving takt time
 - Typical results cost avoidance of investments

Results – PDCA and VTX sprints



Conclusions

- LEAN R&D tools can be used also on test development, as test development is R&D
- Some of the LEAN tools used in manufacturing can be applied to office environment
- Most important is to be able to provide solutions which support LEAN manufacturing
- Continuous improvement is the key to keep the performance level

Thank You!

