



2014 Workshop on Accelerated Stress Testing and Reliability



7 Habits of Highly Effective Product Development



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John Lenss

- John has over 18 years of experience in performing HALT. He has produced excellent results for many firms in the Twin cities area and around the United States.
- John currently works at 3M in the Personal Safety Division. He was the General Manager for Time Compression Labs, a HALT testing facility in St. Louis Park, MN, until Gregg Hobbs premature death in July 2010.
- John has authored over 100 papers and been a presenter at events such as the American Society for Quality's Annual Conference, the Minnesota Reliability Consortium, the Minnesota Quality Conference and the Accelerated Reliability Technology Symposium, to name just a few.
- This presentation and the data herein are from John's career and any specific companies mentioned have given John permission to tell this story.



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Presentation Outline

Things learned from working with over a dozen companies and performing hundreds of product HALTs.

- What are the 7 Habits?
- A Typical Product Development Process
- A Case Study



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The Seven Habits are:

1. Concurrent Engineering with Multifunctional Teams
2. Product Robustness Must Be Put in at the Design Stage
3. Change the “Designer’s Mentality”, to see Breaking Products as a Good Thing
4. HALT on the Prototype
5. FMECA is Needed to Disseminate Engineering’s Knowledge to the rest of the Organization
6. HALT on the Final solution
7. Know When the Project is Done and Celebrate



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Phases of Product Development

Initial Concept Phase

System Design Phase

Implementation Phase

Product Acceptance Phase

Manufacturing/Warranty Phase



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Initial Concept Phase

- Investigate Market Needs, Potential and Technology
- Assess Program Viability
- Plan System Design Phase



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System Design Phase

- Team Is Formed, Initial Timelines and Budgets are established by the team
- Define and Agree on Customer Requirements
- Define and Agree on the Solution
- Plan the rest of the program
- Design Verification Testing
- Prototyping of New Technologies/Processes
- Developmental HALT on prototypes



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Implementation Phase

- Design, Test, and Produce the Final Solution
- System Verification Testing
- FMECA
- Agency Testing
- Developmental HALT on Final Solution
- Run Safety of HASS



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Product Acceptance Phase

- Test and Certify that the solution works in the customer environment – Beta Test
- Launch the product



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Manufacturing/Warranty Phase

- Support the Program Warranty
- Identify Process Improvements
 - Rerun Safety of HASS
 - If there are design changes/additions, then a re-HALT must be done



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Case Study

e^N-Counter 4000™
Transaction Terminal





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Direction for this new product

1. Make e^N-Counter 4000 **THE** most reliable product on the market
2. Come up with a plan to implement quality/reliability improvements in all legacy products



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Getting Buy-In from the Developers

I provided the training for our development team on why we should do a HALT and what we would gain by performing HALT, as opposed to the other testing we had planned.



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e^N-Counter 4000 HALT Timeline

- March – first HALT seminar
- June - Developmental HALT on e^N-Counter 4000 initial release product
- June - HALT results discussed with Mfg, Service, and Design Engineering
- July – Legacy products - Transaction Terminals - Developmental HALTs
- October - Printer Developmental HALT



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Legacy Products HALT

- September - e^N-Counter 4000 Released to the Public
- November - Reliability Engineering and Management Institute at U of Arizona, Tucson



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Additional Timeline Items

- August - Developmental HALT on e^N-Counter 4000 block release (ASIC Version of Product)
- December - FMECA
- March – Purchased a HALT chamber, 2 years after first learning about HALT
 - Used for e^N-Counter 4000 HASS
 - Used by other divisions for their own HALTs



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Sales Pitch story

“Competition Gets Blindsided by Our Customer”



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Resources

- www.qualmark.com – for papers and chambers
- www.hobbsengr.com – for papers
- <http://www.intertek.com/performance-testing/failure-mode-verification-fmvt/> - FMVT
- www.thermotron.com – for chambers
- www.haltandhass.com – papers and chambers
- www.vironlab.com – test services



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Questions:

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