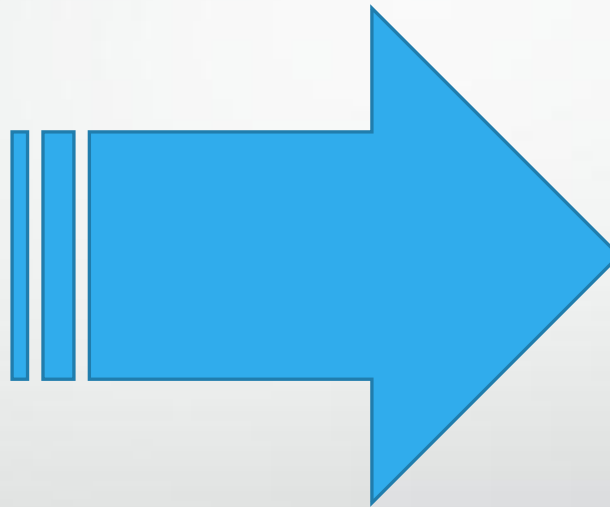


Signal Hardware: Bread Board to Battle Field



By Steve Teske, CSM, CSPO, CSP, PMP, ICP-ATF

Steve Teske's Bio



Embedded Developer/ Architect/Team Lead

- Wireless 3G Core Network
- Software Defined Military Radios (JEM or PRC-148)

Embedded Software Engineering Manager

- 50 Embedded Software Staff
- Numerous Agile Teams

Agile Project Manager

- Geospatial Web Apps
- Cloud/Big Data Systems
- Transformational Role turning Chaos to Agile

ICP
ATF

CERTIFIED PRO
AGILE TEAM
FACILITATION



Certified Scrum
Professional



Certified Scrum
Product Owner



Certified Scrum
Master

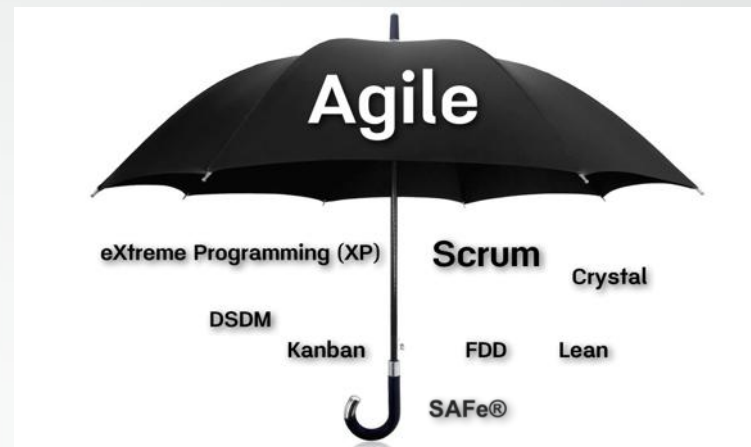


Project
Management
Professional
(PMP)®

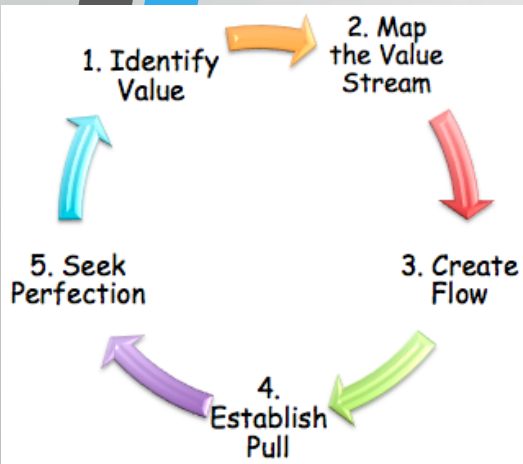
ICAgile – Certified
Professional in
Agile Team
Facilitation

Certified Scrum Professional®, Certified Scrum Product Owner® and Certified Scrum Master® are a certification marks of Scrum Alliance, Inc. Any unauthorized use is strictly prohibited.

What is Agile?



LEAN



6?



Agile Manifesto

- 1. **CUSTOMER** COLLABORATION over contract negotiation
- 2. **INDIVIDUALS AND INTERACTIONS** over processes and tools
- 3. **RESPONDING TO CHANGE** over following a plan
- 4. **WORKING SOFTWARE** over full documentation



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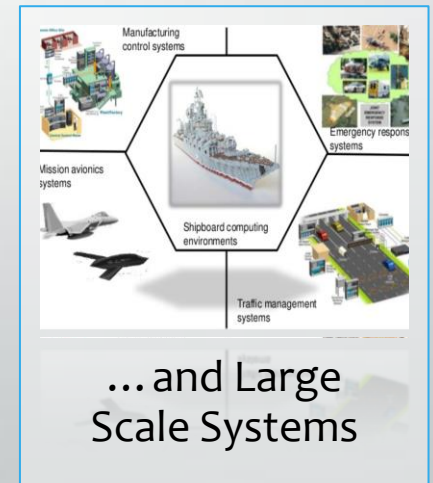
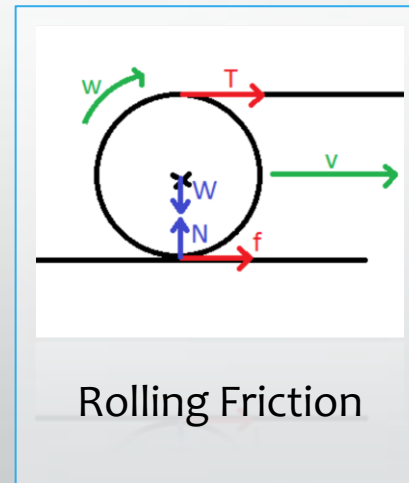
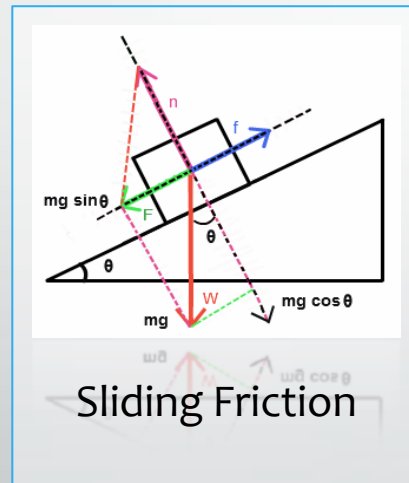
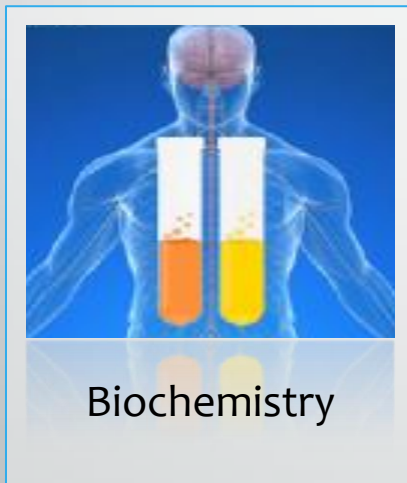
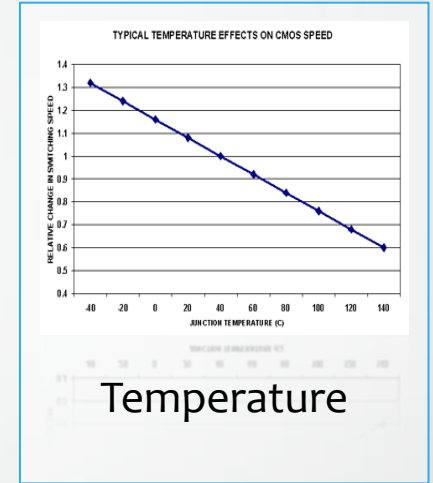
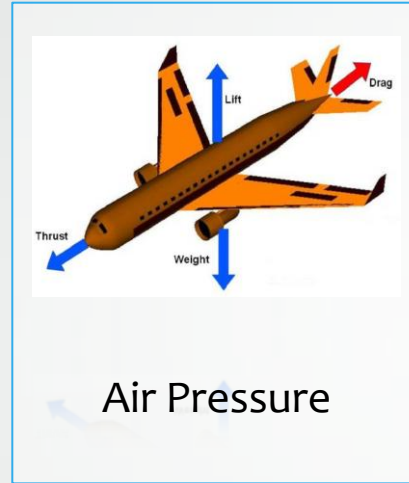
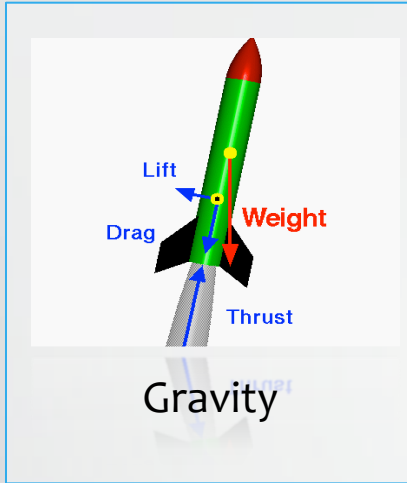


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Fast...

Physics is the Challenge for Agile HW



Best Agile Hardware Project Ever

In my opinion [NASA's 1960's space program](#) was one of the most agile project ever executed.

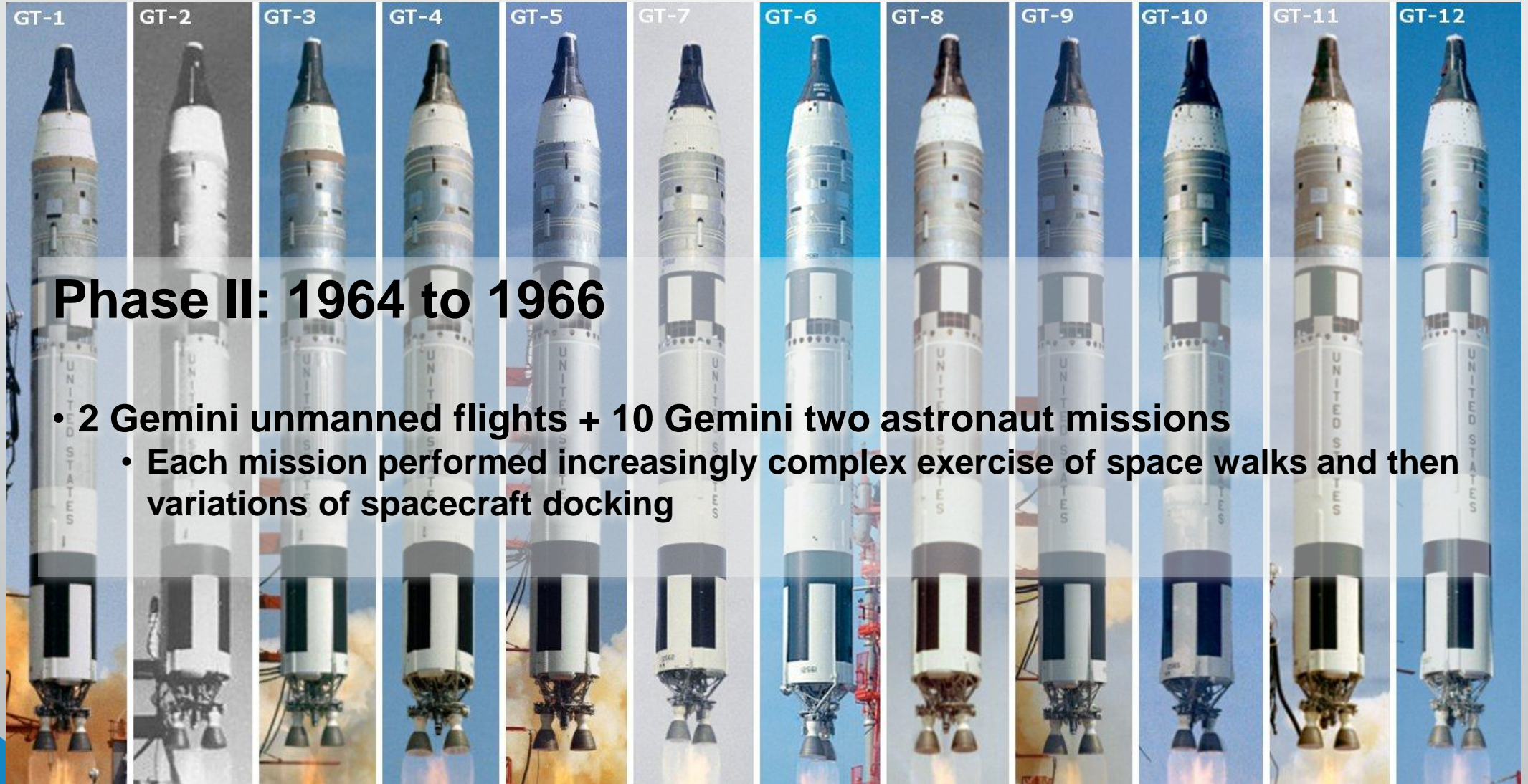
Unmanned Missions: 1959 to 1961

20 Unmanned "test flights" occurred before manned flights began

- At least 4 of these 20 were failures due to numerous malfunctions including explosions.
- 3 of the 20 were considered partial success and the remaining 13 were considered successful.
- Each flight provided insight into different features of the craft: strength of the air frame, thrust required, re-entry considerations, heat shield requirements, etc.



Best Agile Hardware Project Ever



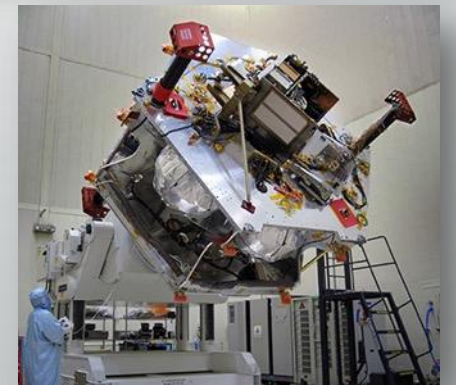
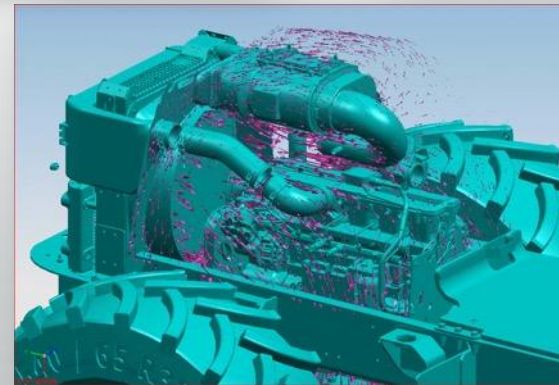
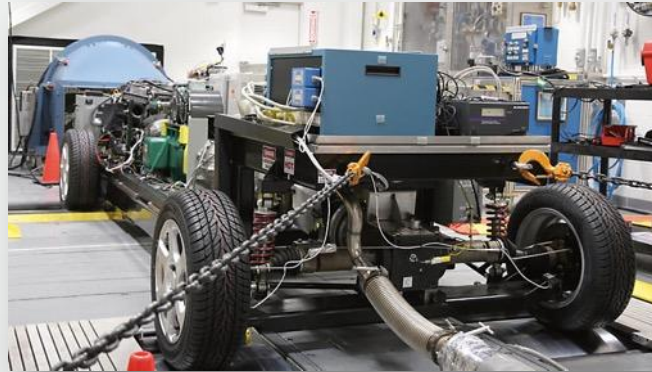
Phase II: 1964 to 1966

- **2 Gemini unmanned flights + 10 Gemini two astronaut missions**
 - **Each mission performed increasingly complex exercise of space walks and then variations of spacecraft docking**

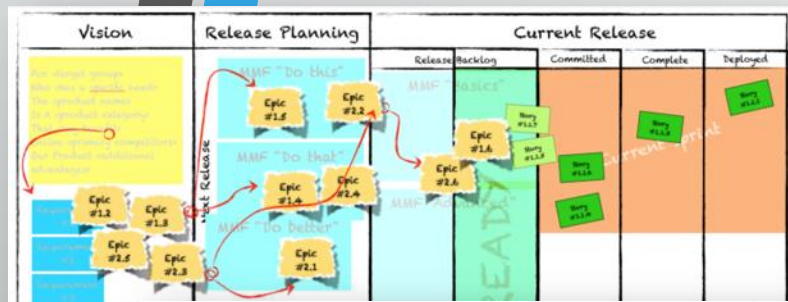
Best Agile Hardware Project Ever



Better Tools: 3D Printers, Simulation, Automated Test Fixtures



Success = Visibility + Cross Functional Teams + Agile Leadership



Stories	To Do	In Progress	Testing	Done
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Biggest Barrier to Agile Hardware Adoption

“The **hardest part** is getting to where they [Engineers] **believe it’s even possible...** they have an instinctive feel that some things take too long... ’look it takes... weeks to do this. It can’t be made shorter. We can’t get it done in a two week sprint therefore Scrum doesn’t work.’

In every case what you have to do is to look at that thing [and ask] ‘really, so how do you go about making that thing anyway.’ They list out... steps they go through. Each of those steps accomplishes something and has a deliverable and takes a couple days to do. The whole thing might indeed take many weeks end-to-end. **The fact is that you do have deliverables you can implement and validate along the way and those can be done in a two week sprint.**

That is the single toughest point to get across. And the single biggest barrier to adoption.”

Kevin Thompson, PhD, “Agile Hardware Development with Scrum – Webinar”

Steve's Rules of Agile Success

- Rule 1:
 - Do not accept the statement, “It can’t be done in small iterations.”
- Rule 2:
 - Coach technical leadership to guide teams to use iterative steps.
- Rule 3:
 - If the team concludes they need a long period of HW or SW development before integrating the components, see Rule 1.

What Next?

- Mindset over matter: enforce breakdown into small measure goals
- Employ technology
- Iterate, Learn, Repeat
- The only successful approach to high risk, time-bound project is agile

References

[Webinar from Our Sponsor: Agile Hardware Development with Scrum - Scrum Alliance](#)

- Kevin Thompson, PhD – Agile Hardware
 - Assertions:
 - Apply Agile for Creation of Design, not End Product
 - Swarming not likely
 - See the white paper for additional information [Eleven Lessons Learned about Agile Hardware Development](#)

The image shows a promotional graphic for a webinar. On the left, the Scrum Alliance logo is displayed with the tagline "Transforming the World of Work". Below the logo, the title "Agile Hardware Development with Scrum" is written in blue. A large blue play button icon is overlaid on the right side of the text. Below the title, the speaker's name "Kevin Thompson, PhD, PMP, ACP, CSP, CSM" and his email address "kevin.thompson@cprime.com" are listed. At the bottom, there is a small line of text providing the company's address and website: "4100 E. Third Ave., Suite 205, Foster City, CA 94404 | 650-931-1651 | www.cprime.com". On the right side of the graphic, there is a photograph of two people, a man and a woman, looking at a wall covered with colorful sticky notes. The background of the graphic features a blue and white pattern of overlapping circles.

ScrumAlliance®
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Agile Hardware Development
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Kevin Thompson, PhD, PMP, ACP, CSP, CSM
kevin.thompson@cprime.com

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References

[Agile Methods in Medical Device Development](#)

- Chris Danek, PhD, MBA – Agile Hardware in Medical Devices
 - Apply Agile for Creation End-to-End of Product
 - Deep interaction required for cross functional teams



References

[Agile Leadership Webinar: Scrum for Hardware — Introduction and Real-Life Experience](#)

- Hubert Smits, Big Orange Square – Agile Hardware
 - Apply Agile for Creation End-to-End of Product
 - Big Orange Square is Leading SCRUM4HW Track at Scrum Gathering San Diego 2017





Thank You!

Read my blog: <http://agileleadershipedge.com>

Reach me: steve@steveteske.com