Designers Gone Wild

or, channeling Apple's Jonathan Ive …

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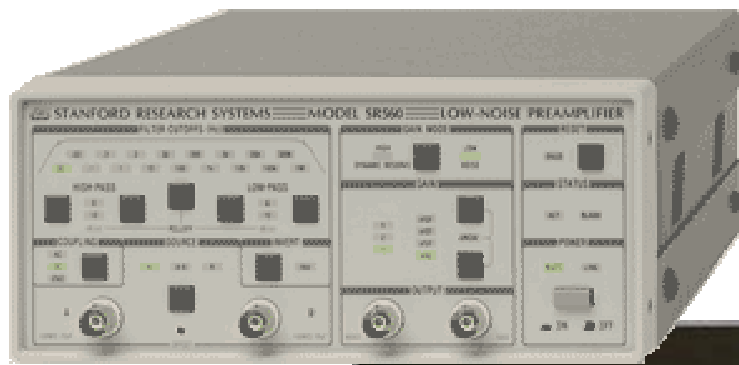
crescendo

But what was my Ur-motivation?

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On Silicon Valley

" … there is a remarkable optimism, and an attitude to try out and explore ideas without the fear of failure."

"There's not a sense of looking to generate money, its about having an idea and doing it …"

- First response to many new unconventional ideas is "That can never work." Disregard what others are saying.

- You will likely run through many failed designs before you reach one that is ready to release to customers.

- Be modest and listen. Manufacturing is specialized – in SV, it has to be to survive. Understand niches and expertise and costs. Manufacturers want to develop new customers, you need new partners.

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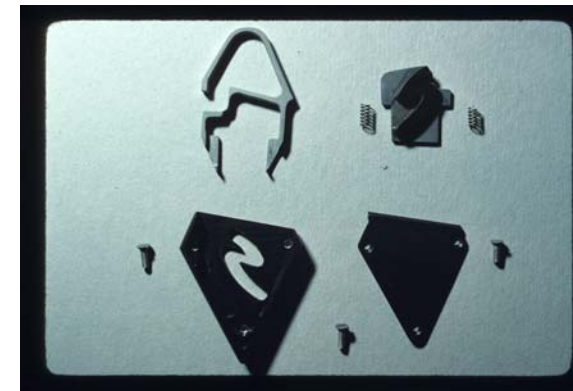April 18-20, 2012

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On the Design Process

Design " … is very much about designing and prototyping and making. When you separate those, I think the final result suffers."

- CAD is great but ultimately your product must leave the computer and be realized. With 3D printing so affordable, hands-on validation and tweaking of designs is a huge advantage. Same goes for electronic circuitry.

- As a designer, it behooves you to have a fundamental grasp on and experience with a wide range of materials and manufacturing techniques. Sample sample sample.

- Get your hands dirty. Know how to operate a mill, lathe, saw, welder, file, sanding block, etc. with reasonable skill. This helps you develop a feel for how things are made and can go together.

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On Creativity

"The nature of having ideas and creativity is incredibly inspiring. There is an idea which is solitary, fragile and tentative and doesn't have form."

- Good design is highly multidimensional / multidisciplinary. This is one thing that makes it so exciting.

- As a designer, your ultimate goal should be to *produce something new*. How you get there is up to you.

- Design ideas can be drawn from a multitude of sources.

On Being a Nimble Designer

"It is so important to be light on your feet, inquisitive and interested in being wrong."

- Design requires a real commitment – live and breathe your designs, iterating on them over and over, until an elegant solution emerges. If it's not good enough, try again. Be able to defend your design decisions. Some designs take months or years to resolve satisfactorily.

- If you must compromise your design, understand why, and be able to quantify and explain it. Cost often drives compromise.

- Small, subtle changes to a design-in-process can deeply impact manufacturability, cost, etc. Perturb your design's trajectory to evaluate your options.

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On Goals

"Our goals are very simple - to design and make better products. If we can't make something that is better, we won't do it."
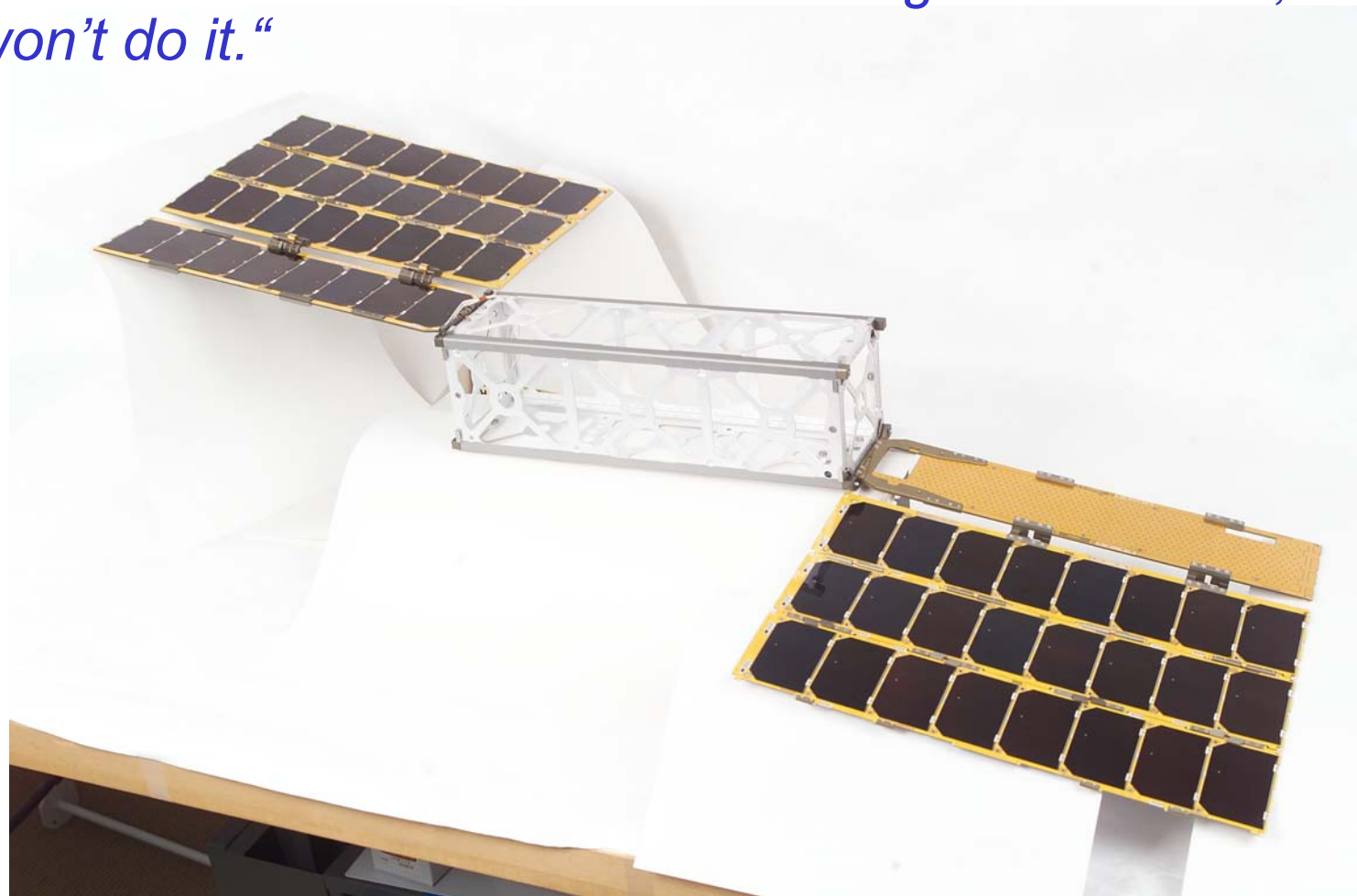
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On the Working Environment

"A product has to be genuinely better. This requires real discipline, and that's what drives us - a sincere, genuine appetite to do something that is better. Committees just don't work, and it's not about price, schedule or a bizarre marketing goal to appear different - they are corporate goals with scant regard for people who use the product."

- As a designer, my goal is to make end-users of my products more than just satisfied with their purchase. I want them to be happy with it, and appreciate the thought and care that went into designing and manufacturing it.

- Committees are about compromise, and good design is about vision, not compromise. A design must stand on its own merits, and a team will recognize that. Do not share responsibilities – assign them to individuals.

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On Knowing what Consumers Want

"We don't do focus groups - that is the job of the designer."

- Amen to that.

- A good rule of thumb:
  - The customer drives half of the process
  - You drive the other half

  The customer lays out what they need, but it's up to you to drive the process to that end goal, adding your own mark. You should always be drawing from your "woulda coulda shoulda" ideas you've been collecting all along …

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On Experienced Teams

"… the complexity of these products really makes it critical to work collaboratively, with different areas of expertise… We're located together, we share the same goal, have exactly the same preoccupation with making great products. One of the other things that enables this is that we've been doing this together for many years - there is a collective confidence when you are facing a seemingly insurmountable challenge ...."

- Experience can be in-house or external.

- Experience can be learned, gleaned or purchased.

- Experience can be wrong. Or, at least not up-to-date.

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On Obsession with Details

"It's incredibly time consuming, you can spent months and months and months on a tiny detail - but unless you solve that tiny problem, you can't solve this other, fundamental product."

- To a great degree, details can separate a good product from a great one. How does it stand the test of time?

- Details may evolve over the life of a product with more experience, customer feedback, etc. This is natural. Work this into your manufacturing plan / schedule.
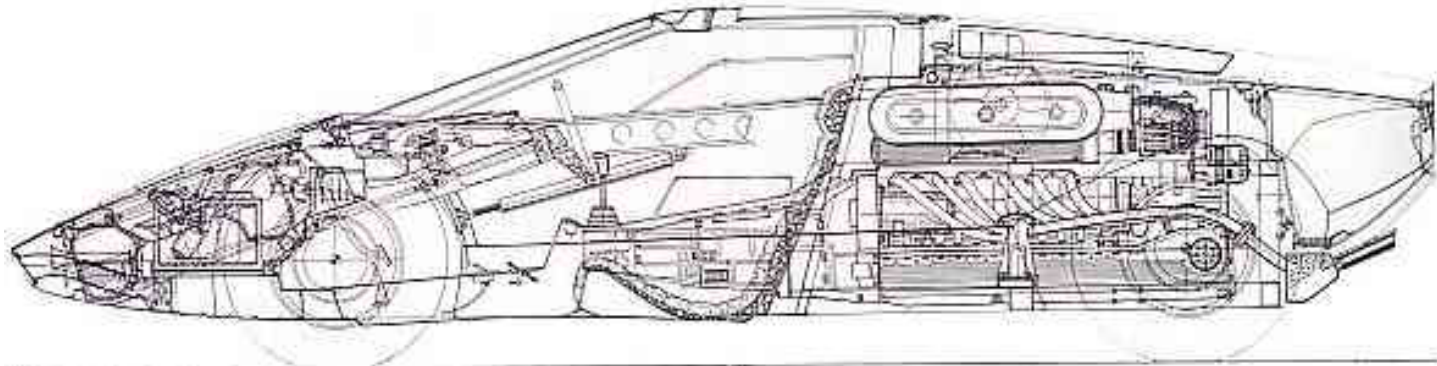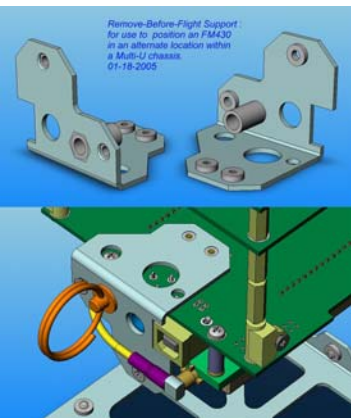
On Succeeding

"Our goal is simple objects, objects that you can't imagine any other way. Simplicity is not the absence of clutter. Get it right, and you become closer and more focused on the object."

- Sense of accomplishment – ties to artistry

- Commercial success – dependent on much more than just the design itself, but also on funding, sales & marketing, time-to-market, etc.

QbX 1   Libertad-1

Mayflower/Caerus   RAX 2

Delfi-C3

QbX 2

DICE

ITUpSAT   RAX
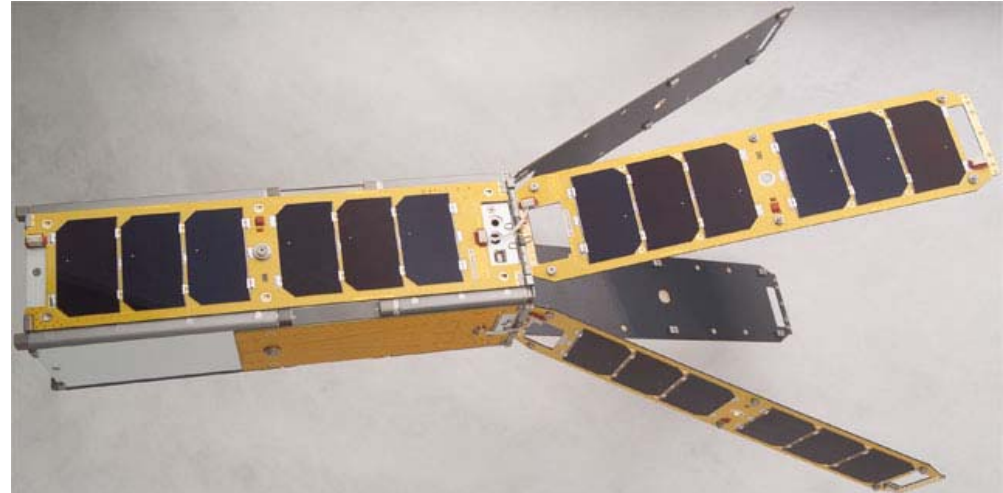
Q&A Session

Thank you for attending this Pumpkin presentation at the 2012 CubeSat Spring Developers Workshop!

Credits

Quotes from an interview with Sir Jonathan Ives in the London Evening Standard, March 12, 2012.

http://www.thisislondon.co.uk/lifestyle/london-life/sir-jonathan-ive-the-iman-cometh-7562170.html

Notice

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Appendix

- ## Speaker information
    - Dr. Kalman is Pumpkin's president and chief technology architect. He entered the embedded programming world in the mid-1980's. After co-founding Euphonix, Inc – the pioneering Silicon Valley high-tech pro-audio company – he founded Pumpkin, Inc. to explore the feasibility of applying high-level programming paradigms to severely memory-constrained embedded architectures. He is the creator of the Salvo RTOS and the CubeSat Kit. He holds several United States patents. He is a consulting professor in the Department of Aeronautics & Astronautics at Stanford University and directs the department's Space Systems Development Laboratory (SSDL). Contact Andrew at aek@pumpkininc.com.

- ## Acknowledgements
    - Pumpkin's Salvo, CubeSat Kit and MISC customers, whose real-world experience with our products helps us continually improve and innovate.

- ## CubeSat Kit information
    - More information on Pumpkin's CubeSat Kit can be found at http://www.cubesatkit.com/. Patented and Patents pending.

- ## Copyright notice

First presented at the CubeSat Developers' Workshop in San Luis Obispo, California on Thursday, April 19, 2012.

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