Evolutionary Design Cheat Sheet

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Version 1.0

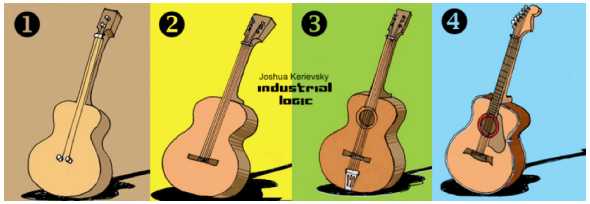
MODERN AGILE

"A seed is an embryonic plant." –*Wikipedia*

Evolutionary Design Is...

A strategy for rapidly providing value by growing something from a primitive, yet complete, whole to a higher level of sophistication over time. *–Joshua Kerievsky*

Think Primitive and Essential

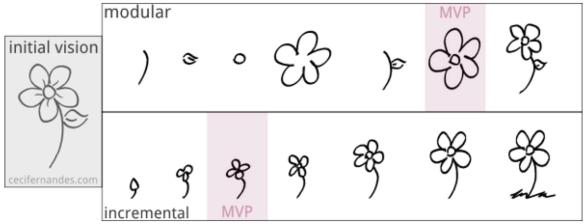


"A complex system that works is inevitably found to have evolved from a simple system that works." *–John Gall*

What Is a Primitive Whole?

- "Primitive" - a "rough cut" version, lacking details and precision.
- "Whole" - an integration of all major parts.
- A valuable and useful starting point.
- Represents the "essence" of what the final will evolve to become.

Evolve a Whole, not Components



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Each successive version...

- Is a coherent whole.
- Sparks feedback.
- Generates learning, which may alter the direction of future versions.

Make the First Version Smaller, Sooner!

- Rapidly create a small, primitive version of the end result.
- The hardest part is starting small enough and learning soon enough.
- What do you want to learn next? How could you learn it sooner, cheaper, easier?
- What key risks or unknowns inform what you want to learn next?
- Produce as little as you can get away with, rather than as much as you can think of.

Sketch, Craft, Refine

Evolutionary design resembles the artistic process: produce inexpensive sketches, select a promising sketch, elaborate on that sketch, craft it and ultimately refine it into a polished result.

What Do You Evolve First?

Pursue high-value and high-risk items early. High value is the essence of what the end solution does. High risk is anything new or untested that you'd do well to learn about sooner by using it in early evolutions.

Embrace Emergent Learning

"...begin learning as quickly as possible" *–Eric Ries*

- *Experiment & Learn Rapidly,* a Modern Agile principle, is the heart of continuous improvement.
- Evolutionary Design isn't limited to delivering a preplanned goal incrementally. Embrace emergent learning rather than relying on fallible future-knowledge.
- "The trick to learning rapidly is creating small cheap experiments that will inform a decision you're trying to make." *-- Joshua Kerievsky & III*
- Expect plans to change; keep options open.
- Lowest fidelity, fastest feedback.
- "Treat ideas as guesses. Test and verify as inexpensively as possible" *–Jon Kern*

Exploit Emerging Opportunities

Evolutionary Design opens opportunities to:

- Expand - Produce more when you see value
- Contract - Produce less when value is lacking
- Wait - Defer until conditions are favorable.
- Abandon - Drop whatever doesn't prove to be valuable.

Manage Risk with Evolutionary Design

Evolutionary Design is powerful, dynamic risk management, continuously closing the plan-reality gap as results emerge.

- Schedule Risk - can we deliver on time?
- Technical Risk - will it work?
- Integration Risk - can it all work together?
- Delivery Risk - can we release reliably?
- Market Risk - do users want it?
- Collaboration Risk - can we all work together effectively?

Discovery Over Predictability

"People like predictability. The principles of evolution are counterintuitive. Try it out before investing too much in analysis/design; there are discoveries to be made and you don't know what they are until you try." - Liz Keogh

Try These Approaches

- *Learning Slice* - for internal benefit; accelerates learning about building and operating the primitive whole..
- *Consumable Slice* - intended for use by a customer; may also be a learning slice.
- *Multiplicity & Selection* - rapidly building multiple variants and choosing the best. This relates to concurrent set-based design.
- *Imaginary Deadline* - Imagine you must deliver something by Friday; what might you try?
- *Preserve Flexibility* - Prefer design choices that leave options open. Evolutionary Design both enables and exploits flexibility.

Pitfalls and Heuristics

- *Resistance to shipping early versions?* Early versions, even to limited audiences, can provide feedback to improve while it's less expensive to do so.
- *Everything is critical?* Sure you have a million must-haves. That's fine. Pick one, build a slice rapidly, get feedback, repeat.
- *Multiple Teams?* Be sure teams collaborate and integrate continuously (at least daily) as you evolve a solution.
- *Smoke & Mirrors?* Prototypes are useful but insufficient for Evolutionary Design. Build fully working capabilities in thin slices.
- *Not ready to ship?* Mastering the skill of Evolutionary Design requires learning to keep our work always shippable. Practice working in smaller increments, not breaking prior work, rapidly validating new work.
- *How Much to Design?* We seek the simplest design that meets the current requirements in an excellent way.(see Cunningham quote below).

Constantly Ask and Observe

Observe and ask these questions to evolve something simple and elegant:

- Why is this so hard?
- Is there an easier way?
- How did we get here?
- Why do we need that?

Things to Ponder

We value *responding to change over following a plan*. – Agile Manifesto

Continuous attention to technical excellence and good design enhances agility. – *Principles Behind the Agile Manifesto*

It was important to me that we accumulate the learnings about the application over time by modifying the program to look as if we had known what we were doing all along. – *Ward Cunningham*

Deliver Value Continuously –ModernAgile.org

References and Recommended Sources

"Evolutionary Design", by Joshua Kerievsky
Lean Startup, by Eric Ries
"Is Design Dead?", by Martin Fowler
"Real Options' Underly Agility", by Maassen & Matts

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