Principles To Code By

Designing and Defining for Beyond Today
SMoRES 2.5
What’s in it for me?

• You’ll walk away with
  • 5 Core Principles of design
  • Knowledge of how these can be applied
  • Belief in the importance of applying them
  • A bucket full of tips and tricks of how to execute on them
    o (that’s a metric bucket full…not SI)
Houston.....we have a problem

• Just because it runs, doesn’t mean it’s done

• We’re not raising the quality bar

• Coding without vision is wiring in the dark
What Kind of Programmer Are You?
Start forward engineering….  

…. and stop reverse engineering

• Code rarely dies  
  • But can turn into a zombie

• Project scope is never static  
  • This shouldn’t come as a shock

• Progress means forward motion  
  • Stop coding yourself (or others) in circles
Building Flexibility

Taipei 101 Damper Movement During earthquake - 750 tons

Visible building movement
SMoRES??

With every VI, ask yourself, “How can I make this.....”

• Scalable
• Modular
• Reusable
• Extensible
• Simple

Tim Jones
Father of SMoReS
Can I make this.....

**Scalable**

- Going N+1
  - How about N + 50?

- Considerations
  - # of wires / readability
  - time to integrate / refactor
  - User experience
BRAINSTORM

What types of applications should we seriously consider scalability?
Can I make this.....

Modular

• Functional containment
  • Prevents Play-Doh syndrome

• Considerations
  • What are the logical boundaries
  • How will module fit into other code
  • Ease of use
BRAINSTORM

What should the MAIN program control?

What tasks have you struggled to make modular?

How do you know when it’s time to make a subVI?
Can I make this.....

**Reusable**

- Polish up that ol’ function and use it again
  - …or reuse the blueprint design

**Considerations**

- One of a (kind, few, most)
- Big or small, **reuse is time saved**
- Think beyond your *immediate* use

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NOTE: Just don’t take the code from your last project and call it “Reuse”
It might just be “refuse”
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What functions can your whole team share?

Discussions to have with your team about reuse?
Extensible

- Implementation planned for future growth
  - Ability to extend a system with lowered level of effort required to implement extension

- Considerations
  - Flexible hooks/ additional inputs
  - Evaluate hot spots of growth
  - Minimize steps

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How is this different from Scalable?

What are some features we’d want to extend?

What are the “hooks” we need to leave to have this flexibility later?
Can I make this.....

Simple

- Balance creativity vs. complexity
  - Get creative, then get skeptical

- Considerations
  - How intuitive is design
  - Does problem warrant design
  - Good requirement gathering

NOTE: Never put this S first. You’ll end up with something else in the end that starts with Sh.....
BRAINSTORM

What tripwires can we use to Keep It Simple …?

Who can we rely on to help us assess simplicity?
So what?!

You must have wisdom to share it.

You must share wisdom to have it

~,,~
Is change good or bad?

• It is neither good nor bad...

...it is inevitable
and scary
Process Improvement Isn’t a Game
Return on Investment

- Time Needed Now > Time Available

- Time Needed Now + Time for Change >>>>> Available
It’s not about how much more you’ll make,…

… It’s about how much less you’ll lose
If you can measure it, you can improve it

• First steps
  • Set a higher bar for all you do and all you see
  • Lower your threshold for pain
  • Start tracking the cost of change
    o Fixing bugs
    o Time spent reviewing code
    o Adding features

• Work towards
  • Mentorship
  • Creating your own tools
  • Becoming the center of excellence in your organization
Questions?

Topics Covered:

Going N+1 : Techniques for scalability

Avoiding Functional Play-Doh : Establishing proper boundaries

Recycling Wires : Creating with 80% recovered material

App Store for your App : Building on the shoulders of your genius

Getting creative, then getting realistic : Polar bears don't need A/C

Making the Dream a Reality : Pulling teeth from a shark

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