Design to Fabrication
Workflows and Visual Programming

@frankfralick
@BeckGroup
Innovation vs. Implementation
Capability vs. Suitability
Capability vs. Suitability

The ability to perform actions.

The work of innovation is identifying and acting on new opportunities created by new capabilities.

Having the properties that are right for a specific purpose.

The work of implementation is bridging the gap between capability and suitability.
Capability vs. Suitability

The ability to perform actions.

The work of innovation is identifying and acting on new opportunities created by new capabilities.

Having the properties that are right for a specific purpose.

The work of implementation is bridging the gap between capability and suitability.
Capability vs. Suitability

The ability to perform actions.

The work of innovation is identifying and acting on new opportunities created by new capabilities.

Having the properties that are right for a specific purpose.

The work of implementation is bridging the gap between capability and suitability.
Capability vs. Suitability

The ability to perform actions.

The work of innovation is identifying and acting on new opportunities created by new capabilities.

Having the properties that are right for a specific purpose.

The work of implementation is bridging the gap between capability and suitability.
**Jig:** A type of custom-made tool used to control the location and/or motion of another tool.

A jig’s primary purpose is to provide repeatability, accuracy, and interchangeability.

Making tools capable of performing an action, better suited to the task.
Jig: A type of custom-made tool used to control the location and/or motion of another tool.

A jig’s primary purpose is to provide repeatability, accuracy, and interchangeability.

Making tools capable of performing an action, better suited to the task.
Jig: A type of custom-made tool used to control the location and/or motion of another tool.

A jig’s primary purpose is to provide repeatability, accuracy, and interchangeability.

Making tools capable of performing an action, better suited to the task.
Components of a Design Model → ? → Fabrication Details

A tool that guides the tools.
2010
Concept → Design Model → Documentation → Fabrication Modelling and Detailing
Concept → Fabrication Model and Detail Templates → Design Model → Fabrication Model and Detail Generation
Understanding intent and developing details

Fabrication Model and Detail Templates

Concept

Design Model

Fabrication Model and Detail Generation

Design Changes

Field Conditions
Understanding intent and developing details

Fabrication Model and Detail Templates

Concept

Design Model

Design Changes

Field Conditions

Fabrication Model and Detail Generation

Custom built software using design model data to automate generating digital prototypes
03 BREAK METAL BRACKET UP SLOPE B - CH
QUANTITY: 6

03 BREAK METAL BRACKET DOWN SLOPE A - CH102
QUANTITY: 48

03 BREAK METAL BRACKET TOP UP
QUANTITY: 14

#BIMForumED
Market: $565,000
Actual: $220,000
Put cooperation into the infrastructure. Design systems that coordinate the output of the group as a byproduct of the operating of the system. -Clay Shirky
Visual Programming Tool

Conceptual Modeller

BIM Authoring Tool
Visual Programming Tool

Conceptual Modeller -> data -> BIM Authoring Tool
Visual Programming Tool ← process → Visual Programming Tool

BIM Authoring Tool

Digital Prototyping Tool
Desired Attributes of a Visual Programming Tool

- Open source
- Extensible
- Decoupled from any authoring tool
- Community
Desired Attributes of a Visual Programming Tool

- Open source
- Extensible
- Decoupled from any authoring tool
- Community
Desired Attributes of a Visual Programming Tool

- Open source
- Extensible
- Decoupled from any authoring tool
- Community
Desired Attributes of a Visual Programming Tool

- Open source
- Extensible
- Decoupled from any authoring tool
- Community
Desired Attributes of a Visual Programming Tool

- Open source
- Extensible
- Decoupled from any authoring tool
- Community
- Learn a visual programming tool. Programming can change everything about how you approach problems.

- Work on real problems. The best source of real problems are the ones you have. Wonky shape making is great, but these tools have practical uses for any practice using BIM. Its uses will be limited to your imagination.

- Suitability gaps are hard to foresee until you try. Discovering the ways an idea doesn’t work is part of the cycle. Don’t throw the baby out with the bathwater.
Thanks!