Module 3 – Ideate: Breaking Cognitive Fixedness and Generating Ideas

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Figure adapted from following sources:
The best way to have a good idea is to have a lot of ideas.

-- Linus Pauling
The **Creative Matrix** is a structured format for triggering new ideas.

Design Principles in the column headings are what you are designing/ideating to.

The given row headings – SIT, Open Brainstorming – are tools you can use to generate ideas.
### Design Challenge

WHAT are the DESIGN PRINCIPLES guiding your design efforts in order to address the pain points?

### Tools for generating ideas to achieve design principles.

<table>
<thead>
<tr>
<th>Ideas for achieving the design principles</th>
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Systematic Inventive Thinking
Exercise | The Flat Tire
The tendency to create a **strong association** between an **element** (physical or otherwise) and its **designated function**, resulting in an **inability** to consider additional functions for that element.

Source: SIT 201
The only resources for inventing something new, solving a problem, or dealing with any issue creatively are those that are already there.

Source: SIT 2012
Go far....

Don’t go too far...

Diverge

Converge

Source: SIT 2012
SIT | Systematic Inventive Thinking

A set of tools used to generate predictable, progressive ideas.

Uses templates to channel the ideation process in a structured way that overcomes the randomness of brainstorming.

A method of taking a product, concept, service or process and breaking it into its component parts or attributes to create a “new-to-the-world” construct for which you seek a valuable use.

Source: SIT 2012
Existing Situation

Manipulation (apply tools)

Virtual Product

Identify benefits, advantages, markets

Identify challenges

Adaptations

Innovative Idea with Potential to meet unmet needs

Marketing Filter

Feasibility Filter

VALUE

Source: SIT 2012
SIT | Principle – Function Follows Form

Existing Situation

- Manipulation (apply tools)
- Virtual Product
- Identify benefits, advantages, markets
- Identify challenges
- Adaptations
- Innovative Idea with Potential to meet unmet needs

FUNCTION

FORM

Marketing Filter
Feasibility Filter

Source: SIT 2012
Systematic Inventive Thinking

Task Unification
Assign a new task (i.e. function) to an existing element of the product or its environment.

Breaks functional fixedness and capitalizes on existing resources.
Task Unification in Action
• Start by making a list of resources available to you.
  – Might you assign an internal task to an external resource?
  – Might an internal resource perform multiple tasks?
  – Might an external task be completed by an internal resource?
• What **benefits** emerge? What **value** is created?
Systematic Inventive Thinking

Multiplication
A multiplication (or addition) of components already existing in the product along with a required adjustment.

Add additional copies of components that exist in the product yet different from the original – i.e. a qualitative change.
Multiplication in Action
Multiplication in Action
Applying **multiplication** to a product, service or offering:

1. List components/features of your service/product/process and select one.
2. Imagine making a copy of that component/feature.
3. Change the copied component in some novel way, e.g.
   a. Size
   b. Shape
   c. Color
   d. Function
4. Using **Function Follows Form**, envision **new benefits** or opportunities of the new virtual product.

<table>
<thead>
<tr>
<th>Component</th>
<th>Qualitative Change</th>
<th>Number of Copies</th>
<th>Virtual Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blade</td>
<td>Angle of blade</td>
<td>4</td>
<td>A razor with four blades, each at a different angle</td>
</tr>
</tbody>
</table>
Systematic Inventive Thinking

Division
Structural Fixedness

The tendency to think of an object or process as a whole, with a defined structure that cannot be modified, divided, or rearranged.

Source: SIT 2012
Division | Breaking Structural Fixedness
By dividing a product, process, or business model into its component parts you see the collection in a new light.

This process allows you to reconfigure parts in unanticipated ways.
Blood is drawn as soon as the patient enters the exam room.
• Results available before the end of the exam.
• Doctor and patient able to discuss.
1. Transcribe your organizational process steps onto post-it notes and arrange in chronological order.

2. Take a step that comes later in the process (say, the 7th step in the process you just mapped), and move it earlier (say to the 4th place).

3. By applying Function Follows Form, imagine what the benefits of this new process might be.

4. What new service or offering might you create that gives your organization a competitive advantage?
Existing Situation

- Manipulation (apply tools)
- Virtual Product
- Identify benefits, advantages, markets
- Identify challenges
- Adaptations

Innovative Idea with Potential
to meet unmet needs

FUNCTION

FORM

Marketing Filter

Feasibility Filter

Source: SIT 2012
The essence of SIT is that you take a given product, service or process – in its “closed world” – and you manipulate it using SIT thinking tools.

Applying “function follows form” forces a thinker to transcend fixednesses (e.g. functional, structural) that typically impede innovative thinking.

SIT tools and the virtual products they create open up new possibilities to pursue when thinking about innovating in a particular space.

Source: SIT 2012
Existing Situation

- Manipulation (apply tools)
- Virtual Product
- Identify benefits, advantages, markets
- Identify challenges
- Adaptations

... and Create VALUE

Source: SIT 2012
Asst5 – Post to CANVAS by Sunday, 04/02/17 at 5:00PM

- Apply task unification, multiplication and/or division to any products, processes, services, experiences, business models, or strategies of interest to you to break your own fixedness and generate interesting ideas.

- Will have 2-3 of you present on Monday.

- Remember to make notes to your “Apply-the-Concept” Journal

- Refer to CANVAS for full instructions and submission requirements
END
Wrapping Up - Backwards Bicycle

https://www.youtube.com/watch?v=MFzDaBzIiL0&ab_channel=SmarterEveryDay