TIM 80C Lecture #5 (4/18/17)

(1) Review Product Design
   - from dissection to function structure
to product concept

(2) Product Strategy & Prototyping

(3) Organizing a start-up: roles & responsibilities

(4) Typical timelines for startups
Review of Product Design

- Real
- Product dissection (FAST)
- Product Concepts

Abstract
- Product functions (function structures)

Morphological Matrix (possible realizations)

References
- German Design (function & form)
- Engineering Design, Pahl & Beitz
- Japanese Design (Quality)
- Quality Engineering using Robust Design, Phadke
- American Design (Usability)
- The Design of Everyday Things, Don Norman
2. **Product Strategy**

Product Strategy has 2 key components:

1. A design concept for the product
   - functions
   - form (how functions are realized)
   - description of how the product will work
     (Step 7 of Design Process)

2. A plan for how the startup will develop the design concept into a working product.
   - **Resources**: people (skillsets), equipment, facilities, other
   - **Source of Resources**: where will the startup obtain the resources? In-house? Outsource?
   - **Schedule**: when resources are needed?
     - prototype
     - production
Prototype ($\alpha, \beta$)

Design Concept

Prototype
- Communicates the main features & benefits of the product
- Helps stakeholders envision what the product will do
- Identifies & clarifies upcoming technical challenges

$\alpha$ Version
- Have key features & be interactive
- Be used to identify & solve key technical challenges

$\beta$ Version
- More polished than $\alpha$
- Can be used by stakeholders & customers to demonstrate the value of the solution; gather data (performance, cost, user reaction); set expectations

Production
### Organizing a Startup

<table>
<thead>
<tr>
<th>Roles (Titles)</th>
<th>Responsibilities</th>
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<tbody>
<tr>
<td>Chief Executive Officer (CEO)</td>
<td>- leads &amp; manages people,</td>
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<td>- sets business goals,</td>
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<td>- gets the funding</td>
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<td>Chief Technical Officer (CTO)</td>
<td>- develops &amp; implements the product strategy</td>
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<td>VP of Product Dev</td>
<td>- leads the development of the product concept, prototyping &amp; user testing</td>
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<td>VP of Manufacturing</td>
<td>- leads the production of the product</td>
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<td>- coordinating with suppliers</td>
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<td>- quality control</td>
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<td>- supply chain management</td>
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<td>Roles</td>
<td>Responsibilities</td>
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<td>VP of marketing and Sales</td>
<td>- Develops &amp; implements the market &amp; business (competitive) strategy</td>
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<td>Chief Financial Officer (CFO)</td>
<td>- Performs cash-flow analysis</td>
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<td>- Creates a financial strategy (budget)</td>
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<td>Other</td>
<td>Legal, Human Resources (often outsourced)</td>
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(4) Typical Timelines

(1) TIM 80C "economy"  - Creating the business plan
   (10 weeks)
   - Conceptual design
   - Market strategy
   - Financial strategy

(2) Actual economy  - Execute the business plan
   (1-2 years)
   - Getting funding
   - Building sales