Integrated Design for Product Success

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New technologies.

New business paradigms.

Great Products.
New technologies.

How is this accomplished?

Great Products.
Integration

New technologies.

design  business  engineering

New business paradigms.
Integration

New technologies.

New business paradigms.

- Design desirability
- Engineering feasibility
- Business viability

Great Products
captivating user experience
beautiful form
simplicity

itunes
apps
at&t

system complexity
gorilla glass
captivating user experience
beautiful form
simplicity

design desirability

business viability

engineering feasibility

system complexity gorilla glass

itunes apps at&t
Match team structure to market expectations

design desirability

business viability

engineering feasibility

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Match team structure to market expectations

- design desirability
- business viability
- engineering feasibility
Match team structure to market expectations

- Business viability
- Design desirability
- Engineering feasibility

Logos for PayPal, Airbnb, and Uber

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Research
↓
Generate Concepts
↓
Test
Engineering
Technology Research
Build Technology
Test Function
Build Technology

Design
User Research
Build Prototype
Test Market
Build Prototype

Business
Market Research
Build Biz Model
Test Biz Model
Build Biz Model
Research

Generate Concepts

Test
Research

Develop Empathy

Generate Concepts

Maximize Creativity

Test

Learn from Failure
Research
    ↓
Develop Empathy
    ↓
Generate Concepts
    ↓
Maximize Creativity
    ↓
Test
    ↓
Embrace Failure
    ↓

Interviews & Observation
Connect with People
Image Boards

Push the Limits
Don’t Settle
Make it Fun

Failure = Progress
Team as Family
Environment
Research

Develop Empathy

Interviews & Observation
Connect with People
Image Boards

Generate Concepts

Maximize Creativity

Push the Limits
Don’t Settle
Make it Fun

Test

Embrace Failure

Failure = Progress
Support Each Other
Team as Family
### Appendix A - EFNDS Distilled Needs

<table>
<thead>
<tr>
<th>Need #</th>
<th>User Needs</th>
<th>User Statements</th>
<th>Imp (1-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The EFNDS is easy to use.</td>
<td>U-3,9,13,18,21/JK-6</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>The EFNDS is durable.</td>
<td>U-1,2,14,22/LM-4,5,6,7,8/JK-1</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>The EFNDS taste good.</td>
<td>U-6,4,16,20,21/SM-1</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>The EFNDS has good tactile feedback.</td>
<td>U-3,9,14,15,21</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>The EFNDS can easily modulate concentration.</td>
<td>U-3,21</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>The EFNDS stays clean.</td>
<td>U-1,2,13,22,18</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>The EFNDS pouch fastens properly with repeated use.</td>
<td>U-7</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>The EFNDS can be used while wearing gloves.</td>
<td>U-3,9</td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td>The EFNDS has consistant flavor.</td>
<td>U-4</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>The EFNDS requies little effort to draw water into the mouth.</td>
<td>U-5</td>
<td>4</td>
</tr>
<tr>
<td>11</td>
<td>The EFNDS is lightweight.</td>
<td>U-11</td>
<td>4</td>
</tr>
<tr>
<td>12</td>
<td>The EFNDS is small.</td>
<td>U-10,26,27</td>
<td>4</td>
</tr>
<tr>
<td>13</td>
<td>The EFNDS does not add clutter.</td>
<td>U-23,24,25</td>
<td>4</td>
</tr>
<tr>
<td>14</td>
<td>The EFNDS does not leak.</td>
<td>U-2,22</td>
<td>5</td>
</tr>
<tr>
<td>15</td>
<td>The EFNDS must be comouflage.</td>
<td>U-12</td>
<td>5</td>
</tr>
<tr>
<td>16</td>
<td>The EFNDS concentrate package can be easily accessed.</td>
<td>U-25</td>
<td>3</td>
</tr>
<tr>
<td>17</td>
<td>The EFNDS works in all weather conditions.</td>
<td>U-28</td>
<td>3</td>
</tr>
<tr>
<td>18</td>
<td>The EFNDS concentrate does not spoil.</td>
<td>BD-1/LM-3</td>
<td>5</td>
</tr>
<tr>
<td>19</td>
<td>The EFNDS concentrate is easy to change.</td>
<td>U-18,25/LM-1</td>
<td>4</td>
</tr>
<tr>
<td>20</td>
<td>The EFNDS concentrate is safe.</td>
<td>BD-3</td>
<td>5</td>
</tr>
<tr>
<td>21</td>
<td>The EFNDS concentrate is made in the US.</td>
<td>BD-2/LM-2/JK-2</td>
<td>5</td>
</tr>
<tr>
<td>22</td>
<td>The EFNDS concentrate contents enhance user performance.</td>
<td>U-29/SM-2,3</td>
<td>5</td>
</tr>
<tr>
<td>23</td>
<td>The EFNDS concentrate lasts a long time.</td>
<td>U-7,17</td>
<td>3</td>
</tr>
<tr>
<td>24</td>
<td>The EFNDS concentrate package is flexible.</td>
<td>U-17</td>
<td>3</td>
</tr>
</tbody>
</table>
Image Board

HOLIDAY 2017
MUSIC, ARCHITECTURE, 60'S ART
AND POP CULTURE, YAYOI KUSAMA
DOTS OBSESSION, TWIGGY, EMMA
PEAL, SNAKE PRINTS, HEART/SKULL,
Research
↓
Get Inspired
↓
Generate Concepts
↓
Maximize Creativity
↓
Test
↓
Embrace Failure
↓

Interviews & Observation
Develop Empathy & Connect
Image Boards

Push the Limits
Don’t Settle
Make it Fun

Failure = Progress
Support Each Other
Team as Family
Iterate
Have fun
Research
↓
Get Inspired
↓
Generate Concepts
↓
Maximize Creativity
↓
Test

Embrace Failure

Interviews & Observation
Develop Empathy & Connect
Image Boards

Push the Limits
Don’t Settle
Make it Fun

Failure = Progress
Support Each Other
Team as Family
The Design Process

- A process to solve and explore intangible problems.
- Jump in, feel around (fail) until you find it (succeed).
- A series of failures designed to inform in order to create a solution. Also known as “strategy”.
You all speak different languages. Learn them. If possible, become trilingual.

Appreciate each other. Make this a priority.

Introverts - speak up. Extroverts - encourage the introverts.

Respect each other’s time. Focus on efficiency.

Reach for something great. Mediocrity is pointless.
Environment

...a place to work together
Environment

domestique

...a place to share
Process Checklist

- Does your vision include a fantastic user experience?
- Did your concept generation get wild enough?
- Success evolves through lots of trial, error and embarrassing failure.
- Good design has sensitivity and empathy for the customer/stakeholders.
- Good design is a team sport.
- Reach for something great. Mediocrity is pointless.
Team Checklist

- Do you have an interdisciplinary team that will work across disciplines?
- Does your team reach for greatness or settle for mediocrity?
- Did the whole team participate in the various phases?
- Appreciate each other and learn each other’s languages.
Culture Checklist

- Do you have a space that allows you to create, think, build, dream, collaborate with reckless abandon?
- Does the whole team have empathy and a connection to the customer?
- Does the team have a passionate vision?
- Create product vision with small interdisciplinary leadership teams.
- Are you ready to fail?
Integrated Student Body

Integrated Faculty

Integrated Design Lab Curriculum

Integrated Curriculum

MIT idm

Together in an Action-Based Immersive Environment
Thank you!

Website: idm.mit.edu
Email: idm@mit.edu
Some good reading:

**Product Design & Development**
Karl Ulrich & Steve Eppinger

**The Measure of Man and Woman: Human Factors in Design**
Alvin Tiley & Henry Dreyfuss Associates