A Process for Informing Strategy with Design and Forecasting
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Motivation

Process

Case Study

Recommendations
Motivation

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Case Study

Recommendations
A Process for Informing Strategy with Design and Forecasting
EMN Developer Kit
more than just a material sample
It's the output of a year of research and development, inspired by direct contact with the consumer. Each material to explore is thoughtfully chosen from an iterative process, including user-centered research, forecasting scenarios of the future, and material exploration on how to solve the user's needs.
Choose a Trend or Market Area

- Are there significant changes underway or coming in this industry?
- At what speed does this industry change?
- Do you have access to consumers in this industry?
- Does the consumer influence this market directly?
- Is this an area of interest to a greater community of corporate or design?
- Is the trend a fad or sustainable trend?

- Technology, Mobile Health, ACA, Moving control to consumer
- Parts are slow, but technology, social media are speeding areas up
- We are all consumers in this industry
- Health care not so much, but wellness definitely
- Yes with certain constraints and yes
- As long as we are human, health and wellness will be present.
Persona

Needs

Physical Ability Enhancement

Eastman

Products
<table>
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<tr>
<th>Scenario</th>
<th>Speed Research</th>
<th>Interviews</th>
<th>In-depth</th>
<th>Personal Experience</th>
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<tbody>
<tr>
<td></td>
<td>Semi-structured interviews</td>
<td>Semi-structured interviews</td>
<td>Observation / shadowing</td>
<td>Journal of experience</td>
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<tr>
<td></td>
<td>One on one – 1-5 min 57 participants</td>
<td>One on one – 1 hour 21 participants + 27 designers</td>
<td>1-9 days 14 different participants</td>
<td>1-4 days 2 different participants</td>
</tr>
<tr>
<td></td>
<td>22-87 years old (49 avg) 27 men, 12 women</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expansion of capability</td>
<td>3 retirees 8 Manager Six Sigma 2 Marketing 6 Directors 2 Professors 3 Scientist Engineer 2 Massage therapists</td>
<td>2 Alexander technique Designers</td>
<td>In home health care nurse (12 nurse, 2 days, 7 pieces of equipment)</td>
<td>Moving (2 participants, 1 day) Alexander Technique (1 participant, 1 day)</td>
</tr>
<tr>
<td>Temporary Recovery / loss of capability</td>
<td>Physical Therapist Chiropractor Teen with broken elbow Adult w/ broken clavicle Designers</td>
<td>Older mother of young children (1 participant, 1 day)</td>
<td></td>
<td>Sling on arm (1 participant, 4 days) Hospital Lift Equipment (1 Participant, 2 days)</td>
</tr>
<tr>
<td>Chronic Illness or Injury</td>
<td>6 Designer 3 Students Adult w/ broken clavicle 87 year old woman with arthritis Runner</td>
<td>Occupational therapist 2 Massage Therapists Runner Designers</td>
<td>87 year old woman with arthritis (1 participant, 9 days)</td>
<td>Arm exoskeleton for repetitive motion (1 participant, 1 day) Lumo Posture Coach (1 participant 4 days)</td>
</tr>
</tbody>
</table>
Synthesis

- **the lack of the ability to sense our bodies** - in space, good versus bad pain, etc. - proper position of the body is huge in performance, overall health, and changes are an indication of an upcoming of injury
- the need to have **feedback that does not require** looking and interacting with **a screen** - i.e. haptic and auditory feedback - essentially people should not have to stop what they are doing and focus on the device
- the present performance **(sports) market in wearables is niche** - and there needs to be a better understanding what the average person needs to improve in their everyday life
- **chronic pain management is likely the largest opportunity** which overlaps with flare-up prevention and chronic loss of capability (i.e. sciatica, bursitis, stenosis, etc.)
- the **need for enhancement may not be at the point of pain**, or loss of capability, but at another place that actually is the root cause of the issue
- **people are living at the extremes** - sitting all week at work and intense physical activity on weekend
- **today’s product is one sensor** that in general only has one function in one position - people really need multiple points of measurement that requires more sophisticated technology - i.e. flexible sensors, integration with textiles
- **passive assistance can be sufficient** (from rubber bands/bungee cords) for those who have some if not all of their power - versus robotics like Ekso Bionics
How summer research ties in

• Increase knowledge so the analysis of the future is grounded in today’s facts
• Determination of consistent human need despite technology changes with time
  – recreation, sitting workforce, aging, injury, surgery, recovery, lack of caregivers
• Extreme users can signal what the future may hold in consumer behavior
Alternative Forecast Scenarios

**ASSUMPTIONS: FOUR ALTERNATIVE FUTURES**

**GROWTH**
Trends and conditions progress in a continuous direction
- **Economics**: Strong economic indicators
- **Culture**: Mass consumerism
- **Infrastructure**: Growth of mid-size cities, urban sprawl
- **Governance**: Data-driven governance

**CONSTRAINT**
A core guiding value or purpose organizes society and controls behavior
- **Economics**: Weak economic indicators
- **Culture**: Informal workarounds
- **Infrastructure**: Resource and housing shortages
- **Governance**: Widespread monitoring

**COLLAPSE**
Major social systems and infrastructure break down or fail
- **Economics**: Widespread economic dislocation and poverty
- **Culture**: Retreat to conservative social groups and exclusion
- **Infrastructure**: Gated cities, impoverished exurbs, food and water crises
- **Governance**: Bankruptcies across traditional public and private institutions

**TRANSFORMATION**
Society or systems fundamentally change or reorganize
- **Economics**: Open collaborative economy
- **Culture**: Diversity and enlightenment
- **Infrastructure**: Creative overhaul of ownership and land use
- **Governance**: Continuous representation and feedback
Transformational Scenario

Assumptions

Patient receives support and collaborates directly with healthcare to plan and create solutions. Various products readily interact. Open sourcing of data. Mix of modern, traditional and alternative medicines are included. Sharing economy of products. Social media data is connected with quantifiable data.

Important Signals

E-Nable Community
BioGlas, Ref
Mimo Kimono
Big Data for rare diseases
Minnetronics Cognita System
Retailization of Healthcare
BMI Scale in the Kaiser hallway
Virtually Better

• Medical mall is specialized retail with technical staff to navigate
• A concierge/product manager or team is assigned to each patient to help make plans with the consumer. The consumer’s entire life is considered. Services are provided on the spot.
• Healthcare is as accountable as the patient for effectiveness.
• Products can be rented, exchanged or purchased. The base platform is made by large companies and accessories come from entrepreneurs that allow for customization. Solutions are cool, but not as refined as the growth.
• Wearables are on the consumer at all times. Once setup, they can help navigate products/services to help meet goals. System points out opportunities (i.e. steps around corner, product on shelf) System connects with other systems to identify people with the same goals.
• Other industries like recreation adopt the platform as well.
• The data belongs to healthcare and the patient. Cleaned data is available to all. Insights are passed on to others with similar goals.
• The next product is developed in collaboration with the data.
Growth Scenario

**Assumptions**
- Market Driven Healthcare
Incentives from healthcare, companies & government → personal spending ability
Consumer demand > supply
Consumer wants options to ↓ total cost
Access and management is easy from multiple venues and industries
Data shows this is good for all.

**Important Signals**
- Retailization of healthcare
- Vitality Health Index
- Dr. Scholl’s booth at CVS
- Specialized treatment where the patient is
- Proteus Digital Medicine
- 3D printer at Orchard Supply
- Minute Clinic at CVS
- Music Glove

- Healthcare offers incentives for better health and products are available that measure and prove compliance.
- Medical gym is specialized to help navigate. Consumer may approach on their own or doctor may prescribe. Consumer is aware & knowledgeable of offerings.
- An initial screening is made to develop a holistic picture for the person’s life including work life balance, DNA sequencing, biome, range of motion, pain level, BMI, etc.
- An expert or team is involved in developing a plan, choosing the devices and setting them up. Product is a sleek, mass produced system from a big brand. It fully integrates with the gym, home, and mobile devices. Parts are interchangeable for upgrading and customization. Employers offer a less attractive system for employees that allows for modules for specific tasks.
- Data is collected to monitor progress, any changes from baseline, and effectiveness of the system. The product and interaction with the data is in the background of people’s lives. No stopping to interact with a touch screen.
- Experts have access to data for coaching and feedback. Algorithms also develop humanized feedback between visits to the expert. For example, changes may be seen in the user’s body movement to indicate the likelihood of future injury.
Constraint Scenario

Assumptions

- Recession continues. Plateau in growth. New normal is accepted.
- People look for ways to work system to their advantage and supplement with their own creations. It is expected that the consumer will have to take the initiative.
- Resource shortages cause unlikely sources to develop. Everyone is monitoring data.

Important Signals

- BioCurious
- Hax
- Little Bits
- E-Nable Community
- 3D printer at Orchard Supply
- OT makes braces from various products
- Designer destroys Fitbit to carry sensor
- Lumo Posture Coach

- Insurance requires metrics to reach access to certain healthcare services.
- Decision is in the hands of the consumer on how these are to be met.
- Consumer wants convenience in obtaining the metrics. Products have haptic and auditory feedback, so the consumer never has to stop what they are doing to look at or touch a screen.
- Consumer goes to a medical maker space. Consumer can lower costs by participating in the manufacturing.
- Modular, commercialized systems are available for those uncomfortable with systems and can be customized with slight modifications or with modules made from scratch.
- Modules allow for low initial cost to start and low cash flow to add on.
- The products here are more 3D, interactive and physical (mechanical + tech). These can be less refined and more expressive.
- Data from the devices helps the consumer continuously improve, but the sheer size of it is difficult to manage. The consumer does have control of what kind of data is collected, how it is monitored and opting out.
- Talking to others about the systems is preferred. Hacker groups meet to exchange ideas and modules. Online crowd coaching also works.
## Collapse Scenario

### Assumptions
- Collapse of EU and Euro = recession
- Disposable spending stops.
- Consumer trust is low. Social groups help navigate. These are tight, closed, isolated and homogeneous. Membership is required for access to resources and info. No investments are made. No insurance coverage for products.

### Important Signals
- Ordering supplies as needed.
- Poliwogg Investments
- InTouch Robot
- Google Glass used as medical scribe
- Jerry the Bear
- SJSU $30 prosthetic Project
- E-Nable Community
- Kaiser looking at camping gear for nurses

- Insurance coverage cuts back to the bare minimum. More effort is pushed off on the consumer to manage and pay for health care.
- Consumer turns to avatar, devices and online advice. Consumers spend only as needed. The headache of navigating the market doesn’t encourage anyone to try new products.
- Groups are formed to spread the cost of healthcare and risk. Small investment advisors manage the money. A product coordinator navigates the offerings.
- Membership is required to gain access to the information. Requirements to maintain membership are always rising. But once invested with money, body scans, most will not switch.
- Socially, purchase is considered only for the elite or disabled. Products should be “invisible” since they carry some shame with them.
- Only the elite have total branded systems. Masses have knock off parts. Few consumers are happy with what is available. Consumer cobbles together what they can by themselves. Products have few options and no customization.
- Cost drives this although the consumer needs multifunctional devices. Passive, mechanical devices help drive the costs down.
- Consumer holds onto the products much longer unless there are options to exchange within the groups.
Motivation

Process

Case Study

Recommendations