Hassle Maps, Theory of Constraints, and User Research

Skip Walter
January 13, 2012
Composing a Life
Creating Rainbows with my Colleagues

- Psychology Researcher
- Software Engineer
- Software Designer
- Manager
- Teacher
- Executive
- Organizational Designer
- Executive Consultant
- Entrepreneur
- Proud Father - PhD, Lawyer, Soundscape Designer
Education of a Product Innovator
Shifting Intentions

1970s
Making technologies and products

1980s
Creating enterprise software products for international markets

1990s
Developing Executive Skills

2000s
Creating a successful company - Attenex

2010s
Fueling a local economy - paying it forward

Costs
Profits
Revenues
Valuation
Jobs
Human Centered Design

User Research
Prototypes
Value
User Experience
Human Centered Design

User Research

Prototypes

Value

User Experience

YOU ARE HERE
Human Centered Design

User Research  Prototypes  Value  User Experience
Learning Goals for Today

• Describe the basics of Hassle Maps
• Describe the basics of Theory of Constraints
• Compare and contrast Hassle Maps and Theory of Constraints
• Describe the role of Hassle Maps and TOC in user research aimed at discovering “latent unmet needs”
• Compare and contrast mobile user research and loyalty marketing
Innovation Challenge and Opportunity
Human Centered Design - The Solution

- **Challenge**
  - 1 in 500 patents earns enough to pay back filing fee
  - < 5 percent of developed technologies are commercialized
  - < 5 percent of products succeed
  - < 5 percent of technology startup companies succeed

- **Opportunity**
  - In 2000, Proctor and Gamble Return on Research (RoR) < 5%
  - CEO A.G. Lafley increased RoR to >50% within five years
    - *Clay Street Design Center the big contributor*

- Why such abysmal results?

- What can you do differently?
Demand Creators
Who is number 2?

- Prius
- Kindle
- Nespresso
- Facebook
- iPod
- Zipcar
Demand Creators
What is the difference in demand?

- Prius
- Kindle
- Nespresso
- Facebook
- iPod
- Zipcar
- Honda Civic Hybrid
- Sony Reader
- Senseo
- MySpace
- Sansa
- Hertz on Demand
Demand Creators
What is the difference in demand?

- Prius (5X)
- Kindle (4X)
- Nespresso (8X)
- Facebook (>8X)
- iPod (9X)
- Zipcar (>8X)
- Honda Civic Hybrid
- Sony Reader
- Senseo
- MySpace
- Sansa
- Hertz on Demand
Adrian Slywotzky on Demand Creation

http://www.youtube.com/watch?v=BOvliIOMs58
http://changethis.com/manifesto/86.01.Demand/pdf/86.01.Demand.pdf
Adrian Slywotzky on Demand Creation

Find the answers in *Demand*

Adrian Slywotzky, bestselling author and senior partner at Oliver Wyman, examines the gap between what we buy and what we really want in *Demand: Creating What People Love Before They Know They Want It*. With engaging stories, Slywotzky pulls back the curtain on how great demand creators wind up creating the killer offers things customers can’t resist and competitors can’t copy.

[Amazon](https://www.amazon.com), [Barnes & Noble Booksellers](https://www.barnesandnoble.com), [800CEOread](https://www.800CEOread.com), [iBookstore](https://www.itunes.apple.com), [Amazon Kindle](https://www.amazon.com), [Nook](https://www.nook.com)
The City Driving Hassle Map

Gas + Insurance + Maintenance + Parking + Financing + Depreciation
The City Driving Hassle Map
How did Zipcar finally drive demand?

The City Driving Hassle Map

- Gas
- Insurance
- Maintenance
- Parking
- Financing
- Depreciation

The City Driving Hassle Map After Zipcar

- Membership fee
- Low hourly rate
The City Driving Hassle Map
Latent Unmet Need Discovered

The City Driving Hassle Map
- Gas
- Insurance
- Maintenance
- Parking
- Financing
- Depreciation

The City Driving Hassle Map After Zipcar
- Membership fee
- Low hourly rate

HyperLocality < 5 Minute Walk
Hassle Map for the TV User Experience

- Don’t know which TV to pick, too many choices
- How soon will the next cool TV come out? Buy or wait?
- Shopping experience online vs in store
- Making sure it hooks to all my other equipment (compatibility)
- What content provider - cable, satellite, internet
- Remote control problem
- Fear of aggressive sales people - big box stores
- Dealing with Comcast - scheduling an installer
- Getting the big TV home
- Researching the best buy based on ratings and price
- What height is optimal for viewing
- Asking friends which is best brand and place
Design of the Apple TV 2012 (iTV)?
HCDE 518 Hassle Map Design Speculations

- SiriTV

- Simplicity, everything in the iCloud, portable, take it with you, familiarity (similar controls), everything mobile
  - You don’t need anything else, we’ve figured it out for you.

- Simple, seamless integration with Apple devices, one cord setup, project from devices to TV, and get TV viewing to other devices (Slingbox like)

- I feel like watching TV anytime anywhere. Watch Modern Family and with my friends we can see it at the same time

- Foldable and elastic, make it any size you want, can be wall size. Sticks to the wall. Hal from 2001 - personal friend and guide, not just an answer machine

- All-in-1, plug it in, no setup, use the iPad as a remote, integrate the app store and face time and everything, iTV (rename). If someone calls you on your phone, it pauses and listens to your needs

- Don’t want to give up my Blu-ray - has to talk to the rest of the home theater system, one remote to rule them all, does all the remote configuration (even mom can run it), move from a fixed TV location to TV anywhere
Hassle Map

May make a grocery list

Go to store #1

Search store for food and/or products

If unfamiliar with product, look for ingredients written in very small print somewhere on the box or product

Get confused if you see an ingredient that is unfamiliar - fear that you may accidently buy something with an animal ingredient

Keep shopping and not be able to find everything you needed

Go to store #2 and start whole process over again

Takes a lot of your time and you start to dread shopping

Still can't find what you need and go to store #3 and start process over

Become frustrated and discouraged with your choice to be vegan; feeling that it's "hard" to do the right thing
Six Steps for Demand Creators

1. Make it magnetic
2. Fix the Hassle Map
3. Build a complete backstory
4. Find the triggers
5. Build a steep trajectory
6. De-Average
Six Steps for Demand Creators

1. Make it magnetic
   - Create and capture the emotional space in the market.

2. Fix the Hassle Map
   - Map the hassles and figure out how to fix them.

3. Build a complete backstory
   - Demand creators connect all the dots needed to fix the hassle map of the consumer.

4. Find the triggers
   - Obstacles to demand are inertia, skepticism, habit and indifference. Find the triggers that move fence-sitters to customers.

5. Build a steep trajectory
   - How fast can the demand creator get better. Continue to improve technical features and improve emotional engagement.

6. De-Average
   - One size does not fit all. Find cost efficient and effective ways to create product variations.
From Hassle Maps to Theory of Constraints

**Air Travel:** *Extra 160 Minutes + Extra $150*

- **Taxi: Paris to De Gaulle**
  - 40 minutes
  - 55€

- **Check-in, check bags, security**
  - 40 minutes
  - Baggage fee?

- **Walk a mile to gate**
  - 10 minutes

- **WWF act with bags on plane**
  - Injury

- **Customs**
  - 30 minutes

- **Taxi: Heathrow to London**
  - 40 minutes
  - 55€

**Eurostar:** *Extra 20 Minutes + Extra $30*

- **Taxi: Paris to Gare du Nord**
  - 10 minutes
  - 10€

- **Check-in, customs, security**
  - 10 minutes

- **Find seat, lots of baggage space**
  - 10 minutes

- **Taxi: St. Pancras to London**
  - 10 minutes
  - 10€
From Hassle Maps to Theory of Constraints

### Air Travel: *Extra 160 Minutes + Extra $150*

<table>
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<th>Cost</th>
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### Eurostar: *Extra 20 Minutes + Extra $30*

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**TOC**

- Suppliers of materials and equipments
- Design and redesign
- Consumer research
- Tests of processes, machines, methods, costs
- Distribution

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Seeing the Bottlenecks in Enterprises
The Organizational Dance

The Chihuly Process
A problem which arises in one department can rarely be solved in that same department.
Cadillac Transformation Using TOC
Custom order - from 45 days to 24 hours

How do you observe and analyze a workflow?

The Land of Medium Scale Numbers

<table>
<thead>
<tr>
<th>Scale</th>
<th>Description</th>
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<tbody>
<tr>
<td>Large Scale</td>
<td>Statistics</td>
</tr>
<tr>
<td>Medium Scale</td>
<td>No theory</td>
</tr>
<tr>
<td>Small Scale</td>
<td>Analysis</td>
</tr>
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</table>
The bottleneck is the bottleneck
Putting the cork in the bottle
The Goal

- Three results of business interventions:
  - Increase Revenue
  - Decrease Expenses
  - Decrease Time

- Traditional financial view:
  - Optimize every step
  - Net Profit
  - Return on Investment
  - Cash Flow

- Theory of Constraints - interventions:
  - Manage the “bottlenecks”
  - Increase Throughput
  - Decrease Inventory
  - Decrease Operating Expense
Terms Defined

- **THROUGHPUT** - the rate at which the system generates money through sales.

- **INVENTORY** - all the money the system invests in purchasing things the system intends to sell.

- **OPERATING EXPENSE** - all the money the system spends in turning inventory into throughput.
First Map the Process
Then, find the Bottlenecks
...now, re-write the story.
Increase Productivity
eDiscovery Cost

Legal Cost

- Processing
- Review
- Analysis
- Production
- Presentation

Inadvertent waiver of privilege

Linear Review
Automatic Review

Records Management -> Identification
Identification -> Preservation
Preservation -> Collection
Collection -> Review
Review -> Analysis
Analysis -> Production
Production -> Presentation

VOLUME

RELEVANCE
6/1/01: Very First Interface
Organize and Cluster Documents in 3D
2/1/07: 300+ Prototypes and 4 Versions Later
Social Network and Semantic Network
• Using Slywotzsky’s imperatives, observe knowledge workers
  • Move from guessing what customers want to knowing their needs;
  • Move from getting information in lag time to getting it in real time;
  • Move from burdening talent with low-value work to gaining high talent leverage.

• Identify productivity outcome metric
  • Attenex: Increase document decisions per hour

• Develop prototype(s)

• Test for productivity outcome
Viability

- Impact of Attenex Patterns
  - 2001: 300GB took 200 attorneys 1 year (Anti-trust Matter - Pre Attenex)
    - Total Matter Cost to client: > $18M (0% technology, 100% labor)
  - 2003: 300GB took 100 attorneys three weeks (Energy Fraud Matter)
    - Total Matter Cost to client: > $6M (30% technology, 70% labor)
  - 2006: 300GB took 65 attorneys 2.5 days to review (Board Investigation)
    - Total Matter Cost to client: ~ $2M (50% technology, 50% labor)

- Revenue for Attenex and Growth Partners
  - 2001: $0
  - 2007: > $30M and $200M
    - (> 50% gross margin)
1. Technology can bring benefits if and only if it diminishes a limitation.

2. Long before the availability of a technology we developed modes of behavior, policies, measurements and rules to help us accommodate the limitation.

What benefits will any technology (solution design) bring if we neglect to change the “rules”? 
1. What is the main power of the technology (design)?
2. What limitation does it diminish?
3. What *rules* helped us accommodate the limitation?
4. What *rules* should we use now?
Hassle Maps versus TOC

**Hassle Maps**
- *Use with consumers*
- Make it magnetic
- Fix the [Hassle Map](#)
- Build a complete backstory
- Find the triggers
- Build a steep trajectory
- De-Average

**TOC**
- *Use with enterprise workflows*
- Use analysis as the core method
  - *Don’t try to optimize every process step*
- Find the bottleneck(s) (capacity constraining resource) in the system and manage and innovate around the bottleneck
- An ideal intervention is one that impacts all three metrics (increase revenue, decrease expenses, and decrease time)
• Dan Turner, UW Foster Business School:
  • “Marketing is engineering exchanges to separate customers from their money (or time/attention) willingly . . . by creating, communicating and delivering unique value.”

• “Note that not all benefit requirements of customers are expressed; many remain latent until ‘discovered’ by some creative marketer. The marketer who is able to uncover and satisfy latent customer needs can turn her organization from one that is market-driven to one that is market-driving, influencing and shaping these latent customer needs as they become expressed in the marketspace.”
DSCOUT - Turning qualitative research into a mobile product
Recursive user research and product design

APP-DRIVEN RESEARCH

dscout lets users share their experiences in real-time through snippets - twitter-like photos and descriptions - that paint a vivid picture of their behaviors and lives.

1. Describe
   - Describe your goals, study frequency and length

2. Design
   - Create a custom “survey” to ask specific questions for each snippet

3. Invite
   - Invite scouts via an email that prompts them to download an app

Easy setup
design a study, invite participants, be up and running in a few minutes

POWERFUL TOOLS FOR RESEARCH

http://www.dscout.com/
DSCOUT - Components

What is the new bottleneck?

THREE KEY COMPONENTS

1. Pool of active scouts
2. Engaging missions
3. Real-time analytics

dScout is a SAAS web and mobile platform that makes it incredibly easy for brand managers, agency planners and researchers to engage their users in sharing real-world experiences, in the moment ideas and real-time feedback.

think instagr.am meets surveymonkey
dSCOUT
How do we analyze all the data we generate?
Target
User Research or Loyalty Marketing?

HOW IT FITS IN RESEARCH
what you can expect

STUDY DURATION
2 days - 2 weeks

SAMPLE SIZE
20-50 scouts

SNIPPET COUNT
200 to 500

How it works
Researchers have access to real-time data and powerful analysis tools

Tagging
Sorting
Highlighting
Commenting
Which kind of designer are you?
Start designing for **DEMAND**

- Prius (5X)
- Kindle (4X)
- Nespresso (8X)
- Facebook (>8X)
- iPod (9X)
- Zipcar (>8X)
- Honda Civic Hybrid
- Sony Reader
- Senseo
- MySpace
- Sansa
- Hertz on Demand
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HCDE 521 Winter 2012

Questions?

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Extreme Productivity by Design
Hassle Maps, Theory of Constraints, and User Research

Skip Walter

January 13, 2012
**Calvin and Hobbes**

**WHERE'S THE DEMAND?! I DON'T SEE ANY DEMAND!**
**THERE'S LOTS OF DEMAND!**
**Yeah?**
**SURE! AS THE SOLE STOCKHOLDER IN THIS ENTERPRISE, I DEMAND MONSTROUS PROFIT ON MY INVESTMENT.**

**AND AS PRESIDENT AND CEO OF THE COMPANY, I DEMAND AN EXORBITANT ANNUAL SALARY!**
**AND AS MY OWN EMPLOYEE, I DEMAND A HIGH HOURLY WAGE AND ALL SortS OF COMPANY BENEFITS, AND THEN THERE'S OVERHEAD AND ACTUAL PRODUCTION COSTS!**
**BUT IT LOOKS LIKE YOU JUST THREW A LEMON IN SOME SLUDGE WATER!**
**WELL, I HAVE TO CUT EXPENSES SOMEWHERE IF I WANT TO STAY COMPETITIVE.**
**WHAT IF I GOT SICK FROM THAT?**
**'CAVEAT EMPTOR' IS THE MOTO WE STAND BEHIND! I'D HAVE TO CHARGE MORE IF WE FOLLOWED HEALTH AND ENVIRONMENTAL REGULATIONS.**

**YOU'RE OUT OF YOUR MIND. I'M GOING HOME TO DRINK SOMETHING ELSE.**
**SURE! PUT ME OUT OF A JOB! IT'S YOU ANTI-BUSINESS TYPES WHO RUIN THE ECONOMY!**

**LEMONADE $15.00 GLASS**

**I NEED TO BE SUBSIDIZED.**

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**Alternative Demand**

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HCD at a Glance

User Experience

Useful Usable
Desirable
Valuable
Findable
Accessible
Credible

Useful or Usable?

Design Impact
- Greater value to the customer (and the company)

What is desirable to users?

Innovation
- What is possible with technology
- What is viable in the marketplace

Value

10X Ideas

User Research

Sketches, Prototypes

Industrial Age
- Product = what you bought
- Place = where you bought it (channels of distribution)
- Promotion = what get you to buy NOW
- Price = how much you pay for the product

Information Age
- Product = information
- Place = where the information is found
- Promotion = how the "place" is found
- Price = what the customer is willing to endure to get the information

Social Networking Age
- Product = authentic experience to share with colleagues
- Place = where my colleagues gather (LinkedIn, Facebook...)
- Promotion = what I'm driven and compelled to share, which leads to reputation score
- Price = what I have to do to access and create authentic experiences

The Four P's of the Information Age

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"The User Experience Honeycomb" by Peter Morville

“An example of user experience is a Q&A site like Yahoo Answers. And the thing is, you know how to do things, you just don’t know what to do. The more advice you give, the more questions you get, and it makes design pointless.”

Grid of Human Values and Sub Values

- Right Conduct
- Peace
- Truth
- Love
- Non-Violence

- Manners
- Patience
- Truthfulness
- Kindness
- Consideration

- Health Awareness
- Concentration
- Creativity
- Friendship
- Cooperation

- Helpfulness
- Purity
- Honesty
- Forgiveness
- Global Stewardship

- Responsibility
- Self Acceptance
- Determination
- Community
- Loyalty

- Independence
- Self Discipline
- Fairness
- Compassion
- Active Citizenship

- Perseverance
- Thankfulness
- Trust
- Tolerance
- Justice

- Courage
- Contentment
- Reflection
- Service
- Respect
HCD is a Team Art Process
What is desirable to users?

What is possible with technology

What is viable in the marketplace

Essence of Commercialization

http://www.ideo.com/work/human-centered-design-toolkit/
The Challenge for Designers
In Order to Innovate and Make Money -
You Have to Change the Organization!

Do you want to design something cool – or make a real difference?

**The Ten Types of Innovation**

- **finance**
  - business model
  - networking
- **process**
  - enabling process
  - core process
- **offering**
  - product performance
  - product system
  - service
- **delivery**
  - channel
  - brand
  - customer experience

Wal-Mart grew profitably through core process innovations such as real-time inventory management systems, aggressive volume, pricing and delivery contracts with merchandise providers, and systems that helped store managers identify changing buyer behaviors and respond quickly with new pricing and merchandising.

Most companies equate innovation with the development of new products. But creating new products is only one of ten types of innovation, and on its own, it provides the least return.

Our Ten Types of Innovation framework can help to identify new opportunities in finance, process, offering and delivery. Companies that are able to simultaneously innovate across multiple innovation types will develop offerings that are more difficult to copy and that generate higher returns.

Source: Dublin research