

- **Physical Constraints:**

- Making limits
- No special training required
- Ease of interpretation
- Legacy problem
 - o Superior solution (USB C vs. USB A)
- Design questions
 - o Why, why, why..

- **Cultural Constraints:**

- Sets of allowable actions for (social) situations
- Schemas in the mind
 - o Scripts that guide behavior
 - Link on a site underlined or bolded that lets you know it's a link
- Norms, conventions & standards
- Designers curse
 - o Cultural norms can be issues
 - o Need to know client jargon to understand their cultures to integrate what they might not realize about there cultures, yet that are extremely beneficial
- Change over time

- **Semantic Constraints:**

- What are semantics: Locus of attention
- Situation knowledge helps
- Changes over time

- **Logical Constraints**

- Spatial & function layout
- Importance of natural mapping
 - o The visual ques for stove top burners

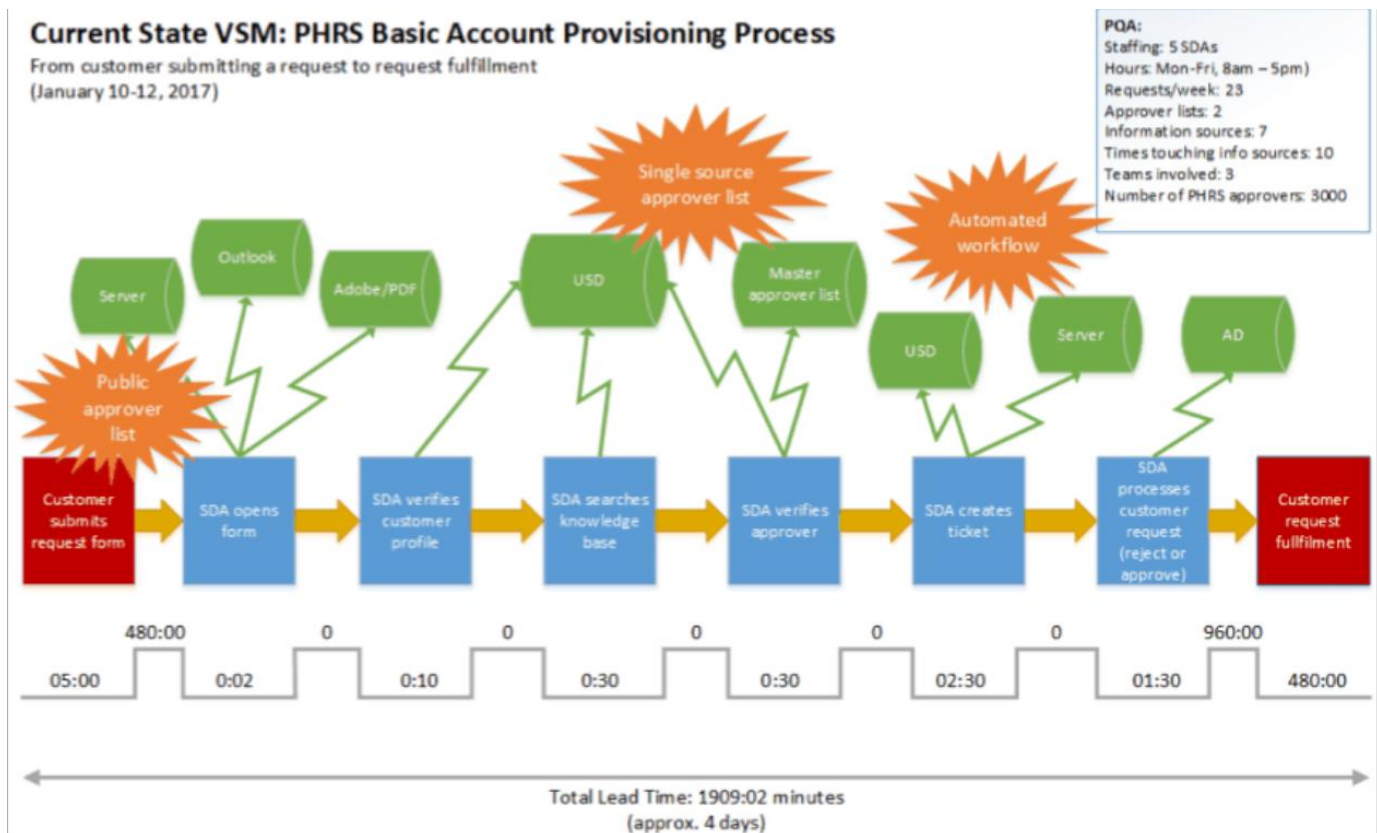
- **Constraints & Forcing Behavior**

- Forcing function
 - Example: Utilizing this can prevent objects purchased twice on a website
 - Three types of forcing functions (Safety Engineering)
 - *Interlock*: Things take place in proper sequence
 - *Example*: Printing, password tips to make stronger, clarifying to save a document before closing
 - *Lock-ins*: *Places a client in a stalemate with being locked into their product or service*
 - *Apple and google users*
 - *Lock-out*: Prevents event of occurring or or someone leaving if unsafe

- **Brainstorming Alternatives:**

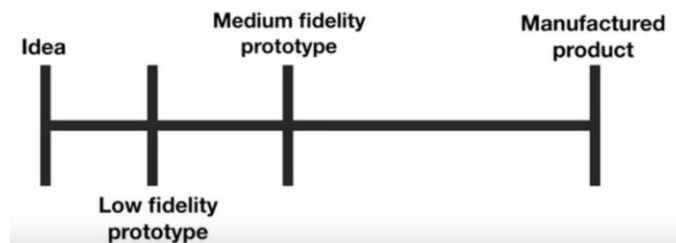
- Shifting from problems to solutions
- Goal
 - Converge/diverge pattern
 - Use all tools with constraints, mapping, etc
 - Successful innovation
 - Diversity in ideas
 - Groups of people to find optimal solution
 - Exploring lots of alternatives
 - Power of blends
 - Combining and recombining ideas
 - Iterating
- Tunnel Vision & Fresh Snow:
 - Caution!
 - Thinking you found the best solution
 - Finding a good solution and not looking further very hard
 - Fresh snow:
 - Beautiful environment created, “no packed ruts”
 - Mitigating the tunnel to reach the fresh snow
 - Brain storm early

- Quantity, not quality in the beginning
 - Embrace cousins
 - Succession of similar ideas
 - Lateral jumps
 - Embracing things further of cousins that might create cousins (Embrace wild ideas)
 - Marinate
- **Visualization Techniques:**
 - Story Boarding (Like the video he provided: NN/g Paper prototyping video)
 - Show sequences
 - Minimum details
 - Brief captions
 - Show people/emotions
 - Beware the artist
 - Don't get too attached
 - Don't spend too much time on it
 - Flow/state diagrams



- Sketching/physical models:
 - o High/low fidelity prototyping (begin low cost → high cost ending)
 - o Beware of the artist!

Fidelity of Prototypes



Remember these are tests, meant to be thrown away. Do not waste all your time making things perfect. This is conceptual.



LoFi image above

HiFi image below



- o Low-Fidelity (LoFi) prototyping

- Recall – You are not the user
 - Quick way to recognize the vision
 - Watch the Paper Prototyping Video
 - Hi-Fidelity (HiFi) prototyping:
 - Testing colours (colour blindness)
 - Image interactions
 - “Fancy interaction”
 - Cross device interaction
 - Etc
 - Do not spend so much time that could be spent on the actual design
- **Prototyping:**
 - Pretotype
 - Getting feedback early, getting feedback often
 - Types:
 - Paper
 - Wireframe
 - Mock-up
 - Partially coded
- **False Consensus effect:** a cognitive bias where people tend to overestimate how much others share their own beliefs, attitudes, and behaviors, essentially assuming that their own perspective is more widely held than it actually is. The designer is not the user.
- Quiet-Storming
 - Start with quiet time from group brainstorming
 - Pass the paper