



## Discover

- Background Research
- Observation
- Interaction with Stakeholders

## Define

Discoveries distilled into:

- Functions (Verbs)
 
- Objectives (Adverbs/Adjectives)
 
- Constraints = standards, non-functional design boundaries

## Ideate

Generate ideas for design concepts:

- Functions to Morph Charts
 
- Objectives to Pugh Charts

## Prototype

Build a prototype to begin to fill in gaps in design knowledge

- Prototype ...
  - To test most uncertain parts
  - If fundamental physical modeling is not possible
  - If statistical information is required
  - To learn about fit and tolerance of components
- Long List of System Interfaces
  - FMEA
  - System Integration

## Test

Set up experiments and test to learn more about uncertain design aspects

- Clearly identify variables in question
- Define what constitutes an "effective" result
- Summarize next steps

## Communicate

Utilize MANY forms of communication to inform your team, client and stakeholders about your design process

- **Face to Face Meetings:** Team meetings (with/without instructor), with other instructors, with Makerspace and Innovation Alley staff
- **Written Communication:** Texts, emails, memos, A3, Readme Files, Smartsheet
- **Visual Communication:** Fabrication drawings, terrain maps, sketches and schematics, photos, videos, charts to document design process, spreadsheets for numerical models

- Meet with Client to determine goals and objectives
- Research relevant building codes, government regulations and standards
- Procure General Contractor/Construction Manager (GCCM)

- Turn client goals and objectives into Design Criteria
- Determine constraints (codes, standards, laws, budget, property boundaries, etc.)
- Define Evaluation Criteria

- Brainstorm design concepts
- Evaluate Concepts
  - Perform a feasibility study (compare against design criteria/constraints)
  - Prepare preliminary design report summarizing comparative analysis (which design performs best against the evaluation criteria)
- Prepare for public comment opportunity & client feedback /decision on how to proceed

- Commence preparation of design deliverables
  - Prepare high level drawings
  - Draft detailed drawings and construction specifications

- Meetings for approvals and feedback
  - Client meetings (1-2) to inform and solicit feedback on detailed design
  - Submit for review by city, state, federal clients and/or permitting agencies
- Continue Preparation of Design Deliverables

- Utilize MANY forms of communication to inform your team, client and stakeholders about your design process
- Prepare detailed drawing package and construction specifications
- Prepare Written Documentation (i.e., Reports to Client)
- Client Meetings
- Public Meetings
- Regulatory Meetings (i.e., City, State, or Federal Officials)