

F.W. Olin SCOPE: User Focused Approach to Stove Building in Rural Guatemala

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SCOPE

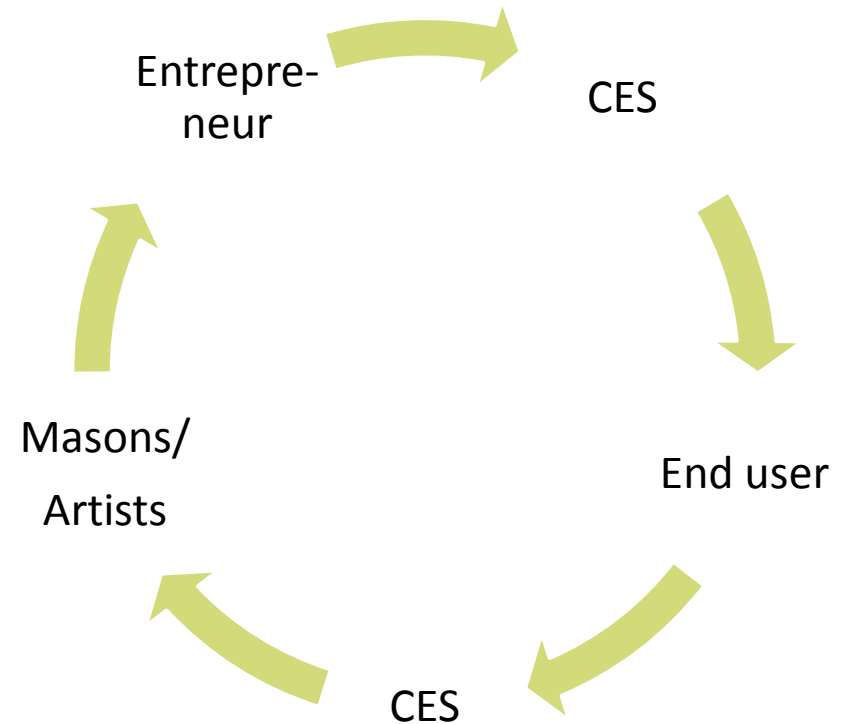
Senior Consulting
Program for Engineering



Community
Enterprise
Solutions

Our partnership

- ▶ Development, not relief
- ▶ Helping Guatemalans help themselves
- ▶ The bottom line is economics – everything is cost driven



Current Stove



Technical Problem Statement

Redesign existing Lorena stove to reduce cost and improve efficiency.

User Centered Design

1. Inquire Into
2. Identify With
3. Generate Ideas
4. Involve Users
5. Expand Upon
6. Describe

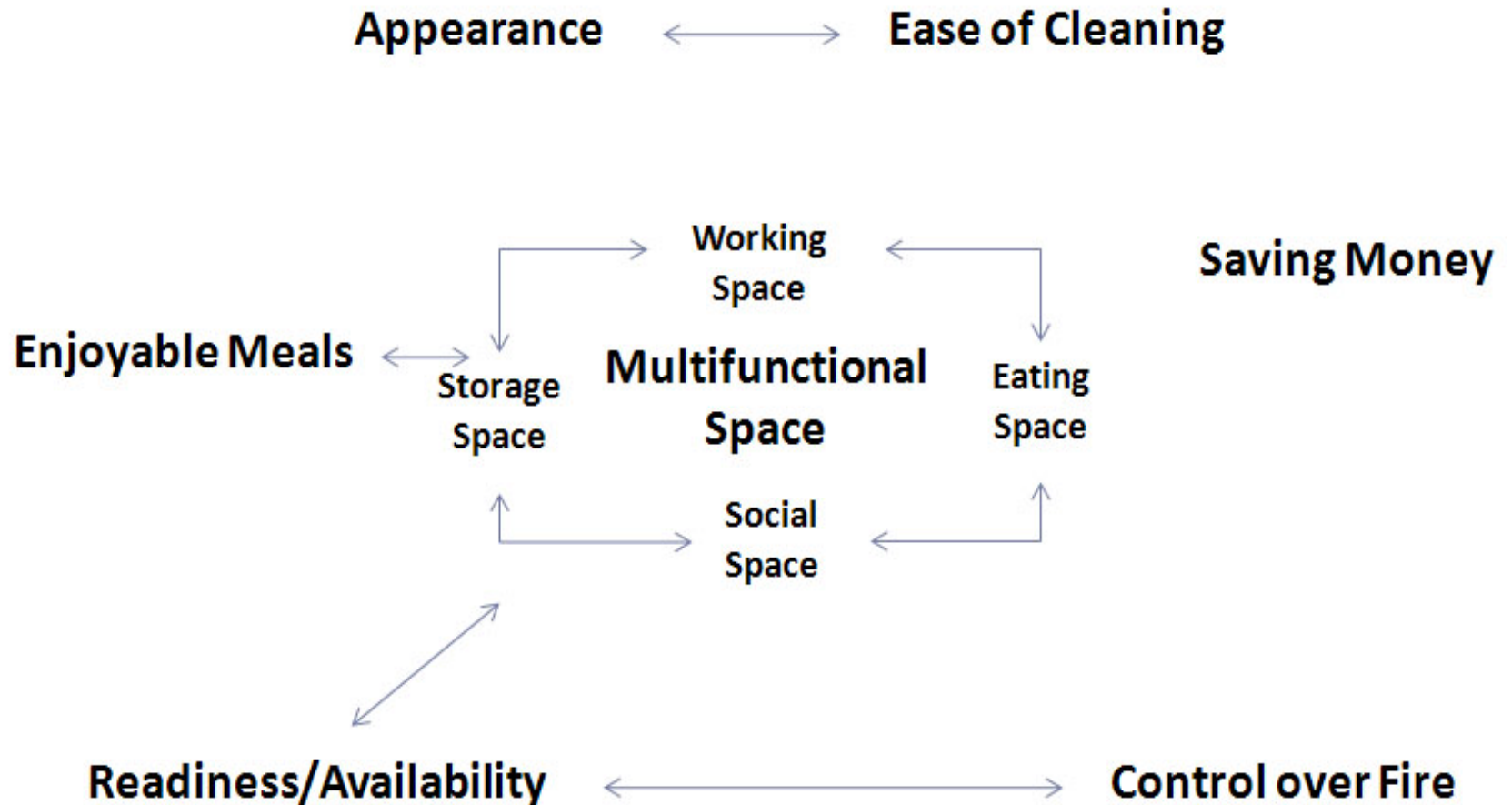


User Research

- ▶ Rural Guatemalan Populations
- ▶ Distributed Project
 - ▶ Review of Literature
 - ▶ Census Data
 - ▶ User Interviews











Identified User Needs



User-Centered Problem Statement

Help three-stone fire users have a safe, enjoyable, low-cost, in-home cooking experience.

Our Goals

	Current Stove	Additional Products
Primary importance	 Base Cost of Stove  Fuel Efficiency	 Mini Stove
Secondary importance	 Desirability of Stove  Safety and Health  Ease of Construction	 Stove Accessories  Supporting Services

Assessing User Needs

- ▶ FIC Analysis

- ▶ Function

- ▶ How well does the stove do its job?

- ▶ Interaction

- ▶ How does the stove user interact with the stove to complete the job?

- ▶ Character

- ▶ How does the stove user perceive the stove?

- ▶ Used to assess future designs based on criteria

Design Guidelines: FIC

- ▶ **Function (40%)**
 - ▶ Fast heating time
 - ▶ Cooks over a long period
 - ▶ Is fuel efficient (> open fire)
 - ▶ Handles a variety of pot sizes
 - ▶ Cleaner emissions
- ▶ **Interaction (30%)**
 - ▶ Allows user to cook comfortably for long periods of time
 - ▶ Provides a cooking space
 - ▶ Provides a central eating place
 - ▶ Gives user control over cooking
 - ▶ Increases safety
- ▶ **Character (30%)**
 - ▶ Sturdy
 - ▶ Status symbol
 - ▶ Toyota pick-up



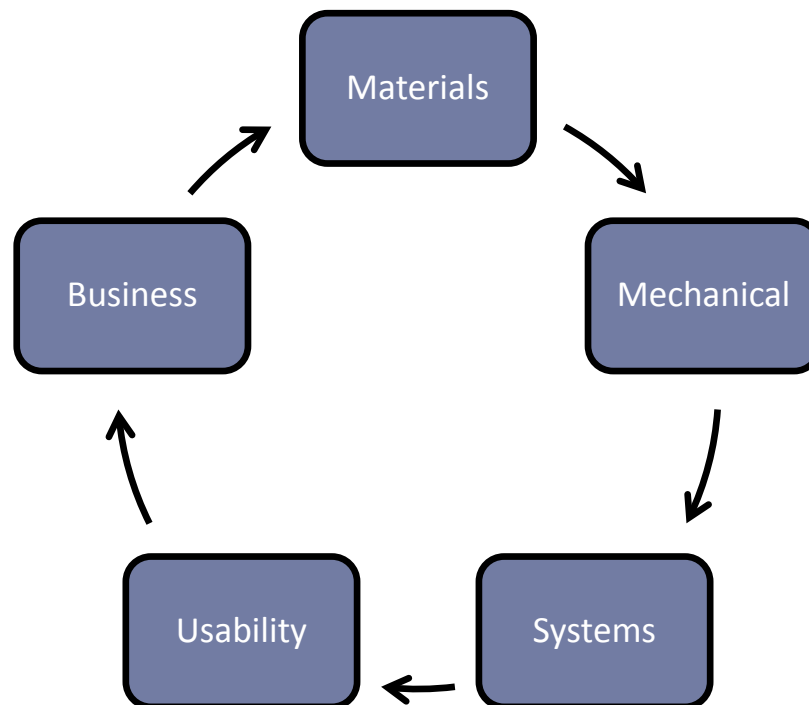
“Sky High” Ideation

- ▶ No censoring of ideas
- ▶ Encouraged to dream big
- ▶ Rapid fire
- ▶ Simulation

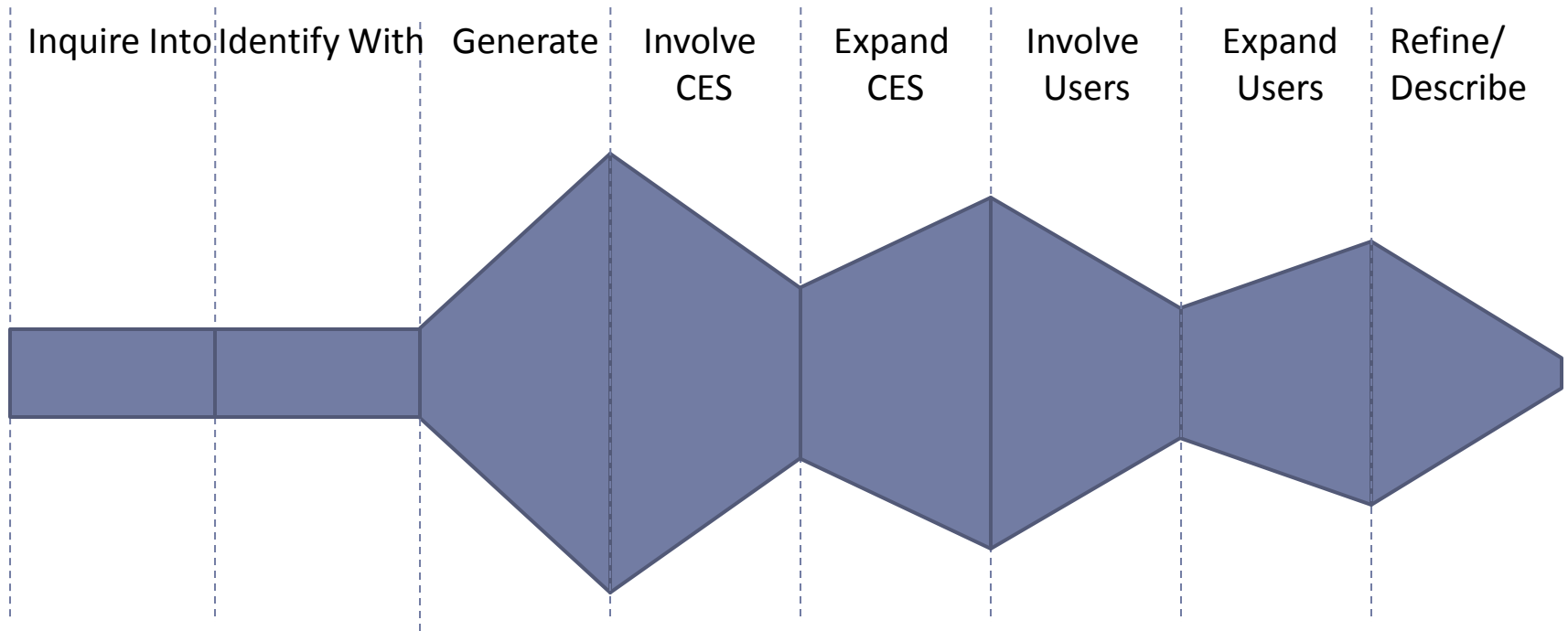
Problem statement: *Help three-stone fire users have a safe, enjoyable, low-cost, in-home cooking experience.*

Collaborative Ideation

- ▶ Each team member brings a different perspective:
 - ▶ Mechanical, Systems, Materials engineers
 - ▶ Business administration
- ▶ Cycle ideas through each team member



The Design Process



The Difference

Technical Problem

Redesign existing Lorena stove to reduce cost and improve efficiency.

vs.

User-Centered Problem Statement:

Help three-stone fire users have a safe, fuel-efficient, in-home cooking experience.

Using the User-Centered Approach let us:

Consider novel solutions.

Example: separate line of small stoves at a much lower price point.

Consider and understand user behavior.

Example: educational tools and props to encourage good fuel feeding.

Maintain user desires.

Example: too much insulation on chamber might leave the room too cold.