### STAKEHOLDERS
Which stakeholder(s) or stakeholder group would be best suited to answer your front-end design question?

### PROTOTYPES
What prototype(s) would allow you to answer your front-end design question?

### STRATEGIES
Select one or more strategies to answer your front-end design question.

### FRONT-END DESIGN QUESTION
What do you need to know in order to move forward?

Describe how you will leverage the strategy (or strategies) by considering the following questions.
- How will you prepare for interacting with the stakeholder(s)?
- How will you frame the interaction with the stakeholder(s)?
- How will you introduce your prototype(s)?
- How will you engage with the stakeholder(s)?

### PROTOTYPING TOOL FOR FRONT-END STAKEHOLDER ENGAGEMENT

The front end of design is critical for product success. It includes activities such as problem identification, problem definition, requirements and specifications development, and concept generation and development. Prototypes can play important roles in front-end design work, but historical emphases on prototype use in design have been for supporting back-end design activities. This Front-end Prototyping Tool for Stakeholder Engagement was developed from research on practitioners’ use of prototypes in front-end design work to support designers in thinking about how to intentionally use prototypes to engage stakeholders during front-end design.

To use this Front-end Prototyping Tool for Stakeholder Engagement, start with the design question in the middle of the diagram. It is up to you to determine which section to complete next. For example, you might have an interest in engaging a particular stakeholder type or you might have prototypes that you have already created that you want to use. Follow the prompt in that section, and then complete the additional sections (the order in which you do this is your choice). Be intentional in your planned approaches. After all of the sections are completed, review them to ensure that there is alignment across sections, and revise as necessary.

Repeat the process of filling out the form for each of your front-end design questions. Refer to the next page for examples of types of stakeholders, prototypes, and strategies.

### Prototypes

Prototypes are representations of design ideas and are tools that can be leveraged at multiple design process stages, including during the front end of design to engage stakeholders.

#### USERS
- Active user
- Passive user
- Proxy user
- Use-cycle stakeholder

#### EXPERT ADVISORS

#### OTHER STAKEHOLDERS
- Community partner
- Customers
- Financial decision maker
- Government and regulatory
- Manufacturing stakeholder
- Marketing stakeholder
- Supply chain stakeholder
- User influencers

### FRONT-END PROTOTYPING

<table>
<thead>
<tr>
<th>Prototypes</th>
<th>Stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-D</td>
<td></td>
</tr>
<tr>
<td>Drawing</td>
<td></td>
</tr>
<tr>
<td>Engineering Drawing</td>
<td></td>
</tr>
<tr>
<td>Photo of a physical prototype</td>
<td></td>
</tr>
<tr>
<td>Rendering</td>
<td></td>
</tr>
<tr>
<td>Storyboard</td>
<td></td>
</tr>
<tr>
<td>PHYSICAL 3-D</td>
<td></td>
</tr>
<tr>
<td>Existing product</td>
<td></td>
</tr>
<tr>
<td>Near-final materials prototype</td>
<td></td>
</tr>
<tr>
<td>Pilot</td>
<td></td>
</tr>
<tr>
<td>Test materials prototype</td>
<td></td>
</tr>
<tr>
<td>DIGITAL 3-D</td>
<td></td>
</tr>
<tr>
<td>CAD Model</td>
<td></td>
</tr>
<tr>
<td>Interactive rendering</td>
<td></td>
</tr>
<tr>
<td>Video of a physical prototype</td>
<td></td>
</tr>
</tbody>
</table>

### STRATEGIES

- **Brief the stakeholder about the project and the prototype(s) shown**
  - Introduce the stakeholder to the project, describe the prototype(s), and describe participation expectations

- **Encourage the stakeholder to envision use cases while interacting with the prototype(s)**
  - Prompt the stakeholder to imagine how they would use the prototype in use cases

- **Have the stakeholder interact with the prototype(s) in a simulated use case**
  - Replicate relevant conditions of the product’s environment of use in a simulated setting

- **Introduce the prototype(s) to the stakeholder in the use environment**
  - Place the prototype in its environment of use when engaging the stakeholder

- **Lessen a prototype’s refinement when showing it to the stakeholder**
  - Engage the stakeholder with less sophisticated or complete prototypes than the current project status

- **Make prototype extremes to show the stakeholder**
  - Exaggerate prototype characteristics with specifications at their upper or lower limit, or opposite characteristics

- **Modify the prototype(s) in real time while engaging the stakeholder**
  - Make changes to the prototype(s) while the stakeholder is present (designer as main actor)

- **Observe the stakeholder interacting with the prototype(s)**
  - Prompt the stakeholder to interact with prototypes while observing the interaction

- **Polish the prototype(s) shown to the stakeholder**
  - Create or modify a prototype to more closely resemble the final form versus the current status of the project

- **Present a deliberate subset of prototypes to the stakeholder**
  - Present fewer, carefully selected prototypes to the stakeholder than the full set of prototypes created

- **Prompt the stakeholder to select prototypes and prototype features**
  - Ask the stakeholder to choose or prioritize ideas based on provided prototypes

- **Reveal relevant information to the stakeholder specific to the prototype or its use**
  - Strategically reveal relevant information, leaving out details about e.g., functionality or rationale

- **Show a single prototype to the stakeholder**
  - Engage the stakeholder using one prototype

- **Show the stakeholder additional prototypes to supplement a prototype of the same concept**
  - Engage the stakeholder using storyboards, test data, computational models, materials, physical models, etc. to elaborate on the details of the prototype

- **Show the stakeholder multiple prototypes concurrently**
  - Prompt the stakeholder to compare options using multiple prototypes

- **Task the stakeholder with creating or changing the prototype(s)**
  - Prompt the stakeholder to create or modify the prototype(s) (stakeholder as main actor)

- **Standardize the refinement of prototypes shown concurrently to the stakeholder**
  - Present prototypes that are at the same level of refinement when shown simultaneously to the stakeholder

### REFERENCES

