

User Experience: Defined and Applied

Trilinos User Group – 12.2.21

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User Experience is _____

User Experience is

Emotions

Beliefs

Expectations

Perceptions

Physical and
Psychological responses

Behaviors

Accomplishments

User Experience is

Emotions

Useful

Beliefs

Valuable

Expectations

Desirable

Perceptions

Accessible

Physical and

Psychological responses

Credible

Behaviors

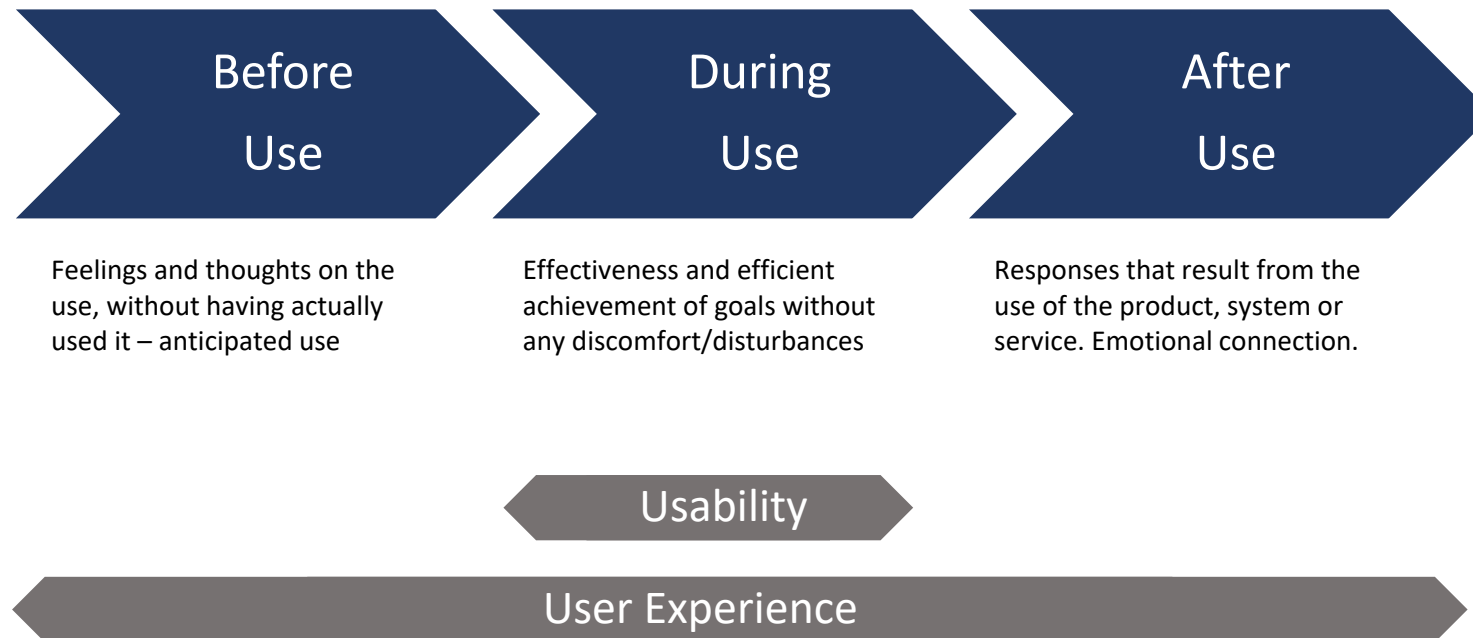
Findable

Accomplishments

Usable

User Experience occurs...

Before, During, and After interacting with a product or system.



UX: A History

1950s – 1980s



Enterprise computing

1980s



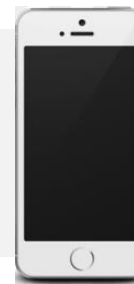
PC Revolution

1990s – 2000s



Web Revolution

2000s - Present



Ubiquitous Computing





Vision for UX

Deliver valuable products and services that delight users through a consistent, relentless, user-centered approach

UX Gaps: Current-State

- Lack of understanding around user's:
 - Needs and drivers
 - End-to-end workflows
 - Task accomplishment
- Inconsistent look, feel, and interactions
- Connect solutions to support end-to-end experiences

Understanding Users: Personas

		DEFINING CHARACTERISTICS	DESIGN DRIVERS
	Command Line Commander “Help me quickly or get out of my way.”	I am highly technical from both an engineering and computer standpoint; I rely heavily on Linux and am adept at navigating file structures and running commands from command line.	<ul style="list-style-type: none">• Solutions must be extremely intuitive• Solutions must show me quick value -- help me maintain or increase my efficiency• The behavior of the tool must match my expectations
	Tool Adopter “I’ll take what I can get.”	My primary focus is on solving engineering problems, rather than refining or leveraging any computer prowess. I am willing to try new tools with patience to learn the long-term benefits to my work.	<ul style="list-style-type: none">• Continue adding value and I’ll continue to adopt the tools• If it’s potentially useful, and I know about it, I’ll work to adopt it
	The Optimizer “I am continuously improving my approach to work.”	I am constantly looking to improve the way I work. I have an adaptable approach to executing my work based on the projects I have and the problems I am trying to solve.	<ul style="list-style-type: none">• Show me why it’s valuable, so I will adopt it to enhance my process• Will adapt approach to increase efficiency and effectiveness
	The Strategist “I am here for the greater good.”	I have spent years in this domain and I pride myself on my expertise. Peers respect my knowledge and they understand that I will support them however I can.	<ul style="list-style-type: none">• Give me solutions that improve quality, efficiency, and consistency• We should utilize best practices from industry to improve SNL toolsets• Help to shape, capture, and share best practices

User Persona: The Command Line Commander

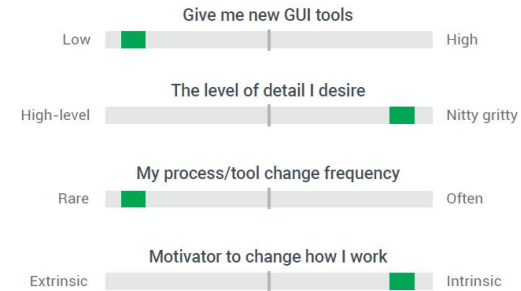


“ Help me quickly or get out of my way. ”

>_ Command Line Commander

DEFINING CHARACTERISTICS

I am highly technical from both an engineering and computer standpoint; I rely heavily on Linux and am an expert at navigating file structures and running commands from command line interfaces (CLI). Utilizing keyboard shortcuts is fundamental to streamlining my work processes. I am more than reluctant to adopt new GUI tools. I may try a new tool once, but will quickly revert to my command line tools if any unnecessary delays or challenges are encountered. Time is too precious to invest in learning new GUI tools.



DESIGN DRIVERS

- Solutions must be highly intuitive
- Value needs to be quickly evident in solutions
- The behavior of the tool must match my expectations



PAIN POINTS

- Anything that gets in the way of getting work done (e.g. partially defined requirements); unnecessary impediments
- Incomplete input data for work



MY MOTIVATIONS

- Getting work done as quickly as possible with the least amount of resistance
- New tools should not introduce new barriers to getting my work done



FRUSTRATIONS

- Disruption
- Lack of Control
- Unintuitive tools
- Tools that don't work as expected

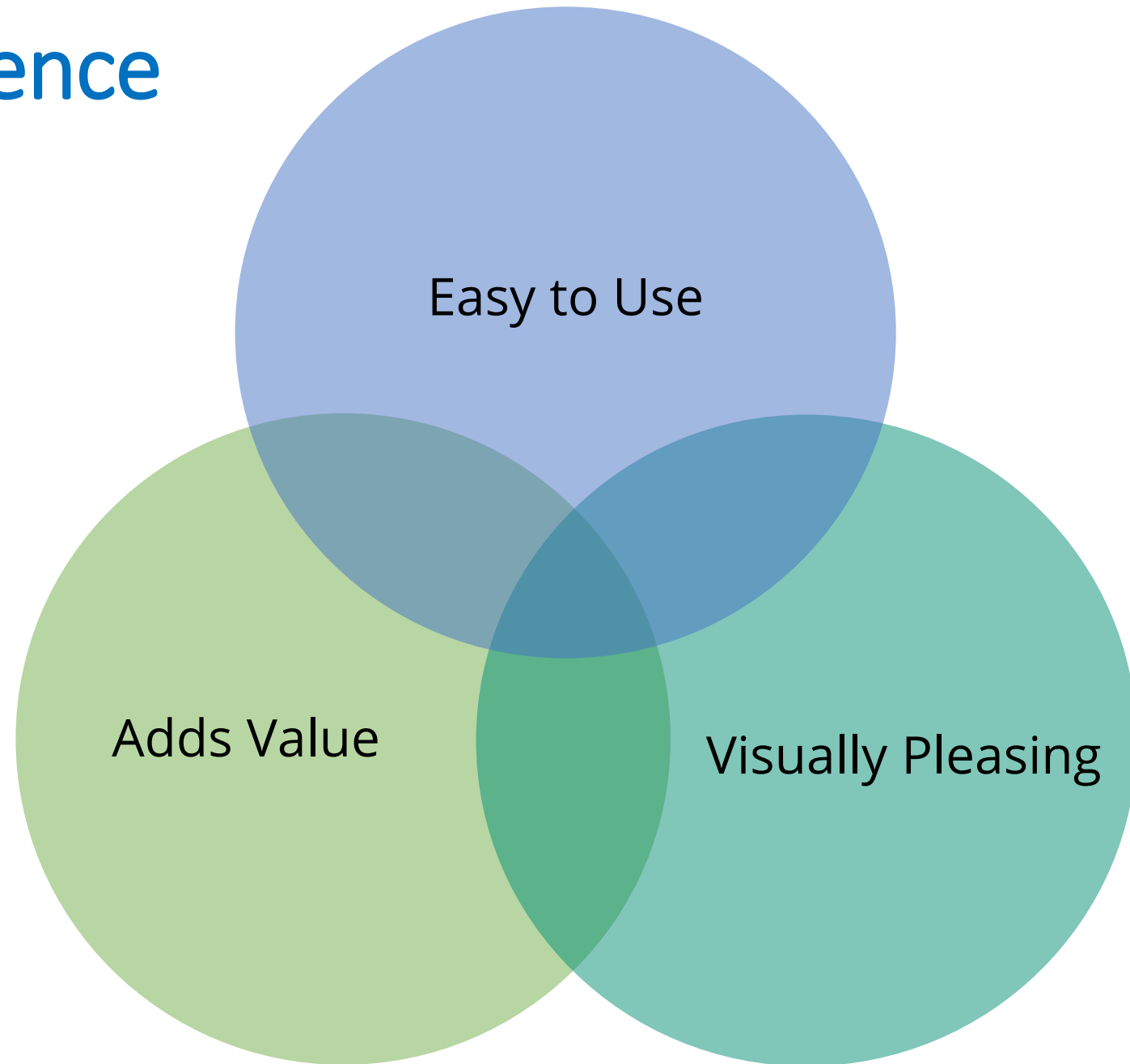


OTHER CHARACTERISTICS

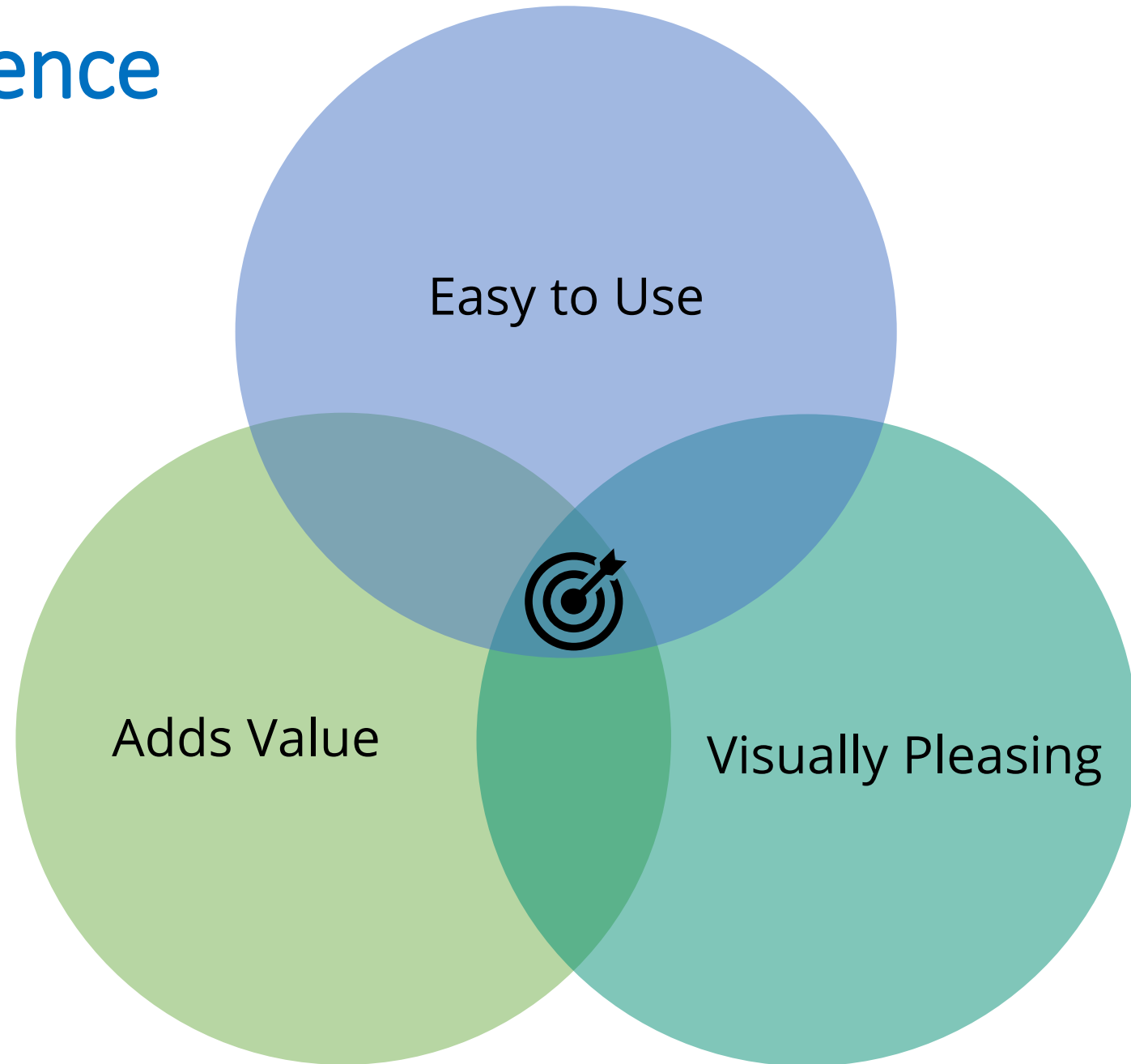
- Work process is heavily influenced by previous behavior



A Great Experience



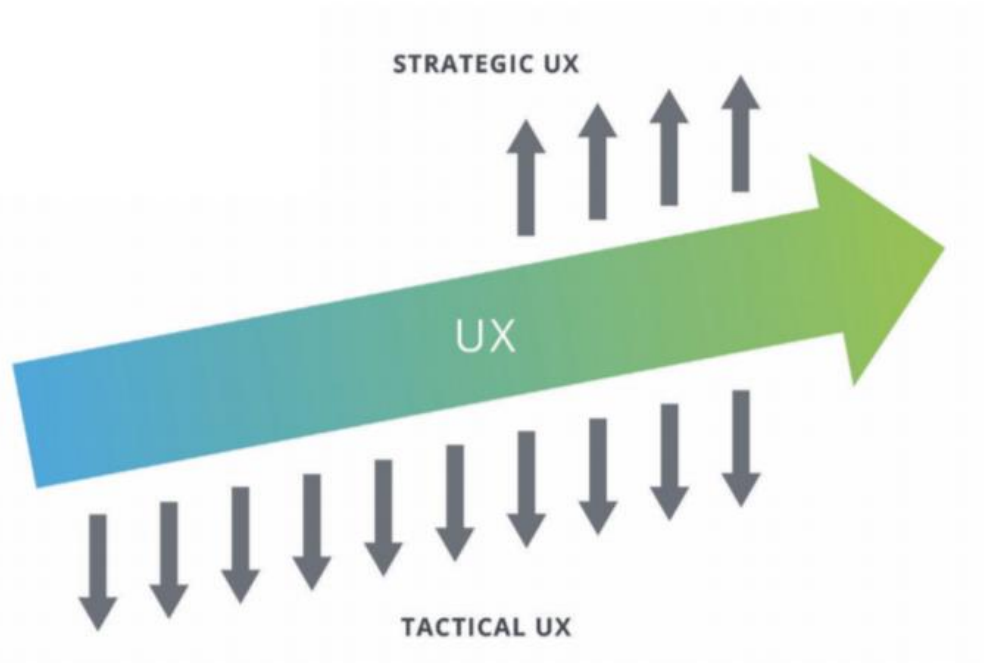
A Great Experience



UX

Strategic & Tactical

UX works at 2 levels:
Strategic & Tactical



Strategic

- Data-driven decision making
- Creating a shared vision and roadmap
- Gathering actual requirements, along with data
- Prioritizing projects
- Removing silos
- Reducing development costs
- Increasing on-time delivery

Tactical

- Improving the user experience across all products, solutions, and projects

UX works at 2 levels: **Strategic & Tactical**

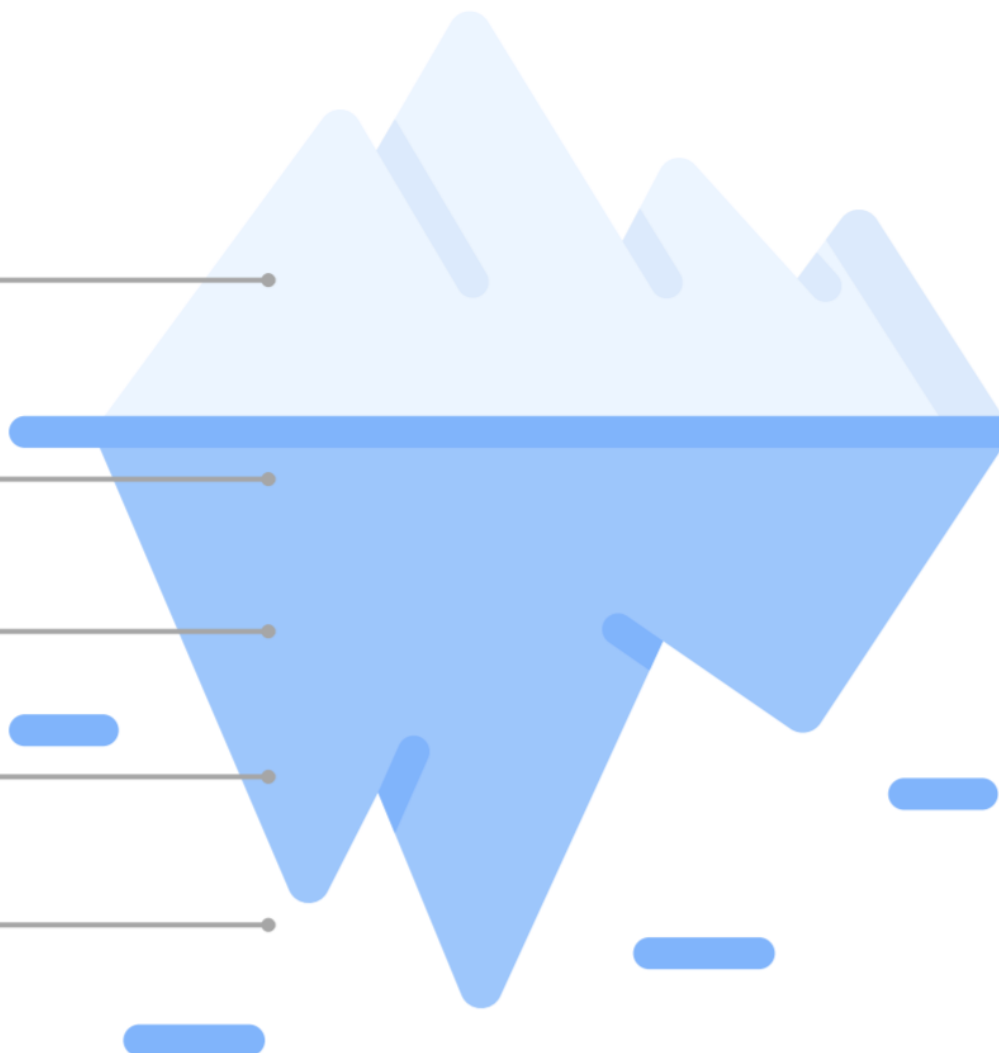
Surface ————— ●
Visual Design

Skeleton ————— ●
Wireframes

Structure ————— ●
Site Map / Screen Flow

Scope ————— ●
Requirements / Content

Strategy ————— ●
Concept / User Research



What We Do

RESEARCH

Understand user needs and goals and how the environment impacts their jobs.

Card Sorting

Content Inventory

Experience Mapping

Focus Groups

Task Analysis

Contextual Interviews

Ecosystem Map

Personas

Use Cases and Scenarios

DESIGN

Create potential solutions based on what we know about users and their goals.

Wireframing

Prototyping

Standards

Storyboarding

Eye Tracking

A/B Testing

Pattern Library

TEST & REFINE

Iteratively evaluate design solutions and make improvements.

Usability Testing

Heuristic Evaluations

First Click Testing

Metrics Analysis

Surveys

What We Do: Trilinos

FY22+

RESEARCH

Understand user needs and goals and how the environment impacts their jobs.

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Levels of UX Strategy

- 1 Individual Products
- 2 Across products, services, and company touchpoints
- 3 Transformational Strategy throughout the ecosystem

Levels of UX Strategy: UI/Product Design

1 Individual Products & Initiatives

- Defined problem statement: team agreement
- Design feasibility
- Emphasis on usability
- Project baseline and targeted success measures

Alegra ● Sierra ● SPARC ● RAMSES ● Drekar

User Feedback Elicitation: CLI

Option 1	Option 2
<pre>volumes_to_mesh: - include: volumes: [<id>, <id>,...] volume_ranges: [[<min id>,<max id>],[<min id>,<max id>],...] volume_names: [<name>,<name>] - exclude: volumes: [<id>, <id>,...] volume_ranges: [[<min id>,<max id>],[<min id>,<max id>],...] volume_names: [<name>,<name>] blocks: - name: <block name> Type: tet (default) shell beam volume_names: [<name>,<name>] volumes: [<id>, <id>,...] volume_ranges: [[<min id>,<max id>],[<min id>,<max id>],...] surfaces: [<id>, <id>,...] surface_names: [<name>,<name>] surface_ranges: [[<min id>,<max id>],[<min id>,<max id>],...] curves: [<id>, <id>,...] curve_names: [<name>,<name>] curve_ranges: [[<min id>,<max id>],[<min id>,<max id>],...] sidesets: - id: <id> volume_names: [<name>,<name>] volumes: [<id>, <id>,...] volume_ranges: [[<min id>,<max id>],[<min id>,<max id>],...] surfaces: [<id>, <id>,...] surface_names: [<name>,<name>] surface_ranges: [[<min id>,<max id>],[<min id>,<max id>],...]</pre>	<pre>geometry_to_ignore: volume_names: [<name>,<name>] volumes: [<id>, <id>,...] volume_ranges: [[<min id>,<max id>],[<min id>,<max id>],...] output: default_behavior: OneBlockPerVolume (default) OneBlockPerVolumeName OneBlockPerCubitVolumeName OneBlock NoBlocks element_order: linear (default) quadratic blocks: - name: <block name> Type: tet (default) shell beam volume_names: [<name>,<name>] volumes: [<id>, <id>,...] volume_ranges: [[<min id>,<max id>],[<min id>,<max id>],...] surfaces: [<id>, <id>,...] surface_names: [<name>,<name>] surface_ranges: [[<min id>,<max id>],[<min id>,<max id>],...] curves: [<id>, <id>,...] curve_names: [<name>,<name>] curve_ranges: [[<min id>,<max id>],[<min id>,<max id>],...] sidesets: - id: <id> volume_names: [<name>,<name>] volumes: [<id>, <id>,...] volume_ranges: [[<min id>,<max id>],[<min id>,<max id>],...] surfaces: [<id>, <id>,...] surface_names: [<name>,<name>] surface_ranges: [[<min id>,<max id>],[<min id>,<max id>],...]</pre>

Levels of UX Strategy: Service Design

2 Strategy across products, services, and touchpoints

- Defined problem statement: multiple teams
- Mapping & understanding end-to-end experiences
- Many teams leveraging:
 - UI guidelines
 - standards
 - frameworks
 - components
- Project baseline and targeted success measures across internal programs

Consistent Design Patterns ● Shared User Data ● Credibility Evidence

Levels of UX Strategy: Transformational

3 User-centered, transformational strategy

“Everything in concert”

- Defined vision statement: agreement throughout the ecosystem
- Mapping experiences
- Cognitive shift: user-centered
- UI Design System
- Baseline and targeted success measures
- User-obsessed

User Support



Repositories



Computational Resources

Questions?

