TUX2021

TRIDEUM UX TRANSFORMATION GUIDE

TRIDEUM® USER EXPERIENCE

GUIDED TOUR

"User experience is how something works *in the real world*"

– Steve Jobs

Trideum's User Experience (UX) process provides a strategy to create or improve systems by designing what users need in a way they can more easily understand and engage.

CASE STUDY: APPLE

In early 2007, Apple was struggling to maintain three points of profit– but by the end of the fiscal year, they had turned those 3 points into 30. How did they do it?

Meanwhile, Motorola was forced to pull their smart phones from the shelves due to over-saturation of the market. No one was buying smart phones – and it was at that exact moment that Steve Jobs decided to break in with the new iPhone.

Jobs was convinced that he had a better design than any other players on the market. He understood that it's not about the technology that we use, but about building that technology around human needs.

Apple released the iPhone, and it sold 270,000 units in the first 30 hours. Because the iPhone was built with users in mind, Apple is now among the top five most profitable companies in the world.

CASE STUDY: INTUIT

Intuit takes takes a similar approach as Apple to create their products, investing 10,000 hours a year in user research to observe how people actually use their software tools; their needs and pain-points. Intuit begins by identifying the problem that needs to be solved – and then building a product to solve it.

But it hasn't always been that way.

In 2007, Intuit founder Scott Cook decided the company could innovate through "Design for Delight" – by putting users at the center of their product development processes.

By 2009, Design for Delight was the driving impetus behinds Intuit's product development, which leverages their "follow me home" approach to user feedback & observation. For the next 5 years after, Intuit sales grew from 10 to 45 million and stock prices tripled.

Today, Intuit is the leader in personal and professional financial software. Their TurboTax product enjoys a staggering 67% market share of all online tax preparation products, while QuickBooks rings up a whopping 57% market share for all accounting software.

INTRO

We are tireless user advocates and promoters of innovation, crafting experiences that impact lives and advance society.

We do paradigm-shaping work. We are experts in UX who educate our communities on the application of user-centered processes to solving the world's toughest challenges. We bring commercial best practices and design thinking to complex systems such as DoD, emergency management and healthcare.

WHAT IS USER EXPERIENCE?

Trideum's UX process takes a User-Centered approach to a problem, product, service; as opposed to a System-Centered approach.

User-centered design is driven by empathy. Too often, systems are built from a system-centric perspective, designed to meet system goals and system requirements, while ignoring the needs and attributes of the people who use the system. User-centered product development builds out product requirements and designs around the needs of the user.

Usability is more than efficient code and eye-popping visuals, at its core, it's about problem solving. User-centered product development processes tend to produce better user experiences by creating products that make the interchange between us and the systems that we use more facile, more understandable, more efficient.

SERVICES

SKILLS

User Research

We exercise empathy in our human-centered approach to problem solving, employing qualitative and quantitative measures to investigate and uncover insights into the impact of systems and services on their users to ensure we are solving the right problems to meet our users' unique needs.

Evaluation & Assessment

We are skilled practitioners of data collection and analysis who translate words and numbers into meaning. We can measure anything–from attitudes to performance–and our findings guide iteration based in evidence-driven decisions.

Service Design

We transform organizations and services from the ground up to deliver the best experience for the user/customer, employee, and service provider. Whether improving an existing service or creating a new one, we apply a holistic and flexible approach to planning and organizing

Interaction Design

We see more than just an interface, constructing engaging systems and services that explore the functional and emotional impacts of interaction on user behaviors and limitations.

Information Architecture

We understand the art and science of how content should be structured and presented to a user when they are interacting with the product to optimize efficiency and usability.

SKILLS

Product Design

We can imagine a product from identifying the problem to developing the solution, taking into consideration business objectives and user needs.
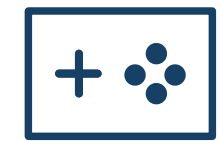
Game Design

We apply our expertise in storytelling, interaction, and aesthetics to the art of game design. As strategic thinkers, we balance logic with empathy to craft goals, rules, and challenges for educational and entertainment purposes – and often apply those principles to other domains in the form of gamification.

Visual Design & Branding

We create visual systems that improve ease of use, utility and inspire action by empowering audiences. We use color, shape, and type to transform company values into recognizable patterns.

Development

UX developers are able to collaborate with UX designers & researchers and understand the importance of the end user. Agile software development enables iteration and responsiveness to user feedback.

Workshops & Conferences

We seek every opportunity to advocate for user-centered practices in our community. We take a hands-on approach to making connections and have built a reputation for ourselves as passionate educators who remain inspired to learn from those around us.

USER-CENTERED RESEARCH

User research refers to systematic investigation of the behaviors, needs, and motivations of the users of a system or service. Research may entail anything from literature reviews to non-intrusive observation to detailed personal interviews. Regardless of the methodologies employed, the goal of user research remains the same: to build contextual understanding and empathy for the users.

A critical part of user research is evaluation and assessment, which employ a collection of methodologies aimed at measuring usability. These could range from questionnaires or surveys to elicit feedback on a specific topic – to heuristic or reviews based on expertise in usability best practices – to usability testing, which involves a user performing some action using a system or service as the research team collects qualitative and/or quantitative data on how the product (not the user) performs.

Results

Opinions

Surveys

Focus Groups

Ratings ★★★★☆

Information Mining

Testing

Observations

Ideas

SERVICE DESIGN

Service Design is the application of UX principles and strategies to organizations and services (as opposed to the more tangible products or systems for which UX is commonly recognized). By applying our iterative approach to discovery and problem-solving to people, policies, and procedures, we can improve the quality of the work produced and interactions between a company and its clients.

Through a deep and holistic examination of the problem area, the UX team can provide leadership with recommendations for a strategy and timeline to improve internal and client-facing relationships, products, and practices – and potentially uncover additional business opportunities.

02 ...which identifies your most critical scenarios, needs and opportunities....

05 ...that when blueprinted, allows everyone to see end-to-end and surface-to-core...

01 Your opportunity space allows you focus in on an area of your business...

04 ....letting leadership identify strategic themes and tactical fixes...

06 ...which enables the organization to take meaningful, enduring action, transforming our organization and customers' experience.

03 ....which leads to valuable insights across multiple scenarios...

INTERACTION DESIGN

Whereas visual design concerns the visual presentation of form and information, the main focus of interaction design rests upon behaviors— how does a tool behave when used by operators; and how must users behave to most effectively use the tool?

GUIDING PRINCIPLES

Discoverability

Users must be able to easily and quickly find what they're looking for - or for them, it simply doesn't exist.

Signifiers

"Affordances define what actions are possible. *Signifiers* specify how people discover those possibilities: signifiers are signs, perceptible signals of what can be done. Signifiers are of far more importance to designers than are affordances." *(Don Norman, 2013)*

Feedback

Feedback refers to the information provided to the user regarding the action taken or status of events. Without sufficient feedback, users can experience uncertainty and frustration.

Mental Models

Mental models are pre-existing ideas in the users mind about how something should work. Designs that use mental models effectively creates a more intuitive experience for the user.

Constraints

Constraints in design eliminate unnecessary controls or features that can overly-complicate the user experience - providing guard rails that simplify and streamline actions.

Consistency

The consistent use of similar actions, elements or rules within a design makes it easier for users to learn and use a product - and, minimizes the likelihood of error.

Patterns

The use of common interaction patterns provide instant learnability. For example, once someone knows how to use a fork, they always know how to use a fork. The same notion applies to UI components such as buttons or menus.

Visual Hierarchy

Visual hierarchy enables the user to focus on and take action on those items that are most important - and can be achieved by balancing properties such as size, contrast, proximity or color.

Recognition & Recall

Designs that utilize recognition throughout an experience make it easier and faster for users; requiring users to recall information creates a higher cognitive load.
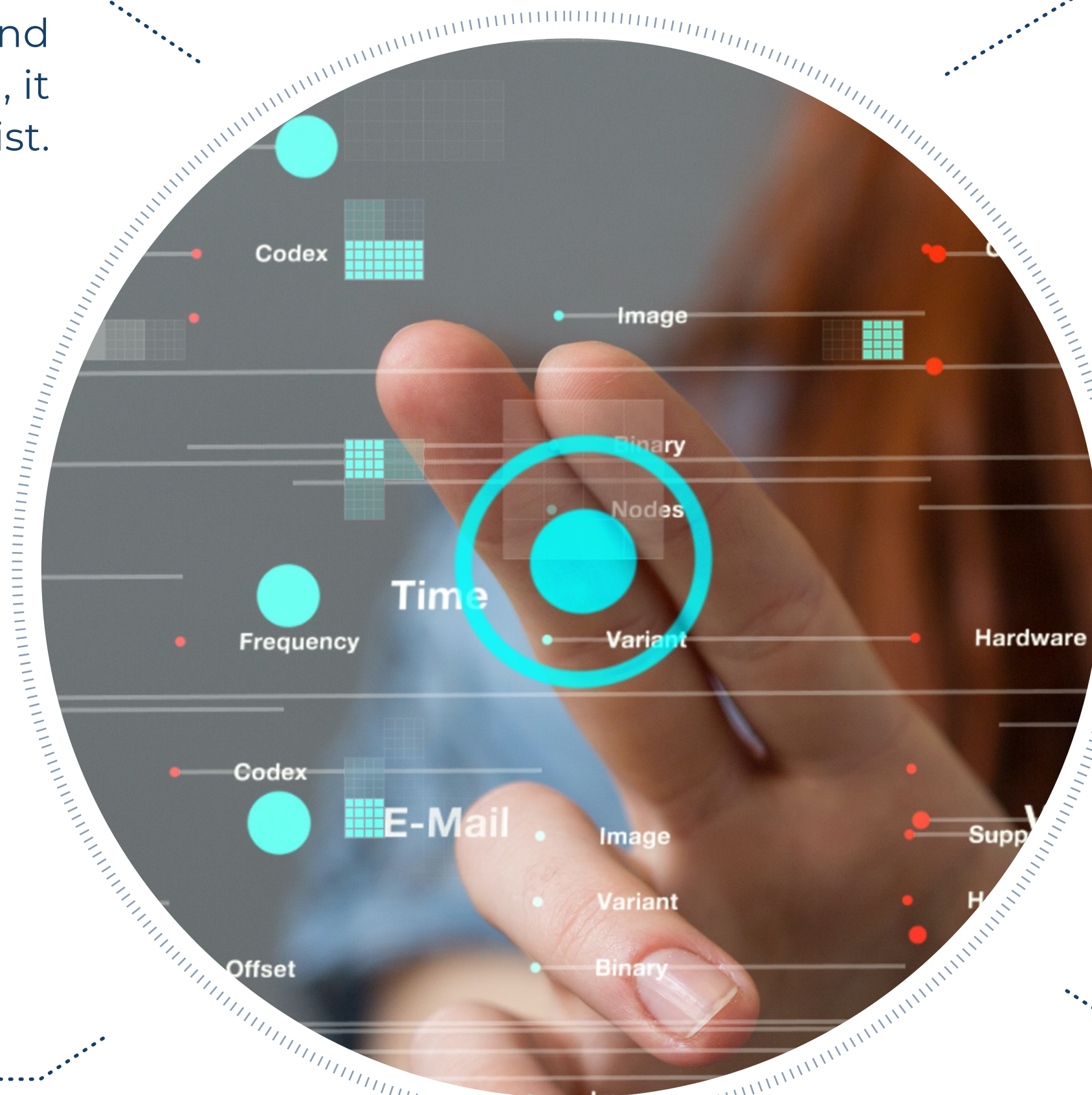
INFORMATION ARCHITECTURE

Information architecture concerns the clear and logical organization of information within a system. It is important to structure complex information hierarchies in a way that make them easy for the user to navigate. This increases both efficiency and satisfaction.

PRODUCT DESIGN

XHACK3R
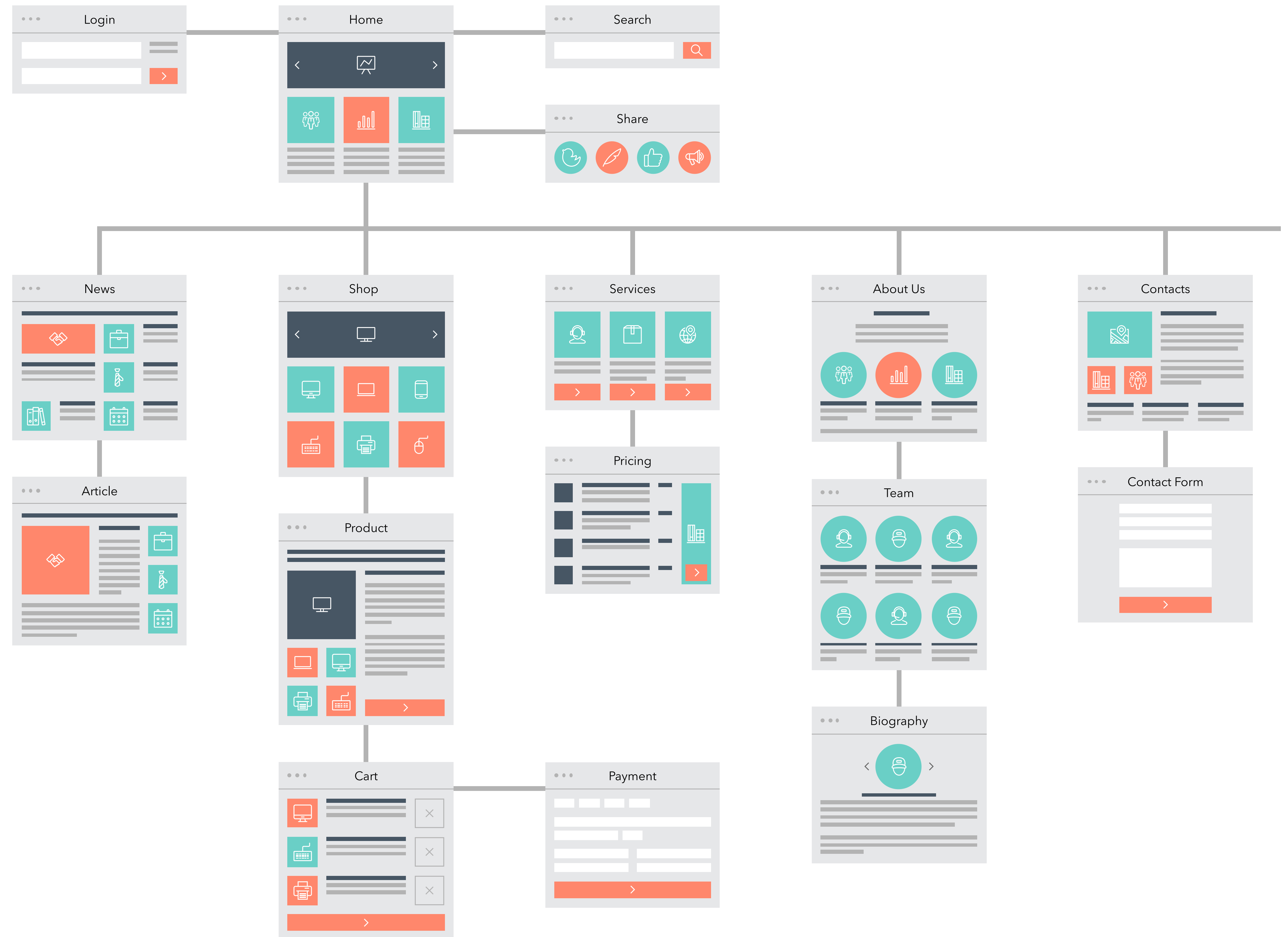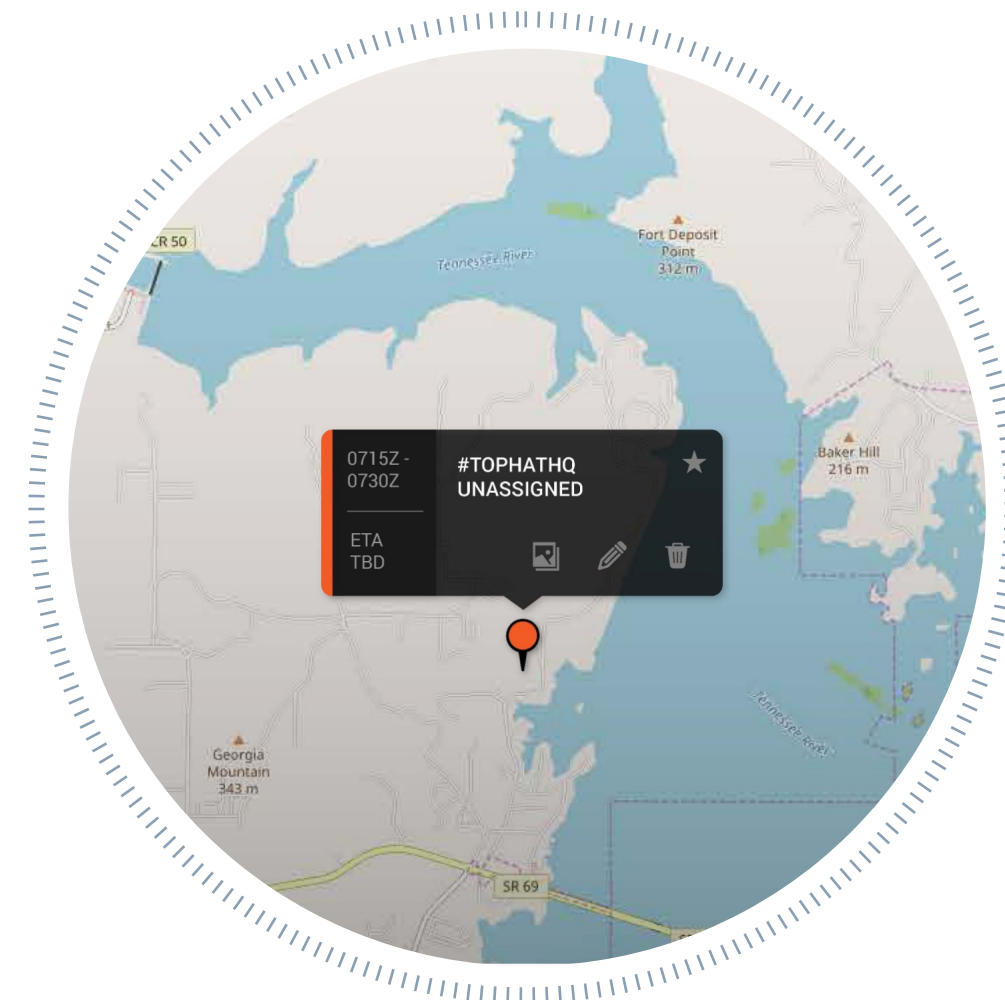
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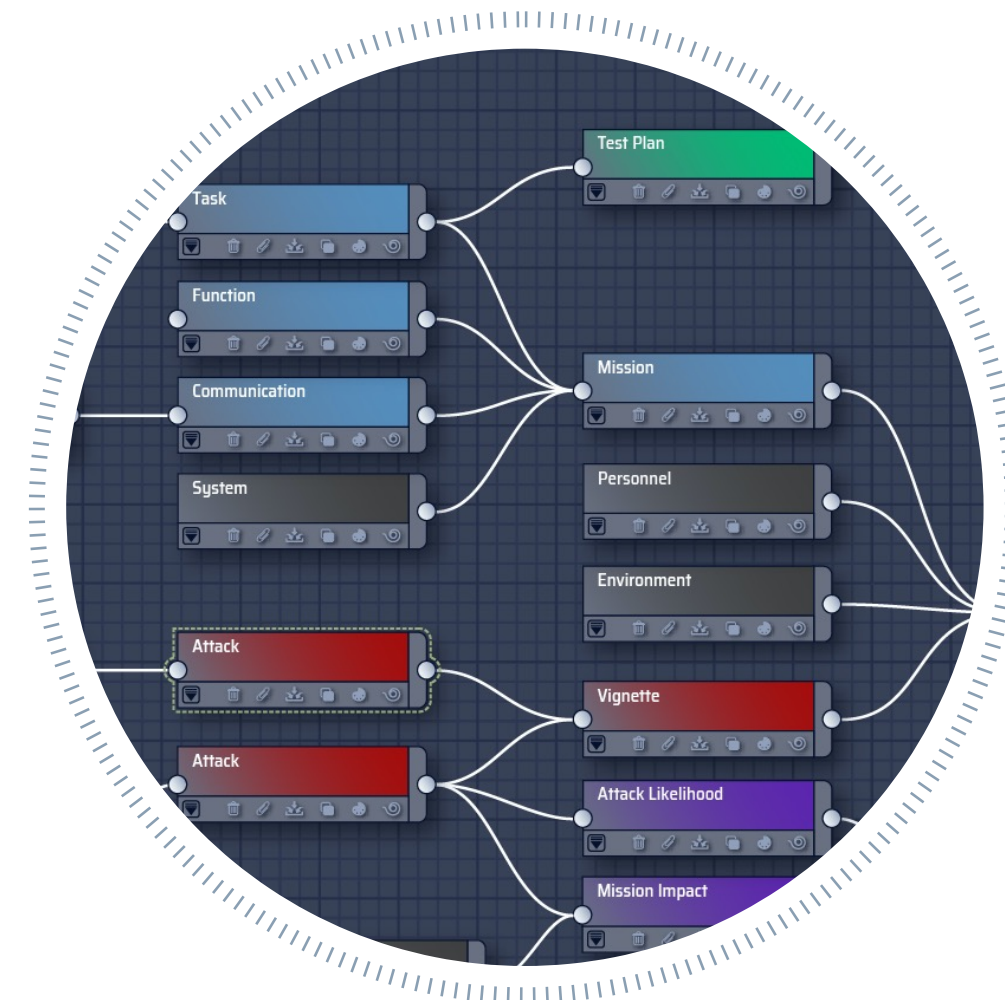
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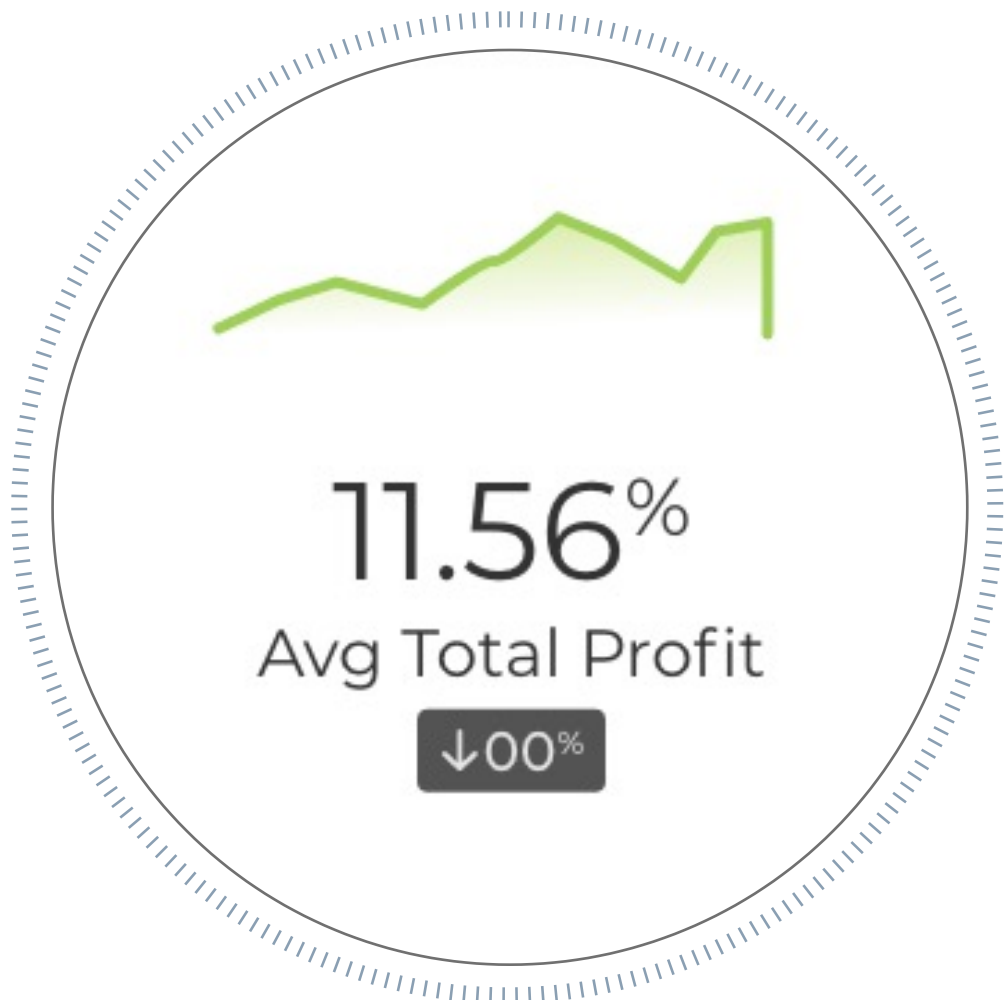
Twenty20

Product design is about conceptualizing, creating, and refining marketable products that address the needs of a target user group. A product is anything that can be produced and sold, ranging from the material (tangible objects) to the digital (such as software systems). Understanding the end-user (the person for whom the product is being designed) is critical to successful product design. At Trideum, our UX team specializes in the production of complex digital assets. Our product line-up includes educational games, mobile applications, intelligent management tools, ground control interfaces, monitoring systems, configuration management software, and more!

PRODUCT DESIGN

BLUVECTOR.

MMC
GENERAL ATOMICS

SIMChEC
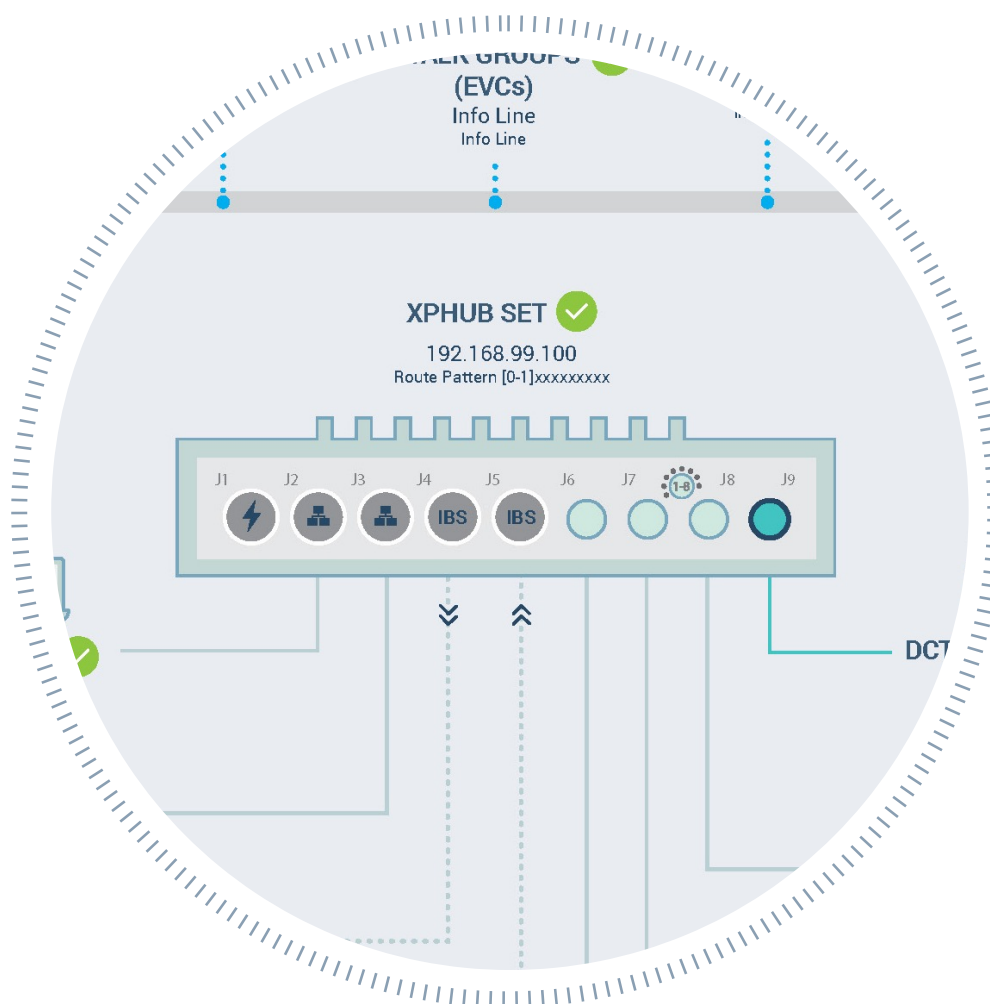
COMMUNICATIONS MANAGER
SANMINA SCI

Product design is about conceptualizing, creating, and refining marketable products that address the needs of a target user group. A product is anything that can be produced and sold, ranging from the material (tangible objects) to the digital (such as software systems). Understanding the end-user (the person for whom the product is being designed) is critical to successful product design. At Trideum, our UX team specializes in the production of complex digital assets. Our product line-up includes educational games, mobile applications, intelligent management tools, ground control interfaces, monitoring systems, configuration management software, and more!

GAME DESIGN

UX and game design go hand in hand – both concern how a person experiences the end product. Whereas UX is about solving problems, game design is about creating and redefining problems (or challenges) for the users (or players) to solve. In game design, defining appropriate levels of challenge is crucial to engaging play.
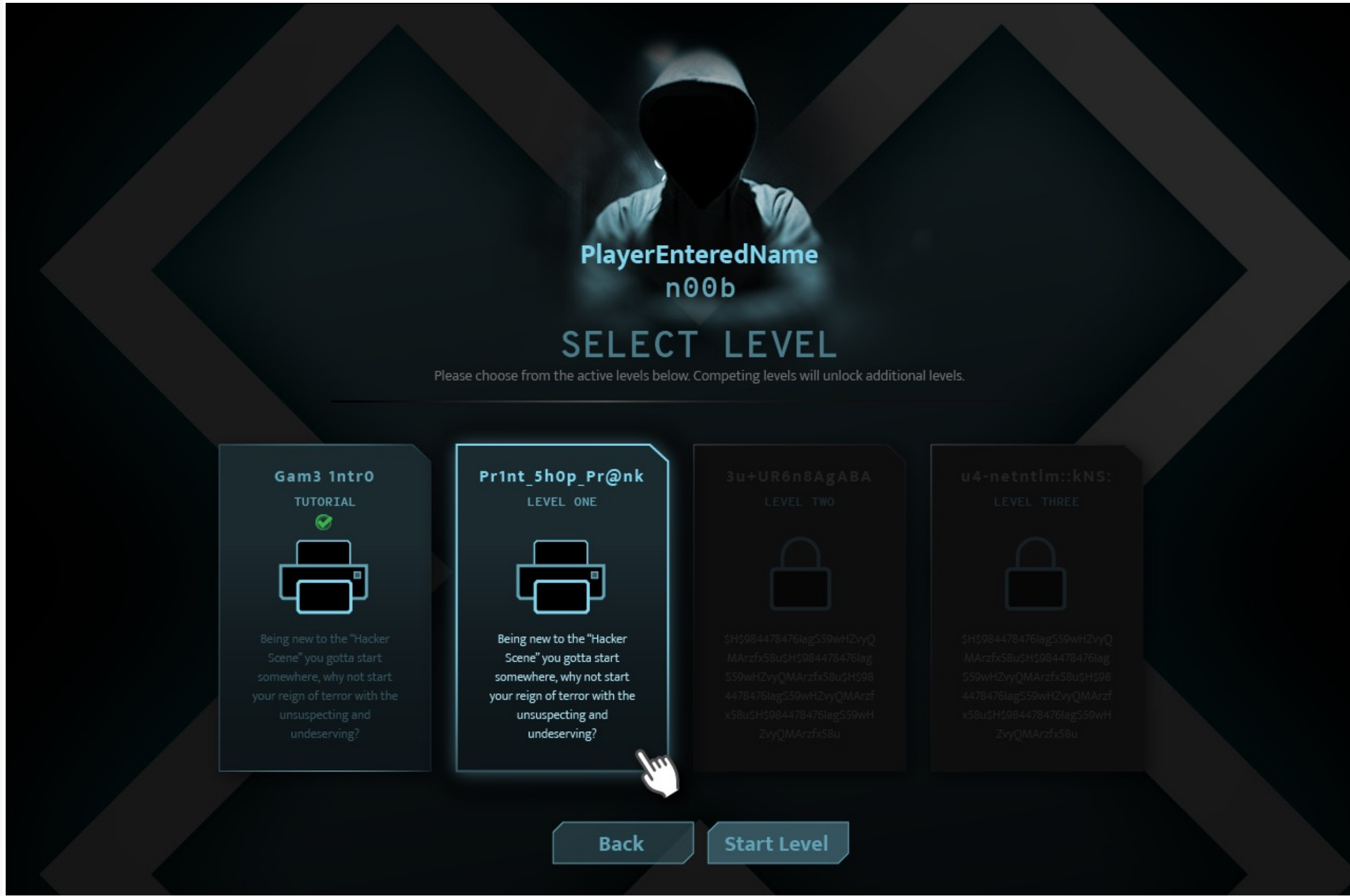
GAMIFICATION

Game design principles such as competition, scoring, and rewards can be applied to non-game contexts as well, in the form of gamification – which can help to encourage engagement with the product or service. Gamification takes advantage of human psychology by repurposing the dopamine reward systems to promote specific user behaviors.

GOALS

CHALLENGE

MOTIVATE

REWARD

LEARN

Clear, objective **goals** increase engagement and cultivate responsibility for meeting requirements

Challenges must be created around the anticipated skill level of an individual in order to provide an experience that is neither too easy nor too hard resulting in defeat or abandonment

Gamification introduces extrinsic **motivators** such as rewards or badges to non-game content to compensate for content that may not be intrinsically motivating

Rewards such as badges or certificates increase engagement and can include things such as cash, status recognition, exclusive access or additional power.

Gamification increases **learning** capacity; studies have shown specific benefits in the area of content recall, retention and application

BRANDING & VISUAL DESIGN

Branding is the practice of building a unique and recognizable professional presence. Companies, products, and sales teams use branding to get recognition, increase business value, generate new customers, improve employee pride, and create trust with consumers.

To build a brand, creative teams have to turn insight into innovation. Creative teams conduct and evaluate marketplace research in order to successfully find and establish a brand's place in the world. Once they have found where the brand fits in, they use language and visual arts to tell the brand story. The most successful brands stand out while also connecting with their audience's values. Beyond creating logos, our team can help envision a new brand or strengthen and personify an existing brand.

DEVELOPMENT

From consulting, prototyping, and front-end development to developing out code for robust systems architecture, our dev team is involved throughout the UX process. By embracing the challenges that others say can't be done – while always keeping the end-users front of mind – our devs consistently build, deliver, and implement top quality and easy-to-use software.
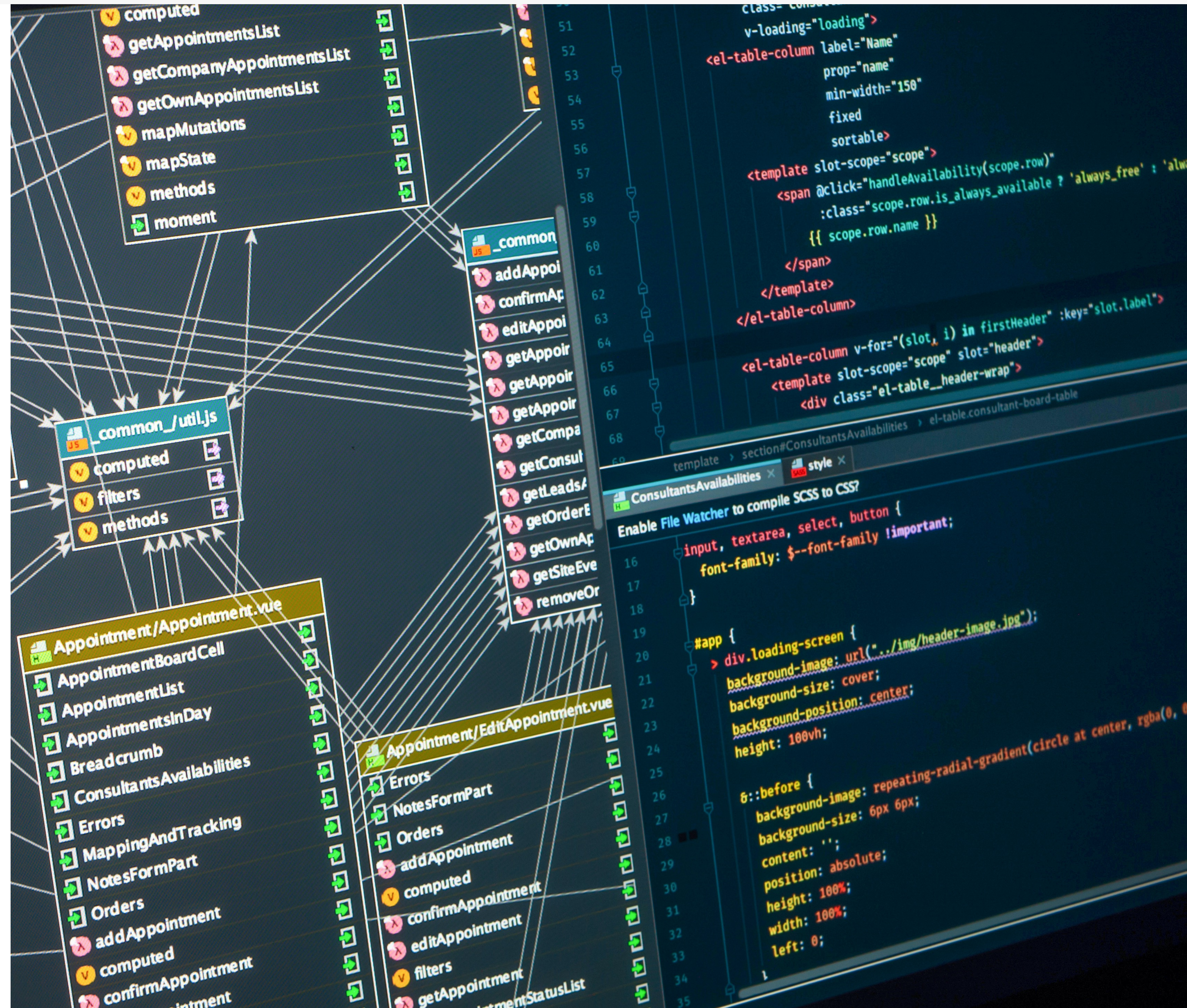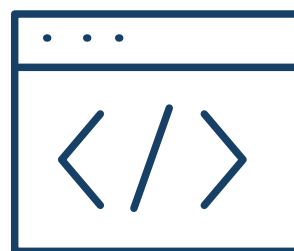
WORKSHOPS & CONFERENCES

In addition to providing UX services on contracts, our team of experts has the capability to offer hands-on training for your team (virtually or on-site). Workshops can be customized around your specific learning objectives. These events are ideal for groups seeking to increase awareness and understanding of UX value, processes, and methodologies.

In 2020, Trideum proudly established and sponsored the first annual UX Rising Conference in Huntsville, AL. This half-day mini conference was an opportunity for the local UX community to come together to celebrate and share industry knowledge and interests. Stay tuned for future events and happenings.
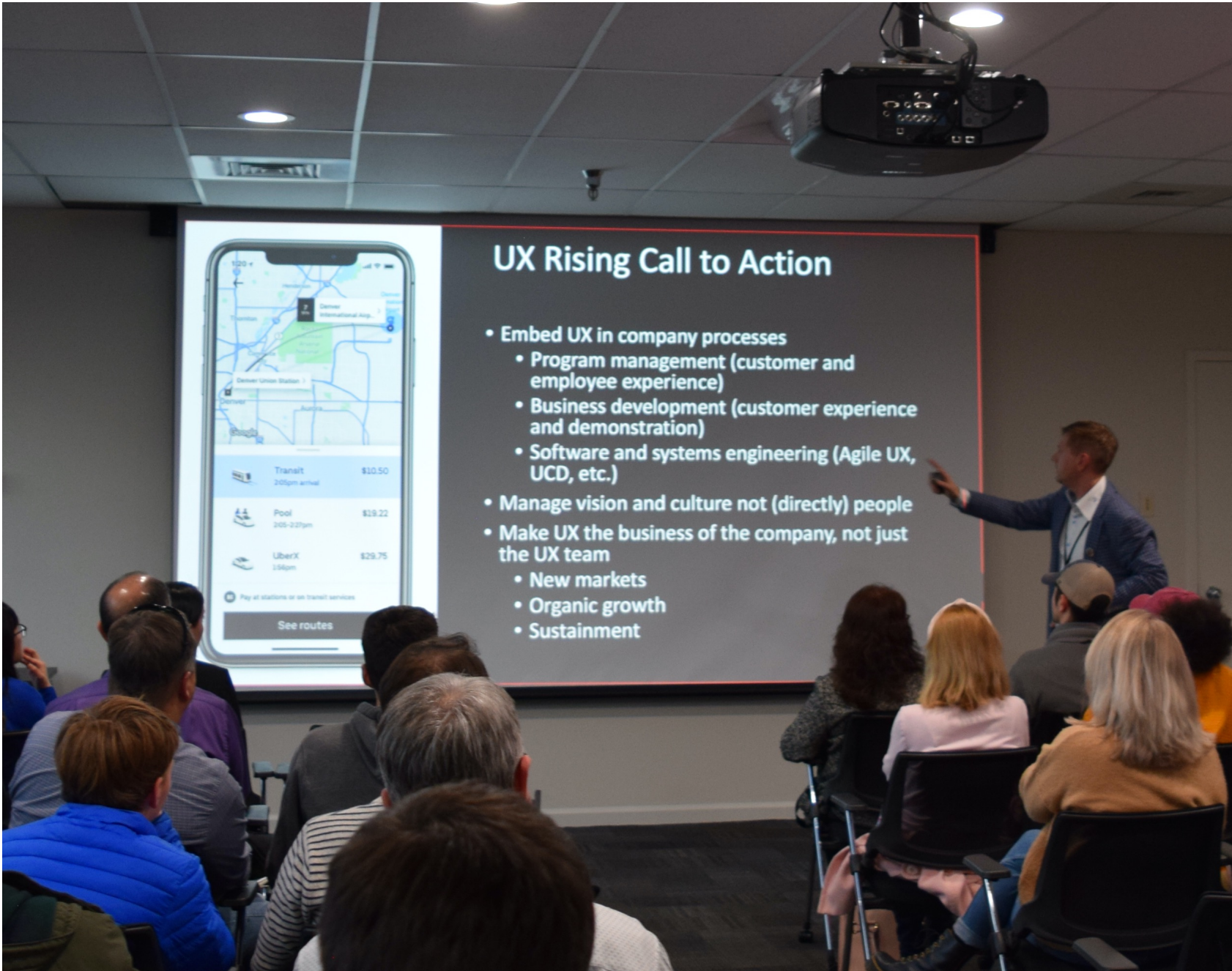
TRIDEUM UX
USER CENTERED DESIGN PROCESS

USER-CENTERED DESIGN

The idealized Trideum UX process below is displayed as a linear process. The true process is iterative, customized and tailored based on customer needs and desired outcomes.

Creative Discovery

Discover

- Business Case/Mission
- Contextual Inquiry
- Ethnographic Observation
- Interviews
- Focus Groups
- Academic Research

Define

- Vision
- Personas
- Journey Maps
- Task Models
- User Stories
- Environmental Profile

Design Thinking

Create

- Design Framework
- Wireframes
- Visual Design System
- Interaction Design
- Sketches and Storyboards
- Information Architecture
- Prototyping

Evaluate

- Heuristic Evaluations
- Usability Testing
- Card Sorts
- Surveys
- A/B Testing
- Expectancy Matrices

Iterative Production

Iterate

- Prototyping
- Pilot Testing
- Design Recommendations
- Research
- Design Actions

Implement

- Software Design
- Documentation
- Visual Style Guide
- Specifications
- Software Development

EVERY STEP INCLUDES: *Collaborative Brainstorming, Design Reviews, User Research & Feedback*

UX ARTIFACTS & METHODOLOGIES

USER PERSONAS

An empirical or hypothetical archetype personified into a character, typically defined by their goals.

PROJECT DELTA | User Profile - Program Manager (PM) Scenario: Contract award requiring substantial onboarding (20+ employees) plau delay in contract with ATP

> "I might be working on something at 3 AM, and I can't wait to be granted access by someone who's away on vacation - I need it now!"

> "If it takes me an hour and a half to sort through a report, it's useless."

Primary Goals:
Project Performance
Resource Management
Customer Relationships

Primary Tools
E MS Excel
- Current workaround for tracking and reporting
- We should not use/depend on this tool the way we are

P MS Project
- Industry and business standard
- Difficult to manage without expert knowledge

Wants/Needs
Immediate, accurate visibility

Answers (what does the information mean?)

Standardized organization

Performance accountability

Optimize effectiveness (ability to do job well)

Frustrations
⚠ Difficulty obtaining the information I need.
- Housed in disparate locations
- Culture of tribal knowledge for current toolset

⚠ Difficulty obtaining information when I need it.
- Contains sensitive data I am not authorized to access
- Communication (or lack thereof)

⚠ Relying on Excel to execute complex data reporting.
- Time-consuming
- Prone to error

⚠ Our company is growing, fast. (This is a good thing! But...)
- We are over-tasked
- We are always running behind

Opportunities
• Central location to collect and access info
• Cross-project reporting
  - Awareness of consequential reverberations
  - Integrate resource performance, project performance, and financials
• Sandbox for what-if analyses
  - Must be protected from actual data
• Tailorable to fit diverse project needs
  - All programs structured differently
• Accountability to process
• Standardization of reports

People I Rely On
Executives, Contracting, Client Contacts, Team Members, PM, Human Resources, Team Leads

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Shadow Persona

> "I work long hours, and am confined to a box for nearly 12 hours when deployed. I fly with the same person nearly every day, and we have gotten to know each other really well — flying habits, payload behaviors, and communication styles/intent."

PRIMARY ROLES
AIRCRAFT OPERATOR: As an AO, my goal is to get the aircraft in a position to support payload operations and then just monitor. May mark targets. Sometimes I go in Knobs and make 1-degree changes in either direction just to do something.

PAYLOAD OPERATOR: As a PO, I am continuously reviewing my feed and trying to get a better picture for our customer or unit – adjusting brightness, contrast, modes, and so on. If I lose a target for just a moment, our entire mission can be blown.

BLAIR | Shadow Operator

ABOUT ME
Soldier Type:	Regular Army
Job Title:	UAS Operator
Primary Role(s):	AO/PO
Age:	26-30
Readiness Level:	1
Experience:	5-8 years
System Experience:	7 years
Operation Frequency:	2-4 times a week
License(s):	None
Command Type:	TRADOC & FORSCOM

SECONDARY ROLES
NUMBER OF SECONDARY ROLES: 1, 2, 3+, None
DISTRIBUTION OF ROLES: IO, SO, MC, AC

PAIN-POINTS
⚠ Issues diagnosing, or recognizing a problem prior to a WCA appearance.
⚠ Issues, or difficulty, in tracking a moving target.
⚠ Issues, or difficulties, associated with the P@C functionality.
⚠ Accidental editing of routes of overlays on the map, and the inability to edit once submitted.
⚠ Inaccuracies with mark targets.
⚠ Issues in recognizing a new WCA, and knowing when it was received.
⚠ Information organization - for instance, knowing and finding the appropriate info.
⚠ Users experience confusion, or oversight, when making runway adjustments for approach.
⚠ Drawing tools being a secondary ribbon menu that must be accessed.
⚠ Difficulty making an adjustment to overlays (i.e., removing or editing a point).

PRIMARY MISSIONS
Average Preflight Time: 45 minutes

✓ **SOAKING**
AO: Maneuver aircraft into a position that allows the PO to get a clear picture. May mark targets.
PO: Attempts to mark targets in order of intended progression, or label them clearly for easy movement between targets. May use P@C from target list to slew payload. Monitor to see if track is breaking, or if aircraft is about to obscure video so the zoom level can be adjusted or go into inertial to minimize impact.

✓ **ROUTE RECON**
AO: Support the PO in scanning and data mapping or collection. Primarily fly Knobs or Points Nav. May rely on drawing tools.
PO: Collect data to create payload products, including pictures of areas that could be used to form a more complete or comparative view when combined.

✓ **WIDE AREA SEARCH**
AO: Maneuver aircraft into a position that allows the PO to get a clear picture. Knobs or Points Nav may be used.
PO: Will rely on P@C but after receiving grid callout so the sensor payload directional indicator can be used for orientation (for both operators). Manually scans each section of a designated area in inertial mode.
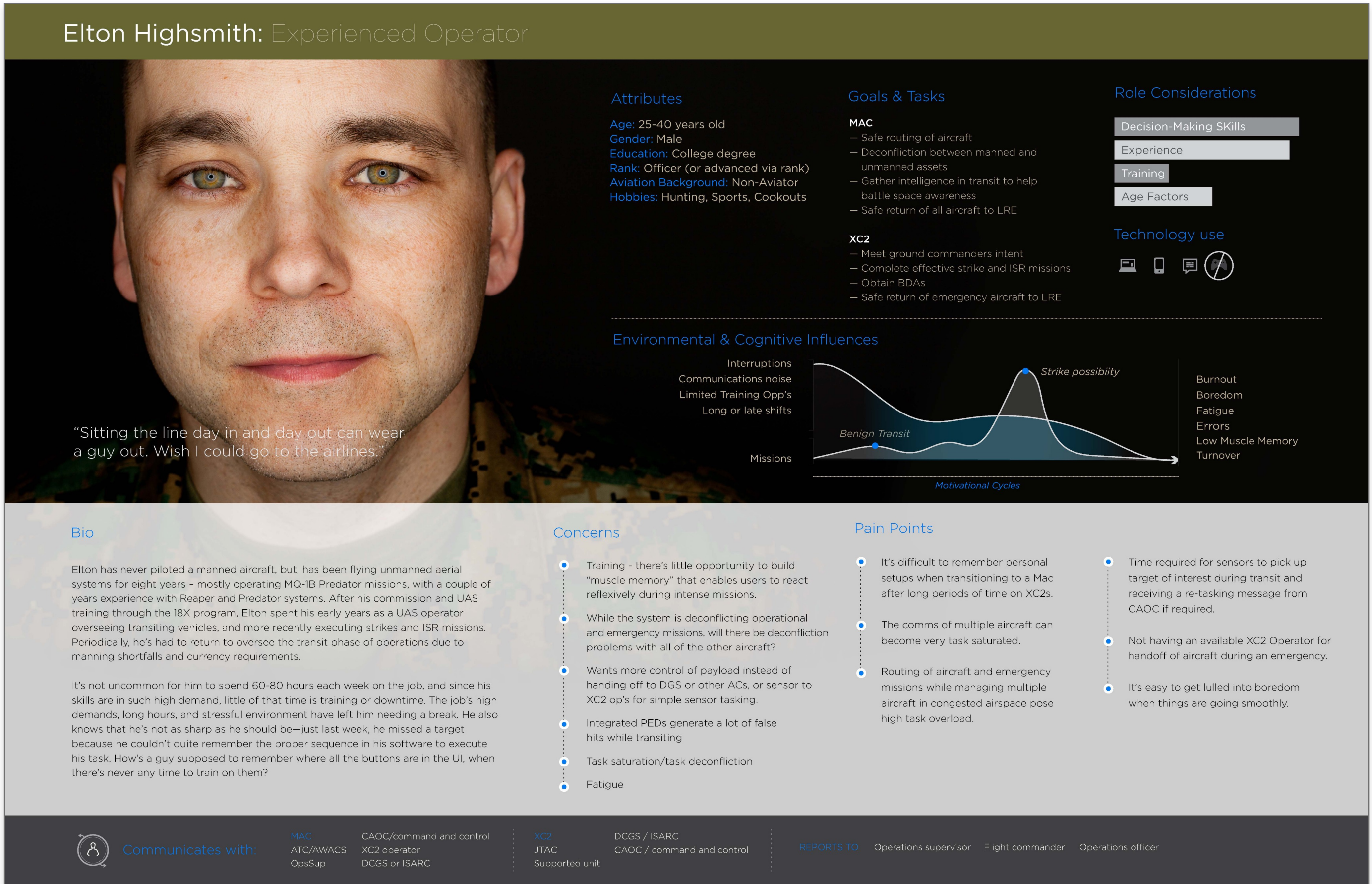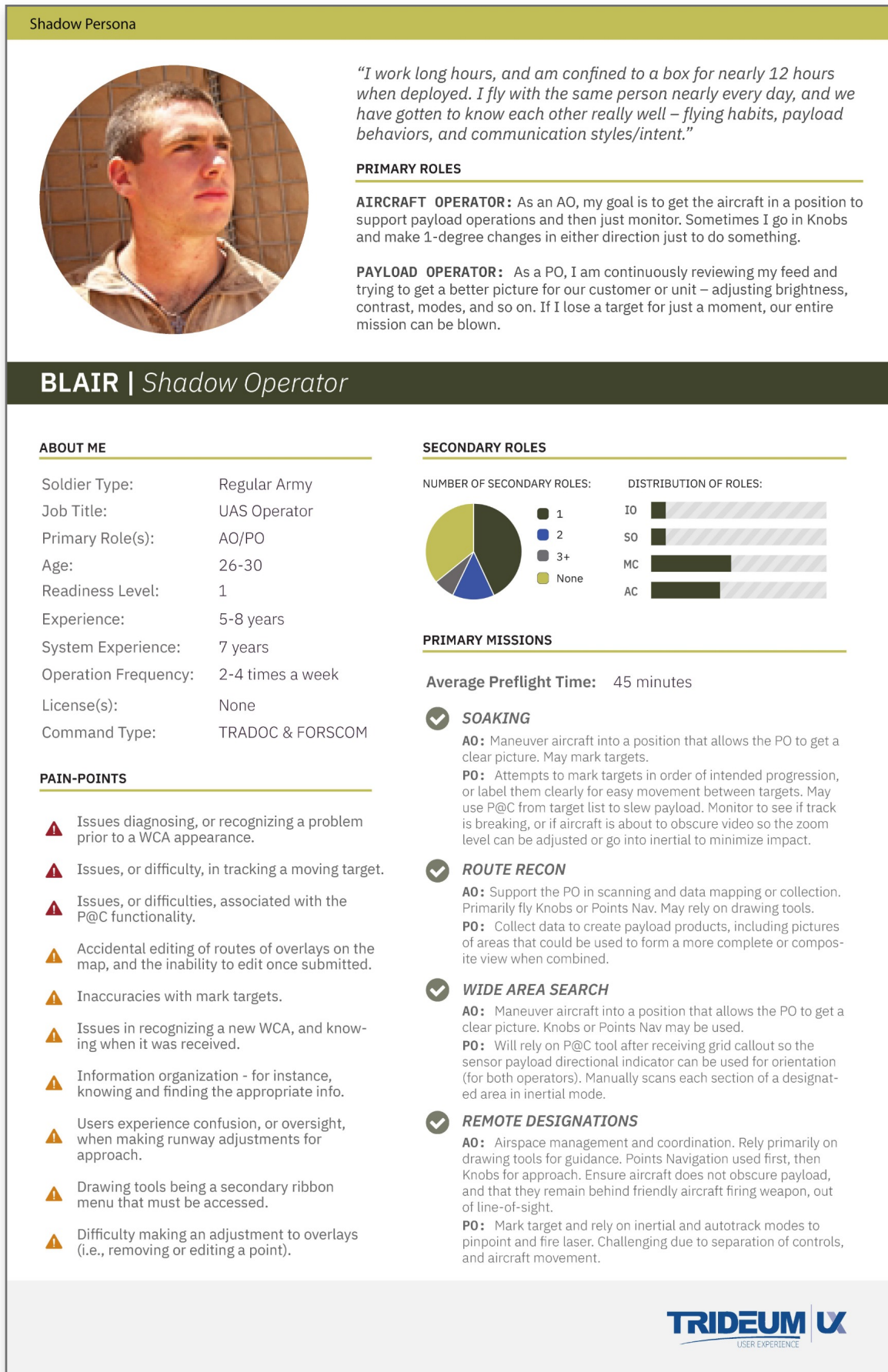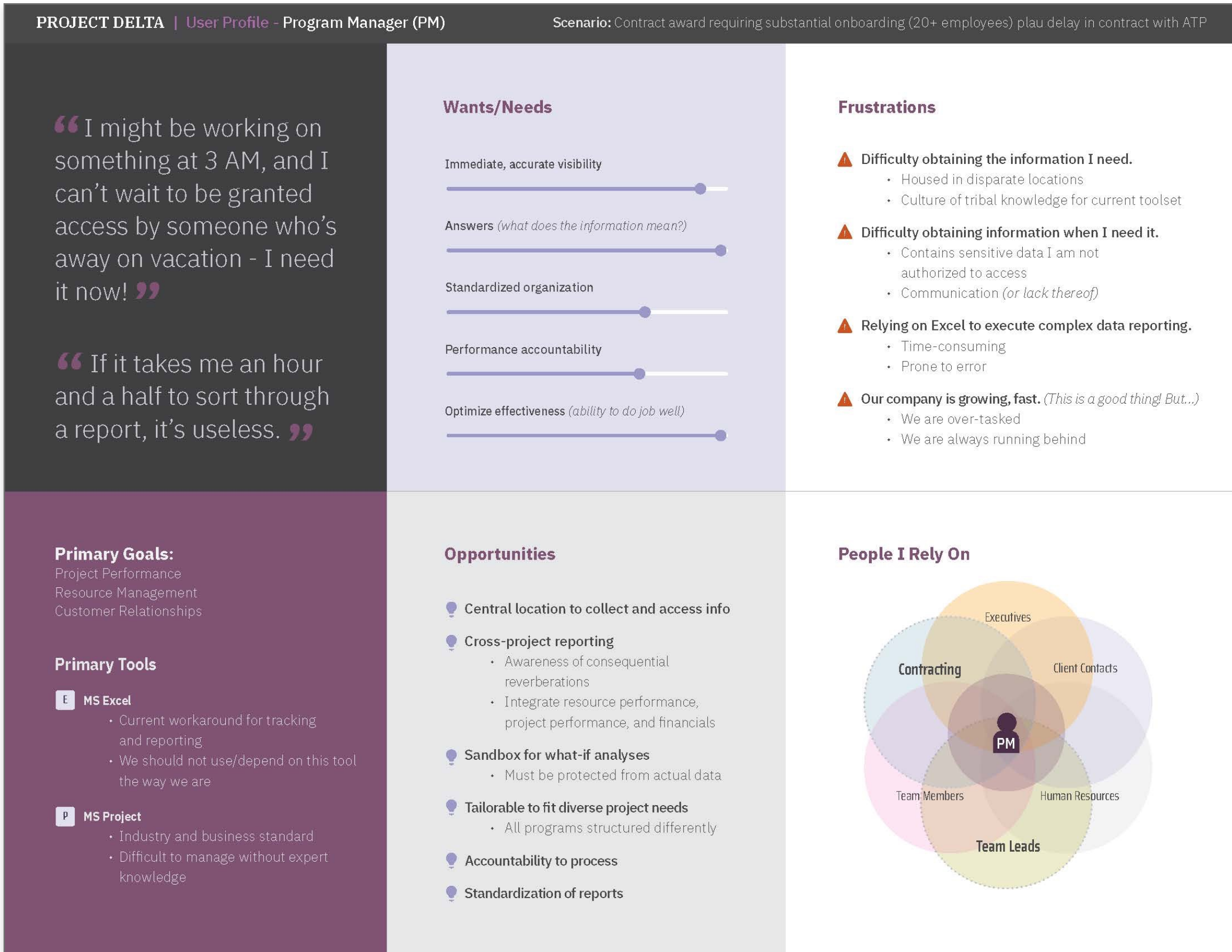
✓ **REMOTE DESIGNATIONS**
AO: Airspace management and coordination. Rely primarily on drawing tools for guidance. Points Navigation used first, then Knobs for approach. Ensure aircraft does not obscure payload, and that they remain behind friendly aircraft firing weapon, out of line-of-sight.
PO: Mark target and rely on inertial and autotrack modes to pinpoint and fire laser. Challenging due to separation of controls, and aircraft movement.

TRIDEUM UX

Elton Highsmith: Experienced Operator

> "Sitting the line day in and day out can wear a guy out. Wish I could go to the airlines."

Attributes
Age: 25-40 years old
Gender: Male
Education: College degree
Rank: Officer (or advanced via rank)
Aviation Background: Non-Aviator
Hobbies: Hunting, Sports, Cookouts

Goals & Tasks
MAC
- Safe routing of aircraft
- Deconfliction between manned and unmanned assets
- Gather intelligence in transit to help battle space awareness
- Safe return of all aircraft to LRE

XC2
- Meet ground commanders intent
- Complete effective strike and ISR missions
- Obtain BDAs
- Safe return of emergency aircraft to LRE

Role Considerations
Decision-Making Skills
Experience
Training
Age Factors

Technology use

Environmental & Cognitive Influences
Interruptions
Communications noise
Limited Training Opp's
Long or late shifts

Missions

Strike possibility
Benign Transit
Motivational Cycles

Burnout
Boredom
Fatigue
Errors
Low Muscle Memory
Turnover

Bio
Elton has never piloted a manned aircraft, but, has been flying unmanned aerial systems for eight years – mostly operating MQ-1B Predator missions, with a couple of years experience with Reaper and Predator systems. After his commission and UAS training through the 18X program, Elton spent his early years as a UAS operator overseeing transiting vehicles, and more recently executing strikes and ISR missions. Periodically, he's had to return to oversee the transit phase of operations due to manning shortfalls and currency requirements.

It's not uncommon for him to spend 60-80 hours each week on the job, and since his skills are in such high demand, little of that time is training or downtime. The job's high demands, long hours, and stressful environment have left him needing a break. He also knows that he's not as sharp as he should be—just last week, he missed a target because he couldn't quite remember the proper sequence in his software to execute his task. How's a guy supposed to remember where all the buttons are in the UI, when there's never any time to train on them?

Concerns
• Training - there's little opportunity to build "muscle memory" that enables users to react reflexively during intense missions.
• While the system is deconflicting operational and emergency missions, will there be deconfliction problems with all of the other aircraft?
• Wants more control of payload instead of handing off to DGS or other ACs, or sensor to XC2 op's for simple sensor tasking.
• Integrated PEDs generate a lot of false hits while transiting
• Task saturation/task deconfliction
• Fatigue

Pain Points
• It's difficult to remember personal setups when transitioning to a Mac after long periods of time on XC2s.
• The comms of multiple aircraft can become very task saturated.
• Routing of aircraft and emergency missions while managing multiple aircraft in congested airspace pose high task overload.

• Time required for sensors to pick up target of interest during transit and receiving a re-tasking message from CAOC if required.
• Not having an available XC2 Operator for handoff of aircraft during an emergency.
• It's easy to get lulled into boredom when things are going smoothly.

Communicates with: MAC ATC/AWACS OpsSup CAOC/command and control XC2 operator DGCS or ISARC — JTAC Supported unit — DCGS / ISARC CAOC / command and control — Operations supervisor Flight commander Operations officer

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User personas are research artifacts and tools that help the design team and stakeholders build empathy with the user(s) of a product, and to keep the users' needs, motivations, and frustrations in the forefront throughout the UX process.

USER STORIES & REQUIREMENTS

A collection of short, specific components describing a system or service used to guide design and development

As a [USER]...	...I need...	...so that...		
Program Manager	to keep track of how much I've spent on ODCs (Overhead - such as for conferences)	I can plan ways to support employee morale such as with conferences or other incentives		
Program Manager	to compare my profitability **performance** to the **target profitability** on a single project	I know how profitable my program is		
Program Manager	to compare my profitability performance to the target profitability across multiple projects	I know how profitable my programs are	I can determine the level of cost for this adjustment	
	to show budget tracking to customer		I am have SA of project budget health	

Program Manager	to see my estimates versus actuals by **dollars**	I can see the variance between what I planned and what is being executed		

Program Manager	to see my estimates versus actuals by **dollars**	I can see the variance between what I planned and what is being executed	being executed	
			I can access the correct information based on my role and permissions	
Program Manager	to see my estimates versus actuals by **labor category** (LCAT)	I can see the variance between what I planned and what is being executed	I have a clear picture and insight into the programs I manage	
		Program Manager to view data across all programs I manage	I have a clear picture and insight across the programs I manage	

Whereas system requirements focus primarily on what elements are needed for the product or service to be successful, **user stories** offer a goal-oriented and user-centered view of these items, which help the team to stay connected with the user's perspective.

TASK MODELS

A visual representation of each step in a flow carried out to achieve a goal
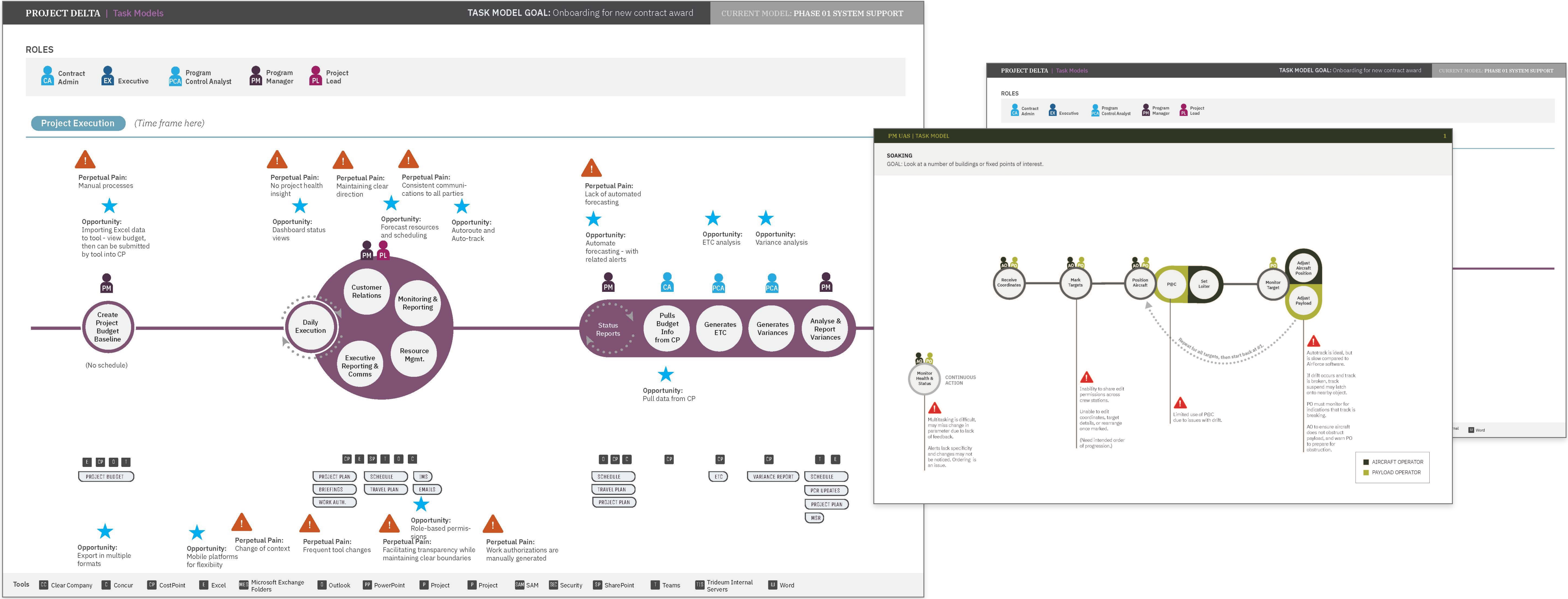
A **task model** identifies a specific task or goal and articulates the steps and decisions a user makes as they work toward that goal. Task models enable us to understand the process, identify issues or inefficiencies in current task flows, and may also be used to convey enhanced or optimized task flow approaches.

SERVICE BLUEPRINTS

A diagram outlining the steps in a process and all the components that make each step possible
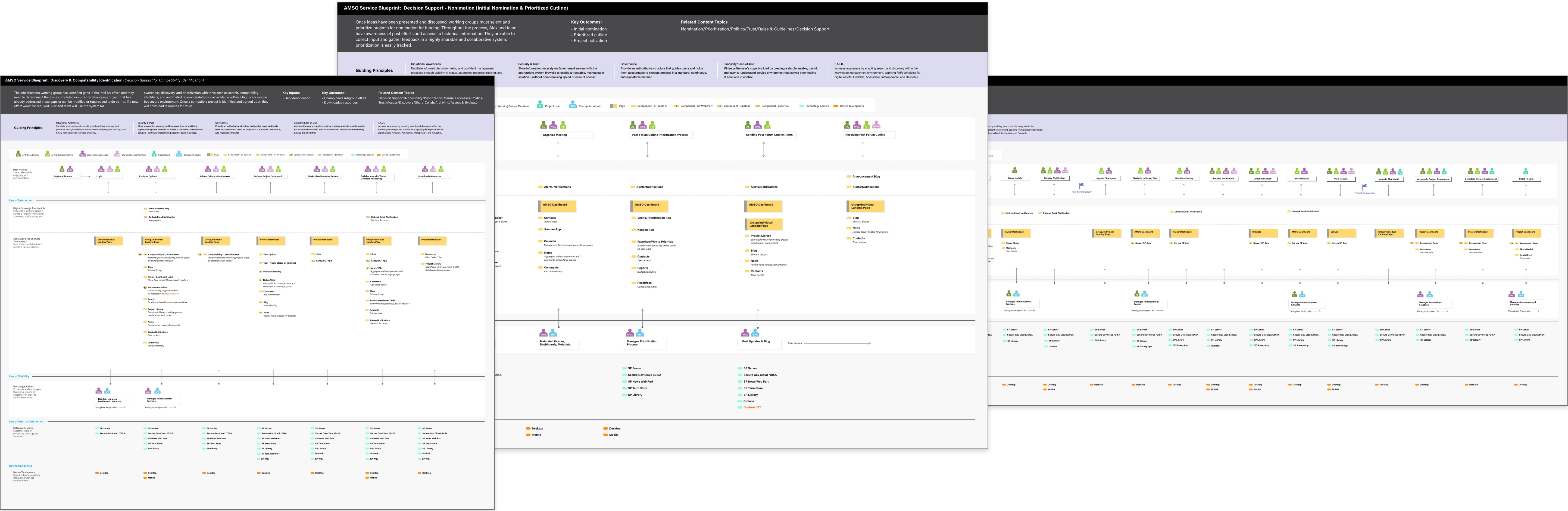
A **service blueprint** illustrates the entire process of service delivery – step by step – encompassing user-facing tasks as well as a look behind the scenes at the roles, touchpoints, and systems that drive the process as a whole. The service blueprint can be used to draw attention to inefficiencies in a current workflow as well as to assist in defining a new or modified service process.

DESIGN REVIEWS

A meeting between the UX team and stakeholders for the purpose of revision or approval of deliverables.
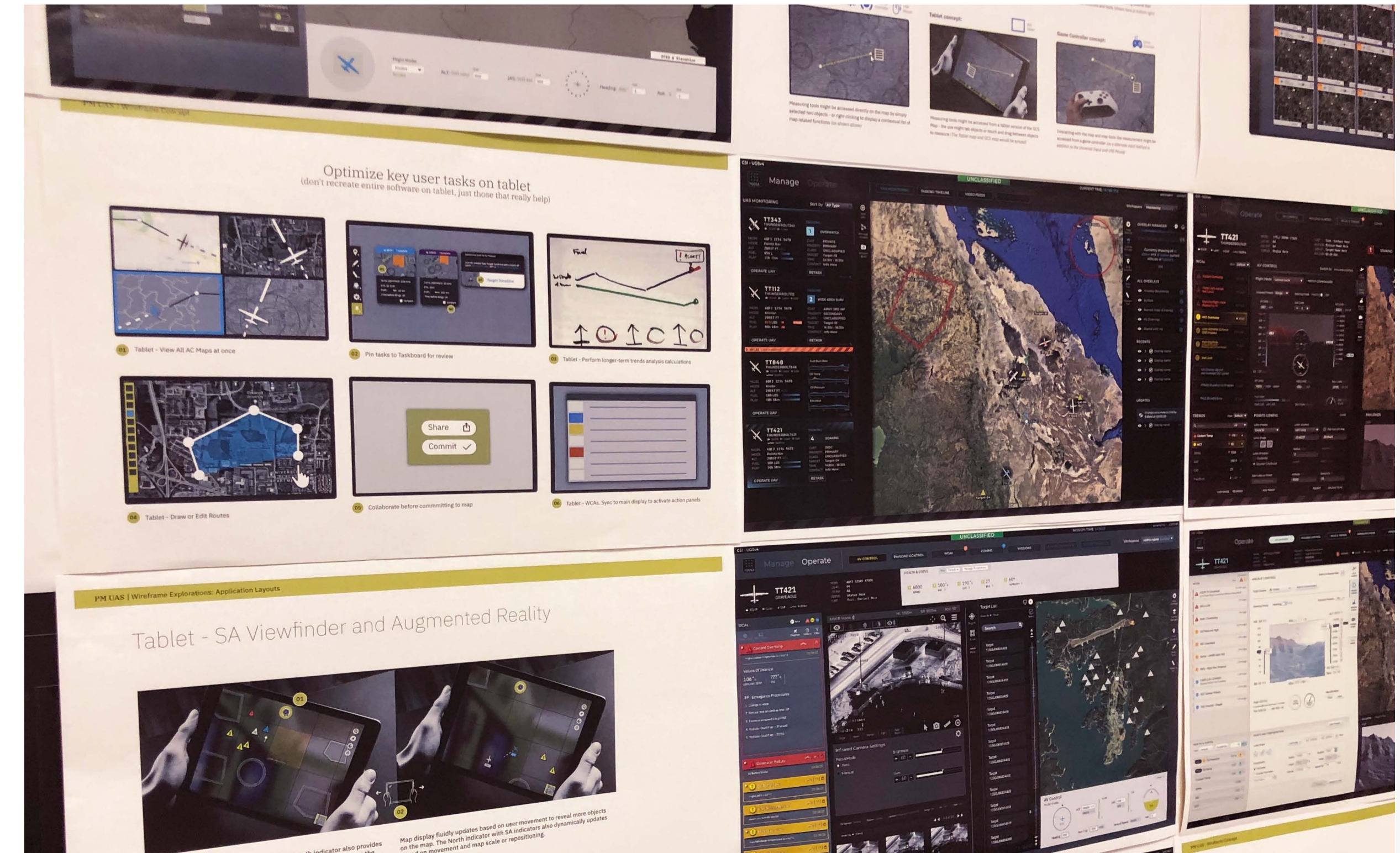
The **design review** may include presentations of completed work and/or discussion of drafts in progress. It is an occasion for the UX team to provide updates and allow stakeholders to ask questions, identify challenges, and provide insights as the group comes to a shared understanding of the proposed solution.

PROTOTYPES

A simulated version of a product used for testing and evaluation
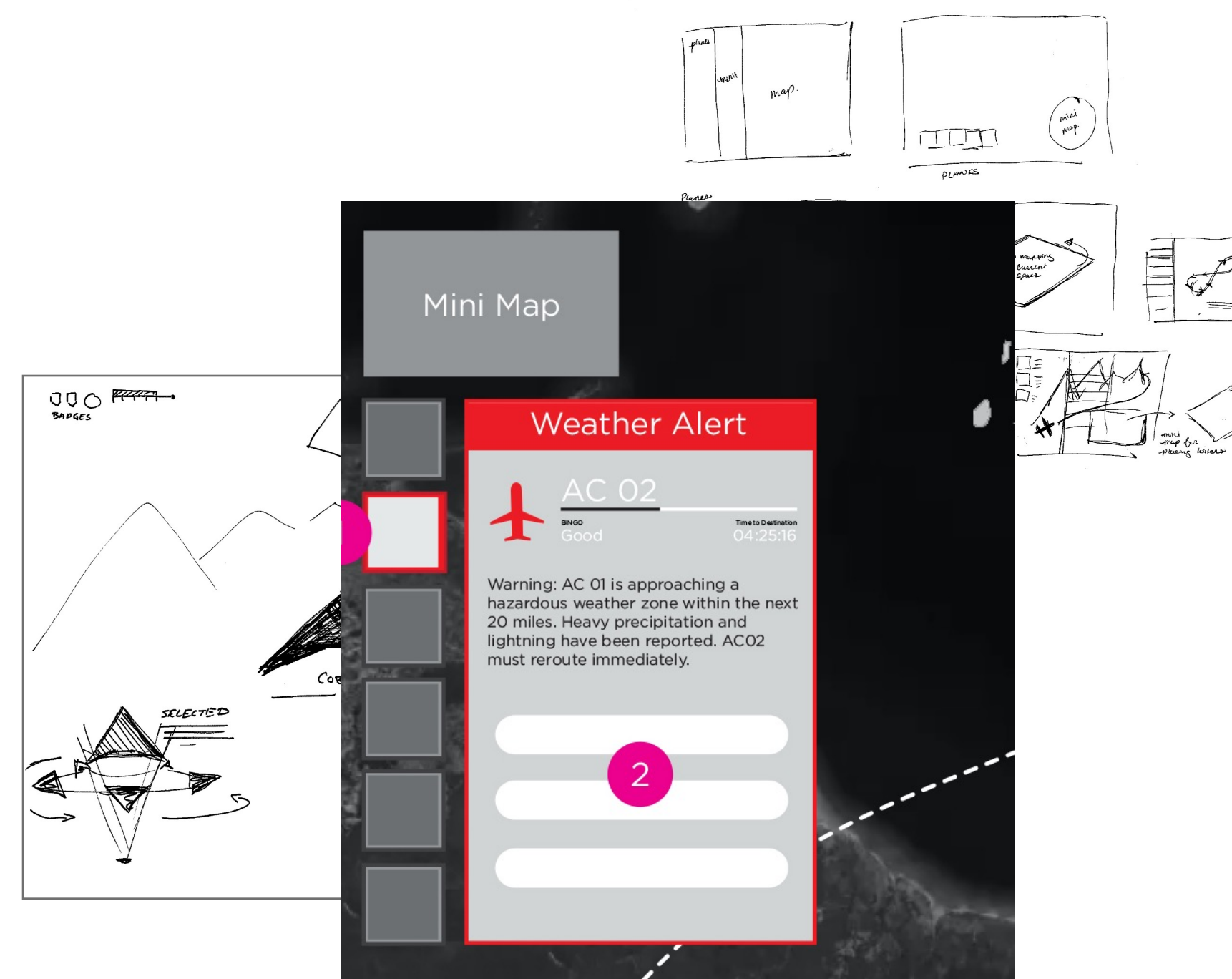
Low Fidelity

High Fidelity
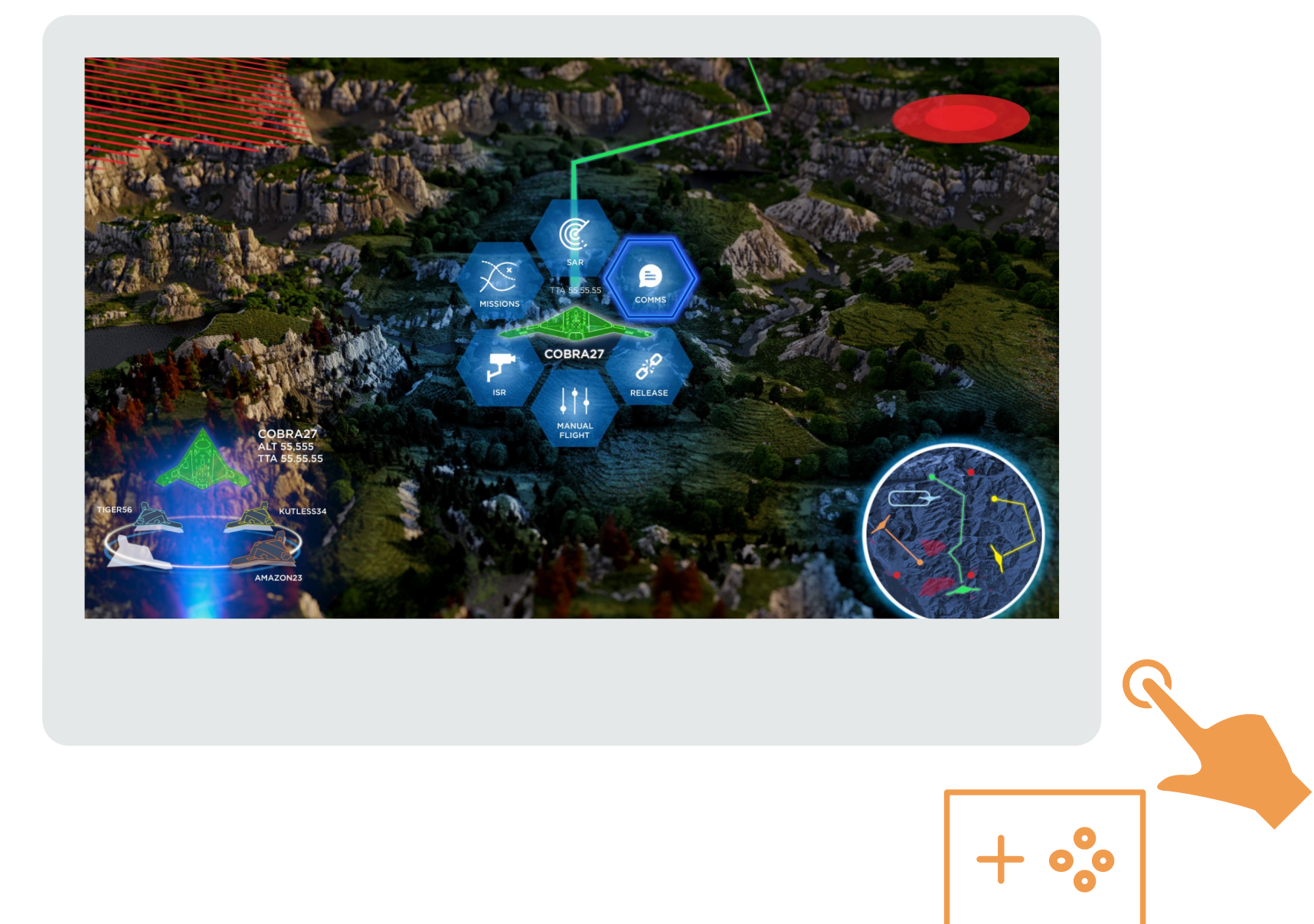
Highest Fidelity

Prototypes can range from sketches on paper to high-fidelity interactive mockups; they serve to represent designs and are typically used to assess interactions and collect usability feedback for iteration prior to a full development effort.
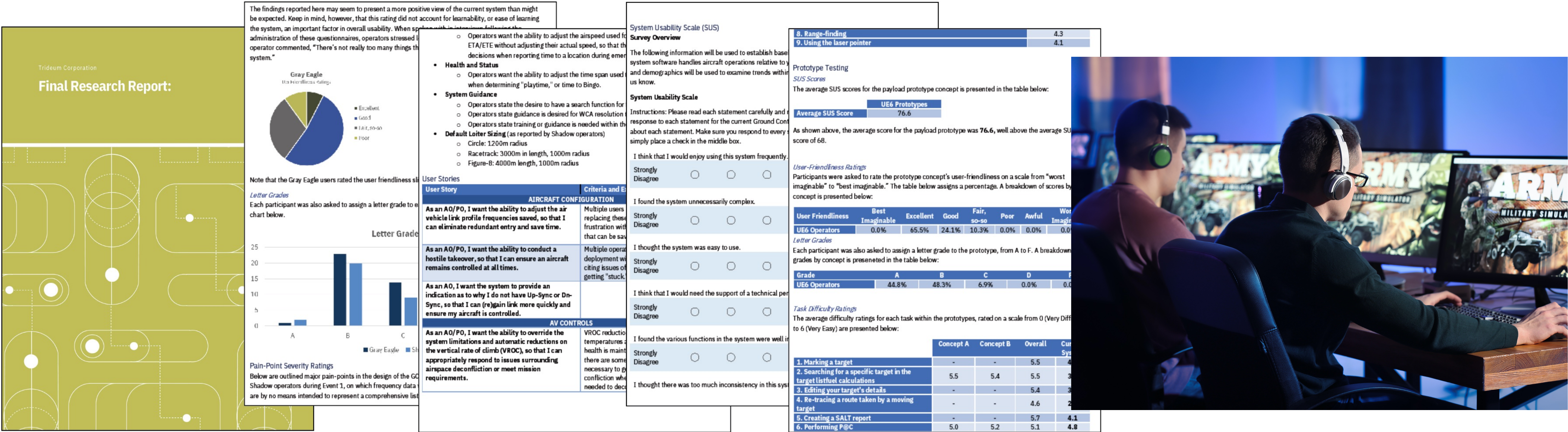
Information discovery and usability testing can occur throughout the UX process, dependent upon access to users and availability of resources. When these activities require special equipment or travel, or are subject to time constraints, they may be structured more formally as a "**user event**." These events typically range from a few day to a week at a time, and provide an opportunity for the UX team and stakeholders to get a more intimate view into users' behaviors within their natural environment – while gathering a large volume of data.

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