

# Issue #29: Needs Assessment Tool

**Repository:** CherrelleTucker/codesign-toolkit **URL:**

<https://github.com/CherrelleTucker/codesign-toolkit/issues/29> **Author:** @CherrelleTucker

**State:** open **Labels:**  users-stakeholders,  phase-discovery,  difficulty-intermediate

**Assignees:** None

**Created:** 2025-11-14T08:54:47Z **Last Updated in GitHub:** 2025-11-17T05:48:06Z **Worksheet**

**Version:** 2025-11-17T05:48:14.865Z

---

## Needs Assessment Tool

### **Systematic Approach to Understanding User Problems and Requirements**

**Tool Category:** Users & Stakeholders | **Phase:** Discovery | **Difficulty:**  Intermediate

Conduct comprehensive assessment of user needs, current workflows, and solution requirements to ensure your Earth observation solution addresses real problems effectively.

---

#### Tool Summary Card

Attribute	Value
 <b>Purpose</b>	Systematically identify and validate user needs, gaps, and requirements before solution design
 <b>Time Required</b>	1-2 weeks data collection + 4-6 hours analysis + 2-3 hours validation with users
 <b>Participants</b>	5-8 people: project lead + user researcher + 3-5 representative users from different roles
 <b>Outputs</b>	Needs assessment report, prioritized requirements list, user workflow analysis, gap analysis
 <b>Frequency</b>	Once per project, updated when scope changes significantly or new user groups join
 <b>Materials</b>	Interview guide, survey platform, workflow mapping tools, analysis templates

---

#### When to Use This Tool

##### Essential For:

- New Earth observation solution projects starting from user problems
- Existing solutions being redesigned or significantly enhanced
- Multi-user projects where different groups may have different needs

- Projects where user requirements are unclear or assumptions need validation

#### **Consider Simpler Approaches When:**

- Well-understood problems with clear, documented requirements
- Single-user or very small team solutions
- Rapid prototyping phases where broad exploration is more valuable

#### **Use Before:**

- Technical architecture decisions are finalized
  - Major development effort begins
  - Resource allocation and timeline commitments are made
- 
- 

## **Needs Assessment Framework**

### **Assessment Dimensions**

#### **Current State Analysis:**

- **Existing Workflows:** How users currently accomplish their work
- **Tools and Systems:** What they use now and how well it works
- **Pain Points:** Frustrations, inefficiencies, and barriers
- **Workarounds:** Creative solutions they've developed
- **Information Sources:** Where they get data and how they use it

#### **Future State Vision:**

- **Desired Outcomes:** What success looks like to users
- **Workflow Improvements:** How processes could be better
- **Information Needs:** What data would help them make better decisions
- **Capability Gaps:** What they wish they could do but can't
- **Integration Requirements:** How solutions need to fit with existing systems

#### **Contextual Factors:**

- **Organizational Constraints:** Policies, procedures, and limitations
- **Technical Environment:** Infrastructure, security, and compatibility
- **Resource Limitations:** Time, budget, and skill constraints
- **Stakeholder Dynamics:** Who influences decisions and adoption

### **Data Collection Methods**

#### **User Interviews (Primary Method):**

- **Individual Interviews:** Deep dive with key users (60-90 minutes each)
- **Group Interviews:** Explore team dynamics and shared challenges (90-120 minutes)
- **Walk-through Sessions:** Observe current workflows in action (2-3 hours)
- **Follow-up Interviews:** Validate findings and explore solutions (30-45 minutes)

#### **Surveys and Questionnaires:**

- **Broad User Survey:** Quantitative data from larger user population
- **Workflow Assessment:** Detailed mapping of current processes
- **Priority Ranking:** User validation of identified needs
- **Technology Readiness:** Assessment of technical capabilities and constraints

## **Observational Methods:**

- **Workflow Shadowing:** Direct observation of user work
  - **Task Analysis:** Breaking down complex processes into steps
  - **Environment Assessment:** Understanding physical and technical context
  - **Artifact Review:** Examining current outputs, reports, and tools
- 

## **Interview Guide Templates**

### **Individual User Interview Script**

#### **Opening (5 minutes):**

Introduction and Purpose:

"Thank you for taking time to speak with us. We're working on [solution description] and want to understand how you currently [relevant work area] so we can design something that truly helps your work. This conversation should take about [time], and everything you share will help us build something more useful."

Permission and Recording:

"Is it okay if we record this conversation for our notes? Only our team will access the recording, and we can stop anytime if you prefer."

#### **Current State Exploration (25-30 minutes):**

##### **Workflow Understanding:**

- "Walk me through a typical [relevant work process] from start to finish."
- "What does a good day vs. a challenging day look like in your work?"
- "What information do you need to make decisions in [specific area]?"
- "How do you currently get that information?"

##### **Tools and Systems:**

- "What tools or systems do you use for [specific tasks]?"
- "How well do these tools work for you? What works well? What doesn't?"
- "Tell me about a time when your current tools couldn't do what you needed."
- "What workarounds have you developed to get your work done?"

##### **Pain Points and Challenges:**

- "What takes the most time in your current process?"
- "What's the most frustrating part of [specific workflow]?"
- "When do you feel like you're missing information you need?"
- "What would you change about how you currently work if you could?"

#### **Future State Vision (20-25 minutes):**

##### **Ideal Outcomes:**

- "If we could wave a magic wand, what would your ideal [work process] look like?"
- "What would 'success' look like for a solution in this area?"
- "How would you know if a new tool was actually helping your work?"

##### **Specific Needs:**

- "What information do you wish you had access to?"
- "What tasks would you love to automate or simplify?"
- "How important is it that a new solution works with [existing systems]?"
- "What would make you excited to use a new solution?"

#### **Context and Constraints (8-10 minutes):**

##### **Organizational Factors:**

- "What organizational policies or procedures would affect using a new solution?"
- "Who else would need to be involved in adopting new tools?"
- "What approval processes exist for new technology?"

##### **Technical Environment:**

- "What are the technical requirements or limitations in your environment?"
- "How comfortable are you and your team with learning new technology?"

#### **Closing (2 minutes):**

Validation and Next Steps:

"Is there anything important we haven't covered about your work in this area?"

"Who else should we talk to who has different perspectives on these challenges?"

"Would you be interested in seeing early concepts as we develop solutions?"

## **Group Interview Facilitation Guide**

#### **Session Setup (10 minutes):**

- Introductions and role clarification
- Ground rules for discussion (equal participation, build on ideas, etc.)
- Overview of session goals and agenda

#### **Current State Mapping (30-40 minutes):**

##### **Collaborative Workflow Mapping:**

1. "Let's map out how [process] works across your team"
2. "Who does what? Where do handoffs happen?"
3. "Where do things typically get stuck or delayed?"
4. "What information needs to flow between people?"

##### **Shared Challenges Discussion:**

- "What challenges does everyone experience?"
- "Where do individual differences create coordination problems?"
- "How do you currently resolve conflicts or disagreements?"

#### **Future State Visioning (30-40 minutes):**

##### **Collaborative Improvement Brainstorming:**

- "If we could redesign this process, what would we change?"
- "What would make collaboration easier?"
- "How could better information sharing help?"

##### **Priority Setting:**

- "Which improvements would have the biggest impact?"
- "What changes would be easiest for everyone to adopt?"
- "Where should we focus first?"

#### **Wrap-up and Validation (10 minutes):**

- Summary of key themes
  - Validation of understanding
  - Next steps and follow-up
- 
- 

## **Analysis Framework**

### **Needs Analysis Template**

#### **User Need Profile:**

Need Category: [Functional/Information/Process/Integration]

Description: [Clear statement of the need]

#### Current Situation:

- How users currently handle this: [Current approach]
- Pain points: [Specific problems or inefficiencies]
- Workarounds: [How users adapt or compensate]

#### Desired Future State:

- User vision: [What users want to be able to do]
- Success criteria: [How they'd measure improvement]
- Benefits expected: [Value they anticipate]

#### Context:

- Frequency: [How often this need arises]
- Criticality: [Impact on user success]
- User segments affected: [Who experiences this need]
- Dependencies: [What else must be in place]

#### Requirements Implications:

- Functional requirements: [What solution must do]
- Performance requirements: [Speed, accuracy, reliability needs]
- Integration requirements: [System connections needed]
- Usability requirements: [User experience expectations]

## **Gap Analysis Matrix**

#### **Current vs. Desired State Comparison:**

<b>Workflow Area</b>	<b>Current Capability</b>	<b>Desired Capability</b>	<b>Gap Size</b>	<b>Impact</b>
Data Collection	[Current approach]	[Desired improvement]	[Large/Medium/Small]	[High/Medium/Low]

Analysis Process	[Current approach]	[Desired improvement]	[Large/Medium/Small]	[High/Medium/Low]
Decision Making	[Current approach]	[Desired improvement]	[Large/Medium/Small]	[High/Medium/Low]
Communication	[Current approach]	[Desired improvement]	[Large/Medium/Small]	[High/Medium/Low]
Documentation	[Current approach]	[Desired improvement]	[Large/Medium/Small]	[High/Medium/Low]

## Requirements Prioritization Framework

### Priority Scoring Criteria:

- **User Impact:** How much this improves user outcomes (1-5)
- **User Frequency:** How often users need this capability (1-5)
- **Current Pain:** How problematic the current situation is (1-5)
- **Feasibility:** How achievable this is technically (1-5)
- **Strategic Alignment:** How well this fits organizational goals (1-5)

### Priority Categories:

- **Must Have:** [Score >20] Critical for solution success
- **Should Have:** [Score 15-19] Important for user satisfaction
- **Could Have:** [Score 10-14] Valuable but not essential
- **Won't Have (This Phase):** [Score <10] Future consideration

## User Persona Development

### Primary User Persona Template:

Persona Name: [Representative name]

Role: [Job title and primary responsibilities]

#### Background:

- Experience level: [Years in role, technical expertise]
- Organization type: [Agency, research, operational, etc.]
- Team context: [Individual contributor, team lead, etc.]

#### Goals and Motivations:

- Primary goals: [What they're trying to accomplish]
- Success metrics: [How they measure their effectiveness]
- Pain points: [Current frustrations and challenges]

#### Workflow Characteristics:

- Typical tasks: [Daily and weekly activities]
- Information needs: [Data types and timing requirements]
- Decision patterns: [How they make choices]
- Collaboration needs: [Who they work with and how]

#### Technology Context:

- Current tools: [Systems and applications they use]

- Technical comfort: [Skill level and learning preferences]
- Constraints: [Organizational or technical limitations]

#### Solution Implications:

- Key requirements: [What solution must provide for this user]
- Adoption factors: [What would drive their use of solution]
- Success scenarios: [How solution would improve their work]

## Validation and Documentation

### Findings Validation Process

#### User Validation Sessions:

1. **Findings Presentation:** Share analysis with interview participants
2. **Accuracy Check:** Validate that findings reflect their input correctly
3. **Priority Validation:** Confirm that prioritization makes sense to users
4. **Gap Identification:** Check for missed needs or misunderstood requirements
5. **Solution Direction:** Test early solution concepts against identified needs

#### Stakeholder Review Process:

1. **Internal Team Review:** Ensure findings align with project goals
2. **Leadership Briefing:** Present key findings to decision makers
3. **Technical Feasibility Check:** Validate requirements with development team
4. **Resource Planning:** Assess requirements against available resources

### Needs Assessment Report Template

#### Executive Summary:

Needs Assessment Summary: [Project Name]  
Assessment Period: [Date range]  
Participants: [Number and types of users involved]

#### Key Findings:

- Primary user needs: [Top 3-5 critical needs identified]
- Major pain points: [Current situation problems]
- Success criteria: [How users define solution success]
- Critical requirements: [Must-have solution capabilities]

#### Recommendations:

- Solution focus areas: [Where to concentrate development effort]
- Priority features: [Capabilities to build first]
- Success metrics: [How to measure solution effectiveness]
- Next steps: [Recommended actions for project team]

### Detailed Findings:

#### User Context:

- User roles and responsibilities
- Current workflow descriptions
- Organizational environment factors

- Technical environment constraints

#### **Needs Analysis:**

- Functional needs (what users need to do)
- Information needs (what data they need)
- Process needs (how work should flow)
- Integration needs (system connections required)

#### **Gap Analysis:**

- Current state limitations
- Desired future capabilities
- Priority improvement areas
- Resource requirements for addressing gaps

#### **Requirements Specification:**

- Functional requirements by priority
- Performance and quality requirements
- Integration and compatibility requirements
- User experience requirements

#### **Success Framework:**

- User success criteria
- Solution adoption indicators
- Performance metrics
- Value measurement approach

### **Handoff to Design Team**

#### **Requirements Package:**

- Prioritized requirements list
- User personas and scenarios
- Current state workflow maps
- Success criteria and metrics
- Constraints and considerations

#### **Design Guidance:**

- Key user insights for design decisions
- Critical user experience considerations
- Integration and workflow requirements
- Performance and usability expectations

---

## **Integration with Other Tools**

#### **This Needs Assessment Builds On:**

-  **Stakeholder Mapping Workshop** - Identification of user types and roles to include in assessment
-  **Discovery Interview Blueprint** - Interview techniques and question frameworks

#### **Information Sources:**

-  **Information Flow Analysis** - Understanding of current data and decision processes
-  **Context Analysis Framework** - Organizational and technical environment factors

#### This Needs Assessment Enables:

-  **Requirements Definition Canvas** - Validated user requirements and success criteria
-  **User Journey Mapping Kit** - Understanding of user workflows and pain points
-  **Co-Design Workshop Facilitator Manual** - User needs context for collaborative design sessions

#### This Assessment Informs:

-  **Solution Implementation Plan** - User requirements inform implementation scope and priorities
-  **Training Material Development Kit** - Understanding of user skills and learning needs
-  **Adoption Monitoring Dashboard** - Success criteria and adoption indicators

#### External Tool Integration:

- **Survey Platforms:** Online questionnaires and feedback collection
- **Interview Recording:** Session documentation and analysis
- **Workflow Mapping:** Process visualization and analysis tools
- **Requirements Management:** Tracking and prioritization systems

---

## Source Attribution

#### Primary Sources:

- **Solution Co-Development Toolkit Narrative** - User needs assessment and requirements validation approaches
- **SERVIR Service Planning Toolkit 2021** - Stakeholder engagement and needs identification methods

#### Supporting Sources:

- **NSITE Solution Project Requirements and Expectations** - User-centered requirements gathering standards
- **MSFC Coordination on Solutions Co-Development Toolkit** - Multi-stakeholder needs assessment coordination

#### Methodology Foundation:

- User experience research methodologies from human-computer interaction literature
- Requirements engineering best practices from software development
- Participatory design approaches for stakeholder-centered solution development

---

## Community Discussion

#### Share your needs assessment experience:

- What techniques have been most effective for uncovering hidden user needs?
- How do you balance comprehensive assessment with project timeline pressures?
- What approaches work best for validating needs across diverse user groups?
- How do you handle conflicting needs or requirements from different stakeholders?

**Tool improvements:**

- What additional assessment methods would be valuable for Earth observation contexts?
- How do you adapt needs assessment for users with varying technical expertise?
- What validation techniques have been most effective for confirming assessment accuracy?

---

 **Tool Maintainer:** @your-username |  **Last Updated:** [Today's Date] |  **Version:** 1.0