SDI ScienceDocs Inc.
Research • Funding • AI Strategy • Est. 2004

Problem Exploration Checklist

A practical worksheet for testing whether a problem is real, urgent, and worth solving

How to use this tool

Use this worksheet before committing major time, grant-writing effort, product development, or commercialization resources to a new idea. The goal is to understand the problem first, before locking into a specific solution.

Complete the sections with evidence, not just opinions. A strong problem exploration process should reveal who experiences the problem, how often it occurs, what it costs, how people solve it today, and why current approaches are insufficient.

This checklist is designed for scientific founders, university spinouts, startups, commercialization teams, AI/technology organizations, and operational improvement projects.

1. Problem Snapshot

Prompt	Response / notes
Working problem statement	
Who experiences this problem?	
Where does the problem occur? (lab, clinic, factory, workflow, market, university, agency, customer environment)	
When does it occur? How often?	
Why does it matter now?	
What happens if the problem is not solved?	

2. Problem Definition Checklist

Problem exploration question	Yes	Partial	No	Notes / evidence needed
The problem can be described in one clear sentence without mentioning the proposed solution.	[ ]	[ ]	[ ]	
The problem affects a specific user, buyer,	[ ]	[ ]	[ ]	

Problem exploration question	Yes	Partial	No	Notes / evidence needed
organization, or stakeholder group.				
The problem creates measurable consequences such as cost, time, delay, risk, lost revenue, poor outcomes, or compliance burden.	[ ]	[ ]	[ ]	
The problem occurs often enough to justify a product, service, process change, grant project, or commercialization effort.	[ ]	[ ]	[ ]	
The team understands the difference between the user, buyer, decision-maker, and beneficiary.	[ ]	[ ]	[ ]	
The problem is connected to a real workflow, operating environment, or customer journey.	[ ]	[ ]	[ ]	
There is evidence that current alternatives are inadequate, inefficient, expensive, risky, or difficult to use.	[ ]	[ ]	[ ]	
The team has identified what information is still unknown and needs customer or stakeholder validation.	[ ]	[ ]	[ ]	

3. Target Users, Buyers, and Stakeholders

Stakeholder group	Likely pain or motivation	What they do today	Interview / evidence needed
Primary user			
Economic buyer / budget owner			
Decision-maker / approver			
Influencer / champion			
Regulator, compliance group, or institutional stakeholder			
Potential blocker or skeptic			

4. Current Alternatives and Workarounds

Alternative / workaround	Who uses it?	Limitations or pain points	Evidence to collect
Do nothing / tolerate the problem			
Manual workaround			
Existing software, tool, device, consultant, or service			
Internal process or spreadsheet-based approach			
Academic, clinical, operational, or policy workaround			

5. Evidence That the Problem Matters

Problem exploration question	Yes	Partial	No	Notes / evidence needed
At least 3-5 potential users or stakeholders have described the problem in their own words.	[ ]	[ ]	[ ]	

Problem exploration question	Yes	Partial	No	Notes / evidence needed
The problem creates a cost, risk, delay, compliance issue, safety issue, lost opportunity, or strategic barrier.	[ ]	[ ]	[ ]	
The problem appears in more than one customer, organization, research setting, or operational environment.	[ ]	[ ]	[ ]	
People already spend time, money, staff effort, or political capital trying to address the problem.	[ ]	[ ]	[ ]	
The problem is tied to external pressure such as funding requirements, regulation, market change, competition, workforce constraints, or technology adoption.	[ ]	[ ]	[ ]	
The team has early qualitative evidence, quantitative evidence, literature support, customer interviews, or operational data.	[ ]	[ ]	[ ]	

Evidence notes: quotes, data points, examples, references, or observations

6. Root Cause and Problem Depth

Layer	Prompt	Notes
Surface symptom	What people complain about first	
Underlying cause	Why the symptom occurs	
System or workflow driver	Process, staffing, policy, data, technology, market, incentive, or training factor	
Consequences	What the problem causes downstream	
Highest-risk assumption	The one assumption that could invalidate the opportunity	

7. Scientific, Technical, or Operational Basis

Prompt	Response / notes
What knowledge, discovery, technology, workflow insight, data asset, or operational expertise supports this problem area?	
Is the team uniquely positioned to understand or address the problem? Why?	
What technical, scientific, clinical, regulatory, or operational uncertainties remain?	
What proof-of-concept, prototype, analysis, pilot, or expert review would strengthen the case?	

8. Commercial and Funding Fit

Problem exploration question	Yes	Partial	No	Notes / evidence needed
The problem aligns with a definable market, customer segment, funding program, institutional need, or commercialization pathway.	[ ]	[ ]	[ ]	
The team can identify a plausible buyer,	[ ]	[ ]	[ ]	

Problem exploration question	Yes	Partial	No	Notes / evidence needed
payer, funder, partner, licensee, or adopting organization.				
The problem is important enough that someone may pay, fund, adopt, pilot, license, or partner to solve it.	[ ]	[ ]	[ ]	
The problem could support a grant, SBIR/STTR project, pilot program, paid service, licensing opportunity, product, or internal optimization project.	[ ]	[ ]	[ ]	
There is a credible path to demonstrating value within a realistic time frame.	[ ]	[ ]	[ ]	
The problem is not so broad that the team cannot define a focused first use case.	[ ]	[ ]	[ ]	

9. Differentiation and Competitive Pressure

Prompt	Response / notes
What solutions already exist?	
What do current solutions do well?	
What do current solutions fail to address?	
What would make a new approach meaningfully better?	
What evidence is needed to prove differentiation?	

10. Key Assumptions to Test

#	Assumption	Category	How to test it	Owner / due date
1		User need / buyer / technical / regulatory / market / funding / workflow		
2		User need / buyer / technical / regulatory / market / funding / workflow		
3		User need / buyer / technical / regulatory / market / funding / workflow		
4		User need / buyer / technical / regulatory / market / funding / workflow		
5		User need / buyer / technical / regulatory / market / funding / workflow		
6		User need / buyer / technical / regulatory / market / funding / workflow		

11. Problem Exploration Scorecard

Dimension	1 = Weak / unclear	2 = Developing	3 = Strong	Score	Notes
Problem clarity					
User / stakeholder specificity					
Evidence that the problem matters					
Strength of current pain or urgency					

Dimension	1 = Weak / unclear	2 = Developing	3 = Strong	Score	Notes
Weakness of current alternatives					
Commercial or funding pathway fit					
Team insight or unfair advantage					
Feasibility of next validation step					

Suggested interpretation: 8-12 = exploratory only; 13-18 = promising but needs validation; 19-24 = strong candidate for customer discovery, early landscape scan, or commercialization planning.

12. Next-Step Action Plan

Action area	Specific next step	Owner	Target date
Customer / stakeholder interviews to schedule			
Data, literature, or market evidence to collect			
Technical or scientific questions to test			
Commercialization or funding pathway to review			
Internal decision needed			
Go / no-go / revise decision date			

Decision summary: proceed, revise, pause, or stop

Need help applying this tool? ScienceDocs supports commercialization, change management, AI adoption, grant strategy, and operational optimization.