

# TCRLAS

## Technology Commercialization Readiness Level Assessment System

*A concise guide for investors, entrepreneurs, and technologists*

### 1. What TCRLAS Does

**TCRLAS answers one practical question:** How ready is a technology to become a sustainable commercial venture?

Unlike a technical-readiness score alone, TCRLAS evaluates five dimensions together: technical maturity, market validation, intellectual property (IP) strength, business/team readiness, and funding/resource alignment. **The overall level is the lowest of the five scores.**

### 2. The Nine Levels

| Phase                            | Levels | Commercial meaning                                                                 | Key evidence                                                                    |
|----------------------------------|--------|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| I — Proof of Principle           | 1–3    | Is the idea credible, feasible, differentiated, and protectable?                   | Research result; reproducible lab work; prior-art/IP analysis                   |
| II — Proof of Concept            | 4–6    | Does a real user problem exist, and is there a workable product and adoption path? | User interviews; prototype; feedback; LOIs/pilots; pricing and regulatory path  |
| III — Proof of Commercialization | 7–9    | Can the venture work in the real world, repeat, earn revenue, and scale?           | Pilot deployment; team; paying customers; repeat contracts; scalable operations |

### 3. Level-by-Level Commercialization Guide

| Level | Readiness                    | What must be true                                                                    | Typical evidence                                                                     |
|-------|------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 1     | Scientific insight           | A novel scientific/engineering insight may solve a practical problem.                | Research result, theory, algorithm, early observation                                |
| 2     | Practical feasibility        | The idea works in principle under controlled conditions and can be reproduced.       | Lab experiments, simulation, bench demonstration                                     |
| 3     | Differentiated & protectable | The technology is meaningfully different and has a plausible IP position.            | Invention disclosure, provisional draft, prior-art/competitive analysis              |
| 4     | Customer pain defined        | A specific user and acknowledged problem are identified.                             | 5–10 structured interviews, use cases, problem statements                            |
| 5     | Prototype + feedback         | Potential users can interact with a working prototype and influence its design.      | Alpha prototype, demo system, documented user feedback                               |
| 6     | Adoption path validated      | There is a credible path to payment, pricing, deployment, and regulatory compliance. | LOIs, pilot agreements, cost/pricing model, regulatory pathway                       |
| 7     | Real-world pilot             | The product works outside the lab and a committed team can execute.                  | Pilot results, startup/licensing plan, defined team roles                            |
| 8     | Repeatability + revenue      | The venture shows repeatable value creation and sustainable delivery economics.      | Paying customers, repeat contracts, manufacturing/delivery process, funding interest |
| 9     | Scalable operation           | The venture operates sustainably with scalable processes and a defensible position.  | Stable revenue, scalable processes, market moat, growth/exit strategy                |

## 4. Five Mandatory Dimensions

- **Technical Maturity:** Does it work reliably, reproducibly, at useful scale, and as an integrated system?
- **Market Validation:** Who has the problem? How painful is it? What alternatives exist? Will users adopt or pay?
- **IP Strength:** Who owns the innovation? Is freedom to operate plausible? Is the position defensible?
- **Business & Team Readiness:** Is the business logic credible? Is the regulatory path understood? Can the team execute without depending on one inventor?
- **Funding & Resource Alignment:** How much capital is required? What milestone will it buy? Are the resources and capital needs efficient?

## 5. The Non-Negotiable Rule

**TCRLAS Level = the lowest evaluated dimension.** A project cannot claim a higher commercialization level because one dimension is strong.

**Example:** Technical = 6, Market = 4, IP = 3, Business/Team = 5, Funding = 5 → **Declared TCRLAS = Level 3.**

## 6. How Different Users Should Apply It

| User                    | Primary use                                                            | Decision question                                                               |
|-------------------------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Investor                | Screen risk and identify the weakest value-creation dimension.         | Is the remaining weakness understandable, fixable, and worth funding?           |
| Entrepreneur            | Prioritize the next milestone instead of polishing the strongest area. | What is preventing us from reaching the next commercialization level?           |
| Technologist / Inventor | Connect technical progress to users, IP, execution, and capital needs. | What evidence must accompany the technology before it is commercially credible? |

## 7. Evidence Before Optimism

**A TCRLAS claim should be supported by evidence, not expectation.** Useful evidence includes reproducible tests, customer interviews, prototype use, letters of intent (LOIs), pilot agreements, pricing models, regulatory mapping, real-world deployment, paying customers, repeat contracts, scalable delivery/manufacturing processes, and sustainable revenue.

## 8. Practical Decision Use

**Advance:** the weakest dimension has enough evidence to support the next level. **Improve/Pivot:** the weakness is identifiable and can be repaired with reasonable time and resources. **Stop:** a critical dimension remains unsupported or the required path is no longer commercially rational.

**Core principle:** A great technology is not yet a great investment or company. Commercial readiness requires the technology, market, IP, team, and capital plan to advance together.