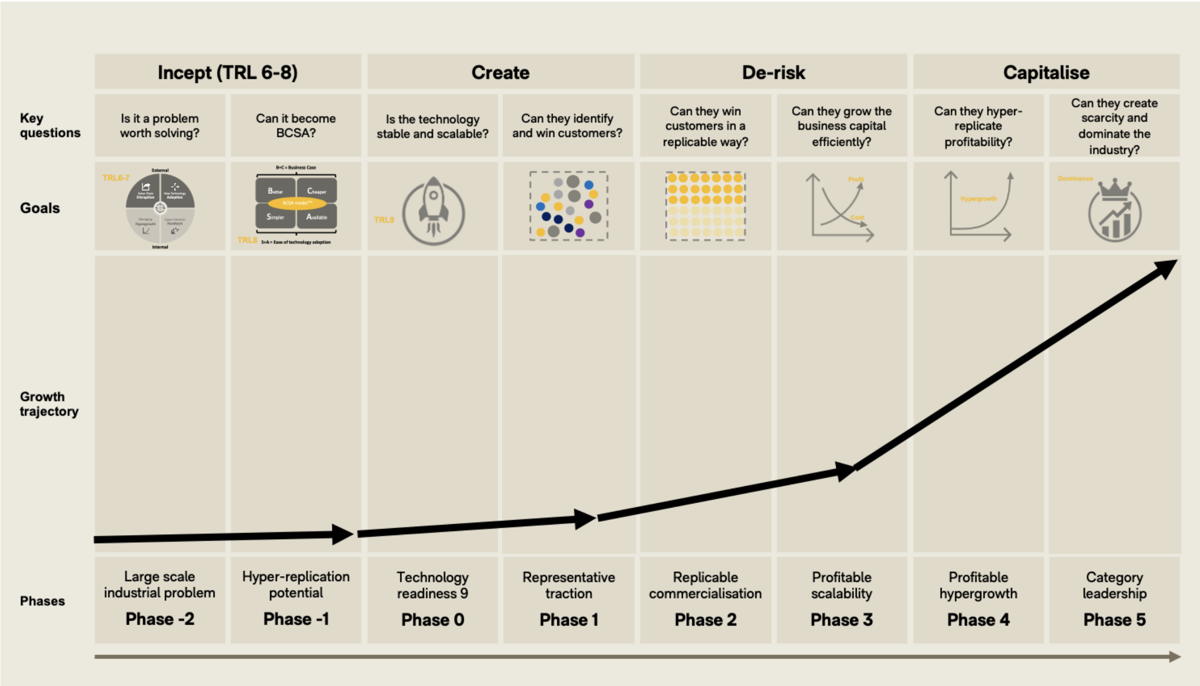
The Scale-Up Readiness Index



A new approach to capital-efficient scaling in deep-tech industries

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Europe's persistent difficulty in building globally dominant deep-tech companies is not due to insufficient innovation, talent, or technological sophistication. It is the result of a systemic misalignment between technological maturity and commercial scaling strategy.

Technology companies are repeatedly pushed to scale before the structural conditions for scaling exist. This affects founders, investors, and policymakers alike and has become one of the most significant sources of capital destruction in industrial innovation.

To address this problem directly, we have developed the Scale-Up Readiness (SUR) Index as a **company-level diagnostic framework** designed to determine whether a business and its technology offering is capable of scaling in a capital-efficient, repeatable, and predictable manner.

In other words, the index helps companies and funds understand when a company is ready for hyper-scaling and when it is not. Internally in the fund, we use it to assess whether it is ready for using our value creation tools, and whether it is using them correctly.

The primary function of the SUR Index is to prevent companies from scaling prematurely.

1. What the SUR index measures
The Index focuses on where a company is in terms of commercial stages.

It does not attempt to replace notions such as Technology Readiness. TRL describes the development journey of the technology, rather than the dynamics of the *business* behind the technology.

SUR asks a set of narrower and more demanding questions: given the environment in which the technology is due to operate, does the business possess the right characteristics required to scale in a capital efficient way?

2. The SUR phases

SUR -2 – Finding the right problem

Technologies in the inception stage (TRL 6-8) are in "negative" commercial readiness territory. This -2 phase is focused on identifying the right problem. To increase readiness and move to the next phase, it is important to find out and prove whether the industrial problem that is being solved with the technology in development is large enough to have real commercial viability. This is where you would highlight typical metrics such as:

Market Size
Market Drivers
Market Trends

This might sound simple, but very often, a seemingly brilliant technology will have limited deployment scope, and so would struggle to move towards commercial scale-up readiness.

SUR -1 – Finding the right solution

Still in negative commercial readiness territory, this phase is focused on clarifying whether the technology in development is the right solution to the problem. This phase uses typical metrics such as:

Value Proposition (Better & Cheaper)
Customer Profile / Perfect Customer
Customer Journey
Competing Solution Analysis

The next step for an early-stage technology is to zoom in on the conventional value proposition of being better on features and cheaper on cost while also mapping potential customers, their journey, and how other solutions are faring in the market. The technology should be moving toward the final stages of TRL 8-9.

SUR 0 – Technological readiness (TRL 9-10)

The starting point for commercial scale-up readiness is focused on stabilizing the technology and preparing for scalability. The company has found the right problem and a solution that is better and cheaper than the alternatives.

It now needs to spend more resources on becoming ready for commercialisation and ensuring its product is ready for commercial scale. It will probably not have mentionable sales yet, but the inception phase is complete and the seed and incubation stages have created a product that can potentially be commercialised..

However, reaching TRL 9 with a better and cheaper product does not automatically translate into converting industrial customers.

To them, simplicity and availability is much more important, i.e. can the technology be integrated easily into existing value chains and operations, and can the technology be delivered to multiple sites quickly?

If the company can deliver a product that is stable and Better, Cheaper, Simple and Available (BCSA), it can move beyond Phase 0.

SUR 1 – Representative traction

SUR level 1 marks the transition from technological capability to commercial reality. At this stage, the company has demonstrated that it can sell its product to real customers who buy for the right reasons. These customers are not friends, pilot partners, or symbolic references. They resemble the intended target market and purchase because the product solves a relevant problem.

Traction is not “representative” just because customers provide testimonials, enthusiasm, or claims the product to be unique. It simply means that a relative number of relevant customers are willing to pay. Sales at this stage are typically ad hoc and non-systematic. There is no clearly defined ideal customer profile, no structured go-to-market approach, and no predictable sales cycle. Success often depends on founder involvement, individual relationships, or favourable circumstances.

SUR 1 proves relevance. It does not prove scalability.

SUR 2 – Replicable Commercialisation

SUR 2 is reached when customer acquisition becomes systematic rather than incidental. The company can define which customers it targets, how it approaches them, and what a typical sales process looks like. Conversion rates, lead times, and sales cycle durations are sufficiently understood to allow forecasting of outcomes from inputs.

At this stage, sales can be replicated across customers, geographies, or segments. Importantly, SUR 2 does not imply profitability. A company can be systematically losing money on every sale and still be at SUR 2. Many deep-tech companies remain in this phase for extended periods, supported by grants, venture capital, or strategic patience.

SUR 2 proves repeatability of sales, not economic sustainability.

SUR 3 – Profitable scalability

SUR 3 represents a structural inflection point. This is where **capital efficiency enters the frame.**

At SUR 3, the company's commercial activities generate more value than they consume. This is measured using a simple but strict ratio: gross profit divided by cost of execution (GP/CoE). Cost of execution includes all direct commercial costs required to win and serve customers. When GP exceeds CoE by more than 100 percent, often expressed as GP/CoE ratio greater than two (2.0), the company has achieved profitable scalability.

SUR 3 does not imply hypergrowth. It implies that growth, if pursued, would be economically rational. This is the earliest phase at which scale-up and growth investments become structurally justified. It is also the phase most frequently skipped, often under pressure to demonstrate momentum, leading directly to premature scaling.

SUR 4 – Profitable hyperreplication

SUR 4 is not defined by growth rate alone. It is defined by **replicability of profitable growth**.

At this stage, the company has identified specific cost-of-execution entities—sales roles, partners, channels, or commercial units—that can be deployed repeatedly with consistent risk and return profiles. The company knows what these entities cost, how long they take to ramp, and what value they generate.

Once this condition is met, sustained growth above forty percent annually becomes possible without increasing fragility. Growth is no longer exploratory or opportunistic. It is engineered through replication. Operational complexity remains high, but structural risk is low because each additional unit of growth follows a proven economic pattern.

We refer to this as hyperreplication.

SUR 5 – Category leadership

SUR 5 represents a qualitative shift in market position. At this level, companies achieve conversion rates far above industry norms and become the default choice for customers, partners, and suppliers. Leadership and dominance emerges not from marketing, but from accumulated structural advantages, learning effects, and ecosystem positioning.

Category leaders do not win marginally more deals than competitors. They win materially more, often converting fifty to seventy percent of opportunities in markets where thirty to forty percent would already be considered strong. At this point, conversion itself becomes a structural moat.

Very few companies reach SUR 5. Those that do will be able to capture above normal strategic and financial value.

THE SCALE-UP READINESS FRAMEWORK

SUR 0
Technological readiness

The company's technology is stable and scalable, and it has been successfully proven in real-world operations but has not yet achieved significant sales (TRL9).

SUR 1
Representative traction

SUR 1 marks the shift from technological capability to commercial reality. The company has shown it can sell its product to genuine customers who buy for the right reasons. These customers are not friends, pilot partners or symbolic references; they reflect the intended target market and purchase because the product addresses a real problem.

Representative traction is not about testimonials, enthusiasm or claims of uniqueness. It means that a meaningful number of relevant customers are willing to pay. Sales at this point are usually ad hoc and unsystematic. There is no clear ideal customer profile, no structured go-to-market strategy and no predictable sales cycle. Success often relies on founder involvement, personal relationships or favourable circumstances.

SUR 1 demonstrates relevance but not scalability.

SUR 2
Replicable commercialisation

Achieved when customer acquisition becomes systematic rather than incidental. The company can clearly define its target customers, outline its approach to them and describe a typical sales process. Key metrics such as conversion rates, lead times and sales cycle durations are well understood, enabling reliable forecasting.

At this stage, sales can be replicated across different customers, geographies or segments. Crucially, reaching this level does not require profitability — a company may still be making a loss on every sale and remain at SUR 2. Many deep-tech companies stay in this phase for extended periods, often supported by grants, VC or strategic patience.

SUR 2 demonstrates repeatability of sales, but not economic sustainability.

SUR 3
Profitable scalability

SUR 3 marks a structural turning point: Capital efficiency becomes central. At this stage, the company's commercial activities generate more value than they consume, measured by the Growth Efficiency KPI (the GP/CoE ratio). When gross profit exceeds the cost of execution by more than 100% (a GP/CoE ratio greater than 2.0), the company has reached profitable scalability.

SUR 3 does not mean hypergrowth. Rather, it means that any further growth would be economically rational. This is the first phase where scale-up and growth investments are truly justified. However, it is also the phase most often overlooked, as companies rush to show momentum, leading to premature scaling.

SUR 4
Profitable hyperreplication

SUR 4 is not defined by growth rate alone but by the replicability of execution. At this stage, the company has identified specific cost-of-execution entities – such as sales roles, partners, channels or commercial units – that can be deployed repeatedly with consistent risk and return profiles. The company understands the cost, ramp-up time and value generation of each entity.

Once this is achieved, sustained growth above 40% per year becomes possible without increasing organisational fragility. Growth is no longer exploratory or opportunistic; it is engineered through systematic replication. Although operational complexity remains high, structural risk is reduced because each additional unit of growth follows a proven economic model.

This is what we call hyperreplication.

SUR 5
Category leadership

Represents a significant leap in market position. At this stage, the company achieves conversion rates far above industry norms and becomes the default choice for customers, partners and suppliers. Leadership and dominance arise not from marketing but from accumulated structural advantages, learning effects and a strong position within the ecosystem.

Category leaders do not simply outperform competitors by a small margin; they win considerably more business, often converting fifty to 70% of opportunities in markets where 30%–40% would already be seen as strong. At this level, high conversion rates themselves become a structural moat.

Few companies ever reach SUR 5. Those that do are able to capture exceptional strategic and financial value.

The Five Phases of the SUR Index

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3. Progression, regression, and structural deterioration

SUR is not a ladder that companies casually climb up and down. However, it is equally misleading to assume that once a level is reached, it is permanently secured. The confusion arises from conflating **capability** with **performance**.

A company does not lose representative traction simply because it becomes temporarily unprofitable, nor does it lose systematic customer acquisition because capital efficiency deteriorates. What changes is which dimension of replicability remains intact.

At SUR 2, replicability exists on the customer side. At SUR 4, replicability exists on the cost-of-execution side. A company that scales aggressively at SUR 3 without understanding what it is replicating does not formally move backward, but it experiences structural deterioration. Profitability collapses and the company reverts to selling systematically but not capital-efficiently.

SUR is therefore best understood as a forward-progressing framework in which failure manifests itself as a loss of capital efficiency, rather than loss of (hyper)growth.

4. Create, de-risk, and capitalise: strategic regimes within SUR

The five SUR phases can be grouped into three strategic regimes.

SUR 1 and SUR 2 constitute the region of growth **creation,** where the company proves relevance and repeatability of demand. Risk is high and data is scarce.

SUR 2 and SUR 3 together form the regime of **de-risking**, where capital efficiency is established and the economic foundations of scaling, as well as relevant datapoints, are validated. Uncertainty has been reduced sufficiently to justify large-scale capital deployment and value extraction.

SUR 4 and SUR 5 belong to the regime of **capitalisation**, where proven systems are scaled aggressively and returns are realised. Dominance or upcoming leadership has been established, paving the way for above normal value extraction.

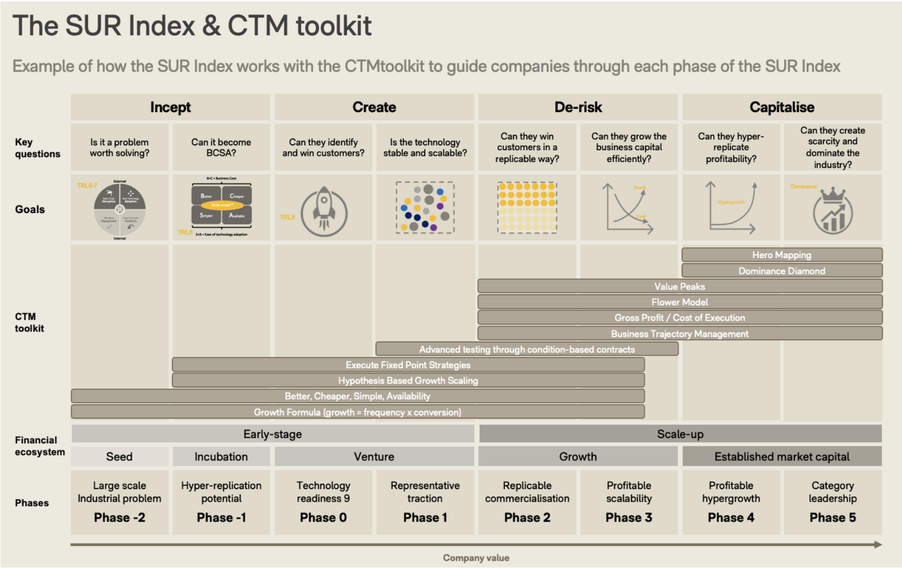
5. Evidence requirements at each SUR level

SUR relies on explicit evidence. At SUR 1, evidence consists of measurable conversion from relevant customers. At SUR 2, time becomes a critical variable, and the company can demonstrate predictable sales cycles and conversion rates. At SUR 3, profitability of commercial execution is proven through showing a ratio between gross profit and cost of execution (GP/CoE) above two. At SUR 4, the replicability of cost-of-execution entities is demonstrated at scale. At SUR 5, dominance is evidenced by conversion rates that materially exceed industry norms over sustained periods of time.

6. Value chains, and the limits of conventional innovation models

Many deep-tech failures are not failures of technology or execution, but failures of value-chain readiness. Industries such as hydrogen and power-to-x illustrate this clearly. Technologies may function, pilot projects may succeed, and early customers may exist, but the surrounding infrastructure, regulation, and offtake mechanisms may not yet be in place.

SUR does not explicitly measure value-chain maturity, but it exposes the consequences of ignoring it. Companies that attempt SUR 4 level scaling without a mature value chain experience collapsing GP/CoE ratios, market saturation, and stalled growth. This limitation also explains why frameworks such as *Crossing the Chasm* often mislead deep-tech investors by assuming that early adopters imply a scalable market.



Excerpt from a Nordic Alpha Partners slide deck detailing the SUR Index and how the value creation toolkit is used in each phase. The two additional phases (-2, -1) are added here to showcase earlier stage companies and their place on the SUR Index

7. Dominance without hypergrowth: the DyeMansion case

Our German 3D print post-processing company DyeMansion illustrates an important nuance. The company experiences dominant conversion rates in industrial 3D printing, effectively owning the large-scale segment of its market. However, the overall market remains constrained in size and pace of transformation, limiting hypergrowth.

Structurally, DyeMansion sits at SUR 3 while already exhibiting SUR 5 characteristics. This creates optionality. When market conditions expand, the company can accelerate from a position of dominance rather than competition. With the SUR index, this position is explicit, rather than ambiguous.

8. Externalities and the limits of SUR

A possible critique of the SUR levels and the index as a whole is that it does not explicitly incorporate regulation, infrastructure availability, or antitrust dynamics. This omission is intentional. SUR does not claim that external conditions are irrelevant. It claims that they do not change the mathematics of capital efficiency.

Externalities may explain why a company cannot reach SUR 3 or SUR 4, but they do not change whether it has reached those phases.

Plenty of other indexes and perspectives explain the influence of these externalities, such as our recent article on moving beyond TRL 9 and towards [TRL 10](#).

9. Capital abundance and suppressed readiness

In several highly capitalised sectors, excessive early funding creates a paradoxical effect: When there are more companies and more capital than customers, firms begin selling at zero or near-zero margins to secure traction and justify valuations. Capital efficiency collapses across the sector, trapping companies at SUR 2 until consolidation occurs.

This dynamic is not accidental. It is a direct consequence of deploying scale-up capital before scale-up readiness exists.

10. Bankability versus profitability

Traditional lenders often prefer SUR 3 companies that are EBITDA-positive, even if growth is slow. However, a SUR 4 company with negative EBITDA but fully replicable, capital-efficient commercial execution represents lower structural risk. SUR 4 companies can deploy capital into known return profiles, while SUR 3 companies may be vulnerable to disruption.

11. Liquidity and exit dynamics across SUR levels

Companies below SUR 3 are rarely liquid assets. SUR 3 marks the first phase at which a company becomes broadly sellable from an M&A perspective. SUR 4 companies are often deeply liquid because they combine capital-efficient growth with near technological dominance. The value difference between SUR 4 and SUR 5 can be substantial even at similar revenue levels, due to the defensibility that comes with the technology category leadership of SUR 5.

12. Why SUR exists

The SUR framework was developed to answer a single question honestly and consistently: Is the company ready to create a capital efficient foundation for hypergrowth, de-risk its journey and capitalise on its positio?

In deep-tech industries, the answer determines not only valuation but also survival.