How to Map Your Company's Core Technology Portfolio

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Knowing that your company has core technologies is one thing. Having a clear, structured account of what they are, what the state of the art is in each area, and how your R&D activity connects to them is another.

This article is about the second part. It details how to get from the concept to a working map that your leadership can stand over, your finance team can use for funding applications, and your technical team can build on.

Step 1 — Start With Your Products, Services, and IP

The most reliable starting point for identifying core technologies is working backwards from what the company makes and sells. For each significant product, service, or IP asset, ask: what specific areas of applied science or engineering make this possible at the level of quality or capability that the business depends on?

A manufacturing company making precision-engineered components might identify: the subtractive manufacturing processes that allow it to achieve required tolerances; the metrology and quality systems that underpin consistent output; and the materials knowledge that determines how it specifies and processes incoming stock. Each of these is a candidate core technology.

A software company building a security platform might identify: the cryptographic architecture at the heart of the product; the threat modelling methodology it has developed; and the data processing infrastructure that handles scale. In agri-food, core technologies often cluster around cultivar development, precision sensing, and processing science.

At this stage, the goal is to generate candidates, not to finalise the list. Write down everything that comes up.

Step 2 — Test Each Candidate Against the Core Technology Criteria

Not everything that is technically important is a core technology in the framework sense. For each candidate, test it against three questions:

First: is this something we are actively advancing, pushing beyond the known state of the art, rather than applying or using? Standard engineering practice, even at a high level, is not R&D. The question is whether the company is doing systematic work to advance the technology beyond what is currently known.

Second: does this technology underpin competitive advantage? A core technology should be something that, if a competitor matched it, would materially erode the company's position. If it is easily replicated or purchased off the shelf, it is probably not a core technology.

Third: does this technology persist across multiple projects and products? Core technologies are company assets, not project assets. They should be identifiable independent of any single customer engagement.

Candidates that pass all three tests are core technologies. Those that don't may still be important operationally, but they belong in the project or process layer, not in the core technology register.

Step 3 — Research/Document the State of the Art for Each Technology

Once the core technologies are identified, the next step is to document the state of the art in each area; what is currently known and achievable in that technology domain, using publicly available knowledge and the company's existing capabilities.

This matters for two reasons. First, it defines the baseline against which R&D advancement is measured — what the company is advancing beyond. Second, it is the document that gets produced as part of a State-of-the-Art Review for tax credit and grant purposes. Building it as part of the core technology map means it exists when it is needed, rather than being reconstructed under deadline pressure.

For each core technology, record: the current established techniques and approaches in the field; the known limits of those approaches, the specific gap or challenge the company is addressing; and the direction of advancement the company is pursuing.

Step 4 — Connect Your R&D Activity to the Map

The final step is connecting the company's active R&D, current projects, investigations, work packages, to the core technologies they are advancing. This is where the map becomes operational rather than theoretical.

For each active R&D project or investigation, identify which core technology or technologies it is advancing, what specific aspect of that technology is being pushed forward, and what evidence exists that the work goes beyond the known state of the art.

This connection does two things. It ensures that R&D activity is captured against the right technology area. It builds a running record of what has been learned, tried, and advanced. And it makes the funding case: each piece of qualifying activity can be traced from the investigation through to the technology being advanced and the state of the art it is moving beyond.

The Leadership Sign-Off

In a well-governed R&D programme, the core technology map is not a document that one person produces — it is ratified at leadership level. Leaders review and signsoff the technology areas, confirms the state-of-the-art assessments, and provides the formal mechanism for classifying active work as qualifying R&D.

This governance step is not bureaucracy. It is what makes the map credible — both internally, as a basis for investment and strategy decisions, and externally, as the foundation for tax credit claims and grant applications.

If you would like to see how this works in a ReaDI-Watch context, we are happy to walk through it. The starting point is usually a conversation about what the company already knows and what structure is needed to make that knowledge visible.