

To succeed, Macron's DARPA vision needs support from researchers

The French president is a fan of a high-risk, high-reward research body for Europe. But such a fund will work only when it has grass-roots support.

DARPA, the US Defense Advanced Research Projects Agency, has a huge fan in Paris. At the end of last month, French President Emmanuel Macron gave a two-hour speech at Sorbonne University calling for Europe to create its own DARPA. The agency would have “the best scientific teams in each discipline – assuming risks, and therefore losses of capital when projects don't work out, which is the very key to breakthrough research projects”. It's not the first time Macron has made this call. He made a similar appeal in 2017, shortly after he was first elected president. The problem for him, and for other DARPA fans, is that there's little evidence that researchers share this vision. The president needs to appreciate that a successful – and long-term – agency of this kind will work best with grass-roots support.

DARPA is globally renowned for incubating risky research projects that have practical uses. Some of its most famous achievements include the Internet precursor ARPANET; stealth fighter aircraft; and Transit, the first global satellite-navigation system. It employs renowned researchers as programme grant managers. Its grant recipients are given a higher degree of autonomy than most conventional funders would allow. Its funding model incorporates a willingness to tolerate failure and learn from it, something that is becoming ever rarer in the current cash-constrained times. The model also needs organizations with deep pockets (the military, notably) to fund large-scale testing of its projects.

The arguments for a European DARPA rest on the fact that Europe lags behind the United States in innovation. The landscape of US business research and development (R&D) is dominated by software and other digital technologies, whereas around half of private-sector R&D spending in the European Union comes from older industries, such as pharmaceuticals and the automotive sector. The EU is stuck in what the authors of a report last month call “the middle technology trap” – specialization in relatively mature technologies that don't require a high level of expertise (see go.nature.com/4baff). If the EU is to break out of this trap,

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it cannot rely on existing private sources of funding. This is where, say proponents, a publicly funded DARPA-like agency comes in. It would have a higher tolerance for risks and failure, but greater potential for big breakthroughs.

It's a model that many are copying. In the United States, the original DARPA, established in 1958, is now joined by ARPA-H for technologies in health (ARPA-H, established in 2022) and energy (ARPA-E, created in 2009). Germany's version, SPRIN-D, focuses on innovative projects not related to national defence. Japan has a Moonshot Research and Development Program. The United Kingdom set up a non-military Advanced Research and Innovation Agency last year.

These efforts have largely come from policymakers. To get traction in the complicated process of EU politics, a DARPA-like organization would need member states to support it. That, in turn, would need a senior science official to champion it, along with a campaign by researchers and their representative organizations. There's little sign of either. If anything, scientists are worried about existing EU research budgets and would not want to see these cut to accommodate a new agency.

This week, ahead of June's elections to the European Parliament, a consortium of organizations launched Research Matters, a campaign to protect Europe's future funding schemes from cuts. Already, the EU's Horizon Europe research budget is being cut by €2.1 billion (US\$2.3 billion), partly to make way for a €1.5-billion boost in defence-research spending. If it is to be funded on the US scale, an EU DARPA would need to receive a further roughly €750 million annually (around 0.75% of Horizon Europe's budget).

Part of the EU's dilemma is that it already has substantial funds for research designed to support what it calls “disruptive innovations”. In 2021, it created the European Innovation Council (EIC), which has an annual budget of €1 billion. The EIC funds proposals with strong involvement from businesses. Around 70% of the cash is allocated to technologies at a late stage of development, with the remaining 30% going to earlier-stage or riskier work. The EU also has a separate fund for ‘mission oriented’ research in five areas: fighting cancer, adapting to climate change, creating carbon-neutral cities, protecting seas and rivers and promoting soil health.

In recent months, there have been calls to rethink, if not scale back, these funds. But that could be a mistake, given that they have been around for only a few years. Over DARPA's nearly seven-decade history, the programme itself has been allowed to survive and evolve. It has not been sacrificed as funding trends have changed, and it continues to exist in spite of changes to governments and their priorities.

It is good that a leader of Macron's stature continues to advocate for science and innovation. But to realize his vision for an EU-DARPA, he needs to get more researchers and grass-roots organizations on board, and persuade them that the new agency won't extract money from existing funds. If he can do this, then he has more chance that his next speech at the Sorbonne will be a celebration of achievement, rather than a lament about what could have been.