PLEASE MIND THE GAP

HOW THE INNOVATION PIPELINE IS BROKEN

A Strategic Proposal to Back Real Invention

Please Mind The Gap: How The Innovation Pipeline Is Broken

A Strategic Proposal to Back Real Invention

February 2026 | David Stoddart-Scott

Please Mind the Gap: How the Innovation Pipeline is Broken

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The views expressed in this publication are those of the author and do not necessarily reflect those of any official department, advisory panel, or tea-making committee.

Typeset in Gill Sans and Garamond, chosen for their balance of modern clarity and traditional character, and because Comic Sans was vetoed at the highest level.

Design and production were carried out in Yorkshire, with the intention of crafting a document people might actually want to keep, instead of leaving it in a conference tote bag until bin day.

I would like to thank my wife and daughter for tolerating the endless hours of research, writing, and muttering at the computer that went into this paper. Special thanks also go to Mr Steve Etherton, who not only proofread the work but took the trouble to provide critical feedback and encouragement, despite there being no tea or biscuits in it for him.

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10 miles to sea off the Cornish coast,
2014

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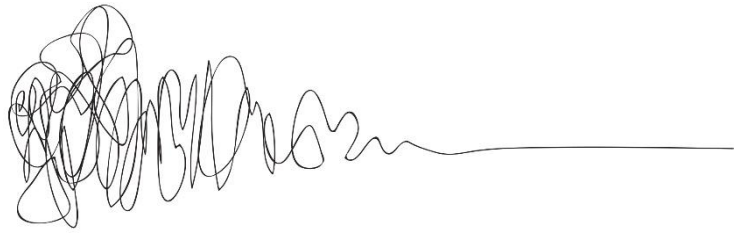
Innovation is messy.



Innovation is hard.

It involves getting your hands dirty, taking real risks, and doing things that probably won't work the first time. It means cutting materials, writing buggy code, building hardware that might fail, and then learning why it did. It's not a marketing campaign. It's not a policy theme. It's actual work.

I've spent the last fifteen years in and around startups, renewable energy, and subsea technologies, often trying to build something new with barely enough time or money to do it properly. I've written grant applications, designed prototypes, and stood knee-deep in saltwater trying to make machines work. I've failed more times than I can count. I've also seen how the system consistently overlooks the people doing that work.

Writing this was triggered by a recent experience. I thought I had written a well-targeted application to a regional **'innovation'** grant, only to be told that it didn't fund actual innovation work. It '*supported innovation*' through workshops, mentoring and training. But I can't buy hardware or build systems with mentoring, no matter how valuable it is.

Of course it's hard.

It's supposed to be hard.

If it was easy everyone would do it.

We don't need more startup pitch nights or innovation engagement programmes. We need a focused strategy for closing a critical funding gap: the lack of support for people who are actually building things in their sheds. Yorkshire has a strong history of incredibly successful shed-born inventions. From the Davy lamp that safeguarded coal miners, to the invention of stainless steel in Sheffield, and the printing presses revolutionising 19th century knowledge exchange from Wharfedale and Halifax. This region has long punched above its weight in practical, hands-on innovation.

These were not polished university spinouts, they were scrappy, often solo efforts grounded in real problems, real materials, and relentless curiosity.

Too much public innovation support goes into awareness, events, or strategy exercises. Too little backs the work of those who are attempting the thing itself, be it a prototype, a platform, or a pilot deployment.

If West Yorkshire wants to support real innovation, it must find a way to really support and hopefully fund the work between the sketch and the term sheet.

The bit that doesn't fit in a form.

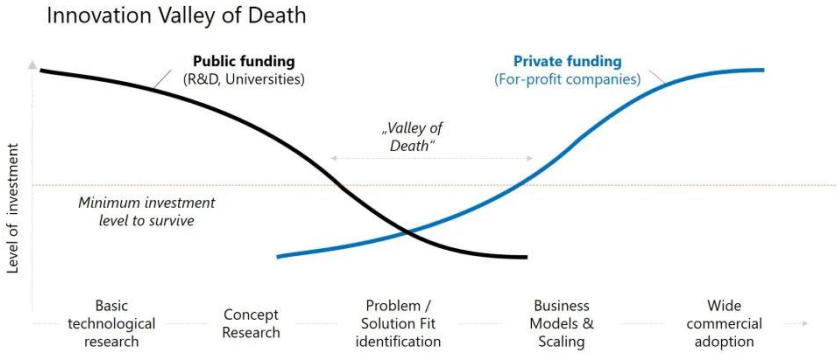
The bit where funding dries up.

The bit where things fail.

The bit that matters.

David Stoddart-Scott, FEI, MIKE. February 2025
Creskeld, West Yorkshire.

"This gap occurs between initial R&D (supported by research grants) and revenue generation (aided by tax incentives), where government support mechanisms are absent or ineffective."
— **Protopia Group, 2023**



Innovation Valley of Death – Nick Skillicorn

EXECUTIVE SUMMARY:

PLEASE MIND THE GAP

Innovation is the engine of long-term prosperity, but in the UK, it is not firing on all cylinders. While government and industry speak proudly of innovation strategy, few are willing to fund the messy, early, failure-prone work that actually does it, and creates value.

There is a critical gap in the UK's innovation ecosystem, which is mirrored in West Yorkshire; the absence of targeted support for early-stage technical invention. This is not a call for more engagement events, cluster strategies, or communication campaigns. It is a call to fund the bit that matters, the work between the invention and fundraising.

In recent years, the UK has withdrawn key mechanisms that once supported this space. The SMART Grant programme, formerly open to all sectors and founders, was suspended after demand vastly outstripped supply. No direct replacement has been introduced. Today, there is no open-call public grant available to an individual or micro-SME to explore a technical idea of their choosing. This leaves a widening gap between concept and investable proposition, a valley; most ideas will never cross.

The UK has strong scientific research, a growing startup culture, and bold policy ambitions. But without early-stage invention support, these ingredients do not add up to innovation. Instead, we fund the theatre of innovation while starving the action.

Germany's SPRIND and the UK's ARIA offer better models: high-trust, low-bureaucracy structures that fund ideas at their earliest and riskiest stages. But could we do even more?

"The UK has world-class science but often fails to turn ideas into impactful products. Many great innovations fail by falling into the 'valley of death'."

— **Onward, 2023**

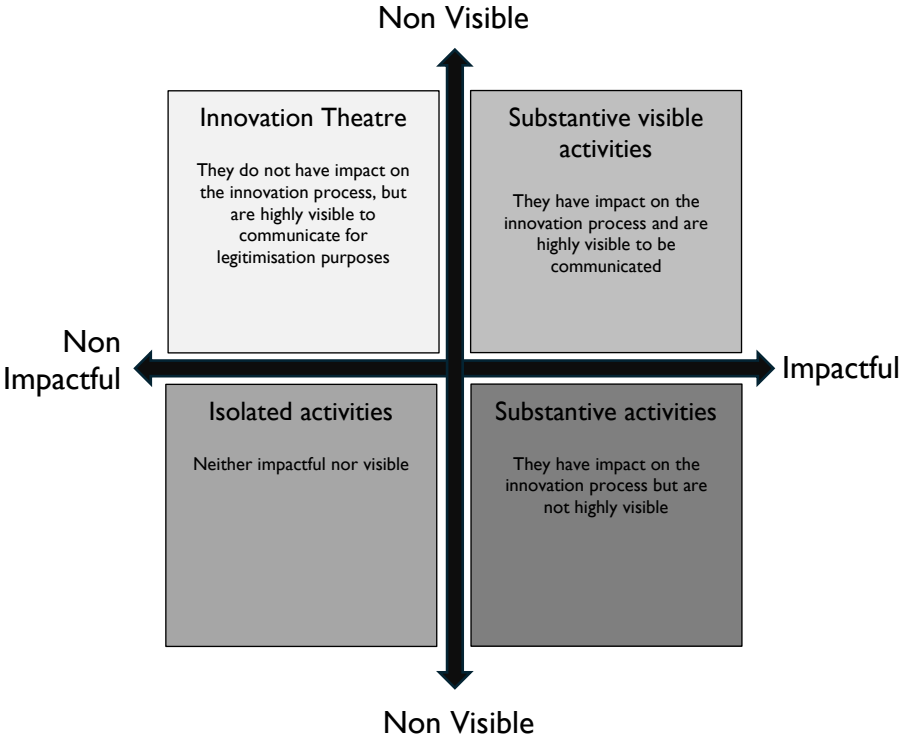


Diagram from "Is it substantive or just symbolic? Understanding innovation theatre in organisations", Technovation, Volume 129, 2024

THE THEATRE:

INNOVATION VS ENGAGEMENT

A core confusion in public funding is the tendency to conflate innovation with engagement. Workshops, training programmes, and stakeholder roundtables are often presented as '*innovation activities*'. While these may contribute to the ecosystem innovation lives in, they are not innovation itself. At best, they are communication about innovation. At worst, they are theatre[i].

The UK Parliament defines innovation as "*the creation and implementation of new ideas, processes, products or services that deliver economic or social value.*"[ii] Science and Innovation for development defines it as "*the process by which inventions are produced*"[iii]. The common thread is impact and implementation. Something has to get built, tested, or trialled. If there is no prototype, no new IP, no experimental output, then it's not innovation. It's engagement.

This distinction is more than semantic. It shapes how public money is allocated. For example a recent 'innovation-led' grant programme, intended for regional economic development, explicitly excluded technical development or prototype funding. Instead, it requested "*innovation projects – via delivery methods such as workshops and one-to-one support – provide business-focused guidance, mentoring and training*"[iv]. All useful services, but none constituting actual innovation. The funding supported conversation, not creation.

This mismatch is endemic. A recent House of Commons briefing acknowledges that UK innovation funding has become overly focused on headline themes and clusters, often overlooking grassroots R&D[v].


WHAT WE NEED IS AN OVERARCHING STRATEGY TO STIMULATE OUR INNOVATION.
OR YOU COULD STOP SMOTHERING THE INNOVATION WE ALREADY HAVE.
THAT'S THE DUMBEST IDEA I'VE HEARD IN MY ENTIRE LIFE.
AND THERE IT IS.

Similarly, the Fourth Industrial Strategy White Paper notes that only 29% of businesses believe current regulation facilitates the efficient market entry of new technologies[vi]. It is a damning figure, given that we claim to be an innovation-led economy. The same paper calls for "*greater experimentation, testing and trialling of innovations under regulatory supervision*" and praises the role of the FCA's sandbox approach in fintech. Yet this culture of supervised experimentation is still the exception, not the rule.

The impact of this confusion is deeply felt by founders and technical entrepreneurs. Time and again, early-stage developers are told there is '**plenty of funding out there**' only to discover it is for pitch training, market analysis, or stakeholder engagement. The work of actual invention, the risky, technical bit, is not eligible.

There is a growing international response. Germany's SPRIN-D explicitly supports early-stage, high-risk technical projects[vii]. Its philosophy is that failure is not just acceptable, it is essential. ARIA[viii] in the UK, modelled partly on SPRIN-D and DARPA, is attempting to adopt this approach. Yet both remain exceptions in a system heavily skewed toward the language of innovation, not the practice of it.

Too much of the UK's innovation budget is absorbed by administration, facilitation, and events that talk *about* innovation rather than supporting those doing it. Panels, workshops, knowledge exchanges, and convening strategies consume time and resource without generating new IP, new tools, or new capability.

Until we funding the work of invention itself, rather than the conversation around it, we will remain in the theatre; admiring the set, applauding the actors, but never actually building the damn thing.

We must stop confusing convening with creating.

Delivering the UKRI Strategy: total funding allocations, 2022-23 –2024-25

Charlotte Gill – UK Research and innovation: An Explainer

"UKRI's budget for 2021–22 was approximately £7.9 billion, with Innovate UK accounting for around £1 billion of that total."

— UK Parliament, House of Commons Library Briefing Paper CBP 7237, 2022

WHERE DOES THE MONEY ACTUALLY GO?

The UK spends over £2 billion[v] annually on innovation support through InnovateUK, and a further £410 million[ix] supporting regional innovation initiatives. But very little of that reaches the individuals or micro-enterprises who are actually trying to invent something new.

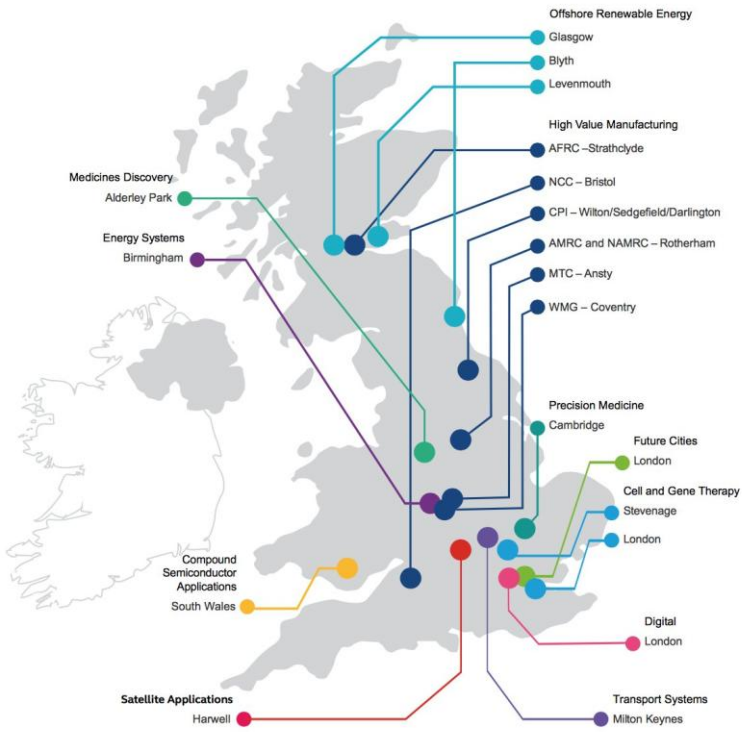
In-depth analyses by Nesta[x] and the House of Commons[v] found that a disproportionate share of Innovate UK funding has historically gone to large, incumbent businesses. Rolls-Royce alone received over 7% of Innovate UK grant funding between 2004 and 2022. That is more than the total allocation to all micro-sized enterprises combined over the same period.

Even more striking, around 24% of Innovate UK's total grant spend during that time went to Research and Technology Organisations (RTOs) and Catapults, the semi-public organisations designed to bridge the gap between academia and industry. While these institutions can provide valuable facilities and services, they now function more like centralised innovation contractors than enablers. In some sectors, they directly compete with private SMEs for funding, creating duplication rather than support. Their overheads and delivery models often require six- or seven-figure budgets, limiting accessibility to smaller enterprises.

This structural bias toward scale and institutional safety also extends to consultancy spend[v]. There is increasing concern about the proportion of public innovation budgets being used for feasibility studies carried out by large engineering firms. These reports, often costing hundreds of thousands of pounds, can generate shelf-ready analysis that never translates into practical deployment. Meanwhile, independent inventors and technical founders struggle to access even modest funding to build a single prototype.

"A quarter of the grant funding intended to spur innovation has gone into these semi-public institutions, which often partner with (or duplicate efforts of) large industrial companies." — **Source Advisors, 2022**

CATAPULTS
WHERE THEY ARE



None of this reflects a lack of capability among SMEs. The issue is systemic. "*The complexity and inaccessibility of grant mechanisms has effectively excluded early-stage companies*"[ii]. The application processes favour those with existing infrastructure, dedicated bid writers, and a track record; not necessarily those with the best ideas or the highest potential impact.

Public funding is being absorbed upstream by institutions who specialise in winning it. This is not corruption, but it is a distortion. The system optimises for continuity and credentials, not creativity. And the result is a vacuum at the very stage where support is most needed: the messy, under-resourced middle where ideas get built, tested, and proven.

In May 2011 the team at Sustainable Marine Technologies submitted a proposal to the Energy Technologies Institute's *Tidal Energy Converter (TEC) System Demonstrator RFP*. We proposed a tidal platform, aligned in scope, scale, and ambition with the published guidance. Our small team produced over 100 pages of detailed material.

After an initial review, and written responses to questions, we were invited to present in person at ETI's Loughborough offices. The meeting was professional but disjointed. Some board members appeared unfamiliar with the call's stated aims. One repeatedly returned to the perceived risk of our proposal, despite risk being an expected feature of an innovative experimental technology. It felt as though we were being judged against criteria we had not been asked to meet.

Our bid was ultimately unsuccessful. Instead, the ETI commissioned a feasibility study, the very type of work the RFP had expressly excluded. That study, delivered by Black & Veatch, drew directly on our time and input. We cooperated freely, under the impression that it would feed into a second-phase TEC funding call that never materialised.

Informal feedback later described our concept as "truly innovative" and our team as "energetic, smart, and professional," but cited perceived concept risk and concerns over delivery scale. The experience left a lasting impression: for all its stated ambition, the ETI appeared to lack the risk appetite to match. They defaulted to the safe option.

"Most SMEs turned to SMART not because it was easy, but because it was the only genuinely open, cross-sector innovation grant. With its suspension, there is now no such instrument in the UK toolbox."

— **Myriad Associates, 2025**

THE STRUCTURAL PROBLEM:

NO SUPPORT BETWEEN SPARK AND SCALE

There is currently no UK-wide grant programme that allows single companies, from any sector, to apply for early-stage R&D or technical prototyping on an open-topic basis. The absence of such a mechanism creates a critical structural gap. Policy documents acknowledge this problem, but have yet to provide any solutions.

The Innovate UK SMART grant programme was, until recently, the only competitive open call that provided this type of support. It was formally paused in January and remains closed as of mid-2025. The reason cited was oversubscription. In its final rounds, success rates dropped below 3 percent. According to data from UKRI, over 1,600 applications were received for fewer than 50 awards.

This is not an indication of programme failure. It is an indicator of unmet demand. The Parliamentary Office of Science and Technology has explicitly warned that "*the complexity and competitiveness of grant schemes disincentivises small or early-stage businesses from applying*[ii]" with the House of Commons adding that "*the innovation funding landscape is fragmented and difficult to navigate*" especially for "*companies without dedicated administrative capacity*". The absence of flexible, accessible capital is a recurring barrier for innovators outside university networks.

In place of SMART, founders are routinely directed to sector-specific competitions, which may not match their work. Others are offered innovation loans, which are only appropriate at later stages of development. Academic partnerships are often promoted as a workaround, but this assumes time, access, and a research agenda. It does not help

"The innovation funding landscape is fragmented and difficult to navigate. Many smaller firms fail to progress beyond initial proof-of-concept due to lack of early, risk-tolerant finance."

— UK Parliament, House of Commons Library Briefing Paper CBP 7237, 2022

INTERVENTIONS THAT FOCUS NARROWLY ON ECONOMIC RETURN CAN UNDER REPRESENT HIGH RISK, HIGH REWARD INNOVATION

POSTNOTE #664, 2023

a startup founder with a prototype and a six-month window to prove viability.

There is no coherent alternative for the developer working on a manufacturing method, hardware product, or infrastructure solution who needs funding to move from benchtop to field trial. Regional growth funds, such as those administered under the UK Shared Prosperity Fund (UKSPF), often exclude technical R&D entirely or redefine innovation.

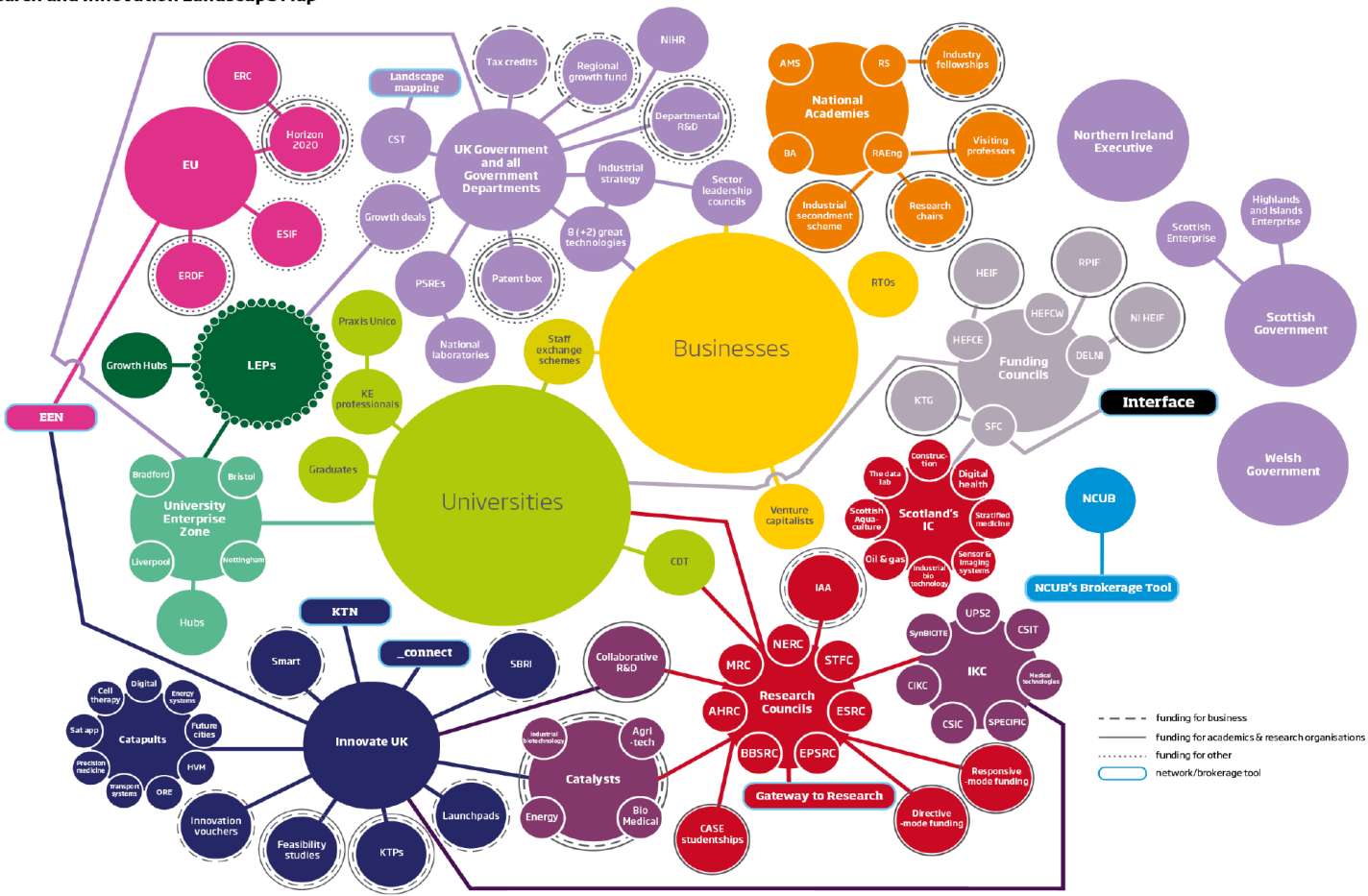
The innovation ecosystem currently assumes that only institutions and consortia need risk funding. This systematically excludes individuals and startups operating at the edge of applied technical development. It also contradicts best practice internationally.

SPRIN-D in Germany provides open-topic funding for high-risk ideas from individuals and micro-teams. It explicitly funds "*unreasonably ambitious*[xi]" projects that cannot yet secure commercial investment. ARIA in the UK, formed with cross-party support in 2021, recognises the same structural problem. Its model rejects narrow calls, bureaucratic eligibility criteria, and demands for commercial traction. Instead, it funds projects based on boldness and technical plausibility. It does not reward polish.

What is missing in the UK, and in West Yorkshire specifically, is a regional, founder-first mechanism that can fund work between the sketch and the spreadsheet. This is the stage where value is created, but support is scarce. It is the riskiest point in the process, but also the most leverageable.

It is where most ideas die, not because they fail, but because they are never given the chance to live.

Research and Innovation Landscape Map[37]



[37] Figure 10 is an attempt to capture the major organisations and funding sources, relevant to business-university collaboration, in the UK's research and innovation landscape. Due to the complexity of the landscape there will inevitably be information missing.

Taken from the 2015 UK Gov Dowling Review, published by the House of Commons Science & Technology Select Committee

THE HARDWARE BARRIER:

UNEQUAL STARTING LINES FOR INVENTION

When innovation is reduced to pitch decks, digital platforms, and policy toolkits, it risks becoming detached from the physical reality of building. Software startups mostly have a low barrier to entry: a laptop, internet access, and some time. That's not to diminish the challenge of digital innovation, but to highlight the asymmetry.

Hardware, infrastructure, and product development demand a different starting point. A founder working on clean energy, robotics, manufacturing systems, or new materials often needs access to tools, space, specialist components, fabrication equipment, and testing environments. Before a single iteration can be attempted.

Hardware startups face significantly higher costs, longer development cycles, and greater operational complexity than their digital counterparts, due to the need for physical infrastructure, specialised equipment, and iterative prototyping. This presents a structural barrier highlighted in both UK innovation policy analysis[xii] and recent manufacturing research[xiii]. Nesta also highlighted that early-stage support "*tends to favour sectors with low capital intensity and fast iteration cycles*[x]" leaving deep-tech and hardware ventures structurally underserved.

UKRI data[xiv] does not disaggregate funding by hardware vs software or service-led ventures, but Innovate UK's sector breakdown shows that digital, AI, and service industries receive a disproportionate share of open-call and sector-specific competitions. In contrast, physical product development is often pushed towards narrow industry

Whitworth pioneered standardisation
in precision engineering.
He began his career as an apprentice and
innovated while hands-on in the workshop.

Joseph Whitworth – Precision Engineering
(worked in Leeds)

themes or collaborative research environments that do not suit micro-entrepreneurs or startups.

Even innovation loans, which require future revenue, are poorly matched to capital-intensive hard tech. A hardware startup might need twelve months of iterative failure just to validate one function, before revenue can even be modelled.

If the UK wants real innovation, it must make space for those building the next generation of physical systems. The barrier is not ambition or talent. It is tooling, time, and trust.

"Extremely difficult but specific objectives… and the freedom to take risks — and fail — define the heart of a Skunk Works operation."

— Ben R. Rich, Skunk Works: A Personal Memoir of My Years of Lockheed

"SPRIND is a different world. Our projects would not have been funded through any existing ministry. The culture is too different."
— SPRIND Evaluation, 2025

SPRIN-D AND ARIA ARE GETTING IT RIGHT

Germany's SPRIND and the UK's ARIA represent a deliberate break from traditional innovation funding models. Both were created to fund what bureaucratic structures cannot: bold, founder-led, long-range, and high-risk ideas that may appear implausible in their early stages.

SPRIN-D (Bundesagentur für Sprunginnovationen) operates with a simple question: What if this worked? It runs rolling, open-topic calls and is explicitly designed to fund the types of projects that would be rejected by standard grant panels. In its own mission statement, SPRIND states it supports "*leap innovations that change our lives fundamentally and make Germany and Europe more resilient and sustainable*[xi]." Examples of funded projects include carbon-negative textiles, modular hydrogen energy storage, and wearable human gills… These are all areas requiring years of development with uncertain outcomes and no guaranteed ROI.

ARIA (Advanced Research and Invention Agency) was launched in 2021 with cross-party backing. Unlike UKRI, ARIA is structured to operate outside the constraints of traditional calls and review boards. Its programme managers are given autonomy to select projects based on technical vision, not commercial readiness. In its 2021 Guiding Principles[viii], ARIA describes its goal as backing "*transformative science that conventional mechanisms cannot reach*." It values speed, independence, and failure tolerance as design features.

This is not simply about funding scale. SPRIND's budget in 2022 was under €100 million, and ARIA's is capped at £800 million over ten years. It is about philosophy. ARIA is a

What we've built in numbers

£361m

Total amount of funding under agreement

88%

of funding awarded to UK-based teams

7

international organisations attracted to launch UK operations

15

projects that have catalysed new companies and subsidiaries

48%

Share of funding going to startups and companies

Data from ARIA's annual Report 2025[xv]

deliberate attempt to escape the 'path dependency[v]' of mainstream UK innovation policy, where funding decisions are often driven by risk aversion, consensus, and calls for demonstrable economic impact within short timeframes.

Both ARIA and SPRIND exemplify a culture of permission: permission to fail, in service of breakthroughs.

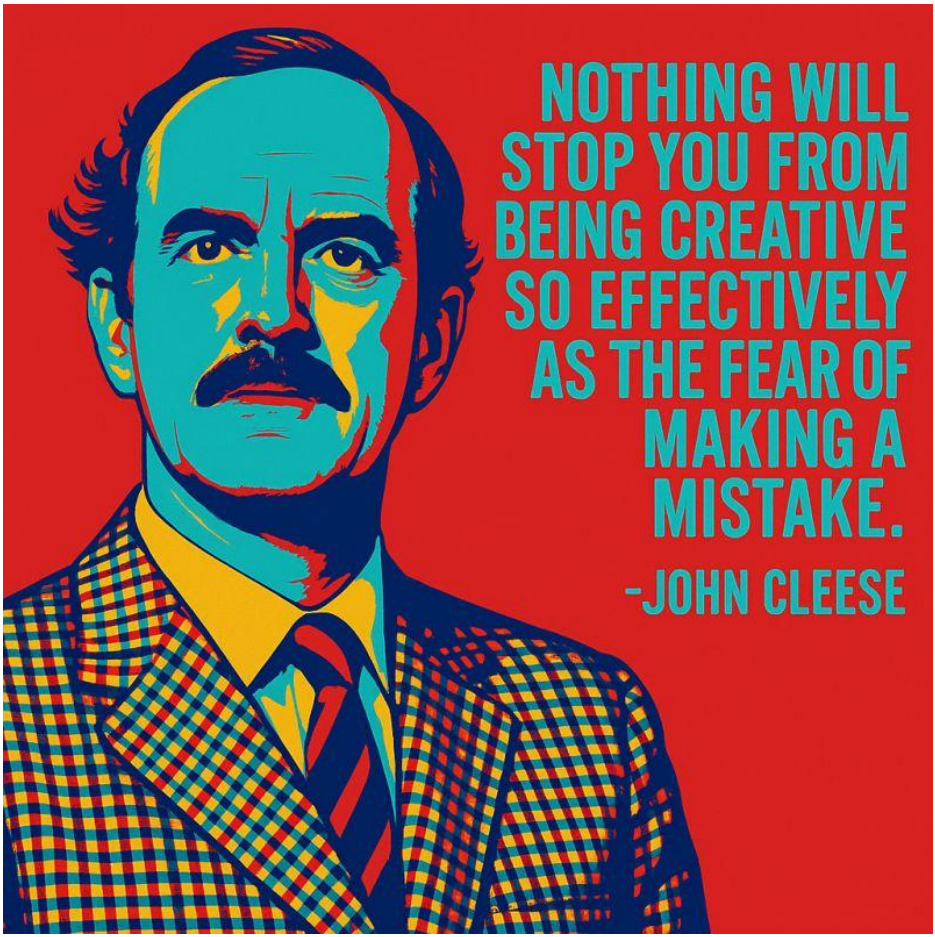
This is the culture we need to promote in West Yorkshire. We do not need ARIA's budget. But we can emulate its courage.

Advanced Research + Invention Agency

ARIA

"Our job is to support projects that would be too risky for other funders. We are not bound by political cycles. We tolerate failure and seek breakthroughs."

— **ARIA, 2023**


NOTHING WILL STOP YOU FROM BEING CREATIVE SO EFFECTIVELY AS THE FEAR OF MAKING A MISTAKE.
-JOHN CLEESE

THE CULTURE THAT CREATES

Funding matters. But without the right culture, it does not work. As SPRIND and ARIA have shown, innovation is not simply a process, it is a state of being, a mindset, a posture, a space in which people are allowed to take risks, try things, and fail without punishment.

Jon Cleese, in his reflections on creativity, argues that genuine creativity can only emerge when the mind is in what he calls the "*open mode*[xvi]", a mental state of playfulness, curiosity, and temporary suspension of judgment. He contrasts this with the "*closed mode*" of execution and evaluation, commonly referred to as executive function. "*Creativity, is not a talent. It is a way of operating*". To innovate, you must spend time in open mode. But most organisations, especially large ones, foster a culture and surroundings that encourage staff to spend all of their time in closed mode. Deadlines, performance metrics, and cultural aversion to embarrassment shut down the very thinking that leads to breakthroughs. Cleese found that setting boundaries of time and space was essential to creating ideas. Creativity was not a random spark. It was the result of a protected time and process.

IDEO, one of the world's most influential innovation firms, teaches the same principle. Innovation is not about brilliance, it is about iteration. It is about building rough prototypes early, testing ideas quickly, and allowing teams to fail in the open. The result is not just better ideas, but a culture of momentum. "*Fail faster to succeed sooner*[xvii]" as the firm famously puts it. Their work with companies like Apple, Ford, and P&G helped shift the idea of design from an aesthetic function to a problem-solving mindset. IDEO's methodology is rooted in human-centred design, which requires a blend of technical and emotional insight, and the humility to get things wrong repeatedly before getting them right.

"There's a temptation in our networked age to think that ideas can be developed by email and iChat. That's crazy. Creativity comes from spontaneous meetings, from random discussions. You run into someone, you ask what they're doing, you say 'wow,' and soon you're cooking up all sorts of ideas." Steve Jobs

These conditions are extremely rare in established institutions. Despite their resources, most large companies fail to innovate meaningfully because they cannot create the right environment. This is why they outsource innovation to consultants like Innovia, Frog Design, or IDEO itself. Alternatively, they attempt to acquire it by purchasing early-stage companies once products have been proven. The risk tolerance and ambiguity required to innovate is simply incompatible with how most large organisations are run. IDEO founder David Kelley notes that fear of judgement is the number one inhibitor of creativity in corporate settings[xviii].

There are rare instances where large companies manage to encapsulate the culture that allowed creativity when they were startups, and perpetuate it as the organisation scales. Two that spring to mind are Pixar and Valve. Ed Catmull, a founder of Pixar, said: "*When it comes to creative endeavors, the concept of zero failures is worse than useless. It is counterproductive. Being too risk-averse causes many companies to stop innovating and to reject new ideas, which is the first step on the path to irrelevance*[xix]". Valve, by contrast, has maintained an almost anarchic flat structure where anyone can initiate projects. In their employee handbook they write: *"When you're working in a rapidly changing environment or trying to discover new things, [hierarchies] are a terrible fit*[xx]*"*. It's this combination of psychological safety and freedom from structural rigidity that allows new ideas to emerge and thrive.

Startups, by contrast, operate differently. They are born in open mode. They can iterate without permission. They can tolerate risk because failure is normal, not career-ending. This is why real innovation happens at the edge, in garages, workshops, coworking spaces, and back bedrooms. The environments themselves, cheap, messy, informal, promote failure and play.


PEOPLE WHO ARE CRAZY ENOUGH TO THINK THEY CAN CHANGE THE WORLD ARE THE ONES WHO DO.
-ROB SILTANEN

The financial pressure is real, but the cultural pressure is minimal. There is freedom to explore.

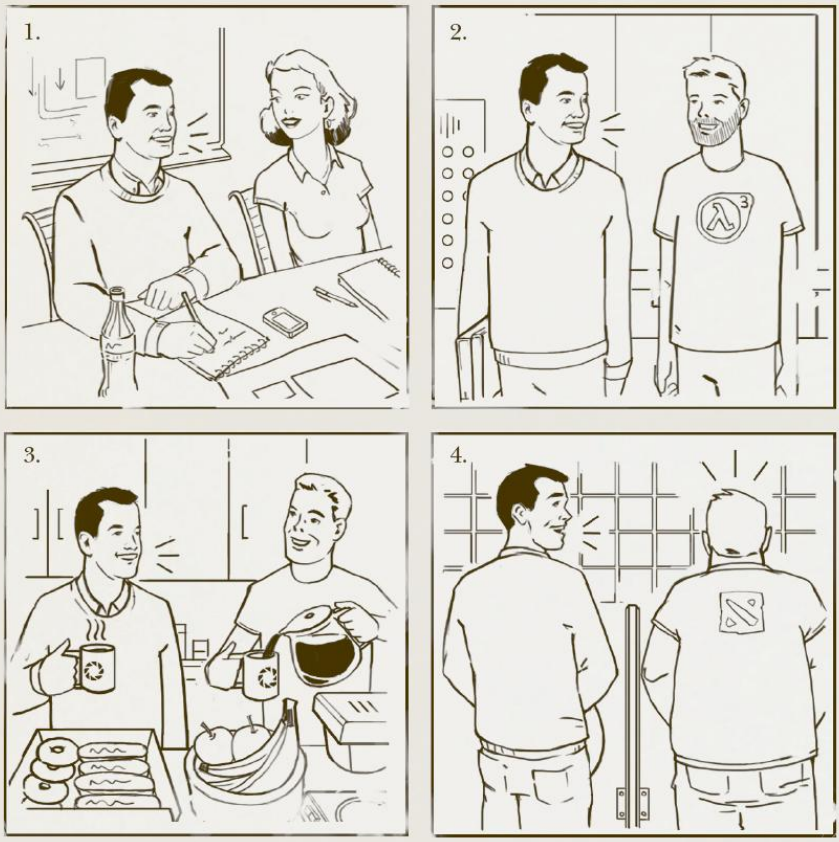
Simon Sinek echoes this in his work on leadership and team performance. "*A team is not a group of people who work together. A team is a group of people who trust each other*[xxi]" Innovation flourishes where there is trust, not just between people, but between people and their environment.

Studies in environmental psychology have shown that the physical arrangement and psychological ownership of a workspace can have a powerful effect on performance and satisfaction. In one landmark study by Knight & Haslam, participants who were allowed to personalise and arrange their office space performed up to 32% better on cognitive tasks than those in sterile or pre-arranged environments. Empowered workspaces not only led to higher productivity but also improved well-being and focus[xxii]. Related research has shown that these gains stem from a stronger sense of identity, autonomy, and psychological investment, all known contributors to creative output[xxiii]. In short, the office layout is not just an aesthetic decision[xxiv], it is a strategic lever in enabling innovation.

If founders feel they must succeed on the first try, they will never try anything risky, let alone **'unreasonably ambitious'**. If they feel free to fail well, they may well eventually build something truly remarkable. If they do not, society will be better off regardless, and their learning will help countless others.

There is also a geographic as well as cultural dimension to this. Silicon Valley's success was not due to superior ideas, it was due to tolerance of failure, a density of capital, and a cultural habit of experimentation. Israel's startup ecosystem functions on similar principles: national service creates tight-knit teams,

Fig. 2-4 Methods to find out what's going on



step 1. Talk to someone in a meeting
step 2. Talk to someone in the elevator
step 3. Talk to someone in the kitchen
step 4. Talk to someone in the bathroom

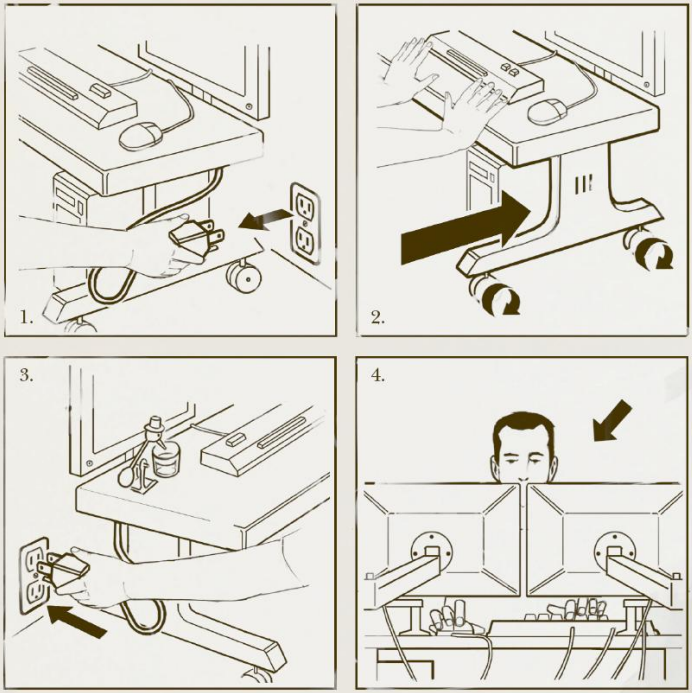
and the culture values boldness over polish. Neither environment is driven by grants or strategy papers. They are driven by the accumulation of risk-taking norms.

Closer to home, the Francis Crick Institute in London designed their entire building around cross-pollination[xxv]. Labs are not siloed. Researchers from different disciplines literally bump into each other. Creativity is engineered into the architecture. These lessons are not expensive. They are about intention.

Steve Jobs famously placed utilities like mailboxes, conference rooms, cafés and even toilets, in the central atrium of Pixar's studio[xxvi] to encourage spontaneous interactions. "*to force people to go there*" so that "*when people run into each other, when they make eye contact, things happen*" [xxvii]. He saw physical serendipity, the chance collisions in daily routines, as essential to innovation.

The structure of a workspace can profoundly influence the creative performance of its occupants. A series of experimental studies over the past two decades has shown that employees who are empowered to shape their physical environment demonstrate higher satisfaction, better information retention, and improved productivity compared to those who are not. In one of the most striking experiments, researchers tested three office layouts: one where employees were allowed to freely personalise and rearrange the space, a second where they were allowed to do so within limits, and a third where no modification was permitted. Knight & Haslam found the group with full control over their workspace reported the highest levels of well-being and creative engagement[xxii]. These findings were supported by earlier work by Haynes[xxiii] , and by Brill et al.[xxviii] who found that workspace design could account for up to 25% of variation in individual performance.

Fig. 2-2 Method to move your desk



step 1. Unplug cords from wall
step 2. Move your desk
step 3. Plug cords back into wall
step 4. Get back to work

* See Page 18, Fig. 2-2

Why does your desk have wheels? Think of those wheels as a symbolic reminder that you should always be considering where you could move yourself to be more valuable. But also think of those wheels as literal wheels, because that's what they are, and you'll be able to actually move your desk with them.

You'll notice people moving frequently; often whole teams will move their desks to be closer to each other. There is no organizational structure keeping you from being in close proximity to the people who you'd help or be helped by most.

The fact that everyone is always moving around within the company makes people hard to find. That's why we have **http://user**—check it out. We know where you are based on where your machine is plugged in, so use this site to see a map of where everyone is right now.

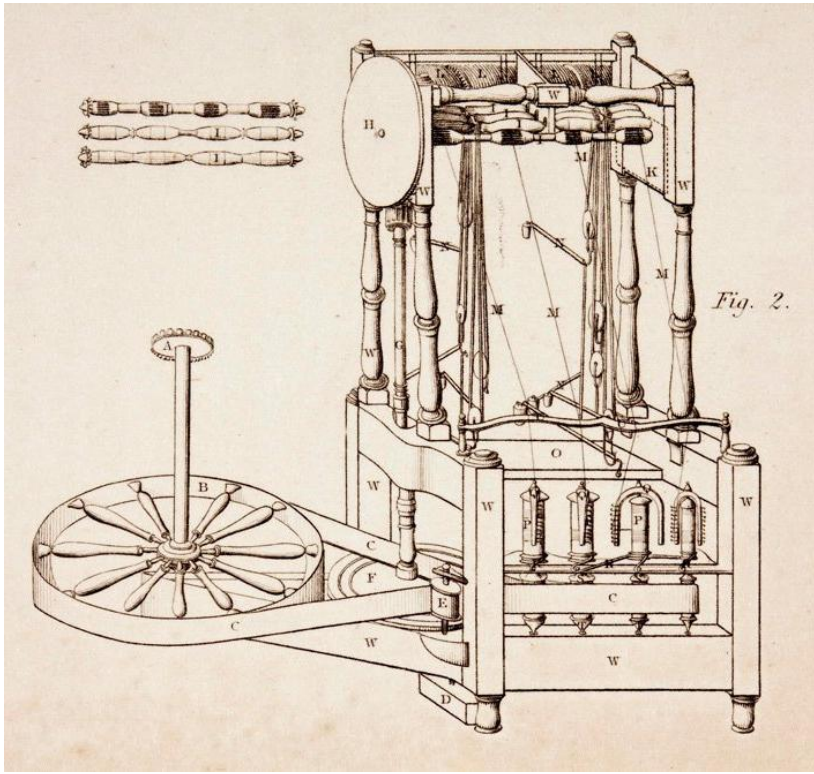
This demonstrates a strong correlation between perceived control over environmental conditions and job satisfaction.

This control over environment is taken to the extreme by Valve, where employees are encouraged to self-organise into project teams, and reflect that physically by rearranging the position of their desks in the building. Valve even provides desks with wheels to facilitate easy and frequent changes of location, along with helpful if slightly tongue in cheek instruction cartoon in their New Employee Handbook[xx].

The key insight is that physical autonomy feeds psychological autonomy and security. When people feel trusted to shape their surroundings, they are more likely to approach problems with ownership and creativity. This has important implications for startup environments, where budget constraints may be high but the need for innovation is higher still. Creating spaces that invite experimentation, even what would in polite society would be considered messiness, can be a competitive advantage.

Overall, both anecdotal evidence and research point to a consistent theme: creative work often benefits from a loosely structured, even messy physical environment. Design firms like IDEO cultivate a playful clutter to keep ideas flowing. Figures like Adrian Newey famously railed against the culture established by Ron Dennis at McLaren and it's overly regimented workplace, which mandated clear desks and sparse personalisation. Whether he directly attributes it or not, it is clear that Newey left McLaren partly because he felt such constraints stifled innovation.

While extreme disorder would clearly become counterproductive, a balance favouring creative messiness, what one IDEO designer called **'curated clutter',** tends to energise people who need to be creative, inventive, and innovate. As long as the chaos is meaningful. Imagine walls filled with Post-its and drawings of prototypes, not just



— The Arkwright Spinning Frame, Leeds Woollen Mills (1769)

unrelated reference material. It serves as a tangible manifestation of ideas-in-progress.

This isn't far removed from the logic of the *fridge door*. Just as children proudly pin up half-finished drawings, creative professionals often surround themselves with sketches, fragments, and scraps of half-formed thinking. These visible cues don't just document the process, they *invite* it to continue. They act as reminders to the mind that it is in the 'open mode', and maybe even help step back into that mode more easily. The playful, unstructured state where ideas are free to collide. Environments that allow space for that mode of thought, rather than suppressing it in the name of tidiness, process, or organisation, are the ones where genuine invention can thrive. In the realms of design, innovation, and engineering, an overly tidy ship might miss the new horizons that a messier vessel could discover.

Culture is not decoration. It is infrastructure. It is the single most powerful tool we have in the innovators arsenal to make innovation happen, and happen with purpose.

So the question is: where can that culture take root?

"Innovation thrives in regions with frictionless access to early-stage capital, low institutional drag, and a culture of unreasonable ambition."
— Policy Exchange, 2024

Creativity takes Courage by Bobbi Abbey, Jameson Rogan and Emma Hardaker, Mabgate, Leeds

WHY WEST YORKSHIRE SHOULD LEAD

West Yorkshire is uniquely placed to demonstrate what it means to support innovation in practice, not just in policy. The region already benefits from a strong foundation: The Innovation Framework[xxix] sets a clear vision for a more connected, ambitious, and inclusive innovation ecosystem. The Innovation Network[xxx] (TIN), brings together key players across local government, academia, and enterprise to improve alignment and collaboration. Most recently, the development of an Innovation Centre of Excellence[xxxi] (ICoE) promises to provide long-term strategic oversight, with a quadruple helix board involving business, research, civic and community voices. These are significant achievements. But even taken together, they do not yet provide a direct mechanism for listening to the people building at the edge of that ecosystem: early-stage founders, technical entrepreneurs, solo inventors, and first-time builders.

Currently, there is no structured channel for their lived experience to inform how innovation policies are implemented, or how regional funding priorities are shaped. While TIN connects institutions, and the ICoE will coordinate programmes, there is still no formal role for the individuals doing the riskiest, most uncertain, and often least visible work, the work between idea and invest-ability.

That gap could be closed by establishing a a practitioner-led group that complements the existing ecosystem by offering real-time insight from those working hands-on to develop new products, hardware systems, and deep-tech services. This group could report into the ICoE board whilst sitting under the umbrella of TIN.

yorkshireman

"About 100 years ago, an ~~Englishman~~, Sir George Cayley, carried the science of flight to a point which it had never reached before and which it scarcely reached again during the last century."

Wilbur Wright, 1909

Its mandate would be different. Not convening, but ground-truthing. Not strategy-setting, but stress-testing policy through lived experience.

This complements existing efforts, rather than competing with them. The Innovation Framework already calls for "*a shift to delivery*" and acknowledges the need to engage under-represented groups in innovation activity. The Parliamentary evidence submitted by WYCA in 2023 notes that innovation support must become more inclusive and responsive to barriers faced by micro and small businesses[xxxii]. Yet it seems no structure exists to channel that responsiveness from the bottom up.

West Yorkshire has the ingredients others lack. It has deep industrial expertise, a maturing financial and legal services cluster, world-class universities, and emerging specialisms in healthtech, data, and creative digital sectors[xxxiii]. It also has a track record of successful coordination, from the Healthtech Catalyst to MIT's Regional Entrepreneurship Acceleration Programme pilot[xxxiv].

Perhaps most importantly, it has political appetite. WYCA's strategic plans and policy statements consistently express a willingness to challenge convention and back frontier thinking[xxxv]. That openness is rare. It should be leveraged.

What remains is to create a formal loop between that policy ambition and the technical reality of doing the work, especially at the earliest and most vulnerable stages of development. A practitioner-led group would provide that loop. It would enable learning from the region's edges, not just its institutions. And it would help ensure that the next round of innovation strategy is informed not only by top-down vision, but by bottom-up insight.

"Yorkshire engineering for small hands doing big work"

By Her Majesty's Royal Letters Patent.

THE ANGLO-AMERICAN

"ARAB"

PATENT PLATEN PRINTING MACHINES.

Specialities of the Anglo-American "ARAB" Platen Machine.

IMPRESSION LEVER.

The Impression Lever or "Striker" is on left hand side of operator, and can be thrown on or off instantly, at any position of the Platens.

PLATENS.

By a new method of working the platens the "dwell" of the type on the paper is twice as long as other machines of this class, thus saving severe strain with heavy formes and giving full and clear impression.

FEED.

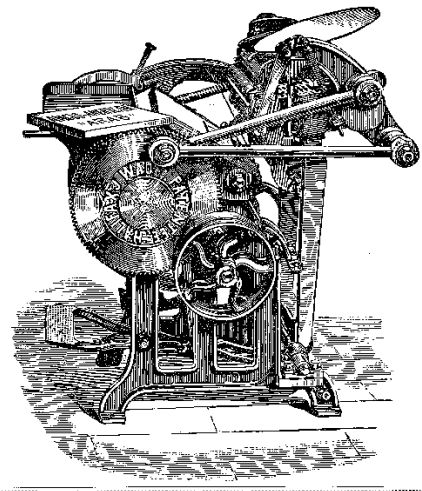
Swivel feeding guides with holes drilled for pins, *superseding* gauge and register; these guides will be found invaluable for accurate and quick working.

SHEET HOLDER.

Adjustable spring at right angles.

BLANKET HOLDER.

Ratchet motion, same as Cylinder machines.



Specialities—*contd.*

LEATHER BEARERS.

Roller kept revolving prevents "rule cutting."

BRAKE.

Combined Brake and Strap Guide, stops the Machine instantly.

And other improvements of great value.

REQUISITES supplied with each Machine:—

Six Roller Stocks (Three covered).
Roller Mould.
Four Spanners.
Two Screw Drivers
Lever Oil Can.
Pliers.
Two Chases.
Blanket.
Parchment, &c.
A box arranged to contain the above.

Space required for Foolscap Folio Machine and Operator:

Four Feet Square.

TESTIMONIALS AND TERMS ON APPLICATION.

PRICES: (Complete, with Steam Gear, Ink Fountain, and all Requisites.)

Foolscap Folio - £48.
Crown Folio - £60.

CALLE SAN MARTIN, No. 351, BUENOS AYRES, 27th May, 1898.

Dear Sir,—During the past 5 years we have received from you some 20 of your Foolscap and Crown "Arab" Arabs." We have now running in our own establishment 4 of each size—and there are no better made machines as it does work. The "Arab" is all over the Republic, and we have not heard from anyone that such or such a machine is even equal to yours. It is made of as materials, never fusses, seems badly gets out of order, and *prints far better* than any other machine. If you consider our opinion of any value, make whatever use you choose of this letter.

MR. JOSIAH WADE, HALIFAX. Yours faithfully, J. H. KIDD & CO.

INVENTOR, PATENTEE, AND MANUFACTURER,

JOSIAH WADE,

Crown Works, Hopwood Lane, Halifax.

Depôt for the North of England, Midlands, and Ireland—17, Cable Street, Liverpool.

MR. D. L. FARGHER, MANAGER.

The Arab Press - Josiah Wade, Halifax (1872)

Making it Real

The gap between invention and investment isn't theoretical. It is structural, material, and without urgent addressing will only get wider. Closing it requires more than marginal tweaks to existing funding frameworks, it requires a deliberate, strategic shift in how we identify and support radical innovation at its earliest and most fragile stage.

West Yorkshire has a once-in-a-generation opportunity to lead that shift.

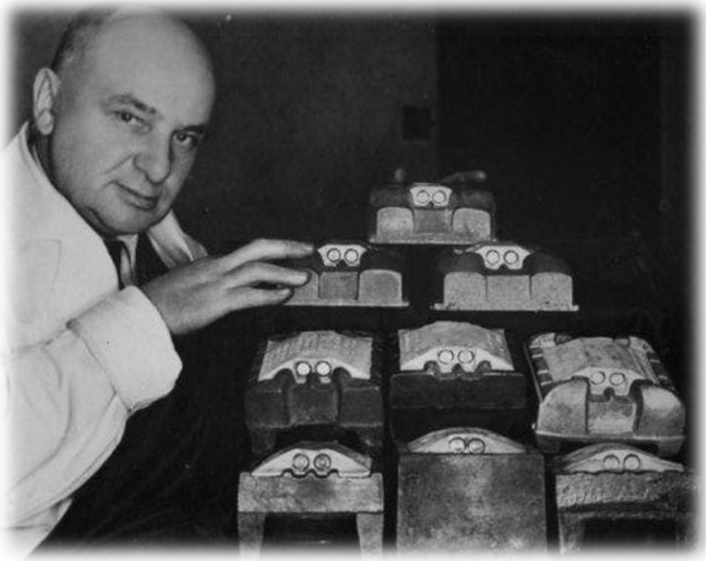
We are not short of initiatives. We have grants, programmes, accelerators, business support offers and a healthy appetite for activity. What we lack, what every region lacks, is a coherent, founder-first, invention-led mechanism that places bold new ideas at the heart of the system.

The proposals set out here offer exactly that:

First, the creation of "*The Founders Group"*. A permanent, practitioner-led body that brings together inventors, engineers, builders and founders to provide critical insight into what the system is missing. Not a committee, not a panel. A working group focused on listening to those trying to do the hardest thing: make something new exist in the world.

Second, the establishment of "*The Radical Invention Grant"*. A simple, fast, always-open seed grant to give inventors the freedom to build, to fail, and to try again. No match funding. No calls. Just support, fast, for the ideas that genuinely couldn't be funded any other way. The goal is not economic uplift in 18 months. The goal is to spark 100 new attempts at invention in the region annually. Because from that will come the breakthroughs we cannot yet imagine.

"If you've driven safely at night,
thank a Yorkshireman who started in a shed."



Percy Shaw – Cat's Eyes
(Halifax, 1934)

Third, the ambition to evolve the grant scheme into *The Radical Invention Fund*. A self-sustaining mechanism that supports both early-stage invention and follow-on development, through convertible or equity-triggering grants. A fund that grows with its founders. A fund that learns from its failures. A fund that recycles success back into the ecosystem.

Fourth, to roll both up into an entity that in essence is a regional counterpart to ARIA. Not in scale or process, but in culture. Like ARIA, we aim to move fast, tolerate risk, and back the unproven. But where ARIA's impact is measured by the scale of individual breakthroughs, ours is measured by the health of the ecosystem we are helping to build. ARIA is a bet on technologies. This would be a bet on technolog*ists*.

The aim is not to compete with national agencies but to supply them. The indicator of success is simple: more West Yorkshire founders, startups, and technologies graduating to secure Innovate UK, EIC, and ARIA funding than any other region. If we build this right, the pipeline of radical invention will flow not occasionally, but constantly, and from here.

The current system will not close this gap. That is not a criticism, it was not designed to. But we can.

This is not simply a call for money. It is a call for a smarter braver, bet. Back the founders. Back the inventors.

We don't need to change everything at once. The best first steps are small. If anything in these pages has sparked a thought, or prompted a question, then talk about it, share it, and when you feel ready reach out to me.

I hope there is enough of a blueprint here, what it needs is more people who are ready to act.

David testing the Nuytco Exosuit Atmospheric Diving System, Vancouver, 2022

About the Author

David Stoddart-Scott has spent over 15 years working at the bleeding, sometimes scabby, edge of innovation. His experience spans the field, the lab, the workshop, and the open sea. His career has involved high-risk hardware development, subsea technologies, energy systems, floating infrastructure, and startup-scale engineering projects. In many of these settings, failure is not only likely but is treated as a necessary part of the process.*

He has written and won multimillion-pound grant applications (written many more than won, see failure) delivered publicly funded R&D programmes under demanding technical and environmental conditions, filed multiple patents, and advised founders on intellectual property strategy. His IP work ranges from first principles through to full portfolio structuring. As an experienced operator, he understands how to build breakthrough technologies and how to navigate funding systems in both public and private domains.*

In addition to technical delivery, David is a committed facilitator of creative environments. He has led high-performing teams in startup and scale-up environments, established innovation cultures from the ground up, and coached founders and engineers to overcome creative and organisational barriers. He is known for his ability to simplify complex problems and for creating the conditions where radical ideas can emerge without losing commercial or technical discipline.

David is a Fellow of the Energy Institute, and a Member of the Institution of Innovation and Knowledge Exchange (IKE). He currently supports multiple early-stage ventures in clean tech, subsea systems and consumer hardware. He remains deeply committed to practical invention. He believes that with the right culture, the right appetite for risk, and the right support, anyone can build as boldly as they dream.

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APPENDIX A: SPRIN-D, A HOME FOR PEOPLE WITH RADICAL NEW IDEAS

The Federal Agency for Breakthrough Innovation

SPRIN-D's approach centres on enabling breakthrough innovation through curiosity, entrepreneurial action, speed, and a high tolerance for failure.

"Curiosity is the force that drives us. The will to overcome boundaries, leave behind the already known and make the unimaginable possible."

"Breakthrough innovations do not emerge in a vacuum. Progress calls for entrepreneurial thought and action. We understand entrepreneurs as people who think in terms of solutions rather than problems."

"We provide a protected space for radical ideas to grow. To make this happen, we provide appropriate funding and organizational structures, encourage interdisciplinary exchange and facilitate rapid prototyping and testing."

"We're not afraid of failure. It's part of the process. That's why we fund ideas even when success is uncertain."

"We believe in people who are willing to tackle problems that others shy away from."

"We provide flexible, challenge-based funding that allows selected teams to focus on rapid execution and iteration. The first stage of funding can be disbursed within days."

"Our job is not to protect the status quo, but to enable leaps of progress that would otherwise not happen."

All statements are directly quoted from SPRIN-D's own publicly available media, including the "About Us," "What We Believe In," and "Challenges" sections of their official website (www.sprind.org).

APPENDIX B: THE *"VALLEY OF DEATH"*

THE UK INNOVATION FUNDING LANDSCAPE

Open Grant Funding for Single-Company R&D in the UK

Innovate UK SMART Grants (Paused in 2025). Historically, the main open-call grant in the UK for single-company R&D was the Innovate UK "SMART" Grants program[i]. This scheme accepted proposals from any sector or technology area and did not require consortium partnership. SMART grants were highly competitive but offered up to 70% project funding for small businesses, making them a critical lifeline for solo innovators. However, as of January 2025 Innovate UK has paused the SMART Grants programme to review its effectiveness. The pause came after a surge in applications led to success rates below 3% – for example, the final 2024 round funded only 46 projects out of 1,645 applications (~2.8% success rate[ii]). With thousands of companies chasing a £15–25M pot each round, many SMEs spent significant effort on bids with only a "less than 3% chance[iii]" of success. Innovate UK acknowledged this as an unsustainable situation and is developing a "new, tailored package of support" expected in Spring 2025. (As of mid-2025, no replacement open call has yet launched, validating the concern that SMART grants might effectively be "dead" for now.)

Alternatives After SMART Grants: *In the absence of SMART, UK innovators must turn to other funding avenues that support single-company R&D. Key options include:*

Themed Innovate UK Competitions: *Innovate UK continues to run targeted competitions in specific domains (e.g. clean energy, AI, healthcare). These are not open-topic calls, but single companies **can** apply if their project fits the call's theme[iv]. A grant consultancy notes that many SMEs applied to SMART simply because it was always open and sector-agnostic; in the interim, businesses are advised to monitor the current Innovate UK themed grants and align proposals to those calls.*

Innovate UK Innovation Loans: *These are loans (not grants) for late-stage R&D and innovation scale-up. They provide 100% project financing (since a loan must be repaid) and have been offered through open competitions. Innovation loans can*

help bridge funding for a single company preparing for commercialization, but of course they add debt rather than non-dilutive funding.

Horizon Europe EIC Accelerator: *The EU's European Innovation Council (EIC) Accelerator is now open to UK SMEs as the UK re-associated with Horizon Europe in 2024[v]. This program closely resembles SMART grants in that it supports high-risk, high-impact innovations from any sector, and single companies (usually startups/SMEs) can apply without needing EU partners. In fact, British firms have historically been very successful in EU innovation programs. The EIC Accelerator offers substantial grants (often millions of euros) and optional equity investment, and many UK SMEs are unaware they can now apply[iv]. Notably, some experts suggest EIC grants are "in many ways better than the Innovate UK Smart Grants and can be easier to win". With SMART on hold, the EIC Accelerator is a prime alternative for ambitious UK companies seeking broad-topic R&D funding.*

Small Business Research Initiative (SBRI): *SBRI provides 100% funded contracts for companies to develop solutions to public sector challenges. While not open-topic (each SBRI call targets a specific problem defined by a government department), it does allow single-company bids and funds feasibility studies and prototypes. SBRI essentially pays companies to solve a customer-defined problem, which differs from a grant on a company's self-chosen project. It's a useful route for some firms but does not fill the gap of a completely open R&D grant.*

In summary, no fully open, sector-agnostic grant program for single companies currently exists at the national level now that SMART is paused. The UK government has indicated a replacement scheme will launch as a pilot in 2025[iv], but mid-year has arrived with no new open call announced. This leaves UK innovators in a difficult position – they must either fit their ideas into narrower themed competitions, take on repayable finance, or seek international funds like Horizon Europe. Indeed, grant advisors are urging companies to "diversify their funding approach" and not rely solely on a future SMART re-launch.

The "Valley of Death" Funding Gap in Innovation

Entrepreneurs often speak of a "valley of death" in the innovation lifecycle – a perilous gap between initial research/seed funding and the later-stage investment needed for full commercialization. This is the phase where a project has shown technical proof-of-concept but hasn't yet generated revenue or demonstrated commercial traction. In the UK context, the valley of death has been widely acknowledged as a persistent challenge preventing many

innovations from scaling up. As one 2023 policy event put it, "many great UK innovations fail by falling into the funding 'valley of death'", undermining the nation's ambition to be an "innovation nation" [vi]*. In this stage, sustained funding and investment are often lacking just when they are most needed to turn a promising prototype into a market-ready product.*

Evidence suggests that UK public funding mechanisms have historically been focused on early-stage R&D or very specific later-stage programs, but support in the middle (TRL 4–7) has been insufficient. An analysis by Protopia Group in 2023[vii] *found a clear pattern among university spin-out companies: receiving Innovate UK R&D grants significantly improved a spinout's survival rate and headcount in the first ~5 years, but had no significant effect on the company's ability to attract private investment. In other words, government grants helped keep these startups alive longer (and hire more staff) but did not necessarily help them cross the valley of death to reach self-sustaining growth. The researchers observed that Innovate UK's funding tends to emphasize technical progress up to prototype stage, without ensuring a bridge to commercial rollout. They note that "this gap […] evidenced in the 'valley of death' occurs between initial R&D (supported by research grants) and revenue generation (aided by tax incentives), where government support mechanisms are absent or ineffective"*[viii]*. In fact, most Innovate UK grants support work in early proof-of-concept through prototype stages (roughly TRL 3–7), while private venture capital is often deterred from exactly these stages due to high technological uncertainty and long timelines. This mismatch leaves mature start-ups (5+ years old) with innovative tech stranded – they may have used grants to build a prototype but then struggle to raise the larger sums needed for commercialization, as investors wait for more market validation.*

Multiple voices have pointed out this "critical and often fatal gap between delivery of a prototype and a final product" in UK innovation funding. Even the Defence and Security Accelerator (DASA), which provides 100% funding for early-stage tech in defence, acknowledged that a funding mechanism is still missing for the later stages to fully transition a prototype into adoption essentially, "we are still lacking a funding mechanism for this valley of death". All of this suggests the UK's existing funding landscape tends to get projects started (research grants) and can help once they're selling (via R&D tax credits or commercial loans), but the middle phase relies on piecemeal support. If a startup cannot find a large strategic investor or follow-on grant, its innovation can stall in development purgatory.

Notably, the UK government is aware of this issue. Recent policy initiatives have aimed to address it, such as modest "Proof of Concept" bridging funds for university spinouts[ix] and the creation of new agencies (discussed next) with a mandate to take bigger risks. However, critics argue that more must be done. One think tank report bluntly stated that to deliver on the UK's tech ambitions, "the UK must overcome [these] stubborn obstacles", providing innovators with longer-term funding to sustain them through the valley of death and into successful scale-up[x].

ARIA – A New High-Risk Funding Model Acknowledging Flaws

The Advanced Research and Invention Agency (ARIA) is an intriguing newcomer on the UK funding scene, and indeed its very existence is an implicit admission that the conventional funding system has limitations. ARIA was legislated in 2021 and launched in 2023 with ~£800 million budget through 2024–25[xi]. It's explicitly modelled on the U.S. DARPA and similar "ARPA-style" agencies, aiming to fund high-risk, high-reward research in a radically different way. Government statements describe ARIA's mission: to focus exclusively on projects that promise "transformative technological change or a paradigm shift," accepting that most may fail, but a few breakthroughs could have profound impact. This philosophy is a stark contrast to typical UKRI/Innovate UK grants, which often require evidence of deliverables and market prospects in the short term.

How ARIA differs from the status quo: ARIA has been set up outside of UK Research & Innovation (UKRI), granting it greater freedom from standard government oversight and bureaucracy. The rationale for this separation is that the existing funding mechanisms, governed by annual budgets, stringent accountability, and "value for money" checks, tend to be risk-averse and focused on incremental outcomes. A recent analysis noted that "UKRI is subject to regular Spending Reviews demanding evidence of impact even in the shorter-term. None of these [constraints] gel well with ARIA's design principles." In other words, ARIA's creation acknowledges that breakthrough innovation can't always thrive under the heavy oversight and low risk-tolerance of traditional public grants. ARIA instead employs expert Programme Directors with wide latitude to define ambitious "missions" and back portfolios of projects at speed. These directors can start or stop funding to teams dynamically and are encouraged to tolerate failure and pivot as needed – much like DARPA's model of agile program management.

Crucially, ARIA is sector-agnostic and independent. It can fund any field (it is not limited to defence or any one domain), and it operates with minimal political interference. In fact, ARIA's founding was premised on giving it freedom from detailed Treasury oversight and FOI (Freedom of Information) requests, to enable nimble, long-term bets. This independence is a direct response to the critique that UK funding was too centrally steered and cautious. The government explicitly cited the success of models like Germany's SPRIN-D and Japan's Moonshot R&D, agencies which, like ARIA, are mission-focused and cut across sectors – as inspiration.

It's fair to say ARIA's launch is an acceptance that the current funding approach is flawed for certain kinds of innovation. The "flaw" in question is that transformative innovations (think the internet, GPS, or mRNA vaccines) often require sustained investment with a high tolerance for failure – something the normal grant system struggled to accommodate. By creating ARIA, the UK is effectively admitting that its existing tools (Innovate UK competitions, research council grants, Catapult centres, etc.) were not adequately fostering "unreasonably ambitious" projects. ARIA aims to fill that gap by writing bigger checks, faster, with less paperwork and oversight on interim metrics. As a Frontier Economics commentary put it, ARIA's agile, discretion-driven model could "avoid the need for [it] to follow existing governance arrangements" that slow down innovation, instead enabling truly long-term bets beyond political cycles.

Status and early focus: As of mid-2025, ARIA has begun announcing its first programs. For example, it launched a "Safeguarded AI" programme with £45M across multiple projects on AI safety, and an £18M open call to establish a dedicated machine-learning research facility[xii]. ARIA is also exploring "Opportunity Seed" grants (up to £500k) to back individual high-risk ideas that might seed larger programs. While ARIA's budget is relatively small (£800M over 4 years, vs. Innovate UK's ~£1B per year), it is hoped that its impact will be outsized by tackling the kind of projects that ordinarily "would be too risky for the private sector" or for traditional grants. In effect, ARIA is meant to serve as a bridge over the valley of death for select breakthrough ideas, funding them through that precarious middle stage until they're attractive to larger investors or industry. Time will tell if ARIA can deliver on this promise, but its creation clearly reflects a policy consensus that "business-as-usual" funding wasn't sufficient for the UK to stay at the forefront of innovation.

International Wildcards: Germany's SPRIND and Others

Looking abroad, the UK is not alone in rethinking how to fund ambitious innovation. Germany's SPRIN-D (Federal Agency for Disruptive Innovation) is a notable "wildcard" example. SPRIND was founded in 2019 with a mission to spur "sprunginnovationen" essentially leap innovations, by backing high-risk projects and encouraging unreasonably ambitious ideas. In its first five years, SPRIND has developed a reputation for a fast, dynamic funding culture that contrasts with traditional German grant bodies[xiii]*. An independent evaluation released in January 2025 concluded that SPRIND has been largely successful so far. It attracted a high volume of radical ideas from researchers and entrepreneurs, and it fostered an internal culture described as "a different world" – much more open-minded and faster-moving than other public funding agencies in Germany. For example, SPRIND typically can release funds to a selected project team within two weeks of their application, an astonishing turnaround in contrast to months-long grant cycles elsewhere. The agency also uses rolling "challenge" competitions to pose broad problems (like long-duration energy storage, antiviral therapies, or autonomous flight) and invites diverse solutions. Multiple teams can be funded in stages, with the most promising advancing, an approach that embraces trial and error.*

One defining feature of SPRIND is that it's not restricted to one sector (unlike US DARPA which is defence-focused). SPRIND can fund any field – from biotechnology to digital innovation – which gives it a broad remit but also an unclear public profile. It explicitly aims to bridge the gap in Germany's innovation system by funding things existing ministries or grant programs wouldn't. Interviewees in the evaluation noted that many SPRIND projects "would not have been possible to fund from an existing ministry; the culture is just too different. You need a new agency that can act much more independently." This echoes the motivation behind ARIA in the UK. In practice, SPRIND has backed projects ranging from anti-drone systems to biodegradable electronics, often via a stage-gated competition (the "SPRIND Challenges") or even faster mini-calls called "Funke" (German for spark) that give a quick burst of funding to demonstrate a concept.

Importantly, SPRIND keeps a rolling, open channel for ideas: it actively solicits proposals from innovators year-round and has an "always open" portal for radical ideas outside of its predefined challenges. This means an inventor with a wild concept can approach SPRIND outside the typical bureaucracy, something quite appealing to those frustrated with structured calls. While SPRIND does issue focused challenges, it

prides itself on being a "home for people with radical new ideas" and will consider funding proposals that fall in its broad aim of breakthrough innovation. The agency explicitly markets itself as willing to "take conscious risks" and accept failure as part of the process.

Besides SPRIND, other international models include the EU's aforementioned EIC (which operates somewhat like a pan-European ARPA for high-risk startups) and agencies in certain other countries (for example, Canada's I-SEDI or Japan's Moonshot program). Even private philanthropy sometimes fills the gap – e.g. the Gates Foundation funding high-risk global health tech. SPRIND is a strong example to highlight because it has explicitly been encouraging "audacious" projects that would likely die in a traditional funding system. SPRIND's early outcomes are encouraging (several of its funded teams secured follow-on venture capital, validating the model[xiii]), though it too faces questions about having sufficient budget to sustain efforts long-term.

The broader point is that new funding mechanisms, whether ARIA, SPRIND, or the EIC, have emerged precisely because conventional grants were seen as too narrow or risk-averse. These wildcards introduce more flexibility: open-topic funding, rolling submissions, quicker decisions, and a mandate to "think radically differently" and aim for moonshots. They represent a deliberate push to fix the innovation funding pipeline where it was broken: at the transition from idea to impactful product, which so many initiatives never managed to cross.

Concerns About Funding Going to Big Players vs. Innovators

For balance, it's important to discuss how existing innovation funds have been utilized, and the criticism that too much money flows to large organizations or consultancies instead of agile startups. There is a view that substantial public innovation funding gets "gobbled up" by quasi-governmental bodies like Catapults, or by big firms (e.g. Black & Veatch) doing studies that end up gathering dust. There is evidence to support the claim that a significant share of UK innovation funding has been absorbed by large entities:

A detailed analysis of Innovate UK's funding data (2004–2022) revealed that Rolls-Royce plc alone received about 7%[xiv] of all Innovate UK grant funding in that period. This is a striking figure – one major corporation taking a hefty slice of the pie (likely via many projects in aerospace and propulsion). Moreover, "4 out of 5 of the top [funding recipient] entities are research and technology organisations (RTOs) and Catapults". In fact, when added up, the network of Catapult Centres and similar RTOs

accounted for over 25% of all Innovate UK funding (~£2.5 billion). Catapults are government-established innovation centres meant to bridge academia and industry in specific sectors (like High-Value Manufacturing, Digital, Cell & Gene Therapy, etc.). They do valuable work, but critics argue they sometimes compete with or overshadow private SMEs. The data suggests that a quarter of the grant funding intended to spur innovation has gone into these semi-public institutions, which often partner with (or duplicate efforts of) large industrial companies.

Other top recipients included giants like Airbus and Jaguar Land Rover. These firms certainly conduct R&D in the UK and contribute to economic growth, but one can question whether limited public funds should subsidize R&D that such large corporations might finance themselves. The Source Advisors impact report implicitly raises this by highlighting Rolls-Royce's dominant share and asking if the money could be "better spent elsewhere" to spur innovation. From an opportunity cost perspective, £1 going to a multinational might have yielded more additional innovation if given to a cash-starved startup. (Big firms, after all, have other financing options and generally lower risk of failure.)

Feasibility studies by big engineering consultancies; this echoes a common gripe: Government competitions sometimes award six-figure sums to large consultancies to write reports or do proofs-of-concept, which then "collect dust on a shelf." Without naming specific companies, there have indeed been cases where, for example, a major firm wins a grant to study (say) the feasibility of a new energy system, produces a report, and no further development ensues. This is hard to quantify, but it ties into the broader narrative of innovation funding not always reaching those who need it most or yielding tangible products.

Why does so much funding end up with large players? Part of the reason is structural: Collaborative grant competitions often require or favour having an established partner or an RTO involved. Many Innovate UK calls encourage university or Catapult collaboration, which, while useful, can sideline smaller firms that lack those connections. Additionally, bigger organizations have dedicated bid teams and experience to win grants. They also represent "low risk" from the funder's perspective – a big company is unlikely to fold mid-project, whereas a two-person startup might. However, funding only "safe" bets contradicts the goal of nurturing radical innovation. It's a delicate balance.

There is also the argument that Catapults and RTOs help SMEs by providing expertise and facilities – acting as enablers rather than

competitors. Indeed, Catapults were created explicitly to bridge the "gap between emerging innovation and industrial-scale manufacturing", i.e. to help startups overcome the valley of death by giving them access to expensive equipment and know-how[xv]. In theory, money given to Catapults indirectly benefits many companies. The concern, however, is whether this model is truly effective or whether it ends up diluting accountability (it's the difference between directly funding a startup vs. funding an intermediary to assist many startups). A 2021 parliamentary review found the Catapult network had room for improvement in how it's managed and interfaces with industry, though it affirmed Catapults' role in the ecosystem.

The key is ensuring that innovation funding leads to real outcomes, new products, companies scaling up, societal benefits rather than just reports or perpetual prototypes. The data about large recipients should be a call for scrutiny: If Rolls-Royce and the Catapults have received such a large chunk of funding, we should ask what the return on that investment has been. Innovate UK claims an impressive "£7 economic benefit for every £1 invested" across its programs, but as an analyst skeptically noted, it would be good to see the calculation behind that[xiv]. There is ongoing debate whether distributing funds more towards SMEs and less to already-successful firms might improve the overall innovation yield.

In conclusion, research and white papers on this topic do exist. The Source Advisors report (2022) provides a data-driven deep dive into who gets Innovate UK funding, the Protopia Group study (2023) examines outcomes and the valley of death issue for spinouts, and evaluations like the SPRIND 5-year assessment (2025) show how alternative approaches are working in practice. Think tanks (e.g. Onward's "Science Superpower" series) and Parliamentary committees have also published papers on improving UK innovation finance. All point to a common conclusion: while the UK has great strengths in research and creativity, it must reform its funding mechanisms – making them more accessible, timely, and daring – to conquer the valley of death and ensure brilliant ideas don't stagnate. The pause of SMART grants and rise of ARIA are pivotal developments in this story, and your White Paper's thesis appears well-founded: new strategies are needed to inject efficiency, openness, and focus on outcomes into the innovation funding system so that it truly delivers groundbreaking innovations rather than shelves full of studies.

APPENDIX C: THE CREATIVELY CHAOTIC WORK ENVIRONMENT

IDEO

The famed design consultancy, has long embraced a "creative chaos" in its workspaces. Walk into IDEO's offices and you'll find an explosion of prototypes, sketches, and notes strewn about. As one profile described, "Long rolls of butcher paper… record doodles, scribbles, notes. Prototypes are everywhere… Standing in the middle of things, admiring the creative chaos, is David M. Kelley, IDEO's founder"[xvi]. Kelley himself calls the company "a living laboratory of the workplace" in "a state of perpetual experimentation", constantly trying new ideas in its projects, workspace, and culturefastcompany.com. In other words, not everything at IDEO is "buttoned up" – chaos and clutter are part of their creative process.

This playful messiness is even likened to childhood creativity. An IDEO designer once suggested imagining "the creative chaos of a kindergartner's life" applied to work – going on field trips, making stuff, hatching crazy ideas – and noted that at IDEO, "it's how work gets done every day."[xvii]. In short, IDEO is publicly known for lively, cluttered offices where a bit of mess is seen as fuel for innovation rather than a flaw. As another article put it, IDEO openly admits it sometimes drifts into "creative chaos", driven by a childlike curiosity – a tradeoff the company accepts as part of producing cool ideasfastcompany.combehance.net. The underlying belief is that freedom, fun, and a dash of disorder in the environment help IDEO's teams think outside the box and stay innovative.

Adrian Newey's Clash with McLaren's Tidy Order

In stark contrast, Formula 1 design legend Adrian Newey experienced how an overly tidy workplace can stifle creativity. Newey famously clashed with McLaren management (in particular, team principal Ron Dennis) over the hyper-organized atmosphere at the McLaren Technology Centre (MTC). Ron Dennis was obsessively orderly – "very, very neat and organised, which of course are positive qualities until such time as they cross the line into becoming overly controlling"[xviii], Newey quipped. When McLaren moved to their new Norman Foster-designed Technology Centre factory, Newey found the pristine environment oppressive. The building's aesthetic was an immaculate "ordered greyness" with "rows and rows of desks with nothing out of line… Built by the Empire" – not at all conducive to creative engineering work. As Newey bluntly put it, "Not an environment in which I… found it easy to be creative."

McLaren's strict "clean desk" policies went so far that, initially, even drinking water at one's desk was forbidden. "When we first moved in, we weren't even allowed glasses of water at our desk, and absolutely no tea or coffee or personal effects," Newey recalled. After pushback, management relented on water but not on other beverages, and personal items stayed heavily restricted. Employees were allowed at most one family photo on their desk – and even that had to be locked in a drawer overnight. The facility's regimented rules (down to prescribed walking routes monitored by CCTV) created a controlled, almost "Orwellian" vibe that Newey detested.

Newey has indicated that this sterile, constrained environment hampered his creativity and was a factor in his decision to leave McLaren. He "hated" the oppressive order of the MTC and the feeling of being monitored and micromanaged. Indeed, after eight years at McLaren (and soon after the MTC opened), Newey departed to join Red Bull Racing in 2006. Many commentators have since pointed to this episode as a cautionary tale: enforcing tidiness and uniformity to the extreme can drive away top creative talent. In Newey's case, the clash of philosophies was clear – his innovative genius thrived in a more relaxed, clutter-friendly space, not under the museum-like cleaniness that McLaren's management enforced.

Messy Environments and Creativity: What Research Says

Multiple studies in psychology and management back up the idea that a little mess can boost creativity. In fact, research suggests that while tidy environments encourage discipline and convention, messy environments often spark original thinking.

Creativity Flourishes in Messy Rooms: *In a set of experiments by University of Minnesota researcher Kathleen Vohs[xix] and colleagues, participants in a disorderly room generated more creative ideas than those in an identical but tidy room. For example, when asked to brainstorm new uses for a ping-pong ball, people working in a messy space came up with ideas that independent judges rated as significantly more innovative and interesting than the ideas from participants in a neat space. As Vohs summarized, "Being in a messy room led to something that firms, industries, and societies want more of: Creativity." In contrast, the clean room prompted more conventional thinking and safer choices (those participants even tended to pick an apple over candy on the way out, behaving more "proper").*

Order vs. Disorder – Different Benefits: *The same research noted that orderly environments encourage conformity and responsible behavior, whereas messy ones encourage breaking from tradition. "Orderly environments, in contrast, encourage convention and playing it safe," Vohs explains, while "disorderly environments seem to inspire breaking free of tradition, which can produce fresh insights."psychologicalscience.org In other words, a spotless desk might promote diligence and propriety, but a cluttered desk might nudge your mind toward new, out-of-the-box ideas. This echoes the old Einstein quip: "If a cluttered desk is a sign of a cluttered mind, of what, then, is an empty desk a sign?" The science suggests an empty (perfectly neat) desk might signal an empty creative pipeline, whereas a bit of mess can feed creative divergence[xx].*

Clutter Sparks Serendipity: *Messy workspaces can also lead to unexpected creative connections. Writers, inventors, and engineers often keep piles of books, models, or notes around, precisely because you never know what random juxtaposition might trigger a useful idea. As one Wired column noted, "An old report sitting on the corner of your desk can spark a useful idea when you glance at it."wired.com In a pristine environment, you might file everything away and miss those chance encounters between ideas. Clutter, within control, acts as a visual reminder of diverse thoughts and past explorations, potentially leading to "aha" moments. Steve Jobs, Thomas Edison, and other*

famously creative individuals were known for their messy desks, reflecting this principle that innovation often thrives in a bit of chaos.

Overall, both anecdotal evidence and research point to a consistent theme: creative work often benefits from a loosely structured, even messy physical environment. Design firms like IDEO cultivate a playful clutter to keep ideas flowing, and figures like Adrian Newey chafed at overly regimented workplaces that felt creativity-killing. While extreme disorder can become counterproductive, a balance favouring creative messiness – what one IDEO designer called "curated clutter" – tends to energize people who need to innovate. As long as the chaos is meaningful (think: walls filled with Post-its and prototypes, not just garbage), it serves as a tangible manifestation of ideas-in-progress. The evidence suggests that embracing a bit of mess not only reflects a creative mind, but can actually help produce one. In the realms of design, innovation, and engineering, an overly tidy ship might miss the new horizons that a messier vessel could discover.

APPENDIX D: DELIVERY MODEL AND KEY CONSIDERATIONS

HYBRID PUBLIC–PRIVATE STRUCTURE OF THE RIF

The proposed Radical Invention Fund (RIF) is envisioned as a hybrid entity, combining features of a public agency with those of a private investment fund. In practice, this means initial capitalization and mission guidance from the public sector, paired with the agility and co-financing of private partners. Notably, the Leeds City Region's original Revolving Investment Fund[xxi] was structured as a limited partnership of local authorities and contemplated bringing in private sector funding managed by an independent fund manager after launch. This kind of hybrid model can leverage public funds to de-risk projects and crowd in private investment, expanding the financing options available. It also introduces private-sector discipline and broader investment expertise while retaining a public purpose. A useful analogy is the Fraunhofer Institutes in Germany, which operate in a "dynamic equilibrium" between public and private funding. Roughly 30% of support from government base grants and ~70% from contract research earnings[xxii]. Such a balance helps ensure both societal impact and financial sustainability. The RIF's hybrid design will similarly aim to blend public good with market-driven growth, positioning it to support projects that might otherwise struggle to secure sufficient financing. Importantly, as a revolving fund, capital returns can be re-invested: in the Leeds RIF example, loan interest and repayments are recycled to fund future investments. This will help the RIF remain a long-term fixture rather than a one-off grant program, as discussed further under sustainability.

Intellectual Property and Ownership Framework

A critical design question is how intellectual property (IP) and returns on investment will be handled – which can follow a public-oriented model, a private-oriented model, or a creative mix of both. The approach we choose will affect the incentives for participants and the long-term sustainability of the fund.

Public-Sector IP Policies and Clawbacks

In a traditional public grant context, the funding agency typically does not take ownership of IP or equity in the projects it supports – the goal being to let innovators commercialize freely for the wider economic benefit. However, the public does retain certain rights to ensure its investment isn't squandered or offshored. For example, under the US Bayh-Dole Act, when federal funds support research, the government retains a royalty-free license to use any resulting patented inventions[xxiii]. This means the government (and thus taxpayers) can practice the invention without paying royalties, ensuring public access if needed. Furthermore, if the private sector fails to commercialize a publicly funded invention or tries to impose unreasonable terms, the government can invoke "march-in" rights to license the IP to others. A safeguard to prevent shelved innovations or price-gouging on taxpayer-funded discoveries.

In recent years, some innovation agencies have gone further by instituting clawback mechanisms for IP that is developed with public money. The goal is to prevent scenarios where a company takes public funding, develops valuable IP, and then sells it off to foreign investors or moves it overseas, depriving the home country of benefits. The newly launched Canada Innovation Corporation (CIC) plans to levy "significant clawbacks" or fines if a firm that it funded later sells IP to a foreign buyer or shifts operations abroad[xxiv]. This approach was inspired in part by Israel's Innovation Authority, which for years has enforced payback rules on grant recipients: if a company wants to transfer publicly-subsidized IP out of Israel, it must repay up to 3× the grant value (and up to 6× if it also closes its local operations). A noted case was when Google acquired the Israeli startup Waze. Because Waze had benefitted from a ~$1M IIA grant, the company had to pay a $3M fee upon its $1.1B sale to Google. These examples highlight tools a public-oriented RIF can use to protect the region's interest in funded innovations: retained IP rights, revenue-sharing, and clawbacks if outcomes undermine local benefit.

Applying this to our Yorkshire RIF, a public-sector stance might mean that startups or projects keep ownership of their inventions (encouraging them to grow the business), but the RIF agreement could require that key IP developed with RIF support stays domiciled in the UK/Yorkshire for a period of time. If a project were to be sold off outside the region, the RIF could demand a payback or share of the sale proceeds. Likewise, the RIF might hold royalty-free rights to use the technology for public benefit (e.g. letting the NHS use a healthcare innovation developed

through the fund). These conditions would reassure public stakeholders that "we're not just funding a one-way ticket out of Yorkshire" any upside from public investment returns, at least in part, to the public realm or is reinvested locally.

Private-Sector Investment Practices (Equity, Vesting, and IP Pools)

From a private fund perspective, the model for IP and returns is almost the inverse: the investor's reward for backing innovation is typically an equity stake (ownership share) in the venture, not ownership of the IP itself. Venture capital and accelerators, for instance, rarely take direct IP rights; instead they receive shares in the company which give them a claim on future profits or an acquisition payoff. A well-known example is Y Combinator (YC), the tech accelerator, which invests a fixed amount on standard terms. $500k for roughly 7% equity, and in return YC gains that percentage of the startup but does not assume control of the startup's patents or products[xxv]. The startup remains the owner of its intellectual property (held under the company entity that YC has invested in), and is free to commercialize or license it; YC's benefit comes when the company's value grows. This equity-based approach aligns the fund's interests with the innovators'. Everyone wins only if the innovation succeeds in the market, and avoids burdening startups with complicated IP ownership splits. For the RIF, incorporating a private-style approach could mean taking equity warrants or revenue shares in projects it funds, thus creating a portfolio of ownership stakes. If one of the startups becomes a "unicorn" or is acquired, the RIF would receive a payout proportional to its stake, which could then feed back into the fund (supporting the sustainability goal). This is analogous to how a private venture fund operates, except our returns would be recycled for public benefit rather than distributed to private limited partners.

To implement this in a hybrid RIF, we could structure investments as convertible grants or loans: initially provided as grant-like funding, but converting into an equity stake or royalty obligation if the project hits certain success criteria (e.g. product reaches market or company achieves a valuation threshold). Another mechanism is an IP royalty pool or shared IP agreement among RIF-backed projects. While not common, one could envision that any project funded yields a small perpetual royalty or licensing right to the RIF or a collective pool. For example, if a biotech startup funded by RIF patents a new drug, the RIF might get a 1% royalty on future sales, or

all RIF-supported companies agree to grant each other non-exclusive licenses to any patents (to cross-pollinate innovation). Such an IP pool approach would create a collaborative ecosystem and a passive income stream, though it needs careful design to be attractive (startups may be wary of encumbrances on their IP). At minimum, vesting and clawback provisions should be in place on the individual level: any equity the RIF receives in a startup should come with standard founder vesting terms (e.g. founders must stay ~4 years to fully earn their shares, preventing them from taking the money and immediately leaving). If a founder or key personnel exit early, the RIF (and other investors) could claw back unvested shares – a common practice in venture deals to protect against team instability. Similarly, if a project grossly underperforms or misuses funds, a private fund might have clauses to cease funding or even reclaim assets; a public-private RIF could include contractual milestones (without being overly rigid) to stop funding projects that fail to hit agreed checkpoints. In summary, the private perspective contributes mechanisms to align incentives and ensure commitment: equity stakes to capture upside, vesting schedules to keep talent engaged, and clawback options as a safety net. Balancing these with the public interest protections above will be key to our hybrid model's success.

Achieving Long-Term Financial Sustainability

A foremost goal is for the RIF to become self-sustaining over time breaking out of the cycle of short-term funding and instead operating akin to an endowment or revolving evergreen fund. In practical terms, this means using early successes to secure a permanent capital base that generates income for the RIF's activities indefinitely. The user aptly mentioned seeking an endowment from "the hated fund" (presumably a major regional or national funder currently viewed as inefficient) after a couple of years of proven operation. There is strong precedent for this strategy in the UK. NESTA, the National Endowment for Science, Technology and the Arts, was established in 1998 exactly in this way; with a one-time endowment of £250 million from the UK National Lottery[xxvi]. That lump sum was placed in a trust, and NESTA has since lived off the investment income (around £10–12 million annually in the early years) to fund its innovation programs while preserving the capital. In fact, after demonstrating impact in its initial years, NESTA convinced the government to top up its endowment by a further £95 million in 2003[xxvii], ensuring it could expand its mission without seeking annual grants. This model,

a sizable endowment yielding interest/dividends to cover ongoing grants and operations, is ideal for longevity. It allowed NESTA to become an independent charity and continue supporting innovators to this day. We should certainly explore a similar ask: once the RIF can show a track record (perhaps 2–3 years in), approach the major funding bodies (e.g. UK Research & Innovation, British Business Bank, or a regional "Investment Pot") to seed an endowment that anchors the RIF's future.

Apart from a one-off endowment, revolving funds are another path to self-sustainability. The Leeds City Region RIF itself was designed as a revolving fund, loans made to projects are repaid with interest, and those proceeds are ploughed into the next round of projects[xxviii]. Essentially, the fund capital keeps cycling. Our RIF can use a revolving mechanism for any investments that have a revenue return (e.g. loans, equity exits, royalties as discussed). Over time, successful projects will return multiples of the initial investment (for example, interest on Leeds RIF loans was expected to accrue over £1.2m). If managed prudently, this creates a snowball effect, the fund grows or at least maintains itself as money returns. Of course, revolving funds can be slow to grow if returns are low or long-term (e.g. equity in startups might take 5-10 years to liquidity). That is why combining an initial endowment with a revolving portfolio is powerful: the endowment covers core costs and patient long-term bets, while the revolving portfolio provides a pipeline of replenished capital and demonstrates impact (which in turn justifies additional infusions).

We should also examine hybrid revenue models. For instance, Germany's Fraunhofer model (cited earlier) shows how an institute can earn a large share of its budget by selling research and IP. In our context, this could translate to the RIF offering contract R&D or innovation services to companies for a fee, or taking on later-stage investment deals that yield financial returns. Additionally, if any RIF-backed project creates a blockbuster technology, the royalties or equity gains from that single success could endow the fund further. (For example, Fraunhofer famously earned substantial royalties from the MP3 audio codec which one of its labs invented – a reminder that IP generated can become a revenue stream in itself).

Lastly, we should not overlook philanthropic and corporate contributions to the endowment. Many large firms have corporate social responsibility budgets or innovation funds that could match public contributions if they see a well-run RIF with demonstrated outcomes. Over a horizon of, say, 5–10 years, the objective is that RIF's operating budget no longer depends on precarious annual grants but is largely covered by endowment earnings, returns on investments, and ongoing support

from diverse partners. Achieving this will "allow us to run sustainably forever" as envisioned, freeing the RIF team to focus on impact rather than yearly fund-raising. Every strategic decision (IP terms, equity stakes, etc.) we make in the setup should therefore consider its effect on long-term finances – balancing generosity to attract participants with retained rights that could ensure the RIF's future.

Project Selection Criteria and Pipeline Development

The initial concept suggested setting a high bar, only funding "terrifyingly bold" ideas, to ensure the RIF backs genuinely transformative innovations. While aiming for boldness is important (we do want breakthroughs, not just marginal improvements), we also must ensure a sufficient deal flow of quality projects in the Yorkshire region. There may not be 50 or 100 truly "terrifyingly bold" proposals locally each year, especially in the early years of the program. To address this, we will expand and clarify the selection criteria, creating a pipeline that is ambitious yet realistic and inclusive of different innovation stages.

Firstly, we remain committed to prioritizing high-risk, high-reward projects – those that, if successful, could be game-changers for industry or society. This mirrors the philosophy of agencies like DARPA or the newer ARPA-H, which explicitly seek out projects with breakthrough potential even if many might fail. Such projects often involve unproven science or novel applications that traditional investors shy away from, which is exactly where a mission-driven fund should step in. We will actively scout for these "moonshot" ideas (e.g. through universities, hackathons, industry challenges) and perhaps even launch our own Grand Challenges to stimulate proposals in areas of strategic interest (for example, a challenge for zero-carbon industrial processes or AI solutions for elderly care – areas that would benefit Yorkshire and beyond). That said, not every supported project needs to be a moonshot. We can also fund "bridging innovations", projects that are not purely incremental improvements, but maybe moderately bold ideas building on existing regional strengths. For instance, an advanced manufacturing company in Sheffield might not be creating a brand-new industry, but implementing cutting-edge robotics in a factory, that's innovative and valuable to back, even if it's not "terrifying" in a global sense. Including such projects ensures we capture more of the good ideas out there and deliver tangible

regional benefits (jobs, productivity gains) in the near term, while still pushing the envelope.

To manage this spectrum, our selection criteria will have a tiered approach or scoring system. Key recommended criteria include:

Novelty & Impact: *How novel is the idea and what magnitude of impact could it have if it succeeds? Projects should ideally either create a new market/industry or dramatically transform an existing one (at least in the region, if not globally). We will rank higher those proposals that address significant problems or opportunities, whether economic, social, or environmental, with a clear theory of change for a step-change improvement. (A helpful question from the DARPA playbook: "If it works, how big a difference will it make?"). Truly unique, first-of-a-kind ideas get priority, but strong improvements (e.g. 10x better performance on a key metric) in critical fields also score highly.*

Technical and Execution Feasibility: *Is the science/technology foundation sound, and can the team credibly execute the project? Bold ideas must be paired with competent teams. We will assess whether proposers have the necessary expertise or partnerships to deliver. This doesn't mean we only take fully proven concepts (then it wouldn't be high-risk), but we look for a plausible path and milestones. We might use something like the Heilmeier Catechism (a set of questions used by ARPA managers) to evaluate proposals: e.g., What are you trying to do? How is it done today and what are the limitations? What's new in your approach and why do you think you can succeed now? What are the risks? This ensures even wild ideas have thought-through plans. We should be prepared to provide support (mentorship, access to labs) to promising teams that lack some capacity, rather than reject otherwise great ideas outright. But a minimum threshold of technical viability is needed to avoid funding wishful thinking.*

Alignment with Regional Strengths & Needs: *Does the project leverage Yorkshire's unique assets or address local priorities? Part of our mandate is to boost the Yorkshire (and Leeds City Region) economy and innovation ecosystem. So, proposals that involve local universities, industries or address challenges in Yorkshire (such as sustainable textile manufacturing in West Yorkshire, digital health leveraging the Leeds health data hub, green energy in the Humber, etc.) will have an edge. This doesn't mean we exclude all ideas that aren't Yorkshire-specific, innovation can be globally relevant, but a tie will go to the local-centric one. We will also ensure a broad coverage across sectors important to the region: manufacturing, health, agriculture, creative industries, clean energy, etc., to not concentrate all bets in one domain.*

Scalability and Sustainability: *If the idea works, what's the path to scale and lasting benefit? We prefer projects that have a clear route to implementation/adoption. For a product, is there a sizable market or a clear customer? For a research proof-of-concept, is there a plan for follow-on development or spin-out? We aren't requiring mature business plans for very early research, but we want to avoid funding dead-ends. The applicants should articulate how their innovation could be scaled or attract follow-on investment. This criterion will also help us filter out proposals that, while exciting scientifically, have no plausible way of benefiting the economy or society (we are not basic science funders per se – there are other grants for that).*

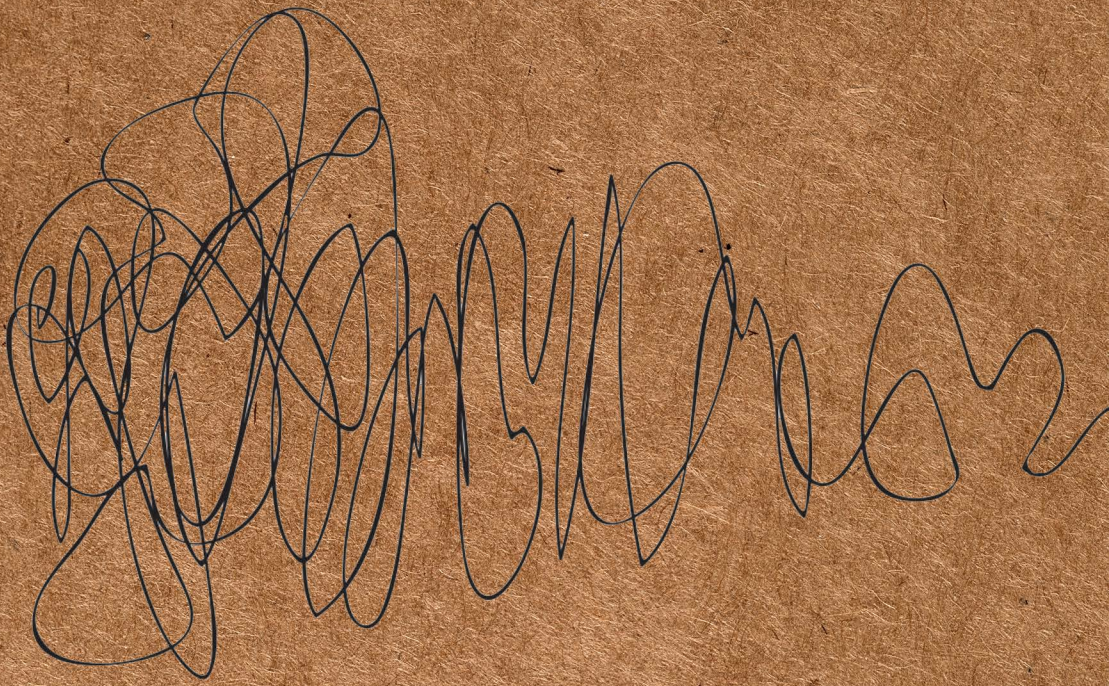
Boldness of Vision relative to ask: *Finally, we will indeed gauge the boldness, essentially, the innovation-to-funding ratio. We want to fund things that wouldn't happen otherwise. If a project is relatively safe and could attract bank financing or existing grant schemes, then it's likely not a priority for RIF. Our funds should make a decisive difference for audacious projects that currently fall between the cracks of public and private funding. One way to implement the "terrifyingly bold" hurdle is to literally ask the selection panel: "On a scale of 1-10, how excited (or scared) are you by this idea?" If the answer is lukewarm, the project might be too conventional. However, as noted, we will calibrate this so as not to have an empty pipeline – a mix of moonshots and near-term innovations is healthy. We might aim for a portfolio approach: e.g., 20% of projects truly moonshot (accepting many will fail), 50% mid-level innovations (likely to succeed and deliver ROI), and 30% incremental but necessary innovations (low risk, almost like anchor tenants ensuring some guaranteed wins). The overall RIF portfolio can thus deliver some quick wins for credibility while still swinging for a few home runs.*

Additionally, we will implement an active scouting and mentoring process to develop the pipeline. It's not enough to passively wait for 100 amazing applications to show up in Yorkshire each year. The RIF team should proactively work with universities, SMEs, and entrepreneurs to surface latent bold ideas and help refine them into fundable proposals. This could involve running workshops in local tech hubs, idea challenges in schools and colleges, and even bringing in ideas from outside Yorkshire that could be piloted or scaled here. Over time, as the RIF gains reputation, we may attract talent from beyond the region (e.g. a cutting-edge startup might choose to relocate or partner in Yorkshire to access RIF support). That would increase the pool of "terrifyingly bold" ventures associated with Yorkshire, helping overcome the initial pipeline scarcity.

In summary, the selection criteria will be broadened from just a single "boldness" yardstick to a balanced scorecard of Impact, Feasibility, Strategic Fit, Scale Potential, and Novelty. We will still hold true to the ethos of funding the unfundable, the big swings that others avoid, but with a pragmatic lens on what is available and needed in our context. By doing so, the RIF can fill its pipeline with a robust range of innovations – from revolutionary moonshots to solid applied technology projects – all contributing to Yorkshire's transformation into an innovation powerhouse. This dual approach of high aspirations and broad engagement will help ensure we have at least 50-100 worthwhile candidates to choose from, even if only a fraction are "scary bold," and that none of our precious funding capacity sits idle. Each year's cohort can then be a showcase of Yorkshire's brightest ideas, demonstrating both visionary ambition and tangible progress.

i **Innovate UK Smart Grants guidance and pause announcement**
https://www.ukri.org/opportunity/smart-grants/
ii **Kene Partners: "The Pause on SMART Grants – What it Means"**
https://kene.partners/insights/the-pause-on-smart-grants/
iii **Myriad Associates: "What's Happened to the SMART Grant?"**
https://www.myriadassociates.com/news/2024/3/4/smart-grant-has-it-been-scrapped/
iv **Novigo Group: "SMART Grant Suspended: What Now?"**
https://www.novigogroup.com/news/innovate-uk-smart-grant-suspended
v **European Commission – Horizon Europe (ec.europa.eu)**
https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/home
vi **Onward Think Tank – "Tackling the Valley of Death" Event**
https://www.ukonward.com/events/tackling-the-valley-of-death/
vii **Protopia Group: "Innovate UK Grant Impact on Spinouts" (2023)**
https://protopiagroup.org/insights/innovate-uk-impact-on-spinouts/
viii **Protopia Group homepage**
https://protopiagroup.org/
ix **TenU – Translational Ecosystem Network**
https://www.ten-u.org/
x **Onward Think Tank homepage**
https://www.ukonward.com/
xi **Frontier Economics: "ARIA vs UKRI – Commentary on Risk Funding"**
https://www.frontier-economics.com/uk/en/news-and-insights/news/news-article/iaria-and-the-case-for-high-risk-public-funding/
xii **Advanced Research and Invention Agency (ARIA)**
https://aria.org.uk/
xiii**Science Business: UK and EU Innovation Policy Coverage**
https://sciencebusiness.net/innovationchallenges
xiv **Source Advisors: "Innovate UK Funding Impact Report"**
https://www.sourceadvisors.co.uk/innovate-uk-funding-analysis/
xv **The Guardian – Innovation or R&D Commentary**
https://www.theguardian.com/hermann-hauser-science-catapults
xvi **Fast Company – "Encourage Wild Ideas"** (T. O'Brien, 1996) – profile of IDEO's culture and workspace https://www.fastcompany.com/28121/encourage-wild-ideas
xvii **Behance / IDEO: "Big Innovation Lives on the Edge of Ridiculous"**
https://www.behance.net/blog/innovation-on-the-edge-of-ridiculous
xviii **Sky Sports – Adrian Newey Extract from Autobiography**
https://www.skysports.com/f1/news/12433/10928076/how-to-build-a-car-exclusive-extract-from-adrian-neweys-autobiography
xix **Psychological Science: Vohs et al. (2013) – "Order, Disorder, and Creativity"**
https://journals.sagepub.com/doi/10.1177/0956797613480186
xx **Wired: "Tidying Up Can Hamper Creativity" (C. Thompson, 2016)**
https://www.wired.com/2016/05/tidying-up-can-hamper-creativity/
xxi **North Yorkshire Council eDemocracy Portal**
https://edemocracy.northyorks.gov.uk/

xxii **Fraunhofer Society – Innovation Research Institutes (Germany)**
https://www.fraunhofer.de/en/about-fraunhofer/
xxiii **Crowell & Moring – Government Contracting Law Firm**
https://www.crowell.com/en/insights/client-alerts/federal-circuit-hints-at-the-scope-of-governments-license-rights
xxiv **The Logic – Innovation Clawbacks**
https://thelogic.co/news/new-federal-innovation-organization
xxv **Y Combinator Accelerator – Startup Model**
https://www.ycombinator.com/deal
xxvi **Wikipedia – NESTA**
https://en.wikipedia.org/wiki/Nesta
xxvii **UK Parliament API – Hansard quote Lord Davies 2003 NESTA**
https://api.parliament.uk/national-endowment-for-science
xxviii **Leeds City Council – Background on Leeds Revolving Investment Fund and economic development activity**
https://www.leeds.gov.uk/business/support-and-advice



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