Staff Mobility to Action Resilient, Restorative, and Regenerative Transitions & Societies

Funded by
the European Union

I3X – Guiding Principles

SMAR3TS

- Innovate3X-Igniting Impactful Initiatives, or I3X, should aim to accelerate the understanding/scoping of a challenge (technological, market, societal etc), and the emergence/development of possible solutions. This can be interpreted as e.g. increased technological or societal readiness, once the I3X is completed.
- I3X should have a sufficient scale and scope (i.e. not being too narrowly-defined), and should require multi/cross/inter/trans disciplinary capabilities.
- I3X should align to the core concepts of SMAR3TS – Resilience, Restoration, Regeneration (either R or all Rs).
- I3X should align to (at least) one WP – WPs are the main coordination mechanism of the project, hence I3X should be connected to WPs.
- Any partner can initiate an I3X. Yet, shaping the I3X should be done collectively, and in collaboration with WP leader and SMAR3TS Team.
- At this stage, we are looking for initial I3X, which will be further defined during the Kick Off Meeting – and where engagement across the consortium will be assessed.
- Overall, it is expected that each I3X will lead and enable about 10 person-months of secondment, across the consortium (i.e. not only between the initiator of the I3X and possible contributors), possibly more.
- I3X will serve as guiding instruments for secondments, as well as for events (i.e. hackathons, workshops, showcase)

I3X – About the initiator

Name of Organization: University of Cambridge
Research Group/Department: IfM Engage
Country: UK

1. Background info

Short description of your organization: IfM Engage
Website: https://engage.ifm.eng.cam.ac.uk

2. Research Group/Company Department

Short description: Facilitating knowledge translation from University to practice (industry/government) through the deployment of consulting/education and communication

Link to the website: https://engage.ifm.eng.cam.ac.uk

Contact info: Dr David Lott (CEO). Email: dl362@cam.ac.uk

3. Expertise and available technologies within SMAR3TS project

1. ***Expertise*** *of your research group/department and available technologies:*

Expertise relates to tools/ approaches developed at IfM https://www.ifm.eng.cam.ac.uk/research/
4 areas are put forward
- ***Supporting young people mental health***
- ***Supporting policy for translating science into technology and innovation for sustainable goals***
- ***Supporting Agrifood supply chains resilience***
- ***Encouraging digitalisation of SMEs manufacturing to support resilience, restoration and regeneration of manufacturing***

2. ***Current status*** *of available technologies (incl. TRL) / problematization/solution development (SRL) and expected TRL/SRL to reach:*
The research areas are continuously updated and hence we have approaches that are at most stages in the TRL (from Pilot to mainstream)

4. Examples of strategically relevant Innovate-3X Initiatives

4 areas are put forward, although more is available

- ***Supporting young people mental health***
- ***Supporting policy for translating science into technology and innovation for sustainable goals***
- ***Supporting Agrifood supply chains resilience***
- ***Encouraging digitalisation of SMEs manufacturing to support resilience, restoration and regeneration of manufacturing***

I3X – Alignment to R3 and to WPs

SMAR3TS domains:

1) ***Specify here:*** *one or several SMAR3TS domains that are relevant to the work of your organization/research and innovation team.*

We are agnostic and have much experience to deploy our approaches in all the 4 sectors (Nutrition, Mobility, Energy and Construction)

2) ***Specify here:*** *alignment of the work of your organization/research and innovation team with one or several SMAR3TS focus areas on Resilience, Restoration, and Regeneration. Share examples.*

On top of the specific projects/I3X areas below, Case studies which describe capabilities include

https://engage.ifm.eng.cam.ac.uk/e-wave-powering-the-future-of-electric-shipping/

https://www.ifm.eng.cam.ac.uk/insights/sustainability/

https://engage.ifm.eng.cam.ac.uk/project/eit-food-roadmapping-case-study/

https://engage.ifm.eng.cam.ac.uk/project/unlocking-the-potential-of-materials-for-quantum-technologies-in-the-uk/

https://engage.ifm.eng.cam.ac.uk/project/future-proofing-controlled-environment-agriculture-with-defra/

I3X Description

Note: *there can be several Innovate-3X descriptions, just duplicate this template slide*

1) Innovate-3X: Joining up science across domains to deliver actionable interventions for young people mental health

1. Description of Current Stage

https://engage.ifm.eng.cam.ac.uk/project/ypmh-mental-health-support-roadmap/

Supporting young people mental health through cross disciplinary research – particularly linked to nutrition science.

By deploying management approaches, this work looks to joining experts' knowledge across scientific domains with the aim to develop implementable solutions which enhance the opportunity to prevent, diagnose and support the recovery of mental health, particularly of young people.

Engagement in resilience, restoration, regeneration:

IfM Engage recently designed and delivered a food, nutrition and mental health workshop which was attended by researchers, public health experts, clinicians, schools, prisons, employers, policy experts and innovators who are motivated to accelerate progress in improving knowledge, diet, regulation and food offering across the UK (in the first instance) to support brain and mental health. At this meeting, a draft document describing all aspects of food, nutrition and brain health was presented and discussed, and completion of the document as a reference work agreed as a follow up action.

☐Pilot / Proof of Concept

☐Early Implementation

☐Scaling / Mainstreaming

2. Necessary skills and capabilities, across disciplines:

To engage with this work requirements include:

- ***Capabilities to understand, develop and deploy innovation in mental health environments***
- ***Ability to work with different types of stakeholders in the mental health ecosystems.***
- ***Capability to bring key players in the discussion to develop key solutions to main challenges***

3. Examples of challenges that need to be addressed

Specify here: *Please outline which challenges remain unresolved. You may answer in bullet points.*

Despite the wealth of popular science resources on the importance of nutrition, only a proportion , ~10%, (based on top 200 nutrition books on Good Reads in last 10 years), specifically describe the importance of nutrition and food in brain and mental health. Additionally, the resources that are available typically focus on one aspect, such as gut-brain connection, the role of Omega-3 fatty acids or importance of micronutrients, according to what the author considers most important, meaning a single comprehensive resource does not exist.

There is therefore a need for a robust, evidence-based and validated resource covering all aspects of food, nutrition and brain health, which may be used as a reference work for information campaigns educating key audiences on the importance of food and nutrition in brain and mental health.

Expert researchers who attended the workshop have volunteered their time to validate the information presented in the resource, and we are seeking a person dedicated to the work to deploy management methods to the body of collated information to develop a useable resource and manage contributors.

I3X Description

Note: *there can be several Innovate-3X descriptions, just duplicate this template slide*

2) Innovate-3X: Sustainable Packaging challenge - new materials

1. Description of Current Stage

Organisations in the IfM Open Innovation FMCG forum come together to collaboratively share practices and solve numerous challenges affecting the industry.

One of the key issues for current industry is addressing the materials and infrastructure required to have more sustainable packaging for food and drink products, in line with the intent of forthcoming legislation and regulations.

There is a need to develop cross-firm understanding and planning across the supply chain to drive meaningful sustainable improvements. In the short-term this means identifying materials that can be used more sustainably within the existing infrastructure. In the longer-term, the ambition is to identify novel material developments which could be beneficial at the technical, economic, and environmental level and could support the meeting of industry regulators' needs.

(resilience, restoration, regeneration)

☐Pilot / Proof of Concept

2. Necessary skills and capabilities, across disciplines:

To engage with this work requirements include:

Work to bridge academic expertise and industrial needs (e.g. materials, economic, manufacturing, policy, sustainability etc) .

By relying on the Forum's members the person will

- ***Map current challenges and forecast future needs for materials to improve sustainability in packaging across the supply chains in the food industry (considering challenges/ specificities of players/ regulatory diversity / etc)***
- ***Identify/ evaluate / prioritise challenges***
- ***Identify/ evaluate/ prioritise opportunities in materials for packaging that meet the current and long-term needs of the industry***
- ***Support the develpment of a roadmap (moving from short- to long-term), integrating learning from the mapping about materials advancements and facilitating strategic plans over time***
- ***Deep-dive into some of the technical solutions proposing next steps***

3. Examples of challenges that need to be addressed

Specify here: *Please outline which challenges remain unresolved. You may answer in bullet points.*

How should the food and drink industry and supply chain plan and coordinate to deliver more sustainable packaging – both quick wins in the short-term and taking advantage of the most advanced opportunities emerging from new materials, designs and manufacturing approaches?

The project should work across the various disciplines to help bring scientific developments into practice and support the future of packaging sustainability in the food industry.

I3X Description

Note: *there can be several Innovate-3X descriptions, just duplicate this template slide*

3) Innovate-3X: Policy action – supporting scale-up and digital transformation

1. Description of Current Stage

Research that explores what makes national innovation systems effective at translating new science and engineering ideas into novel technologies and emerging industries for **Resilience Regeneration and Restoration**

https://www.ciip.group.cam.ac.uk/what-we-do/services/policy-links-team/

https://www.ifm.eng.cam.ac.uk/uploads/Content_Images/Policy_Links_2_page_overview.pdf

Examples of R&I stages:

☐Other: Researching Policy effectiveness and assessing/developing policy learning and tools

2. Necessary skills and capabilities, across disciplines:

To engage with this work requirements include:

- ***Skills complementing existing in-house engineering/economic/policy competences***
- ***Knowledge/data/ interests about specific governmental policies***
- ***Capability to translate research into practice through collaboration with policy-makers***
-

3. Examples of challenges that need to be addressed

Specify here:

Challenges can be related e.g., to market and business model, technology adoption, sustainability assessment, regulation, policy, technologies, data availability, methods & analysis, technical or methodological gaps, ecosystem building or community development, societal & cultural acceptance of innovations, impact, etc.

Examples of questions that can help you clarify the challenges:

- Market & Adoption: Are there gaps in market analysis, business models, or scalability?
- Sustainability & Assessment: What kind of sustainability evaluation is needed?
- Regulation & Policy: What regulatory, legal, or policy issues must be addressed?
- Technology & Methods: What are technical, data, or methodological gaps?
- Ecosystem & Community development: Are there coordination, stakeholder engagement, or ecosystem development challenges?
- Societal & Cultural: What issues e.g., related to social acceptance need attention?
- Impact: Are there difficulties in mapping, monitoring, measuring, or demonstrating impact?

I3X Description

Note: *there can be several Innovate-3X descriptions, just duplicate this template slide*

4) Innovate-3X: Enabling digital transformation on a shoestring

1. Description of Current Stage

https://engage.ifm.eng.cam.ac.uk/digital-manufacturing-on-a-shoestring/

Shoestring research offers a step-by-step approach to digitalisation using off-the-shelf technology to create low-cost, low-risk digital solutions.

These small-scale solutions are designed to provide companies with immediate benefits without disrupting core **operations (resilience/regeneration). This action particularly targets SMEs**

Examples of R&I stages:

☐Pilot / Proof of Concept
☐Early Implementation

☐Scaling / Mainstreaming

2. Necessary skills and capabilities, across disciplines:

To engage with this work requirements include:

- ***Capabilities to understand, develop and deploy digitally-led improvements for traditional manufacturing environments (including software)***
- ***Understanding of how digitalisation solutions could improve sustainable goals***
- ***Capability to drive solutions/innovation in frugal environments***
- ***Understanding manufacturing and SMEs***

3. Examples of challenges that need to be addressed

Specify here: *Please outline which challenges remain unresolved. You may answer in bullet points.*

Challenges can be related e.g., to market and business model, technology adoption, sustainability assessment, regulation, policy, technologies, data availability, methods & analysis, technical or methodological gaps, ecosystem building or community development, societal & cultural acceptance of innovations, impact, etc.

Examples of questions that can help you clarify the challenges:

- Market & Adoption: Are there gaps in market analysis, business models, or scalability?
- Sustainability & Assessment: What kind of sustainability evaluation is needed?
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- Technology & Methods: What are technical, data, or methodological gaps?
- Ecosystem & Community development: Are there coordination, stakeholder engagement, or ecosystem development challenges?
- Societal & Cultural: What issues e.g., related to social acceptance need attention?
- Impact: Are there difficulties in mapping, monitoring, measuring, or demonstrating impact?

I3X Description

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5) Innovate-3X: Enabling agrifood supply chain resilience

1. Description of Current Stage

https://engage-events.ifm.eng.cam.ac.uk/Agri-FoodSCWorkshop
How can manufacturing become more **resilient** at the factory, supply network and industrial system levels? By investigating the relationship between products, processes and location, we aim to identify and evaluate risk, develop mitigations, and build resilience in a wide range of industrial sectors but with a particular focus on the food and critical mineral sector. We work closely with industry and academic institutions in the UK, US and India. Geopolitical shifts are reshaping how we produce, distribute, and consume food. Trade tensions, conflicts, regulatory divergence, and climate-related risks are increasingly intertwined with the resilience and sustainability of food supply chains. Themes
Functionality: Ensuring nutritional quality and health outcomes across supply chains.
Availability: Safeguarding stable production and distribution under disruption.
Affordability: Balancing costs and investment strategies for affordable food options.
Accessibility: Leveraging technology and data-driven solutions for equitable access to nutritious food.

☐Idea / Conceptualization
☐Pilot / Proof of Concept
☐Early Implementation

2. Necessary skills and capabilities, across disciplines:

To engage with this work, requirements include:

- ***Capabilities to understand, develop and deploy innovation (e.g. digitally led, data led, policy instruments ...) which supports the tackling of the main challenges in food supply chains and ensure their resilience***
- ***Working with different types of stakeholders along the supply chain.***
- ***Capability to bring key players along the supply chain (e.g. producers, growers, labels, national policy etc..) in the discussion for the development of key solutions to main challenges***

3. Examples of challenges that need to be addressed

Specify here: *Please outline which challenges remain unresolved. You may answer in bullet points.*

Challenges can be related e.g., to market and business model, technology adoption, sustainability assessment, regulation, policy, technologies, data availability, methods & analysis, technical or methodological gaps, ecosystem building or community development, societal & cultural acceptance of innovations, impact, etc.

Examples of questions that can help you clarify the challenges:

- Market & Adoption: Are there gaps in market analysis, business models, or scalability?
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