SMAR3TS

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

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# 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 – 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.*

Domain housing:

The **Sustainable Value Chain Management Unit at TalTech Department of Business Administration** deals with tasks and processes aiming at preparing and supporting the implementation of growth opportunities and innovations in companies, focusing on preparing, planning, implementing and evaluating a continuous stream of potential innovations; investigation of potential growth and innovation opportunities within and between organizations by using interdisciplinary approaches from business, sustainability management (e.g. circular economy) and environmental economics, operations and innovation management, engineering, IT, design and social sciences. Within this umbrella, there is ongoing research on circular economy business models that is directly related to construction and adjacent sectors such as wood or metal industry, or reuse of old buildings as building material.

***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.*

Through the circular economy framework, Units' research is aligned with all three R3 elements: resilience, restoration and regeneration.

Circular business models enhance the adaptive capacity of local economies by reducing dependence on global supply chains and by stabilising resource flows. Approaches such as material recirculation or modular construction support more efficient primary use and systematic reuse of locally sourced building materials. This, in turn, strengthens the resilience of local firms and communities by fostering resource security, promoting local value creation, and reducing exposure to external shocks as well as contributing to restoration by lowering the ecological footprint of construction activities, mitigating waste generation, and enabling the reintegration of secondary materials into production processes.

# I3X – About the initiator

**Name of Organization**: ***Tallinn University of Technology /TalTech***

**Research Group/Department**: ***TalTech School of Business and Governance (TalTech SBG),*** **Sustainable Value Chain Management Unit**

**Country**: Estonia

## 1. Background info

*Short description of your organization*:

TalTech is internationally recognized research-based university; leading provider of engineering and economic education in Estonia.
*Website*: www.taltech.ee

## 2. Research Group/Company Department

*Short description*: The Unit deals with tasks and processes aiming at preparing and supporting the implementation of growth opportunities and innovations in companies, focusing on preparing, planning, implementing and evaluating a continuous stream of potential innovations; investigation of potential growth and innovation opportunities within and between organizations by using interdisciplinary approaches from business, sustainability management (e.g. circular economy) and environmental economics, operations and innovation management, engineering, IT, design and social sciences; in the context of the European agenda for smart, sustainable and inclusive growth.
*Link to the website*: : https://taltech.ee/en/department-business-administration
*Contact info*: Tarmo Tuisk, Project Specialist, tarmo.tuisk@taltech.ee

## 3. Expertise and available technologies within SMAR3TS project

*1.* ***Expertise*** *of your research group/department and available technologies:* R&D-related expertise in the fields of sustainable value chain management
*2.* ***Current status*** *of available technologies (incl. TRL) / problematization/solution development (SRL) and expected TRL/SRL to reach:*
Long-term and ongoing thematic research and development projects, a selection: Reusing Old Buildings for Circular Construction; Opportunities for Motivating Companies in the Context of Implementing the Green Transition; Capacity Building in Circular Economy at Local Municipalities; etc.

*3. Examples of engagement in* ***Research, Development & Innovation (RDI) partnerships and industry partnerships***
Projects funded by EC, OECD, UN, national ministries and agencies, etc. Engagement in various compentence centres such as Centre of Excellence in Circular Economy of Strategic Mineral and Carbon-based Resources (SOURCES); or Circular Economy Core Lab at TalTech.

## 4. Examples of strategically relevant Innovate-3X Initiatives

(I3X proposal described in the last slide)

# I3X Description

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

## 1) Innovate-3X: *Challenges of Application of Circular Economy Principles in Housing/Construction Development*

### 1. Description of Current Stage

***Specify here:*** *What is your research group/department currently working on? Which initiatives/projects are underway under Innovate-3X? How does this work contribute to resilience, restoration, and regeneration?*

The construction sector has traditionally followed a linear path: build, use, demolish, discard. This approach is no longer seen sustainable in Estonia. Globally the built environment is responsible for about 40% of $CO_2$ emissions, nearly 1/3 of all waste and 1/2 of Europe's resource use. To correspond climate targets and create sustainable urban futures, cities must move towards circular construction by reusing what already exists instead of discarding it.

TalTech Department of Business Administration is currently involved in several sustainability related Projects, most relevant for current I3X proposal: Reusing Old Buildings for Circular Construction.

R&I stages:

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

### 2. Necessary skills and capabilities, across disciplines:

***Specify here:*** *What gaps or barriers need to be addressed to move forward? Which new skills, knowledge, expertise, interdisciplinary approaches or collaborations are required?*

- For a problem related to the buildings which contain durable and valuable components with high reuse potential, there is currently no standardized way to identify, recover and reallocate these materials - as a solution – there is a need for a standardized pre-demolition audit methodology to identify materials with reuse potential.
- One of the solutions would a registry/Marketplace in the format of a digital platform, skills are needed to create this tool/environment, accessible for developers.
- Learning about the best practices in other European countries (including the barriers and enablers in this process) will be most valuable to solve the problems related to the reuse of building materials.

### 3. Examples of challenges that need to be addressed

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

- Market & Adoption-related challenges: Scalability of reuse of construction materials extracted from old buildings is applicable only in the case where newer buildings need similar unified materials and their location is nearby demolition site, otherwise the costs will be higher than using materials based on virgin components.
- Sustainability & Assessment of innovative business models for new technologies in construction-related sectors.
- Regulation & Policy: Construction developers meet challenges when considering materials from demolished or unused buildings as there is a lack of standardized certificates concerning these materials that could included in new buildings. The reliability, durability and other aspects are in question. Finding innovative solutions for evaluating each old building separately for each type of reusable material is time and resource consuming (expensive).
- Societal & Cultural: There are communities that are ready to consume (=live) in the buildings where reusable materials are in use, but they still form a minority. The issues of social acceptance need constant attention and context-specific solutions.