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**COOPERATION**  
FORWARD



FH Vorarlberg

Dornbirn - 28.03.2022



## EXPERIENCE EXCHANGE WORKSHOP IV



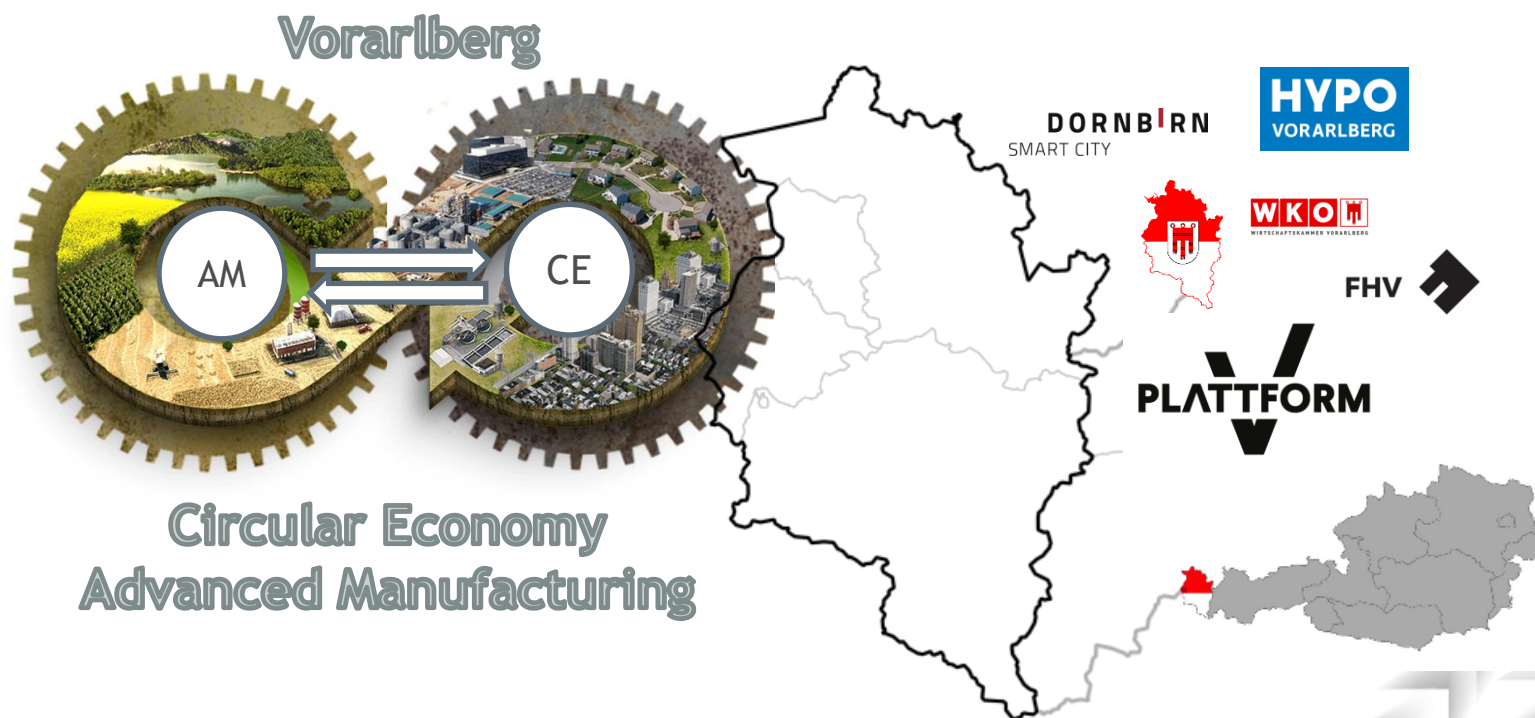
Bojana Suzic

# FHV: PILOT

## ADVANCED MANUFACTURING AND GREEN INNOVATION

### Main Objectives:

- Analyze open business models and services in advanced manufacturing & green innovation
- Set up the Open Circular Economy Model for Advanced Manufacturing
- Develop a knowledge base and guidelines for circular economy-driven advanced manufacturing



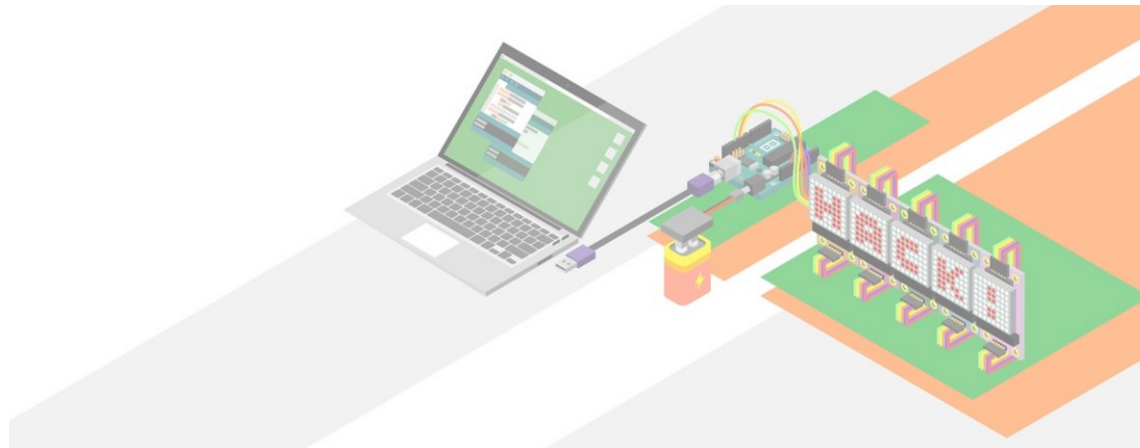
# PILOT IMPLEMENTATION PROCESS

**A1 - Circular economy, Open Business Models and Advanced Manufacturing: State-of-the-Art; 07/20**

**A2 - Best Practice Analysis and Feasibility Study; 11/20**

**A3 - Circular Economy Advanced Manufacturing Framework; 07/21**

**A4 - Circular Economy Open Business Model for Advanced Manufacturing: Test Scenarios; 11/21**



**A5 - Circular Economy Open Business Model for Advanced Manufacturing: Evaluation; 12/21**

**A6 - Circular Economy Open Business Model for Advanced Manufacturing: Recommendations & Guidelines; 01/22**

**A7 - Communication and Dissemination; 03/22**

**A8 - Monitoring and evaluation; 03/22**



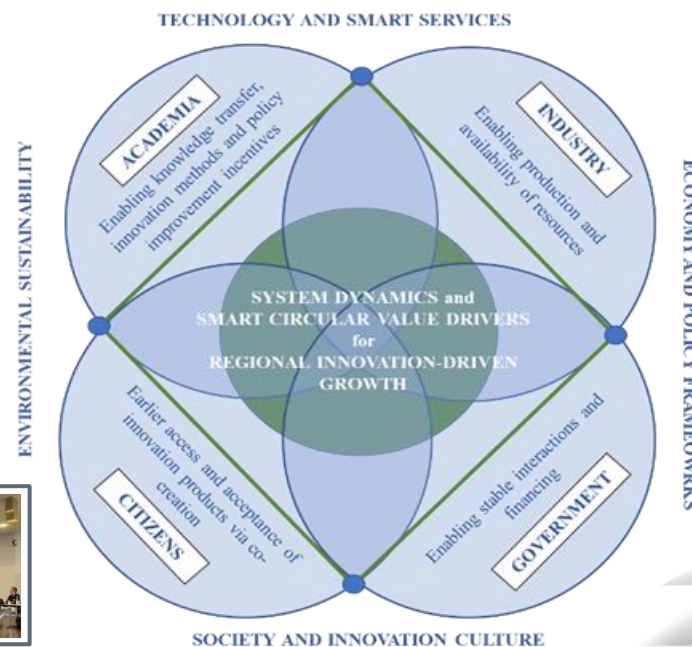
# WORKSHOPS AND PARTICIPATORY LABS

## OUTPUTS:

- Methodology for implementing circular economy design in advanced manufacturing systems - **OCE/AM Framework**
- Circular Economy Innovation Cardboard Game: **Fo(u)r Pioneers**
- **Student Projects w/ industry** - PSS models for AM
- Dissemination activities

## IMPACT:

**Environmental**  
**Economic**  
**Socio-Cultural**

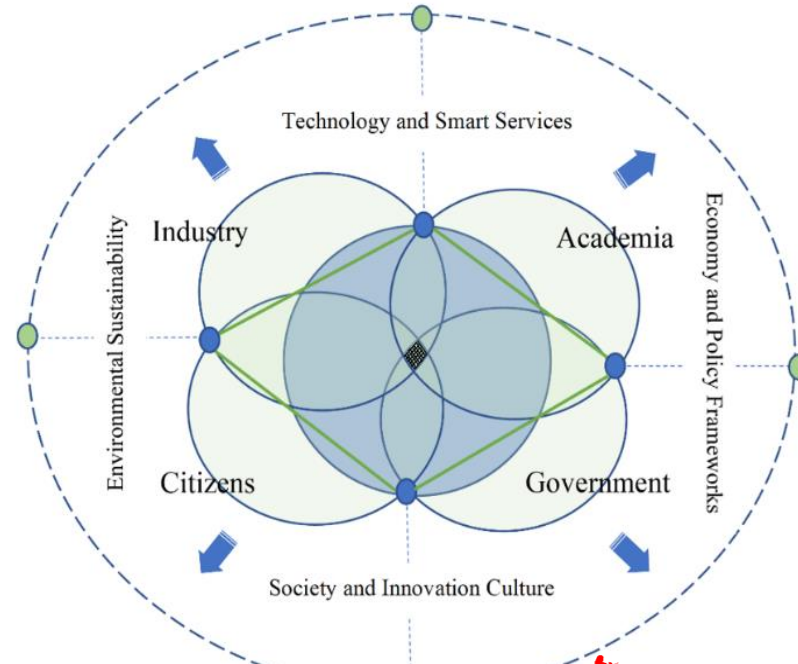




# SOLUTIONS TESTED

- **Collaborative business model** for circular advanced manufacturing
- Circular Innovation Cardboard Game - **Fo(u)r Pioneers**
- **Design for Circularity:** Materials minimization for minimized energy use and waste
- **Circular production planning and optimization** of manufacturing processes models
- **Digital Skills** for CE - human machine interaction and decision-making
- **Lean production technologies:** Reduction of the process failure rate
- **Financial models** for circular advanced manufacturing
- Student projects

System dynamics in the quadruple helix and circular economy-driven Innovation System



Josef Ressel Center  
for Robust Decisions



DIGITAL INNOVATION HUB  
VORARLBERG



**DORNBERN**  
SMART CITY



## Areas to Explore

- Citizen science projects needed
- Focus on sustainable innovation for product-service systems in AM
- Design theory and sustainability methodology in intelligent production and green innovation
- Cross-sectoral standardization of circularity metrics and ESG regulations
- Exploration of standardization effects in international context
- Managing quadruple helix innovation models for circular economy (applied in the sectoral context) with particular focus on the role of financial institutions in further CE/AM integration





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