Case Study 2

TrentinoSalute4.0 - Competence center for digital health

WP9 Strengthening ecosystems

Task 9.2 Key activities at European level

CASE STUDIES OF TRANSFORMATIVE ECOSYSTEMS

Case Study 2: TrentinoSalute4.0 - Competence center for digital health

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Executive Summary

Transformative Ecosystems as in THCS

A transformative ecosystem is a collaborative, value-driven network that enables systemic, inclusive, and lasting change in human well-being. Key dynamics include influential nodes: people, institutions, technologies, or practices, that foster systemic coherence and inspire replication or scaling.

To foster transformative ecosystems, it is essential to assess long-term sustainability, cross-sectoral collaboration, strategic alignment, service user integration, goal achievement through indicators, and broader impact recognition. TrentinoSalute4.0 ecosystem is showcased as an inspirational transformative ecosystem that illustrates how local and regional elements foster transformation in European health and care systems.

Key transformative elements of TrentinoSalute4.0

- Autonomous Province of Trento acts as a "policy laboratory": one local health authority, digital-health competence center (TS4.0) and the TreC+ platform as key initiators of activity
- The apps created in the framework of TreC are initially based on experiments: The Autonomous Province of Trento and other key stakeholders as key actors promote a culture of experimentation
- Long-term political commitment and provincial health law that explicitly backs RDI and digital care.
- Integrated data heritage dating back to the early 2000s, supports advanced analytics. A remarkable function of that the citizens can upload also their own health data from additional sources to complement the electronic health record data.

Co-funded by
the European Union

Abbreviations

TS4.0   TrentinoSalute4.0

TreC   Cartella Clinica del Cittadino (eng. Citizen's Clinical Record)

THCS   Transforming Health and Care Systems

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1   Introduction

Within the Transforming Health and Care Systems (THCS) partnership, one key task is to identify and showcase transformative ecosystems in the health and care sector. To support this, we collaborated with our partners across Europe to develop a case catalogue featuring real-life examples. Each case follows a structured template that guides contributors in describing the ecosystem's purpose and strategic goals, identifying key actors, and explaining how collaboration is organized. The template also captures how outcomes are monitored and measured, including the methodologies used. Currently, the catalogue includes around 30 ecosystem descriptions from around Europe.

1.1   What are transformative ecosystems in health and care?

Transformative ecosystems are defined in THCS as goal-oriented entities that have successfully transitioned to new, jointly agreed modes of operation at various levels - macro, meso, and micro - within the health and care system. The transformations at each level are marked by the alignment of strategies, decisions, and actions among independent, but also interdependent actors. In addition, the integration and legitimacy of service users, goal achievement through indicators, and recognition of broader impacts are important to consider, when evaluating a transformative ecosystem. Our approach focuses especially on ecosystems on regional and local levels.

Due to the complex and context-specific nature of these ecosystems, there is no universal formula for systems transformation. Ultimately, success depends on the commitment and execution capabilities of ecosystem members. Individuals who embrace change and possess the motivation and skills to drive transformation, often referred to as "change agents", are essential. To amplify their impact, transformative ecosystems foster a cultural shift toward a "transformative mindset."

To better understand the dynamics that cultivate this mindset, we explored influential factors, whether people, institutions, technologies, or practices, that illustrate pathways of change, promote systemic coherence, and inspire replication or scaling. Based on this, *TrentinoSalute4.0* model from Trento, Italy was selected to showcase as an inspirational case a of transformative ecosystem. The description will work as a blueprint example that can help us to understand more in-depth how local and regional actions combined with technological innovation can foster transformation.

1.2   What is TrentinoSalute4.0

TrentinoSalute4.0 is a health and care ecosystem, in the Autonomous Province of Trento. It is focused on building digital solutions in the area. There is also strong regional focus on digital technologies, with the aim to serve especially the remote and scarcely populated areas. Trento has spent a decade building an integrated, prevention-oriented digital health platform and a culture of quadruple-helix based co-design. The region's autonomy, data assets and EU networks position it as a living laboratory for next-generation technological solutions and community-anchored care, but success now hinges on mastering workforce capacity, citizen digital inclusion and simpler partnership governance.

2 TrentinoSalute4.0 as a transformative ecosystem

Two decades of accumulated social capital and shared trust make TrentinoSalute4.0 a long-term ecosystem, that has long overcome the "project phase". Although, the current plan to scale up actions and expand the reach of the ecosystem for instance toward additional sectors to health and care, that allows for experimenting on the ecosystem approach even more widely.

There are ambitious plans for the applications, especially in terms of prevention and patient empowerment.

2.1 Key transformative elements of TrentinoSalute4.0

- Autonomous Province of Trento acts as a **"policy laboratory"**: one local health authority, digital-health competence centre (TS4.0) and the TreC+ platform as key initiators of activity
- The apps created in the framework of TreC are initially based on experiments: The Autonomous Province of Trento and other key stakeholders as key actors promote a culture of experimentation
- Long-term political commitment and provincial health law that explicitly backs RDI and digital care.
- Integrated data heritage dating back to the early 2000s, supports advanced analytics. A remarkable function of that the citizens can upload also their own health data from additional sources to complement the electronic health record data.

3 Transformation across different service levels

3.1 Grassroots level ('micro')

The ecosystem follows a bottom-up ethos in which ideas spark from citizens, move swiftly into rapid prototypes, proceed to pilot tests, and are scaled only when real-world value is demonstrated. This dynamic unfolds through quadruple-helix collaboration: industry, knowledge institutions, government, and civil society work side-by-side in multidisciplinary labs and co-design sessions, giving individuals space both to voice their needs and to help shape the very functions built into new digital applications. Figure 1. depicts where the focus and thoughts of a micro level actor are.
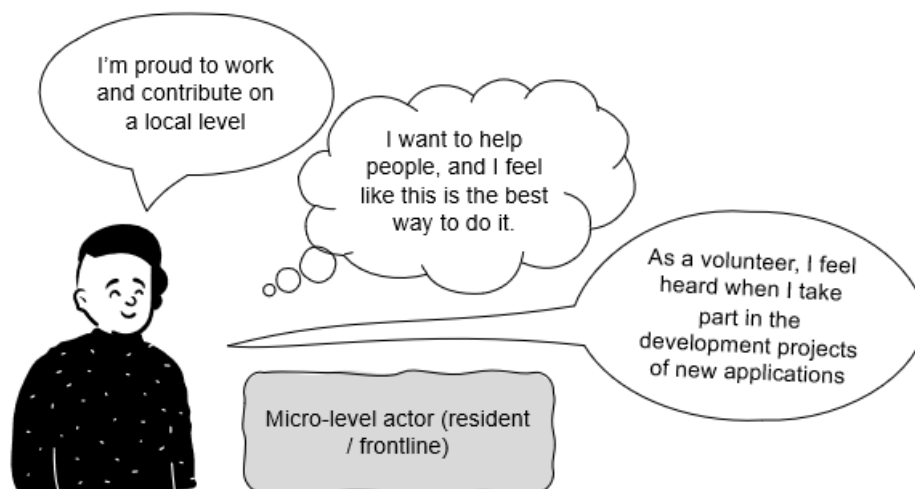
Figure 3.1 Depiction of a micro-level actor and their main thoughts and concerns regarding the ecosystem

3.2   Inter-organisational level ('meso')

Among Trento's flagship assets are TreC+, the region-wide electronic health record and a selection of different apps that are based on the EHR system. The organization of the technological development is focused on the advanced AI laboratories at FBK; a dedicated prevention department; ongoing tele-monitoring pilots; and a suite of disease-specific applications, including the Parkinson platform, TreC Mamma, and TreC Diabetes. A complementary "security-by-design" cloud-migration roadmap is streamlining interoperability across the regional EHR. Figure 2 summarises the principal views and concerns expressed by meso-level actors within this ecosystem.
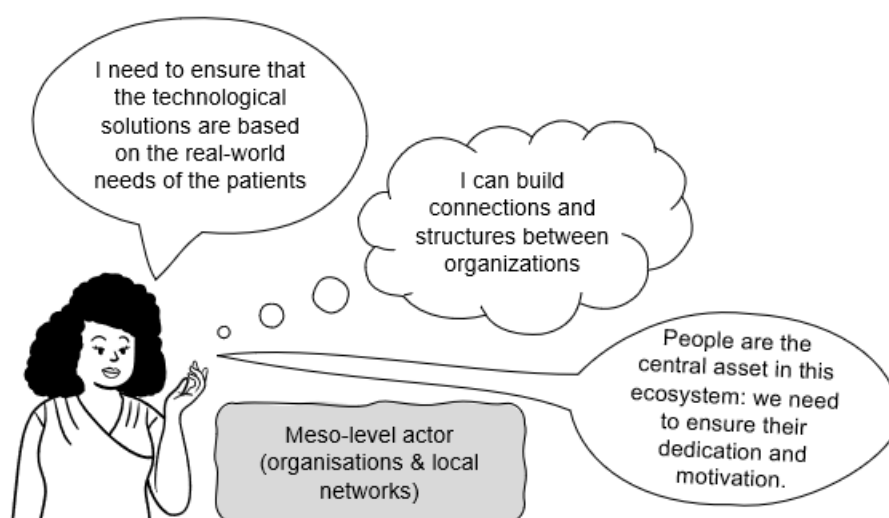

Figure 3.2 Depiction of a meso-level actor and their main thoughts and concerns regarding the ecosystem.

3.3 (National) policy level ('macro')

In Italy, national bodies set direction through health and care policies, and each region implements the policies according to their strategic health priorities. Thus, the regions determine how policies and experiments are carried out. EU projects and programs deliver both expertise and seed funding; once these initiatives demonstrate impact, the local government typically finances broader roll-out.

Figure 3.3 Depiction of a macro-level actor and their main thoughts and concerns regarding the ecosystem.

4 Challenges and opportunities

4.1 Challenges

- Workforce stress & shortages
- Digital innovation is expected to relieve pressure yet also demands new skills.
- Digital literacy & equity gaps among citizens
- Internet connectivity challenges mean tablets or library support are still needed.
- Governance complexity across multiple EU partnerships
- Call for simpler, standardized rules of application

4.2 Opportunities

- Scale tele-monitoring from single villages to province-wide with evidence now being collected.
- Leverage provincial autonomy to pilot AI-enabled care pathways ahead of national roll-out.
- Use ecosystem visualisations to attract diverse actors and close skill gaps.

5 Key lessons from TrentinoSalute4.0

1. **Autonomy can turn a region into a policy-lab:** The Province of Trento uses its statutory autonomy to trial electronic health records, AI pilots and new funding mixes years ahead

of national roll-out. Clear provincial laws lock in RDI and digital health, letting the region "learn fast, share fast" without waiting for central approval.

2. **A single, open digital backbone multiplies innovation:** The TreC+ platform and 20-year data heritage give every new project (tele-monitoring, disease-specific apps, AI tools) an instant launchpad and shared data layer. Integrating once, and then plugging in anything new, keeps costs down and speeds up the process.

3. **Quadruple-helix co-design sustains adoption:** Citizens trigger ideas, multidisciplinary labs prototype them, and health-authority budgets scale what works. That end-user-to-policy feedback loop (grassroots ↔ academia ↔ industry ↔ government) means tools like TreC Mamma or TreC Diabetes are built around real needs, not just tech potential. For instance, TreC Diabetes was originally an independent app, and later embedded in TreC, that since came TreC+. Such vertical interventions, making additions to the original TreC, have become a way to answer the user's needs where seen crucial.

4. **Technology must travel with skills and simple rules:** Digital literacy gaps, workforce shortages and complex EU-partnership governance are now the main brakes. Trento's next leap depends on

   1. upskilling professionals and citizens,

   2. widening connectivity access, and

   3. standardizing partnership rules so actors can focus on delivery, not administration.

Table 5.1 Some of the apps integrated into the TreC+.

TreC+ apps in a nutshell	
TreC+	A modernized, user-centric digital health platform that centralizes access to healthcare services for citizens in Trentino. It improves on its predecessors by offering broader services, mobile access, enhanced security, privacy controls, and integration with telemedicine and payments—all under one cohesive system.
TreC Mamma	TreC Mamma is a free app developed for the Trentino regional health service (Italy), designed to support pregnant women (and their families) during pregnancy and the early years of the child's life—eventually aiming to cover the first 1,000 days of life. It is is a digital health app that provides information, guidance, and tools for pregnant women in Trentino, helping them monitor their health, access services, and feel supported throughout pregnancy and early motherhood. Embedded in TreC+.
TreC Diabetes	A digitally enabled management tool for diabetes that bridges patients and healthcare professionals. It helps patients log and monitor their disease, supports clinicians in delivering personalized care, and is embedded in the TreC.