REPAIR

Using Badges to Increase Railway Sustainability

REPAIR supports the Sustainable Development Goals

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INTELLECTUAL OUTPUT 1

REPAIR FRAMEWORK

Mapping emerging competences in the rail sector to support the adoption of the U.N. SDGs

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Project Partners

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SUMMARY

The white paper provides an in-depth exploration of the relationship between Communities of Practice (CoPs) and the concept of Open Badges as a tool for recognising and reifying social capital within these communities.

Introduction: The introductory section sets the stage, explaining the core subjects and what the REPAIR Framework aims to accomplish.

Communities of Practice (CoP): This segment delves into the essence of what CoPs are, their significance, and how they function. It particularly focuses on Reification and Recognition as dual aspects of CoPs.

Reflective Practice and Reflection in Action: The framework emphasises the role of reflective practices in enhancing the quality and effectiveness of CoPs.

Recognition Capital as Reification of Social Capital: The framework introduces "Recognition Capital" as a tangible manifestation of the intangible "Social Capital," presenting a novel framework for understanding CoP dynamics.

Modelling Dynamics: The framework then details the internal dynamics within CoPs and how they interact with dynamics between different communities, forming the backbone for meaningful Open Badge systems.

Open Badges and Recognition Capital Currency: Here, Open Badges are presented as a form of "Recognition Capital Currency," highlighting their potential to support the dynamics within and between CoPs.

Mapping Emerging Practices and REPAIR Framework & SDGs: The framework proposes a REPAIR framework aligned with the UN's Sustainable Development Goals (SDGs) as a comprehensive strategy for implementing Open Badges and fostering Open Recognition.

Recognition as a Transformational Engine & Revisiting Occupational Frameworks: This section elucidates how recognition can act as a catalyst for transformational change and provides new perspectives on redefining occupational frameworks.

The REPAIR Approach to Achieving SDGs and Its Instruments: It describes how the REPAIR approach can be instrumental in achieving the SDGs, introducing instruments like SDG Adoption Maturity Matrix and SDG Pathways.

RAIL SDG Communities of Practice & ORCA : The paper concludes by illustrating how Open Recognition and Open Badges can be specifically applied in the context of Rail Sustainability and Development Goals (RSI), using the ORCA tool for building SDG-oriented Communities of Practice.

Overall, although focused on the United Nations' Sustainable Development Goals, the REPAIR Framework offers a comprehensive roadmap for implementing Communities of Practice and Open Badges to transform the approach to the design and implementation of occupational frameworks.

INTRODUCTION

According to Marianne Thyssen, Commissioner Employment, Social Affairs, Skills and Labour Mobility "30% of today's occupations did not exist 20 years ago. People will be constantly learning new skills. Many key skills you learn outside formal education. And in the digital age, you need to update these skills almost as soon as you learn them[1]." For the Institute for the Future "85% of the jobs that today's learners will be doing in 2030 haven't been invented yet[2]."

These observations raise a series of questions :

- How can we develop educational and training programs that prepare people for jobs that do not yet exist?
- How do technological, economic, and social changes drive transformations in the world of work?
- What are some of the signals that can help us identify emerging transformations in the world of work?
- How do people at work experience and contribute to, or hinder, transformations in the world of work?
- How can digital technologies contribute to anticipating and adjusting to those changes?

To address those questions, we need to:

Understand emergent transformations:

- What are the key drivers behind the rapid evolution of new occupations and skill sets?
- How can data analytics and predictive modelling be used to identify emerging job roles and required skills?

Identify early signals:

- What real-time indicators or markers can be leveraged to identify the advent of new occupations or the obsolescence of existing skills?
- How can Communities of Practice (CoPs) contribute to sensing networks for emerging skills and job roles?

Rethink education for unknown futures:

- What pedagogical approaches can best equip learners with the adaptive skills required for occupations that have not been invented yet?
- How can experiential learning be incorporated into educational systems to better prepare learners for uncertain job landscapes?

Rethink the role of individuals in the workplace:

- How do employees perceive, adapt to, and either anticipate, facilitate or obstruct rapid changes in job roles and skills within their organisations?
- How can organisations encourage a culture of continuous learning and agility among their employees?

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[1] Marianne Thyssen, Commissioner Employment, Social Affairs, Skills and Labour Mobility, Speech at the European Skills Validation Festival, Brussels, June 15 2018.

[2] Realising 2030: A Divided Vision of the Future, *Global business leaders forecast the next era of human-machine partnerships and how they intend to prepare*, Dell Technologies, 2018

Leverage digital technologies for HR:

- What role can digital platforms play in making emergent skills and roles visible to both individuals and organisations for career planning and development?
- How can machine learning algorithms and AI be employed to dynamically match individuals' skills with evolving job market needs for career development planning?

To address those questions, the REPAIR framework is restricting the context to the United Nations Sustainable Development Goals (SDGs). By introducing the SDGs, we are changing the context from an *unknown* future to a *desirable* one. What remains *unknown* is the way we can achieve a desirable future. It is an *unknown* on which we have the power to act.

Based on this new context, we can reformulate the initial points as follows:

Understand emergent transformations → Understand how to achieve the SDGs.

- What are the key drivers for the practices to support the SDGs ?
- How can data analytics and predictive modelling be used to identify emerging job roles and required skills to support the SDGs?

Identify early signals -> Share emerging practices conducive to achieving the SDGs.

- What real-time indicators or markers can be leveraged to identify SDG-aware practices?
- How can Communities of Practice (CoPs) contribute to include SDGs in their practices?

Rethink education for unknown futures → Rethink education to achieve the SDGs.

- What pedagogical approaches can best equip learners with the adaptive skills required for supporting the adoption of SDGs?
- How can educational systems become the playground for practices conducive to the SDGs?

Rethink the role of individuals in the workplace → Recognise employees as key stakeholders to achieve SDGs.

- How can employees contribute to the adoption of SDGs within their organisations?
- How can organisations encourage a culture of transformative learning among their employees?

Leverage digital technologies for HR → Leverage digital technologies for the planet

- How can digital platforms help individuals and organisations plan for and develop their careers to develop occupational competences supporting the achievement of SDGs?
- How can machine learning algorithms and AI be employed to dynamically integrate SDGs in professional practices?

Beyond Occupational competence and qualification frameworks

Occupational competence and qualification frameworks, the instruments of choice for human resource managers and education policy planners, have a hard time adapting to this new world. Generally formulated after extensive research and validation, in today's fast-paced changes, these frameworks struggle to keep up.

How could they keep up? If we look at competence frameworks as *competence maps*, telling where a person is and what is the path to reach a new set of competence, then we can compare how mapping techniques have evolved over time.

If we look at road maps, Google Maps and Open Street Maps have very little in common with yesterday's paper maps. "I honestly think we're seeing a more profound change, for map-making, than the switch from manuscript to print in the Renaissance," University of London cartographic historian Jerry Brotton told the Sydney Morning Herald. "That was huge. But this is bigger."

No such things could be said from the way we are building competence and qualification frameworks. If we look at competence frameworks as "competence maps" describing an occupational territory, the process and technologies used for establishing those maps have not changed much since the 50's.

Modern digital maps are developed by collecting data directly from users, their navigation systems, and other sensors. Crowd intelligence is harnessed through feedback loops: the map is created/updated by using the map itself. Aerial photography and drawing boards have been replaced by real-time information.

One of the objectives of the REPAIR framework is precisely to develop an approach where the workers, the practitioners, are the co-constructors of those maps, something that could be achieved with the use of a technology that was invented in 2011: the Open Badges.

About REPAIR

Competence mapping is generally associated with "competence frameworks'', which are models that broadly describe performance expected by the people operating within a sector or a company. The REPAIR approach reverses the traditional top-down approach to building competence frameworks.

REPAIR is about mobilising the collective intelligence of the workforce to create real time occupational maps that will help students, citizens, employees, employers and public authorities make informed decisions regarding learning and career paths.

While the traditional building and exploitation of competence framework was based on an analytical model, the REPAIR approach is based on an 'analogical' model centered on the recognition of individuals and their practices.

About Open Badges

A lifetime of learning consists largely of informal learning. How can we acknowledge and make visible this learning? The response to that question was provided at an event organised by the Mozilla Foundation in Barcelona in 2011: it was the invention of the Open Badges.

They devised an ingenious solution to store information about learning within image files, and verify the authenticity of the badge by comparing the recipient's copy with the issuer's original. It couldn't be simpler, and the immediate success that followed is proof of that.

Communities of practice (CoP)

In his book, "Communities of Practice: Learning, Meaning, and Identity", Etienne Wenger argues that learning is a social process that takes place through participation in communities of practice. He identifies three key dimensions of learning in communities of practice:

- **Learning as participation**: When we participate in a CoP, we learn by doing. We learn by interacting with other members of the community, by sharing our knowledge and experiences, and by listening to the knowledge and experiences of others.
- **Learning as meaning-making**: When we participate in a CoP, we learn by making meaning of our experiences. We learn by negotiating the meaning of concepts and practices, by developing shared understandings, and by creating new knowledge.
- **Learning as identity formation**: When we participate in a CoP, we learn by developing our identities. We learn by taking on new roles and responsibilities, by developing new skills and knowledge, and by becoming part of a community that shares our values and interests.

CoPs and Reification

Wenger argues that these three dimensions of learning are interdependent. Learning as participation is necessary for learning as meaning-making, and learning as meaning-making is necessary for learning as identity formation. CoPs provide a space for people to learn from each other, develop new skills, and solve problems together.

Reification, the process of giving concrete form to abstract ideas, knowledge, and practices within the community, is one of the most important aspects of CoPs: knowledge sharing, communications, and transformation are fundamentally driven by this concept.

CoPs and Reification

- **Codification**: the process of transforming practices into tangible forms such as documents, tools, or other resources.
- **Symbolism**: creating rituals, traditions, or jargon as shorthands for sharing complex ideas and experiences.
- **Artefacts**: the tools, templates, or other artefacts embodying collective practices.
- **Boundary Objects**: artefacts that enable communication across domains.

Reification contributes to:

- **Efficiency**: reification allows for more efficient communication and knowledge transfer. A reified concept can be more easily shared, discussed, and challenged.
- **Durability**: reified knowledge is more enduring and can serve as a legacy of the community's collective wisdom, outlasting individual membership.
- **Accessibility**: new members can more easily assimilate into the community by engaging with its reified knowledge and practices.

CoPs and Recognition

In communities of practice, "recognition" is a multi-faceted process that serves to identify, acknowledge, and validate the skills, knowledge, contributions, and competences of individual members. Recognition in this context is not just a formal system but also involves informal dynamics. Below are various dimensions through which recognition can occur:

Formal Recognition:

- **Certification**: Formalised credentials like certificates or digital badges can be awarded to members who have demonstrated particular skills or knowledge. These often have set criteria and evaluation processes.
- **Awards and Honors**: Some communities give out periodic awards for notable contributions, helping to recognise and celebrate expertise.
- **Promotion within the Community**: Gaining a leadership position within the community, like becoming a moderator or a committee member, can be a form of recognition.

Informal Recognition:

- **Peer Validation**: Sometimes the most powerful form of recognition comes from peers. This could be through positive feedback, mentions, or recommendations.
- **Increased Responsibility**: Being asked to lead a project or mentor newer members can also be a form of recognition.
- **Knowledge Sharing**: Those who are recognised as experts often get more platforms to share their knowledge, be it through webinars, talks, or featured articles.

Cultural and Social Dynamics:

- **Norms and Values**: The type and frequency of recognition may depend on the culture of the community. For example, some may value teamwork over individual achievement.
- **Power Relations**: The dynamics of who gets recognised and who doesn't can sometimes reflect underlying power structures within the community.
- **Inclusion and Diversity**: Efforts to recognise contributions from diverse members can strengthen the sense of community and make it more inclusive.

Combining Reification and Recognition

In a Community of Practice (CoP), reification and recognition can work together to codify knowledge and validate contributions. In contrast to reification, recognition acknowledges and validates the contributions and expertise of community members. Through the integration of reification and recognition in a CoP, concrete forms of knowledge (reification) are produced and maintained through systems that acknowledge and incentivise individual contributions (recognition). Through this symbiosis, shared practices can be enhanced, knowledge can be transferred, and communities can become more engaged and collaborative.

Here are some examples of how they can interact and complement one another:

Recognition through reification:

- **Recognition through artefacts**: A reified practice or the competence (knowledge, skills, attitudes and values) it involves, can serve as a tangible proof of expertise of the community members who have contributed to its creation.
- **Recognition through publication**: When community members contribute to the development of tools, practices, or documents, their contributions become visible and can be recognised within and beyond the CoP.
- **Recognition through credentials**: certificates can be used to recognise the expertise or contributions of community members and shared within and outside the community.

Recognition as incentive for reification (from informal to non-formal recognition):

- **Social Validation**: informal recognition in the community of a particular practice, idea, method, or tool may serve as an indicator that it is valuable enough to be formalised (reified).
- **Contribution**: Recognition can serve as an incentive for community members to actively participate in discussions, problem-solving, and creating reified instruments like practice guides, competence frameworks, thereby enriching the community's knowledge base.
- **Accountability**: Recognition systems can ensure that only high-quality, peer-reviewed contributions get reified to enhance the value and reliability of the reified artefacts.
- **Influence**: Recognition can lead to a member's practices or contributions being reified as a standard within the CoP.

Contextualised dynamic recognition:

- **Contextualisation**: recognition systems can provide the context: who are the contributors (how are they recognised) under what circumstances, who recognise that reified practice (knowledge, skills, etc.) and why it is valuable. This makes the reified practice more usable and trustworthy.
- **Dynamic reification**: the mutual reinforcement of reification and recognition allows community knowledge to evolve more dynamically. As new contributions are recognised and incorporated, reified artefacts can be updated or revised.

Some attention points:

- **Too much formal kills the informal**: we shouldn't forget that what is formal today was probably informal yesterday: the source of the formal is the informal. Over formalisation could ultimately hinder the informal to eventually degrade the quality of the community. It is the *informal* that keeps the CoP alive, and the *formal* (the reified *informal*) is what scaffolds its development: too many scaffolds and it becomes a prison.
- **Recognition systems can be biased and gamed:** more vocal or prominent members may be inadvertently favoured over those who make less visible contributions, potentially sidelining valuable contributions. Recognition systems should be designed to ensure that the process of reification is inclusive, valuing diverse contributions and preventing the formation of hierarchies or cliques.

Reflective Practice and Reflection in Action

CoPs can provide a safe and supportive space for members to reflect on their practice. They can also provide opportunities for members to learn from each other's experiences and to share ideas for improvement. By promoting reflective practice and reflection in action, CoPs can help members to become more effective practitioners and learners.

The ideas of "reflective practice" and "reflection-in-action," popularised by Donald Schön and Chris Argyris, align well with the functioning of Communities of Practice (CoPs). These concepts explore the way professionals think in action and learn from their experiences, which is a cornerstone of any effective CoP.

> **Reflective practice** is the process of reflecting on one's own practice in order to improve it. It involves thinking about what happened, why it happened, and what could be done differently next time.
>
> **Reflection in action** is the process of reflecting on one's own practice while it is happening. It involves thinking about what is happening in the moment and how to respond in the best way possible.

Reflective practice and reflection-in-action are integral to the functioning of a CoP. They contribute to both individual and collective learning, feeding into the broader dynamics of social capital, reification, and recognition that underlie the community's operation.

Here's how they intersect:

Reflective Practice:

- **Learning Through Doing**: In CoPs, members often learn by doing, which naturally integrates reflective practice. Post-task reflections allow members to understand what went well, what didn't, and how things can be improved.
- **Shared Reflection**: Reflective practice is usually a collective endeavour in a CoP. Group discussions, debriefing sessions, or formal reviews can be forums where members share their reflections, get and provide feedback, thereby enriching collective knowledge.
- **Adaptive Learning**: Reflective practice enables CoP members to adapt to new situations by applying the wisdom gained from past experiences. This is particularly important in fast-changing fields where the community needs to evolve continually.

Reflection-in-Action:

- **Real-time Adjustments**: In CoPs, reflection doesn't always happen after the fact. Members often have to adapt their actions in real-time, similar to Schön's concept of "reflection-in-action."
- **Collective Cognition**: The community serves as a 'collective brain' where reflections-in-action can be immediately discussed, dissected, and applied. The immediate feedback loop is shorter, allowing for rapid iterative learning.
- **Implicit Knowledge**: Schön also talks about "knowing-in-action," the tacit knowledge that professionals have but may not be able to articulate. CoPs provide an environment where such implicit knowledge can surface through collective reflection-in-action.

Synergy with CoP Dynamics:

- **Social Capital and Reflection**: The reflection activities in CoPs enhance the social capital of the members by building trust and increasing shared understanding.
- **Reification and Reflection**: Reflection often leads to the creation of reified objects like best practices, documentation, or learning modules that capture the collective insights of the community.
- **Recognition through Reflection**: CoPs often recognise members who contribute valuable insights during reflective practices. This not only boosts the members' social capital but also encourages a culture of reflection within the community.

"Recognition capital" as reification of "social capital"

A Community of Practice's dynamics of recognition and reification can also be understood through the lens of social capital, where reified recognitions become currencies. In a recognition economy, where recognitions are a debt to those who provided them and an investment in those who received them, recognition capital of a person (or a community) can be defined as the sum of her debts and investments. As a result, when someone offers a recognition and it is accepted, both parties have increased their recognition capital: a "recognition economy" is not a zero sum game. It is an economy where the wealth could grow exponentially.

Recognition capital can significantly influence CoP members' social capital, their standing and relationships both within and outside the CoP. Creating recognition capital not only enhances individual social capital, but also contributes to the development of a more robust, interconnected community.

> **Recognition capital** is both the product of the reification of *social capital*, and the currency that can produce the dividends that will increase *social capital.*

The concept of *recognition capital* in a Community of Practice (CoP) sits at the intersection of social capital and reification, serving as both an outcome and a catalyst for these complex dynamics. Recognition capital serves as a multi-dimensional asset within a CoP. It is created when social capital is reified into a tangible form and serves as a potent 'currency' that can be employed to foster further social connections and collaborative ventures. This dual role makes recognition capital a pivotal concept for understanding the complex interplay of social dynamics within communities of practice.

Let's unpack this statement by looking at how recognition capital operates in a CoP:

Recognition Capital as a Product of Reification:

- **Codified Acknowledgment**: when recognition is formalised or reified through means like certificates, badges, or community endorsements, it turns into a tangible form that can be referred to as 'recognition capital.' This is a codified, lasting acknowledgment of one's contributions, skills, or knowledge.
- **Materialising Social Standing**: Social capital, which represents the accrued benefits of social interactions and relationships within a CoP, can be 'materialised' through the reification process. When a community member's social standing is converted into a reified form—like an award or a formal title—it crystallises as recognition capital.

- **Longevity and Transferability**: Reified recognition capital, unlike ephemeral praise or ad-hoc acknowledgments, has a longer shelf-life and can be transferred or displayed across multiple platforms or communities. This makes it a more enduring form of social capital.

Recognition Capital as Currency for Increasing Social Capital:

- **Interpersonal Dynamics**: Recognition capital, once earned, can be "invested[3]" in the form of influence, trust, and leadership within the community. This enhances the individual's social capital by deepening relationships and broadening networks.
- **Leverage for Collaboration**: Members with high recognition capital are often sought-after for new projects or problem-solving within the CoP. Their endorsement or participation can be crucial in mobilising resources or support, thus increasing the collective social capital of the community.
- **Cycle of Reinforcement**: Recognition capital can generate a self-reinforcing cycle. For instance, a recognised expert (who has thereby amassed recognition capital) may collaborate on a new project. The successful completion and subsequent reification of this project (e.g., a best practices guide) serve to further boost their recognition capital, and by extension, their social capital.
- **Global Influence**: Recognition capital can extend beyond the boundaries of the CoP. If reified in a universally understood format like digital badges, this form of capital can be leveraged in broader contexts, thereby multiplying its utility and impact as social capital.

In view of the fact that recognition capital is shared by construction (by accepting my recognition, you are recognising me) the risk of one individual accumulating capital at the expense of others in the community is reduced: to reestablish the balance "spoiled" members could simply withdraw their recognition capital investments from that individual.

Recognition as Social Capital:

- **Status and Trust**: When a member's contribution is recognised by their peers or the community at large, it elevates their status and engenders trust. This social trust is an essential form of social capital that enables more effective collaboration and knowledge exchange.
- **Influence and Leadership**: Recognised members often gain the ability to influence community decisions and directions. This influence can be seen as an accumulation of social capital, providing them with a platform to guide and mentor others.
- **Network Extension:** Recognition can also lead to an expansion of one's network within and outside the CoP. Recognised members become more attractive as collaborators, advisors, or mentors, thus diversifying and enriching their social capital.
- **Reciprocity**: Social capital is often built on the principle of reciprocity. When community members receive recognition, they are more likely to contribute further to the CoP, perpetuating a cycle that enriches the social capital of the entire community.

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[3] Recognition capital is not "fungible" ; it cannot be *exchanged* against a loaf of bread. On the other hand, it can be invested into others: the recognition capital I have can facilitate the acceptance of my offer to recognise someone, which will in turn augment both recognition capitals.
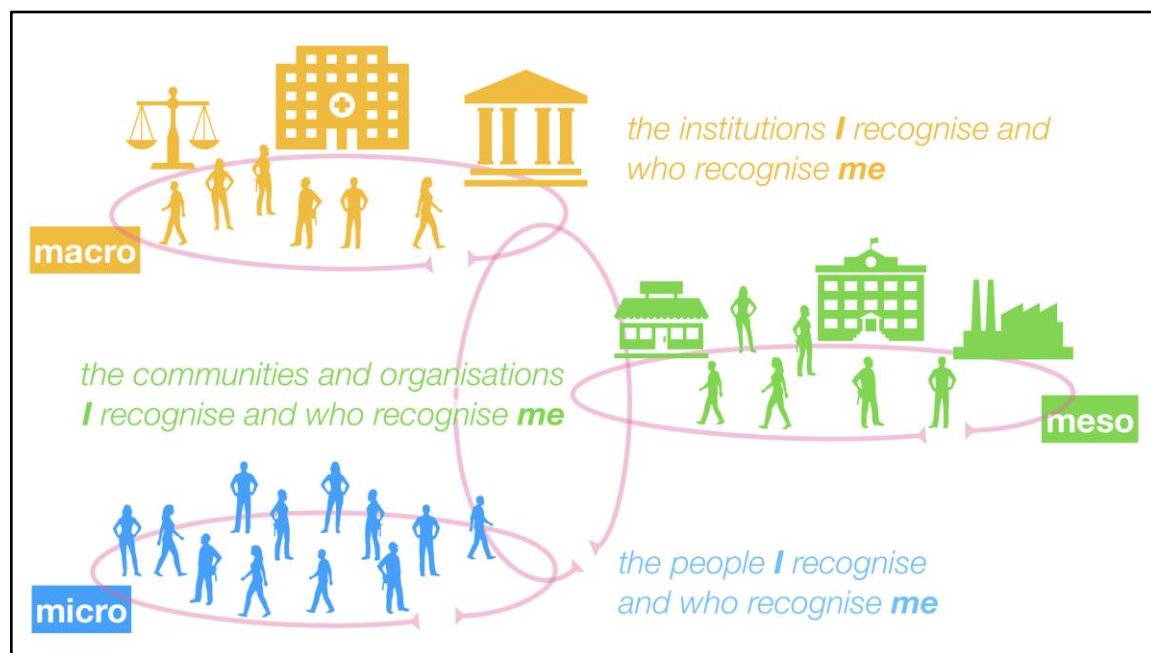
Reification as Recognition Capital (Tangible Social Capital):

- **Artefacts as Currencies**: In a CoP, reified objects like best practice guides, templates, or even Open Badges can act as 'currencies' of social capital. These objects often carry the implicit endorsement of the community, and possessing or contributing to them can enhance one's standing.
- **Legacy and Continuity**: Reified objects serve as tangible manifestations of a member's contributions, creating a lasting legacy. This adds to their reservoir of social capital as new members engage with these objects and recognise the contributors' expertise.
- **Credibility Markers**: Reified objects can serve as evidence or 'markers' of the credibility and expertise of community members. They can be showcased to external audiences, further enhancing the social capital of the contributing members beyond the CoP boundaries.

Synergy between Recognition and Reification:

- **Validation and Endorsement**: Recognition often leads to reification (e.g., a highly-praised community solution may be formalised into a guideline). Conversely, reification can serve as a basis for recognition (e.g., the contributors to a reified object might be formally acknowledged or awarded).
- **Shared Resources**: Both recognition and reified objects become part of the CoP's shared pool of resources, strengthening the collective social capital. This can lead to a more collaborative, innovative, and resilient community.
- **Cultivating Relationships**: Recognition and reification often work together in fostering meaningful relationships within the CoP. Recognised members may collaborate in creating reified objects, while these objects, in turn, serve as focal points for interaction and discussion, strengthening the bonds among members.

MODELING DYNAMICS

the institutions I recognise and who recognise me

macro

the communities and organisations I recognise and who recognise me

meso

the people I recognise and who recognise me

micro

A recognition ecosystem

Internal dynamics

Understanding the micro-level internal dynamics is crucial when developing and implementing Open Badges to recognize practices and practitioners within a Community of Practice (CoP). Communities of practice are complex social systems with their own unique internal dynamics. By understanding these dynamics, we can better understand how CoPs work and how they can be effectively managed. This involves a nuanced grasp of roles, participation patterns, communication channels, and other key elements that shape the CoP.

Researchers like Etienne Wenger have outlined some universal internal dynamics that CoPs often exhibit. These include a shared domain of interest that unites members, a culture of mutual engagement in learning and sharing, and a constantly evolving set of shared resources and practices. Additionally, the norms and values of the community are continually negotiated among its members. The concept of peripherality allows even less active members to contribute knowledge and experiences, enhancing the CoP's overall value and legitimacy.

CoP member types

- **Core Members**: This group actively engages in discussions, projects, and often takes the lead in various activities. They can be considered the driving force behind the community.
- **Peripheral Members**: These are individuals who participate less frequently but are nonetheless valuable for their intermittent contributions and perspectives.
- **Observers**: Often newcomers or those who are interested but not active. Their passive participation can transition into a more active role over time.

Members can be segmented into core members, who are actively involved in discussions and often spearhead initiatives; peripheral members, who intermittently contribute and offer valuable perspectives; and observers, who may eventually become more active participants.

In terms of involvement, some members regularly contribute to discussions, projects, and activities, while others may prefer passive engagement, such as reading articles or watching webinars. Various communication channels facilitate these interactions, ranging from formal outlets like newsletters and webinars to informal platforms like social media and chat rooms.

Etienne Wenger and other scholars have identified a number of internal dynamics that are common to communities of practice. These dynamics include:

- **Shared domain**: The members of a CoP share a common interest or passion for a particular topic. This is what brings them together and motivates them to participate.
- **Mutual engagemen**t: Members of a CoP are mutually engaged in learning and sharing. They are not simply consumers of information; they are also active contributors.
- **Shared repertoire**: CoPs develop a shared repertoire of resources, knowledge, and practices. This repertoire is constantly evolving as members learn from each other and share their experiences.
- **Negotiated order**: CoPs have a negotiated order, which means that the norms and values of the community are constantly being negotiated and renegotiated by its members. Power dynamics within the CoP may vary; decision-making could be centralised among a few core members or be more democratic. Individual influence can stem from various forms of social capital, including expertise and charisma.
- **Peripherality and participation**: CoPs have a periphery and a core. The periphery is made up of members who are not as actively involved in the community as the core members. However, even peripheral members can still contribute to the community by sharing their knowledge and experiences.
- **Legitimacy**: CoPs have a sense of legitimacy, which means that they are seen as credible and valuable by their members. This legitimacy is often based on the community's ability to provide its members with opportunities for learning, meaning-making, and identity formation.

Shared norms and practices often manifest in the form of knowledge sharing and a code of conduct. Trust among members is built through a combination of consistent contributions and ethical behaviour, fostering an environment of mutual help and exchange. Motivation to participate in the CoP can be driven by intrinsic factors such as a passion for the subject or the joy of helping others, as well as extrinsic factors like rewards and career advancement. Issues of inclusion and diversity also shape the CoP, from barriers to entry to the diversity of demographics and viewpoints represented within the community.

John Seely Brown's view on CoPs

John Seely Brown, a cognitive scientist and knowledge management expert, posits that Communities of Practice (CoPs) are vital platforms for knowledge sharing, skill development, and innovation. His perspective is rooted in the concept of situated learning, where the learning process is contextual and driven by the interplay between the individual, the community, and the environment. In CoPs, this manifests as learning by doing and sharing experiences with other community members.

Brown extends the concept of CoPs beyond a single organization or locale, identifying them as networks of practice that can connect multiple entities, even across national borders. He argues that they can serve as a bridge between diverse groups, providing a common language and shared understanding.

According to Brown, the benefits of CoPs are manifold. They enhance knowledge sharing, foster innovation by encouraging collaboration and risk-taking, and improve employee satisfaction by creating a sense of community and purpose. CoPs are not just repositories for existing knowledge; they are dynamic entities that generate new knowledge. While technology plays a role, the essence of CoPs lies in the human relationships that form the backbone of these communities.

In summary, Brown contends that for organisations aiming for success in the 21st century, CoPs offer a way to accelerate learning, spur innovation, and adapt effectively to change.

These are just some of the internal dynamics that are common to communities of practice. The specific dynamics that are present in any given CoP will vary depending on the community's size, purpose, and membership.

In summary, each CoP will have its unique blend of these internal dynamics, influenced by its size, goals, and membership, which all inform the optimal design and delivery of Open Badges for recognizing achievements within the community.

Inter communities dynamics
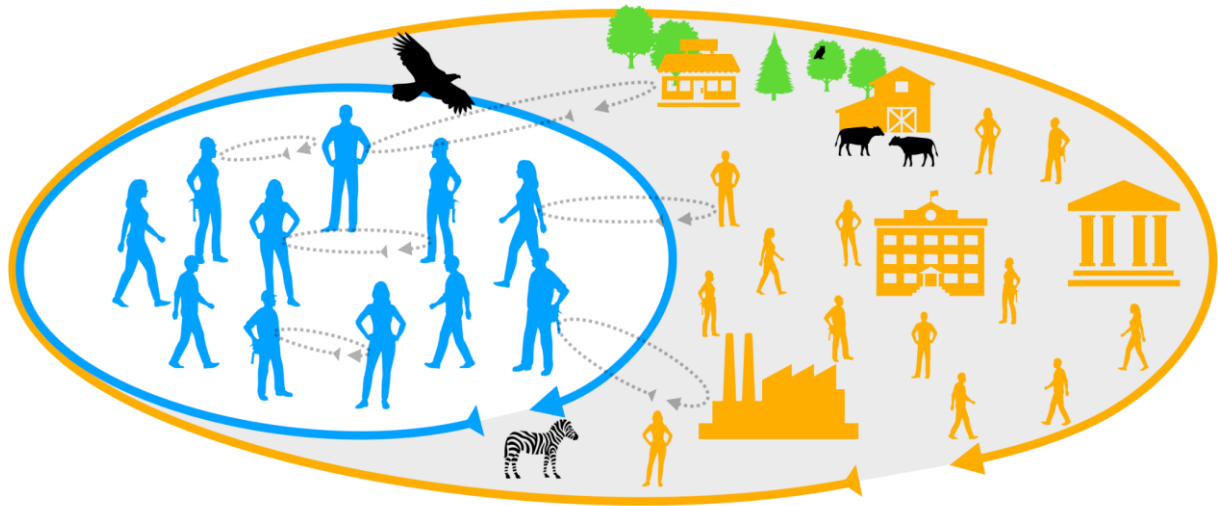
Double Loop Recognition

The key function of modelling inter-communities dynamics is to explore how can an informal recognition produced within one community be valuable to outside communities? What are the vectors, human and technology, that can convey this information meaningfully? How is it activated?

Etienne Wenger and other scholars have identified a number of external dynamics that are common to communities of practice. These dynamics include:

- The environment: CoPs exist within a larger environment, which includes other CoPs, organisations, and institutions. This environment can have a significant impact on the CoP, shaping its goals, practices, and membership.
- The wider community: CoPs are also embedded in a wider community of people who share similar interests or concerns. This wider community can provide support and resources for the CoP, and it can also help to legitimise the CoP's work.
- The market: In some cases, CoPs may interact with the market. This can happen when the CoP's products or services are sold to others, or when the CoP's members are employed by organisations that compete in the market.
- The policy environment: CoPs may also interact with the policy environment. This can happen when the CoP's work is affected by government regulations, or when the CoP seeks to influence government policy.
- The technology environment: CoPs may also interact with the technology environment. This can happen when the CoP uses technology to communicate, collaborate, or share knowledge.

These are just some of the external dynamics that are common to communities of practice. The specific dynamics that are present in any given CoP will vary depending on the community's size, purpose, and membership.

The external dynamics of Communities of Practice (CoPs) refer to how these communities interact with external entities, including other CoPs, organisations, and broader social or institutional structures. Below are some aspects of external dynamics, as informed by Etienne Wenger's work and other perspectives.

Boundary Interactions

- Boundary Spanners: Individuals who are members of multiple CoPs or organisations can serve as intermediaries, facilitating the exchange of knowledge and practices.
- Boundary Objects: Artifacts, documents, or even jargon that can be shared across different CoPs to facilitate communication.

Organisational Alignment

- Alignment with Organisational Goals: CoPs that are situated within larger organisations may need to align their practices and contributions with the broader objectives of that organisation.
- Influence on Policy and Strategy: Mature CoPs can have a significant influence on organisational policy, especially when their area of focus aligns with the organisation's core business.

Collaboration and Partnerships

- Inter-CoP Collaboration: Multiple CoPs **may** collaborate on projects that require diverse expertise.
- External Partnerships: CoPs often form partnerships with external organisations, educational institutions, or other entities to achieve shared goals.

Accountability and Evaluation

- Performance Metrics: External stakeholders might measure the success of a CoP based on certain key performance indicators (KPIs), such as knowledge production, innovation, or member engagement.
- Funding and Resources: External funding, either from the host organisation or external grants, can have an impact on the activities and focus of the CoP.

Social and Cultural Context

- Cultural Attitudes: Broader societal attitudes towards the field of practice can influence the external interactions and reputation of the CoP.
- Regulatory Environment: Laws and regulations can constrain or facilitate the activities and contributions of a CoP.

Wenger emphasises the concept of "brokering," where some individuals act as agents that connect their CoP to other networks or communities. This interaction can lead to what Wenger calls a "landscape of practice," which is a broader ecosystem that comprises multiple CoPs and other kinds of knowledge communities. By understanding both the internal and external dynamics, stakeholders can more effectively navigate the complex landscapes that CoPs operate within.

Communities of practice are complex social systems that are influenced by both internal and external dynamics. By understanding these dynamics, we can better understand how CoPs work and how they can be effectively managed.

Open Badges

Open Badges as "Recognition Capital" currency

Open Badges offer an innovative way to intertwine the processes of reification and recognition within Communities of Practice. They serve as both concrete representations of knowledge and skills, and as mechanisms for recognising individual contributions, thereby enriching the communal fabric of learning and practice. Instruments initially designed to make visible informal learning can also be used to make visible contributions, artefacts and credentials in a standardised and interoperable format.

Reification and Open Badges:

- **Artefacts as badges**: when a community develops an artefact, such as the documentation of a practice, an Open Badge can be created to make it visible as a reified representation of the collective knowledge and expertise involved in its creation.
- **Standardising contributions**. It is possible to use Open Badges as a standardised indicator of various types of contributions, past, present or future: participation, commitments, achievements, publications, etc.
- **Codifying practice**: Open Badges can encapsulate the description of specific practices and/or the underlying competences (i.e. the activation, in context, of knowledge, skills, attitudes and values) or other attributes relevant to that practice

Recognition and Open Badges:

Contribution recognition: An Open Badge can be awarded to a community member as a form of recognition for their contributions to an artefact, project, or the body of knowledge within the CoP.

Peer recognition: Some CoPs have peer-review mechanisms where community members can nominate or endorse each other for badges, fostering a culture of recognition and validation.

External recognition: Because Open Badges are often designed to be interoperable and can be displayed across various platforms, they enable members to take their credentials and recognitions beyond the boundaries of the CoP, thereby expanding their professional opportunities.

Advantages of Open Badges in CoPs:

- **Interoperability**: by using standardised specifications, Open Badges can be easily shared across different platforms and communities, making them more useful and more valuable.
- **Granularity**: An Open Badge can capture a wide range of contributions and achievements, from sharing knowledge, to managing a successful project, allowing for a more nuanced approach to recognition.
- **Transparency**: a transparent peer-review system is an incentive for the badge reviewers to act honestly and with discernment which adds to the credibility of both the badge, the reviewers who issued it and the holder who claimed it.
- **Trust**: making visible the trust relationships within the community and the place of a badge within that trust network contributes to making the badge trustworthy.

- **Empowerment**: The democratic nature of Open Badges can empower all community members to engage more proactively, knowing that their contributions will be recognised and valued.

Risks:

- **Equity**: There is the risk of badges becoming status symbols that create hierarchies within the community, potentially stifling contributions from those who have fewer badges.
- **Overemphasis** on Credentialing: While badges can promote engagement, an over-reliance on them might divert focus from the intrinsic value of participation and learning in the CoP.

More generally, Open Badges can be used to create a culture of recognition: when community members are recognised for their contributions, they are more likely to continue contributing. This can help to create a positive and supportive environment for learning and collaboration. They can be used to connect with other communities of practice, an opportunity to expand learning and collaboration opportunities.

Supporting CoP dynamics

Open Badges can play a pivotal role in enhancing the dynamics of a Community of Practice (CoP). These digital credentials provide a standardised way to recognise skills, contributions, and achievements. Here is how they could impact various internal facets of a CoP:

Recognition and Social Capital

Open Badges illuminate the contributions of community members, offering a concrete form of recognition that enhances their social capital. This newfound visibility helps build trust, influence, and status within the community. Serving as micro-credentials, badges also invigorate member participation. This active involvement, acknowledged and solidified through the badges, further elevates a member's social standing within the Community of Practice. Moreover, the availability of badges for various types of contributions—such as problem-solving, mentoring, or content creation—encourages a broader spectrum of activities, thereby enriching the ways members can earn recognition and engage with the community.

Learning and Skill Development

Open Badges serve as markers of various skills or competencies acquired through engagement in the Community of Practice, offering a transparent roadmap for individual growth and skill development. They also function as identifiers for community experts, thereby enabling targeted peer-to-peer learning experiences. Earning a badge becomes an occasion for introspection, inspiring members to evaluate their learning journey, contributions, and future steps. Furthermore, badges assist in charting progress and accomplishments, offering motivational anchors that help maintain focus on goals. They also enable the creation of individualized learning pathways, allowing members to zero in on their interests and learn at a pace that suits them.

Collaboration and Task Coordination

Open Badges facilitate the recognition of individual skills and expertise within the Community of Practice, thereby expediting the assembly of effective teams for projects and collaborations. Additionally, badges can be conferred upon reaching particular project milestones, thereby clarifying the stages of progression and individual contributions to all community members involved.

Community Governance and Culture

Open Badges offer a merit-based system for acknowledging contributions, which can in turn shape the governance models and potentially the culture of the Community of Practice. Furthermore, the specific behaviours and contributions that are recognized through badges serve as indicators of the community's core values, subtly influencing the prevailing cultural norms within the group.

Risks

While Open Badges bring numerous advantages, they also come with some risks that need to be thoughtfully managed. One concern is that the introduction of badges as a form of extrinsic motivation might inadvertently dampen the intrinsic motivation of community members. That is, members could become so fixated on accumulating badges that they lose sight of the more authentic forms of learning or contribution that initially drove their participation in the Community of Practice.

Another challenge lies in the administrative aspects of the badge system. Issuing, tracking, and managing badges can become a complicated affair, demanding extra time and resources. This increased administrative burden has the potential to impact the operational efficiency of the Community of Practice, diverting valuable resources away from other important activities and objectives. Therefore, while badges offer a compelling way to recognize and incentivize contributions, their implementation must be carefully balanced against these potential drawbacks.

In summary, Open Badges offer a multifaceted approach to bolstering the internal dynamics of a CoP, impacting recognition, learning, collaboration, and governance. When implemented thoughtfully, they can provide a rich tapestry of opportunities for both individual and collective growth.

Mapping emerging practices

Open Badges offer a dynamic way to identify and validate emerging practices and competences within a learning environment or Community of Practice (CoP). They serve as digital credentials that capture specific skills, contributions, or achievements, and can be particularly effective in tracking and catalysing the development of new competences and practices.

Here's how:

- **Create a shared language** around emerging practices and competences. This can help to facilitate communication and collaboration within the CoP.
- **Create a common understanding of the value of emerging practices** and competences. This can help to motivate community members to participate in these practices and to develop the necessary skills and knowledge.

- **Create a culture of innovation and entrepreneurship.** This can help community members to identify new opportunities and to develop new solutions to problems.

Identifying Emerging Practices:

- **Crowdsourced Insights**: Open Badges can be issued not just by administrators but also by community members, allowing for a more nuanced, ground-up identification of new and valuable practices.
- **Granular Recognition**: Unlike traditional certifications that may cover broad skills or competences, Open Badges can be used to recognise very specific practices, even those that are newly emerging within a CoP.
- **Adaptability**: The digital nature of Open Badges allows them to be easily updated or modified. As new practices emerge, new badges can be quickly created to recognise and incentivise these developments.

Mapping Emerging competences:

- **Skill Landscaping**: The variety of badges issued within a CoP can provide a "map" of the skills and competences that are considered valuable, including those that are emerging.
- **competence Pathways**: Badges can be designed to represent progressive levels of mastery in an emerging competence. This creates a roadmap for those interested in developing that particular skill.
- **Interdisciplinary competences**: Often, emerging competences are at the intersection of existing disciplines. Open Badges can capture these nuanced, interdisciplinary skills that traditional frameworks might overlook.

Data and Analytics:

- **Tracking Trends**: The data associated with badge issuance and acquisition can offer insights into trends. Are certain badges being earned more frequently? This could indicate a growing importance for the competence or practice they represent.
- **Gap Analysis**: By looking at which badges are rarely earned or issued, organisations can identify areas where there may be a skills gap, prompting targeted intervention or training.

Fostering Community Engagement:

- **Community Conversations**: The introduction of new badges for emerging practices can prompt dialogue among members about the value and relevance of these new areas, thereby keeping the community engaged and forward-looking.
- **Peer Validation**: The peer-to-peer nature of some badge systems can serve as an additional validation of emerging practices and competences, enhancing their credibility and acceptance within the CoP.

Open Badges thus offer a flexible, adaptable tool for mapping emerging practices and competences, providing both the granularity and dynamism needed to keep pace with rapid changes in knowledge and practice. They can serve as both a lens to identify emerging trends and a catalyst to encourage their development. By identifying emerging practices, eliciting and defining the underpinning competences, Open Badges can help CoPs to stay up-to-date on the latest trends and to ensure that their members are developing the necessary competences.

REPAIR FRAMEWORK & SDGS

The REPAIR Framework rests on 3 pillars:

- The U.N. Sustainable Development Goals (SDGs) — *the challenge*
- Communities of Practice (CoP) — *the actors*
- Open Badges — *the technolog*y

Communities of practice (CoPs) can be a powerful tool for achieving the United Nations' Sustainable Development Goals (SDGs). CoPs can help to:

- **Share knowledge and best practices:** CoPs can bring together people from different organisations and backgrounds who share an interest in a particular SDG. This can help to share knowledge and best practices, and to build a common understanding of the challenges and opportunities associated with each goal.
- **Collaborate on solutions**: CoPs can provide a space for people to collaborate on solutions to the challenges associated with the SDGs. This can help to pool resources and expertise, and to develop innovative solutions that can be scaled up and replicated.
- **Advocacy**: CoPs can advocate for the SDGs at the local, national, and international levels. This can help to raise awareness of the goals, and to build support for policies and actions that will help to achieve them.

There are a number of existing CoPs that are already integrating some of the SDGs. For example, the Sustainable Brands Community[4] brings together businesses and organisations that are committed to sustainability. The community's work aligns with several SDGs, including SDG 12 (responsible consumption and production), SDG 13 (climate action), and SDG 17 (partnerships for the goals).

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[4] https://sustainablebrands.com/participate/corporatemember/community

There are also a number of emerging CoPs that are dedicated to one or more SDGs. For example, the SDG 6 IWRM Community[5] brings together people who are working to achieve SDG 6 (clean water and sanitation). The community's work focuses on sharing knowledge, best practices, and resources related to water and sanitation.

CoPs can be a powerful tool for achieving the SDGs. By bringing people together from different organisations and backgrounds, CoPs can help to share knowledge and best practices, collaborate on solutions, and advocate for the goals.

Communities of Practice (CoPs) can play a significant role in advancing the United Nations Sustainable Development Goals (SDGs). Both existing CoPs and newly emerging ones can contribute to this global agenda in different but complementary ways.

Existing CoPs Integrating SDGs

- **Broadening Scope**: Existing CoPs can broaden their objectives to integrate relevant SDGs. For instance, a CoP focused on agricultural best practices could integrate SDG 2 (Zero Hunger) into its activities.
- **Knowledge Sharing**: The expertise within these communities can be harnessed to disseminate knowledge that aligns with the SDGs. For example, a CoP around renewable energy can contribute to SDG 7 (Affordable and Clean Energy).
- **Policy Influence**: Established CoPs often have connections with policy-making bodies and can leverage this influence to push for SDG-aligned policies.
- **Capacity Building**: Through workshops, training, and mentorship, existing CoPs can build the capacities of their members to contribute more effectively to the SDGs.
- **Global Partnerships**: Existing CoPs with a broad network can collaborate with international organisations, NGOs, and governments to jointly work on SDG-related projects.

Emerging CoPs Focused on SDGs

- **Targeted Objectives**: These CoPs can be created with a specific focus on one or more SDGs, ensuring a concentrated effort on particular objectives.
- **Cross-Sector Collaboration**: Given the interdisciplinary nature of the SDGs, these CoPs often involve members from diverse sectors—ranging from academia to industry to government.
- **Innovation**: New CoPs are more agile and can be more experimental in their approaches, allowing for innovative solutions to complex SDG-related challenges.
- **Grassroots Initiatives**: Emerging CoPs may be more connected to grassroots realities and could be more effective in implementing localised solutions that align with SDGs.
- **Funding and Resources**: New CoPs can seek funding specifically aimed at SDG-related projects, allowing for more directed and impactful work.

By actively aligning with the UN's SDGs, both existing and emerging CoPs can make meaningful contributions to these global goals, benefitting from the shared knowledge and collaborative potential that these communities offer.

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[5] https://iwrmactionhub.org/group/sdg6iwrm/about

The UN Sustainable Development Goals

While the world of work is changing, the World is facing a number of challenges. To address those challenges, in 2015, United Nations Member States adopted the 2030 Agenda for Sustainable Development. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries in a global partnership.

Representing the actors of a low carbon transport system, the UIC is active on this agenda and is committed to addressing the following 7 SDGs:

- 5: Gender Equality
- 7: Affordable and Clean Energy
- 8: Decent Work and Economic Growth
- 9: Industry Innovation and Infrastructure
- 11: Sustainable Cities and Communities
- 12: Responsible Consumption and Production
- 13: Climate Action

Addressing those challenges requires the commitment of all professionals empowered to explore the solutions and practices conducive to the achievement of those goals. The possibility of this exploration and the emergence of innovative practices is dependent on the context where people work: it is the working environment that creates the conditions to activate or hinder the expression of one's competences. A person can be highly competent in one context and feel incompetent when moved into a context which is not conducive to the activation of her competences. While this is true in general, the SDGs poses an even greater challenge: being *competent* is not anymore about the sole ability of doing one's job as usual, with more or less variations, but it is about being able to understand the challenges, imagine, explore and integrate solutions in one's professional environment. Conversely, from the employer's perspective and the management of the people working in the company, providing a working environment conducive to the emergence of new professional practices is critical to give SDGs a chance to be an engine for innovation.

Open Badges and Open Recognition

Imagined in 2011 as a means to make informal learning visible (over 90% of our learning is informal) Open Badges have opened the path to Open Recognition, i.e. give every individual, community or organisation the means to recognise and be recognised—and make that recognition visible.

The picture below describes *the recognition space* which is organised around two axes:

- Traditional - non-traditional
- Formal - non-formal (informal is part of non-formal in this context)

Those two axes split *the recognition space* into four quadrants:

- **Conformance**: recognition is top-down, static, aligned to a standard, a curriculum
- **Inclusion**: recognition is horizontal, e.g. within a community of peers
- **Enabling**: recognition is dynamic, interactive, evolves over time
- **Empowerment**: individuals use recognition as a means for individual and collective emancipation
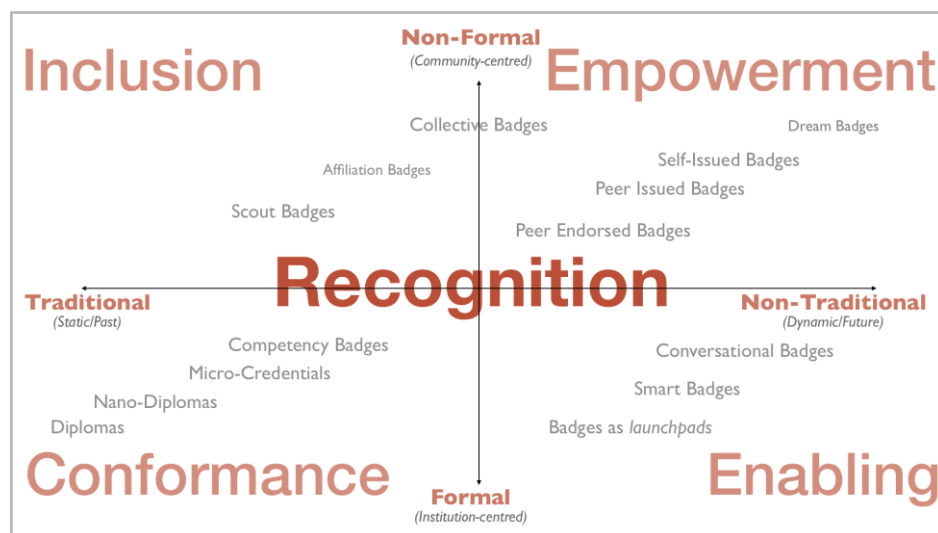
The recognition space

From the perspective of SDGs, it is clear that the *conformance* quadrant is of little use as it has probably contributed to the current state of affairs, or at least educated the people who led us to that situation. Moreover, the solutions we need to imagine and explore to achieve the SDGs have little chance of being found in a curriculum or a competence framework. And even if they were, are the working places conducive to their activation?

Yet, there are many individuals and organisations that are actively engaged in practices related to the United Nations Sustainable Development Goals. How to find them, how to discover the innovative practices that are emerging in different sectors of society?

Another way to ask those questions is: how can we recognise, make visible, the people, projects, ideas and initiatives? How can we transform this recognition to fuel further action? This is what Open Recognition is about and what Open Badges, along with other instruments, could help us to achieve.

Recognition as a Transformational Engine

Recognition is the central element explored by REPAIR. The goal is to explore how recognition (of people, practices, communities of practice, etc.) can have a transformative impact (on people, practices, communities of practice, organisations, etc.) and how making that recognition visible (using Open Badges) could expand and accelerate the recognition process and the impact:

- *Awareness* leads to reflection, then eventually to
- *Experimenting* leads to innovative practices, leading to increased awareness and eventually to
- *Integrating* leads to systematising practices through policies, giving confidence to further experimentation leading eventually to
- *Transformation* of processes, equipment, organisations.

The scope of the project is limited to the field of SDGs, therefore the question is:

How raising the awareness of SDGs leads to self and community reflection, eventually leading to experimentation, etc.

Revisiting Occupational Frameworks

A secondary element of REPAIR is the exploration of a new approach to building occupational frameworks, moving from the traditional top-down model to a bottom-up, real-time constantly evolving framework using Open Badges as the vehicle to collect, organise and make visible practices.

REPAIR is about mobilising the collective intelligence of the workforce as curators of the information used to create real time occupational maps 'à la manière de' Open Street Map: a bottom-up framework mapping of practices to help students, citizens, employees, employers and public authorities to make informed decisions regarding learning and career paths.

Focusing the curation of practices in relation to SDGs, REPAIR Framework aims at raising the awareness of professionals and organisations and the integration of professional practices conducive to the achievements of the United Nations Sustainable Development Goals.

The REPAIR approach to achieving SDGs

Achieving SDGs requires a systemic approach: for the professionals, the main challenge is not to acquire a new set of competences, but to be empowered to imagine, explore and implement innovative practices through which they will acquire, develop and hone their competences.

For that, it is important to understand the relationship between *competence* and *practice*:

- A competence does not exist independently from a practice (even the so-called transversal competences!)
- It is through practice that competences are acquired and developed
- It is through the analysis of practices (reflective practice) that competences are elicited.

It is very unlikely that an addition of "competences" acquired independently from a specific (integrative) practice will create a performant practitioner:

> "Acquiring various competencies does not necessarily make a manager competent." Contrary to the assumption of most leadership competency frameworks, there is neither a linear, nor even causal, relationship between competencies and job performance."

--Henry Mintzberg, author of "Managers Not MBAs"

For transforming practices, there is not a catalogue of predefined "innovative practices" nor "new competences" from which to choose in order to achieve the SDGs. Transforming practices is about creating the conditions to empower professionals to develop new practices that might (should?) have a ripple effect on other practices. The dynamics of transformative professional innovation are similar to the dynamics of transformative social innovation.
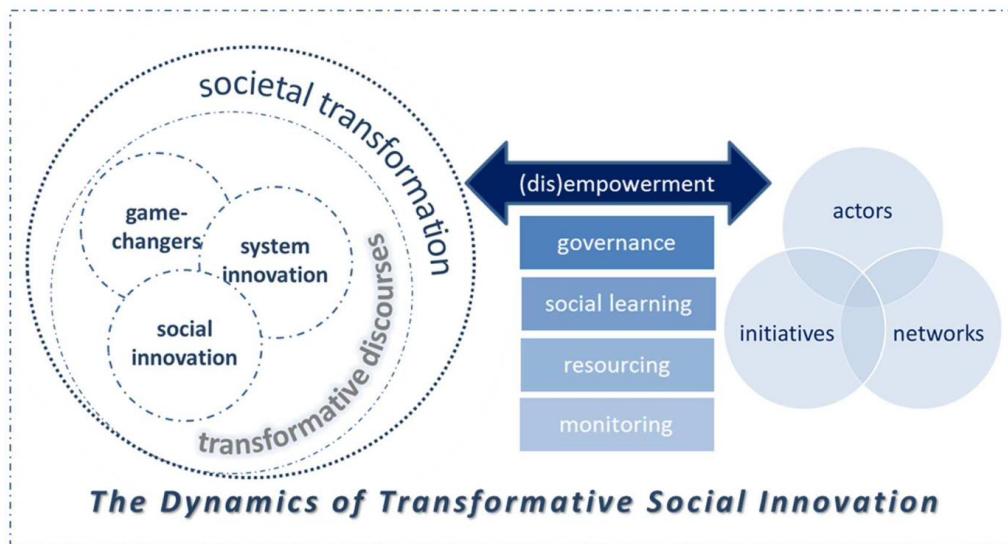
Cognitive map for TRANSIT research questions
(Source: http://www.transitsocialinnovation.eu/)

The graphic above elicits the issue of (dis)empowerment. The response of REPAIR to that issue is to state that:

- Everybody has the power to *recognise* and be *recognised* (c.f. above)
- Open Badges are the instrument that everybody can use to do so

Open Badges make recognition visible and by making recognition visible, new dynamics can emerge that wouldn't have otherwise: Helmut has developed new practice, made it visible with an Open Badge, other professionals endorse or adopt it, a community of practice emerges, this community is recognised by one or more institutions and actors who then become visible as part of the extended community of practice.
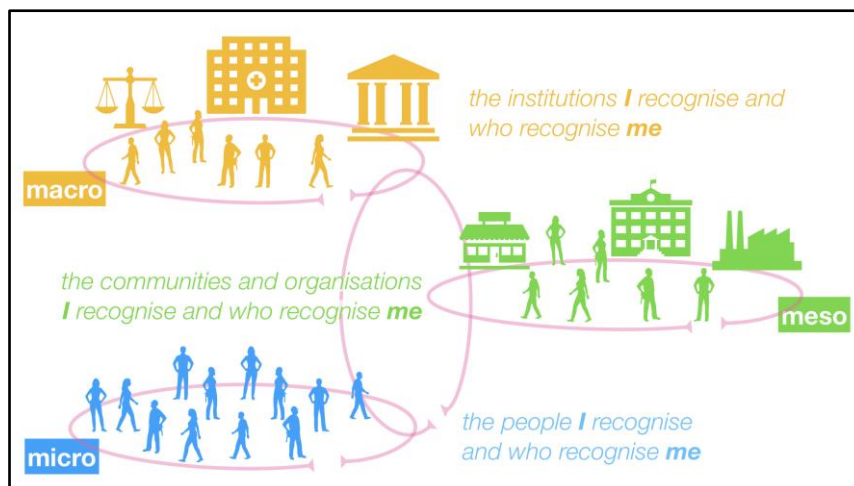
A recognition ecosystem

The systemic approach is about building an ecosystem, a **recognition ecosystem** of actors with a range of commitments to achieving the United Nations' Sustainable Development Goals.

REPAIR INSTRUMENTS

Defining a journey towards achieving the SDGs is almost impossible: too many factors have to be taken into account. On the other hand it is possible to define different levels, or stages, of maturity, starting from the initial *awareness* of the SDGs and the need to contribute to their achievements. This is what the **SDG Adoption Maturity Matrix** offers.

Once maturity levels are defined, how do we know how to move from one level to the next? Answers can be developed using **SDG Pathways**.

One of the pathways is defined by the **Rail Sustainability index**, a tool providing the UIC members with a unique rating system on the Sustainable Development Goals of the United Nations to assess the performance of each railway based on a selection of Key Performance Indicators (KPIs).

Eventually, **Open Badges** and mapping technologies are used to make visible the maturity levels and the many different pathways to move from one to the next.

SDGs Adoption Maturity Matrix

Being aware of a problem is certainly better than not being aware, but what difference does it make? One can be aware of the gender equality issue and not do anything about it. Not for lack of willingness but simply for having no idea of how to contribute to addressing it. It is a recurring problem with many *awareness raising* initiatives: not enough girls in STEM education and carriers? Organise an event in a school with women scientists and engineers with the hope that it will be conducive to more girls choosing a scientific career… This type of awareness raising practice is called "spray and pray": spray the audience with a message then pray that change will follow. Notwithstanding that, in this case, the implicit message is: it's for the girls to make a move, not the institution, the curriculum or any institutional change[6].

The very first goal of the *Matrix* is to bridge the gap between the *awareness* of an issue or an opportunity and the *actions* that would contribute to addressing the issue or seising the opportunity. As a person, a community, an organisation, what can be done, how to contribute? While the *Matrix* provides a model to move from ignorance to awareness then experimenting, integrating and transforming, it is probably the first step which is the most important to understand and equip, the next ones, *integrating* and *transforming* might come by themselves once engaged in a practice.

The *experimenting* level could take many different forms, including thought experiments to be discussed with colleagues and therefore raising their own awareness.

At each maturity level badges are proposed to make visible the practices that are conducive to the adoption of SDGs. They are just here for illustration. A more detailed presentation is proposed in the SDG Pathways and the Open Badges sections.

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[6] In France, the share of girls in maths education has collapsed following the reform imposed by Jean Michel Blanquer, the minister of education. http://demain-lecole.over-blog.com/2022/01/lycee-la-part-des-filles-en-specialite-maths-s-effondre-avec-la-reforme-blanquer.html!

	Awareness Raising	Experimenting	Integrating	Transforming
Definition	Understand the value of SDGs	Experimenting with practices supporting SDGs	SDGs practices are an integral part of the community of practice / organisation	SDGs have transformed the way the communities and organisations operate
Positioning question	What is the degree of SDGs awareness?	Are there SDGs initiatives? Are they encouraged and supported?	Is there a policy for systematic integration of *SDGs practices*	Is there an impact on the organisation and the community (e.g. cross-discipline collaboration, etc.)?
Action (examples leading to)	Seminars, webinars, workshops	Workshops, engaging in SDGs practices, thought experiments, challenges	Create a dashboard to measure the level of "SDG activity"	Benchmark across institutions, organisations and communities
Tools (supporting)	Leaflets, learning resources, polls	Documentation of SDGs practices, observations, suggestions, experimentations, etc.	Statistics, annual reports, policies, etc.	Benchmarking, ad hoc software
People (supporting)	Experts, SDG advocates, managers, ...	Experts, SDG advocates, ...	Managers, executives	Leaders
Indicators (success)	Number of people "SDGs aware"	Number of projects and people involved, impact	Progress indicators at organisation, community and society levels	Network effect
Badges (how it is made visible)	Participation Support *"I support SDGs"* *"SDGs Ambassador"*	Documenting projects and practices *"SDGs Mentor"* *"SDG Practice xxx"*	Documenting organisational practices *"Here we value SDGs"*	*"SDGs Champion"*
Impact (of visibility)	A growing community of SDGs aware individuals, organisations and communities	Documented, shared and recognised practices	Resilience, sustainability	Transformation

SDGs Adoption Maturity Matrix

The Matrix can be used in multiple ways:

- Positioning: individuals, organisations and communities can claim a level of awareness and provide evidence supporting that claim;
- Benchmarking: develop indicators to position organisations and share practices;
- Planning: defining pathways to move from one level to the next (see below);...

The Matrix can be customised to address a specific group, for example by creating a matrix for individuals as shown below.

|	**Awareness Raising**	**Experimenting**	**Integrating**	**Transforming**
Definition	Understand the value of SDGs	Experimenting with practices supporting SDGs	SDGs practices are an integral part of practices	SDGs practices have transformed work
Positioning questions	Are SDGs relevant to my work? Do I know people who are involved in SDGs?	How do I imagine that I could contribute to SDGs? With whom?	How could I make SDGs an integral part of my work and my community/organisation?	What are the transformations necessary to be fully in line with SDGs?
Action (examples leading to)	Meeting people, conversations, attending lectures, reading, etc.	Reflecting on approaches to SDGs, inviting others in the conversation and in experimenting	Working with colleagues and/or clients in a way that is conducive to achieving SDGs	SDGs advocacy, activism, ...
Tools (supporting)	Internet, books, special interest groups	Documentation of SDGs practices, observations, suggestions, experimentations, etc.	Statistics, annual reports, policies, etc.	Benchmarking, ad hoc software
People (supporting)	Experts, SDG advocates, colleagues, managers, ...	Experts, SDG advocates, colleagues, managers, ...	Colleagues, managers, executives	All!
Indicators (success)	Knowledge, social contacts, clear ideas	Formulated ideas, support from colleagues and other stakeholders	Endorsements	SDG-related social network
Badges (how it is made visible)	*"I support SDGs"*	*"SDG Practice xxx"* (author of)	Endorsements received and offered	*"SDGs Champion"*
Impact (of visibility)	A growing community of SDGs aware individuals, organisations and communities	Documented, shared and recognised practices	Resilience, sustainability	Transformation

SDG Pathways

The most difficult step on a SDG Pathway is the first one: *transforming awareness into action*. The context where awareness can be transformed into action plays a role in (dis)empowering individuals to engage in any form of action. The commitment of organisations to address, or not, SDGs can make a difference, so does the way this commitment is enacted: it can be done top-down, bottom-up and any combination and variations of the two. It is also unlikely that the solutions to the problems elicited by the SDGs will come from those who created them in the first place.

The objective of the SDG Pathways is to elicit the multilevel context where actions take place and provide indications on how those actions could be made visible (using Open Badges):

- **Individuals**: practices, whether connected to SDGs or not, are performed by individuals, within a context
- **Groups**: professional practice is not a solitary exercice, it is performed in relation to a range of stakeholders, colleagues, managers, clients and peers (community of practice)
- **Organisations**: provide the context for professional practices; it can be more or less conducive to the empowerment of professionals.
- **Communities**: the UIC is the global community of rail industries, services and professionals

The UIC has developed the Rail Sustainability index (c.f. below) which invites its members to reflect on and document the advancement of the 7 SDGs selected for their relevance to the rail sector. It is a powerful tool to raise awareness and invite the participants to engage processes that will improve the scoring from one year to the next.
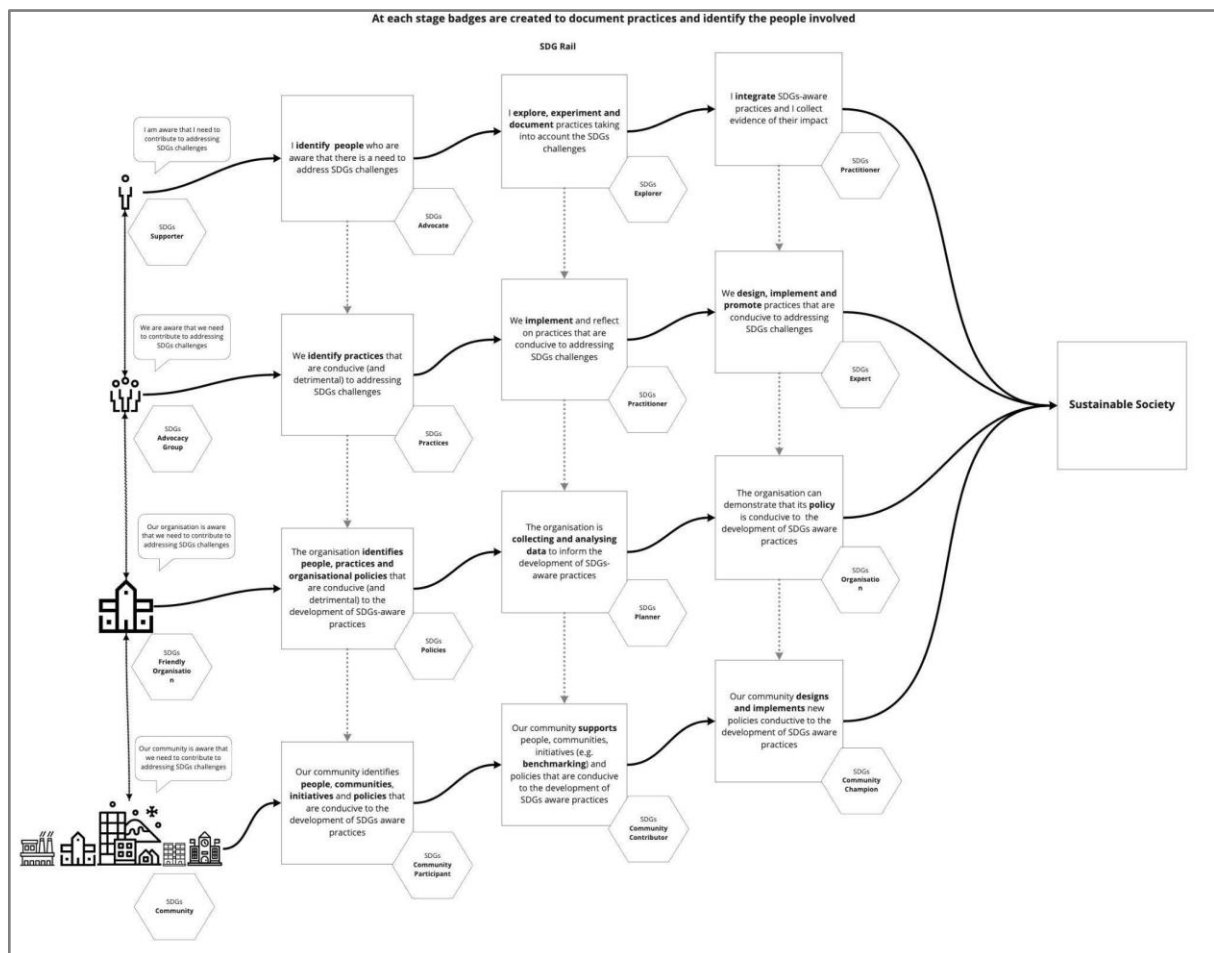
SDG Pathways

How could we transfer the idea of the RSi (for organisations) to individuals and, conversely, the idea of badges to make visible emerging SDG practices (of individuals) to organisations?

For the second part of the question there is an easy answer:

- Recognise the individuals who have contributed to the collection and analysis of data of the RSi (with an Open Badge)
- Invite participants to document their practices and make them visible using Open Badges: the badges could then be claimed (by those adopting the practices) or simply *endorsed* (like!) by UIC community members

For the first part of the question, i.e. creating something that, like the Rail Sustainability index, is both a tool for raising awareness and an incentive to integrate SDGs in one's practice, things are a bit more complicated, starting with the difference in the number of actors involved.

The hypothesis formulated by the REPAIR project is that recognition, of awareness, commitment, practices etc. can be the fuel to feed the adoption of SDGs with the emergence and adoption of innovative practices.

Rail Sustainability index (RSI)

The Rail Sustainability index (RSi) is a tool being designed for and with the global rail community. It will provide the UIC members with a unique rating system and a supportive digital platform based on the Sustainable Development Goals of the United Nations to assess the performance of each railway based on a selection of Key Performance Indicators (KPIs).

The Rail Sustainability index will provide UIC members with:

- a reporting system on each individual company's and the whole sector's contribution to the achievement of SDGs, featuring benchmarks and best practices,
- improved access to green bonds and sustainable finance instruments.

Corresponding to the 7 goals chosen by the UIC, a set of 24 Key Performance Indicators (KPIs) was developed for 2020; these consist of both quantitative figures and qualitative questions. Based upon these 24 KPIs, a 'questionnaire' including guidance and referencing was drafted and used to develop the BETA version of the online self-assessment functionality presented at the December 2020 UIC General Assembly.

Open Badges

The role of the Open Badges is to "make visible something that wouldn't be visible without them" and by making those things visible, "create the conditions for new things to emerge (actions, services, projects, etc.).

In the context of SDGs, Open Badges can be used to make visible:

- Awareness
- Commitments
- Practices (ideas, resources and actions)
- Achievements
- SDG Maturity
- …

The challenge at the current stage of Open Badge development is how to transform visibility into action by the person who claims or gets a badge and/or those present in her ecosystem?

To explore this question, the first step is to unlearn the idea that a badge is a kind of certificate. It can be used to hold a certificate, but a badge can be much less and, paradoxically, much more. A badge is a connector and a pointer.

As a connector, a badge connects the issuer and the recipient of the badge to knowledge, ideas, resources, places, values and much more. It also connects all the people who share the same badge, those who endorse the badge etc. If 100 people have the same badge and each one receives 10 endorsements, the same badge is now connecting 1,000 people, who might have other badges connected and endorsed by other people. Open Badges have the power to create a network effect where new nodes don't simply add to but *multiply* the power of the network.

As a pointer, a badge is a means to make a resource accessible. For example, when a professional develops a new practice, she can use a badge to document the practice. In reality, the document is not in the badge (especially if it is a video!) but a link to the documentation is provided in the badge. For the person who has developed the practice, it is a means to share it and an opportunity to be recognised by those who would claim or endorse the badge.

So, while the RSi is both a means to raise awareness and invite actions, Open Badges can do the same at a more granular level and contribute to making visible emerging communities of SDG practices. In a sense Open Badges could be an instrument to act locally and have a global impact.

	SDG Definition	UIC Criteria	Badges
All	UIC SDG monitor	Badges related to monitoring UIC criteria (all SDG criteria, individual SDG criteria?)	Knowledge (K), Teaching (T), Implementation (I) = doing monitoring.
5	Gender equality	Non-discrimination framework/code	K, T, I, D, P Develop, teach, implement code in organisation.
		Women by level of responsibility	Develop programs for increasing women in responsible positions …
		Governance bodies (% women)	Develop programs for increasing women on governance boards …
7	Affordable and clean energy	Share of renewable energy	Develop specific energy saving techniques in organisation.
		Target of renewable energy (existence, monitoring)	Develop programs for increasing use of renewable energy …
8	Decent work and economic growth	Fixed term/temporary employment contracts	Develop programs for improving employment conditions …
		Health & safety management system (existence, certification, monitoring)	Develop specific health and safety MGT system techniques …
9	Industry, innovation, and infrastructure	Percent electrified lines	Develop programs for more efficiently increasing electrification …
		Climate-related risk management process (existence, monitoring, TCFD consistent)	Develop climate related risk MGT process program elements …
		Infrastructure planning climate-related risk management (existence, TCFD consistent)	Develop climate related infrastructure planning program elements …
11	Sustainable cities and communities	Significant accidents, safety index	Develop specific workplace safety elements and programs …
		(Seems like there could be additional UIC SDG criteria here?)	
12	Responsible production and consumption	Hazardous waste (generation, reuse/ recycle/ disposal %	Develop specific Haz-mat waste reduction techniques and programs …
		Sustainability report (existence, outside verification, 'annual')	Develop / revise organisation's sustainability report program.
		Environmental management system (existence, certification, monitoring)	Develop / revise organisation's env MGT system.
13	Climate action	Reduce CO2 emissions (direct and indirect)	Develop specific techniques / processes for reducing CO2 emissions …
		Green Bond	Develop specific green bond programs for organisation.
		Board-level oversight of climate related issues	Develop programs for increasing board oversight of env issues.

		Emission targets (existence, monitoring)	Develop / revise organisation's emissions targets & monitoring tech.
		Collaborating with governments/PPPs to develop climate change solutions/policies	Develop specific programs for working with outside on climate PGMs

Example of SDG Practice Badges (source: Andy Nash, POL)

Types of badges:

- (K) - Knowledge: badge that acknowledges having attended a course on the technique.
- (T) - Teaching: badge recognising the ability to teach the technique to others.
- - Implementation: badge recognising the use of the technique in the field.
- (D) - Developer: badge recognising that it has developed a new technique.
- (P) - Pedagogy: badge recognising having passed on the technique to others.
- Another dimension could be related to the level of commitment of individuals in relation to SDGs in general or a specific one:
  - - Ambassador / Advocate: badge recognising the role in promoting SDGs
- (O) - Observer: badge recognising the role in observing and documenting SDGs actions and progress
  - - Champion: badge recognising excellence in advancing SDGs practices

THE REPAIR FRAMEWORK IN ACTION: BUILDING THE RAILWAY SDGS COP

The railway sector could potentially leverage Communities of Practice (CoPs) and Open Badges to align its operations and workforce with the United Nations' Sustainable Development Goals (SDGs). Here's a roadmap outlining how this could be achieved:

- Identify emerging practices and competences that support SDGs. The railway sector can use Open Badges to identify emerging practices and competences that support SDGs. This can be done by looking at the skills and knowledge that are needed to achieve the SDGs, and by identifying the practices that are being used to develop these skills and knowledge.
- Create CoPs around these emerging practices and competences. Once the railway sector has identified emerging practices and competences that support SDGs, it can create CoPs around these topics. These CoPs can provide a forum for community members to share their knowledge and experiences, and to collaborate on projects that support the SDGs.
- Use Open Badges to recognize contributions to CoPs. Open Badges can be used to recognize contributions to CoPs. This can help to motivate community members to participate in CoPs, and to share their knowledge and experiences.
- Use Open Badges to track progress towards SDGs. Open Badges can be used to track progress towards SDGs. This can be done by issuing Open Badges to community members who have completed learning activities that support the SDGs.
- Use Open Badges to connect with other CoPs. Open Badges can be used to connect with other CoPs that are working on similar issues. This can help to expand the reach of CoPs, and to share knowledge and experiences across different communities.
- In conclusion, Open Badges can be a powerful tool for building CoPs in the railway sector that support SDGs. By identifying emerging practices and competences that support SDGs, creating CoPs around these topics, using Open Badges to recognize contributions to CoPs, tracking progress towards SDGs, and connecting with other CoPs, the railway sector can use Open Badges to create a more sustainable and equitable future.

Identifying SDGs of Relevance:

- Mapping Goals: Identify which SDGs are most pertinent to the railway sector, such as SDG 9 (Industry, Innovation, and Infrastructure), SDG 11 (Sustainable Cities and Communities), or SDG 13 (Climate Action).
- Stakeholder Engagement: Consult various stakeholders, including employees, regulators, and community representatives, to ensure the selected goals are both ambitious and feasible.

Creating CoPs around SDGs:

- Objective-Oriented CoPs: Establish specialised CoPs that are explicitly designed to tackle particular SDGs or subsets of them.
- Interdisciplinary Teams: Include not just technical experts but also professionals in sustainability, community engagement, and policy planning.
- Open Forums: Provide platforms (online and offline) for sharing insights, asking questions, and collaboratively problem-solving.

Utilising Open Badges within CoPs:

- Badge Design: Create a set of Open Badges aligned with competencies, contributions, or achievements directly related to the SDGs being targeted.
- Skill Recognition: Award badges for mastering sustainability-related skills, attending relevant training sessions, or implementing a successful green initiative.
- Social Capital: Use badges to recognize contributions to the CoP itself, such as sharing valuable resources, mentoring peers, or facilitating impactful discussions.
- Emerging Practices: Create badges that identify and validate new, innovative practices or solutions that contribute to SDGs.

Monitoring and Evaluation:

- Impact Measurement: Use key performance indicators (KPIs) related to SDGs to evaluate the impact of the CoPs.
- Badge Analytics: Analyze data on badge issuance and acquisition to understand trends in community engagement and competency development.
- Feedback Loops: Create mechanisms for ongoing feedback from CoP members to continuously refine both the CoPs and the Open Badge system.

Communication and Outreach:

- Showcasing Success: Use the stories and achievements of badge earners to promote the CoPs and their impact on SDGs, both internally and externally.
- Inter-Sector Collaboration: Promote the concept to other sectors and industries to expand the reach and impact on SDGs globally.

By aligning CoPs and Open Badges with SDGs, the railway sector can create a focused, measurable, and engaging approach to sustainability, offering both a roadmap for strategic action and a way to recognize and accelerate individual and collective contributions.

Building SDG Communities of practice with ORCA

To bolster the growth and effectiveness of communities of practice, REPAIR has adopted ORCA (Open Recognition Community App) as its go-to tool for managing recognition and credentialing within these communities. ORCA serves as an inclusive platform that enables the issuance, management, and tracking of Open Badges, thereby converting the ephemeral nature of "social capital" into a more tangible "recognition capital."

As a pioneering endeavor, REPAIR has rolled out its first community under this initiative, accessible at Railways ORCA Pods (https://railways.orcapods.org). This online space serves as a nexus for like-minded individuals and organisations committed to sustainable development, specifically within the railway sector. The community aims to be an epicenter of knowledge sharing, collaboration, and recognition, aligning its objectives with the broader Sustainable Development Goals (SDGs) laid out by the United Nations.

What sets this community apart is its innovative use of Open Badges as a mechanism to encourage active participation and document milestones. These badges, which members can claim, serve multiple functions:

- **Public Commitment**: By claiming a badge, members make a public commitment to the principles and goals set out by the community, adding a layer of accountability to their actions.

- **Visible Support**: Badges act as virtual tokens that signify the member's explicit support for achieving the SDGs. This not only boosts individual morale but also serves as a visual indicator of community solidarity.
- **Recognition**: Beyond their symbolic value, these badges carry a measure of prestige, rewarding members for their contributions and achievements within the community.
- **Motivation**: The badges aim to incentivise proactive involvement in the community's projects and discussions. They represent a form of micro-credentialing that can have a macro impact on both the individual and the community at large.

In this way, the integration of ORCA and Open Badges in the Railways community is not merely cosmetic but serves to invigorate the participatory culture, thus accelerating the collective journey towards realising Sustainable Development Goals.

The badges structuring the community

These badges match the 4 levels of the SDGs adoption maturity matrix.

	Awareness Raising	**Experimenting**	**Integrating**	**Transforming**
Definition	Understand the value of SDGs	Experimenting with practices supporting SDGs	SDGs practices are an integral part of the community of practice / organisation	SDGs practices have transformed the way the communities and organisations operate

Extract from the SDGs adoption maturity matrix

The function of these badges is to position the participants in the CoP in relation to their level of commitment:

- **SDG Aware**: anybody can claim that badge and there is no review. The people who claim that badge are invited to indicate the SDGs of interest and why it is of interest.
- **SDG Explorer**: this badge can be claimed by people who are exploring ideas and practices that could contribute to the achievement of SDGs. This badge, like the next ones can be claimed by "members" and is peer reviewed.
- **SDG Practitioner**: this badge can be claimed by people who have integrated in their practice and/or their organisations the achievement of SDGs. This badge can be claimed by "members" and is peer reviewed.
- **SDG Champion**: this badge can be claimed by people who have made a significant contribution to the rail practices and/or their organisations to contribute to the achievement of SDGs. This badge can be claimed by "members'' and is peer reviewed.
- **Member**: anybody can claim this badge which is peer reviewed in order to establish links between new and old members (reviewers are a kind of "sponsors") and moderate the access to the community—to avoid "undesirable" people.

-

Structuring a Community of Practice (CoP) around a series of badges like "SDG Aware," "SDG Explorer," "SDG Practitioner," "SDG Champion," and "Member" can offer several benefits that contribute to the community's growth, learning, and overall effectiveness.

Inclusive entry point: SDG Aware

By allowing anyone to claim the "SDG Aware" badge without a review, the community lowers the barrier to entry. This inclusiveness can encourage broader participation and attract individuals with a nascent interest in Sustainable Development Goals (SDGs). Inviting these badge claimants to indicate their specific SDGs of interest and reasons behind it also serves as an informal onboarding process, guiding them towards areas where they can contribute or learn more.

Encouraging exploration: SDG Explorer

The "SDG Explorer" badge serves as a stepping stone for those who are moving beyond initial awareness to actively explore ideas and practices related to SDGs. The peer review process at this level adds a layer of credibility and ensures that the badge holders have demonstrated some degree of engagement. This badge could serve as a motivator for newcomers to delve deeper into the subject matter.

Recognizing integration: SDG Practitioner

The "SDG Practitioner" badge targets those who have not only explored but have also integrated SDG-related practices into their work or organizational strategy. The peer review process for this badge could provide constructive feedback and validation, encouraging continued dedication and possibly influencing others to take the journey from awareness to integration.

Celebrating excellence: SDG Champion

The "SDG Champion" badge serves as a high honor within the community, reserved for those who have made significant contributions toward the achievement of SDGs. This elite badge can serve as both a motivator and a form of high recognition, encouraging the highest level of commitment and performance. Peer review ensures that the recognition is credible and respected within the community.

Building social Capital: Member

The "Member" badge, claimable by anyone but subject to peer review, serves multiple functions. It can act as a social glue, facilitating networking between new and existing members. The review process, conducted by existing members who act as "sponsors," adds a vetting layer that can maintain the quality and integrity of the community. This helps in moderating access and ensures that members align with the community's objectives and norms, thereby creating a safer and more focused environment.

Overall, the badge-oriented structure enhances recognition, motivation, accountability, and community integrity. It also aligns well with the tenets of situated learning and knowledge sharing, which are often considered vital for the success of Communities of Practice.
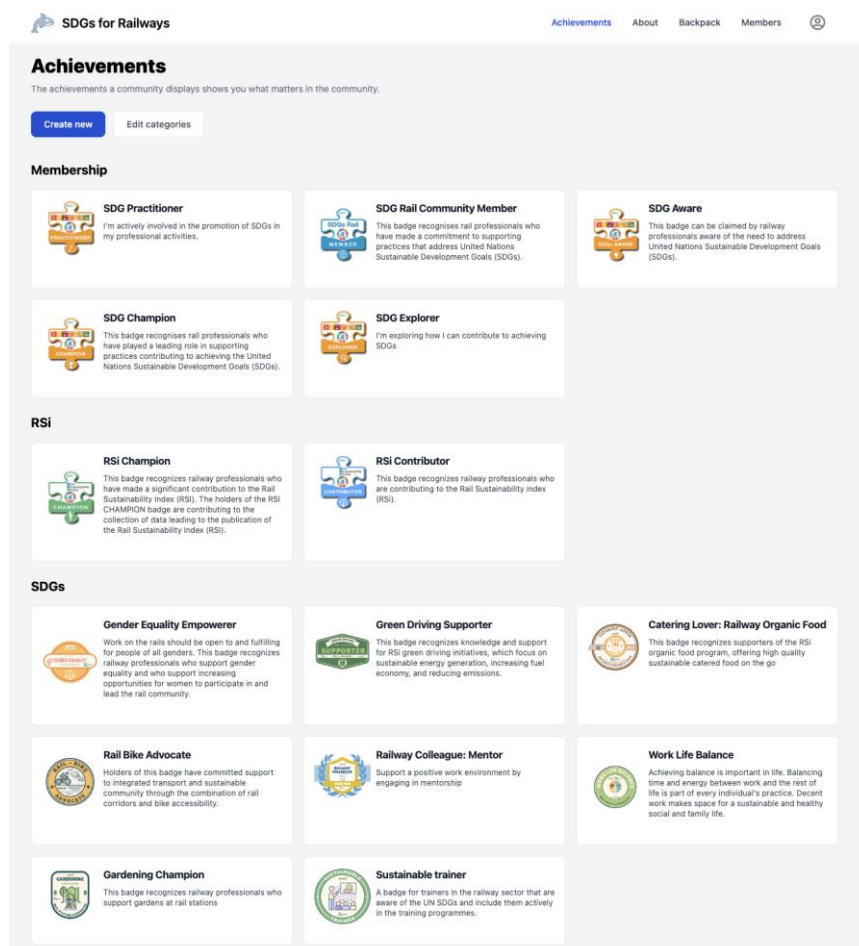
Open Badges that can currently be claimed from the Railway SDG Community

In conclusion, the REPAIR Framework stands as a comprehensive blueprint for leveraging Communities of Practice (CoPs) and Open Badges to engender transformative change, The framework not only demystifies the core elements of CoPs—such as Reification and Recognition—but also delves into the subtle intricacies of community dynamics, laying the groundwork for effective Open Badge systems. By introducing the concept of "Recognition Capital," the framework gives tangible form to the idea of "Social Capital," thereby offering fresh perspectives on community engagement and value creation.

Emphasising the role of reflective practices, the REPAIR Framework elevates the quality and effectiveness of CoPs, allowing them to serve as potent vehicles for social and organisational change. Moreover, the framework aligns itself with the UN's SDGs, offering pragmatic tools like the SDG Adoption Maturity Matrix and SDG Pathways to steer communities towards global objectives. Importantly, it demonstrates the applicability of these ideas through its discussion of Rail Sustainability index (RSi), presenting the Open Recognition Community App (ORCA) as a practical instrument for building CoPs.

Thus, while it may be rooted in the objectives of global sustainable development, the REPAIR Framework transcends this specific focus to provide a flexible roadmap for the design and implementation of occupational frameworks. It captures the transformative potential of Open Badges and Open Recognition in enriching CoPs, thereby offering a robust strategy for realising broader organisational and societal goals.

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ANNEX

Bootstrapping the REPAIR process

- Working with the Design Thinking Model
- Working in multiples circles - iterating from small to large
- Working on selected SDGs.
- Process-guiding questions:
  - **How can Open Recognition be used to promote SDGs in the railway sector?**
  - What does an eco-system look like that supports people in engaging in the SDGs? What features/key requirements does the eco-system have?
  - What could a "badge library" look that considers the needed practices for promoting the SDGs? (...while considering the requirements of a) being open and b) focusing on practices)
  - What could be the technique to make the benchmarking exercise at the individual level? (benchmarking goes "bench-practicing"?)
  - How can a bottom-up benchmarking process look like? How do we bring together top-down benchmarks (like SDGs, IRIS+) with individual practices or communities of practice?

First Circle:

- Starting with one selected SDG.
- Running through the process(es) of Open Recognition **within the Consortium**
- **Empathise** along three guiding dimensions:
  - What practices are promoting SDGs?
  - What inspiration is needed to identify relevant practices and their contribution to the SDGs?
  - How do I know that a practice is promoting SDGs? How do I become aware of good practices?
  - How do current practices need to be improved to contribute to the SDGs?
  - (How) are my activites that contribute to the SDGs recognised?
  - How can the "benchmarking" be re-phrased/re-worded to make it applicable on an indivdiual level? Eg: Can we have a "individual score" for SDG practices?
  - Example questions:
    - How does your group deal with Gender Equity (as an example for a SDG)?
    - Do you think you can have an impact on the SDG?
    - Do you think your organisation has an impact on the SDG?
  - How does a practice have an impact on SDGs? How can we improve our practices to promote SDGs?
- **Define** the problem and the resulting research questions. Develop possible impact model.
- Find solutions (**ideate**) and **prototype** them.
  - First Badge Library: very basic → "I support SDG # XXX."
  - **Using the Open Badge Factory.**
- Test the **prototype**. Measure results along the impact model.

Second Circle:

- Running through the process(es) of Open Recognition within <u>one occupational group (a community of practice).</u>
- <u>Start with the results (impact model, prototype, etc.) from First Circle.</u>
- **Empathise** along three guiding dimensions:
  - How do they [members of the selected occupational group] feel recognised? How do they show practice?
  - How do they give recognition? How do they confirm practice?
  - How do they see that someone is recognised? How do they see practices?
- Each dimension is reflected on the levels of:
  - Micro (individual) Level
  - Meso (organisational) Level
  - Macro (societal) Level
- **Define** the problem and the resulting research questions. Develop possible impact model.
- Find solutions (**ideate**) and **prototype** them.
- Test the **prototype**. Measure results along the impact model.

Third Circle:

- Running through the process(es)of Open Recognition within multiple occupational group (multiple communities of practice).
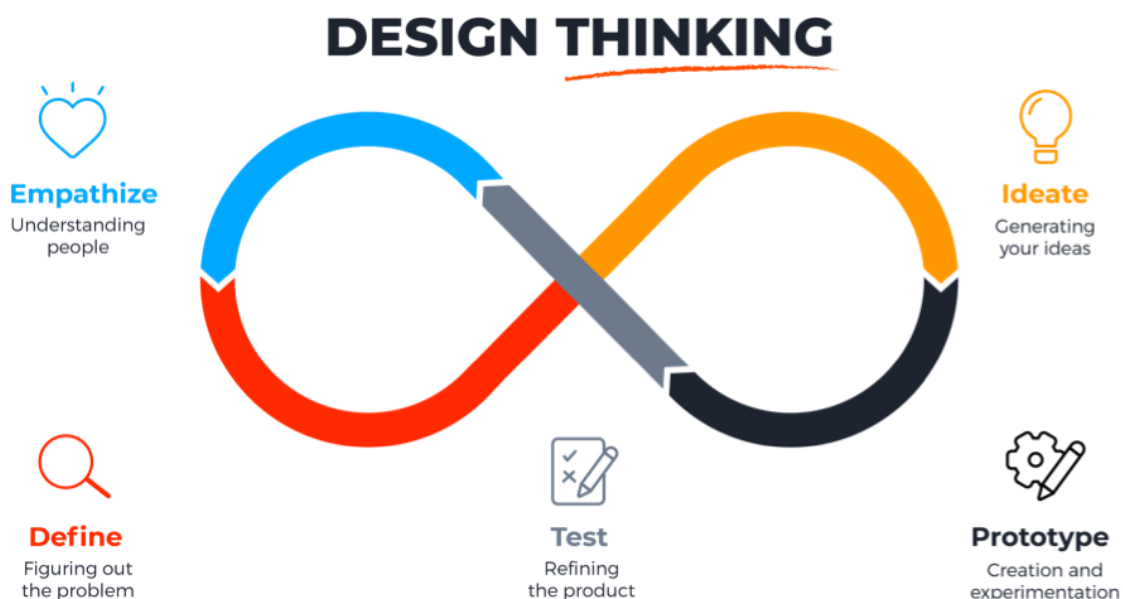
Methods

- Workshops: For self-reflection, a guided workshop will be held within the consortium.
- Qualitative Interviews: with occupational groups and stakeholders to understand/empathise with their viewpoint and be able to define the problems
- Focus Groups: in the course of prototype testing and impact measurement
- Quantitative surveys: in the course of prototype testing and impact measurement

Measuring the Impact

- Development of an Impact Model for "Open Recognition on the topic of promoting the SDGs in the railway sector" (IOOI-Modell) // in the course of the Definition Phase
- Outputs: Open Badges Ecosystem; Training; Mapping
- Outcomes: Awareness; Recognition of Self and Others; Exploration; Development; Integration; Transformation (Outcomes are measured along the maturity matrix: awareness, experimenting, integration, transforming.)
- Impact Measurement: against the maturity matrix.