Grant Agreement No.: 101139070 (SNS JU)

Objective and Subjective Approaches to Key Value Indicators – Sharing Methodological Approaches and Evaluation Instruments?

AN INTERACTIVE WORKSHOP

REPORT ON ACTIVITIES AND INSIGHTS

Jointly Organised by 6G4Society and TrialsNet

06th February 2025

6G4SOCIETY project has received funding from the Smart Networks and Services Joint Undertaking (SNS JU) under the European Union's Horizon Europe research and innovation programme under Grant Agreement No 101139070. This work has received funding from the Swiss State Secretariat for Education, Research and Innovation (SERI).

OVERVIEW

On 6 February 2025, 6G4Society and TrialsNet co-hosted a workshop bringing together SNS JU projects and external experts to explore objective and subjective approaches to Key Value Indicators (KVIs). The aim was to present methods that can be used to effectively measure social and sustainability values in 6G research. The workshop also attempted to dive into methodologies that go beyond traditional KPIs to capture these critical dimensions. Presenters highlighted specific methodologies that are being applied within the SNS projects, while external experts brought real-world examples and strategies to assess non-technical value outcomes.

Workshop Objectives:

- Gather examples of how social and sustainability values can be assessed and evaluated from projects and external experts.
- Explore approaches that look beyond technical KPIs and consider non-technical evaluations of value.
- Improve our understanding and capacity to address these value outcomes in practical terms, using existing resources.

A few key trends emerging from the presentations related to KVIs and how they should be approached:

How to Develop and Measure KVIs Depends on Broader Aims: Before it is possible to determine an appropriate indicator, let alone an appropriate measure for that indicator, it is necessary to articulate why a project wants to measure with an indicator. What is it the project wants to achieve with the knowledge gained? This goal determines the next steps. In many cases, if a project is struggling to know how to measure it could be because the 'why' is not yet clear enough.

Focus on Stakeholder Relevance: There is a clear emphasis on the stakeholder perspective when selecting indicators. The idea is that indicators should be chosen with stakeholders to ensure that the data is meaningful and reflective of their experience. Without this collaboration, the values and data being used as evidence towards them might be misinterpreted. It is also necessary to work with stakeholders to prioritise within our context—within the purpose of our technology—the issues that are important for the projects and that should be worked on.

Understanding the Extent and Meaning of Change: It is not just about tracking whether change happens, but also about measuring how much change occurs and whether it is meaningful to stakeholders. This shows a focus on both qualitative and quantitative aspects of impact. Quantitative shows the extent of the change. Qualitative shows how that extent matters.

Assess Against Established Principles and How They Map onto Specific Concerns Related to a Domain: This helps to better understand what is tracking in the policy, related regulation, standard certification guidelines, recommendations, etc., to build a complete picture of the social, economic, and environmental context. Use this to understand how different values matter the most in different contexts, supporting ranking and prioritising. This also makes it possible to look at tensions between values, where if one value goes up the other values go down.

Practicality and Feasibility of Data Collection: There is an understanding of the practicalities of data collection given context, accessibility, and stakeholder burden**.** Too much

Co-funded by the European Union

data collection can affect the quality of responses (e.g. too many survey questions for users after a trial can diminish the quality of responses), so there's a need for a balance between thoroughness and manageability.

Contextual Understanding: Indicators must be chosen with consideration for the context, such as the project's focus and the overall scope of measurement**.** This suggests a tailored approach to measurement, depending on the specific project or environment.

Decision-Making: A recurring theme is that indicators should inform decisions. Understanding how KVIs can influence decision-making processes—and what decisions they are meant to inform in the first place—helps ensure that the indicators collected are aligned with the broader goals of the project. The main goal is not to measure social value in and of itself, but to inform decision making so that social and environmental values are taken into account.

Co-funded by the European Union

VIEW FROM THE PROJECTS: EXAMPLE NON-TECHNICAL KVIS

TRIALSNET

- **Focus:** Engagement with cultural and historical heritage through a game-based, AR/VR, and social metaverse experience.
- **Key Value Indicators (KVIs):** Edutainment was a primary KVI, measuring how well the game enhances the educational experience.
- **Methodology:** Defined KVIs based on prior research and adapted them to the project. Integrated expert reviews and user feedback (including design thinking sessions) to refine the indicators. Benchmarked results with a control group (guided tour without the game) to measure the educational value of the game.
- **Learnings so far:** Edutainment was the key predictor of value, more than raw performance metrics.

ORIGAMI

- **Focus:** Business models for 5G technology and building trust between operators in a federated network.
- **Key Value Indicators (KVIs):** Trustworthiness is the primary KVI for the business-to-business relationship between operators.
- **Methodology:** built upon key KPIs related to **resource efficiency** and **accuracy** of machine learning solutions, building a **zero-trust layer** related to business model performance.
- **Learnings so far:** Challenges emerge in measuring trustworthiness due to the business-to-business nature of the project.

DETERMINISTIC6G

- **Focus:** Developing a new 6G architecture for deterministic communication and time-critical applications.
- **Key Value Indicators (KVIs):** Environmental impact (e.g. resource usage, emissions) and socio-economic impact (e.g. healthcare, well-being) are key focus areas applied to specific use cases (e.g. translating well-being and health to reduced work-related injuries).
- **Methodology:** Focused on impact areas to explore how they are impacted by the use cases via hypothetical gains and losses. Uses the concept of KVIs to set some principles for the operation of the architecture, the services and the 6G.
- **Learnings so far:** Challenges in providing numbers for the KVIs

FIDAL

- **Focus:** Exploring the impact of beyond 5G on the activities of public safety and disaster response practitioners.
- **Key Value Indicators (KVIs):** Safety as an overarching KVI, assessing how well tools help responders achieve their goals of saving lives.

Co-funded by the European Union

- **Methodology:** Blended a subjective quantitative indicator leveraging a widely used existing measurement tool, the NASA Task Load Index, to assess mental and physical demands, with a short qualitative user questionnaire to provide context.
- **Learnings so far:** Indicators can be more meaningful when balancing quantitative with qualitative.

IDENTIFYING VALUE-BASED INDICATORS: THE YAGHMA APPROACH

Presented by Emad Yaghmaei, Senior Consultant & Rie B. Larsen, Researcher and strategic advisor

Yahgma is a Netherlands-based SME that specialises in monitoring and assessing technology against non-technological factors such as social, ethical, environmental, and governance aspects. They presented a methodology for creating tailored value taxonomies and indicator sets. Their system combines Large Language Models (LLMs) and direct stakeholder input. **A key takeaway was that such a methodology should be adapted depending on the type of indicators a project wants to achieve.**

To begin, they use an LLM to **analyse a wide range of literature**—from scientific articles, standards, policy documents, industry newsletters, and general news—identifying societal concerns like values, risks, and impacts. This helps **derive a map of established and emerging concerns**, which can be clustered and categorised into themes. These are assessed against ethical and sustainability principles to identify missing values. Though starting from a broad knowledge base can result in an overwhelming list, it offers a complete picture, ensuring relevant issues are not overlooked. Understanding this context is vital for recognising value tensions, where one value's increase may decrease another.

This in-depth understanding of issues informs the next step: identifying the most critical issues to address within the project's context. To do this, they **work with project owners and stakeholders** to refine the list, select key values, and prioritise key concerns. Within the project's context, within the purpose of the technology, what are the issues that are really important for a project? This can be established in multiple ways, such as expert opinions, workshops, interviews of stakeholders and potential user groups. Through these interactions, values are ranked within and between the thematic clusters.

From the value prioritisation, three key input streams can be used to identify relevant indicators and measures.

- **Draw upon common indicators:** These are indicators that already exist and are used in various contexts.
- **Big data analysis**: Explore previous experiences that offer insight into data, targets, thresholds that can be further indicators. These can be from similar projects, if the current one is novel. Such an analysis can also capture implicit values that are not directly labelled as such in the text.
- **Consult with project owners and stakeholders**: Conduct workshops or interviews with project owners, technology developers, and stakeholders who are the intended users or benefit groups to prioritise the indicators as well as to agree upon what numbers already exist and that provide meaningful data about an issue.

This approach ensures the chosen indicators align with societal priorities, a project's objectives, and stakeholder needs.

MEASURING CHANGE: THE SOCIAL VALUE INTERNATIONAL APPROACH

Presented by Yulia ***Romaschenko, Technical Director, Social Value International***

Social Value International, a member-based organisation that supports social value based assessments and related practices, starts their work from the premise that the **main goal of value-based indicators is not to 'measure' social value but to inform and guide the decision-making process** on a strategic level. The aim is to have social outcomes considered as equal to financial results.

Some definitions that drive their work:

- **Social Value**: The value that we create through or destroy through our activities on a daily basis. This includes environmental outcomes or how our activities influence people's well-being.
- **Outcomes**: The things that change as a result of our activities.
- **Indicators:** A way to understand how these things change.
- **Stakeholders**: The people affected by our activities, such as the end users, the beneficiaries. It is that group of people whose well-being changes as a result of activities. It can include those who do not have a say in a project's decisions.

Their approach does not standardise the specific metrics or indicators because project priorities can shift. Unexpected factors often become important, which sometimes require new outcomes to be added to a framework or revealing that previously assumed priorities do not align with stakeholders' real experiences. Instead of rigid standardisation, they follow a principles-based approach to ensure meaningful measurement. As a whole, these principles support assessing if the measurement alone is actually doing something useful or if an alternative approach or view is needed.

METHODOLOGY PRINCIPLES

- **Involve Stakeholders:** Engage with stakeholders to understand the value they see in the project.
- **Focus on Meaningful Change:** Identify the key outcomes and the real impact created.
- **Value What Matters:** Prioritise what is important to stakeholders rather than just tracking predefined KPIs. For example, job placements may be a key metric for younger stakeholders but might not be relevant to retirees participating in a program.
- **Include Only What's Material:** Measure outcomes that are truly significant to stakeholders. If expected results aren't being achieved, assess their relevance and understand why.
- **Avoid Overclaiming:** Recognise external factors that contribute to change and account for the influence of other players in the field.

REPORTING PRINCIPLES

- **Be Transparent & Verify Results:** Clearly communicate analysis methods, conclusions, and recommendations. Involve stakeholders in verification and seek external review from social value practitioners.

Co-funded by the European Union

- **Be Responsive:** Data collection should drive real decision-making, not just reporting. Insights should help us adjust activities to better support stakeholders' well-being while considering potential risks.

This approach ensures that impact measurement remains flexible, relevant, and truly reflective of the value created on the ground.

INTENDED AND UNINTENDED OUTCOMES

A key point of discussion was whether and how to **account for outcomes beyond those initially planned**. Unintended outcomes, particularly negative ones, are still part of our activities. However, questions arose about how to measure and include these in our assessments.

Participants debated our responsibility as project designers and developers in understanding the full extent of how our activities affect people and the environment. While some felt this was not a concern projects should address as they were out of scope, others raised ethical questions, especially in situations where unintended negative outcomes may outweigh the intended positive ones. This valuable discussion should be continued in order to better define both a) what kinds of impacts are expected from the use of KVIs as well as b) whether clusters of KVIs should have specific characteristics to be more holistic and representative.

KNOW IF ANYTHING CHANGED

Social value indicators enable us to **measure the amount of change in an outcome for a stakeholder** Projects need to not just make sure that change happens, but also need to understand **to what extent change is happening and is meaningful for the stakeholders**. This is one reason why indicators should be selected by **working with the stakeholders**. Otherwise, it is possible to set some measurable elements that stakeholders interpret differently, creating a mismatch between value and outcome. This is especially important when setting thresholds and targets (preferably with stakeholders), as stakeholders should have a say in what is the minimum amount of change needed and wanted. If a target or goal is not met, only with such consultations is it possible to determine if the activity or the target itself needs to adapt.

To select the right indicator and measure, projects need to understand:

- How representative is an indicator of a problem (e.g. does it cover the whole issue or is it only a part of it)?
- What are the potential decisions that can be informed with the various data;
- What data can be collected on an ongoing basis.

And, this all depends on:

- The context of measurement
- The project focus
- Data accessibility
- How much of a load is being asked of stakeholders (e.g. if they are asked too many questions, the quality of the answers will not be good)

The relationship between KVIs and KPIs is not deterministic, standard, nor clearcut. At the end of the day, without this relationship explicitly articulated, any KVI will have less impact.

WHY BEFORE HOW

Q/A with Tim Goodspeed, Social Value Trainer and Practitioners, one of the founders of Social Value International

When measuring the impact of a project, it's essential to **clarify why you're measuring it in the first place**. The purpose, scope, context, and questions you're aiming to answer need to be defined upfront. This foundation ensures that the metrics you choose, align with your goals and accurately reflect whether the project is progressing in a way that serves its intended purpose**. Without a clear understanding of what success looks like, it becomes difficult to determine what to measure and how to interpret the results.** This is not just about threshold and targets as success factors, but about the bigger picture that frames what is success and thus would help determine the underlying factors to consider.

Different stakeholders may have differing views on the purpose of measurement, so aligning on the goal is crucial before deciding on how to measure. Aligning on this is important, because the purpose of the measurement could vary. For example, it might be:

- To improve internal processes, in which case
  - You will include the negatives to learn from mistakes
  - You would want real-time information to manage it
- To promote your work externally
  - You will do an evaluation at the end
- To provide information to funders
  - You will use the funders' objectives as goalposts.

The reason for measuring will influence what gets included—whether you focus only on positive outcomes or also incorporate unintended negatives to learn from mistakes. Having this clearly defined also makes it possible to rank and make some value judgments about some of the things you are measuring, helping to identify priority values and goals, and priority "whys".

Ultimately, understanding why you are measuring is key to identifying the right metrics and defining what success looks like for your project.

Co-funded by the European Union