Towards a Methodological Framework for a Sustainable Intelligence System on Uncertainties (SISU)

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This paper proposes a Methodological Framework for a Sustainable Intelligence System on Uncertainties (SISU). While there is plenty of literature on frameworks and methodologies for foresight and futures studies, as well as a myriad of projects and initiatives to anticipate and recommend wide ranging futures, there have been limited efforts to develop a framework for the assessment and management of highly uncertain "critical issues" such as "catastrophes", "wild cards" and "weak signals" (e.g. Ilmola & Kuusi 2006; Ahlqvist & Uotila 2020). The European Commission funded initiatives like EFMN, iKnow, EFP and CASI have contributed to raise awareness about the importance of paying attention to such issues, however none of these activities aimed at consolidating a robust and long-lasting framework to deal with highly uncertain futures. With this in mind, uncertainty assessment and management would be at the centre of the methodological framework, both from the perspective of "desirable" and "undesirable" impacts, considering interpretational (values-related) and contextual (situation-bounded) factors into the assessment framework.

There is a need to foster a novel methodological framework for uncertainty sensemaking in the decision-making contexts of nation-states. An example of a national policy context for the SISU framework could be the system for national crisis preparedness. Preparedness refers to activities that aim at guaranteeing the successful management of tasks as well as the additional procedures that may be required upon emergencies or in a case of disruption. In other words, the crisis preparedness system is about preparing for uncertain futures through a selected sense-making lens and a related conceptual framework (e.g. Kuosa 2010; Slaughter 2012; Könnölä et al 2012). This sense-making process is continuously disturbed by novel, surprising events that entwine various levels of uncertainty. What makes the interpretation even more difficult is the fact that the events emerge, and could have potential impacts on, varied temporal and spatial scales. Currently, it is increasingly acknowledged, due to the emergence of COVID-19 pandemic, that societies could confront drastic shocks that will profoundly tremble the baseline of society. During the emergency conditions, governmental decision-makers and foresight processes are forced to cope with rapid flows of emerging events: sudden discontinuities, short-term developments, weak signals of change, and varied wild card effects. Although pandemics have been identified as potential wild card phenomena in policy foresight exercises for quite some time already (for example, in the iKnow project), there has not been systematic preparation or action plans to manage these possibilities in the sphere of policy-making. This is because the notion of pandemic has been looming outside the boundary of *actionable political plausibility*, despite its immense possible impacts.

The proposed methodological framework aims at tackling these kinds of complex flows of uncertain events. The methodological framework aims at interconnecting highly uncertain knowledge on global and local critical issues (drivers, barriers, opportunities, threats) and devise ways of systematically assessing their level of uncertainty in terms of importance, impact and interpretation would support early action for sustainable growth and wellbeing of our societies. To do so, the framework will have the following scientific and broader objectives:

First, a methodology for combining top-down and bottom-up with inward-looking and outward-looking approaches in order to systematically mapping uncertain issues relate to societal Grand Challenges and Opportunities (GCOs). Examples will be provided about the challenges of mapping knowledge on highly uncertain futures related to: changing climate, biosphere and land/water-systems; changing agricultural practices and food solutions; changing consumption, competition and collaboration patterns; changing globalisation, trade and production arrangements; changing roles of the state and other actors in welfare, healthcare, social care and public health provision; changing energy demand, supply and infrastructure systems; changing demographic, migration and ageing pressures; changing values, skills, competences and education needs; changing nature of business, industrial and innovation eco-systems; changing safety, security and sustainability needs; changing mobility, working and life styles; changing information and communication technologies and practices; and changing systems of governance and policies.

Second, a methodology for Robust Advice Framing (RAF) around GCOs across disciplinary and practitioner communities and policy domains. These RAF will aim to address GCOs by helping to bridge the gaps between research, policy and the market by, for example, identifying emerging and potential technological and social innovations helping to address GCOs. The proposed methodology would include qualitative and quantitative methods ranging from face-to-face workshops to web tools supporting the monitoring, analysis, and systematically prioritisation of uncertain issues that are liable to impinge upon GCOs and the interconnections between these.

Third, a methodology for harmonising strategic-, programming- and operational-level priorities, instruments and actions so as to enhance the governance and resilience of the concerned societies. Better understanding of the feedbacks and synergies between GCOs would increase the capacity of the societal actors to achieve higher levels of self-organisation, adaptation and resilience.

Fourth, a methodology for interconnecting foresight tools into a constellation of web-based platforms with the capacity for building synergies in many different forms, through creative collaboration, strategic thinking and shared intelligence. This will require the adaption of successfully piloted and implemented web-based systems, tools and approaches, such as the ones used in the iKnow, EFP, CfWI and CASI projects.

Fifth, a methodology for engaging, managing and coordinating a critical mass of national and international organisations with outstanding expertise, both in terms of GCO-specific knowledge and forward-looking methodology, and contacts with research and innovation stakeholders addressing GCOs. Setting up a dissemination, knowledge transfer and added value networking activity with core stakeholders in Finland, European and the world. This will allow the project to openly discuss and assess the impacts of medium- to long-term demographic, economic, environmental, social, political and technological futures for Finland and the world (i.e. supporting all work packages).

In terms of expected results, the proposed methodology would help to co-create ‘sustainable responses’ to ‘uncertain issues’ thought systematic ‘knowledge governance’ using a ‘world views approach’.

Regarding ‘sustainable responses’ (SR), there is a considerable volume of text seeking to identify and define responses to societal challenges. The proposed framework will draw upon, review, and map many existing documents presenting relevant knowledge: the task is one of interconnecting knowledge on SR across disciplinary and practitioner communities and policy domains. A major consideration in the context of interconnecting knowledge is the selection of methods to represent this knowledge and its interconnections, in ways that can easy be shared and assimilated. One methodological approach is through engaging stakeholders in Delphi surveys, expert workshops, gaming, scenario building and associated roadmapping, along with application of visualisation tools and the engagement activities.

Regarding ‘uncertain issues’ (UI), the framework will use methods ranging from face-to-face expert workshops and Delphi surveys to the social technology of its web tools to identify, collate, and systematically assess uncertainty (including around wild cards and weak signals) that are liable to impinge upon GCOs. The framework will propose how to use quantitative, semi-quantitative and qualitative approaches to explore how uncertain issues may inform decision-making. Particular attention will be paid to the unanticipated consequences (“side-effects”, stakeholder reactions, “reinvention”) of GCOs. Factors that might prove disruptive to existing efforts at promoting change – for example, technological breakthroughs that could radically change the relative costs of different technical elements of solutions, social movements that might support or oppose particular policy directions – will be considered.

Regarding ‘knowledge governance’ (KG), the framework will describe the powerful role of social technology. The technical potential of networked information can enable new forms of development, debate and feedback of social cognition to contribute to an evolving shared intelligence (‘strategic policy intelligence’). The development activities of social technology and “scripts” to enhance interpersonal communication in virtual and physical exchanges will be based on analysis of user requirements and

successful experience in transdisciplinary and cross-professional collaborations (this latter will be informed by systematic literature reviews of this specific topic).

Finally, regarding the use of 'multiple interpretations' (MI), there are several ways in which this can be accomplished, which can be realised in more or less interactive/participatory settings. One approach is to articulate the main features of different interpretations/perspectives/worldviews in a systematic way, where possible enabling direct comparison by organising these in a table where the approaches and assessments around specific points are set out side-by-side. This can be developed through deskwork and/or articulated in the course of workshops by proponents or others with high familiarity of one or other interpretation. What is often found is that all interpretations have some limitations in their abilities to grasp major problems and solutions, and that there are some points at which agreement will be reached about gaps in knowledge (though not necessarily about how to most effectively resolve these). There is scope in this type of appraisal to identify and articulate "boundary objects" where participants can share agreement about many key features of a phenomenon and may be aligned in terms of action without necessarily achieving consensus about many other things. Some familiar interpretations/worldviews are those organised according to the perspectives of political economy – thus the Freeman and Jahoda study contrasted "conservative", "reformist" and "radical" worldviews, broadly differentiated in terms of the extent to which change was seen to be required in political and economic frameworks. This framework can be effective in creating alternative accounts of development dynamics and paths in international economic relations, growth and its environmental impacts, among others.

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