

An outline for a proposed research program to address semantic web technologies and linked data in sustainable development, focusing on ontologies, informational and technical interoperability.

A proposal from Project Paradigm: Innovation and ICT for a Resilient World

Sustainable development has become a mainstream subject of academic research and driver for innovation in many industrial sectors because of issues and developments during the last decade, which have captured the attention of the general public and press, academic circles and politics at national , regional and global levels, and which have called for an urgent line of action to tackle some pressing problems facing mankind as a whole in sustainability on our planet.

First and foremost is the issue of climate change and its direct corollaries renewable energy technologies and climate change mitigation/adaptation.

The impact of climate change on agriculture, food security, water management and health has also made abundantly clear the need to address clustered and or overarching issues in sustainable development in a more manageable fashion, both from a data collection, big data mining, and from a statistical modeling perspective.

Without going into much details about the operational aspects of the definitions of sustainable development (for these see the site : <https://sustainabledevelopment.un.org>), we can summarize the current data and information needs for sustainable development as follows.

1. the need to be able to address the 17 objectives and 169 goals of the Agenda 2030 in a rigorous formalized fashion, allowing and enabling statistical data exchange and information exchange, using among other indicators currently under development by the IAEG-SDGs, the Inter-agency Expert Group on SDG Indicators, see <http://unstats.un.org/sdgs/iaeg-sdgss>;
2. the need to address the ocean of documentation on sustainable development in a more manageable manner, see <https://sustainabledevelopment.un.org/resourcelibrary>;
3. the urgent need to create basic interactive data and information exchange channels between stakeholders in sustainable development, that are open and inclusive and that can be built or based upon readily available Internet services, wireless and mobile services on (smart) phones, tablets, netbooks, notebooks, desktop computers and other (hand held) personal digital assistants;
4. the need to create the ICT for development (ICT4D) nuts and bolts open software platforms, tools and services to enable the Technology Facilitation Mechanism for Agenda 2030, and
5. the need to address the Economic, Social and Ecological issues in Agenda 2030 in an interrelated, integrated fashion with respect to new emerging technologies like the Internet of Things, smart agriculture and farming, smart energy grids, smart cities and transport, eHealth and mHealth, and open and inclusive education, research and innovation platforms for sustainable engineering and manufacturing.

The use of ontologies to create formalized frameworks for access to the wealth of documentation on sustainable development and the application of these for statistical data analysis, utilization of indicators for evaluation of progress in implementing 17

objectives and 169 goals of Agenda 2030 is the first and most urgent proposed subject of research.

Second is the need for informational interoperability in e.g. digital dashboards and semantically interlinked on-line communities, and other platforms, tools and services for interactive exchange of data and information.

And tertio making sustainable development an open and inclusive process requires open and inclusive education, research and innovation platforms for sustainable engineering and manufacturing to be made available to all stakeholders in sustainable development.

This is achieved by creating standards for technical interoperability allowing for effective and efficient interfacing of readily available open source and proprietary platforms, tools, services and devices, and make these available for (smart) phones, tablets, netbooks, notebooks, desktop computers and other digital devices.

The targeted publication forums are open access journals (both peer reviewed and open), scientific and trade journals, and other open access media.

The target audiences are:

1. The United Nations in general and UN bodies dealing specifically with statistics, open access, communication and ICT for sustainable development
2. Academic research institutes dealing with economic and statistical modeling of sustainable development, technological innovation in sustainable development, and in particular the utilization of ICT and open access research for sustainable development
3. Standards bodies
4. Statistics bodies
5. Scientific and educational organizations in academia, industry organizations and professional organizations, including those focused on library systems and standards
6. International civil society networks

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Project Paradigm: Innovation and ICT for a resilient world

Project Paradigm is the flagship program of Rainbow Warriors Core Foundation, and focuses on collaborative research, ICT for development, governance and treaties monitoring for sustainable development

Rainbow Warriors Core Foundation is an organizational participant in W3C Community Groups and member of the Collaborative Software Community Group, the Experience API (xAPI) Vocabulary and Interoperability Community Group and the Semantic Web Interfaces Community Group

Recommended sources/publications for further reading:

1. Harnessing the IoT for Global Development
<<https://www.itu.int/en/action/broadband/Documents/Harnessing-IoT-Global-Development.pdf>>
2. The Internet and Sustainable Development
<<http://www.internetsociety.org/sites/default/files/ISOC-ICTs-SDGs-201506-1.pdf>>
3. United Nations Global Pulse-Harnessing big data for development and humanitarian action
<<http://www.unglobalpulse.org/projects>>
4. FAO AIMS: Agricultural Information Management Standards
<<http://aims.fao.org>>
5. A World that Counts: Mobilising the Data Revolution for Sustainable Development
<www.undatarevolution.org/report>
6. Global Partnership for Sustainable Development Data
<www.data4sdgs.org>
7. Civicus- The Data Shift
Building the capacity and confidence of civil society organizations to produce and use citizen-generated data
<civicus.org/thedatashift> and <civicus.org/thedatashift/learning-zone/research>
8. UNESCO Global Open Access Portal
<<http://www.unesco.org/new/en/communication-and-information/portals-and-platforms/goap/>>
9. UNEP-OARE- Open Access for Research in the Environment
<unep.org/oare>
10. SciDevNet-Bringing science and development together through original news and analysis
<scidev.org>