Blueprint for the STIG1.0

Defining core SDI principles and setting up performance indicators

Nushi, Bujar; van Loenen, Bastiaan; Crompvoets, Joep

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Blueprint for the STIG1.0: Defining core SDI principles and setting up performance indicators

B. Nushi[1], B. Van Loenen[2], J. Crompvoets[3]

[1] TU Delft, Delft, The Netherlands, b.nushi@tudelft.nl
[2] TU Delft, Delft, The Netherlands, b.vanloenen @tudelft.nl
[3] KU Leuven, Leuven, Belgium, joep.crompvoets@soc.kuleuven.be

Abstract

Spatial Data Infrastructures (SDIs) have been developed over the last decades all over the world. SDI is the integration of several components to create a platform which enables a wide variety of stakeholders to access, share and use spatial data in an efficient and effective way. To stimulate the SDI development effectively and efficiently, it is key to assess the progress and benefits of the SDI. Currently, several SDI assessment methods exist. However, most assessment methods are analyzing the SDI as a whole, which does not allow understanding their internal dynamics and none of these appear to meet the requirements of practitioners. Thus, SDI decision makers are still without any guidance on the success of their SDI.

The research on this paper stands on an ongoing PhD research project on the development of a sound foundation for an academic theoretical framework for the STIG, Stress Test for Infrastructure of Geographic information. The last paper was focused on the similarities of the Financial infrastructures with the Spatial Data Infrastructures and if the financial stress testing which is commonly used to assess the sustainability and success of the financial system can be used for SDI assessment. Based on a review of the nature and concept of the SDI and Financial Infrastructure (FI) we conclude that there is significant similarity between these two infrastructures and the stress test methodology is likely to be an appealing alternative way of assessing SDIs.

The purpose of this paper is to define the Core SDI Principles based on the 29 Basel Core Principles and setting up the Core SDI performance indicators. Additionally, a set of essential and additional assessment criteria for each Core SDI Principle will be defined. From all the examined types of risk factors and methods to construct financial stress tests, the Multi-factor Stress tests (Hypothetical and a Non-systematic Subjective scenario model) are most promising as a basis for SDI assessment. This hypothetical scenario first chooses and then stresses risk factors based on expert inputs including users, producers, data owners, management, consultants etc. SDI practitioners can construct hypothetical scenarios when no historical scenarios match the special features of their situation or when they want to stress new combinations of risk factors. Stress testing as a SDI assessment method once implemented in the decision-making process, can effectively increase system robustness of a SDI. When implementing stress testing, challenges remain in modeling the interaction of different risk factors and their impacts. Such things as: integrating stress testing at different levels and making stress tests workable, realistic and timely remain complicated. These issues will be addressed in the research further developing the Stress Test for Infrastructure of Geographic information: the STIG. The paper ends with a shortlist of issues for discussion on the way to move forward.