

Base Anchors in Model of Global Quality Management System (G-QMS) in System of Systems (SoS)

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Extended Abstract

This research addresses an advanced topic in Industrial Engineering, which integrates innovation to relative new and rapidly evolving disciplines of Quality Management System (QMS), System of Systems (SoS), Globalization and Systems approaches such as Systems Thinking, by defining a field of research for *Global Quality Management System (G-QMS) in SoS*. From the literature on each of these disciplines separately, among them in Globalization [1], in QMS [2], in SoS [3] and in Systems Thinking [4-5], it is found that each discipline is generally still in a preliminary state in referring to organizational systems in particular those which are also global. In addition, they emphasize the importance and potential contribution in the further progress of these disciplines in organizational applications.

This research focuses on the concepts, structure, contents and behavior of G-QMS in SoS which is characterized by a global and multi-organizational deployment, in target to create foundational principles for defining and modelling this kind of G-QMS with the unique characteristics and needs for the SoS.

Our exploratory study, uses the methodology of the Grounded Theory [6] combined with an analytical review and professional experience. It reveals, in its conclusions, **eight base anchors** that might underlie any model of G-QMS in SoS [7]. Furthermore, a consolidated view of the eight base anchors together with their main factors and aspects, creates an **initial model** of G-QMS in SoS [7]. In addition, the study findings emphasized that G-QMS is a necessary condition for SoS, while the management of G-QMS is inseparable from the management of the SoS. By doing so, they reinforce the motivation in further progressing this research.

Further to this exploratory study, an extensive field research in real global SoS organizations, is currently being conducted, to base the knowledge in G-QMS in SoS for the sake of establishing definition, structure and model. The research methodology is a structured qualitative research, based on dozens of semi-structured interviews which were selected and sorted by a 3- dimensions tabular structure. The first dimension includes four industrial sectors in SoS: Aviation, Space and Defence, Light Trains, Water Infrastructures and Medical Devices. The second dimension focuses on the main occupational fields: Corporate Quality Management, Business and Product Management, Project Quality Management and Systems Engineering – SoS. The third one involves four professional sectors: Industry, Academy, Accreditation bodies for ISO standards and Consultants. That raw data structure defines a total of 163 data sources into 13 categories. The research raw data obtained is enormous – extensive, profound and includes a lot of information. Especially, the data analysis integrates analytical, quantitative and qualitative methods and done by phases as well as by sorting to define clusters.

The preliminary results of this report further strengthen and deepen the importance of the eight base anchors, that have already been identified. These, together with the discovery of additional insights, are expected to provide a better theoretical background for the development of a model in G-QMS of SoS.

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