TOC Tool Data Model

Conceptualization and Core Entities

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1 Introduction

The present report lays out the basic concepts and core design principles informing the semantic model over which the TOC Tool is built. The model is expressed using the OWL W3C specification and is used in the Graph Database that is part of the TOC Tool backend, along with the corresponding tests for data integrity and conformance to the model.

2 Basic Concepts

The workflow of the TOC Tool is organized around the concept of TOC Flows, i.e., sets of Theories of Change of different levels referring to a specific Programme. Figure 1 depicts the core entities involved in the definition of a TOC Flow. A flow is created by a set of TOC Users participating with different capacities in the creation (Leader, Co-leader, Member, Reviewer, Stakeholder). A flow also refers to a specific Programme, which can be a CGIAR Initiative, a CGIAR Project, a Proposal or any other type of Project.

Finally, a TOC Flow potentially includes different Theories of Change, each of one of the following levels: Initiative Level, Work Package Level, or Sub-level. The latter type is further specialised in Country-Level and Innovation Package-Level TOCs.

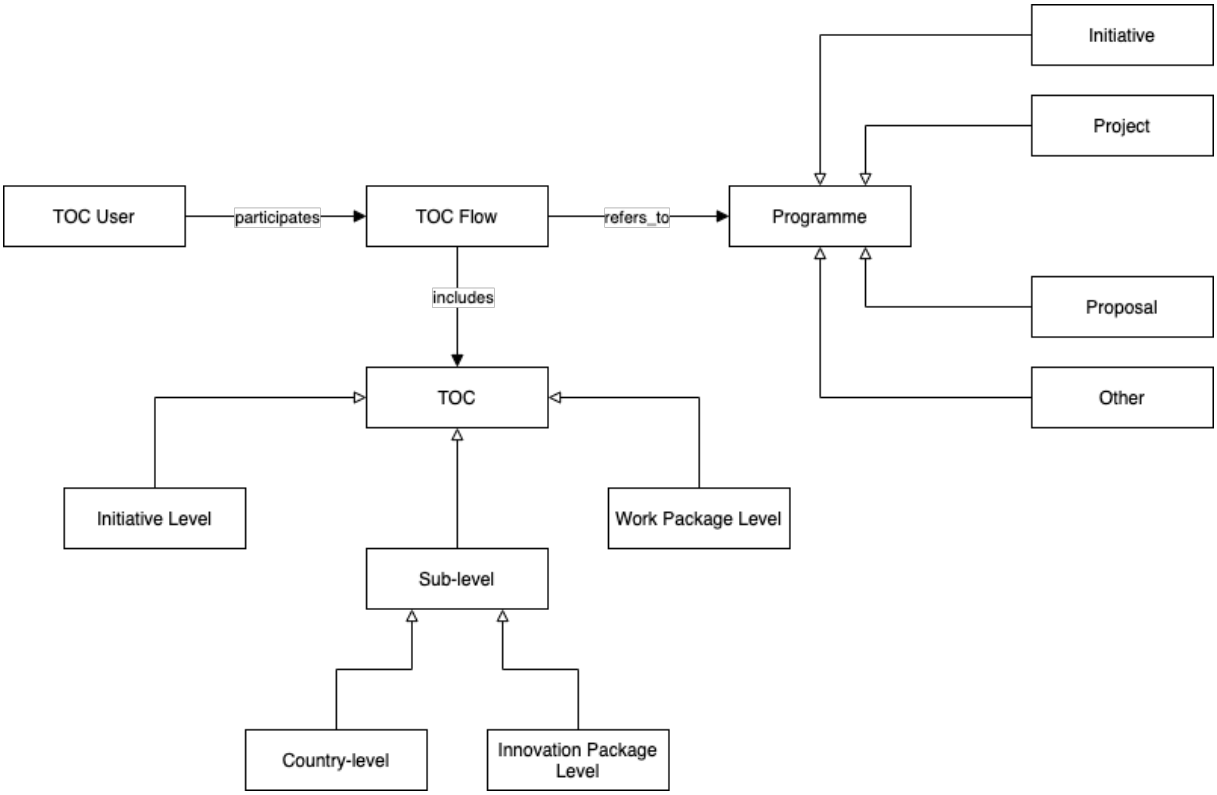

Figure 1: TOC Tool Basic Entities

3 TOC Elements

Theories of Change of different types are built via the inclusion and the association of different elements. The following tables summarise the elements involved in each type of TOC supported by the tool. All TOC Elements have manifestations independently of their participation in TOCs. Thus, the model defines the relevant Classes representing these elements as autonomous entities, as well as Classes that define TOC-specific entities referring to these autonomous elements. As an example, a UN SDG is described as an entity of the SDG Class of the Model. When an SDG is used within a TOC, an instance of the SdgTocEntity is defined and linked with other TOC Entities in the TOC.

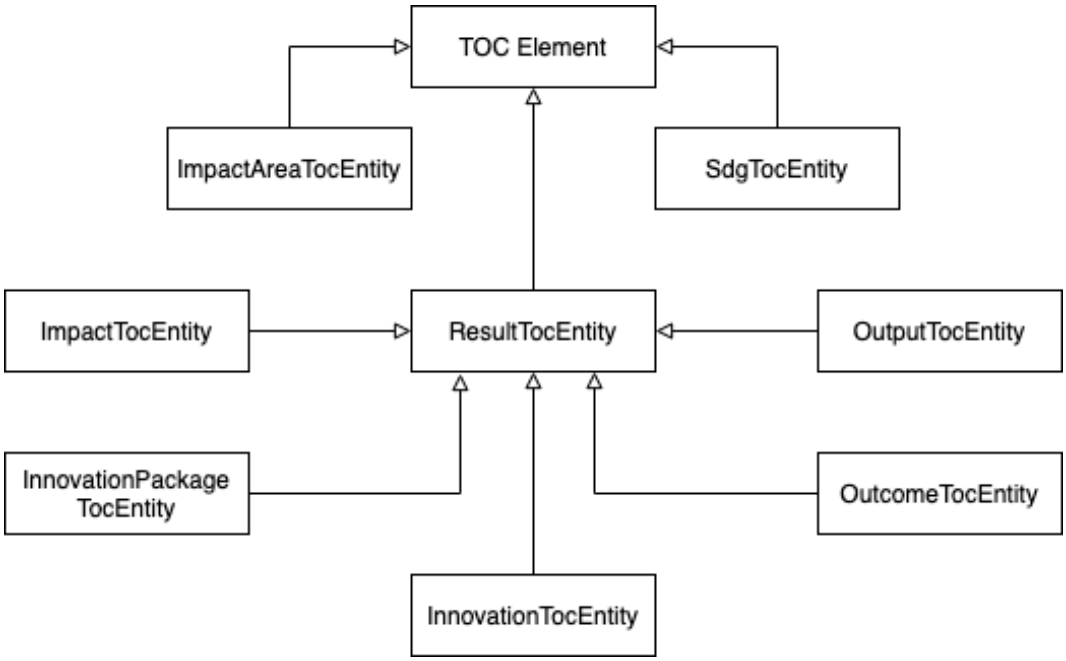

Figure 2: TOC Elements Class Hierarchy

Initiative-level TOC	
TOC Element	**Description**
UN Sustainable Development Goal	The 17 UN SDGs along with a subset of their targets and indicators
CGIAR Impact Area	The 5 CGIAR Impact Areas along with a subset of their targets
Action Area Outcome	Outcomes defined for each of the CGIAR Action Areas
End of Initiative Outcome	Outcomes defined as End-of-Initiative ones by the programme the TOC Flow refers to
Work Package	Work Packages defined in the programme covered by the TOC Flow

Work Package-level TOC	
TOC Element	**Description**
End of Initiative Outcome	Outcomes defined as End-of-Initiative ones by the programme the TOC Flow refers to
Outcome	Outcomes that are not EoI outcomes

Output	Assets produced in the context of the covered programme

Sub-level TOC	
TOC Element	**Description**
End of Initiative Outcome	Outcomes defined as End-of-Initiative ones by the programme the TOC Flow refers to
Outcome	Outcomes that are not EoI outcomes
Output	Assets produced in the context of the covered programme
Innovation	
Innovation Package	Set of Innovations grouped as a complex result applicable to a specific geographical scope

In all TOC levels, associations between the different involved elements are established to denote causal relations between the connected elements. The Causal Link class of the Model models these connections and the information they carry, depending on the TOC level.

4 TOC Diagram

Based on the aforementioned model constituents, the following figure depicts the conceptual relations between the different entities in a TOC.

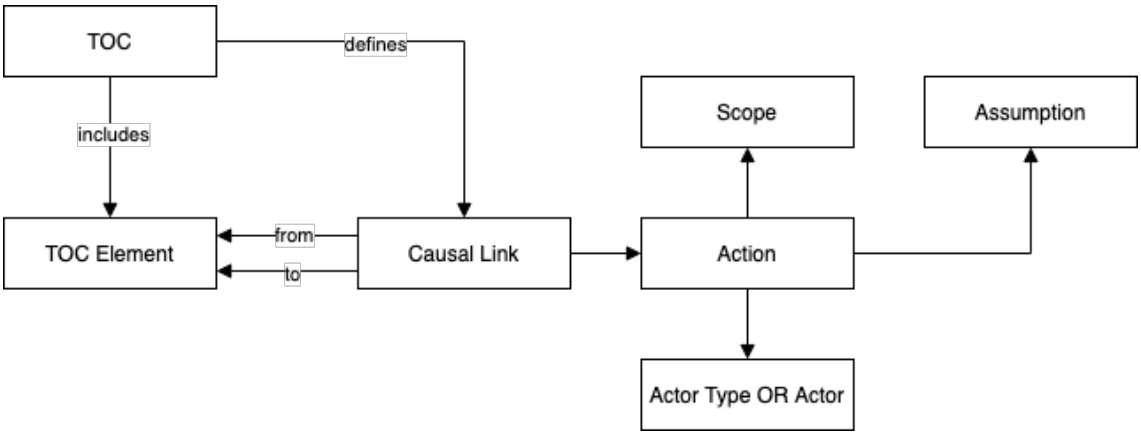

Figure 3: Connections between basic TOC entities

5 Formal Model Definition

The TOC Tool Data Model is expressed as an OWL ontology, available via an open GitHub repository[1]. Documentation on the defined classes and properties is also available via the repository and accompanies the tool's deployment[2].

[1] https://github.com/icarda-git/Theory-of-Change-Tool
[2] https://demo.toc.scio.services/owldoc/