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Data and model framework for a community Industrial Ecology Socio-environmental Model

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Abstract: Industrial ecology is a diverse community covering many research areas and application domains; in some areas, such as Life Cycle Assessment (LCA), common databases and data formats are widely used, while in other areas, like Material Flow Assessment (MFA), there are no common data formats or databases. Recent work has shown that there is a common underlying knowledge model across most industrial ecology domains. This common socio-economic metabolism is a spatially- and temporally-resolved graph of product and service flows throughout the economy, including into and out of stocks. In this presentation, we review previous work to develop a common ontology for LCA and MFA, and describe a draft simple common format and ontology for industrial ecology data using JSON linked data. We demonstrate how this format can be applied to existing data sources, and how combining a common ontology with existing common nomenclature systems can lead to a radical reduction in the effort needed to share data. While further effort is needed to create a complete data format, including e.g. material properties and details on data entry and review, our simple data format can already be used in open source software such as Brightway.

***Keywords**:* ontology, MFA, LCA, Industrial Ecology, data