

A New Approach for Sustainable Product Development Using Scenario Network Mapping and Eco-design

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Abstract

The two most widely recognised ethics of sustainable development are equity between present and future people (intergenerational equity) and equity among currently living people (intra-generational equity); however, it is not always clear how to translate these principles into practice. This paper argues that at least two questions must first be addressed in order to bound sustainable development in space and time: (1) ‘what is to be sustained?’ and (2) ‘sustained for how long?’ In this paper, the system to be sustained is a business and the time horizon considered is 20 years. As a crucial role of any business is to meet needs within society, this paper presents a new framework for sustainable product and service development which combines both forward-looking strategy and measures that can be implemented in day-to-day product/service development. Once the framework is introduced, its application in the context of industrial electronics company Actronic Technologies is presented.

The strategic component of the framework uses a new scenario-building technique, scenario network mapping, to map trends within a business’ core markets. By extending the business’ planning horizon to several decades, it is possible to develop roadmaps for radically new technologies, products and/or services. However, as most products and services will undergo several major redesigns over this period, there is also room for both incremental change and flexibility at an operational level.

Even though the duration of a business’ impacts upon society and the natural environment may well extend beyond 20 years, the long-term future is overwhelmingly uncertain and in most cases it will not be feasible for a business to study a time horizon of much more than this. In order to account for longer-term impacts, this framework requires that long-term risks be assessed by collaborative groups (e.g., universities and industry groups) and translated into implications that affect businesses in the short-term.