

## **Advancing Sustainable Product Development Through Life cycle Thinking**

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Life Cycle Assessment (LCA) is a robust internationally accepted method for evaluating the whole of life impacts of products and services. LCA knowledge assists product developers in integrating environmentally beneficial decisions throughout the design process. However, it has traditionally been largely inaccessible to the design community – requiring several years of experience to effectively conduct an LCA. In recent years there has been a shift towards the 'liberation' of LCA through the development of simplified LCA tools. Yet how do designers actually integrate and translate the LCA data to understand the net environmental benefits of their product or eco innovation? Life cycle thinking (LCT) is a theoretical approach to design decision making that employs the results and leanings of LCA and develops them into eco-design strategies and whole systems thinking in order to provide an environmental framework that relies on scientific information as opposed to 'good guesses' and our often flawed intuition. The use of LCT is limited to well characterized product systems with radical changes in system or product parameters needing a more complete LCA. This paper explores the issues that result from initiative as opposed to explorative decision making for sustainable design and innovation. It provides examples of LCT in use by educators and design practitioners from an Australian context. Case studies and examples of the benefits of utilizing LCT in design decision making are also provided.