## The evolution of modularity and architectural innovation: web-enabled collective development of a tangible artefact

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**Abstract:** Can a web-based community of peers autonomously engage in architectural innovation and develop tangible products? We present a theoretical framework that builds upon the idea of product modularisation as a knowledge management tool enabling community collaboration. The framework consists of a community meta-model and a product meta-model; some mechanisms enabling collective innovation are also presented as part of the framework. We then apply the theoretical framework to the real case of a high-performance human powered watercraft showing how the community was able to innovate the artefact evolving its modular architecture.

**Keywords:** collective intelligence; human powered boats; modularity; open source; product architecture; user community; open manufacturing; user innovation.

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**Biographical notes:** Giuseppe Carignani is an independent Researcher at the University of Udine and a Professor at ITI Malignani, Udine, Italy. His main research interest is technological innovation, focusing in particular on the evolutionary analogies of technological change, complexity and modularity in innovation, creativity and innovation in education.

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