**participation architectures for Crowdsourced innovation communities**

**Project Summary**

Crowdsourcing employs online social media platforms to leverage the skills and ideas of actors external to the formal organization. The involvement of external stakeholders such as product users, users of competing products, or technology experts, allows innovation communities to mobilize knowledge, talents, and creative ideas to suggest features for open software applications such as online education, library administration, or a device-independent operating system. The proposed research project explores how elements of participation architectures enable or constrain open participation in four crowdsourced innovation communities that support free and open-source software (FOSS) product organizations. These communities work differently than historical FOSS projects, which were more transient in their membership. Their structure is based around a stable core administration, who actively engage product users and employees of user firms in directing and developing the software product and strategy.

Our understanding of how to design effective participation architectures -- the combination of community structures and roles, social interaction procedures and mechanisms, and technology platform features -- is limited. Software developers typically focus on product stability, maintenance, and long-term product strategy formulation. This works against an understanding of the product as *technology-in-practice*, used differently by users in various situations. A technology product tends to be viewed as providing a set of stable features that provide a uniform capability to users. But users in practice employ different subsets of product features to fit with local needs, use features for unintended purposes, and see product goals as emergent. This establishes a conflict of interpretation in evaluating new product feature suggestions.   
Further, the notion of a one-size-fits-all, optimal feature-set is also applied to the community technology platform. Crowdsourced community managers need a better understanding of how user participants with different skills and expertise wish to interact with other community members, for what purposes, and how to design this understanding into a participation architecture that supports a diverse set of interaction channels. Idea submission should allow discussion across and between users, to develop feature realization aims and to interpret the situations in which innovative product ideas are meaningful.

***The overriding goal of this project*** is to derive a socio-technical framework for participation architecture that allows innovation communities to maximize open participation, based on *three research questions:*

**Research Question 1. How do community structures (roles, organization, and stabilized representational forms and procedures) affect opportunities for open participation?**

*Exploring this question*will provide us with community exemplars that allow us to explain the role of structural enablers and constraints on open participation in innovation communities.

**Research Question 2. What mechanisms and communication channels allow community members to mobilize boundary-spanning networks for successful innovation?** *Exploring this question*will provide us with an understanding of the strategies by which participants navigate communication channels and processes for knowledge-sharing, process coordination, and decision-making. We will map trajectories of actor-network interaction to understand success vs failure in open participation.

**Research Question 3. How may we characterize the affordances provided by technology platforms for open participation in innovation communities?** *Exploring this question*will enable us to trace the “affordances” by which each of the four community technology platforms provides distinct possibilities for action. This allows us to explore technology constraints and enablers that are related to the community structures, procedures, channels, and mechanisms identified in research questions 1 and 2.

The *outcome*will produce a framework for participation architecture design that will be evaluated and developed in joint assessment sessions with community administrators.

The **intellectual merit** of the proposed work is that it will develop a participation architecture framework that explains how elements of social structure, interaction mechanisms, and technology affordances combine to enable or constrain open participation in various forms of product innovation. Its *significance* is that the framework will relate theory to practice, guiding the configuration of online social media technology platforms with community structures and procedures to support crowdsourced innovation.   
The **broader impacts** of this research will affect the design of technology platforms and procedures to support innovation communities. This is badly needed: pilot study observations concluded that technology platform design undermined open participation. Not only will this research substantially inform the design and selection of online cyberinfrastructure, but it will also transfer to a wide range of innovation communities. We will share case studies and lessons learned with participating community administrators via a project website and share findings in academic conference and journal publications.