# Broadening Collective Networks for Sustainability: Can the Open Source Guild be a Solution?

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## Abstract
Building on the original European medieval guilds, the open source guild has been developed by applying intrinsic values to the context of digital networking technology and micro-business. The open source guild offers its members the opportunity to create a commons of expertise and knowledge, build social capital, work with other guild members to create larger markets, and potentially operate as a larger entity. The guild model could enable researchers in sustainable HCI to create effective networks to share experience and best practice, also to collaborate on larger projects.

## Author Keywords
Open source; sustainability; collaboration; stakeholders; networks; guilds.

## ACM Classification Keywords
K.4.3 Organizational Impacts: Computer-supported collaborative work.

## Interest in the Area
The open source guild could be an effective way of coordinating independent researchers for collaboration on sustainable HCI initiatives, also involving other stakeholders as appropriate, including policy makers, practitioners and the general public. This could

contribute to broadening their collective networks, enabling individual researchers to find others working on similar topics and also potential sources of funding.

## The Development of Sustainable HCI

Blevis introduced the concept of sustainable HCI at the 2007 CHI conference as 'sustainable interaction design' where, as 'a starting point for a perspective of sustainability, design is defined as an act of choosing among or informing choices of future ways of being' [4].

Silberman *et al*. highlighted in 2014 that there is much sustainability-oriented work within and outside HCI that was not acknowledged as such, also that sustainable HCI (SHCI) research so far has had little impact outside the field of HCI. Their recommendations for developing the research agenda include establishing specific 'sustainability goals' and to identify how 'SHCI researchers might support broad efforts to make changes to larger systems such as institutions, infrastructures, and policies' [14].

## Intrinsic Values and Sustainability

Schwartz identified 10 'basic values', which he then grouped into a typology of conservatism, openness to change, self-enhancement and self-transcendence [13]. Chilton *et al*.'s work builds on this typology to relate 'extrinsic values' to extrinsic goals and self-enhancement values, then 'intrinsic values' to intrinsic goals and self-transcendence values [7]. In the context of environmental campaigning, Holmes *et al*. assert, from a review of the relevant literature, that promotion of long-lasting change in the behavior of citizens by engaging with people's intrinsic rather than extrinsic values is key to achieving true sustainability [8].

Considering these issues leads to the concept of the 'quadruple bottom line' where personal meaning, together with social and environmental factors, is facilitated by the human construct of economic activity [16]. This relates to Orr's perception of sustainability as a 'deeper process akin to humankind growing to a fuller stature' and that 'barriers to a graceful transition to sustainability... are not so much technological as they are social, political, and psychological' [11].

## Open Source and Intrinsic Values

Open source is a mechanism for creating software which allows people to share ideas, make contributions and get feedback on designs within a community that has clear layers of decision-making power, as an example of 'socially meaningful participation' [1]. Although the reasons why people participate in open source projects may not be immediately obvious, several writers make reference to the intrinsic motivations for participating in open source projects or the intrinsic value gained from doing so [e.g. 3, 5].

Roberts *et al*. [12] found that these intrinsic motivations were not 'crowded out' by extrinsic motivations such as being paid to participate in open source projects, reinforced by Baytiyeh and Pfaffman [2] who found that payment didn't significantly affect the altruistic motivations of contributors to open source software. Thus the intrinsic rewards gained from participating in open source projects can be reinforced by extrinsic rewards, implying that open source can promote intrinsic values.

## The Open Source Guild

Merges points out how the medieval guilds contributed to the prosperity of both individual families and wider

industries by sharing some information about work methods while keeping the rest proprietary to the family. He then draws parallels with open source software, leading to the virtual guild model [10].

Bonanni and Parkes developed the virtual guild concept further in the context of craft, in particular its potential to be sustainable through creating 'structured communities of experts' [6]. Larner [9] developed the open source guild model in the context of emergent micro-business, which builds on the virtual guild to include the proprietary aspect of the original medieval guilds. The open source guild model is shown below in Figure 1.

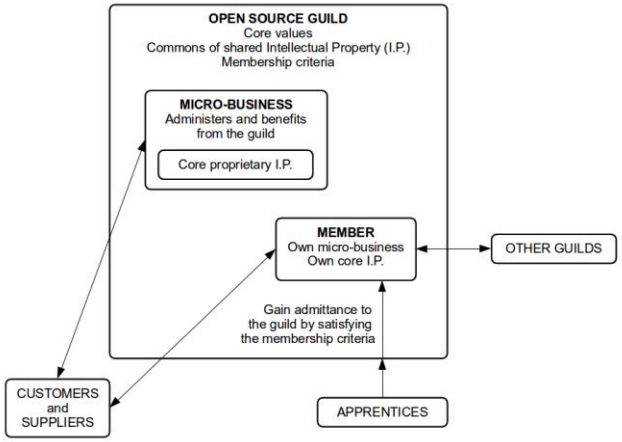


Figure 1: The open source guild model.

## The Open Source Guild and Sustainable HCI

Ulhøi uses private property theory and a model of collective agency to consider open source as a mechanism for innovation through 'critical knowledge sharing', where 'knowledge and experience have the interesting feature that they tend to grow when shared' [15].

The open source guild model has the potential to be sustainable in terms of building a community around shared personal values and meaning, thus contributing to the fourth bottom line identified by Walker [16].

In the context of sustainable HCI, the open source guild could thus be a mechanism for promoting innovation thorough a commons of knowledge and experience, bringing researchers together for collaboration based on shared values. These shared values will help ensure that the innovation contributes to sustainability.

## Questions

Considering the open source guild model in terms of the contribution it could make to overcoming the 'difficulty of collaboration, especially across fields and sectors' identified by Silberman *et al*. [14], raises the questions:

1. Can the guild model enable researchers to form collective networks for collaboration?
2. Can the guild model promote the values of sustainability?
3. Can research collaboration though an open source guild promote sustainable innovation?
4. Can a guild model involve other researchers in sustainable development outside the field of sustainable HCI?
5. Can the open source guild model itself be a contribution to sustainable HCI?
6. Should business models be a research output for sustainable HCI?

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