



The open source guild: creating more sustainable enterprise?

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1. Introduction

In this paper, we link the principles of open source with the historical concept of the guild to create a new micro-business model, the *open source guild*. We demonstrate that the open source guild can be a business model as defined by Zott *et al.* (2011), having the characteristics of building a focal micro-business through effectuation (Sarasvathy, 2001), promoting learning and development through apprenticeship, creating shared value through a commons of experience and knowledge and capturing value (Chesborough and Appleyard, 2007) by protecting key intellectual property.

Bridge and O'Neill (2013, p. 31) point out that small business can offer 'social benefits such as choice, stability and personal self-actualization'. Small business thus has the potential to promote personal values and meaning, the key element that the quadruple bottom line (Walker, 2011) adds to the triple bottom line (Elkington, 2004). The open source guild model can potentially enable micro business to fulfil the quadruple bottom line of sustainability in economic, social and environmental terms together with promoting personal values and meaning. This paper focusses particularly on its potential to address both the economic and personal value bottom lines.

The findings presented in this paper arise from an exploratory study, using participatory action research and design workshop methods, working with two micro-businesses over a period of 12 months as co-researchers. The model of the open source guild was found to have advantages for founders in terms of new revenue generation, the framing of shared values and the protection of core intellectual property. This in turn contributes to the sustainability of the guild, both economically and in terms of the personal values of stakeholders. The guild can then operate within its own value framework, reducing external isomorphic pressures. The open source guild model has the potential to broaden the scope of micro-enterprises to incorporate a wider conceptualisation of profitability beyond the economic bottom line.

2. Sustainability as the quadruple bottom line

A purely economic view of business is challenged by writers such as Gray (2006), who pointed out that in the context of limited natural resources, assuming these resources are an externality to the firm is untenable, and that responsible accounting will need to include environmental as well as economic factors. This widening of sustainability to include other than economic factors was articulated by John Elkington (2004) as the triple bottom line, with its social and environmental dimensions in addition to economic. Yunus *et al.* (2010) draw on the experience of Grameen to identify a social business model as one that includes social and environmental value creation as well as economic profit.

Varey and Storbacka (2011) identify that sustainable business can contribute to quality of life and well-being, highlighting that there is another dimension to sustainability which is not covered by the triple bottom line. Walker (2011, p. 127) frames sustainability in terms of the 'quadruple bottom line', where economic, social and environmental factors all contribute to personal values and meaning.

This paper explores the sustainability of the individual micro-business, rather than their contribution to sustainable development. We will therefore focus on the contribution of the open source guild model to the economic and personal values bottom lines, whilst acknowledging the wider potential contribution to the welfare of stakeholders and the environment.

The following section introduces the concepts of open source and the virtual guild model as a

particular application of human-computer interaction that was the starting point for our research.

3. Open source and the virtual guild model

3.1 Open source and open innovation

Open source is a mechanism for creating computer software which allows people to share ideas, make their contribution and get feedback within a community that has clear layers of decision-making power, as an example of ‘socially meaningful participation’ (Bach and Twidale, 2010, p. 70). Ulhøi (2004, pp. 1108-1109) 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’.

Open source is starting to be applied in a business context, with firms now making use of open source communities to promote innovation (Dahlander and Magnusson, 2008), while Albers *et al.* (2008) claim that the impact of networking technology is now extending to new business models that promote open innovation. Chesborough and Appleyard (2007, p. 58) point out that sustainability could be an issue with open innovation, however, calling for an ‘open strategy’, where creating a sustainable business model ‘requires a means to capture a portion of the value created from innovation... instead of losing sight of value capture during the pursuit of innovation’. Fuad-Luke (2009, p. 145) identified how the mechanism of open source enabled self-employed designers to create an ‘intellectual commons’ that can share know-how while protecting the intellectual property of their designs from exploitation in a global marketplace. The medieval guilds also offered a mechanism for protecting intellectual property while enabling industries to prosper, indicating that this was a model worth exploring further.

3.2 Open source and the virtual guild model

According to Defourny and Develtere (1999), the first guilds appeared in European countries in the 9th century, with guilds starting to control labour markets in the 14th century. There is some dispute over the role of guilds, where Richardson (2001) points out that the common perception of medieval guilds being about enforcing a monopoly is based on a misunderstanding of the historical meaning of the word. He sees the medieval guilds as voluntary cooperatives that played a role in building human capital through apprenticeship. Reinforcing this perspective, Epstein (1998, p. 684) claims that ‘medieval craft guilds emerged in order to provide transferable skills through apprenticeship’ as ‘cost sharing rather than price-fixing cartels’ (Epstein, 1998, p. 688), serving to regulate labour markets and promote technical innovation (rather than suppress it as popularly supposed).

A guild model is one that could promote co-opetition (Gnyawali and Park (2009) by enabling competing small businesses to collectively work together, sharing some knowledge and experience within the guild while keeping some proprietary within each firm. The guild, with its unique combination of apprenticeship, knowledge sharing and the capacity to promote technical innovation, could thus be a valid model in present-day society.

Merges (2004, p. 4) connected the medieval guilds with open source software, proposing that open source ‘represents a sort of “virtual guild”’. Bonanni and Parkes (2010, p. 182) developed the virtual guild concept further in the context of craft, in particular its potential to be sustainable through creating ‘structured communities of experts’, but highlighted that the knowledge generated could be exploited for commercial purposes. In this view, the virtual guild model is an example of

the collective model of agency (Ulhøi, 2009, p. 1096), in contrast to the original medieval guilds which operated more to the private model of agency. In this paper, we propose a new business model particularly appropriate for micro-business, which incorporates both the collective and private model of agency: the open source guild. The relevance of this model is further supported by Wells (2013), who highlights a counter-trend away from globalism towards localism, thus this model could be relevant to micro-business.

4. Method and Findings

This section outlines the research methods used in this study. As an iterative process, the findings are reported here concurrently, as each stage of the analysis and findings informed the subsequent design of the study.

4.1 Working with emergent micro-businesses to create the open source guild concept

One author worked directly as a facilitator with two emergent micro-businesses as co-researchers, Shrimping It (<http://www.shrimping.it>) and The Northern School of Permaculture (<http://www.northernschool.info>), initially to explore the potential of the virtual guild model for their organisation. Our research methodology took a participatory action research approach (Cassell and Johnson, 2006), drawing on the parallels with user centred design (Hayes, 2011), where Varey and Storbacka (2011) highlight the importance of design in creating sustainable business models. There were three stages to the research and data gathering during 2013 and 2014:

1. Reviewing organisation websites, social media and internal documentation during June and July 2013 to co-create an agreed 2000 word description of the organisation and issues facing it with research study participants.
2. Open discussions with founders and stakeholders that were recorded in a reflective journal from which the open source guild emerged as a novel concept to explore further.
3. Two workshops a year apart, with data captured through notes and photographs to explore the efficacy of the concept of open source guild to address our research question, "Can the principles of open source enable micro-business sustainability?".

This paper draws predominantly on the data gathered in the two workshops, which is summarised below.

4.2 Establishing the open source guild as a potential business model

The starting point for the first workshop in August 2013 was an analysis of the data gathered in stages one and two of the project. NVivo software was used to undertake thematic analysis of the initial data. This initial analysis drew out themes relevant to the personal values held by each the founder of each organisation using a number of values frameworks, including basic values (Schwartz, 1992), intrinsic and extrinsic motivations (Ryan and Deci, 2000) and values relevant in a community development context (Hoggett *et al.*, 2009).

Using these frameworks, we identified the core values for Shrimping It as:

- Achievement and Benevolence (basic values).
- Competence (intrinsic and extrinsic motivations).
- Honesty and Transparency (community development context).

For the Northern School of Permaculture the core values were:

- Achievement and Universalism (basic values).
- Autonomy and Relatedness (intrinsic and extrinsic motivations).
- Honesty and Repatriation (community development context).

The workshop began with an exploration of the core values held by each organisation's founder in greater depth, starting with these initial values which were represented by personas (Cooper, 2000; Floyd *et al.*, 2008) and developed further as specifically value-led personas, a form of persona that is intended to represent values held by the stakeholders associated with an organisation. Participants were asked to visualise how the personas might engage with the organisation both at present and if it adopted an open source guild model in its future development. The pertinent issues and implications of the open source guild model for their particular micro-businesses as highlighted by participants are summarised below.

4.2.1 First workshop with Shrimping It

The workshop was held with Cefn Hoile, founder of Shrimping It, who offer educational workshops aiming to teach the fundamentals of programming Arduino-compatible circuits. Cefn related the open source guild model to Shrimping It's everyday work, giving the example of a facilitator who effectively became an apprentice after helping out with some workshops. Cefn thought that members of the guild could create designs that the micro-business can sell, so the intellectual property (IP) generated by the guild benefits the business which is taking on the role of servicing the guild. The guild has evolved as a common resource led by the needs of stakeholders, particularly teachers who are affected by changes in the UK curriculum which favours the Shrimping It approach. Cefn observed that openness has created a market for Shrimping It with its community of stakeholders, creating the capacity for a business at its core, taking a 'small share of a big opportunity', with the business evolving organically with no outward investment needed.

Cefn's thinking was that the open source guild model could enable members to make the transition from a hobby to a business, including dealing with issues such as insurance, marketing, practical advice and sharing ideas. The discussion then moved onto intellectual property, Shrimping It could trademark its name to protect its core IP and ensure that anything done under the Shrimping It name is appropriate. Cefn put the model into practice there and then, planning how it could be applied at the Manchester mini-Maker Faire the following weekend, where the guild model could help with marketing.

4.2.2 First workshop with The Northern School of Permaculture

The workshop was held with Angus and Krysia Soutar, co-founders of the Northern School of Permaculture. The Northern School welcomed the open source guild model, which they saw as very much aligned with the values of the School and its parent Permaculture Institute, a 'name for how we do business'. They elaborated the guild model in two diagrams to show all their relationships with stakeholders, the roles they would play in relation to the guild and where resources would be gathered and distributed within the guild. The workshop led them to conceptualise the wider context of the international permaculture movement as a 'guild of institutes'.

The Permaculture Institute holds the core intellectual property relating to permaculture itself, while the School can develop its own core IP centred around the delivery of training courses on

1 permaculture, while being able to draw on the 'commons' held by the Institute as a member. Each
2 teacher who is accredited by receiving their diploma from the School can set up as a micro-business
3 (and hence create their own guild), creating a 'fractal' structure of guilds within guilds.
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6 In relation to the open source guild model for the School and Institute, they 'can't see any other way
7 of doing it' in the development of a sustainable business, first develop the team and relationships,
8 which then leads to the guild, then the micro-business is founded to undertake the work of the guild.
9 The discussion then went on to consider who would get paid, concluding that the strength of the
10 guild model is that it offers a mechanism to grow a micro-business with 'no investors other than
11 those who are working in it' and hence no external debt. The guild allows the business to grow
12 organically according to permaculture principles and values.
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14 15 *4.3 Creating the initial specification for the open source guild*

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17 The initial data and workshop findings were then used by the facilitator to create a specification for
18 the open source guild that could be applied outside the context of the two research organisations by
19 identifying the common factors from each partner organisation:
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- 21 • The founder has a key idea or gains key intellectual property.
- 22 • The founder creates or protects the core intellectual property (which could just be a name
23 and logo).
- 24 • The founder then recruits others to form the guild based on shared values, creating a
25 commons of shared experience and knowledge.
- 26 • Then the founder creates a micro-business to protect the core intellectual property, service
27 the guild and make a living providing goods and services developed through the commons.
- 28 • The founding micro-business can then continue recruiting members to the guild, all
29 benefiting from a larger market.
- 30 • Each guild member operates as their own micro-business.
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34 We explored the potential for this initial open source guild model to contribute to the strategic
35 development of partner organisations in a second workshop held a year later in August 2014.
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37 *4.4 Applying the open source guild model in strategic development*

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39 The second workshops focused on how the open source guild model contributed to the strategic
40 development of Shrimping It and the Northern School of Permaculture. Value-led personas were
41 again used in the workshops as a tool to both communicate values and to enable participants to
42 visualise how their stakeholders could interact with the organisation. Participants in the workshops
43 were invited to consider how the guild structure created in the first workshop could be developed
44 further. The outcomes from the second workshops are summarised below.
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47 *4.4.1 Second workshop with Shrimping It*

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49 Shrimping It had developed since the previous workshop, in particular there was now a larger group
50 of facilitators who were holding workshops independently and asking questions about best practice.
51 Cefn had recently set up a repository for information and sharing best practice on GitHub, called the
52 Guildhall. The Guildhall had a 'narrow scope', mainly for workshop facilitators to create a 'place
53 for a guild of @Shrimping It facilitators to agree best practice on kit preparation and workshop
54 design to teach learners how to prototype devices'. Cefn created the Guildhall following discussions
55 with facilitators 'reflecting on pedagogy' and highlighting the importance of values. The Guildhall
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1 was intended to reinforce the original purpose of Shrimping It, to reach the people 'left behind' by
2 those who like technology for its own sake. Cefn thought Twitter could be used to create 'a kind of
3 guild' by asking followers about potential projects, 'what should it do', as he did while developing a
4 Shrimp-based Real Time Clock. The guild model promotes 'interaction around a task', which is a
5 good reason for using GitHub, as it offers tools to facilitate this kind of interaction in creating open
6 source software.
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9 **4.4.2 Second workshop with The Northern School of Permaculture**

10 The workshop was held with Angus Soutar, co-founder of the Northern School of Permaculture.
11 Considering the guild structure created in the first workshop, Angus pointed out that 'there's 10
12 years of work gone into this', in building up the existing practice within the organisation. The
13 concept of the open source guild helped give a conceptual frame for this existing practice. Further
14 reflection on the guild model in this workshop led to Angus updating it to include landowners and
15 people who could offer venues as guild members. He emphasised that the School is not about
16 owning assets such as land or buildings, its assets are people and knowledge. The guild model was
17 now part of the permaculture courses offered by the School. The guild model de-monetises the
18 process of building a business, but it involved people investing unpaid time and 'sharing risks and
19 reward' to build it up.
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24 **5. Discussion: the open source guild as a business model**

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27 Zott *et al.* (2011, p. 1038), from their comprehensive literature review, see the business model as
28 being about how to do business, including 'boundary-spanning activities (performed by a focal firm
29 or others), and focusing on value creation as well as on value capture', rather than what firms do.
30 Considering this perspective on what a business model is, the open source guild can be seen as
31 having the characteristics of:
32

- 33 1. Building a focal micro-business through effectuation.
 - 34 2. Doing business by promoting learning and development through apprenticeship.
 - 35 3. Creating shared value through a commons of experience and knowledge.
 - 36 4. Capturing value by protecting key intellectual property.
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39 We explore these characteristics in relation to the two partner organisations below, together with the
40 potential contribution of the open source guild model to the fourth bottom line of personal values
41 and meaning. Considering the open source guild as a sustainable business model could contribute to
42 fulfilling the need identified by Varey and Storbacka (2011) for sustainable business models that
43 contribute to the well-being of all stakeholders.
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46 **5.1 Building a focal micro-business through effectuation**

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48 In the initial workshops, both Shrimping It and the Northern School of Permaculture highlighted
49 that creating the business through forming an open source guild could enable their businesses to
50 develop without conventional external resource acquisition, where the investors are people working
51 in the guild who also benefit from their involvement. Development without external finance links
52 with the effectuation model of business development proposed by Sarasvathy (2001) of working
53 with stakeholders to gradually develop the business. The open source guild model could thus
54 contribute to economic sustainability through promoting effectuation.
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5.2 Promoting learning and development through apprenticeship

The Northern School of Permaculture had already been developing a guild-like structure over the previous ten years, where students studying with the School start as apprentices, then are promoted to full membership of the guild as teachers once they have gained their Permaculture Diploma. As teachers, they can access the intellectual property held by the School on teaching permaculture. Shrimping It, in their gradual evolution from a project to a business, effectively operated an informal apprenticeship system by involving potential facilitators in workshop delivery. Shrimping It now operate their more formal on-line Guildhall, where facilitators effectively complete their apprenticeship through being admitted to the Guildhall. Apprenticeship is thus key to how both organisations operate, linking with the medieval guilds that transferred skills through apprenticeship (Epstein, 1998).

5.3 Creating value through a commons of knowledge and experience

Members of Shrimping It's online Guildhall benefit from the commons of designs in facilitating workshops under the Shrimping It name. Shrimping It also use Twitter to create a commons of knowledge and experience about new designs which is open to all, not just facilitators. The Northern School benefits from the commons of knowledge held by its parent Permaculture Institute through its membership. Both organisations appear to benefit from the characteristic of knowledge growing when it is shared identified by Ulhøi (2004).

5.4 Capturing value by protecting key intellectual property

Shrimping It have been able to capture value as well as create it (Chesborough and Appleyard, 2007) by creating a micro-business to sell electronic kits based on the designs created by members. In this case, their core intellectual property is their name, which they could protect by trademarking. The Northern School of Permaculture is part of a multi-layered guild where they create intellectual property on how to deliver training courses which is shared with members, while in turn benefiting from the IP of permaculture itself as a member of the Permaculture Institute. In this protecting of key intellectual property through an intellectual commons (Fuad-Luke, 2009), the two organisations are applying the principles of open source software that was developed to overcome the restrictions of existing Free Software licenses which were unattractive to business (DiBona *et al.*, 1999).

5.5 Promoting shared personal values

Both Shrimping It and the Northern School of Permaculture are driven by values other than economic profit. Shrimping It is founded on the values of openness and honesty, which has gained them repeat business from customers. The open source guild model has enabled them to develop a growing network of facilitators who share their values, using the Github open source development tool to share knowledge and experience. The Northern School of Permaculture has chosen the gradual growth and development of their business afforded by the open source guild model as this is in line with the values of permaculture itself. Both organisations appear to be operating to create social value, which is a key factor distinguishing a social business from a commercial one (Yunus *et al.*, 2010). Promoting shared values and meaning is the key element that the quadruple bottom line identified by Walker (2011) adds to the triple bottom line (Elkington, 2004).

6. Conclusions and future work

1 The research that is documented in this paper started with the virtual guild model, an application of
2 open source principles to the original medieval guilds, then developed this model to create the
3 concept of the open source guild. The open source guild is a business model that aligns with current
4 trends in society towards greater use of digital networking technology and people working
5 independently rather than in large organisations. The open source guild can enable emergent micro-
6 businesses to maintain their autonomy, protect their core intellectual property and create a
7 community based on a commons of shared experiences and values.
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10 The open source guild model offers a micro-business founder a mechanism to develop their
11 business gradually, building up a community of stakeholders that can both contribute to and benefit
12 from the business. This gradual development through effectuation can reduce or negate reliance on
13 external resources to establish and maintain the organisation. The community of stakeholders within
14 the guild can help find resources which can contribute to both the sustainability of the business and
15 its network. The open source guild model also offers the potential to be sustainable in the sense of
16 enabling the founding micro-business to build a community around shared personal values, thus
17 contributing to the fourth bottom line.
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20 We developed the open source guild model in a specific context, working with two emergent micro-
21 businesses who wished to apply the principles of open source to how they did business, which
22 limits the applicability of this model at present. Further research will be needed to explore the
23 applicability of this model to other business contexts. Whilst the contribution to social and
24 environmental concerns was apparent, this paper does not make specific claims in relation to
25 fulfilling these bottom lines and this is also an area for further research.
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28 We will continue investigating this topic to explore the viability of guild-like organisations in a
29 range of contexts beyond emergent micro-businesses, taking a research through design approach to
30 potentially co-create new value-led business models.
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