

LiquidPublications and its technical and legal challenges

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Abstract. This paper proposes a new paradigm for dealing with scientific knowledge in general, and publications in particular. The paradigm aims at changing the way in which knowledge is produced, disseminated, evaluated, and consumed. A formal model is proposed and the issues of credit attribution, copyrights and licensing, which are crucial for the success of any new model, are addressed.

Keywords: publications, credit attribution, copyrights and licensing

1. Introduction

The current publication model is based on promoting quality research by relying on peer review for selecting publishable papers, i.e. papers to be accepted by the community. This model requires a lot of effort and time from the authors, reviewers, editors, etc. Authors tend to waste a lot of effort and time on repackaging already existing ideas for the sole purpose of increasing their number of publications, and hence, their reputation. This results in a dissemination overhead for the community. Reviewers are subsequently affected by this overhead, and are also required to spend more and more time on reviewing papers. Additionally, peer review is not always fair: it sometimes results in the rejection of good papers; and if a paper is accepted, a long time (typically months) passes before the paper appears in a published outlet.

In this paper, we propose a new paradigm that aims at changing the way in which knowledge is produced, disseminated, evaluated, and consumed. Although this paper does not focus on the technical implementation details, it does provide a general overview of the proposed LiquidPub (LP) model, its implications on the life-cycle of scientific knowledge, and it addresses the crucial issues of credit attribution, copyrights and licensing that are key to the success of such systems.

Section 2 of this paper formally defines the proposed model. Section 3 illustrates how this model addresses the pitfalls of the existing one. Sections 4 and 5 address the crucial issues of credit attribution and copyrights and licensing, respectively. A motivating example is presented by Section 6. And conclusions are drawn by Section 7.

2. The LiquidPub Model

The more generic, yet expressive, a framework is, the more useful it would be for a large variety of audiences (or applications). For the world of publications, we propose a simple framework built on two main building blocks: the scientific knowledge objects (SKOs) and the researchers, or the users. We then propose a set of relations for linking these types of elements (which are, formally, nodes in a graph), based on the current needs of the publications field. Note that we avoid padding the system with extra rules on who can perform what action, since we believe this is generally context dependent and is the responsibility of the user; nevertheless, a minimum set of integrity constraints is needed to preserve the robustness of the system. Due to the lack of space, we refer the interested reader to Section 2.3.2 of Giunchiglia et al. (2009) for more information on the LP system's integrity constraints. The LP model is then defined as follows.

Definition 1. An LP system is defined as the tuple specified by a set of nodes and relations, accordingly:

$$LP = \langle N, G, \mathcal{O}, \mathcal{P}, \mathcal{V}, \mathcal{S}, \mathcal{C}, \mathcal{R} \rangle$$

where,

- N represents the set of SKOs (or research items),
- G represents the set of users (or researchers),
- $\mathcal{O} \subseteq N \times G$ represents the *owns* relation that describes which user is the owner of which node,
- $\mathcal{P} \subseteq G \times G$ represents the *part of* relation that describes which SKO constitutes a part of which other,
- $\mathcal{V} \subseteq G \times G$ represents the *version of* relation that describes which SKO is considered to be a version of which other,
- $\mathcal{S} \subseteq G \times G$ represents the *submitted to* relation that describes which SKO has been submitted to join which other,
- $\mathcal{C} \subseteq G \times G$ represents the *cites* relation that describes which SKO cites which other, and
- $\mathcal{R} \subseteq G \times G$ represents the *reviews* relation that describes which SKO is a review of which other.

The LP system may be viewed as being composed of different layers of networks and graphs. For instance, the *cites* relation helps build a citation network; the *part of* relation results in an SKO structural graph; co-authorship networks may be deduced; and so on. We note that the proposed model of this paper is a formal high level model. Implementation choices are better described by Section 1 of Giunchiglia et al. (2009). For additional and more technical details on the proposed LiquidPub model, we refer the interested reader to Section 2 of Giunchiglia et al. (2009).

The LP system distinguishes between various researcher roles. Mainly, the owner of a node plays different roles based on the type of this node. For example, if the node represented a conference, then the owner is viewed as the chair; if it represented a conference proceedings, then the owner is viewed as the editor; if it represented a paper, then the owner is viewed as an author; if it represented a review, then the owner is viewed as a reviewer; and so on.

A bunch of additional relations may be deduced from the information provided by the LP system. For example, the collaboration of authors may be defined as a relation that may be inferred, the reviewers of a given paper may also be defined as an inferred relation, etc. Such inferred relations can be specified by organisational charters, which may be viewed as a layer that lies on top of the LP system and provides additional definitions and constraints by making use of LP data. Organisational charters may also choose to define relations that are based on data not provided by the LP system, such as the degree of dependency between researchers, their degree of collaboration, etc. In such cases, the charter should also provide the means for obtaining this data. Section 6 provides a brief introduction to organisational charters through our motivating example.

Each node in the LP system should be defined through a set of attributes. Table I provides a sample of these attributes, which we believe are self-explanatory.

Table I. The attributes of LP nodes

Researchers (Users)	Research Work (SKOs)
First name	Title
Family name	Date
Primary affiliation	URI
Primary address	Type
Primary email	Access rights
...	...

Naturally, some of these attributes will be mandatory, such as the email address of a researcher, which could be used as his/her ID. These provide one example of the constraints essential for maintaining the integrity of the system: the integrity constraints described by Section 2.3.2 of Giunchiglia et al. (2009).

3. The LiquidPub Contribution

What changes does the proposed LP model bring to the publications world? LiquidPub aims at advancing the entire life-cycle of knowledge by improving the way knowledge is produced, disseminated, evaluated, and consumed. In what follows, we discuss how the proposed model influences these stages:

- **Production.** The LP model allows users to divide their work into chunks, linking them through the *part of* relation. This helps promote reuse. For example, in the case of writing papers, authors no longer need to spend too much time on re-writing and re-packaging already existing ideas; they could simply re-use existing sections. This also results in reducing the dissemination overhead of current publications. The ease of reusing and linking to others' work also promotes collaboration. A document can easily be constructed by combining several SKOs, where the owners vary for each SKO. Of course, maintaining a fair credit attribution (which we discuss shortly) is also crucial for promoting reuse and collaboration.
- **Dissemination.** The system promotes early sharing. With the existence of the *version of* relation, researchers may now share their initial developing research ideas with the community, without the fear of losing credit. Furthermore, early sharing helps in finding potential collaborators, getting the community feedback from an early stage, etc. As the work matures, later and more stable versions may be adopted by more reputable journals, conferences, etc. This essentially implies that the chances for good quality work to be brought to light is much higher than in the current system, where good papers can sometimes be rejected depending on the luck of who gets to review them. This system allows the community to judge and promote interesting ideas. Again, a fair credit attribution is crucial for the success of such a scenario.
- **Evaluation.** The LP model preserves the authorship of researchers on bits and pieces of a larger research work; hence, each author will be given credit based on what exactly s/he has contributed.

Publishing papers which are different versions of each other, or that reuse a lot of existing material, could now be differentiated from publishing distinct novel ideas (to some extent, of course). All of this, along with the numerous information sources made available by the system (such as the social relations between researchers that could affect the reliability of reviews, the citations network, the co-authorship network, the structural graphs of SKOs, etc.) helps achieve a fairer credit attribution.

- **Consumption.** As illustrated above, research work does not need to be published to be brought to light. It is now the community that decides what is interesting, and hence, what receives higher credit and may then be published. The LP system facilitates sharing, finding, and publishing interesting research work. This becomes even more concrete with the introduction of the concept of Liquid Journals (Baez and Casati, 2009), which provide means based on social networking for sharing and promoting interesting work.

In addition to the technological challenges in building such a system, two crucial challenges confront the success of the proposed LP model: (1) to provide an incentive for researchers to use the system by providing fair credit attribution, and (2) to address the legal issues. These challenges are addressed by the following two sections, respectively.

4. The Issue of Credit Attribution

Credit attribution in the LP model is mainly concerned with computing the reputation of research and researchers. It is a common understanding that reputation represents group opinion. As such, we say that any available information that should influence reputation may be viewed as opinions. For instance, the LP system will contain direct opinions provided by reviews. Additionally, citations may also be viewed as an indication of how good a given research work is.¹ Hence, we first provide the following definition for opinions.

Definition 2. The opinion that a person β holds about an entity α concerning the attribute a at time t is defined as:

$$o(\beta, \alpha, a, t) = \{e_1 \mapsto v_1, \dots, e_n \mapsto v_n\}$$

¹ In this paper, we assume that the functions that translate the information provided by the LP model into opinions are already provided. The *cites* relation provides one example of such information. Each citation may be viewed as an opinion being formed about the cited entity, whose value is equivalent to the reputation of the citing entity (which could be, for instance, an aggregation of the authors' *h*-index).

where,

– $\beta \in G$,

– $\alpha \in N$,

– $t \in T$, and T represents calendar time,

– $a \in A$, and A is the set of attributes that opinions may address (e.g. $A = \{quality, novelty, \dots\}$),

– $\{e_1, \dots, e_n\} = E$, and E is the evaluation space over which opinions are defined (e.g. $E = \{bad, good, v.good\}$), and

– $v_i \in [0, 1]$ represents the value assigned to each element $e_i \in E$, with the condition that $\sum_i v_i = 1$

In other words, the opinion is specified as a probability distribution over the evaluation space E . We note that the opinion one holds about an SKO may change with time, hence various instances of $o(\beta, \alpha, a, t)$ may exist for the same α , β , and a , but with distinct ts .

We say, the reputation of an SKO should not only be influenced by the opinions it receives, but by its position in the SKO structural graph as well. For instance, a conference is reputable if it accepts high quality papers only. Similarly, people usually assume that in the absence of any information about a given paper, the fact that the paper has been accepted by a highly reputable journal implies that the paper should be of good quality. Hence, there is a notion of propagation of opinions along the *part of* relation of the structural SKO graphs.

The direction of propagation is crucial, so we differentiate between the opinion that propagates from parent to child and that which propagates from child to parent. We say that the *intrinsic* opinion about an SKO is either the result of direct opinions it has received or the aggregation of the opinions about its children SKOs:

$$\mathbb{P}_n^t = \frac{1}{\sum_{(c,n) \in \mathcal{P}} \pi_c^t} \cdot \sum_{(c,n) \in \mathcal{P}} \pi_c^t \cdot \mathbb{P}_c^t \quad (1)$$

where, \mathbb{P}_x^t is the intrinsic opinion about the SKO x at time t , π_x^t represents the reliability of an intrinsic opinion and is defined as the proportion of nodes that have received a direct opinion in the structural sub-tree whose root node is x , and $(c, n) \in \mathcal{P}$ specifies that the SKO c is a child of (part of) n .

We then say the default opinion about an SKO, in the absence of any information about it or the parts that compose it, may be inherited from its parent SKOs. We call this the *extrinsic* opinion about an SKO, which we define accordingly:

$$\mathbb{D}_n^t = \frac{1}{\sum_{(n,p) \in \mathcal{P}} \pi_p^t} \cdot \sum_{(n,p) \in \mathcal{P}} \pi_p^t \cdot \mathbb{P}_p^t \quad (2)$$

The basic idea is that initially $\mathbb{P}_n^t = \mathbb{D}_n^t = \mathbb{F} = \frac{1}{|E|}$, i.e. the values of both the intrinsic and extrinsic opinions are equal to the flat (uniform) distribution \mathbb{F} . As times goes by, and as opinions start to be formed about parent or children nodes, the intrinsic and extrinsic opinions start to shape up.

With time, the intrinsic opinion loses its value. Technically speaking, this means the intrinsic opinions starts decaying towards its default \mathbb{D} , following the equation presented below:

$$\mathbb{P}_n^t = \Lambda(\mathbb{D}_n^t, \mathbb{P}_n^{t-1}) \quad (3)$$

where Λ is a *decay function* satisfying the property: $\lim_{t \rightarrow \infty} \mathbb{P}_n^t = \mathbb{D}_n^t$. In other words, Λ is a function that makes \mathbb{P}_n^t converge to \mathbb{D}_n^t with time.

And since all information loses its value with time, we say the default opinion \mathbb{D} also decays, but towards the flat distribution \mathbb{F} and presumably at a much slower pace than the decay of \mathbb{P} :

$$\mathbb{D}_n^t = \Lambda(\mathbb{F}, \mathbb{D}_n^{t-1}) \quad (4)$$

Interested readers may refer to Osman et al. (2010a, 2010b) for the technical details of our proposed propagation algorithm. Ongoing work investigates the calculation of researchers' reputation. In a similarly manner to computing the reputation of SKOs, the reputation of an author may be computed through the propagation of the reputation of the author's research work (SKOs) along the *owns* relation. However, when computing the reputation of authors, it is important to consider which SKOs are versions of which other. For instance, we say an author who has two highly reputable SKOs that are different versions of each other should have a lower reputation than an author who has two highly reputable novel SKOs that are independent of each other. In other words, it is crucial to consider the *version of* relation when computing the reputation of authors.

Existing mechanisms have addressed the issue of using citations for calculating the reputation of an author (Radicchi et al., 2009) or the reputation of a paper (Walker et al., 2007). Aggregating individual

opinions to obtain the group opinion has been addressed by Sierra and Debenham (2009). Calculating the reliability of reviewers has been addressed by Sabater-Mir and Sierra (2002), Sabater-Mir et al. (2006), and Kuter and Golbeck (2007). In summary, existing research has already proposed numerous methods for calculating the reputation of isolated entities. And these are all useful and complementary methods to our proposed algorithm. However, what is novel in the LP model is the introduction of the notion of the SKO structural graphs: SKOs are linked to each other through the *part of* relation resulting in possible large structural graphs.

Our propagation mechanism allows one to deduce opinions about new entities by propagating opinions from other related entities. Additionally, the presented mechanism is highly customisable. For instance, a user may choose to run the propagation algorithm over a certain type of information, say its personal direct opinions only. In such a case, given one person's opinions on a set of nodes of a structural graph, the algorithm aids this person in deducing its opinion concerning the remaining nodes.

5. The Issue of Copyrights and Licensing

The LiquidPub project envisions a variety of different innovations in publishing and research dissemination. Among the concrete paradigms under development are liquid extensions of journals (Baez and Casati, 2009), books (Casati and Ragone, 2009) and conferences (Origgi and Schneider, 2009). In each of these cases it is possible to envision many different licensing practices that could be applied. However, it is important not just that there be innovation in individual areas of research dissemination but also that each of these innovations should complement the other. Therefore the principal focus needs to be on licensing models which enhance the interoperability and potential for exchange between these different liquid publishing paradigms, and which enhance the possibilities for further user-initiated innovations. As PLoS editor Fiona MacCallum notes of open access (MacCallum, 2007),

[T]he beauty ... is not just that you can download and read an article for personal use. You can also redistribute it, make derivative copies of it ..., use it for educational purposes ..., or, most importantly, for purposes that we can't yet envisage.

Such potential for 'purposes that we can't yet envisage' needs to be firmly embedded into the licensing framework of LiquidPub.

If such a thought sounds scary—many researchers are understandably concerned about others re-using their articles in inappropriate or

abusive ways—it is worthwhile to remember that copyright and licensing *per se* plays little part in determining what is acceptable practice in academia. Community norms and institutional constraints play a far larger role, as acknowledged for example in the Bethesda declaration on open access:

Community standards, rather than copyright law, will continue to provide the mechanism for enforcement of proper attribution and responsible use of the published work, *as they do now* [our emphasis].

The extremely permissive licensing terms of many open access articles (MacCallum, 2007) have not so far resulted in obvious abuse; in fact if anything they have served primarily to pre-emptively avoid the potential for copyright holders to constrain what most academics would consider fair use (Zimmer, 2007). Even non-open access publishers grant many permissions for use of their content—such as author or institutional self-archiving (Harnad et al. 2004, 2008)—primarily in response to community demand.

Where licensing factors *can* play a role is in those circumstances where we want to *change* the community norms. For example, the free/open source software communities have been able to foster norms of sharing and re-using computer code through so-called ‘copyleft’ licensing, which constrains distributors of code to grant recipients key freedoms to use and modify the software (Stallman 1996, 1998, 2004; O’Mahony, 2003). One obvious parallel is that researchers might be much more willing to share datasets if there were a constraint that whoever used that data in a publication had to make available on similar terms any extra data they employed or created in that work.

With these factors in mind we can articulate a number of general principles for any LiquidPub licensing framework to bear in mind:

1. The licensing forms for different liquid publishing paradigms should complement and facilitate each other.
2. Licenses should encourage and facilitate independent innovation for ‘purposes we can’t yet envisage’.
3. Licenses should not result in *greater* restriction of dissemination than exists at present.
4. Community norms, rather than copyright restrictions, should be the principal source of *constraints* on use. The main use of legal constraints should be where it can *facilitate the emergence of new desirable norms*.

5. Licensing, and rights, need to be accorded to factors other than scientific texts—to things such as identity, reputation and so on.

As an example, we present the draft licensing framework being developed for *Liquid Conferences*. These are virtual ‘meetings’ in an online environment, where articles take the place of presentations, and discourse follows in the form of (usually moderated) comments from system users. This enables many of the key features of ‘real’ conferences—detailed presentation of ideas, focused discussion and exchange—while avoiding the costs and constraints associated with bringing many people together in the same place at the same time. The main working example,² is the website Interdisciplines (www.interdisciplines.org), which has been running such online events very successfully over a period of more than 10 years, and is now being significantly updated and expanded as part of the LiquidPub project.

Interdisciplines operates an invitation-based system where conference organisers commission original articles from specially-chosen authors. All articles are subject to review prior to being publicly displayed on the website, although the details of the review process may vary from conference to conference. Once an article goes ‘live’, any reader of the website can post comments and feedback, subject to moderation in order to sustain the quality of the discussion.

Despite its various processes of selection and review, which grant its contents an academic validity at least equal to peer-reviewed conference proceedings, Interdisciplines is not a serial or other registered publication venue,³ and so in distribution terms it occupies a middle ground not dissimilar to a preprint archive. From a licensing point of view, this system presents a number of challenges.

First, if the proceedings of a meeting are intended to be published in a book or journal special issue, the copies archived on Interdisciplines must be distributed according to terms that do not violate the publisher’s rules on distribution (in particular, many publishers request an exclusive right to commercial distribution of content). If the proceedings are not intended to be published in a particular venue, authors must be able to individually seek publication for their articles, as long as this does not affect the ability of Interdisciplines to archive and distribute copies.

² We are not aware of any other websites deliberately *designed* to be Liquid Conference platforms. However, as we note later, various other websites or publications can be seen as fitting closely with the Liquid Conference paradigm.

³ Depending on academic discipline, inclusion in conference proceedings may in any case not be considered as ‘publication’, whether the conference is a liquid one on Interdisciplines or a regular scientific meeting.

Secondly, wherever articles are eventually published, it should be possible for their accompanying commentary to be published with them: the carefully-cultivated discourse is often the most interesting part of an Interdisciplines conference, and is what sets Interdisciplines apart from other comment forums. At the same time, for this very reason, interaction with and re-use of the comments and discussion needs to be maximised.

Finally, since Interdisciplines content is intended to be freely available to all, it is desirable where possible to go beyond this to full or ‘libre’ open access where redistribution and re-use are widely encouraged (MacCallum, 2007; Suber, 2008).

The Interdisciplines licensing structure is designed to resolve these problems while still providing as much leeway as possible for authors and conference organisers to determine for themselves the distribution terms of their work. First, conference organisers must determine the range of acceptable licensing options for articles, selecting from a range of predetermined options: a basic non-exclusive and irrevocable license for Interdisciplines to distribute the article, plus a range of Creative Commons licenses (the four—CC-BY, CC-BY-SA, CC-BY-NC and CC-BY-NC-SA—that do not contain a ‘no derivatives’ clause). Authors submitting to the conference can then select from any of the licenses the organisers have deemed acceptable. In this way, conference organisers can weed out any license incompatible with a preselected publication venue, while permitting authors maximum possible choice where possible.

Comments and feedback technically fall under the same considerations. However, Interdisciplines has an interest in promoting interaction and dialogue around articles: conversely, from a publisher’s point of view, comments are likely to only be of value when attached to their parent article. We therefore choose to mandate the permissive Creative Commons Attribution (CC-BY) license for comments, allowing maximum re-use while not touching the licensing status of articles.

This is a relatively conservative licensing framework, designed to create minimum conflict with current publishing norms. Much more radical frameworks are possible if we are willing to abandon such compatibility. One option is to share the research and writing process in a project setup similar to free and open source software projects (Wakeling et al., 2009), with copyleft-style licensing to ensure freedoms to access and use data, analyses and so on. The micro-structure of SKOs described in this article offers plentiful opportunities for frameworks based on re-use and reincorporation of others’ work. Extended proposals for such fine-grained processes of sharing and credit attribution are the subject of ongoing research in the LiquidPub project.

6. Motivating Example

The LiquidPub system may be used for any process that deals with the creation of knowledge objects, collaboration between researchers, sharing with the community, evaluation by the community, publishing, etc. As an example, in this section we illustrate how a more traditional conference may be created, managed, and maintained through the proposed LiquidPub system. The (simplified) steps that need to be followed by the conference chair to achieve this are:

1. **Create your conference SKO:**

The SKO will be empty at this stage, but will later represent the conference proceedings. Later on, accepted papers (or SKOs) will be appended to this SKO through the *part of* relation.

2. **Invite reputable SKOs / Place a call for papers:**

The chair here may decide either to invite papers, place a call for papers, or both.

3. **Collect submitted papers:**

At this stage authors will link their papers (SKOs) to the conference's SKO via the *submitted to* relation.

4. **Review submitted SKOs:**

The chair (or the conference SKO's owner) will assign reviewers for each SKO and provide them with the right to link their reviews to the appropriate SKO via the *reviews* relation. We note that access rights and constraints that deal with who can perform what action are dealt with by the LP system's integrity constraints, which is outside the scope of this paper.

5. **Select accepted SKOs:**

After the reviews are written, the chair checks the reputation of each submitted paper (SKOs) by using the systems' reputation module of Section 4 along with its own additional constraints on the selection criteria. Accepted SKOs are then linked to the main conference SKO via the *part of* relation.

Note that not all of the above steps have an immediate effect on the LiquidPub system. For example, inviting SKOs or placing a call for papers does not imply the addition, modification, or deletion of some nodes or relations. It simply requires the transmission of messages.

A process model, defined by the conference's organisational charter, may be used to drive these six steps. The process model, when initiated, will then control the flow of various actions. Some of these actions will

have a direct effect on the LiquidPub system, such as the creation of a conference SKO, while others will be non-LiquidPub actions, such as message passing actions.

We note that the organisational charter may specify additional details that are related to the process model in general, such as the deadline for submission, the topics of the conference, the licensing constraints, the acceptance rate, how the reputation and reliability of reviewers is computed, how reputable SKOs are selected, the details of the process model, etc.

We use Electronic Institutions (EI) (Arcos et al., 2005) for the specification of organisational charters. Undergoing work⁴ is being carried out to permit the automated generation and update of a web-based user interface, eliminating the need for manual modifications every time an EI specification is created or modified.

An example of a basic and generic process model that automates the entire process of a conference is provided by Figure 1. The actions in bold are the actions that require the use of our reputation module. This illustrates how the reputation module may also be invoked from within the interaction model. The actions in italic address the issues of copyrights and licensing.

Note that the interaction could be made flexible enough to accommodate the various decisions of conference chairs. For example, the chair may decide whether or not to invite reputable SKOs, whether or not to invite reviewers for a discussion, whether or not to allow authors to defend their work by replying to reviewers' comments, and so on.

The sub-interaction model specified within the dark grey box represents the parallel instances of this sub-interaction, where each instance deals with a different SKO. As for the sub-interaction models specified within the light grey boxes, these represent parallel instances run by the various reviewers of a given SKO.

Finally, note that reviewers may discuss issues infinitely often; however, an author may only reply to a reviewer's comment once. Of course, the interaction model may easily be modified to allow authors to reply to reviewers' comments more than once, if needed.

7. Conclusion

The paper proposes a new paradigm that addresses some of the pitfalls of the current publication process by changing the way in which scientific knowledge is produced, disseminated, evaluated, and consumed.

⁴ Interested readers may follow this work at <http://project.liquidpub.org/lpms/>

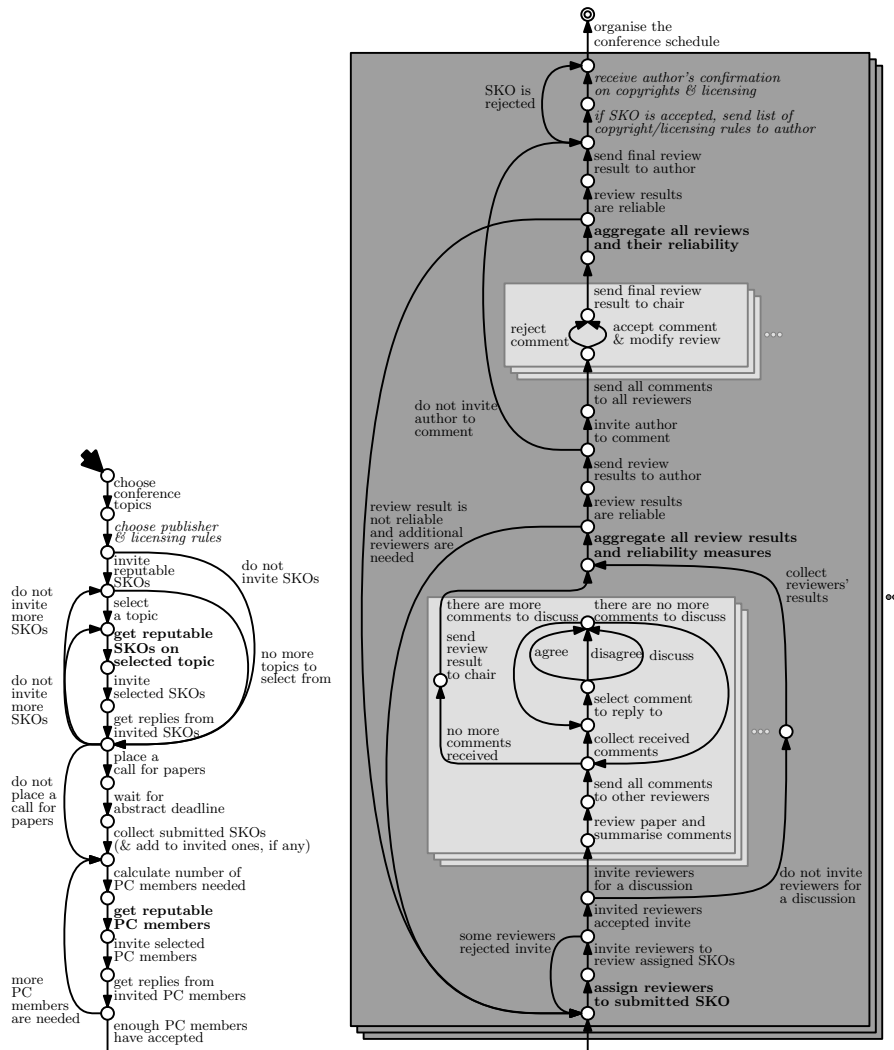


Figure 1. The state graph of a conference management process model

In summary, re-use and collaboration is encouraged by the structural SKO graph, which also helps maintain a ‘fairer’ credit attribution. Peer-review is no longer a necessity for dissemination. The system helps promote interesting research by relying on the community’s feedback (either through direct opinions or indirect ones, such as measuring the traffic, subscriptions, citations, etc.). Nevertheless, peer review could still be used for selecting future publications, which provides some sort of official certification.

Additionally, the issue of credit attribution and the legal issues of copyrights and licensing have been addressed. A propagation algorithm

is suggested for the propagation of opinions in structural graphs, which provides more dynamic and liquid reputations measures that are influenced by changes in the system. The system can also offer authors a wider and much more flexible licensing rules, which currently are focused on the Liquid Conferences use case.

Acknowledgements

This work is part of the Liquid Publications Project (<http://project.LiquidPub.org/>). The LiquidPub project acknowledges the financial support of the Future and Emerging Technologies (FET) programme within the Seventh Framework Programme for Research of the European Commission, under FET-Open grant number: 213360.

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