FLOW Licensing & Contracting

Applied Intellectual Resource Economics in the Canadian Public Sector

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Abstract: The paper explains and illustrates a generic approach to licensing together with associated contracting of "free-libre-open works" (FLOW). Concepts in economics, accounting and copyright law are summarized, providing the basis for a view of the business purposes of free-libre-open resource availability. The article presents an original way to summarize the differences amongst various major free-libre-open license types, emphasizing their rules for distribution of derivative and associated works. The paper offers a generic naming convention for comprehensive models that combine sets of licensing and contracting choices, for communities working on free-libre-open resources. A particular model described in the paper is named FLOW.through.1, and the example used to illustrate its application is the first free-libre-open project to be initiated by Treasury Board Secretariat, of the Canadian Government.

1. Free-Libre-Open Work (FLOW)

"Free/Libre/Open Work" refers to any data, information or knowledge resource created and distributed under free or open source software licensing, under similar licensing for content, or under "public domain" status. The "flow" metaphor emphasizes that intellectual works constitute dynamic "streams" of meaning. This idea is opposed to treating intellectual works as fixed property. In the book *I Seem to Be a Verb* (Fuller

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1970), Buckminster Fuller wrote: “I live on Earth at present, and I don't know what I am. I know that I am not a category. I am not a thing — a noun. I seem to be a verb, an evolutionary process.” Since I first read that as a teenager, Fuller's perception has influenced my sense of static versus dynamic reality. In this paper, FLOW is used in place of FLOSS (Free/Libre Open Source Software).[2]

2. Considerations in Economics, Accounting and Copyright Law

In his Principles of Economics, Alfred Marshall (1920) described "Land", "Labour", "Capital" and "Organization/Knowledge" as the four primary factors of production. Whether landscaped features should be treated as Capital or Land, and whether management strategy is to be considered Labour or Knowledge, will always be debatable, due to different legitimate objectives underlying various accounting or analytical efforts. The boundaries cannot depend solely upon their biophysical characteristics. Marshall also did not clearly distinguish Organization/Knowledge from Capital. But he did observe that: “The distinction between public and private property in knowledge and organization is of greater importance than that between public and private property in material things; and partly for that reason it seems best sometimes to reckon Organization apart as a distinct agent of production.” (Marshall 1920: 114)

A hundred years earlier, on 13 August, 1813, Thomas Jefferson wrote a letter to Isaac McPherson to articulate the practical distinction between public/private property considerations in relation to intellectual versus material things:

> If nature has made any one thing less susceptible than all others of exclusive property, it is the action of the thinking power called

2 It was in the trivial act of creating a filename for this article that typing “Free-Libre-Open” led me to think that all I needed was a good W word to complete what could be a deeply metaphorical acronym. "Works" is the generic term used in law and economics for all sorts of creative output. FLOW is usually perceived first as a verb, and even when it is a noun, such as in "the flow of water", it refers to movement. The result is that the subject of discussion is less likely to be mistaken for a commodity, as in: "Yes, please, I'll have another flow". (Though, if you did say that at the pub, the second one would probably be delivered!) I've never liked FLOSS (Free/Libre Open Source Software), because it is meaningless within the licensing context, and brings to mind the dental hygiene context to anyone outside the jargon circle. Furthermore, FLOSS refers just to software, whereas I find that most of the issues we concern ourselves with in this community are relevant to a wide spectrum of intellectual resources. Already I had reinterpreted FLOSS in the original title of my presentation at the April 2007 workshop, to refer to services instead of software: "Licensing in a Free/Libre Open Source Services (FLOSS) Oriented Architecture: An Experiment in Applied Intellectual Resource Economics in the Canadian Public Sector". As an economist, I have always held the view that a software programmer is a service provider, not a manufacturer.

> an idea, which an individual may exclusively possess as long as he keeps it to himself; but the moment it is divulged, it forces itself into the possession of every one, and the receiver cannot dispossess himself of it. Its peculiar character, too, is that no one possesses the less, because every other possesses the whole of it. He who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me. (Jefferson 1813)

Jefferson's emphasis that the possession of intellectual things can be infinitely concurrent, while the possession of material things is ultimately exclusive (even when held “in common”), is obviously critical to any consideration of licensing and contracting. In this paper, therefore, it will be useful to maintain a distinction between intellectual “Organization / Knowledge” and physical ”Capital”.

The significance of distinguishing between Organization / Knowledge and physical Capital is most evident today in relation to software. In legislation software is considered to constitute a type of “literary work”. Under the Canadian Copyright Act, the term literary work explicitly “includes tables, computer programs, and compilations of literary works”. It further specifies that “computer program” means “a set of instructions or statements, expressed, fixed, embodied or stored in any manner, that is to be used directly or indirectly in a computer in order to bring about a specific result”. The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), which is Annex 1C of the Marrakesh Agreement Establishing the World Trade Organization, Article 10 (1) , similarly states: “Computer programs, whether in source or object code, shall be protected as literary works under the Berne Convention (1971).” Figure 1 illustrates the command Print: “Hello World!” in English, and in five formal dialects of English. Their specialized vocabularies and syntaxes make them more efficiently machine-readable than colloquial English, but also express the functional logic that is semantically understandable to anyone fluent in each dialect.

Figure 1: These are not things.

In 1928-29, Belgian surrealist painter Rene Magritte depicted a pipe on canvas, below which he also painted the words: “Ceci n’est pas une pipe.” (This is not a pipe.) (Magritte 1928-29). His intent was to play with the human propensity to confuse the mere depiction of something, with the thing itself. His paradox is solved with the realization that one is not looking at a pipe, but at a painting of a pipe. As obvious as this may seem here, this type of misunderstanding frequently characterizes current perceptions of works distributed on digital media. The literary works produced by software writers are readable by those fluent in these languages, to enable learning and to inspire derivative works. But because the information that these writers supply is also machine-readable by appropriately configured computers, people often feel that the software and the hardware are similar, unaware of the reasons that Jefferson, Marshall and the Copyright Act emphasize their essential difference.

Consider, for example how many public sector organizations handle licensing and contracting in relation to software. The "Software Commodities Division" in the Acquisitions Branch of the Department of Public Works and Government Service Canada is named in a way, and functions so as to treat federal acquisition of computer “programming code” like acquiring “hard drives”, as one might consider “stories” to be similar to “books”. The methods of commerce applied to trade in licences for units of restricted-access software since the early 1990s have made it seem common sense for procurement professionals to treat software programs in terms of commodity units. But when one thinks of programming code composed under contract, or in-house by one's own employees, or code that is downloaded from external sources under free/libre/open license terms, it quickly becomes apparent that each of these are acquisitions of streams or compilations of information, like reports. Spending for programming code that is prepared under contract is accounted for under “professional services”; and when the code is written in-house, the money shows up as “salaries”. Furthermore, there are no financial transactions to be accounted for at all when code is downloaded under free/libre/open license terms, or when personnel from other organizations volunteer improvements or extensions to software that one's in-house developers created and published under free/libre/open license terms. Yet all of these are genuine “software acquisitions”. On the contrary, payments to vendors for unit licenses are really “rental and support fees” in exchange for the installation or use of that software (which is usually also bundled with financial services fees, and support services fees). These are not acquisitions of software, per se. Indeed it requires heroic conceptual acrobatics to

describe any of the above acquisitions in terms of software commodity units that can or should be capitalized.

In 2001 Statistics Canada joined the statistical agencies of several other countries in compounding the problem, when they began recording all spending on software by businesses and governments, whether in the form of license purchases, custom or own-account development, as capital expenditure for the purpose of National Accounts. In contrast, Professor Charles Mulford and Jack Roberts (2006, cited in Shaw 2006) at the Georgia Institute of Technology recently analyzed how the capitalization of software expenditure causes financial reports to significantly overstate earnings for the fiscal year in which the money is spent, and then through amortization, to cause earnings to be understated in subsequent years. Finding that the majority of software development companies, in fact, do not capitalize software spending, and that amongst firms where it is done, the methods are arbitrary, they recommend that accounting standards bodies should revoke the provisions that permit this practice. They propose that software development costs should be returned to the pre-1980s treatment as research and development, which is expensed. Such a step “would be more closely aligned with the realities of the software industry today”. Michael Tinkler of the Society of Management Accountants of Canada has also commented (Potvin 2004) that whether employee contributions to a software project should show up as operations/maintenance expenditures (e.g. bug fixes), or as research and development investment (e.g. new capabilities), might depend upon the organization's accounting policies, not just the types of contributions. Furthermore, as mentioned above, payments to vendors for unit licenses are rentals (royalties), bundled with fees for financial services fees and support services.

It is typical in many large organizations that spending towards commoditized licenses for restricted-access software constitutes less than half of the organization's total software expenditure, and such licenses do not transfer any ownership of physical assets or intellectual rights to the customer. Accounting and acquisitions policies and practices that perceive this genre of literary work as commodity units rather than as steams or compilations of information, are at best inadequate, and at worst misleading. From a pragmatic point of view, they can restrict an organization's consideration of licensing and contracting options to the confines of a single business model.

The present paper outlines a consistent approach to FLOW licensing and contracting

related to the creation and distribution of any intellectual resources, whether documentation, software or graphics, that aligns with Canadian and international copyright law, with conservative management accounting standards, guidelines, and with long-standing principles of economics.

3. Importance of the Terms and Conditions Related to Intellectual Resource Availability

A “Resource” is any available supply of wealth that may be drawn upon when needed. “Intellectual Resources” are any available supply of data, information or knowledge that may be drawn upon when needed. The terms and conditions of “availability”, especially provisions related to the creation and distribution of derivative and associated works, establish the types of community relationships possible amongst the creators and users of these resources.

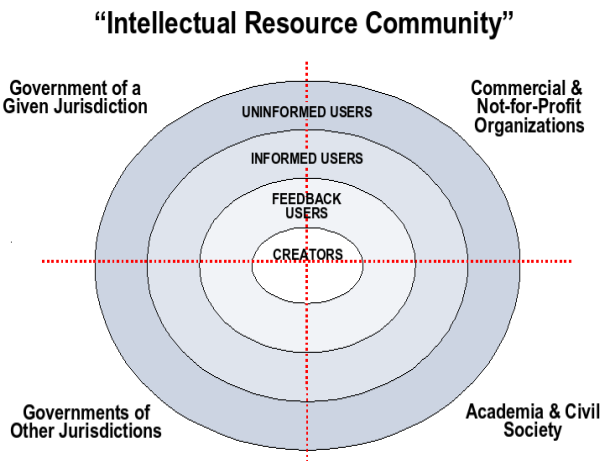

Figure 1, developed in conversation with Mike Lachapelle of Public Works and Government Services Canada, illustrates creators of Intellectual Resources at the centre of a given community. The resource may be used by people who are unaware that they are using it, such as visitors to www.canada.gc.ca who don't realize that the site is delivered from a system running a compilation of more than 200 software community resources distributed as the “Apache Webserver” www.apache.org (The name is derived from an early reference to this compilation of elements, by one of its original creators, as “a patchy webserver”.) Being told this fact, users of the site are introduced into the group of informed users. It's then a small part of this group that offers feedback to the creators of a given intellectual resource like Apache, and by communicating with the creators, they can influence its further evolution.

Formal access rules such as non-disclosure agreements, licenses, and role-based access protocols, as well as informal “us/them” social dichotomies, may restrict participation in an Intellectual Resource Community to a defined group within one of the sector quadrants indicated, such as a single branch of a given organization, or to

identified participants within or across sectors.[3] Business interests in restrictive licensing and contracting of intellectual resources depend upon the ability of rights owners to maintain some degree of exclusive possession of intellectual resources, as if they were physical. In his time, Jefferson was not opposed to limited restrictions on the flow of ideas, but he observed that business interests in such approaches to leveraging intellectual value are generally less effective than their proponents believe:

> "England was, until we copied her, the only country on earth which ever, by a general law, gave a legal right to the exclusive use of an idea. In some other countries it is sometimes done, in a great case, and by a special and personal act, but, generally speaking, other nations have thought that these monopolies produce more embarrassment than advantage to society; and it may be observed that the nations which refuse monopolies of invention, are as fruitful as England in new and useful devices. (Jefferson 1813)

An Intellectual Resource Community under FLOW arrangements declares itself open to participation from any participant from any sector, under an explicit or implicit governance agreement and management process. There are numerous business reasons that creators in various contexts choose FLOW licensing and contracting options. Their reasons can be grouped as augmenting benefits, reducing costs, and managing risk, summarized in Table 1. Some of the terminology in this list reflects its origins relating to software. But most of the elements can be easily interpreted in connection with other intellectual resource types.

A theme that is evident from this summary of business interests in FLOW arrangements for intellectual resource availability is that the scope of feedback influences the depth of learning. Almost half a century ago, Jay Forrester (1959; 1962) observed that the basic structural element of an organization (or for our context, a community) is the "information-feedback loop". He believed that it is really the set of interacting feedback loops that comprise the underlying structure of a system. More recently, Chris Argyris (1999) described learning that takes for granted certain goals, values, frameworks as "single-loop learning". Since participants in open communities are more often challenged to reconsider their goals, strategies and assumptions, these influences lead to what Argyris called "double-loop learning", by which he means they learn how to learn more effectively.

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3 An example across sectors would be a public sector study, or software project team, the design of which is exclusive to staff and selected external commercial contractors, even if it invites public feedback on the results.

Table 1: Business interests in FLOW licensing and contracting.

Augment Benefits

- Knowledge-sharing & innovation through agile private-public-academic collaboration
  - International
  - Cross-sector/Cross-departmental
  - Cross-industry
- Leverage of intellectual assets that have been already been paid for
- Leverage of the most competitive approaches
- Better in-house & independent security, management and financial control
- Diversify and decentralize
  - Customization for niche requirements
  - Opportunities for participation of small and medium enterprise outside major cities
- Engage internal and external expertise
  - Designers/architects/planners
  - Quality assurance community
  - Implementation community

Reduce Costs

- Cost management
  - Configuration flexibility
  - Migration flexibility (no forced obsolescence)
  - Reuse components (own & others')
  - Externalize certain costs
  - Simplify license management
- Reduce start-up & delivery times
- Engage international standards by default
- More elegant modular architecture
- More agile systems development

Manage Risk

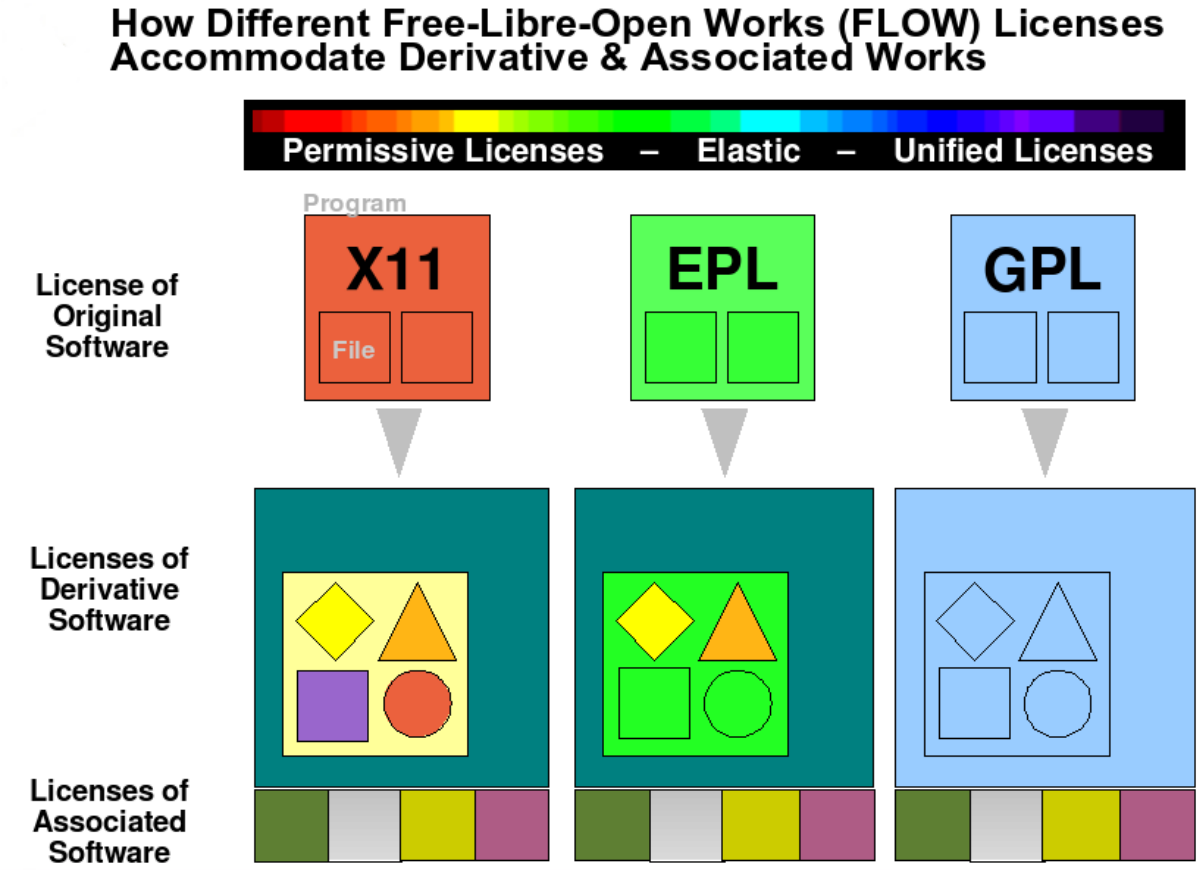
- Provide/obtain independent security assurance
- Distribute risk amongst multiple investors
- Protect the "knowledge commons"
- Sustainability (outlast team/organization)
- Learn from peer review feedback
  - Praise and/or criticism
  - Confirmation/rejection of assumptions
- Employee retention & succession management

FLOW terms and conditions of supply around data, information or knowledge, and the associated provisions for derivative and associated works, are expressly designed to foster the most diverse set of interacting feedback loops possible. If Forrester and Argyris are correct, participants in FLOW communities can be expected to experience more opportunities to learn, and to learn more deeply, than in those operating under restrictive arrangements.

4. A Spectrum of FLOW License Types

The key to understanding the differences amongst alternative FLOW licenses is to consider how they accommodate derivative and associated works. Figure 2 is an original way to illustrate this essential factor in relation to the three basic types of software licences used by FLOW communities. The large red, green and blue squares at the top represent software “programs”, and the small internal squares represent

component “files” that constitute the functional elements of those programs. As before, the terminology here is related to software, because that is the most advance area of FLOW licensing, offering the clearest examples. The essential concepts can be leveraged for many other types of works also.



For software, the most popular “unified license” is the GNU General Public License (GPL) http://www.gnu.org/copyleft/gpl.html. Under its terms, anyone is free to change elements of the work, represented here as a square that is modified to be a circle; to add new elements into it, seen as the addition of the diamond and the triangle; and, to “wrap” other software around it, on the condition that the entire resulting program is distributed under the same GPL license, shown in blue. The business intent of such a license is to ensure that terms and conditions for users, contributors and distributors remain simple and consistent for the whole resource, hence the term “unified”. It also establishes a prohibition against distribution of elements or derivatives other than via the unified license. This protects the interests of the original software creators in open competition that depends upon derivatives of their creative work. This license does

accommodate the distribution of other intellectual resources under any license type, in association with the program under the unified license, represented by the multicoloured squares along the bottom, so long as all derivatives and extensions of their original work are under the one license.

At the other end of this FLOW licensing spectrum are the co-called X11 options, best represented by the MIT http://www.opensource.org/licenses/mit-license.php and "new" BSD http://www.opensource.org/licenses/bsd-license.php. This "permissive" class of licences leaves anyone the right to maintain or change elements of the original work, to add new elements, and to "wrap" other software around it, under any licences at all. The business intent of X11 licenses is simply to propagate a technical solution. For this reason it is particularly suited to reference implementations of international standards, because the business goals of these resource creators are met even when others re-license the solution under restrictive royalty-based terms and conditions.

A hybrid approach is referred to here as "elastic" licensing of intellectual resources, best represented by the Eclipse Public License, or EPL www.eclipse.org/legal/epl-v10.html. The GPL-styled share-alike requirements of unified licensing apply to component files and their derivatives and extensions, but X11-style of laissez-faire permissive licensing applies to the whole functional program. Under this scenario, anyone may change discrete elements of the work, shown here as a square that is modified to be a circle, on the condition that the derivative element is re-distributed under the original EPL license, shown in light green. Anyone may also add new elements, and "wrap" other software around the entire set, under any licences at all. The business intent of this type of license is to ensure that terms and conditions for users, contributors and distributors of individual components and their derivatives remains consistent, but that anyone can create derivative programs by adding different features and functions under any license at all, including restrictive royalty-based terms and conditions. The elastic license fosters more complex, composite licensing scenarios for complete programs than either the unified or permissive scenarios:

- The unified GPL requires application of the original single license to the whole program;
- The permissive X11 permits the option of applying any other single license to all adopted components that are licensed under it;
- The elastic EPL restricts licensing to some parts, but not all.

5. The FLOW.through.1 Model for Licensing and Contracting by an Intellectual Resource Community

5.1 A Naming Convention for Licensing and Contracting Models

Earlier it was mentioned that the terms and conditions of “availability” of intellectual resources, especially provisions related to the creation and distribution of derivative and associated works, establish the types of community relationships possible amongst their creators and users. FLOW licenses provide rules governing the availability and distribution of completed, derivative and associated works from an Intellectual Resource Community. But these licenses are not designed to address, and do not imply any assumptions about, the original intellectual rights of creators, whether individuals or organizations, as autonomous original contributors of data, information and knowledge to the community.

Walter Pitkin of Columbia University observed that "there are a few right ways of doing anything (some say there is only one, but that is not true); and there are a million easy ways of doing each thing wrongly" (Pitkin 1935: 16). There are several potential “right' ways for an Intellectual Resource Community as a whole, and its contributors and distributors individually, to complement FLOW licensing with contractual foundations for intellectual rights in original contributions, as well as for ongoing rights and license management. But at present there is no easy way to name alternative approaches to contracting and licensing.

A three-part generic naming convention is suggested here for comprehensive models that combine sets of licensing and contracting choices. The first part is the FLOW acronym, which refers to any stream of data, information or knowledge that is created and distributed under free or open source software licensing, under similar licensing for content, or under “public domain” status. The second part is any word in lowercase to distinguish each model, the preference being to select words that extend or qualify the metaphor. The third part appends conventional version numbering to the model's name, so that incremental improvements can be easily signalled. A particular model described below is named: “FLOW.through.1”. A similar naming convention can be used to distinguish FLOW from exclusive models. For example the label RENT (”Restrictive / Exclusive / Negotiated Title”) emphasizes the terms of compensation, and can be used

in the following form: “RENT.thought.1”.

The FLOW.through.1 model outlined in this paper borrows ideas from four sources. Its treatment of primary intellectual rights ownership is derived from the Canadian Government's “Policy on Title to Intellectual Property Arising Under Crown Procurement”, specifically Annex A, Part 1: “Contractor Owns” (Treasury Board Secretariat 2000). Provisions for community copyright management are adapted from the OpenOffice.org “Joint Copyright Assignment” (Sun Microsystems n.d.). Risk management relating to potential and perceived liability builds upon the rationale presented by the Canadian Institute of Chartered Accountants regarding the application of joint and several liability to professional defendants, and incorporated into subsequent recommendations by the Canadian Senate Standing Senate Committee on Banking, Trade and Commerce (Senate of Canada 1997; 1998). The synthesis of all these elements into an approach for FLOW licensing and contracting that maintains an attractive incentive structure for voluntary knowledge-sharing and inter-organizational learning, is the outcome of many conversations with private, public and academic participants in the GOSLING Community (www.goslingcommunity.org).[4]

5.2 FLOW.through.1 and the Intellectual Rights of Individual Contributors

The FLOW.through.1 model vests authors' rights to original work with the contributor most directly associated with authorship, whether the author's legal status is as contractor, sub-contractor, organization, employee(s) or individual(s). When an author is sub-contracted through another firm, such as a professional services broker that holds a standing offer with a paying client, the brokering firm and the paying client will need to waive all intellectual rights claims to the creative work contributed, in favour of the author.[5] When the author is an employee, the employer should consider sharing intellectual rights claims to the through an agreement similar to the joint rights assignment described in section 5.3 below.

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4 GOSLING (Getting Open Source Logic INto Governments) is a voluntary, informal learning and knowledge-sharing community of practice, involving civil servants and other citizens who actively assist the engagement of free/libre/open methods and software solutions in government operations. Participation in GOSLING involves individuals in their personal capacities, such that activities are driven by the research, interests and views of the members, which may or may not reflect the official stances of the organizations in which they may work.

5 All brokering firms I have approached with this FLOW.1 model have agreed to sign such a waiver, or were able to demonstrate that they were making no intellectual rights claims in the work of their contractors.

Under both international agreements and national legislation, authors of creative works hold moral rights of integrity, association, and attribution. They also hold author rights to issue licenses and to assert controls on copying and distribution of the work (i.e. copyright). How these rights are understood varies from country to country.

The FLOW.through.1 model for licensing and contracting has each author participating in the Intellectual Resource Community sign an attestation upon first seeking to join the ranks of contributor. It states that any work to be contributed shall be either:

- Directly authored by himself or herself, such that he/she holds moral rights of integrity, association, and attribution for the contributions, and also holds author rights to issue licenses and to assert controls on copying and distribution of these contributions (copyright). The FLOW.1 model then has each author sign a waiver of his/her moral rights of integrity of the work, thereby authorizing anyone else to make derivative works, and a waiver of his/her moral rights of association, which authorizes anyone else to combine or distribute the contributed work in relation to any product, service, cause or institution. However each author retains moral right of attribution to the original contributed form of the work (right to claim authorship; to remain anonymous; to use a pseudonym).

- Third party data, information or knowledge, accompanied by identification of sources, and documentation of permissions from those who hold moral rights and authors rights, which may be in the form of licenses. The FLOW.through.1 model has each contributor sign a statement that any such work will be only be contributed if it is known to be under permissions and licenses that are compatible with the licensing regime use by this community. The statement also commits the contributor to respect all requirements of third party permissions and licenses, and which must provide the community clear rights or authorizations to modify and distribute under its own community licensing regime. The contributor is obliged to identify in writing of any issues or uncertainties regarding appropriate use or distribution. The statement also requires that the terms and conditions of externally acquired supporting resources employed needed to work with, implement or operate the community resource, shall be read and respected by the contributor.

5.3 FLOW.through.1 Intellectual Rights Contract Provisions to Enable Community-Level License Management

It is essential that an Intellectual Resource Community be able to exercise management authority over licensing and distribution of its resources, under whatever governance structure it happens to engage. The approach to licensing described in section 5.5 below requires that the governing entity of the community obtain unrestricted, independent, joint authors' rights over all contributions taken together, without limiting the intellectual rights of individual contributors. Otherwise, at some future date, the Community could find it entirely impractical to implement even the most minor and obvious adjustments to the licensing of the combined works. If authors rights vest only with each individual contributor, then any change in any license clause covering the whole would have to be approved by each and every contributor. Some of the contributors may be impossible to reach, indeed some may only be represented by their estates. Companies that held rights might have been absorbed by other firms, or they may no longer exist. This is the bind that the Linux kernel community got itself into during the past 15 years. Since most kernel contributors have always retained exclusive individual rights in their contributions, negotiation related to changing from version 2 to version 3 of the GNU General Public License was significantly complicated beyond any substantive differences of opinion. Certainly, some kernel contributors who did not agree with elements of the version 3 license viewed this limitation as beneficial. But even if there had been consensus amongst all the authors who had ever contributed to the Linux kernel, it would have remained entirely impractical to obtain the community's full legal expression of consent to change the license.

The present FLOW.through.1 model is suitable for any Intellectual Resource Community whose participants would vest authority with its governing entity to manage licensing of the whole, yet want to leave intact the intellectual rights of individual contributors. Before any original contribution can be accepted as part of the combined resource, the owner of the authors' rights is required to assign “unrestricted, independent, joint” authors rights (copyright) to the governing entity. That means both the author and the governing entity will hold full, autonomous rights to distribute, license and sub-license the contribution, and while the original author will always be attributed (within the limited provisions of the license), both may independently register a copyright in the contribution in any jurisdiction. But by this means, the governing entity is granted

by all contributors, unrestricted and independent derivative and distribution rights in the synthesized whole, or any part, including the right to make these available under any license, for a fee or otherwise, to re-license and/or sub-license and/or multiple-license, without seeking any additional authorizations from any contributors.

5.4 The FLOW.through.1 Community Risk Management Strategy

The FLOW.through.1 model explicitly does not encompass the supply of financial services (such as warranties, insurance and indemnifications) to any part of the community, directly, indirectly or by implication. However some observers of free-libre-open activities have raised the question of whether an Intellectual Resource Community could be considered a legal partnership, in which case it would be subject to rules about joint and several liability so that all contributors and distributor could be considered liable for the actions of each contributor and distributor individually. Although the contributors, distributors and other participants in such a community typically do not intend to establish a legal partnership, some argue that a legal partnership could potentially be deemed to be created, particularly in cases where a community may be managing a fund, maintaining a well-defined Internet presence, sharing management responsibilities for copyrighted works, and perhaps even referring to itself as a "partnership" in the colloquial sense. These analysts point to numerous cases related to physical property in which courts have found the existence of partnerships, contrary to the intent of the participants, even in cases where signed agreements expressly declared that no partnership was created. They are concerned that a court can still examine the facts of a relationship, and declare it to be a legal partnership. If so, then the model might well need to include certain financial services.

In 1996, representatives of the Canadian Institute of Chartered Accountants (CICA) appeared before the Standing Senate Committee on Banking, Trade and Commerce to explain that auditors were facing just this sort of liability crisis, which they blamed on the application of joint and several liability to professional organizations. The Senate Committee went further and “expressed the view that the issue of joint and several liability ... affects all professional defendants, not just auditors”, and agreed to hold hearings on the subject later the same year. Its "Interim Report: Joint and Several Liability and Professional Defendants" (1996) identified Limited Liability Partnerships (LLP) as a practical solution, because they would “allow firms to retain their partnership structure while protecting the personal assets of partners who have no involvement in a

negligence action. The firm is liable for the acts committed by its members in the ordinary course of the firm's business, but individual members, while continuing to maintain responsibility for their own acts and for those over which they have a direct supervisory role or knowledge, will not be liable for each other's acts." With further input from the Canadian Bar Association (CBA) and the CICA, the Committee issued the "Fourteenth Report: Modified Proportionate Liability" in September 1998, recommending a limited liability regime for all types of professionals, to replace joint and several liability. Specifically it recommended:

- A form of modified proportionate liability should replace joint and several liability for claims for financial loss arising by reason of an error, omission, statement or misstatement;
- Joint and several liability should continue to apply to claims made against a defendant who knowingly or intentionally engaged in fraudulent or dishonest conduct;
- The modified proportionate liability regime should distinguish between sophisticated and unsophisticated plaintiffs.(Senate of Canada 1997; 1998).

Subsequently, Canadian provinces updated their legislation to recognize LLPs, but some jurisdictions (such as Ontario) declined to accommodate the Senate Committee's expressed concern that joint and several liability was inappropriate to professional membership organizations of all types of disciplines. Instead they restricted LLP protections only to chartered accountants, certified general accountants and lawyers, presumably because of the leading roles that the CICA and the CBA played in the Committee's consultations.

To address potential scenarios in which a court examining the facts of an Intellectual Resource Community, may deem a legal partnership to exist, the FLOW.through.1 model includes an explicit conditional declaration by each contributor and distributor to the effect that if the relationship would be considered a partnership of some form, then the participants consider that it would exist as a Limited Liability Partnership within the jurisdiction of the governing entity of the community, and in every other jurisdiction, as an Extra-Territorial Limited Liability Partnership. Clearly, such an interpretation is not supported in current provincial legislation, however the declaration stands as a statement of intent by the community to challenge the restriction of LLP protections according to field of endeavour, if necessary, in light of the Senate Committee's expressed view that joint and several liability presented a problem relevant to all types

of professional defendants, not just auditors. Obviously, further analysis on this question is required.

While some lawyers have expressed concern that there is very little case law to review in relation to disputes over work covered by free-libre-open licenses, this is because almost all such disputes are settled through negotiation, not litigation. In general, the conflict management environment around FLOW licensing and contracting tends to differ qualitatively from scenarios driven by exclusive rights and restrictive licensing. Most available case law stems from incidents at that dangerous intersection on the corner of Exclusive-Restrictive Road, and Free-Libre-Open Street, rather than along Free-Libre-Open Street per se.

5.5 FLOW.through.1 Community-Level License Management

The intellectual rights contracts described above are intended to enable effective community-level license management under a diversity of FLOW licensing scenarios. Since moral rights of integrity and association are waived, and the governing entity is granted unrestricted and independent authors' rights to the community resources, the Intellectual Resource Community is at liberty, by whatever governance process it has adopted, to make the synthesized resources available in whole or in part, for any purpose and under any license, without seeking additional authorizations from any or all of the contributors. This provides a basis for genuine community-level license management that is not fettered by the inevitable plurality of views on any future licensing issue.

Under the FLOW.through.1 model, both the individual contributor and the community's governing entity have their own licensing decisions to make, since both autonomously hold author's rights.

The FLOW concept in general is not congruent with any licenses that place conditions on field-of-endeavour, such as the Creative Commons Attribution Non-Commercial License. A No-Royalties License would be within the scope of FLOW models, because it would address terms of compensation, and remain useable by any type of organization. However the Creative Commons family of standardized licenses does not include a No-Royalties option.

Under the FLOW.through.1 model, the governing entity of an Intellectual Resource Community uses licenses for resources under management by the community that are optimized to attract back, under unified business terms and conditions, the improved, derivative and/or combined works that anyone may create for distribution. That's to say, a governing entity using this model would select from amongst the major Unified licenses:

FLOW.through.1 Community Licenses

Software

- GNU General Public License (GPL) Version 3
- GNU Affero License (New adaptation of the GNU GPL, for software run on a network. This license is not yet "widely used".)

Content

- GNU Free Documentation License Version 1.2
- Creative Commons Attribution Share-Alike License Version 3.0.[6]

Having said this, however, the governing entity of an Intellectual Resource Community under the FLOW.through.1 model does not impose any pre-conceived license choices on contributors. Each contributor, having retained full authors' rights in their own creative work, can use, modify and distribute their work, in whole or in part, through any channel, for any purpose, under any license at all. They are not required to attach their own license to these contributions, since the governing entity of the Intellectual Resource Community will apply the appropriate unified license(s). But contributors, including those internal to the governing entity, may apply any license that could be distinct from the community license. This may appear contradictory or redundant. But there are often good reasons for using different licenses for different contexts, and the FLOW.through.1 model maintains each contributor's right to do so. (This is further explained, with an example, in section 6 below.) In the interest of license standardization and compatibility, the FLOW.through.1 model suggests, but does not require, that contributors choose from amongst any of the licenses that are widely used (Open Source Initiative 2006), and that are also compatible with the most widely used

6 Work that is both programming code and descriptive text or architecture graphics, such as descriptive comments in the source code that are not executable, as well as source-code samples that are used in textual documentation, can be distributed dual-licensed, for example, under the FDL and the GPL.

unified licenses (Free Software Foundation 2007a; Wheeler 2007; Wikipedia 2007):

FLOW.through.1 Contribution Licenses (Recommended Only)

Software

- Apache License, 2.0
- “New” (“Modified”; “3-Clause”) BSD license
- GNU General Public License (GPL)
- GNU Library or "Lesser" General Public License (LGPL)
- GNU Affero License
- X11 (MIT) license
- Public Domain (if not licensed)

Content

- Creative Commons Attribution Share Alike License (CC-by-sa)
- Creative Commons Attribution License (CC-by)
- GNU Free Documentation License
- Public Domain (if not licensed)

The right of each contributor to license their own creative work does not extend to the combined or derivative works involving contributions of other rights holders in the community. Nevertheless, any subset of contributors under FLOW.through.1 are at liberty to establish separate written agreements amongst themselves, to distribute their synthesized or collective works in any way they please.

6. The ITERation Project: Implementing the FLOW.through.1 Model

Elements of the FLOW.through.1 model were researched and arranged through 2006 and 2007 as the basis for community development of the ITERation Project (IT for Expenditure Reporting Automation). This project is an experimental “proof-of-concept” initiative led by the Canadian Government (Treasury Board of Canada Secretariat 2006)[7] to automate and simplify expenditure data assembly, mapping, and issue management from across multiple non-confidential authoritative sources, and to support

7 Treasury Board Secretariat provides advice and support to Treasury Board Ministers in their role of ensuring value for money, and provides oversight of the financial management functions in departments and agencies. The Secretariat makes recommendations and provides advice to the Treasury Board on policies, directives, regulations and program expenditure proposals with respect to the management of the government's resources.

repeatable trend analysis and reporting according to user-defined profiles. The Government's 2007 “Federal Accountability Action Plan” (Treasury Board Secretariat 2007) refers to Part III of the International Monetary Fund's “Code of Good Practices on Fiscal Transparency”, entitled “Public Availability of Information”, which states: “Making fiscal information available to the public is a defining characteristic of fiscal transparency. Principles and practices in this regard concern the provision of comprehensive information on fiscal activity and government objectives and the presentation of such information in a way that facilitates policy analysis and promotes accountability. A cornerstone for ensuring the timely and uniform availability of fiscal information is that it can be readily accessed free of charge on the internet.” (International Monetary Fund 2007: 177-178) ITERation is therefore an experiment in information management according to the principles of “Open Services Oriented Architecture” (KAPLAN 2005), which requires a process for “integrating structured and unstructured information sources so that they can be dealt with as if they were a single source” (SELVAGE 2005). The ITERation Project involves:

1. The ITERation Reference Implementation.[8] This is a generic structured data warehouse that includes data documentation control, business rules management, multi-source data mapping, data issue management, data cleansing, and formal revision control workflow, together with a web application that includes automated statistical analysis and visualization functions, and a portfolio system also supported with issue management and revision control for user-generated content and system software. The functional scope of the ITERation Reference Implementation is described in Fig. 2.

2. The ITERation Web Service. This is a functioning instance of the Reference Implementation, at its ongoing state of development, populated with data that is formally cleared for unencumbered public use.[9]

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8 The modules that comprise the Reference Implementation are architected to be substitutable with solutions from alternative suppliers. ITERation Version 1.0 operates on the following externally acquired software:

- PostgreSQL database, distributed by the PostgreSQL Global Development Group www.postgresql.org under the BSD License www.opensource.org/licenses/bsd-.php
- R and R-Project statistics and graphing environment, distributed by the R Foundation www.r-project.org under the GNU General Public License www.gnu.org/copyleft/gpl.html
- PHP web application environment, distributed by the PHP Group www.php.net under the PHP License www.opensource.org/licenses/php

9 In his report “Database Protection and Canadian Laws” (2nd Ed) for the Department of Canadian

The project is intended to help multiple organizations share a common approach to:

- Simplify and accelerate data assembly, management, statistical analysis and reporting;
- Automate quarterly and annual trend reporting to precise requirements, based on re-usable analytical elements;
- Ensure 100% auditability of all elements, functions, files and data sources;
- Support user-customizable queries, data sources, adjustments, charts, etc.;
- Provide analysts a simple secure web interface for analysis and reporting, with role-based access;
- Ensure flexibility, adaptability to change, and extensibility to other purposes;
- Assist conformance with policy, legislation and standards.

The ITERation Project is not the first FLOW project initiated by the Canadian Government, however it is first FLOW project led from within TBS. It therefore has a demonstrative role as an experimental or "proof-of-concept" implementation of free-libre-open contracting and licensing by the Canadian federal public sector.

In the present author's role as a public servant, it appeared attractive that the X11 and CC-by v3 licenses provide a basis for offering unrestricted access to non-confidential intellectual resources that have been paid for by individual and business taxpayers across Canada.

From the present author's complementary perspective as the initial proponent and manager of the ITERation Project, however, the GNU-GPL, GNU-FDL, Affero-GPL and CC-by-sa licenses together afforded a well-understood incentive structure for attracting back to the project improved, derivative and combined works.

Therefore. FLOW.through.1 licensing was arranged to accommodate both the “project manager's” and the “public servant's” priorities. This hybrid model evolved through discussions with numerous people inside and outside the public sector. In the particular case of contributions to the ITERation Project authored by employees of the governance entity, Treasury Board Secretariat, this creative work is licensed “prior to” contribution to the project under the X-11 or CC-by3 licenses, which enable

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Heritage, Robert Howell asks: "Should some data, such as non-confidential information held by governments or public authorities, be declared public domain data or information?" (Howell 2002).

unencumbered public access to these resources on terms as close to “public domain” as Canadian law provides. Once any contributions are “in” the ITERation Project, they are at that point sub-licensed by Treasury Board Secretariat, in its distinct capacity as the project's governing entity, under the GNU-GPL v3, Affero-GPL v3, GNU-FDL v1.2, or CC-by-sa v3 licenses. Putting these unified licenses at the centre of the resource community leaves contributors the widest spectrum of options for their own work, and also, the most recent GPL licenses provide protections from software patent litigation risk (Free Software Foundation 2007).

At the time of writing, the ITERation Project has not yet formally “published” version 1.0 of the ITERation Reference Implementation, and the proof-of-concept web service instance is running only on an internal development server. However the ITERation Project community during 2006 and 2007 has included public servants, paid consultants, and volunteers. Throughout this time, all FLOW.through.1 arrangements described in this paper have been implemented in the project's licensing and contracting. For example, the moral rights and author's rights provisions were included in the statements of work attached to consulting contracts, and in an attached agreement.

Reference List

ARGYRIS, Chris.1999. On Organizational Learning, 2nd Ed. Oxford: Blackwell.

FORRESTER, Jay W. 1959. "Industrial Dynamics—A Major Breakthrough for Decision Makers," Harvard Business Review, March-April. p. 100.

FORRESTER, Jay W. 1962. Industrial Dynamics. Cambridge: M.I.T. Press.

FREE SOFTWARE FOUNDATION. 2007a. Various Licenses and Comments About Them. http://www.gnu.org/licenses/license-list.html#GPLCompatibleLicenses

FREE SOFTWARE FOUNDATION. 2007b. FSF releases the GNU General Public License, version 3. http://www.fsf.org/news/gplv3_launched

HOWELL, Robert G. 2002. Database Protection and Canadian Laws (2nd Ed – State of Law as of March 31, 2002). Prepared for the Department of Canadian Heritage. http://www.pch.gc.ca/progs/ac-ca/pubs/ic-ci/pubs/fulveren.pdf and http://www.pch.gc.ca/progs/ac-ca/progs/pda-cpb/pubs/database/toc_e.cfm

INTERNATIONAL MONETARY FUND. 2007. Code of Good Practices on Fiscal Transparency. http://www.imf.org/external/np/fad/trans/index.htm

JEFFERSON, Thomas. 1813. Letter to Isaac McPherson. In: KURLAND, Philip and Ralph LERNER. 1986. The Founders' Constitution. Article 1, Section 8, Clause 8, Document 12. 13 Aug. 1813 Writings 13:333--35. University of Chicago Press and the Liberty Fund. http://press-pubs.uchicago.edu/founders/documents/a1_8_8s12.html

KAPLAN, Jeff. 2005. Roadmap for Open ICT Ecosystems. Berkman Center for Internet and Society, Harvard Law School. http://cyber.law.harvard.edu/epolicy/

MAGRITTE, Rene. La trahison des images. Oil on canvas. Los Angeles County Museum of Art.

MARSHALL, A. 1920 [1979]. Principles of Economics, Eighth Edition. London: Macmillan.

MULFORD, Charles & J. Roberts, et.al. 2006. Capitalization of Software Development

Costs: A Survey of Accounting Practices in the Software Industry. College of Management, Georgia Institute of Technology, Atlanta, GA 30332-0520 http://smartech.gatech.edu/handle/1853/15598

OPEN SOURCE INITIATIVE. 2006. Report of License Proliferation Committee and draft FAQ. 31 July 2006. http://www.opensource.org/proliferation-report

PITKIN, Walter. 1935. A Short Introduction to the History of Human Stupidity. London: Allen & Unwin.

POTVIN, Joseph. 2004. The business of sharing: Accounting for open source. CMA Management. Thomson Gale Publishers. Vol 78, No 6. pp 20-23. http://www.managementmag.com/index.cfm/ci_id/2214/la_id/1

SELVAGE, M., D. Wolfson & J.Handy-Bosma. 2005. "Information Management in Service-Oriented Architecture". IBM. http://www-128.ibm.com/developerworks/webservices/library/ws-soa-ims/ http://www-128.ibm.com/developerworks/webservices/library/ws-soa-ims2/

SHAW, Helen. 2006. "Software Capitalization Clouds Comparisons" CFO Magazine. 26 May, 2006. http://www.cfo.com/article.cfm/6994798

SUN MICROSYSTEMS. n.d. "OpenOffice.org Open Source Project Joint Copyright Assignment by Contributor To Sun Microsystems, Inc. ("Sun")." www.openoffice.org/licenses/jca.pdf

TREASURY BOARD OF CANADA SECRETARIAT. 2000. Policy on Title to Intellectual Property Arising Under Crown Procurement (Annex A, Part 1: Contractor Owns). Government of Canada. http://www.tbs-sct.gc.ca/Pubs_pol/dcgpubs/Contracting/tipaucpca_e.asp

TREASURY BOARD OF CANADA SECRETARIAT. 2006. Government of Canada Service Oriented Architecture Strategy: Statement of Direction. http://www.tbs-sct.gc.ca/cio-dpi/webapps/architecture/sd-eo/sd-eo03_e.asp

TREASURY BOARD OF CANADA SECRETARIAT. 2007. “Federal Accountability Action Plan”. www.faa-lfi.gc.ca/docs/ap-pa/ap-pa06_e.asp

WHEELER, David, 2007. The Free-Libre / Open Source Software (FLOSS) License Slide. September 27, 2007. www.dwheeler.com/essays/floss-license-slide.odt

WIKIPEDIA. 2007. List of FSF approved software licences. http://en.wikipedia.org/wiki/List_of_FSF_approved_software_licenses