Software Management in HEP Research Organisation’s Research Management in HEP Software
1 IP Rights in Software

Copyright, Patentable Inventions, Know-How

Mucky software, who owns the rights

2 Business Models

License to a Spinout
Collaborative/Cooperative Models
OSS, Academic, Industry
Licensing Scenarios

3 Management Day to Day

Policies
Forms
IP Database
Resolutions - Logs

OS Champion & Training Resources

Champion & Training, Resources, Agenda
Software Rich Organisations

- Simulation toolkits
  - Geant4 (a toolkit for the simulation of the passage of particles through matter)

- Control systems
  - EPICS (Experimental Physics and Industrial Control System)

- Firmware

- Material & Mathematical Libraries

- AI and Machine Learning codes for beamline management

- Research Consortia codes

- Firmware

- Research Consortia codes

- Material & Mathematical Libraries
IP Rights in Software

Who owns the Rights

Copyright, Patentable Inventions, Know-How
What IPR is appropriate

Legal right

Know How

Organisation

Valuable Information to the

Copyright

Know How

Knowledge, Skills

Copyright

Original creative or artistic

Existed automatically/

Application and examination

Registration

Content

Patents

New Technical Inventions

What for?

How?

What IPR is appropriate
Writing code that provides same functionality from scratch are not infringing act.

Distribution of Software requires a license, academic, commercial or OSS.

Making copies without a license, distributing, etc. are infringing acts.

Copyright & Software

The original creator/owner maintains rights over direct translations, such as writing code into another language.

The written code is protected **NOT** its functionality.
Copyright - Ownership

- Employment contracts are not your employees.
- Assignment of rights through a contract
- Commissioners does NOT own commissioned works
- Students are not employees
- Collaborations - Joint ownership can arise through joint authorships
- Contractors.

Employment contracts IP section.

- Does the employer own employees' works
- Dependent on National Legislation

Copyright
Best Intentions

Mucky Software

- Highly collaborative organisations
- Due diligence to determine ownership - it can be complex to build a clear picture of ownership
- Can we commercialise the messiest multi-party owned assets
Inventions Must Be:

- Novel
- Inventive step
- Covers the technical function
- Does the organisation own the rights of the inventor
- Inventors those who came up with the novelty
- Controversial to patent or astute
- Commercial Tool
- Conflicts between patents and copyright
- Commercial Tool and Copyright
Tangible Knowledge
- Processes, methods that have been recorded,
  Workflows, algorithms, simulations, models.

Intangible Know-How
- Expertise, skills,

Know-How
Business Models

Licensing Scenarios

• OSS, Academic, Industry
• Collaborative/Cooperative Models

Licensing to a Spinout
Different Licensing Scenarios

- License to Spin-out to develop the software
- Academic License, Contributory License - automate if possible
- Commercial License
- OSS License - requires promotion and governance

License to Spin-out to develop the software
- Set up matrix of fixed term royalties, per seat, per site
- Is it economically viable? (DL-Poly a molecular simulation package)
- Evaluation License
- Software is usually in an alpha state

HSL
Open Source Software Licenses

Copyright Statements in different languages

Permissive License
- Simple non-litigious, commercially friendly

Copyleft License
- Complicated, ambiguous, viral

Permissive License
- BSD, MIT, Apache, Mozilla

GPL
- GPL1, GPL2, GPL3, LGPL

Open Source Licenses

Software Development and Distribution

Open Source Software Licenses
Open Source Champions

Individuals in the organisation knowledgeable in OSS

Resources
- OSS Policy
- Forms
- ASTP Digital SIG
- OSS Watch
- Training
Cooperative Models

Mixed ownership partners agree to reinvest royalties to project CCP4 Software for Macromolecular X-Ray Crystallography—user interface that interfaces with partner codes, manages different languages, licenses (OSS) and industrial licenses to big pharma of the user interface.

Academic contributory licenses flow back rights to proprietary code.

Income redistributed to the project.

CCPEM to Follow
Automation of Academic licenses, first step.

CASTEP

A full-featured materials simulation package based on a quantum mechanical description of electrons and nuclei.

We will trial a standard HSL commercial license next. Around 100 per month.

504 orders since we went live in March 21 –

CASTEP A full-featured materials simulation package based on a quantum mechanical desciption of electrons and nuclei.

Then our DL Academic and commercial licenses.
Licencing to Spin-out

- Software is usually in an alpha state.
- Raise investment to develop the code.
- Require evidence of providence.
- Patent?
- In a position to supply software support.
- Given the amount of Software in our organisations is a specific policy required to enable Spin-outs as a route to market.

Licencing to Spin-out
Atheras Analytics Ltd has developed a suite of software tools for managing satellite ground station Ka and Q/V-band communications links. The platform can enhance de novo formulation design by reducing time to market through:

- Providing easy access to sophisticated modeling, simulation, and data tools in a language familiar to formulation scientists rather than computer scientists.
- Automating the deployment of these tools onto the cloud, alleviating the need for formulation scientists to acquire specialist skills in this domain.

Mitigating against significant atmospheric impairments, primarily from rain, which can lead to significant service outages and operational challenges that have not been faced before.

The vast number of gateways and switching required to deliver these services presents design and operational challenges that have not been faced before.

The platform can directly enhance de novo formulation design and thereby reduce time to market by:

- Providing easy access to sophisticated tools in a language familiar to formulation scientists rather than computer scientists.
- Automating the deployment of these tools onto the cloud, alleviating the need for formulation scientists to acquire specialist skills in this domain.
FORMERIC – Virtual Formulation Made Easy

FORMERIC is making HPC simulation an essential component for chemists.

- Enabling the digital design of formulated products
- Reducing cost and time for new product development
- Enhancing product insights
- Integrated and secure in the cloud
- Provides world-leading algorithms on a cloud hosted HPC platform in an easy-to-use pay as you go simulation service

For more information, visit www.formeric.com
Next generation high throughput satellite data services require:

- the use of much higher frequencies (Ka and Q/V bands);
- a much larger number of gateways – tens or hundreds
- a. the use of much higher frequencies (Ka and Q/V bands);
- b. a much larger number of gateways – tens or hundreds
- High frequencies are much more sensitive to rain – which leads to service outages

Networks of tens or hundreds of gateways present design and operational challenges that have not been faced before.
Use of measured weather attenuation data and proprietary attenuation data to design and operate networks of satellite gateways.

Data applied to proprietary models and algorithms to design and operate networks of satellite gateways.

Atheras Analytics is developing a suite of two software tools:

- the **SGD Design Tool** that will enable satellite operators to optimise the design of their next-generation, multi-gateway satellite networks to provide the most cost-effective design; and,
- the **SGD Operational Tool** that will enable satellite operators to optimise the design of their next-generation satellite gateways, predicting rain outages and automatically transferring traffic to alternate gateways before these outages occur.

**Optimised design and operation**

**Use of measured weather attenuation data**
Management Day to Day
IP Policy

Reservation of rights to ensure the organisation always maintains rights of any (IP) software that is required to operate the facilities.

OSS Policy

Short set of rules or guidance on:
- Preferred OSS licenses;
- Who to get to request permission for releasing code on an open source license;
- Have a voice in a consortium if the code is to be OSS.

Spin-out Policy?

Should we have one?

Reference to Software disclosure forms and license request forms.
Encourage use of Central Logs

- GIT Hub – Organisation Page
- GIT Lab – Repository
IP Database

- Logging Software activity
- Log SDF's & IDF's
- Automate NDA's
- Simple License Templates
- Associate relatedLicense
- Log Copyright and Patents
- Log Royalty Income and 3rd party obligations (collaborators)
- Mechanism for storing/distributing income to parties (3rd Parties/Awards)

Loggig Software activity
Software Disclosure Forms

<table>
<thead>
<tr>
<th>Information Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title and date, name of creator, department</td>
</tr>
<tr>
<td>Brief description</td>
</tr>
<tr>
<td>Is it a modification of existing software?</td>
</tr>
<tr>
<td>Any preferences for distribution (OSS, Academic, commercial)</td>
</tr>
<tr>
<td>Any dependencies - libraries, Funding obligations, any collaborators, does anyone else have rights to use the code</td>
</tr>
</tbody>
</table>
The form completes a template license which is circulated for signature.

Process:
- Commercial and Technical Contact for both organisations.
- Term of the license
- Customer Detail
- Title of Software

Form
Contracts

Contracts tend to be based around patentable inventions.

Remember that for copyright, joint IP should be treated differently.

DESCA agreements have software sections.

Collaboration agreements should template as much as possible.