

LA-UR 11-04994

# Leveraging Software Disclosures into Licensable Technologies

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## Agenda

- What is a copyright?
- Copyright Disclosure information capture
- Decision criteria
- Diligence: License compatibility
- Should we license?
- Passive marketing
- Active marketing
- Exclusive / Multiple non-exclusive
- Exclusive licensing
- Preparing principal investigators



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## What is a Copyright?

**Copyright protection subsists....in original works of authorship fixed in any tangible medium of expression .....otherwise communicated, either directly or with the aid of a machine or device. (17 U.S.C. § 102)**

- Applicable for:
  - Software
  - Schematics/drawings
  - Firmware
  - Publications (technical/journal articles, etc.)



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## Copyright Disclosure Information Capture

- **Abstract (functionality)**
  - Why was this developed? Is this not available commercially? What does it *do*?
  - Technology Maturity (is there a Graphic User Interface?)
- **Authorship**
  - Internal Authors? Collaboration across internal divisions?
  - External Authors?
    - Commercial, Open Source, Collaboration across National Laboratories?
  - Intended Distribution? (Policy versus Practical Considerations)
    - Controlled?
    - Open?
      - Open Source? (GPL, LGPL, BSD, etc.)
      - Publicly Available?
  - Assert Copyright as a Gov. Owned Contractor Operated (GOCO) lab?
    - Open Source Software?
    - Commercial?



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### Decision Criteria

- **Are there pre-existing License Requirements?**
  - Open Source Software? (GPL, LGPL, BSD, etc.?)
  - 3<sup>rd</sup> Party Contributions?
    - Royalty Sharing Agreement in place?
  - Are there reach-through license requirements stemming from the compiler?
  - Multi-Lab Collaboration Incorporating GOGOs?
    - Is there an IP Management Agreement?
    - Partnership intermediary?
  - Are There Related Patents?



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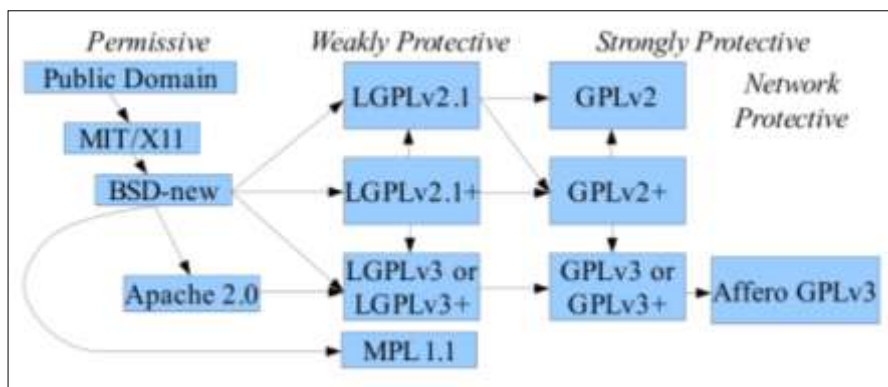
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### Diligence: License Compatibility



<http://www.dwheeler.com/essays/floss-license-slide.html>



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## License Compatibility (continued)

- **Take note of the compiler(s) your PIs are using**
  - Compilers turn human-readable (source) code into executable (target) code
  - Most compilers combine portions of certain header files and runtime libraries with the compiled program. As a result, the compiled code is technically a derivative work of the compiler
  - Take care to read the license language associated with any compilers that were used
- **There are several popular GPL open source compilers**
  - Target code produced using an open source compiler could inherit a viral license
  - Some of these open source compilers, such as G95, contain exceptions that allow you to propagate derivative works in cases that would otherwise violate the terms of the GPL license: e.g. GCC Runtime Library Exception, GNU Classpath, etc.
- **Some commercial compilers contain reach-through requirements**
  - Absoft requires execution of an "Absoft Runtime Redistribution License" prior to distribution of compressed works



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## Should we License?

- **Market Value**
  - Smaller cost of protection of copyright versus patent; thus, multiple non-exclusive agreements often make good business sense
  - The smaller capital outlay required for software makes arms-length, transactional management of codes a viable commercialization option, whereas patents are almost always strategic
- **Laboratory Brand Recognition**
- **Can we Build a Laboratory Capability?**
- **Can we Bring an Author or Division into the TT Network?**
  - Author self-selection helps



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### Passive Marketing

- Hosted on LANL webpage
- Minimal effort— Title, Abstract, Tracking Number
- Meets Fairness Of Opportunity (FOO) Requirements
- Gives authors a place direct colleagues to demonstrate their code developments
- TT receives 20-30 inquiries annually as a result of this passive marketing

LA-UR number	Title	Description	Date
LA-UR 10-130	2-D and 3-D Fluid Dynamics through oriented...	...	10/1/10
LA-UR 10-131	2-D and 3-D Fluid Dynamics through oriented...	...	10/1/10
LA-UR 10-132	2-D and 3-D Fluid Dynamics through oriented...	...	10/1/10
LA-UR 10-133	2-D and 3-D Fluid Dynamics through oriented...	...	10/1/10
LA-UR 10-134	2-D and 3-D Fluid Dynamics through oriented...	...	10/1/10
LA-UR 10-135	2-D and 3-D Fluid Dynamics through oriented...	...	10/1/10



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### Active Marketing

- Moderate effort— a more targeted approach to marketing
- May be technology-specific or a broad capability description for Sponsored Research (CRADA or WFO opportunity)
- Serves as a nice pre-phone call marketing element

**Licensable Technologies**

**KIVA—Hydrodynamics Model for Chemically Reacting Flow with Spray**

**Applications:**

- Flow and combustion model for liquid rockets, solid rockets, and gas turbines
- Analysis of flow in automotive catalytic converters
- Design of fire suppression systems
- Pollutant dispersion around urban systems design

**Benefits:**

- Increase engine efficiency while reducing harmful byproducts
- Reduce engine development time

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**Summary:**  
 Fuel economy is heavily dependent upon engine efficiency, which in turn depends to a large degree on how fuel is injected within the cylinder of the engine. Higher injection pressures and temperatures lead to increased fuel economy, but they also make more difficult to controlling the combustion process. Poorly controlled and/or complete combustion can cause higher levels of emissions and lower engine efficiency.

In order to optimize combustion processes, engine designers have traditionally undertaken manual engine modifications, cost-extended testing, and analyzed the results. This iterative process is considerably time-consuming, and does not lend itself to identifying the optimal engine design specifications.

In response to these problems, Los Alamos National Laboratory (LANL) scientists have developed KIVA, an advanced computational fluid dynamics (CFD) modeling code that accurately simulates flow in cylinder processes of engines.

KIVA, a transient, three-dimensional, multiphase, multi-component code for the analysis of chemically reacting flows with spray has been under development at LANL for several years. The code uses an Arbitrary Lagrangian-Eulerian (ALE) methodology on a staggered grid, and computes spray using the three-volume technique. The code can be applied to low-dimensional (2D) or high-dimensional (3D) problems. The code can be applied to low-dimensional (2D) or high-dimensional (3D) problems. The code can be applied to low-dimensional (2D) or high-dimensional (3D) problems.



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## Exclusive / Multiple Non-exclusive

- For reduced-functionality executable codes
- Best suited for mature, user-friendly software
- Facilitates collection of basic market information
- Builds a user community to promote software adoption
- Easily builds brand recognition with hassle-free download

### To download a free, personal-use version of RaveGrid:

Please fill out all fields. (Provide a valid email if you want to be notified about future upgrades.)

Requester's Name

Org

Email

Phone

Software

*\*Check back for upgrades.*

For Executables Only



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## Commercialization Workshop

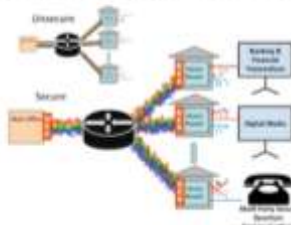
- Strategic licensing
- Appropriate for exclusive licensing in defined fields of use
- Best suited for portfolios of technologies including software

### Cyber Security Technologies—Authentication and Encryption

#### Call for Commercialization Partners

Los Alamos National Laboratory (LANL) has developed two unique cyber security technologies based on Quantum Key Distribution (QKD) that can provide both Communications (COMSEC) and Transmission (TRANSEC) Security. While fully capable of operating independently, these technologies, entitled "Quantum Enabled Security (QES)" and "Quantum Smart Card (QSmart)", can also operate as one complete system providing both encryption and authentication. QES provides the TRANSEC while QSmart provides the COMSEC.

**Quantum Enabled Security (QES)**—a revolutionary new cyber security capability using quantum (single photon) communications integrated with optical communications to provide a strong, innate security foundation at the photonic layer for optical fiber networks.



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## Prepare your Principal Investigators

- The PI is the strongest advocate for the technology. By preparing software authors prior to presentations and publications, you leverage word-of-mouth marketing within the author's peer groups
- This can help you find technical champions within potential licensees' organizations (in some cases they will even reach out to TT)



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## Questions?

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