Software Committee Report

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Collaborator

- **LAL Software Librarian**

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Fundamental Software Goals

- **Establish a software Standard (LAL Specification)**
- **Write scientific search software that adheres to the standard (LIGO/LSC Algorithm Library = LAL)**
- **Test the code by conducting mock data challenges**

Software standard (LAL Spec)

- Motivation for the software specification
  - » **carrot**: "… software specification that fosters widespread use and collaborative development of a well tested analysis library"
    - – **written in C (not C++)**
    - – **Name space convention, to avoid internal and external conflicts**
    - – **Minimal use of other packages (only Fourier Transform Package is required.)**
    - – **Documentation ["Keep the documentation close to the code"]**
  - » **stick:** "… all participating groups will be required to analyze LIGO data using LAL compliant software"
- Status of standard: Complete.
  awaiting "binding version control''
  - » This must happen soon. It is impossible to enforce a standard that is still changing

LSC Z000.0

Documentation

- **“Keep the documentation close to the code.”**
  --- Is in conflict with ---
  “We need a comprehensive manual for the entire library.”
  - » **Developed Autodocumentation system: laldoc**
    - – **very simple to use (Uses knowledge of LaTeX)**
    - – **documentation is written inside the C source code**
    - – **builds comprehensive manual**
    - – **parser is written in C**
  - » **Adopted/Adapted for use with some LDAS documentation [Parser was rewritten in Java for use with LDAS]**
  - » **Functionality is now documented and controlled**

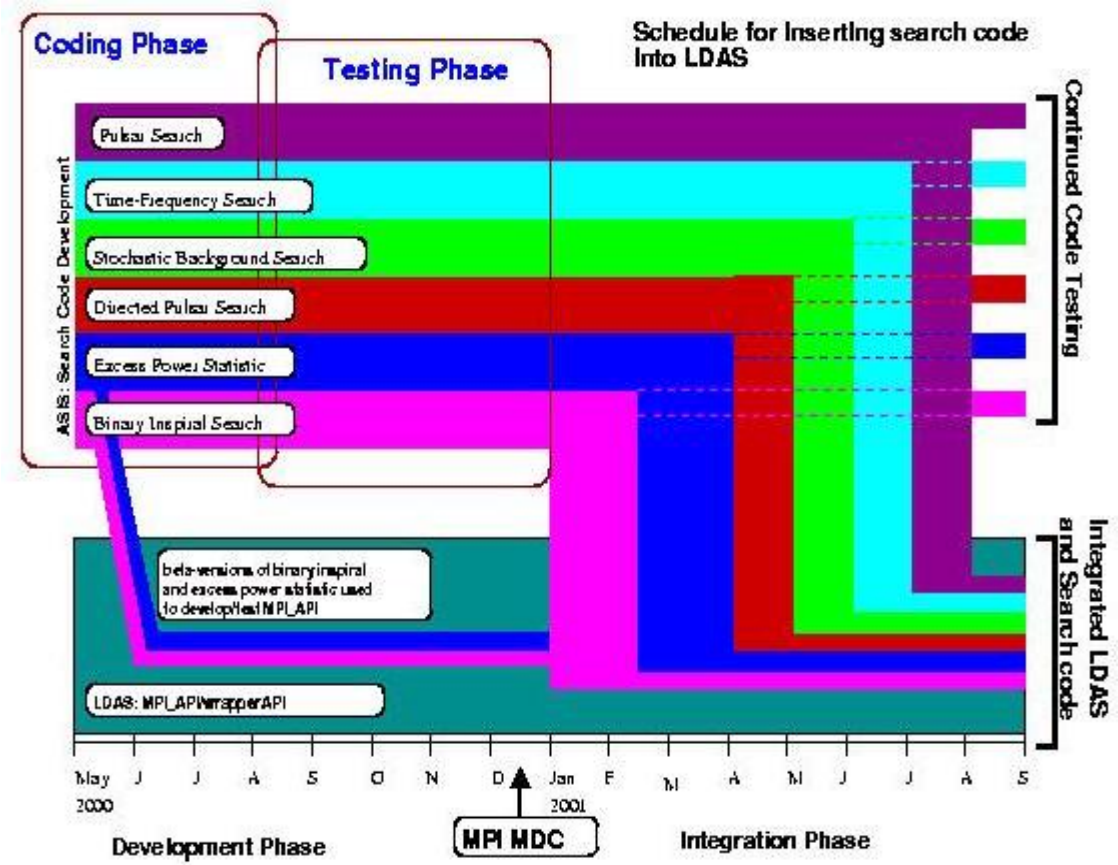
Development of Scientific Search Code

- White paper: “The near term program … inspiral, uncharacterized, CW, and stochastic background”
  - » **Hierarchical binary inspiral**
    - – Cardiff: templates & gridding
    - – UW Milwaukee: filtering
  - » Uncharacterized (blind)
    - – Cornell: power monitoring
    - – Cardiff and AEI: time/frequency transforms
  - » Continuous wave (pulsar)
    - – AEI: wide-area Hough transform
    - – UW Milwaukee: wide area FFT stack-slide
    - – Caltech: directed known sources
    - – Michigan: discriminators
  - » Stochastic background
    - – UT Brownsville: correlation statistic
    - – Cornell: Robust statistic

Mock Data Challenges

- **Data Conditioning MDC [Complete] Sam Finn.**
  - » **Spigots from which the search code will get the data**
  - » **Sam will talk in detail following this talk.**
- **Database MDC [Fall 2000] Peter Shawhan.**
  - » **Drain where the search code will dump the candidate events**
- **MPI MDC [Winter 2000] Patrick Brady.**
  - » **Interface layer between LDAS and search code.**
- **Scientific Inchpebbles [Spring 2001].**
  - » **Sequential Integration of all the search algorithms into the LDAS system**

Sequence of Inchpebbles



LSC Z000.0

Organization of Mock Data Challenges: LSC-LIGO software collaboration

- Pick someone who knows what's up to lead the group:
  - » Sam Finn for Data Conditioning MDC
  - » Peter Shawhan for Database MDC
  - » Patrick Brady for MPI MDC
- Pick a target date to give the task a sense of urgency: "Deadlines focus the mind."
- Form a (small) working of group [Mixture of Lab and LSC people]
- Software coordinator's management style: benign neglect.

End