Integration Testing

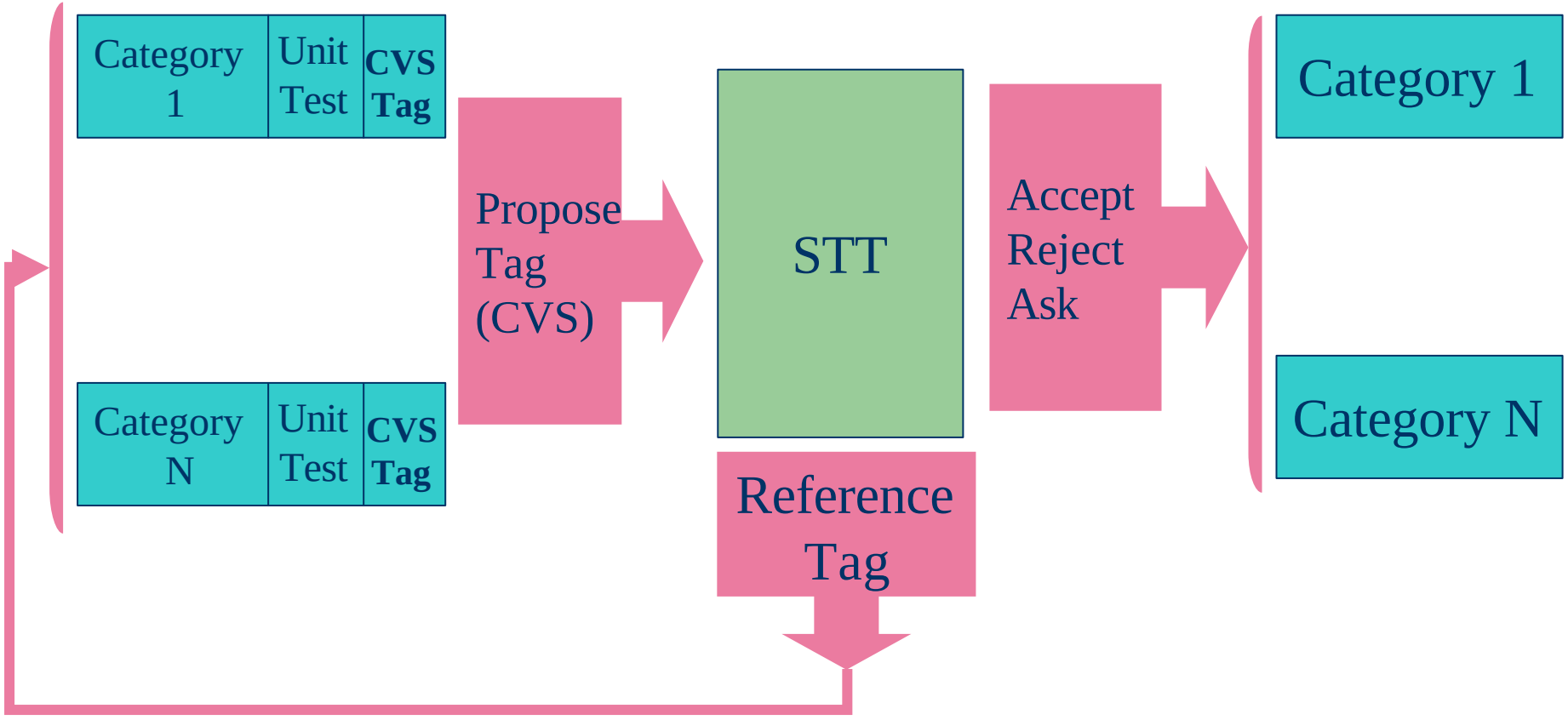
System Testing Team

Outline

System Testing Team (STT) was started August 1998 with John Allison as coordinator.

- Role in software process
- Components
  - Test Suite
  - Tools
- Improvements

Testing Cycle



Test Suite

Today there are:

- 7 “system configurations”
  - 17 tests
    - ✓ 1 interfaces
    - ✓ 4 geometry and some processes
    - ✓ 6 electromagnetic
    - ✓ 7 hadronic
  - 16 examples
    - ✓ 2 persistency
    - ✓ 2 g3tog4
    - ✓ 5 electromagnetic
    - ✓ 7 integrated examples

A new test:

• added when new functionality or physics models are released

• created by the WG Coordinator in collaboration with STT

Coverage restrictions:

• no visualization testing

• no analysis testing

• persistency on limited number of systems

System configurations

- OS (Linux, SUN, etc)
- Compiler (g++, CC, etc)
- “flavours” (deb/opt, etc)

G4SYSTEM:
Linux-g++
SUN-CC

$G4SYSTEM/debug_ISO

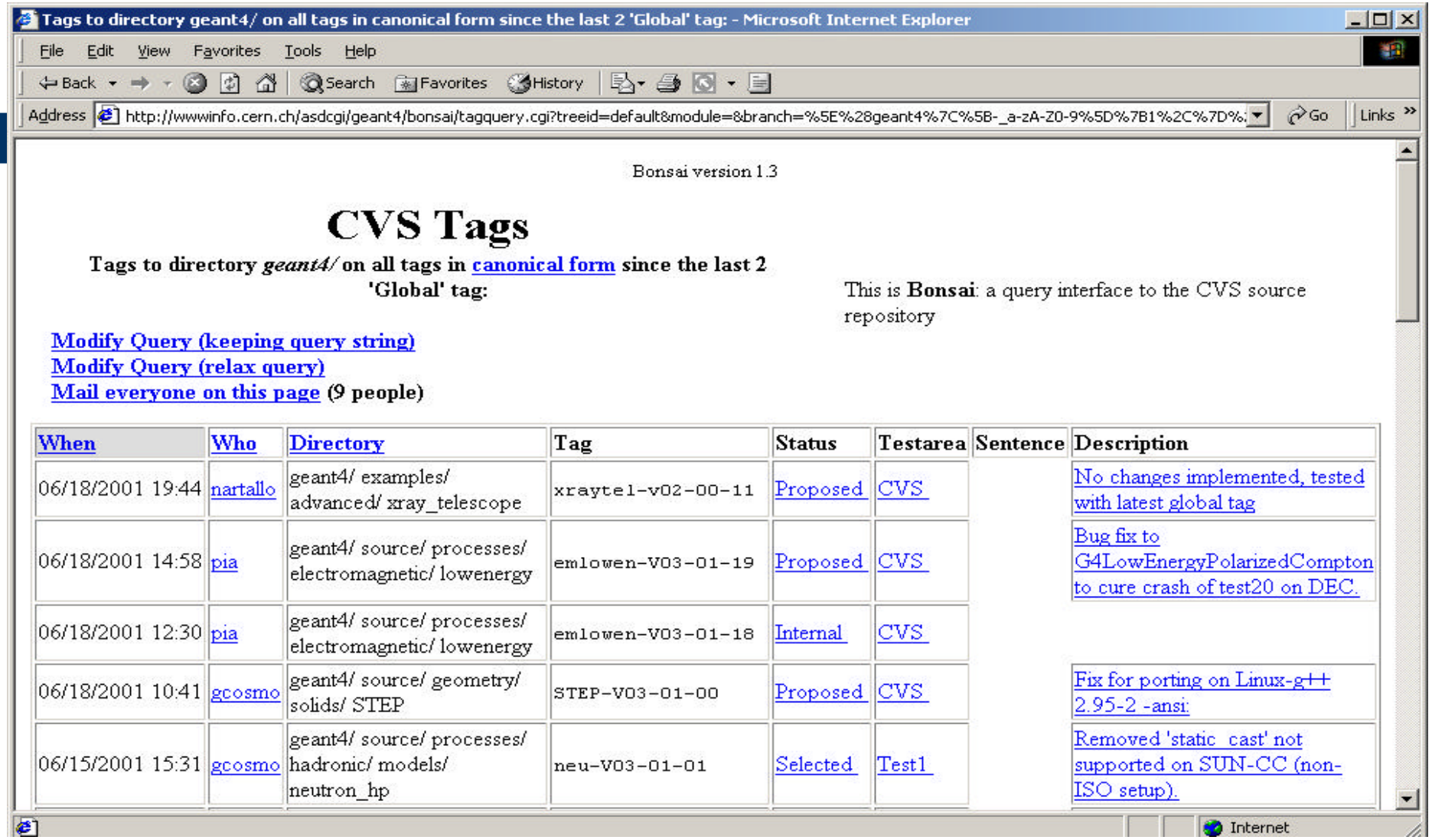
Details of a Test

- Test Program
- Reference Output
- More than one Input
  - Hadronic vs. Electromagnetic
  - Large statistics runs

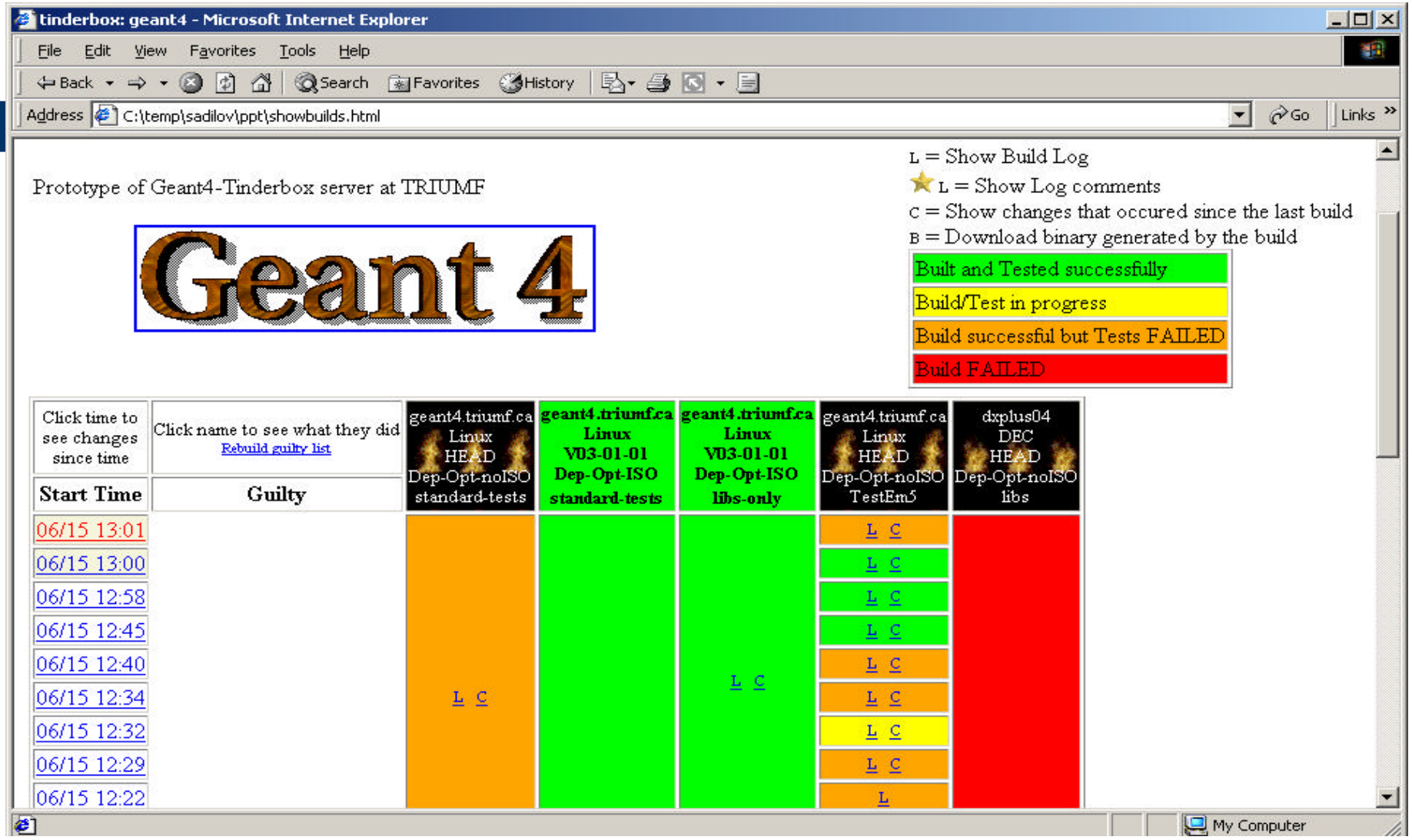
Tools

- Bonsai
  - Automatic recording of tags (CVS)
  - Tag “management” tool (proposal,accept/reject etc)
  - Automatic tracking of development
- Tinderbox
  - Monitoring of test runs
- LXR
  - Shareable access (WEB) to source code cross-reference DB
- Script Suite
  - Core scripts for testing

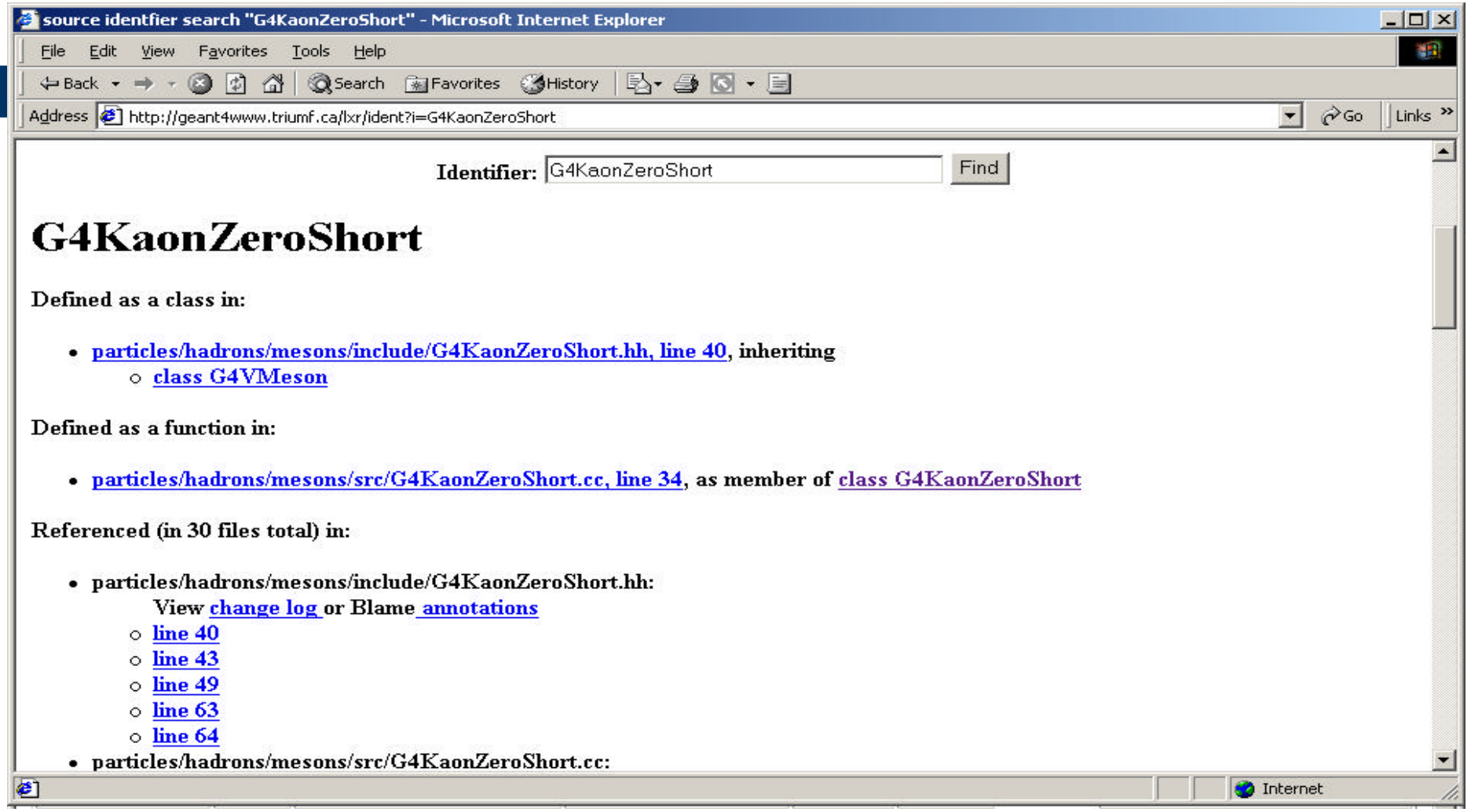
Bonsai (in production)



Tinderbox (in development)



LXR (in development)



Script Suite

List of (some):
- Hasami.plx – “scissors” for Bonsai
- FilterMake.plx – gmake.log filter
- ExtractLastLog.plx – filter of run
- ShowFiles.plx - *.diff, *.err filter

- Remote run (rsh)
- Flexibility (build lib/test, run test, etc)

Improvements for Integration Testing

- Test Coverage
  - traceability with requirements and use-cases
- Improvements of Statistical Tests
- Web Tools Automation
- New:
  - System Configurations
  - Functionalities (analysis,visualization,persistency, etc)