



U.S. DEPARTMENT OF
ENERGY

Open Source Software

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DOE Lab-Created Software

- **May be made available without assertion of copyright or restriction of publication**
 - *effectively places software in the public domain*
- **May be offered through a commercial, royalty-bearing license**
 - *Contractor authorized to assert copyright*
 - *DOE agrees to restrict public release of commercially-offered software for 5-year renewable periods*
- **May be licensed as Open Source Software**

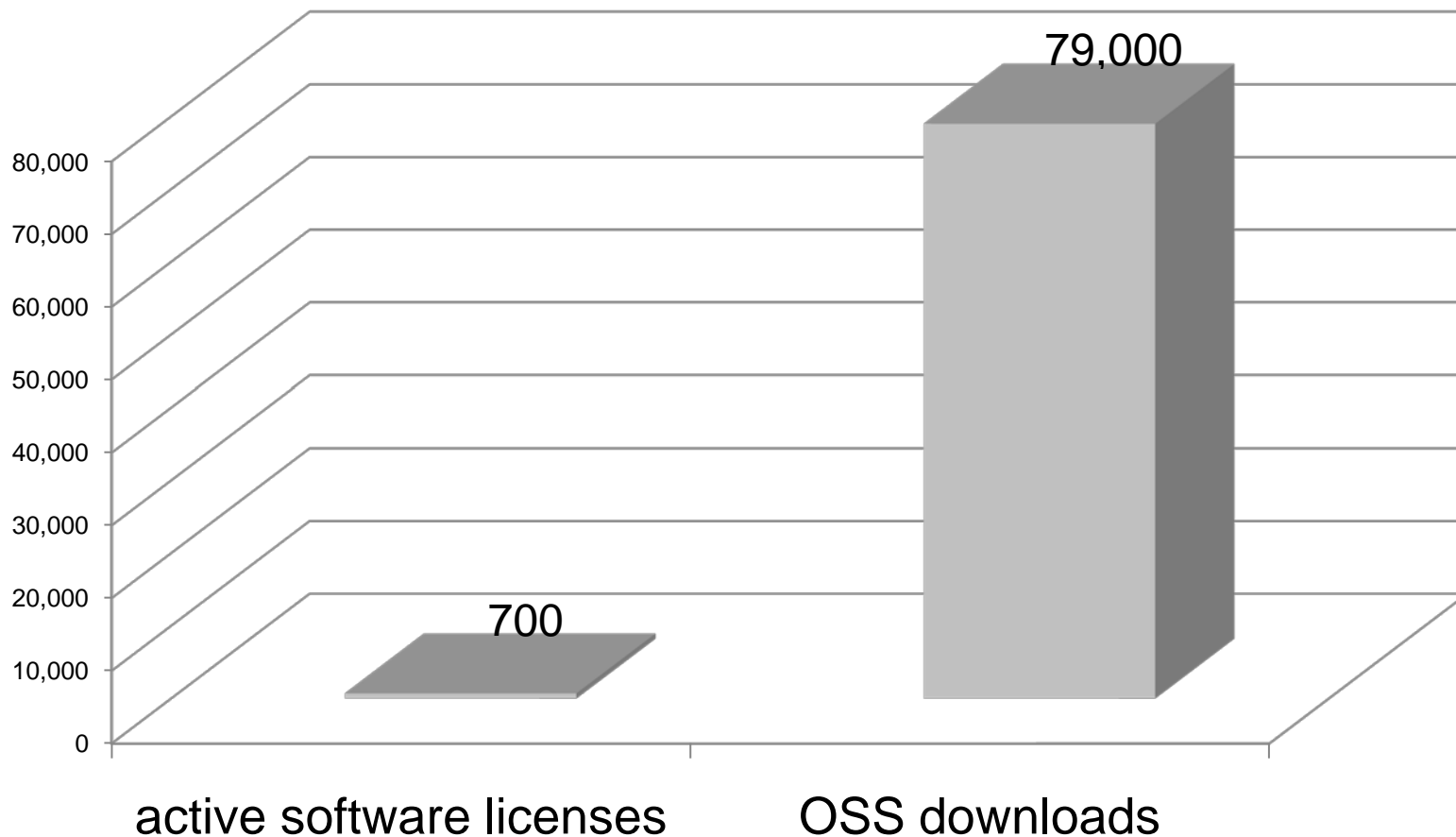


OSS Policy and Benefits

- Statutory mandate to disseminate widely the results of R&D at DOE Labs
- Creation of technologies to further scientific research efforts
 - Broaden public and industry acceptances of a software product
 - Increase awareness of the Laboratories and their competencies
 - Author credit
- Maximize impact of intellectual property while balancing restrictions of intellectual property rights



2009 Software Transfers Tracked for Two DOE Labs



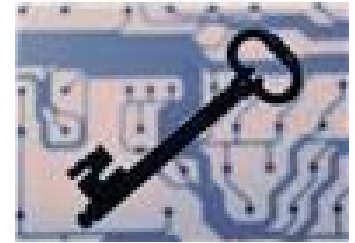
OPEN SOURCE SOFTWARE APPROVAL AT DOE LABS

- Until 2010: Approval required from DOE Programs
 - DOE Patent Counsel was able to provide approval if Program approval was not practicable
- NOW:
Labs provide DOE with 2 weeks' notice
 - DOE may object to release as OSS



OASCR and ASCI:

Office of Advanced Scientific Computing Research
Office of Advanced Simulation and Computing



- Since 2003, Blanket approvals provided by:
 - *Office of Science/Office of Advanced Scientific Computing Research (OASCR)*
 - *Office of Defense Programs/Office of Advanced Simulation and Computing (ASCI)*
- DOE Labs directed to release all publicly-releasable software from OASCR and ASCI
- Labs must seek OASCR/ASCI approval to commercialize software with royalty-bearing licenses

OPEN SOURCE SOFTWARE AT DOE LABS: NEW POLICY

- 2010 issuance of blanket approval
 - *Laboratories authorized to assert copyright*
 - *Laboratories authorized to license code as OSS for any DOE -funded software unless*
 - *a specific prohibition exists (e.g. export control, contains third party proprietary software, contains classified code)*
 - *specific grant terms and conditions exist*
 - *DOE Program overrides release as OSS*
 - *DOE funding Program objects within 2 weeks of notification*
- Blanket approval does not apply to DHS-funded or partially-funded software



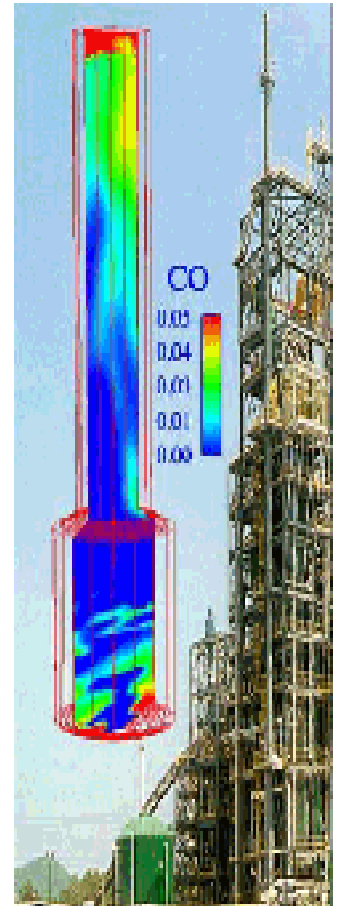
Providing Public Access to OSS



- DOE encourages its Labs
 - To monitor use of OSS
 - Engage in periodic consideration whether change in promotion strategy of the software is warranted
- Labs may license OSS commercially
 - Must first obtain DOE approval, considering
 - Whether OSS version still be available to the public to satisfy DOE's dissemination mandate
 - advantages to having a commercial license for the tech transfer mission - should not emphasize royalties

MFIX (Multiphase Flow with Interphase eXchanges) software

- Physics-based model of multiphase reactors solving scale-up problems for advanced power plants
- Transferred through the open-source method at www.mfix.org and through collaborative projects with end users
- Allowed the flow of the technology to universities, national laboratories and industry
- Used by a number of universities to advance multiphase science, resulting in publications and 15 graduate theses over five years
- Enabled a reverse flow of technology into MFIX from external researchers.
- ~1000 registered MFIX users from over 250 institutions worldwide
- **Examples:**
 - **MFIX simulation of pilot scale KBR/Southern transport**
 - **Los Alamos National Laboratory used MFIX to explore multiphase dynamics (e.g., dust explosions) in handling high-level radioactive waste**





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