Source files	Commits	Projects
9,737,474,402	2,044,795,439	151,779,991

Directories	Authors	Releases
8,193,616,976	41,535,953	17,132,343

Research Highlight

Software Heritage: preserving the world's source code

SoftWare Heritage's (SWH) mission is to build the universal archive of all available software source code, preserve the precious knowledge it contains, and make it widely accessible [Di Cosmo and Zacchiroli, 2017]. With this mission in mind, it now collects, preserves and shares source code, which is accessible on the browsable archive. The figure above shows the most recent capture of the archive's size.

Started over 5 years ago by Inria with support from UNESCO, Software Heritage is a non-profit initiative supported by a growing number of research institutions, industry players, and governmental bodies. SWH has a dedicated team who make sure that the infrastructure is running and capable of responding to multiple stakeholders in a variety of situations. All the code developed for SWH is released under a Free and Open Source Software (FOSS) license.

How does it work?

Archiving all the source code is a daunting task and there are different mechanisms put in place to ensure the preservation of source code from different types of origins. Archiving a repository from a forge isn't the same ... *continued*.

contributed by
Morane Gruenpeter, Inria Resarch Team, Software Heritage Team

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CIG IV Leadership

Dear Community,

As Chair of the Writing Committee and co PI for CIG IV along with Lorraine Hwang, I am pleased to report on our progress on preparing the CIG renewal proposal, which is due at the NSF Geoinformatics Program in August, 2021. Members of the Writing Committee include myself, Wolfgang Bangerth, Sylvain Barbot, Ebru Bozdag, Rene Gassmoeller, Lorraine Hwang, Laurent Montesi, Max Rudolph, Marc Spiegelman, and Jolante Van Wijk. This committee is charged with the task of building on the strengths of CIG and identifying new opportunities to move us forward into the future.

An important starting point for the committee has been to take stock of the current needs and goals of our community. The recent community-wide workshop, topic-oriented workshops, and member survey offered a detailed snapshot of our collective vision. A number of themes have consistently emerged from this effort, and we are committed to including these themes in the renewal.

Computational infrastructure can be organized into several categories. The original goal of providing open-source software to address fundamental scientific questions in geodynamics is as relevant today as it was when CIG began.

Powerful and reliable computational tools, complemented with training and education, are essential components of this infrastructure. Since its inception, CIG has made great strides in implementing and developing modern software practices and leveraging advances across computational and domain sciences for the benefit of the broader geodynamics community.

We are keenly aware of the need to train researchers to use these new tools more effectively. We plan to broaden engagement in computational geoscience through targeted training, providing opportunities for multidisciplinary collaboration, and closer coordination with other community organizations (e.g. CIDER). Training and education extends to many other aspects of high performance computing. An overarching goal is to increase our communities abilities to run state-of-the-art simulations. We also recognize a growing need to improve computational workflows. Model set-up and analysis have become increasingly complex. CIG should promote and incentivize the reuse of workflow and analysis tools, and identify opportunities to further the development of common and interoperable platforms.

In the proposed renewal we will seek to accelerate discovery by enabling a larger community of talented researchers to tackle fundamental scientific questions across all geosciences.

Sincerely on behalf of the Writing Committee,
Bruce Buffett, *Chair*

Governance

Elections

Please join us in welcoming Alice Gabriel to the Executive Committee (EC) and Min Chen and John Naliboff to the Science Steering Committee (SSC). They will be serving 3 year terms ending in 2023. Many thanks to EC member Carl Tape, and SSC members David Ham and Jessica Irving for their contributions to the community as well as everyone who participated by running and/or voting in this year's elections.

New Member

Welcome to our newest Institutional Member, University of Massachusetts and Member Representative Michele Cooke.

News

Software Users Survey and Developers Meeting

CIG is holding its first developers meeting this month. To facilitate discussions, we are asking for feedback on your experience using software available through CIG. We encourage everyone to set aside some time to think through how they use software and interact with the CIG community in the course of their research. More information and links to survey can be found on the workshop page. Don't forget to register to join the discussions. **Survey closes Tuesday February 9. Registration closes Tuesday February 16.** [workshop] [survey]

Summer MOdeling Research Experiences in Geodynamics

Members of the geodynamics community come from a broad range of fields, although many of these fields themselves are the least diverse in STEM. The challenges for computational geodynamics are not only to increase competency in these domains but also in recruiting from an undergraduate student pool that in itself lacks diversity. This summer CIG will look to address both these challenges with a pilot virtual computational geodynamics tutorial and Summer MOdeling Research Experiences (SMOREs) program. The virtual geodynamics tutorial, held June 28-July 2, will be open to both graduate students, postdocs, and internship participants. Topics will include best programming practices, version control, an introduction to advanced python programming in computational geodynamics, and an introduction to high-performance computing.

The SMOREs program will incorporate multiple host institutions and mentors, including UC Davis, UC San Diego - JPL, Washington State - University of Idaho, and New Mexico Tech. The 9-week training and research programs will focus on building computational skill sets that can be applied in both academic and industry settings including use of advanced forward modeling techniques and applications to solid Earth and extraterrestrial systems. Potential project topics range from modeling the evolution of crustal magmatic systems to convective processes within Venus. Project results will be presented in a virtual workshop open to the broader geodynamics community. Recruitment will heavily target underrepresented groups in STEM, and the structure, focus, and practices of the program will draw on previous undergraduate leadership experiences within the geodynamics and geophysics communities. Information on how to apply will be announced in early March. Please contact us if you have any questions or are interested in participating as a mentor or instructor. [more info]

Speaker Series

Do you know someone who would be a great ambassador for CIG research? The CIG Speaker Series is looking for talented speakers who can promote computational modeling in geodynamics and related earth sciences to a broad scientific audience. Send your nominations to speakers@geodynamics.org. More information for speakers and institutions looking for speakers can be found on our website. Deadline is **February 28, 2021**. [info]

Events

2nd Annual ASPECT Virtual User Workshop

The ASPECT User Community held its second virtual workshop on January 25-26, 2021. Over 40 participants, including members of the international community, joined online for presentations and discussions. Participants had a wide variety of research interests spanning from the deep Earth to the lithosphere as well as interests in applying and developing rheological models down to the grain size. A big part of the success of the meeting were our 9 community members, who gave excellent presentations on their scientific and software development work - a year of zoom meetings pays off!

2020-2021 Workshops

- **2021 February 23 & 25.** CIG Developers Workshop. Virtual. [info]
- **2021 Spring.** Rayleigh Hackathon. Virtual. *dates tbd*
- **2021 June 7-10, 14-16.** PyLith Hackathon**.** Virtual.
- **2021 June 21-August 20.** Summer Modeling Research Experiences in Geodynamics**.** Multiple locations. [info]
- **2021 June 28-July 2.** Introduction to Numerical Modeling and High Performance Computing**.** Virtual.
- **2021 July 6-16.** ASPECT Hackathon**.** Virtual. [info]

Remember to join our forum to receive announcements for these and other 2021 events as dates are finalized.