From License Consultation to Software Spotlights

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Session: Reproduzierbare Wissenschaft – Forschungsdaten und Research Software im Zusammenspiel

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HIFIS - Helmholtz digital Services for Science

Helmholtz Cloud + Backbone Services

• Provide high performance collaboration and community services based on an unified AAI
• Connect all centres and their world-wide collaboration Partners
• Secure, simple access and easy-to-use

Services for Research Software Engineering

• Achieve high level of knowledge, quality, sustainability and visibility of research software through training and consultation services
• Provide state-of the-art SW development infrastructures
HIFIS Cloud Services + Portal

Collaboration Services
Infrastructure Services
Scientific / Community specific Services (ramp-up)

https://cloud.helmholtz.de
Services for the Research Software Lifecycle

Consulting

Community Services

Development Infrastructure

Education & Training
Research reproducibility and research software

- Research software is a fundamental part of reproducibility
- Software is often times cited badly or not at all
- Software developed by scientists is rarely published
- FAIR principles implemented?

Goal

- Provide support to scientists and developers so they can publish and (re)use Software within the meaning of FAIR principles
Increasing the visibility of research software

- Create a process around a software directory
- Goal: every software developed at a research center will be added to the directory
- Allow access for other services, e.g.
  - License consultation
  - DOI registry services
- Automatically collected metrics help to assess software impact
Research Software Directory

• Build on top of open-source project
  Research Software Directory
• Developed at Netherlands eScience Center
• Features
  • Harvesting information
  • Visual representation of development activity
  • Citation support
• Currently setting up collaboration
Adding software to the RSD using a web form

**Contributors and funding**

- **First contributor**: Name: [ ], Role: [ ]
- **Second contributor**: Name: [ ], Role: [ ]
- **Third contributor**: Name: [ ], Role: [ ]
- **Fourth contributor**: Name: [ ], Role: [ ]

Are there more than four contributors? * [ ]
- Select confirmation

**Funding**

- A list of funding sources separated by commas

Provide a list of dependencies and their licenses

- library_name: SPD Identifier

**Filling out the dependency list**

- Use one line per dependency
- The license of the dependency should be listed on the corresponding website or repository
- For a full list of SPD identifiers please refer to https://spdx.org/licenses/
- Fill out only primary dependencies of your software (not the dependencies of your dependencies)
- We provide a framework that helps you to generate a list of dependencies: https://git.gfz-potsdam.de/GFZSoftware/services/file/software-quality-assurance
- If you do not know the license of a library, please write "unknown"
License consultation process
Becoming a Software Spotlight

Release

Periodically harvest metrics

Metrics
- Citations
- Release cycles
- Issues, Commits
- Stars
- User Feedback

Key Performance Indicators

Software Spotlight
HIFIS Software Spotlights 2021

Initiative of the Helmholtz Software Forum:
• platform to exchange knowledge, present ideas & results and define policies and incentives.

Helmholtz Lighthouse Projects:
• First Call: **94 great software projects** representing top success stories, about 50% for Simulation and Data Analytics
HIFIS Software Spotlights

PICONGPU

PICongGPU is an extremely scalable and platform portable application for particle-in-cell simulations. While we mainly use it for studying laser-plasma interactions, it has also been used for astrophysics studies of the Kelvin-Helmholtz instability.

PICongGPU has been a finalist for the prestigious Gordon Bell Award in 2013 and has been one of the flagship applications for a number of leading edge high performance computing (HPC) systems since then (Titan, JUWELS Booster, Frontier 1, Frontier 2, Frontier 3). Through this work, PICongGPU has established strong ties with a lot of national and international partners, especially the underlying hardware agnostic libraries like Alpaka and Uplma are now adopted in the CERN LHC software stack as well. Another collaborative effort also driven by PICongGPU is a standardization in data formats for plasma physics via openPMD, which is becoming one of the leading data standards in the community.

CENTRES
HIDR

CONTRIBUTING ORGANISATIONS
Center for Advanced Systems Understanding, University of Delaware, Oak Ridge National Laboratory

KEYWORDS
Simulation

RESEARCH FIELD
Matter

SCIENTIFIC COMMUNITY
Matter / Photon Science

FUNDING
HZDR, CASLUS, ORNL CAAR project

PROGRAMMING LANGUAGES
C++

LICENSE
GPL-3.0-only

ENPT - ENMAP PROCESSING TOOL

The Environmental Mapping and Analysis Program (EnMAP) is a German hyperspectral satellite mission that aims at monitoring and characterising the Earth’s environment on a global scale. The EnPT Python package is an automated pre-processing pipeline for the new EnMAP hyperspectral satellite data. It provides free and open-source features to transform EnMAP Level-1B data to Level-2A. The package has been developed at the German Research Centre for Geosciences Potsdam (GFZ) as an alternative to the processing chain of the EnMAP Ground Segment.

CENTRES
GFZ, AIM, DLR

KEYWORDS
Ecosystem sensing, Hyperspectral, In-situ data, EnMAP

RESEARCH FIELD
Earth and Environment

SCIENTIFIC COMMUNITY
Remote sensing

FUNDING
German Federal Ministry of Economic Affairs and Energy (50 EE 0850)

PROGRAMMING LANGUAGES
Python

LICENSE
GPL-3.0-or-later

CITE
10.5281/zenodo.3742344

CONTACT

hifis.net/spotlights
SAOC IN A NUTSHELL

Anomalies and errors are the rule, not the exception when working with time series data. This is especially true if such data originates from in situ measurements of environmental properties. Almost all applications, however, implicitly rely on data that complies with some definition of ‘correct’. In order to infer reliable data products and tools, there is no alternative to quality control. SAOC provides all the building blocks to comfortably bridge the gap between ‘usually faulty’ and ‘expected to be corrected’ in an accessible, consistent, objective and reproducible way.

IGMAS+ IN A NUTSHELL

Modern geophysical interpretation requires an interdisciplinary approach and software capable of handling multiple inhomogeneous data like seismic, FTG gravity, magnetic and magnetotelluric in complex geological environments.

IGMAS+ (Interactive Gravity and Magnetic Application System) is a geo-modelling software for three-dimensional joint inversion of potential fields and its derivatives under the condition of constraining data and independent information.

Three-dimensional gravity and magnetic modelling appreciably improves the results of distinct depth imaging projects. This regards especially to areas of strong lateral seismic velocity and density contrasts and corresponding imaging problems. Typical areas where grav/mag modelling has been successfully used are sub-salt and sub-basalt settings.

What makes IGMAS+ highly efficient and user-friendly is that it allows adjusting the geometries and
The Helmholtz Platform HIFIS supports the entire software life-cycle in order to increase quality, sustainability and visibility. Consulting, in particular licensing consulting, is an integrated service.

The Helmholtz Software Forum is a platform to exchange knowledge, present ideas & results and define policies, key indicators and incentives.

With its partners Helmholtz is building up a Research Software Directory and selects best practice software projects representing success stories; top projects are highlighted and prominently featured via spotlights.

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