

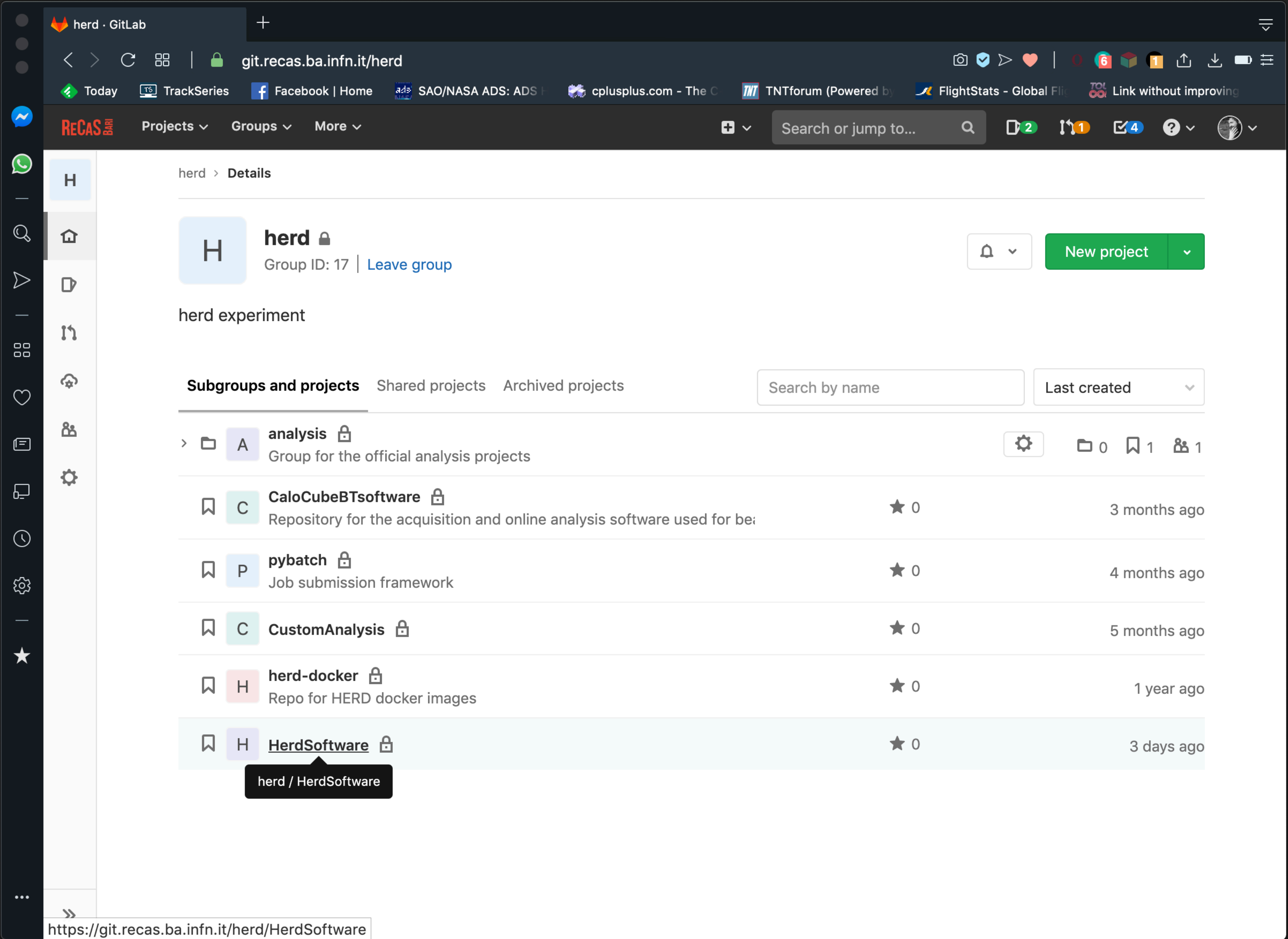
V. FORMATO - 17/03/2020

HERDSOFTWARE INFRASTRUCTURE

HERDSOFTWARE

HerdSoftware is currently hosted on a GitLab instance at RECAS

The code is organized under a "herd" group. Here we group all projects: starting from the **HerdSoftware** repo, up to analysis code by the users, or production tools for job submission.



HERDSOFTWARE

Every *git* repository in *gitlab* is associated to a **project** (<https://docs.gitlab.com/ee/user/project/>).

Projects encompass a *git* repo and offer additional tools around it:

- Issue tracker
- Merge requests
- Continuous integration
- Wiki documentation
- ...and many more

We will touch all these subject briefly

herd / HerdSoftware · GitLab

git.recas.ba.infn.it/herd/HerdSoftware

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herd > HerdSoftware > Details

H

HerdSoftware

Project ID: 9

693 Commits

6 Branches

0 Tags

4.1 MB Files

pipeline

passed

coverage

86.00%

master

HerdSoftware /

+

History

Find file

Web IDE

Clone

Merge branch 'autoformat_fix' into 'master'

Valerio Formato authored 6 days ago

99181fa1

CI/CD configuration

Add README

Add LICENSE

Add CHANGELOG

Add CONTRIBUTING

Add Kubernetes cluster

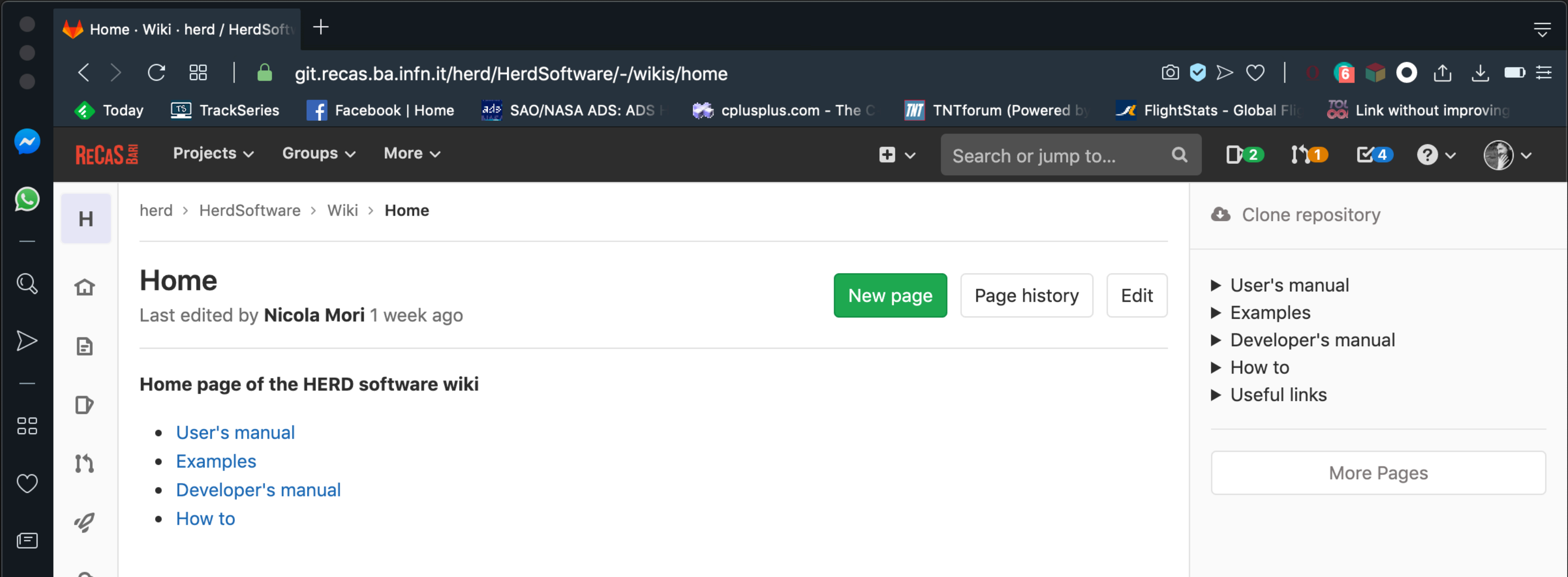
Name	Last commit	Last update
.autoformat	autoformat: return different values for fatal and non-fata...	4 months ago
doc	doc: do not generate doxygen documentation in latex fo...	1 year ago
dustbin	dustbin: add README.md and MCPPrimaryParticleStream...	5 months ago
examples	Merge branch 'master' into FIT_geometry.	1 month ago
include	Merge branch 'master' into FIT_geometry.	1 month ago

WIKI

A separate system for documentation called **Wiki**, is built right into each GitLab project. It is enabled by default on all new projects and you can find it under **Wiki** in your project.

Wikis are very convenient if you don't want to keep your documentation in your repository, but you do want to keep it in the same project where your code resides.

HerdSoftware comes with its own **Wiki** documentation that we try to keep always updated. You are encouraged to consult it whenever you have doubts about the software. If you think that some section is not described in enough detail, don't hesitate to write a mail or open an issue (see later...)

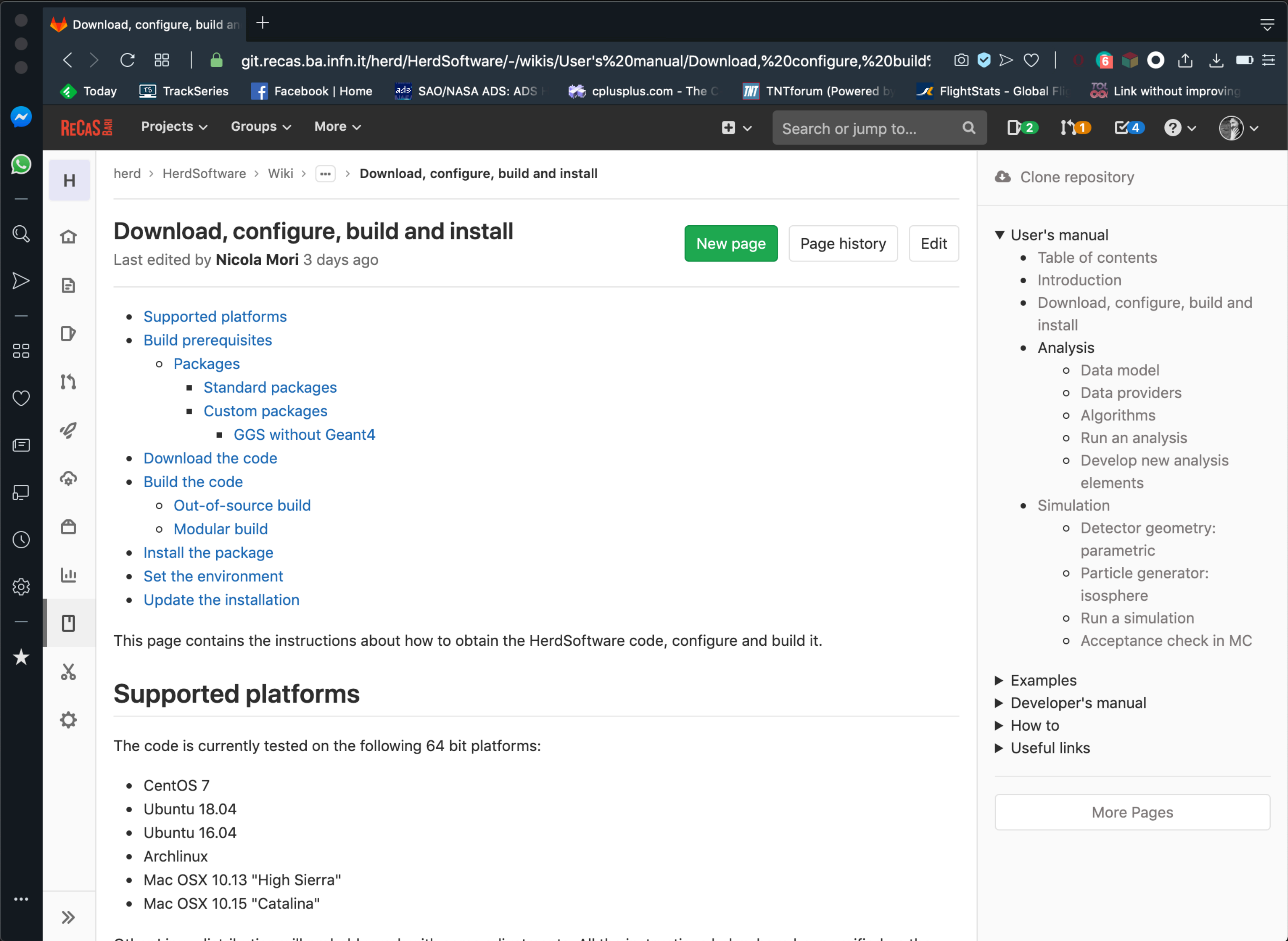


WIKI

We try to keep the HerdSoftware wiki as updated and complete as possible. This is supposed to be the entry point for every user needing help or information about the data format / algorithms / etc...

The User's manual tells you:

- How to install the project

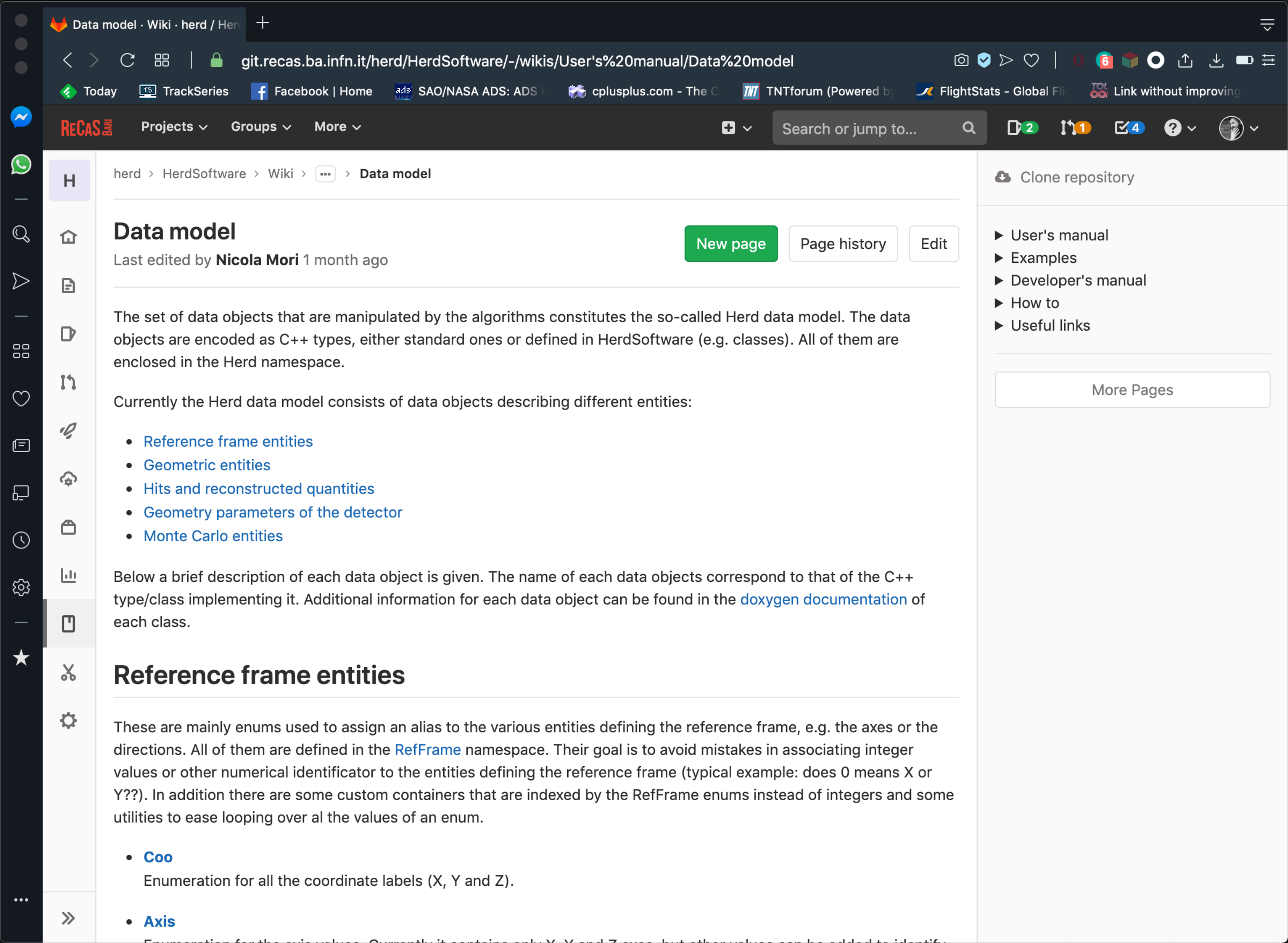


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- How to install the project
- How the data model is organized

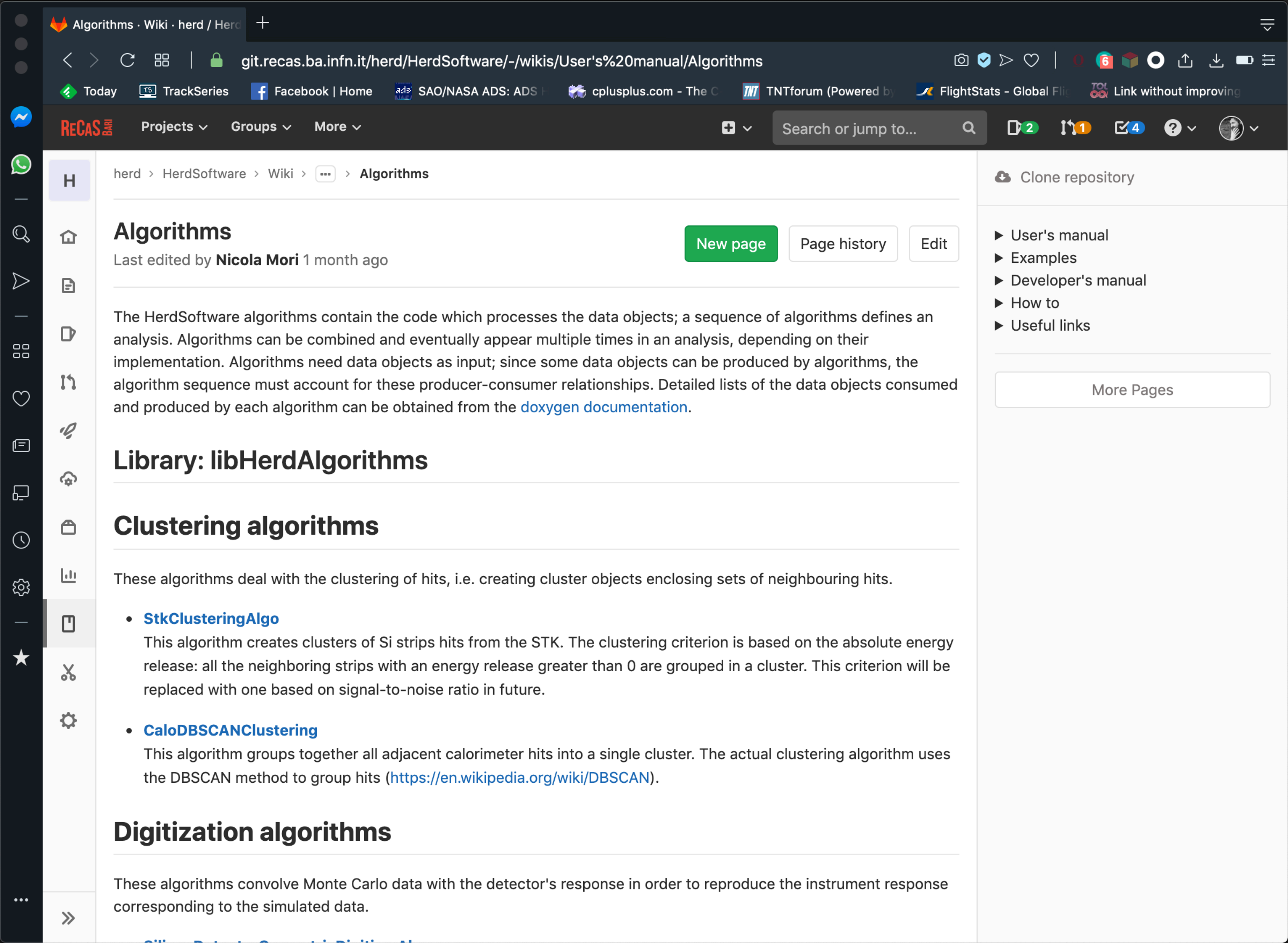


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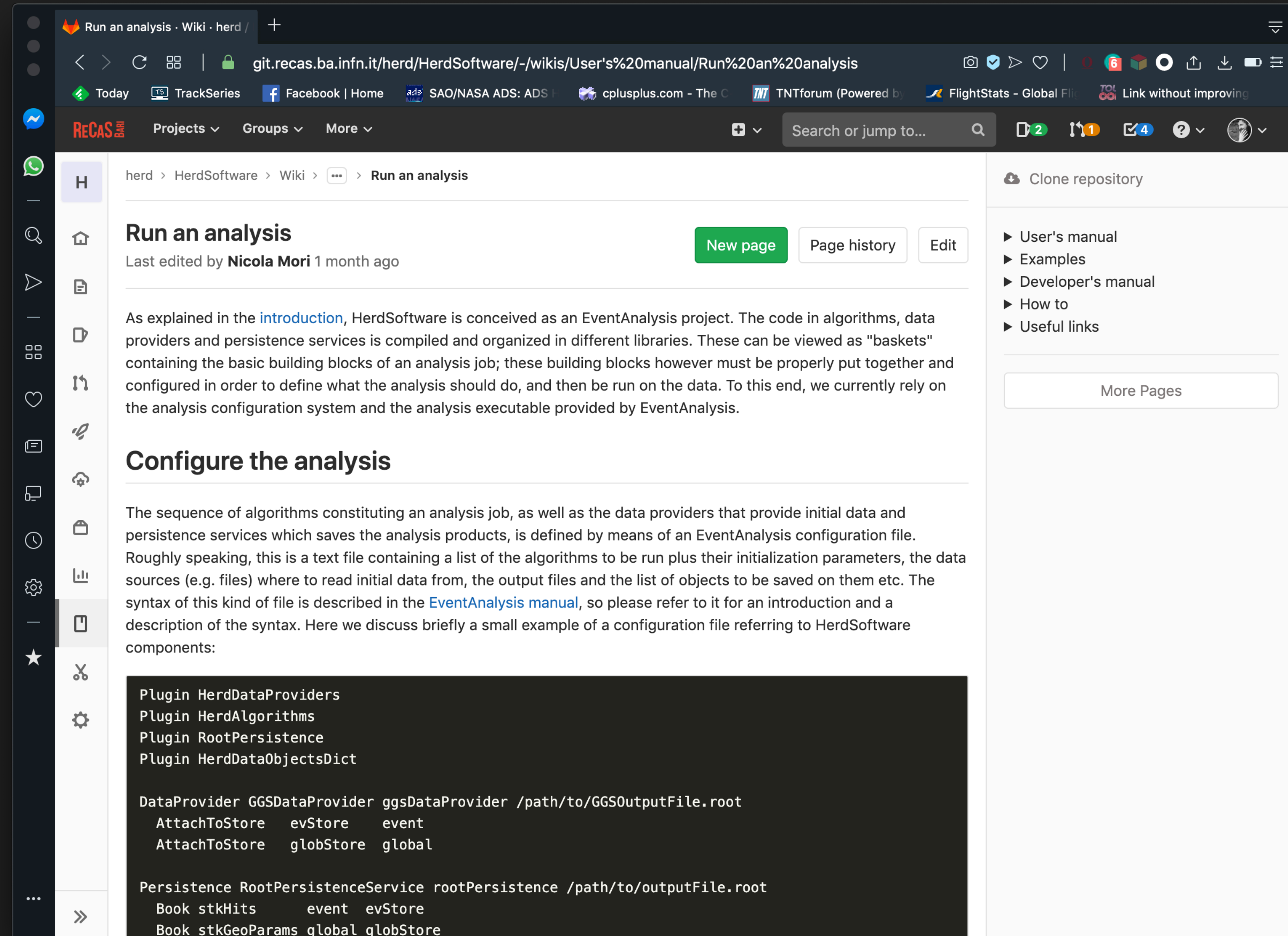
The User's manual tells you:

- How to install the project
- How the data model is organized
- What algorithms are available and how to use them



We try to keep the HerdSoftware wiki as updated and complete as possible. This is supposed to be the entry point for every user needing help or information about the data format / algorithms / etc...

- How to install the project
- How the data model is organized
- What algorithms are available and how to use them
- How to run an analysis



WIKI

We try to keep the HerdSoftware wiki as updated and complete as possible. This is supposed to be the entry point for every user needing help or information about the data format / algorithms / etc...

The User's manual tells you:

- How to install the project
- How the data model is organized
- What algorithms are available and how to use them
- How to run an analysis
- How to run a simulation

Run a simulation · Wiki · herd

git.recas.ba.infn.it/herd/HerdSoftware/-/wikis/User's%20manual/Run%20a%20simulation

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herd > HerdSoftware > Wiki > Run a simulation

Run a simulation

Last edited by **Nicola Mori** 1 month ago

New pagePage historyEdit

As explained in the [introduction](#), HerdSoftware relies on GGS to run Geant4 Monte Carlo simulations. In HerdSoftware the detector geometry and the particle generator are implemented as plugin libraries to be loaded at runtime by the **GGSPenny** simulation program. The Herd geometry is obviously mandatory, while for generating particles it is possible also to use one of the GGS generators.

Configure the simulation

The configuration of a GGS simulation run is done with datacard files, where configuration commands in the usual Geant4 syntax are placed. There are 2 different files that can be passed to **GGSPenny** :

- a geometry datacard file
This file is passed to **GGSPenny** with the **-gd** option. It is meant to contain the eventual commands defined by the geometry that will be used for the simulation. For example, see the [commands for setting the parameters of the parametric geometry](#)
- a job configuration file
This file contains the commands for choosing and configuring the particle generator, the simulation output etc. It has to be passed to **GGSPenny** with the **-d** command line option.

The content of the job configuration file might vary, depending on what the user wants to configure. There are however some commands that must always be given:

- the choice of the particle generator
- the definition of active volumes (i.e. volumes for which hits will be produced)
- the creation of user actions (e.g. to actually save the hits on the output file)

A commented example of a datacard file is given in [Ex00](#).

Clone repository

User's manual

Examples

Developer's manual

How to

Useful links

More Pages

WIKI

We try to keep the HerdSoftware wiki as updated and complete as possible. This is supposed to be the entry point for every user needing help or information about the data format / algorithms / etc...

The User's manual tells you:

- How to install the project
- How the data model is organized
- What algorithms are available and how to use them
- How to run an analysis
- How to run a simulation
- How to customize the detector geometry
- ...

Detector geometry: Parametri

git.recas.ba.infn.it/herd/HerdSoftware/-/wikis/User's%20manual/Detector%20geometry:%20parame

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Parameters

Some geometry parameters can be set at run time by means of datacard commands (to be placed in the geometry data card). These commands and the related meanings are:

General commands

/herd/geometry/parametric/general/chargeID

Sets the charge ID detector. Possible values: none, scd, stcdTop (i.e. only top SCD), stkSide (i.e. SCD only on sides). Default value: none.

/herd/geometry/parametric/general/tracker

Sets the trackig detector. Possible values: none, stk, stkTop (i.e. only top STK), stkSide (i.e. STK only on sides), fit, fitTop, fitSide. Default value: stk.

/herd/geometry/parametric/general/calorimeter

Sets the calorimeter. Possible values: calo, none. Default value: calo.

/herd/geometry/parametric/general/antiCoincidence

Sets the anticoincidence detector. Possible values: none, psd, psdTop, psdSide. Default value: psd.

/herd/geometry/parametric/general/caloTopStkDistance

The distance between the top face of CALO and bottom face of top STK. Default value: 5 cm

/herd/geometry/parametric/general/caloSideStkDistance

The distance between the lateral faces of CALO and the side STK. Default value: 5 cm

/herd/geometry/parametric/general/topPsdTopStkDistance

The distance between the top face of the top STK and the bottom face of the top PSD. Default value: 6.1 cm

CALO commands

/herd/geometry/parametric/cal/monolithic

If set to true then the CALO will be built as a monolithic block of LYSO instead of being made by cubes. For testing purposes. Default value: false.

PSD commands

/herd/geometry/parametric/psd/type

Sets the PSD type either to bars or tiles. In case of bars, each PSD will be constituted of two layers of plastic scintillator bars, while in case of tiles there will be just one layer of square tiles. Possible values: tiles, bars. Default value: tiles.

/herd/geometry/parametric/psd/topThickness

Sets the thickness of the scintillator material in the top PSD. Default value: 2 cm (tiles), 1 cm (bars)

Clone repository

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More Pages

Complementing the Wiki we also have a Doxygen documentation with a detailed description of the implementation for all the relevant classes.

Detector geometry: ParametrizationHerdSoftware: Herd::PsdGeometricDigitizerAlgo

wizard.fi.infn.it/herd/software/doxygen/master/classHerd_1_1PsdGeometricDigitizerAlgo.html

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HerdSoftware0.0

Main PageNamespaces ▾Classes ▾Files ▾Search

Herd ▸PsdGeometricDigitizerAlgo ▸

Public Member Functions | Private Member Functions | Private Attributes | List of all members

Herd::PsdGeometricDigitizerAlgo Class Reference

Algorithm that groups the Monte Carlo PSD hits based on a purely geometric criterion. [More...](#)

```
#include <algorithms/digitization/PsdGeometricDigitizerAlgo.h>
```

Inheritance diagram for Herd::PsdGeometricDigitizerAlgo:

```
graph BT; Herd_PsdGeometricDigitizerAlgo[Herd::PsdGeometricDigitizerAlgo] --> Algorithm[Algorithm];
```

Public Member Functions

PsdGeometricDigitizerAlgo (const std::string &name)
Constructor. More...
bool Initialize ()
Initialization of the algorithm. More...
bool Process ()
Process a single event. More...

Private Member Functions

void _Aggregate (const std::vector< PsdGeoParams > &originalGeoParams, const PsdHits &originalHits, observer_ptr< const PsdParticleHits > originalParticleHits, const AxesArray < int > &aggrFactors, const std::vector< PsdGeoParams > &aggregatedGeoParams, PsdHits &aggregatedHits, PsdParticleHits &aggregatedParticleHits)
Aggregate hits for a single PSD detector. More...
CooArray < unsigned char > _AggregatedIndexes (const CooArray < unsigned char > &origIndexes, const AxesArray < int > &aggrFactors)

Private Attributes

DOXYGEN

Complementing the Wiki we also have a Doxygen documentation with a detailed description of the implementation for all the relevant classes.

Algorithms also have a full description of all the data objects they need and/or produce.

Detector geometry: Parametr...

HerdSoftware: Herd::PsdGeon

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wizard.fi.infn.it/herd/software/doxygen/master/classHerd_1_1PsdGeometricDigitizerAlgo.html

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Detailed Description

Algorithm that groups the Monte Carlo PSD hits based on a purely geometric criterion.

This algorithm groups the neighboring PSD tiles/bars into bigger elements, by adding up the energy releases and assigning the total release to a new, bigger PSD element. The number of elements to be digitized is defined by the aggregation factors for each direction, which can be set as algorithm parameters. For example, setting an aggregation factor of 3 for the X direction of top STK means that big bars/tiles for the top PSD along X will be created by grouping 3 neighboring bars/tiles along X. The default aggregation factor is 1 in each direction, meaning that no aggregation is done if the user does not explicitly set the aggregation parameters. The digitization criterion is purely geometric and does not take into account important effects such as quenching, the photoelectron statistics, electronic noise, GeV->ADC conversion etc.

Needed event objects:

name	type	store	optional	description
psdHitsCollMC	PsdHitsColl	evStore	no	The hits in the PSD produced by MC simulation.
psdParticleHitsCollMC	PsdParticleHitsColl	evStore	yes	The particle hits in the PSD produced by MC simulation.

Needed global objects:

name	type	store	optional	description
psdGeoParamsColl	PsdGeoParamsColl	globStore	yes	Geometric parameters of the top PSD.

Produced event objects:

name	alias	type	store	description
psdHitsCollAggregated	psdHitsCollMC	PsdHitsColl	evStore	The hits in the digitized tiles/bars of the PSD.
psdParticleHitsCollAggregated	psdParticleHitsCollMC	PsdParticleHitsColl	evStore	The particle hits in the digitized tiles/bars of the PSD.

Produced global objects:

name	alias	type	store	description
psdGeoParamsCollAggregated	psdGeoParamsColl	PsdGeoParamsColl	evStore	Geometric parameters of the digitized PSD.

Parameters:

name	type	default value	description
------	------	---------------	-------------

ISSUES

Issues are the fundamental medium for collaborating on ideas and planning work in GitLab.

In HerdSoftware they are used for:

- Report a bug
- Propose a new feature or work item
- Organise and split the work on big tasks between different developers

Each issue comes with a title and a description. Comments can be added as the work progresses. Gitlab can automatically create a dedicated branch (and a merge request) for a given issue. Issues can be labelled with custom with tags.

Problem with digitization of psd bars

git.recas.ba.infn.it/herd/HerdSoftware/issues/112

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Hherd > HerdSoftware > Issues > #112

ClosedOpened 3 months ago by Giovanni MarsellaReopen issueNew issue

Problem with digitization of psd bars

While trying to use the PSD configuration with bars, trying to digitize the output file I get the following error:

```
*****  
*           HerdSoftware v0.0           *  
* commit: f429cf6799b765589e5abed92aa2511f6dace80f *  
* code status: clean                       *  
*****  
[DataProviderManager::Connect]      Connecting provider "ggsDataProvider" to data source: da  
[PsdGeometricDigitizerAlgo::...] ERROR    Layer 0: aggregation factor for side Xpos along Z (5) is  
[EventLoop::Initialize]            ERROR    Can't initialize algorithm "psdGeomDig"  
[AnalysisManager::RunEventLoops] ERROR    Can't initialize event loop for pass 0  
[EventAnalysis]                    ERROR    Analysis run error. Trying to finalize the analysis.  
  
*** Break *** segmentation violation  
[RootPersistenceService::End...] WARNING   Event object psdHitsCollMC has never been found in data  
[<unknown binary>] (no debug info)  
[/Users/imarsella/HERD/software/install//EVENTANALYSIS_7d98e157/lib/libEAPersistence.dylib] EA::Per  
[/Users/imarsella/HERD/software/install//EVENTANALYSIS_7d98e157/lib/libEAAnalysis.dylib] EA::Analys  
[/Users/imarsella/HERD/software/install//EVENTANALYSIS_7d98e157/bin/EventAnalysis] main (no debug i  
[/usr/lib/system/libdyld.dylib] start (no debug info)
```

Edited 3 months ago by Valerio Formato

Related merge requests1

Resolve "Problem with digitization of psd bars"

To DoAdd a To Do»

AssigneeEditValerio Formato@vformato

MilestoneEditNone

Time tracking?No estimate or time spent

Due dateEditNone

LabelsEditAlgorithmsBug

ConfidentialityEditNot confidential

Lock issueEditUnlocked

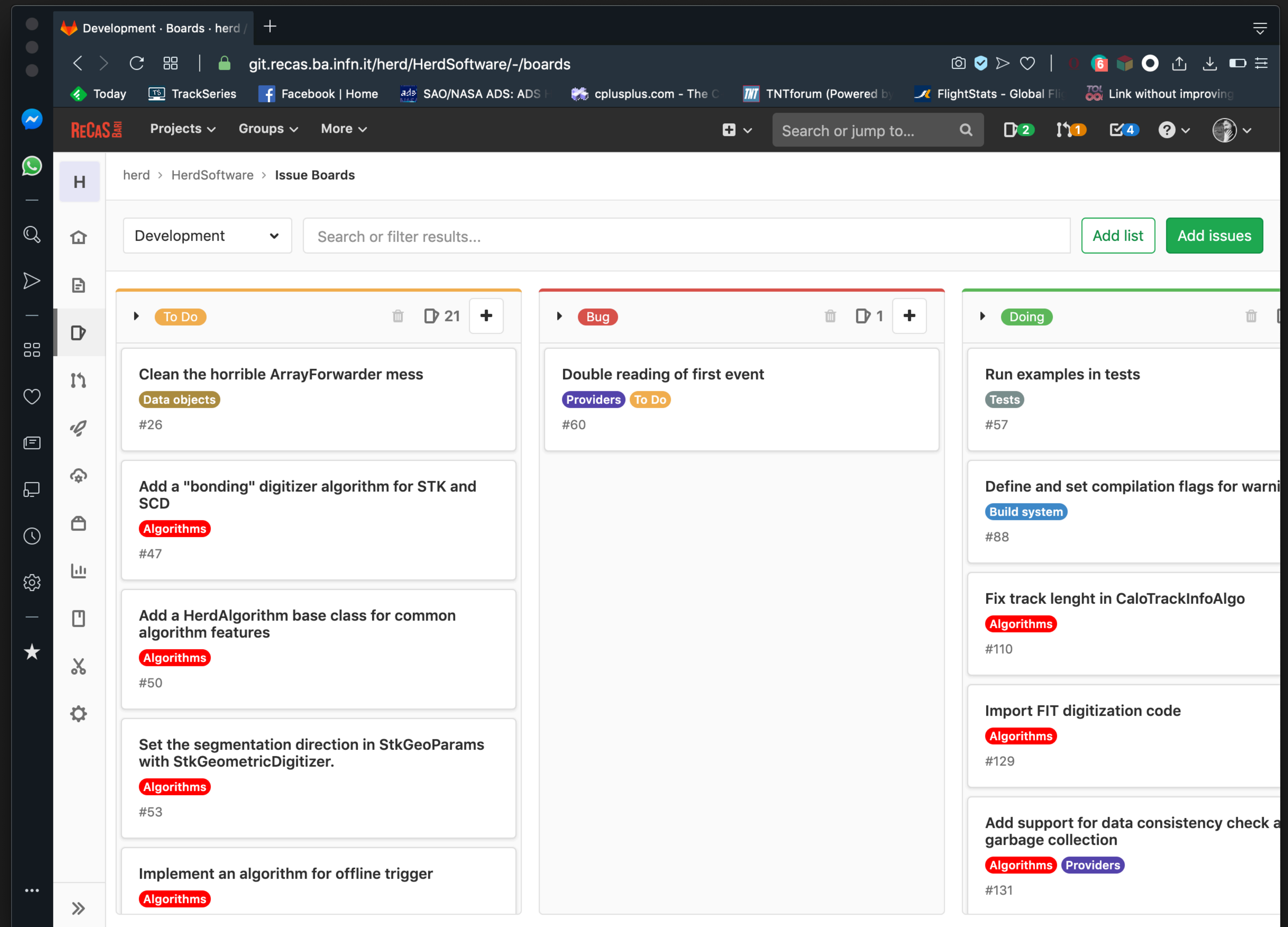
4 participants

Notifications

ISSUES

In HerdSoftware they are used for:

- Report a bug
- Propose a new feature or work item
- Organise and split the work on big tasks between different developers



ADVANCED TOOLS: MERGE REQUESTS

A Merge Request (MR) is the basis of GitLab as a code collaboration and version control platform. It is as simple as the name implies: a request to merge one branch into another.

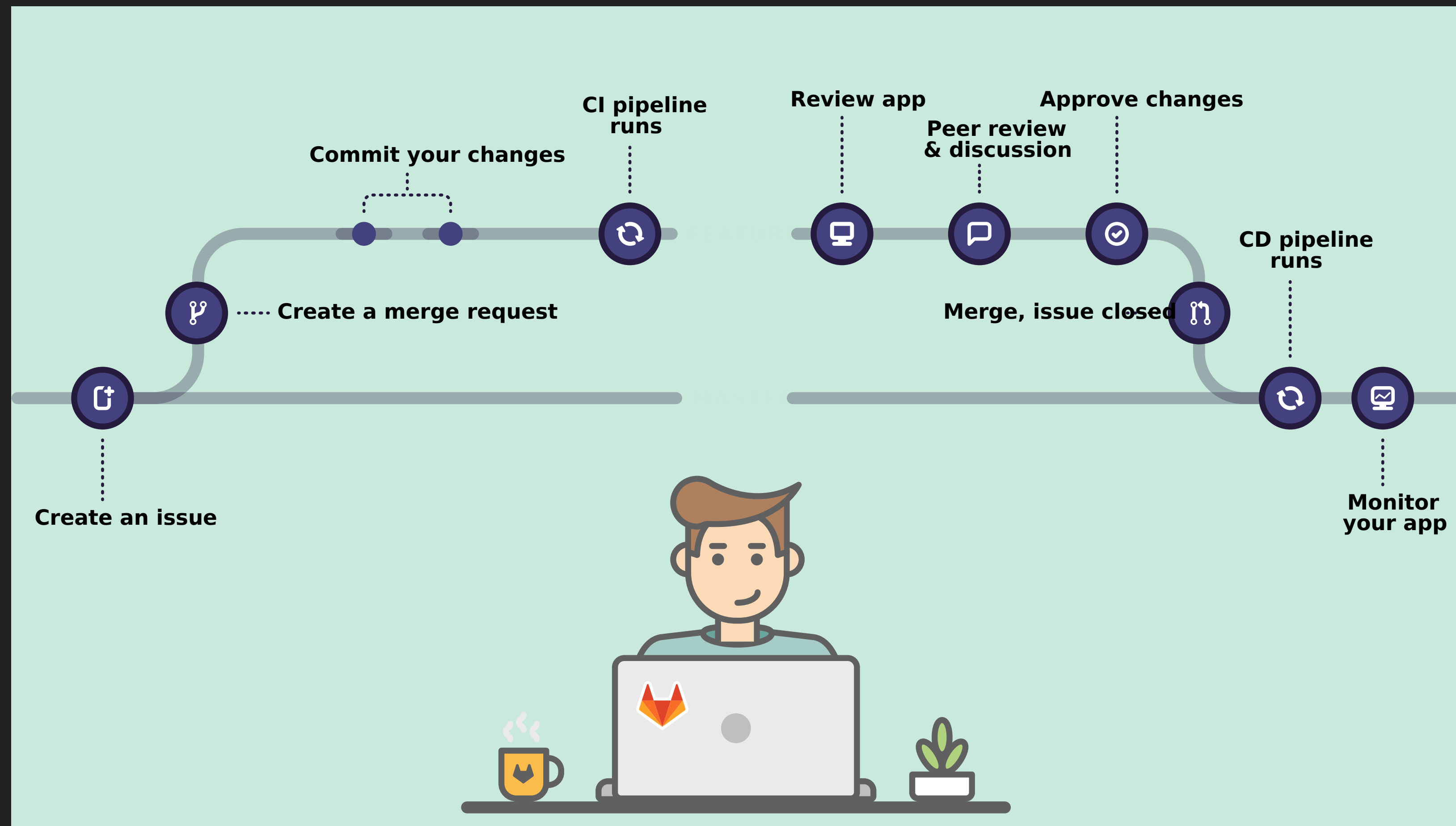
- Compare the changes between two branches
- Review and discuss the proposed modifications inline
- Build, test, and deploy your code in a per-branch basis with built-in GitLab CI/CD
- Automatically close the issue(s) that originated the implementation proposed in the merge request
- Organize your issues and merge requests consistently throughout the project with labels
- Resolve merge conflicts from the UI
- Enable fast-forward merge requests

The screenshot shows a GitLab Merge Request (MR) page for the project 'herd/HerdSoftware'. The MR is titled 'WIP: Resolve "Import FIT digitization code"' and was opened 3 weeks ago by Valerio Formato. It is currently in 'Open' status. The MR is linked to issue #129 and has 36 commits, 26 pipelines, and 50 changes. The 'Overview' tab is selected, showing a pipeline #678 that passed for commit 93261a92 on the 129-import-fit-digi... branch, with a coverage of 78.80% (-7.20%). The MR is a 'Request to merge 129-import-fit-digi... into master'. It is marked as a 'Work in Progress' (WIP) and has a 'Merge' button. The MR is also linked to issue #129. The right sidebar shows the 'To Do' section with 'Add a To Do' button, the 'Assignee' section with Valerio Formato (@vformato), the 'Milestone' section with 'None', the 'Time tracking' section with 'No estimate or time spent', the 'Labels' section with 'Algorithms' and 'Doing', the 'Lock merge request' section with 'Unlocked', the '1 participant' section with Valerio Formato, and the 'Notifications' section with a toggle switch. The bottom of the page shows the MR was created by Valerio Formato 3 weeks ago.

ADVANCED TOOLS: MERGE REQUESTS

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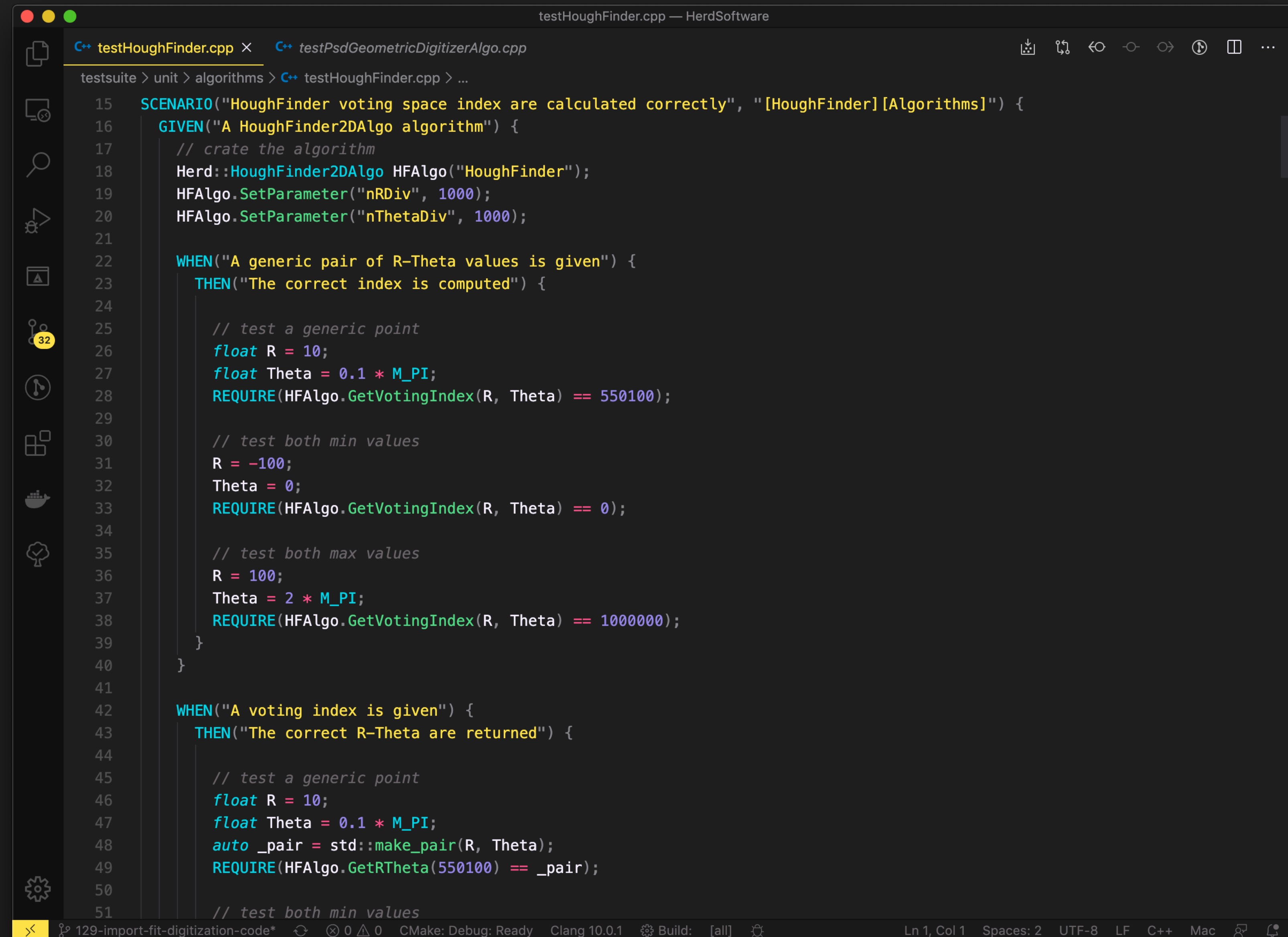
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- Resolve merge conflicts from the UI
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UNIT-TESTS

HerdSoftware comes with a suite of tests, based on the Catch2 framework, divided into several categories:

- Unit tests:
Make sure that the each single component of HerdSoftware perform its function as expected.
- Integration tests:
Check that details implemented in the simulation correspond to their corresponding software-side implementation
- System tests:
Check the whole pipeline for producing and analysing data
- External projects tests:
Check that the API for user-implemented algorithms is stable.



```
testHoughFinder.cpp — HerdSoftware
C++ testHoughFinder.cpp × C++ testPsdGeometricDigitizerAlgo.cpp
testsuite > unit > algorithms > C++ testHoughFinder.cpp > ...
15 SCENARIO("HoughFinder voting space index are calculated correctly", "[HoughFinder][Algorithms]") {
16     GIVEN("A HoughFinder2DAlgo algorithm") {
17         // crate the algorithm
18         Herd::HoughFinder2DAlgo HFAlgo("HoughFinder");
19         HFAlgo.SetParameter("nRDiv", 1000);
20         HFAlgo.SetParameter("nThetaDiv", 1000);
21
22         WHEN("A generic pair of R-Theta values is given") {
23             THEN("The correct index is computed") {
24
25                 // test a generic point
26                 float R = 10;
27                 float Theta = 0.1 * M_PI;
28                 REQUIRE(HFAlgo.GetVotingIndex(R, Theta) == 550100);
29
30                 // test both min values
31                 R = -100;
32                 Theta = 0;
33                 REQUIRE(HFAlgo.GetVotingIndex(R, Theta) == 0);
34
35                 // test both max values
36                 R = 100;
37                 Theta = 2 * M_PI;
38                 REQUIRE(HFAlgo.GetVotingIndex(R, Theta) == 1000000);
39             }
40         }
41
42         WHEN("A voting index is given") {
43             THEN("The correct R-Theta are returned") {
44
45                 // test a generic point
46                 float R = 10;
47                 float Theta = 0.1 * M_PI;
48                 auto _pair = std::make_pair(R, Theta);
49                 REQUIRE(HFAlgo.GetRTheta(550100) == _pair);
50
51                 // test both min values
```

UNIT-TESTS

This is extremely important: having a test suite while developing a software allows the developers to spot any breaking changes in the code as soon as possible, so that they will know immediately if any new feature they are working on breaks any component and they can find and fix any newly introduced bug before pushing their work.

```
vformato@trillian-laptop: /Volumes/HERD_Disk/software/source/HerdSoftware
zsh 129-import-fit-digitization-code + 24% 11 GB 0.0 kB↓ 0.0 kB↑
vformato@trillian-laptop HerdSoftware git 129-import-fit-digitization-code ✓ 59.84s 19:28
> ./build/testsuite/run_tests --makedatafiles
*****
*                      HerdSoftware v0.0                      *
* commit: 93261a92517c21ebd76aa459408860471fc98d92             *
* code status: clean                                           *
*****
[run_tests::RunGGSPenny] Generating data file unit/dataproviders/GGSDDataProviderTestFile_ParamGeo_Til
esPSD.root
[run_tests::RunGGSPenny] Generating data file unit/dataproviders/GGSDDataProviderTestFile_ParamGeo_Bar
sPSD.root
[run_tests::RunGGSPenny] Generating data file unit/dataproviders/GGSDDataProviderTestFile_ParamGeo_FIT
.root
[run_tests::RunGGSPenny] Generating data file unit/dataproviders/GGSDDataProviderTestFile_ParamGeo_Til
esPSD_withPartHits.root
[run_tests::RunGGSPenny] Generating data file unit/dataproviders/GGSDDataProviderTestFile_ParamGeo_Bar
sPSD_withPartHits.root
[run_tests::RunGGSPenny] Generating data file unit/dataproviders/GGSDDataProviderTestFile_ParamGeo_Til
esPSD_withPartHits_nonDefaultThickness.root
[run_tests::RunGGSPenny] Generating data file unit/dataproviders/GGSDDataProviderTestFile_ParamGeo_Bar
sPSD_withPartHits_nonDefaultThickness.root
[run_tests::RunGGSPenny] Generating data file unit/dataproviders/GGSDDataProviderTestFile_ParamGeo_Stk
Off_Scd0n.root
[run_tests::RunGGSPenny] Generating data file unit/dataproviders/GeoParams.root
[run_tests::RunGGSPenny] Generating data file unit/dataproviders/MCTruthOnly.root
[run_tests::RunGGSPenny] Generating data file integration/stkgeomdig/geantinosOnTop_StkStrip.root
[run_tests::RunGGSPenny] Generating data file integration/stkgeomdig/geantinosOnTop_StkWafer.root
[run_tests::RunGGSPenny] Generating data file integration/stkgeomdig/geantinosOnXSide_StkStrip.root
[run_tests::RunGGSPenny] Generating data file integration/stkgeomdig/geantinosOnXSide_StkWafer.root
[run_tests::RunGGSPenny] Generating data file system/digitizemc/electrons_10GeV_sphere.root
=====
All tests passed (117945 assertions in 45 test cases)
vformato@trillian-laptop HerdSoftware git 129-import-fit-digitization-code ✓ 01:00 19:29
>
```


CONTINUOUS INTEGRATION

What if the developer forgets to run the test while he is working?

Or if he doesn't try to compile the code before pushing it?

We have configured HerdSoftware to use the GitLab continuous integration facility to compile the code and run the tests automatically on each push. If anything breaks the developer receives an automatically generated email with detailed information on what's gone wrong.

Pipelines · herd / HerdSoftware | HerdSoftware: Herd::PsdGeor | +

git.recas.ba.infn.it/herd/HerdSoftware/pipelines

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H All 540 Pending 0 Running 0 Finished 507 Branches Tags Run Pipeline Clear Runner Caches CI Lint

Status	Pipeline	Triggerer	Commit	Stages	
passed	#678 latest		P129-import-... → 93261a92 algorithms/digitization: Fir...	✓ ✓	⌚ 00:09:16 📅 2 days ago
passed	#677		P129-import-... → 2c806f01 dataobjects: Fix position-...	✓ ✓	⌚ 00:09:11 📅 2 days ago
passed	#676 latest		P57-run-exam... → 22bf665b analysis/providers: raise a...	✓ ✓	⌚ 00:10:57 📅 2 days ago
passed	#675		P129-import-... → 768d449e Adding missing file...	✓ ✓	⌚ 00:09:39 📅 3 days ago
failed	#674		P129-import-... → 5ed8771a dataobjects: introduce ch...	✗ ➡	⌚ 00:01:03 📅 3 days ago
passed	#673		P57-run-exam... → cc69d7eb analysis/dataproviders: fix ...	✓ ✓	⌚ 00:09:44 📅 3 days ago
passed	#672		P129-import-... → b6725c72 testsuite/external: add mis...	✓ ✓	⌚ 00:08:45 📅 3 days ago
failed	#671		P129-import-... → b081d23c dataobjects: Add few func...	✓ ✗	⌚ 00:09:46 📅 4 days ago

CONTINUOUS INTEGRATION

What if the developer forgets to run the test while he is working?

Or if he doesn't try to compile the code before pushing it?

We have configured HerdSoftware to use the GitLab continuous integration facility to compile the code and run the tests automatically on each push. If anything breaks the developer receives an automatically generated email with detailed information on what's gone wrong.

Moreover the code is built and tested on several platforms in order to make sure that it works properly on all the supported platforms.

Pipeline · herd / HerdSoftware

git.recas.ba.infn.it/herd/HerdSoftware/pipelines/678

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passed Pipeline #678 triggered 2 days ago by Valerio Formato

algorithms/digitization: First steps in FitDigitizerAlgo import

10 jobs for 129-import-fit-digitization-code in 9 minutes and 16 seconds (queued for 2 seconds)

latest

93261a92

1 related merge request: !35 WIP: Resolve "Import FIT digitization code"

Pipeline Jobs 10

Build	Test
build-co7	tests-co7
build-osx-catali...	tests-osx-catal...
build-osx-high...	tests-osx-high...
build-ubuntu16...	tests-ubuntu16...
build-ubuntu18...	tests-ubuntu18...

Available runners:

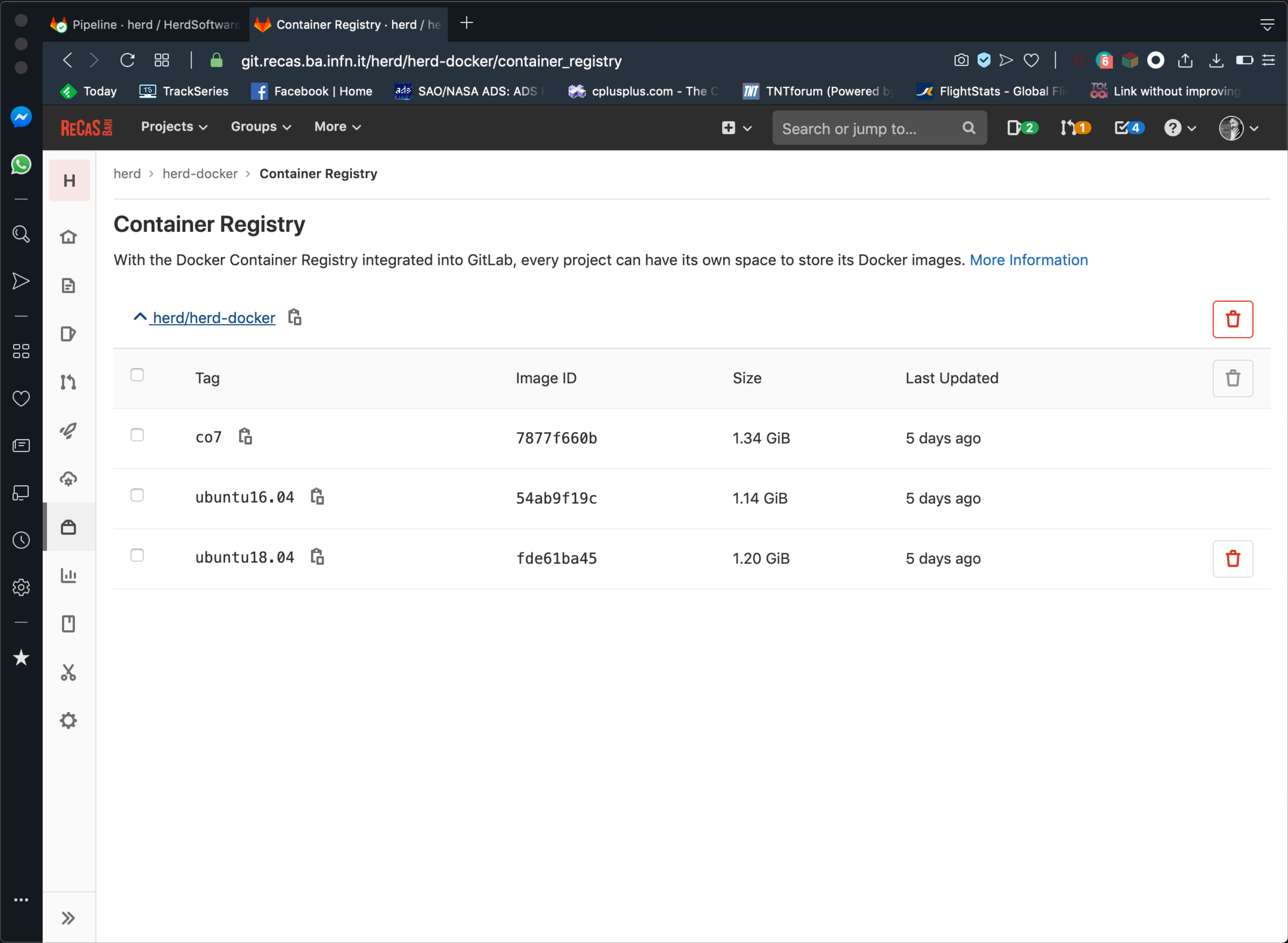
- CentOS7 (docker)
- Ubuntu 16.04 (docker)
- Ubuntu 18.04 (docker)
- Mac OSX High Sierra
- Mac OSX Catalina

CONTINUOUS INTEGRATION

We have configured HerdSoftware to use the GitLab continuous integration facility to compile the code and run the tests automatically on each push. If anything breaks the developer receives an automatically generated email with detailed information on what's gone wrong.

Moreover the code is built and tested on several platforms in order to make sure that it works properly on all the supported platforms.

Linux distributions are tested on custom docker images automatically generated in another GitLab project and are available for debugging.



CONTINUOUS INTEGRATION

We have configured HerdSoftware to use the GitLab continuous integration facility to compile the code and run the tests automatically on each push. If anything breaks the developer receives an automatically generated email with detailed information on what's gone wrong.

The test jobs also compute the code coverage for the project and give information on which parts of the codebase are not explored by the tests, so that the developers can add the proper tests to the suite and make sure that every line of code is properly tested.

tests-co7 (#4519) · Jobs · her

git.recas.ba.infn.it/herd/HerdSoftware/-/jobs/4519

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H

src/analysis/dataobjects/Cluster.cpp2121100%178src/analysis/dataobjects/FitGeoParams.cpp17919016787%36,38,40,65,125-127,144,162-164,186-188,198-199,209-211,250-251,296-297180src/analysis/dataobjects/Line.cpp491836%25,38,40-41,43,48-53,55-59,61-65,67-68,72-74,77-80,82181src/analysis/dataobjects/Line2D.cpp6583%18182src/analysis/dataobjects/MCPPrimaryParticle.cpp183171588%21,30184src/analysis/dataobjects/Plane.cpp212095%33185src/analysis/dataobjects/PsdGeoParams.cpp186514894%19,63-64187src/analysis/dataobjects/SiliconDetectorGeoParams.cpp18820018994%48,51-52,73,80,214-215,261-262,307-308189src/analysis/dataobjects/Track2D.cpp252496%26190src/analysis/dataobjects/TrackInfoForCalo.cpp1911111100%192src/analysis/dataproviders/GGSDataProvider.cpp1931368115784%110-111,162,192,399,401,446-447,528-529,535-536,546-550,599,601,612,665,678,703-704,714-718,810-811,817-818,828-832,880,882,944,957,982-983,993-997,1027,1030,1053-1054,1064-1065,1073-1074,1082-1083,1091-1092,1100-1101,1107-1109,1112-1113,1163,1168,1201,1206,1217,1222,1231-1233,1235-1237,1254-1255,1290-1291,1294-1295,1423,1427,1437-1439,1441-1443,1455-1456,1464,1466,1478,1480,1585-1589,1591-1592,1594,1597-1598,1605,1610,1619-1621,1623-1625,1642-1643,1652-1654,1663-1665,1671-1673,1678-1679,1682-1683,1719-1727,1732-1733,1735-1748,1750-1754,1760-1764,1766-1779,1781-1783,1787-1789,1791-1792,1794-1797,1810,1837,1839,1927,1937,1941,1951,1961,2007-2008,2057,2075-2078,2081-2082194-----195TOTAL3822301979%196-----201Job succeeded

tests-co7Retry

Duration: 2 minutes 33 secondsTimeout: 1h (from project)Runner: vm-mori-recas (#7)Coverage: 79%Tags: docker

Commit 93261a92 in !35algorithms/digitization: First steps in FitDigitizerAlgo import

Pipeline #678 for 129-import-fit-digitization-code

test

→ tests-co7

tests-osx-catalina

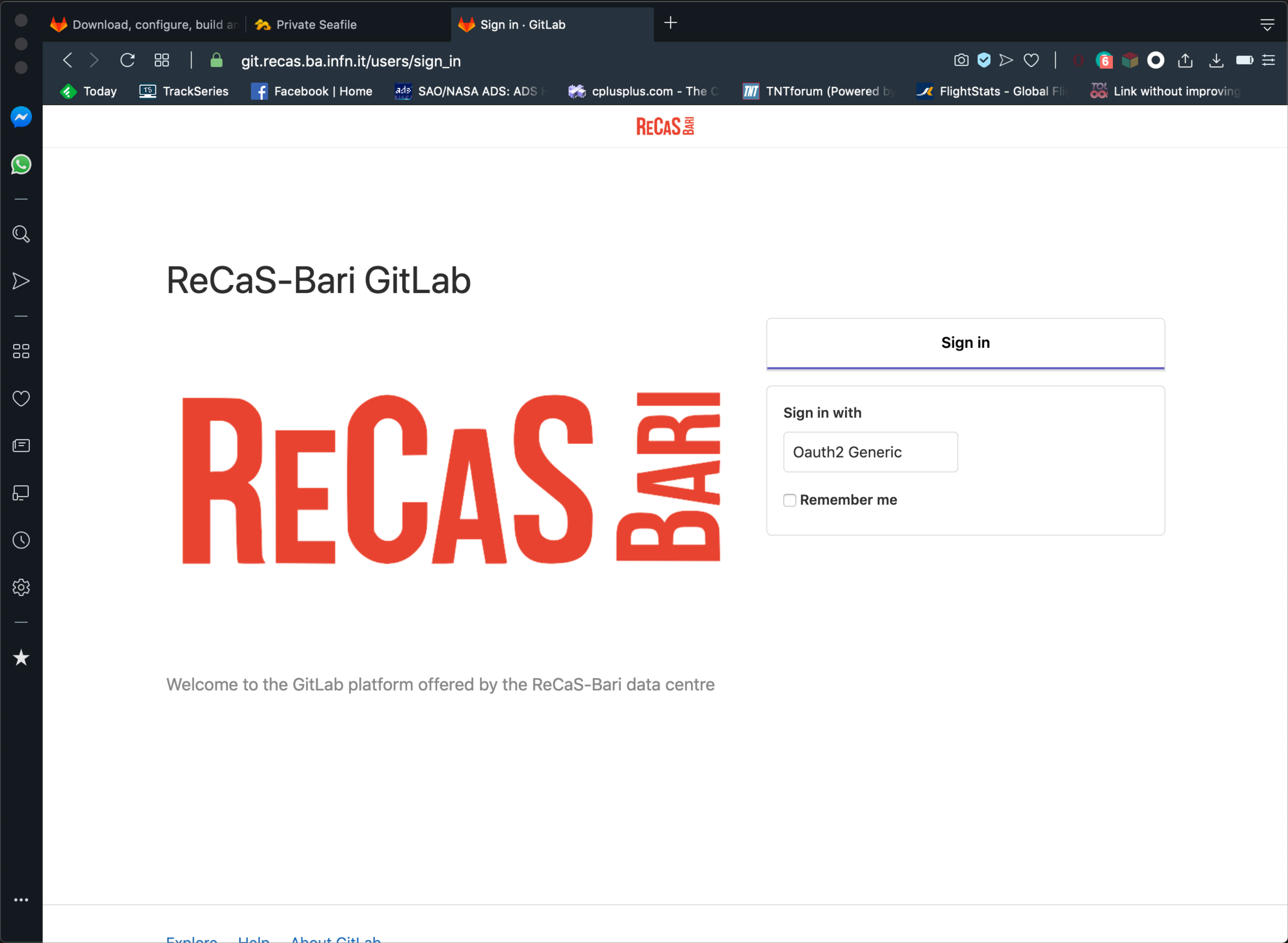
tests-osx-highsierra

tests-ubuntu16.04

tests-ubuntu18.04

ACCESS TO HERDSOFTWARE

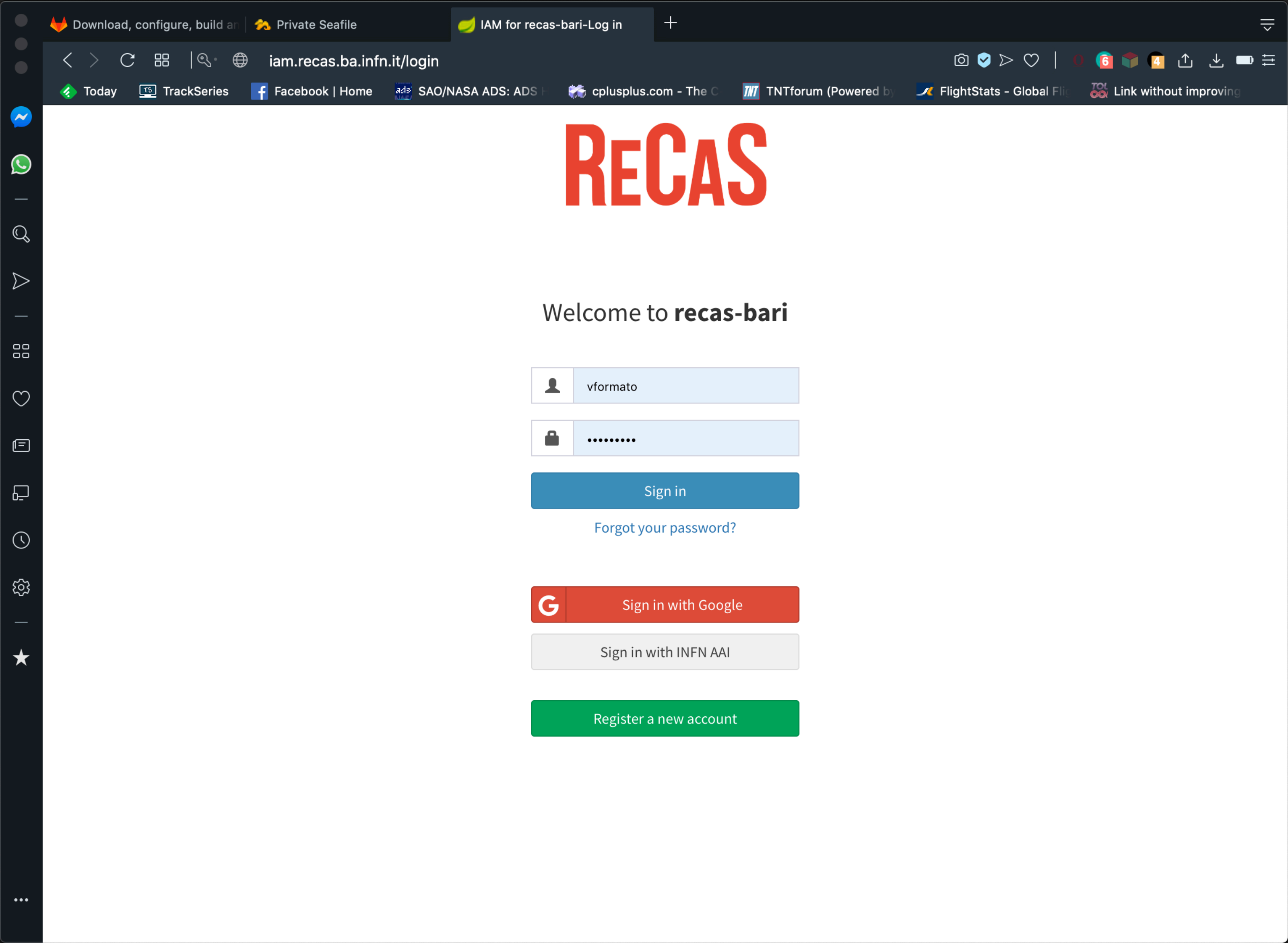
Go to git.recas.ba.infn.it



ACCESS TO HERDSOFTWARE

Go to git.recas.ba.infn.it

You need a INFN or a registered Google account. To register click on the **green** button.

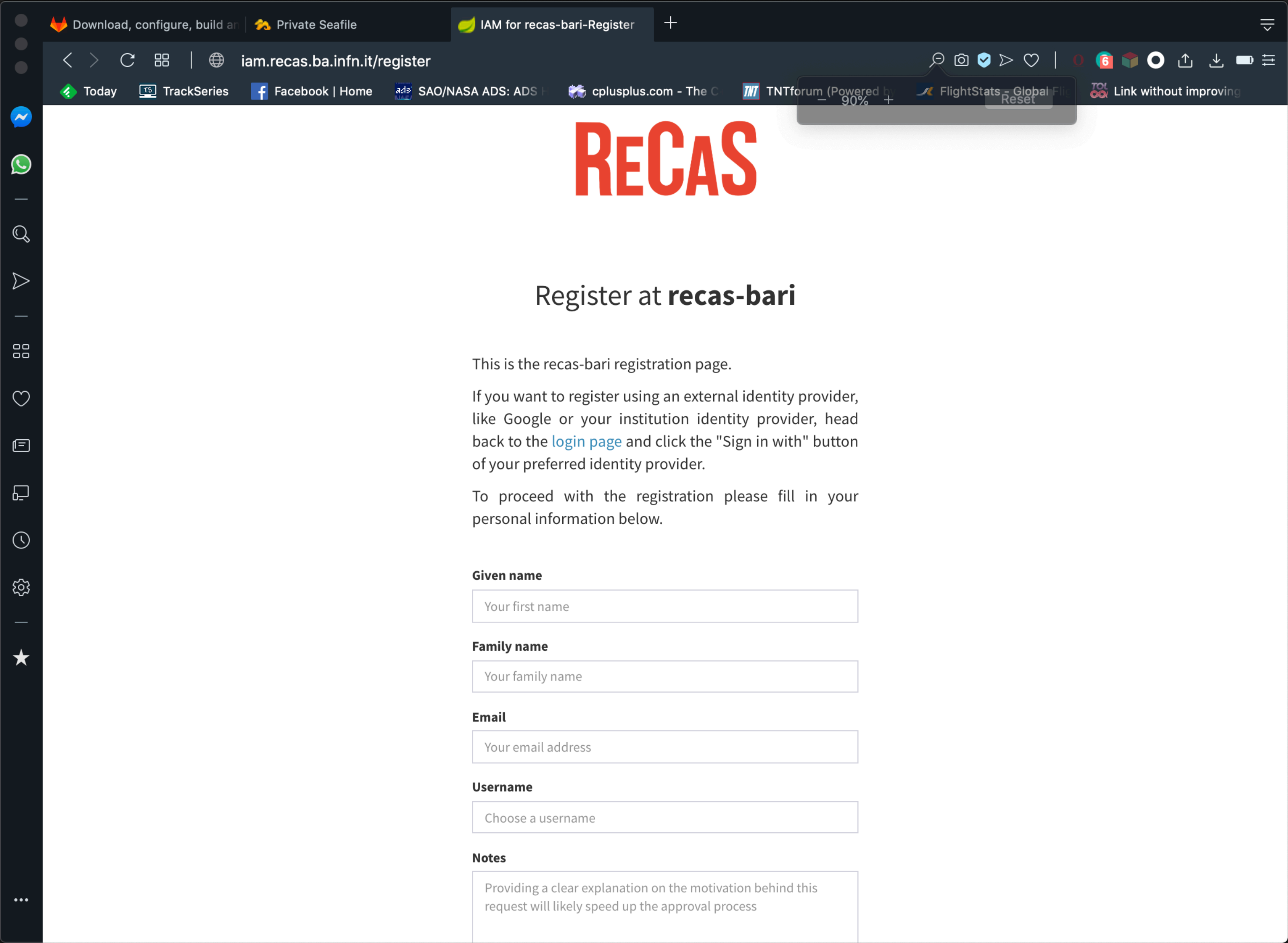


ACCESS TO HERDSOFTWARE

Go to git.recas.ba.infn.it

You need a INFN or a registered Google account. To register click on the **green** button.

Fill in the details. In the "notes" field type: "Access to the HERD repository (contact person: Fabio Gargano, INFN Bari). Click on "Register".



ACCESS TO HERDSOFTWARE

Go to git.recas.ba.infn.it

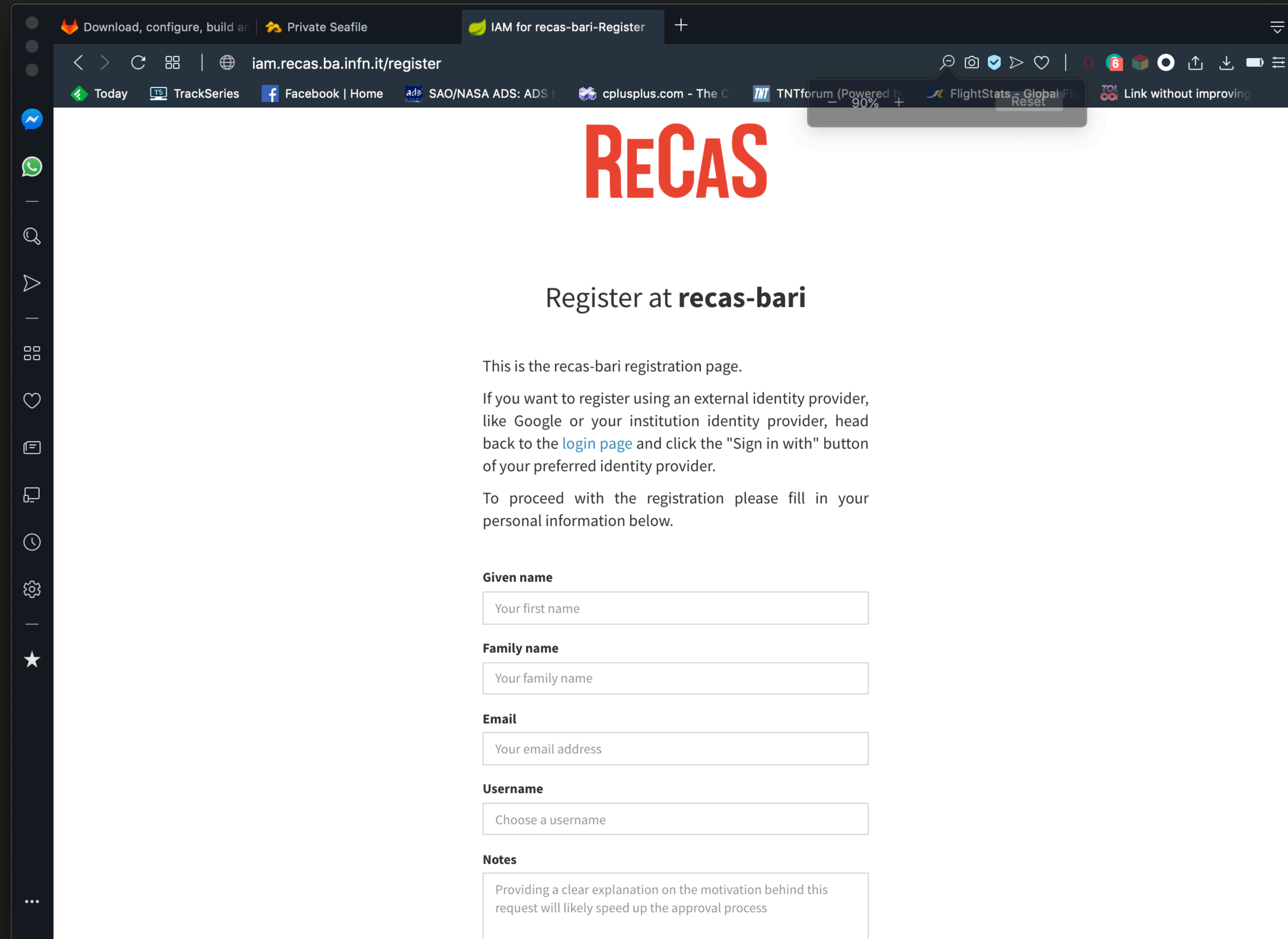
You need a INFN or a registered Google account. To register click on the **green** button.

Fill in the details. In the "notes" field type: "Access to the HERD repository (contact person: Fabio Gargano, INFN Bari). Click on "Register".

After logging, write to one of:

- fabio.gargano@ba.infn.it
- nicola.mori@fi.infn.it
- valerio.formato@roma2.infn.it

to be added to the "herd" group



The screenshot shows a web browser window with the URL `iam.recas.ba.infn.it/register`. The page has a white background with the **RECAS** logo in red. Below the logo, the heading "Register at **recas-bari**" is displayed. The page contains the following text and form fields:

This is the recas-bari registration page.

If you want to register using an external identity provider, like Google or your institution identity provider, head back to the [login page](#) and click the "Sign in with" button of your preferred identity provider.

To proceed with the registration please fill in your personal information below.

Given name

Family name

Email

Username

Notes

Providing a clear explanation on the motivation behind this request will likely speed up the approval process