UNIVERSITEIT
GENT

FACULTY OF **SCIENCES**

Ghent University in OpenDreamKit

Jeroen Demeyer

UGent added to OpenDreamKit

- Jeroen Demeyer applied for a “ingénieur de recherche” position at Paris-Sud to work for OpenDreamKit.
- Jeroen was recruted 1 March 2016, but there were a lot of administrative difficulties because he did not want to move to France.
- To solve this, it was decided to add UGent as partner of OpenDreamKit, starting at 1 July 2016 (hopefully).
- UGent has a single participant, Jeroen Demeyer, who will work 30.5 PM at UGent for OpenDreamKit (after having worked 2 PM at Paris-Sud).

Who is Jeroen Demeyer?

- SageMath developer since July 2010 (Sage Days 23 in Leiden). Main contributions:
  - Build system.
  - PARI interface.
  - Coercion model, core arithmetic and comparison infrastructure.
  - Lines of code written for Sage according to GitHub: $-125\,115$.
- SageMath release manager from January 2011 (Sage 4.6.1) to December 2013 (Sage 5.13).
- Main developer of cysignals: a Cython package for interrupt, signal, error and memory handling.
- Main developer of pari_jupyter: a kernel for the Jupyter Notebook running PARI/GP.

D 3.2: Understand and document SageMathCloud backend code

Some initial attempts to run SageMathCloud on a personal laptop.

- There is documentation from upstream on how to do this.
- Managed to run the SMC server, but starting projects did not work.
- Various issues reported upstream, no response yet.

D 4.1: Python/Cython bindings for PARI and its integration in Sage

This deliverable is about splitting off the PARI interface of Sage to a separate package `cypari`.

- This turned out to be much harder than originally anticipated: the PARI bindings are quite closely tied to Sage.
- Two most important problems:
  - Interrupt (CTRL-C) and error handling using the `sig_on()` mechanism.
  - The coercion model which is needed to do arithmetic between PARI elements and other Sage elements.

D 4.1: Python/Cython bindings for PARI and its integration in Sage

This deliverable has been split in 4 sub-tasks:

1. Split off interrupt/signal/error handling to a separate package `cysignals`: DONE.
2. Refactor the Sage coercion model. Add better support for non-Sage types, such that the PARI bindings no longer need the coercion model. In progress.
3. Split off the remaining Sage-specific parts of the PARI interface (for example, conversion from/to Sage types). In progress.
4. Finally, actually split off the PARI bindings from Sage as a new package. Should be easy once the rest has been done.

D 4.4: Basic Jupyter interface for GAP, PARI/GP, SageMath, Singular

First version of Jupyter kernel for PARI/GP is done: Python package `pari_jupyter` on PyPI.

- Supports all GP functions except plotting.
- Supports history and TAB-completion as in GP.
- TODO for second version (D 4.7): syntax highlighting, plotting, break loop.
- TODO for Jupyter upstream: decide on the proper way to install kernel specs!

D 4.13: Refactorisation of SageMath's Sphinx documentation system

Big task, but many things have been done:

- Sphinx in Sage has been upgraded to version 1.4.1 (latest upstream is version 1.4.4).
- A lot of cleaning up and minor refactoring has been done.
- Reduce the amount of Sage-specific stuff in docbuilder: a lot of progress but a lot remains to do. This is mostly about Cython, so coordination with Python/Cython upstream might be needed.
- Some work has been done with upstream to reduce the memory footprint of Sphinx.