

# The Sampo\* Project

Richard Hook, Michele Peron & Peter Quinn

ESO STC April 2005

\* The Sampo is a mysterious magical artifact and source of power from the Finnish Kalevala Legend.



April 2005

#### ESO Data Reduction and Analysis tools - an example

QFitsView (3D visualisation tool) Gasgano & Sinfoni Pipeline File Edit Scale Colourmap Rotation Zoom Options ImRed DPUSER Buffer Window Help 🚅 🔚 🞒 🐚 ්ර ↔ 🚦 🙊 🔎 1150 🛊 Movie 🗀 20 172.4  $+ - \times \div ^{\wedge} \hat{x}$ 4 41 nan 83.871625 -69.269955 collapse Find entry: File SINFO.2004-11-29T06:25:43.431.fits SINFO.2004-11-29T06:46:47.908.fits TPL.ID SINFONI\_ifs\_obs\_FixedS... SKY\_NODDING SINFONI\_ifs\_obs\_FixedS... INFO.2004-11-29T06:57:25.768.fits SINFONI\_ifs\_obs\_FixedS... INFO.2004-11-29T07:08:07.548.fits OBJECT NODDING SINFONI\_ifs\_obs\_FixedS... SINFO.2004-11-29T07:29:04.333.fits OBJECT\_NODDING SINFONI\_ifs\_obs\_FixedS SKY\_NODD Si\_rec\_objnod v1 ଡ଼ pd 60.A-9235(A) SINFONI Wolfgang BP\_MAP\_NL BP MAP NL HK 025 fits BP MAP NL H 025,fits BP\_MAP\_NL BP\_MAP\_NL\_J\_025.fits BP\_MAP\_N BP\_MAP\_NL\_K\_025.fits BP MAP N infoni.general.overwrite\_parameters sinfoni.stacked.frm\_doclass DISTORTIC infoni.stacked.method infoni.stacked.lower\_rejection sinfoni.stacked.higher\_rejection sinfoni.stacked.flat index Extension: HEADER ▼ Find in he infoni.stacked.ind index sinfoni stacked mask rad Incl...
Filename
SINFO.2004-11-29T06:25:43.4
SINFO.2004-11-29T06:46:47.5
SINFO.2004-11-29T06:57:25.7 MIDAS 00 graph 0 MIDAS □ R11 + R22 + Divide St2.08097 04 SEP RADECSYS 300 MJD-OBS DATE-OBS er: emodigit 560 2.200 2.263 2.325 2.388 2.451 1987A\_K. bdf OBSERVER Intensity entification: 200 CRVAL1 CRVAL2 1 to 80 i to i 100 3.77317e-05 Midas (and fitting routines) k: 105 te: 08 Apr 2005 me: 11:58:22 2.3

**ESO STC** 



# Data Reduction and Analysis in the ESO Community - the current situation

- An ESO goal is to export VLT instrument pipelines to the community.
   Pipeline recipes will be available on the desktop together with tools such as gasgano and esoRex
- Many "old" systems (MIDAS, IRAF, IDL...) are used for data reduction and data analysis in the community
- Those systems do not work well with each other
- Most of the necessary reduction and analysis algorithms are now available somewhere
- Data volume and complexity is increasing rapidly (VLTI, VST, VISTA...). There will be soon a need for distributed and parallel processing
- Virtual Observatory resources and tools are becoming available



#### Sampo: The Motivation

To address these problem we need to move towards a system that:

- Is easy to use
- Provides a uniform environment for running standard tools and legacy applications, including data reduction and analysis, instrument pipelines, data visualisation and plotting, etc...
- Provides uniform access to local and distributed data
- Provides access to remote and distributed computing resources
- Integrates well with VO
- Provides means for developing and integrating "private" applications (e.g. python scripts or compiled applications) so that they can be used flexibly in many contexts



### Background to the Sampo project

- As part of Finland's joining fee a contribution "in kind" of 6 people for three years (18 FTE) was made available.
- The Project formally started in January 2005 and will run for three years.
- Project Organisation:
  - Project Manager: Richard Hook (ESO/ST-ECF/DMD)
  - Project Scientist: Palle Moller (ESO/DMD)
  - Project Team (Finland):
    - Finnish National Coordinator (CSC)
    - VO Specialist (CSC)
    - System Architect (Helsinki Observatory)
    - Two Software Engineers (Helsinki Observatory)
    - One Consultant (Space Systems Finland)
- Project Oversight:
  - A Finnish Astronomical Advisory Group (FAAG) chaired by Janne Ignatius.
  - An ESO Science Advisory Committee (SAC), chaired by the Project Scientist, representing the ESO Faculty.



# Sampo Project Goals

- The main project goals are:
  - Get a clear and precise understanding of the requirements of such a future system.
  - Assess technology and test it on realistic astronomical datasets.
- To achieve these goals the Sampo project will:
  - Execute several pilot projects that will also provide useful tools and address some of the requirements of forthcoming ESO telescopes and instrumentation.
  - Provide detailed reports and risk assessments to guide future choices.
- It is a Phase A project not a project to deliver a major system at the end of the study phase.



## Current Sampo Project Status

- The team has been in post since January 2005
- An Initial project PyMidas, a Python interface to ESO-MIDAS in progress (to be finished October 2005)
- The team is also preparing for the next pilot projects by gaining expertise in VO and other technologies
- The project is working closely with the Opticon 3.6 Network on Future Astronomical Software Environment (FASE)
- Advisory bodies currently preparing recommendations for future Sampo projects
- Advice from the community, via the project scientist is very welcome!

April 2005 ESO STC 7