PRISM Survey

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Aims of the Survey

- "To review the experience of all the groups in the community that used or tested the PRISM software. Those groups should be interviewed in order to gather their experience, remarks, and ideas for further evolution."
- " To capture feedback on the tools produced in the PRISM project" (but not explicitly the *processes* used in the project in which the tools were produced).
- "To direct tool development in PSI" (but not explicitly to address the processes to be used to achieve this).
- Aim to capture the views of users, but "also those of developers and integrators of tools." The views of individuals were of prime importance but also institutional views were sought.

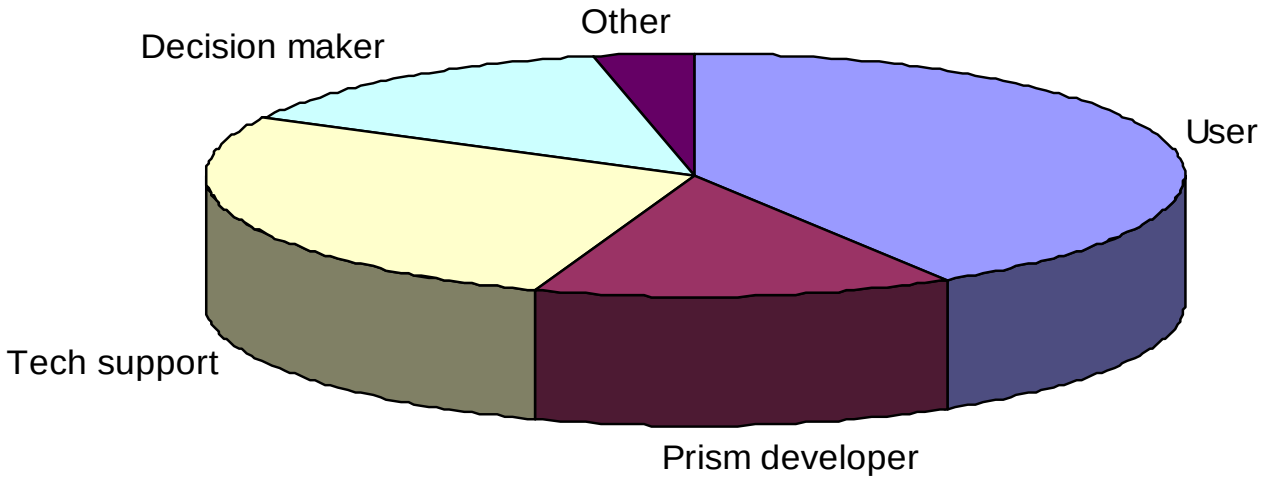
What was done?

- Developed a questionnaire
  - Tested on two sites
- Gathered responses to questionnaire
  - Sent to targets identified by PSI Core team
- Undertook three site visits
  - Sites identified by PSI Core team
- Produced a Survey Final Report
  - Collation of processed responses
  - Key points made during visits
- Produced a (more subjective) ‘Next Steps’ doc

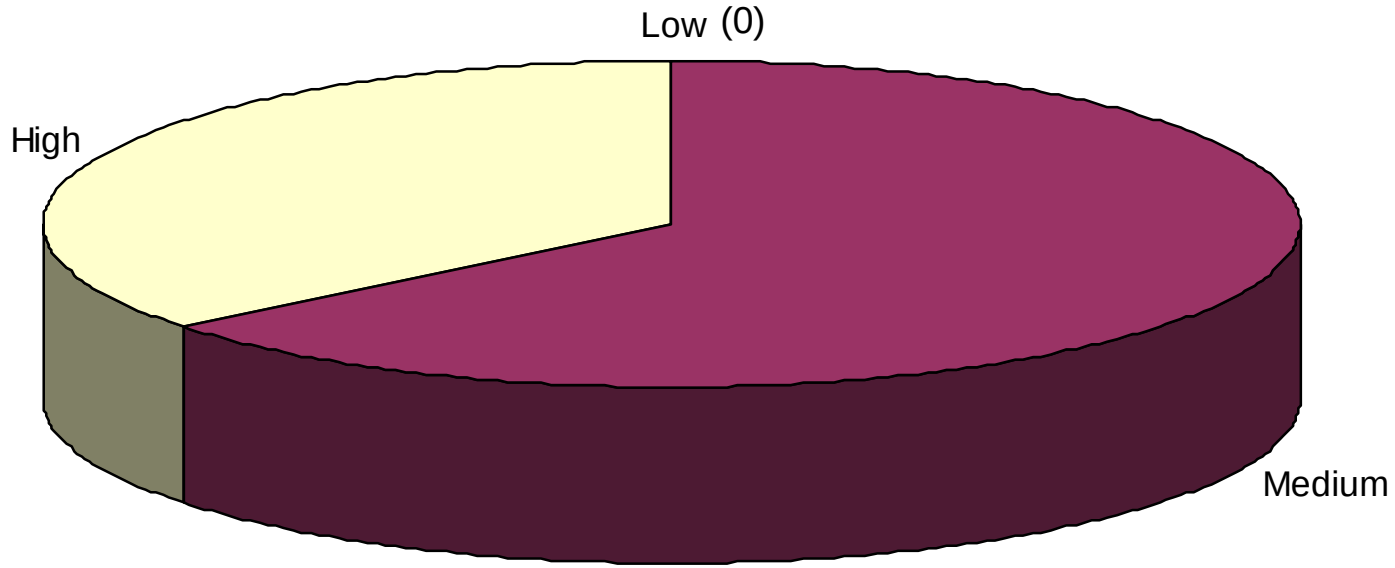
Responses

- 25 sites contacted
- 19 responses
- Reasons for not participating:
  - MPI-BGC - Currently in a restructuring phase
  - KNMI – actually a late response
  - CSCS - Not enough time and little experience
  - PIK - No one available to fill in questionnaire
  - UCL - Do not wish to participate
  - INPE - Not yet ready to use Prism

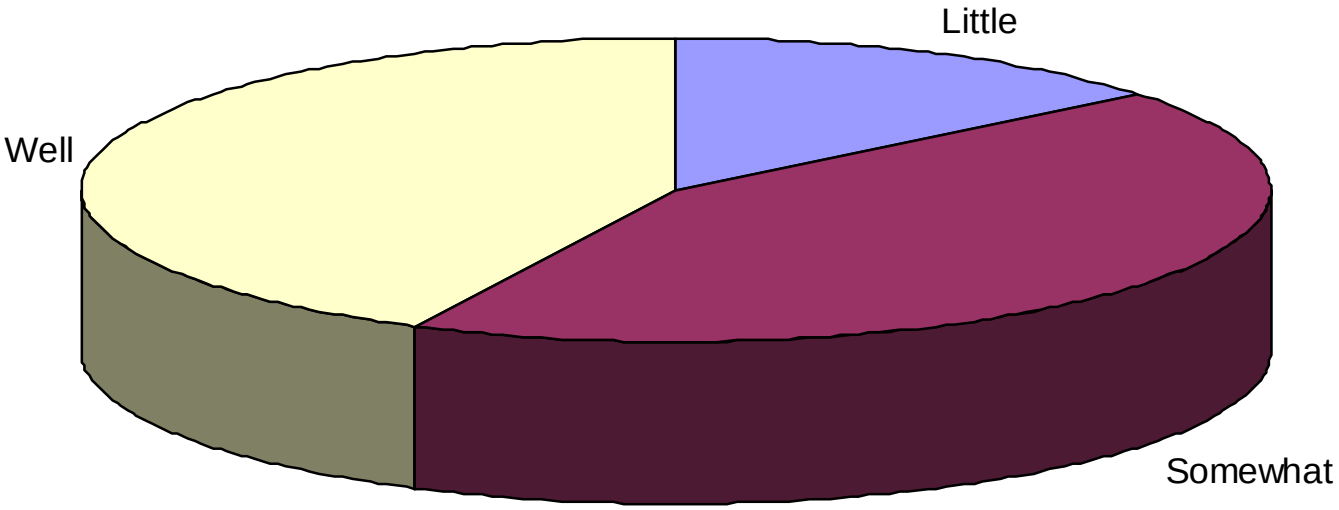
Statistics
Responder by Classification



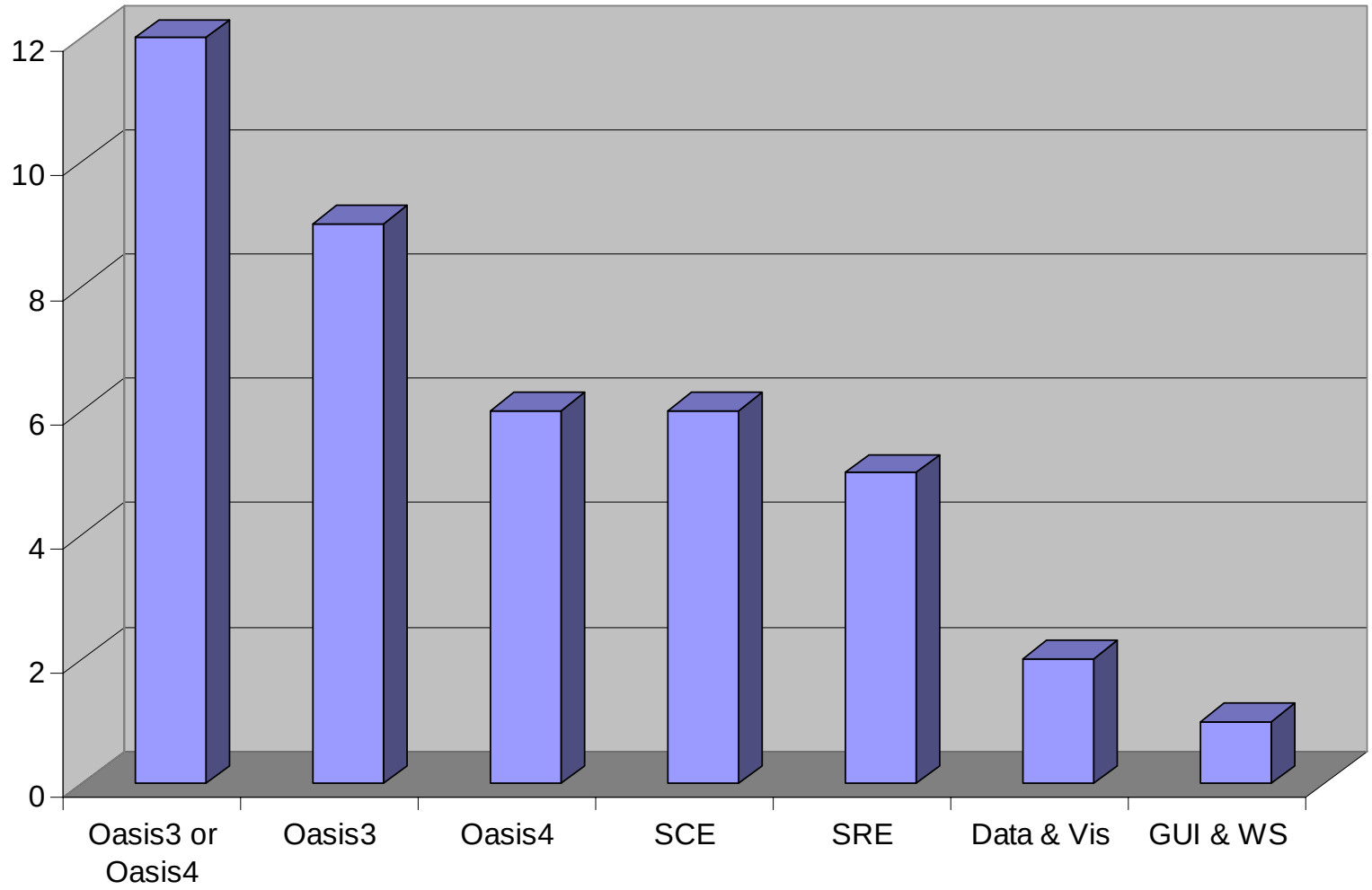
Software Infrastructure Importance



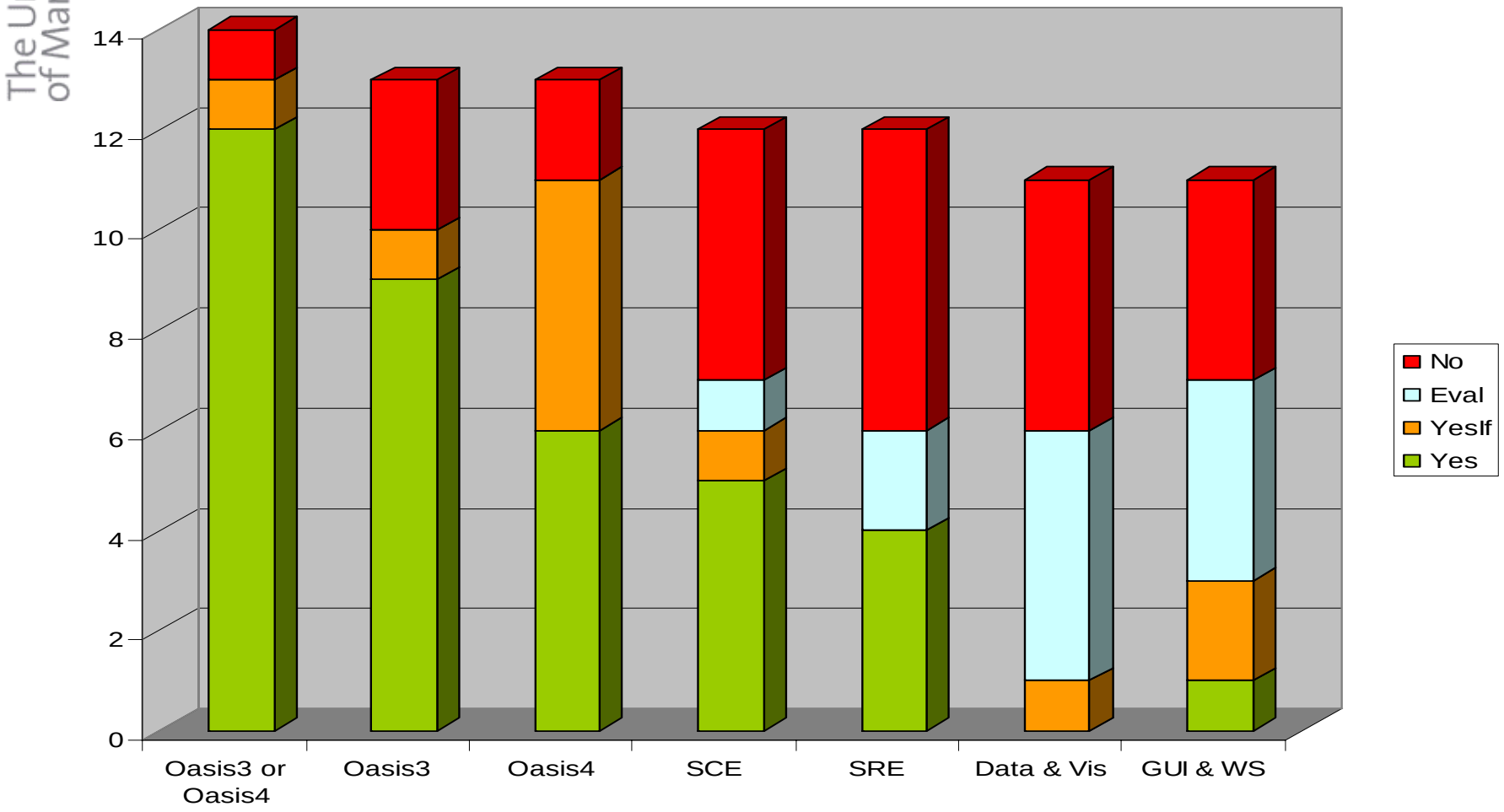
Institutional Organisation



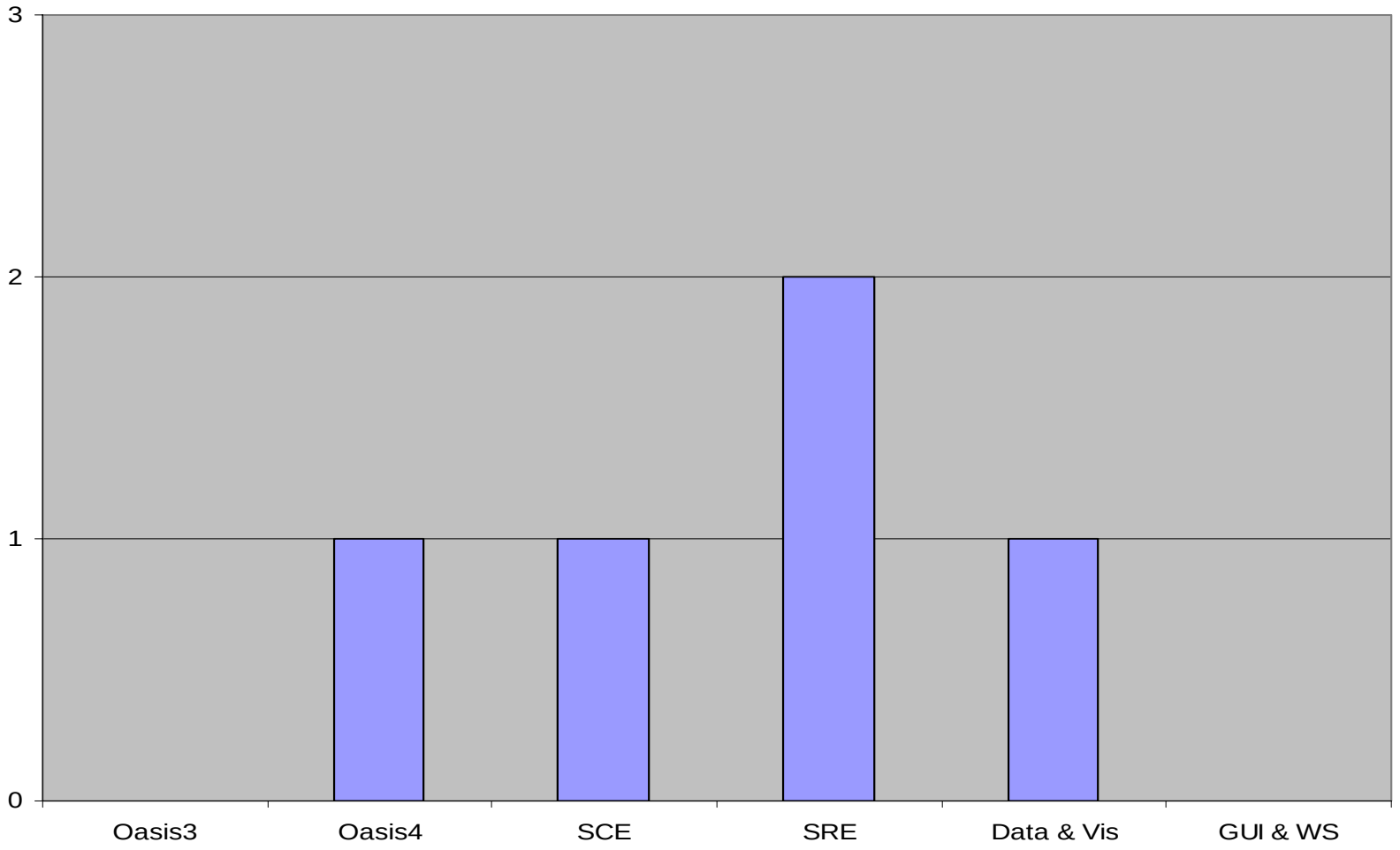
Number Using/Used the Software



Planning to Use Software in Future



Tried but No Plans to Use



General Section

- **Level of infrastructure effort**
  - 7 institutions explicitly listed the amount of infrastructure effort in their institution.
  - 6 of these had effort of up to 3 person years/year. One had in excess of 10 person years/year.
  - All institutions implied they had some effort.
  - Effort available is typically made up from a mix of permanent and soft-funded posts.

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- **Plans to improve the organisation of software infrastructure**
  - [5] Improvement is under constant review
  - [5] Have specific improvements planned or respond only to scientific requirements
  - [2] Use infrastructure developed elsewhere
  - [2] No plans to improve in the near future (current infrastructure is adequate)

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- **Difficulties in organising an efficient software infrastructure**
  - [3] Lack of standards
  - [5] Lack of expertise
  - [3] Not enough people
  - [3] Need for platform independence
  - [3] Soft funding/limited contracts

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- **Standards or standard interfaces that should be common**
  - [12] NetCDF/CF
  - [4] Standard coupler
  - [3] GRIB
  - [3] Standard model interfaces
  - [3] Standard compile environment
  - [2] Standard run environment

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- **Role of PSI**
  - [10] Further development of existing tools
  - [7] Maintenance and support of existing PRISM tools
  - [4] Maintain an up-to-date website, to promote discussion/dissemination
  - [4] Define, manage and promote standards
  - [2] Support for grids (reduced Gaussian/ unstructured) in OASIS4
  - [2] Improve interpolation in OASIS4
  - [2] Improve portability and quality control of the software
  - [2] Promote use of PRISM software on real models in big centres

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OASIS 3 Coupler

- **Tools used previously or currently in-use**
  - [12] OASIS2 (2.2 or 2.4)
  - [2] OASIS4 (for test purposes)
  - [2] Own solution (e.g. STASH at the Met Office)
- **Reasons to use or not use**
  - [6] Planning to migrate to Oasis4 (either from Oasis3 or earlier versions)
  - [2] Oasis3 is currently in use
  - [2] Oasis3 is used purely for interpolation

OASIS 3 cont.

- **Benefits**
  - [4] Portable
  - [4] Targeted at ESM needs
  - [4] netcdf support
  - [4] Well used standard
  - [2] Good documentation
  - [2] robust
  - [2] interpolations

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OASIS 3 cont.

- **Drawbacks**
  - [4] too slow
  - [2] only 2d exchange
  - [2] difficult to debug
- **Improvements**
  - [5] make more efficient/parallel
  - [3] support 3d exchange
  - [2] no further improvements should be made

OASIS 3 cont.

- **Benefits: (of using with other PRISM tools)**
  - [3]accepted standard (with existing model implementations)
  - [2]Oasis3 integrated with SCE and SRE
- **Benefits: (of using with other non-PRISM tools)**
  - [2] Oasis3 is usable independently of other PRISM tools
- **Drawbacks: (of using with other non-PRISM tools)**
  - [2] requires modification to integrate with other environments

- [12] sites were previously using earlier versions of OASIS for coupling. Some sites will continue to use OASIS2.x but most expect to move to OASIS4. Only two sites used coupling technology other than OASIS.

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OASIS 4 Coupler

- **Tools used previously or currently in-use**
  - [9] OASIS3
  - [6] OASIS2 (2.2 and 2.4)
  - [2] Own solutions (e.g. STASH at the Met Office)
- **Reasons to use or not use**
  - [3] All Oasis3 features (interpolations) must be available in Oasis4 before switching
  - [3] Oasis4 not yet (proven to be) stable enough for use
  - [2] The new features that Oasis4 provides are required
  - [2] Oasis4 currently used in development not production
  - [2] Happy with Oasis2/3 at the moment

OASIS 4 cont.

- **Benefits**
  - [6] More efficient (parallel coupler and interpolation)
  - [4] Improved api
  - [2] Portability
- **Drawbacks**
  - [3] Poorer interpolation than Oasis3
  - [3] Not yet mature enough
  - [2] Increased complexity c.f. Oasis3
  - [2] Dependence on other packages

OASIS 4 cont.

- **Improvements**
  - [2] Provide clearer error messages
  - [2] Complete interpolation development
  - [2] Simplify xml structure

OASIS 4 cont.

- **Benefits: (of using with other PRISM tools)**
  - [2] Works directly with SCE, SRE, GUI and Data Visualisation tools
- **Drawbacks: (of using with other PRISM tools)**
  - [2] Dependency on SCE and SRE to compile

SCE: Standard Compile Env.

- **Tools used previously or currently in-use**
  - [10] Home grown scripts
  - [5] Systems developed by others (e.g. for Hirlam, UM, Modipsl, PrepIFS)
- **Reasons to use or not use**
  - [2] Not suitable/feasible for institutions requirements

SCE cont.

- **Benefits**
  - [4] Portability (easy to port to new platforms)
  - [3] Ease of use
  - [3] Consistent/standard environment
  - [2] Only modified files are compiled
- **Drawbacks**
  - [3] Change of model source directory structure required
  - [2] Difficult to adapt/debug
- **Improvements**
  - [2] Support models not adhering to standards
  - [2] Improve documentation

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SRE: Standard Running Env.

- **Tools used previously or currently in-use**
  - [7] Home grown scripts
  - [5] Systems developed by others (e.g. for Hirlam, UM, Modipsl, SMS)
- **Reasons to use or not use**
  - [5] Existing System fits requirements

SRE cont.

- **Benefits**
  - [3] Ease of use
  - [3] Portability
  - [2] Consistent/standard environment
  - [2] Standard directory structure
  - [2] Easy to incorporate new models
  - [2] Easy to install
- **Drawbacks**
  - [2] Difficult to adapt to new platforms
- **Improvements**
  - [2] Interface with a GUI
  - [2] Further integrate with post-processing and visualisation

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Data Processing and Vis Tools

- **Tools used previously or currently in-use**
  - There are many!
- **Reasons to use or not use**
  - [3] Existing Tools fit requirements

Data and Vis Tools cont.

- **Benefits**
  - [2] Scripting support (as well as GUI)
  - [2] Netcdf compliance
- **Drawbacks**
  - [2] Lack of portability
  - [2] Currently unstable
- **Improvements**
  - [2] Improved documentation

Data and Vis Tools cont.

- **Benefits: (of using with other non-PRISM tools)**
  - [2] Support for netcdf
- **Improvements**
  - [2] Improved documentation
- **Benefits: (of using with other non-PRISM tools)**
  - [2] Support for netcdf

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GUI and Web Services

- **Tools used previously or currently in-use**
  - [8] Home grown solutions
  - [2] UMUI
- **Reasons to use or not use**
  - [2] The GUI creating a SMIOC is/would be useful
- **Benefits**
  - [2] Usable locally and remotely
  - [2] Ease of use

GUI and WS cont.

- The above summary is limited due to the relatively small number of responses for this Section. It may therefore be as (or more) insightful to examine the collated responses directly

Visits

- ECMWF - where 3 people were interviewed,
- IPSL where 8 people were interviewed
- MPI-MET where 5 people were interviewed.
- At MPI-MET one of the responders from IFM-GEOMAR in Kiel was present and was also interviewed.

Points made in Discussions

- **General Points**
  - Comments on PRISM
  - Tool Specific
  - Standards and Compliance
- **How PSI should operate**
  - Structure
  - Interaction with users/sites
  - Coordination
  - Effort
  - Standards
  - Provision of software
  - Priorities
  - Dissemination of information
  - Remit
- **Practical Issues PSI could tackle**

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Thanks!

- To everyone who gave their (valuable) time and effort to contribute.
- To those who hosted us on the visits.

End of Part 1

PSI: Next Steps?

- Contains more subjective material
- Q: What should PSI be?

  A: On behalf of the ESM community:
  - Seek, promote and disseminate good practice
  - Promote communication
  - Identify gaps and seek to plug them
    - Through co-ordinated community action
    - Through targeted proposals for funding

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Promoting Collaboration

- Host community meetings (infrequent)
- Organise visits by PSI developers (frequent)
- Host and manage the PSI web-site
- Host email lists/bug lists/documentation

- Funding for this support?
  - Supplement with Network of Excellence?

Purpose of Visits to Sites

- Discuss current and long term issues
- Gather experiences
- Feed (on-going) requirements capture process
- Feature demonstrations/tutorials
- Share/promote good practice

- Everyone willing but very little time!

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Tools and Tool Use

- One tool versus a toolkit?
- E.g. coupler versus data processing and vis tools
  - One shared problem, one coupler
  - Not so much sharing, specialised toolkit
    - Interoperable tools, shared formats etc.
    - but IPCC requirements – intercomparison projects
- Community should support diversity where necessary and possible

Tool development

- For existing **and** new tools
- Based on requirements of community
  - Democratic process to agree requirements
  - i.e. support substantial minorities also
- Where an existing tool is not adopted…
  - Understand why and then address real requirements
- PSI should evaluate tools from elsewhere on behalf of the community

Community engagement

- PSI exists to serve the community
- Must engage and keep people ‘on board’
  - Consultation vital (e.g. through visits/email)
  - Community decisions/priorities
    - Democratic process
- ‘In a thriving community, everyone has to compromise to some extent’
- Maintain and expand links to wider community
  - EU (COSMOS, FLUME, GENIEfy), Japan (Earth Simulator), US (ESMF)

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Standards

- Experience shows that successful standards emerge and are not enforced
- Standards defined too early hinder progress and stop innovation
- Everyone recognises the benefits of a good standard!
  - Effort cost to adopt acceptable
  - Benefits from adopting accrue

Questions

- Should PSI support NWP as well as ESM?
  - Appears sensible
  - Entails different and/or additional requirements
  - Larger community (a plus and a minus …)
    - Potentially more effort available
    - More difficult to manage/co-ordinate?

Funding

- Two big issues:
  - Funding for development activities
  - Funding for on-going, long-term support
    - Including: organising meetings, website and email list maintenance etc.
    - e.g. How was this meeting funded?

Funding cont.

- Funding for development
  - Most institutions have some!
    - Priority is on internal requirements (quite right!)
    - Collaboration possible where shared interests exist
      - Management issues…ok with up-front agreement
      - EU funding possible for big developments

Funding cont.

- Funding for support
  - Many institutions find it difficult to fund support for their own users let alone support outside users
  - ‘Quid pro quo’ model?
    - Managers don’t like implicit cost-benefits…
  - Difficult to convince EU funders to pay
  - Subscription model?
  - Several institutions already committed effort in PSI
    - How inwardly focussed is this?

Conclusion

- Much positive will exists
- Good foundations exist
  - Current tools *and* current people
- ‘Bottom-up’ community-based approach rather than ‘top-down’ directed approach is favoured

- Carpe diem! (“Sieze the day”)