Planetary GIS

WORKSHOP

5-7 May 2015, ESAC

Final Report

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Workshop Summary

ESA's first Planetary GIS Workshop took place from May 5th to 7th at ESA's ESAC establishment near Madrid. This report contains both input collected and condensed during the workshop and post-workshop survey results. The entire combined report is publicly available and it has also been submitted to the PSA User Group [1] and ESA's PSA for further processing and evaluation.

The objectives of the Workshop included:

- Evaluation of the state-of-art in mapping and visualization of planetary geospatial data;
- identification (and sharing) of prospective scientific use cases and technologies
- Identification of the geospatial mapping community and capacity building at European level;
- Facilitation of possible future open, collaborative, community-driven planetary data exploitation efforts;
- The use of geospatial standards and the approach and tools for non-traditional applications.

Over 80 participants from over 40 institutions in 12 countries (including USA, Russia and China) joined the workshop, mainly from the surface-science sub-community (geology, geography and cartography, ~80%), the atmospheric-science community (~10%), and from magnetospheric and plasma physics (~10%). The list of participants is reported in [2]. Actors represented at the workshop include: data users, data producers (e.g. from experiment teams), data providers/archivers, software developers (mainly linked to data producer/provider categories). The entire workshop programme and materials (presentations, video recordings [3], hands-on aid material, etc.) are available to the community on the PSA-maintained wiki [4].

The workshop structure consisted of: an introductory session with expert talks, hands-on sessions with contents shaped according to a pre-workshop survey, and an open session with short talks on a wide range of topics, leading to three separate non-plenary tracks. The final morning took the form of a general discussion of the various track results, workshop outcomes and possible future activities.

Outcomes and Recommendations

Community Evaluation

The overall initiative, topical and organizational aspects of the workshop were positively evaluated by participants. The mixture of lecture and 'unconference' format was very well received. One of the main results of the workshop, highlighted by participants, was that it facilitated new cooperation, networking and sharing of knowledge.

More time, for the Open Session, Hands-on and non-plenary tracks would be preferable for future workshops of this kind. Hands-on and tracks in particular might have benefited from a longer (half-day per hands-on) duration. The need for a specific planetary geological mapping track has also been highlighted by several participants.

In general, to accommodate the longer sessions, an additional full day for such a workshop could be added.

Future Workshops

Participants have clearly expressed the need for periodic workshops of this kind (~95%) to be held at ESAC. Needs strongly expressed by participants include: longer hands-ons (~1 day), longer open session and dedicated tracks for geological mapping, addressing new challenges and solving problems with the involvement of software developers.

Online Community

90% of the participants who responded the survey have clearly expressed the desire to discuss and share further in the near future – among the participants and beyond. One direct outcome of the workshop is an initial community-driven effort (1) to stay connected and share information related to and beyond this workshop; (2) to work out online solutions for all to share knowledge, resources, code, tools and services (e.g. forums, wiki, stackexchange, github, etc.); (3) to organise online events such as tool demos and surveys, hackathons and tutorials, or topical discussions; as a follow-up of the (too-short) open session at the workshop (and in anticipation of the next workshops, or conference splinters).

The core target community for a Planetary GIS/Mapping workshop (series) is the surface science one. However such type of workshop would be also valuable for neighboring communities. In this respect, discussion and development of use cases beyond surface science investigations is needed. Also, other communities (atmospheres, plasma, magnetospheres, etc.) might need additional, dedicated spaces/workshops and this could be addressed with the respective communities and through the PSA-UG. In all cases, surveys and listings of available and upcoming tools of relevance for planetary data analysis are desirable.

This effort is currently and temporarily driven by the Workshop Organizing Committee (WOC), which is engaging with all participants to contribute to discussions using an online team communication tool, called Slack [5]. Among the participants, data providers are seen to play an important role in participating to this initiative. In addition, ESAC/PSA could provide some services in that direction; especially the maintenance and continuous use of the Workshop Wiki could be valuable as a more long-term curated knowledge-base.

References

[1] PSA-UG web site:
http://www.sciops.esa.int/index.php?project=PSA&page=psa-ug

[2] List of workshop participants, including Workshop Organizing Committee:
https://issues.cosmos.esa.int/psawiki/display/GISWS/Participants

[3] Workshop YouTube channel:
https://www.youtube.com/channel/UClnl_6ucOIvZ75NSNLf6jMw

[4] Workshop programme:
https://issues.cosmos.esa.int/psawiki/display/GISWS/Programme
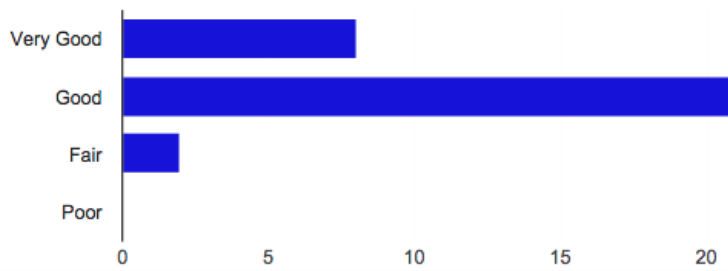
[5] Workshop Slack:
https://openplanetary.slack.com

Appendix: Participants Feedback

Inputs from online survey (31 responses)

How do you overall evaluate the workshop?

Programme

Very Good	8	25.8%
Good	21	67.7%
Fair	2	6.5%
Poor	0	0%

Information
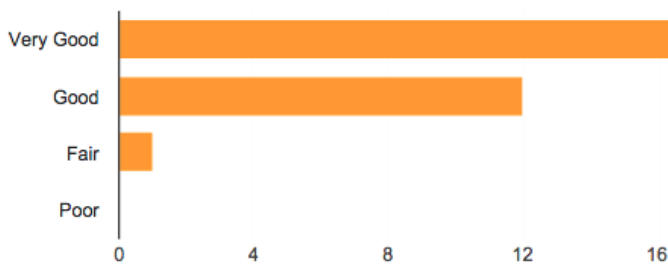
Very Good	18	58.1%
Good	12	38.7%
Fair	1	3.2%
Poor	0	0%

Logistics
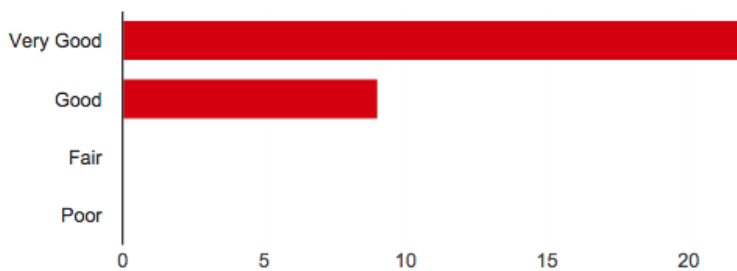
Very Good	22	71%
Good	9	29%
Fair	0	0%
Poor	0	0%

Venue
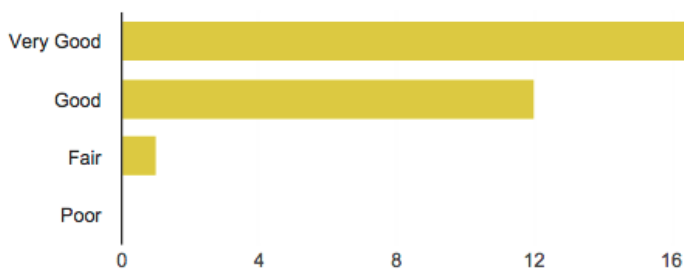
Very Good	18	58.1%
Good	12	38.7%
Fair	1	3.2%
Poor	0	0%

Comments

- *Not enough time for tracks or could not follow multiple tracks. Great work with Slack.*

- *Very good interest and enthusiasm about GIS and its potential capabilities. There were good presentations on the overview of the subject. I would have liked much more hands-on experience, where at least one of the days was dedicated to learning to work with software (ArcGIS or QGIS), going beyond an introduction.*
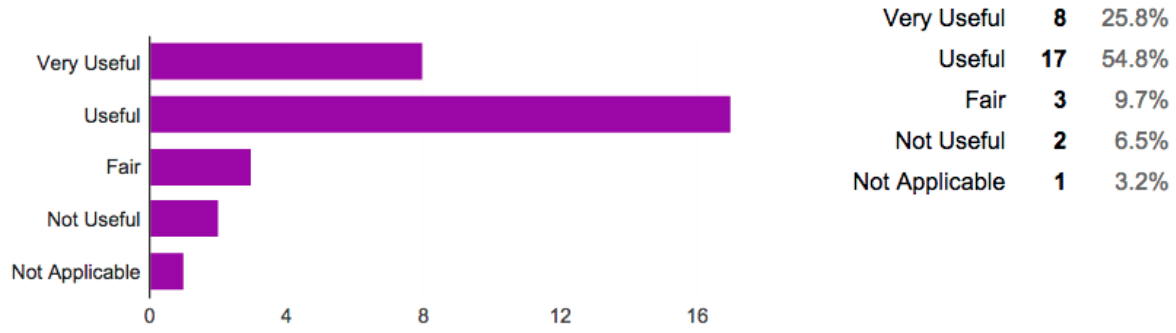
- *I would like to see more poster in the workshop.*

- *Absolutely a workshop to be done again in the future! Great work have been done for the community building. Even if I did not took part to day 3, I felt like being part of the group since the beginning, great work by the WOC! Efforts to create a community involving the larger and mixed population possible have been significantly appreciated.*

- *Good things: organisation in general was awesome, although I only went 1 day. I enjoyed a lot, people was friendly (in general ;P) Bad things: the tracks were a bit unorganised, in track B we suffered a little bit with the demos, so I think that having very clear the contents of this track would have been useful (and perhaps more time! or to create sub-groups)*

- *Too much good stuff, little time. Next time I would like to have more structured tracks (not a program but guideline beforehand?).*

- *The WS was well organised, but I think that it deserved at least one more day to span all the fields. Hands-on and tracks should have been divided into two separate days.*

- *Very interesting, nice mix of data details and use cases. Presentations online are useful, as are the list of tools presented.*

- *The workshop was generally excellent, although it seem like the programme could have been more spread out over a few more days. I understand the need to generalise or quickly skim the topics because it was the first workshop of it's kind - but I think a lot of people didn't have time to participate in some aspects (e.g. the hands on) because it moved a little too fast to fit everything in.*

- *With the venue, I can not really evaluate it. I live in Madrid and I came by my own car.*

- *I missed time for discussion groups. In the end I did not have much time to discuss with people relevant to my work.*

- *Very good turnout and participation. Good talks on GIS happenings. More demonstrations will be useful to get better understanding available capabilities. Would be good to identify what are the GIS challenges, what might be the solutions. If solutions not available, perhaps establish working group(s) to provide solution. Thank you for hosting the event. It was very useful and well run considering this is the first one. I appreciate you organizing this. And look forward to future ones.*

How useful for your work were the different sessions?

Introduction Session

Very Useful	**12**	38.7%
Useful	**14**	45.2%
Fair	**5**	16.1%
Not Useful	**0**	0%
Not Applicable	**0**	0%

Hands-on

Very Useful	**8**	25.8%
Useful	**17**	54.8%
Fair	**3**	9.7%
Not Useful	**2**	6.5%
Not Applicable	**1**	3.2%

Open Session

Very Useful	**10**	32.3%
Useful	**13**	41.9%
Fair	**6**	19.4%
Not Useful	**1**	3.2%
Not Applicable	**1**	3.2%

Community Building

Very Useful	**12**	38.7%
Useful	**8**	25.8%
Fair	**6**	19.4%
Not Useful	**0**	0%
Not Applicable	**5**	16.1%
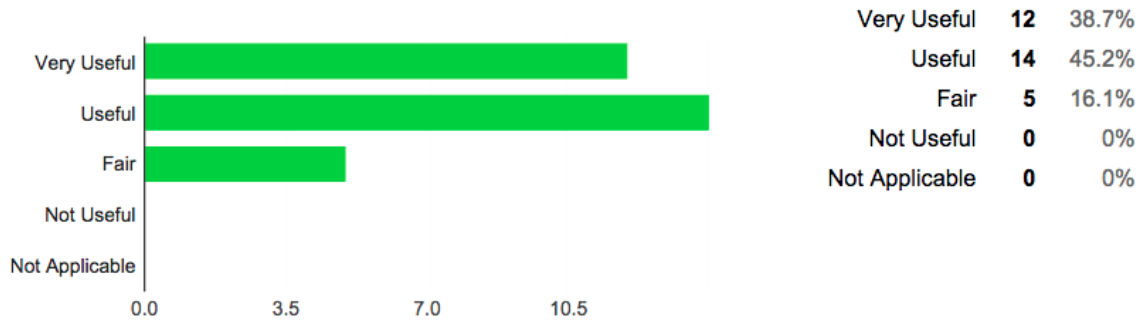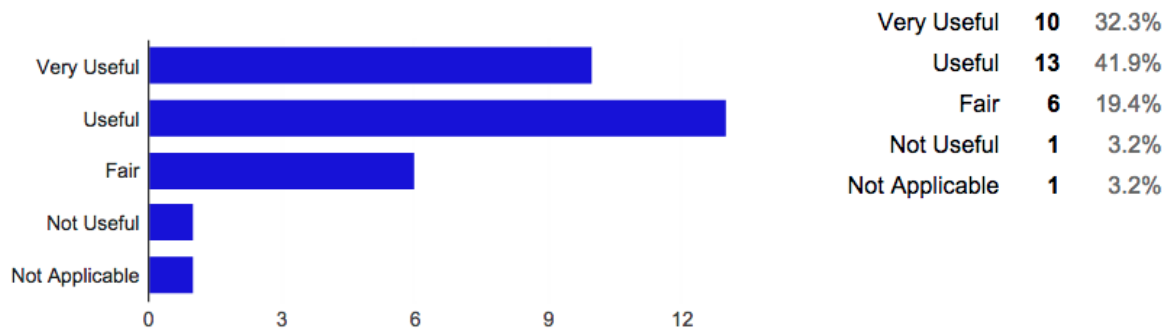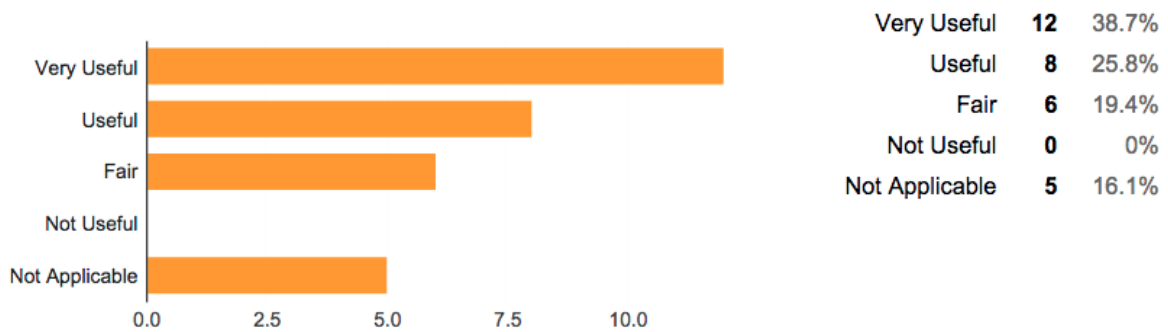
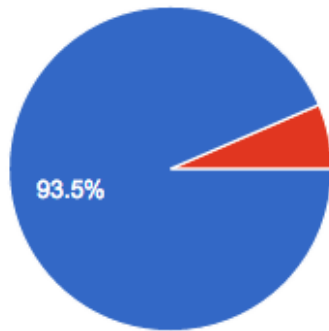**Comments**

- *The Hands-on felt a bit a rushed and it was difficult to really get an understanding of the tools if you were not able to keep due to, for example, some technical error.*

- *A planetary mapping track would be helpful next time to share technical experiences on mapping. The theme of the tracks were very interesting but there was few time to concentrate on and follow more than one track.*

- *Although it was very useful for me the hands-on session, maybe it would be better to focus in one and new use of the tools, instead of knowing the general working of the software.*

- *This workshop showed how fragmented the community is in facing the same problems, by developing time and again ad hoc solutions for a single class of data without the capability to absorb new datasets. I subscribe to what Jonathan joked about in his cartoon on the futility of trying to develop a single universal standard for planetary data, but an effort to consolidate strategies, to develop commonalities and to enforce compatibility of standards needs to be done. This workshop could be the place to do it.*

- *the hands-on and the open session needs more time*

- *I felt the Open Sessions were very productive, but I think we could have spent a whole day on them, at least in the track I was in (C). Some subjects were only briefly touched on and the discussion had to continue informally, without group input, after the session. As mentioned in the previous question I think the hands-on could have also either been more focussed or allowed more time for users to keep pace. There was however, great support for the hands-on, with pre-prepared VMs ready for all - an excellent idea! Although some users did experience technical issues (e.g. getting internet connectivity in their VM) it could have been much worse!*

- *Probably fewer topics/presentations, but more detailed with examples. Some of the talks, while interesting, presented good ideas but without a lot of specifics on how to accomplish them.*

- *The Introduction Session showed the very state of the art of the topic. Hands-on session suffered from the malfunction of Virtual Machines, but showed very useful cases. Open Sessions (in particular Tracks) were too dispersive, thus limiting the possibility to follow different topics. Demo Tools Track was not planned in order to show all the tools and could have maybe merged with Use Cases Track (at least). Maybe in the future the 4 minute presentations could be canceled, thus improving time for tracks, so that they could be not parallel. During the workshop the possibility of talk with colleagues greatly improved the possibility of new collaborations.*

- *In my opinion the same programme should have been done with 1 more day. Too dense sessions and talks not allowing for the discussion within the session and limiting it after each talk. One more day could also allow for more room for the user/scientific cases (which it's 50% of the GIS world). E.g: Day 1: Software/Tools/Developers contributions (including topical lightning talks). Day 2: Science cases and user-oriented contributions (GIS software/tools are useless without users!). Day 3: Hands-on (half day to ArcMap, half to QGIS). Day 4: Community*

building and Open sessions. Lightning talks are a good idea but I can't estimate how much they contributed to the workshop aim. Hands on have proved very useful to allow practical examples but again, too dense and, especially for the new user, too fast.

- *Hand on session longer*

- *(except the virtual machines which ruined my computer…). The cadence was really fast, but I think this is a factor of success in this case - no time to read mail or do something else.*

- *Allow participants to bring challenge and use hands-on opportunities to demonstrate solutions. More opportunities and time to share tools and knowledge.*

- *Hands-on was useful, less technical problems than there could have been .I had a few issues, but managed to follow what was going on and learned a few useful things. Tracks potentially useful, maybe not for demoing tools though, could use a separate time slot for that, or make tools and user guides available before the meeting so you can get to grips with them and make more informed decisions. Discussion on aims, challenges, ways around challenges, etc, which are common to all may have been useful.*

- *Open session too short and, on the other hand sometime overlapping each other,*

- *The hands-on session was too short. If you got behind it was impossible to catch back up. It would have been helpful to have a step-by-step set of instructions for the hands-on demos to help keep up with the presentation. I suggest that some time be added at the end of each section of the lightning talks for discussion of the preceding talks.*

**Would you like to see such a workshop periodically held at ESAC?**

Yes	29	93.5%
No	2	6.5%

Comments

- *Yes please!*

- *You may want to change the focus from one workshop to the next. The central theme I think is to improve the access and usage to the PSA, which certainly means serving the surface/GIS community, but not only. Cross-community topics (surface/atmosphere, etc + eg workflows to process atmospheric data using reference databases of gases) are certainly of interest. Joint analysis of space borne & related telescopic data may be another topic.*

- *The local arrangements were very good. The organizers were very helpful.*

- *An yearly workshop would be precious to have the point of the situation.*

- *Each year! Maybe moving between ESTEC/ESAC/ESRIN.*

- *I think it is interesting even though I would probably not attend another time. For no particular reason other than it is not really my field and I attended the first one more out of curiosity than real need of such event.*

Would be an online participation to future workshop (e.g. webex) an option for you?
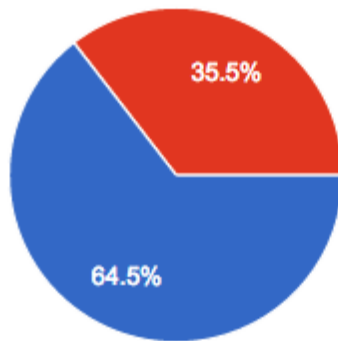

Yes	**20**	64.5%
No	**11**	35.5%

Comments:

- *This would be beneficial when travel is not practical.*
- *The nature of the workshop was very web/cloud-based, so online participation seems like it could work ok, as long as the software made it easy (Adobe Connect?).*
- *Yes, it would allow more people to participate.*
- *Meeting and talking to the attendees was very useful.*
- *The possibility of participating online would be important to allow an easy way to follow the meeting. However it would probably affect the community building capabilities and therefore it could be preferred to be there in loco (especially if it is once a year).*
- *As an option. But physical gathering with such a large scope was certainly beneficial.*
- *Online participation is possible. However the value of face to face connection, hands-on/demo participation are very valuable. I would encourage future workshops to be in person.*
- *Just as a backup solution in case of impossibility to attend*

Would you plan to discuss and share further - with the participants and beyond - documentation, code, resources in the near future?
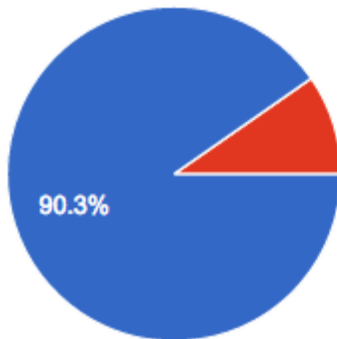
Yes 28 90.3%
No   3   9.7%

Comments:

- *I will write a user case for MARSIS data within the VESPA framework.*

- *As not everybody was able to go to see the demos in Track B, it could be interesting if the demonstrators who want to show-off their tool create a video demonstration and upload it to e.g. slack, from where further feedback and discussions could take place outside of the physical workshop.*

- *I am still using Slack and I got in contact with the planetary mappers that were present at the workshop. We plan to keep in contact through mailing lists/forums/slack to help each-other and build a stronger planetary mapping community for the future.*

- *Firstly, through Slack. There was also significant discussion about starting a some kind of Planetary GIS Users Group/Forum. That would be a focal point for this kind of work and many members of the community expressed interest.*

- *I did a lot of networking there and I'm currently in contact with some people. Very happy about that! Thank you for the great event!*

- *I would like to participate in the Geographic Information Systems Stack Exchange forum, and in the slack tool of the workshop.*

- *We will certainly try to implement an access to WMS to 3DView tool, discuss on some spice with Boris. But for sure we will give some support to jonathan for BepiColombo Venus flybys and maybe more.*

- *Sharing documentation and code is what helps the GIS community the most. The software and capabilities are too broad to try to approach learning GIS by one's self.*

- *Yes, but with a very small group due to not overlapping of interests*

- *Of course the possibility of develop new tasks together would be of capital importance to proceed through the same path.*

- *Associating the instrument/mission workshops as splinters to this kind of meeting may be an option, to insure sufficient participation (eg: it was so far impossible to get*

sufficient attendance to the VEx workshops to make them happen; this may become possible in this context).

- *Have connected multiple participants that have further communication to share resources/data.*

Additional inputs extracted from discussions on last day of workshop

Additionally some additional points have been raised by panel members in the Community Building Session:

- Understanding scientific needs / use cases is important also at workshop planning stage.
- Neighboring communities can also benefit from GIS, but it is not the solution to all disciplines (e.g all atmospheric science). In this respect, similar "data fusion frameworks" for other disciplines should be addressed (i.e. effectively with multiple heterogeneous datasets)
- Need for discipline-based workshops (e.g. surfaces, atmospheres, plasmas) vs. dataset/experiment based ones (those existing so far, with the exception of this workshop
- Future workshops could be both either the same topic (GIS) or on new ones (e.g. atmospheric science and tools).
- Community building splinters or alike could be held at EPSC, EGU as well, providing additional smaller venues for the communities of the ESAC GIS workshop
- A moderated list of tools/services registry would be useful (e.g. ESA, PDS, IPDA)
- There is the need for science-ready data in the archives (higher-level products): this needs the involvement/engagement of PI teams (and ESA)
- Need to have both agency-developed tools, and data producer-developed tools, in addition to community (user)-developed tools, using existing/developing protocols (e.g. PDAP, EPN-TAP)
- Getting more interactivity within/for/from these workshops: (forum on web sites, more interactivity → e.g. wiki presentations useful for archivers)
- PSA is developing a WebGIS interface to PSA. A subsequent GIS workshop could allow users to test and provide feedback
- Need for making it easy for data producers to become "data providers"; by sharing peer-reviewed derived data products using existing/developing protocols.

Moreover, participants suggested additional topics for an eventual further iteration of the workshop, namely:

- GIS & irregular bodies geometries (the minor bodies community and its "GIS-like" mapping needs and challenges were not very represented at the workshop);
- GIS & space/time-variable data, 3D, 4D. The possible need for a broader participation from minor bodies.