Hardware development and mission formulation

Summary
(see minutes for more)

1: Library of available parts & technologies

Some sort of **wiki** - look for possibilities (server, free wiki, mailing list, forum)

Database of available parts for a task (e.g.: readout of CsI, ...)

Public: external people (vendors, …) can propose additions

From the **single components** to complete **hardware solutions**

Careful with restrictions! Yet knowing that one setup works is a starting point.

Can coordinate **sharing** of evaluation boards, systems, ...

Contact: Riccardo Rando

2: Space qualification

Lots of parts need to be **qualified** (e.g. SiPMs of different manufacturers,...), many are but information is hard to come by: collect and make available

Also: structural materials (e.g. for activation, electrical interference, radiation degradation)

Again, users' experience is vital, avoid repeating over and over the same effort, avoid doing the same mistakes

List **facilities** for qualification (e.g. ESA approved facilities operated by Universities and research institutes)

Contact: Merlin Kole

3: Capabilities

Different nanosats, different capabilities. Some planned by design, some others can be achieved later by clever analysis (found e.g. in our wiki)

Prepare a list of **desired capabilities**, with strong input from **science**

E.g. AT-1000 (absolute time at 1 ms level, no triangulation), AT-100 (a.t. at 100 us level, ok for triangulation), ...

Database of satellites in the network with their capabilities, makes it easy to find what datasets to collect for analysis, ...

Contact: Jeremy Perkins (NB: transversal to all discussion groups)

3.1: Capabilities: attitude / time binning

All GRB sats will have absolute timing to some level, attitude knowledge with some accuracy, ...

1) make **pointing history** available to the network in real time: location (2LE), attitude/FOV (quaternion), status (ON/OFF)

Either downlink of time-tagged events, or storage on board and controlled download of segments (e.g. below threshold following external alert), makes continuous download of large amounts of data useless

2) allow network to **alert**, **deal with alerts**

3.2: Capabilities: transmission

Alert and controlled download require contact and bandwidth, probably not that much (VHF?)

Inter-satellite communication too hard

Recommendation: if you join, consider contributing also something to the ground segment (see SVOM)

Model: eduroam. Possible model: you take care for uplink (critical), rely on the network for downlink

E.g.: institutions with *-band antennas, not in use at all times

4: Coordinate mission plans

Probably not possible / not effective

Not really an option in the validation phase: specific sequence of operation is necessary (observations, calibrations, …)

Not so useful in the mature phase: many satellites will ensure a good sky coverage

5: Conclusion

One liner: **collect and share** experience, techniques, problems & solutions

Take full advantage of the scientist's mentality

- Allow developers to maximize capabilities
- Easily available overview of the available data

Merge into one distributed instrument, maximize science

Need one science working group to provide requirements to classify capabilities, goals