

SPACE POWER SYMPOSIUM (C3)  
Joint Session on Nuclear Power and Propulsion (5-C4.7)

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MEGAHIT: UPDATE ON THE ADVANCED PROPULSION ROADMAP FOR HORIZON2020

**Abstract**

A significant number of exploration missions require nuclear propulsion for which power sources are essential and enabling key assets. Associated technological developments however require important financial efforts that can probably only take place in the frame of an international collaboration, sharing the efforts as this has been the case for the International Space Station. MEGAHIT, funded by the European Commission under the 7th Framework Programme for Research and Technological Development, is a supporting action aiming at building a European roadmap for Megawatt level nuclear electric propulsion, in preparation of the Horizon 2020 programme. MEGAHIT is driven by a consortium that is coordinated by the European Science Foundation and that includes CNES, DLR, Keldysh Research Center, the National Nuclear Laboratory from U.K. and Thales Alenia Space Italia. The consortium favours an open and participative approach in order that all interested stakeholders - research centers, agencies and industry- within consortium or not, can establish common research objectives and initiate research alliances. This approach will allow building a scientific and technical community on the topic in Europe and Russia. Potential collaboration opportunities at international level with other space fairing nations will be included.

Megahit adopted an approach in 4 phases.

- Phase 1: High level requirements. Collected inputs from space agencies and research centers on mission-related high level requirements.
- Phase 2: Reference vision. Built a reference vision of what system we aim at, and what would be the best technological options.
- Phase 3: Technological plans. The rationale was that the best people for establishing technological plans are the stakeholders identified as being able to carry out the development. These stakeholders were associated through discussions and workshops on technologies they have expertise in. Main workshop was held in Brussels on December 2013 and was attended by about a hundred specialists.
- Phase 4: Road-maps. Aims at a synthesis of the three previous phases, translating into consistent road-maps what has been established in terms of key technologies and technological plans.

The paper and presentation will provide a summary of the project and update on the progress made.