

Concepts and Planning for MSR public outreach. A. R. Heward^{1,2}, ¹Europlanet 2020 Research Infrastructure (The Open University, Walton Hall, Milton Keynes MK7 6AA, UK, anita.heward@europlanet-eu.org), ²Science Office (Rua, Luso Celuloide n° 488, r/c direito, 4500-819, Espinho, Portugal)

Introduction: Mars Sample Return (MSR) sets a challenge for humanity that has the capacity to inspire and engage people around the globe. The broad mix of themes addressed within MSR, including exploration, cross-disciplinary cutting-edge science, technological innovation, robotics and AI, philosophical questions about the origins of life and humanity's future, as well as ethical questions about planetary protection, provides multiple facets to engage different audiences with different interests and priorities. At a time of growing concerns about globalization, nationalism and public confidence in "experts", MSR could offer a very positive example of collaboration on an international scale. Nonetheless, MSR requires large investments over long periods. This means that there is a need for proactive and strategic engagement to build support for MSR in a wide range of stakeholder groups, including policy makers, the media, the general public, teachers and students (who will be the next generation of scientists and engineers). A collaborative effort within the MSR community will help create a coherent narrative and make the most of outreach opportunities deriving from scientific and technical achievements, mission events and milestones, resources, human stories and role models. Early 2018, with major ESA and NASA missions coming up in 2020, is an ideal time to discuss opportunities for international collaboration on engagement with a wide range of audiences. This presentation, alongside that by Sheri Klug Boonstra, aims to raise questions and start a dialogue on concepts and planning for MSR outreach.

Areas for consideration:

Potential partners: An effective international outreach strategy for MSR will need a broad network of partners at an international, national, regional and local scale. These could include space agencies, funding agencies, research institutions, industry, research infrastructures, societies and associations. They could also include museums, science centres, planetaria, educational networks, charities and citizen science projects. Identifying key partners will be an important first step in discussions.

Timeline: As well as major mission events and milestones, ongoing research and activities, e.g. analogue field trips, can provide richness and continuity in the timeline building towards MSR. How can events on large and small scales be highlighted and

incorporated within the MSR story at a level that is achievable by the multiple players involved?

Tools: There is an ever-increasing range of tools available for outreach. The media, social media, webinars, MOOCs, citizen science projects, exhibitions, live events, teacher training and educational resources can all be effective tools when well-designed and targeted at the right audience. However, many organisations rely on limited resources or volunteer effort, so need to focus activities. How can we use different channels of communication most effectively and share best practice and resources?

Accessibility, diversity and inclusion: How can we make the wider community feel part of the MSR endeavour? The multiple languages and cultural differences across continents and countries can provide a significant challenge for outreach at an international level. How can resources be most effectively adapted and translated to reach diverse audiences and minimise barriers? How can those that are under-represented or would not normally consider science as "for them" be engaged? Can we find diverse role models and methods of communication to ensure that we are not "preaching to the choir"?

Risks: What are the potential areas for backlash or negative stories? How can these be addressed and risks minimised?

Training: Does the community require training to support outreach efforts? If so, what kind of training is most needed and what is the best way of meeting this need?

Evaluation: How can we effectively evaluate the impact of outreach efforts? How can we include formative evaluation in developing programmes and resources to ensure that they meet the highest standards of quality and accessibility? What metrics are required to measure short-term outcomes and longer-term behavioural changes resulting from outreach initiatives?

Related stories: How should/could MSR outreach strategy intersect with other fields of exploration, such as development of a lunar village or space mining? Where are the areas of overlap and possible collaboration? Where is there divergence? What are the potential causes of confusion or conflicting messages, and how should these be addressed?