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Collaborative online knowledge base for human planetary mission simulation stations: a new Hablife wiki

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Abstract

More than 90 crews working at Mars Society's research stations have accumulated a substantial amount of science and operation information. Now a need is felt for knowledge management; to maintain a permanent platform for crews to use before their rotation. in order for them to familiarise themselves with the hablife and the surroundings. To have a platform on which knowledge can be exchanged and preserved.
The format of a wiki is considered the best format for this knowledge management. This would be a simulation of how subsequent Mars crews could pass information and "lessons learned". The project would grow out of two projects: one is hablife wiki [6] [7] which describes life at the Habs of various research stations, and the (unofficial) MDRS Expedition Guide [5] that focuses on the environment of MDRS from bio- and geoscience point of view, complete with maps and climate descriptions. It is unclear is yet if the hablife wiki will be hosted in Hungary or in the Netherlands.

Background

Mars Society operates two Mars simulation research stations since 2001/2002: one in Devon Island (FMARS) and one in Utah (MDRS). The goal of these stations is to simulate human mission -work and life on the Surface of Mars. FMARS receives one crew each year while at MDRS crews change every second week except for the summer season. In the last 8 years 81 crews worked at MDRS. Their results are published in various forums: in peer-reviewed papers, conference abstracts, books, private websites or other publications [3]. The actual work of all crews is documented as specialized daily reports together with images and are available at the MDRS website [4] (Fig. 1, Fig. 2.). An important part of these reports are the "lessons learned" sections where crews describe what they have learned during field trips (EVAs) or other activities. Updated operation manuals and cartographic resources [1] are also available on the website. Some of crew members are visiting MDRS for the first time, others are "veterans".

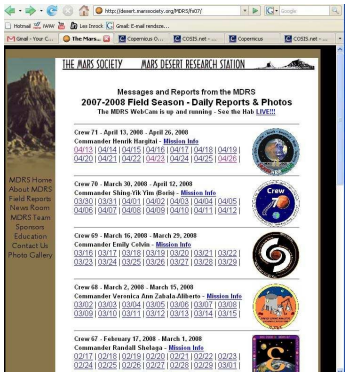

Fig. 1. Mars Societies MDRS Daily Reports page

Defining goals

What is the goal of this structure of operation? Does MDRS provide a place for simulation for the first human mission, or its goal is also to provide a place for simulation of subsequent crew operations of a Mars station? Crews now have the option to get geologic and other data on the station and surrounding from the aforementioned resources, which partly would be available for a first crew of a Mars Mission from in situ automatic and spacecraft based observations and analysis by experts; however, reading the daily reports before arriving to the station gives the feeling of being not the first, but the second or 82nd crew visiting Mars. If it is not the main goal to test 82 (and more) first missions, all previous knowledge should be collected and made available in an easy-to-access form for the crews, at the stage of planning the activities while being in simulation and after returning home. I propose that a wikimedia based online knowledge base would serve this task well at Mars Societies stations or in future human planetary mission simulation stations as well.

The wikimedia structure

The wikimedia organizes information based not on crew, conference, or time, but on a themes. This way crews could learn what previous crews learned and could build on their experience and knowledge, and thus subsequent crews could improve simulation as in a real multiple-crew situation which is in fact planned by Mars Society's MarsDirect program. Information, images and "lessons learned" from daily reports

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would be inserted to the system to the appropriate article. Then crewmembers analysing these data later, could also enter their results here. Although this is not a peer-reviewed publication, and would give the feeling of investing too much work "for nothing", this is the most effective way to pass on knowledge to the next crews which would finally lead to an actual Mars mission crewmembers and planner experts.

Access

Present and previous crewmembers and mission support team members could have access to the system: they could insert new information, upload files and modify previous data if needed (correction, update etc). The articles would not be open to the public for writing/modifying (or, only after registration), but would be open for reading all articles and writing to discussion pages (or for other Mars-simulation related information, like [2]).

Sample uses

The operation manuals now provide a very detailed description of almost all parts of the station, but minor or major problems -with their solution -could be listed in a collaborative way as articles. Here, discussion pages would provide an important tool for resolving various problems.
Discussion pages are also important in the science related articles. An image of a geologic landform could be posted, asking for help telling what it is and how it was formed. Then mission support or other crew members could post possible answers which when settled, could be entered into the appropriate article.

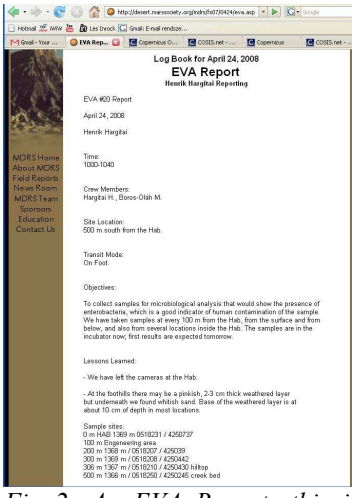

Fig 2: An EVA Report: this is how "collective knowledge" is now stored at the MDRS website

Sample articles

Sample articles or groups of articles would be for example: "Nighttime EVA", "Aeolian landforms", "Water pump usage", "Phobos Peak", "severe weather", "halophile species", "desert pavement" (fig. 3.) etc. along with articles concerning everyday life at the habitats, as in the hablife project: "This site is all about being a Marsonaut on EuroMARS, or on one of the other already operational Mars Analogue Research Stations, FMARS and MDRS. What to bring and what to expect. What rules apply to Safety, SIM, Science, Public Relations and Comfort. In short how to live on analogue Mars." [6]. These articles could serve as a historical database how various crews saw the subject, collecting all information in an organized way. It would also prevent crews for trying to solve problems or get data that previous crews already did; giving them the chance to make one step ahead for a subsequent problem, using data from previous crews. Each station would have a separate wikimedia knowledge base. A surplus would be if articles of FMARS and MDRS on the same topic could be linked for comparison. Since official language is English, only English pages would be acceptable thus collecting all information in one place, one language.

Fig. 3. Sample page from a publication on MDRS area geography [5].

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