

**21<sup>ST</sup> CENTURY ENGAGEMENT: “SPACE ROCKS” GAME JAM. AN IMMERSIVE, OPEN-ENDED, AND COLLABORATIVE SCIENCE OUTREACH PROGRAM.** M. M. Mader<sup>1</sup>, D. Ireland<sup>1</sup>, W. Ng<sup>1</sup>, K. Tait<sup>1</sup>, S. Engels<sup>2</sup>, A. Llewellyn<sup>3</sup>. <sup>1</sup>Royal Ontario Museum, 100 Queen’s Park, Toronto, ON M5S 2C6, [mmader@rom.on.ca](mailto:mmader@rom.on.ca), <sup>2</sup>Dept. of Computer Science, University of Toronto, Toronto, ON M5S 3E4, <sup>3</sup>Technology and Innovation Division, NASA, Houston, TX.

**Introduction:** Planetary mission milestones provide key opportunities to engage the public in the day to day work and showcase the value, wonder, and innovative technologies of planetary exploration. The Royal Ontario Museum (ROM), Canada, is designing unique experiences that will allow new audiences to relate to planetary mission results, through direct interaction with planetary materials and data. Through co-creation and collaboration, we aim to encourage STEM and STEAM learning through interactive programs that incorporate 21<sup>st</sup> century engagement principles, including the following qualities:

- Immersive
- Open-ended
- Interest driven
- Project-based
- Two-way engagement

Based on these principles, the ROM, in collaboration with the University of Toronto, hosts an annual Game Jam event [1]. A Game Jam invites creative, motivated, and inspired video game developers to work in a collaborative environment over a specific period of time (e.g. a weekend) to create digital games linked to a theme. This year’s theme was “Space Rocks”.

**Game Jam Program:** The ROM Game Jam has evolved into a comprehensive outreach and engagement program over the past three years and comprises four key parts: the Game Jam event, school visits, public events, and commercialization of games.

**Game Jam Event.** For the 2015 ROM Game Jam, we selected 100 game developers to draw inspiration from planetary missions and the ROM’s collection of over 100,000 rocks, minerals, and gems, including over 500 Martian, lunar, and asteroidal meteorites.



Fig. 1 Game developers explore geology gallery at the ROM and learn from content experts.

Participants learned about planetary science directly from ROM experts. NASA datasets related to our collection were highlighted and curated for this event. The ROM hosted the developers over a weekend, in which they could choose to stay overnight in the museum [2].



Fig. 2: Developers creating new games at ROM Game Jam, Oct 2-4, 2015.

**School Visits.** The games produced during the Game Jam are housed in the ROM Learning Portal website [3] and have been used to pilot a new school visit program focused on 21<sup>st</sup> century learning skills. During the school visit, students are inspired by a research topic, visit galleries in the museum, play-test games developed during Game Jam, provide feedback to Game Jam developers, are taught programming skills, and then make their own digital game.



Fig. 3: Gam Jam School Visits. Students inspired by ROM research, play-test video games and create their own digital game.

*Public Events.* Throughout the year the ROM runs special events for the public at the museum. Selected games created during the ROM Game Jam are showcased in an 'arcade'. Game developers are invited to participate and are able to obtain valuable feedback from users regarding their game. The arcade provided a fun, engaging activity to engage audiences of all ages and inspire curiosity about the science content embedded within the game play.

*Game Commercialization.* Game developers own the games they develop and can choose to commercialize their product and partner with the ROM. The ROM helps by providing opportunities for their games to be play-tested by the public and students, critiqued by ROM content experts, and promoted through ROM channels. One game from the 2014 game is currently available for purchase, and some of the proceeds are being donated to the ROM.



Fig. 3: First commercialize product from ROM Game Jam – Clash of the Talons game  
(<http://lasthourgames.com/pageCott.php>)

Overall video games, inspired by actual mission data, capture public interest in space and science in a unique and powerful way. The co-creation of these products by a collaborative Game Jam program involving ROM research staff, game developers, and students, provides a unique opportunity for learning, capacity building, partnerships, and innovative public engagement.

**References:**

- [1] ROM Game Jam website:  
<https://www.rom.on.ca/en/activities-programs/programs/game-jam>
- [2] ROM Game Jam Recap blog post:  
<https://www.rom.on.ca/en/blog/rom-game-jam-space-rocks-recap>
- [3] ROM Learning Portal website:  
<https://www.rom.on.ca/en/learn/activities/games>