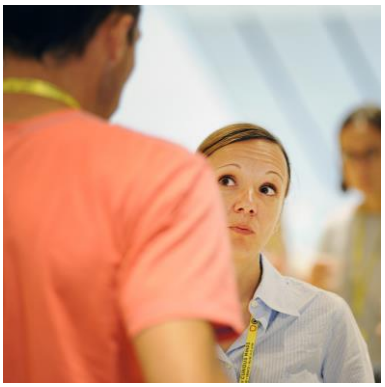
The Ecsite Space Group
Pre-Conference Workshop
“Space for Life”
at the Ecsite Annual Conference
“Food for Curious Minds”

Report

9-13 June 2015 – MUSE (Trento, Italy)

Contents


RISOTTO



1. About The Ecsite Space Group

The Ecsite Space Group offers a platform for science centres and museums to improve and extend communication about European space activities by helping specialised science centres and space professionals to work together with non-specialists and develop collaborative projects and events.

The group is led by Marc Moutin, Director of Exhibitions at Cité de l'Espace, France, Ana Noronha, Executive Director of Ciência Viva, Portugal, and Maria Menendez, Head of ESA Corporate Exhibitions and Events, France.

Joining the Ecsite Space Group means getting closer to space professionals and science centres willing to communicate about space. It also allows to be better informed about space news, programs, and discoveries. The Space Group offers opportunities to share experience, expertise, knowledge, tools, and best practices.

For Europe's main space actors like the European Space Agency (ESA), national space agencies, industries, research institutions, and academia, the Space Group offers the possibility to build close collaborations with science communication professionals. The group benefits from the already established European networks of Ecsite and the European Space network of ESA and its member states.

2. Summary of the pre-conference workshop

After successful cooperation of the Ecsite Space Group and ESA in development of the Kit about the Hook up with Rosetta campaign in 2013-2015, the collaboration will continue. Space has a tremendous role in the sustainable development of natural resources, monitoring the state of the oceans and atmosphere, extending our knowledge about life on Earth and beyond. In this context in 2015 the Space Group will be working to develop collaborative projects around the theme "Space for life". As agreed at the last Space Group annual meeting in Greenwich in November 2014, representatives from museums and science centres decided to work together on three themes until the end of 2016:

- Monitoring the atmosphere and oceans from Space;
- The International Space Station: Living and working in Space;
- Is there life out there?

Thus, the main goals of the two-day Space Group pre-conference workshop held on June 9-10, 2015 in MUSE (Trento, Italy) was to brainstorm about possible ideas for new collaborative projects and find concrete ways, how these ideas can be brought into life and developed into pilot projects.

In total 38 participants representing 12 countries attended the pre-conference workshop[1]. The first day started with the warm welcome from Michele Lanzinger, the Director of MUSE, Italy, followed by Jean-Baptiste Desbois, Treasurer and Member of the Ecsite Board, Executive Director of Cité de l'Espace, France and Fernando Doblas, Head of ESA's Communication Department, on behalf of ESA. Maria Menendez, Ana Noronha and Marc Moutin welcomed all participants as well, stressing the need to bring space and non-space related science centres and museums and space industry to work together on a challenging task of improving communication and awareness of European space activities.

Representatives of ESA, Italian Space Agency (ASI) and Telespazio gave inspirational keynote speeches on various examples of fruitful collaborations between space industry and science centres and museums. In conclusion, several comments and questions were discussed by participants of the workshop. It was stressed that there is lack of accessible merchandise from ESA, which has to be improved in the future.

[1] For the detailed list of participants, see Annex 2

After the keynote speeches, several input talks from the representatives of ESA followed. The aim of these presentations was to prepare ground for group work on three themes, as well as to give some examples of existing and potential projects. Participants were able to discuss possible ways to collaborate in three groups according to the theme they have decided to work on.

The opening remarks of the second pre-conference workshop day were delivered by co-chairs of the Space Group as a call for action. During the first day of the workshop many ideas for potential projects were developed. Each group presented its potential projects. The work and the results achieved in working groups will be presented further in this report.

General Assembly of the Space Group took place on June 10, 2015. As there were no applications from other candidates to chair the Space Group, Marc Moutin and Ana Noronha will continue their work as co-chairs for the period 2015-2018.

In conclusion, members of the Space Group had an opportunity to present various projects, in which are currently involved[2].

2.1. "Monitoring Atmosphere and Oceans from Space" (Ana Noronha)

This topic presents an opportunity to demonstrate in a dramatic and informative way the role that space science and associated technologies play in understanding the complex interactions between our planet's oceans and atmosphere for the benefit of mankind.

Specialists in the group started by presenting the wealth of information on ocean parameters and conditions that can now be monitored by satellites: temperature, colour, suspended matter, topography, currents (surface currents and even deep currents).

However, it was pointed out that for a science centre exhibition it is crucial to have a hands-on element and a story line. A connection with daily life and also with other people's life (e.g. in the Pacific Ocean), inviting visitors to pass from local to global are also important issues in an exhibition. The possibility of developing a citizen science project or at least collecting some data locally was also considered.

In my opinion, two possibilities emerge from the working group:

A) Exhibition

Creating a full exhibition, modular, eventually connected with the theme of oceans on other planets and the search for life. A storyline was developed:

- Aliens are looking for life; they find the solar system
- They find the planet Earth, check it is in habitable zone and launch satellites
- Detect seasons, gases in the atmosphere, oceans, biomarkers
- As they approach they detect many other properties of the planet: magnetosphere, plate tectonics, earthquakes…
- Relation of ocean and atmosphere, storms
- Is there intelligent life?

B) Feasible activities:

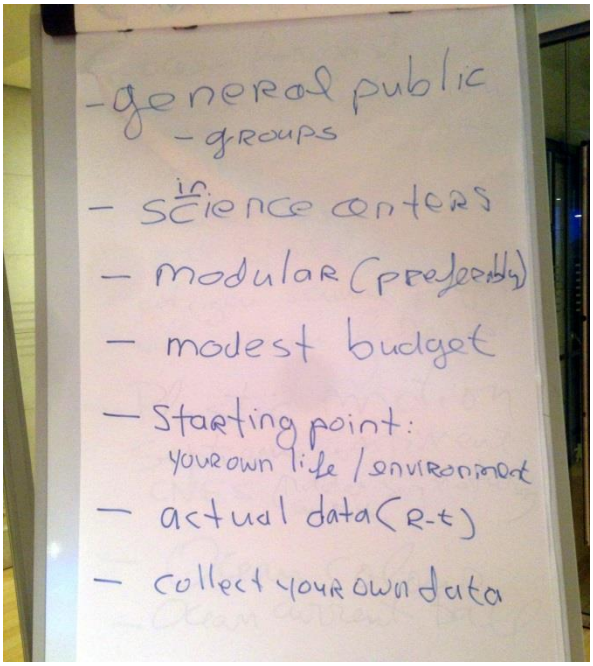
- Educational tools, hands-on activities, workshops: there is a lot of available scientific content on climate change monitoring that could be further transformed into various educational tools;
- Possibility to develop simulator of currents and simulator of climate change based on current models used for studying climate scenarios. An element of interaction would be included and the visitors could change solar radiation, wind, geophysical parameters

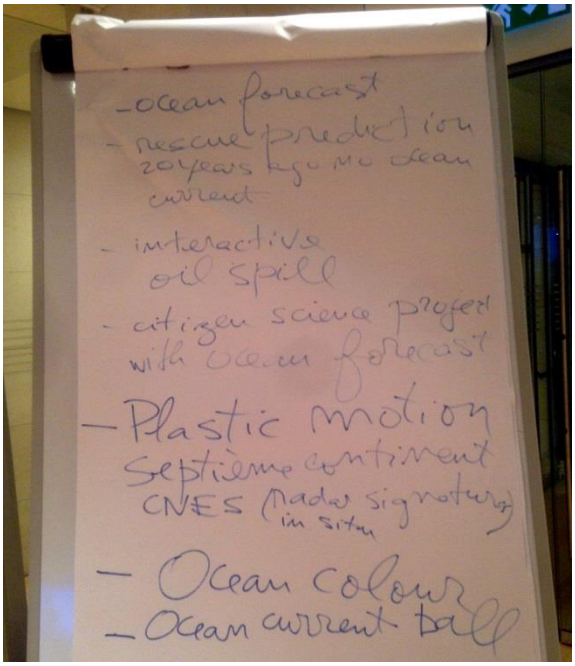
[2] For the description of presented projects, see Annex 3

like Earth rotation and see the resulting currents, temperature, and salinity. They could also try to contain an oil spill or see how an algae bloom evolves;
- A version of the simulator could be implemented for planetariums, where they can show currents and have other contributions other than astrophysics.

<u>Possible collaborations:</u>

- Ciência Viva, Portugal – Ana Noronha
- Science centre NEMO, the Netherlands – Eugen van Wees
- Copernicus Science Centre, Poland – Maciej Mucha
- Science Projects, Ltd, UK – Steve Pizzey
- Space Expo, the Netherlands – Rob van den Berg





Results of the brainstorming session on topic "Monitoring atmosphere and oceans from Space"

2.2. "The International Space Station: Living and Working in Space" (Aude Lesty, Tina Ibsen)

1/ HIGHLIGHT&SHARE - Day 1, in search of key ideas

Our main purpose was to identify the basic material to enable us to design a concrete, relevant offering around the theme *The International Space Station (ISS): Living and Working in Space*.

- All participants were asked each to share with the working group:
- Their knowledge... <u>& ignorance</u> of the topic
- The general public's knowledge, ignorance... <u>& misconceptions</u> around the topic
- Their experience in handling topics related to this theme in their Centres

At the end of an afternoon of debate and dialogue on the life of humans in Space on board the ISS, the working group identified no less than 47 key elements, thereby confirming the excessive scope of this topic on the scale of an exhibition!

- Initial intentions for handling the offering were outlined:
- Working / collaborating with REAL astronauts
- Self-experimentation on the effects of weightlessness in humans with one's own body;
- Training like astronauts
- Self-testing, obtaining a score for self-evaluation (in a pleasant atmosphere, without frustration!) to know if *I could be an astronaut*

2/ ORGANIZE&DEFINE - From... 47 key ideas to the 4 main themes of the offering

The Group worked to sum up the 47 key ideas and arrange them in categories to be used easily in exhibition offerings.

Four complementary themes emerged from this wrap-up:

- WHAT YOU MUST KNOW! about humans in Space
- DAILY ROUTINE of humans in Space
- DAILY SCIENCE on board the ISS
- TECHNICAL ASPECTS of life in Space

3/ Target

The Group agreed that the offering should be designed to be used with the general public and families with children under age 12.

But it is also important to adapt it to school groups, collaboratively.

Day 2 was dedicated to reaching a concrete definition of the offering.

4/ LET'S DESIGN - What we want to develop together

- An innovative exhibition on the daily lives of astronauts on board the ISS
- Interactive...
- With the possibility of collaborative use for school groups...
- ... But simple to produce and set up for other Centres in case we decide to produce each a copy of this exhibition.
- "Economical," to be produced at the lowest cost,
- ... And designed for easy transport between Centres, in case we decide to share a single exhibition that would travel among our Centres.

5/ LET'S DESIGN - How we imagine the exhibition

5.1/Connected interactive panels

The concept of interactive panels developed by the Space Group for the Rosetta Mission strikes us as the most appropriate formula for this collaborative production.

Each panel will propose a little game or simple action in the modules identified (see below). The idea is to collect the results for each panel in each module to be able to offer a final result to participant(s) at the end of their visit, in the last module.

5.2/An entertaining experience "In an astronaut's shoes"

"Dear visitor, imagine yourself in an astronaut's shoes.

You will live "like an Earthling" in a spacecraft in orbit around your planet, with very limited resources: fuel, oxygen, water, food...

... And in an "extra-ordinary" environment hostile to humans: weightlessness, vacuum, extreme temperatures, radiation...

Be smart! Try to make the best use of what you know about thrift and recycling of resources on Earth to imagine how to maintain life on board the ISS... and beyond (why not another planet?)!"

5.3/3 complementary immersive modules

This experience could be organised in 3 complementary modules:

MODULE 1 - *Preparing for a Space flight!*

The content of the panels and the simple actions and games they propose here are centred on health and nutrition.

The idea is to invite visitors to train like astronauts and understand that good physical condition is crucial.

For school groups, this module could easily be combined with physical activities taken the Mission X programme.

NB: a minimum score is necessary to move on to the activities in Module 2...

MODULE 2 - *Maintaining life on board - You are the Commander!*

The content of the panels and the simple actions and games they propose here are centred on such major fundamental issues as recycling water, protection against cosmic radiation, electrolysis to produce oxygen, the durability of equipment... Science on board will also be in the spotlight.

The idea is to ask visitors to deal with a crisis situation on board the ISS: *i.e.* lack of water or oxygen on board.

A "collaborative" way of using the panels for this module must be developed to be able to offer school groups (and why not families of visitors?) a situation where they must take action together.

MODULE 3 - *"Debriefing - Are you ready to go further?"*

After training and maintenance of life on board, it is time to debrief visitors on their experience.

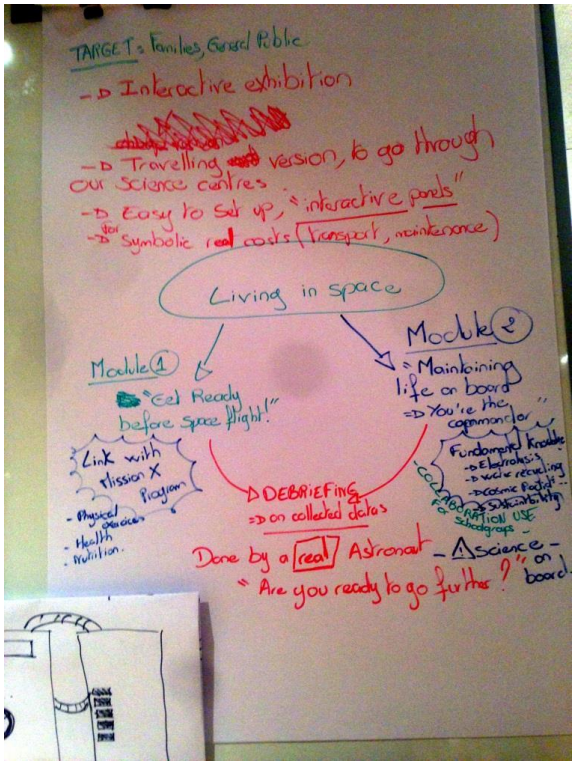
Face to face with a REAL astronaut (through pre-recorded videos to be shown according to the scores obtained in Modules 1 & 2), they hear him analyse the visitors' (or group's) performances and highlight the key points not to be overlooked. For humans, living elsewhere is a long-term quest; the ISS is an advanced post which prepares humankind to go further...

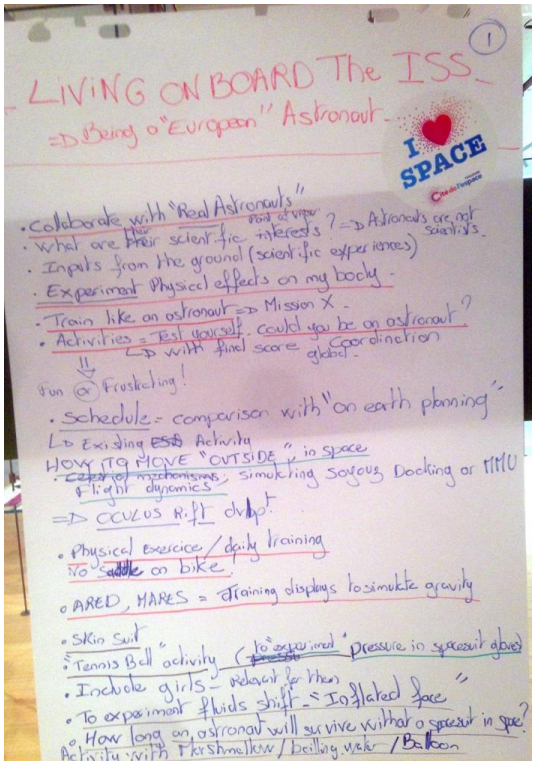
6/ Making sense of the other two future Space Group productions

Links can be made with the topics of the other two Space Group working groups (*Monitoring atmosphere and oceans* & *Is there life out there?*): Earth, ISS, exoplanets... all of which can be viewed as "spacecraft". The common foundation for all three topics could be "how to take advantage of our experience of life on Earth and in the ISS to imagine humankind living elsewhere?" To be continued...

Possible collaborations:

- Cite de L'Espace, France - Aude Lesty
- Tycho Brahe Planetarium, Denmark - Tina Ibsen
- Technopolis, Belgium - Nellie Konijnendjik
- Associazione Apriticielo, Infini.to, Italy - Marco Brusa
- Cosmodrome - vzw Kattevennen, Belgium – Michelle Accardo





Results of the brainstorming session on topic "The International Space Station (ISS): Living and Working in Space"

2.3. "Is there life out there?" (José Antonio Gordillo)

We are all Martians, aren't we?

Imagine that "somebody" finds us in a very far corner of the Universe. What should "they" think about us? If you consider in detail, we are an extraordinary odd example of life in the Universe... or possibly not.

We propose connect all the work activity with ExoMars 2016 mission for several reasons:

- Through this approach we can match "raw" scientific data of the mission with the audience, transforming them into good stories, hot topics, games etc...
- We can use a real space mission with real staff of engineers, scientists, researchers, etc... also with the media "echo" of a great challenge.
- ExoMars 2016 could be used in a similar way like Rosetta was planned and did, especially in the science centres' networking activities.
- Is a mission that builds bridges with the other themes easily: life on board of ISS (because it is a closed system as Mars environment), oceans, soils and atmosphere on Mars, etc...
- Connect with a very powerful cultural icon: Mars and aliens. Mars and our obsession with the alien life is a good field to play and try to change some dangerous misconceptions. Because science is always more astonishing than pseudoscience.
- We can produce great expectations.
- We can develop the key concepts (explained by Javier Martin in his talk): what is life?, biosignatures, living under "other" star, a second genesis on Earth, simple and complex life, searching for DNA, extreme life-life at the edge etc..
- We could connect with everyday life people questions: pollution (in other worlds), microorganism and bacteria (bad or good for life, we need some of them to live, psychological controversy like life in a closed and very narrow space, etc...
- We can apply gamification and storytelling methodologies.
- Finally, we can work with the powerful education curriculum STEAM (science, technology, engineering, art and mathematics).

Feasible activities:

- A European educational competition with the topic "Building Mars, our future city"- a competition not only for students (12-16 years old mainly), but also families. This a key point. We can develop new alliances with new learn agents like families, experts, creatives, communicators etc…Different kind of learning communities using a powerful scientific and technological background offered by ExoMars. ExoMars transformed in a very special competition.
- A big "Martian event" with the main European science centres connected. The main "dish" will be the launching of the mission and the retransmission of it. But, like ESA did with Rosetta in a previous way, we can "heat up" the atmosphere with different actions like planetariums shows, exhibitions, "Martian tours", on-line educational resources, etc… The main starting point for the two other mentioned activities. ExoMars transformed in a very special event.
- ExoMars in a form of a physical game, which everyone can download and play easily. "House of Mars". A game that tells you a powerful story of how the mission was imagined, planned, programed, organized and finally launched, a game to develop local communities of "ExoMars" fans that goes one step far away from the typical videogame culture. A game to play it "seriously but with fun" because you have the possibility to improve your mission knowledge like a true part if it with using true scientific resources provided by ESA: videos and multimedia, e-books, magic books, social media background etc… ExoMars is an inspiring challenge about life on Mars but also about our life on Mars. ExoMars transformed in a very special game. A game that can be developed in several ways to buy it in the main science centres and planetariums of Europe.

Some of my colleagues want to collaborate in the development of this project. Representatives of the Hannover and Rome planetarium are involved in the big event. I am also very interested in the competition and game ideas. In this last case we have the contact of one of the most brilliant physical game designer of Europe, Oriol Comas[3];

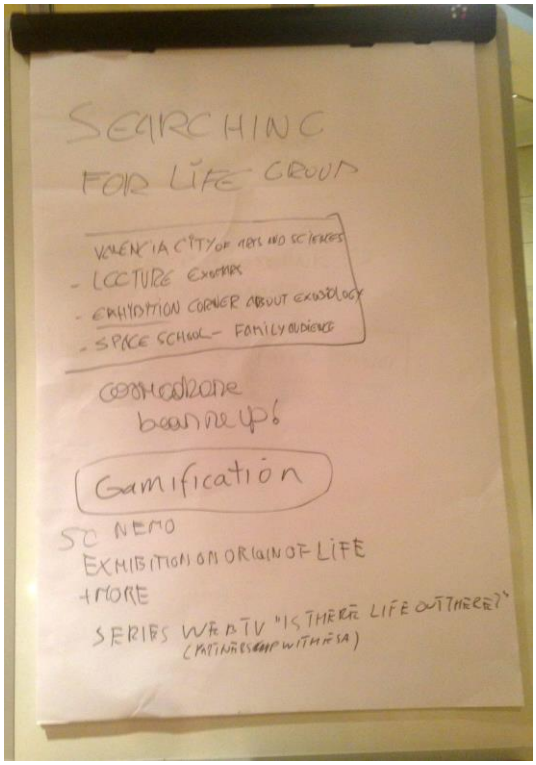
Obviously we maintain a permanent contact with the scientific help of Javier Martín Torres and a prominent science writer named Juan Francisco Buenestado.

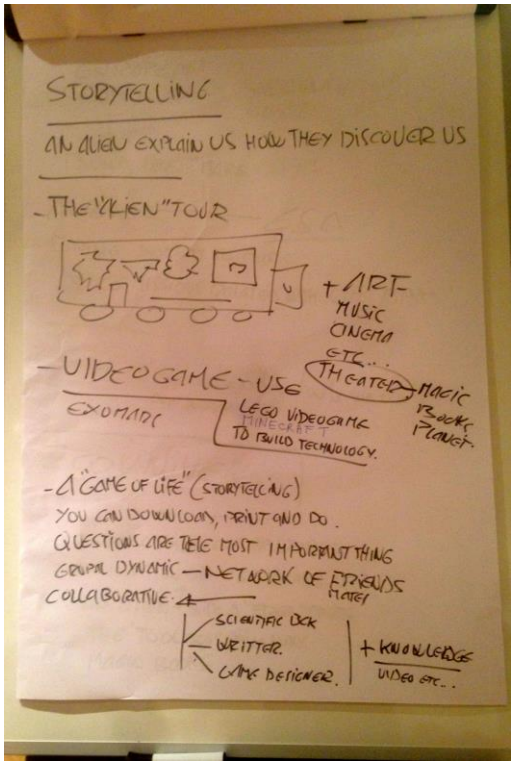
All these three ideas are simple, powerful, closely connected with a true "star" spatial mission of ESA, can be or not combined with other official initiatives, measurable, easy to convey, and above everything cheap.

Possible collaborations:

- City of Arts and Sciences Valencia, Spain - Jose Antonio Gordillo
- Planetarium Hamburg, Germany - Thomas Kraupe
- Musei Scientifici di Roma, Italy - Stefano Giovanardi
- Swiss Space Museum Supporters Association, Switzerland - Guido Schwarz– ready to contribute ideas and feedback

[3] For more information, see http://www.comascoma.com/english/00presentacio.htm





Results of the brainstorming session on topic "Is there life out there?"

3. Other activities during the Ecsite Annual Conference

Other Space Group related activities at the Ecsite Annual Conference 2015 also included a session on the role of planetaria in science centres and space technologies in protection of the food supply, as well as an ESA booth during the Business Bistro.

Session: What role for planetaria in science centres?

Speakers: Marc Moutin Cité de l´Espace, France, Thomas Kraupe, Planetarium Hamburg , Germany, Maciej Mucha, Copernicus Science Centre, Poland

Convenor**:** Weronika Śliwa, Copernicus Science Centre, Poland

The main subject of the session was the role of the planetarium as a part of the science centre. First speaker, Thomas Kraupe form Hamburg Planetarium perceives planetarium as a mini science centre by itself, creating opportunity to enhance our perception and curiosity by vast possibilities within the dome. Marc Moutin form Cité de l´Espace presented domes within the centre in Toulouse: visitors come for a full day and pay one single ticket for the whole Science Centre, and they are allowed for only one show per visit. It requires a well-planned program, with one astronomical show in the big dome, children shows in the smaller one and astronautics in the IMAX. Maciej Mucha discussed visitors flow between the exhibitions and the planetarium showing how different kinds of activities influence visitors flow between such facilities. Discussion during the session concerned mostly the future of the planetaria, especially usage of the big data, new equipment and new areas to accommodate within the domes.

Session "Using space technologies to protect future food supply"

Speakers: Penny Fidler, The Association for Science and Discovery Centres, UK; Marc Moutin, Cité de l'Espace, France; Fabrice Messal, Mercator Océan, France.

Convenor**:** Ana Noronha, Ciência Viva, Portugal

This official Ecsite Space Group session explored how space science and technology can raise

public awareness on the responsible use of water and food. Seen from far away, Earth is a pale blue dot. This is our spaceship, with its limited life support system. Besides generating images that capture the public imagination, satellites now collect real time information on the transformation of forests, deserts, polar ice or oceans, giving us new responsibilities regarding the limited resources at our disposal. Science centres and museums have a role to lay in engaging the public on these important issues. No other institutions are more skilled to transform space images into tools to communicate with different audiences, contributing to a responsible society.

ESA at the Business Bistro

During the Ecsite Annual Conference "Food for Curios Minds" in Trento, Italy in 2015 the ESA was present at the Ecsite Business Bistro. This year, the ESA stand presented the results of the "Hook up with Rosetta" campaign[4] of 2014. The stand attracted a lot of interest from the conference participants, interested in improving and extending communication about European space activities.

4. Next steps

The Space Group will organise its next annual meeting at the **National Museum of Science and Technology Leonardo da Vinci in Milan, Italy, November, 3-4, 2015**. The aims of the annual meeting will be to discuss further steps in developing new kits and tools around three themes, presented in this report; to plan the next Pre-Conference program during the Ecsite Annual Conference in 2016 in Graz, Austria; and to exchange about space-related topics. All space-related institutions, as well as non-space science centres and museums are invited to join the Space Group to discuss collaborative projects, build partnerships, exchange ideas and best practices. For further information on how to join the Ecsite Space Group or if you are interested in participating in the Space Group activities, please contact Antonina Khodzhaeva at akhodzhaeva@ecsite.eu

[4] For more information, see http://www.ecsite.eu/activities-and-services/resources/join-european-campaign-esas-rosetta-mission

ANNEX

Annex 1: Pre-conference workshop program

"Space for Life" – Develop and Share Resources

9-10 June 2015 – MUSE, Ravioli room

This workshop is organised by the Ecsite thematic group for space science, the Space Group.

In 2015, the Ecsite Space Group explores a new topic, "Space for life". This pre-conference workshop is the opportunity to brainstorm and imagine projects that could be developed and shared within the Ecsite network. All institutions are welcome to contribute. In particular, the workshop will focus on the importance of space for monitoring changes in oceans and atmosphere, improving our knowledge about life on Earth and beyond, and astronauts' life on the International Space Station.

After an introduction of these themes by experts, two workshops will allow participants to imagine potential collaborative projects. In 2015, volunteer museums, Ecsite, and the European Space Agency (ESA) will work towards the development of ready-to-use resources on the basis of ideas born during this workshop. The tools will be shared and broadly used to engage audiences with life and space topics. 2015 also marks the end of the current chair of the Space Group. A general assembly will be organized elect a new Steering Committee.

For further information about the programme, please contact: Fiorella Coliolo, *Coordinator of the Ecsite Space Group for ESA,* fcoliolo@exoworld.net

Speakers and facilitators

- **Jean-Baptiste Desbois,** Ecsite Treasurer
- **Marc Moutin**, Head of Exhibitions, Cité de l´Espace, Toulouse, France and Co-Chair of the Space Group
- **Ana Noronha**, Executive Director, Pavilion of Knowledge - Ciência Viva, Lisbon, Portugal and Co-Chair of the Space Group
- **Maria Menendez**, Head of Corporate Exhibitions and Events, European Space Agency, France and Co-Chair of the Space Group
- **Aude Lesty,** Museographer / Designer, Cité de l'Espace, Toulouse, France
- **Jose Antonio Gordillo**, Technician, Science Outreach Department of the City of Arts and Sciences
- **Fernando Doblas**, Head of ESA Communication Department
- **Monica Talevi**, ESA Head of Coordination and Outreach Unit, Education Office
- **Javier Martin Torres,** Chaired Professor in Atmospheric Science and expert in exobiology; Lulea University
- **Francesco Sarti**, Scientific Coordinator of the Education and Training Activities; ESA Directorate of Earth Observation Programmes
- **Rosaria D'Antonio**, Communication and Public Relation Office, Italian Space Agency (ASI)
- **Floriana Vizzari**, Head of Corporate Exhibitions and Fairs, Telespazio
- **Nigel Savage**, STEM Didactics and Hands---on Projects Coordinator, ESA Education Office
- **Simonetta Cheli**, Head of Coordination Office Earth Observation programme

Programme – Tuesday 9 June

Time	Session	Leader	Duration
9:00-9:10	**Welcome by Jean-Baptiste Desbois**	Ecsite Treasurer	10 min
9:10-9:15	**Ecsite Space Group: presentation of the group and pre-conference programme**	Co-Chairs of the Space Group	5 min
9:15-9:25	**Roundtable**	All	10 min
KEYNOTE SPEECHES *Moderator: Maria Menendez (until break) / Marc Moutin (after break)*			
9:25-9:45	**Bringing space to Earth. An inspirational mission.**	Fernando Doblas	20 min
9:45-10:05	**Overview of ESA's Education activities**	Monica Talevi	20 min
10:05-10:25	**How the Italian Space Agency works with science centres & museums**	Rosaria D'Antonio	20 min
10:25-10:45	**Collaborations between Industries, science centres and museums**	Floriana Vizzari	20 min
10:45-11:00	**Q&A**		20 min
11:00-11:20	**Coffee break**		20 min
11:20-11:30	**Overview of the topic "Space for Life"** **Trailer "Is there life out there?"**	Fernando Doblas	10 min
11:30-11:50	**The International Space Station: Living and Working in Space**	Nigel Savage	20 min
11:50-12:20	**Is there Life out there?**	Javier Martin Torres and Jose Antonio Gordillo	30 min
12:20-12:40	**Climate Change: Monitoring Atmosphere and Oceans from Space**	Francesco Sarti and Simonetta Cheli	20 min
12:40-13:00	**Q&A**		20 min
13.00-14.00	**Lunch**		60min
PREPARING SPACE GROUP ACTIVITIES 2015-2016 *Moderator: Ana Noronha*			
14:00-15:30	**Workshops in small groups on the three topics presented - PART I**	Aude Lesty, Jose Antonio Gordillo, Ana Noronha	90 min
15:30-16:00	**Coffee break**		30 min
16:00-17:00	**Workshops on the three topics presented in small groups – PART II**	Aude Lesty, Jose Antonio Gordillo, Ana Noronha	60 min
17:00 – 17:15	**Summary of the day**	Ana Noronha	15 min

Programme – Wednesday 10 June

Time	Session	Leader	Duration
Moderator for the morning: Marc Moutin			
9:00-9:30	**Summary of the first day and introduction of the second day** • Welcome and short summary of the first day (5 minutes) • Presentation of the ideas raised during the first day (5 minutes per group) • Reminder of the objectives and presentation of the second day programme (10 minutes)	Marc Moutin	30 min
9:30-11:00	**Working together in small groups– PART III** • Work in small groups towards final objectives (1 hour) • Preparation of a synthesis (30 minutes)	Aude Lesty, Jose Antonio Gordillo, Ana Noronha	90 min
11:00-11:30	**Coffee break**		30 min
11:30-12:30	**Presentation of results of the three workshops** (20 minutes per group)	Aude Lesty, Jose Antonio Gordillo, Ana Noronha	60 min
12:30-13:00	**Questions and answers, exchanges on the results, and discussions**		30 min
13:00-14:00	**Lunch break**		60 min
Moderator for the afternoon: Ana Noronha			
14:00-15:00	**General Assembly** Elections of Co-Chairs, Communication Officer, governance of the Group	Co-Chairs of the Space Group	60 min
PROJECTS FORUM			
15:00-15:30	**Projects forum - PART I** Three 10 min presentations of innovative projects, ideas from Space Group members	All participants are invited to give their contribution	30 min
15:30-16:00	**Coffee break**		30 min
16:00-16:30	**Projects forum - PART II** Three 10 min presentations of innovative projects, ideas from Space Group members and highlights from the Rosetta Campaign	All participants are invited to give their contribution	30 min
16:30-17:00	**Summary of the workshops and next steps**	Ana Noronha and Marc Moutin	30 min

Annex 2: Participants of the pre-conference workshop

Nr.	First name	Family name	Institution/company	Country
1	Michelle	Accardo	Cosmodrome - vzw Kattevennen	Belgium
2	Sylviane	Blum	University of Bern / Center for Space and Habitability	Switzerland
3	Marco	Brusa	Associazione Apriticielo, Infini.to	Italy
4	Marion	Budde	Universum Managementges GmbH	Germany
5	Simonetta	Cheli	European Space Agency	Italy
6	Fiorella	Coliolo	Fiorella Coliolo	France
7	Fernando	Doblas	European Space Agency	France
8	Stefano	Giovanardi	Musei Scientifici di Roma	Italy
9	José Antonio	Gordillo Martorell	Ciudad de las Artes y las Ciencias, S.A.	Spain
10	Tina	Ibsen	Tycho Brahe Planetarium	Denmark
11	Antonina	Khodzhaeva	Ecsite aisbl	Belgium
12	Nellie	Konijnendijk	Technopolis®, the Flemish Science Centre	Belgium
13	Thomas	Kraupe	Planetarium Hamburg	Germany
14	Aude	Lesty	Cité de l'Espace	France
15	Sebastian	Marcu	Design & Data GmbH	Germany
16	D'Antonio	Maria Rosaria	Italian Space Agency	Italy
17	Javier	Martin-Torres	CSIC & LTU	Spain
18	Tomáš	Meiser	TECHMANIA SCIENCE CENTER o.p.s.	Czech Republic
19	Maria	Menendez	European Space Agency	France
20	Fabrice	Messal	Mercator Océan	France
21	Jon	Milton	Science Museum	United Kingdom
22	Marc	Moutin	Cité de l'Espace	France
23	Maciej	Mucha	Centrum Nauki Kopernik	Poland
24	Ana	Noronha	Pavilhão do Conhecimento - Ciência Viva	Portugal
25	Steve	Pizzey	Science Projects, Ltd	United Kingdom
26	Nathalie	Puzenat	Universcience - EPPDDCSI - Palais de la découverte	France
27	Luca	Reduzzi	Museo Nazionale della Scienza e della Tecnologia	Italy
28	Manuel	Roca	Parque de las Ciencias	Spain
29	Francesco	Sarti	European Space Agency	
30	Nigel	Savage	European Space Agency	
31	Guido	Schwarz	Swiss Space Museum Supporters Association	Switzerland
32	Weronika	Sliwa	Centrum Nauki Kopernik	Poland
33	Monica	Talevi	European Space Agency	Netherlands
34	Rob	van den Berg	Space Expo	Netherlands
35	Wendy	van den Putte	Science Center NEMO-NCWT	Netherlands
36	Eugeen	van Wees	Science Center NEMO-NCWT	Netherlands
37	Floriana	Vizzari	Telespazio	Italy
38	Milène	Wendling	Université de Strasbourg / Jardin des Sciences	France

Annex 3: List of project presentations from the Space Group members

Space dreams

Marc Moutin, Cité de l'Espace

Abstract

"Space dreams" is a new traveling exhibition on the history of space. From Man dreams (leave Earth, go to the Moon, Mars exploration, and live in space…) to their realization, some steps of space exploration presented in the context of the time

Space girls, space women

Fiorella Coliolo

Abstract

The photographic exhibition "Space Girls Space Women" presents the stories of girls and women passionate about space, all around the world. Space Girls Space Women was produced by the French Photo Agency Sipa Press, with ESA as a founding partner, to bring to life. 11 renowned female photographers met female students passionate about space, scientists, engineers and many more who are today at the heart of the space adventure - from Nairobi to Moscow, from Bangalore to Munich, from the Atacama Desert to the suburbs of Izmir, the photo reporters illustrated these women's views of space.

EU-Space-Awareness

Ana Noronha, Ciência Viva

Abstract

EU-Space-Awareness is a 3 year European Project that started in March 2015. The project will develop a repository of peer reviewed space educational resources and citizen science initiatives, easily reachable by children, teachers, educators, and families. New educational resources will be developed, in relation with current European Space Agency's missions, Galileo and Copernicus. Specific activities will focus on raising interest of young people in space related careers reaching out to teenagers. Particular attention will be paid to stimulating interest amongst girls and ethnic minorities and reaching children in underprivileged communities, where most talent is wasted. The project will include teacher and educator training, through MOOCs and international workshops.

Funded by the European Commission's Enterprise and Industry Directorate under the Horizon 2020 framework programme, EU-Space-Awareness involves 10 partner organisations and 15 network nodes in 17 European countries and South Africa. The project is led by Leiden Observatory in the Netherlands.

Astroconcert: a musical storytelling about the sky

Stefano Giovanardi, Planetarium and Astronomical Museum of Rome

Abstract

Astroconcert is a multimedia project on communicating science through musical events and concerts, combining live electronic music and narration. It was started in 2008 by composer and musician Angelina Yershova and Stefano Giovanardi, astronomer at the Planetarium and Astronomical Museum of Rome.

The Astroconcert project aims at exploring innovative formats for musical and scientific performances, in venues like planetaria, auditoriums, concert halls, open spaces. A careful research on the use of storytelling, visuals and sounds results in creating emotional atmospheres tailored for different topics and narrative levels.

Based on the Astroconcert productions (i.e. "Stellar Vibrations" 2009, "Astrotherapy" 2009, "Cosmic Echoes" 2009, "Destination Infinity" 2011, "Aurora Borealis" 2013, "Icy Rose 67P" 2015) I will discuss how the interplay between astronomy and music can develop synesthetic perceptions that may give a broader meaning to experiencing and enjoying both scientific and musical contents.

Bringing Space Missions to Digital Planetariums in Europe

Thomas W. Kraupe, Planetarium Hamburg

Abstract

As President (and now Past-President) of the International Planetarium Society (IPS) the author has launched the "IPS science data and visualization task force". You will hear an update on steps made to streamline the process of bringing digital data from space missions to planetarium domes. New tools for digital planetariums will allow audiences to follow current space missions and to understand how current and past missions have collected their observations, providing context both in technology and science of images and data collected.

As an example, efforts for bringing the current New Horizon Pluto Mission to Planetariums are shown and exemplify that it is time to create a network of theatres as a platform for simultaneous events. First steps towards such a network of digital theatres for Europe will be presented with the hope that we can team up for the future of Space Exploration.

Great ideas and small budgets: Innovation in astronomy and space communication in a transforming planetarium

Michelle Accardo, Cosmodrome - vzw Kattevennen-Europlanetarium

Abstract

The Cosmodrome started a process of transformation four years ago. The challenge was to handle this buzzing question: How to reach out to the general public with great ideas and a small budget? A reorganization of every operational level in order to be able to develop new attractive visitors' products, was inevitable. The result is rewarding and affirmative. Today we present to our public an engaging exhibition in which current missions and research as well as creativity play a central role.

Beam me up! An epic ride in the hunt for the evidence of alien life.

In the forest of Kattevennen-Genk a steaming cube landed in a tree. A team of experts led by the national weatherman Frank Deboosere did a lot of research on the spot. Where does the cube come from? Is there somewhere in the universe a planet turning square? The Cosmodrome team gathered all their discoveries in the unique exhibit Beam me up! Here the audience discovers the ESA and ESO missions and research, finds out how science fiction can be a trigger for technological innovation, cooperates to puzzle the elements of life and joins in for a skype session with 'Martians'. Visitors can find out fact and fiction in a fun quest for extra-terrestrial life.

Interactive exhibition "Cosmovisions"

Nathalie Puzenat, Universcience

Abstract

Universcience (Paris, France) and the UNAM (National Autonomous University of Mexico) coproduce a 600 sq. interactive exhibition "Cosmovisions" to make the public discover the evolution of the representations of the sky and universe, from the pre-telescopic time in different cultures from South America, Europe and Middle East or Asia to the last research in astrophysics and cosmology.