

For the European Commission: EPSC 2017 Riga Outcome Report

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Summary of Outcomes

Participation Outcome. *The EPSC 2017 Riga had 808 participants from 40 countries with 1000 abstracts (650 Oral, 350 Poster presentations in 100 sessions). It was the largest single EPSC showing since the EPSC 2012 London meeting, and the largest number of countries, ever. There were 80 Latvians attending with the numbers from Finland, Estonia and Lithuania larger than usual too.*

Engagement of all levels of Society.

- *Communicate space to all of Latvia’s and the Baltic’s stakeholders ranging from school children to space companies to Parliament members.*

Our five key speakers: **Drs. Vaira Viķe-Freiberga, Ene Ergma, Mathias Link, Dana Reizniece-Ozola, and Kārlis Šadurskis** gave helpful, interesting and informative (recorded) space-related presentations addressed to the international scientific community, to our Latvian space workers, to Latvia’s youth, to the Baltic Public of all-ages, and to the Latvian policy makers. The presentations give weight to the educational and economical value of space work, what Latvian politicians can do better to support space, and the natural ties between the Baltic pagan cultures and the cosmos.

- *Communicate Baltic space capacities with the international space community to help build new and competitive space collaborations.*

An elegant ‘Baltic Space Facilities’ booklet was developed and printed (1000 copies), and given to the EPSC 2017 Participants, combining the efforts of the space workers in the Baltic Sea Region. Latvian Space Exhibits showcased Latvian space skills.

- *Provide space education to inspire our Latvian and Baltic young via their schools and families.*

Six hundred school kids learned about space during the EPSC week from the new portable Space Exhibits, and many thousands more will learn from Zinoo at their five science centers. Twenty-

five Latvian and Estonian space interns and their mentors were exposed to and inspired by the most cutting edge space work and evaluated themselves on their summer work. One Latvian team from LU won an early career poster. A fascinating space topic was discussed at the Public Event and recorded, with an introduction in Latvian by Minister **Kārlis Šadurskis** for the Latvian school teachers, as educational inspirational STEM material that they can view at their leisure.

- *Raise public awareness for the linkages between space and our deep Latvian and Baltic cultural traditions to build on the theme of ‘space’ for our cultural Future.*

We now have a recording by Latvia’s most respected past politician (**Dr. Vaira Vīķe-Freiberga**) who shows how the cosmos and the Dainas are linked. We have given 210 new visitors to Riga a warm introduction to Baltic dancing and music at the Social Event.

- *Communicate EPSC 2017 space results to the Latvian and Baltic public to provide a rare glimpse into cutting-edge space work, and therefore real results of STEM careers. The city will find itself in the center of the international planetary news cycle for this week, hence a source of pride for the Latvians.*

For one week, Riga, Latvia was in the center of international space news. The International Press pieces number at about 30, reaching the most visible press such as The Economist. Latvians heard all about it, daily from all of their local news. An active streaming of one-sixth of the talks, including the keynotes are now archived. These 100 recorded talks will form the basis for a collection of inspiring lectures that could influence college-aged all over the world to go into planetary or space work.

Small Latvia has made a substantial contribution to the world’s available planetary space education.

The European Planetary Science Congress

The European Planetary Science Congress (EPSC) is the meeting arm of the Europlanet consortium (Appendices). Europlanet is funded by a 10 MEur EC Horizon 2020 Advanced Infrastructure grant¹. The EC Europlanet Grant Agreement covers the scientific organization through the company Copernicus Meetings. The EC Europlanet Grant Agreement does not financially cover the operational costs of the Local Organizing Committee (LOC). The members of the LOC of the EPSC vary from year to year, based on its location and host. The host for the 2017 EPSC Riga was Amara Graps (Grapa), Executive Director of Baltics in Space.

¹ http://cordis.europa.eu/project/rcn/198071_en.html

Grapa marketed the EPSC 2017 Riga meeting to the Europe-wide EPSC Board as a **Baltic meeting**, to raise the visibility of the Baltic space facilities to the international space community, while acknowledging the 100-year birthday celebrations in Finland, Estonia, Latvia and Lithuania. As the 2017 meeting is the first EPSC to embrace more than one country and the first in Central and Northern Europe, the EPSC local organisers can, therefore, provide a broad impact to meet many societal challenges.



Audience of the Opening Session of the EPSC 2017 Riga.

Part 1. EPSC 2017 Public Speakers.

Arrange high-profile EPSC 2017 public speakers with the goal to publicly communicate *space- 1) policy, 2) education, 3) science, 4) industry, and 5) ancient cultural values*. Invite key policy makers from the Latvian Parliament and Ministries.

Part 1 communicates ‘Space’ to Latvia’s and the Baltic’s stakeholders, ranging from school children to space companies to Parliament members.

*A. Grapa arranged **five** keynote speakers for the EPSC 2017 Riga. The EPSC LOC Chair is responsible for paying the travel/accommodation for key speakers, if funding is asked or required. All speakers donated their time and all but one (for whom we had ready travel funds) donated their travel.*

Opening Speakers 18. September: Dr. Vaira Vīķe-Freiberga & Dr. Ene Ergma

- 1) **Dr. Vaira Vīķe-Freiberga** . Past two-time Latvian president. International spokesperson for democracy and Latvian culture and current president of the Madrid Club.
Topic: Sun in the Latvian (**Culture**).

Recorded: The Latvian Mobile Telephone (LMT) company streamed her presentation:
<http://straume.lmt.lv/lv/konferences/konferences/vaira-vike-freiberga/1003023>

Details and subsequent support and feedback. Dr. Vaira Vīķe-Freiberga (VVF) spoke for approximately 20 min. ‘Scientific models are metaphors just like folklore poetry is a built on metaphors’ (02:30 in recording) she said. In those metaphorical activities, Science seeks understanding, and folklore poetry seeks meaning. Dr. Vaira Vīķe-Freiberga provided an important connection between Latvian culture and STEM subjects like our planetary science topic. Since it is recorded, the Latvian public can refer to her speech in the years to come. Latvian school (Rigas. vidusskola. 6) child: Vija Grapa presented VVF with flowers afterwards. Dr. Grapa summarized the cultural significance of VVF’s presentation in her Overview presentation one hour later in the Opening Session (also streamed by LMT).

VVF’s presentation was carried by the Latvian press:

- NRA.lv <https://goo.gl/NZNxs6>
- TVNET.lv <https://goo.gl/jXBX24>
- La.lv <https://goo.gl/PqfAi2>

and captured internationally on Twitter.

https://twitter.com/nick_attree/status/909661634066608128
<https://twitter.com/europlanetmedia/status/909661962866393088>
<https://twitter.com/anitaheward/status/909662115757199360>
<https://twitter.com/MarsMetNet/status/909662668713275392>
<https://twitter.com/Chmee2/status/909664360955547648>
<https://twitter.com/LucaPlanets/status/909666102921322496>
<https://twitter.com/LeighFletcher/status/909669747834355712>
<https://twitter.com/anitaheward/status/909669795712212994>
<https://twitter.com/LucaPlanets/status/909672914781392898>
https://twitter.com/lets_boldly_go/status/909678131535126528
https://twitter.com/Ines_Blgcm/status/90968072630772941_3
<https://twitter.com/JLGalache/status/909683027953045504>

<https://twitter.com/gpikio/status/909699406462676997>

<https://twitter.com/marruciic/status/909723336627904512>



Opening Session Speakers: Vaira Viķe-Freiberga and Ene Ergma

2) **Dr. Ene Ergma** Former two-time leader of the Estonian Parliament.

Topic: How Space was supported in the Estonian government in 2000s (*Policy*). This talk is policy-oriented to explain to the Latvian government some of her experience in supporting Space in the Estonian Parliament.

Recorded with All of the Opening talks: (00:31:00 to 00:51:00)

<http://straume.lmt.lv/lv/konferences/konferences/opening/1003044>

Details and subsequent support and feedback. Dr. Ergma spoke for approximately 20 min. Her space policy advice starts at about 00:41:00 in the recording (above). Latvian school (Rigas. vidusskola. 6) child: Vija Grapa presented Dr. Ergma with flowers afterwards. Dr. Grapa summarized the policy and communication significance of Dr Ergma’s presentation in her Overview presentation 30 later in the Opening Session (also streamed by LMT).

Dr. Ergma’s presentation was also captured internationally on Twitter.

<https://twitter.com/europlanetmedia/status/909667331361710080>
<https://twitter.com/anitaheward/status/909669795712212994>
<https://twitter.com/LucaPlanets/status/909672914781392898>
https://twitter.com/lets_boldly_go/status/909678131535126528
https://twitter.com/Ines_Blgcm/status/909680726307729413
<https://twitter.com/FMIspace/status/910508818844536832>
<https://twitter.com/DrMLHarris/status/910513306078674946>

Keynote Speakers 19. September : Dr. Mathias Link & Dr. Dana Reizniece-Ozola

These two speakers coincide with the EPSC 2017 Riga Industry Days, Sept. 19 and 20.

- 3) **Dr. Mathias Link** Space Affairs lead of the Luxembourg Ministry of the Economy.
 Topic: The Luxembourg Space Resources Initiative (**Industry / Policy**). This talk introduces the European space workers, including those from the Baltic region, to ‘New Space’ and Asteroid Mining.

Recorded with all of the in-space resource utilization session talks: 0:00:00 -00:21:00
<http://straume.lmt.lv/lv/konferences/konferences/scientific-constraints/1003270>

Details and subsequent support and feedback. Dr. Link spoke for approximately 20 minutes. There was time for only one question afterwards. In the same session as Dr. Link was a paper by Galache and Graps (Grapa), which became a Europlanet press release about asteroid mining and then a press conference three hours later, in which Dr. Galache presented asteroid mining. These press pieces bootstrapped from Dr. Link’s presentation to show that Luxembourg is already active-in-asteroid-science. The Europlanet asteroid mining press release was carried internationally by approximately 10 press pieces. The major pieces are below.

Europlanet Press Release:

What do we need to know to mine an asteroid? <https://goo.gl/kSZcjG>

Space Mining News: <https://goo.gl/c7jEEY>

Science Daily: <https://goo.gl/VwDTjD>

Leonard David: <https://goo.gl/oBA69h>

Physics World: <https://goo.gl/65Gc4Z>

Sky Nightly: <https://goo.gl/V1RNMQ>

Seeker: <https://goo.gl/WPLoF5>

INAF: <https://goo.gl/1Vqftj>



Key speaker: Luxembourg Ministry of the Economy Space Policy Lead: Mathias Link

Dr. Link's presentation was captured internationally on Twitter.

<https://twitter.com/JLGalache/status/910021591999893504>

<https://twitter.com/asrivkin/status/910021937958670336>

<https://twitter.com/JLGalache/status/910022362279620608>

<https://twitter.com/asrivkin/status/910022507167649793>

<https://twitter.com/JLGalache/status/910023096370909184>

<https://twitter.com/asrivkin/status/910023245553954816>

<https://twitter.com/JLGalache/status/910025288712704000>

4) **Dr. Dana Reizniece-Ozola** Minister of the Latvian Finance Ministry.

Topic: The value of Space in Latvia. (*Industry / Policy*). This talk was aimed at the Latvian space workers, to give a view for the status of where is Latvia in building a space industry.

Details and subsequent support and feedback. Dr. Reizniece-Ozola spoke for approximately 20 minutes, at the end of the session about interplanetary nanosatellites. There were approximately eight minutes of seven questions to her from the audience. In the same session was a speaker: Pekka Janhunen from the Finnish Meteorological Institute (FMI) about nanosatellites visiting hundreds of asteroids using a propulsion technology called E-sail. That FMI presentation was

also a press-release and press conference immediately after Dr. Reizniece-Ozola’s presentation and was the highest-visibility press piece of the entire EPSC 2017 Riga.

Recorded separately *and* with all of the nanosatellite session talks:

The Latvian Finance Minister speaking:

<http://straume.lmt.lv/lv/konferences/konferences/dana-reizniece-ozola/1003050>

The Entire nanosatellites session:

<http://straume.lmt.lv/lv/konferences/konferences/interplanetary-nanosatellites/1003272>

Dr. Reizniece-Ozola’s presentation was overshadowed in the Latvian media by the large press piece of her session by FMI’s Pekka Janhunen. Nevertheless, her presentation had some Latvian press: delphi.lv <https://goo.gl/13Q9oH> and, with her political colleagues, was considered one of the EPSC 2017 Riga highlights: <https://goo.gl/EQ9r5c>

Moreover, there is now an important record for the scientists and space industry in Latvia regarding the country’s path through ESA and how the Latvian government views its progress building space skills. The first question after her talk finishes by Ilgonis Vilks in the above recording, and Dr. Reizniece-Ozola’s answer, explores that topic in more detail.



Key Speaker: Minister Dana Reizniece-Ozola

Dr. Reizniece’Ozola’s presentation was captured internationally on Twitter :

<https://twitter.com/JLGalache/status/910074591594385408>
<https://twitter.com/JLGalache/status/910076236231266304>
<https://twitter.com/DrMLHarris/status/910076755196678145>
<https://twitter.com/gpikkio/status/910077350980804610>
<https://twitter.com/mansLMT/status/910079609651286016>
<https://twitter.com/anitaheward/status/910079648259874816>
<https://twitter.com/DrMLHarris/status/910079774420295680>

Keynote Speaker 21. September : Dr. Kārlis Šadurskis

This speaker coincides with the **EPSC 2017 Riga Public Event, Sept. 21.**

- 5) **Dr. Kārlis Šadurskis** Minister of the Latvian Ministry of Education and Science.
 Topic: The importance of STEM education in space work. (*Education*). We were expecting through our contact (ESA liaison at the Latvian Ministry of Education and Science) a “Latvian teenagers” audience, but they were not there, so we filled a set of seats in the auditorium in the ten minutes before the Event with professional space workers from the EPSC Thursday poster session.

Dr. Šadurskis’ talk was recorded:

<http://straume.lmt.lv/lv/konferences/konferences/moon-mars/1003294>



Public Event, Key speaker: Minister Kārlis Šadurskis

Details and subsequent support and feedback. Dr. Šadurskis spoke for approximately 13 minutes. He explained that space exploration is one of the key industries that can successfully attract young people to the field of engineering and applied sciences. "Working with space technologies and space sciences imposes high demands on intellectual preparation, while the desire to operate in the space industry can be trained by highly qualified specialists in physics, mathematics, chemistry, biology and other disciplines and natural sciences," He answered two questions from the audience.

He spoke in Latvian as a lead-in to the English language round-table Public Event discussion: *Moon, Mars and Beyond?*, where the role of astronauts in entrepreneurial New Space / Space 4.0 was explored. We will describe the EPSC 2017 Public Event in Part 4, below. As Dr. Šadurskis' talk in Latvian was recorded, we now have a valuable resource for the Latvian school teachers and their students.

Press. Dr. Šadurskis' presentation was discussed on the Latvian Educational Ministry website <https://goo.gl/7r8skn> and in the local Latvian press:

- EcoMedia.lv: <https://goo.gl/CS4opx>.
- TVNET.lv <https://goo.gl/MEEYkk>
- and on the Finnish blog: <https://goo.gl/HKr431>

Dr. Šadurskis' presentation was captured internationally on Twitter:
<https://twitter.com/AnastasiaKokori/status/910905290895364097>
https://twitter.com/Philae_MUPUS/status/910905446407577600
<https://twitter.com/marrucciic/status/910905709428080640>

Speaker Costs

None of the key speakers required a speakers fee. We had ready funds for Dr. Ergma's travel from Estonia and for her Riga accommodations from the Interreg SpaceTEM project, 'policy' portion of the grant.

To put cost-numbers on the tremendous gift-of-speaking offered by these speakers, I've estimated costs for these speakers' preparation time, with typical high-profile speakers' costs and their additional travel costs, to treat their speaking as an *in-kind sponsorship* of the EPSC 2017 Riga meeting. What follows is subjective and an estimate only. Dr. Vīķe-Freiberga's in-kind costs: 5,000 Eur, Dr. Ergma: 2,100 Eur, Dr. Link: 1,180 Eur, Dr. Reizniece-Ozola: 1500 Eur,, Dr. Šadurskis: 1,000 Eur.

Total in-kind sponsorship from the five Speakers: € 10,780

Unavailable speakers: Dr. Grapa had also tried to have 1) Estonian-American space investor (Space-X, Planetlabs, etc.): Steve Jurvetson (dfj.com), through the company’s communications office and the US Embassy Riga, and 2) European Commissioner: Elzbieta Bienkowska (DG GROW, through the local Latvia representation office. The two were unavailable.

Dr. Grapa key speakers communication costs: € 2,200

Total Part 1 Cost: €12,980

Part 2. EPSC 2017 LOC Space Facilities Booklet.

Support and Coordinate the Latvian and Baltic Space Facilities EPSC 2017 Baltic Space Facilities booklet. The Baltic space community had a rare opportunity to show the international space community our Baltic space facilities, to communicate the concept that the eight space facilities represents a regional space competency that rivals other European regions and to show specific space skillsets to build new international space collaborations.

Part 2 communicates Baltic space capacities with the international space community to help build new and competitive space collaborations.

Booklet Development

With financial support for the graphics artist: Egils Parups, for a second editor: Anna Reynolds, and for printing, Amara Grapa coordinated the development of the Baltic Space Facilities booklet with the eight space-related institutes and one museum:

Tartu Observatory --Estonia

Ventspils International Radio Astronomical Center (VIRAC) -- Latvia

University of Latvia / Institute of Astronomy: **Baldone Observatory** –Latvia

University of Latvia / Institute of Astronomy: **Riga Satellite Laser Ranging Station** –Latvia

University of Latvia : **Canders Space Exploration Museum** –Latvia

Institute of Environmental Solutions (Cesis) –Latvia

Moletai Astronomical Observatory –Lithuania

University of Helsinki, Planetary Systems Research group –Finland

Finnish Meteorological Institute FMI (Helsinki) --Finland.

These facilities provided information about the space facilities’ past history, current status, photos, associated people skillsets, and contact information. Amara Grapa wrote the Introduction with Juris Žagars, and Anna Reynolds, the Table of Contents. The Latvian Investment Agency (LIAA) gathered text and photos from the Latvian space institutes, while Grapa gathered text and photos from the remaining non-Latvian space institutes.

The Baltic Space Facilities booklet required editing to ‘speak’ to the audience of the professional planetary scientists. The booklet chapters also required editing for homogenization of details for each of the chapters; that is, not too many details, not too little. Dr. Grapa provided those two sets of edits. Our second editor: Anna Reynolds provided a third level of editing so that the final output was smooth and highly readable.

The graphics artist: Egils Parups provided a beautiful cover and inside graphics layout that invited people to read. The booklet was not too heavy or thick, so slipping it inside of briefcases and backpacks was easy for the EPSC participants. This booklet was distributed to 800 participants with the Conference Programme book and the participant’s badge at the EPSC-2017 Registration desk.



Example of what each participant received at the EPSC 2017 Riga Registration desk.

Additional booklets were displayed in several stands around the LIAA, Latvian Space Facilities Exhibits near the largest three conference rooms.



One view of the LIAA Latvian space facilities exhibits plus one stand of extra booklets.

The primary virtual home of the Baltic Space Facilities booklet is at the www.balticsinspace.eu web site: <https://goo.gl/gxWnJn> where a pdf can be downloaded: <https://goo.gl/ZJP5bj>. The licensing of the booklet is a Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0) license. This is a proprietary license that requires copies or adaptations of this booklet to be released under the same or similar license as the original. This allows the other institutes to adopt and modify versions too. Baltics in Space is carrying the responsibility to keep the content current for the Baltic space workers.

Booklet Costs

For financial support of the booklet, Amara Grapa pushed this document through several paths: 1) Through a contribution to a (finally failed) VIRAC-led Interreg EstLat-2020 ‘ALSPACET’ bid in Spring/Summer 2016, then, 2) in a separate proposal to the Latvian Finance Minister, and then, with the new Baltics in Space nonprofit, in two proposals to 3) to the Latvian Investment Agency and 4) the European Commission Latvia representation office. **The paths: 3) and 4) were successful** for funding the booklet development, with Grapa underpaid. Grapa has made

estimates of the costs incurred by LIAA and by the institutes themselves for producing their (words + photos) contributions. Those are included below.

3. **LIAA Costs** (guestimates): graphics artist (1000 Eur) + Communication-- between themselves and with Latvian Institutes and me-- (1000 Eur) + Printing (2400 Eur) = **total 4,400 Eur**

4. **EC + Baltics in Space Costs.** [a. Graphics: amendments + preproduction: Egils Parups at Baltics in Space (300 Eur). b. Editing. Anna Reynolds at Baltics in Space (730 Eur). c. Editing. Amara Grapa at Baltics in Space. (170 Eur).] = **total 1,200 Eur**

* **In-kind Institute Costs** (guestimates): FMI (1,000 Eur) + PSR (1,000 Eur) + TO (200 Eur) + IES (200 Eur) + LU (3 facilities, 300 Eur) + VIRAC (200 Eur) + Moletai Obs. (200 Eur) = **total 2,100 Eur**

* **Amara Grapa Costs** (project development, communication, editing) = **total 6,830 Eur**

Total Part 2 Cost: €14,530

Part 3. EPSC 2017 Floor Exhibits.

Invite, communicate and assist the Europlanet Industry liaison to build planetary space industry floor exhibits on the conference floor next to the meeting rooms. Support and Coordinate the nine Latvian and Baltic Space Facilities EPSC 2017 Baltic Space Facilities Exhibits to present their space skills to the Conference participants.

Part 3 follows up Part 2 to provide the necessary face-to-face communications between our Latvian and Baltic space facilities and space companies to establish new collaborative space work projects.

The Conference (second) Floor Exhibits provided some linkage to the Baltic professionals. The EPSC 2017 conference floor showed Exhibits from 1) the Finnish Meteorological Institute (FMI), 2) from LIAA, to show five Latvian space institutes, plus 3) an exhibit from a Finnish company: Reaktor Space (Helsinki), and 4) from a Latvian company: Cryogenic & Vacuum Systems (Ventspils).

With respect to our original grant proposal text, the Europlanet liaison focused on the ‘Industry Days’, not the professional exhibits. Therefore, the rest of this text doesn’t discuss the Industry Days part of the conference. Relevant parts to this ‘professional’ section include Grapa’s inclusion of the Baltic space workers into the EPSC scientific program, and the support of the Baltic people’s registration fees so that the space workers could afford to attend as participants.

Exhibits Development

The two largest sets of displays were by FMI and LIAA. LIAA’s displays were rooted in wooden pedestals that each encased a small model of a key feature of the space institute’s work, such as a model airplane for the IES ARSENAL multi-spectral airplane and a 3D printed model of the 32-m VIRAC radio telescope. While rooted in wood, the displays used modern technology with sequential-running screens of relevant information for each of the institutes. The pedestals were spaced nicely so that one didn’t feel crowded.



Another view of the LIAA Latvian space facilities exhibits.

Next to the LIAA wooden pedestals was FMI’s Exhibit, which displayed working representations of most of FMI’s space mission contributions. The contributions were encased in glass cases rented from a Riga glass cases company found by Amara Grapa.



One view of the Finnish Meteorological Institute (FMI) Exhibits.

The floor-to-ceiling windows next to the Exhibits of FMI and Reaktor provided good lighting and an ‘open’ feeling which was felt all the way to the center of the floor. The same kinds of windows on the other side of the hotel on the conference floor provided good lighting for the posters next to the three smaller conference rooms.

The FMI Exhibit included a Mars lander called: “MetNet”, which the hotel trussed up in a sophisticated way to hang from the ceiling. The FMI team skillfully used Twitter to bring people to their side of the conference floor when there were particular maintenance actions with MetNet, such as filling the lander with more air (!). It was a very effective technique; soon a small crowd of people gathered around that side of the conference floor and then lingered, looking at the other Exhibits.



Another view of the FMI exhibits, with the Martian lander: "MetNet"

The LMT 100-km rocket display served as a pseudo-exhibit-advertisement for the Latvian Mobile Telephone company. The best location, upon consideration by everyone, was not embedded within the other exhibits, but instead in a prominent place between the ‘Jupiter’ room and the ‘Saturn’ conference rooms. It was a fun backdrop for conference participants to take selfies and added to the space artifacts on the second floor.



Vaira Vīķe-Freiberga and the LMT 100-km rocket exhibit.



EPSC 2017 Riga Exhibit floor discussion with Mars mission managers. We are discussing collaborations with Latvian geophysicists.

EPSC 2017 Riga Registration fees

The EPSC fee structure proposed in April 2017 by the EPSC Chairman and head of Copernicus Meetings: 550 Euro for the professional planetary scientist would have made attendance by Baltic space workers prohibitive. Grapa sought a conversation with the EPSC and Europlanet managers to describe what are typical salaries for space workers in the Baltic Sea Region and how to support the Baltic people’s registration fees so that the space workers could afford to attend as participants. After letters, we began to have several telecons to solve the issue.

The solution was 1) a lower registration fee than usual: 420 Euros, 2) 100 bursaries of 300 Eur for inclusive countries, to discount the space workers costs, suitable not only for Early Career scientists, but for *all ages* and 3) a recognition that few *Professional* planetary scientists exist in the Baltic Sea Region (EE, LV, LT). Therefore those who might want to attend would fit the *Amateur* or *Teacher* rate, which is significantly reduced rate from the professional: 65 Eur. In fact, the solution 3) was the solution which the Baltic people used most often at the EPSC 2017.

The many registration fee discussions took many turns, for example, Grapa’s suggestion: what if the participants’ registration fees included their country resident location to give point to a tiered registration fee? In which we learned that such a fee structure is prohibitive by EU equality laws. I would be interested to know how other international meetings decide their fee structure when their EU meetings are held in lower-income countries.

Europlanet also included Ukraine into the list of ‘Inclusive’ countries for which the bursaries were applicable because Grapa engaged the Kharkiv polarimetry group early in the EPSC abstract submittal process. Grapa, in the Summer of 2017, gained a 500 Eur sponsor support from the American Astronomical Society Division of Planetary Scientists to aid in the Kharkiv’s travel and accommodation costs for the EPSC 2017 Riga. With additional travel support from the University of Helsinki, Planetary Systems Research group (K. Muinonen), the four Ukraine scientists could attend the EPSC in Riga. Grapa’s intention for supporting the Kharkiv astronomers’ EPSC 2017 attendance, was to hold discussions with Baldone Observatory director regarding a potential retrofitting of that telescope with a polarimeter. Such capability raises the Baldone Schmidt’s telescope’s suitability to provide asteroid observations for the asteroid mining community. That goal was successful: The scientists from Kharkiv and Baldone met each other during the EPSC and discussed that topic.



Kharkiv, Ukraine polarimetry group @ EPSC with financial assistance by Planetary Systems Research Group (U Helsinki), and the Division of Planetary Sciences of the American Astronomical Society via Baltics in Space. Beginnings of a collaboration.

The telecons to resolve the registration fee issue turned into weekly EPSC 2017 Management meetings on every Friday morning starting in May 2017. The weekly meetings were important for Dr. Grapa to solve many LOC issues with the rest of the EPSC Management team.

Inclusion of professional Baltic space workers

Relevant parts to this ‘professional’ section include Grapa’s inclusion of the Baltic space workers into the EPSC scientific program. Here we are including Finland, because of the geographical position of the Local Organizing Committee. The final statistics (<http://www.epsc2017.eu>) show 808 participants from 40 countries. For the Baltic Sea Region countries, the participant numbers show: Latvia: 80 (10%), Finland: 36 (5%), Estonia: 15 (2%), Lithuania 2 (0.3%). Together these four countries’ participants numbered: 133 and 17% of the total participants.



One of two Poster Sessions at the EPSC 2017 Riga.

Exhibits Costs

Initially, Amara Grapa pushed the financial support of the Baltic professional Space Exhibits through the same funders as those she choose for the Baltic Space Facilities booklet: 1) Through

a contribution to a (finally failed) VIRAC-led Interreg EstLat-2020 bid in Spring/Summer 2016, then, 2) in a separate proposal to the Latvian Finance Minister. Then, with the new Baltics in Space nonprofit, she proposed to 3) to the Latvian Investment Agency. **The path: 3) was successful** for funding the Latvian space facilities Exhibits, with Grapa underpaid. She provided LIAA about 40-50 pages in total for Latvian space exhibit ideas and contact information to aid their communications with the institutes. Grapa has made estimates of the costs incurred by LIAA and by the institutes and the companies themselves, for producing their Exhibits contribution. Those are included below.

3. **LIAA Exhibit Costs** (guestimates): for the materials and time to develop their five Latvian space facilities exhibits = **total 25,000 Eur**

4. **Other Baltic Space Facilities Exhibit Costs** (guestimates): [a. FMI (2,500 Eur). b. Reaktor Space (1,300 Eur). c. Cryogenic & Vacuum Systems (800 Eur).] = **total 4,600 Eur**

* **FMI Exhibit Manager Costs** (guestimates): including one HEL-RIX Riga conference hotel travel for two FMI persons and part-time work on this task from June 2017 through Sept 17, 2017: **total 6,000 Eur**

* **Amara Grapa Costs** (Space Exhibits project development and communication-- 7000 Eur) + Reg. Fee discussions and bursary support -- 800 Eur + session invitations-- 200 Eur) = **total 8,000 Eur**

Total Part 3 Cost: €43,600

Part 4. Education. EPSC 2017 'Solar System for Kids' Exhibit and more

Coordinate and support a ground floor interactive exhibit to educate school-age children about the solar system and space.

Part 4 provides space education to inspire our Latvian and Baltic young via their schools and families.

The main goal of this European Commission Latvia contract is space awareness and STEM education generally for Latvia's youth. While this education part four, at the time of the contract preparation, considered only the Kids' Exhibits, it is suitable section to describe the full, education-related components of the EPSC local organizing, because Dr. Grapa put the Baltic young into every niche of space education available: 1) inclusion of the young Interreg SpaceTEM interns to participate in the set of EPSC Early Career Scientist programs (Science Flashes, Poster Awards), 2) inclusion of Baltic space enthusiasts to help Copernicus Meetings,

and be paid, for working at the EPSC, 3) the EPSC 2017 Public Event to highlight an intriguing space topic to inspire the Latvian teenagers to think about space, and 4) the ‘Solar System for Kids’ Exhibits, to inspire the Latvian grade school kids about space-related activities.

Interreg SpaceTEM interns

The Interreg SpaceTEM is an EU Structural Funds project to train Estonian and Latvian young people on our Baltic space facilities and to mentor entrepreneurial skills. The EPSC 2017 Riga offered an opportunity to present one's new space work to an international community of one's peers. The educational value to present one's work at a young age to a scientific community cannot be overstated.



Interreg SpaceTEM team

When we learned in March 2016 that Riga won the 2017 EPSC bid, the SpaceTEM project development was already underway with the submittal deadline only a couple of weeks away. It was an easy vehicle in which to allocate some EPSC 2017 funds in our proposed budget to support the young people's, and their mentors', EPSC 2017 participation. And then SpaceTEM won.

In the Summer of 2017, the Estonian and Latvian project trained 25 interns at Tartu Observatory, the Ventspils International Radio Astronomical Center and in Riga at: Baldone Observatory and

the Riga Satellite Laser Ranging Station. The 25 interns had 10 weeks of time to develop new space skills. The SpaceTEM Summer 2017 results were prepared by the students with their mentors’ assisting in 10 posters, arranged separately by Copernicus Meetings, and presented as ‘Early Career’ scientists to the international scientific community. These ten posters were then judged at the Early Careers Poster session, September 21.



EPSC 2017 Riga Early Career Poster Awards



There were two sets of winners that night, one was a team: Anni Kasikov and Rudolfs Treilis from SpaceTEM’s, Latvia-Baldone Observatory for their solid scientific results of identifying by spectroscopy a group of new carbon stars in the Schmidt telescope data.

Copernicus Meetings EPSC 2017 Baltic workers

The company funded by the European Commission Europlanet grant to implement the scientific sessions of the EPSC is Copernicus Meetings, based on Goettingen, Germany. They have staff members whom they take to every EPSC meeting. However, they seek additional, local, space-interested, youth, as well, to work on the conference floor. Copernicus’ requirement for the EPSC 2017 Riga work, was that the students be enrolled in high school or at a University and with some courses in (and a passion for) astronomy, space or STEM topics. Here was another paid path to involve Baltic / Latvian youth with a passion for space at the EPSC. Dr. Grapa advertised for the positions through social media, and Copernicus hired six Baltic people of age: late teens-early 20s to work at the registration desk and in the six rooms, running the computers which held the scientists electronic presentations. During quiet times, the young had the opportunity to read the posters or hear the scientists’ discussions.



Some of the Latvian and Estonian crew working for Copernicus Meetings

EPSC 2017 Riga Public Event: Thursday, September 21

The Why. In Latvia, the European Space Agency (ESA) responsibility goes through the Ministry of Education and Science instead of the Ministry of the Economy, as in other EU countries. When it comes time to pay the ESA bill, the payment comes from the same source of money as the teacher's salaries, causing friction between the teachers and the space workers. The general Latvian society doesn't see Space as an opportunity or an economic opportunity. They see it as a liability. The goal of this Public Event was to reach the Latvian teachers through their students to show the opportunity and excitement of space.



Public Event Title: The Moon, Mars, and Beyond.

The participants of the Round Table discussion were:

Amara Graps (Baltics in Space) Guiding the discussion.

Kārlis Šadurskis (Minister of the Latvian Ministry of Education and Science). Gave an introduction of STEM careers for space work.

JL Galache (Aten Engineering, Founder and Chief Technology Officer) to represent the voice of 'New Space'.

Jānis Ķirpītis (Zinoo Science Center, Latvian amateur space rocket mission) After some substitutions, he was supposed to talk from an astronaut's point of view.

Bernard Foing (European Space Agency, International Lunar Exploration Working Group (ILEWG), Principal Project Scientist for SMART-1), he was the voice of robotic missions.

The theme. Today, space is changing rapidly. We have amazing new images sent back by international space missions, like Cassini. Private industry is becoming a major participant (Space 4.0 or 'New Space') by supplying launch vehicles, spacecraft, instruments and astronauts. Citizen scientists are participating, too, by analysing data, making observations or even building their own spacecraft. Space 4.0 changes the roles of all interested players including the roles of human explorers. This ‘democratisation’ of space points to a large and exciting universe in which all parts of society are engaged. If governments are not the only entities responsible for space activities, *what are the new roles in Space 4.0?*

The Public Event was designed for the Latvian teenagers and their schoolteachers. Dr. Grapa’s arrangement with the ESA liaison at the Ministry of Education and Science, is that the Ministry would carry the Event, including advertisement and promotion, and support the Kazakh cosmonaut being provided by LIAA. Then, Dr. Grapa’s responsibilities would center solely on providing the other two speakers: 1) a New Space worker and 2) a space agency robotics mission expert.



At the EPSC 2017 Riga Public Event: Roundtable discussion.

The Outcome was not exactly that, but we accomplished the intended goals. We included a talk by the Latvian Minister of Education and Science to the Latvian teachers and their students, spoken in Latvian. We had an interesting and inspiring roundtable discussion with this particular Theme for the teenagers to see, spoken in English. And because it was recorded, the teenagers and teachers can see this talk at their leisure.

The Moon, Mars, and Beyond.

<http://straume.lmt.lv/lv/konferences/konferences/moon-mars/1003294>

This Public Event highlighted the challenges of working with large government entities and fundraising to pay for one of the speakers.

We built the Public Event around a Kazakh cosmonaut, offered to us by LIAA and the Latvian Ministry of Education and Science in Spring/Summer of 2017. When the Latvian Ministry of Education and Science doubled their financial contribution to the Solar System for Kids Exhibit, Dr. Grapa developed the theme for their astronaut, hitting on a serious topic that is of great value to the New Space / Entrepreneurial space. Unfortunately, the cosmonaut: Aidyn Aimbetov, at a late date couldn't make the Event. We then intended Latvia's only candidate to Mars One: Pauls Irbins, to be his replacement, but Pauls became ill the morning of the Event. So we went forward with Pauls' colleague: Jānis Ķirpītis, an engineer, citizen scientist on Latvia's 100-km Rocket project.

Dr. Grapa's intended speaker to represent New Space ran into financial challenges with the path of the U.S. Embassy Riga. Dr. Grapa was offered by the Embassy to pay for her speaker, but they dropped the project at a very late date. She then tried to fund JL Galache with the British Embassy (the speaker is a multinational: USA / ES/ UK citizen), but it was too late for them to find funds to support Dr. Galache. The financial supporter of Dr. Galache at the end was Europlanet.



The EPSC 2017 Riga Public Event. We are watching the first rocket launch of the 100-km project.

For the robotics mission expert, the European Space Agency was to provide Dr. Grapa’s intended speaker (a Cassini mission project manager). However, he was deemed not suitable for the Theme by the space agency, and they did not find a replacement until two weeks before the Event. Their choice: Bernard Foing, was at the end, a perfect choice.

The last challenge was our Audience. The Latvian teenagers weren’t in the Audience. The Ministry’s promotion of the Event was not effective. The only young we had in the audience was Dr. Grapa’s 8 year old daughter, and two other children age about 7 and 5 years. We put them in the center, near the front of the auditorium of the Jupiter room (the hotel’s largest conference room). Our Europlanet and EPSC colleagues (Bernard Foing, JL Galache, Anita Heward) rounded up scientists from the Thursday evening poster session, which was going on outside of the Jupiter room. After ten minutes, they gathered about thirty planetary scientists to fill one set of bleachers. LMT’s cameras did not focus on the empty bleachers. Dr. Grapa enlisted the help of two translators: Anna Reynolds and Aija Abens to assist with Audience translations, but they were not needed.

As for the Roundtable discussion, the discussion was interesting and fun. JL Galache was as engaging as a speaker as Bernard Foing. Jānis Ķirpītis was a perfect Latvian link for our Roundtable and local space enthusiast counterpoint to the two other gentlemen in his speaking role.



The young Audience of the EPSC 2017 Riga Public Event

The Solar System for Kids Exhibits

The 'Solar System for Kids' Exhibits below the main conference floor, at the street level of the Radisson Blu Latvija, was approximately ten Exhibits open from 1200-1700, September 18-22. The Exhibits were visited by about 600 kids during the five days of the congress week. The Exhibits were developed by Zinoo with a 10 K€ grant from the Latvian Ministry of Education and Science. The Exhibits were in the style of Zinoo's interactive exhibits with Latvian language. There were two contributions to the Zinoo products: An excellent meteorite display by Meteoriti.lv and a spherical projector: 'Planets in a Room' by (Italian company) Speak Science. We could hear the kids' squeals of delight from below (connected by an easy escalator).

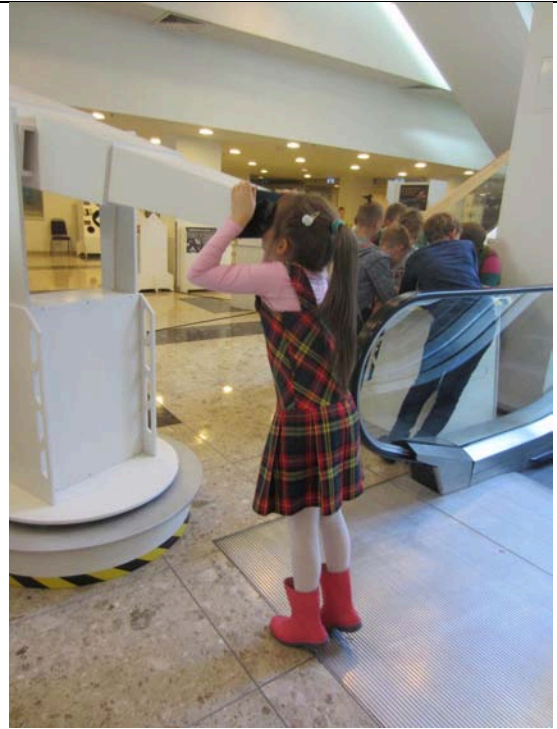
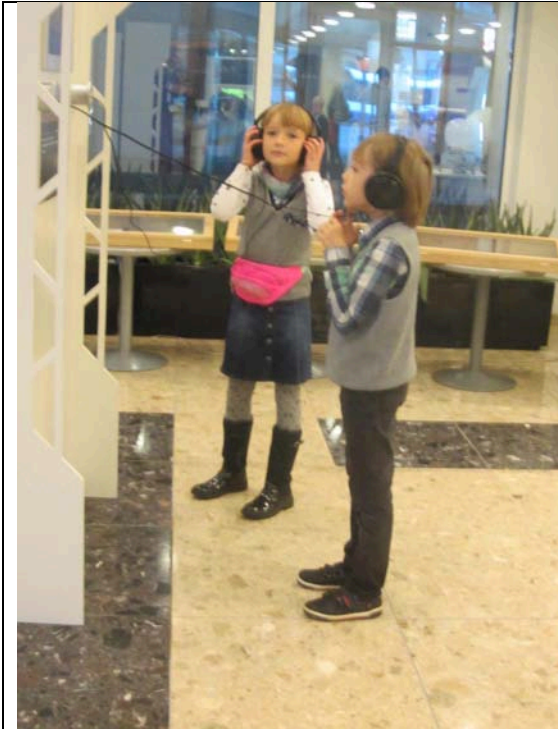


Escalator from the Conference Floor to the Solar System for Kids Exhibits

The scientists on the Conference floor appreciated and referred to the Kids' Exhibits below. They visited the Exhibits and referred to the Mars rover exhibit in the Public Event recorded talk and was referred to on Twitter.



Solar System for Kids Mars Rover Exhibit







The Zinoo exhibits, designed to be portable, will be shown at consecutive Zinoo science centers in the next year-few. As there are five Zinoo centers in Latvia, we expect to reach 10,000+ kids, even in the Latvian countryside.

International Planetary Science Education.

With respect to space education, the EPSC 2017 Riga provided a ‘container’ for international professional space education for years in the future. The 1000 EPSC 2017 Riga abstracts are available here:

<https://www.epsc2017.eu/>

Go to the left panel and select one of the ways to browse.

For example a session.

<https://meetingorganizer.copernicus.org/EPSC2017/sessionprogramme>

Then you select a 'program group', such as Missions. People can upload their presentations to the web site, if they wish. Some have uploaded their presentations already.

Planetary Science Stories:

See the 'For science + stories:' in the ‘Outreach / Press’ part of this Report, Part 6.

Education Costs

a. SpaceTEM Interns: EPSC Attendance (SpaceTEM grant: 5000 Eur) + Grapa EPSC-related SpaceTEM proposal development and extra EPSC support with registration invoices, poster titles and boards (200 Eur) = **total 5,200 Eur**

b. Copernicus Meetings Baltic workers: [1. Copernicus (1,800 Eur). 2. Amara Grapa Advertisements (200 Eur)] = **total 2,000 Eur**

c. EPSC 2017 Riga Public Event: Thursday, September 21. In-kind Costs (guestimates). To put cost-numbers on the tremendous gift-of-speaking offered by these speakers and our two translators, I've estimated costs for these speakers' preparation and execution time, to treat their speaking as an *in-kind sponsorship* of the EPSC 2017 Riga meeting. The New Space worker: JL Galache, additionally required travel and accommodation and registration. The costs of the Minister: Kārlis Šadurskis has already been taken into account in Part 1. A. Grapa's costs for the development (proposals, communications) and support of these speakers and the topic are added to the costs.

Janis Kirpitis (100 Eur) + Bernard Foing (300 Eur) + JL Galache (1,320 Eur) + Anna Reynolds (50 Eur) + Aija Abens (50 Eur) + Amara Grapa (3,400 Eur) = **total 5,220 Eur**

d. Zinoo Solar System for Kids Exhibits: [1. Zinoo: 10,000 Eur 2. Amara Grapa Discussions and communication (200 Eur)] = **total 10,200 Eur**

Total Part 4 Cost: €22,620

Part 5. EPSC 2017 Art-Science Exhibit and Cultural Links.

Coordinate and support artists planning to develop art-science projects about the solar system and space.

Part 5 raises public awareness for the linkages between space and our deep Latvian and Baltic cultural traditions to build on the theme of 'space' for our cultural Future.

Two Cultural-Science Exhibits : RIXC & Moletai Ethnocosmological Museum

There were two Cultural-Science Exhibits: 1) by RIXC and by 2) Moletai Ethnocosmological Museum on the EPSC 2017 Riga conference floor, which were informative and beautiful, filling the space we had, tastefully.



View of RIXC (two) Exhibits

The RIXC Exhibit consisted of two objects, both video displays with places for the viewer to sit and listen to the explanation with headphones. The first object was the history of the Irbene secret radio telescopes since its origin in the 1970s until Latvia's Re-Independence. The video display showed the efforts of Latvian astronomers to protect this unique object from destruction, as well as the first set of restorations in 1990s, after Re-Independence.



Another View of RIXC Exhibits

The second video was devoted to the international sound art, radio and satellite technology symposium “Acoustic space laboratory” (2001), which was attended by more than 30 international artists, radio amateurs and radio activists. The authors of the video “RT-32. Acoustic Space Laboratory” are Rasa Šmite and Raitis Šmits; the work was co-produced by artist Mārtiņš Ratniks; producer – RIXC. The original version of video “RT-32” (2002) is part of the collection of the future Latvian Museum of Contemporary Art.

RIXC’s involvement was due to suggestions from the Latvian Ministry of Culture LV-100 group after two detailed January meetings -- Grapa prepared presentations to the LV-100 group and spent time in follow-up communication. There was a strong interest in LV-100 group to provide space as an inspirational theme for Latvia’s young people. However, there were no funds for Dr. Grapa’s or other people’s time (Dr. Grapa has no staff) to involve the Latvian artists. Dr. Grapa was referred by the Cultural Ministry to a cultural funding source with a late January 2017 deadline, for which she could also refer artists. Dr. Grapa wrote a supporting letter for RIXC for their proposal and reviewed their proposal. RIXC won their proposal but their grant received 1/3 of the funds that they requested.



Moletai Ethnocosmological Museum Exhibit

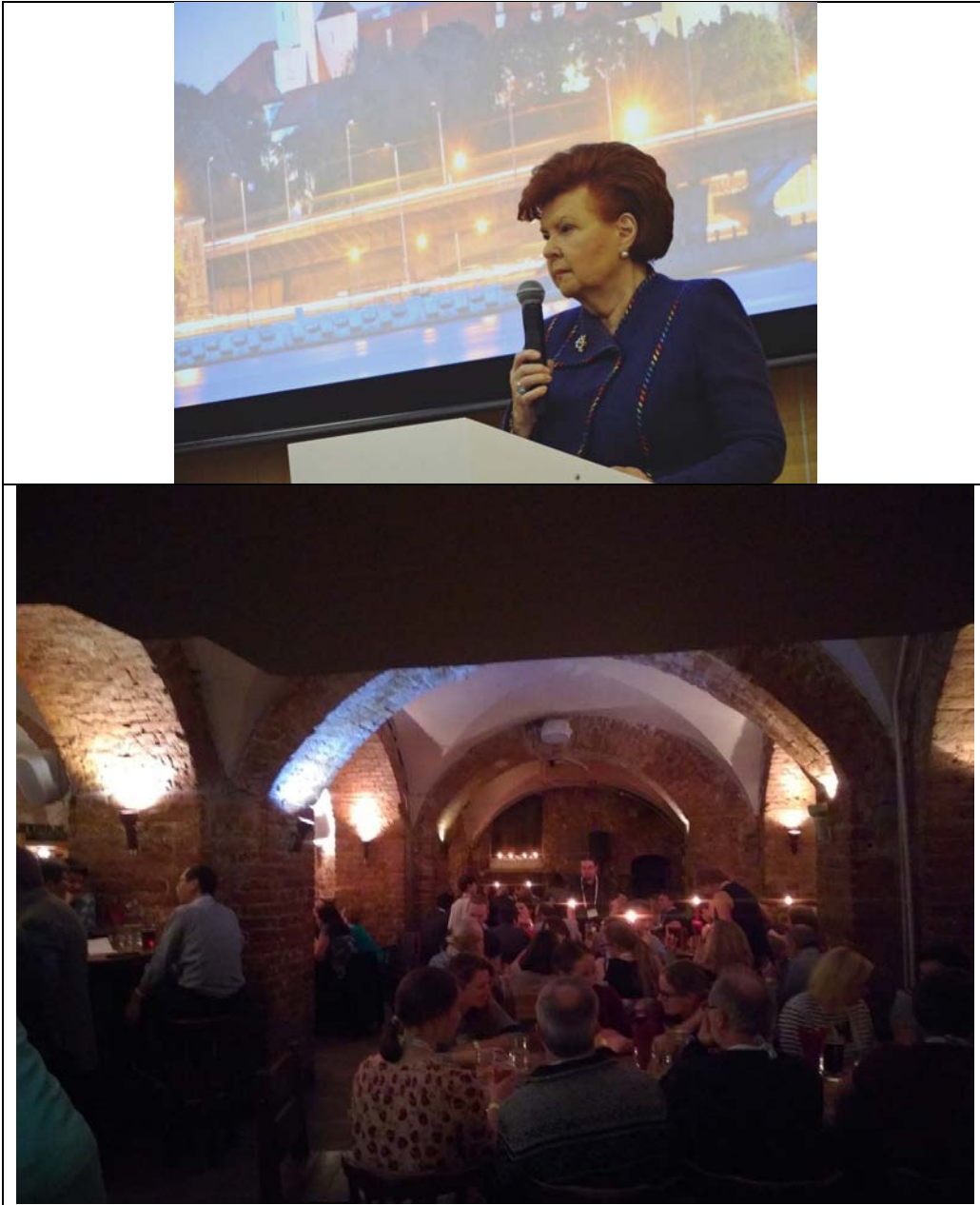
The Moletai Ethnocosmological Museum links humans’ pagan history to the cosmos. Dr. Grapa travelled to Moletai Ethnocosmological Museum on May 1, 2017 w/Juris Zhagars to engage them for the EPSC 2017 Riga.

This museum is one of the largest science museums in Lithuania, the largest public astronomical observatory in Europe, and it was our only Lithuanian exhibitor. The Moletai Ethnocosmological Museum Exhibit consisted of a large booth with flyers, fold-up sundials and a person to talk to you about their museum. They exhibited the entire week.

Other Linkages linkages between space and our deep Latvian and Baltic cultural traditions

A high-impact presentation for *public awareness for the linkages between space and our deep Latvian and Baltic cultural traditions* in addition to these exhibits, is the Opening Session talk by Dr. Viķe-Freiberga. She linked the Latvian epic Dainas, with the most frequently referenced word: saules (sun) to every day life and to the scientific cosmos study. Her talk was recorded. See Part 1 for those results.

In addition, the mid-week Social Event at ALA Pagrabs was designed to give the participants a sample of the Baltic style of singing and dancing that is deeply embedded inside of the Baltic folk traditions. The Social Event was attended by about 210 scientists and was enjoyed greatly.



Margaret Harris @DrMLHarris

“This is genuinely one of the most adorable conference social activities I've ever seen, and I go to lots of conferences. Well done, #EPSC2017” <https://goo.gl/dd13zb>

Cultural Linkages Costs

RIXC Exhibit Costs (my guestimates): for their materials and time to develop their two Latvian radio science art exhibits = **total 2000 Eur**

Moletai Ethnocosmological Museum Exhibit Costs (guestimates): Transportation and materials (500 Eur) for their large exhibiting booth (1000 Eur), and staying the entire week (500 Eur). = **total 2,000 Eur**

Social Event at ALA Pagrabs Costs: OGA Events (1150 Eur) + ALA Pagrabs (6800 Eur) = **total 7,950 Eur**

* **Amara Grapa Costs:** Travel to Moletai Ethnocosmological Museum May 1 (200 Eur) + RIXC Proposal Review and Letter of Support (200 Eur) + Meetings with LV-100 group, preparation of presentation and follow-up communication (600 Eur) + Social Event Support (200 Eur) = **total 1,200 Eur**

Total Part 5 Cost: €13,150

Part 6. EPSC 2017 Public Science Communication.

Support the Latvian and Baltic Science Communications by providing links to the science journalists and public communicators to the Europlanet communications coordinator. During the EPSC 2017, there will be 15-20 international news releases of cutting edge planetary science results in addition to local human-interest stories related to the four countries' space workers.

Part 6 communicates EPSC 2017 space results to the Latvian and Baltic public to provide a rare glimpse into cutting-edge space work, and therefore real results of STEM careers. The human-interest space worker stories will dispel the view of space workers as an elite group but instead they will show space workers as humans like any of us. As these 15+ international news stories originate in Riga, Latvia, the city will find itself in the center of the international planetary news cycle for this week, and therefore a source of pride for the Latvians.

There was a large international and local press following for the EPSC 2017 Riga, which was aided by the Deep White (LV) Press office of the Latvian Mobile Telephone company (LMT), see below. We also had around 20 journalists on site, including from the AFP and DPA press associations.

EPSC 2017 Riga Press Releases

- 1) Lava tubes: the hidden sites for future human habitats on the Moon and Mars. <https://goo.gl/ESKSkC>
- 2) Crash Scene Investigation reveals resting place of SMART-1 impact. <https://goo.gl/aYsuRY>
- 3) Solar eruption photobombed Mars encounter with Comet Siding Spring. <https://goo.gl/Wvqexu>
- 4) What do we need to know to mine an asteroid? <https://goo.gl/kSZcjG>
- 5) Nanosat fleet proposed for voyage to 300 asteroids. <https://goo.gl/b77HCn>
- 6) Size matters in the detection of exoplanet atmospheres. <https://goo.gl/qqMXq5>
- 7) Devilish source of dust in atmosphere of Earth and Mars. <https://goo.gl/fdehbB>
- 8) Studies of Crater Capital in the Baltics show impactful history. <https://goo.gl/1DL5au>
- 9) 2017 Farinella Prize Awarded to Simone Marchi. <https://goo.gl/nMN4xd>
- 10) Europlanet Press' Highlights of the EPSC 2017 Riga <https://goo.gl/EQ9r5c>

Two Press Briefings

The Europlanet/EPSC press briefings were recorded, thanks to Livia Giacomini at Europlanet. You can see them here, but they still need to be edited, as there are a few minutes of dead time at the beginning:

Press Conference 1: <https://goo.gl/C12VgP>

Press Conference 2: <https://goo.gl/QEJw4P>

One-Minute Videos

Thilina Heenatigala, Europlanet's social media manger, filmed a number of 1-minute videos of participants at the conference that he will be releasing on social media over the coming weeks.

Press Coverage

International Press

Europlanet is still gathering the international coverage, but this includes The Economist, The Sunday Times (UK), The Sun (UK), The Daily Mail, The Hindu, Sciences et Avenir, Focus.it, Spektrum.de, Sueddeutsche Zeitung, Forschung aktuell Deutschlandfunk, ABC.es, CBC Radio, The Japan Times, Thdet ja avaruus, Sky at Night Magazine, Gizmodo, IFLScience, Yahoo! News, Engadget, Popular Mechanics... the list is still growing.

Latvian Press

What follows are **90 Latvian Press Mentions**.

The following has been provided by Deep White, LMT’s press consultancy.. I’ve deleted the LETA pieces which required a subscription. Many thanks for this compilation

Publicity before the EPSC opening

TV

- LTV1 morning newscast Rīta Panorāma
Interview with Valdis Avotiņš, Director of the Ventspils International Radio Astronomy Center
<http://replay.lsm.lv/lv/ieraksts/ltv/106497/telefonintervija-ar-valdi-avotinu/>

Radio

- LR4 morning news broadcast Домская площадь
Telephone interview with scientist Juris Žagars and Ventspils University College researcher Boris Rjabovs
- <http://replay.lsm.lv/lv/ieraksts/lr/92223/kongress-planetarnih-nauk-v-rige-budet-iskat-zhizn-v-ko/>
- Article in Lsm.lv, referring to LR4 morning news broadcast
<http://lr4.lsm.lv/lv/raksts/domskaja-ploschad/kongress-planetarnih-nauk-v-rige-budet-iskat-zhizn-v-kosmose.a92223/>

News portals

- Interviews with Amara Graps about the European Planetary Science Congress + interview audio file
- <http://eng.lsm.lv/article/culture/culture/space-conference-on-the-launchpad.a249684/>
<http://eng.lsm.lv/article/culture/culture/major-space-conference-under-way-in-riga.a250508/>

After the first press-release and media invitation

News agencies

- BNS (13.09)
<http://news.lv/BNS/2017/09/13/nakosnedel-riga-norisinaties-eiropas-planetaras-zinatnes-kongress>
- BNS (17.09)
<http://news.lv/BNS/2017/09/17/sonedel-riga-norisinaties-eiropas-planetaras-zinatnes-kongress>

News portals

- <http://zparki.lv/latvija-ieveroja-mobilo-datu-paterina-pieaugums-videji-5gb-uz-sim-kartimus-ierindo-topa/>

- http://www.tvnet.lv/tehnologijas/zinatnes/675499-septembri_riga_notiks_eiropas_planetaras_zinatnes_kongress
- <http://www.starspace.lv/lv/citas-zinas/eiropas-planetologijas-kongress-2017-26052017.html>
- <https://kursors.lv/2017/09/06/septembri-riga-notiks-eiropas-planetaras-zinatnes-kongress/>
- <https://boot.ritakafija.lv/tehnologijas/it-sasniedzumi/septembri-riga-notiks-eiropas-planetaras-zinatnes-kongress/>
- <http://www.lbr.lv/septembri-riga-notiks-eiropas-planetaras-zinatnes-kongress/>
- http://baltnews.lv/riga_news/20170904/1020769208.html
- <https://www.goriga.info/news/1781682>
- <http://rus.delfi.lv/news/daily/latvia/vike-frejberga-rasskazhet-ekspertam-nasa-o-rolu-solnca-i-kosmosa-v-latyshskih-dajnah.d?id=49235781>

Publicity of Press-release "9 facts you did not know about Latvia's space research"

News portals

- <https://boot.ritakafija.lv/tehnologijas/it-sasniedzumi/9-fakti-ko-tu-nezinaji-par-latvijas-sasniedzumiem-kosmosa-izpetes-joma/>
- <http://www.la.lv/ari-slavenais-sputnik-1-neiztika-bez-latviesiem-9-fakti-ko-tu-nezinaji/>
- http://www.tvnet.lv/tehnologijas/nozares_jaunumi/678760-9_fakti_ko_tu_nezinaji_par_latvijas_sasniedzumiem_kosmosa_izpetes_joma
- <http://brivbridis.lv/9-fakti-ko-tu-nezinaji-par-latvijas-sasniedzumiem-kosmosa-izpetes-joma/>
- <http://lat.vesti.lv/news/27451>
- <https://ecomedia.lv/9-fakti-ko-tu-nezinaji-par-latvijas-sasniedzumiem-kosmosa-izpetes-joma/>

Publicity of press-release "6 significant space research projects, whose representatives will attend Riga next week"

News portals

- <https://kursors.lv/2017/09/17/6-nozimigi-kosmosa-izpetes-projekti-kuru-parstavji-nakamnedel-pulcesies-riga/>
- <http://lat.vesti.lv/news/6-kosmosa-noslepumi-kuru-atklajeji-pulcesies-riga?27264>
- <https://boot.ritakafija.lv/tehnologijas/it-sasniedzumi/sesi-nozimigi-kosmosa-izpetes-projekti-kuru-parstavji-nakamnedel-pulcesies-riga/>
- http://www.tvnet.lv/tehnologijas/zinatnes/677777-top_6_kosmosa_izpetes_projekti_kuru_parstavji_sonedel_pulcesies_riga

Publicity after the opening of the EPSC on 18.09

TV

- TV3 evening newscast Ziņas (video starting from 25:07)
<https://tvplay.skaties.lv/parraides/tv3-zinas/874758?>

- Raksts skaties.lv, balstoties uz sižetu
Article in news portal Skaties.lv, referring to the TV3 evening newscast Ziņas
<https://skaties.lv/zinas/zinatne-un-tehnologijas/zinatne/vike-freiberga-stasta-par-saules-un-kosmosa-nozimi-latvju-dainas/>
- ПБК evening newscast Латвийское время
<http://www.1tv.lv/news/12498-riga-kosmicheskaya-stolica.html>
- Article in Russian news portal Plainnews.ru, referring to ПБК evening newscast Латвийское время
<http://plainnews.ru/video-channel-186689.html>

News portals

- <http://lat.vesti.lv/news/riga-klust-par-eiropas-kosmosa-galvaspilsetu?27307>
- <https://www.diena.lv/raksts/latvija/zinas/video-riga-klust-par-eiropas-kosmosa-galvaspilsetu-vike-freiberga-saka-ievada-wardus-14180799>
- <http://bnn.lv/kongresa-priekssedetaja-sonedel-riga-ir-eiropas-kosmosa-nozares-galvaspilseta-246032>
- <http://www.la.lv/vaira-vike-freiberga-tautasdziesmas-mekle-dzives-jegu/>
- http://www.tvnet.lv/tehnologijas/zinatnes/677846-riga_klust_par_eiropas_kosmosa_galvaspilsetu
- <https://boot.ritakafija.lv/tehnologijas/it-sasniegumi/riga-klust-par-eiropas-kosmosa-galvaspilsetu/>
- <http://mernieks.lv/article/2699>
- <http://www.la.lv/tiesraide-riga-atklaj-eiropas-lielako-kosmosa-zinatnes-notikumu/>
- <http://m.nra.lv/latvija/riga/222664-tiesraide-riga-atklaj-eiropas-lielako-kosmosa-zinatnes-notikumu.htm>
- http://www.tvnet.lv/tehnologijas/nozares_jaunumi/677770-tiesraide_riga_atklaj_eiropas_lielako_kosmosa_zinatnes_notikumu

Publicity of the EPSC after a presentation of Minister of Finance of Latvia Dana Reizniece-Ozola on 19.09 and after the 2nd day of the EPSC and first press briefing

TV

- LNT morning newscast 900 sekundes
<https://tvplay.skaties.lv/parraides/900-sekundes/874914?autostart=true>
- Article in news portal Skaties.lv, referring to the LNT morning newscast 900 sekundes
<https://skaties.lv/zinas/zinatne-un-tehnologijas/verienigs-notikums-riga-pulcejas-izcilakie-kosmosa-zinatnieki/>
- LNT daytime newscast Dienas ziņas (video starting from 08:05)
<https://tvplay.skaties.lv/parraides/lnt-dienas-zinas/875083?>
- LNT evening newscast (video starting from 23:27)

<https://tvplay.skaties.lv/parraides/lnt-zinas/875164?> (Grapa is at 26:00)

- TV3 evening newscast Ziņas (video starting from 15:46)
<https://tvplay.skaties.lv/parraides/tv3-zinas/875229?>
- Article in news portal Skaties.lv, referring to the TV3 evening newscast Ziņas
<https://skaties.lv/zinas/zinatne-un-tehnologijas/zinatne/kosmosa-zinatnieki-riga-prezente-ideju-par-derigo-izraktenu-ieguvi-no-asteroidiem/>
- LTV7 evening newscast Сегодня вечером
<http://ltv.lsm.lv/lv/raksts/19.09.2017-riga--centr-vseh-planet.id106607/>
- Article in news portal Lsm.lv, referring to the LTV7 evening newscast Сегодня вечером
<http://rus.lsm.lv/statja/novosti/obschestvo/latvija-stala-centrom-kosmicheskoy-nauki.a250749/>

Press

- Auseklis, rubric “Latvijas ziņas” / “Latvian news”
<http://monitorings.leta.lv/item/PF74313F4-9729-4DFD-83CB-785CE429BDB4/>

News agencies

LETA photo gallery

http://www.leta.lv/photo/album/7BA84DF8-82CD-46DB-ABFA-1FB1316E4EA0?force_lang=lat

News portals

- <http://rus.tvnet.lv/novosti/ekonomika/371420-revznietse-ozola-latviya-vlozhila-v-proekty-po-izucheniyu-kosmosa-32-mln-evro>
- <http://www.delfi.lv/news/national/politics/kosmosa-izpetes-projektos-latvija-lidz-sim-ieguldijusi-3-2-miljonus-eiro.d?id=49256735>
- <http://bnn.lv/reizniece-ozola-kosmosa-izpetes-projektos-latvija-lidz-sim-ieguldijusi-3-2-miljonus-eiro-246320>
- http://www.mixnews.lv/ru/science/news/227384_latviya-vlozhila-po4ti-4-mln-evro-v-izu4enie-kosmosa-opros/
- <http://www.gorod.lv/novosti/285825-latviya-vlozhila-pochti-4-mln-evro-v-izuchenie-kosmosa>
- http://www.baltic-course.com/rus/good_for_business/?doc=133338
- <http://ru.focus.lv/news/latvija-vlozhila-v-proekty-po-izucheniyu-kosmosa-32-mln-evro?17926>
- <http://rus.jauns.lv/raksts/aktualno/254424-latviya-vlozhila-v-proekty-po-izucheniyu-kosmosa-32-mln-evro>
- <https://regnum.ru/news/2323964.html>
- <http://vesti.lv/news/latviya-tratit-milliony-evro-nalogov-v-izuchenie-kosmosa-1>
- <http://bnn-news.ru/latviya-vlozhila-3-2-mln-evro-v-proektyi-po-issledovaniyu-kosmosa-178497>

- <http://www.infotop.lv/article/ru/latvija-pretenduet-na-zvanie-kosmicheskoi-derzhavi-i-vkladivaet-millioni-v-izuchenie-kosmosa>
- https://www.baltictimes.com/latvia_has_invested_eur_3_2_million_in_space_exploration_projects/
- <https://www.diena.lv/raksts/pasaule/cits/zinatnieks-pirmais-komercialais-guvums-no-asteroidiem-bus-udens-ieguve-14180879>
- <http://www.la.lv/tiesraide-riga-atklaj-eiropas-lielako-kosmosa-zinatnes-notikumumu/>
- <http://nra.lv/latvija/222803-tiesraide-eiropas-planetaras-zinatnes-kongresa-2-diena.htm>
- <http://www.tvnet.lv/tehnologijas/zinatnes/677930-tiesraide-eiropas-planetaras-zinatnes-kongresa-2diena>

Publicity after 3rd day of the EPSC

- <http://nra.lv/latvija/222949-tiesraide-eiropas-planetaras-zinatnes-kongresa-3-diena.htm>

Publicity after the 4th day EPSC and after 2nd press briefing and after Public Event

Radio

- LR1 science news program Zināmais nezināmajā
<http://replay.lsm.lv/lv/ieraksts/lr/92123/ints-kesans-spuldziti-nomainit-kosmosa-stacija--tas-ir-/>
- LR1, morning news broadcast Labrīt at 08.43
Interview with the EPSC representative Anita Heward
<http://lr1.lsm.lv/lv/raksts/stasti/riga-aizvadita-verieniga-eiropas-planetaras-zinatnes-kongresa-ne.a92472/>

News portals

- Article in news portal Lsm.lv, referring to the LR1 morning news broadcast Labrīt
<http://www.lsm.lv/raksts/dzive--stils/tehnologijas-un-zinatne/planetaras-zinatnes-kongresa-riga-pulcejas-800-kosmosa-petnieki.a251000/>
- Article in news portal Lsm.lv, referring to the LR1 science news program Zināmais nezināmajā
<http://lr1.lsm.lv/lv/raksts/zinamais-nezinamaja/dzive-starptautiskaja-kosmosa-stacija.a92123/>
- https://www.diena.lv/raksts/pasaule/cits/zinatnieki-_cassini_-misija-sniedza-milzigu-ieguldijumu-kosmosa-izpete-14181044
- <http://jauns.lv/raksts/arzemes/254725-zinatnieki-cassini-misija-sniegusi-loti-vertigu-ieskatu-saturna-un-tam-blakus-esosa-meness-un-pavadona-sistemas>
- <http://lat.vesti.lv/news/27392>
- <http://www.lvportals.lv/visi/preses-relizes/289942-sadurskis-kosmosa-izpetes-nozare-raisa-jauniesu-interesi-par-eksaktajam-un-inzenierzinatnem/>
- <http://www.tvnet.lv/tehnologijas/zinatnes/678476-sadurskis-kosmosa-izpetes-nozare-raisa-jauniesu-interesi-par-eksaktajam-un-inzenierzina>

tnem

- <http://www.la.lv/tiesraide-riga-atklaj-eiropas-lielako-kosmosa-zinatnes-notikumumu/>
- http://www.tvnet.lv/tehnologijas/zinatnes/678259-tiesraide_eiropas_planetaras_zinatnes_kongresa_4diena
- <http://nra.lv/latvija/223169-tiesraide-vai-cilveki-pec-20-gadiem-dzivos-uz-meness-un-marsa.htm>
- LETA photo gallery
http://www.leta.lv/photo/album/38BA233B-0107-4FC1-A849-31E756360574?force_lang=lat

The EPSC 5th Day

- <http://nra.lv/latvija/223225-tiesraide-epsc-2017-meness-izpete-un-astrobiologija.htm>
- http://www.tvnet.lv/tehnologijas/zinatnes/678442-tiesraide_epsc_2017_meness_izpete_un_astrobiologija

Publicity after the EPSC

Press and News portals

- Latvijas Avīze (26.09)
http://news.lv/Latvijas_Avize/2017/09/26/zinatnieki-kers-un-urbs-asteroidus
- Diena (13.10) (SestDiena) Interview with Amara Grapa
- <https://www.diena.lv/raksts/sestdiena/tuvplana/ievest-baltiju-kosmosa-14182670> (online preview)
- <https://goo.gl/JsKWo6> Scanned full SestDiena article
http://news.lv/Zurnals_Sestdiena/2017/10/13/ievest-baltiju-kosmosa
- <http://www.la.lv/zinatnieki-kers-un-urbs-asteroidus/>
- <https://www.diena.lv/raksts/viedokli/pasaule/iemest-zemudeni-titana-ezeros-14181258>

Another long piece about the EPSC is planned to be published in Zvaigota Debess (Starry Sky) in the winter issue (it is published quarterly).



Interview with Ilgonis Vilks and Juris Žagars by Latvian News broadcaster: LNT

Streaming and Archiving

LMT streamed/archived 105 talks of the 650 total talks.

The Latvia Mobile Telephone (LMT) EPSC 2017 Riga Archive: <https://goo.gl/txDQT2>



The LMT archive shows 19 videos, which includes the Opening (as one 'talk') and the Thursday Public Event (as one 'talk') and sessions from each day as one 'talk'. All recordings will be archived by LMT for the international public for the long term.

What's Wild in the Worlds of Planetary

Science

From the 105 recorded talks, we will have an EPSC sample. With these, we will select about 30 talks, which will form the basis of a collection to inspire young people all over the world

to go into planetary science.

The Recordings Feat. The graphic, below, shows what was recorded on the Stream from the six rooms of concurrent talks. I have embedded the links to the LMT recorded sessions inside of the Storify timelines too, see below. With six rooms of talks and one camera crew, we needed to select a session with the greatest potential number of good talks, for which we could have permissions. An additional constraint is the minimum time to set up (30 min) in another room for the camera crew.

Streaming Permissions

The permissions were the bugaboo. Some scientists have publications in process, which means that their results are embargoed until the official release by the journal. And we were late ourselves with the quantity of work before the congress. The press officer made a permissions Doodle poll for each of the selected sessions, which received some good feedback, but there were still many permissions to gain. Dr. Grapa worked on some of those permissions the weekend before and on the first day-two, and then the press officer received additional help from Mariana of the Europlanet's Science Office. Mariana actually stood at the door of the sessions and asked scientists as they entered for their permission. We shifted our strategy to record all talks for which we had permissions. That would allow the greatest choices to further define the 'What's Wild in the Worlds of Planetary Sciences' collection for the young people.

We had challenges with the Juno related talks. The authors didn't answer the Doodle poll or emails. Then right before the session, they all said 'no', which created a crisis for the LMT camera crew. LMT had to fill that streaming time-slot with some pre-recordings of something else. So we have fewer recordings for that day. That was the most challenging issue, as far as I know, with the streaming. LMT provided an extremely professional crew.

Latvia's contribution to international Planetary Science

In the big picture, 'tiny' Latvia did something for the European Planetary Science Congress that had never been done before by the previous host cities. It provided streaming and archiving of a selection of talks, which is a valuable resource for the international planetary space community that will be remembered and referred to often in the next few years.



	Timeblock	Time	Jupiter room / Omega 1	Saturn room / Omega 2	Uranus room / Alfa	Neptune room / Beta2	Venus room / Gamma1-2	Mars room / Beta1	Mercury room / Ksi	Press conference room	
Sunday		15:00-19:00							ouncil meeting		AB1 - Astrobiology
		16:00-18:00									AM1 - Amateur collaborator
Monday	1	09:00-10:30	Opening (CE2)								AM2 - Juno Ground-Based St
	2	11:00-12:30	TP8	MG1	EX3 - Formation and Dynamical Evolution of	TP6	LF1	SB7			EX1 - Recent advances and n
	Lunch	12:45-13:45							SMW1.4		EX2/MT16 - Future instrume
	3	14:00-15:30		SB5 - Ceres and Vesta - 10th anniversary of Dawn Special Session	EX3		LF4	MT8			EX3 - Formation and Dynamical
	4	16:00-17:30	TP8		EX4	TP7					EX4 - Observations and mod
5	17:45-19:15									LF1 - Earth Analogues	
Tuesday	1	09:00-10:30			EX4		MT3/SB13 - In-Space Resource	MT1			LF2 - The distributed Planeta
	2	11:00-12:30	SB3	TP8		TP1	MT4 - Interplanetary Space Habitation				LF4 - Cometary, asteroidal ar
	Lunch	12:45-13:45							SMW1.2		LSE1 - Lunar Science and Exp
	3	14:00-15:30	SB3	TP8	OPS3	TP2 - Mercury Science and Observation	MG2				LSE2 - Site selections for luna
	4	16:00-17:30									LSE3 - Towards a Moon Villag
5	17:45-19:15	Poster session group 1									MG1 - Planetary magnetosp
Wednesday	1	09:00-10:30	TP4 - Mars Interior and Surface	SB3							MG2 - Planetary Space Weat
	2	11:00-12:30	TP4	SB3 - What do we know and what don't we	OPS3	OPS4/TP8.2	MT15	SB10			MG3 - Planetary, solar and e:
	Lunch	12:45-13:45							SMW1.1		MT1 - Future Planetary missi
	3	14:00-15:30	TP4	SB3	OPS1	OPS4/TP8.2	SB6 - KBOs and Centaurs	AM1	MT5		MT2 - Planetary in situ meas
	4	16:00-17:30		MT12				AM2	SMW1.5		MT3/SB13 - In-Space Resour
	18:30	Social event (CE3)									MT4 - Interplanetary nanosa
Thursday	1	09:00-10:30	OPS1 - Outer planets systems and Pluto	SB4	SB9	TP5/OPS5/SB14					MT5 - Defense of Planet Eart
	2	11:00-12:30			OEP4	MT2	TP8.1	OEP2			MT6 - Advances in Planetary
	Lunch	12:45-13:45	General Asser						SMW1.9		MT8 - Solar and Planetary Da
	3	14:00-15:30	OPS1 - Outer planets systems and Pluto	SB4	LSE3			SB8	OEP1		MT12 - Towards a Moon Villi
	4	16:00-17:30		EX1		SMW1.7			OEP3		MT15 - European Vision 206:
	5	17:45-19:15	Poster session group 2								
6	19:15-21:00	Public event (CE7)				ECS Reception (CE6, 19:30)					OEP2 - Education, capacity b
Friday	1	09:00-10:30	LSE1 - Lunar Science and Exploration	OPS2	SB2	SB1	EX2/MT16	MT6	SMW1.8		OEP3 - Planetary science and
	2	11:00-12:30									OEP4 - International lunar de
	Lunch	12:45-13:45									OPS1 - Outer planets system
	3	14:00-15:30	LSE1 - Lunar Science and Exploration	OPS2	SB2	SB12	AB1				OPS2 - Ocean worlds and icy
4	16:00-17:30	LSE2 - Site selections for lunar outposts									OPS3 - Juno at Jupiter and St

Twitter

There were 3335 posts on Twitter during the conference week (hashtag: #EPSC2017) by the planetary scientists, making it ‘trend in Latvia during the EPSC week.



Science Stories via Storify

We can learn good planetary science from the scientists’ own reporting, and with the human element too. Grapa has encapsulated the EPSC 2017 Riga 'Story' so far in Storify, emphasis on the 3300 posts on Twitter.

Pre-EPSC (before 17 September 2017): <https://goo.gl/VFQsfK>

Sun-Tues 17-19 September 2017: <https://goo.gl/iYyrj6>

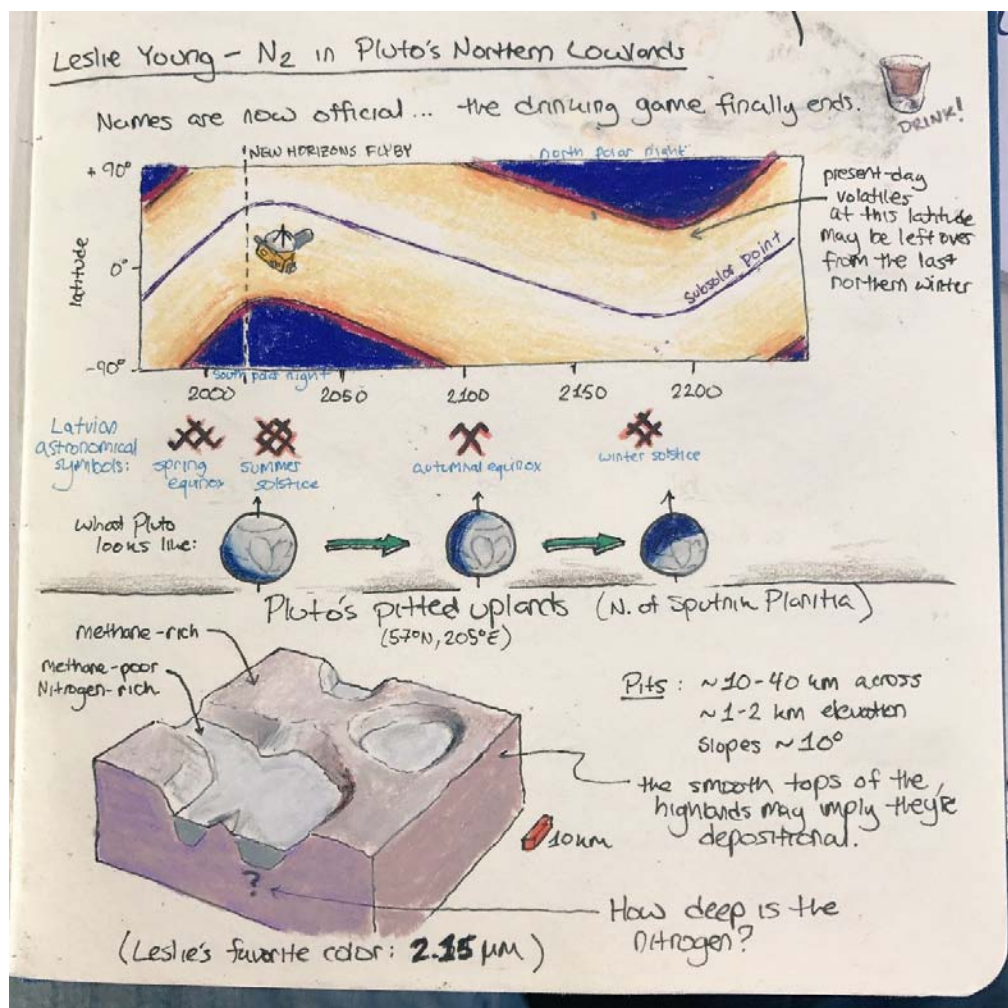
Wed-Thur 20-21 September 2017: <https://goo.gl/Bmh8p9>

Friday 22 September 2017: <https://goo.gl/GNvjG1>

Post-EPSC (after 22 September 2017): <https://goo.gl/iBSyhv>

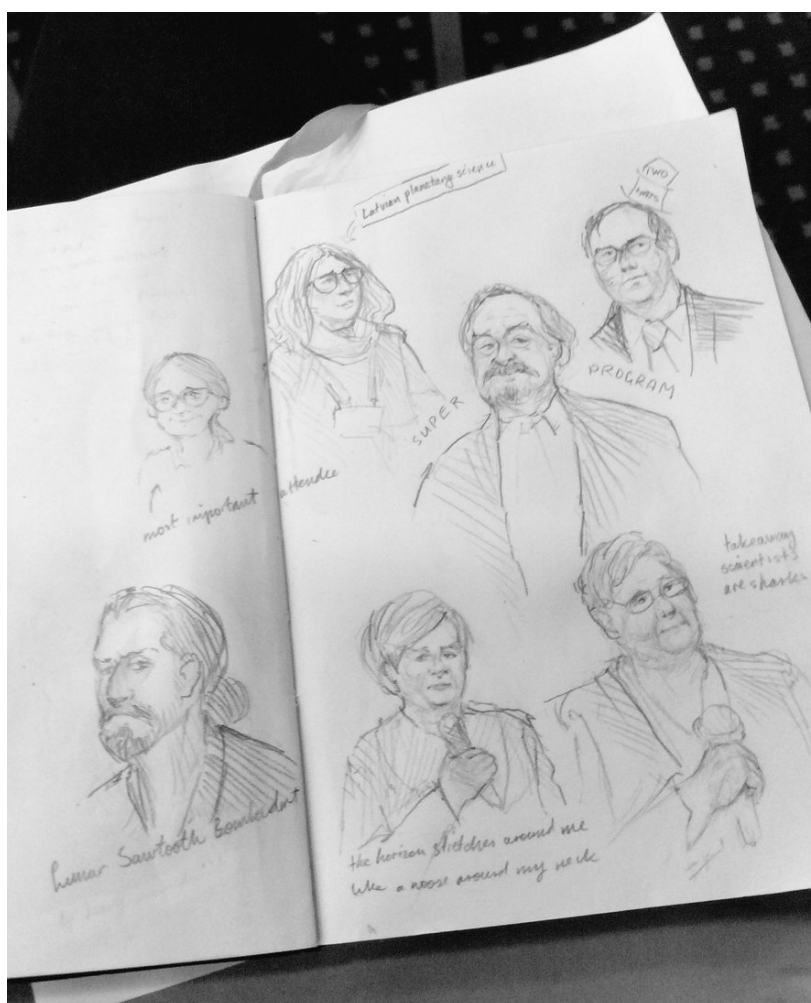
Science-Art via Planetary Scientists who are also artists

James Tuttle Keane (@jtuttlekeane) attended the EPSC 2017 Riga, producing roughly 30 pages (2 drawings per page?) of the planetary science results, which he posted on Twitter. His art interpretations are aiding the planetary science field in significant ways and we were very lucky to have him at our conference. <https://goo.gl/tBJKgu>



One of James Tuttle Keane's 30 science results sketches. Here we see Leslie Young's Pluto atmosphere result. She went to particular effort to learn the symbols for the Latvian solstices.

Leila Qışın (@winterhazelly) also attended the EPSC 2017 Riga, producing roughly 30 sketches with an emphasis on the scientists themselves, which she posted on Twitter. These are yet another warm and personal dimension of our planetary science community. We were very lucky to have **two** artists / planetary scientists at our conference. <https://goo.gl/6mB8Wi>



One of Leila Qışın’s 30 people faces results sketches. These are the speakers from the Opening Session.

Notes on the EPSC 2017 Riga Press Support

The press support of the EPSC 2017 Riga was boosted by the tremendous press support of LMT/Deep White and the streaming offered by LMT.

Some details on Amara Grapa’s press and streaming support. After Dr. Grapa met LMT vice-president, Ingmārs Pūķis, on the press bus to Cesis for the first rocket launch in April 2017, Dr. Grapa had two meetings at LMT to develop the EPSC 2017 Riga streaming requirements in more detail. Following those presentations, LMT directed her to meet their Press Group and consultant company: Deep White for more EPSC 2017 press support. Dr. Grapa met Deep White initially to give a full introduction to the EPSC and then briefly over email, phone and off-and-on during the Congress. Dr. Grapa corrected Deep White’s / LMT’s first press piece that summarized Latvian space science and suggested several Baltic journalists to add to their collection.

Dr. Grapa also met the LMT camera crew at the Radisson Blu to see and discuss the Radisson Blu floor layout, at a time when Europlanet/LMT and LMT was at a decision point about what could be streamed exactly.

For connecting the local press to Europlanet’s Press Office, Dr. Grapa communicated regularly with Europlanet Press Office (especially Anita Heward) through the days, just prior and during the Congress, especially regarding the selections of the talks to stream and for streaming permissions for the LMT recordings. The Europlanet Press Office and I will liaise with Deep White and LMT on the Latvian coverage and hope to produce a full press report late in October. I do not include the Europlanet’s Press Office to these costs below.

Public Communication Costs

LMT Streaming Costs (my guestimates): for their 4-person camera team and time to stream one session at a time from 9:00 to 19:00 for 5 days, attaching labels and info to the streamed information and archiving = **total 15,000 Eur**

Amara Grapa Selecting / Streaming Costs: For selecting / Streaming Talks: Meetings and discussions with LMT and Europlanet Press Office and with LMT Camera Crew (600 Eur), Selecting Talks from the Abstracts (600 Eur), Initial work for gaining permissions from Authors (200 Eur). Dr. Grapa was paid 500 Eur by LMT for her work on these parts. = **1400 – 500 = total 900 Eur**

Deep White Press Costs (my guestimates, correct me if you know more): for their ten journalists’ travel and accommodations to Riga to follow the EPSC and write stories = **total 10,000 Eur**

Amara Grapa Press Contributions: Press invitations and discussions (600 Eur), Meetings with Deep White, correcting their large Latvian Space press release, multi-part pointers to local journalists and to Latvian space scientists for interviews (800 Eur) = **total 1400 Eur**

Total Part 6 Cost: €27,300

EPSC 2017 Riga LOC Financials

Sum of Totals

Total Opening and Key Speakers Cost: €12,980

Total Space Facilities Booklet Cost: €14,530

Total Baltic Space Exhibits Cost: €43,600

Total Solar System for Kids and more Cost: €22,620

Total Art-Science-Culture Links Cost: €13,150

Total Public Science Communication Cost: €27,300

EPSC 2017 LOC Sum Total: €137,180

Baltic entities In-kind contributions for the six parts: € 112,650

A. Grapa costs for the six parts: € 24,530

Donations to A. Grapa for her EPSC LOC work: € 7500

Net A. Grapa costs: € 17,030

The remaining parts of the Dr. Grapa LOC effort: the LOC Meetings, the Riga Transportation Guide, the Riga Restaurant Guide, the Crowd-funding (time) costs, this proposal development (time) costs are not described here. Those costs are about € 15,000. See full spreadsheet at the balticsinspace.eu web site.

EPSC 2017 Riga LOC Financial Summary:

- Dr. Grapa engaged the International and Baltic businesses, government, institutes and individuals for in-kind sponsorship of the Local Organizing of the EPSC 2017 Riga for **€ 112,650**.
- Dr. Grapa’s EPSC 2017 local organizing costs of at least **€ 17,030** (and up to € 32,000, see full spreadsheet) was not financially covered by any entity. This will be discussed further in the Lessons for Improvement, below.

Some EPSC 2017 Riga Feedback

On the Planetary Scientists in Riga:

FB comment from Ingmārs Pūķis, LMT Vice President:

"It was great to have all this planetary brainpower coming to Riga:). Thank you Amara!"

On the Zinoo Space Exhibits:

FB comment from Adele Stanford, Kings College, Riga, teacher, on the Zinoo Exhibits: "Amara Graps the children from Kings College loved it. They have been telling me all about it. Thanks so much x"

FB comment from JL Galache, UK/ES/USA planetary scientist and asteroid miner, on the Zinoo Exhibits: " I hope all the grownups attending the conference took a few minutes to go enjoy the Zinoo exhibit. The Mars rover, for one, was very cool and enlightening."

On the Congress:

EstLat-2020 SPACETEM Intern, Anni Kasikov:

"As a bachelor's student it was difficult to understand many of the presentations, because I don't have enough knowledge about the subjects. But the best experience for me was the Tuesday's poster session, where I could walk around and ask people about their posters. So I asked them "Could you explain your research to a bachelor's student?" And I learned so much during those few hours! I learned about magnetic fields of Uranus and Saturn, about the geology of Mercury, about the processes on a comet's surface and how the solar wind affects Earth's atmosphere. By the end of the night I felt like my head was about to explode from all the cool things I heard! And the rest of the night me and the other LU students were discussing what we learned that day. This was the most awesome experience for me at the EPSC and it gave me a lot of motivation to do well at my studies, so that in the future I could also be one of those planetary scientists presenting a research."

EstLat-2020 SPACTEM Mentor: Endija Briede:

"Great conference, especially high level keynote speakers. The ability to meet and network with great people was excellent. I was happy to see captivated trainees and hear positive feedback from them."

On the black, handmade t-shirts worn by the SpaceTEM team.

Twitter comment by USA planetary scientist @asrivkin :

"A group of Baltic engineering interns are wearing this shirt tonight at #EPSC2017. I post this for the gang of engineers back at @JHUAPL..."

pic.twitter.com/sBg1mERjmdhttps://t.co/sBg1mERjmdpic.twitter.com/sBg1mERjmd

Twitter comment by USA planetary scientist and asteroid miner @drphitill :

"Seen at #EPSC2017" https://t.co/5Eb1nYw50n

FB comment by Andris Slavinskis, LV/EE space engineer on the EPSC 2017 Riga scientific sessions: "Interplanetary Nanosatellites, CubeSats/SmallSats session at #EPSC2017 makes me very happy. When proposing an engineering session for a science conference, only I could dream about such excellent talks, and I definitely did not expect the Latvian Minister of Finance giving a talk there and an article in The Economist coming out the session. Thank you everybody who contributed!"

FB comment by Glenn Orton, JPL (USA) planetary scientist: "I will attest that, even with the tremendously challenging travel from the western US, the Congress as a whole was exciting and immensely worth while. I'd do it again in a heartbeat, including the challenges we have just to approve the required travel."

FB Comment by Rosaly Lopes, JPL (USA) planetary scientist: "It's been a great meeting! I hope for more meetings in Riga!"

FB Comment by Philip Metzger, Univ Central Florida, planetary scientist and asteroid miner: "EPSC 2017 was great. Kudos to Amara Graps and the other organizers. Everything went smoothly (from my perspective!): the talks were great, lots of cool science, the conversations were great, lots of coffee and snacks, Amazing social event. Beautiful city. Everything one could want in a planetary science conference. Thank you Amara!"

Twitter pic of Opening EPSC sketch of Riga from USA planetary scientist & artist: @jtuttlekeane
<https://twitter.com/jtuttlekeane/status/909655231205699584>

Twitter comment/pic from UK planetary scientist: @leighfletcher
"My first time in the Baltics, and fantastic to see a former Latvian president addressing our planetary science community in Riga! #EPSC2017"
pic.twitter.com/6wh6EIWrIJ

Twitter comment from UK/ES/USA planetary scientist and asteroid miner: @JLGalache
"Madam President Vaira Viķe-Freiberga gave a beautiful talk about the significance of the Sun in Latvian folklore and life. #EPSC2017"

Twitter comment from Nature Editor @LucaPlanets
"Should we mention that the two (important) Baltic politicians that talked at #EPSC2017 opening ceremony were women? Let's mention it..."

Twitter comment from German planetary PhD student @lets_boldly_go
"Pleased to see so many women speakers in the first hours of #EPSC2017 . So so important!
@europlanetmedia"

Twitter Comment from Finnish space scientist @samooja
"One great thing about #EPSC2017 #European planetary #Science conference are amateur astronomy sessions. (this year in #Riga #Latvia) #space"

Twitter comment from French planetary PhD student @Ines_Blgcm
"#EPSC2017 is also the 1st conf I've heard of with amateur astronomers sessions as well as science & industry ! Diversity is so appreciated!"

Twitter comment/pic from UK planetary scientist: @leighfletcher
"One thing #EPSC2017 does really well is the inclusion of amateur observers in the sessions, particularly to support missions like Juno." pic.twitter.com/sjBZAHVwrO

Twitter comment from USA planetary scientist @asrivkin
"Great to see the turnout at the Diversity Breakfast at #EPSC2017!"

Twitter comment from a French planetary scientist: @davidwdubois
"Thanks to @euromedia for organizing such a wonderful meeting this week, with amazing talks all throughout! #EPSC2017 @balticsinspace"

Twitter comment from Spanish planetary scientist: @ajd_geosci
"A huge thank you to the #EPSC2017 organisers for a great congress!"

Twitter comment/pics from USA planetary scientist: @asrivkin
"We're just about to start the road trip leg. Thanks to @amaragraps and @anitaheward (et al!) for doing an amazing job with #EPSC2017 !"
"Farewell #EPSC2017! Thanks for the science! We're off to Lithuania with the brave @asrivkin behind the wheel!" <https://t.co/rFWWaYrViu>

Twitter comment/pic from French planetary PhD student @Ines_Blgcm
"At Riga Airport getting ready to go back to Paris! Thank you 4 a wonderful #EPSC2017! Great science, awesome people! See you next year :)" <https://t.co/Bth7hMjhnP>

FB Comment from JL Galache, UK/ES/USA planetary scientist and asteroid miner, on the EPSC 2017 Riga generally:

"I spent the week asking people how they thought the organisation and conference went, and everyone was positive. The only complaint I received was "the beer at the poster sessions isn't good." To put this complaint into perspective: There was beer and wine during the poster sessions, and it was free; as much as you could drink! Personally I don't see any reason to complain ☐

Items that are always important to me:

- Free flowing caffeine: ✓
- Smooth glitchless projection and audio equipment: ✓
- Ample rooms for talks and socialising: ✓
- Easy to navigate floor plan: ✓

One issue I saw was a session on the first day that many people ended up sitting on the floor for (I tweeted a photo). Amara heard about this and the next day that room had some 50 extra chairs in it.

So bravo Amara for a hugely successful conference, with the highest attendance since the London EPSC (2013?). And let's face it, to "lose" the attendance battle to London says a lot about how well Riga did. “

I come back home scientifically refreshed (if physically exhausted) and with wonderful memories of Riga and the conference. Thank you, Amara!!!

On the EPSC 2017 Riga Social Event:

Twitter comments by Dr. Margaret Harris, Industry Editor at Physics World @drmlharris
 "Turns out that planetary scientists are really into orbits, even on the dance floor! Traditional Latvian dance at the #EPSC2017 social" pic.twitter.com/WxMdFov0GP
 "This is genuinely one of the most adorable conference social activities I've ever seen, and I go to lots of conferences. Well done, #EPSC2017"

Twitter pic by Welsh planetary science PhD student: @caryshuntly
 "Cheers #EPSC2017! Tonight is all about trying local food and drinks!" <https://t.co/OndUyBSJ6d>

Twitter comment by USA planetary scientist and asteroid miner: @DrPhiltill
 "Great conference social at #epsc2017" <https://twitter.com/drmlharris/status/910566095542775808> ...

On Riga:

(FB comment on the first days of Riga rain)
 Scot Rafin, USA Mars scientist
 "I really enjoyed the mix of sun and rain. Coming from a mostly dry and crunchy land, the rain can be refreshing."

Twitter Pics of Riga during EPSC from Nature Astronomy Editor
<https://twitter.com/LucaPlanets/status/909400673825038336>

Twitter Pics of Riga during EPSC from UK planetary scientist: @nick_attree
https://twitter.com/nick_attree/status/909474733883822080

Twitter pics of a Riga Old Town street from a UK planetary scientist: @physicsJ
 "This photo was all about the cat. #EPSC2017" <https://t.co/0zobJrV6wM>

Twitter pics of Riga by a Welsh PhD planetary science student @caryshuntly
 "Very cool sightseeing lunch break at #EPSC2017. Riga is a beautiful city. #scienceinthepark"
<https://t.co/18nWoB342v>

Twitter pic from USA planetary scientist: @schmemela
 "Enjoying the view from my #epsc2017 hotel room" pic.twitter.com/PBGsattTCq

Twitter comments from UK/ES/USA planetary scientist and asteroid miner: @JLGalache
 "I do appreciate the directness of this [Caffeine] establishment's name. No beating around the coffee bush here!"

in response:

Twitter comments from USA planetary scientist: @schmemela
 "Latvia, I love you. #epsc2017"

Twitter comment/pic from USA planetary scientist: @schmemela
 "Not entirely certain what I'm eating, but pizza in Latvia does not disappoint! #epsc2017"
<https://t.co/ngNm5bsGXF>

Twitter comment/pic from USA planetary scientist and artist: @jtuttlekeane
 "Taking a break from drawing planets to relax and enjoy Riga #EPSC2017" pic.twitter.com/qaZx15POSI

Twitter pic from USA planetary scientist: @schmemela
 "#EPSC2017 coffee break comes with adorable merengues! I've never had one before. Tastes like crunchy cotton candy." <https://t.co/ww2oz0nf7V>

Twitter pic of group in Riga Esplanade park by UK planetary scientist: @leighfletcher
 "Farewell Riga #EPSC2017 and thanks for a great week - love from the Leicester planetees
 @PhysicsUoL #RSPP" <https://t.co/vJMHSQOxH9>

Twitter and Instagram pic in front of a Riga old town restaurant from a UK planetary scientist
 @davidaw222
 "And it's over. Had a great time in Riga at #epsc2017. I had a good talk on NASA Dawn mission..."
<https://t.co/plm7zJEe5b> <https://www.instagram.com/p/BZWdJ3cHKcT/>

Twitter comment/pic from French planetary PhD student: @planeto57
 "In #Riga witches are not allowed in bakeries #EPSC2017" <https://t.co/HrmHloNB5h>

Twitter comment/pic from from a UK planetary scientist: @physicsJ
 "Riga was fun. #EPSC2017 was productive. On way to DC now" <https://t.co/wN92UANGs7>

Twitter comment/pic from USA planetary scientist and artist: @jtuttlekeane
 "Goodbye Riga! Great city, fantastic #EPSC2017! I'll be back sketching at #DPS49!"
<https://t.co/GxjEDeeiCw>
 Phil Metzger with alot of riga photos

Twitter comment/pic from USA planetary scientist and asteroid miner: @DrPhiltill
 "#EPSC2017 was great! FInal day in Latvia before returning to the US. I'm heading to the Baltic coast now to see some sand." pic.twitter.com/ljH6Tv2dNf <https://t.co/ljH6Tv2dNf>

EPSC 2017 Riga LOC Lessons for Improvement

I consider the EPSC 2017 LOC a success for delivering what I told the EPSC Board in Fall 2015 that I would deliver. I established many useful new contacts. I learned new skills; found good reasons to found a new non-profit, and there are ‘hooks’ that can be utilized for continuing to build space work in the Baltic Sea Region. The financial support of the EPSC 2017 LOC has room for considerable improvement, however, which seemed to have stemmed from a number of misunderstandings by Europlanet and the EPSC Board. Here is a discussion.

Notes for the Europlanet and EPSC Managers and Board

The following are points that I found myself repeating to the EPSC / Europlanet Board managers, while explaining the environment from which I was supporting the EPSC.

- Half of Europe, the Eastern half, is mostly soft money scientists. (I am one of those.)
- University affiliations do not mean a stable income. (I collect affiliations so that I have more funders to write proposals to.)
- Eastern Europe consists of tiny countries, in both size and population. (It was reasonable for the EPSC Board to ask for a four-country Event. It was *not* reasonable for one planetary scientist to support it with 0 resources from EPSC and Europlanet)
- A four-country EPSC LOC needs more time than a one-country EPSC LOC. (Remember my first EPSC LOC Contact List in Summer 2016? It had 130 entries and needed one week of my time to develop it.)
- Eastern European countries do not collaborate as well as Western Europe thinks because their native languages are not understandable by each other. (Nevertheless, English –is– used.)
- Some Eastern European countries have no planetary scientists. (Look East)
- Many Eastern European space scientists have no experience of what is an EPSC. (Such as the three Baltic countries.)
- Repeating in another way: I was the only scientist in the three Baltic countries who knew what was the EPSC and what its value would be for space workers in this region.
- The typical EPSC professional registration fee is the same as the full monthly salaries of some Eastern Europe countries. (The attention I spent on the EPSC Registration fee issue was for a good reason.)

I (A. Grapa) developed a Local Organising Committee for the EPSC 2017 Riga that anchored around the Baltic Space Facilities, in order to have the highest probability of good material in the Space Exhibits and in the Space Facilities booklet. That is, the people from whom I wanted to contribute to these activities were those who would have the greatest to gain from them.

The LOC was initially given 0 Eur. The reason is that the EPSC LOC was not listed for funds in the European Commission Europlanet grant agreement. Instead, the EPSC 2017 Riga EC funds went to the scientific abstract and registration and hotel organizing (company: Copernicus Meetings).

By the end of the Congress, the number people who were involved for all aspects of the Local Organizing activities included 195 Baltic people (see the full spreadsheet of costs and personnel). I ran the majority of the Local Organizing tasks for the EPSC 2017 Riga, spending 209 fulltime days on this project since March 2016, when I learned that Riga won the EPSC 2017 competition.

I didn't ask the rest of the LOC members to donate their free time beyond immediate 'Space Booklet' and 'Space Exhibit' roles, because, as soft money scientists like me, with no official paid 'EPSC project', I felt that their family sacrifices would be too great and for something that they had no previous knowledge about.

However, the financial burden for my EPSC LOC work caused me to lose my only credit card, my only child barely saw me for 10 months, and the financial recovery impacts my ability for professional and personal travel for the next year-two.

If Europlanet and the EPSC Board are serious about the 'Widening' intention of European projects, then here are my suggestions for their future Eastern European Meetings.

IF Europlanet and the EPSC Board want to give a major international meeting with 0 funds to an Eastern European scientist, and the receiver understands fully what they are getting into (I didn't), then you need to give them a minimum of two years in advance, and better three years. Why?

Fund-raising.

1. Government proposals need at least one year to develop, submit, and then receive, if they win (and they might not win).
2. The local industry needs at least one year in advance to put the meeting in their yearly budget.
3. The scientist needs some months to develop (or hire) sponsorship skills, -- pricing assets, surveying the business environment, gaining access to company CEOs, all to learn 'no' and then to repeat it for the next company and its CEO.
4. The scientist needs some months to learn crowd-funding skills --storytelling, video making, and appealing graphics-- for additional funds.

I learned the above skills and ran two crowd-funding campaigns for 53 donors for my LOC work. However, the time I needed to learn those new skills was about the same as the amount of funds I gained in the Crowd-funding. So therefore, the time that the EPSC Board gave (1.5 years) for

Fundraising –and- for the LOC Chair to learn those new skills, was too little time to implement the fund-raising properly.

My personal lessons-learned is that I started with the wrong funders in my too-short time of 1.5 years. The government funders were too paperwork-intensive, too restrictive in who they could pay, too time-consuming and too few funds to support my work. If I had started with the local businesses (learning those skills, above), for sponsorship, then my fund-raising would have been easier.

IF Europlanet / EPSC Board wants to give a major international meeting with suitable funds (20-40 KEur, then it is a truly ‘Widening’ effort) to an Eastern European scientist, then you need to give them a minimum of 1.5 years Why?

1. They need to develop the educational projects to involve the Youth in the Event (you are paying for the scientist’s time to develop the projects).
2. They need to develop the communication and press contacts. (you are paying for the scientist’s time to develop the projects). The LOC might even be able to provide you streaming, if they have enough time.
3. They need time to develop the mechanisms for their Keynote Speakers who must travel to the Event (see note on tiny countries above)
4. They will use the funds for their telecommunication software (Skype doesn’t work for large groups of people) and for their Cloud Storage (i.e. Dropbox or Equivalent for storing the large numbers of presentations).
5. Choose a host city in the country’s capital city. This gives the organizers access to Embassies who have speakers programs who can pay for some speakers’ travel/accommodations. An EPSC in a Capital City also gives the LOC access to the European Commission Representation office for some financial Communication support.

I hope that this Lessons for Improvement discussion proves useful. If any management members want to utilize the new skills that I have developed in this project, I am willing to be a teacher in this area, but not for free.

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