

Citizens' Space

ESA's forum for a Citizens' Debate, issue 2
2016 edition

Space
resources
**Return of the
Wild West?**



Big data
Who owns the data
collected up there?

European citizens dreaming of endless space

Citizens' Debate: 1,618 PARTICIPANTS FOR A WORLD FIRST

Next stop: space with citizens

Let me thank you for contributing to an important step in the realisation of my vision of a broader dialogue with all stakeholders of European space activities. As you know, the Citizens' Debate is part of the implementation of my Space 4.0 concept, whereby ESA increasingly interacts with all and integrates space more seamlessly into European society. You, representing citizens of all 22 ESA Member States, in all their diversity, have answered my invitation and engaged in a genuine dialogue with ESA.



I am extremely grateful for your interest and curiosity as well as the wonderful feedback, perceptions and ideas you provided us with. The Citizens' Debate mobilised over 2,000 people throughout ESA's Member States; men and women from all walks of life, aged between 15 and 89 years. It turns out that after the Debate, 93% of you were so pleased with the way the day went that you would recommend a similar debate in the future to friends or relatives. This is a very positive outcome and a multiplier effect that will enable us to provide European

citizens in general with a clearer and more vivid image and understanding of space activities and their importance in our day-to-day life, while also allowing us to gather your input and ideas, which we will use to shape our policies and programmes.

This magazine contains further results from the day, with a first analysis of the discussions. On a personal note, in the Debate that I joined live in Darmstadt and in many other locations via video link, I very much enjoyed the enthusiasm spread by the participants in attendance that day. With your help, we have already increased the participation of society and citizens in shaping European space activities and integrating space into European society and economy. I give you my word that we will continue this endeavour and I am looking forward to it.

Jan Woerner
ESA Director General



8. A look back...
The day citizens set foot on planet ESA



12. Quotes
Over to the participants



15. Outcomes
Europe has found its place among the stars



18. Participants have free rein
If you please, draw me a space mission



20. Big data
Who owns data collected in space?

The Debate causes a stir

The Citizens' Debate on Space received extensive coverage in the press and on social networks. Here is a visual, non-exhaustive selection, including a nice nod from NASA!



SWI swissinfo.ch @swissinfo_fr
Claude Nicollier #astronaute, à Lucerne pour le débat citoyen #ESACD16. Interview vidéo. L'espace pour la #paix. s.swissinfo.ch/O3iWYbi
1:27 PM - 6 Oct 2016

You can see more press articles and reactions at: <http://tinyurl.com/zk2qd5j>



AGENZIA SPAZIALE EUROPA
Roma, incontro internazionale ESA sul futuro dello spazio

Il 10 Settembre 2016 circa 2000 cittadini da 22 paesi Europei parteciperanno al primo - e unico - Dibattito Cittadino sullo Spazio per l'Europa organizzato dall'Agenzia Spaziale Europea (ESA)
Il 10 Settembre prossimo 22 diversi paesi e 2.000 cittadini europei circa saranno i protagonisti del primo - e unico - Dibattito Cittadino sullo Spazio per l'Europa organizzato dall'Agenzia Spaziale Europea (ESA) a Roma in luogo da definire.

NASA Kennedy / KSC @NASAKennedy
@ESAcitizens debate on space for Europe is the 1st dialogue organized in every member state of the @esa. #ESACD2016. citizensdebate.space
8:51 PM - 12 Sep 2016

science ORF.at

ESA sucht Diskussion mit Bürgern

Über 2.000 Personen aus allen 22 ESA-Mitgliedsländern, darunter Österreich, sollen in einer Bürgerdebatte am 10. September ihre Meinung, Wünsche, Sorgen zum Thema Raumfahrt äußern und Vorschläge einbringen. In Wien können 100 Personen teilnehmen, anmelden kann man sich bis 29. August.

„Wir wollen ein Gefühl bekommen, was die Bürger interessiert, das diskutieren und in die künftige Weltraumstrategie der europäischen Raumfahrt einbauen“, sagte der kürzlich zum ESA-Direktor für Erdbeobachtung bestellte österreichische Geophysiker Josef Aschbacher <http://www.esa.int/About_Us/Welcome_to_ESA/New_ESA_Director_of_Earth_Observation>, der das ESA-Erdbeobachtungszentrum ES/RIN in Frascati bei Rom leitet, im Gespräch mit der APA.

Üblicherweise würden Entscheidungen in der Weltraumorganisation über den ESA-Ministerrat und die Mitgliedsländer getroffen. „Nun wollen wir zusätzlichen Input von den Bürgern bekommen, um zu verstehen, was die Menschen quer durch alle Nationalitäten, verschiedenen Alters und Ausbildungen vom Weltraum halten, was sie interessiert, was sie gut und was sie weniger gut finden“, so Aschbacher.

Service
Anmeldungen zur ESA-Bürgerdebatte können bis 29. August über die ICCR-Foundation <<https://iccr-foundation.org/>> (mailto:phorylea@iccr-foundation.org) erfolgen.

Relevant für Alltag

Schließlich gebe es viele Bereiche des alltäglichen Lebens, wo der Weltraum direkt oder indirekt einfließe - von der Wetterprognose bis zur Navigation, die beide ohne Satelliten im Weltall nicht mehr vorstellbar wären. Aschbacher sieht es positiv, dass der Bedarf nach Weltraumtechnologie nicht sehr umstritten sei, „die Frage ist, wie man diese Investitionen am besten verwendet, um die Bürger unterstützen zu können und den Weltraum für alle nutzbar und relevant zu machen“. Die ESA hat immerhin ein Jahresbudget von mehr als fünf Mrd. Euro.

Die Frage, wie weit die ESA dabei bereit ist, auf die Meinung der Bürger zu hören, ob sie etwa einem breiten Wunsch nach Weltraumtourismus nachkommen würde, beantwortet Aschbacher mit Verweis auf die Rolle der Raumfahrtagentur: Die ESA sei nur einer von mehreren Partnern beim Thema Weltraum, fast immer sei auch die Industrie mit an Bord. „Wir sind dazu da, die Weltraumprogramme im großen Rahmen zu definieren, aber die Industrie implementiert diese dann“, so Aschbacher, der es deshalb für unwahrscheinlich hält, dass die ESA selbst in den Weltraumtourismus einsteigen wird. „Aber woran wir sicher Interesse haben ist, den Sektor so zu entwickeln, damit die Privatindustrie solche Möglichkeiten anbieten kann“, sagte der ESA-Direktor.

Kein Vorwissen notwendig

Die von ESA-Generaldirektor Jan Woerner <http://www.esa.int/About_Us/Welcome_to_ESA/Johann-Dietrich_Woerner_Generaldirektor_der_ESA> initiierte Bürgerdebatte läuft in allen Ländern nach dem gleichen Muster ab, in Österreich wird sie vom sozialwissenschaftlichen

ΔΙΕΘΝΗ

ΑΡΧΗ

Α Α

Δημόσια συζήτηση για το Διάστημα με τη συμμετοχή 100 Ελλήνων



Το περασμένο Σάββατο

<http://www.parapolitika.gr/article/379010id-moisia-syziti-gia-diasima-me-ti-symmetochi-100-ellnon>

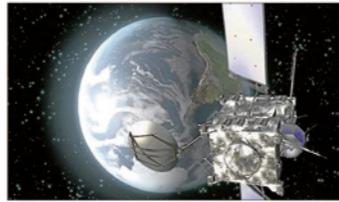
Wohin geht die Weltraum-Reise?

Erstmals waren Bürger zu einer Debatte über die Zukunft der Raumfahrt geladen

Die Europäische Weltraumagentur Esa hatte zur ersten großen „Bürgerdebatte“ über die europäische Raumfahrt gerufen. 108 Teilnehmer versammelten sich am Samstag in Darmstadt. Über sieben Stunden wurde über den Weltraum und seine Erforschung diskutiert.

VON BERNHARD MACKOWIAK

Darmstadt. Sind wir nach mehr als fünfzig Jahren schon im Weltraum zu Hause oder ist der Kosmos mit seinen „unendlichen Weiten“, wie einer der bekanntesten Sätze aus der Fernsehserie „Raumschiff Enterprise/Star Trek“ laut, immer noch etwas Geheimnisvolles, Unheimliches, ja Gefährliches? So jedenfalls lautete die Kardinalfrage, die es galt in der ersten sogenannten Bürgerdebatte der Europäischen Raumfahrtagentur (Esa) am vergangenen Samstag zu beantworten. Das sollte zugleich an diesem Tag in allen zweieundzwanzig Mitgliedsländern dieser supranationalen Organisation an ebenso vielen verschiedenen Orten geschehen. Es sollte ein echter Austausch von Gedanken,



Esa-Satellit „Rosetta“ bei der Annäherung an die Erde. Foto: dpa

Meinungen, Erwartungen und Wünschen sein, aber auch Träume waren gewünscht. Nicht nur Fachleute mit akademischer und technischer Ausbildung sollten diskutieren, sondern „Menschen wie und ich“. **Siebzehn Tische** Siebzehn runde Tische waren aufgebaut, an denen bis zu sieben Teilnehmer und ein sogenannter Tischmoderator sich einfanden. Hauptmoderator war Dirk Wagner, der alle Versammelten begrüßte und das Prozedere bekannt gab. „Anschließend begrüßte als Gastgeber Esa-Generaldirektor Jan Woerner die Teil-

nehmer, auf dessen Idee diese Veranstaltung als erste ihrer Art bei Esa zurückging. Fünf große Themenblöcke mit an die fünfzehn Unterthemen galt es in Fragebögen und Diskussion abzuhandeln, angefangen vom augenblicklichen Wissen über Raumfahrt und natürlich den europäischen Part sowie ihre Bedeutung im täglichen Leben – bis hin, für welche Raumfahrtprojekte sich die Esa in Zukunft engagieren sollte; neben der Weiterentwicklung entsprechender Technologien, um das „Raumschiff Erde“ noch besser zu managen, über den Aufbau einer bemannten Mondstation mit

3-D-Druckern bis hin zum bemannten Marsflug – und all das in internationaler Zusammenarbeit mit anderen Raumfahrtagenturen. Gefremdet wurde an den Tischen nicht: Man kam schnell in Kontakt und regen Gedankenaustausch – ging es doch um eine Sache, von der alle begeistert und von deren Richtigkeit alle überzeugt waren.

Live nach Paris

Eingespielte Videofilme mit Statements verschiedener Bürger Europas zu Beginn jedes Diskussionsthemas taten ein übriges zur Motivation, ebenso wie die Liveschaltung nach Paris, wo dasselbe Event mit derselben Begeisterung abließ. Die war bei allen Teilnehmern so groß, dass selbst in den Kaffeepausen und der Mittagspause weiter diskutiert und Essen zur Nebensache wurde. Natürlich durfte das obligatorische Gruppenfoto nicht fehlen und die Zusammenfassung der Ergebnisse, die in einer vorläufigen Statistik auf die Leinwand projiziert wurde. Als Überraschung zum Schluss gab es noch eine Besichtigung des großen Kontrollraumes.

LE HUFFINGTON POST
EN ASSOCIATION AVEC LE GROUPE Le Monde

POLITIQUE ÉCONOMIE INTERNATIONAL CULTURE LE BON LIEN

LES BLOGS

Le premier débat citoyen sur l'espace pour l'Europe

34/09/2016 14:03 CEST | Actualisé 05/10/2016 17:51 CEST

Un message de l'espace : l'astronaute Tim Peake invite les citoyens à participer au premier débat citoyen sur l'espace pour l'Europe (inscription ici pour le débat à Paris)

Le 10 septembre 2016, environ 2000 citoyens, dans 22 pays en Europe, participeront au premier débat citoyen sur l'espace pour l'Europe, organisé par l'Agence spatiale européenne.

Le premier débat citoyen sur l'espace pour l'Europe

06:47

ESA European Space Agency

Tim Peake

Bonjour, je suis Tim Peake,

EL MUNDO

¿Y tú qué harías en el Universo?

Encuentro de la ESA en Caixaforum. | OLMO CALVO

Cien españoles de a pie participan en una consulta realizada por la Agencia Espacial Europea

DANIEL MARTÍN Madrid 12/09/2016 01:22

La soberanía del espacio exterior, los beneficios económicos de la carrera espacial, las nuevas tecnologías, los macrorodatos...Estas y otras cuestiones fueron puestas a debate este sábado en el CaixaForum de Madrid, donde un centenar de ciudadanos españoles de a pie participaron en una consulta sobre el universo promovida por la Agencia Espacial Europea (ESA). El encuentro, organizado en nuestro país por la Obra Social La Caixa y la empresa de transferencia tecnológica KIM, se desarrolló simultáneamente en 22 países europeos, con un total de 2.200 participantes que respondieron a 30 preguntas de un cuestionario en el que se abordaban los temas anteriormente citados.

Alessia Tricomi @alessia_tricomi

Amazing September with @ESA_Italia and @astro_luca #esacd16 #notteideicercatori

9:49 AM - 1 Oct 2016

Raumfahrer.net @Raumfahrer_net

#ESACD16 - Erste #Bürgerdebatte der #ESA am 10.09.2016 - auch 2 Riesaer mit dabei: sternenfreunde-riesa.de/bildergalerie/... (tw)

10:20 AM - 21 Sep 2016

You can see more press articles and reactions at: <http://tinyurl.com/zk2qd5j>

romanian space agency (ROSA) @RomanianSpaceAgency

The European Space Agency (ESA) will organise the Citizens' Debate on Space for Europe on 10 September, a unique event which will take place in all 22 ESA Member States. In Romania the debate will take place Phoenixia Grand Hotel in Bucharest. Anyone can register to participate until 28 August!

“We should integrate space into society and our European economies”

Many of the citizens who took part in the Debate described themselves as “novices” on space issues, but that didn’t stop them having some fairly accurate ideas. Jan Woerner, ESA Director General, believes that these citizens must be welcomed, since they represent an opportunity for Europe’s space sector.

WHAT HAS SURPRISED YOU THE MOST ABOUT THE DEBATE? AND WHAT HAS GIVEN YOU THE GREATEST SATISFACTION?

Jan Woerner : I’ve been deeply impressed by the participants’ openness, enthusiasm and diversity. As you know, I joined the Debate personally in Germany and very much enjoyed the curiosity and interest expressed by its participants. In a way, that was the result I had hoped for. Great satisfaction also comes from the fact that more than a third of the participants who found their way to us on that day described themselves as “space novices”.

(continued)



Denis Esnault

Jan Woerner, ESA's DG, at the European Space Operations Centre in Darmstadt, in a live address to the Paris Debate at CNES (the French Space Agency).

dr

After the Debate, 93% of participants said that they would recommend a similar event in future to friends or relatives. This is a very positive outcome and has a multiplier effect that we will leverage.

WHAT HAVE YOU LEARNED FROM THE FIRST RESULTS?

Jan Woerner : For one thing, I have learned that citizens take a real interest. They want to engage in a meaningful and ongoing debate. 96% of citizens consider space to be a universe of possibilities and opportunities and 84% are in favour of increasing the resources available for space activities. In addition, citizens expressed strong trust in space agencies in general (82%), which is even stronger in ESA in particular (88%). This also sends a powerful message to the Member States coming together for the Ministerial Council meeting later this year to decide on the next programmes and budgets for the Agency.

IN YOUR WORDS OF WELCOME ON OPENING THE DEBATE, YOU SAID THAT YOU WERE EXPECTING SOME DISRUPTIVE IDEAS FROM CITIZENS. WHICH ONES CAUGHT YOUR ATTENTION?

Jan Woerner : 84% of participants maintain that ESA should speed up the process of opening space programmes and activities to non-traditional space actors, such as NGOs, start-ups specialised in new services on mobile devices and internet-connected objects, etc. This is a step towards the full integration of space into European society and its economy, which is one of ESA's declared goals. We are working on how to implement this practically. Other ideas concerned space tourism or a mission to Enceladus, Saturn's sixth-largest moon.

SHOULD ESA WORK ON INCREASING ITS PROFILE AMONG THE GENERAL PUBLIC IN ORDER TO EVENTUALLY BECOME AS WELL-KNOWN AS NASA?

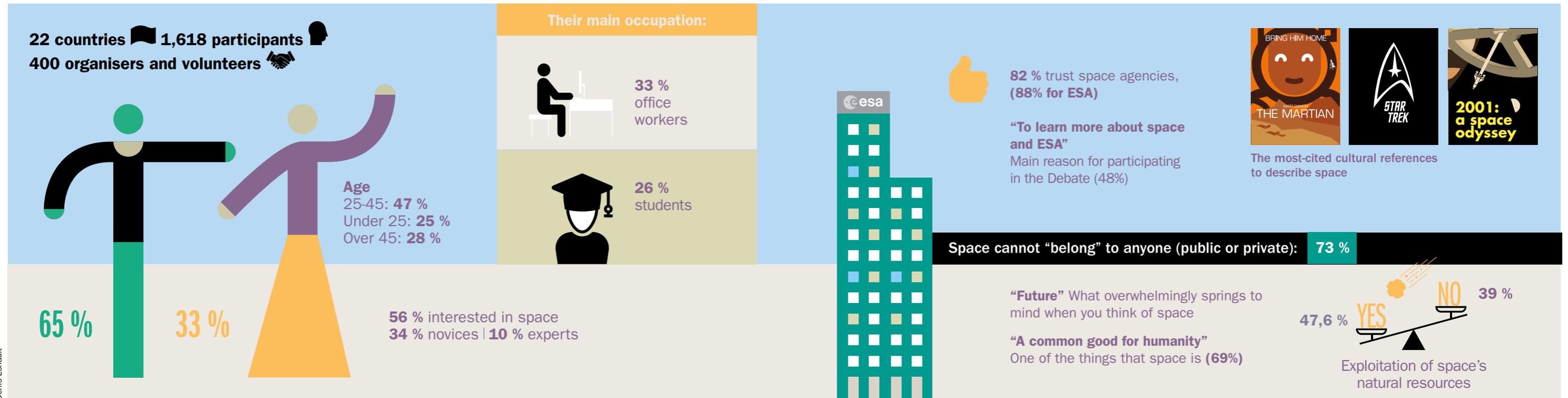
Jan Woerner : ESA can only benefit from enhanced public awareness of its activities. This can be achieved by a more active communication and branding strategy, reaching out to the general public via modern channels and with modern means. The Citizens' Debate — with a sample of 100-150 people representing, as far as possible, the population structure and diversity of each country to obtain citizens' perceptions and views on the role of space in their lives, public policies and the private sector — is an excellent example of just such a modern means of two-way communication. We plan to engage fully with tools and content fitting the current and future generations' interests, taking advantage of social media and reaching out to the widest network. Another means is, of course, our education programme. And there are many more instruments and ideas on how to further raise our profile in the eyes of the general public.

“By engaging in citizens' science, you can be much more than a passive user.”
Jan Woerner

WHAT PLACE MIGHT CITIZENS HAVE IN AN INSTITUTION SUCH AS ESA?

Jan Woerner : Our activities, ultimately, all serve the citizen — the weather forecasting, television and internet services or satellite navigation systems, that all goes without saying. My vision is, however, that citizens should not only benefit from Europe's space capacities and capabilities. You can be much more than a passive user by, for example, engaging in citizen science, by answering calls for ideas or challenges and, of course, by participating actively in the public debate.©

Who took part in the Debate and what do they think?



The day citizens set foot on planet ESA

On 10 September 2016, 2,000 citizens speaking 17 languages from 22 countries were mobilised to reflect on space issues.

The Member States of the European Space Agency (ESA) are located in three different time zones (GMT 0 to GMT +2). Participants had the following timetable, regardless of their time zone.

8h29 The first participants gather in the Debate room. Upon arrival, they are given a kit containing the Citizens' Space magazine, a presentation on the Agency prepared for the event, and a questionnaire designed to get to know them. After a quick welcome coffee, the Debate begins.

9h01 Each participant joins a group of five to six others, which is accompanied by a facilitator. The day begins with an introductory video: Jan Woerner, ESA Director General, welcomes the participants and explains the reasons for the Debate. The video is shown in each country, apart from Darmstadt (Germany), where Jan Woerner welcomes the participants in person. There are personal appearances all over: the astronaut Claudie Haigneré (France);

Philippe Willekens, from the ESA Director General's Cabinet (Belgium); the astronaut Claude Nicollier (Switzerland); the Deputy Prime Minister Etienne Schneider (Luxembourg); the Mayor of Noordwijk, Jan Rijpstra (The Netherlands); the Deputy Mayor of Odense, Steen Møller (Denmark); the astronaut Dumitru Dorin (Romania); the astronaut Bertalan Farkas (Hungary); and the astronaut Karel Dobeš (Czech Republic).

9h32 The first sequence is entitled "Space and me". The discussion starts after a short informative film. At each table, the facilitator sets out and reiterates the discussion framework at regular intervals and reminds participants of the rules for good dialogue, to enable favourable conditions for everyone to talk and express themselves. Following some lively discussion, the participants individually fill in the questionnaires provided by the facilitator at the beginning of the sequence.

10h17 The host introduces the second sequence: "Europe's role in space exploration and exploitation". During a short film introducing the topic, some people — "scrutineers" — use this time to go round the tables to collect the questionnaires from the first activity. The three scrutineers then input the results into an online tool. As soon as the questionnaire has been input, the results appear on the site citizensdebate.space.

11h15 Following an hour of intense discussion, the participants fill in the questionnaire for the second sequence. There is then a short well-earned break with pastries and drinks provided.

11h30 The host regroups the participants and announces the third sequence: "The global governance of space". After the film has introduced the theme, discussions are resumed at each table.

12h32 A routine is established: the latest questionnaire is distributed, completed and collected. The host announces the eagerly-awaited lunch break, but before anything else he/she asks the participants to take a few minutes to imagine the question(s) that they would like to ask if they met an astronaut, the ESA Director General or someone responsible for making decisions on future space policies.



Debate sequence in Ireland.

12h46 Lunchtime!

14h12 In the afternoon, each group starts with a video-conference discussion with another country taking part in the Debate. This is an ideal opportunity to compare ideas and underlines the European aspect of the day! The fourth sequence, "Let's go into space", differs in that everyone works together. Each group chooses one scenario from four options, then imagines a mission or a vision for the future of space. To get imaginations going, the sequence begins with a video that includes shots taken mainly from the International Space Station (ISS). The voiceover, by astronaut Claudie Haigneré, tells us about her downtime on board the ISS, when she would admire the Earth while listening to Maria Callas singing "casta Diva".

15h16 After participants' imaginations have run wild during this sequence, the host suggests a bit of exercise to keep the day's momentum going and to ensure that the home straight starts under optimal conditions.

15h22 The participants tackle the fifth and final sequence of the day: "Preparing the future of space for Europe". After a video to present the theme and about 40 minutes of discussion, the participants individually fill in the questionnaires.

16h18 Before bringing the day to a close, the host invites the participants to complete a short evaluation.

16h30 The host announces that the day has come to an end and profusely thanks the participants, directing them to citizensdebate.space, where the first results are available. A summary of the results will be sent to each participant at the end of the year.

16h45 The participants gradually leave the room or continue informal discussions in small groups. They intend to stay in contact. It was a great day and human experience! ☺



Five participants in the Dutch Debate.

22 countries for 23 debates

- Greece - Athens** (Corallia & si-Cluster) www.corallia.org & www.si-cluster.gr
- Romania - Bucharest** (The Romanian Space Agency ROSA) www.rosa.ro
- Estonia - Tõravere** (Enterprise Estonia - EAS) www.eas.ee
- Estonia - Tallinn** (Enterprise Estonia - EAS) www.eas.ee
- Finland - Helsinki** (Kupla Productions Oy Ltd) www.kupla.com
- Norway - Oslo** (Norwegian Space Centre) www.romsenter.no
- Sweden - Gothenburg**

(Pernilla Warberg Consultant Limited Company) www.pernillawarberg.se

- Denmark - Odense** (Coworking Odense) www.coworking odense.dk
- Poland - Rzeszów** (Technology Transfer Centre Cracow University of Technology) www.transfer.edu.pl
- Hungary - Budapest** (ORION Space Generation Foundation) www.spacegeneration.hu
- Austria - Vienna** (ICCR FOUNDATION) www.iccr-foundation.org
- Czech Republic - Prague** (Technology Centre CAS) - www.tc.cz

- Italy - Rome** (ISINNOVA – Institute of Studies for the Integration of Systems) www.isinnova.org
- Switzerland - Lucerne** (Swiss Space Center - SSC) - www.space.ethz.ch
- Germany - Darmstadt** (nexus Institute for Cooperation Management and Interdisciplinary Research) www.nexusinstitut.de
- Luxembourg – Luxembourg** (4motion) www.4motion.lu
- France – Paris** (Missions Publiques) www.missionspubliques.com
- Belgium - Brussels** (Missions Publiques) www.missionspubliques.com

- Netherlands - Noordwijk** (LEI Wageningen UR) - www.wageningenur.nl/nl/Expertises-Dienstverlening/Onderzoeksinstituten/LEI.htm
- United Kingdom - Edinburgh** (Keep Scotland Beautiful) www.keeptoscotlandbeautiful.org
- Ireland - Cork** (Camden Palace Hotel Community Arts Centre) www.camdenpalacehotel.org
- Spain - Madrid** (Knowledge Innovation Market - KIM) www.kimglobal.com
- Portugal - Lisbon** (Ciência Viva) - www.cienciaviva.pt

“Participants want us to take their opinions into account”

Citizens have a role to play in decision-making on research in general, and on the future of space activities in particular, according to Hans-Liudger Dienel, research fellow at the Nexus Institute, Berlin (Germany), who took part in the Debate on Space.



1. DOES AN AGENCY SUCH AS ESA REALLY NEED TO CONSULT CITIZENS?

Yes. Firstly, ESA is an important international scientific organisation, whose work is greatly admired. However, many citizens haven't heard of it or aren't very familiar

with it. And yet, as citizens of Member States of the European Space Agency, they contribute to the Agency's budget. ESA is therefore dependent on money from European taxpayers. Then, you have to take the concept of “citizen science”

into account, at two levels. On the one hand, citizens should participate in specific interdisciplinary research projects — this is possible. On the other hand, they should take part in strategic decision-making defining the future of research. However, up until now it was the governments of Member States that set the agenda with experts from relevant fields. By involving citizens in preparing decisions on the future of its activities, the Agency can boost its legitimacy and image.

2. AREN'T EXPERTS' OPINIONS MORE PERTINENT THAN CITIZENS' OPINIONS WHEN TALKING ABOUT THE FUTURE OF SPACE RESEARCH?

On the premise that the citizen is the sovereign of European institutions, why not involve this sovereign in the necessary decision-making process on the future of European space policies and research? This perspective alone is enough to justify a process of citizen participation. Moreover, ESA's space activities have a significant impact on citizens' daily lives. Experts' opinions are crucial to defining ESA's priorities, but the opinions of those who fund these space activities and who are affected by them should be just as important. Participants in the Citizens' Debate on Space for Europe were geographically, socially and demographically diverse. They added their own opinions and experiences to the Debate, which

should be regarded as a significant asset.

3. WHAT ARE THE MAIN LESSONS TO BE LEARNED FROM THE DEBATE?

Firstly, that the participants are favourable towards cooperation. They want to see the public and private sectors work together and see the countries cooperate. They also emphasise the role that the international organisations can play in managing space activities. Furthermore, they want the profits from European space activities to be widely shared between the various sectors, in Europe and beyond. Finally, and once again, they confirm their interest in participating, now and in the future. They want decision-makers from ESA and Member States to take their opinions seriously.

4. YOUR AGENCY WAS IN CHARGE OF ORGANISING THE DEBATE AT DARMSTADT. WOULD YOU SAY THAT THERE WERE DIFFERENCES BETWEEN COUNTRIES IN TERMS OF EUROPEAN OR GLOBAL QUESTIONS?

We're living in times of growing nationalism. However, giving citizens the opportunity to talk and debate about space research and policies strengthens the supra-national view. In Germany, a country with a very strong tradition of space research and industry, the predisposition towards a supra-national vision was especially noticeable, and perhaps easier than in other countries. €



“Citizens endorse space technology to meet the challenges of humanity”

Nathalie Meusy supervised the organisation of the Citizens' Debate on Space for ESA. She says people understand the contribution space can make to the challenges of sustainable development.

WHY DID YOU RESPOND TO CITIZENS' DESIRE TO BE INVOLVED IN ESA'S DESTINY?

We weren't really aware that there was a desire when we suggested this Debate. It just seemed the obvious, natural thing to do. We mustn't forget that the public are both actors in, and users of, space technology: actors in terms of their contribution, since they pay for space programmes through their taxes; users, perhaps unknowingly, of applications and services that are provided by space technology every day.

Our desire to interact also involved an element of wishing to be accountable to those who put their trust in us or invest in a mission. They already do this indirectly, of course, through their elected representatives and national delegates on the Council, ESA's highest governing body. But I sometimes think that you can't beat direct dialogue, particularly in the context of an informed debate. This participatory discussion was also intended as a mark of respect, of consideration, towards our stakeholders. Our aim was to innovate, to open ourselves up and transform our way

Nathalie Meusy (ESA) et Yves Mathieu (Missions Publiques) and their teams organised the Citizens' Debate

of communicating and talking to the wider public. And, with hindsight, we can see that this was a good approach to take as it's been a success.

IS AN INSTITUTION SUCH AS ESA REALLY CUT OUT FOR A PARTICIPATORY DEBATE?

ESA's governing body has always been akin to that of a classic intergovernmental organisation. It is naturally careful, even conservative, regarding the way space programmes are run: it is a matter of ensuring the maximum chance of success. And yet this careful management has always been accompanied by the kind of calculated risk-taking that goes hand in hand with any space-related project. Is space not so much a place of the unknown as it is one of potential discovery? This approach has paid off, as can be seen by the success of the numerous European space programmes implemented since the creation of ESA, their agency in Europe. This Citizens' Debate on Space was similar in outlook. It was a real risk in terms of governance: no one knew what might come out of the consultation. It was an important stage in space-sector governance because nothing similar has ever taken place before. It was quite simply a world first!

DO THE PUBLIC SEE SPACE AS SERVING SUSTAINABLE DEVELOPMENT?

Strictly speaking, the challenges of sustainable development are not particularly well-known by the general public. They are, however, well aware of the great challenges facing humanity over the coming years. And this collective awareness has only grown in recent years. The great challenges of the new millennium relate not only to climate change but also to natural disaster management, education, health for all and epidemic prevention or monitoring. There are also issues of immigration, water management, energy, marine protection, aquaculture and fisheries, etc. There is a long list of challenges to which space-sector services, applications and programmes can respond. Once people are aware of the contributions that space programmes can make to all these challenges, not only will they endorse them; they will want more. One of the most interesting outcomes of our Citizens' Debate was the desire to see all of humanity, and the whole planet, benefit from these contributions. €

Over to the participants

The 1618 participants of the 23 discussions, meeting in 22 different countries, wanted to send a very strong message to ESA's leaders. The following provides a general and uncensored overview and summary of the discussions.

"We can't look at space in the same way we have airspace, planting our flags all over the place."

A participant from Luxembourg

"For me, space is a little frightening, and so I would like to know more about it."

Tomasz, 55, Poland



Switzerland

A global and human-centred project. It was from this perspective, above all, that the participants in the Citizens' Debate viewed space-related issues. They defined themselves as citizens of the world, as part of humanity. They felt that space policy should target wider societal issues such as environmental challenges. For these individuals, there was no doubt at all: space is a common good for humanity.

"Clean space". The issue of waste is therefore clearly of great concern to them. Many saw space as a life raft for future generations, and thus somewhere that absolutely has to be kept clean and tidy.

Innovation. In the participants' eyes, space is also clearly an opportunity and, as such, requires audacity. Exploration projects need to demonstrate their effects on our daily lives, and benefit the Earth and all humanity, now and in the future. They therefore felt that building a "Village on the Moon" would be a first step in this direction.

Communication and interaction. The window for public discussion opened up by ESA during the Citizen's Debate on 10 September 2016 set a precedent in this regard. The participants felt that this was a great idea and needed to be continued. They even felt that tools should be created to enable the public to interact with space missions and space policy in order to create further interest and benefit from their collective intelligence.

"Space should not be seen as an easy way out. We have problems on Earth that must be prioritised."

Simone, 44, Netherlands

"The general public should have greater influence over ESA's decisions."

Andrea, Denmark

"It would be disastrous to see organisations exploiting space resources for their own good. We have to avoid a battle for resources, as we have seen on Earth."

Lars, Denmark

"Humanity has no business in space, except to colonise it, and even then that should begin with robots."

Hendrick, 23, Estonia

"Space debris is caused by all of us. We need to create a mediation body, with responsibility for creating the link between cleaners and payers. The polluters should pay to clean up the debris. Space service suppliers should incorporate the cost of the debris into their tariffs."

Laura, 32, Hungary



Czech Republic

"We need to pay close attention to the goals of space tourism, as well as those involved in it."

Valeria, 48, Italy

"Exploring the unknown, that's human nature. That's how we obtain new technologies and increase our knowledge. Something that isn't possible today may well be tomorrow."

Chris, 30, Switzerland

"I would volunteer for a brigade to clear up space debris."

Sunna, 46, Norway

"Sending people into space is a source of hope for us."

Kristian, 24, Norway

"We lack vision and missions. Our vision should be universal. The most universally shared objective is the survival of humanity."

Petr, 36, Czech Republic

Participants loved the Citizens' Debate on Space for Europe

93% would recommend participating in the next Debate to their family and friends.

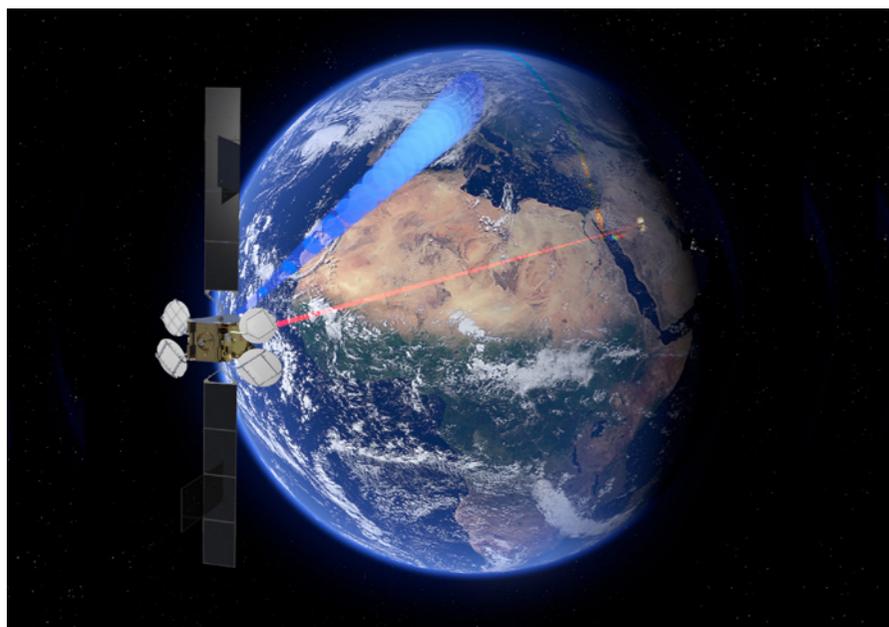
95% thought ESA should organise more discussions with the public, in this or a different format, in the future.

92% felt that varied and/or opposing opinions were expressed during the discussions.

Finally, 75% felt that ESA would listen to the opinions voiced during the Debate



Italy



Satellites (Sentinel 2A shown) support many daily services.

Agreement... and disagreement

Is space a place of opportunity for humanity or an empty and unwelcoming void? Should we be concerned with space pollution? Should we send astronauts or robots into space? The Citizens' Debate enabled us to take stock of both the agreements and disagreements aired by a panel of European citizens.

The range of questions asked of the 1618 participants required personal perception as well as a political conception of space programmes. By launching this initiative, Jan Woerner's team embraced the plurality of citizens' perceptions with regard to space and dis-

covered how they feel about the space challenges of tomorrow. The objective was not to achieve a consensus in the short or medium term, but rather to understand the broad positions of our citizens and, more particularly, the issues worthy of debate. For most

The gender gap: some differences

An analysis of the outcomes of the Citizens' Debate on Space highlights some significant differences between men and women. For example, the issue of forecasting natural disasters and humanitarian crises was a particular priority for women participants. Proposals relating to innovation and technology, however, were more favoured by men.

participants, their main interest in space programmes lay in their contribution to the production of scientific knowledge about the universe and Earth, pushing back technological boundaries and exploring new territories. People were clearly interested in space innovation and exploration proposals; preferably proposals related to improving international cooperation, preventing natural disasters and creating services for our daily lives. Nonetheless, when the 1618 European citizens were asked, with the same range of possible responses, not about what interested them but what they felt the priorities should be for space programmes, we saw an contrasting dynamic. For example, while the proposal to create new services for our daily lives and industry through space programmes was not of great interest to participants (21.43%), this did not prevent them from thinking that it was a priority (30.07%).

"Fair return"

In economic terms, and particularly in the area of job creation and development, the participants felt that the space activities conducted by ESA should primarily be of benefit to either ESA Member States (35%) or the world (28%). It was therefore difficult to reach a consensus around the legitimate or priority beneficiaries of the space activities conducted by ESA. Nonetheless, half of the participants wanted to maintain the principle of a "fair return", meaning that 85% of the money allocated by each ESA Member State should be spent on the industry or services of that state.

The participants were divided on the issue of security: 41% felt that ESA should develop programmes aimed at improving global security; 21% thought that these programmes should be "limited" to the European level. Nonetheless, one constraint on ESA's work on security programmes was noted: 16% of participants did not want this at all. And 13% of them had no clear opinion on the issue, even after discussing it.

Finally, 43% of participants were favourable to dual use — security and civil — of the new technologies, provided this was appropriate. ©

ESA/ATG medialab

Europe has found its place among the stars

Has the idea of space, and the opportunities it opens up, become obvious to the general public? The response is positive but not completely clear-cut.

On first analysis, some outcomes are particularly noteworthy. According to participants in the Citizens' Debate, sending European astronauts into space, ensuring independent access to space or even the importance of Europe and its visibility as a major player in the space sector did not figure in the picture of significant European achievements of the last 50 years.

Instead, on a number of occasions, the participants bore witness to a vision of space that would benefit humanity and its future. Space often emerged as a common good for humanity, with space activities needing to be conducted in that spirit. For 41% of participants, the European Space Agency should contribute to improving global security. 21% limited this choice to within European borders. Moreover, nearly half of the participants (46%) felt that the most important space success over the last 50 years was... the setting-up creation of ESA. This reflects a more or less global vision and approach to issues, and perhaps accounts for the relatively little interest shown in more specific proposals. What you might mistake for indifference, however, is actually down to the fact that citizens have already taken some of these issues for granted. This is true in terms of sending astronauts into space, ensuring independent access to space, and Europe's place as a major player.

The public: craving information

In terms of these issues, space is clearly established in people's minds. A number of the responses drive this point home. There is thus broad trust in the agencies — 82% of respondents — and in space activities in general (82%). It is interesting to note the

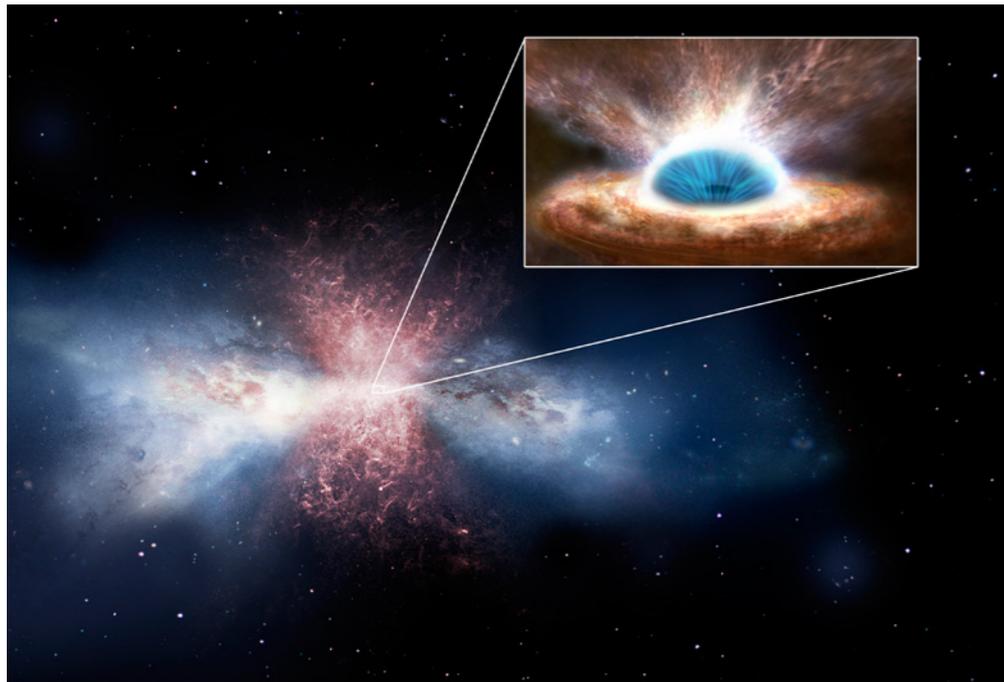
ESA/ATG medialab



Philae leaves the Rosetta probe for Comet 67P/Churyumov-Gerasimenko.

very strong confidence in ESA (88%) and, more generally, in European space activities (85%). Moreover, 89% of participants rejected the idea of space as an empty territory devoid of all interest. 85% of respondents felt that it was still important to send European astronauts into space. Communication was the theme that drew most comments and written responses during the Debate. People want information on space and on ESA's activities. And they want it in different forms: interaction, social media mobilisation, publications on the Agency's successes, meetings and discussions organised with the public. This needs to call on people's emotions, through a project like the Apollo mission. ©

Space for humanity
Space is perceived as a place for survival, a kind of "life raft", according to participants' written contributions. In fact, they see the establishment of settlements on other planets as a real possibility. 37% felt that the main aim of sending women and men into space was to prepare permanent bases beyond Earth.



Black hole blowing galactic gas.

What should space be for?

The priority space activities noted by European citizens included the sending-up of probes and satellites and the broadening of our scientific knowledge.

The magnificent Rosetta adventure came to an end just a few days after the Citizens' Debate on Space took place. This was a symbolic project and so it was unsurprising that citizens made sending satellites and probes into space a priority objective for ESA. This was the number one priority for 37% of those participating in the Debate.

The other important

tasks "chosen" by the citizen panels were, in descending order, cooperation between ESA and other agencies (22% of respondents), supporting governments and people during humanitarian crises (21%) and supporting the construction of a highly competitive European industry (19%). Of lesser concern to the participants were: sharing space technology with

emerging countries, sending astronauts into space and European space autonomy. These latter proposals all scored less than 10%.

Science, innovation, exploration

In addition to the stated priorities, the participants in the Debate bore witness to diverse expectations with regard to space activities. These included, in no particular order, international cooperation, tools of benefit to society and even the issue of economic benefits! This analysis was confirmed when the participants were asked to state the broad principles that should, in their eyes, guide European space activities. Their preferences were divided almost equally between three proposals. Firstly, that these activities

should be mainly driven by science in order to generate knowledge (34%). Secondly, the participants wanted a stimulation of technological innovation in Europe (33%). And, thirdly, the capacity to explore and exploit space (29%).

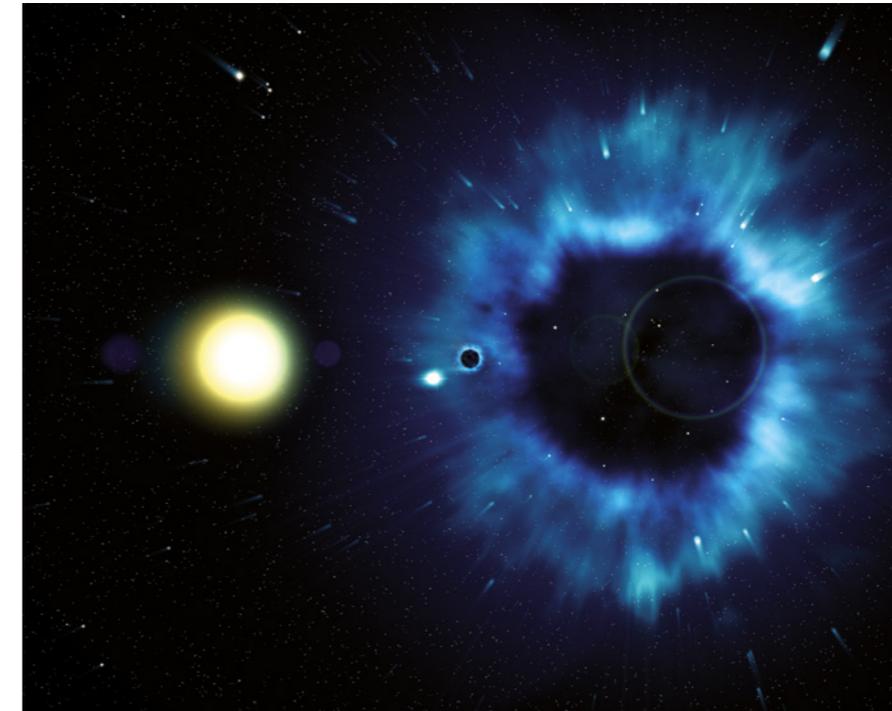
The data challenge

The data currently being produced by ESA's space programmes can be freely used by whosoever wishes. However, in actual fact it is difficult for an ordinary citizen to do so. Nonetheless, almost half of the participants questioned on this issue (48%) felt there was no need to change this. 52% felt, in contrast, that the raw data should be processed before being made available. On this issue, 25% of participants felt that ESA should support the emergence of an economic sector to analyse the data, 19% that ESA should process them itself before making them available to everyone and 9% felt that ESA should analyse them but control their dissemination. This data market is expected to expand significantly over the coming years. Faced with this situation, the participants felt that this should remain free of charge. 46% stated that it should remain free for everyone, 33% only for citizens and not-for-profit organisations and 13% that it could be free of charge or paid for, depending on ESA's priorities. Only 4% felt that it should be paid for. €

ESA/ATG medialab

Back to the future

How do citizens see the space sector of tomorrow? A theatre of diversified activities, in their opinion it will be at the service of both humanity and our daily lives.



Artist's impression of a black hole.

Space is the future. The two ideas are closely linked in the minds of the Debate's participants. The evidence? When we asked the 1618 citizens present to complete the phrase "Space, for me, is..." with just one word, the term "future" came up 176 times. The same exercise, when applied to the phrase "For me, space activity is...", showed that participants associated this with research, exploration, innovation, development, astronauts and even... the future! To clarify, people are mapping out a future in which humanity will depend heavily on space-based systems. The conclusion to this is, in their opinion, that space is a common good: 90% agree with this proposal. Space

activity is also a source of scientific discovery and research (99%). Finally, the participants felt that the main aim of sending humans into space should be to generate knowledge and technologies useful to life on Earth (39%), to prepare living places beyond Earth (37%), and to gather knowledge for educational purposes (20%).

Educating and participating

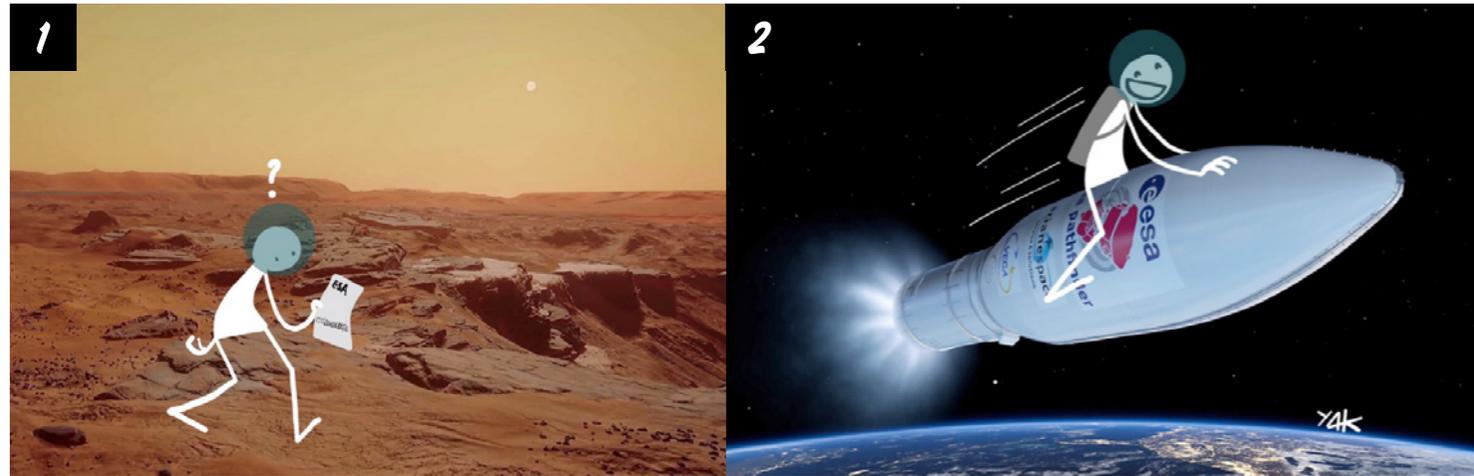
53% of participants felt that the most effective way of generating interest in space was through educational programmes in schools and universities. They were also strongly in favour of different ways of making citizens active (16%): contributing personally to the design and exploitation of a space programme, contributing personally and financially or even using a satellite or robot. ESA's educational platform is available to children, young people and teachers: esa.int/esaKIDSen

"Humanistic" and utilitarian activities

In the short term, they felt it was essential to maintain a human presence in space (90%). The participants were very open to new forms of space activity, particularly for economic reasons. 72% of them thus thought that ESA should be involved in developing space tourism. 34% of participants felt that the development of space activities should be mainly driven by science, in order to generate discoveries about the universe and Earth. For 18% of them, the most important thing was to meet global challenges: sustainable development, climate change, conflicts and natural disasters. Three other ideas — out of the 11 proposed — gained at least 6% of responses: generating more services to improve the quality of life on Earth (13%), supporting the development of new technologies (12%) and driving space colonisation (9%). The participants called widely (84%) for the opening up of space programmes to non-traditional actors in the space sector: NGOs, start-ups, citizens, schools, universities, etc. Only 6% of participants were opposed to this idea. A vision of the future was thus mapped out. In the minds of our fellow citizens, space will or should be a theatre of activities at the service of humanity, through research and innovation. These activities will co-exist alongside other more economic and/or applied activities that are useful, even essential, to our daily life on Earth. €

If you please, draw me a space mission

One of the most original sequences of the Citizens' Debate invited participants to imagine a future space mission. The following have been selected from over 200 missions that were designed.



A big thank you to Yacine Ait Kaci, the creator of Elyx, the UN digital ambassador for the Sustainable Development Goals. Elyx is on Facebook and @elyxYak on Twitter.

1 The quest for extraterrestrial life

One in five of the 200 suggested missions involved looking for life elsewhere. Some of these proposals were very daring, such as a multi-generational space quest, with the intention of reaching and experiencing at least one habitable exoplanet. Leaving aside the search for extra-terrestrial life, many of the proposed missions involved permanent human settlement on the Moon (40%) or on Mars (30%). One in five missions involved outer space. Europa, one of Jupiter's moons, was one of the top four destinations (1 in 10 missions). The aim would be to find life there.

2 Holidays among the stars

Space tourism is all the rage. It is a primary focus or an associated service in one in six missions. In some of the more extreme suggestions, space hotels even appear, attached to the International Space Station, and airlines become air- and spacelines.

3 Mission... Earth

Some missions examine the idea of living spaces, of consumption and recycling of resources within an environment, with a view to consuming very little in the way of external resources apart from solar energy. Living in space should thus teach us to live better on Earth. These missions aim to change our views of humanity, and to make it more united, more peaceful and happier. Some even foresee the blurring and subsequent abolition of borders between countries. Real spinoffs for food and health are expected, while telemedicine would be widely used, both on Earth and on space stations and bases, and solutions would be found for all physical disabilities. Energy consumed on Earth would be produced in space, hologram technologies would expand and new jobs would be created. Materials from space would be brought back to Earth or the Moon for exploitation.

4 A clean sweep

Almost one mission in seven addresses the waste orbiting the Earth. Some imagine the use of "serious games" technology to launch a huge

YAK - or

space-cleansing operation.

5 The Moon and its surroundings

One of the ideas that recurred most frequently was using the Moon or the orbit of the Earth as a launch pad for further missions, or as a transfer station, for example for missions to Mars. This would create an interplanetary human community. Vessels and equipment for further missions would be made there, to avoid costly launches from Earth. Mineral resources from celestial bodies would be used to supply automatic factories. Several missions were based on elevators between the Moon and Earth, which would make departure and return spectacular, less costly and more accessible than using rockets.

6 Social innovations first

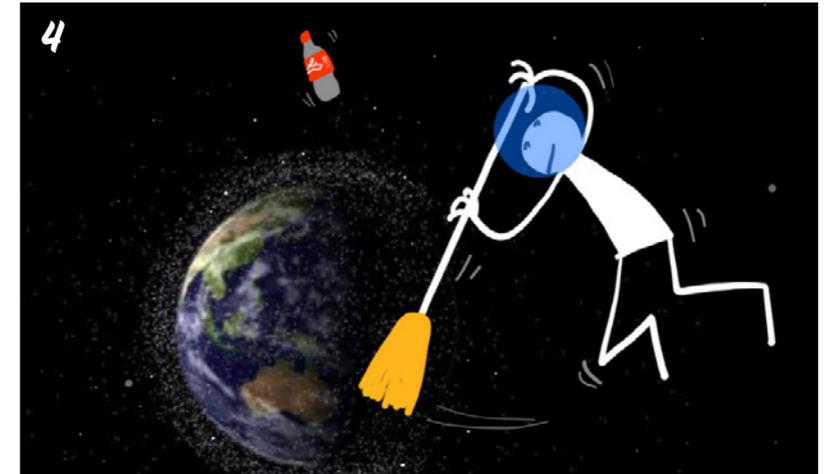
The most remarkable and varied innovations proposed were social ones. Teams for these missions would be made more diverse, to increase the range of benefits that the missions would have: for example, artists, people with disabilities, educators and children could be sent. Each mission would take its own teacher, who would be responsible for maintaining contact with human beings using a robust learning programme. The Moon Village would have a university. Space missions in general, and their educational aspects in particular, would increase humanity's awareness of major causes. A business centre would also be created at the heart of the Moon Village.

7 Collective intelligence in charge

Social networks play a major role in missions created by participants. The web is imagined as a way to support teams in their decision-making. The content and return date of some missions are designed to change in accordance with contributors' wishes, as expressed via social networks. "Intelligent" space would be created from collective and digital intelligence.

8 And more...

- A (robotic) mission to be sent close to a black hole. Using new propulsion methods, this mission would access distant places in the universe more quickly.
- Virtual reality. Cameras placed on the Moon, on Mars or on board space stations would enable humans back on Earth to reach these places whenever they want.
- Crowdfunding is proposed as a way of funding



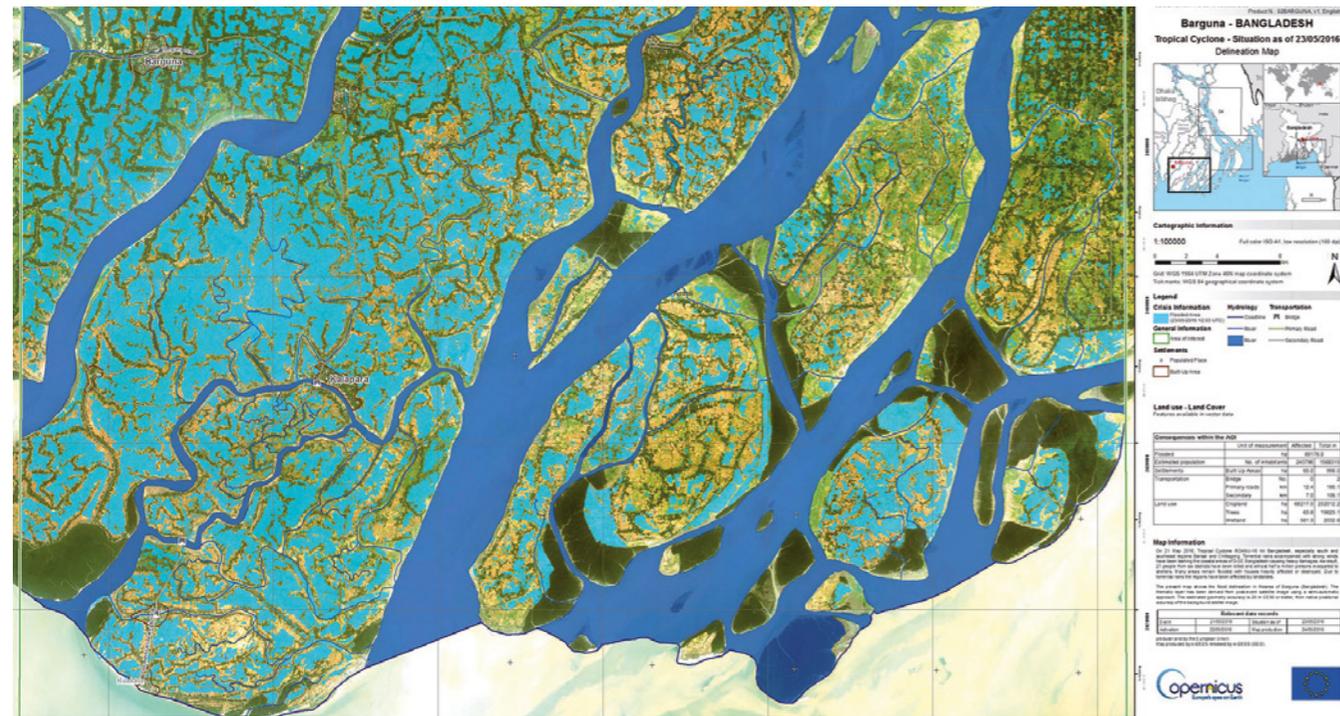
a mission to Mars.

- One scenario sets out a catastrophic situation in which the Earth has been hit by an asteroid. This situation would lead to a complete review of protection programmes that had hitherto been deployed.



Elyx appears in "Bienvenue dans ton monde" (Édition Nathan), which allows young people to take charge of their world in 2030.





Mapping of flooding in Barguna (Bangladesh).

Space programmes often generate a huge amount of raw data of all kinds. This may be collected during exploration missions, such as when the Rosetta probe and the Philae robot explore Comet 67P/Churyumov-Gerasimenko. Furthermore, satellites orbiting the Earth transmit enormous volumes of data every single day, about the atmosphere, greenhouse gas emissions, forests, humanitarian operations, etc. ESA currently makes these data available to any person or organisation who asks for them. Once it is processed, this material can drive innovation and the development of major new services and applications. The value of such data on the big data market could increase five-fold over the next decade. Should we henceforth manage or process these data? If so, how? Should ESA adopt different

Who owns data collected in space?

Every day, astronomical quantities of data are gathered in space. Some of these data are potentially of huge economic and strategic significance. The citizens suggested some rules to prevent a free-for-all.

procedures for making data available, depending on the recipient and the intended use?

A gold mine that needs guarding

Participants in the Debate answered questions about current and future uses of data. First there was the question of making data available. Here, the status quo prevailed. For 46–48%

of respondents, ESA should continue to make raw data available for free to anyone who requests them. This is regardless of whether the requester intends to profit from these data. Then there is the question of how these data will be used. There are two opposing visions at work here. Some see a potential goldmine in these data. Making them available will encourage economic growth

and profit, and will help private enterprise to drive innovation and economic activity. 25% of participants therefore believe that ESA must support the emergence of a sector in charge of processing and analysing data in order to create new economic and social value. Others, conversely, believe that these data are a common good that must be used for the benefit of all, for the sake of solidarity. 33% of participants believe that data must be freely available for non-profit use, but must be paid for in other cases. Some participants fear that these data will be put to military use. The particular set of big data is still an abstract concept. What type of data will be made available in years to come? How will it be used? The public is still waiting for explanations. ©

Copernicus Service Information (2016) / Copernicus EMS / e-GEOS

ESA - ScienceOffice.org

Natural resources in space: the Wild West, up above?

Cleaning space, exploiting its resources, even appropriating them. Events of recent years have created challenges that were previously unknown. Citizens want clear governance to be put in place for space.

A great many entities are involved in space, yet the interactions between them do not fit any model of governance seen here on Earth. There is of course an International Space Station. The United Nation recognised this diversity internationally in its 1967 Outer Space Treaty. The new challenges of space require a new type of governance and common regulations, particularly governing the exploitation, appropriation and cleaning of outer space. As for the question of natural resources in space, in 2015 the President of the United States of America, Barack Obama, passed a law allowing American citizens to appropriate such resources. At the same time, projects to exploit asteroids were emerging. This trend is opening up a potentially fruitful scientific debate, but also raises a question: will it be first come, first served?



The binary asteroid Didymos

Yes to cooperation, no to appropriation

When participants in the Debate addressed the issue of ownership, a consensus began to emerge. Space, which is first and foremost a public and inalienable

good, must be subject to international governance based on cooperation between states and sectors: the public and private sectors, research institutions and profit-making bodies. Put simply, exploitation is generally accepted if it can be regulated. However, the citizens stated that they were opposed to any “territorial” appropriation or attempt to impose sovereignty on space. They also expressed a wish

that any exploitation would help to meet challenges on Earth. In concrete terms, who would be responsible for applying these principles? 68% of participants in the Debate called for the creation of an international organisation, perhaps under the umbrella of the UN. This organisation would be responsible for space traffic (orbits, launches and trajectories). ©

The thorny question of debris

Space debris is any artificial object that is orbiting the Earth, which was taken there as part of a space mission and which is not/no longer in use. It is estimated that over 29,000 objects of more than 10 cm in diameter are orbiting the Earth. Some of these pose a danger to the ISS. Several space agencies have put in place cleaning initiatives, following the model of ESA's Clean Space. However, despite the existence of COPUOS (1), there are no international regulations that require countries to remove or destroy the space debris that they leave. Participants in the Debate believe that an international institution such as the UN should oversee the clean-up of such pollution. Young people seem less troubled by this issue than their elders. A third of young people considered that debris was not a problem and that space can be used as a dustbin! As for the costs of space cleaning, the participants favoured the polluter-pays principle adopted by the OECD (1972) and in the Single European Act (1986). This is also a clear trend in climate negotiations on Earth (COP-CMP).

(1) COPUOS: United Nations Committee on the Peaceful Uses of Outer Space

1. How should we innovate?



The entire point of space travel is to move towards the unknown. Innovation, in technology and in society, is central to this. ESA is therefore constantly on the lookout for disruptive processes and technologies. With this aim in mind, its 16 “Business Incubation Centres” throughout Europe are designed to foster new ideas and keep Europe at the forefront. Their calls for proposals mean that those with innovative projects can apply at any time, addressing areas as varied as the environment, health and lifestyle. Participants expressed the wish to see innovations in the space sector used to meet the challenges faced by humanity. Returning to the Moon and building a “village” there would be a powerful way of achieving this goal.

2. Finding other ways to inform



Space is a fascinating subject. For ESA, it provides a rich source of material to reach a wide variety of audiences: industry, researchers, the general public and political decision-makers. The Agency is investing in social networks, online video channels such as YouTube and conferences such as TEDx. The animated adventures of the Rosetta probe are one illustration of this. Participants in the Debate strongly support this idea, and in their comments they demonstrate a great thirst for information about space-related activities, preferably in a variety of forms.

3. Greater interaction



ESA, by its very nature, interacts with many different bodies at once: Member States, European institutions, major international bodies and industry partners. These interactions are already highly fruitful, as the success of the International Space Station attests. Nevertheless, ESA is aware of the need to be even more open. Innovative businesses, NGOs, universities and citizens are just some of those asking to interact with it. Participants in this first Debate on Space expressed a clear wish that the event be repeated, and that the link between ESA and citizens be strengthened.

4. Inspiring and dreaming



Space exploration can potentially transform some of humanity’s dreams into reality. ESA has taken this idea on board, with the Moon Village as just one illustration. Participants in the Debate share this vision. They cite multiple cultural references, particularly films, which show the amazing potential of the imagination to mobilise people. They suggest that missions as “powerful” as the Apollo Programme be devised.

Space as a common good

The time when space was an exclusive playing field for a few nations is now over. New players have emerged in the field, and others are asking for a role: industry, universities, citizens, etc. in the context of an increasingly digital and globalised society. A new era is upon us: “Space 4.0”. ESA is no mere passive watcher of this change: it is seeking to make its mark in four areas: innovation, information, inspiration and interaction. These “four i’s” will form a structure for all of the Agency’s future projects, and collectively will be known as “Space 4.0i”. The Debate held on 10 September was an opportunity to put this vision, and related present and future projects, to the critical and constructive input of more than 1,600 people from all walks of life who took part in this one-day event.

5. Autonomy



One of ESA’s goals is to ensure Europe’s autonomy in the space field, in a safe and healthy environment. Participants in the Debate are particularly open to the idea of keeping space clean and dealing with debris, and most of them became aware of the strategic dimension of this during the conversation.

6. Encouraging and supporting competition in the European space sector

ESA is continually creating links with European industry. It provides support in the design and marketing of new products and services. Participants in the Citizens’ Debate are aware of the wider effects of these ESA activities for the European economy. Nevertheless, they do not wish the pursuit of economic goals at any price. They were firm on one point: exploitable natural resources found in space must remain inalienable.

7. Making space an integral part of European economic life and society

One of the strengths of Europe lies in the variety and diversity of its actors. This is particularly true for the space sector, in which national public sector organisations, European organisations and the private sector all play a part. The vision of a united European space sector does mean, however, that each of these bodies plays a specific role within a balanced system. With this aim in mind, ESA has developed programmes and activities that are in line with European space strategies. To increase levels of integration, Debate participants believe that we should “think global” and ensure that European space projects address the challenges that society faces.

From space 1.0 to the present

ESA has created a new way of dividing the space age into sections. The first Space Age “Space 1.0” saw the initial steps in astronomy, or indeed astrology. Then there was “Space 2.0”, much closer to our own time, during which nations involved in space discovery went down the path that led ultimately to the Apollo Moon missions. The third, “Space 3.0”, began with the creation of the International Space Station (ISS). This marked the point at which nations used space as a new focus of cooperation and exploitation. The emergence of new private actors in the space sector has marked a new era: “Space 4.0”.



Jan Woerner, ESA Director General, presents the results of the Debate in the presence of the directors of the world's major space agencies at the International Astronautical Congress in Mexico.

The Citizens' Debate on Space: to infinity and beyond!

Experts, the general public, yourselves and your friends... The outcome of the Debate is of interest to all Earthlings. Everyone can get involved and contribute their own vision of space.

The Citizens' Debate on Space has made a big impression, even beyond Europe's borders. Jan Woerner, ESA's Director General, engaged with participants' responses in the days following the Debate. On 26 September 2016, at the annual congress organised by the International Astronautical Federation, he presented the Debate's results, in the presence of the directors of the world's major space agencies.

Results accessible to all

3,000 decision-makers from space programmes around the world heard these words. Since then, he has continued to

promote the Debate's results both within and outside the Agency. The results were presented at a press conference in Paris on 7 November 2016. The responses to questions raised in the Debate can be consulted in all 17 languages in which the Debate was held. The results can be compared by country, using filters that can be combined for a more granular view by age group, gender, occupation and participants' knowledge of space. A summary of results is also available. This contains an analysis of participants' responses to multiple-choice and open questions, their comments and joint projects. ©

How about organising your own debate?

You can use the debate creation tools, which are available in 17 languages, in your school, club, university or association.

The Citizens' Debate on Space for Europe uses various tools; videos introducing the five themes for the debate; the *Citizens' Space* magazine (24 pages) and a four-page information leaflet entitled *ESA and You*.

These tools are available in 17 languages, at www.citizensdebate.space, in the "Replica Debates" section, where you can also find the debate questionnaire, the introductory document used on the day of the Debate, and all the resources used by participants.

How to organise a debate

1 hour. If you have an hour: choose one of the five debate sequences.

2-3 hours. If you have an evening: choose two debate sequences.

1 day. If you have a day or equivalent (e.g. two half-days, 5 one-hour sessions): stage the debate in its entirety!

Caution! However many sequences you organise, refer to the Replica Debates guide, which will show you how to lead each sequence. Download and distribute the *Citizens' Space* magazine and the *ESA and You* leaflet before the session, and download the questionnaire, the video(s) relating to the chosen sequence(s) and the Debate tools.

Results of the Debate are available at www.citizensdebate.space and you can take part in the conversation on Twitter using @ESAcitizens and on Facebook by searching for @esacitizensdebate.

