HORIZON 2020

EPIC

Report

D5.3 Yearly Dissemination Report 2015

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1 INTRODUCTION

In the frame of the Electric Propulsion Innovation & Competitiveness (EPIC) project, (grant number 640199) and more specifically it's Work Package 5 "Dissemination Education and Outreach", this document has been produced with the aim to describe the activities performed in by the EPIC PSA regarding Dissemination, Education and Outreach (Task T5.1 and Task T5.2) during the first year of execution of the project. These activities are in line with the agreed Dissemination plan RD1 containing the dissemination objectives, target groups identified, and the structure, means and activities to ensure successful and wide dissemination of project results as well as maximising the project visibility.

The present document is the deliverable D5.3: *Yearly Dissemination Report 2015*.

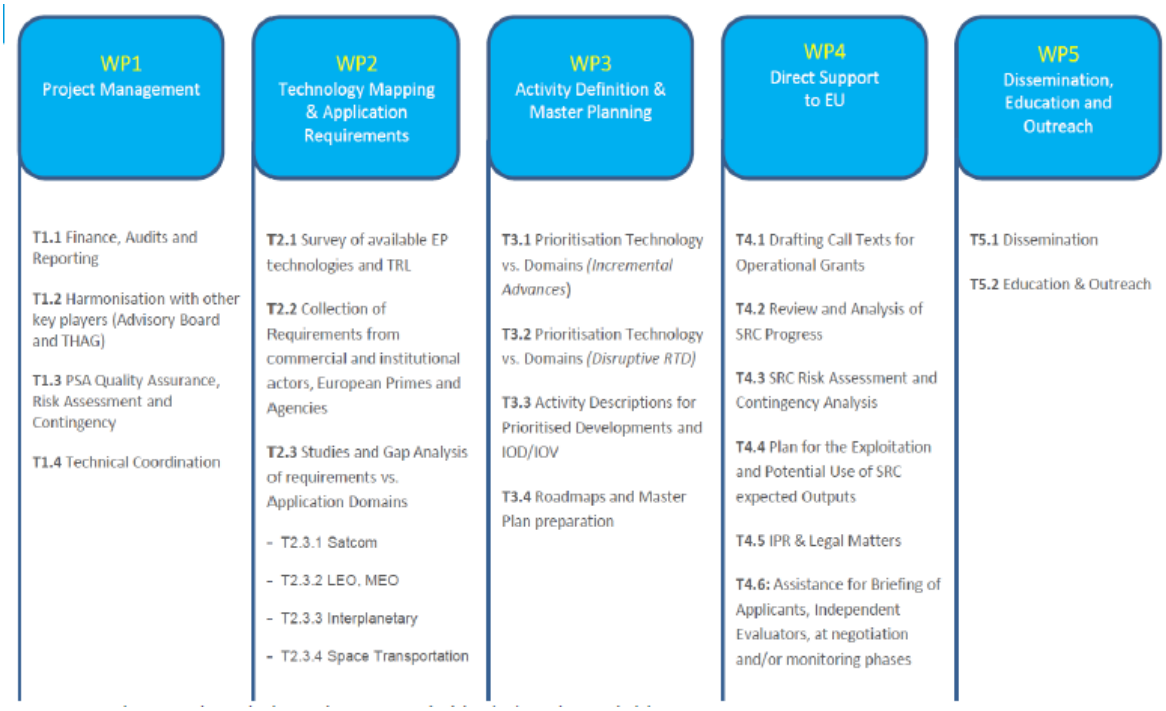


Figure 1.1: EPIC Work Package Structure

2 REFERENCE DOCUMENTS

[RD1] EPIC-CDTI-5.1-RP-D5.1 Dissemination plan

[RD2] EPIC-CDTI-5.1-RP-D5.2 Web Portal for EPIC

[RD3] EPIC Grant Agreement: COMPET-03-2014 EPIC Grant Agreement for: Coordination & support action (Ref. Ares(2014)3706837)

[RD4] EPIC-CNES-2.2-RP-D2.3 Workshop 1

[RD5] EPIC-DLR-3.4-RP-D3.4 Workshop 2

3 ACRONYMS & ABBREVIATIONS

ASI	Agenzia Spaziale Italiana
BELSPO	Belgian Science Policy Office
COSMOS	Continuation of Cooperation Of Space NCPs as a Means to Optimise Services
CDTI	Centro para el Desarrollo Tecnológico Industrial
CNES	Centre National d'Études Spatiales
DLR	Deutsches Zentrum für Luft- und Raumfahrt
EC	European Commission
EPIC	Electric Propulsion Innovation and Competitiveness
ESA	European Space Agency
EU	European Union
H2020	Horizon 2020
NCP	National Contact Points
OG	Operational Grant
PSA	Project Support Activity
SRC	Strategic Research Cluster
UKSA	UK Space Agency
WP	Work Package

4 DISSEMINATION EDUCATION AND OUTREACH OBJECTIVES AND STRUCTURE

In line with [RD1], the EPIC PSA dissemination and exploitation activities are aimed at:

- Promoting the EPIC PSA project, its progress and results.
- Improving access to useful inputs from the SRC Operational Grants.
- Contribute to ensuring that the EPIC and Electric Propulsion SRC achievements are known to the potential users and future potential bidders for SRC Operational Grants.
- Improving the knowledge and acceptance of the SRC and therefore contribute to the subsequent exploitation of the project results by end-users or by a potential next SRC phase beyond 2020.
- Guaranteeing that the EPIC project is exploited to its full potential.

The dissemination activities are the responsibility of and coordinated by CDTI (as leader of Task 5.1 "Dissemination" and of WP 5), but this task includes the participation of all PSA Partners.

EPIC Dissemination activities will be performed as far as possible in coordination with the COSMOS network which is the network of National Contact Points (NCP) for the Space theme under the EU's Horizon 2020 (http://ncp-space.net/); and in collaboration with the PSA Partner organisation NCPs for Space.

The EPIC PSA will also encourage the dissemination of results by the SRC Operational Grants holders, in a united and coordinated way as much as possible, so that all possible channels are exploited.

In line with [RD3], the main education and outreach activities planned are:

- To reach grade-school and high-school students, in order to increase the interest in STEM (science, technology, engineering and math) and of female students in particular.
- Organisation of educational material, trainings or contests, making use of the ESA and National Agencies educational programmes and resources.
- Exchange and network with non-space sectors to identify opportunities outside the space field, presenting the PSA work at non-space events when possible.
- Preparation of education material related to space and EP especially aimed at promoting the interest in science, technology, engineering and mathematics in grade- and high-school students; and sharing it directly with entities performing outreach activities and through the EPIC website in an education and outreach section.
- 1 trainee will be invited to do his/her final thesis in the ESA Propulsion Laboratory at ESTEC in support of EPIC.

The education & outreach activities are the responsibility of and coordinated by ESA (as leader of Task 5.2 "Education & Outreach"), but this task includes the participation of all PSA Partners.

EPIC education & outreach activities will be performed as far as possible in coordination and collaboration with the education & outreach activities of the EPIC Partners and its means and channels, mainly the National Agencies and ESA will make use of their expertise and resources in organising these types of communication, education & outreach activities.

The distribution of support in these two tasks (T5.1 and T5.2) by PSA Partners will be described in detail in each activity of this document.

5 TARGET GROUPS

In line with [RD1], the main target groups for dissemination had been grouped as follows:

- Main research institutions, and academia [DG1-Research/Academia]
- European space industry at all levels, especially manufactures of space subsystems: Large System Integrators, components manufacturers at subsystem, system or component level [DG2-Space Industry].
- European Commission, main Space Agencies, European Member States and Governmental Institutions [DG3-Governments].
- Space satellite operators and new space market and missions developers [DG4-Operators].
- Public media and general public interested in space technology and science, and its impact and benefits in their daily life [DG5-General Public].

These target groups for dissemination will be identify and map for each activity performed in each Yearly Dissemination Report

In line with [RD3], the main target groups for education & outreach activities are:

- Grade-school and high-school students and its teachers [EG1-Schools]
- University students, and Master and students in science, technology, engineering and mathematics; and its teachers [EG2-University]
- Research Institutions; PhD students; young graduate trainees; and junior technical researchers in science, technology, engineering and mathematics, and its tutors [EG3-Research]
- General public [EG4-General public]

These target groups for education & outreach will be identify and map for each activity performed in each Yearly Dissemination Report

6 DISEMINATION ACTIVITIES IN 2015

Various dissemination channels and media had been used during 2015 to obtain maximum impact from the promotion of EPIC results. The channels had been selected according to the intended audience.

6.1 EPIC website in 2015

The EPIC website is http://epic-src.eu/. It has already been set up in 2015 and evolved to its final shape to become the major EPIC dissemination tool. This website should help increasing the public awareness and visibility of the project and it will be used as a channel to communicate with the main stakeholders, industry, research institutions and academia. In addition the site will be a valuable tool for exchanging information produced in the EPIC PSA and in the SRC Operational Grants to be funded. The website will be continuously maintained by CDTI and DLR and its content updated with the contributions of all PSA Partners.

The creation of a PSA web portal (media tool) provides a fast and on-line access of the relevant background, foreground and any other project related information (PSA events, links, public deliverables, news) that can be made public and disseminated.

The structure (Main Page/Child Pages/Sub-child Pages) of the web portal is the following:

- Main Page: Welcome page, including a News section (both with a dynamic window and with a fix list window)
- Child Pages (list of topics in the left had side of the Main Page), and Sub-child pages (second level) for the The EPIC Programme Support Activity Child Page .
    - Child Page: News
    - Child Page: What is Electric Propulsion?
    - Child Page: The Strategic Research Cluster: Programme Support Activity and Operational Grants
    - Child Page: The EPIC Programme Support Activity
        - Sub-child page: The EPIC Partners
        - Sub-child page: The EPIC work performed on its first year
        - Sub-child page: EPIC Events
        - Sub-child page: EPIC Public Documents
        - Sub-child Page: EPIC Education material (TBD)
    - Child Page: High Level SRC Roadmap
    - Child Page: Space 2016 H2020 Call on Electric Propulsion
    - Child Page: SRC Operational Grants (TBD)
    - Child Page: Related links
    - Child Page: Questions & Answers
- Contact box (EPIC web content: Jorge.lopez@cdti.es, EPIC web master: Marc.Jochemich@dlr.de)
- Search box

The content of the web portal contains among others the following:

- The EPIC PSA: what it is, its activities, objectives and PSA Partners,
- The H2020 Electric Propulsion SRC, its set up and the relationship between the PSA and the operational grants
- Background on Electric Propulsion (what it is, history, the EP system, its use, current European situation…)
- EPIC public documents,
- Agenda of events and calendar,
- Information on the EPIC Workshops already held (with links to their specific pages), and planned,
- Questions & Answers page (public but not open),
- External links to be included (e.g. to Commission related documents, to SRC operational grants, etc.)
- Information/links on H2020 SRC Calls or relevant documents (as published by the Commission),
- Web links to SRC Operational Grants sites
- Web manager and web content points of contact,

Information on the EPIC Workshops are already included in detail in their respective websites as reported in the deliverables [RD4] D2.3 Workshop 1 report and [RD5] D3.4 Workshop 2 report, and the EPIC website is already linked those websites.

- The EPIC Workshops one organised by EPIC in Brussels: 25-28/11/2014 (http://www.epic2014.eu/)
- The EPIC Workshop two organised by EPIC in Stockholm: 11-12/02/2015 (http://epic-src.eu/?page_id=12)

The EPIC website is one of the Deliverables of the project [RD2] and will be completed and maintained by CDTI and DLR, with all PSA Partners contributions. The full description of the EPIC web is detailed in [RD2], and its updates will be recorded if considered necessary in updates of this reference document.

Target Groups	**EPIC Website dissemination in 2005**	**Type of channel**	**EPIC Partner**	**EPIC Partner preparing material**
[DG1-Research/Academia] [DG2-Space Industry] [DG3-Governments] [DG4-Operators] [DG5-General Public]	EPIC Website / http://epic-src.eu/	PSA Website	DLR/ CDTI	CDTI/ DLR/ ESA
	EPIC Workshop 1 Website Brussels: 25-28/11/2014 / http://www.epic2014.eu/	Workshop website and registration tool	CNES	CNES
	EPIC Workshop 2 Website Stockholm: 11-12/02/2015 / http://epic-src.eu/?page_id=12/	Workshop website and registration tool	DLR	DLR

Table 6.1.1: List of EPIC websites for dissemination in 2015

At the moment, the EPIC website looks as shown in the following Imaging Print (Only the Main Page is shown).

Figure 6.1.1: EPIC website Main Page

6.2 PSA's Partners own websites in 2015

The publication of the EPIC work and results in PSA's Partners own websites is also a very important dissemination activity. The preparation of the PSA´s Partners own website and text is the responsibility of the related PSA Partner, but the current content has been coordinated by CDTI drafting a baseline text proposed to all Partners.

Target Groups	EPIC Dissemination link in the PSA Partner website	EPIC Partner
[DG1-Research/Academia] [DG2-Space Industry] [DG3-Governments] [DG4-Operators] [DG5-General Public]	EPIC reference in ESA website : http://www.esa.int/Our_Activities/Space_Engineering_Technology/EPIC_Electric_Propulsion_Innovation_and_Competitiveness	ESA
	EPIC reference in ASI website: http://www.asi.it/it/news/epic-in-space-electrical-propulsion-and-station-keeping	ASI
	EPIC reference in BELSPO website http://www.belspo.be/belspo/space/euPolicy_h2020_en.stm http://www.belspo.be/belspo/space/euPolicy_h2020_nl.stm http://www.belspo.be/belspo/space/euPolicy_h2020_fr.stm	BELSPO
	TBD	CNES
	EPIC reference in CDTI ESH2020 website: http://eshorizonte2020.cdti.es/index.asp?MP=88&MS=711&MN=2&TR=C&IDR=2394	CDTI
	EPIC reference in DLR website: in English: http://www.dlr.de/rd/en/desktopdefault.aspx/tabid-2266/3398_read-44284/ and German: http://www.dlr.de/rd/desktopdefault.aspx/tabid-2266/3398_read-44284/	DLR
	TBD	UKSA
	EPIC reference in EUROSPACE website: http://eurospace.win2.nucleus.be/news.aspx	ADS-EUROSPACE
	EPIC reference in SME4Space website: http://www.sme4space.org/index.php?option=com_content&view=article&id=59	SME4Space

Table 6.2.1: List of links of each EPIC PSA Partner website dedicated to EPIC and SRC dissemination activities in 2015.

6.3 Social Media dissemination in 2015

The dissemination of PSA work and SRC Operational Grants results using social media-related channels is important for the dissemination of EPIC activities.

EPIC has selected LinkedIn as the primary social media channel because it is the largest professional network, it is structured by professionals, companies and technologies. The targeted audience would be professionals of the space sector or other sectors of interest in H2020 which could profit from the networking or knowledge on EPIC It is currently used by the partner organisations and already contains multiple groups on Horizon 2020 which can also serve as vehicle of promotion and networking.

EPIC had just already implementation this Social media dissemination activity by CDTI via a LinkedIn Dissemination Group (https://www.linkedin.com/grp/home?gid=8303568) named: H2020 SRC EPIC. This social media dissemination is currently at its early stages in 2015, and it will be further developed and exploited during the following years in coordination with the website.

The maintenance will be managed by CDTI, with the help and inputs from all PSA partners.

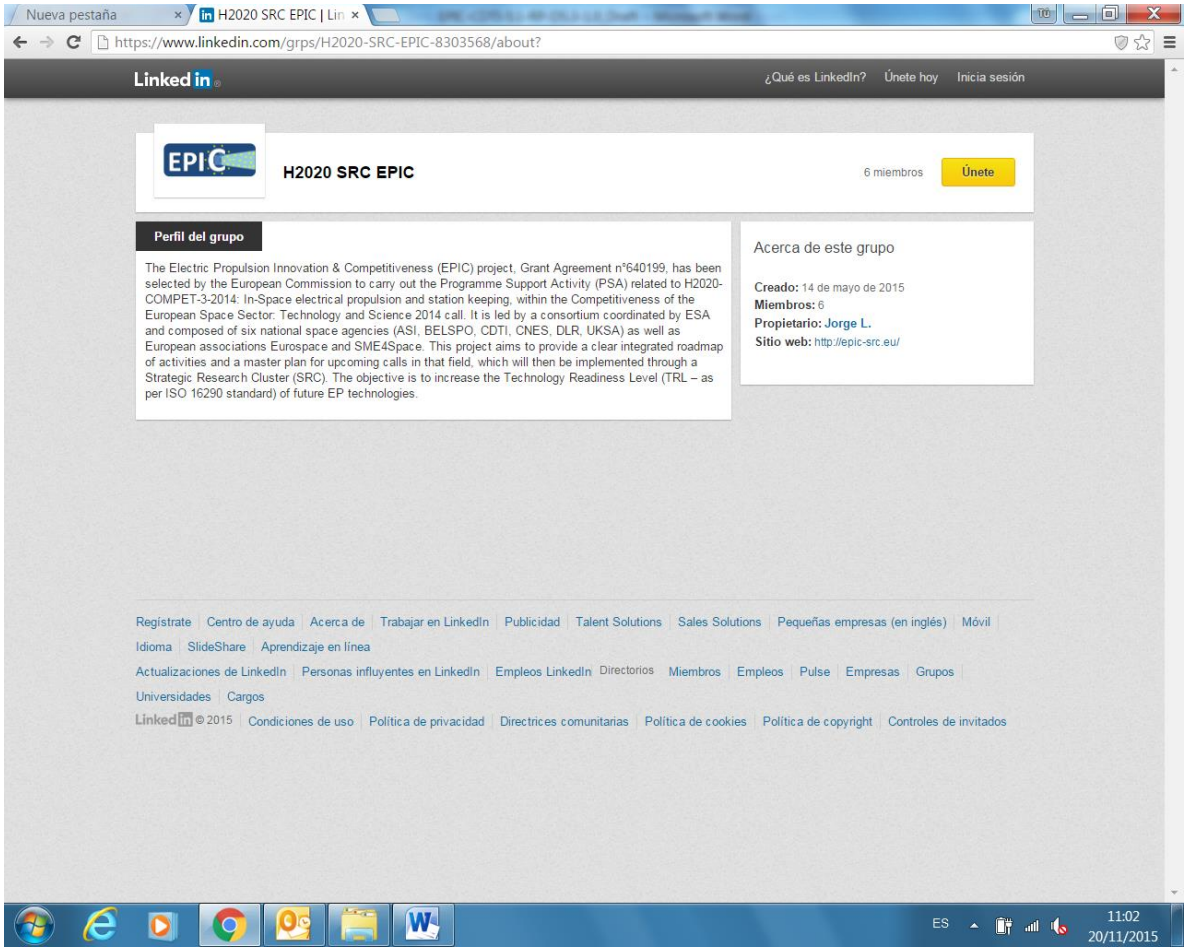


Figure 6.3.1: EPIC Group in LinkedIn

Target Groups	EPIC Dissemination Social Media	EPIC Partner
[DG1-Research/Academia] [DG2-Space Industry] [DG3-Governments] [DG4-Operators]	LinkedIn Group: (https://www.linkedin.com/grp/home?gid=8303568) named: H2020 SRC EPIC	CDTI

Table 6.3.1: List of EPIC Dissemination Social Media activities in 2015.

6.4 EPIC Logo in 2015

The EPIC Logo has already been produced in 2015 and selected by the PSA Partners. It is being used in the website and, from now on, on all PSA documentation, presentations and dissemination material along the project.

Figure 6.4.1 EPIC Logo

The EPIC banner to be used in all documents and presentations with the new EPIC PSA Partners Logos has been also produced in 2015 and updated to make it coherent with the PERASPERA banner.

Figure 6.4.2 EPIC PSA Partners Logos

6.5 Organisation of EPIC Workshops events in 2015

The EPIC Workshops one and two were the ones organised by EPIC during the first year of execution of the PSA. The first one was in Brussels: 25-28/11/2014 (http://www.epic2014.eu/) organised by CNES and BELSPO; and the second one was in Stockholm: 11-12/02/2015 (http://epic-src.eu/?page_id=12) organised by DLR with the help of the THAG Swedish Delegation.

These Workshops did not fall under the Dissemination Work Package (WP 5), but under WP2 and 3, since they had as objective the collection of inputs from European stakeholders relevant to Electric Propulsion which are not part of the EPIC consortium. Information on the EPIC Workshops performed during the first year of EPIC execution are already included in detail in their respective deliverables [RD4] Workshop 1 report and [RD5] Workshop 2 report.

Target Groups	EPIC Dissemination Social Media	EPIC Partner
[DG1-Research/Academia] [DG2-Space Industry] [DG3-Governments] [DG4-Operators]	EPIC Workshop 1 / Brussels: 25-28/11/2014 (http://www.epic2014.eu/)	CNES+BELSPO / All Partners
	EPIC Workshop 2 / Stockholm: 11-12/02/2015 (http://epic-src.eu/?page_id=12)	DLR / All Partners

Table 6.5.1: List of EPIC Workshops events in 2015.

6.6 External events: Conferences/Workshops/Symposia in 2015

The participation and presentation of the PSA work and the progress of the SRC activities with respect to the SRC roadmap at relevant European and international conferences/workshops/symposia is a very important EPIC dissemination activity.

The EPIC PSA had already participated during 2015 in several H2020 Info days presenting the PSA work and the 2016 SRC Call texts and its requirements and guidelines at relevant European and international conferences/workshops/symposia.

EPIC supported during 2015 the European Commission in the H2020 Space Info Days to present the Electric Propulsion SRC calls and related documentation and presentations. Presentations were produced for each occasion after consultation with the EC. The agenda of the events and the EPIC presentations are available on the EPIC website.

CDTI, ESA and UKSA prepared standard slides on the EPIC project to be used at different events. EPIC Partners presenting at each events, refined them and adapt them to the event needs.

Target Groups	**European and international space conferences/workshops/symposia in 2015**	**EPIC Partner participant**	**EPIC partner preparing material**
[DG1-Research/Academia] [DG2-Space Industry] [DG3-Governments] [DG4-Operators]	IEPC 2015 (International Electric Propulsion Conference), Kobe-Hyogo, Japan [6-10.7. 2015]/ (www.iepc2015.org)	ESA	ESA
	H2020 Space Information day 2015 – Warsaw, Poland [29.9.2015]. COSMOS Event/ https://www.b2match.eu/h2020-space-infoday/pages/information-day-warsaw	ESA	CDTI/ESA/UKSA
	Space Week 2015 in Rome, Italy [23.10.2015]. Dragon Star, organised by ASI and China. Introduction day with EC H2020. Coordination with COSMOS contacts point./ https://www.b2match.eu/spaceweek-italy/pages/agenda	ESA	CDTI/ESA
	H2020 EC Infoday Brussels [10.11.2015]. Dedicated presentation to SRC – In-Space electrical propulsion and station keeping by EPIC PSA. COSMOS Event. / https://www.b2match.eu/h2020-space-infoday/pages/information-day-brussels	ESA/+ all PSA Partners	CDTI/ESA

Table 6.6.1: List of relevant European and international space conferences/workshops/symposia in 2015.

Target Groups	**Local space conferences/workshops/symposia in 2015**	**EPIC Partner participant**	**EPIC partner preparing material**
[DG1-Research/Academia] [DG2-Space Industry] [DG3-Governments] [DG4-Operators]	H2020 CDTI Infoday 2015 Call, Madrid, Spain [21.01.2015]/ http://www.cdti.es/index.asp?MP=9&MS=37&MN=2&accion=si&fecha=21/01/2015&filtrodia=1	CDTI	CDTI
	H2020 CDTI Infoday 2016 Call, Madrid, Spain [20.10.2015]/ http://www.cdti.es/index.asp?MP=9&MS=37&MN=2&TR=&IDR=0&accion=si&texto=&idprograma=0&fecha=01/10/2015&filtrodia=0&fechadesde=&fechahasta=&tipo=&id=3184&xtmc=&xtcr=13	CDTI	CDTI/ESA
	H2020 Info Day Lisbon [28.10.2015] /	ESA	CDTI/ESA

	http://www.gppq.fct.pt/h2020/_docs/eventos/4101_agenda.pdf		
	HUNSPACE Info Day: EU Grant opportunities on Electric Propulsion (EPIC project), Budapest [02.11.2015] / http://www.hunspace.org/index.php/en-news	SME4SPACE	CDTI/ESA

Table 6.6.2: List of relevant local space conferences/workshops/symposia in 2015.

6.7 EPIC Partners use of own dissemination channels in 2015

The dissemination of EPIC work and results using PSA Partners own existing (private/national/European) dissemination channels is very important for the dissemination of EPIC activities because it would take advantage of a well-established, dedicated and efficient apparatus within each PSA Partner organisation, therefore multiplying the impact of each action.

Target Groups	**Dissemination activities using own PSA Partners or European dissemination channels**	**Type of channel**	**EPIC Partner**	**EPIC Partner preparing material**
[DG1-Research/Academia] [DG2-Space Industry] [DG3-Governments] [DG4-Operators]	Article in the CDTI Newsletter: Perspectiva CDTI nº45 p. 35 Feb. 2015 "El CDTI participa en los primeros clusters de espacio del H2020" http://www.cdti.es/recursos/publicaciones/archivos/26847_1821822015112625.pdf	Newsletter article	CDTI	CDTI

Table 6.7.1: List of events or activities using PSA Partners own existing dissemination channels in 2015

[especial espacio]

CDTI interviene en estos proyectos conjuntamente con la ESA y las principales agencias espaciales europeas

El CDTI participa en los primeros *clusters* de Espacio del H2020

CDTI participa en dos proyectos sobre Robótica y Propulsión Eléctrica Espacial del denominado *Programe Support Activity* (PSA) pertenecientes al programa marco de investigación e innovación de la Unión Europea, Horizonte 2020 (H2020). Mediante estos proyectos, que se iniciaron el 1 de octubre de 2014 y tendrán una duración de 5 años, se pretende dar apoyo y asesorar a la Comisión Europea (CE) en los primeros *Strategic Research Clusters (SRC)* del programa de Espacio de H2020.

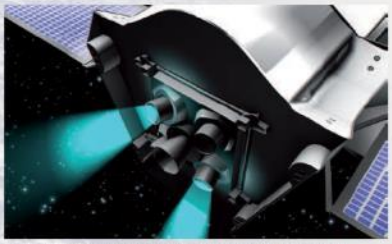
Los SRCs son un nuevo instrumento para establecer la hoja de ruta de temáticas concretas del área de espacio que se irán desarrollando a través de las sucesivas convocatorias de H2020. El objetivo es conseguir que los diferentes proyectos desarrollados en un SRC estén relacionados y orientados a obtener resultados más ambiciosos y complejos de los que pueden conseguirse mediante proyectos aislados.

CDTI participa en estos proyectos conjuntamente con la ESA y las principales agencias espaciales Europeas (CNES, DLR, ASI, UKSA y BELSPO) además de las asociaciones empresariales Eurospace y SME4S. El primer proyecto de cada SRC está destinado a la creación de la PSA que se centrará en el desarrollo de los siguientes aspectos:

- Proporcionar asesoramiento y apoyo a la CE en los SRCs
- Definir los planes de trabajo y las actividades prioritarias de cada convocatoria
- Elaborar de las convocatorias para los proyectos del SRC
- Analizar de los resultados de las convocatorias
- Realizar la coordinación entre los distintos proyectos para conseguir los objetivos de los SRCs

El primero de los SRC se denomina EPIC (*Electric Propulsion Innovation and Competitiveness*); su objetivo fundamental consiste en alcanzar para 2023 la madurez y la competitividad de la tecnología actual de propulsores y subsistemas asociados, hasta un nivel precomercial frente a requisitos operacionales. Además, explorará la viabilidad de nuevos conceptos de motores eléctricos con prestaciones potenciales muy innovadoras y que se encuentran todavía en un nivel de madurez bajo. El presupuesto dedicado a EPIC será de unos 64 millones de euros distribuido en 2 ó 3 convocatorias durante 5 años.

Brazo robótico en la Estación Espacial Internacional (cortesía ESA)



Recreación artística del subsistema de propulsión eléctrica de la misión BepiColombo (cortesía ESA)

El segundo de los SRC, llamado PERASPERA (*Plan the European Roadmap and its Activities for Space Exploitation of Robotics and Autonomy*), tiene como objetivo desarrollar tecnologías robóticas espaciales que sirvan como componentes básicos de proyectos de exploración y de servicio en órbita para su posterior utilización en el marco de misiones espaciales europeas. En concreto, se pretende alcanzar la demostración en órbita de un sistema autónomo para 2023. El presupuesto dedicado a PERASPERA será de unos 58 millones de euros distribuido en 2 o 3 convocatorias durante 5 años.

Paralelamente el CDTI, como organismo público de referencia en espacio en España, también tiene como objetivo trasladar los intereses y visión de la comunidad espacial española competente en esos temas, así como promover la participación de la industria española en las propuestas a los SRCs de robótica espacial y de propulsión eléctrica. En ambas temáticas España cuenta con un gran potencial gracias a la especialización y cualificación de nuestra industria, centros tecnológicos y universidades.

más información

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E-mail: esa@cdti.es

Figure 6.7.1: EPIC Article in CDTI Newsletter n°45 in 2015

6.8 Dissemination outside of the usual space landscape channels in 2015

None in 2015

7 EDUCATION & OUTREACH ACTIVITIES IN 2015

Even if the official start of Task 5.2 is in January 2016, during the first year, several initiatives on education and outreach have been performed or initiated by EPIC team, and mainly by ESA as Task 5.2 responsible.

Target Groups	**Education & Outreach activities in 2015**	**Type of activity**	**EPIC partner**
[EG2-University] [EG3-Research]	Lecture at the Aerospace Master Programme at the University Carlos III of Madrid (UC3M) on Electric Propulsion and its applications [22.11. 2015]	Master Lecture at University	ESA
[EG3-Research] [EG4-General public]	ESA Propulsion Lab paper/presentation of Electric propulsion activities at IEPC 2015 (International Electric Propulsion Conference), Kobe-Hyogo, Japan [6-10.7. 2015]/ (www.iepc2015.org)	Presentation at International Conference	ESA
[EG3-Research]	Electric propulsion presentations to students from the Von Karman Institute (VKI) [2015]	Presentation at Research Institution	ESA
[EG1-Schools]	Electric propulsion educational activity/case iniciated with Dutch high school (Technasium/Calandlyceum) on Electric propulsion. The students will design, manufacture and test at ESTEC (ESA) a vacuum arc thruster with the monitoring of ESA staff. This activity will allow high school students to understand the way an electric propulsion system work in a vacuum chamber and they will gain a hands-on experience in testing this kind of engines with experts from ESA at the ESA Propulsion Laboratory. [Initiated in 2015]	Electric propulsion educational activity	ESA

Table 7.1: List of Education & Outreach activities in 2015.

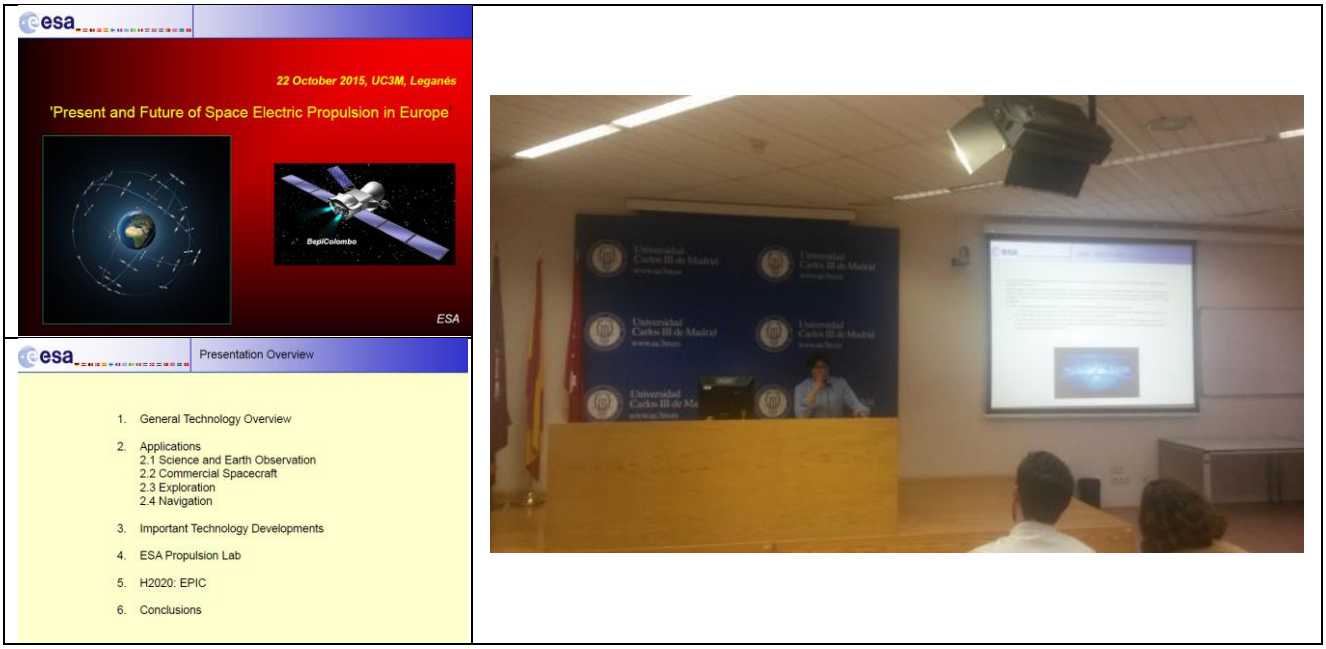

Figure 7.1: Lecture at the Aerospace Master Programme at the University Carlos III of Madrid (UC3M)

European Space Agency (ESA) Electric Propulsion Activiti

IEPC-2015-02

Presented at Joint Conference of 30th International Symposium on Space Technology and Science
34th International Electric Propulsion Conference and 6th Nano-satellite Symposium,
Hyogo-Kobe, Japan
July 4 – 10, 2015

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Abstract: ESA is supporting the European Industry in the field of space telecommunications by having more performing satellites capable of saving more than one thousand kilos of propellant by using electric propulsion for orbit raising manoeuvres. ESA Neosat and Electra satellites will perform orbit raising and station keeping manoeuvres with Electric Propulsion systems which will allow to reduce the launching costs by selecting smaller launchers or participating as a co-passenger with another spacecraft in the same launcher. New constellation of hundreds of spacecraft are being developed and they will make use of electric propulsion in the next years. Besides, new Scientific and Earth observation missions dictate new challenging requirements for propulsion systems and components based on advanced technologies such as microNewton thrusters. New space missions in the frame of Exploration will also require sophisticated propulsion systems to reach planets such as Mars or Venus and in some cases bring back to Earth samples from asteroids or comets. Finally the use of Electric Propulsion to perform orbit raising saving huge amounts of propellant has also attracted the attention of the future Galileo programme at ESA, the use of EP will allow to place 4 spacecraft in Ariane 5 and 3 spacecraft in Soyuz, allowing low launcher costs. Due to all these new space projects, ESA is currently involved in activities related to spacecraft electric propulsion, from the basic research and development of conventional and new concepts to the manufacturing, AIV and flight control of the propulsion subsystems of several European satellites. ESA missions such as AlphaBus, GOCE, Smart-1 and Artemis have paved the way for the use of electric propulsion in future ESA missions: Bepi Colombo, Small GEO, LISA, etc. Furthermore, ESA is the coordinator of an activity with the European Community (EPIC) that will provide a clear roadmap for preparing the future of the Electric propulsion in Europe. This paper will present the current and future challenges of the electric propulsion in Europe.

Figure 7.2: Paper of Electric propulsion Lab activities at IEPC 2015

8 CONCLUSIONS

One of the main objectives of the EPIC PSA is to disseminate its progress and results, and to contribute to the dissemination of the SRC results'. The dissemination activities are been implemented following the EPIC PSA Dissemination plan [RD1] in close coordination with all operational grants.

This document aims at providing the list and detail description of the dissemination activities performed during EPIC PSA first year of execution, detailing: the dissemination activities performed, the role or the involved Partners, and the target groups addressed by each activity.

The dissemination activities presented are separated in different categories and detailed in this document, and they are mainly: EPIC website, PSA's Partners own websites, Social Media dissemination, EPIC Logo, Organisation of EPIC Workshops, External events: Conferences/Workshops/Symposia (international & local), EPIC Partners use of own dissemination channels, and Dissemination outside of usual space landscape channels.

Also among the main objectives of the EPIC PSA are the education and outreach activities in order to increase the interest in STEM (science, technology, engineering and math) and in the space Electric propulsion in particular on the different target groups (high-school students, University grade and PhD students, Research Institutions trainees and young researchers, and general public).

This document also aims at providing the list and detail description of the education & outreach activities performed during EPIC PSA first year of execution.

Dissemination, education and outreach future evolution and continuation activities will be reported and updated in following Yearly Dissemination Report.