

PROMISE

WP6 Dissemination

D6.1 Project Identity Set and Website

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1. INTRODUCTION

1.1. SCOPE AND PURPOSE

This document contains the basic set of information about the PROMISE project that both technical and layman public can use to get a first insight of the project. This information can be used by the partners to provide their stakeholders and the media with information about the project. Further details and up to date information can be retrieved through the project webpage that is also described and linked in this document.

1.2. APPLICABLE DOCUMENTS

Applicable documents

Internal code / DRL	Reference	Issue	Title	Location of record
AD1	Ares(2019)7788021	001	PROMISE Grant Agreement (870358)	SYGMA online system: https://ec.europa.eu/research/participants/grants-app/reporting/DLV-870358
AD3	D7.2	002	Communication Toolkit	SYGMA online system: https://ec.europa.eu/research/participants/grants-app/reporting/DLV-870358

1.3. REFERENCE DOCUMENTS

Internal code / DRL	Reference	Title	Location of record
RD1	-	PROMISE Consortium Agreement	https://dwp.thalesdigital.io/docs/DOC-14613

1.4. DEFINITIONS AND ACRONYMS

Acronyms & Definitions	
PROMISE	PRO grammable MI xed S ignal E lectronics

2. PROJECT DESCRIPTION

The following descriptions are made available for specialized and general public. These shall be used by the partners or the media to provide a first high level overview of the project. For further details or specific technical questions, the project team shall be contacted.

2.1. PROJECT ABSTRACT

Space Market is living a mutation with the emergence of New Space, promoting integration/miniaturization, satellite acceleration, cost-efficient and cost-reduction approaches for all mission types: Earth Observation, Science, Telecom, Navigation and Robotic Exploration. Accordingly, middle range ASIC solutions are in competition with high performance/high capacity FPGA, new multicore devices and Rad Tolerant parts and COTS. Indeed, Mixed Signal ASIC solutions offer functional added value for testability of electronic units and digitalization of full analog functions. Hence, the PROMISE project sets clear and measurable objectives to optimize the design cost, shorten schedule and de-risk analog and mixed ASIC radhard design, manufacturing and qualification by covering the needs of the space industry. More specifically, PROMISE will provide the space community with a flexible mixed signal ASIC architecture design ecosystem built on a portfolio of hardened features. The project will also provide a flexible mixed signal ASIC manufacturing and qualification ecosystem. Last but not least, PROMISE will deliver IP dissemination, commercialization and intellectual property management to allow efficient reuse of the project's outcomes and efficient environment for new IPs and mid-range ASIC design for space applications. PROMISE, led by Thales Alenia Space, encompasses diverse European partners, subcontractors, potential users or solution providers, all top actors of the European Mixed Signal ASIC ecosystem. The market for mega constellations is in full swing and several initiatives promoted by different operators are already underway. Thanks to PROMISE, a 50 % market share will be reached, so an estimate of 706 satellites will be delivered within a period of 5 years. Assuming only 1 PROMISE based ASIC per constellation and at least 4 pieces of this ASIC per satellite, this means more than 2800 units will be delivered in the first 5 years after the project.

2.2. PROJECT SHORT DESCRIPTION

2.2.1. TECHNICAL

The PROMISE project, funded by the EC under the H2020 program, will propose a full European mixed-signal ASIC/ASSP ecosystem including technology hardening, design houses, foundry and supply chain." This ecosystem will be based on a library of analog and digital IP blocks built upon the DARE 180X rad hard technology ; furthermore, the ecosystem will enable new IPs entrance in the library. To build this ecosystem, the project has fixed the objective to "Build a community of users for this IP library". This library and ecosystem will be accessible to all the space community and the IPs will be available at a fair cost with the target to reduce the development and manufacturing cost of high reliability Mixed Signal ASIC for the space domain.

2.2.2. NON TECHNICAL

The PROMISE project, funded by the EC under the H2020 program, will reinforce the European position in the domain of the Mixed Signal ASICs for space, circuits that combine on the same chip acquisition of signals, actuation and data processing. To do so, the project will develop and validate a set of blocks that will be made available to the space community and provide an ecosystem for new IP developer. In this way, future users will be able to develop their own compact and cost effective solutions in short time by combining these blocks and producing through a pre-validated chain. This solution will position the European space industry on a strong competitive position to face the new challenges of the space sector.

2.3. PROJECT LONG DESCRIPTION

PROMISE (PROgrammable MIxed Signal Electronics) is a 3-year project conducted through the Horizon 2020 Research & Innovation program of the European Commission¹.

New trends in the space market are pushing towards satellite miniaturization and mass production for constellations, leading to a drastic drop in production costs and acceleration of development cycles. These trends, combined with initiatives for reducing launch costs, makes the space industry more accessible to the independent private sector, scientists, academia and population at large.

In this context, the PROMISE project is targeting the development of key enabling digital technologies by generating a new ecosystem fully based on European suppliers, to ensure European competitiveness and non-dependence to third parties. The project will provide the space community with a flexible mixed-signal ASIC² architecture design, manufacturing and qualification ecosystem built on a library of space qualified radiation hardened building blocks, which will enable the development of complete mixed-signal System on Chip (SoC) solutions at a fraction of its current cost for the next generation of space data handling and data processing units. These units, in turn, will become the core of new space missions for telecommunications, navigation, Earth observation and space exploration.

The new PROMISE-based circuits will position European space industry on the front line for the development of competitive cost-effective solutions and enable European space players to take a leading role in the new space era in the XXI century.

The PROMISE consortium is led by Thales Alenia Space in Spain and includes top level SME ISD (Greece) and MENTA (France), key technological institutes IMEC (Belgium), IT (Portugal) and VTT (Finland) and leading satellite manufacturer Thales Alenia Space in France.

¹ This project received funding from the European Union's Horizon 2020 Research & Innovation program under grant agreement ID: 870358. More information on the PROMISE project: <https://cordis.europa.eu/project/id/870358>

² ASIC: Application-Specific Integrated Circuit are tailor-made circuits for particular applications, highly favoured in miniaturised satellites

The PROMISE project was officially kicked off in Tres Cantos (Madrid) on January 24th 2020 and its final results will be presented to the end-user community and to the general public in a workshop to be held in the second half of 2022.

2.4. PROJECT Q&A

Here is a short summary of the most common questions about the project and a short answer for each of them.

- **What is the target of PROMISE?**
 - PROMISE shall make available for the space community a complete ecosystem to design and manufacture Mixed Signal ASICs for space applications based on a library of pre-validated IP blocks. This shall allow to reduce the cost and development time of space oriented mixed signal ASICs

- **Who are the PROMISE partners?**
 - The PROMISE consortium is led by Thales Alenia Space in Spain and includes top level SME ISD (Greece) and MENTA (France), key technological institutes IMEC (Belgium), IT (Portugal) and VTT (Finland) and leading satellite manufacturer Thales Alenia Space in France.

- **What technology will PROMISE develop?**
 - PROMISE will develop an architecture based on an eFPGA accompanied by a set of key digital and analog modules: NVM, ADC, DAC, References, Oscillators... These basic blocks shall allow future users to design their own Mixed Signal ASICs by assembling these elements together. These elements shall be based on the DARE 180X technology and shall be tested under space conditions.

- **When will be the PROMISE results available?**
 - PROMISE final results will be presented to the end-user community and to the general public in a workshop to be held in the second half of 2022

- **How shall contribute PROMISE to European Space Non-dependency?**

- PROMISE shall make available for the European actors a technology that allows them to design their own Mixed Signal ASICs that currently are built using American export controlled technologies. A full European unrestricted supply chain shall be validated to guarantee that not only the IPs but all the elements of the device (silicon die, packaging...) are not under export limitations.

- **Is PROMISE linked to the “New Space” paradigm?**
 - The PROMISE technology will be validated under full space grade conditions thus making it valid for any kind of space application. More specifically, the cost and development time reductions targeted by PROMISE shall make this technology suitable to be used under the cost and schedule restrictions typical of the New Space paradigm.

- **What is the PROMISE Library?**
 - The PROMISE library will be a site where the European Space actors can access a set of IPs that can be used to easily build Mixed Signal ASICs. These IPs will be pre-validated, which means that the end user will have the confidence that all the used IPs will be easily integrated together and will be compatible with the DARE180X technology and the validated supply chain thus maximizing the chances to build their Mixed Signal ASIC right on the first run with the corresponding cost and planning savings.

- **What is the PROMISE Pilot Circuit?**
 - The PROMISE Pilot Circuit will be a Mixed Signal ASIC that shall contain all the IP blocks developed under the PROMISE project. This device shall be submitted to a full space qualification cycle in order to validate the technology and IPs design. Once finished, this device shall be made available as a general purpose SoC.

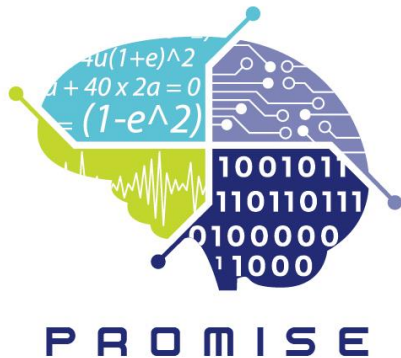
- **Will PROMISE technology openly available for everyone?**
 - Yes. The PROMISE results will be made available for the European space community and the developed IPs and the validated supply chain will be published in the PROMISE library.

- **Does this mean that PROMISE technology will be free?**
 - No. PROMISE technology involves a big research effort and background from different partners. This technology and the IPs in the library will be available under license at a fair price.

- **Is PROMISE project open for participation?**
 - Yes. The idea behind PROMISE is to build a dynamic community of users that benefit from the PROMISE technology and enrich the library of validated IPs for the benefit of the European Space community. Any actor interested in the PROMISE technology will be able to attend the PROMISE final workshop to share their needs and interests. Once the Library is open, potential users will be able not only to access the existing IPs but also to contribute with new IPs that use the PROMISE technology. Before this event, any interested actor shall get in touch with the project coordinator to explore cooperation possibilities.

3. PROJECT LOGO

The PROMISE logo is the following:



Its shape represents how PROMISE shall help in bringing intelligence to the domains where it is used, while its four quadrants summarize how PROMISE will combine analog (low left) and digital (low right) signals to be processed through complex algorithms (top left) that will be included in a device that can be directly mounted on a circuit (top right).

The project acronym means **PRO**grammable **MIX**ed **SIG**nal **ELECTRONICS** which explains the project contents while maintaining the idea of an immediate solution to a problem already in place, as this project promises to bring a new technology to the market.

4. PROJECT WEBPAGE

4.1. LINK

The PROMISE webpage can be reached in the following URL:

<https://promise-h2020.eu/>

The web page has a dynamic design that adapts to the device used for browsing and can be accessed easily both from desktop and mobile devices.

4.2. STRUCTURE

The PROMISE project website has two different areas, a general information area, where the project objectives and advancements are presented to both the technical and general public; and a library area where the IPs and other project developments will be accessible to technical correspondents.

The library area will not be available at the beginning of the project as its structure and conditions to access will be developed during the project according to the exploitation activities. A pilot version shall be made operative during the third year of the project and the full operative library shall be presented in the PROMISE final workshop in 2022.

The general information area has the following format and contents:

Work plan, Work packages and deliverables

Overall structure of the Work plan

The overall approach for the activities is summarized in the next figure:

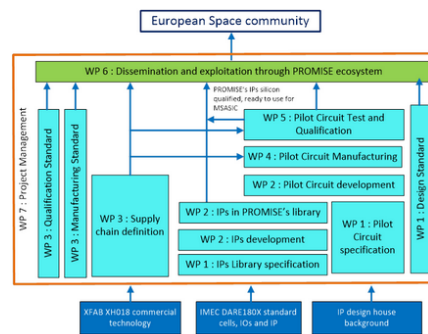
☆ WP1: IPs Library specification, Pilot Circuit specification & Design Standard

The first steps in WP1 are devoted to set the frame of the IP portfolio that will be made available for the Space Community. This is the first Pillar of the PROMISE vision. The end-user will specify the IPs and the Pilot Circuit. The Design Standard will be defined to support the design activities: the Design Standard will include all the design flow and recommendations to guarantee the accessibility and easy reuse of those IPs: interface standards, rules and methods for accessing to the IPs, IP documentation standards.

☆ WP2: IPs development, IPs in PROMISE's library & Pilot Circuit development

Based on the XFAB XH018 technology, the existing IMEC DARE180X libraries, design houses background and the Design Standard, hardened IPs will be designed by partner design houses in WP2. When designed, the IPs is gathered in the PROMISE library after a sanity check. The Pilot Circuit is then developed using the IPs in compliance with the Pilot Circuit specification. The Pilot Circuit design will demonstrate the capability of the IPs to be used in a Mixed-Signal ASIC design flow. Main output of the WP2 is the GDSII file to be transferred to the XFAB European foundry for mask process.

Figure 1: Overall approach of PROMISE



Click image to view full size

- **Home:** This is the front page of the PROMISE web. It shall summarize the content of the web and shall have links to the relevant sections, updates and recent news.
- **The Project:** This section provides a description of the project, its main advantages and expected results.
- **Partners:** This section provides detailed information about the project partners including their heritage and role in the project.
- **Project Structure:** This section summarizes the structure of the project, detailing the different work packages and activities so that public can follow the project advancement.
- **Applications:** This section includes information on the PROMISE proposed technology and its potential applications in the space sector and outside it
- **News:** This sections contains the latest project news, including project milestones, press impacts, relevant news from the partners and other dynamic elements

- **Contact:** This section is the main communication link between the consortium and the users accessing the webpage. A formulary is offered to get in touch with the project coordinators and request further information.
- **Access the IP Library:** This link shall connect with the PROMISE library once it is available.

4.3. MANAGEMENT AND PUBLISHING RULES

In order to maintain the project webpage updated and as dynamic as possible, all the partners are encouraged to provide content under the following rules:

- In order to maintain coherence, the web content is controlled by the project coordinator that shall centralize the contributions and upload them.
- Submissions can be documents, full articles, and links to external resources or any other content considered relevant by the partner.
- The project webpage shall be updated as frequently as needed. It shall be updated at least once per month in order to report project advancement.
- All the webpage contents shall be preferably in English. If for any submitted material this is not the case (e.g.: Local press notes), at least an English header shall be made available to open its publication in the web
- Any partner can submit elements to be published. They shall be published as soon as possible once they have been screened following these criteria:
 - News: Shall be reviewed by coordinator
 - Technical Contents: Shall be approved by Technical and Management coordinators
 - Web structure modifications: Shall be approved by partners
- External resources submitted for publication shall be owned by the publishing partner or have permission of the owner to be published. Same applies for images and other material, it shall be either owned by partner or open license. The submitting partner shall be in charge of validating this before submission.
- External resources shall be accompanied by a descriptive header in English to open its publication in the web
- Only the project deliverables labeled as Public shall be published in the open section.

- Restricted material shall be published in the PROMISE Library restricted access area when it becomes available

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