Dissemination and communication plan

High-Voltage Spinel LNMO Silicon-Graphite Cells and Modules for Automotive and Aeronautic Transport Applications

Horizon Europe | HORIZON-CL5-2021-D2-01-02

*Advanced high-performance Generation 3b (high capacity / high-voltage)
Li-ion batteries supporting electro mobility and other applications*

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PROJECT ABSTRACT

HighSpin aims to develop high-performing, safe and sustainable generation 3b high-voltage spinel LNMO||Si/C material, cells and modules with a short industrialisation pathway and demonstrate their application for automotive and aeronautic transport applications. The project addresses in full the scope of the HORIZON-CL5-2021-D2-01-02 topic, setting its activities in the "highvoltage" line. The project objectives are:

• Further develop the LNMO||Si/C cell chemistry compared to the reference 3beLiEVe baseline, extracting its maximum performance.

• Develop and manufacture LNMO||Si/C cells fit for automotive and aeronautic applications.

• Design and demonstrate battery modules for automotive and aeronautic applications.

• Thoroughly assess the LMNO||Si/C HighSpin technology vs. performance, recyclability, cost and TRL.

The HighSpin cell delivers 390 Wh/kg and 925 Wh/l target energy density, 790 W/kg and 1,850 W/l target power density (at 2C), 2,000 deep cycles, and 90 €/kWh target cost (pack-level). The project activities encompass stabilisation of the active materials via microstructure optimisation, the development of high-voltage electrolyte formulations containing $LiPF_6$ and LIFSI, high-speed laserstructuring of the electrodes, and the inclusion of operando sensors in the form of a chip-based Cell Management Unit (CMU).

HighSpin will demonstrate TRL 6 at the battery module level, with a module-to-cell gravimetric energy density ratio of 85-to-90% (depending on the application). Recyclability is demonstrated, targeting 90% recycling efficiency at 99.9% purity. HighSpin aims at approaching the market as a second-step generation 3b LNMO||Si/C in the year 2028 (automotive) and 2030 (aeronautics), delivering above 40 GWh/year and 4 billion/year sales volume in the reference year 2030.

LIST OF ABBREVIATIONS

Table 1: List of abbreviations

Acronym / Short Name	Meaning
EU	European Union
GA	Grant Agreement
IPR	Intellectual property rights
KPI	Key performance indicator
RIA	Research and innovation action
WP	Work package

EXECUTIVE SUMMARY

Effective communication and dissemination are a part of excellent science. They help to increase the impact of research and innovation by bringing research and its outcomes to the attention of non-scientific audiences, scientific peers, potential business partners or policymakers, which promotes collaboration and innovation [1].

Project communication is also essential to help a project achieve its goals and helps increase the impact of research and innovation. As a project co-funded by the EU, HighSpin obligations for communication, dissemination and promotion of the action are also rooted in Article 17 of the annotated model grant agreement[2], thus making them a contractual obligation.

The activities to ensure effective communication and dissemination are encapsulated in the project's *WP7 Dissemination, communication, exploitation and IPR management*, which is structured in five tasks:

- T 7.1 Scientific dissemination
- T 7.2 Communication towards non-specialist stakeholders and public outreach activities
- T 7.3 Exploitation
- T 7.4 IPR management
- T 7.5 Clustering and liaising with other relevant RIA projects and initiatives

Of these, T7.1, T7.2 and T7.5 directly contribute to dissemination and communication goals, while also directly or indirectly supporting T7.3 and T7.4.

The present report is an interim outcome of T7.1 and T7.2. It describes the overall approach to dissemination and communication in the project. It outlines the structured approach along the dimensions of objectives, audience/stakeholders, messages, media and means (channels), communication timing (phases), and assessment of the effectiveness of the communication measures (through KPIs).

1 INTRODUCTION

The present *D7.1 Dissemination and communication plan* covers communication to the project's outside environments (external stakeholders). Project-internal communication is covered in *D8.1 Project handbook*.

This plan can be read in conjunction with the following other project deliverables (once they are issued):

- *D7.3 Final dissemination report* – will report retrospectively the dissemination activities of the project.
- *D7.4 Final exploitation strategy (including IPR valorisation after the project)*
- *D8.1 Project handbook* – This is where project stakeholders are defined. Changes to stakeholders made in the project handbook should be taken into consideration for the communication and dissemination activities.
- *D8.2 Data management plan* – relevant for Open Science
- *D8.3 Data management plan (updated)* – as for D8.2.

All these are public deliverables and once cleared for publication should be available at https://cordis.europa.eu/project/id/101069508.

Section 2 of this document describes the general communication approach, whereas section 3 adopts the same methodological approach but focuses on the specifics of dissemination, building on the more general communication part.

2 COMMUNICATION

To plan and execute communication that supports the project goals and impact maximisation, a systematic approach is adopted in HighSpin, according to the numbered scheme below. First, overall goals and objectives for communication are stated (1). Stakeholders as defined in the project management environment analysis are adopted (2). Appropriate types of messages are identified (3), according to audience (=stakeholders (2)) and communication phase (see (5)). A focused set of media channels and means of communication are selected (4) through which HighSpin will transport its messages and enable connection with its stakeholders. The project communication is segmented into phases (5), in-line with the development of the technical activities of the project. Finally, the effectiveness of the communication activities is measured by adopting selected KPIs (6).

1. Goals and objectives
2. Audience
3. Message
4. Media and means
5. Communication phases (timing)
6. Key Performance Indicators.

These aspects are further elaborated in the following subsections.

2.1 OBJECTIVES

Objectives for the overall project communication are to:

1. **Promote the visibility of the project** and communicate the greater context in which it operates - Promote the action and its results, by providing targeted information to multiple audiences (including the media and the public), in accordance with Annex 1, in a strategic, coherent and effective manner
2. **Inform stakeholders** about the project and allow them to get in touch
3. **Establish a recognisable and consistent project identity** (visual, language)
4. **Support the project's dissemination and exploitation measures**
5. **Assess** through key performance indicators (KPIs) **the effectiveness of communication and dissemination measures**.

2.2 AUDIENCE

HighSpin communication addresses multiple audiences. On one hand, these are the more specialised community and stakeholders relating to battery research, automotive and aeronautic stakeholders, as defined in *D8.1 Project handbook* and given in Figure 1 (see "external project environments")*.* Updates to the external project environments in the handbook should be taken into consideration in this communication plan.

For communication, HighSpin will benefit from the strategic position of its members within the former H2020 and CleanSky actions, as well as within the EU networks. Focusing on the latter, the HighSpin coordinator (AIT) is a consortium member of the Battery 2030+ project and network[1], and a member of the EU network of research pilot

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[1] https://cordis.europa.eu/project/id/957213

lines LiPlanet[2], of the Batteries Europe platform[3], and of the European Partnership on Batteries (BEPA)[4].

The HighSpin partners CICE, KIT and CEA hold similar positions in these networks, together with FZJ, ARK, and SAFT within BEPA. Moreover, the HighSpin industrial partners, HTAS, SAFT, CCI, ARK (COA), SCP, and VIA, are members of the European Battery Alliance (EBA250[5]).

Besides this specialist community, project communication also targets the broader public and the media. They are considered stakeholders because the project is co-funded with EU taxpayer money, and because it aims to contribute towards the decarbonisation of road and air transport, and thus to larger societal objectives such as those of the Paris Agreement, the EU Green Deal, and associated efforts.
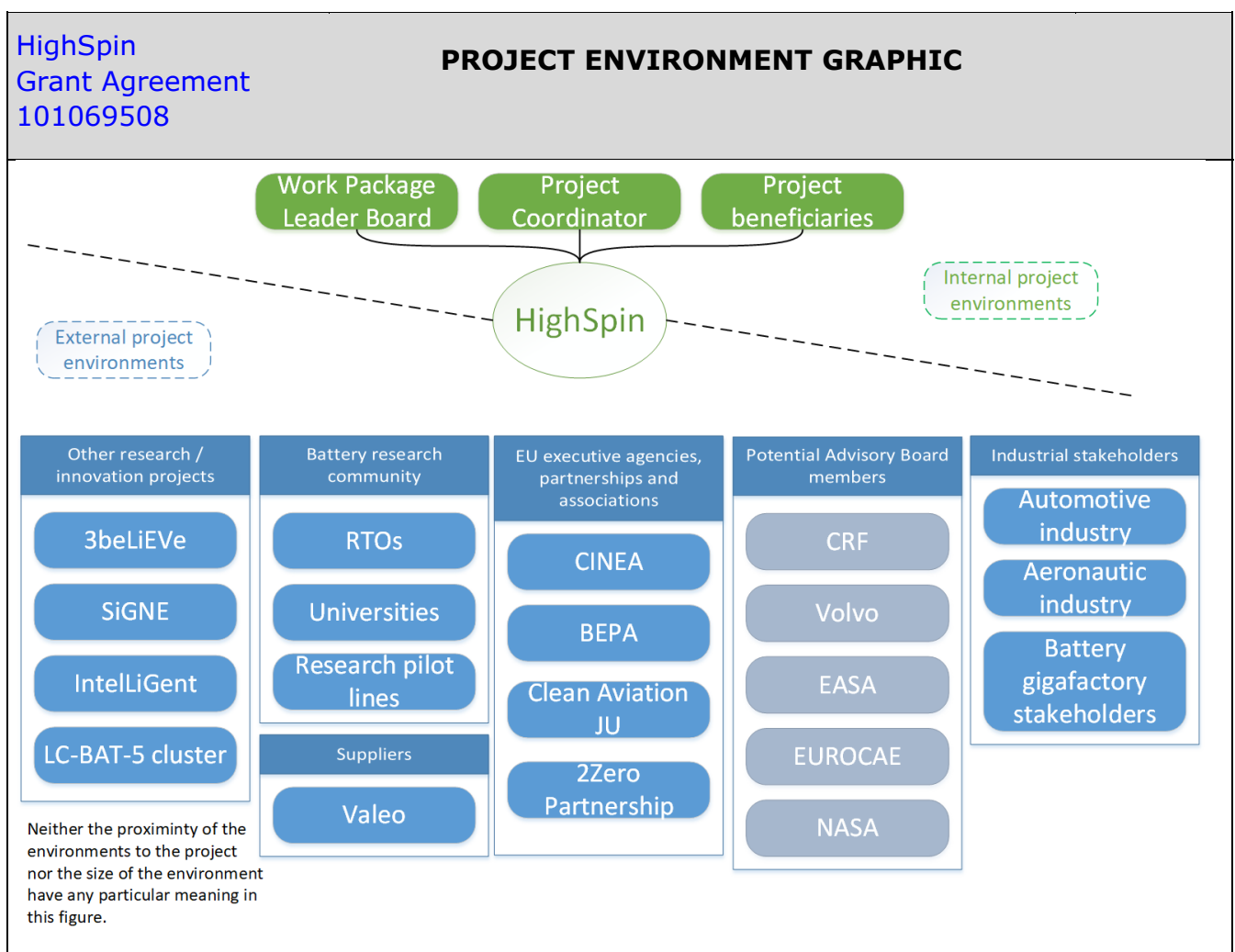

Figure 1: Project stakeholders (external project environment)

[2] https://www.liplanet.eu/
[3] https://energy.ec.europa.eu/topics/research-and-technology/energy-storage_en
[4] https://bepassociation.eu/
[5] https://www.eba250.com/

2.3 MESSAGE

Messages will be tailored based on the occasion and the specific audience being targeted, therefore no taxative enumeration of messages can be given here. However, some key types of messages can be formulated. Communication can focus on one or more of these key types of messages:

- Showing how this project and/or related European research (and innovation) actions strengthen the European battery industry
- Demonstrating how the research and innovation in the project contributes to solving societal challenges (impact on everyday lives, contribution towards decarbonisation, better use of results and spill-over to policy-makers, industry and the scientific community).
- Increasing public support for batteries and electric vehicles in the context of a transition to more sustainable patterns and modes of mobility
- Demonstrating scientific excellence, showcasing innovations and advances in battery technology and materials
- Demonstrating how collaboration in the format of a European research project achieves more than beneficiaries could manage individually
- Announcing publications, events, or other news from the project.

2.4 MEDIA AND MEANS

2.4.1 Visual identity

The visual identity of the project sets a consistent look and feel for project communication. The visual identity is incorporated in all official project documents, especially those destined for communication with the project's external environment, as well as the project's communication channels.

The project logo is the main visual element:

Figure 2: HighSpin project logo.

The colour palette is employed on website and in project documents (e.g., deliverables, presentations, etc.).

The colour palette (Figure 3) provides the range of colours that may be employed in project communications to ensure a flexible yet consistent visual appearance.
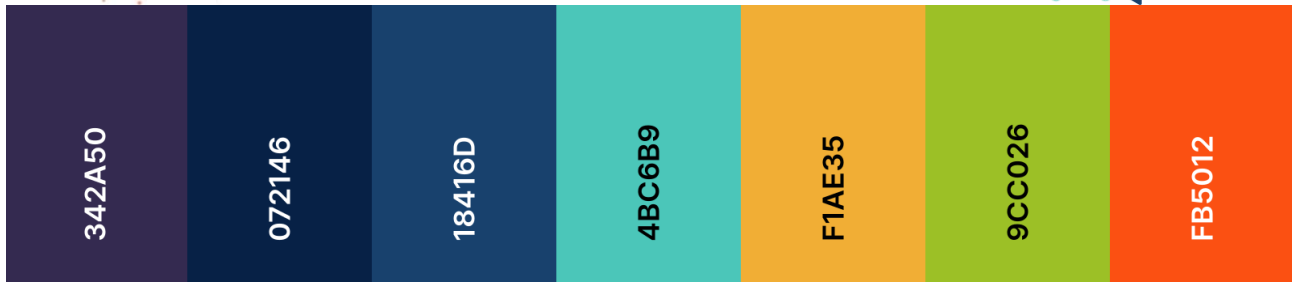
Figure 3: HighSpin colour palette (example figure)

2.4.2 Project website

The project will operate its own website at the domains highspin-project.eu and highspin.eu. The website will provide an overview of the consortium, the project objectives and activities, news, publications, and links to the project social media channels. It will also allow interested parties to get in touch with the project coordinator.

2.4.3 Social media

HighSpin will employ selected social media to reach its audiences. This will be a two-pronged approach:

- **Project's own social media**. The focus will be on LinkedIn, as from previous experience this appears the most effective online tool for reaching most of the target audience. At a later stage, when publications start to be available based on project results, a ResearchGate profile may be set up for the project as well[6].
- **The members of the project consortium will also be encouraged to leverage the social media of their own organisations (companies, research institutes, etc.) to amplify the messaging of the project**. To increase visibility of project news and posting, the project beneficiaries will be encouraged to repost items from the project's LinkedIn and/or homepage entries to their company social media (e.g., LinkedIn, YouTube), as well as their personal accounts. This appears to be one of the most effective methods to obtain visibility, at the same time it is a voluntary measure to the extent that partner organisations and individuals are willing to carry it.

The selection and use of appropriate hashtags/handles to bring the project to the attention of relevant. HighSpin will survey the social media of its predecessor and other related battery projects to find the important #hashtags to use.

In connection with dissemination, it may be expedient to use Zenodo.org for making open data available. This topic is covered in the data management plan (DMP) → *D8.2 Data management plan*.

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[6] However, in the meantime the ResearchGate gate functionality for projects has been discontinued (https://www.researchgate.net/researchgate-updates/retiring-projects). Therefore, this is not an option for HighSpin, but individual researchers are free to post their research on ResearchGate, in keeping with the confidentiality, etc. requirements of the projects.

HighSpin's website and social media channels are maintained and populated primarily by Lead Tech; content input suggestions are routinely made by the project coordinator but are welcome and encouraged from any consortium partner.

2.4.4 Communication materials

The range of communication materials covers printed and digital materials.

Print materials: Project brochure, stickers (e.g., with project logo and website URL or QR code, to stick on business cards or project demonstrators such pouch cells.)

Digital materials: Mini videos (e.g., interviews, videos of General Assembly meetings), newsletter (optional, possibly in cooperation with other projects as a joint effort). A set of icons depicting the main project themes will be developed. These can be used in presentations and other communication materials to focus attention on key topics.

Objective: one project video, 3 animated project mini-clips, 7 in-focus technical interviews with WP leaders (WP1 to WP6, plus WP8), one project brochure, one project reference infographic, one set of icon, plus other communication material as needed.

A separate newsletter is not planned. Instead, news updates will be provided via the website and social media channels. However, a joint newsletter with related projects may be envisaged in connection with the activities of *T7.5 Clustering and liaising with other relevant RIA projects and initiatives* insofar as this is agreed with other projects.

2.4.5 Presence at online and physical events

Representatives of HighSpin will take part in selected conferences and other on- and offline events. For details on this, see section 3.4.1

2.4.6 Acknowledgement of EU funding

Acknowledgement of EU funding must and will be made in line with the applicable guidelines [3] for all project materials accessible to the public.

2.5 COMMUNICATION PHASES

Project communication will evolve with time and technical progress in the project. Three main phases are envisaged.

- **Phase 1 – Infrastructure setup**: establishing project visual identity, developing document templates, establishing project presence online (website, social media). Timing: M1-M6.
- **Phase 2 – Communication ramp-up**. In this phase, project activities are well under way, but major results are not expected to have materialised yet. Communication will focus on initiating contact and connection with audiences and linking with other projects. Message focus is on project goals and project context. Connectivity and engagement KPIs are in focus for this phase. Timing: M6-M18
- **Phase 3 – Results and events communication**. This phase continues with the activities of phase 2 and adds message focus on project results, publications, events organised or attended by the consortium members. Active support of

dissemination activities. Impact KPIs become the main focus in this phase (phase 2 KPIs continue to be important). Timing: M18-M48.

2.6 KEY PERFORMANCE INDICATORS

In HighSpin we consider two groups of KPIs. The first is a more general measure of connectedness with audiences, mostly but not only online. The second group relates to the scientific output of the project.

Connectivity and engagement KPIs: these measure the extent to which the project is reaching its stakeholders and establishing connections, as well as promoting engagement with the project or individual consortium members. On social media, this includes followers, reposts, and comments. On the website, this will be measured through website traffic (e.g., via google analytics or other appropriate tool) and meaningful (non-spam) contacts through the website contact form. Other contacts such as personal meetings or email requests can also be included here.

Impact KPIs. These relate to dissemination and measure the scientific output. Examples: conferences and events attended, audience presentations held, publications.

Table 2: Connectivity and engagement KPIs for HighSpin communication

Project website	
Site traffic	15k+ visitors over the project life; about 4k (2023), 5k (2024), 6k (2025),
Contact form	3 meaningful contacts / year
Social media	
LinkedIn	500+ followers
	Reposts, comments and likes can be further indicators
Other digital formats	
Videos	One project video, 3 animated project mini-clips, 7 in-focus technical interviews with WP leaders (WP1 to WP6, plus WP8)
Newsletter	Optional – potentially a joint newsletter as part of a project cluster (tbd)

3 DISSEMINATION

Dissemination refers to the transfer of knowledge and results with the aim of enabling others to use or reuse and take up results, thus maximising the impact of funded research [1]. Since EU grants are financed by public funds, EU Beneficiaries are expected to disseminate their project results. In this way, the projects can benefit a larger group of persons and reach wider target groups [4].

This section follows the structure of section 2 to show the approach towards dissemination that is adopted in HighSpin.

3.1 OBJECTIVES

From [1], the dissemination-specific objectives obligations (resulting from the Grant Agreement) are adopted as objectives::

- **Disseminate results** — as soon as possible — through appropriate means, including in scientific publications (Article 17of the Model Grant Agreement)
- **Ensure open access** (online access to research outputs provided free of charge to the end-user) to all peer-reviewed scientific publications relating to its results (Article 17 of the Model Grant Agreement)
- **Manage the digital research data generated in the action responsibly**, in line with the FAIR (Findable, Accessible, Interoperable and Reusable) principles (Article 17 of the Model Grant Agreement)
- **Comply, where the case, with additional obligations regarding Open Science** practices, such as measures regarding the validation of scientific publications (Article 17 of the Model Grant Agreement).

3.2 AUDIENCE

The audience addressed by HighSpin is defined in section 2.2. For dissemination purposes, the focus will be on the scientific and technical audience. Additionally: CL5-2021-D5-01-02 and CL5-2021-D5-01-03 funded projects (Gen. 3b/4) – cf. section 3.4.1.

Further specification of these audiences: scientific/technological stakeholders (worldwide), certification bodies (e.g. EASA/FAA), automotive and aeronautics sector, battery sectors, policy makers (e.g. EC, EASA, etc.), stakeholders and associations (e.g. BEPA, Batteries Europe, Battery 2030 plus, EARPA, 2ZERO, EREA, etc.).

3.3 MESSAGE

Focus is on communicating and sharing scientific findings, in line with the objectives (see above), as well as advertising project/consortium/partner participation in relevant events.

3.4 MEDIA AND MEANS

3.4.1 International conferences, symposia, and industry forums

Consortium beneficiaries will select at their discretion appropriate conferences, symposia, and industry forums in which to participate and disseminate project results. In the following a non-exhaustive list of examples: SAE World Congress, Electric Vehicle Symposium, Transportation Research Board at a global level, EUROCAE for Aerospace standardisation and Transport Research Arena at the EU level. Participation and/or dedicated workshop to the TRA 2024 conference and exhibition, possibly co-organised with the CL5-2021-D5-01-02 and CL5-2021-D5-01-03 funded projects (Gen. 3b/4). Presentation at H2020RTR23 and H2020RTR24 conference (if applicable).

3.4.2 Peer-reviewed scientific publications

Scientific original articles in peer-reviewed scientific journals, belonging to the areas of energy storage (e.g. Journal of Power Sources, Energy, Applied Energy, Electrochimica Acta). If applicable, the Open Research Europe Engineering and Technology Journal[7] will be considered, and scientific publications will be complemented by the publication of open datasets.

3.4.3 Portal projects and results page, and CORDIS

Key project results (identified as such as part of project periodic reporting), including public technical deliverables, will be available via the project's CORDIS entry at https://cordis.europa.eu/project/id/101069508.

These automatically roll up into the generalised Projects and results reporting at https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/projects-results.

3.4.4 Open science

Open Access publication of scientific articles. The consortium is aware that scientific publications coming from research in the project must be made available in open access. Corresponding budgets were allocated in the project design phase, and the open access requirements have been communicated as part of project meetings. There is support for questions relating to Open Access through the project's IPR manager in task *T7.4 IPR Management*.

Open Data. One of the aims of the open science policy under Horizon Europe is to "require research data to be FAIR and open by default (with exceptions notably for commercial purposes) [5]. The topic of open data and management of research data according to FAIR principles is done in HighSpin as part of project management under *T8.3 Quality, data and risk management* and is documented in the deliverables *D8.2 Data management plan* and *D8.3 Data management plan (updated)*. While open access is default for papers, open data are subject to a case-per-case evaluation, in order to protect industrially/commercially sensitive information.

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[7] https://open-research-europe.ec.europa.eu/browse/engineering-and-technology

3.5 COMMUNICATION PHASES

See section 2.5. Phase 2 and above all phase 3 will be in focus for dissemination.

3.6 KEY PERFORMANCE INDICATORS

Table 3Table 3: Dissemination KPIs summarises the KPIs for dissemination.

Table 3: Dissemination KPIs

Publications	
Conferences	7 international conference papers, with publication in conference proceedings. Priority will be given to peer-reviewed conferences (such as AIAA/TRA, etc.).
Articles	6 original articles in peer-reviewed scientific journals.
Poster presentations	3 poster presentations held at scientific events.
Project deliverables	22 of the project's technical and management deliverables will be publicly accessible via the project's CORDIS entry and on its website.
ResearchGate	See footnote on page 12.
Open Data	
Datasets	At least one extensive dataset from final cell testing in WP6 published as FAIR-compliant Open Data, probably on zenodo.org.

4 CONCLUSIONS

This dissemination and communication plan presented the structured approach towards communication and dissemination planning in the HighSpin project. Starting with the objectives, the plan described the target audiences and the main types of messages that the project will aim to convey. Applying learnings from previous projects, a focused set of communication channels has been selected to optimize effectiveness (in terms of reaching audiences) and efficiency (in the management of the communication channels). The project communication has been split into three major phases, representing a stepped ramp-up in communication activities following the initial setup of the communication infrastructure, and in line with project technical developments. Finally, a small but expressive set of KPIs are adopted to assess the effectiveness the project's communication and dissemination activities.

5 REFERENCES

[1]   European Innovation Council and SMEs Executive Agency., *European IP Helpdesk: successful valorisation of knowledge and research results in Horizon Europe : boosting the impact of your project through effective communication, dissemination and exploitation.* LU: Publications Office, 2022. Accessed: Jan. 31, 2023. [Online]. Available: https://data.europa.eu/doi/10.2826/437645

[2]   European Commission, 'AGA - Annotated Model Grant Agreement (Pre-draft)'. Nov. 30, 2021. [Online]. Available: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/common/guidance/aga_en.pdf

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[5]   'Open Science', Feb. 10, 2023. https://research-and-innovation.ec.europa.eu/strategy/strategy-2020-2024/our-digital-future/open-science_en (accessed Feb. 17, 2023).