TALAN

Positive innovation

Research and Innovation

Business Report *2024*

Contents

PREFACE

#1

PREFACE

We are pleased to present the Talan Research and Innovation Center's 2024 Annual Report. Once again this year, our research and innovation activities have played a central role in our mission: **anticipate changes in technologies and practices so we can offer our customers cutting-edge solutions tailored to the challenges of tomorrow, whilst also considering their impact on society and the environment.**

This year was particularly significant for our Group, with the award of the **European HRS4R** (Human Resources Strategy for Researchers) certification, making Talan the first French company in the private sector to receive this distinction, which recognises the excellence of our practices regarding human resources management for researchers. This commitment illustrates our desire to attract the best talent and offer them an environment in which they can flourish and achieve scientific excellence.

2024 saw the rapid emergence of numerous generative artificial intelligence solutions, and our Research Center has positioned itself at the forefront of these developments by devising **rigorous evaluation methodologies and exploring their practical applications.**

Our commitment to research has also resulted in significant scientific output, with more than 40 publications in peer-reviewed scientific journals and conferences, as well as communications and popular articles aimed at the general public. Our team is actively contributing to advances in a wide range of fields, from artificial intelligence to managerial innovation, and including the ecological transition. 2024 also saw our team grow with the recruitment of 20 new PhDs, strengthening our capacity to run ambitious research projects. This growth has been supported by the implementation of a reinforced structure, based around four strategic divisions: Managerial practices and innovations, Governance and technology assessment, Carbon trajectory and CSR performance, and Use of technologies and business cases.

We are particularly proud to see our researchers developing innovative solutions such as Hope, TalanSeeker and CV Pro AI, which demonstrate our ability to transform research into practical tools for our employees and customers.

For 2025, we plan to further intensify our efforts, in particular by strengthening the international scope of our operations and developing new strategic partnerships. Our vision remains rooted in a responsible approach to innovation, where technology is used to support human and environmental progress.

We thank you for your interest in our work and encourage you peruse this report and find out about the extent of our achievements and ambitions.

Enjoy your reading

Nicolas Recapet
Group Executive Vice-President
HR, CSR, M&A

Laurent Cervoni
Director of Research
and Innovation

INTRODUCTION

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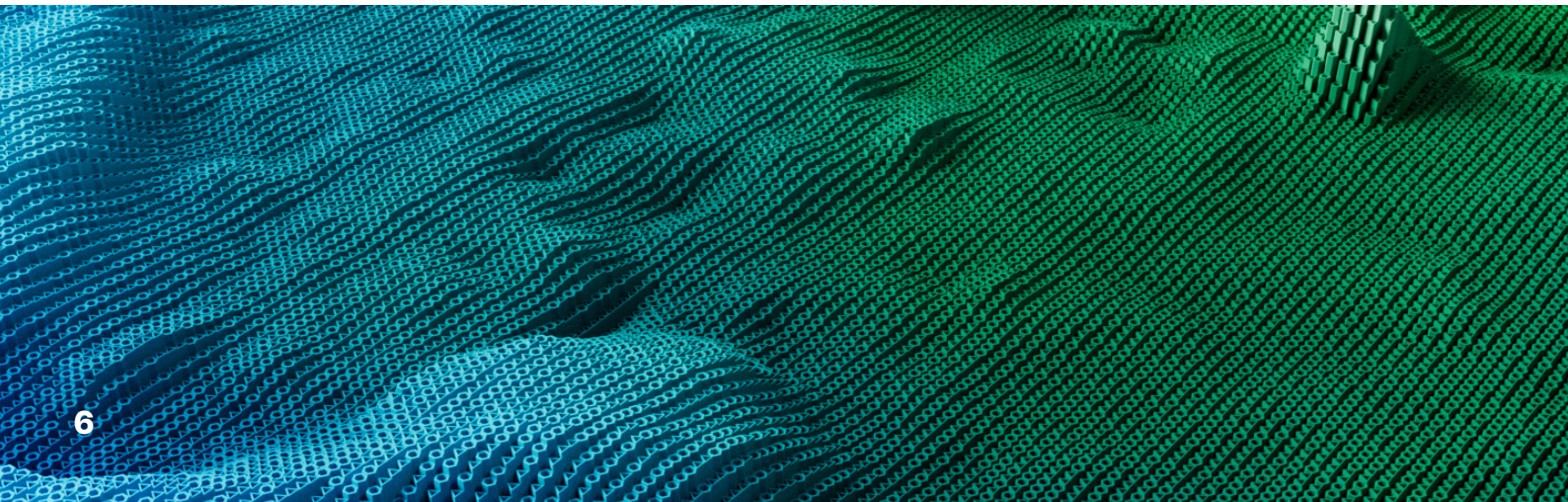
A. Objectives of the annual report

Research and innovation lie at the heart of Talan's identity and its activities. Our ability to innovate enables us to stand out and spread our influence, while also delivering greater added value to our customers. This report on Talan's research activities will provide you with a clearer picture of the research we undertake and its impact. In particular, we will be presenting a comprehensive overview of our objectives, the means deployed to achieve them, our commitment to research and our ability to meet the needs of our customers and the scientific community.

To do this, we will present in this report the organisation of Talan's various research entities and the way in which the teams work together with the different entities of the group, as well as their role in achieving the objectives. We will outline the strategic objectives we have set ourselves for 2025 and for the longer term, as well as an overview of the means used to achieve them. This report also highlights the collaborations and partnerships with other organisations and the ways in which we work together. We will be presenting the scientific publications and communications produced during the year by our researchers, including a description of their content and impact. Finally, we will present the events organised by the Research and Innovation Center.



B. Presentation of the parties in involved in Research and Innovation

The Talan Group's Research and Innovation activities are coordinated by the R&I Center. The Center is based in Paris but draws on contributors in all countries where Talan operates in order to offer projects that best meet the needs of each local economy, while maintaining a broad strategic vision.

1/ The Talan Research and Innovation Center in Paris

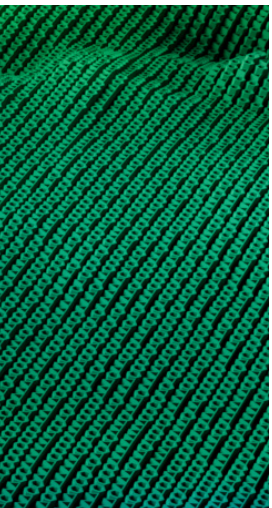
The Talan Research and Innovation Center was inaugurated in 2019 under the direction of Dr Laurent Cervoni, PhD in Computer Science and a specialist in Artificial Intelligence. The Center brings together around twenty researchers from a wide variety of fields: computer sciences, theoretical physics, geosciences, art history, management sciences, deep learning, etc. Drawing on this diversity, the Center drives multi-disciplinary innovation, covering topics ranging from digital transformation to artificial intelligence, including managerial innovation and the governance of artificial intelligence, not forgetting the societal and environmental repercussions of these new tools.

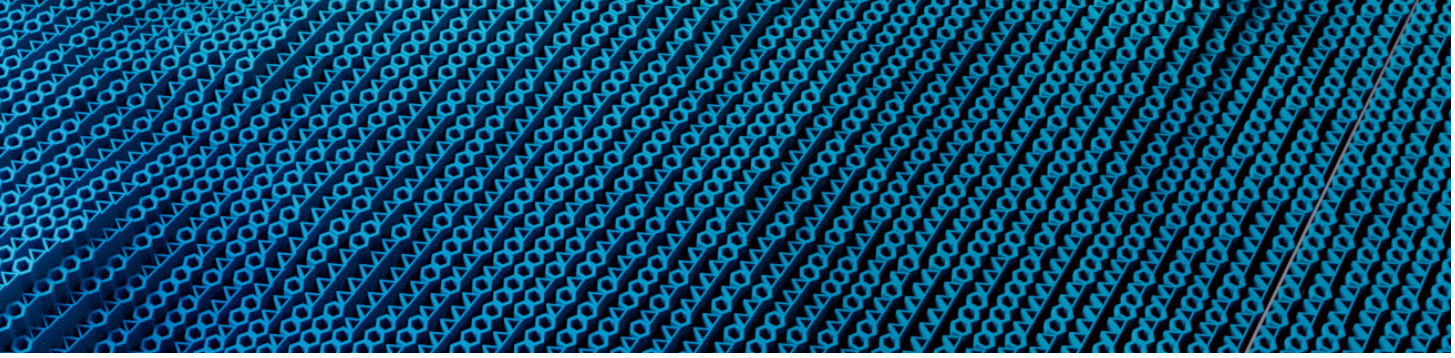
2/ Dataroots

Dataroots, a subsidiary of the Talan Group, specialises in the development of artificial intelligence and data science solutions to support organisations in their digital transformation. Dataroots therefore offers end-to-end solutions, ranging from the design of bespoke AI models to their deployment in production environments, via data analysis and strategic consultancy. Actively contributing to numerous applied R&D projects, Dataroots ensures that its consultants have cutting-edge expertise in machine learning, AI and cloud computing technologies. Dataroots is also known for its commitment to AI4Good initiatives such as tracking the carbon footprint of cloud computing, monitoring the swarming of bees to prevent their death and creating federated learning platforms for the purpose of analysing medical data.

3/ Germserv

Germserv is a UK professional services firm specialising in data, energy and technology. It provides consultancy and governance services and contributes to research projects, particularly in the field of energy. In 2024, it launched the Ammogen project to demonstrate the feasibility of using ammonia as a vector to transport hydrogen. This technology has been commissioned at the company's Birmingham plant, positioning the UK as a world leader in an emerging market. Germserv joined the Talan Group in 2024.





4/ Micropole

Micropole is an international consultancy specialising in business transformation through Data, Cloud and Digital. The group employs 1,200 people in 14 offices in Europe and China. Micropole was acquired by the Talan Group in 2024, strengthening the group's position on the international market and in the field of research and innovation. The R&D projects supported by Micropole are diverse and cover all sectors: real estate, insurance, services and energy. Projects include, for example, the analysis and modelling of household energy consumption in order to accurately identify the electrical signatures of household appliances. Other projects involve the management of natural risks in a property insurance context or the optimisation of operational or decision-making processes.

Micropole's innovation unit: anticipating, experimenting, and innovating

The mission of Micropole's innovation unit is to identify and anticipate short-, medium- and long-term technological trends. Using an operational approach, the team explores, tests and integrates emerging technologies – such as AI, Data, Digital, and IoT – to improve the services offered to customers and internal teams.

Active technology watch and a firm foothold in the field

Working cross-functionally within the Group, the unit monitors developments constantly and takes part in international technology trade fairs. The aim of this approach is to identify innovative solutions from start-ups and strategic partners.

The unit also works on customer assignments, offering:

- acculturation workshops for innovation and new technologies;
- operational support for integration and training in emerging solutions;
- reports on trends observed at major tech events.

From experimentation to implementation

The team plays a key role in developing and implementing innovative technologies within the Group and for its customers. This involves experimentation in the form of proofs of concept (POC) to confirm the feasibility and relevance of the solutions tested.

It is also a hub for capitalising on and sharing the Group's R&D. By identifying and supporting projects eligible for the French research tax credit system, the unit actively contributes to Micropole's innovation strategy.

Sharing innovation internally and externally

The team also ensures Micropole's visibility through covering in the media (interviews, articles, conferences, etc.). It promotes the dissemination of knowledge and best practice internally through events, training, and dedicated tools.

5/ Coexya

Coexya is a French company specialising in the digital sector, operating as an integrator, software publisher and consultant. It employs more than 900 people across France, helping businesses with their digital transformation and exploitation of their data. Coexya joined the Talan Group in 2024, consolidating its presence on the global market and strengthening its commitment to research and innovation through various R&D projects. Coexya is involved in a number of research projects, particularly in machine learning, NLP in the medical and health sectors, and task automation. The ConSoRe project, for example, provides hospitals with an AI tool that enables them to build up cohorts of patients quickly, based on specific criteria (gender, age, type of tumour, treatment, etc.). The MEDTRONIC project, undertaken in collaboration with a French start-up, seeks to develop a medical data collection platform. Finally, the MithraREM solution aims to map exposure to electromagnetic fields throughout France, for a better assessment of the impact of electromagnetic waves on public health. Coexya's multidisciplinary research is therefore perfectly aligned with Talan's vision for research.

6/ Talan Tunisia

Talan Tunisia is the group's nearshore development facility with more than 500 engineers from the best Tunisian and European engineering schools, all specialising in new technologies. It concentrates on fields such as artificial intelligence, blockchain, the cloud, and intelligent automation. The Tunisian team contributes to the group's innovation activities in projects including ones involving Generative Artificial Intelligence, the Metaverse, and Blockchain, led by Imen Ayari. The innovation team also initiates or participates in events such as the Talan Global Hackathon and the Talan Summer Camp, which takes place every year.

7/ Talan Canada

Talan operates in Canada at its offices in Montreal, Quebec and Toronto. Createch and INSUM (a specialist in Oracle solutions) have joined the Talan Canada teams. These three entities have thus pooled their expertise in research and innovation applied to businesses, and collaborate regularly with the Research and Innovation Center in France.

C. Key figures in 2024 (INCLUDING 2024 ACQUISITIONS)

39,000 Research days

40 Research publications

>40 Current projects

20 PhDs recruited

Comparison with 2023

13,000	37	30	12

The Research and Innovation Center is supported by a strong doctoral research team with a wide range of backgrounds. These PhDs manage projects within the Center or are on assignment at customer sites.

In total, more than 60 PhDs are spread across the group, including 20 PhDs recruited to the Center in 2024. They are responsible for around thirty projects, the production of 15,000 days of research and close to 40 publications. This represents an increase of 35% on a like-for-like basis. The acquisitions made by the Group in 2024 tripled the number of R&I days (39,000 days).

Strategic orientations

#3

Talan group's strategic orientations in research and innovation

The Talan Group aims to align its R&I activities with its objectives of moving upmarket, anticipating technological developments and strengthening synergies with customer projects. There are three main strands to this approach: define an integrated research and innovation strategy (i), boost visibility and attractiveness (ii), and invest in skills and talent (iii). The Group's research is based on collaboration with academic and private partners, international scientific publications and projects demonstrating Talan's expertise. In 2024, the R&I Center published more than 40 articles, contributing to recognition of the group. Our priority is to recruit highly qualified people, especially PhDs. These experts combine R&I project management with the ability to work directly with customers, thereby enhancing the added value of the teams. The 2025-2026 strategic orientations aim to strengthen the international scope of our research activities and diversify the fields of technological application.

Recruitment and international partnerships, labelling and R&I initiatives, and development of technological and methodological tools

The Group plans to increase collaboration with laboratories and other partners. It also plans to recruit up to 50 PhDs in France and abroad. This includes participation in European projects and the creation of an operational excellence unit to enable the industrialisation of work carried out by research teams. Lastly, for the Group, this is also reflected in the launch of solutions such as TALIA, Hope and OptiLLM, which support operational teams in managing customer projects and deploying artificial intelligence in various sectors.

These directions reveal Talan's commitment to consolidating its position as a major player in technological innovation, while delivering genuine added value to its customers.

Research projects organised into four strategic divisions

To structure this approach effectively and meet the expectations expressed by its Business Units (BUs), Talan is supported by the four strategic divisions of the R&I Center. By structuring its research activities in this way, Talan combines an approach that is both innovative and pragmatic, enabling its customers to benefit from a capacity for anticipating technological developments by turning them into relevant, sustainable and exploitable solutions.

1. Managerial practices and innovations

The Talan Research Center's Managerial Practices and Innovations division is part of an approach aimed at rethinking organisational dynamics and anticipating changes in businesses in a constantly changing world.

The projects carried out by this division explore a wide range of themes, such as optimising human resources management processes using artificial intelligence, empowering employees through decentralised approaches, and supporting cultural transformations during mergers and acquisitions.

Particular emphasis is placed on the role of AI in simplifying and improving managerial practices. This includes the development of interactive solutions, such as chatbots for building ideal project teams or personalised support tools for updating and improving CVs. These innovations are designed to free up time for employees, all the while strengthening their professional identity and their commitment to the organisation's values.

By anticipating future skills needs, rethinking decision-making processes and promoting cultural harmonisation, this Center is helping to transform managerial practices to meet the challenges facing organisations now and in the future.

2. Governance and technology assessment

The division focuses on developing reliable frameworks for assessing emerging AI technologies. Its key themes include the development of replicable methodologies and rigorous benchmarks for analysing the performance of AI models, whether they are dedicated to generating images, code or other creative content. Special attention is paid to identifying and mitigating the potential biases and negative impacts of generative AI (GenAI) systems. The division also explores the role of AI in the democratisation of creative and technical processes, as well as the distinctions between human production and that assisted by artificial intelligence.

Finally, research work includes studying the integration of logical and symbolic techniques into AI models to guarantee coherent reasoning in complex domains requiring particular rigour.

3. Carbon trajectory and CSR performance

The Carbon Trajectory and CSR Performance division is part of an approach designed to support businesses and organisations in their ecological transition, while strengthening their overall performance.

The research undertaken explores the interactions between technological innovation, environmental impact and sustainable development. This includes the use of advanced technologies, such as satellite data and artificial intelligence, to measure and reduce CO_2 emissions, as well as to assess the environmental impact of various economic activities.

The division is also looking at ways of aligning sustainability and economic growth, by analysing how eco-responsible strategies can drive competitiveness and resilience in businesses.

At the same time, it considers the role of experts in the ecological transition, reconciling scientific rigour and practical application, to maximise the impact of actions taken in the field of corporate social responsibility.

4. Use of technologies and business cases

The Talan Research Center's **Use of Technologies and Business Cases** division explores the use of advanced technologies in response to a wide range of practical problems. The purpose is to demonstrate how artificial intelligence, predictive models and explainable technologies can transform practices in key sectors.

The division's work focuses on a number of areas:

Automation and optimisation: Facilitate the performance of complex tasks and improve productivity in a variety of professional contexts.

Intelligent interaction: Develop multimodal solutions to enrich user experience and enhance systems' ability to understand and communicate.

Transparency and reliability: Increase confidence in technology by making its decisions more explicable and understandable.

Sectoral innovation: Apply predictive tools and innovative approaches to address sector-specific challenges in industry, healthcare or legal affairs.

This division illustrates how emerging technologies can be used to help businesses, paving the way for more efficient, innovative and responsible practices.

A. Projects and progress at the Research and Innovation Center in 2024

1. Talan research projects: signature projects from the four divisions

TalanSeeker:

At the heart of innovation in artificial intelligence, **TalanSeeker** is revolutionising the way businesses put together their project teams in order to respond to Requests for proposals (RFPs). This intelligent chatbot uses advanced machine learning and natural language processing technologies to analyse specific project requirements and come up with an optimal team composition.

Thanks to its analytical capabilities, **TalanSeeker** guarantees:

- Optimisation of resources, aligning the skills and experience of employees with the precise needs of the projects.
- A reduction in the time needed to set up teams, enabling a rapid and competitive response to RFPs.
- Improved performance, increasing the chances of success of bids through the formation of tailored teams.

With this signature project of the Managerial Practices and Innovations division, Talan is positioning itself as a leader in the use of AI in transforming human resources management practices and optimising collaboration in complex and competitive environments.

CV Pro AI:

In a world where artificial intelligence is redefining recruitment processes, **CV Pro AI** provides an innovative solution to simplify and optimise the updating of consultants' CVs. This interactive tool uses AI algorithms to make personalised recommendations, ensure compliance with formats, and align the skills and experience of employees with the requirements of requests for proposals.

Drawing on progress in GenAI, **CV Pro AI** acts as a true digital coach, offering:

- An **improvement in the quality of applications**, increasing consultants' chances of success.

- **Simplified administrative tasks**, freeing up time for higher added-value tasks.

- **Ongoing training**, helping consultants to make better use of their skills, while reinforcing their commitment to Talan's culture and values.

With CV Pro AI in the Managerial Practices and Innovations division, Talan aims to redefine HR practices by combining technological innovation and human experience to maximise the effectiveness and impact of job applications.

Caring leadership in hybrid work contexts

As the practice of hybrid working spreads through businesses, the question of how standard theories of caring leadership remain effective and functional in these contexts remains open. The aim of this research is to characterise caring leadership, evaluate it using an indicator and test its managerial usefulness on other essential variables for organisations (e.g. turnover, commitment). This doctoral thesis work is being undertaken with the aim of perpetuating Talan's efforts in terms of well-being at work and employee management in working environments where digital technologies and the mobility of players are predominant.

T2I:

Text-to-image (T2I) models, such as DALLE, Stable Diffusion, Adobe Firefly or Leonardo.ai, can be used to generate images from text prompts. However, the T2I market is evolving rapidly, as new models appear claiming superior performance, often based on proprietary and non-standardised evaluation frameworks. These approaches make objective, replicable comparisons difficult.

This project aims to develop a reliable and iterative benchmark for assessing these models. This benchmark incorporates advanced tools, such as Detectron2 and GPT-Detection, to enhance model evaluation.

In addition to automated evaluations, a human assessment is carried out to ensure a more nuanced and qualitative analysis of performance. The aim is to propose standardised and replicable metrics, while exploring the ethical and societal impacts of generative AI.

With this work, the Governance and Technology Assessment division aims to lay solid foundations for transparent and comparable assessments, thereby contributing to the governance and ethics of AI technologies.

Generative AI for Games (IAGG):

Generative AI technologies are profoundly transforming the way we work, making it easier to learn new skills and optimising existing practices. The Generative AI for Games (IAGG) project explores the potential of these technologies in the field of video game creation, asking an ambitious question: can someone with no programming experience use GenAI tools to design a video game of comparable quality to one produced by experts in the sector?

This project is not just a technical experiment. It also seeks to identify the key elements that distinguish human work from AI-assisted work by analysing the different aspects of a video game: visual quality, sound design, interactions with the player, and other creative dimensions.

Another central objective is to assess GenAI as a tool for learning and accelerating creativity. By making the various aspects of video game design (programming, illustration, storytelling, etc.) accessible without requiring any prior technical skills, these technologies could democratise digital creation and open up new perspectives for the uninitiated.

With IAGG, the Governance and Technology Assessment division aims to gain a better understanding of the contributions and limits of generative AI in a field that combines creativity, technology and human interaction by initiating a debate on the future transformations of the creative professions.

Carbon footprint and growth:

In a globalised and increasingly competitive market, businesses are facing major challenges, particularly in terms of the environment. The need to reconcile economic growth with social and environmental responsibility has become a key challenge, in line with the United Nations' sustainable development objective of "promoting sustained, shared, and sustainable economic growth." This shift highlights the need to understand how businesses are integrating these imperatives into their strategies, while complying with demanding regulatory frameworks.

The aim of this research project is to analyse the relationship between businesses' economic growth and their social, societal and environmental impact, in relation to their respective business sectors. It explores the links between financial, non-financial and environmental performance, particularly with regard to the new European regulations on corporate sustainability reporting (CSRD). The study also focuses on data accessibility and transparency, questioning businesses' reporting practices and their communication to the public.

Based on a comparative analysis of practices in different sectors, this signature project of the Carbon Trajectory and CSR Performance division aims to determine whether investment in sustainable strategies can offer competitive advantages. These benefits, whether financial or non-financial, include a better brand image, enhanced attractiveness and increased compliance with regulatory requirements. The aim of this project is to provide strategic insight for businesses wishing to integrate climate issues into their economic development, while meeting the growing expectations of stakeholders as regards sustainability.

Predictive AI and Biotechnology:

Biotechnology is a vast field of the future, and one that is becoming increasingly important in sectors such as the pharmaceutical and agri-food industries, energy and environmental engineering. Artificial intelligence is accelerating this field, offering revolutionary solutions that businesses are seizing on for a wide variety of applications, such as the accelerated design and modelling of compounds with desired effects (drugs, biomaterials, etc.), predicting the effectiveness of treatments or the automated analysis of complex data.

This research project explores the potential of predictive artificial intelligence tools to optimise the industrial production of molecules of interest. Drawing on a combination of technological advances in AI and biology, the project aims to evaluate and propose the most promising solutions for accelerating research and development in this area. The aim is to contribute to more efficient, sustainable bioproduction tailored to the growing needs of industry.

With this signature project of the Use of Technologies and Business Cases division, Talan is positioning itself at the crossroads between technological innovation and industrial applications, promoting solutions that combine performance and responsibility in key sectors.

2. Human Resources Strategy for Researchers

The HRS4R certification is a distinction awarded by the European Commission to research institutions and laboratories that are committed to improving their practices in terms of recruitment, working conditions and human resources management for researchers. This certification is part of the European strategy to make careers in research more attractive and guarantee high standards within scientific institutions. For Talan, this certification will increase its credibility and attractiveness in the world of academic research. Talan is the first private company in France to be awarded this prestigious distinction.

Begun in 2023, a working group was set up for an internal study phase. This phase consists of an internal analysis of any gaps between the objectives defined by the certification and current practices at Talan (GAP analysis, figure below). Gaps may stem from a lack of or weaknesses in existing practices, deficiencies between researchers' expectations and the actions in place, or non-compliance with European standards. Once identified, these gaps are classified by impact and urgency, and an action plan is drawn up to address them. It was on the basis of this report that we were awarded the certification.

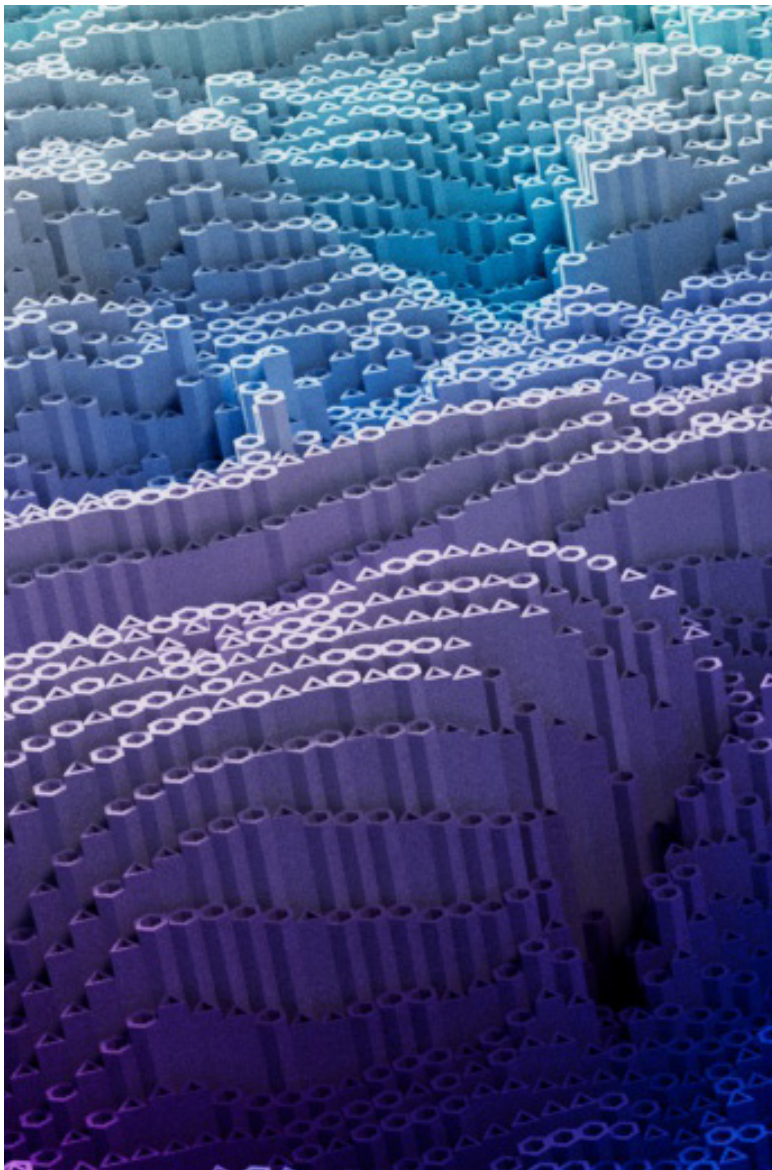
This award triggers the second phase, **the action plan implementation phase**, which began in May 2024.

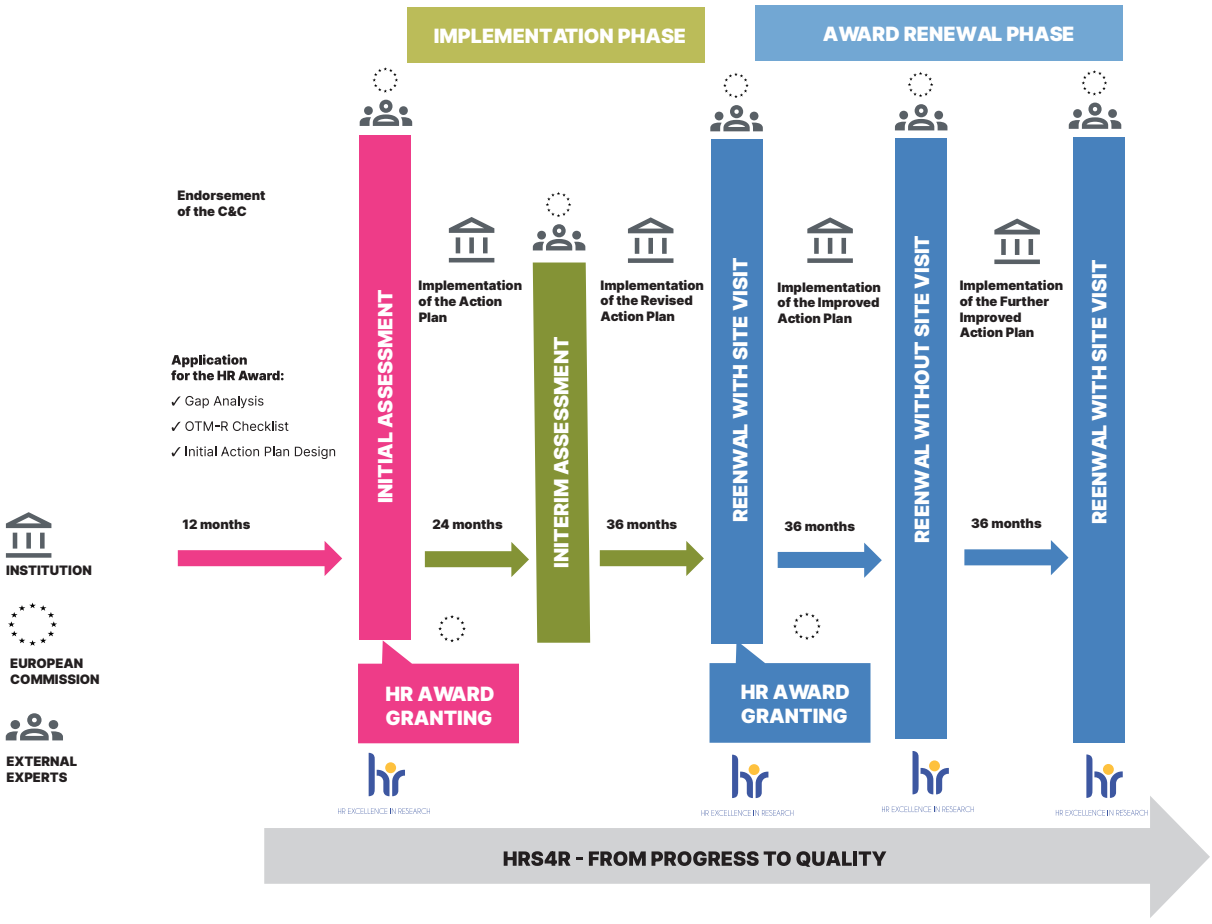
A number of initiatives have been put in place since then, especially in collaboration with the Human Resources department, such as improvements to the recruitment process.

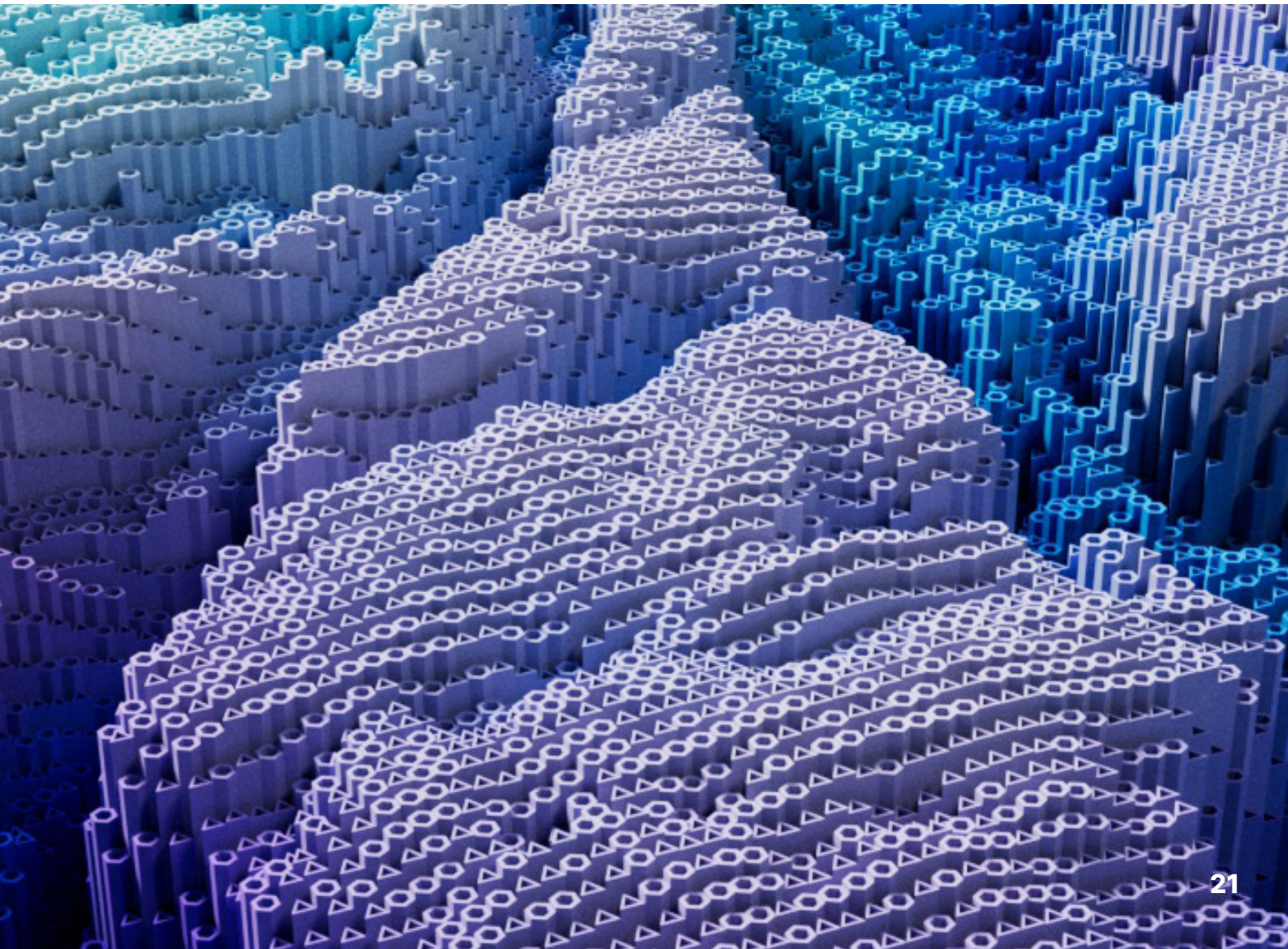
Furthermore, a researcher's ethics charter has been drawn up and circulated within the Research Center to ensure that the ethical implications of research projects are taken into account.

A number of internal actions have also been implemented to clarify responsibilities and improve communication. Other initiatives are underway, such as the distribution and collection of well-being questionnaires for the Center's researchers, as well as inclusion indicators.

HR EXCELLENCE IN RESEARCH




IMPLEMENTATION PHASE
AWARD RENEWAL PHASE
Endorsement of the C&C
Application for the HR Award:
✓ Gap Analysis
✓ OTM-R Checklist
✓ Initial Action Plan Design
INITIAL ASSESSMENT
Implementation of the Action Plan
INITERIM ASSESSMENT
Implementation of the Revised Action Plan
REENWAL WITH SITE VISIT
Implementation of the Improved Action Plan
REENWAL WITHOUT SITE VISIT
Implementation of the Further Improved Action Plan
REENWAL WITH SITE VISIT
12 months
24 months
36 months
36 months
36 months
HR AWARD GRANTING
HR AWARD GRANTING
INSTITUTION
EUROPEAN COMMISSION
EXTERNAL EXPERTS
HRS4R - FROM PROGRESS TO QUALITY



B. 2025 Objectives

For 2025, the Talan Group plans to step up its research and innovation efforts in order to consolidate its position as a leader in technological and scientific innovation. This approach is based on a number of strategic priorities aimed at strengthening the synergy between research, innovation and experimental development, while meeting the needs of our operational teams and our customers.

1) Strengthening of R&D activities and merger with Coexya and Micropole

In 2025, Talan will continue integrating its research activities with those of Coexya and Micropole, which began at the end of 2024. The aim is to create a unified, interdisciplinary research ecosystem, promoting the exchange of skills and the development of collaborative projects. This synergy will enhance the impact of research work and speed up its deployment in production.

2) Production start-up of demonstrators for the entire group

In order to capitalise on the expertise and know-how of its research teams, Talan plans to deploy Group-wide the demonstrators developed within the Research Center over the past year. These demonstrators will provide a concrete illustration of the potential of the technologies and methodologies tested in R&I projects, facilitating their adoption by operational teams and our customers.

3) Continued recruitment of PhDs in a wide range of fields

To strengthen our R&I team and broaden the variety of skills, Talan will continue to recruit PhDs from a wide range of disciplines. This strategy aims to stimulate innovation by integrating complementary expertise, while encouraging diversification of research methods within the Group's different entities.

4) Opening up new R&D projects based on the needs of operational teams

In 2025, Talan has already planned new research projects based on the needs expressed by its operational teams, including sales people, project managers and other people in the field. This approach ensures the best possible match between the research undertaken and the challenges faced by employees and customers.

5) Strengthening international focus with projects in the United Kingdom, the United States and Canada

As part of our international strategy, Talan is initiating new research and innovation projects with its teams in the United Kingdom, the United States and Canada. This international growth will enable us to diversify the scope of the technologies we develop, while raising the profile of the Group.

6) Implementation of the HRS4R (Human Resources Strategy for Researchers) action plan

After obtaining the European HRS4R certification in 2024, Talan will continue to implement the associated action plan. This phase includes improving recruitment processes, developing researchers' skills and promoting an ethical and inclusive working environment. These actions will help make Talan more attractive to researchers and encourage their professional development.

7) International and national publications (journals and conferences)

To ensure its work is disseminated and contribute to the advancement of knowledge, Talan is pursuing its strategy of publishing its research in scientific journals and international conferences. This approach strengthens recognition of the Group within the scientific community and contributes to the creation of new academic and industrial partnerships.

By consolidating its research activities, developing strategic collaborations and seeking to integrate innovations into its products, Talan is reaffirming its commitment to anticipating technological developments and offering cutting-edge solutions that meet the challenges facing its customers.

C. Strategies for achieving objectives

To achieve its recruitment objectives, the Center is promoting a 'post-doctoral' year within the structure to attract young PhDs who wish to maintain a research component in their employment with a company. During this year, young PhDs lead research projects with the aim of coming up with innovative solutions for the market. Researchers are given a great deal of freedom to choose their research topics, which helps to attract a wide range of multidisciplinary profiles. The Center's researchers also have the opportunity to mentor Group employees, thus developing their management skills. At the end of this post-doc year, the PhDs recruited by the Center will join the different entities, where they will continue to provide us with their expertise. In 2024, Talan was also awarded the European HRS4R (Human Resources Strategy for Researchers) certification, helping to attract PhDs to the Center.

Communication, collaboration, and outreach

#4

Scientific research is fundamentally based on sharing knowledge. With this in mind, this section highlights the steps taken by Talan to promote communication, collaboration and the dissemination of its research work. In particular, it presents contributions in the form of scientific papers and popular articles, as well as other structural actions.

This section is divided into three sub-sections:

Publications: exploration of research published by Talan in various formats.

Events: presentation of conferences and workshops organised or attended by Talan.

Courses and training: overview of training initiatives and educational programmes developed.

A. PUBLICATIONS

Talan's research is promoted through a rich and varied range of publications. These fall into two main categories, each with a distinct but complementary objective: peer-reviewed scientific papers and popular articles aimed at a wider audience.

1) Peer-reviewed journals and conferences

Scientific papers and presentations at prestigious conferences reflect Talan's commitment to actively contributing to advances in artificial intelligence, data science and their applications. This work, which is subject to a rigorous evaluation process, enables innovative methodologies and research results to be shared with the academic community and industry.

Title	Author(s)	Conference/ Publication
AI and Specialised Translation: Assessing ChatGPT's Competence in Translating Feminist Terminology in UN Documents on Violence Against Women	C. Atzeni, M. El Saadany, W. Babonnaud	GERAS 2024
Exploring the abilities and limits of generative AIs on specialized translation: a case study on UN documents on violence against women	C. Atzeni, W. Babonnaud	ESSE 2024
The digital Euro, a “currency for the future”? Reconciling the green and digital transition with a European CBDC	A. Allaire, M. Naccache	Finance and Accounting 2024 Annual Research Symposium
A Tiny Transformer For Physiotherapy Exercise Recognition Based On Pose Landmark Time Series	R. Meziati	HAL
L’apport de l’IA dans la lutte contre le blanchiment d’argent et le financement du terrorisme (LCB-FT): performance et explicabilité (AI’s contribution to Anti-Money Laundering and the Financing of Terrorism (AML/CFT): performance and explainability)	F. Dama, R. Sleiman	Dataquitaine 2024
Introduire l'IA dans la lutte contre la fraude: Comment choisir et convaincre ? (Introducing AI in the fight against fraud: How can we choose and convince?)	F. Dama, R. Sleiman, S. Bellart	PFIA - APIA
The Bias that Lies Beneath: Qualitative Uncovering of Stereotypes in Large Language Models	W. Babonnaud, E. Delouche, M. Lahlouh	SCAI 2024

Title	Author(s)	Conference/ Publication
Le management et le leadership bienveillants: une clarification conceptuelle (Caring management and leadership: a conceptual clarification)	Y. Arnaud, L. Benraiss-Noailles, J. Cusin	ADERSE Bordeaux
Les perceptions d'un leadership bienveillant dans les contextes de mobilité et de déspatialisation hybride des lieux de travail (Perceptions of caring leadership in contexts of mobility and hybrid de-spatialisation of the workplace)	Y. Arnaud, L. Benraiss-Noailles, J. Cusin	AIMS Montreal
Vers une conceptualisation du micro-benchmarking pour l'évaluation des LLM dans un cadre opérationnel (Towards conceptualisation of micro-benchmarking in the assessment of LLMs in an operational framework)	W. Babonnaud	JEP-TALN (EvalLLM workshop)
LLM-Based Adaptive, Automatic and Dynamic Evaluation System	L. Arnould, M. Al Assaad	ICEduTECH
Leadership bienveillant: développement et validation d'une échelle de mesure dans les contextes de mobiliste et de despatialisation hybride des lieux de travail (Caring leadership: development and validation of a measurement scale in the context of mobility and hybrid de-spatialisation of the workplace)	Y. Arnaud, L. Benraiss-Noailles, J. Cusin	AGRH Barcelona
SWOT-based Simulation of River Discharge with Temporal Graph Neural Networks	K. Osanlou, T. Holmes, A. Getirana, T. Cazenave	NEURIPS 2024 Workshop
Caractérisation, évaluation et modélisation d'un leadership bienveillant dans les contextes de travail hybride (Characterisation, assessment and modelling of caring leadership in hybrid work contexts)	Y. Arnaud, L. Benraïss-Noailles, J. Cusin	*Journée de recherche hybride au GRM* (Hybrid research day at the GRM-lab)
Adaptation et développement d'un instrument de leadership bienveillant: une analyse à travers le prisme de la mobilité et de la déspatialisation hybride du travail (Adaptation and development of a caring leadership approach: an analysis through the prism of mobility and the hybrid de-spatialisation of work)	Y. Arnaud, L. Benraïss-Noailles, J. Cusin	*4ème Édition des Journées de la Recherche en Éthique* (4th Edition of the Ethics Research Days)

2) Other publications

To make innovations accessible to a wider audience, Talan also publishes popular articles. These publications, which are often published on blogs or in specialist magazines, highlight the practical impact of research in a wide range of topics, such as AI, sustainability and societal challenges. They therefore promote a better understanding of technological issues and strengthen dialogue between experts and non-experts.

Title	Author(s)
L'Intelligence Artificielle au service de la Lutte Contre le Blanchiment d'Argent – Note stratégique de Talan (Artificial Intelligence in Anti-Money Laundering – Talan strategy note)	F. Dama
Les docteurs en recherche appliquée, nouveaux rois de l'innovation en entreprise ? (Are PhDs in applied research the new kings of corporate innovation?)	L. Cervoni
OpenAI présente SORA: Transformer les mots en vidéos grâce à l'intelligence artificielle (OpenAI presents SORA: Turning words into videos using artificial intelligence)	A. Journe, A. Benamar
IA Gen pour les développeurs (GenAI for developers)	M. I. Diaz, A. Journe, A. El Hadi
La face cachée du progrès des intelligences artificielles génératives: les nouveaux deepfakes (The dark side of progress in GenAI: the new deepfakes)	A. Trabelsi
AI index report	S. Fayad
IA et Tourisme (AI and Tourism)	S. Bellart, N. De Bufala
Les agents LLM piratent des sites internet en toute autonomie (LLM agents hack websites completely independently)	A. Benamar
Rapport France digital: souveraineté de l'UE en IA gen (France digital report: EU sovereignty in GenAI)	M. Lalouh

Title	Author(s)
L'intelligence artificielle pour mieux comprendre notre planète (Artificial Intelligence as a means of better understanding our planet)	E. Delouche
Vers une IA Ethique et Durable: Défis et Solutions (Towards Ethical and Sustainable AI: Challenges and Solutions)	E. Delouche, J. Jehl, M. Lahlouh
Texte 2 video: un panorama commenté (Text 2 video: an overview with commentary)	E. Jewison
L'intelligence artificielle au service du droit: méthodes, outils et enjeux (Using AI to support work in law: methods, tools and challenges)	W. Babonnaud, A. Benamar, S. Fayad
IA et les jeux olympiques: Transport, tourisme, moteurs de recherche (AI and the Olympic Games: Transport, tourism, and search engines)	N. De Bufala
Comment réduire l'impact des biais géographiques (How to reduce the impact of geographical bias)	R. Sturgis
Sur la longévité des arbres et des forêts (en Machine Learning) (On the longevity of trees and forests (in Machine Learning)	L. Arnould
Nos cerveaux se synchronisent par les mots: l'apport de l'IA pour comprendre le langage (Our brains are synchronised through words: AI's contribution to understanding language)	J. Jehl, L. Cervoni
Les assistants virtuels: une nouvelle ère de la programmation ? (Virtual assistants: a new era in programming?)	E. Delouche
Qu'est-ce que le leadership bienveillant ? (What is caring leadership?)	Y.Arnaud
Adaptive Learning / IA générative pour l'éducation (Adaptive Learning / GenAI in education)	R. Sleiman

B. Events

The Talan Group actively participated in various events to promote and enhance its research work. These initiatives included:

Internal events: held to inform and mobilise Talan's employees around the company's scientific and technological progress, thus reinforcing the internal innovation culture.

External events: mainly carried out in partnership with higher education institutions, these events aim to share Talan's knowledge and advances with students, teachers and professionals in training. These events help to strengthen the links between academia and industry, while supporting the training of future talent.

1) Internal events

/ "Research" breakfasts

The Research and Innovation Center regularly organises "Research breakfasts". These morning sessions provide opportunities to present various research projects, grouped by theme, to all Talan employees. This helps to ensure that the Center's projects are visible to the whole group, and also enables employees who have taken part in a project to see the progress of the research work. Three sessions were held in 2024, focusing on the following themes:

- AI in Talan's business lines
- Carbon footprint research
- Using R&D to support gaming

2) External events

/ EPITA

This scientific talk took place on 24 September 2024 at EPITA, where Dr Mounir Lahlouh gave a presentation on unlearning. The purpose of this presentation was to make students and users aware of the risks involved in using generative AIs that are trained using personal data. Indeed, deleting this data is not enough to solve the problem, as its path through the learning networks is both diffuse and complex. As a result, preventing any breach of confidentiality remains a difficult task. An alternative often considered is to retrain the models, excluding the data to be deleted, but this method generates significant resource costs. Dr Lahlouh presented the algorithms and research on this topic.

/ **ENSIMAG**

In 2024, two lectures were given at ENSIMAG. These talks were organised at the *École Nationale Supérieure d'Informatique et de Mathématiques Appliquées de Grenoble* (ENSIMAG). Recognised as one of the most prestigious engineering schools in France, ENSIMAG trains experts in computer science, applied mathematics and quantitative finance, and stands out for its commitment to research and innovation.

- "AI within the challenges of sustainable development, frugality, and ethics" by Dr Jehl and Dr Delouche in April 2024
- "AI and satellite" by Dr Sturgis in November 2024

The first presentation, given by Dr Jehl and Dr Delouche, looked at the environmental and ethical impact of AI tools, particularly generative ones, and suggested ways of making them more sustainable.

The second presentation, given by Dr Sturgis, looked at the use of artificial intelligence on satellite data to detect CO_2 emissions from merchant ships.

During these events, researchers from the Talan Research and Innovation Center visited the Grenoble campus to share their research topics with students. The purpose of these talks was to introduce students to the world of corporate research and to show that it is possible to reconcile industrial innovation with scientific rigour. The event was also designed to encourage students to take up doctoral studies.

/ **EFREI**

Talk at an engineering school, EFREI (*Ecole FRançaise d'Électronique et d'Informatique*), to a hundred or so students on the issues of explainable AI and ethics. This presentation gave the students the keys to understanding the many ethical issues raised by AI: Frugal AI, user bias, learning bias, RGPD compliance, etc. The presentation also addressed the difficulties of explaining and controlling the behaviour of AI. Some tools to remedy this, such as SHARP and LIME, were presented.

/ **Hackathon**

During 2024, PhDs from the Talan Research Center were members of the judging panel for two Hackathons:

Video games with generative AI (June 2024): hackathon involving students from EPITECH in Toulouse, with Dr De Bufala and Dr Bellart as members of the panel.

Evaluation of generative AI (September 2024): hackathon held at the De Vinci campus (MBA) with Dr Babonnaud and Dr Allaire.

C. Courses and training

As part of its efforts to share its expertise and contribute to the training of future professionals, Talan has also taken part in providing courses at several renowned establishments:

Courses at EPITA (Kremlin-Bicêtre): a total of eight lectures on Artificial Intelligence and Cognitive Sciences. These courses were designed for engineering students by Dr Sophie Fayad and Dr Rita Sleiman, and updated by Dr Jehl, supported by the entire Center. The aim was to offer an in-depth look at the parallels between AI and the brain, by deciphering the bio-inspiration of AI and its limits. The result of joint work between researchers specialising in neuroscience and in AI, this series of presentations covered a wide range of topics, including the differences between biological and artificial neural networks, and the way in which humans and machines learn, perceive the environment and make decisions.

Course at the Ecole de Vinci (La Défense): this series of lectures is devoted to Deep Learning and Artificial Intelligence as part of an MBA. This course, designed for professionals in continuing education, covered advanced concepts and practical applications, enabling participants to acquire operational skills immediately.

Courses at ESSCA Paris: an introductory research course for undergraduate students (in year three of a degree). The aim of the course was to introduce students to scientific thinking and research methodologies in management sciences, so that they could use them in their end-of-year dissertation.

Courses at IAE Bordeaux: a course devoted to project management in human resources, enabling first-year Masters' students to acquire the skills to manage projects in the field of human resources, based on situations in the Talan Group.

These talks and presentations reflect Talan's commitment to passing on knowledge and developing skills in artificial intelligence, research and project management across a range of audiences, from students completing initial training to professionals undergoing retraining or specialisation.

The teams

#5

A. The Research & Innovation Center

The Talan Research and Innovation Center, located in the 16th arrondissement of Paris, welcomed the majority of the company's researchers in 2024. Made up of young doctors and PhD students, the Center is run by Laurent Cervoni, Director of Research.

The Center also benefits from occasional support from numerous Talan employees, involved depending on the specific needs of ongoing projects.

In this section, we will present in detail the various people who work at the Research and Innovation Center, highlighting their expertise and their contribution to the Center's activities.

1) Management

Laurent Cervoni, Research and Innovation Director:

An engineer from the École Supérieure d'Ingénieurs en Électronique et Électrotechnique (ESIEE) and a PhD in Computer Science from the University of Rouen, his professional career began as Deputy Department Director at a publisher of Artificial Intelligence software (including LISP and Prolog). He then actively contributed to the certification of the Prolog language, a key link in symbolic AI.

He was Technical Director of an IT Consultancy, in charge of AI projects. He then headed the new media development department of an international group before setting up and running his own consulting firm to **support businesses in their digital transformation.**

He was an advisor to a ministerial office (Victim Assistance Secretariat) and then took over as General Manager of a subsidiary of a major group, before joining Talan.

He has also been a member of the **Association des Docteurs de France** (ANDès) since 2015 and of the Board of Directors of the **Regional Institute of Sports and Health Medicine** in Normandy. He chairs the Scientific Committee of ActuIA, a journal specialising in Artificial Intelligence.

Jean-Louis Vila, Technical Director:

Jean-Louis Vila is **Technical Director at Coexya**, which became part of the Talan Group in 2024. He defines the company's technical strategy, oversees innovation and supervises R&D projects. An expert in **AI, data capture, semantic analysis and information visualisation**, he also manages the Business Units and provides consultancy and expertise. A PhD from the University of Savoie (specialising in image processing and analysis), he is active in research and university teaching. He has led initiatives in **Deep Learning** since 2015 and now manages the AI plan for all of Coexya's teams.

Imen Ayari, Head of Innovation Factory:

Head of the Research and Business Development (R&BD) department at Talan Tunisia's Innovation Factory, **Imen Ayari is a qualified engineer, holds an Executive MBA,** and has more than 20 years of experience in Information and Communication Technologies. Her experience covers a wide range of sectors including banking, industry, retail, e-government, and insurance. **Imen is a firm believer in open collaboration and synergy between professionals, academics, and students.**

Jérôme Malzac, Head of Innovation Factory:

Jérôme has been tackling Data, AI & Digital issues from the angle of innovation from a technical, functional & business point of view for more than 20 years.

He is now Director of Innovation for the Micropole Group. He identifies and integrates innovative solutions, technologies and start-ups, both internally and for our customers. Trend monitoring, forecasting, acculturation and sharing of innovation and R&D are part of his daily routine.

In addition to having led several conferences and training courses on AI and in particular generative AI, Jérôme works on a daily basis on issues linked to its concrete application for our customers and for Micropole. His assignments involve the acculturation of Executive Committees, Management Committees and leading workshops on the ideation and prioritisation of AI use cases, the implementation of MVPs and innovation support.

2) PhDs participating in research projects in France

Mohamad Al Assaad

Mohamad Al Assaad is a PhD engineer specialising in signal processing and computer vision, with expertise in Deep Learning and Machine Learning. He holds a PhD from the University of Haute-Alsace and has extensive experience in higher education and project supervision. His technical skills include areas such as image processing, the development of Deep Learning algorithms, and the use of these technologies to solve complex computer vision problems. He is proficient in several programming languages and essential tools for engineering research and development.

Hugues Ali Mehenni

Hugues Ali Mehenni holds a PhD in Computer Science with a specialisation in artificial intelligence, which he obtained in 2023 from the University of Paris-Saclay. His thesis focuses on the analysis and modelling of agents capable of personalised nudges.

Hugues works in a range of topics relating to symbolic and multimodal AI.

Angélique Allaire

Angélique Allaire holds a PhD in the History of Art, specialising in digital humanities, which she obtained in 2023 at the University of Sorbonne in partnership with the Sorbonne Center for Artificial Intelligence. During her thesis, Angélique worked on a comparative archaeological epistemology of the Greek world in France and Germany between 1870 and 1915, utilising an automatic analysis of a large multilingual corpus of documents.

Angélique works on a range of issues relating to generative AI, its evaluation, and its impact, as well as the environmental evaluation and impact of innovation.

Ludovic Arnould

Ludovic Arnould holds a PhD in statistics, more specifically in Artificial Intelligence, obtained in 2023 from the University of Sorbonne. His thesis focuses on machine learning models, combining neural networks and random forests.

He joined the Talan Research and Innovation Center as a young R&D PhD. Ludovic is involved in a range of topics relating to GenAI, its evaluation and impact, and adaptive learning based on the needs of individual employees.

William Babonnaud

William Babonnaud holds a PhD in Computer Science with a specialisation in computational linguistics, awarded by the University of Lorraine in 2022. His thesis focuses on lexical semantics, compositionality, and coercion and explores the theoretical foundations of semantic types.

After a post-doc in Computational Linguistics, William joined the Talan teams, where he participates in research projects on several subjects relating to generative AI, including its evaluation, the detection of ethical biases, and abuses, along with its impact.

Steve Bellart

Steve Bellart holds a PhD in Computer Science with a specialisation in artificial intelligence, which he obtained in 2023 from the University of Artois in partnership with the French National Centre for Scientific Research (CNRS). His thesis focuses on the computation of formal explanations for decision-tree ensemble machine learning models.

Steve contributes to a variety of topics related to GenAI, including its evaluation, impact and explainability.

Alexandra Benamar

Alexandra Benamar obtained her PhD in Computer Science with a specialisation in artificial intelligence and natural language processing in 2023 from the University of Paris-Saclay,in partnership with EDF, as part of the CIFRE scheme. Her thesis focuses on the assessment and adaptation of lexical extensions in the field by exploiting syntactic and semantic knowledge.

Alexandra is involved in various topics relating to generative and multimodal AI, data quality and machine unlearning.

Ahmad Chamma

Ahmad Chamma obtained his PhD in Computer Science with a specialisation in signal and image processing from the University of Paris-Saclay in 2024. His thesis focuses on the statistical interpretation of complex, high-dimensional prediction models for biomedical data.

He joined the Talan Research and Innovation Center as a young R&D PhD. Ahmad contributes to several topics related to generative AI in the field of multimodal data extraction (Multimodal RAG) with intelligent assistants and the explainability of learning models.

Fatoumata Dama

An engineering graduate of ENSIMAG (*École Nationale Supérieure d'Informatique et de Mathématiques Appliquées de Grenoble*), Fatoumata Dama obtained her PhD in Computer Science in 2022. She is a machine learning, deep learning and probabilistic modelling specialist. Since 2023, she has been an R&D Engineer at Talan, where she manages R&D projects on AI subjects. She is currently working on fraud detection and generative AI.

Nicolas De Bufala

Nicolas De Bufala has a PhD in Computer Science from the University of Sorbonne, which he obtained in 2022 in partnership with Pole-Emploi as part of the CIFRE scheme. His thesis looks at the impact of automation on the labour market using a multi-agent approach.

After a post-doc in data science applied to the simulation of the whole economy, focusing particularly on the labour market, he joined the Research and Innovation Center where he contributes to several topics related to GenAI tools, including their evaluation, their impact as well as their role in the mapping of employee skills at Talan.

Arnaud Deleruyelle

Arnaud Deleruyelle holds a PhD in Computer Science with a specialisation in artificial intelligence, obtained in 2022 from the University of Lille. His thesis focuses on the segmentation of cellular microscopy images using deep learning in contexts with very little supervision.

Arnaud participates in research projects on several subjects related to generative AI, computer vision, and data augmentation and anonymisation.

Sophie Fayad

Sophie Fayad obtained her PhD in Neuroscience from the University of Sorbonne in 2019. After writing a thesis on the neural bases of neuropathic pain, she completed a post-doctorate specialising in data science, working on inter-individual variability in social behaviour and addiction.

She joined the Talan Research and Innovation Center in 2023, where she works on a range of topics relating to generative and multimodal AI and the interplay between AI and neuroscience.

Estelle Delouche

Estelle Delouche holds a PhD in Earth and Environmental Sciences with a specialisation in Geophysics, obtained in 2023 from the University of Grenoble Alpes. Her thesis focuses on the monitoring of seismic velocity changes in the upper crust and the dynamics of aquifers.

Estelle contributes to a variety of topics related to generative AI, including its evaluation and impact. She also manages a number of projects focusing on sport and data analysis with the aim of improving the user experience.

Kevin Feghoul

Kévin Feghoul holds a PhD in Mathematics and its interactions, with a specialisation in machine learning, obtained in 2024 from the University of Lille. His thesis focuses on the automatic recognition of emotions and analysis of surgical gestures in the context of learning through medical simulation.

He joined the Talan Research and Innovation Center as a young R&D PhD. Kévin contributes to various projects, particularly on generative AI, AI applied to biology, and computer vision.

Antoine Garçon

A graduate engineer from the Ecole Polytechnique Fédérale de Lausanne, Antoine Garçon obtained his PhD in Atomic and Molecular Physics in 2020. He later completed a post-doctorate in Machine Learning and Deep Neural Networks. During his research, Antoine focused on developing new metrology tools based on nuclear magnetic resonance. He is also an expert in the processing of data from laboratories, specialising in the modelling and detection of weak signals in rich and complex data sets.

Malak Ghourabi

After completing a Masters in Biomedical Engineering, Malak prepared and defended his thesis at the University of Technology of Troyes, focusing on the early detection of infectious diseases using artificial intelligence models.

She also taught subjects such as mathematics, the digital environment and linear automation whilst working on her PhD. Malak joined the Talan Research and Innovation Center as an R&D engineer. She is involved in various topics relating to generative AI, computer vision and the application of AI methodologies to develop innovative solutions.

Jordan Gonzalez

Jordan Gonzalez obtained his PhD in Computer Science from the ESIEA engineering school in 2022, with a specialisation in supervised and semi-supervised incremental learning. Jordan has extensive expertise in the deployment of generative AI. At Talan, Jordan has worked on generative AI and its use in information retrieval systems.

Manuel Ignacio Díaz

Manuel Ignacio Díaz graduated from the *École Normale Supérieure* (ENS) in 2023 with a PhD in Physics, specialising in quantum physics. His thesis focuses on the mathematical modelling of the behaviour of electrons in strongly interacting quantum materials.

Manuel participates in research projects on a variety of GenAI-related subjects, including its evaluation and impact as well as quantum computing.

Damien Jacob

Damien Jacob holds a PhD in Earth and Environmental Sciences with a specialisation in Geophysics, obtained in 2021 from the University of Strasbourg. His thesis focuses on the dual-media modelling of the karstic aquifer system in Qatar.

Damien works on a range of topics relating to generative AI, multi-agent systems, and virtual reality.

Joachim Jehl

Joachim Jehl holds a PhD in Neuroscience, obtained in 2022 from the University of Sorbonne. His thesis focuses on nicotine reinforcement and aversion through the interaction between dopaminergic and interpeduncular circuits in the brain. He joined the Talan Research and Innovation Center as a young R&D PhD. Joachim contributes to several topics, including generative AI, frugal AI, and carbon footprint, as well as the use of language models in biology.

David Jaramillo Duque

David Jaramillo Duque obtained his PhD in Physics in September 2023 from the *École Normale Supérieure* (ENS), where he worked in the team specialising in fields, gravity and strings. His thesis focused on the computation of topological invariants associated with complex geometric varieties, and on their links with certain six-dimensional quantum theories. In order to carry out this research, he had to develop advanced computing tools to overcome the computational challenges. David joined us as a young R&D PhD. He contributes to various development projects, whilst also working on subjects related to artificial intelligence and quantum mechanics.

Ella Jewison

Ella Jewison holds a PhD in Earth Sciences with a specialisation in geo-thermochronology, obtained in 2018 from the University of Sorbonne. Her thesis focuses on the structural and thermal evolution of the Scottish Caledonides. After acquiring experience in AI, and satellite and drone image processing at ASTERRA and UNDERSTORY for applications in mining and plant biodiversity monitoring, she joined the Talan Research and Innovation Center as a young R&D PhD. Ella contributes to a range of topics related to generative AI and computer vision.

Axel Journe

PhD in Computer Science: Axel Journe graduated as an engineer from Polytech'Nantes, specialising in Computer Science. He then worked on a CIFRE thesis in collaboration with Engie. His thesis focused on the learning of Bayesian networks, using probabilistic graphical models in the field of artificial intelligence. He has held the position of R&D Engineer at the Talan Research and Innovation Center since 2023, where he leads R&D projects on AI topics. The scope of his projects is broad, covering applications such as communications, human resources management, and IT development.

Ibrahim Krayem

Ibrahim Krayem holds a PhD in Computer Science from the University of Rennes and an engineering degree in Computer Science and Telecommunications from ENSTA Bretagne. With his in-depth expertise in artificial intelligence and embedded systems, he is committed to creating innovative solutions that meet today's technological challenges.

He joined the Talan Research and Innovation Center as a young PhD in research and development. Ibrahim contributes to a variety of topics related to GenAI, including its evaluation, impact and explainability.

Mounir Lahlouh

Mounir Lahlouh holds a PhD in Computer Science, specialising in artificial intelligence, which he obtained in 2023 from the University of Reims Champagne-Ardenne in partnership with Basecamp Vascular (BCV), as part of the CIFRE scheme. His thesis focused on the use of deep learning in the segmentation, classification, and geometric characterisation of blood vessels. Mounir is involved in a variety of fields, focusing mainly on generative AI, studying its evaluation and identifying biases and ethical issues as well as examining sport-related subjects.

Rita Meziati Sabour

An engineer specialising in Signal and Image Processing, Rita Meziati Sabour worked on the recognition of emotions and social stress based on the variability of the calculated, non-contact heart rate in her PhD thesis. Her studies involved the acquisition and analysis of physiological signals. In her thesis, she applied statistical methods and machine learning algorithms to the descriptors read from these signals for the targeted emotion/stress recognition tests. She also used Recurrent Neuron Networks to segment the cardiac signals in order to define their noisy portions.

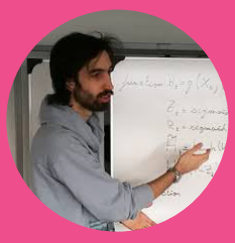
Rita Sleiman

Rita Sleiman graduated from Centrale Lille university in 2022 with a PhD in Computer Science, specialising in artificial intelligence. During her thesis, Rita worked on trend detection and demand forecasting for fashion items using Big Data and AI.

Rita participates in research projects on several subjects including generative AI, neuroscience, and the explainability of AI systems.

Gabrielle Suchaud

Gabrielle Suchaud has solid expertise in global performance (GP) strategy. In 2023, she defended her doctoral thesis in management science: CSR as a lever for Global Performance and Legitimacy: towards companies with a positive impact on the areas in which they operate. Carried out at the CORHIS laboratory (Montpellier 3) in collaboration with Groupama d'Oc (Toulouse), this research highlighted the positive impact of CSR on the legitimacy and performance of businesses, particularly those in the financial sector. Her thesis led to the formulation and implementation of strategic recommendations for both businesses and the academic world. Drawing on her experience in sustainable innovation, she joined the Talan Research and Innovation Center in Paris in October 2024, where she helps to develop solutions at the crossroads of performance and social responsibility.



Raphael Sturgis

Raphael Sturgis holds a PhD in Computer Science, more specifically in machine learning, funded by the SUD region as part of a partnership between the Computer Science and Systems Laboratory (LIS) at the University of Aix-Marseille and Searoutes. His thesis focuses on learning ship behaviour considering geographical biases. He joined the Talan Research and Innovation Center as a young R&D PhD. Raphael is involved in a variety of topics related to generative AI, carbon footprint and computer vision.

Anis Trabelsi

Anis Trabelsi holds a PhD in Computer Science with a specialisation in artificial intelligence, which was obtained in 2022 from the University of Sorbonne in partnership with SURYS, as part of the CIFRE scheme. His thesis is focused on robustness against attacks in digital authentication using deep learning.

Anis is involved in a wide range of topics relating to generative AI, computer vision and virtual reality.

3) PhD students supported by Talan in 2024

Yann Arnaud

Yann Arnaud, R&D engineer and PhD student: Yann Arnaud is writing his Management Sciences thesis at the Institut de Recherche en Gestion des Organisations (University of Bordeaux) and the Talan Research and Innovation Center. He is also a research assistant at CIRANO (Montreal, Canada) working on several healthcare economy-related subjects. His latest work at Talan focuses on human resources management (caring leadership, commitment, and turnover), generative AI and the metaverse (idea creativity in brainstorming contexts), and space debris (the common good and space policy).

Olfa Chelbi

Olfa Chelbi, R&D engineer and PhD student: Olfa Chelbi is conducting her Management Sciences research in collaboration with the Management Research Centre (CRG-I3) at the Institut Polytechnique de Paris. She is particularly interested in how business models work and the mechanisms for collaboration between large companies and startups in the banking sector. Her work also focuses on the impact of the metaverse upon consultant creativity in brainstorming contexts.

Victoire-Manon Canovas

Victoire-Manon Canovas is a PhD student in Management Science at the Magellan laboratory (Jean Moulin Lyon 3 University). Her CIFRE thesis began in January 2025 in collaboration with Coexya, where she has held the position of CSR Project Manager since 2022.

Her research project focuses on the conditions for the sustainable integration of generative artificial intelligence (GenAI) into professional practice. Sustainability is understood here in two ways: (1) long-term integration in line with business strategy; (2) an approach that aims to reduce the negative impact of integrating this technology in line with the principles of sustainable development.

Victoire-Manon is interested in the experience of employees in their relationship with the GenAI and how this translates into their day-to-day working lives. Her research also examines the company's position regarding these developments: what deployment strategy should it adopt? What support systems are available? What are the trade-offs? What type of governance should be adopted? Which monitoring indicators should be used? The aim is to explore the impact of GenAI in social, human, environmental, ethical and economic areas, as well as the potential tensions it may give rise to with regard to the CSR commitments made by businesses.

Qualitative research has two objectives: (1) to identify the conditions for adaptation that will enable companies to limit the negative impact of this technology while ensuring their long-term future; (2) to co-construct systems designed to encourage informed use with the stakeholders in the field, i.e. use that is aware of the risks and limitations of the tool, and capable of mobilising its assets intentionally and with discernment.

Keywords: sustainability, generative artificial intelligence, GenAI, CSR, organisational transformation, IT consulting, digital services company, sustainable business model.

Conclusion

#6

Conclusion

2024 marked a key milestone in the consolidation of Talan's research and innovation strategy: the Group's Research and Innovation Center has not only intensified its activities, but has also demonstrated the tangible value that applied research can bring to Talan's teams and its customers.

The group has enjoyed increased academic and professional recognition of its expertise, with a significant rise in the number of scientific publications and popular articles. Being awarded the European HRS4R certification, making Talan the first French private company to obtain this distinction, illustrates our commitment to structuring and enhancing our researcher management practices.

We also saw a broadening of our research themes over the course of the year, with work undertaken on generative artificial intelligence, the governance of technologies, the environmental transition and managerial innovations.

Solutions resulting from our R&I work, such as Hope, TalanSeeker and CV Pro AI, illustrate our ability to transform research results into operational tools that can be deployed across the Group – and with our customers.

Our international commitment has also been strengthened with new projects in Canada, the United Kingdom and the United States, consolidating Talan's operations on the international stage. Our recruitment drive has equally continued, with the integration of 20 new PhDs, strengthening the diversity of our expertise and our ability to meet emerging technological challenges.

In 2025, we will continue to build on this momentum by strengthening our synergies with Micropole and Coexya, accelerating the industrialisation of our R&D solutions, and increasing our scientific influence through publications and strategic collaborations.

“Research and innovation remain at the heart of Talan's DNA, guiding our ability to anticipate, innovate and create value for our teams and the ecosystem in which they operate.”

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