Innovation and Commercialization Working Group Report

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GPAI | THE GLOBAL PARTNERSHIP ON ARTIFICIAL INTELLIGENCE

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Co-Chairs Foreword

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The Global Partnership on Artificial Intelligence (GPAI) is an international, multi-stakeholder initiative to guide the responsible development and use of AI in a way that is grounded in human rights, inclusion, diversity and innovation, and shared democratic values, as reflected in the OECD Principles on Artificial Intelligence.

In conducting this mission, GPAI has brought together Experts from diverse sectors into four specific Working Groups: Responsible AI, Data Governance, Future of Work, and Innovation and Commercialization.

The Innovation and Commercialization Working Group (WG) studies and recommends practical tools and methods that enable private actors and research organizations to drive international collaboration on AI R&D and innovation, develop research outputs into products and processes, and transfer these results to the industry for commercialization. For the past two years, the Working Group has focused on SME's adoption of AI, emphasizing their importance to a country's economy.

In 2022, the Innovation and Commercialization WG worked on three projects, two of which were ongoing, "Broad Adoption of AI by SMEs" and "Protecting AI innovation and Intellectual Property (IP)", and another newly added project, the "Broad Adoption of AI by SMEs in the Agriculture and Farming Sector (A&F)". The "SMEs Committee" was built around the idea that SMEs may get a critical advantage from AI if they can overcome barriers on their way to AI. The project focuses on exposing SMEs who are "unaware" of AI (i.e. without knowledge of AI), on how AI can be used as a tool to enhance their business. The "IP Committee" focused this year on the foundation in place for data sharing, and enhancing their work from 2021. Finally, newly added project, the "Agro Committee" focused on gathering successful use cases of AI in the A&F sector.

GPAI is at its core a geopolitical object, permitting unique opportunities and challenges. In particular, collecting the views and inputs from actors and companies from a diverse array of countries has proved the value of sharing success stories to avoid re-inventing the wheel as well as mutualizing resources to produce tools useful for all.

Finally, as the Innovation and Commercialization Working Group co-chairs, we wish to extend our utmost gratitude to all Experts for engaging themselves in this collective venture, and for offering their time, knowledge, and expertise to materialize the joint projects. In addition, we want to thank the project leaders: "Broad Adoption of AI by SMEs", Ingo Hoffmann and Laurence Liew; "Protecting AI innovation and Intellectual Property (IP)", Yann Dietrich and Lee Tiedrich, and "Broad Adoption of AI by SMEs in the Agriculture and Farming Sector", Inma Martinez and Daniela Rus.

Françoise Soulié-Fogelman

Laurence Liew

Working Group Overview and Experts

The Innovation and Commercialization (I&C) Working Group's mandate is to:

- Study and recommend tools and methods for driving international collaboration on AI R&D and innovation,
- Advance research results into products and processes,
- Transfer these results to industry, with a special focus on SMEs.

It will examine support measures to facilitate these advances, including standards and norms, self-certification etc.

The I&C Working Group is comprised of 42 Experts, 11 Specialists, and 6 Observers with varied backgrounds and expertise that contribute to the WG projects. Of these 42 Experts, 19 Experts come from an Industry background, 16 from the Science field, 4 with roles in the Government, 2 from Civil Society, and 1 from an International Organization. Among the 11 Specialists, 6 are of Science backgrounds and 5 are of Industry backgrounds. Of the 6 Observers, 4 have Industry backgrounds, 1 comes from a Science background, and 1 comes from an International Organization.

Both the Specialists and Observers were nominated to the I&C WG Co-Chairs to actively contribute to the projects. More specifically, the Specialists were nominated to contribute their expertise to the IP Committee and Agro Committee. Their skillsets are of great value to the I&C Working Group, as they enrich the projects with their knowledge and network, but also contribute to geographic diversity. The Observers also play a unique role in the I&C Working Group, notably contributing to the IP Committee. There are three Observers from France, two from Canada and one from the OECD. The IP Committee also calls for an array of IP experts with regional diversity to contribute to the project, including Specialists from France, the United States, and the World Intellectual Property Organization (WIPO).
All GPAI Members nominated 1 or 2 Experts to the Working Group, thus ensuring geographical diversity. Finally, GPAI considers gender diversity, and has achieved it with approximately 36% female Experts and 64% male Experts making up the I&C Working Group.

Innovation and Commercialization Experts

Nathanael Ackerman Manager AI4Belgium, Head of AI at Federal Public Service Policy and Support (Belgium)
Foteini Agrafioti Chief Science Officer at the Royal Bank of Canada; Head of Borealis AI (Canada)
Pekka Ala-Pietilä Chair of the EU High-Level Expert Group on Artificial Intelligence; Chair of the Board of Directors of Huhtamaki; Chair of the Board of Directors of Sanoma (European Union)
Sergio Álvarez Teleña SciTheWorld; Founding Board Member of Himitsu Tech (Spain)
Laercio Aniceto Silva CERTI - Centers of Reference in Innovative Technologies (Brazil)
Robert Atkinson President of the Information Technology and Innovation Foundation (ITIF) (United States)
Hemant Darbari Director General of India's Centre for Development of Advanced Computing (C-DAC) (India)
Norberto Ferreira Center for Research and Development in Telecommunications (Brazil)
Justin Flitter Chief AI Officer and Founder of NewZealand.AI (New Zealand)
Jean-François Gagné VP AI PM and Strategy at ServiceNow; Element AI (Canada)
Helani Galpaya Chief Executive Officer, LIRNEasia; UNESCO (Sri Lanka)
Daniel Gillblad Director at AI Sweden (Sweden)
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Dorothy Gordon Chair of the Information for All Programme (IFAP) at UNESCO (Ghana)
Marko Grobelnik Deputy Head of AI Department at JSI; Member of Core Management Group, International Research Centre on Artificial Intelligence under the Auspices of UNESCO (IRCAI); Artificial Intelligence Lab, Jožef Stefan Institute (Slovenia)
Ingo Hoffmann Managing Director of AI Hamburg; Member of the Board of Directors of ADI Innovation AG (Germany)

Tagui Ichikawa Professor, Institute of Innovation Research at Hitotsubashi University (Japan)
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Innovation & Commercialization Observers

Yann Dietrich Group Head of Intellectual Property at Atos (France)
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Neeraj Gupta CSO at Attabotics Inc.; Co-Founder of AI Foundry; Co-Founder of Formulate IP; Co-Founder of Law Cubator (Canada)
Alistair Nolan Senior Policy Analyst at the OECD (OECD)
Natalie Raffoul Managing Partner of Brion Raffoul LLP, Expert in patenting inventions in AI, lawyer and patent agent; Member of LES (Licensing Executives Society) (Canada)

Progress Report

Following the guidance from the Steering Committee, I&C Experts collectively chose to carry out three concrete projects in 2022: "Broad Adoption of AI by SMEs"; "Protecting AI innovation and Intellectual Property (IP)", and "Broad Adoption of AI by SMEs in the Agriculture and Farming Sector".

The SMEs Committee seeks to support SMEs to adopt AI which will help them increase their competitivity, and ensure that their workforce will continue to be economically relevant. The IP Committee's main objective is to support startups, SMEs, and larger companies alike in achieving a deeper understanding of the challenges they face in the area of IP as it relates to AI. The Agro Committee takes on a focus of a specific vertical focus of the SMEs Committee, ensuring that SMEs in the agriculture and farming sector are economically empowered as it relates to AI.

Broad Adoption of AI by SMEs

Small and Medium Enterprises (SMEs), Non-Profit Organizations (NGOs), and government-funded institutions typically employ 80% of a country's workforce. However, these organizations usually have low AI maturity as they often lack the resources, skills, data, or IT infrastructure to develop and adopt AI solutions. Understanding AI's capabilities, identifying AI use cases, and applying AI solutions are critical success factors for these organizations and the economies that host them. Early adopters of AI will have a critical advantage from experience with AI applications.

The SMEs Committee recommendations were delivered in 2021 as both a report, and also a web portal ("AI4SME Portal") which implements the report's recommendations. The portal is meant for matching SMEs who are AI Unaware and AI Aware to AI solution providers that have the relevant experience in delivering the AI solutions that meet the needs of the SMEs. The portal is a demonstration of the Committee's recommendations and allows any GPAI Member to customize it according to its own local context and manage the portal with their appointed portal operator. As such, the SMEs Committee achieved the following milestones in 2022:

- **Milestone 1: Finalizing the portal template**

In 2022, the SMEs Committee finalized the portal template for the purpose of testing it in 3-month field tests. Both AIMIND ("AI Maturity Index") and SPMIND ("Solution Provider Maturity Index") were developed and integrated into the portal. AIMIND is intended to evaluate the AI maturity of a SME (e.g. AI Aware, AI Unaware) while SPMIND evaluates the maturity of an AI solution provider. SPMIND was incorporated as a required stage for onboarding the solution providers to the portal. This allows the portal operator to onboard solution providers with knowledge of and confidence in their AI maturity. New features such as a portal operator dashboard and a solution provider dashboard have been added. The portal operator dashboard allows for ease of solution provider onboarding management. The solution provider dashboard could nudge them to complete their onboarding process to be listed on the portal. Ultimately, the portal template empowers any portal operator to set up the portal with ease and customize the portal to their local context.

- **Milestone 2: Testing the usability of the portal template in field tests**

The field test involved several participants such as France, Germany, Singapore and Poland. During the field test, each participant worked with their portal operator to adapt the portal to their needs

(translation to local language, for example) and manage the portal while they conducted outreach to the SMEs and solution providers to participate in the field test. To ascertain the usability of the portal, the field test was focused on getting 3 main users – SMEs, solution providers and portal operators – to use the portal and soliciting their usability feedback. As such, the field test report is used to improve the portal and its features as well as to finetune the outreach strategies for AI Unaware and Aware SMEs and solution providers. This could result into a set of best practices for use during the portal launch. As we concluded the field tests, we collected a catalogue of AI solutions by industry verticals provided by the recruited solution providers.

- **Milestone 3: Building the AI4SME Portal Community**

Since the portal template reduces the portal operator's portal development time, a community forum can further assist in sharing best practices. The forum provides an avenue for developers to be connected and to solve their technical issues. This is also a platform for developers and operators to share their best practices on different topics like go-to-market (GTM) strategy, marketing materials and governance. The 2022 milestones will prepare the SMEs Committee to launch the portal officially. The relevant feedback from the field tests will be used for enhancing the portal. In addition, the network of solution providers, recruited during the field test, could be featured within the portal during the actual launch. The field test experience will help to define outreach strategies and best practices to engage solution providers and SMEs.

Protecting AI innovation, Intellectual Property (IP)

Both the development and use of AI technologies have the potential to be hindered by several identified challenges when it comes to intellectual property rights (IPRs), including, for example: *How to efficiently protect investment through intellectual property protection within a company developing new AI technologies? How can a company's training data set and pretrained model be protected? What kind of intellectual property rights will be created, and how will ownership of such IP be organized? How can a company address the different jurisdictions of IPRs, and how could this deter innovation?*

In the IP Committee's first year (2021), the Committee was able to produce a first version of the *GPAI* ***IP Primer*** *v1*, which acted as a guide for helping SMEs and startups working with AI to navigate and benefit from intellectual property rights, by addressing:

- Current effective IP laws,
- Best practices, activities, and mechanisms related to IP,
- How individual organizations are currently handling IPs,
- Differences across geographies.

In 2022, the GPAI IP Committee continued to work on an updated version of the *IP Primer* that considered the feedback from case studies where eight companies reviewed the *IP Primer v1*, and were then interviewed thus consequently ranking its effectiveness. The *IP Primer v2* was updated to expand upon the following subject matters:

- Clarify the differences between trade secret & IP for software industry and how to build a comprehensive strategy;
- Supplement the *IP primer* with more guidance on open source and licensing especially in relation with the reuse of trained models.

In addition to the *IP Primer v2*, the IP Committee focused on the ***IP Expert***, which is divided into two sections: (1) Guidelines for Scraping or Collecting Publicly Accessible Data and (2) Open Data/Trained Model Licensing Landscape.

- **Guidelines for Scraping or Collecting Publicly Accessible Data**

This task aims to provide high level guidance for scraping or collecting publicly accessible data factoring in certain key legal developments. In this section, the Committee's scope covers the EU, Japan, Singapore, and the United States.

- **Open Data/Trained Model Licensing Landscape**

The IP Committee identified a need to facilitate voluntary data sharing along the lines that organizations currently share software and content using Creative Commons, open source, and other standardized

agreements. At present, there are no standardized agreements that have been broadly adopted that expressly contemplate data sharing or address rights to trained models or outputs that are developed as a result of data sharing. This landscaping task examines emerging practices in this area, with the goal of developing recommendations to help address the need for such agreements and expand voluntary data sharing efforts.

This task involved research to identify ongoing efforts to develop standardized agreements as well as interviews with leaders in this area. The work product includes a landscaping report summarizing efforts to develop standardized agreements as well as recommendations for advancing the work.
Open Source and Creative Commons agreements have been helpful tools for freely sharing software and content. Given that AI involves data and raises other considerations, the question is ripe for assessing what new form agreements should be crafted for data and AI models and determining the best pathways forward for developing them.

The IP Committee conducted eight interviews with companies and individuals working on data sharing efforts:

- ABEJA (Japan)
- ALEIA: Accélérer vos projets d'Intelligence Artificielle (France)
- Creative Commons (United States)
- Google (United States)
- Linux Foundation (United States)
- METI: Ministry of Economy, Trade and Industry (Japan)
- Microsoft (United States)
- Noerr (Germany)

The results of this task are ongoing, with the preliminary findings published in the *IP Expert v1* and are to be expanded upon next year in the *IP Expert v2*.

This project aims to maximize collaboration with the other GPAI Working Groups by sharing information on the current situation of IPR systems and best practices. In particular, the IP Committee worked in close collaboration with the Data Governance Working Group, especially on copyright exceptions on the Guidelines for Scraping or Collecting Publicly Accessible Data section of the *IP Expert v1*, noting the active contribution made by Josef Drexl of the Data Governance WG.

Additionally, the IP Committee's evolved focus in 2022 welcomed the active contribution of several PhD or Master's students, including Joe O'Brien (under the direction of Lee Tiedrich), Daria Kim (under the direction of Josef Drexl), Yusuke Yogoro (under the direction of Hisao Shiomi), and GPAI Junior Investigator Marina Bojarski (under the direction of Yann Dietrich).

Broad Adoption of AI by SMEs in the Agriculture and Farming (A&F) Sector

The Agriculture & Farming (A&F) industry is an SME sector that presents specific requirements when adopting and developing AI that need to be met with appropriate strategies in order to obtain successful results. It is a sector that handles live, biological data, and it must be empowered with a commercial vision of AI development that supports not only the needs of its stakeholders (the farmers and agricultural cooperatives) but of society in general where it comes to the safety of human food chain, the welfare of animals, the optimization of crops and water resources, and the need to fight negative net migration in rural areas that will soon disappear if young people do not find jobs in such geographies. A&F today is not just about "feeding" the human race, but about managing Earth's resources for an economic prosperity based on sustainability practices that AI will help us achieve and deliver to the world, allowing GPAI Members to develop science-based policies for the sector.

The objective of this project is in line with the objectives of Project 1, Broad Adoption of AI by SMEs, to create a dynamic and easy to consult template website of sharable resources in support of local country initiatives laying the foundations and development of AI services within the A&F industries.

This project aims to support the A&F sector in addressing its two main challenges: (1) the need to standardize AI practices deployed within the sector in order to (2) improve current business models, respond to market competitive dynamics, and address consumer expectations. The case studies and AI solutions vendors invited to be part of its resources focus on *Precision* (feeding programs; crop harvesting & yield; utilization of water resources for both crops and animal cooling; pest control; monitoring individual animal growth, health and welfare); *Prediction* (illness in cattle, especially dairy cows; preventing overapplication of herbicides; price forecasting of crops based on yield rates); *Optimization* (dairy cows; best time to harvest crops; best use of biodegradable pesticides); *Detection* (chronic pain and gait disorders in animals; poor plant nutrition; pest control via drones & satellite data; irrigation leaks); and *Tracking and Tracing* of crops and animal products into the human food chain.

The approaches proposed for this project aim to create (1) a "path to success" for the A&F industries - farmer associations, cooperatives, A&F government bodies, and its clusters of service providers - hardware (IoT), infrastructure (Edge & Cloud), telecommunications (5G and other bandwidths), aerospace (drone, AUVs and satellites), data analytics and AI companies; (2) a cornerstone for the foundations of each GPAI Member and its own local initiatives ; (3) a “Repository of A&F resources” that will pave the way to future best practices and collaborative approaches among Members.

These objectives will be delivered via three phases of project development : (I) an initial “Awareness” phase with outreach initiatives to engage AI-Aware A&F ecosystem members and create co-operation and collaboration for the project; (II) an “Accessibility” phase which will catalogue successful AI solutions by verticals and commercial objectives; and (III) a final “Resources” phase where a Portal/Resources Website will be built for the A&F SMEs to access information libraries ranging from a variety of themes from “AI Readiness”, “AI Best Practices” to “How to Digitize your Farm”, as well as downloadable generically trained algorithms used in basic A&F AI projects. The project also aims to compile a resource library of AI companies dedicated to A&F projects and information about publicly available A&F data from local sources.

In 2022, the Committee was able to gather enough case studies of AI in the A&F Sector to lay a foundation for data-gathering capabilities, and begin first steps of adapting the SMEs portal to the needs of their project. In addition, the discovery of new innovative business models in AI-driven A&F and the use of Robotic Automated Systems have helped prove that AI be scaled to be deployed in countries in development and/or small farming cooperatives in the developed world. In line with GPAI Members’ green economy objectives, AI is also digitizing farming methods that contribute to the safeguarding of potable water resources, new plant-based foods for human consumption, and the preservation of arable land.

Forward Look

In 2022, the Innovation and Commercialization Working Group was able to advance on all of the projects that were taken on by the Experts. The Working Group has proposed four projects for 2023, subject to GPAI Council approval at the Tokyo Summit.

The Working Group has proposed to continue to build upon the progress made in this last year regarding the “Broad Adoption of AI by SMEs” project, the “Protecting AI innovation, Intellectual Property (IP)” project, and the “Broad Adoption of AI by SMEs in the Agriculture and Farming Sector” project. In addition, the I&C Working Group has proposed to take on an additional fourth project, titled “Boosting Innovation while Regulating AI”.

Broad Adoption of AI by SMEs

In 2023, it has been proposed to focus on growing the adoption of the Portal by GPAI Members and use of the Portal by SMEs and AI Solution Providers.

One of the key challenges would be the operationalization of the Portal, which includes the localization of the Portal and its materials for each Member. Note that GPAI would not be localizing the Portal for Members. Members adopting the Portal would need to localize the Portal on their own in terms of

language, legal, content, and overall look-and-feel of the Portal.

Another challenge will concern how GPAI Members will be able to promote the use of the Portal. It would therefore be necessary to explore ways of publicity and marketing efforts in order to generate use of each of the Portals.

Protecting AI innovation, Intellectual Property (IP)

The Working Group has proposed in 2023 plans to concentrate exclusively on one of the three tasks from the 2022 Workplan. This task, named Task 3 by the Committee, is one of the two tasks included in the work dedicated to the IP Expert of 2022, and is dedicated to open data and trained model licensing.

There is a need to facilitate voluntary data sharing along the lines that organizations currently share software and content using Creative Commons, open source and other standardized agreements. At present, there are no standardized agreements that have been broadly adopted that expressly contemplate data sharing or address rights to trained models or outputs that are developed as a result of data sharing. This landscaping project would examine emerging practices in this area, with the goal of developing recommendations to help address the need for such agreements and expand voluntary data sharing efforts.

This project would involve research to identify ongoing efforts to develop standardized agreements as well as interviews with leaders in this area.

As part of this work, the Committee plans on continuing interviews that begun in 2022 with more organizations who contribute to the work being done around open data and trained model licensing. The Committee also anticipates a continuation of their close collaboration with the Data Governance Working Group, as well as working closer with the Responsible AI Working Group in the year ahead.

Broad Adoption of AI by SMEs in the Agriculture and Farming Sector

Setting the foundations of data-gathering and methodologies in 2022, the Agro Committee envisions that the project will be in an excellent position to achieve the proposed 2023 milestones:

a) Reach out to AI solution providers in the Agriculture and Livestock farming sectors – issuing Requests for Information (RFI) to establish the qualification process of AI vendors.

b) Run checks on AI-readiness of small-and-medium sized farmers that could benefit from how similarly sized counterparts in other geographies have achieved successful AI deployments.

c) Construct the hypotheses around the various ways in which all the informational data gathered from the case studies and the AI vendors could be queried by the future web portal users, which is assumed will be fundamentally farmers, farming associations, startups and innovators wishing to discover the gaps in the sector where they could build future value, and other members of the ecosystem.

d) Build a user-friendly, natural-text based, as well as an information retrieval query facility in the Web portal and launch a minimum viable product (MVP) version in December 2023.

Boosting Innovation while Regulating AI

Following the I&C WG Private Session on Regulation during the 2021 GPAI Summit in Paris, the I&C WG assembled a task force on the topic of regulation in the context of innovation. Regulating Artificial Intelligence is one of the major challenges that governments, as well as industries and societies, will have to tackle in the coming years. On one hand, AI will affect every aspect of our lives in the future, which makes the regulation of AI most impactful on how we will interact with AI-powered applications. On the other hand, AI is advancing at unprecedented speed, which makes it challenging to foresee future directions and to align reasonably rather stable regulation with dynamic innovation.

As AI advances and diffuses, GPAI Members are considering the role of regulation to limit potential harms but not to hinder innovation, whether the regulation is legally binding (e.g. EU's proposed AI Act) or non-binding (e.g. Singapore's Model Governance Framework, Japanese METI's AI Governance Framework). To help guide governments in this task, the I&C WG laid out a number of principles and best practices for a private session on AI regulation for the GPAI Summit in November 2021. In 2022, the I&C WG continued to finalize the principles for AI regulation and prepared the concept for the working group.

In 2023, the I&C WG has proposed to continue to collect practical examples of how countries, institutions or other organizations support the industry to innovate while complying with AI regulation. Moreover, it will outline both concrete regulatory approaches and concrete impact measures around regulation. The former seeks to help a company easily understand the regulatory implications of a type of technology across regions and sectors. The latter, to provide transparency on the assumptions and the data used to calculate a number of KPIs around foreseeable regulatory impact for governments to be able to either use, fine tune or create similar ones within their ecosystems. It is intended to work closely with the other WGs, particularly with Responsible AI in the context of their Sandbox project.

In more detail, the I&C WG would investigate the various AI regulations procedures and stakeholder activities deployed world-wide in the context of innovation. It would devise a collection of tools or practices that governments as well as other organizations published to support innovation and commercialization of AI based on the upcoming regulations in the existing countries. It would then gather, as best possible, the value of the collected indicators for the listed regulation procedures and tools. The I&C WG would not work on standards or norms. Moreover, the I&C WG does not either intend to propose any recommendation on what the "best" regulation policy is. Instead, the aim would be to create a library of tools that best help the industry to comply with the different existing and upcoming regulations and to propose ways to measure the impact of various regulation approaches on innovation and commercialization. This does include examples from low- and middle-income countries within the reach of the WGs Experts to create a diverse set of practices.

Last, the I&C WG would build on work from the OECD and actively looks for integration of OECD results into the GPAI work to ensure consistency and strengthened collaboration.