

Innovation and Commercialization Working Group Report

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GPAI

THE GLOBAL PARTNERSHIP
ON ARTIFICIAL INTELLIGENCE

Please note that this report was developed by Experts of the Global Partnership on Artificial Intelligence's Working Group on Innovation & Commercialization.

The report reflects the personal opinions of GPAI Experts and does not necessarily reflect the views of the Experts' organizations, GPAI, the OECD, or their respective member states.

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Co-Chairs Foreword



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The Global Partnership on Artificial Intelligence (GPAI) was created as an international, multi-stakeholder initiative with the mandate 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 (with a subgroup on AI and pandemic response), Data Governance, Future of Work, and Innovation and Commercialization.

The Innovation and Commercialization Working Group (WG) works to study and recommend practical tools and methods that enable private actors and research organizations to drive international collaboration on AI R&D and innovation, to develop research outputs into products and processes, and to transfer these results to industry for commercialization. The Working Group is built around a specific focus on SMEs, emphasizing their importance in the AI field.

In 2021, Innovation and Commercialization worked on two different ongoing projects, “Broad Adoption of AI by SMEs” and “Protecting AI innovation and Intellectual Property (IP)”. 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 businesses. The “IP Committee” also focused on SMEs, and worked around the goal of assisting startups or SMEs working with AI and who have limited resources in their legal and/or IP functions to understand the most important characteristics of IP protection when AI is involved.

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, we, as the Co-Chairs of the Innovation and Commercialization Working Group, 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 collective projects. We want to specifically mention the project leaders of our ongoing projects, “Broad Adoption of AI by SMEs”, Ingo Hoffmann and Laurence Liew, and “Protecting AI innovation and Intellectual Property (IP)”, Yann Dietrich and Hiroshi Maruyama.

Françoise Soulié-Fogelman

Jean-François Gagné

Working Group Overview

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.

The I&C Working Group will examine support measures to facilitate these advances, including standards and norms, self-certification, etc.

The I&C Working Group is comprised of 35 Experts and 12 Observers with varied backgrounds and expertise that contribute to the WG projects. Of these 35 Experts, 17 Experts come from an Industry background, 14 from the Science field, 2 from Civil Society, and 2 with roles in the Government. Of the 12 Observers, 4 have an Industry background, 3 come from international organizations, 3 from the Science field, 1 from Civil Society, and 1 from the Government.

The Observers play a unique role in the I&C Working Group. One is nominated by the Egyptian Government, one comes from the OECD, two come from UNESCO, and eight were nominated by the I&C WG Co-Chairs to contribute to the projects, notably the IP Committee. The IP Committee calls for an array of IP experts with regional diversity to contribute to the project, including three French, two Canadians, two Japanese, and an American.

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 39% female Experts and 61% male Experts making up the I&C Working Group.

Innovation and Commercialization Experts

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 Co-Founder of SciTheWorld, HimitsuTechnologies (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)

Barbara Caputo Professor of Computer Science at the Politecnico of Torino; Head of the Visual and Multimodal Applied Learning Laboratory (Italy)

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)

Tabitha Goldstaub Co-Founder of CognitionX; Chair of the UK AI Council (United Kingdom)

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)

Salma Jalife Villalón Undersecretary of Communications and Technology Development at Mexico's Ministry of Communications and Transport (Mexico)

Kyunghoon Kim Director of the AI Strategy Center; Korea Information Society Development Institute (South Korea)



Robert Kroplewski Plenipotentiary of Minister of Digitalization in Information Society Affairs, Chancellery of Prime Minister (Poland)

Tan Geok Leng Chief Executive Officer at Artificial Intelligence Driven Analytics (AIDA); AIDA Technologies (Singapore)

Andreas Liebl Managing Director at UnternehmerTUM GmbH; Managing Director of the AppliedAI Initiative (Germany)

Laurence Liew Director of AI Industry Innovation at AI Singapore (Singapore)

Ségolène Martin CEO and Co-Founder of Kantify; Board Member of Bencode; Ambassador of Women in AI; Board Member at the Brussels Software Cluster; Board Member of French Tech Belgium (European Union)

Inma Martínez Technology Pioneer and AI Scientist; Independent Expert in industrial and societal digital transformation (Spain)

Hiroshi Maruyama PFN Fellow at Preferred Networks, Inc. Project Professor at University of Tokyo Executive Fellow at Kao Corporation (Japan)

Emma Naji Executive Director of AI Forum NZ (New Zealand)

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Lucas Noldus Chief Executive Officer of Noldus Information Technology BV, Wageningen (The Netherlands)

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Riccardo Sabatini Chief Data Scientist at Orionis Biosciences (Italy)

Umakant Soni Co-Founder & CEO, ARTPARK (AI & Robotics Technology Park), Chairman, Alfoundry, Co-Founder ART Venture Fund (India)

Jan Filip Stanifko Strategy Advisor, VIGO System S.A. (Poland)

Junichi Tsujii Director of the Artificial Intelligence Research Centre at Japan's National Institute for Advanced Industrial Science and Technology (Japan)

Toby Walsh Scientia Professor of Artificial Intelligence at the University of New South Wales; Research Group Leader at Data61 (Australia)

Blaž Zupan Chair of the Biolab and Project Manager of Orange Data Mining at University of Ljubljana (Slovenia)

Observers

Matthieu Dhenne Lawyer - Intellectual Property & Patent Law Specialist at Dhenne Avocats; AI-affiliated Researcher at Max Plank Institute in Munich (France)

Yann Dietrich Group Head of Intellectual Property at Atos (France)

Antoine Dupont Direction of Technological Research Agreements and Intellectual Property Department Work with lawyers on business models for exploitation, CEA; Chairman LES (Licensing Executives Society) France for software committee, CEA (France)

Helani Galpaya Chief Executive Officer, LIRNEasia; UNESCO (Sri Lanka)

Dorothy Gordon Chair of the Information for All Programme (IFAP) at UNESCO (Ghana)

Neeraj Gupta CSO, Attabotics Inc.; Co-Founder of AI Foundry; Co-Founder of Formulate IP; Co-Founder of Law Cubator (Canada)

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

Alistair Nolan Senior Policy Analyst at the OECD (OECD)

Yoshiaki Nishigai Associate Professor at Chiba University; Law Review Committee Member at the Law School of the University of Tokyo (Japan)

Golestan Radwan Advisor to the Egyptian Minister for Artificial Intelligence at the Ministry of



Communications and Information Technology (MCIT) (Egypt)

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)

Erich Spangenberg CEO of IPwe (United States)

Progress Report

Following the guidance from the Steering Committee, I&C Experts collectively chose to carry out two concrete projects in 2021: “Broad Adoption of SMEs” and “Protecting AI innovation and Intellectual Property (IP)”.

The SMEs Committee seeks to support SMEs to adopt AI which will help them increase their competitiveness, and ensure that their workforce will continue to be economically relevant. The IP Committee’s main objective is to support startups and SMEs in achieving a deeper understanding of the challenges they face in the area of IP 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.

Therefore, the objective of this project is to create a portal, containing shared resources to support the following initiatives:

- A set of outreach materials and activities to engage AI Unaware and AI Aware enterprises (i.e., SMEs with little or no knowledge of AI),
- A catalogue of AI solutions by industry verticals and functions,
- A service to match SMEs, consumers of AI, with AI Solution providers based on the consumers’ industry verticals and business activities.

In 2021, the SMEs Committee was able to build a template of the portal. This template is designed so that member states can download it, adapt, localize and use common materials to build and operate their own local portals. Along with this, the Committee is also collecting shared resources and activities to engage AI Unaware and AI Aware enterprises. Through these common template and resources, SMEs within member states exploring AI solutions will find it easier to navigate and understand what AI can bring to their business, and possibly identify a potential partner to assist them develop their solutions. The use of the portal, therefore, helps member states assisting their SMEs; it also increases the visibility of initiatives in other member states and thus may facilitate international collaboration.

Each Expert in the SMEs Committee has started to collect AI Solutions which can result in a catalogue of AI Solutions by industry verticals and functions for their respective countries. The catalogue, based on actual use cases in their local countries, will inspire SMEs on the possibility of AI when applied to their business. AI Solution providers will be invited to list their offerings in the portal once it is released publicly by a member country.

By exchanging, distilling, and formalizing best practices and translating them into easily reusable tools and templates, the portal will help create new or augment existing local initiatives from GPAI members. These tools and templates will allow member states to properly allocate resources on executing SME-support initiatives, instead of reinventing or recreating similar programs already available among GPAI countries.



To support the stated initiatives, the SMEs Committee is developing a GPAI AI Maturity Index for SMEs. This index intends to evaluate the maturity of an SME in terms of AI (unaware, aware). Depending on their index an SME can then be proposed different resources suited to its level. The index may play a critical role in matching AI Unaware and AI Aware consumers to AI Solution providers. For instance, AI Solution providers could indicate the required AI maturity of organizations before considering adopting their solution. This differentiation will help SMEs of different AI maturity choosing the right AI providers.

The SME Committee has three recommendations based on current progress:

1. Member states wanting to launch an initiative to foster AI adoption by SMEs should use the portal and its resources, localize them and thus limit initial costs. Use of the portal is thus an accelerator for AI adoption programs.
2. Instead of being a one-off exercise, member states should continuously share new materials and activities created to address AI adoption of SMEs. Though countries have different definitions of SMEs, one common thread runs through all: SMEs risk lagging behind in the new economy and becoming irrelevant if nothing is done to assist them in overcoming hurdles and obstacles of AI adoption. It is not a question of whether, but when they will become irrelevant. By continuously sharing the latest materials and activities, member states may keep current resources up to date with the fast-changing AI landscape.
3. Member states, with the use of the AI maturity index, could adopt a common assessment framework and language in evaluating and describing the AI Maturity of organizations. This could enable a more targeted approach in addressing AI-adoption obstacles faced by SMEs.

In addition, the portal and maturity index favor interoperability and facilitates international collaborations on AI initiatives. For instance, an event organized for AI Aware organizations in Europe could also invite AI Aware organizations from other member states.

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 meeting such challenges, a business must understand how IPRs are handled in different situations (especially in different jurisdictions when it wants to develop on the international market) and set an IP management strategy so that the company can optimize its IPRs while keeping benefits scalable and IP-related risks minimum. A few factors make this task particularly difficult:

- Current IP rights protection mechanisms are very complex,
- Different jurisdictions have slightly different rules and practices,
- New concepts related to AI, such as data, raw data, labeled data, structured data, training datasets, pretrained models, NLP (natural language processing), and image processing, raise questions on how to interact with existing IP mechanisms and how to shape future ones to cover the gaps,
- One can choose from many options to develop an IP management strategy: e.g., for a new idea, file a patent, saving know-how, or publish.

Small companies, SMEs, and startups usually do not have the resources to understand these issues. Yet, if they make mistakes in protecting their innovations, their survival is at risk.

The IP Committee addresses these factors in its *IP Primer*, 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.

To address these factors, the *IP Primer* is divided into five sections: What is Intellectual Property (IP); IP Issues in AI; Difference Between Jurisdictions; IP Management for SMEs, and a list of frequently asked questions (FAQ).

With the completion of the *IP Primer*, the IP Committee was able to interview seven companies around the world for case studies and gather feedback on the completed 2021 *IP Primer*, which will be revised to take into account this feedback.

In 2022 the Committee will produce another document, the *IP Expert* to address, at the expert level, the IP challenges to the development of AI. Some of these challenges are not fully decided yet.

The IP Committee has two recommendations for SMEs and startups based on current progress:

- Do not forget to address the issues around protection of your innovations. There are many solutions which entail varied consequences, risks and costs.
- Before entering a new market abroad, you need to understand the status of IP protection in the jurisdiction you plan to enter. Do not forget implications at IP level of the global market.

Forward Look

In 2021, the Innovation and Commercialization Working Group was able to advance on both of the projects that were taken on by the Experts. Next year in 2022, both projects, “Broad Adoption of AI by SMEs” and “Protecting AI innovation, Intellectual Property (IP)” will continue to build upon the progress made in this last year. In addition, the I&C Working Group will take on an additional third project, titled “Broad Adoption of AI by SMEs in the Agriculture and Farming Sector”, lead by Inma Martinez (Spain).

Broad Adoption of AI by SMEs

Now that the structure of the portal has been built, the next step in this process is to conduct field tests of the platform on existing initiatives from fellow GPAI members. This will allow the SMEs Committee to update the platform according to the needs of the users. Another of the main goals for 2022 is to develop a governance framework for the platform in order to build-in protection mechanisms for the data hosted in the portal, and to ensure quality listing of AI solutions which need to be compliant with GPAI's values, as well as the [OECD Principles on Artificial Intelligence](#). In addition to this governance framework, the SMEs Committee will work on developing an AI readiness index for AI providers. This will act as a quality assessment for AI solution providers listing on the platform. The AI maturity questionnaire for SMEs will also be field-tested in 2022.

Furthermore, 2022 will allow more possibilities to collaborate with other GPAI Working Groups. For example, the Committee intends to explore the issues of audit, certification, and labelling of AI in collaboration with GPAI Responsible AI Working Group to ensure AI solutions on the platform are trustworthy, fair, and robust. Additionally, the issue of transforming the workforce in SMEs, after their first AI project, will be explored with the Future of Work Working Group.



Protecting AI innovation, Intellectual Property (IP)

With 2021 focusing on how to help SMEs working with AI to navigate and benefit from intellectual property rights (*IP Primer v1*), 2022 will be about enriching the debate at the expert level and understanding the IP challenges to the development of AI and how some challenges can be addressed. In contrast to the *IP Primer*, the audience of the *IP Expert* will be business professionals and practitioners supporting them in largest companies or in SMEs and startups mature on IP issues.

Therefore, the IP Committee will update the *IP Primer v1* based on the case studies and distribute it to a wider audience as *IP Primer v2*. In doing so, the IP Committee proposes to:

- Consider additional cases studies to be conducted.
- Update the documents with any issues identified during the cases studies, also reflecting any evolution of legislation and practices.

In 2022, the IP Committee will also publish a second document, the *IP Expert*, for enriching the debate at an expert level, in order to:

- Understand the IP implications of the very significant work done by the EU around data and AI with various legislations in preparation/review such as the Data Governance Act, Data Act, Database Directive, in addition to other legislations around the world.
- Explore a pattern of clauses of framework data access, sharing and flows for implementing it to free trade agreements, electronic trade rules under WTO, and/or transnational regional agreements among like-minded partners.
- Produce key recommendations for the harmonization of rules and mutual recognition of patenting computer-implemented AI inventions.
- Identify and summarize the key IP issues for further consideration by experts.
- Conduct case studies to get feedback about the GPAI IP Expert.

The 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 expects to have close collaboration with the Data Governance Working Group, especially on copyright exceptions on Text and Data Mining and legal review by the Experts in the Data Governance Working Group.

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

The Agriculture & Farming (A&F) industry is an SME sector that presents specific requirements when adopting and developing AI that needs 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 member states to develop science-based policies for the sector.

This project will aim 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 will 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, and pest control via drones and 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 state 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 member states.

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. It will also aim to compile a resource library of AI companies dedicated to A&F projects and information about publicly available A&F data from local sources.

GPAI is the only globally minded, independent, neutral party that can establish a project such as this, as some A&F companies have attempted to do so in the past and their interests have conflicted with the highest benefits of the participants. The GPAI is also the best collaborative platform to bring onto this project the principles of inclusion, innovation, and economic growth and create an international and independent repository of best practices and case studies that can be trusted; attract AI suppliers to qualify to be listed and show case their case studies, and to offer sector industry bodies and associations a centralized source of resources. Furthermore, it can incorporate to the project the know-how of other GPAI Working Groups that will help address specific issues affecting the introduction of AI into the A&F sector:

- **Data Governance:** when the issues of data-sharing practices as well as the merging of traditional Real World Data with field data (Real World Evidence) for example when fighting pests, or animal diseases that affect the food-chain as well as ensuring the welfare of animals when veterinarians and farmers respond to pandemics.
- **Responsible AI:** when establishing the values of optimized practices that deploy AI to derive better yields without damaging the environment, biological ecosystems, animal welfare and human health.
- **Future of Work:** when demonstrating that A&F can become a technology vertical able to attract young people to work in the service provisioning of these industries as new sectors of digital innovation, gentrifying rural areas in order to balance their current negative net migrations towards urban centers.

This project will require a combined approach of internal Expert resources and budgets that will allow us deliver specific outreach tactics, the incorporation of A&F sector experts, and the building of the portal and its resources.

