



An Ambitious Agenda or Big Words? Developing a European Approach to AI

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Artificial Intelligence (AI) has become a key area of global strategic competition, offering potentially revolutionary solutions for commercial, civil, and military applications. While the European Union (EU) has recently taken action as regards the AI's disruptive potential, it arguably lags in its funding, research, and innovation as compared to the United States or China. Recent policy and funding initiatives at the EU level are shaping a distinctive approach to tackle such challenges, both via increased financing opportunities to address research and innovation gaps and through preventive governance mechanisms for the AI's responsible technological design and uses. The question remains whether these actions will mitigate the European governance and funding gaps in this emerging technological domain and foster a globally competitive European AI ecosystem.

INTRODUCTION

Unprecedented improvements in Artificial Intelligence (AI), robotics, and so-called 'autonomous' technologies have the potential to fundamentally transform human-machine relations and generate new and complex autonomous systems. AI has been heralded by the European Union (EU) as 'one of the most transformative forces of our time, [...] bound to alter the fabric of society¹.' Triggered by advances in quantum and cloud computing, hardware, and Big Data intensive machine learning, the imminent new 'age' of AI and autonomous robotics signals far-reaching and profound transformations in all sectors, such as finance, healthcare, cybersecurity, education, and defence.

Equally, such expected disruptions have ushered in an array of pressing and complex debates about the complementarity between humans and 'intelligent' machines, their legal and moral dimensions, their applications in the military, as well as their broader socio-economic and political impact. It comes as no surprise that Ursula von der Leyen, the President-elect of the European Commission, has called for hard rules to govern

AI, and pledged in her agenda for Europe ‘to put forward legislation for a coordinated European approach on the human and ethical implications of artificial intelligence’². The sense of urgency is unmistakably present as regards an ambitious agenda for digital rights and AI, as well as making the European Single Market fit for the digital age.

The EU institutions and member states have recently taken note of the technology’s groundbreaking characteristics, but arguably lag behind in their research and development as compared to major state and corporate actors in the field. As of mid-2019, at least eight EU member states have missed the deadline to put forward national strategies on AI, with France and Germany already adopting strategies in March and November 2018 respectively³. Moreover, with the UK leaving the EU, the Union will lose one of its most important players in AI research and innovation. The year 2018 has marked major developments in the UK in terms of AI. The British government prioritised AI by advancing a lucrative package of almost £1 billion and produced a report on its new level of ambition in setting an ethical AI agenda.

By comparison, in May 2016, the USA was the first country to put forward a comprehensive ‘National Artificial Intelligence Research and Development Strategic Plan’, followed in July 2017 by China’s release of its ‘Next Generation AI Development Plan’⁴. Both the USA and China have developed wide-ranging roadmaps for global AI leadership, being the most active countries in pushing research and development in the sector, as well as concentrating the highest levels of external and internal investments. For instance, by 2030 China aims to become the world’s leading AI innovation centre, its industry being expected to surpass €130 billion and AI-related fields totalling €1.6 trillion⁴.

Global players such as the USA and China have been heavily investing in AI research and the acceleration of its uptake, the driving energy behind this new technological innovation ‘race’ being justified by AI’s significant economic and social benefits and by the fact that early adopters are expected to become the next global leaders. The economic and military competition in this field is already playing itself out globally, giving way to an ever more urgent need to re-double the effort in mitigating the so-called AI ‘arms race’ and to negotiate world-wide safety standards for research and usability, especially in fields such as defence. In this regard, steps have been taken to preserve Europe’s claim to technological leadership, to bridge the technological-innovation gap, and to bring about an ethically-informed and principled European strategy to AI.

The EU in general and particularly the European Commission appear as key drivers and agenda-setters in galvanizing a comprehensive and more human-centred approach to the research and development of AI. Concrete and decisive actions have been taken at the EU-level, by promoting policy initiatives and projects, creating specialized expert groups, providing financing platforms for industry consortia, and fostering public-private partnerships in high-tech areas. However, questions remain whether such initiatives are too little, and too late to consolidate the EU’s position in the AI global ‘race’⁵. This policy brief provides an overview of such initiatives and projects, by focusing first on the EU’s governance approach for ‘Trustworthy’ AI, second on funding initiatives and relevant AI projects, and finally on proposing several recommendations for developing a distinctive European approach to AI.

THE EU'S TRUSTWORTHY AI NARRATIVE

There is a clear link between the overarching strategy with regard to the EU's intention to become a global leader in responsible AI, and the uptake of technologically robust and responsible AI that respects basic human rights and is engineered to mitigate potential harm. The EU's brand of 'Trustworthy AI', by laying the groundwork for ethical guidelines for its creation and use, could indeed become the so-called silver bullet in the EU's strategy to 'catch up' with the USA or China.

The underlying logic behind such a strategy is that the development of AI technologies adhering to high ethical and human rights standards will eventually provide European developers and manufacturers with a much-needed competitive edge, with consumers and users ultimately favouring such products over those sourced elsewhere.

The EU's strategic advantage definitely resides in its market and regulatory power as shown by the recent General Data Protection Regulation (GDPR), by setting industry standards, building trust, and ensuring legal clarity and public legitimacy in AI-based and autonomous robotics applications. The question remains whether the EU's ethical and human-centred approach runs the risk of stifling innovation in these fields, due to over-regulation, or lays the groundwork for a much-needed preventive governance of technological development. How can the EU, notwithstanding its gaps in areas of supercomputing, Big Data, and AI, ensure that ethics-by-design is the silver bullet in the global so-called AI technological 'race'?

The EU is framing AI according to a set of fundamental ethical, legal, and democratic principles enshrined in the values laid down in the EU Treaties and the EU Charter of Fundamental

Rights. In this regard, the European Commission created the **High-Level Expert Group on Artificial Intelligence** (AI HLEG) in June 2018 gathering 52 experts from academia, civil society, and industry responsible with supporting the implementation of a European strategy on AI. The group acts as a steering body for the **European AI Alliance**, set up by the Commission as a multi-stakeholder forum engaged in a dialogue on the future of AI in Europe. With the AI HLEG's Communication on 'Artificial Intelligence for Europe' from April 2018, followed by the 'The Ethics Guidelines for Trustworthy Artificial Intelligence (AI)'⁶ from April 2019, the European Commission has positioned the EU as the key driver for a human-centric approach to AI: by directly dealing with technological, ethical, legal, and socio-economic issues; and by aiming to boost the EU's research and industrial capacity to put AI at the service of European citizens and economy.

According to the Guidelines, which are the first deliverable in the EU's AI strategy, trustworthy AI should be lawful and respect all applicable laws and regulations, ethical and respecting principles and values, and robust both from a technical perspective while taking into account its social environment. Such an approach is substantiated on European AI technologies that respect basic human rights, human agency, and data privacy. These are characterised by transparency, diversity, and fairness, and engineered to mitigate potential harm, allow accountability and oversight, ensuring social and environmental well-being. The AI HLEG has launched a piloting phase from the 26th of June until the 1st of December 2019, in which all stakeholders can provide feedback on an assessment list to ensure that the ethical guidelines for AI development and use can be implemented in practice. The Commission has invited industry, research institutes, and public

authorities to test the detailed assessment list drafted by the AI High-Level Expert Group, which complements the guidelines.

The EU has put forward a unique and proactive normative entrepreneurship approach, by harnessing its regulative and norm-setting power to draw accepted standards of Research & Development (R&D) and usability for AI.

Nevertheless, such guidelines and any proposals put forward by the EU are voluntary in nature and non-binding. Moreover, it is not yet certain how an ethics-first AI approach will establish national and global standards for development, implementation, and regulation. While the practical guidelines and the key requirements that AI systems should meet in order to be deemed trustworthy are a welcomed improvement on the initial draft, questions remain concerning the Commission's approach. While the Trustworthy AI guidelines discuss ethics at length, they downplay key issues concerning technical robustness and they overlook the legal dimension. The risk with concentrating too much on ethics is losing sight of actually formalizing the principles of 'Trustworthy AI' into enforceable laws. This could be addressed by the current Commission's determination to put forward new laws governing AI and how Big Tech companies like Facebook use data. However, regarding technical robustness, what the guidelines fail to address is the worrying link between recent controversies surrounding Big Tech companies and the lucrative algorithmic-driven business models that dominate the industry with or without the AI component.

This is even more worrisome given AI's biases and technical glitches, especially when normatively charged AI systems perpetuate political, economic, and social discrimination. The reality is that the very features of tech giants'

business models making these algorithms lucrative are also what invite and facilitate potential misuses. Consequently, EU policy making in the areas of AI and law should comprehensively address opportunities and challenges of the yet to be seen AI disruptive potential from ethical, economic, and geostrategic vantage points. Commitment to fundamental European values and interdisciplinary efforts is one way ahead to ensure a balanced relationship between AI and the law in Europe.

Three important challenges remain. First, engendering a worldwide critical and ethical AI culture in international policy circles, strategic fields, and the tech world. Moreover, AI developers should be in the front lines of the battle over a human-centric approach. In this regard, concrete and actionable policies and ethical and legal frameworks are needed in specific technological and industrial sectors, which go beyond voluntary ethical self-assessment by manufacturers. Second, specialized skillsets and niche knowledge are required to even attempt the review of opaque 'black box' algorithms. From the outside, these could be seen as unsurmountable obstacles in providing regulatory oversight to algorithms, as their output is often a mystery even to their creators. Third, it remains to be seen how commercially viable such ethically-driven products would be in the long run, especially considering the aggressive start-up culture dominating this field, always chasing the next digital unicorn that will disrupt society and bring high profits to the venture capitalists behind it. This illustrates the EU's regulatory dilemma between law and high-tech, with legal requirements ideally not hampering AI research and development, while innovations not threatening legally protected interests and rights.

AI INVESTMENTS - TOO LITTLE TOO LATE?

On 26 June 2019, the High-Level Expert Group on Artificial Intelligence has put forward the second deliverable in the EU's AI strategy, namely a more comprehensive policy and investment recommendation on how to bolster Europe's competitiveness in AI, including directions for AI strategic research and for creating a network of AI excellence centres across Europe. The 'AI HLEG Policy and Investment Recommendations'⁷ document with its 33 recommendations provides a big picture and a non-exhaustive and holistic approach that should be taken together to achieve maximum uptake of AI in both private and private sectors.

The recommendations focus on four main areas where Trustworthy AI may help attaining a beneficial impact: from humans and society at large, the private sector, the public sector, to Europe's research and academia. They also address the main enablers needed to facilitate such impacts, namely the availability of data and infrastructure, upskilling and education, appropriate governance and regulation, and funding and investment. This is by far the EU's most detailed plan and vision to date on how Europe should 'catch up' with the frontrunners USA and China in the ongoing 'race' for AI supremacy, whatever that might entail.

An overview of recent EU initiatives in AI and robotics delineates clear steps taken to invest in front-line and interdisciplinary research, to ensure coordination at the European level by working with member states, and to create a critical mass of cross-sectoral expertise and cross-border collaborations in these domains. Although it is too early to judge the impact of such initiatives, the EU could indeed have an agenda-setter potential in translating technological innovation in AI into a global

strategic and economic edge by incentivizing the creation of a robust AI ecosystem in Europe.

Nevertheless, while this sounds good on paper and the hype around AI continues to generate interest and attract large funding, including from the EU, the reality is that European home-grown AI products are lacking. For Europe to competitively enter an era of AI entrepreneurship is easier said than done. The European economic and business landscape has yet to capitalize on the full potential of current and former generations of digital tools. If the EU does not double down on efforts to succeed in its overall digital overhaul and the development and corporate and public use of AI tech, it risks adding another AI gap to the digital one as compared to world leaders. Also, a survey has recently highlighted that 40% of European AI start-ups⁸ do not use AI in their products, but actually employ the term to exploit the hype surrounding it to attract more investments. For instance, AI start-ups in both the USA and China received more private equity funding and venture capital in 2017 alone than the EU AI start-ups received in the three years from 2016 to 2018⁹. Moreover, the EU's only AI innovation hub is located in London, which poses further important challenges given the uncertainties surrounding Brexit.

Contradictory accounts position the EU either as a second or third runner-up in the AI 'race'. Based on figures describing the European AI landscape¹⁰ presented in a workshop organized by the Commission in January 2018 in cooperation with the European Association for Artificial Intelligence (EurAI) to take stock of the current state of the field of AI in Europe, the USA is leading the global AI market, followed by the EU, and then China. Conversely, according to a report on 'Who is Winning the AI Race: China, the EU or the United States'¹¹, overall, the

USA is currently leading the AI ‘race’, with China fast on its tails as an emerging leader, and the EU as a third runner-up. The findings indicate that the USA is leading in four of the six categories of metrics examined, namely research, talent, development, and hardware, while China leads in two, namely data and adoption. The EU is in none of the above categories, but scores second behind the USA in talent. Europe undoubtedly possesses the research excellence to develop competitive AI, the EU benefiting from a top-tier and thriving academic AI community.¹² Yet, there is a disconnect between AI research and talent in the EU and its funding and commercial spin-off. Based on a McKinsey discussion paper¹³ on ‘Tackling Europe’s gap in digital and AI’, the potential for the EU to ‘catch-up’ with the USA AI frontier and deliver is high, provided that it quickly addresses its digital and AI gaps and leverages areas where it already has an edge, such as in business-to-business and advanced robotics.

There is no denying the fact that the EU has been a major source of funding for the research and development of both public and private institutions in potentially disruptive technological fields. At its completion, the FP7 programme funded around 130 robotics-based research and development and innovation projects, encompassing around 500 organizations with total grants of approximately €536 million. The mission of the European Commission’s Unit Robotics & Artificial Intelligence¹⁴ is ‘the development of a competitive industry in robotics and Artificial Intelligence in Europe including industrial and service robots as well as the growing field of autonomous systems spanning from drones and driverless vehicles to cognitive vision and computing’. The Unit is in charge of the Commission’s implementation and development of ‘the relevant strategic industrial agenda’, by managing the research and

development and innovation projects in the field in the framework of Horizon 2020.

The European Commission has emerged as a strategic actor in mobilizing the European AI community and member states to optimize the potential in the field. Important strides have been made in the last decade to foster a strong basis to innovate and create added value in cutting-edge technological domains, as shown by the below examples of EU funded AI-related projects and so-called success stories (see table I at the end of this paper).

As early as 2014, the Commission has already invested significant amounts in AI-related areas, with around €1.1 billion under Horizon 2020 between 2014-2017, with more investments coming until the end of 2020. According to an Overview of the EU’s activities and policies in the field¹⁶, the European Commission has allocated significant funding for cognitive systems, robotics and AI since 2004. The Overview lists a number of 15-20 new collaborative projects every year, with more than 80 projects currently in the Cognitive Systems and Robotics field between 2007 and 2013. Moreover, the Overview also offers a brief summary of the European Commission’s viewpoint on AI, being framed as a ‘significant component in robotics activities so far’, as ‘AI research’ and development of related core technologies, and most pointedly ‘AI as enabling technology – for e.g. drones, autonomous vehicles, assistive systems.’ Of note is also the launch of the SPARC¹⁷ initiative in 2013, a PPP in Robotics between the European Commission on the public side and the European robotics industry, research, and academia on the private side that further established the euRobotics Association Internationale Sans But Lucratif (AISBL) in Brussels.

Best practices and lessons-learned garnered from such PPP initiatives and from Europe's leadership in advanced robotics should be translated in this domain in the form of a new PPP on AI.

The European Commission has played an important role in stimulating the field of industrial robotics in Europe, especially in encouraging the interdisciplinary research in 'smart' or 'intelligent robots' and a 'culture of cooperation' between industry and academia. Such efforts have been geared towards introducing a number of specialized instruments and to pushing innovation closer to market opportunities by stimulating cross-sectoral dialogue between producers, users, and academia in robotics technology.

Between 2018-2020, further funding has been dedicated to the research and development of AI, with €1.5 billion under Horizon 2020, topped by €20 billion of combined public and private investment. In particular, the Horizon 2020 funding programmes have substantially supported AI-related European initiatives, with investments in Future and Emerging Technologies (FET), such as the AI-on-Demand Platform (AI4EU) with €20 million to be continued in 2020.¹⁸

Launched in January 2019, the Commission and partners have started building the European AI on-demand platform, the EU's landmark AI project, which seeks to develop a European AI ecosystem, bringing together the knowledge, algorithms, tools and resources available and making it a compelling solution for users in order to unify Europe's Artificial Intelligence community. Comprising 79 top research centres, SMEs and large enterprises from 21 countries, this platform is aiming to build a focal point for AI resources and facilitate a wide uptake in the

business and public sectors across Europe. The platform will serve the role of 'a broker, developer and one-stop shop providing and showcasing services, expertise, algorithms, software frameworks, development tools, components, modules, data, computing resources, prototyping functions and access to funding.'¹⁹ However, it is too early to assess whether such steps are enough to establish a solid basis for an AI culture of innovation and collaboration, more so given Europe's lag. For example, it was behind in private investment in AI by €2.4-3.2 billion in 2016, as compared to €6.5-9.7 billion in Asia and €12.1-18.6 billion in North America.²⁰

While targeted AI funding for innovation is very much welcomed, the EU's broader strategy is also to overall prepare for the digital age. As part of the future Multiannual Financial Framework 2021-2027 (MFF 2021-2027), the European Commission proposed a new funding programme entitled Digital Europe Programme (DEP) in the 'Single Market, Innovation and Digital' chapter of the EU's long-term budget proposal. By building on the Digital Single Market Strategy launched in May 2015 by the Commission, the goal is to prepare Europeans for the digital age and to boost the digitalization of Europe.

With a proposal foreseeing €9.1 billion over the period of 2021-2027²¹, the programme envisages providing funding for projects in five key areas: supercomputing and world-class data processing infrastructure creation; helping the spread of AI across society and economy (€2.5 billion); cybersecurity and trust; advanced digital skills; and the digital transformation of public services and EU-wide interoperability with the establishment of European Digital Innovation Hubs (EDIH) across Europe. In this regard, developments should be indeed part of a larger-

scale and European-wide digital agenda aimed at closing the AI adoption gap across public and private sectors.

CONCLUSION

The Pandora's box with AI has been already opened and only time will tell whether and how such a technology will fundamentally evolve or transform society. Grounding the research and development of new and emerging technologies on ethics and values might be one way to ensure that they do not advance to only benefit certain privileged groups. The future of a European or 'made-in-Europe' AI is being written now, and the EU could play a significant role in setting and shaping the global debate on this disruptive technology and mitigate its unforeseen consequences.

The EU has undoubtedly started to act comprehensively and to outline its own AI future based on a shared ethical vision. It remains to be seen whether the EU's efforts to 'democratize AI' might be too 'soft', running the risk to be left behind in the so-called global 'race' by focusing too much on legal and ethical guidelines. Most importantly, the normalization of an emerging AI 'arms race' narrative creates potential risks and further helps cultivate an insecurity culture premised on a great power competition rhetoric. Should this discourse drive the AI global competition? The real problem is not that the EU is falling behind competitors or it needs to 'catch up', but that these perceptions of a race and lag will push actors to deploy powerful but faulty and unreliable AI systems too soon, thus potentially harming both themselves and consumers.

As a regulatory powerhouse, the EU is one of the first movers in regulating AI, though indeed lagging behind the USA and China in terms of research and innovation investments and viable commercial AI products. The EU could indeed

become a leader in ethical AI, setting the stage for global standards. This approach is certainly grounded in specific normative and cultural factors that go beyond policy and regulatory aspects and are embedded in a distinctive European-centric worldview. It still remains to be seen how effective and actionable the EU's initiatives in ethical AI will be in the long-run, given the EU's purported lag in the research, innovation, and development of this technology.

Several recommendations take shape based on the above cursory overview of the EU's AI-related initiatives. Overall, the actual impact of such funding and governance initiatives will only become clearer in the upcoming years, and whether they will actually yield ethically-designed, concrete, marketable, and globally competitive products.

First, Europe should embrace the prospects afforded by AI and robotics, but not uncritically. Critical engagement should be part of a broader effort to reinforce human-centred AI at all levels from local, to national, and European, across institutions, public services, business, high-tech, industry, academia, and civil society. The EU should continue its commitment to the idea that humans are at the centre of AI development in order to prevent the creation and uses of harmful AI applications and mitigate their unintended consequences. Furthermore, the EU should engage with claims that the process behind the ethics guidelines has been captured by industry interests and the controversies surrounding 'ethics washing'²². According to critical voices²³, the AI HLEG's composition is imbalanced, the Commission assigning a majority of business stakeholders in comparison to only a few civil society representatives, law experts, and ethicists, thus giving an outsized influence to tech industry interests. The EU should also be

ready to be constantly tested by the commercial tech industry that is mainly profit driven and be ready to constructively engage both Big Tech corporations and SMEs. Regulation, which is often made with Big Tech in mind, should also take into account the needs of SMEs and start-ups in Europe, in order to avoid hard barriers for implementation and to bring innovation much faster to the market.

Second, STEM skills gaps in the subjects of science, technology, engineering, and mathematics need to be addressed. The goal is to maintain high levels of advanced technical knowhow in high-tech sectors in Europe, especially ICTs. The EU could play an important role in addressing such challenges, including talent creation, reskilling, and upskilling. However, creating math geniuses is not enough. More importantly, the elements of interdisciplinarity and inclusiveness should be underlined in the research and development of AI technologies, by including social scientists, civil society representatives, ethicists, and lawyers, by minimizing potential biases in algorithms, by looking into the complementarity between humans and AI, and by promoting gender equality in scientific and technical sectors. Furthermore, to avoid a potential brain drain, the funding of academic research should be increased, along with creating a friendly environment to retain and attract AI talent from Europe and the world. The EU's value-added has been demonstrated in its capacity to foster large scale and cross-border scientific research collaborations. The EU should also increase its efforts to translate this expertise in the field of AI.

Third, clear codes of practice are also necessary to ensure that the benefits of AI and associated technologies can indeed be shared widely. Future advances in AI and autonomous robotics should be shaped according to human rights values,

fairness standards, and regulatory conditions for the benefit of European citizens. Raising public awareness on algorithmic-driven decision-making is equally important. The EU should contribute to creating a landscape where civil society and European citizens understand and are actively involved in ongoing debates surrounding AI and Big Data, in particular related to access, data collection, and privacy issues. Most importantly, such debates should not be the exclusive preserve of AI developers, experts, policy makers, and big commercial interests or industry lobby groups. Starting small could be the best option, and Finland's example could be a good one to follow. The Finnish approach is to educate its citizenry in the fundamental basics of AI used today. The Finnish 'Elements of AI' is a free and first-of-its-kind online course designed to raise AI-literacy and intended to be accessible to all for training.

Fourth, the boundaries and enforceability of ethical and legal provisions as stated in the AI HLEG'S Guidelines should be better clarified. The aim should be avoiding either empty rhetorical declarations or over-regulation that could impede innovation and commercialization. At the same time, the 'Trustworthy AI' ethical approach put forward by the EU provides guidelines for self-assessment as part of a voluntary framework. A balance must be struck between preventive measures and innovation in these domains and develop regulatory guidelines that proactively monitor and proportionately evolve along with the technological development and implementation of AI. In short, increasing regulatory and enforcement capacity and creating 'smart regulation' for 'smart industry' as part of a continuing process that adapts to the fast pace of technological developments in emerging high-tech fields. Last but not the least, it takes more than tech skills to code principles into the technology and to push ethical features which are

in reality highly political, context-specific, and part of an ongoing process engendered by the progress of the technology and its evolving socio-political perceptions.

Fifth, with the ‘Trustworthy’ AI branding, the EU might have a unique selling proposition to distinguish itself from competitors. The EU’s own framing of the global AI ‘race’ should ensure that future advances in this domain are made on ethical and human-centred terms, and according to human rights values, fairness standards, and regulatory conditions for the benefit of European citizens. This approach, if indeed further clarified, deepened, and implemented, could provide the EU with the much-needed competitive advantage for European home-grown AI products and services, by inspiring more confidence in consumers and providing a roadmap for regulation. However, the reality is that as long as the EU’s ‘leadership’ in this sector is limited to providing ethical guidelines and not actually leading in its funding, research, and legislation, Europe runs the risk of providing normative declaratory outputs without actual backing. In other words, putting the cart before the horse.

To conclude, if the EU seriously envisions establishing a human-centric and value-based global governance, as well as galvanising a common AI effort in Europe, it should focus more on consolidating its agenda-setting power both among its member states, and in the wider world. EU member states’ individual governmental initiatives should be better coordinated and aimed at building a more coherent overall European-wide narrative and strategy on AI. Such efforts should be coupled by the EU’s better rationalization of dispersed and uncoordinated institutional initiatives across various technological domains such as AI, autonomous systems, drones, and robotics, in order to meet the stated ambitions to become a world leader in these sectors.

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Examples of EU Funded AI-related Projects & So-called Success Stories				
Date	Name	Countries	Budget	(Expected) Results
2013 – 2016	BRIDGET: The visual European search engine of the future	United Kingdom (coordinator), Italy, Germany, Spain, France	Overall Budget € 5,286,510 EU contribution € 3,547,278	The project is expected to deploy a range of sophisticated and innovative technologies extending state-of-the-art 3D scene reconstruction, media analysis and visual search, enabling customised and context-adapted hybrid broadcast / Internet services.
2015 -2018	WIMUST: Widely scalable Mobile Underwater Sonar Technology)	Italy (coordinator), Germany, France, Netherlands, Portugal, United Kingdom	Overall budget € 3 970 081,25 EU contribution € 3 970 081,25	The project successfully designed a system of cooperating autonomous underwater vehicles (AUVs) and autonomous surface crafts (ASCs). This could simplify seismic surveying with significant advantages over modern streamer-towing operations.
2017 – 2019 (ongoing)	Bots2Rec: Using robots to clear asbestos and keep workers safe	Germany (coordinator), France, Italy, Spain	Overall budget € 4 768 875 EU contribution € 3 964 162.50	The project is expected to have a strong impact on the robotics industry and society in Europe, by creating a system made up of several robotic units that work together to remove the asbestos from a building.
2016 – 2019 (ongoing)	MURAB: Using Artificial Intelligence to detect cancer	Netherlands (coordinator), Italy, Germany, Austria	Overall budget € 4 343 307 EU contribution € 3 982 307	The project has the ambition to revolutionise the way cancer screening and muscle diseases are researched for patients and has the potential to save lives by early detection and treatment.
2015 – 2019 (ongoing)	Aeroarms: Safer industrial maintenance and inspection with robotic arms using AI	Spain (coordinator), Switzerland, Germany, France	Overall budget € 5,719,602 EU contribution € 4,722,852	The project is expected to deliver an aerial robotic system with heavy payload drones mounted with multiple arms and autonomous control, perception and planning capabilities for safer industrial inspection and maintenance.

Table I: Compiled from EU Funded AI-related Projects & CORDIS¹⁵

ENDNOTES

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¹⁵ Projects about Artificial Intelligence, <https://ec.europa.eu/digital-single-market/en/projects/76174/76175>

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