ARTIFICIAL INTELLIGENCE FOR EUROPE
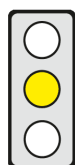# PILLAR 1: INVESTMENT IN AI

cep**PolicyBrief** No. 2019-10

Centrum für
Europäische Politik

KEY ISSUES

Objective of the Communications: The Commission wants to support the development and use of artificial intelligence (AI) in the EU in order to safeguard the EU's global competitiveness.

Affected parties: Industry and research facilities.

Pro: Coordination of AI research will help to avoid unnecessary duplication of publicly financed research projects.

Contra: The proposal to select certain AI applications as particularly worthy of support and to give them priority when channelling funds is presumptive.

The most important passages in the text are indicated by a line in the margin.

CONTENT

Title

Communication COM(2018) 237 of 25 April 2018: **Artificial Intelligence for Europe** and
Communication COM(2018) 795 of 7 December 2018: **Coordinated Plan on Artificial intelligence**

Note: Page references with the addition "M1" relate to Communication COM(2018) 237, references with the addition "M2" to the Communication COM(2018) 795 and those with the reference "CP" to the "Coordinated Plan" in the Annex to M2

Brief Summary

▶ **General Background**
  – Artificial intelligence ("AI") refers to systems that display "intelligent" behaviour, analyse their environment and act with some degree of autonomy to achieve specific goals [M1 p. 1, M2 p. 1].
  – AI can [M1 p. 1]
    - be purely software-based e.g. search engines, digital assistants and translation software, or
    - be "embedded" in hardware such as robots or autonomous cars.
  – AI facilitates economic growth and gains in efficiency across all sectors, such as [M1 p. 1, CP p. 1]
    - better health care, e.g. by more accurate and faster medical diagnoses,
    - a safer transport sector due to autonomous vehicles,
    - a reduction in energy consumption and in the use of pesticides in agriculture and
    - more efficient production processes because e.g. robots take on repetitive and dangerous tasks.

▶ **Context and objectives of the Communications**
  – The EU is home to "world-class" AI researchers and AI start-ups, a strong robotics industry and world-leading companies in sectors such as transport, healthcare and manufacturing in which AI is becoming increasingly important. In the face of tough global competition, the EU must join forces. [M1 p. 5-6, M2 p. 2 et seq.]
  – In 2018, all Member States made a Declaration indicating their commitment to cooperate on AI.
  – The Communication "AI for Europe" (M1) sets out the "European AI strategy". The Commission wants [M1 p. 2 et seq. and p. 6]
    - to push ahead with the development and use of AI in the EU so that the EU remains competitive;
    - the EU to take the lead on developing "responsible" AI which benefits humans and is human-centric.
  – The AI strategy consists of three pillars [M1 p. 3]:
    - Pillar 1: Investment in AI to strengthen "the EU's technological and industrial capacity" and the distribution of AI across the economy [this cep**PolicyBrief**],
    - Pillar 2: Adapting education, training and social systems to the new labour market [cep**PolicyBrief** to follow],
    - Pillar 3: Creation of an ethical and legal framework for AI [cep**PolicyBrief** to follow].
  – More details are contained in the "Coordinated Plan on AI" in the Annex to M2, which was set up by the Member States, Norway and Switzerland, in conjunction with the Commission, in 2018, via the "Group on Digitising European Industry and AI" and which is to be updated annually [M2 p. 2, CP p. 2].
  – This plan will bring together the parallel AI strategies in the EU, maximise the impact of investments, encourage synergies and cooperation and define collective measures [M2 p. 2, CP p. 2 and 4].

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► **First Pillar: Investment in AI to increase the "efficiency" of the EU and AI uptake**
   – The EU "should" be ahead of technological developments in AI. For this purpose, it must invest more in order to boost AI-related research, development, marketing and use [M1 p. 6 and 7].
   – The EU is significantly behind Asia and North America when it comes to private investment in AI [M1 p. 4, M2 p. 1].
   – The private and public sectors (Member States and EU) are to increase investment in AI from approx. € 4-5 billion to a total of at least € 20 billion in the period up to the end of 2020 [M1 p. 6, CP p. 4]:
      - The EU is increasing investment from the Horizon 2020 programme by 70% to a total of € 1.5 billion by the end of 2020. This aims to activate an additional € 2.5 billion from public-private partnerships.
      - Member States and the private sector will also invest a "similar amount" so that overall investment in the EU will increase to approx. € 7 billion per year [M1 p. 6].
   – After 2020, overall investment will increase gradually to € 20 billion per year [M1 p. 6, CP p. 4].
   – By mid-2019, every Member State will adopt a national AI strategy, "taking account of the Coordinated Pan" and submit it to the Commission and the other Member States indicating the level of investment and planned implementation measures [M2 p. 9, CP p. 6].
   – Investment should
      - strengthen AI research and development in the EU and enable innovation,
      - facilitate marketing and use of AI and
      - improve access to the data required for AI.

► **Supporting research and innovation in the field of AI**
   – In particular, the Commission wants to [M1 p. 7 et seq., CP p. 8 et seq.]
      - support basic and industrial research,
      - support projects in "key application areas" for AI such as health, automated driving, agriculture, manufacturing, energy, IT, security, public administrations, AI embedded in hardware and robotics,
      - strengthen national AI research excellence centres and foster tighter networks so that researchers can collaborate.
   – In 2019, Member States will map all "research excellence centres" and their skills, improve their collaboration and actively incorporate industry in the research teams [CP p. 9].
   – In order to scale up private investments, the Commission wants [M1 p. 6, 8, M2 p. 3, CP p. 6 and 7]
      - inter alia to set up a "joint research and innovation agenda for AI" with members of existing public-private partnerships (PPPs) for robotics and "big data", in order to start a new PPP for AI;
      - support start-up and scale-up companies with funds from "Horizon 2020", the European Fund for Strategic Investment [see cep**PolicyBrief** 2015-7] and the European Investment Fund,
      - launch an investment support programme to facilitate the involvement of private investors and
      - expand the pilot project of the "European Innovation Council" - an EU initiative to promote "important innovation" - in order to support companies working on "breakthrough" innovations.

► **Supporting market-readiness of AI**
   – In order to facilitate bringing AI onto the market, the Commission wants inter alia to [M1 p. 7 et seq. M2 p. 4, CP p. 8 -11]
      - establish "world-reference testing facilities" such as test sites and data spaces in which companies can test AI products and services in real-world environments in order to make them market-ready and safe, e.g. corridors for automated driving and "smart cities"; the locations will be identified in 2019;
      - support the development of platforms and pilot projects linked to AI,
      - enable or facilitate the testing of AI, possibly by "regulatory sandboxes" in which certain legal and regulatory requirements are temporarily relaxed.
   – The Commission wants to spend a total of € 390 million on this by 2020; Member States will contribute € 200 million, and € 550 million will come from the private sector. After 2020, the Commission wants to invest € 1.5 billion in EU test facilities and "encourages" Member States to match this investment. [CP p. 9 et seq.]

► **Supporting the take-up and use of AI by way of Digital Innovation Hubs**
   – "Digital Innovation Hubs – DIHs") will help to ensure that AI is taken up and actually used, inter alia by SMEs and authorities [M1 p. 7–9, CP p. 9 et seq.] They will be linked to AI research excellence centres and test facilities and act as single access points for potential AI users.
   – DIHs are specially developed "digital centres of excellence" such as universities and research facilities [Communication COM (2016) 180, see cep**PolicyBrief** 20/2016].
   – DIHs will provide users with information about AI solutions and sources of funding, access to algorithms as well as expertise and assistance with the integration of AI; this will be facilitated by an "AI-on-demand" Platform.
   – The Commission wants to set up additional DIHs and a special network of DIHs with a focus on AI [CP p. 9].
   – In 2019, Member States will "identify" all DIHs with AI competence and "strengthen" their networks [CP p. 10].
   – The Commission wants to invest "more than" € 100 million in DIHs in AI areas. After 2020, it wants to support new DIHs with up to € 900 million; Member States are to provide "similar amounts". [CP p. 10-11]

► **More data as a basis for AI**
– Large amounts of high-quality data are essential for developing reliable AI [M1 p. 10 et seq., M2 p. 6 et seq.].
– One type of AI is "machine learning". Here algorithms evaluate data sets – the larger they are, the more reliable the results – and apply what they have "learned" to new data. [M1 p. 10 et seq., CP p. 13]
– The Commission wants to support greater availability and access to data whilst complying with EU data protection law [cf. cep**Analysis** EU Data Protection Law], inter alia by [M1 p. 10 et seq.,M2 p. 7, CP p. 14-17]:
   - agreement on interoperable data formats and standardised interfaces,
   - creation of common European data spaces in which data is made available for re-use,
   - support for the development of modern "industrial platforms" for secure data sharing and
   - a "support centre" that will provide model contracts and assistance for data sharing.
– Member States are to cooperate with the EU and match its investment of € 35 million in order inter alia to [CP p. 15 et seq.]:
   - identify public datasets for "training" on AI and facilitate access to such data;
   - ensure further development of the European Open Science Cloud [see cep**PolicyBrief** 2016-21];
   - develop secure - e.g. blockchain-based - solutions for access to data and data integrity; and
   - create a "common database of images" for combating cancer and a "healthcare data space".
– The EU requires its own high-performance computing capacity for processing data [M2 p. 8 et seq., CP p. 18].

Policy Context

AI has featured in the EU research and development framework programmes since 2004 and been the subject of other initiatives by the Commission according to which the EU should be leading the way in AI development [COM (2017) 228]. The European Council called for a "European concept" [EUCO 14/17] on AI and approved the preparation of the "Coordinated Plan" [EUCO 9/18]. The Council supports the Coordinated Plan [cf. Conclusions of February 2019].

Options for Influencing the Political Process

Directorates General:	DG Communications Networks, Content & Technology
Committees of the European Parliament:	Industry, Research and Energy (leading), Rapporteur: Ashley Fox (ECR, GB)
Federal Ministries:	Economic Affairs and Energy (leading)
Committees of the German Bundestag:	Education and Research (leading)

ASSESSMENT

Economic Impact Assessment

The Commission's **proposal to select AI** in general - and specific areas of AI application in particular **- as particularly worthy of support**, **and to give them priority when channelling funds** towards them, **is presumptive** since the Commission cannot know whether AI will yield higher returns than other technologies in the future. Still less can it know the areas in which AI applications will be particularly beneficial. Economically relevant knowledge is locally distributed. Private actors are therefore best placed to assess the benefits and risks of a technology. The Commission should thus take a neutral approach as regards technology and sector, leaving private actors to decide which technology they would prefer to invest in. As long as they are liable for their decisions, we may assume that they will do this responsibly.

The Commission is also exerting influence on the decisions of Member States regarding the distribution of public funds according to national requirements. Although the Member States do not have to follow the Commission's proposals, as a result of co-financing they will be inclined to do so. Thus, Estonia, for example, might be inclined to provide funding for AI research in the health sector, as proposed by the Commission, instead of funding research in the field of electronic administration, an area in which the country is already particularly strong.

Nevertheless: **Coordination of AI research** at EU level may increase overall efficiency in that it **will help to avoid unnecessary duplication of publicly funded research projects** as well as of related infrastructure and testing facilities. In principle, public funding of basic research is justified, as the lack of patent protection for its results makes such research unattractive for private actors. If it is unclear whether the research is still basic or has already become industrial, i.e. applied research – the transition is fluid – public-private partnerships (PPPs) should be set up to fund it. However, on no account should PPPs be used as a way of shifting entrepreneurial risks to public budgets. At the same time, in the context of a PPP, public actors should refrain from steering the development of marketable products. Under no circumstances should PPPs promote research that is unequivocally industrial.

The establishment of test facilities is generally the task of entrepreneurs. If there is a demand for it, private companies will offer test facilities to innovative companies. If the construction of such test facilities is costly, venture capital financing is possible, as pioneers have the chance of large profits in the event of a technological breakthrough. In cases where, due to the nature of the facility, the public sector needs to be involved, e.g. in tests for autonomous driving on

public highways, partial funding from the EU may prevent such a facility from having to be set up by every Member State, while at the same time ensuring - for example through uniform regulatory requirements for the authorisation of such tests - that companies from Member States where such a test facility does not exist can test their products in other Member States.

The envisaged exchange of information between research institutes, test facilities and potential AI users via DIHs, encourages innovation. **DIHs should, however, leave the role of providing commercial solutions and advising potential AI users, to private companies.**

Facilitating the provision of data through standardisation and interoperability can lead to significant cost reductions. Public data should be easily available as long as EU data protection law is respected.

Legal Assessment

Legislative Competency

The EU can support - in parallel to the Member States - research and technological development ("RTD") in the field of AI in order to strengthen its industrial development and its competitiveness [Art. 4 (3), Art. 179-188 TFEU]. This covers support for the entire innovation process, from basic research through to the evaluation of results and preparation of market-ready products [Grabitz/Hilf/Nettesheim-Eikenberg TFEU Art. 179 para. 67].

Subsidiarity and Proportionality with Respect to Member States

Dependent on the actual design of the follow-up measures.

Compatibility with EU Law in other respects

The political objectives of AI support touch upon EU competition law which basically prohibits state aid [Art. 107 (1) TFEU]. Payments from funds that are centrally administered by the EU, on which Member States have no influence, do not constitute state aid. This applies e.g. to funds from "Horizon 2020" and the European Fund for Strategic Investment. However, the Coordinated Plan provides extensively for co-financing by the Member States. Insofar as Member States subsidise AI projects, the law on state aid must be complied with [Calliess/Ruffert, TFEU, Art. 179 para. 19]. The same applies where resources come from EU funds but - as in the case of the European Fund for Strategic Investment - their allocation is at the discretion of Member States.

Where state aid is compatible with the internal market, Art. 107 (2) and (3) TFEU, the General Block Exemption Regulation [(EU) No. 651/2014 (GBER)] and the accompanying "Union Framework" [2014/C 198/01] apply. These state e.g. that subsidies for projects involving basic research, industrial research and "experimental development" are permitted. This covers pilot projects and test facilities for product testing in real-world environments but only as long as "the main aim of these measures is essentially to further improve products, processes or services which are not yet established" [Art. 25 in conjunction with Art. 2 No. 84-86 GBER, para. 1.2 Union Framework]. Subsidies to DIHs may be justified as aid for "innovation clusters" – i.e. groups of independent economic players that promote innovation – [Art. 27, Art. 2 No. 92 GBER]. **The EU and Member States must** however **ensure that, when weighed against the policy objectives of AI support, distortions of competition are kept to a minimum** [cf. Callies/Ruffert, Art. 179 para. 19].

Nor should pure EU aid be allowed to distort competition in the internal market or impair trade between Member States [von der Groeben/Schwarze/Hatje – Mederer, EU-Recht, 2015, Vorbem. zu Art. 107-109 AEUV, para. 16]. Thus, inter alia, AI projects that are close to the marketing stage cannot (any longer) receive product-oriented support [CJEU, Judgement of 27 September 2000, BP Chemicals Ltd./Commission, T-184/97, EU:T:2000:217, para. 63].

Impact on German Law

Dependent on the actual design of the follow-up measures.

Conclusion

The proposal to select certain AI applications as particularly worthy of support and to give them priority when channelling funds is presumptive. Coordination of AI research will help to avoid unnecessary duplication of publicly financed research projects. DIHs should, however, leave the role of providing commercial solutions and advising potential AI users, to private companies. The EU and Member States must ensure that, when weighed against the policy objectives of AI support, distortions of competition are kept to a minimum.