

## Coordinated Plan on AI, European Commission

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The European Commission released two major documents outlining a coordinated plan for AI. It includes a projected aim of €20bn in funding by 2020 and lays the foundation for coordination on AI between European nations, with an invitation for international cooperation.

This is a partial overview of the Coordinated Plan on AI that I have cut down, re-structured and edited to highlight the aspects that I am most excited about.<sup>1</sup>

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<sup>1</sup> No annotation means that developments are either already happening, confirmed or underway.

\* denotes specific developments with unknown likelihood of happening

\*\* denotes specific developments with a high likelihood of happening

# Coordinated Plan on AI, European Commission

(07.12.2018)

The European Commission published two documents: (1) a Communication to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of Regions, containing a summary of the Coordinated Plan on AI and (2) an annex outlining the “Coordinated Plan on the Development and Use of Artificial Intelligence Made in Europe” in depth. Member States (+ Norway and Switzerland) agreed that the Coordinated Plan on AI should be updated on a yearly basis.

It's a non-binding document building on the previously published [Communication on AI](#) by the European Commission and the Digital Day Declaration “[Declaration of Cooperation on AI](#)”.<sup>2</sup>

As a result of the Communication on AI, the European Commission established a [High-Level Expert Group on AI](#), tasked with: (i) the drafting of AI ethics guidelines and (ii) proposing policy recommendations for investment and regulatory frameworks.

## 1. What could AI made in Europe look like?

The documents outline a European approach to AI that is built upon ethical and societal values derived from the Charter of Fundamental Rights. It places an emphasis on what it perceives to be interconnected concepts of a “trusted AI” and “human-centric AI”. These also entail that AI ought to be developed for the benefit of citizens.

*“Overall, the ambition is for Europe to become the world-leading region for developing and deploying cutting-edge, ethical and secure AI, promoting a human-centric approach in the global context.”*

Key principles identified for AI made in Europe are “ethics by design” and “security by design”. In 2019, safety and liability frameworks will be assessed in light of adequate

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<sup>2</sup> Signed by all EU Member States + Norway

safety and redress mechanisms and, more generally, regulatory frameworks<sup>3</sup> will be assessed for fitness of purpose in regard to AI-enabled technologies. A report outlining the findings will be published mid-2019.

The High Level Expert Group on AI will publish their draft ethics guidelines in December, followed by a consultation with [the AI Alliance](#), resulting in a final version in March 2019.

### **1.a. Why: coordination?**

The EU is made up of 28 (still) Member States; coordination between them can increase the EU's competitiveness<sup>4</sup> globally by: maximising investment on EU and Member State (MS) level; encouraging synergies between ongoing efforts (incl. ethics); exchange best practices and "collectively define a way forward", i.e. create a common goal and vision among the MS.

### **1.b. Where: coordination?**

The following areas have been identified as being in particular need of coordination: Investment; "excellence in and diffusion of AI"; data availability (pool resources such as data); societal challenges; ethics and regulatory framework (in other parts of the text referred to as a 'seamless regulatory environment').

## **2. Money**

### **2.a. Investment into research, innovation & related infrastructure**

#### **i. Investment into research and innovation**

Between 2018-2020, the [European Commission's Research and Innovation framework programme Horizon 2020](#) will increase by 70%, with a total funding of €1.5bn for AI. Following, the European Commission proposes an investment of €1bn per year under the next [Multiannual Financial Framework \(MFF\)](#), drawing on funds from Horizon

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<sup>3</sup> This includes an exploration of IP issues.

<sup>4</sup> Bearing in mind that the EU as a whole is the second largest economy in the world.

Europe and the [Digital Europe Programme](#). The Coordinated Plan on AI also refers back to the Communication on AI's ambition to increase total investment to reach a total of €20bn until 2020.<sup>56</sup>

2018-2020: €1.5bn (European Commission (EC) - Horizon 2020)

2018-2020\*: €20bn (projected aim, all MS, private and public sector, presumably including the €1.5bn from above)

2021-2027\*\*: €1bn per year (next MFF)

A highlighted area of focus for the European Commission's funding through Horizon 2020 is *"AI for security purposes, namely, on the one hand to prevent the malicious use of AI technologies utilized by malevolent actors for criminal activities or terrorism, and on the other hand to deploy AI tools and solutions in support of law enforcement agencies to better prevent, detect and investigate criminal activities and terrorism."*<sup>57</sup>

## [ii. Investment into related infrastructure](#)

The European Commission, through Horizon 2020, plans to fund networks of AI research excellence centres<sup>7</sup> with €50m "in 2020".<sup>58</sup>

in 2020\*\*: €50m (EC - Horizon 2020, networks of AI research excellence centres)

Between 2019-2020, the European Commission will fund the development of platforms and large-scale pilots integrating AI into areas such as energy, healthcare, and agriculture with €390m. They expect a matched funding from MS at €200m and private sector at €550m\*.<sup>8</sup>

2019-2020: €390m (EC, development of platforms and large-scale pilots)

2019-2020\*: €200m (MS, development of platforms and large-scale pilots)

2019-2020\*: €550m (Private sector, development of platforms and large-scale pilots)

Expected total\*: €1140m (all above, development of platforms and large-scale pilots)

Between 2021-2027, under the Digital Europe Programme, the European Commission hopes to make €1.5bn available to establish testing and experimentation sites for AI (e.g. from components such as neuromorphic computing to application areas such as

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<sup>5</sup> All EU MS + public & private sector together

<sup>6</sup> Other suggested options for funds are the European Fund for Strategic Investment and the European Structural and Investment Fund.

<sup>7</sup> See section on infrastructure.

<sup>8</sup> See section on infrastructure.

health). They encourage matched funding from MS.

2021-2027<sup>\*\*</sup>: €1.5bn (EC - Digital Europe Programme, AI testing and experimentation sites)

2021-2027<sup>\*</sup>: €1.5bn (matched funding MS, AI testing and experimentation sites)

Between 2019-2020, the European Commission will fund Digital Innovation Hubs in selected AI-relevant areas with €100m.

2019-2020: €100m (EC, AI Digital Innovation Hubs)

Between 2021-2027, under the Digital Europe Programme, it is hoped that €900m will be provided to support the establishment of further Digital Innovation Hubs. They encourage matched funding from MS.

2021-2027<sup>\*</sup>: €900m (EC - Digital Europe Programme, support development of Digital Innovation Hubs)

## **2.b. Investment into startups**

The Coordinated Plan on AI identifies a need for the EU to invest in startups in AI and blockchain<sup>9</sup>, both during early stage and scale-up phase. Using existing instruments (European Fund for Strategic Investment, Horizon 2020, European Investment Fund), the Commission expects to mobilise €100m “in 2020”<sup>\*\*10,11</sup>.

in 2020: €100m<sup>\*</sup> (via EFSI, Horizon 2020, EIF, startup early stage and scale-up funds)

The European Commission is preparing a pilot for a European Innovation Council, supporting scale-up of startups, and fund research and innovation projects, that work on “market creating”, “cutting-edge” and “disruptive innovation”<sup>\*\*</sup>.

2019-2020: €100m<sup>\*\*</sup> (EIC funds, startups & research and innovation projects)

Other proposed activities to increase investment are vague: “(i) financing a portfolio of innovative AI/blockchain companies; (ii) developing a dynamic EU-wide investors community focusing on AI; (iii) multiplying investments at the national level by involving

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<sup>9</sup> The Commission will give preference to blockchain applications with more energy efficient infrastructures.

<sup>10</sup> From the original text it is unclear whether €100m by 2020 is meant or in 2020 alone.

<sup>11</sup> Some consideration is given whether AI and blockchain could receive additional support from the InvestEU Programme in the future<sup>\*</sup>.

the national promotional banks (NPBs) that are willing to participate;<sup>12</sup> (iv) incentivising private sector investments and (v) making Europe become more attractive for start-ups to stay and grow.”\*

## 2.c. Investment into skills

Between 2021-2027, the European Commission, under the Digital Europe Programme, will provide €700m to support skills in AI, HPC and cybersecurity.

2021-2027: €700m (EC - Digital Europe Programme, advanced digital skills)

## 2.d. Investment into data

The European Commission plans to use ± €100m from Horizon 2020 and Connecting Europe Facility (CEF) to support the application and definition of data and metadata standards\*.<sup>13</sup>

2020 (?)<sup>14</sup>: €100m\* (EC - Horizon 2020 & CEF, support application and definition of data and metadata standards)

The European Commission, under Horizon 2020, plans to use €27m to develop “blockchain-based and other secure solutions” to secure data integrity and access to data\*.

2020 (?): €27m\* (EC - Horizon 2020, solutions for giving access to data and secure data integrity)

The EU, through Horizon 2020 will contribute €35m to support initiatives on linking genomics repositories, building rare disease registries, and a “*common database of health images initially dedicated to the most common forms of cancer*”<sup>15</sup>.

2020 (-2022?): €35m (EC - Horizon 2020, health data)

The European Commission, expects to contribute €10m from the Connecting Europe

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<sup>12</sup> This is the vehicle through which MS can support the process.

<sup>13</sup> See section on data.

<sup>14</sup> All “2020 (?)” indicate a lack of clarity as to whether “under Horizon 2020” means in 2020 alone or by 2020.

<sup>15</sup> This will be anonymised and the result of data donorship by patients.

Facility to compile less represented language resources to put on the European Data Portal for use in automated translated and NLP.

2020 (?): €10m (EC - Connecting Europe Facility, language data)

The European Commission will build on its Communication “Towards a common European data space” by supporting digital industrial platforms with €50m. It further proposes to create a common European Data Space with MS, making data available for re-use to businesses, public sector and innovators with €1bn out of the Digital Europe Programme’s AI section\*\*.

2020 (?): €50m (EC - Horizon 2020, support digital industrial platforms)

2021-2027\*\*\*: €1bn<sup>16</sup> (EC - Digital Europe Programme’s AI funds, establish a common European Data Space)

### **3. General strategy**

All MS are encouraged to “put in place” a national AI strategy, programme or to add AI to suitable existing national strategies or programmes\*.<sup>17</sup> Incorporating the Coordinated Plan on AI into national AI strategies or programmes is equally encouraged\*.

#### **3.a. Coordination Management**

##### **i. The Plan**

The Member States’ Group on Digitising European Industry and Artificial Intelligence will steer conversations between MS and the European Commission. There will be bi-annual meetings as well as coordination actions across national ministries, industry, academia, civil society and other stakeholders. MS and the European Commission will organise “topical workshops”. Assistance on technical matters will be provided by the Sherpa Group.

##### **ii. Partnerships**

Academia, industry and the European Commission, with MS support, will work on a common Research and Innovation Agenda for AI (2020). This process will be supported

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<sup>16</sup> Co-investment with MS is expected.

<sup>17</sup> Manner and content are up to each MS based on its specific characteristics

by: (i) the European Commission which plans to set up a Leader's Group, representing stakeholder "at CEO level" from industry and research institutes\*\* and (ii) stakeholder discussions between existing robotics and big data Public-Private Partnerships as well as industry and research institutes. The first meeting of the Leader's Group is to be held Q1 2019, supposedly paving the way to "a new partnership in AI".

### iii. International cooperation

The Coordinated Plan on AI states that the AI ethics guidelines (presumably those of the HLEG on AI) will be promoted internationally. The aim is to open cooperation and dialogue with international stakeholders sharing the same values.<sup>18 19</sup> In early 2019, an international ministerial meeting will be organised to form a consensus on the ethical implications of AI.

*"To make these efforts a success, however, Member States and the Union should attempt to align bilateral outreach efforts related to AI between individual Member States and third countries and pool their efforts pushing for a responsible development of AI at the global level. The Union needs to speak with one voice to third countries and the world at-large on this topic. In synergy with activities of the Member States, the EU should also seek alliances with stakeholders - tech companies, academia and other parties - to engage in a multi-stakeholder alliance at the global level for responsible AI."*

### 3.b. Impact Assessment

In 2019, MS and the European Commission are to identify "relevant investment parameters and comparable benchmarks for uptake"\*\*. These will be regularly monitored.

## 4. Infrastructure

**European AI research excellence centres**<sup>20</sup> will be integrated into tighter networks to: (i) scale-up national research capacities, (ii) foster cooperation among research teams

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<sup>18</sup> It also mentions that the joint development of international standards would ease AI acceptance and deployment. However, the document states this in a matter of fact way without making any further push for it.

<sup>19</sup> In terms of international security dimensions, the EU will build on work undertaken by the High Representative in the Global Tech Panel, within the UN and other multilateral fora.

<sup>20</sup> Research centre with a strong expertise in AI.

in Europe, (iii) join forces to tackle “major scientific and technological challenges in AI”, (iv) mobilise industry to work with research teams.

The European Commission, through Horizon 2020, plans to fund networks of AI research excellence centres with €50m “in 2020”.<sup>\*\*</sup>

**A limited number of testing facilities** will be established to allow for testing and experimentation with state-of-the-art technology whilst optimising investment effort and minimising duplication. The document states that these testing facilities should be open to all actors in Europe and may (read: are encouraged to) include regulatory sandboxes.

Between 2019-2020, the European Commission will fund the development of platforms and large-scale pilots with €390m, expected matched funding from MS at €200m and private sector at €550m.

Between 2021-2027, the European Commission, under the Digital Europe Programme, hopes to make €1.5bn<sup>\*\*</sup> available to establish testing and experimentation sites for AI (e.g. ranging from components like neuromorphic computing to application areas like health). Matched funding from the MS will be encouraged and would result in a total of €3bn\*.

**Further support for Digital Innovation Hubs (DIH)**<sup>21</sup> to assist in the identification of datasets, the development of algorithms and to link to “*computing facilities building on the “AI-on-demand” platform*” within the area of AI. Furthermore, DIH are expected to act as mediators between AI research excellence centres and testing facilities.

Between 2018-2020, the EU will invest in the European Institute of Technology’s Digital activities. It will support the existing “network of nodes” to adapt to opportunities provided by AI.

Between 2019-2020, the European Commission will fund Digital Innovation Hubs in selected AI-relevant areas with €100m.

Between 2021-2027, under the Digital Europe Programme, it is envisaged that €900m\* will be provided to support the establishment of further Hubs. Matched funding by the MS is encouraged. Eventually, the eventual Digital Innovation Hub network is expected to support ± 10 000 SMEs with their digital transformation.

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<sup>21</sup> There exists already a Digital Innovation Hub network of ± 450 Hubs.

## **5. Talent**

The Coordinated Plan on AI acknowledges that there is a significant lack of ICT talent in Europe, resulting in a need to foster talent. It also doubles down on its commitment to human-centred AI, suggesting *“ethics and other non-STEM skills [...] should be part of the talent fostering chapter of AI national and international strategies”*.

The overall concern is broken up into (a) brain drain/talent attraction and (b) upskilling, reskilling, and training. The main focus is on the latter.

### **5.a. Brain drain**

By end of 2019, MS are encouraged to accelerate the implementation of the EU Blue Card system, as well as to exchange best practices for the opportunities offered by the system\*.

The call to strengthen AI research excellence centres will include a consideration for PhD and post-PhD programmes with a focus on industrial challenges, aiming to establish a recognised European brand for industrially-oriented PhDs in AI. This is meant to keep talent in Europe after the completion of their studies.

### **5.b. Training**

The Digital Action Plan supporting tech usage and digital competence development in education was adopted. In addition, the European Institute of Innovation and technology (EIT) will integrate AI in its Masters and PhD level courses and the Digital Opportunity Traineeship pilot (2018-2020) opens up internships for Erasmus students to learn advanced digital skills. The Blueprint on sectoral cooperation on skills *“supports the development of sectoral strategies to address the skills gaps, and improve multidisciplinary approaches by integrating elements of AI into other disciplines”*.

MS are encouraged to *“include the skills dimension in their national strategies”*. In

addition, the European Commission with MS support will publish a report in 2020 outlining “*how AI could be incorporated into the curricula of programmes for secondary and tertiary education, including vocational training*” and support “model actions” (read: pilot actions to trial the programmes).

Between 2021-2027, the European Commission, under the Digital Europe Programme, will provide €700m to support skills in AI, HPC and cybersecurity.

## 6. Data

The new regulation on the free flow of non-personal data “*facilitates cross-border data flows across the Union as a cornerstone of the Digital Single Market.*” In addition, the Coordinated Plan on AI identifies a need to create a Common European Data Space, where data held by the public and private sector can be shared and made interoperable<sup>22</sup>, standardised and documented for increased usage between all sectors and to support European innovators and businesses<sup>\*23</sup>. MS are encouraged to identify relevant data sets.

Relevant projects are:

- The Commission plans to use ± €100m from Horizon 2020 and Connecting Europe Facility (CEF) to support the application and definition of data and metadata standards\*.<sup>24</sup>
- The Commission, under Horizon 2020, plans to use €27m to develop “blockchain-based and other secure solutions” to secure data integrity and access to data.
- The EU, under Horizon 2020 will contribute €35m to support initiatives on linking genomics repositories, building rare disease registries, and a “*common database of health images initially dedicated to the most common forms of cancer*”<sup>25</sup>.

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<sup>22</sup> See e.g. European Interoperability Framework (EIF)

<sup>23</sup> See Public Sector Information (PSI) directive for framework

<sup>24</sup> For example with relevant stakeholder such as European standardisation bodies

<sup>25</sup> This will be anonymised and the result of data donorship by patients.

- The European Commission, building on the Copernicus Programme will launch initiatives to “*support AI powered exploitation of Earth observation data and information in the public and private sectors*”.
- The European Commission expects to contribute €10m from the Connecting Europe Facility to compile less represented language resources to put on the European Data Portal for use in automated translation and NLP.

The European Commission will build on its Communication “Towards a common European data space” by supporting digital industrial platforms with €50m (Horizon 2020). It further proposes to create a common European Data Space with MS, making data available for re-use to businesses, public sector and innovators with €1bn out of the Digital Europe Programme’s AI section. A support centre for data sharing will be launched mid-2019 by the European Commission (e.g. for advice, best practices, model contracts etc.).