Cornerstones for the German AI Strategy
18. July 2018

Take away:
- very aligned with European Commission's AI strategy and the Digital Day Declaration
- strong focus on knowledge transfer (connecting R&D&I with economy and industry)
- focus on building AI clusters, research orgs etc. (beginning with FR collab.)
- AI for benefit of society (w. mention of a variety of typical european values)
- strong need to support non-traditional innovation and make use of existent potential
- focus on AI impact on employment (incl. re-/up-skilling, adding AI to several subject courses)
- various mentions of monitoring AI-related developments, through e.g. international AI observatories
- combat brain-drain / attract new experts
- better access and usage of available data w/ infringing on citizens' rights
- expand technical infrastructure for AI
- verifiability, transparency etc to combat discrimination, manipulation […]
- work on standards setting; also - "AI made in Germany"
- collaborate internationally (G7, G20); work with developing regions

Immediate next steps under point 3.13

Introduction:
Germany will present its strategy for AI end of November 2018 at the Digital-Gipfel in Nuerenberg. The cornerstones below are a result of suggestions from the Expert Forum for Autonomous Systems (part of the High-tech strategy 20.March 2017) and of the expert consultation on behalf of Chancellor Merkel (29.May 2018). They form the basis for November's AI strategy. There will be additional expert consultations as well as consultations with diverse organisations and institutions.

Goals:
- Leader in R&D and application of AI (incl. working with european partners point e)
    - Leader in knowledge transfer (research -> application)
    - Modernisation of bureaucracy
    - "AI made in Germany" to become world-renowned seal of approval/hallmark of excellence
- Usage of AI as a responsible and socially beneficial technology
    - Collaboration between economy, science, state and civil society
    - Based on european values: human dignity, private sphere, equality
- European answer to data-based business models
- Attract AI researchers and expand training within the AI field dramatically

- Derived benefit for citizens as main focus
  - Minimise risks that arise from system changes
  - Make systems interpetable
  - Combat bias/discrimination
- Human-centric development and usage of AI within workplace
  - Put workers' need at centre stage
    - Development of their abilities and talents
    - Their autonomy, safety and health
- Use AI for security, efficiency and sustainability in all areas of concern for citizens
  - Incl. social participation, freedom of action and autonomy of citizens
- Usa data for the benefit of society
  - Environment, economy and state
  - Hope for new DE economic models around data usage to become of global interest
- Real-time data transfer
- High-level of IT security
  - Combat manipulations, misusage and other risks
- Developers and users need to be have an understanding of the ethical and legal boundaries of usage for AI systems
  - Incl. examination as to whether the current legal system needs expansion
- Data ethics commission will provide suggestions for the development of the AI strategy

2. Current State
- Need to catch up with US and Asian firms
- German strength in Industry 4.0 and mobility
  - Platform Industry 4.0 already covers several parts of industry;
- "AI made in Germany" will be part of strategy; usage of technology for the benefit of state and society
- Welcomes European Digital Day declaration and will push Digital Europe programme
- GDPR and e-privacy

3. Areas of action
3.1. Strengthen research in DE and EU and push innovation
- Support new competence centres for ML and connect them to existent centres and RTOs across Germany; this will lead to the building of a national Research consortium
  - Collaborate with EU on this
    - First step a R&I network between FR and DE based on given structures; main focus: knowledge transfer to economy, concentration on innovation, development of regulatory/legal and ethical standards
- 'Knowledge-creation' through an encouragement of data accumulation in research institutions for the benefit of DE and EU
- Patient protection in healthcare

- ○ Incl. early involvement of regulatory/legal and research experts
- Responsible usage of potential in technologies such as bio- and environmental tech
- R&D for AI-based tech for civil safety
- Development of methods for control and interpretability of algorithmic prognostics and decision making systems
- Safeguarding of private sphere and consumer protection in regards to personally identifiable data

3.2 [Knowledge]- transfer to economy

- Research knowledge must be better translated into DE and EU economic value
  - ○ Better knowledge transfer
  - ○ Continual technology monitoring
- Support for access to AI tech, computing, cloud etc. as well as the building of platforms for data exchange (citizens, SMEs)
- Support cluster creation for a better AI ecosystem; build upon DIH in DE and EU-wide
- Build sandboxes for experimentation and support of technologies + new business models
- Examine whether AI could be an Important Project of Common European Interest

3.3. Innovation challenges

- Support innovation with specific challenges (NB: mainly meant by this seems to be moonshot, non-conservative or 'leap-frog' type projects)

3.4. Ensure that more people found companies and that they are successful

- Need for financial support during growth phase of companies; easier access to funding for riskier projects; attract investors
- Ease process of, and support, the founding of companies
- Establish a techGrowth fund
- Increase EXIST (programme for the foundation of organisations established out of the area of research and science)
- Support collaboration between founders and established organisations through the Digital Hub Initiative

3.5. The world of work: develop structural changes

- Put the human in focus for development and usage of AI in the world of work; will be bigger step-change than automatisation and digitalisation
- Need to invest not only in technology but also into the employees and their competences
- Companies and employees need to prepare themselves for changes
- Establish a framework (intl. and EU-wide) for AI in the world of employment under the inclusion of ILO and OECD
- Develop AI observatories at international and EU-level
  - ○ Regularly, comprehensive observation of developments

- ○ Assessment of initial developments and developments as a result of those prior developments within the area of employment
- Develop EU and intl. institutions that systematically monitor new applications of AI in the world of work particularly regarding employment, technical creation, human-machine interfaces and data security
- Initialise a transatlantic, as well as european, (in particular DE and FR) exchange for human-centric technical creation
- Develop and establish a strategy for employees
- Develop national strategy for re- and up-skilling
- Establish a programme to support experimentation rooms for AI in the world of work within industry

3.6. Strengthen training and attract subject experts
- Support AI chairs at Universities
- Higher salaries and more attractive work environment for young researchers (from DE and ⌐ DE)
- Support young generations to go into AI research (opportunities to understand and participate)
- More up- and re-skilling opportunities aimed at particular subject areas such as healthcare etc.
- Develop conditions to turn brain-drain into brain-gain (NB: fairly unclear how that would work)
- AI knowledge as part of CS studies but also other subjects such as social sciences, natural sciences, engineering etc.

3.7. Use AI for public administration
- Transparency, verifiability of data usage, data and fundamental rights protection, as well as non-discrimination must be ensured
- Public administration needs to increase competence in AI usage and application
  - ○ Citizens must have the ability to verify decisions made by AI-based systems
- Spearhead AI for public administration; increase efficiency, quality and security
- Considerations of aspects and potential of AI in regards to security for the 'whole of state/government' need to be made

3.8. Make data available - and available for usage
- Need to increase volume of available data that is of high quality and ready for use without infringing individual's rights, the right to informational self-determination or other fundamental rights
- Data from research/science and state needs to be opened for AI usage to support economic and societal benefits (following the idea of an Open Data Strategy)
- Better realisation of European wide 'data room' (read: data establishment) to ease scaling of data-dependent offers in EU
- Examine if access to and usage of data needs new regulations

- Connect public and private actors; support data cooperation inspired by public-private datapools
- Explore possibility of data partnerships between industry actors
- Interoperability of data systems in healthcare
- Support interoperability of data platforms eg. International Data Space
- Expand technical infrastructure; hardware, computing, cloud
    - Consider energy efficient learning and climate

3.9. Amend structural framework and ensure regulatory/legal security
- Both to ensure providers investment and regulatory/legal security & users' trust and acceptance
- Data usage, usage of AI-technologies, clarification of regulatory/legal responsibilities between participants; will consider suggestions from data ethics commission
- Transparency, verifiability etc. against manipulations, misuse, discrimination
- Support innovative application to heighten citizen's autonomy and social participation
- Amend copyright to ease usage of TDM for ML for commercial and ⌐ commercial usage

3.10. Standard setting
- "Whoever sets standards rules the market"; common standards could ensure interoperability, ease of usage
- Push for a European move in international standardisation processes
    - Start of an initiative to represent european interests in international standardisation committees
    - better/stronger engagement to develop open and international standards

3.11. National and international connections
- Work will be undertaken w. data ethics commission, platform industry 4.0, digitalisation in healthcare, mobility 4.0, kids and youth media protection agency, [...] explore measures for future of work, social state and climate change
- Stronger collaboration with EU institutions, EU Commission and other Member States
    - Incl. better usage of Digital Single Market, complimentary aligned instruments on national and EU level
        - Taking existent/available instruments into account
- Exchange and collaboration over possible common guidelines with international (economic) regions; open for bilateral and multilateral cooperation (e.g. G7, G20)
- Build up AI knowledge and capacity in developing regions under the framework of economic collaborations to ensure their ability to benefit from possible economic, societal and social opportunities; "[..] ought not to be left behind from technological development".

3.12. Hold societal dialogues and further develop action framework
- Organisation of multi-stakeholder dialogues concerning usage and regulation of AI (incl. Civil society); q. social implications, ethical implications etc.

- Further development of platform learning systems to become "platform for AI", where there is an exchange between politics, research, industry as well as dialogue with broader society; will also try and support qs regarding ethical and legal/regulatory implications
- More multi- and cross-disciplinary research
- Interdisciplinary dialogue of science to form basis for societal dialogue
- Dialogue for AI integration in workplace

3.13 Immediate next steps
- Focus on support for R&I
- Combat brain drain and support brain gain is immediate priority
- So is establishing connection and expansion between DE and FR competence centres
- Establishment of thematic competence centres (AI focus)
- Expanding infrastructure