FINAL REPORT

Peer review on Artificial Intelligence (AI) in the health sector

Marseille, 17-18 December 2019

Background

The Sud Provence-Alpes-Côte-d'Azur (PACA) Region is the Managing authority for the ERDF-ESF operational programme 2014-2020. As required by the EU regulation, innovation and research is one of the major theme addressed by this programme. This theme covers a wide range of topics, but when drafted in 2013, it did not specifically include Big data or Artificial Intelligence (AI) because this topic was not mature enough. Since then, adjustments have been made to take it into consideration as much as possible, in particular under digital-related issues.

In France, Regions are the unique competent authorities to coordinate policy measures to support economic development. To do so, the Sud PACA Region is in charge of various frameworks and strategies related to economic development, research and innovation.

Main steps in considering AI in the regional strategic orientations:

- In 2016, the regional Smart specialisation strategy (S3) was updated to reflect the regional priorities of the newly elected President and Assembly. The Region approved a Smart Region Strategy, with a strong ambition to become the first smart region in Europe. Artificial intelligence is one of the main sectors to be developed and benefits from a strong political commitment.
- In 2018, a more market-based approach to boost the impact on SMEs was developed, and a focus was made on 8 operational sectors in the revised S3. Thus, AI has become one of the major concerns in the "Smart tech" sector, focused on: digital and ICT, Internet of things (IOT) and smart sensors, Security and cyber security, optics, imaging and immersive technologies. AI is also largely included in the value chain of the "Innovative therapy" sector, focused on health, bio technologies and innovative diagnoses. In June 2018, a formal decision was taken by the political assembly confirming the strong regional ambitions on Artificial Intelligence, with an action plan approved for the period 2018 – 2020.
- In early 2019, the 3IA Côte d'Azur project called "Institut Interdisciplinaire d'Intelligence Artificielle "has just been awarded by the French Ministry of Education, Research and Innovation as one of the four prize winners of the French national programme for Artificial Intelligence. The main stakeholders are: Université Côte d'Azur, CNRS, INRIA, Communauté d'Agglomération Sophia Antipolis and Metropole Nice Côte d'Azur.

In May 2019, PACA Region joined the Smart Specialization Platform Artificial Intelligence and Human Machine interface.

For all these reasons, the focus for the Peer-review was made on Artificial Intelligence in the health sector, which is a key sector in PACA region.

Motivation to call for an interregional peer review

The Managing Authority has **encountered difficulties in the implementation of this policy during the last years, in particular**:

- Difficulties to develop European value chains in this strategic sector AI/Health.
- Difficulties to use ERDF funds on our regional projects linked to AI. The ERDF operational programme was revised in 2018 to adapt it to the new selected strategic sectors defined in the updated regional strategy. It resulted in an additional administrative burden. However, the co-financing of AI/Health sector-related under priority axis 2 – SMEs digitalisation can still be problematic.

Based on the above challenges, the Managing Authority has defined the following needs that should be addressed in short-term and long-term perspective:

1. **Improved insertion of "Artificial Intelligence in the health sector" in our smart specialisation strategy:**

   Recent launch of a debate to adjust the S3 in the perspective of the end of the current program, and of the post 2020 programming period, and consequently on the eligible AI-related types of actions under the ESIF programs: 2014-2020 and 2021-2027.

   - Need to enhance the international dimension of the cross sectorial approach of AI and the health sector.
   - Need to optimize the design of our revised S3, to be able to support and co-finance projects linked to AI in the health sector, avoiding heavy administrative process of revision.
   - Need to capitalise on the projects financed so far, to be able:
     - to better identify the impact of this cross sector (AI/ Health) on this growing industry
     - to develop new ideas of what can be done on the current programming period to better finance this cross sector (AI/ Health).

2. **Better policymaking and improved targeting of structural funds (mainly ERDF) on AI related issues in the health sector**

In this purpose, there is also a need for a critical review of existing tools to support AI and health related stakeholders applying to European calls for proposals.

The main expected gains were:

- Strengthened internal dynamics in order to further legitimate this approach
- Strong input in the revision process of our S3
- Strong input in boosting the development of the emerging sector AI in the health sector

The Managing Authority highly appreciated the opportunity for hosting the peer review of the Interreg Europe Policy Learning Platform, which has been of valuable benefit for regional and local stakeholders as well as for the internal departments of the hosting authority.

The peer review

The list of peers was established by the Interreg Europe Policy Learning Platform following selection of received applications according to their expertise on Artificial intelligence, in particular in the health sector, geographical relevance, and diversity of perspectives (regional, national). Five peers have been involved in the peer review representing different countries and institutions as well as four Interreg Europe representatives:

Charlotte Trap-Kinberg	Project Manager, Innovation and New Technologies (AI) Capital Region of Denmark, Centre of Regional Development, Denmark
Heikki Kallasvaara	Senior Adviser Helsinki-Uusimaa Regional Council, Finland
Jaakko Hallila	Research and Development Manager Seinäjoki University of Applied Sciences, Finland
Raniero Pittini	Head of Swiss Medtech Center (SMTC) Switzerland Innovation Park Biel/Bienne, Espace Mittelland (CH02), Switzerland
Sven Parkel	General Manager Tartu Biotechnology Park, Estonia

Marc Pattinson	Thematic Expert in Research and Innovation, Interreg Europe Policy Learning Platform
Arnault Morisson	Thematic Expert in Research and Innovation Interreg Europe Policy Learning Platform
Elena Ferrario	Thematic manager, Interreg Europe Policy Learning Platform
Mar Martin	Policy Officer, Interreg Europe Joint Secretariat

The peer review agenda elaborated by the Interreg Europe Policy Learning Platform and coordinated with the Managing Authority was structured in a very constructive manner so that to ensure involvement of the stakeholders in interactive discussions on the following key issues: ***(1) Revising S3 to Integrate AI in Health, (2) Financing AI in Health, (3) Digitalisation Strategies - AI in Health, (4) International Dimension and Value Chain.***

Preliminary online meetings with Interreg Europe thematic experts and peers contributed to good preparation on these issues and effective implementation of the tight agenda.

During the peer review, these topics were considered from different perspective. Interreg Europe Policy Learning Platform representatives, stakeholders, decision makers and representatives of the Managing Authority highly contributed for gaining comprehensive understanding of the policy setup and faced policy challenges. Through involvement of regional and local stakeholders, the peers received thorough insight in the challenges from their point of view. This approach helped for common understanding of the issues to be tackled and provision of relevant recommendations.

List of regional and local stakeholders who provided a contribution:

Georges Fallessi	Director Cluster on Solutions Communicantes Sécurisées
Laurent Peillard	Directorate of healthcare organisation – Health Regional Agency (ARS) PACA
Céline Damon	Aix-Marseille University – Support for European research
Fabien Lanteri	Nice Metropolitan area – Health project manager

Morgane Miltgen	Eurobiomed - cluster

Policy recommendations

Due to their expertise in issues similar to the faced policy challenges in the peer review, the peers managed to quickly gain insights on the problems. As a result of constructive discussion, the following specific policy recommendations on each question were provided:

(1) Revising S3 to Integrate the Priority 'AI in Health'

- **Develop a SWOT Analysis and benchmark** to understand what would be the AI priority thematic and where region SUD's competitive advantage lies and where is it positioned on the relevant value chain and with what actors (research, start-ups, clusters)
- **Promote quadruple helix collaboration** – involve a wide range of actors—clusters, companies, regional government, universities, clinical staffs, end-users —to rally actors and promote AI (through informal working groups or more formal structures such as a cluster dedicated to AI or AI digital innovation hubs) to ensure adequate coordination. It is important to involve clinical staffs and hospitals in AI projects as they are the researchers and users of technology in health.
- **Promote AI education and life-long learning / training** (Master, PhD, post-Doc in AI in health) – top level competence and attract talents from abroad (attractive salary, research environment for example 3IA institute) also lifelong training of doctors and clinicians in AI.
- **Involve users (i.e. hospitals) –** awareness raising: spread AI knowledge through conferences, events…, accompany SMEs in adapting AI for their business models.
- **Promote mission-oriented or challenge-based approach to solve very practical challenges – actors collaborating together to solve health-related challenge (example of Finland) and use as a means for launching finance calls**

  + Rally actors together

  + Government as a facilitator

  + Emergence of AI stakeholder leadership
- **Communicate on the positioning of the region on the AI thematic not forgetting the civil society dimension**

- **Select a transversal approach or sector-specific thematic within S3 strategy (health in AI) –** a sector-focused such as AI in Health makes sense but we need to know what the other sectors are

saying, for example energy, industry 4.0. Risk: obstacles linked to applying AI to health sector (timeline for certification, product approval, access to data, …)

- **Define issues for data quality, access, ownership, security, infrastructure, regulation, …**
  - create a **task force to identify obstacles and solutions**
  - consider data sandbox / data lake approaches
  - show political support, targeted lobbying towards key organisations
  - build on regional open data initiatives (Data Sud platform)
  - Map who owns the data, who has access to data, and who can share the data.
- **Lower entry barriers for companies in AI in health –** pay attention to the AI in health value chain – for instance:
  - a platform to create the right environment in universities
  - streamline data structures with other regions to facilitate exchanges
  - define a data base structure
  - a 'regional cloud'.
  - Take into account competitive advantage of database access
- **Have coordinators and facilitators –** the importance of network management – coordinate and guide the AI network to avoid duplication.
- **Follow the UN development goals (SDGs):** map and match relevant thematic objectives to include ethical considerations for example.

(2) Financing AI in health

- **Have a funding strategy / matrix to present different funding opportunities for ecosystem actors**
- **Identify relevant regional council innovation** funding tools suitable for supporting specific needs of AI/Health;
- **Make use of remnants of current ERDF funding programme (2014-2020) –** possibility to pilot test some early ideas/initiatives to help structure AI/health actions?
- **Make use of ERDF funding (2021-2027) with co-financing –** need to understand how to promote collaboration between actors, especially large private companies with SMEs but also hospitals/SMEs
- **Consider the ETC new Component 5** for supporting interregional innovation investments, for example those emerging from S3 Partnerships
- **Make use of European Green deal -** subtopics on AI under review…demonstrate positive environmental benefits (e.g. e-health, sustainable hospitals, …)
- **Define new calls' features:**
  - keep the call open, promote responsible 'artificial intelligence'—moral and ethical guidelines, and avoid micro-management

- experiment mission-oriented and challenge-based ERDF calls with an international/European focus (S3 platform, component 5)

- **Be aware of funding and technology readiness levels –** matrices of funding at different levels – early stage with research with H2020 later stage for innovation with ERDF and private funding (business angels, venture capital) for scale ups …
- **Make use of private funding – define the nature of the bottlenecks – make sure that the process is transparent for start-ups.** Transparency of funding opportunities (SATT, incubators) for start-ups.
- **Make use of vouchers –** collaborative vouchers (such as Innosup01 approach for cross sectoral vouchers) – e.g. generally vouchers have less red tape, really positive feedback from Start-ups, SMEs, and private companies for collaborative innovation.
- **Set criteria for regional funding that match thematic or mission objectives:** e.g. in Switzerland it covers 50% of the cost, for instance if companies leave the region they have to pay back**.**
- **Consider cascade funding approaches –** opportunities for ERDF. Vouchers in digital innovation hubs for robotics in health (Switzerland)
- **Respond to gaps in financial support for business scale up notably and others such as seed capital at incubation level;**

(3) Digitalisation strategies – AI in Health

- **Respond to data issues –**
  - know the legislation well on how to access and use the data
  - share the knowledge to private companies and end-users
  - there are bottlenecks and regulations (i.e. GDPR), try to limit as much as possible regulations
  - Standardisation
  - Cybersecurity issue, a strong cybersecurity partner is a strength for internationalisation
- **Foster education and skills**
  - Attract talents
  - Adapt learning – targeted courses – Machine Learning with a focus on clinicians' needs
  - Lifelong learning for all (incl. citizens)
  - Develop ESF and ERDF complementarities and synergies for training and lifelong learning
  - Strengthen digital initiatives within the administration
- **Create the opportunities to promote the digitalisation of companies**
  - It should not be a top-down approach
  - An emphasis on success stories to promote digitalisation take up

- **Avoid dispersion with too many hubs and try to coordinate/structure stakeholders**
  - How to select the hub?
  - In Estonia, there was a tender—factors such as the ability to attract funds, co-funding…
  - The importance of the AI ecosystem and a coordinator in order to bring the necessary actors together
  - Mapping of the different clusters
- **Promote the adoption of Ai in SMEs – the importance of skills and infrastructures to deploy**
- **Pay attention to technology transfer**
  - Patents, licensing, IPR… are completely different in ICT than in other sectors.
  - Different IPR culture in AI in health – many SMEs don't patent
  - For knowledge providers the final goal is implementation, for universities is licensing and make money.
  - SATT business model can make transfer to regional SMEs challenging.

(4) International dimension and value chain

- **Operationalise interregional programmes and interregional funding opportunities towards thematic priorities.**
- **S3 Industrial Modernisation Platform in AI, MedTech… promote interregional collaboration and prepare ground for 5C type funding model.**
- **Collaborate with Digital Innovation Hubs (DIHs) –** collaborate on creating an interregional DIH. For instance, DIHS in Switzerland and Region SUD. There is expected funding from the European Commission to foster cooperation among DIHs**.**
- **Identify scope for thematic cooperation priorities** – such as active and healthy ageing, mental health…
- **Clusters facilitating interregional collaboration for the benefit of SMEs,** for instance with innovation vouchers and broader internationalisation actions.

Conclusions and follow-up

Thanks to the active involvement of all participants, the results of the peer review were highly appreciated by all participants: stakeholders, decision makers and the Managing Authority.

The policy recommendations were disseminated to the Economic Department of Region SUD, in charge of the revision of the regional Smart Specialisation Strategy, who highly appreciated the work achieved.

The lessons learnt from the peer review will be shared with the respective decision makers and relevant beneficiaries. A regional working group “AI& Health” will be set to extend the work initiated thanks to the peer Review.

In addition, the Managing Authority would like to continue cooperation with peers through some follow-up actions including:

- exchange of information (negotiation on post 2020, new economic models…)
- development of new partnerships
- responses to European calls such as Horizon 2020