

CAS workshop 2020: Background Note

The 3rd annual Workshop of the JRC - Centre for Advanced Studies (CAS) will take place online via Webex from the 2nd to the 4th of December 2020.

The JRC Centre for Advanced Studies

The Centre for Advanced Studies, established in 2016, aims to provide a stimulating, trans-disciplinary platform where the JRC can work together with external scientists to explore the nature of newly emerging scientific and societal issues with the potential of high impact for EU citizens and beyond. The research in the CAS contributes to the JRC knowledge base and enables JRC to elaborate on policy options and their impact well ahead of time. Deliberately chosen without a thematic focus, CAS projects contribute to various Commission Priorities and enable transdisciplinary thinking and exchanges across the range of projects, thus reflecting on the complexity of challenges Europe is facing.

Projects vary in size from 1-5 scientists and are typically led by a senior scientist or project leader with an established track record or reputation in the research area concerned. Projects are time limited to 3 years, after which they may be considered for mainstreaming into the institutional work programme of the JRC.

There are currently seven ongoing CAS projects of which three are concluding this or mid next year, while four others are currently in the startup and preparation phase. The annual CAS workshops ensure both concluding and new CAS projects are showcased.

Objectives of the workshop

This year's CAS workshop thematically focuses on the contribution of the CAS to three important Commission priorities - 'A Europe fit for the digital age', 'An economy that works for the people', and 'A European Green Deal'.

During the workshop, seven ongoing CAS projects are presenting their work, with the mature and outgoing projects given time to detail and discuss their results while the newer projects lay out their objectives and research plans, allowing participants to contribute early on in the shaping of the science questions. With a diverse programme, which includes a roadshow, individual presentations, ePoster sessions, panel discussions and Q/A sessions, participants are informed about the ongoing research and invited to engage with the teams on either research or policy questions.

Under the priority '**A Europe fit for the digital age**', two CAS projects, 'Machine intelligence and human behavior' (HUMAIN) and 'Digital transformation and the governance of human society' (DigiTranScope) are concluding at the end of 2020. Their rich portfolio of results and activities will be presented and the way forward discussed with experts from science and policy making. The project on the 'Paradigm shift in communication' has concluded its preparation phase and is at the beginning of its research agenda. The projects, 'Computational social science for policy (CSS4P)' and 'Social classes in the digital age' (DIGCLASS) are at the conceptual phase, objectives and the scope of the projects will be introduced.

The project 'Big data for forecasting economic developments' (bigNOMICS) contributes to the priority, '**An economy that works for the people**', and will conclude in spring 2021.

Finally, the new project 'Towards a technological platform for nanoplastics detection' (NANOPLASTICS) falls under the priority, '**A European Green Deal**'. This project began in 2020.

The descriptions of each CAS project are in the Annex.

Agenda structure

Day 1 of the workshop will provide a showcase of all the CAS projects, 'the Roadshow'. Each CAS will introduce their CAS briefly and launch their respective ePosters. There is also a dedicated ePoster session for two CAS projects where participants can engage lively with team members regarding their ePosters.

Day 2 and Day 3 dedicated to fuller presentations of the CAS projects, informative panel discussions as well as a dedicated ePoster session for the remainder CAS projects.

ePosters

ePosters will be launched on Day 1, during the roadshow. This is followed by sessions at the end of Day 1 and during the lunchtime of Day 2 for comments/questions/feedback from participants audience, encouraging possible debate and discussion during these sessions. The ePosters are showcased in Kubify. There is the possibility to comment, ask questions or provide feedback on ePosters via Kubify.

During the dedicated ePoster sessions, members of the respective CAS teams will be available to answer questions and engage with participants. This is a good opportunity for stimulating interaction and debate, of which the teams could incorporate any feedback into their fuller presentations on Day 2 or 3.

ePosters will be available for 1 year.

Panel discussions:

There are two panel discussions, one in relation to **artificial intelligence and society** and another on **big data and economic forecasting**. These panel discussions aim to go beyond the CAS projects to a broader discussion, which is more future-oriented policy inclined. The panelists include EU policy makers, members of academia and JRC scientists. It promises to be thought-provoking and engaging.

- **The panel on AI (Day 2):**

AI is a rapidly evolving field with the potential to revolutionise our economies and to contribute to tackle global challenges. The panel on AI will look at current and future policy challenges facing AI and will bring together policy makers from the health, justice and education directorates.

- **The panel on big data and economic forecasting (Day 3):**

The recent availability of big data sets and the advance of modelling techniques provide economists with a large unexplored information set. Recent research in non-traditional data, machine learning, and natural language processing has investigated their usefulness for macroeconomic forecasting purposes. This panel discussion will highlight the importance of these new techniques and data sources for macroeconomic analysis, with a particular focus on topics relevant to policymaking.

Annex

Summaries of CAS Projects

'Machine intelligence and human behavior' HUMAINT (2017 – 2020): The goal of the project is to advance the scientific understanding of the impact that AI systems have on human behaviour. In order to have a comprehensive understanding of the impact of AI on human behaviour, the research touches upon different sectors of society where AI may have a particularly large social impact, such as machine learning algorithms in decision making in the criminal justice system; in working life; in social interaction; in music creation and listening; in medicine and healthcare; and in diversity. The research then establishes commonalities between these scenarios to arrive at scientific and policy-relevant conclusions.

'Digital transformation and the governance of human society' DigiTranScope (2017-2020): A key challenge for the governance of the digital transformation is how to produce social impact with data and new technologies and how to distribute the benefits of digitalization across the whole of society, instead of concentrating wealth in the hands of a few corporations. Covid-19 has further emphasised the critical importance of technology and data for both economic, social and health resilience, making Europe's digital transformation and sovereignty a question of existential importance.

The project investigated the relevance of data for the governance of a digitally transformed European society in two main areas:

- 1) New forms of data-driven policy design and policy learning: How we can develop new forms of more participative policy design, monitoring, and feedback/assessment, that exploit the characteristics of digital transformation, such as smart cities, gaming, digital twins, and personalisation?
- 2) Emerging models of data governance: Which are the new practices of data sharing between the public sector, commercial sector, and civil society that foster a more democratic governance of data and enable the redistribution of value produced through data more equitably across society?

'Big data for forecasting economic developments' bigNOMICS (2018 – 2021): This project aims at exploring novel big data sources to provide better economic forecasting. We leverage on different disciplines, such as artificial intelligence, advanced machine learning, time series analysis, econometrics and finance.

The objective of the project is to develop methods and collect and analyze data that will contribute to increase the accuracy of real-time measures of economic activity. In particular, the project develops along two main directions:

- (1) Better models: improve the accuracy of econometric models for forecasting and nowcasting measures of economic activity and inflation based on economic and financial variables observed at the daily, weekly and monthly frequencies.
- (2) Better data: collect and analyse detailed datasets that can provide new real-time coincident and leading indicators of economic activity.

'Paradigm Shift in Communication (2019 - 2022): The internet has radically shifted the way we communicate. We can now engage in many ways with many people. This project aims to understand this shift by:

- (1) Developing our understanding of how the internet has changed the way information is promoted and shared;
- (2) Investigating the new communication role of institutions and local authorities in the digital era;
- (3) Exploring ways to empower citizens in their daily interactions;
- (4) Looking into novel and innovative ways of non-verbal human-machine communication.

'Towards a technological platform for nanoplastics detection' NANOPLASTICS (2020 – 2023): The project studies novel ways to detect nanoplastics by combining instrumental analytics with novel biological and biotechnological approaches in order to overcome the major limitations of existing analytical methods. The project's aim is to provide the scientific community with analytical tools which can allow the quantification of nanoplastics in a range of key matrices and thus help to reduce the knowledge gaps surrounding what may already be one of the most widely spread yet poorly understood man-made environmental pollutants. This better understanding will provide input to the policy makers who may have to define appropriate actions to safeguard both environmental and human health by tackling whatever potential risks may be presented by this ubiquitous pollutant.

'Computational Social Science' CSS4P (2020 – 2023): The project envisages identifying how our digital footprint is used to describe and anticipate societal trends.

This research aims to unlock the potential of Computational Social Science for EU policy support through a balanced capacity of data scientists, statisticians, social scientists and \data stewards with

legal background to build partnerships with key players in the private sector while addressing legal privacy, ethical and security concerns as well as data transparency, accountability and governance challenges. Thanks to the possibility to channel research findings to policymakers, the European Commission Joint Research Centre has already successfully demonstrated its ability to attract the academic community and this research will draw on collaborations with prominent scholars in the field of Computational Social Science.

'Social classes in the digital age' DIGCLASS (2020 – 2023): The project aims to identify how digital technology may play a role in fueling inequality and transforming society.

There is an increasing concern in Europe about inequality in general and in particular about the implications of the digital revolution in this respect. Most of the research on this topic focuses on the impact of technical change on the observed inequalities in outcomes (income distribution, labour market opportunities). The long and rich tradition of class analysis in the Social Sciences provides an alternative approach, that tries to identify the generative mechanisms (relations to resources) that are behind observed inequalities in outcomes, and use those mechanisms to define taxonomies of social positions that can be used to understand the link between economic and socio-political processes. Class theories and schema such as those of Wright or Goldthorpe contributed significantly to our understanding of advanced industrial societies. An update of these theories and taxonomies that takes into account the impact of digitalisation could bring similarly useful insights to many current socio-economic and political developments in Europe.