

Real-time DATA

ASG 2019-2020

The volume of data available to research and industry is ever-increasing. The acceleration in data collection is not always matched by a comparable acceleration in data storage, data utilization and analysis. If the space to store the data is limited, then data has to be discarded or not recorded at all. When that is not the case, most of the data produced is recorded and stored without ever being analysed. Moreover, data transfer and storage are energetically expensive for both data centres and Internet-of-Things devices. In order to make the most of the available information in a cost-effective way, and to reduce the time between data collection and insight into the results to inform subsequent decisions, data-taking and data-analysis need to become fast, efficient and open. This is a multidisciplinary challenge that requires expertise from many disciplines, and where academia can learn from industry in the emerging topics of real-time data analytics as well as open data.

This ASG brings together the faculties of Science (Physics, Mathematics, Astronomy), Engineering (EIT), Social Sciences (Psychology), and Law to discuss and investigate solutions to this challenge in the realm of real-time data acquisition and data analysis. The traditional data taking and data analysis paradigm requires data to be stored before it is analysed, while the solutions investigated by this Advanced Study Group see a near-simultaneous (real-time) execution of the data collection and analysis.

Open data is another possible solution to the underutilization of data in many fields of science, since when data is open many more users have the chance to analyse it. However, the current practice of opening research data at the end of research projects makes secondary use of data more cumbersome and less attractive, especially in time-sensitive topics. **Born-open data** (real-time sharing of data as it is being collected) can overcome these difficulties, while also increasing the transparency of research in general.

This ASG will build a solid ground for **lasting interdisciplinary collaborations** centred on **open, fast and efficient data storage, analysis, and utilization**. We will work together to seek answers to questions related to real-time data processing and decision-making. The work will take place within a series of **open seminars** by a mixture of local and invited speakers, each followed by **hands-on knowledge exchange discussions** between the

attendants so that each field can gain experience from others. We will **disseminate** our work in short white papers with thoughts and recommendations. We will **communicate** our work to different audiences by jointly attending and presenting our work at public events. As a conclusion of this ASG, we will organize a **final discussion** that will set the scene for future work.

Blog

<https://realtime.blogg.lu.se/>

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