

Report for NDNS+ on workshop
“Future and Emerging Mathematical Technologies in Europe”
December 11-15, 2017

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Executive summary

This workshop was held under auspices of EU-MATHS-IN (www.eu-maths-in.eu), the European Service Network of Mathematics for Industry and Innovation, founded in 2013 by EMS and ECMI. The primary objective of the workshop was to discuss success stories and share experiences as well as best practices of organizing collaborative research projects with industry. Furthermore, discussions and brainstorm sessions took place to discuss future collaborative activities, especially during the Industry Day where major European industries presented their challenges.

The workshop, which was attended by 50 people (the sudden snow caused quite some delays in the travel of many people, and also led to some cancellations), was a big success. Participants as well as industrial partners enjoyed the presentations and discussions, many with a focus on “MSO” (Mathematical Modelling, Simulation and Optimisation), a core topic within NDNS+.

During the workshop, several tasks were discussed both for the international core team and board of EU-MATHS-IN, but also for the local/national teams present (in the Dutch case: PWN committee on Innovation). One of the key issues was the preparation of a meeting at the French Embassy in Berlin, and the preparation of a document entitled “MSO in a data rich environment”. The latter coincides with the interest of several researchers within the NDNS+ cluster, and future plans they have.

Popular summary

The current and future technological and economic development of industrial Europe is characterized by a steadily growing complexity of modern products and processes, as well as ever shorter innovation cycles. Sustainable solution for the associated challenges is only possible through an intensive support of the development procedures of new products and production processes via a holistic MSO (Mathematical Modelling, Simulation and Optimisation) approach, where in each case parallel to each product or process a virtual product or process (the digital twin) is generated. This is at the core of NDNS+ activities, and as such the area of digital twinning or, more generally, “MSO in a data rich environment”, is extremely relevant and important.

The workshop “Future and Emerging Mathematical Technologies in Europe”, held from December 11-15, had the foregoing in its focus. Further advancement of Mathematical Technologies is key for the future of European business or challenges in society (like the energy transition, climate change). Collaboration on a European level is important, and via the organisation EU-MATHS-IN (www.eu-maths-in.eu), of which the committee on Innovation of the Dutch Platform for Mathematics (PWN) is a partner, this is achieved.

More information as well as all presentations can be found on:

<https://www.lorentzcenter.nl/lc/web/2017/954/info.php3?wsid=954&venue=Oort>

The vision document that resulted a.o. from discussions at the workshop can be found here:

<https://www.eu-maths-in.eu/EUMATHSIN/wp-content/uploads/2018/05/MSO-vision.pdf>

Finances

The workshop could be organized by generous subsidies of the Lorentz Centre, 4TU.AMI, EU-MATHS-IN (through travel reimbursement not visible in the table), NWO and NDNS+. Below is a summary of the expenses.

Funding

Lorentz Center	€ 7.000,00
4TU AMI	€ 2.964,03
NDNS+	€ 2.500,00
NWO	€ 2.250,00
TOTAL funding workshop	€ 14.714,03

Expenditures

Lodging	€ 0,00
Travel	€ 259,14
Lunches	€ 1.034,98
Workshop dinner(s)	€ 3.131,90
Taxi	€ 106,30
Announcement poster	€ 681,71
Workshop organization	€ 9.500,00
TOTAL expenditure workshop	€ 14.714,03