

MoST End-of-the-year seminar 17.12.2024

Project leader Agnar Johansen introduced the seminar, with a brief overview of what has been accomplished in 2024. Particular attention was given to public seminars, recruitment, and the progress of the project e.g. in terms of publications. Concerns were raised about the inclusion with the Miljøpakke partners, and how this process could be helped. Measures include utplassering in the partnering communes, along with involvement in projects like “gravefrie fortau”, “Reisekutt” and “Skaun og Trondheim – Digitale tvillinger og transportløsninger”. A recently arrived interrogation from Nyhavna Utvikling AS, with the potential for cooperation in the development of the area. The new journal *Moderne Mobilitet og Infrastruktur* was introduced to the audience. Finally, a Work Plan for 2025 was introduced, including more projects related to Miljøpakken (Skaun, bussdepot, other?), two seminars, one large conference and starting up the work of a new proposal.

Work Package 1

Helge Hilnhütter presented the work of Jarvis Suslowicz on transforming streets to support sustainable mobility. Transforming streets is basically about transforming mobility environments. There is an urgent need to shift to other mobility uses than cars, and this requires altering the mobility environments. The municipality is changing roads where they see a need for pavements. Jarvis is carrying out an analysis of the effects of the measures implemented by the municipality, using both surveys and video measuring, before and after the implementation. The next part of the project is to carry out an analysis of Gamle Bybro.

Aashish presented his work on digital platforms for sustainable mobility solutions. Progress so far includes a theoretical review (state of the art), gathering empirical data, mapping actors, being involved in an EiT (Experts in Teamwork) course work, and work on digital tools for participation in cities. Plans for 2025 include “going out” to gather empirical data, continuing with EiT-work and publishing.

Work Package 2

Zakiya Aryana Pramestri presented “Data utilisation in digital twin for sustainable transportation planning” and the use of Tomtom data in transport model. Key efforts have been laid on understanding the requirements of the actors in the sector. The findings of the findings here, and their meaning, were discussed at some length. After the presentation of her own work, Zakia had a brief going-through of the work of most of the rest of the PhDs in the work package, whilst Yngve Frøyen presented the progress of Mohamed.

Work Package 3

Frank Lindseth gave a general introduction to the organisation of WP 3 and the context into which this was conceived, how this corresponds to the goals of the Miljøpakken. Key themes were the characteristics of digital twins, areas of particular interest, technical solutions and a presentation of how this works out in the Sandmoen bus depot area. The key message from WP 3 was that there is still a need for data, structured data.

Baher Gunied provided a going-through of his work from 2024, from the background research on pedestrian behaviour to the drafting of papers. The goals for 2025 included experiments to test

simulator usability and conducting more pilot testing and experiments. Key challenges include interaction with the municipality of Trondheim and other stakeholders in the Miljøpakken.

Oluwaleke Umar Yusuf presented his work on dynamic digital twins. This included a presentation of paper(s) underway, and the assessment of mobility modes and data. Themes discussed included the alignment to the goals of the Miljøpakken, and the generalizability of the results to other cities than Trondheim.

Sechin Verma presented his work on digital twins for future mobility and infrastructure solutions. A key part of the project is to provide a 3D reconstruction of the outdoors unbounded environment. Central to the presentation was the illustration of technological solutions and the discussion that followed

Omkar Bhoite presented his work on edge intelligence for dynamic digital twin. The plan for 2025 included publishing already acquired data, the gathering of new data and the optimisation with application to road networks and data privacy. It also included the exploration of AI-tools. Mathematical modelling will be key to the development of the project. Key challenges discussed included how to make this more concrete to the stakeholders, its usability for the local community and how comprehensive it is.

Kristin Eggen presented her progress so far in 2024, including a point cloud dataset using data from Trondheim for training deep learning networks – that is currently resulting in a paper (currently under review). Parts of the progress for 2025 include the detection of speed bumps, estimation of runoff volumes, and road damage detection.

Florian Wintel contributed to the seminar via a video. His presentation on Autonomy and Simulation for a sustainable future ambitioned an improved understanding of challenging situations, and to use this information to build more robust and explainable driving agents. Plans for next year includes to include a local environment in which he can test and explore the approach.

Key takeouts from the seminar

- A lot of very good work is being carried out in all the PhD projects in 2024.
- Even though some take more time than expected, the publication activities are ok.
- All PhD projects need to report meetings, seminars, papers for 2024 that has been taken place to the management team. (so that this can be update at the MoST website).
- All PhD project needs to report back title and scope (if it has been changed) to the management team in MoST.
- All PhD project needs to report back plan for interaction for 2025 with Miljøpakke projects.
- Cooperation between the work packages should be enhanced – still, people discover other unknown relevance among other persons within the project.
- Network on European Communications and Transport Activities Research (NECTAR) – This is research network that has interesting work in the field that MoST is working on.

NECTAR (Network on European Communications and Transport Activity Research) is a scientific network. It is an association established in 1992 which emerged from the European Science Foundation Network. It is a European-based scientific association with a network culture. The primary objective is to foster research collaboration and exchange of information between experts in the field of transport, communication and mobility from all European countries and the rest of the world. NECTAR is concerned with transport and communication issues. These are closely connected with all aspects of the spatial behavior of individuals, groups and governments. NECTAR brings together a wide variety of standpoints on transport and

communication problems and their impacts on society in an international perspective” See <https://nectar-eu.eu/organisation/> for more information

- Data gathering – there is still at need for more data from the different sources – such tollbooth passing of cars, and different kind of user data from aps and mobility platforms.
- There is a need for a stronger emphasis on the goals of Miljøpakken from all participants.

MoST Årssluttseminar 17.12.2024

Prosjektleder Agnar Johansen åpnet seminaret med en kort oppsummering av hva som er oppnådd i 2024, med vekt på offentlige seminarer, rekruttering og prosjektets fremgang, inkludert publikasjoner. Det ble uttrykt bekymring for inkluderingen av Miljøpakke-partnere og hvordan denne prosessen kan styrkes. Tiltak inkluderer utplassering i partnerkommuner og involvering i prosjekter som «gravefrie fortau», «Reisekutt» og «Skaun og Trondheim – Digitale tvillinger og transportløsninger». Et mulig samarbeid med Nyhavna Utvikling AS ble også nevnt. Det nye tidsskriftet *Moderne Mobilitet og Infrastruktur* ble presentert, og arbeidsplanen for 2025 ble introdusert, inkludert flere prosjekter knyttet til Miljøpakken, to seminarer, en stor konferanse og oppstart av et nytt prosjektforslag.

Arbeidspakke

1

Helge Hilnhütter presenterte Jarvis Suslowicz sitt arbeid med å transformere gater for bærekraftig mobilitet, som innebærer analyser av tiltak før og etter implementering. Neste del av prosjektet er å analysere Gamle Bybro. Aashish presenterte sitt arbeid med digitale plattformer for bærekraftige mobilitetsløsninger. Planer for 2025 inkluderer innsamling av empiriske data, deltakelse i EIT-kurs og publisering.

Arbeidspakke

2

Zakiya Aryana Pramestri presenterte sitt arbeid med bruk av Tomtom-data i transportmodeller og diskuterte funnene fra sektoren. Hun oppsummerte også arbeidet til andre stipendiater i arbeidspakken, mens Yngve Frøyen rapporterte om Mohamed sitt arbeid.

Arbeidspakke

3

Frank Lindseth introduserte organiseringen av arbeidspakken og dens sammenheng med Miljøpakken, med vekt på digitale tvillinger og tekniske løsninger, spesielt ved Sandmoen bussdepot. Hovedutfordringen er fortsatt behovet for mer strukturert data. Flere deltakere presenterte sine prosjekter, inkludert:

- Baher Gunied (fotgjengeradferd og pilotforsøk).
- Oluwaleke Umar Yusuf (dynamiske digitale tvillinger).
- Sechin Verma (3D-rekonstruksjon av utemiljøer).
- Omkar Bhoite (intelligens for vei- og databeskyttelse).
- Kristin Eggen (punktdatasett og dyp læring).
- Florian Wintel (autonomi og simulering for bærekraftig fremtid).

Hovedpunkter fra seminaret

- Mange PhD-prosjekter har gjort betydelig fremgang i 2024.
- Publiseringsaktiviteten er tilfredsstillende, men noen prosjekter tar lengre tid enn forventet.
- Alle PhD-er må rapportere møter, seminarer og publikasjoner fra 2024, samt planer for 2025, inkludert interaksjon med Miljøpakken.
- Økt samarbeid mellom arbeidspakker anbefales.
- NECTAR-nettverket kan være nyttig for fremtidig forskning.
- Det er behov for mer data fra ulike kilder som bomplasseringer og mobilitetsplattformer.

- Større fokus på Miljøpakkens mål er nødvendig fra alle deltakere.

For mer informasjon om NECTAR: nectar-eu.eu.