

iMOVE ANNUAL WRAP UP

2019 - 2020



iMOVE mission

‘To enable parties from Industry, Academia and Government to collaborate in projects for the development and implementation of contemporary technology that will contribute to safe and effective travel, and to the efficient and sustainable delivery of goods’

Executive Summary

The COVID crisis in the second half of 2019 – 2020 has caused major disruption to communities around the world. To curb the spread of the virus many restrictions have been imposed on the movement of people and goods, and this has had a dramatic impact on the sector that iMOVE serves: transport and mobility.

The disruption and the changes in peoples’ behaviour have placed significant pressure on our transport systems to adapt and change. In this respect iMOVE’s role has as a facilitator, an explorer, and as a source of ideas has become substantially more important.

In this context we are pursuing two strategies:

- Ensure that we add value to the R&D effort in the sector and continue to deliver to the remit of the centre as agreed with the Commonwealth government.
- Find ways to contribute to the national response to the COVID-19 crisis through managing/finding opportunity in the disruption it has caused, and aiding the economic recovery.

Despite the disruption from COVID, iMOVE has been able to maintain its project progress and deliver some excellent outcomes. iMOVE continues to enjoy strong support for its research program with 30 new projects initiated during the reporting period. By the end of the period almost 90% of participants were engaged in at least one project and participant satisfaction increased to 82%. Research expenditure in 2019–2020 was at a similar level to the previous year, but that result was affected by the deferral of a couple of project milestones into the following period. This obscures a substantial body of work that was completed during the reporting period but will be recognised only in the new period when the milestones are signed off.

The education program has continued to grow, and we now have 14 PhD projects underway which places us ahead of our milestone commitments. The undergraduate program is also producing some good outcomes. We have been able to maintain strong enrolment numbers in the program with 46 students participating in 2020. We have had to change the events associated with this program to an online format to comply with the COVID restrictions. This has been well-received by the students, especially as we have enrolments from multiple states, making travel a challenge.

The website is iMOVE’s principal communications and publishing mechanism and we have continued to invest in it to communicate iMOVE activities and capabilities and to build a virtual community within the

industry. The website continues to reach outwards, now averaging around 3,000 users a month (7,000+ page views).

While we had to cancel iMOVE's flagship conference, Transport of Tomorrow, we have been exploring new options for sharing knowledge. iMOVE webinars have proved to be popular, with appetite for iMOVE-generated knowledge continuing to increase. We plan to expand this program over the next year.

Potential impacts of COVID have been integrated into our risk assessment process and they are being closely monitored. Our partners are also adapting and responding to the various pressures created by the crisis on the movement of both people and freight. Freight volumes have surged, public transport usage has plummeted, and the nature and timings of peoples' personal vehicle journeys have been turned on their head.

Through all of this we see numerous opportunities to make contributions to our communities and our country. Data and technology continue to be strong levers for the improvement of Australia's transport systems, now and into the future.

"iMOVE is a tremendous asset to transport research in Australia. I wish there were two iMOVEs."

- Government respondent to 2020 participant satisfaction survey



Australian Government
Department of Industry, Science,
Energy and Resources

Business
Cooperative Research
Centres Program

Notable achievements this year

- The progression of our 'vehicle connectivity' project with Transport and Main Roads and QUT to the stage of recruiting 500 members of the Ipswich community to participate in one of the largest vehicle connectivity trials in the world.
- The formation of a multi-jurisdictional program of work to explore the medium-term effect of COVID on the movement of people and goods. This program covers the development of new modelling indicators to better assess future infrastructure requirements, better understand disruptions, and examine the sustainability and likely persistence of the new working from home paradigm.
- Progress by the federal Department of Infrastructure towards establishment of a national freight data hub as recommended by iMOVE's freight data study.
- Widespread interest in iMOVE's 'Mobility as a Service' (MaaS) projects. These projects investigated the service offerings, consumer expectations, payment models and technology required to support future mobility requirements. The outcomes of these projects are helping to inform how MaaS may be implemented in our communities.

- iMOVE has attracted six new industry partners into its project portfolio. This has created new opportunities for research that were not previously available to us.
- Strong attendance at the webinars we ran in place of our cancelled annual conference.
- Participant satisfaction increased to 82%

Research activity update

Progress to date

iMOVE delivers its on its commitments to the Commonwealth government predominantly through the activities of its portfolio of industry-led research projects. During the 2019-20 period, 30 research project agreements were executed, including 10 new PhD research agreements. The cash committed to the 30 new projects is over \$4M. The 54 project agreements executed by the end of the reporting period collectively commit approximately \$22M of research cash (plus a similar amount of in-kind contributions).

The projects signed to date involve multiple industry/government and university partners, with many organisations involved in multiple projects. Every project involves at least one industry participant and derives its direction from its 'lead' industry participant. In this way we maintain high connection and relevance to industry needs.

Research Achievements

The following outcomes have been achieved from research activity during the period.

Research Program 1: Intelligent Transport Systems and Infrastructure:

- The Connected and Automated Vehicle Initiative (CAVI) program made solid progress in safety, on-road trials, predictive network performance, security credentialing requirements and interactions with infrastructure. COVID restrictions have impacted some of the project activities and have caused some delays. However, the teams responded creatively and have used virtual tools and other mechanisms to enable projects to continue to deliver.
- In response to the COVID-19 pandemic we have set up a multi-jurisdictional program of work to understand the changes occurring in the movement of people and goods. This program covers the development of new modelling indicators to better plan for infrastructure development in the future, understanding disruptions, assessing the economic and productivity impacts of new working arrangements, as well as policy implications in the setting of standards and protocols.

Research Program 2: End-to-end Freight Solutions:

- A comprehensive report on freight data visibility was completed in August 2019, laying the foundations for sector benefits from improved data sharing and visibility across supply chains. Further progress in developing data sharing protocols and enhanced visibility across supply chains is underway which will benefit all participants in the national freight task. iMOVE will be collaborating with partners to progress the work that emerged as part of the freight data visibility study.
- 2020 saw the establishment of the National Freight Data Hub initiative, coming out of foundational work undertaken by an iMOVE consortium in partnership with the Department of Infrastructure. iMOVE continues to contribute to the development of the hub through its participation on the hub steering committee.

Research Program 3 – Enhanced Personal Mobility:

- Mobility as a Service has generated huge interest and iMOVE is involved in multiple trials investigating service offerings, consumers expectations, payment models and technology required to support future mobility requirements. The outcomes of these projects are helping to inform how MaaS will be implemented into our communities.

[VIEW A LIST OF iMOVE PROJECTS](#)

iMOVE has attracted six new industry partners into its project portfolio. This has created new opportunities for research that were not previously available.

iMOVE funded two high-performing students from its undergraduate student project program to attend the ITS World Congress held in Singapore 2019. Both were heavily involved in the event and shared the positive impact this event had on them with the industry.

Our academic publications have grown steadily over this year to 51; including two formal research publications and 49 end user publications and reports. One effect of the COVID pandemic has been cancellation of conferences and this has reduced the number of conference papers prepared by iMOVE participants. Despite that, publication generation is strong and is expected to grow further as the program matures.

Formation of industry-led research projects

All iMOVE projects respond to specific industry needs and all contribute to iMOVE's Commonwealth milestone commitments. We also ensure that each project has suitable partners for its execution and that project outputs are made available to the parties most likely to create usage and impact. This approach is codified in our Project Formation and Management Guidelines.

To ensure projects to deliver relevant, quality outcomes, we assess all project proposals for:

1. Relevance to industry partner
2. Alignment to the remit of the centre
3. Novelty and innovation of the research
4. Likelihood to deliver outcomes
5. Likelihood of utilisation and impact.

Once commenced, we support active projects with the following mechanisms:

- Customised project tracking: All project parties use the iMOVE dedicated project management tool, MOMENTUM. The platform incorporates all project information for relevant partners for each project. Importantly, it provides useful features that simplify and automate our project processes. This includes reminders for technical milestone deadlines, sharing of reports and documents, and sending automatic notifications to reviewers to provide feedback and approvals. Project parties are trained in using the platform as part of the project kick off phase.
- Progress reporting: Independent of the timing of project milestones, we require each project to provide a progress report every three months. All project parties provide input to this management report, and this helps to ensure industry and researchers stay aligned. It also helps to identify any issues or risks to achieving outcomes as per the project plan. iMOVE reviews every report and recommends actions as required.

- Ongoing partner engagement: Until COVID-19 restrictions came into effect in March 2019, we had face-to-face meetings with each project team at least every six months. This contact still takes place, but it has been modified to an online format to accommodate travel restrictions. This ongoing contact is a useful addition to written reports and has, at times, proven critical to ensuring that project issues are resolved. Once travel restrictions are lifted, we intend to visit partners to reconnect in person.
- Variation process: We have developed a robust project variation process that is used when projects require adjustments that impact timelines, budgets, or outputs. This is a collaborative process, managed by iMOVE to ensure changes are understood and approved by all parties. This process has been used to accommodate changes in two very large projects and has ensured collaborative resolution of project changes.

These processes have collectively proven to be effective, particularly for early identification of potential or emerging issues. While we have had delays on some projects, we have been able to avoid 'big surprises' by the constant contact, and there has been no need to escalate issues on any project. The combination of significant industry/government input at project formation and our emphasis on project management and review of milestones have resulted in substantially positive project reports and satisfaction by industry. Our participant satisfaction survey results, which are discussed elsewhere in this report, also demonstrate a solid endorsement of our approach by both industry and research partners.

Education and training

iMOVE has four main elements to its Education and Training program. They are:

- PhD Program
- Undergraduate Program
- Industry Skill Development
- Public Education and Outreach

PhD Program

In the FY19-20 reporting period we substantially increased the number of PhDs in the program. By the end of the reporting period we had agreements in place for 14 PhD studies. This strong progress in FY19-20 has put us ahead of schedule for delivery of our total PhD program.

Due to the COVID-19 impact on travel, three of our PhD students have been unable to move to Australia to commence their studies. We are working with all parties to make the necessary timeline adjustments for the relevant projects where applicable. Given the current restrictions on international travel, we emphasise our preference to Australian citizens or Permanent Residents. We anticipate that our Undergraduate Program, may provide a source of future PhD research students.

Eight of the current PhD projects involve industry co-partners and co-sponsors. This is particularly pleasing given our partners have no or little experience at working with PhDs. We continue to encourage the formation of industry-relevant PhD studies.

[FIND OUT MORE ABOUT THE PHD PROGRAM](#)

[PHD PROJECTS](#) (PROJECTS STARTING WITH A NUMBER 5)

[Undergraduate Program](#)

The Undergraduate Program aims to deliver real-world experience to students from our university partners and give industry partners an introduction to the benefits of collaborating with universities. An important aspect of this program is that the student projects are co-supervised by the university and the host industry/government partner. The program includes regular meetings with the students and their industry mentors and supervisors, as well as iMOVE-hosted events (three per year). The events focus on complementing the students' technical work by maximising their networking opportunities, enhancing their communication skills and presenting their work. iMOVE provides modest funding towards each project.

The Undergraduate program runs on a calendar year in line with university practice. In this reporting period we saw the conclusion of the 2019 Undergraduate Program (with a cohort of 47 students completing) and the start of the 2020 program (with 46 new students). Students from the 2019 program participated in a mid-year workshop where they undertook communication and LinkedIn training. This helped them to communicate their research more effectively and develop LinkedIn profiles that stand out from the crowd as they move into the workforce. At the final event in November 2019, students presented short videos on their research project and participated in a networking evening with their peers, industry professionals and academic supervisors providing insight into their experiences.

Feedback from students indicated that they found the program useful and that it assisted with their studies and future goals as they transition into the workforce or on to a higher degree.

[FIND OUT MORE ABOUT THE UNDERGRADUATE PROGRAM](#)

[Industry Skills Development](#)

For some time iMOVE industry and government participants have been expressing concern about their ability to support technological transformation and data utilisation in their organisations. The COVID-induced upheaval in transport and mobility has highlighted the needs of many organisations for better data and greater ability to process and utilise data. The pandemic has also exposed a high need for 'softer' skills, such as the ability to respond flexibly to disruption and innovative thinking.

In response iMOVE has established a project with RMIT University to identify existing and anticipated skills gaps, and to propose how these can be resolved. The project has the following high-level objectives:

- Identify current and future skill needs in the transport and mobility sector.
- Conduct a skills gap analysis of the transport and mobility sector.
- Assess the training implications of emerging skills gaps.
- Identify how Transport & Mobility industries in other countries have sought to address skills challenges.
- Propose policy responses needed to address skill needs in Australia's Transport & Mobility industry.

The project will roll out in three stages: skills gap analysis, an international skills e-scan, and a training needs analysis. These will be combined to provide insights and recommendations on skills needs and response strategies.

[FIND OUT MORE ABOUT THE SKILLS AND TRAINING PROJECT](#)

How we collaborate

Collaboration underpins all our activities and is demonstrated many ways, including:

- In-person working sessions, workshops, and/or working groups
- Webinars
- Collaboration between industry/government and researchers on projects
- Collaboration between industry/government, researchers, and students on undergraduate programs
- Development of new partners
- Numerous instances of sharing of sensitive information under non-disclosure agreements

The following activities have been conducted during the reporting period:

- Webinars held in traffic management, freight, the impacts of COVID-19 on transport management, and MaaS. We had between 150 and 250 registered participants for each of these sessions with active follow-up and engagement following the events.
- iMOVE staff has been approached to participate on panels, in forums, and as advisors on a regular basis throughout the year.

The nature of collaborations throughout the year are as follows:

- Ten projects have three or more participants, with four projects involving at least four.
- Four projects involve SMEs, with three being non-CRC participants.
- The following new organisations have been involved in research and education projects with iMOVE over the reporting period: Liverpool City Council, Willoughby City Council, Skedgo, Astrolabe Group Pty Ltd, RACQ Operations Pty Ltd, Synergistic Traffic Consultancy, Sensys Gatso Australia Pty Ltd, Campbelltown Council, South Australia, Tapwow, Freight People, HardEdge, and Pakpobox Australia.

Collaboration activities in year three have increased substantially as iMOVE strengthens its role as a centre of excellence. Examples of this are evident with external organisations both approaching iMOVE for involvement in thought leadership and attendance on webinars, panels, boards, and activity on social media.

The desire to create cross-jurisdictional multiparty programs of work are coming to life with the establishment during the reporting period of the first of three projects with participant, 'Aimsun' and various state departments of transport and universities to develop real-time traffic management systems. The *Learning from COVID - Work from Home* collaboration has built a four state, three university collaboration focused on understanding the impacts of this pandemic on future transport systems.

In addition, iMOVE has also recently committed to exploring transport problems and opportunities in aligned sectors including mining, health, agriculture, and energy.

In the reporting period iMOVE was involved in 15 public presentations or panel sessions at notable national conferences. In addition, iMOVE is represented on the national Austroads Industry Reference

Group as well as the federal government's Freight Data Advisory Group and the National Freight Data Hub Steering Committee.

Our undergraduate program is also proving to be an excellent way to engage in collaboration with industry (including SMEs). We anticipate this leading to more substantial collaborations in the future as the program grows.

During this reporting period we have executed six NDA's (four domestic and two international) to undertake investigations into areas of aligned interest, and to explore collaboration opportunities. The use of NDAs in this way provides an environment for open and frank discussions in the pursuit of meaningful collaborative outcomes.

Participant communications and satisfaction

Communications at iMOVE have been strongly influenced this year by both the evolution of the research program, and the external impact of the COVID pandemic. The result has been more online communications to replace face-to-face interactions, and more content that is focused on maximising reach of the knowledge and outcomes being generated by iMOVE projects.

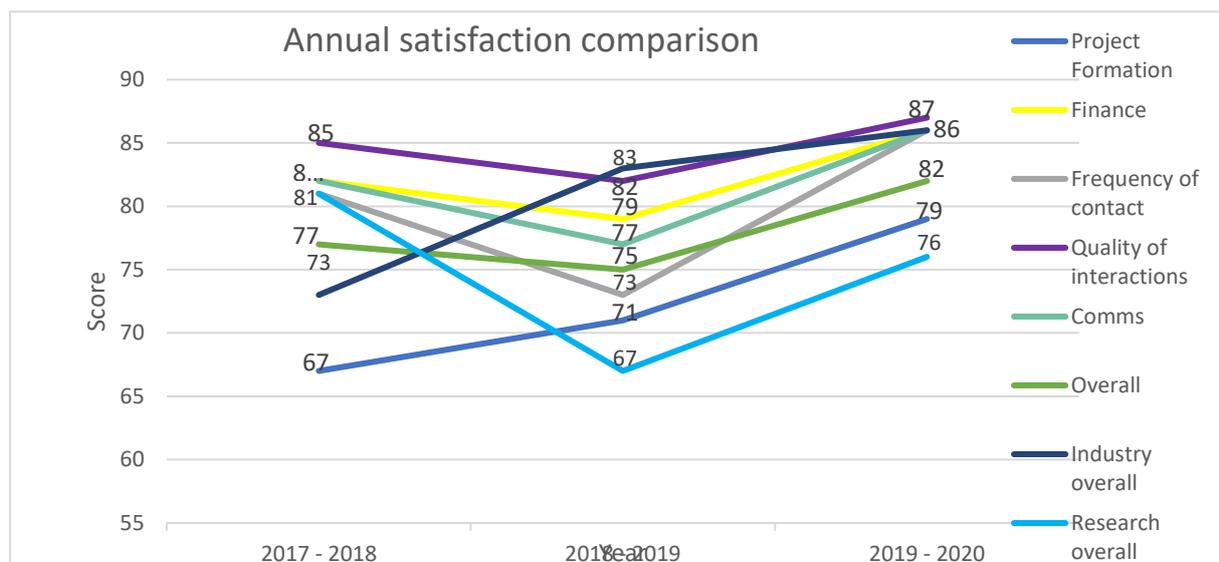
As always, iMOVE communications are driven by the business strategy of the company. At this point in the lifecycle of the CRC, this revolves around building the research program through projects with existing and new partners.

iMOVE has always allocated a large part of its efforts to face-to-face relationship building. These efforts have now been moved online due to the COVID pandemic and this has mostly been effective. An important element of internal communications is maintenance of team cohesion and performance in the new remote working environment. iMOVE has invested significant effort in ensuring that staff are well-placed to perform their roles at home and that they feel supported through regular communications. Individual teams speak with their managers daily and the management team meets daily. The whole team meets twice a week for company-wide checkins. This is done predominantly using Zoom.

Participant satisfaction

iMOVE conducts an annual satisfaction survey of its participants. For this financial year we saw a positive increase in satisfaction, particularly among our industry partners with whom we have ramped up engagement to stimulate project formation. This year we had 38 responses from 33 of our 44 participants.

iMOVE Satisfaction Survey results over three years



The graph shows the satisfaction trends over the three years of iMOVE CRC across all functions of the company, along with overall scores for research and industry/government. The result this year overall combined was 82%. This is a pleasing result in a challenging environment.

The overall effectiveness of our communications is measured each year in the satisfaction survey and this year we saw a marked increase to 86% satisfaction. Commentary reflected that people find our news service very useful and the webinars are well-received. There is appetite for more iMOVE project-related outcomes, which is timely given that we are now finishing some of our initial projects. We are also investigating ways of reporting project outputs through different media, such as a video summary rather than written reports.

iMOVE also ramped up communications during COVID, both sharing relevant news and introducing a new series bringing perspectives on how the COVID pandemic has changed transport to the community.

The iMOVE communications team also speaks regularly to communications teams in key stakeholder organisations and works jointly on releasing information publicly.

Final word

It has been a positive year at iMOVE with significant progress in all areas, despite the challenges of dealing with a global pandemic. The outcomes of the research continue to deliver cumulative impact and open up further opportunities and partnerships as we progress into year four of iMOVE. We anticipate extending the reach of the centre to new partners and new areas of transport as we move forward. We look forward to reporting on this in next year's wrap up.

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