7. RDM

"… there are all sorts of ways that down the road, the system will have to trade the operation objectives against a business case, and that's another reason for having experts in the field, and another part of the learning we've had with the PRISMA project…how you can decide what is a sensible level of remuneration, what is a simple level of trading other people's opinion or data against an end solution? "

Simon Brewerton
Chief Technical Officer, RDM

The company and the technology

Autonomous or 'self-driving' vehicles promise many safety, environmental and congestion-reducing benefits for future transport. In recent years the first steps have been made towards producing and marketing autonomous vehicles. In this pilot we work with the RDM Group, an SME based in Coventry, UK, that produces small low-speed self-driving pods. These are envisioned as being deployed for the 'last mile' of a journey, such as between a railway station and the final destination. They also might be used in shopping malls, university campuses, airports, or for parcel delivery.

The company RDM is part of several consortia that receive funding from Innovate UK, a body that distributes government funds for research. Amongst the project members are also Jaguar Land Rover and Milton Keynes Council. Furthermore, RDM has been involved in UK research council funded projects on automated cars managed by Warwick Manufacturing Group, Warwick University, including the projects INTACT, SWARM, and SMARTER.

Working with RDM

Activity included a regular series of meetings in person and by telephone with members of the company and research group, as well as personnel from WMG, RDM, and Milton Keynes Council. The company has taken part in PRISMA workshops in Brussels in April 2017 and February 2018, has co-operated in filming a video interview; and has allowed members of the PRISMA team at Warwick to experience the pods and the simulator.

It has become clear that the most central issues for our productive focus are information privacy, commercial use of private data, and urban planning; at IERG we have developed our dialogue with the above-mentioned partners in these directions.

The process of working with RDM started with a long period in which the company and WMG staff identified issues for the company that were most usefully addressed with PRISMA. Although they are not labelled as such, there are a number of ongoing practices within RDM that fit comfortably under the heading of 'responsible research and innovation'. Our goal in working with RDM has been to identify, augment and add value to these existing practices in our own role as 'embedded ethicists'. Ongoing RRI-like practices include:

- working with local governments and universities and thereby indirectly engaging with stakeholders through the democratic and research activities of those institutions;

- taking the lead in establishing standards for the new technology with the ISO.

With regard to the first of those aspects, we might emphasise that there is a sense in which RRI activity is 'baked-in' to RDM's work, since the development of the technology is inherently responsive to the needs of government funders and local government. Milton Keynes' interest in the vehicles begins with the fact that its population is likely to increase, and densification is politically difficult; there will be development of communities around the outskirts with new schools and a planned transport pathway. There is a broad goal of helping the city to move towards a less car-based system; on the other hand, the local population is (at least for now) committed to cars. The approach of the local authority in Milton Keynes is pragmatic and experimental: provide people with different transport choices, encourage them to use new forms of public transportation and see whether they in fact do so.

Advice

There are three particular social and ethical issues that have received focus in the course of the pilot.

1. Research Ethics and Testing Procedures

How should the trials of automated vehicles on public roads should be conducted, and how can other road-users be given informed expectations about their behaviour?

We have advised that the key value at stake is the **involvement of a diversity of stakeholders.** Stakeholders include a wide range of actors: those who are involved in financing, designing, manufacturing, selling and marketing the product; users who would benefit from the product; businesses that would benefit from the product; individuals or businesses who are sceptical about the product or who believe they may lose out were it implemented. These groups may overlap. Stakeholders also include industry organisations, NGOs, and local government representatives. The more diverse the actors involved in the development of the product from the outset, the more likely it is that bottleneck issues will be addressed before the technology is too expensive to change. For

PRISMA

example, trial participants may be sought from different populations with a deliberate goal of including those who may not naturally sign up to the process, such as the elderly. More broadly, trials should be understood to be a part of a general process in which different elements of the social group that will use the technology are ultimately consulted.

2. Data collection and usage.

How can the technology be designed in a way that responsibly takes account of privacy and data-use in the future while maintaining its own and its clients' commercial freedom? RDM's operating model involves raising revenue by brokering the data provided by users and the offers made by retailers to pod passengers. This raises the issue of informed consent to the use of this data and the related issue of the various possible uses of data beyond the actual or reasonable expectations of the individual. For instance, businesses may solicit preferable routes on the basis of statistically likely interest on the part of travellers. The RDM technology is being designed from the outset on the model of 'service in exchange for data'. The RDM project is also innovative in facilitating commercial purchases of data it collects.

Our advice in this area is that **the technology should be developed with a clear eye on the recent debates surrounding the existing economic model of information exchange.** This will enable the technology not just to avoid the kind of controversy surrounding Facebook in its dealings with Cambridge Analytica, but moreover to show leadership in forming fair kinds of data exchange. This

begins with systems aimed at establishing informed consent and personal control of data, a process that is now more regulated under the General Data Protection Regulation, so that trading of data to third parties is limited, and that individuals are able easily to extract and remove the information held about them. Since new technologies are often held to higher standards it will be of benefit to the deployment to seek to be leaders in this area by providing separation between users' data in storage thereby increasing cybersecurity; and by implementing protocols that provide for the use of anonymization techniques as extensively as possible.

3. Public spaces, urban planning, and commerce.

How do we understand the limitations imposed by spaces in which this technology is to be deployed? The system might be conceived of on the model of public transport or on the model of a taxi service – or something in between. Such an understanding makes a difference to the permissions and restrictions that the public will be willing to place upon the system. The way the vehicle interacts with commercial retail is a salient instance of this issue. It is conceivable, for example, that retailers could vie for customers by paying for a preferred route that brings passengers to their premises. Furthermore, the possible social benefits that the technology could provide (e.g., through agreements with charities supporting blind people, aid for those living in sheltered housing for elderly, traffic calming schemes, park & ride systems) might similarly alter its status in this regard by playing a role in civic development.

Advice

- **the civic role of the technology is strong and should be developed further**

- **the commercial element is innovative but requires strong backing from democratic institutions in order to be carried out in the public sphere (through arguments relating to congestion, pollution, and safety)**

PRISM▲