International Transport Forum | CPB Corporate Partnership Board

Draft agenda and briefing note

Algorithmic governance in transport

Corporate Partnership Board of the ITF

Workshop 4-5 December 2018

OECD Boulogne
46, quai Alphonse Le Gallo
92100 Boulogne-Billancourt, France

OECD

DRAFT AGENDA

Day 1
4 December

13:30 – 14:00	Welcome and Introduction
14:00 – 14:30	Short Introduction by Participants
14:30 – 15:00	Background presentation by Chair
15:00 – 15:45	Plenary Discussion
15:45 – 16:00	Break
16:00 – 16:45	Session 1: Machine-readable regulatory code Introductory presentation and discussion
16:45 – 17:30	Break-out groups on Machine-readable regulatory code
17:30 – 18:00	Reports back from break-out groups
19:30	Informal dinner (location to be determined)

Day 2
5 December

9:30 – 10:00	Coffee and Recap
10:00 – 10:45	Session 2: Regulating *by* algorithm Introductory presentation and discussion
10:45 – 11:30	Break-out groups on Regulating *by* algorithm
11:30 – 12:00	Reports back from break-out groups
12:00 – 13:30	Lunch
13:30 – 14:15	Session 2: Regulating algorithms Introductory presentation and discussion
14:15 – 15:00	Break-out groups on Regulating algorithms

15:00 – 15:30	**Break**
15:30 – 16:00	**Reports back from break-out groups**
16:00 – 17:00	**Plenary Discussion on Algorithmic impact assessment**
17:00 – 17:15	**Collection of open questions**
17:15 – 17:30	**Next steps and closing**

PARTICIPANTS (as of 20/11/2018)

Mr. Avery Ash, INRIX, Head of Autonomous Mobility,

Mr. Jim Beveridge, ERTICO, Adviser to the CEO on Connectivity

Ms. Francesca Bria, Barcelona City Council, Chief Technology and Digital Innovation Officer

Mr. Jean-Baptiste Burtscher, Valeo, Group External Affairs PO

Mr. Antoine Cazals, Governance & Regulation Chair, Paris-Dauphine University, Post-doc Fellow

Ms. Maguelonne Chandesris, SNCF, Innovation & Research

Ms. Federica Citterio, SAS, Systems Engineer

Mr. John Danaher, School of Law , NUI Galway, Senior Lecturer

Mr. John Ellis, Los Angeles Department of Transportation, Chief Technologist

Ms. Zeynep Engin, UCL, Founder & Director, Data for Policy

Mr. Oskar Eriksson, SAS Institute, AI & Analytics Advisor

Mr. Khurram Gaba, ExxonMobil, Policy Planning Executive

Mr. Paulo Humanes, PTV group, Vice president Business Development

Mr. Tuomas Kaivola, Ministry of Transport and Communications, Ministerial Adviser, Data Business Unit, Data Department

Mr. Takayuki Kusajima, Toyota, Project General Manager

Mr. Eric Landel, RNM Alliance, Expert Leader Digital Modeling and Simulation

Mr. Manuel Lianos, NXP, Director Collaborative R&D / Government Funding

Ms. Deanna Macdonald, CEO, BLOC (Blockchain Labs for Open Collaboration)

Mr. Marius Macku, Uber, Public Policy & Government Relations, EU

Ms. Sophie Martinetz, Future-Law, Founder, Legal Tech & Innovation Expert

Mr. Michael Replogle, NYC DOT, Deputy Commissioner

Ms. Seleta Reynolds, Los Angeles Department of Transportation, General Manager

Mr. David Roine, Valeo, Product marketing director connected car

Ms. Anne Rolland, SNCF, Head OD international synergies

Mr. Sebastian Rummel, Deondigital, Head of Mobility Solutions

Mr. Goknur Sirin, RNM Alliance, Digital Modeling and Simulation Research

Mr. Philippe Ventejol, RATP Group, Independant senior adviser - honorary department director

Mr. Kevin Webb, Open Transport Partnership & SharedStreets, Director

Mr. Günter Wildmann, Kapsch Group, Chief Privacy Officer

Mr. Christian Wilk, Deondigital, Head of Partner Management

Mr. Nigel Williams, Alliance for Parking Data Standards, Chair

Briefing note

Workshop on Algorithmic governance in transport

Purpose:

Algorithms mediate, curate and adjudicate more and more consequential decisions in our lives – in health care, housing, social media, recommendation and reputation systems and even in political discourse. The transport sector is not immune to this trend. Automated decision-making systems are at the heart of self-driving technology, ride-service dispatching, bike and bicycle scooter-share services, passenger and commercial routing apps, public transport scheduling, e-commerce generated parcel delivery, etc.

This workshop will explore how and where automated decision-making systems are having consequential impacts on transport activity and how to ensure policy outcomes are being delivered in a world increasingly infused with algorithmic code.

Expected outcomes:

The output of this workshop will be part of a number of inputs to a report to International Transport Forum Ministers that will be delivered at the ITF Summit in May, 2018. The report will provide guidance to Ministers and other public authorities on how to address the impacts of automated decision-making systems in transport and related fields.

Audience:

The principal audience for the report will be national transport ministers and public authorities responsible for transport and related policy delivery at other levels of government.

Background:

The digitalisation of transport has opened new possibilities for delivering outcomes that were previously thought too expensive, too complicated or simply unobtainable. The transport sector is undergoing a fundamental shift in the way in which data is encoded, produced, processed and used. Increasingly automated vehicles are now part of the policy planning horizon. New types of platform-based, shared, services are being deployed for both freight and passenger transport. There is much promise for what transport will be able to deliver in the future but there are clear pain points as well. One of those is that much of the classic regulatory framework is built around a set of analogue, paper-based and human language based- rules embodied in the legislative framework. In a world increasingly characterised by the outcomes of algorithms embodied in code and software, this may no longer be sufficient. Public authorities will have to broaden their remit to cover not just physical infrastructure, but digital infrastructure as well. This will be challenging because most public authorities do not have the tools or regulatory frameworks to engage in digital, machine-readable, algorithmic governance.

Algorithms are sets of defined steps structured to process instructions and data to produce an output. They can take several forms and carry out various functions – e.g. sorting, classifying, pattern recognition, routing, recommending, optimising, profiling, and matching in order to produce the desired class of outputs. They can be static, in that their code is rarely or infrequently updated or dynamic in that they are designed to re-write themselves to fit the outcomes they are designed to optimise. They are embedded in broader algorithmic processes that are comprised of several components;

- data collection and calibration
- data filtering
- data interpretation
- choice of algorithmic technique
- design of algorithm
- interpretation of algorithmic output
- algorithmic self-modification

They are often seen as straightforward tools that ingest objective data and lead to less biased outcomes than human-decision-making processes. Moreover, because they can process much more data than humans, and much more quickly, they can lead to new insights, outcomes and support processes that are simply not possible or affordable with humans. Algorithms and code, however, are not pure objective constructs and, because they depend on data and assumptions that can be incomplete, flawed or biased, they can lead to sub-optimal outcomes and machine-biases that may not be outwardly obvious.

Take for example a way-finding routing algorithm that assigns a higher (negative) weight to street segments that habitually experience congestion. This weighting reduces the probability that the routing solution would pick and suggest these segments for travellers. This makes sense and optimises travel-times. But if these recurrent travel delays are due to the intervention of police, fire or ambulance services, the objective outcome would be that the algorithm would naturally reduce traffic in, arguably, more dangerous parts of the city thus contributing to making them more dangerous still. Or an algorithm tasked with identifying and tracking different types of users through public space and recommending real-time traffic flow or space allocation outcomes might reliably identify certain users such as larger vehicles more than others and thus optimise only to those users. More fundamentally, many people may not use that space and thus any space allocation or traffic flow solutions based on algorithmic scene analysis would further exacerbate their exclusion. These and other clashes between automated decision-making systems and public governance are not just theoretical. Already today, the deployment of various algorithmically-enabled platform mobility services, leads to outcomes

that are challenging for public authorities to reconcile with the mandates they are tasked to carry out.

Algorithms *govern*, in the sense that they influence human behaviour in a specific and directed way, but they are not *government.* They differ from the latter in that they are hidden (where they act is not easy to discern), they are typically closed and proprietary, and they are inscrutable and obfuscatory (their workings are not easy to explain). To be clear, they offer tremendous advantages as well in that they can be highly efficient, fast, predictable and undertake decision-related analysis beyond human capabilities. The balance of the pros and cons of the growing use of algorithmic decision-making is unclear going forward but it is well worth looking into how public authorities and the private sector should be anticipating and preparing for algorithmic governance.

This workshop will broadly discuss three areas where this dialogue is already underway:

Machine-readable regulatory code

Those coding the automated decision-making algorithms must interpret multiple regulations that are written in human-readable language and typically on analogue and dispersed supports. This is the case, for example, regarding the way in which authorities encode, communicate and control access rules and legally permissible uses of street and curb-space. Defining and enforcing these roles are currently the responsibility of various departments or are delegated to other parties. A single, legal, "street code" feed could harmonise access to these rules and permit much more dynamic use and management of public road and curb space by both private and commercial users. One example of this is the recently released *Mobility Data Specification* that ensures that data and regulations can be shared automatically, bi-directionally and in machine readable format between mobility operators and public authorities.

Regulating by algorithm

A second area of exploration is the deployment of regulatory algorithms by governments – e.g. code that automatically or semi-automatically undertakes specific regulatory functions. These might pertain to the collection of registration, licence or use fees and revenues via digital ledger technology-enabled "smart contracts". These uses are analogous to developments in the financial technology field that seek to leverage blockchain technology to more seamlessly collect revenue, control compliance and allocate legal rights to parties.

Regulating algorithms

The third area of investigation is one that is delicate in that it gets to some of the very real issues relating to the scope of regulation and oversight versus the protection of intellectual property (and individual privacy). Because of the potential material impacts of algorithmic decision-

making on the ability for public authorities to carry out their mandates, some have raised the possibility of regulating algorithms themselves. This call for regulation stems from the aforementioned characteristics of algorithms – their hiddenness, closedness and inscrutability.

Regulating algorithms directly is, however, not straightforward for a number of reasons; doing so may require revealing proprietary and commercially valuable source code, the capability of regulators to correctly interpret code may be limited (and may in fact require third-party algorithm-mediated interpretation), and the workings and structure of algorithms are both exceedingly complicated and constantly evolving (in the case of algorithms re-writing themselves). One strategy to address this may be for those deploying algorithms that have an impact on regulated space or activities to release human-legible *pseudo-code* to understand the functioning of the algorithms without revealing their source code. Another is to put in place an *algorithmic impact assessment process* as in the case of New York City.

This workshop, and the final project report, will explore how governments and the private sector could start to think about translating legislative code into a framework that can be easily integrated into algorithmic decision-making and vice-versa where applicable.

Other government sectors have already started to operate this transition towards "RegTech", most notable financial oversight authorities, but much has yet to be invented in order to build a robust technical-legislative framework for digital actors in transport. In transport, some countries are starting to put in place the necessary building blocks that will enable this shift by, for instance, creating official and immutable individual or commercial "e-identity" numbers (e.g. Estonia) or requiring standardised and open data sharing by regulated entities (e.g. Finland, Los Angeles)

The project will build on a set of use cases where early action to create machine-readable regulatory frameworks could help deliver better policy outcomes.