International Transport Forum

Building the "Internet of Things"

In the coming years the Internet will move from connecting people to connecting things. In a new report entitled "Machine to Machine (M2M) communication: Connecting billions of devices", the OECD analyses the impact of this phenomenon. The report

- ► **finds new sources of growth**

- ► **identifies significant barriers to the functioning of the market**

- ► **proposes liberalisation to further open the mobile telecom market, to enable new entrants that may be transport, energy and healthcare companies, not telecom providers**

- ► **argues to support trade and travel for manufacturers and service providers in providing these services across borders,**

- ► **argues that removing barriers will result in billions in direct and indirect savings on mobile connectivity, and**

- ► **additional billions in new revenue from new services.**

In 2017, in OECD-countries an average family with two teenagers could have 25 things that are connected to the Internet: telephones, TV, tablets, printers, sports gear and health devices. But that is not all. Companies will dramatically change the way they design machines and devices, starting from the type of data they need to operate efficiently and effectively and then building the machine or device around it. Tens of billions of connected devices by 2025 is not farfetched. The combination of the data will allow smart transport, smart cities, smart energy and smart health.

► **Design of devices will change dramatically**

This development has been long foreseen by futurists, but the lack of fixed broadband and mobile broadband networks, made it impossible until recently. Now 60% of the households in OECD countries have broadband and over 99% of the populated areas in the OECD are covered by mobile networks. The cost of communication modules has come down dramatically. As a result the world is at the onset of another digital revolution.

► **On the brink of another digital revolution**

A new type of user of networks will emerge as a result; the million device user. Car companies, consumer electronics companies, energy companies and health providers will see their devices used by millions across the globe. Machine to Machine (M2M) communication will become standard. Mobile networks are best geared to offer support to geographically mobile and dispersed users who want

► **Emergence of the "million device user"**

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to be connected everywhere and always. However, a major barrier for them to be using mobile networks at a large scale is a complete lock-in and lack of competition once they have chosen a mobile network provider. In fact they have less control over what network they use and how much they pay than a teenager.

A major limitation lies in the SIM-card. This little chip links the device to a mobile operator. By design only the mobile network that owns the SIM-card can designate which networks the device can roam on and all the main characteristics cannot be changed. In mobile phones it can be removed by hand and changed for the SIM of another network, but when used in cars and smart electricity meters, it is often soldered to prevent fraud and wear and tear from vibrations. Even if it was not soldered, changing the SIM by hand will cost USD 75 to USD 1 000 per device, not to mention that for consumer electronics finding the device and its owner would be problematic.

▶ **Locked in by SIM card technology**

The effect is that once a device has a SIM-card from a mobile network, the company that developed the device cannot leave the mobile network for the lifetime of the device. Effectively the million device user is locked into a 10-30 year contract. It also means that when a car or health device crosses a border the large scale user is dependent upon the high rates of the roaming contracts of the operator. It cannot negotiate these contracts itself. It also cannot distinguish itself from other customers of the network (normal consumers) and so is bundled into the same roaming contracts that exist for these customers.

A range of possible innovations that a large scale M2M user might want to introduce in both technology and business model can be identified. However at the moment, such a user cannot because it would need approval from its mobile network operator first. Many of these innovations would allow bypassing the mobile operator or innovations in business model and are as such resisted. Other innovations would introduce new functionality or security which are only interesting to niche customers and may therefore not be introduced by mobile operators.

▶ **In search of innovative business models**

The solution would lie in governments allowing large scale M2M users to take control over their own devices by owning their own SIM-cards, something which currently is implicitly forbidden in many countries. This would make a car manufacturer equal to a mobile operator from the perspective of the network. It would allow it to change mobile networks in a matter of hours for millions of cars or to select a different network for a specific country. It would enable competition, introduce new innovations in the devices and business models and would put the large scale user in charge. If, through innovation, data usage increases, it would be able to renegotiate with mobile networks and choose the one with the best price. If the M2M user sells a business unit, it would be able to hand over the management of the devices and their data contract to the new owner. If the mobile network is purchased by another network, the M2M user would not have to fear that the network is switched off.

▶ **Let users take control**

For the transport sector the reforms raised for discussion by the OECD could be considerable. In 2014 the European Union will require all vehicles to have eCall on board. This will be the start of M2M communication being standard on board. If the OECD's proposal saved USD 1 in connectivity per car per year, the benefits would grow to USD 270 million/year in direct benefits. The indirect

▶ **Telecom deregulation is transport policy**

benefits through better and more advanced services enabled by higher bandwidth and better data packages could be a multiple of this change. It would become easier to equip roads with communicating elements and guarantee coverage. The effect may be a more efficient transport system. Competition will make it easier to enter the market, to scale-up the use of services and to experiment with new services and not experience punitive roaming costs. It shows that telecom liberalisation can be an essential element of a sound transport policy.

► **Read the full OECD report here**

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