The Human-Machine interface for the Connected Object

It is a well known fact that India is a price sensitive and value conscious market. At the same time, Indians are, and always have been, very receptive to new technology.

Cutting across gender, social and geographical boundaries, the new generation has embraced the mobile as its most preferred method of communication, internet, entertainment and transaction. As more and more objects gets connected, the emphasis is shifting from the 'mobile' to the 'connected'.

It is worth noting that the mobile has always been personal. People buy mobile devices as a reflection of their style, even persona. When a person buys a mobile, he or she also chooses the mobile service provider. As also the specific usage plan that is most appropriate for the purpose. The person's identity gets linked with the mobile device, a necessary security requirement for the myriad threats our society faces today. The person pays for ALL the services that are used on the mobile device.

As distinct from the mobile, the arriving swarm of 'connected' objects may not be personal at all. For example, a Telematics device fitted in a connected car could be of less interest to the driver (in this case the 'user') than to the insurance company that is heavily dependent on the data from the Telematics device for making decisions regarding driver / vehicle performance. If the vehicle belongs to a fleet, an administrator may be interested in keeping the vehicle 'connected' to know that the vehicle is driven as per the expected trip details.

The Human-Machine relationship between the diverse 'connected' objects will be very different from the one between the 'connected' mobile device. For the purpose of this discussion, let us call this relationship the CoObWeb - **Co**nnected **Ob**ject **Web**.

Elements of the **CoObWeb**

Fundamentally, the 'connected' object differs significantly from the mobile phone in the fact that the user(s) of the facility could be various, and different, from the person who 'pays' for it. The process of 'connecting' the device itself could fall in the hands of several people, or even entities, and this responsibility could change hands over the lifetime of the device.

The 'connected' object is arriving on the scene at a time when the wireless access technologies are going through major changes. A 'connected' object may have many more connectivity options to choose from, compared to the 2G mobile phone half a decade back. 2G, 3G, Wifi, Bluetooth, NFC, ZIGBEE, Zwave, 6LowPAN, LoRa are an illustrative set of examples.

Breaking up of the very personal relationship between the mobile device and its owner is likely to have a significant impact on how the **CoObWeb** evolves. It will be important for the **CoObWeb** to permit several entities to enjoy the benefits of the 'connected' object in a secure and managed fashion, as also to contribute in keeping the object 'connected' and 'maintained'.

Given the scale and spread of the 'connected' objects is forecast to go into billions by 2020, the emergence of the **CoObWeb** is just a matter of time.

The incomplete CoObWeb

Let us take the example of a Connected Car again. A Connected Car has more than a dozen beneficiaries.

The Automotive OEM benefits as a Brand, not just because of the new age features it can offer with the vehicle, but in its compliance to regulations such as E-call and from having a real time pulse of the car's performance. However, the Automotive OEM does have the systems and process to be able to connect and pay for the vehicle and the data generated by the car throughout its life time.

The After Sales Service Network benefits from the connected car in being prepared for the nature and type of service that a car needs, and when it needs that. However, the benefits are not sufficient to justify the device capex, the connectivity charges and the analytical systems that monitor vehicle and driver data.

A Car Insurance Company may be able to drive down the cost of Insurance for the user of the Car if the Telematics device in the connected Car is tamper proof, continuously collects the driver and car performance data and sends it to an agency for analysis. Although millions of devices have been fitted in cars in the US and Europe, the cost and liability of the device remains a barrier to mass penetration.

There are several other beneficiaries – the User of the car for security, performance and tracking; Fleet owner for Track and Trace operations; Roadside Assistance companies; etc. If the costs and benefits were possible to be shared across the many beneficiaries, and throughout the lifecycle of the Connected Car, it may have become as ubiquitous as the mobile device. Unfortunately, the ecosystem lacks the partnering and business models, and the systems and processes required to facilitate such an outcome.

'Connect and Serve' – creating the **CoObWeb**

Whilst it may look as though the capex related to making an object 'Connected' is at the root of the problem, nothing can be farther from the truth. What is missing are the Business Models, and supporting Systems, that can assist the secure on-boarding of the value contributing beneficiaries and accurately distribute the costs and benefits from the Connected Object to these beneficiaries throughout the lifecycle of the Connected Object.

What is also missing is a method to separate out the embedding of the connectivity hardware at manufacturing, from the selection of the subscription in the after-market operation.

Bringing together competent partners in the value chain to develop a secure flow of devices, services, costs, benefits and revenues is the vital need for the **CoObWeb** to thrive. What is also essential is the deployment of systems that can handle the remote management of the Connected Object lifecycle, together with after-market choices for connectivity, data feeds, services and APIs. Doing this while remaining compliant to the M2M National Roadmap and the regulation – KYC norms, retention of customer data within data centres in India, M2M Numbering, IPV6 – could be like lifting the blockade that holds back the fledgling M2M CoObWeb from flowing freely. The benefits of such an intervention will go well beyond Automotive – into Health, Consumer Electronics, White Goods, Safety & Security, and Entertainment. Here's to the early arrival of the **CoObWeb**!