# Keep key identification documents always close at hand

Slovakia prototypes mobile electronic identification (MeID) solution
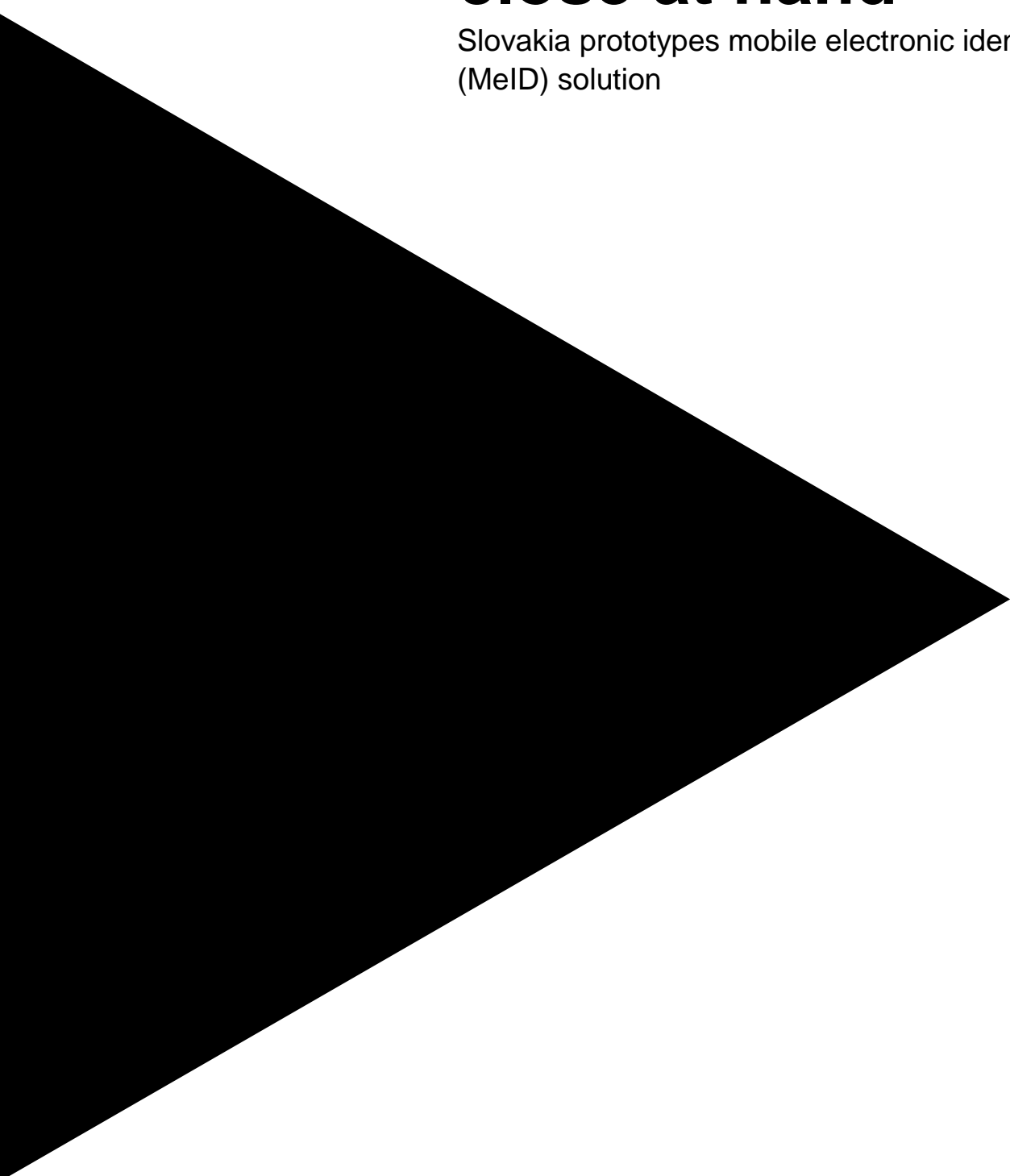
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**The Fifth Element**
This 1997 English-language French science fiction action motion picture was directed and co-written by Luc Besson. Primarily set in the 23rd century, the film's central plot involves the survival of planet Earth. This becomes the responsibility of Korben Dallas, a taxicab driver and former Special Forces Major, after a young woman named Leeloo falls into his cab. Leeloo presenting her Multi Pass became one of the most popular scenes.

**Mobility in Europe**
The Mobile Economy Europe 2015 report, authored by GSMA Intelligence, notes that Europe has the highest regional rate of unique subscriber penetration, at just under 80 percent, which is nearly 10 percent above North America. Unique subscribers in Europe will reach 450 million in four years. The total of 684 million of connections (excluding machine-to-machine) in 2015 should grow further to 745 million connections by 2020, which means an increasing penetration rate from 124.7 percent to 134.7 percent.

Rapid adoption of mobile devices makes e-services accessible from any place at any time. Growing use of these services is stimulating change in many domains, including official documents issued by governments. Empowering e-government by shifting to smart cards is escalating the arrival of a new era of mobile identity and electronic documents. Unlock its potential.

# Going from science fiction to reality

The entertainment industry has already produced myriad movies trying to capture the vision of the world and lifestyle of people living in the distant future. There are only a few that resonate with the audience and become memorable to them.

Undoubtedly, The Fifth Element belongs with the unforgettable and iconic ones for many obvious reasons—but particularly thanks to Leeloo, who was waving around her MultiPass on every occasion—appropriate or not. Other characters in the movie also used MultiPass, and as its name suggests, it represented the "one and only" multipurpose identification document. It was meant to be used by its holder whenever it was required to perform some activity—such as to clone a person, access restricted premises, start and drive a cab, get through airport security check, or get a plane ticket.

MultiPass was predicted for the year 2263; however, DXC Technology (DXC) appears to have reached that destination much sooner. DXC surpassed almost 247 years of otherwise expected evolution in the field of electronic documents and ID as it presents the real MultiPass solution.

# Assessing mobility trends and potential

According to GSMA, at the end of 2016, 60 percent of the world's population had at least one mobile subscription, totaling over 4.8 billion unique mobile subscribers. By 2020, around 73 percent of the global population will have a mobile subscription. Penetration in the developed world is already high at 79 percent and is expected to climb modestly to 81 percent by 2020.

There is also an accelerating technology shift worldwide to mobile broadband networks. Mobile broadband connections (such as 3G and 4G) accounted for 55 percent of total connections at the end of 2016, but by 2020 will increase to almost 73 percent. The amassing proportion reflects the rapid rate of smartphone adoption driven by greater availability and affordability—reaching 65 percent of the connection base in the developed world and expected to reach 75 percent over the next four years.

Mobility has the potential to significantly accelerate the use of governmental and commercial e-services, from anywhere and at any time. Consequently, mobility is directly endorsed by regulation #910/2014 of the European parliament and the council on electronic identification and trust services for e-transactions in the internal market. It is seen as a preferred access mode for e-services.

**MicroSD vs. SIM slot presence in mobile devices offered on the market in April 2016**
Smartphones:

- Top 8 brands sold by Mobile Network Operators

- 97 models currently on market

- 100 percent SIM

- 85.5 percent have a microSD slot; those without are primarily Apple smartphones

- Other manufacturers experimented with removing the microSD slot, but installed it back into new-generation models

- First eSIM devices in the US and UK

Tablets:

- Top 9 manufacturers with 73 models on the market

- 60 percent lack SIM slots

- 80.8 percent have a microSD slot; all remaining tablets without microSD slots are Apple-branded

# Innovating with electronic identity

DXC Technology Slovakia possesses rock-solid expertise gained by developing and delivering a national identification project for the local government. The Slovak republic belongs to the group of countries issuing national ID documents to citizens. DXC, in cooperation with partner company Plaut, successfully implemented electronic identity cards (eID) in the form of a smart card with a contact chip. This chip is capable of cryptographic operations required for authentication over the Internet, creating electronic signatures, and encryption. It is the preferred method for cardholders accessing e-government services in Slovakia, replacing user name and password-based authentication. We expect that eID access to e-services also will be accepted in the commercial sector; however, traditional forms of eID as the authentication token is incompatible with mobile devices.

# Moving toward MeID with DXC

Where secure access to services cannot be compromised and requires user authentication, mobile eID (MeID) can play an important role in raising overall consumption of electronic services. MeID is a complementary concept that combines the advantages of conventional eID cards and mobile devices.

DXC's first-hand experience lays the foundation for further evolution of ID schemes by implementing the MeID solution using standard technology and mobile device components such as near field communication (NFC) and microSD card. It will serve as an alternative mode for establishing a secure channel to access public and commercial e-services.

To minimize risks and ensure high security, mobile devices need a secure element (SE)—a tamper-resistant platform capable of securely hosting applications and their confidential and cryptographic data. According to the Global Platform association, there are three different SE form factors.
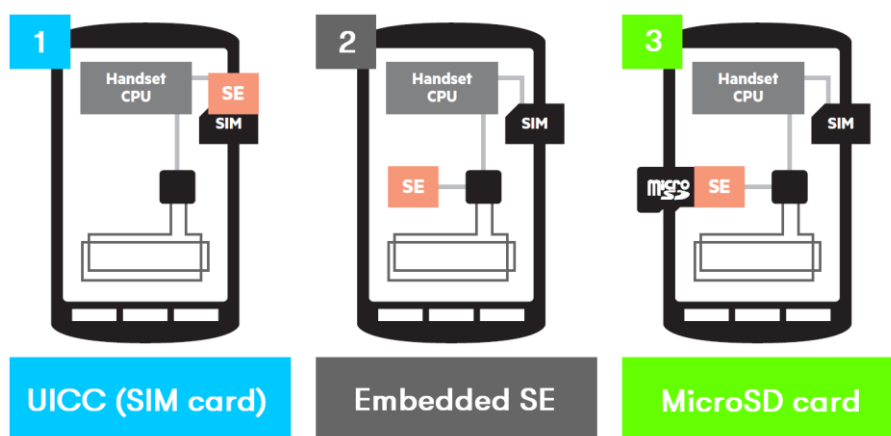


**Figure 1.** Secure element form factors

### Universal Integrated Circuit Card SIM

There is no cohesive policy concerning mobile eID in the EU. Some of the countries, such as Estonia or Finland, have already deployed mobile eID, mostly by applying a combination of SIM SE and PKI.

The disadvantage of this approach is complicated implementation and higher costs, as distributing special SIM cards requires cooperation between issuing authorities and various mobile network operators. Also, some of the mobile devices (such as tablets and ultrabooks) lack a SIM slot, yet are still highly portable and often connected via Wi-Fi.

### Embedded SIM

GSMA announced release of remote provisioning specification, which introduced embedded SIM (eSIM) implanted directly into the mobile device. This may replace removable SIM cards in next few years.

### Multifunctional microSD card

Considering all aspects, the state-of-the-art solution developed by DXC Technology Slovakia is built on a specially designed multifunctional microSD card—a product of SMK Logomotion Corporation. In addition to conventional memory storage, it contains two separate chips: one for eID functions and another for EMV contactless payments using built-in NFC.

This combination enables the holder to authenticate and also make payments for services or products offered online by commercial and governmental institutions.



**Figure 2:** MultiPass microSD card design

**SMK Logomotion Corporation**
SMK Logomotion Corporation (SLC) is a joint venture of Slovak company Logomotion and SMK Corporaton from Japan. The head office is in Tokyo with a branch office in Bratislava, Slovakia. SLC focuses on developing new NFC products incorporating a number of unique, patented technologies to support secure NFC payment and Internet of Things (IoT) applications.

**Electronic identification using MeID on microSD card**
DXC Technology Slovakia and partner company Plaut presented the prototype of this groundbreaking solution at the international congress ITAPA in autumn 2015. MeID will be an add-on to the smart card rather than a replacement. This will enable citizens to access e-services from their mobile devices for greater convenience.
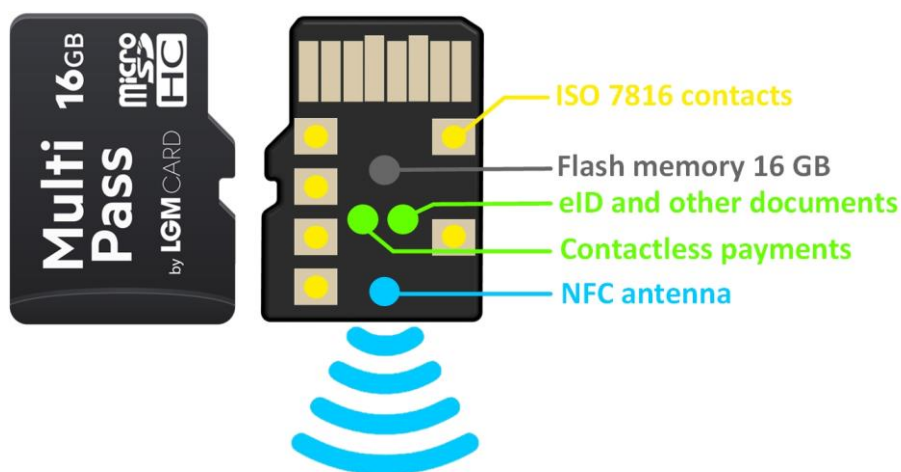
Contacts in compliance with ISO 7816 are fully compatible with high-volume personalization technologies used for smart cards, which allows for mass personalization and distribution. The MeID application is based on an identical eID application already in effect and is saved on a dedicated security chip on the microSD. The same chip has the capacity to store many other electronic documents, such as an electronic health insurance card and mobile driver's license.

Compliance with BSI and ANSSI eIDAS token specification (TR 03110) and adherence to these key principles are the basis of the proposed solution:

• Identical functionality as implemented in the Slovak national identification scheme

• The same high level of security and reliability for MeID as there is for eID

• Standardized hardware and software components for mobile devices

• Lifecycle support via e-services and designated registration offices

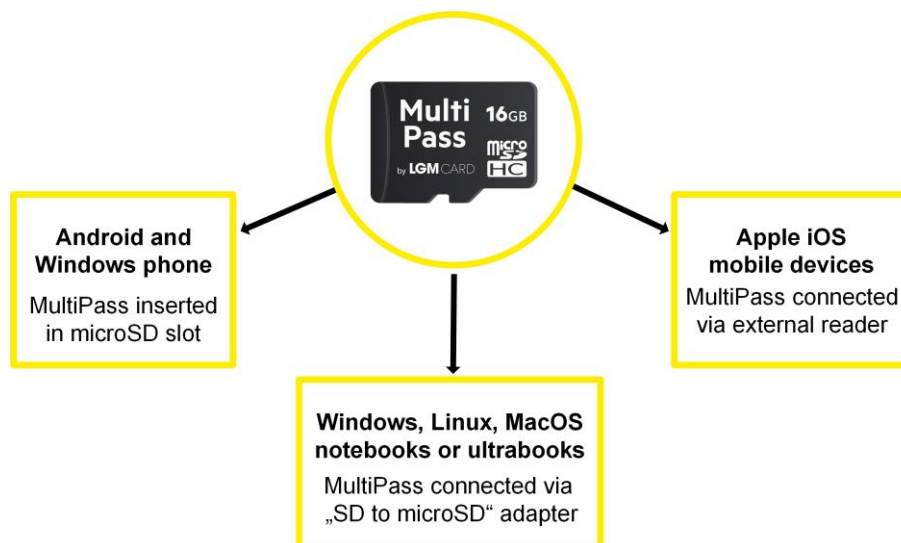• Availability on broad spectrum of mobile platforms (Android, iOS, Windows)



**Figure 3:** Broad mobile platform availability

# Visualizing the future of mobile e-Documents

In practice, people typically hold a number of identification documents or licenses for particular purposes. Converting these into a digitalized form, securely saved in a mobile device, is considered a hot topic currently being analyzed within the industry.

Digitalization should uphold security mechanisms to ensure undisputable data validity and, in some cases, also visual representation for additional proof. DXC´s vision is that a single microSD card inserted into the mobile device will accumulate all electronic documents. Mobile driving license (mDL) is the first one, currently under development in the U.S., UK, and Australia—yet it applies a different technological solution.

Other countries probably will follow this trend in the near future. So adding mobile electronic driver's license (MeDL) as the next application to our microSD card solution appears to be reasonable, with high potential for success. Implementing the MeDL application will be fully in accordance with Commission Regulation (EU) No 383/2012 laying down technical requirements with regard to driver's licenses.

It is a rational choice for citizens to have all electronic documents easily at hand in their mobile device, with the ability to display them to authorities upon request and make payments. From authorities' perspective, there is potential to conduct real-time e-document inspection via a nearby mobile device, as well as to promptly collect payment of a fine charged for a law violation.

And this brings us to the point when a sci-fi term "MultiPass" becomes a reality.

**Authors**

**Marián Mlynarovič**
Information System Architect
marian.mlynarovic@dxc.com

**Peter Handzuš**
Solution Architect
peter.handzus@dxc.com

**DXC Technology Slovakia**
Galvaniho 7
820 02 Bratislava 22
**www.dxc.technology**

**in cooperation with partners:**