

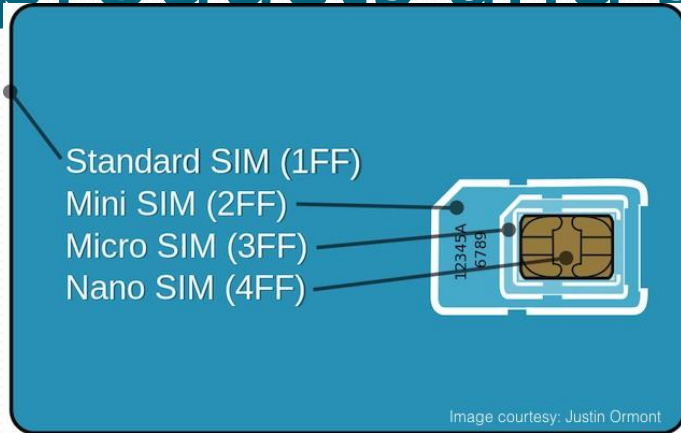
Current state and future of SIM CARD technology area



State of the art in SIM card

Technology

products and standards



- 1991- full-size SIM for GSM – ISO/IEC7810 id1
- 1996- mini SIM for GSM – ISO/IEC7810 id000
- 2003- micro SIM for UMTS – ETSI TS 102221V9
- 2012- nano SIM for LTE – ETSI TS 102221V11

Core Authentication

ISO/IEC 7812
ITU-T Recommendation E.212 for IMSI

Over The Air updates

GSM 03.48 - 3GPP TS 23.048

Apps/Applets/WebServices

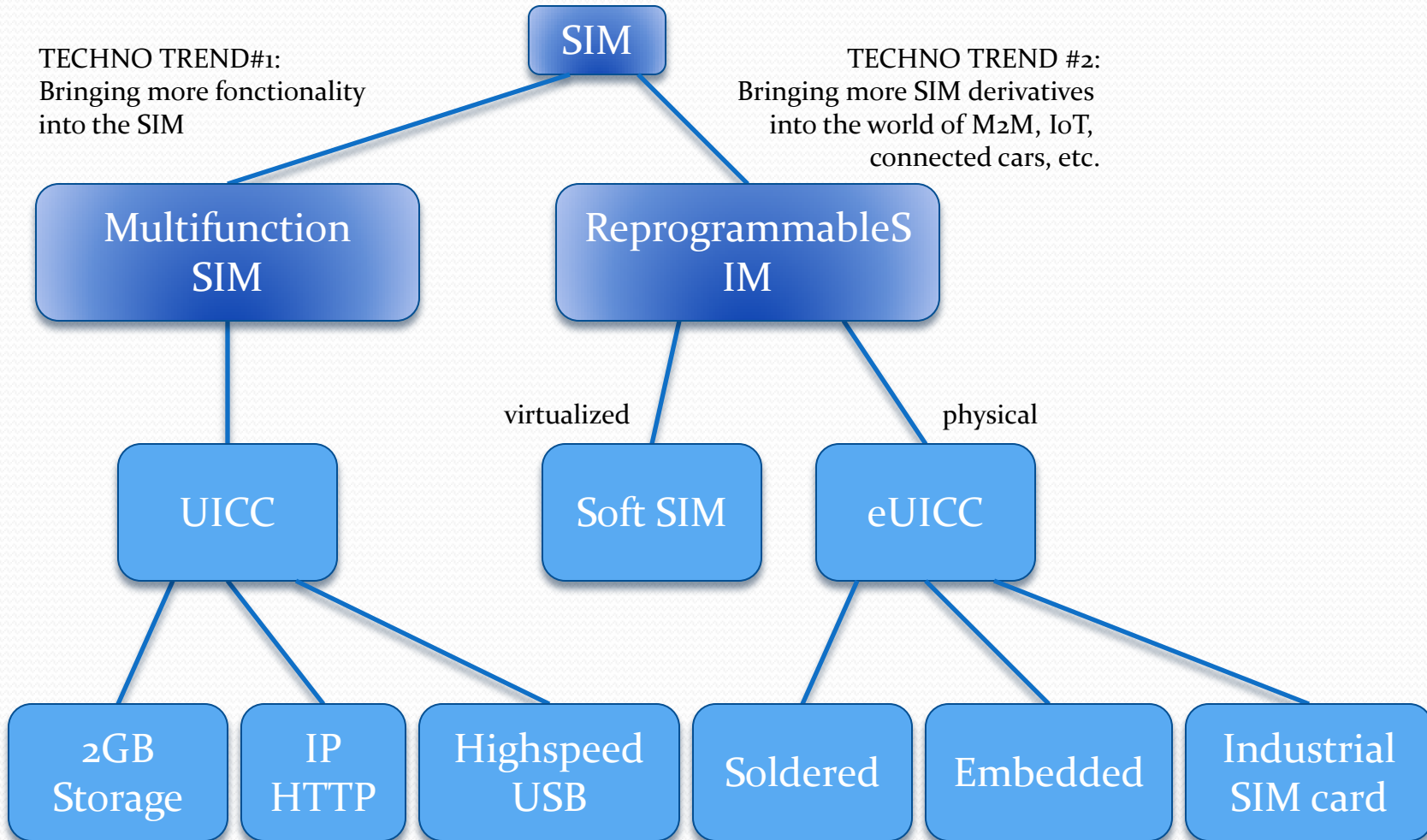
ETSI TS 102 221, TS 102 223, TS 102 225 and
TS 102 226, ETSI TR 102 216

4 Billion SIM cards deployed

Overall trend in the technology

TECHNO TREND#1:
Bringing more functionality
into the SIM

TECHNO TREND #2:
Bringing more SIM derivatives
into the world of M2M, IoT,
connected cars, etc.



Future products and standards in this technology area

- M2M/IoT industrial applications
 - Robustness to vibrations, shocks, temperature, humidity
 - Integration/smaller form factor – embedded SIM, soft SIM
 - Longer lifetime
- Connected cars
 - European eCall regulation/3GPP standards (2015)
 - ERA-Glonass (Russia, 2015) - SIMRAV (Brazil, 2014)

Potential breakthroughs in this technology area

- Evolution of SIM card security with new encryption/authentication protocols:
 - BlackHat 2013 revealed root flaw in OTA SIM control
 - Different threat models in M2M
 - EU/German post-Snowden emerging initiatives for privacy standard alternatives
- Evolution of form factors for more integrated, cost-effective, longer lifetime M2M applications:
 - reprogrammable SIMs, soft SIMs
 - remote subscription management
- “SIMless” SIM for IoT...