



## WIRELESS EXPERTISE FOR SMART, MOBILE HEALTH SERVICES AND DEVICES

The introduction of wireless technologies (Bluetooth®, 3G, 4G, NFC...) into the healthcare sector is transforming the way, health services are provided across the globe. Smart wireless health services and devices are making the work of health care professionals more efficient, can ease the financial situation of health systems and enhance the health care experience of patients.

Certain obstacles however need to be overcome when introducing wireless technologies into a field in which reliability, security and safety are so very crucial.

As a global engineering and test house group, 7layers has in-depth experience of all important wireless technologies. For health devices with integrated wireless modules and chipsets we offer

- Radio & EMC testing
- International certification & type approval
- Wireless module/chipset integration
- RF consulting
- Antenna tuning and integration

As a company of the Bureau Veritas Group we also offer services that go beyond wireless, including aspects such as electrical safety, chemical risks, sustainability etc.

For the reliable set-up of a complete smart medical service, which includes interoperable wireless devices and data base platforms plus the respective health apps, 7layers together with its partners, develops the necessary validation programs to ensure end-to-end connectivity and quality of service.

### EUROPE

#### Germany

Ratingen  
Phone +49.2102.749.0

#### Agency Spain

Palma  
Phone +34.634.507.296

### ASIA

#### P.R. of China

Beijing  
Phone +86.10.6805.0368

#### Japan

Yokohama  
Phone +81.45.949.6020

#### Interlab Agency Taiwan

New Taipei City  
Phone +886.2.2696.2828

### NORTH AMERICA

#### USA

Irvine, CA  
Phone +1.949.716.6512

#### Agency France

Paris  
Phone +33.612.717.783

Shenzhen  
Phone +86.755.865.23100

Sunnyvale, CA  
Phone +1.669.600.5293

Supporting mHealth services and devices

## WIRELESS HEALTH SERVICES DEVELOPMENT, TESTING & CERTIFICATION

Test House | Systems House | Software House

7layers - A Bureau Veritas Group Company

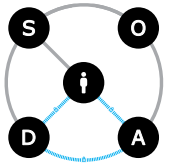


Prepare for a smarter world of healthcare with development services, testing, certification from the global 7layers group



## TECHNOLOGIES

GSM-Family 3G LTE LPWAN WiFi  
GPS Bluetooth® NFC Java W-CDMA



### MOBILE HEALTH SERVICES & DEVICES

Smart, wireless health services combine the usage of interoperable, connected medical devices plus the respective medical apps, networks and data base platforms. Stakeholders of such concepts are the patients themselves, the medical professionals, insurance companies, hospitals, services and network providers, and even governmental institutions. Depending on the service, data is personalized or anonymized, it is free of costs or chargeable. To analyse such complex scenarios, 7layers has developed the SODA® model, which describes smart IoT Services in terms of a dynamic "circular" process.

Mobile health services can be extremely critical. Therefore the connected health-devices and all other aspects, necessary to form a smart service, need to adhere to existing rules and regulations PLUS additional demands for the qualification of proprietary solutions. Once such a service has been set-up, it must be continuously monitored to ensure connectivity, data security, accountability and quality of service.

### OUR EXPERIENCE & CAPABILITIES

7layers has years of experience with even the most complicated wireless technologies and devices. 7layers provides technical consulting & engineering services for mHealth services and runs a global network of accredited test laboratories for wireless connected devices.

### SUPPORTING MOBILE HEALTH SERVICES

Standard test and certification procedures for wireless products are often not sufficient for the reliable assessment of complete mHealth services. 7layers has set up technical consulting and engineering services to support providers of mHealth services with the integration of wireless connectivity.

#### TECHNICAL CONSULTING

- Review of the most suitable radio technologies
- Benchmarking regarding suitable suppliers, competitors, different technologies etc.
- Review of key requirements (quality, risk ...)

#### ENGINEERING & VALIDATION SERVICES

- Requirements capturing
- Specification management
- Development of test cases and test set-ups
- Validation according to proprietary requirements and official rules & regulations

### ASSESSMENTS OF MOBILE HEALTH DEVICES

#### TEST SERVICES

- Radio testing development, regulatory, conformance testing
- Interoperability and field testing
- Antenna, Battery, Safety, Health testing (OTA tests)
- EMC testing

#### REGULATORY APPROVAL

For all countries worldwide, e.g.: RED (EU) CE-marking, E-marking / FCC (USA) / ISED Canada and many more

#### CERTIFICATION

- PTCRB and GCF certification
- Bluetooth® (low energy) qualification & listing
- LPWAN certifications (LoRa, Sigfox)
- Network operator approvals (Vodafone, AT&T...)
- Purchasing approvals

#### RF CONSULTING & ANTENNA SERVICES

7layers helps enhance the radio and antenna performance of wireless mHealth devices (MICS), taking care of housing, shielding, frequency bands etc. We offer

- RF consulting packages
- Antenna integration and tuning
- Antenna assessments (OTA) from 400 MHz to 6 GHz