u-blox Cellular Communications Design Center Overview

Introduction

Established in 2003, and located in Trieste, in the Northeast of Italy, the design center is a hub of innovation and technological expertise, specializing in the development of cutting-edge cellular and communication devices. Over the past two decades, the team has built a reputation for delivering high-quality solutions, developing and delivering to production cellular data modules for IoT applications that have reached over 100 million units in the field worldwide.

With a unique blend of end-to-end capabilities, the design center is equipped to manage the entire lifecycle of a product—from initial concept and design to production setup and customer support. This comprehensive skill set sets us apart from traditional software or hardware houses, making us a strategic partner for companies seeking to innovate in the communication technology space.

Key Capabilities

End-to-End Development Expertise

The design center provides complete know-how for the development of cellular and communication devices, including:

- Hardware Design (BB and RF):
    - Component selection
    - Schematic design
    - PCB/layout design
    - PCB bring up and debug
    - Extensive automated test in extreme conditions
    - Production support HW
- Software Design:
    - C language for embedded microcontrollers
    - Development in a multiuser environment with SW configuration control
    - Developing in multitasking OS environment
    - Wide area of competence to cover all CEL module SW layers: Operating System, File System, Drivers, Protocol stacks, AT SW layer, Internet applications, CEL positioning applications, Audio processing functions, Production support SW, Product security.
    - Continuous Integration / Continuous Delivery with automated testing
    - PC Tools development to easy the module implementation and debug
- Testing and Validation:
    - Test development to validate all the CEL module features
    - Test automation to run 24/7 and remotely, around the globe
    - Instrumental testing with network simulators

- o Field testing in all world Mobile Network Operators
- o Database storage of the test results with reporting
- Certification:
  - o Product certification according to the main regulatory and voluntary certification bodies (e.g. RED, FCC, GFC, PTCRB etc.)
  - o Worldwide MNOs (AT&T, VZW, T-Mobile, Telstra, NTT docomo, Softbank, KDDI etc.)
  - o Cyber Security certification
- Customer Support:
  - o Product documentation writing
  - o Customer product design review
  - o Customer product bring up support
  - o Customer product certification support
  - o Customer production setup support
  - o Customer field problems analysis and resolution
- Product Management/Product Marketing:
  - o Market/product requirement and product roadmap definition
  - o Managing relationship with the key technology suppliers (e.g. chip makers)
  - o Market vertical analysis/Product go to market strategy
  - o Lead customer project coordination
- Project Management:
  - o Project plans development/execution and resource allocation management
  - o Project team coordination and project costs monitoring
  - o Project risks assessment and implementation of mitigation strategies to minimize impact on the project.
  - o Communication with the main project stakeholders

Our ability to seamlessly integrate these competencies under one roof makes us a unique design center capable of delivering complete, ready-for-production solutions.

Team Composition and Expertise

The center employs approximately **140** highly skilled and educated professionals, including engineers and physicists. The team is structured into specialized sub-teams to maximize efficiency and expertise:

- 66 Software Engineers: Specializing in drivers, protocol stacks, modem technologies, application development, production tools, and product security.
- 21 Hardware Engineers: Focused on RF and baseband design.
- 21 Test and Validation Engineers: Ensuring products meet the highest standards of quality and performance.
- 12 Customer Support Engineers: Delivering world-class service and technical support.
- 4 Certifications: Certifying the products according to the main certification schemes

- 6 Product managers/product marketers: Responsible for market and product requirement specification, product life maintenance and lead customers management
- 5 Project managers: Coordinating the project teams during the project execution

Additionally, the design center is supported by teams in HR, IT, Quality assurance, Production monitoring, Sourcing and Finance. In total, approximately, additional **50** resources.

Education and qualifications

The strength of our design center lies not only in its technical expertise but also in the extremely high educational background of its team members. The team's high level of education and specialization ensures cutting-edge innovation and industry-leading solutions. Below is a breakdown of the team's academic qualifications

Education level	Headcount
Ph.D.	12
M.Sc.	107
B.Sc.	5
High school diploma	16

Proven Track Record

1. Collaboration with Leading Technology Suppliers:

- Extensive partnerships with leading international technology providers like Qualcomm, Intel, ASR, Marvel, Unisoc, and other top-tier technology providers.
- Co-development and integration of advanced chipsets, ensuring cutting-edge solutions.

2. Product Development Success:

- Over 120 products developed to date, with many deployed in the field and exceeding 100 million units globally.
- Seamless integration of 4G, 5G, and satellite communication technologies.

3. Satellite Communications and 5G Expertise:

- Strong expertise in satellite proprietary and 3GPP communication technologies, enabling global connectivity solutions.
- Advanced competencies in 5G technologies, addressing the demands of modern communication networks.

4. Security Leadership:

- Deep expertise in product security, ensuring robust solutions to meet the most stringent cybersecurity requirements.

5. Global and Multicultural Experience:

- A strong history of working within a global and multicultural environment, collaborating with teams and customers worldwide.
- Experience supporting international clients and adapting to diverse business needs.

Legacy and Milestones

- Early 90' - 2003: The core team (30 resources) was working in Telit on mobile phones since the beginning of the GSM standard
- 2003-2009: Operated as a center of competence for Infineon, supporting 2G, 3G and 4G mobile phones chipsets and platforms development and providing design expertise to Infineon's global mobile phone customers, mainly in China
- 2009-Present: Acquired by u-blox AG and established as a dedicated cellular design center, contributing significantly to u-blox' product portfolio and market presence. The cellular modules developed and put in production by the cellular design center have been deployed in volumes exceeding 100M-units and have been used in a various Internet of things (IOT) applications like automotive TCUs, fleet telematics, healthcare, smart metering, smart city and smart homes.

Strategic opportunity

Our design center offers a rare combination of technical expertise, operational efficiency, and a proven track record of delivering high-quality products at scale. With a fully integrated team capable of handling every aspect of product development – from design to production -, we are uniquely positioned to provide:

- Accelerated time-to-market for complex products.
- Reliable, field-tested solutions with global impact.
- A strategic advantage through our partnerships with industry leaders and expertise in the latest technologies, including 4G, 5G, satellite communications, and security.