February 2024

Title: Signalling security Intern

Bureau/Dept/Unit: TSB/SGD

Supervision: Denis ANDREEV / Advisor of ITU-T SG11

Duration: 11 months maximum

Location: ITU Headquarter – Geneva, Switzerland

ITU is the United Nations specialized agency for information and communication technologies – ICTs.

We allocate global radio spectrum and satellite orbits, develop the technical standards that ensure networks and technologies seamlessly interconnect, and strive to improve access to ICTs to underserved communities worldwide.

ITU is committed to connecting all the world's people – wherever they live and whatever their means. Through our work, we protect and support everyone's fundamental right to communicate.

Today, ICTs underpin everything we do. They help manage and control emergency services, water supplies, power networks and food distribution chains. They support health care, education, government services, financial markets, transportation systems, e-commerce platforms and environmental management. And they allow people to communicate with colleagues, friends and family anytime, and almost anywhere.

With the help of our global membership, ITU brings the benefits of modern communication technologies to people everywhere in an efficient, safe, easy and affordable manner.

ITU membership reads like a Who's Who of the ICT sector. We're unique among UN agencies in having both public and private sector membership. So in addition to our 193 Member States, ITU membership includes ICT regulators, many leading academic institutions and some 700 tech companies.

In an increasingly interconnected world, ITU is the single global organization embracing all players in this dynamic and fast-growing sector.

1. **Organizational Unit**:

The Telecommunication Standardization Bureau (TSB) fulfills the objectives of the Union relating to telecommunication standardization, by providing secretariat support to groups studying technical, operating and tariff questions and facilitating the adoption of standards (“Recommendations” in ITU parlance) in these areas with a view to standardizing telecommunications and information technology on a global basis. In order to achieve these objectives, the Telecommunication Standardization Bureau works in accordance with the instructions of the World Telecommunication Standardization Assemblies (WTSA), Telecommunication Standardization Study Groups and the Telecommunication Standardization Advisory Group. TSB, headed by an elected Director, provides the technical, administrative and logistic support for the assemblies and for the meetings of the groups mentioned.

The Study Groups Department (SGD) is responsible for facilitating, managing and supporting the work of the ITU-T study groups in the development of global telecommunication standards (ITU-T Recommendations) and other documents and databases related to standardization. It provides the counsel and secretariat for the Sector's study groups, focus groups and other ad hoc groups. Particular attention is given to "Bridging the Standardization Gap", i.e., to strengthen the participation of developing countries in the standards making process. The Department maintains close relations with the ITU Radiocommunication and Telecommunication Development Sectors and takes part in their work as required. Likewise, it cooperates with other global standards organizations such as ISO and IEC as well as recognized industry forums and consortia.

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| 1. **Organizational context:** (Describe the organizational setting of the post and the purpose of the post as well as any supervision given or received)   Many people all over the globe experience the irritating phone calls or calls from parties pretending to be legitimate business ventures (e.g., representatives of banks, health insurance companies, etc.). Technically, these calling parties use the so-called spoofing number – which in essence is the manner in which the calling party number can be replaced with the number of an official enterprise or anyone of trust. As a result, the spoofing numbers as well as robocalls, along with other similar attacks make lives of the customers uncomfortable and unsecure.  The number spoofing is possible due to the gaps available in current signalling protocols which play a cornerstone role in providing different ICT services from the simple audio/video sessions to the complex digital financial services widely used over the globe. These protocols and telecommunication networks were designed without consideration for security and privacy. It enables attacks on ICT infrastructure including exploiting signalling protocols used for different ICT services.  Since 2016, ITU-T is developing standards which may help to mitigate this issue. Among the solutions is the use of digital signature (digital certificates) in the signalling exchange which may guarantee the trustworthiness of the sender. All related outcomes and related current ITU activities on this matter are available on the dedicated webpage at: <https://itu.int/go/SIG-SECURITY>. |

## **Terms of Reference / Internship Objective:**

Under the supervision of the ITU-T SG11 Advisor, the Intern will:

* Learn about ITU-T standards on signalling security and regulations in place to stop number spoofing.
* Analyse current situation on number spoofing and robocalls, including AI-based calls and their consequences over the globe.
* Attend training sessions, workshops and webinars to enhance technical skills and knowledge of telecommunication technologies and protocols.
* Facilitate implementation of ongoing projects, activities and organization of events related to the signalling security issue and related aspects;
* Facilitate the involvement of new interested parties on these activities;
* Write surveys and reports related to signalling security issues, and related aspects;
* Support in carrying out preparatory work for related events, meetings and attend the events, when required;
* Prepare related administrative and technical correspondence, including briefings, background papers on related activities and respond to external and internal inquiries;
* Assist with promoting related activities and events;

1. **Competencies**

**Technical Competencies** *(Examples of technical competencies are knowledge of regulatory frameworks, ERP or project management methodologies, etc.):*

Good analytical skills; Effective Communication; Learning and Knowledge Sharing; Organizational Commitment; Results-Focused, and; Teamwork and Collaboration; General Knowledge of Telecommunications.

The candidate will be integrated in a team, within the Study Group Department of the Telecommunication Standardization Bureau, under the supervision of a TSB SG Counsellor/Advisor. Regular contacts and reporting on a weekly basis are expected. The candidate will interact with ITU Member States, Sector Members and other stakeholders who participate and contribute to ITU-T Activities.

1. **Qualifications required**
2. **Education**:

University degree in computer science, information systems, telecommunication, or a related field. Other university degrees will be considered based on the areas of the research.

1. **Work experience**:

No work experience is required.

1. **Languages:**

Knowledge of one of the six official languages of the Union (Arabic, Chinese, English, French, Russian, Spanish) at advanced level and knowledge of a second official language at intermediate level. Knowledge of a third official language would be an advantage. (Under the provisions of Resolution No. 626 of the Council, a relaxation of the language requirements may be authorized in the case of candidates from developing countries: when candidates from such countries possess a thorough knowledge of one of the official languages of the Union, their applications may be taken into consideration.)

1. **Training and Learning Elements:**

The candidate will acquire knowledge and experience of:

* Signalling and networking standardization activities, including network architectures and related protocols;
* Signalling security issues, including the use of digital certificates in signalling exchange;
* Combating number spoofing.

Learning will be structured and will take place through direct involvement in participation in ITU meetings and/or workshops/webinars, by studying ITU reports, surveys, studies or activities related processes, by mentoring and on-the-job training.

1. **Additional information** *(Additional space for comments that have not been mentioned in the above sections, if any.)*

The helpful links below provide more details:

* ITU activities and outcomes on signalling security <https://itu.int/go/SIG-SECURITY>
* ITU-T SG11 Signalling requirements, protocols, test specifications and combating counterfeit telecommunication/ICT devices, <https://itu.int/go/tsg11>.