Terms of Reference

Title: Associate Software Developer	Organisational Unit: Operations and Technology Support Branch, Technology Hub and Logistics (OTSB/THL)
Post Level: P-2	
Reports To: Head, Technology Hub and Logistics	

1. Organisational setting:

With the destruction of the final remaining stockpiles of declared chemical weapons in July 2023, the Organisation, while continuing to implement its disarmament mandate, has been deepening its focus on preventing the re-emergence of chemical weapons, with efforts being focused on the areas of verification, capacity development, engagement and organisational governance for the enhancement of chemical security internationally. The Technology and Training Hub (TTH), housed at the Centre for Chemistry and Technology (CCT), supports these endeavours by ensuring preparedness to conduct the mandated activities of the Organisation through the provision of logistical support, the maintenance of the equipment throughout its lifecycle, and the development of comprehensive knowledge about emerging technologies, gained through the monitoring and evaluation thereof.

2. Main purpose of the post:

The Project 'Development of Test and Validation Capabilities for Technologies' aims at establishing in-house capabilities at the Technology and Training Hub of the Centre for Chemistry and Technology to serve as a structured and formalized platform for the identification, monitoring, testing, and validation of current and emerging technologies of relevance to the Convention, for empowering the Technical Secretariat to remain vigilant of scientific breakthroughs and technological advancements, proactively responding to the threats and challenges they give rise to, and aptly capitalising on their potential for reinforcing its verification and non-proliferation mandate through the incremental modernisation of the Organisation's equipment pool and a broadened portfolio of capacity building activities and training offered to stakeholders for countering an enlarging spectrum of chemical threats.

The JPO will lead the development and implementation of a software tool which advances the strategic foresight and systematic technology integration capabilities of the Organisation. The role encompasses the development of a cohesive architecture that integrates back-end functionalities -inclusive of a data pipeline for horizon scanning which incorporates data extraction models and Natural Language Processing functionalities, a technology-testing prioritisation mechanism, and scalable databases for storing the information accrued through the horizon scanning, and the test and validation activities of the technologies- with a front-end solution which empowers the end-users to access and interact with holistic and timely insights on technological advancements relevant to their activities.

3. Duties and responsibilities:

1) Development of the Software Back End.
   - Collaborating closely with Head Technology Hub and Logistics, the Associate Project Coordination Officer and other relevant stakeholders to translate the pre-defined core capabilities of the horizon scanning tool, of the technology-testing mechanism, and of the repository of information into technical specifications which will guide the development thereof, ensuring their alignment with the project's objectives.
   - Developing a data pipeline dedicated to horizon scanning activities, incorporating a data extraction module to gather information from a diverse range of input sources and digital repositories.
   - Developing and integrating in the data pipeline for horizon scanning a data processing and

analysis module which leverages ML algorithms and NLP techniques for keyword extraction and ranking, sentiment analysis, text summarisation of relevant corpora, and topic clustering.

- Developing a technology-testing prioritisation matrix which systematically ranks the order in which technologies should be tested and validated based on a scoring mechanism which quantifies the risks associated with the adoption of the technology, and the prospective beneficial value.
- Designing efficient and scalable tiered database system, implement ETL pipelines, and indexing for ensuring efficient data retrieval.

2) Development of the Software Front End
- Develop a dynamic user interface which present data insights interactively, ensuring adherence to UX best practices.
- Implement REST APIs to establish interaction between the front-end components and server-side units.

3) Configuration of Hosting Environment
- Perform evaluation of services offered by cloud providers, considering pre-build algorithmic models offered, databases services, support services, and cost structures offering insights on which provider best aligns with the needs and objectives of the Project.
- Set up a reliable cloud hosting environment to deploy the application, with a focus on modularity, scalability, and security.

4) Software Deployment and Iterative Improvements
- Maintain communication with the Associate Project Coordination Officer to ensure the deployment timelines of the software application align with the Project's deliverables timeline.
- Improve the developed architecture and back-end codebase for enhancing the efficacy of the software's capabilities.
- Refine the UI creation based on feedback received from end-users, ensuring that a user-centric digital solution is being maintained.
- Monitor application health post-deployment, utilising logging and monitoring tools to identify and troubleshoot performance issues swiftly.

4. **Minimum Qualifications Required:**

<u>Education</u>:

- An advanced university degree in Computer Science, Information Technology or a related field. A first level university degree in a related field in combination with qualifying experience (4 years) may be accepted in lieu of an advanced university degree.

<u>Experience</u>:

- A minimum of two years of working experience with an advanced university degree.
- Knowledge of Programming Languages, Network Protocols and Web Scraping Frameworks.
- Experience in evaluating metrics and statistical tests for machine learning.
- Knowledge of database architecture and management.
- Understanding of the principles and patterns of UI/UX.
- Knowledge and understanding of cloud computing.
- A good understanding of various domains of emerging technologies, defining their scope and boundaries with precision would be advantageous.

<u>Competencies (required knowledge, skills, abilities, attitudes and behaviours)</u>:

- Communication: Ability to listen, write, adapt, persuade, and transform. Speaks fluently; expresses opinions, information, and key points of an argument clearly; presents information with skill and confidence. Has knowledge of effective and appropriate communication and has the ability to use and adapt that knowledge in various contexts
- Client orientation: Ability to work effectively with peers, partners, and others who are not in one's line of command, positively impacting business performance. To serve both internal and external clients and build sustainable relationships.
- Accountability: Ability to drive for continuous improvement of results. To take responsibility for the

delivery of agreed results and monitor and maintain quality of work.

- Creativity: Ability to develop and produce new and useful ideas or insights and to implement them at work. To create innovative ways of designing projects or outputs. To find new solutions for "business as usual" problems, leveraging on new technologies and trends.
- Commitment to Continuous Learning: Ability to take initiative in learning and implementing new concepts, technologies and/or methods. To commit to continually improve skillset by gathering new knowledge.

Language requirements:

- Fluency in English is essential and a good working knowledge of one of the other official languages (Arabic, Chinese, French, Russian, Spanish) is desirable.

Other skills:

- Proficiency in Microsoft Office (Word, Excel, Power Point, Outlook, Teams, etc.)

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5. **Training and Learning:**

The JPO will benefit from the following specific training and learning modalities/opportunities in the receiving office: Project Management

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6. **Work relationships/partnership:**

The JPO will report directly to the Head, Technology Support and Logistics of the Operations and Technology Support Branch (OTSB) of the Inspectorate Division. There will be direct working links to all members of the Technology Hub specifically the Associate Project Coordination Officer, the members of the Project 'Development of Test and Validation Capabilities for Technologies' from the Technical Secretariat as well as external partners and supplier, as required.