STAGE DE RECHERCHE – MASTER 2
Année universitaire 2024-2025
PROPOSITION DE STAGE

Titre	**Advancing Smart Building Interoperability: Implementing and Validating Semantic Data Integration**
Descriptif (précisez si le sujet peut déboucher sur une thèse)	**Introduction**: In the current building industry, various models related to design, construction, and operation are developed using different tools and managed by separate teams. However, there is often a lack of coordination in organising these data models. As a result, significant inconsistencies arise, not only in the data structure but also in the naming of functions. This leads to the challenge of dealing with heterogeneous data sources, such as Building Information Models (BIM), Building Energy Models (BEM), and Building Management Systems (BMS). These discrepancies pose a major obstacle to creating intelligent and innovative applications for smart buildings. Building on the foundational work of harmonising data sources using the Brick ontology, this internship aims to implement and validate the semantic data integration approach in real-world smart building scenarios. The focus will be on developing practical applications that demonstrate the benefits of enhanced interoperability. Key Objectives: 1. Implementation of Semantic Data Model: - Develop a comprehensive semantic data model that integrates BIM, BEM, and BMS data using the Brick ontology. 2. Performance Evaluation and Optimization: - Conduct thorough performance testing of the semantic data integration system. - Optimize query efficiency and data processing for large-scale building data sets. 3. Interoperability Validation: - Test the interoperability of the developed system with existing building management platforms. - Evaluate the ease of integrating new data sources into the semantic model. 4. Documentation and Knowledge Transfer: - Develop comprehensive documentation for the semantic data model and integration process. - Create tutorials and guidelines for future developers to extend the system.
Compétences requises	Informatics, programming (python, etc.), Digital Twins, Interoperability, BEM tools (such as EnergyPlus, IDA-ICE), Ontology (such as Brick, SSN, BOT), BIM, BMS
Maître de stage (nom, , téléphone et email)	FARAZDAGHI Elham : efarazdaghi@estp.fr ELMEOUCHE Rani

Laboratoire /entreprise d'accueil	IR- ESTP, 28 avenue du Président Wilson, 94230 Cachan
Durée	6 mois
Gratification	Selon conditions légales master 2 Recherche (Remboursement 50% titre de Transport ; Tickets Restaurants)