Assignment 02 – Applications of Smart Building Technology (2024-2025)

Smart building technology can be used to automate processes to control and optimise building systems and performance. It can also enable building owners and occupants to control and manage the building facilities and building spaces in an intelligent and useful way. The possible types of applications of smart building technology are limited only by your imagination. Prevalent use cases include lighting, HVAC, security and access control, fire safety, energy management and predictive maintenance.

Objective

To evaluate the key success factors of adopting and applying smart building technology.

Methodology

This assignment is intended to strengthen what you have learned during the lectures, by investigating the related topics further and by relating your learning to practical situations. Students are recommended to apply the knowledge and information obtained from the lectures to critically evaluate the applications in real life.

Acting as a Smart Building Specialist, you are required to study the applications of smart building technology for a high-rise commercial office + hotel building complex project in Hong Kong. You should provide professional advice to the client on the planning, design, specification, selection and implementation of the related smart building systems for the project. Essential assumptions can be made for the project to develop the necessary information and facilitate the design and implementation of suitable smart building technology options and recommendations.

Report Submission

Each student shall prepare a technical report of not more than twenty (20) A4 pages to explain the findings of the investigation in a systematic and logical manner. The contents of the report shall address the following aspects. Other important issues may also be included.

(a) Potential benefits and value that the smart building technology can bring to the project
(b) Proposed smart building goals, essential features and digital services to be included
(c) Major components and key considerations for smart building technology options
(d) Strategies to make the building more efficient and sustainable
(e) Important factors and requirements for the system planning, design and operation

Detailed calculations and technical information are not required, but essential data, diagrams and illustration are useful to effectively present the findings and enhance the understanding. If appropriate, a list of references and proper citations should be provided to avoid plagiarism.

The report shall be submitted in electronic PDF format. The assessment criteria of the report include quality of the content, organization, clarity of thought, and report writing skills. The report will be evaluated on synthesis of information during the course and from your own reading/study, and evidence that you have thought about the subject and the lecture topics in some depth. A clear structure and a logical argument is important and you should provide evidence of critical thinking, originality and effective writing.

Useful References

Bakker R., 2020. *Smart Buildings: Technology and the Design of the Built Environment*, RIBA Publishing.

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Habibi S., 2020. *Building Automation and Digital Technologies*, Woodhead Publishing, Cambridge, MA & Kidlington, UK.

HKGBC, 2021. *Hong Kong Smart Green Building Design Best Practice Guidebook*, Hong Kong Green Building Council Limited (HKGBC). https://www.hkgbc.org.hk/eng/resources/publications/Files/HKGBC_Smart-Green-Building-Design-Best-Practice-Guidebook.pdf

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RIBA, 2024. *Smart Building Overlay to the RIBA Plan of Work*, Royal Institute of British Architects (RIBA), London. https://www.architecture.com/knowledge-and-resources/resources-landing-page/smart-building-overlay-to-riba-plan-of-work

Sinopoli J., 2016. *Advanced Technology for Smart Buildings*, Artech House, Boston.