Princess Chulabhorn Science High School Trang

Urine bag management systems for in-patient department

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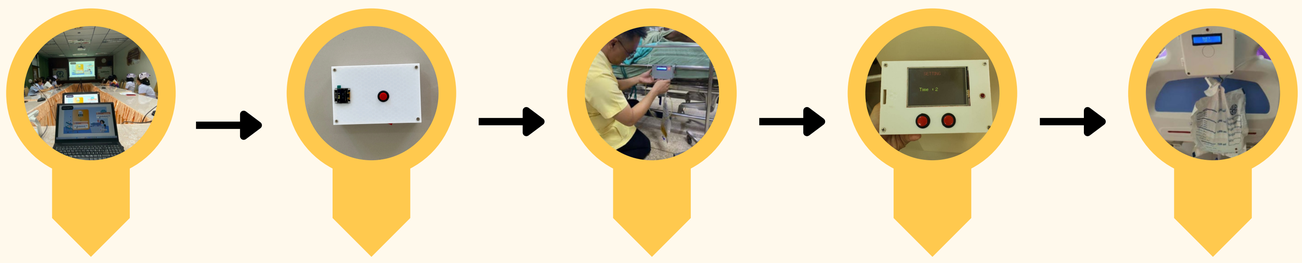
Problem

- Thai hospitals serve a high volume of patients, which contrasts sharply with their limited staff.

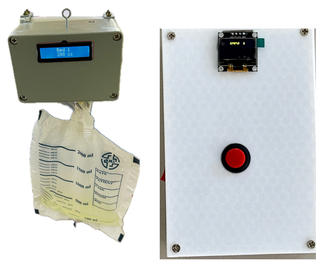
- One nurse is responsible for multiple tasks, including managing urine bags.

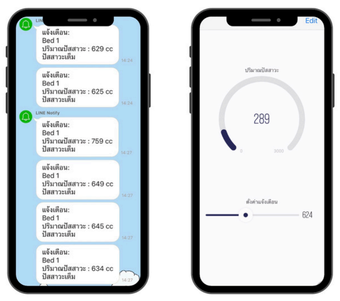
- Managing urine bags in each patient is complex.

Framework



- **FIRST PROTOTYPE**

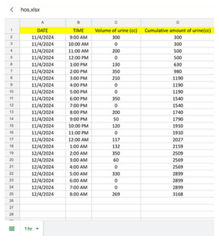




SCAN HERE

- **SECOND PROTOTYPE**

- **THIRD PROTOTYPE**



Google Sheets

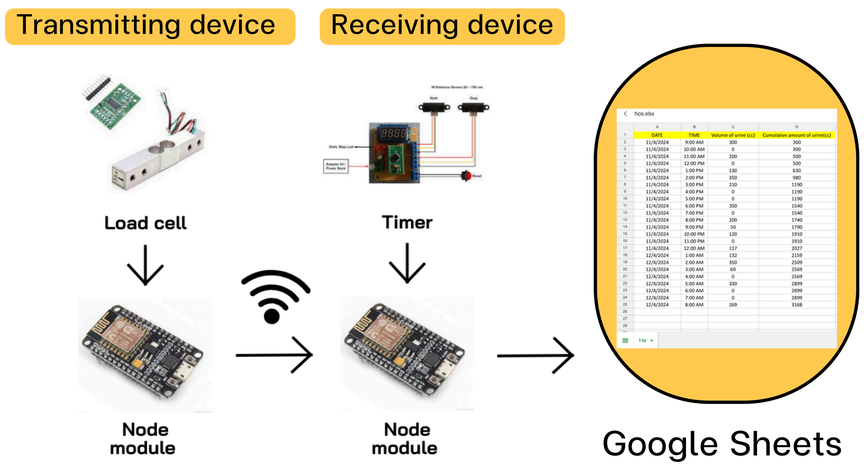
Finding

test with **Trang hospital**

Accuracy of **99 %**

Equipment Design	Excellent level: 4.75	
Suitability of design for use	♥♥♥♥♥	4.50
Adequacy of equipment size for use	♥♥♥♥♥	4.86
Suitability of equipment weight for use	♥♥♥♥	4.90
Display Design	Excellent level: 4.75	
Font size suitability	♥♥♥♥♥	4.50
Interesting design format	♥♥♥♥	4.86
Easy-to-understand layout	♥♥♥♥♥	4.90
Operational Efficiency	Excellent level: 4.87	
Effective problem-solving capability	♥♥♥♥♥	4.83
Suitability in use	♥♥♥♥♥	4.90
Convenience of use	♥♥♥♥♥	4.90
Easy usability	♥♥♥♥♥	4.86

- **WORK PROCESS**



Interpretation and Conclusion

The project was successful. Urine bag management systems for in-patient department consists of 2 devices: a transmitting device that measures weight and transmits data, and a signal receiving device that processes this data. A satisfaction survey of 30 participants reported a high overall user satisfaction score of 4.86 ± 0.37, with the highest satisfaction in efficiency (4.87 ± 0.37). The device demonstrated a volumetric conversion accuracy of 99% compared to standard instruments.

Reference

Huang, J.-J., & Feng, C.-H. (2023). *On Developing an Intelligent AIoT Urine Bag by Integrating AHP and QFD.* Communications in Computer and Information Science, 60-67.

Lee, A., Lee, M., & Yeh, H.-J. J. (2023). *An IoT- Based Automatic and Continuous Urine Measurement System.* BioMedInformatics, 3(2), 446-454.

Sarkar, M., Nandi, S., & Sayamuddin, A.-J. (2022). Implementation of IoT-Based Smart Healthcare Monitoring System. Lecture Notes in Electrical Engineering, 97-107.