



NATIONAL RESONANCE GROUP SURVEY RESULTS

(WP 9/D9.1)

Project Title:

ETAT: Education & Training for Automation 4.0 in Thailand

Project. No.610154-EPP-1-2019-1-DE-EPPKA2-CBHE-JP

Document control

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Introduction and aim

The ETAT project aims to create exemplary Education & Training Centers in the field of engineering education at participating EEC universities that are able to support as education hubs in the EEC region for industry-related education and training for engineers and young specialists. The following objectives are to be achieved with it:

- Modernization of Higher Education in Thailand based on the experience of European countries;
- Increase the employment rate of university graduates and implement the concept of Life-Long learning with the help of special training modules in the field of industrial automation;
- Development of partnerships with enterprises;
- Improve the quality and relevance of Higher Education in Thailand in the field of industrial automation;
- Establishment of 6 certified ETAT Training Centers at partner universities, which will be equipped with 24 special training places (respectively 4 ETAT Smart Labs per Thai university)
- Establishment of a platform for distance learning and cooperation between the partners for providing E-Learning & Cloud-based learning courses and for exchange of didactical documents and information.

ETAT Training Centers will be provided with teaching materials and certificated courses for different target groups (students, employees, post-graduates, trainees) as well as with the Thai trainers trained by EU university partners during the ETAT project.

Executive Summary

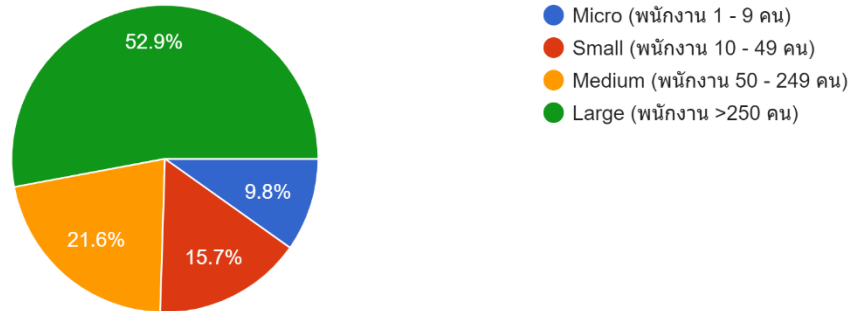
This survey aimed to collect the relevant data for setting up a business plan for the ETAT project. The participants belong to the National Resonance Group (NRG) in Thailand, including engineers and workforce of companies and institutions located in the EEC area and nearby. There are 51 participants altogether. They participated in an Automation workshop organized by 6 Thai Partners, BUU, KU, RMUTTO, KMUTNB, RRU, and KMITL. Then they were interviewed and answered the questionnaires.

The results show that most of the participants are from automotive industry with relatively large company size (more than 250 employees). They have basic knowledge about industry 4.0, especially in the control system. They may lack knowledge of Information Technology such as cyber security, data analysis, and high-level programming. They are eager to learn more about system analysis and design, control and HMI programming, IIoT and SCADA system, and programming and data analysis in general. Most of the participants prefer to have a workshop on 2 days at most, and where it takes place is not important (at university or company). The trainings days could be work days (Mon - Fri) or weekend (Sat - Sun). One course cost should not exceed 3,000 - 5,000 THB.

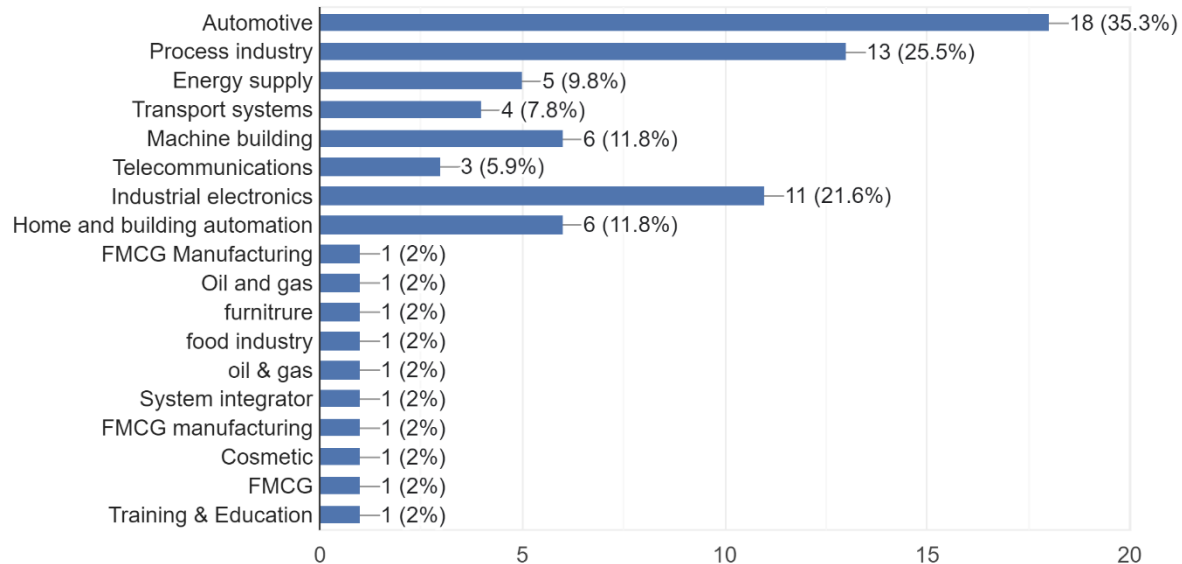


Section 1 – Background Analysis

The Survey participants were asked what their background is. A total of 51 participants took part in this survey.



Most of the participants come from larger companies with more than 250 employees.



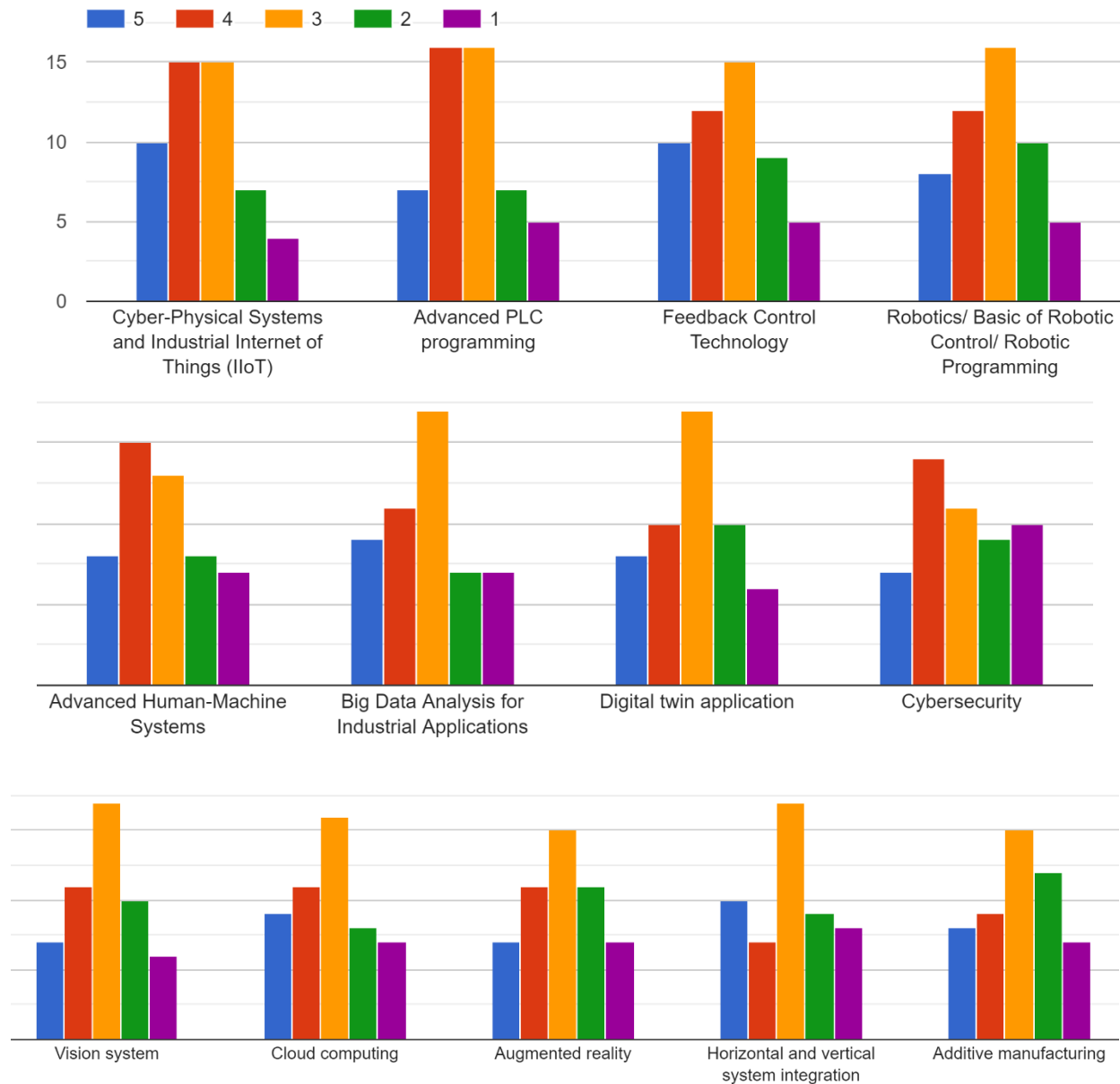
The largest group of the industry is the automotive one. The second and third ones are process industry and industrial electronics respectively.



Section 2 - Automation 4.0 Knowledge

This section provides information about your current knowledge about automation in the context of Industry 4.0.

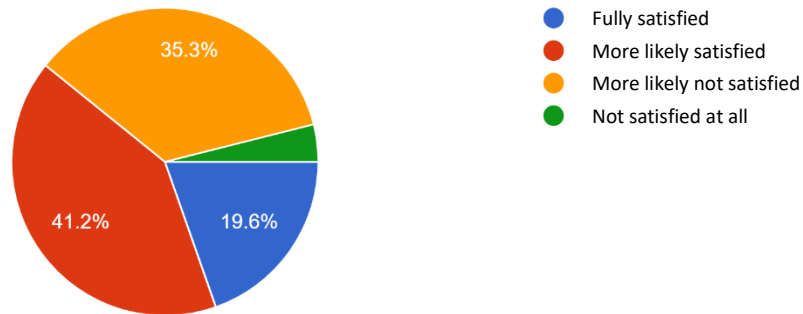
1. How knowledgeable are you in the following Automation 4.0 technology areas? (from 1 to 5, with 1 being the expression of minimum level and 5 the maximum)



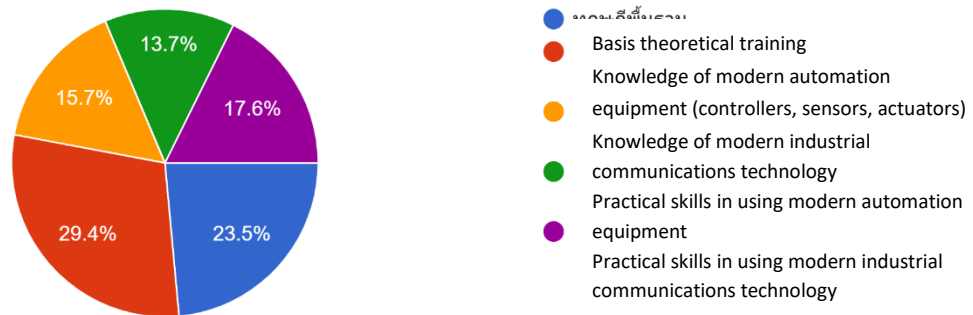
Most of the participants have generic knowledge in Industrial IoT, advanced PLC programming, Feedback control, robotic control, HMI system, digital twin, etc. Some of them may lack knowledge of cyber security, big data analysis, horizontal and vertical system integration, and cloud computing. This indicates that they may need help in the area of Information Technology, since Industry 4.0 is the integration of control engineering and information technology.



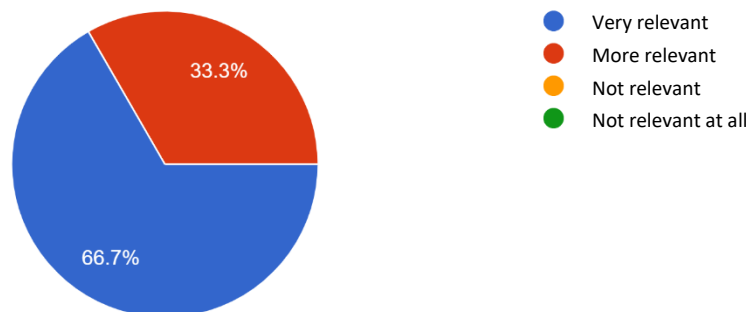
2. How satisfied are you with the quality of qualification of specialists in industrial automation and control?



3. Which aspects of the training of these specialists would you identify as the most problematic?

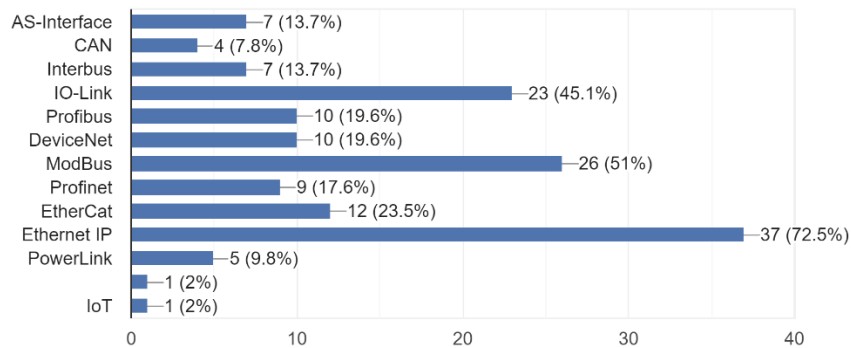


4. Estimate the degree of relevance of the modernization of automation and control equipment in your company.

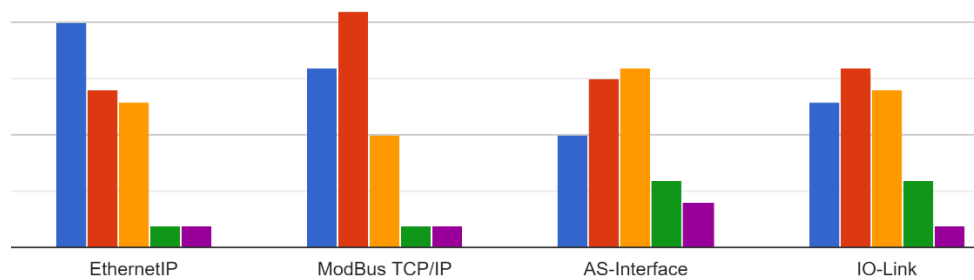




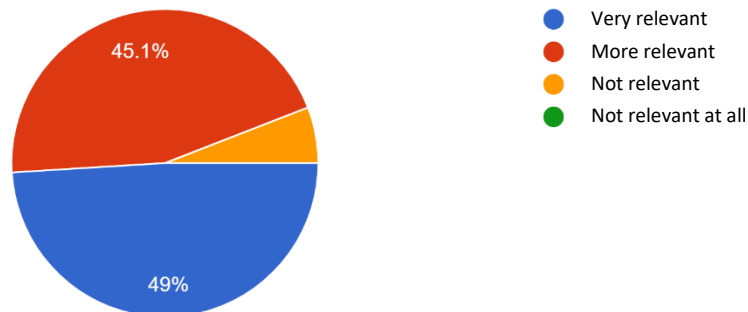
5. Which of the modern technologies and protocols of industrial telecommunications are used at your enterprise? (multiple answers possible)



6. How important is it for an automation specialist to know the following communication technologies and protocols?

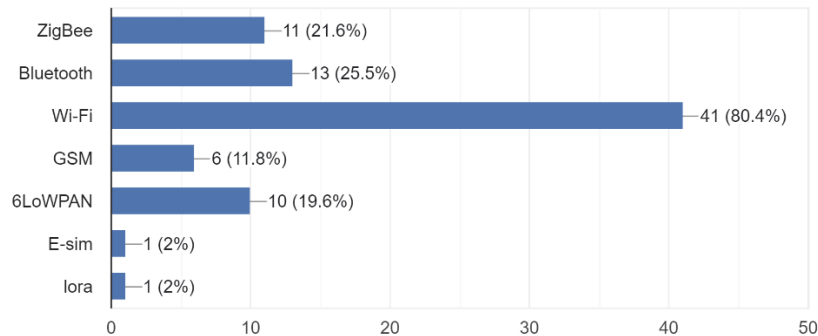


7. How relevant is the development of wireless communication facilities in the field of industrial automation and control?

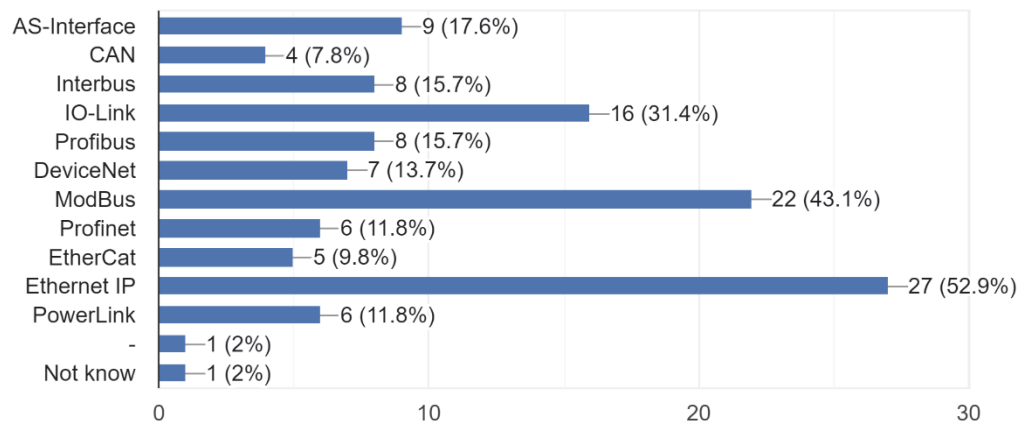




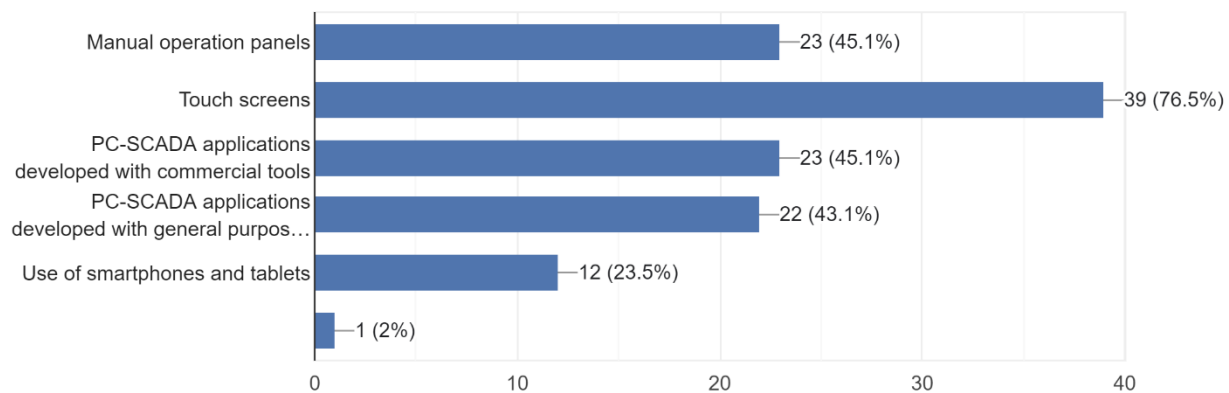
8. In your opinion, which of the presented wireless technologies are the most promising from the point of view of their use in automation systems?



9. Which of the modern technologies of industrial telecommunications or their combinations seem to be the most promising for you in the future? (e.g. CAN-Bluetooth-Modbus TCP/IP)

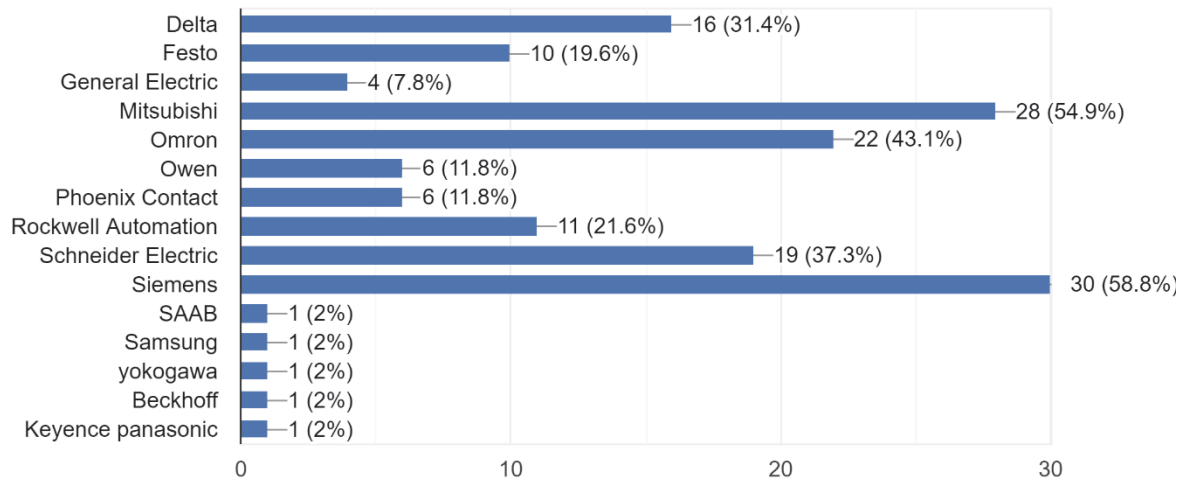


10. What type of Human-Machine Interaction (HMI) systems do you usually use?

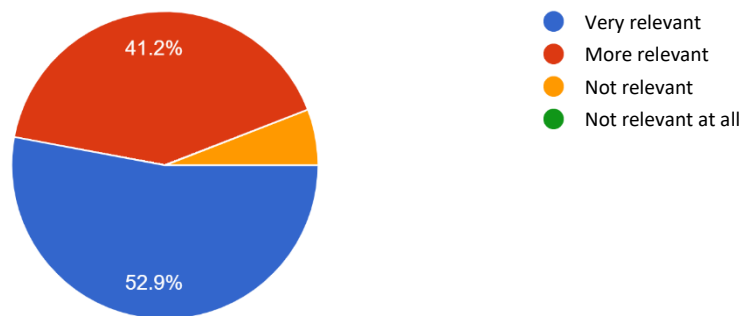




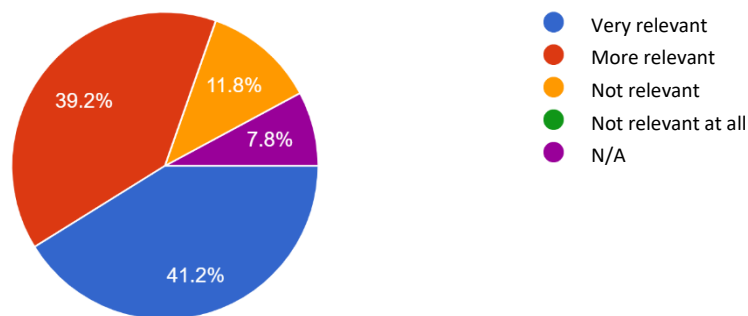
11. What manufacturers/brands are used at your enterprise for industrial automation (e.g. PLC) and HMI?



12. How important is the binding to the equipment of a certain manufacturer when organizing courses on modern automation technologies?

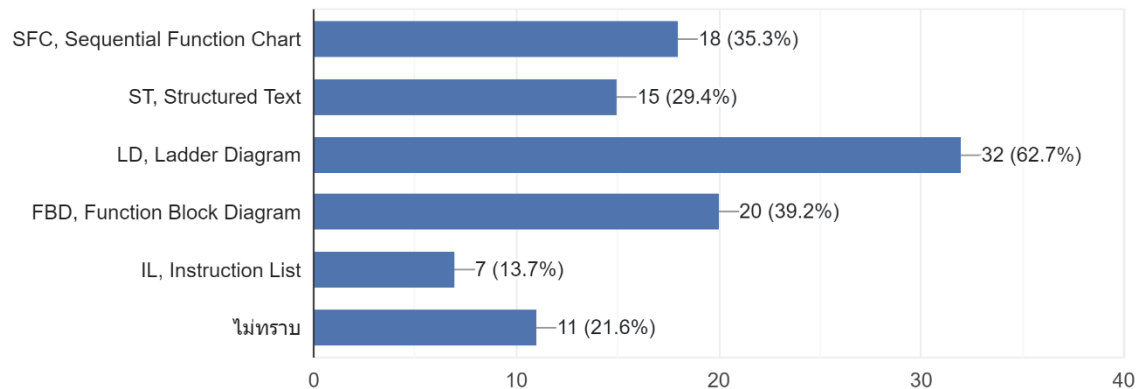


13. How important is training in the IEC 61131-3 programming standard for your company?

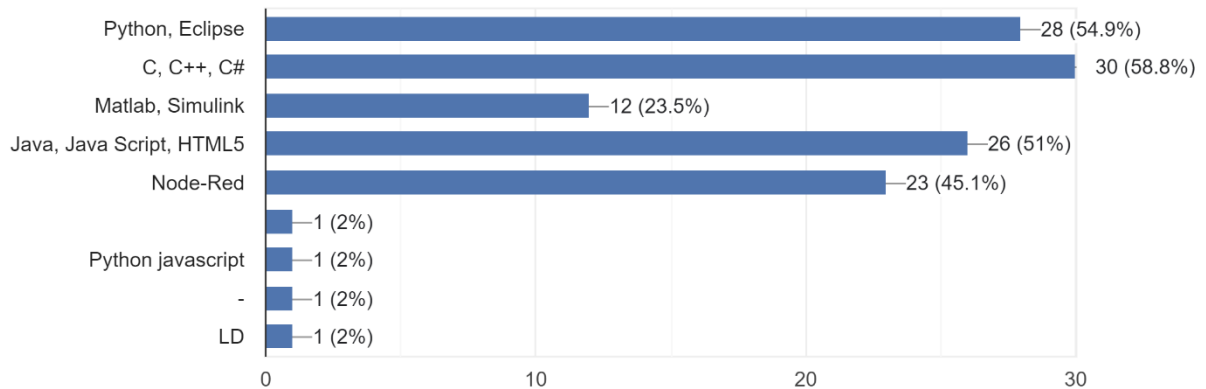




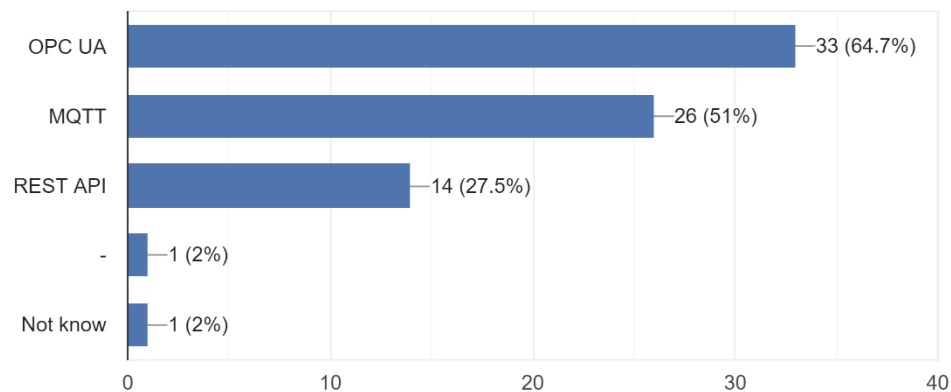
14. Which other programming languages based on IEC 61131-3 standard are most appropriate in your company?



15. What other programming languages do you consider in your company of interest for the integral development of automation and control systems?

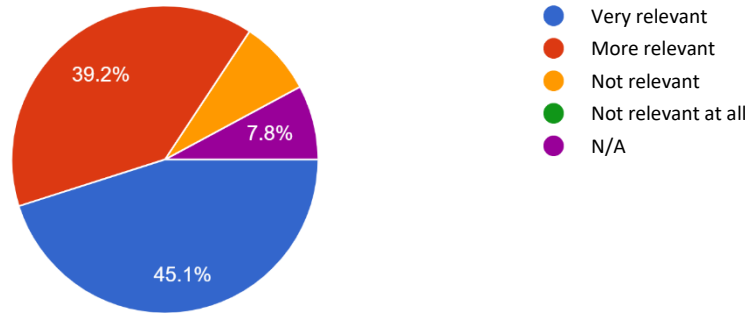


16. What IoT communication protocols do you consider of interest to your company?

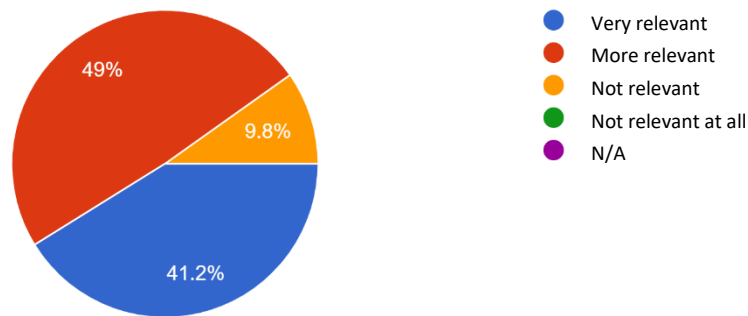




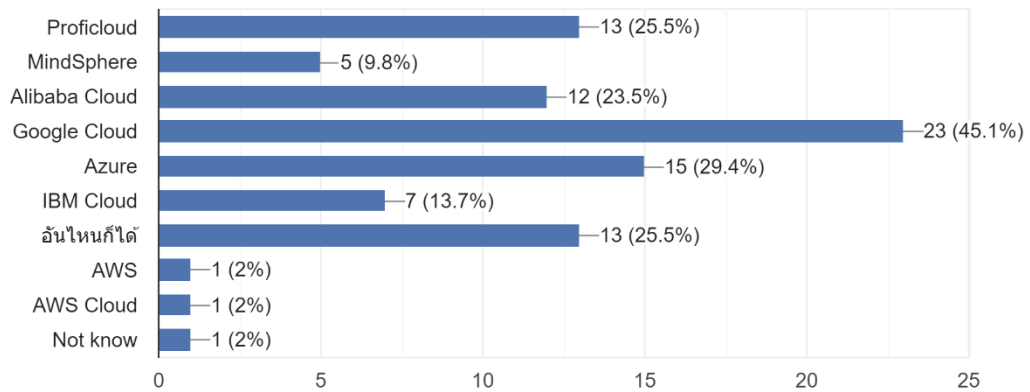
17. Do you think the integration of Mathcad/Simulink and/or classic programming languages (C/C ++, C #, Java...) into a PLC in the future is important for you?



18. Do you consider that using cloud-based control systems will be important in the future?

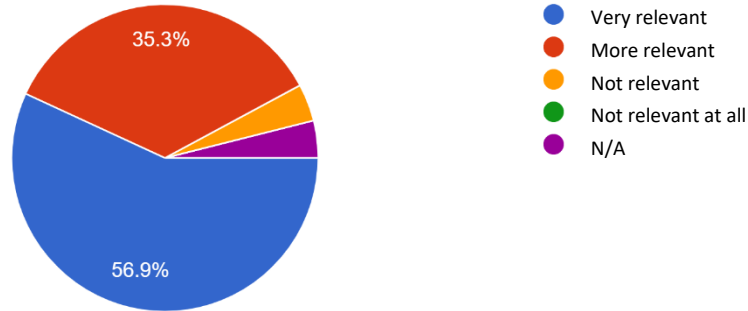


19. Which cloud system do you estimate is more useful for you?

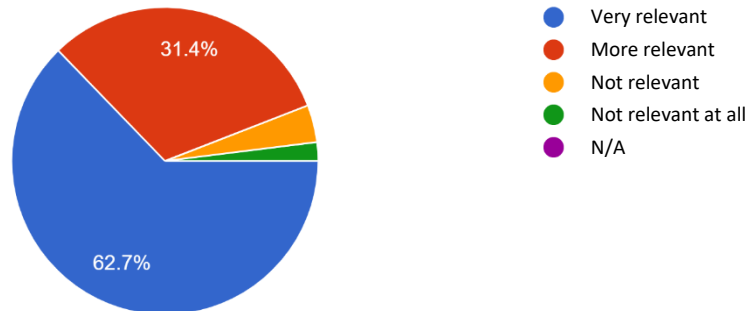




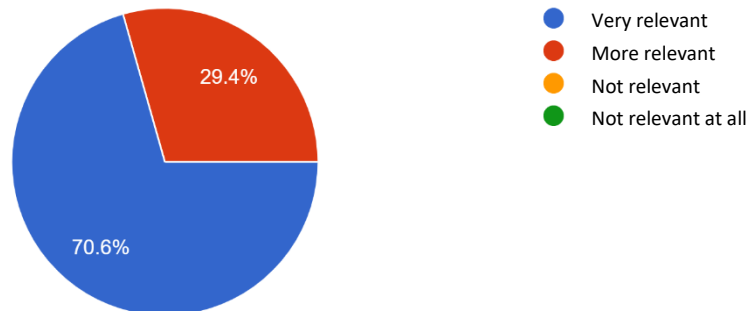
20. How important is it for you to use open and flexible PLCs that also support an ecosystem with user groups, apps and open source software?



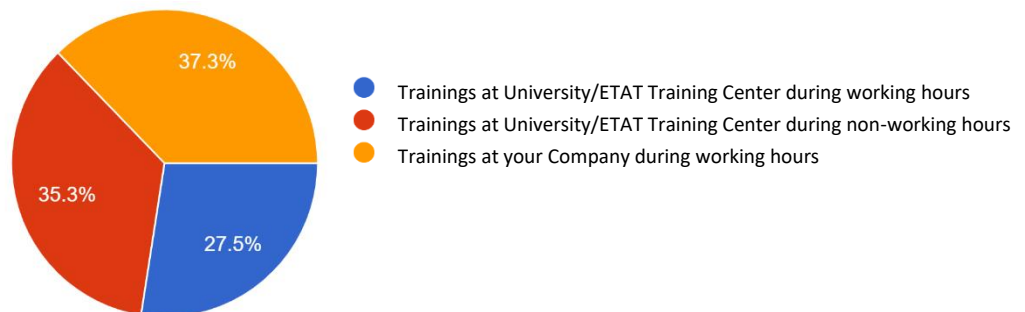
21. How important is it in the courses on industrial automation technologies to address the issues of implementation of safety automation means?



22. How relevant is the organization of professional courses for specialists in the field of industrial automation and control for your company?

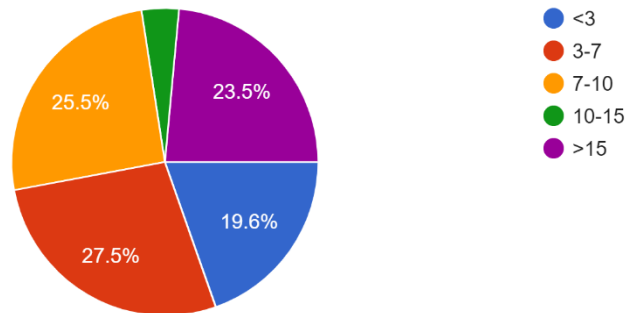


23. Choose the most appropriate form of further training for your company.

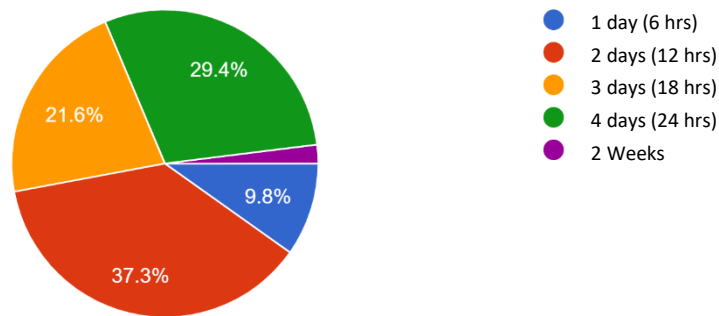




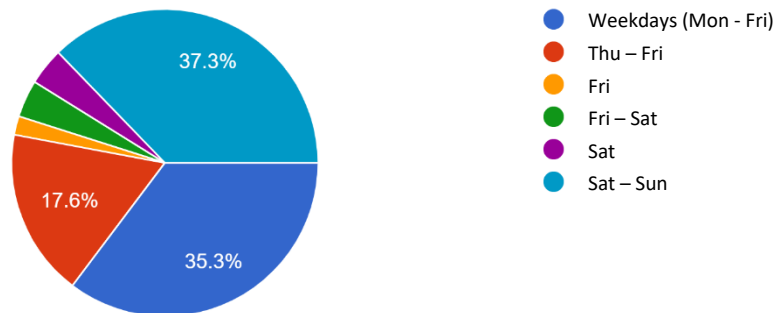
24. How many employees of your enterprise could attend trainings on modern automation technologies?



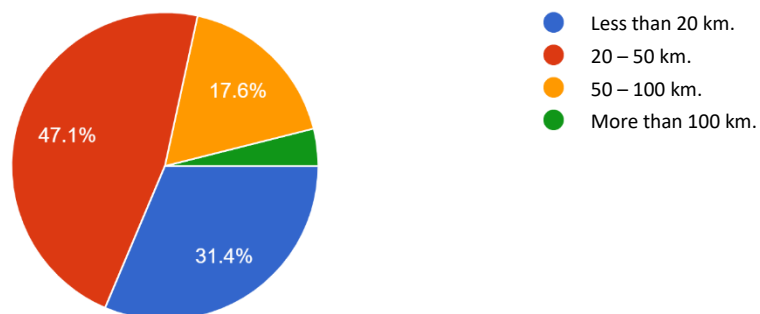
25. Select the most appropriate length of training.



26. Which days of a week are the most suitable for training?

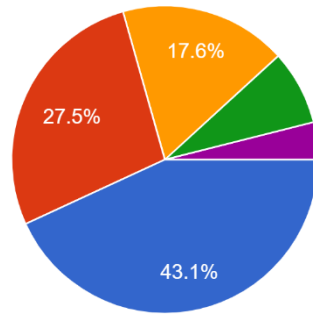


27. How far can you go for a training?



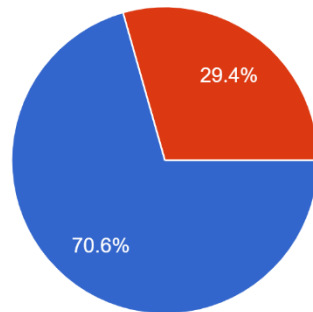


28. How much would you pay for a training course?



- Less than 3,000 THB/Course
- 3,000 – 5,000 THB/Course
- 5,000 – 10,000 THB/Course
- 10,000 – 15,000 THB/Course
- More than 15,000 THB/Course

29. Do you want your training credits to be kept at university Credit Bank?



- Yes, I want to keep my training credits in the University Credit Bank.
- No, I don't want to keep my training credits.

30. Which topics are more interesting for training?

