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DigiS: Building up a Digital Skills Alliance for the Enhancing of Programming Competencies

JOB DESCRIPTION

UAS Developer and Operator

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Methodology

A job description describes the general tasks and responsibilities of a position “UAS Developer and Operator”.

While an abbreviation UAV stands for “Unmanned Aircraft Vehicle” and is equivalent to term “drone”, an abbreviation UAS stands for “Unmanned Aircraft System” and represents a complex system consisting of UAVs, Ground control stations and other subsystems.

Therefore, the position has been renamed as “UAS Developer and Operator”.

Job descriptions as specified below comprises a list of competencies, responsibilities and duties, qualifications (such as education level, experience, specific skills, personal characteristics, certifications, licences and physical abilities) and competences necessary for this job including digital competencies and soft-skills.

1 Job Description

1.1 Job Title

UAS Developer and Operator

1.2 Job Overview

The UAS developer and operator creates hardware designs, software programs and combined solutions for UAS meeting end user business requirements. He/she takes active role in development process starting from user requirements analysis, system architecture and design, functional and performance testing, change management and final solution implementation into end user production environment. Regarding UAS operations he/she will operate UAS in several type of missions and final customer environments. During mission executions he/she will follow operations procedures specific for the UAS being used in the mission and comply to current regulatory conditions. Operator also processes collected data to generate outputs required by customer.

1.3 Responsibilities and Duties

- Assignment analysis
- Proposed solution of the problem
- Communication with end-users, assessment of proposed solutions and incorporation of comments
- Solving problems
- Designing hardware and software architecture of UAS solution to meet end user business requirements
- Selection of a suitable methodology of data collection with regard to the surrounding environment, climatic conditions and required outputs
- Selection of a suitable sensor for data collection
- Selection of appropriate software for planning and subsequent scanned data processing
- Development of UAS solution consisting in hardware and software designs
- Programming in the appropriate programming language based on analytical documentation
- Creating data and object structures and defining their relationships
- Creating hardware designs for UAS subsystems
- Testing applications and systems in simulation and testing environment
- Processing of system documentation of created code and documents for user documentation
- Creating analytical documentation of developed systems
- Maintenance of system software and design documentation
- Implementation of UAS solution in end user production environment
- Development of end user documentation and training programs
- Operations of specified UAS in several types of missions
- Measurement and acquisition of data in the field with respect to the required outputs

- Evaluation and processing of acquired data and their modification and updating
- Archiving and backup of acquired data
- Management of database files of acquired data
- Knowledge of the necessary regulatory requirements concerning UAS operations
- Monitoring current trends in related fields and technologies

1.4 Qualifications

- Secondary education with a school-leaving examination in the field of computer technology
- Secondary education with a school-leaving examination (without apprenticeship) in the field of computer technology
- Secondary education with a school-leaving examination in the field of applied electronics
- Secondary education with a school-leaving examination (without apprenticeship) in the field of applied electronics
- Secondary education with a school-leaving examination in the field of telecommunications
- Secondary education with a school-leaving examination (without apprenticeship) in the field of telecommunications
- Secondary education with a school-leaving examination in the field of automation
- Secondary education with a school-leaving examination (without apprenticeship) in the field of automation
- Secondary education with a school-leaving examination in the field of electronics
- Secondary education with a school-leaving examination (without apprenticeship) in the field of electronics

1.5 Competence requirements for the exercise of the profession

1.5.1 Vocational skills

- Creating system architecture
- Creating hardware designs of UAS by integrating existing hardware components and subsystems
- Programming in the appropriate programming language based on analytical documentation and development process
- Creating a user interface for UAS applications
- Setting up data scheme interconnection and data integrity
- Update and maintenance of design and system tools (e.g. code lists, parametric modules)
- Creating data and object structures and defining their relationships in collaboration with the task analyst
- Testing systems in simulation and testing environments
- Creating analytical documentation of developed systems
- Processing systemic documentation of the created code and data for user's documentation
- Implementation of general and special programs in the specified environment

- Control of the process of implementing all system changes in user implementations
- Testing and setting of user functions of the UAS
- Performing mission planning according to customer requirements, UAS available and other conditions
- Performing UAS pre-flight procedures and checklist
- Performing UAS mission execution in compliance with UAS operation procedures, regulatory requirements, ATC requirements, weather conditions etc.
- Processing, evaluation and control of acquired data
- Management of relevant technical and operational documentation in the field of aviation technology
- Choosing adequate digital technology for video capture
- Search, collection and sorting of acquired data and information
- Database management and backup

1.5.2 Vocational knowledge

- Analysis of user requirements, conditions, environment
- Principles of system software and hardware architecture
- Principles of programming and programming languages
- Informatics and characteristics of information systems
- Design of hardware and software systems
- Tasks' algorithmization
- Integrated development environment, software's testing and localization, operating systems
- Principles of hardware and software integration and communication
- Software tools for system simulations
- Photogrammetry and telemetry
- Basics of aviation physics, meteorology
- Procedures for working with aerial photographs and maps
- Working with a camera and filming with drones
- Computer processing of digital photography
- Regulatory concerning UAS operations
- Data processing & working with databases
- Control, maintenance and deployment of UAS in various sectors

1.5.3 General skills

- Computer skills
- System automation knowledge
- Maths and physics knowledge

- Meteorological knowledge
- Economic knowledge
- Legal knowledge
- Language proficiency in national language
- Language proficiency in English

1.5.4 Digital competences

- Analysing of customers' needs, conditions and environment
- Principles of system software and hardware architecture
- Principles of programming and programming languages
- Informatics and characteristics of information systems
- Designing hardware and software systems
- Tasks' algorithmization
- Integrated development environment, software's testing and localization, operating systems
- Principles of hardware and software integration and communication
- Software tools for system simulations

1.5.5 Soft skills

- Flexibility
- Autonomy
- Problem solving
- Systematic approach
- Following standard procedures and rules
- Lifetime learning
- Stress tolerance
- Active approach
- Team cooperation
- Effective communication
- Customer orientation
- Safety orientation
- Work planning and organizing
- Search capabilities and orientation in information
- Open and honest feedback
- Respect to values and individuals