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Technical Assistance for “A Smart Network for Technology Transfer and Commercialisation with Funnel Model (SMARTNET)”

Contract No: TR14C2.2.05-04/001

EUROPEAID/140284/IH/SER/TR

HANDOVER DOCUMENT (HD)

26.06.2023

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Transfer and Commercialisation with Funnel Model
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DISCLAIMER

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LIST of ABBREVIATIONS

AI	Artificial Intelligence
API	Application Programming Interface
AT	Acceptance Testing
CA	Contracting Authority
CISOP	Competitiveness and Innovation Sector Operational Programme
DS	Decision Support
DSS	Decision Support System
ERA	End Recipient of Assistance (Beneficiary)
EUD	Delegation of the European Union to Türkiye
GTU	Gebze Technical University
HD	Handover Document
HKU	Hasan Kalyoncu University
ICT	Information and Communication Technologies
IP	Intellectual Property
IT	Information Technologies
ITU	Istanbul Technical University
KE	Key Expert
MIS	Management Information System
ML	Machine Learning
MoIT/DoEUFP	Ministry of Industry and Technology Directorate of EU Financial Programmes
MVC	Model-View-Controller Pattern
OCU	Operation Coordination Unit
OCUD	Operation Coordination Unit Director
OS	Operating Structure
R&D	Research and Development
RCOP	Regional Competitiveness Operational Programme
SAP	Software Assurance (Warranty) Period
SME	Small and Medium Sized Enterprise
TA	Technical Assistance
TAT	Technical Assistance Team
TDZ	Technology Development Zone
ToR	Terms of Reference
TTI	Technology Transfer Intermediary
TTO	Technology Transfer Office
YTU	Yıldız Technical University

1. INTRODUCTION

Under Component I of the **A Smart Network for Technology Transfer and Commercialisation with Funnel Model (SMARTNET)** project, one of the primary activities is **Activity 1. Establishment of TTI Network and Development of Institutional Infrastructure** which aims to establish and operationalize **SMARTNET** by delivering training, mentoring/consulting and fundraising services to the target groups for supporting them to commercialize their technology-oriented business ideas.

Activity A.1.1. Development of TTI Network Software Platform focuses on the design, development, and operationalisation of the **SMARTNET Artificial Intelligence Based TTI Network Software Platform (SMARTNET Platform)**.

The **SMARTNET Platform** is designed as a web-based Management Information System (MIS) to serve as a comprehensive commercialization automation software and AI supported management decision support system. It aims to facilitate the coordination of technology transfer and commercialization activities while enabling efficient information flow among various stakeholders within the network. The platform consists of a set of modules tailored to address specific needs and provides a robust framework for managing and streamlining key aspects of the commercialization process.

The SMARTNET Platform offers a range of functionalities to support the ecosystem of Technology Transfer Intermediaries (TTIs) and stakeholders involved in entrepreneurship, mentoring, investment, and intellectual property management. By leveraging integration web services, artificial intelligence, and decision support capabilities, the platform enables seamless collaboration, data exchange, and informed decision-making.

This **Handover Document (HD)** is aimed to serve as a comprehensive guide to facilitate the seamless transition of responsibilities, knowledge, and resources of the SMARTNET Platform from the development team of the TAT to the operational team of ERA and marks a significant milestone in the project, ensuring a smooth and efficient transfer of ownership and operational control.

In this document, we will provide a detailed overview of the SMARTNET Platform, its key features, and the project's journey from inception to completion. We will outline the scope of the handover, encompassing specific tasks, responsibilities, and documentation to be transferred to the ERA's operational team. Additionally, we will present important information on the platform's configuration, user accounts, ongoing support, and maintenance arrangements.

The Handover Document is organised into these following sections:

1. **Introduction:** Brief overview of the purpose and scope of the handover document, including explanation of the handover process and its significance for the Smartnet Platform.
2. **Project Overview:** Description of the SMARTNET Platform's modules, architecture, and technology stack, including overview of the project timeline and milestones.
3. **Key Features and Functionality:** Description of the SMARTNET Platform's key features and functionality, including module interactions.
4. **Documentation:** Listing of all relevant documentation related to the SMARTNET Platform, including design documents, user manuals, technical specifications, etc.; as well as the details on where the documentation is stored and how it can be accessed.
5. **Support and Maintenance:** Description of ongoing support and maintenance arrangements for the Smartnet Platform, including contact information for support channels and escalation procedures.
6. **Conclusion:** Summary of the handover process and acknowledgment of successful completion.

Evidently, the success of this handover relies on effective knowledge transfer, open communication, and a shared commitment to maintaining the SMARTNET Platform's integrity and functionality. The TAT and the IT development team takes pride in delivering the SMARTNET Platform to this stage, and we are confident that the ERA's operational team will carry forward the vision and objectives with equal dedication. Finally, we would again like to extend our appreciation to all team members, ERA, stakeholders, and partners who have contributed to the development and success of the SMARTNET Platform.

2. PROJECT OVERVIEW

The **SMARTNET Platform**; is a web-based Management Information System (MIS) which acts as commercialisation automation software and a management decision support system that will coordinate the transfer of technology and commercialisation activities and provide mutual information flow in the network constituted by stakeholder TTIs.

Modules

The SMARTNET Platform is structured into different modules, each corresponding to a specific functional area. These modules include Entrepreneurs Management, Mentors Management, Investors Management, Intellectual Property (IP) Management, Integration Web Services, Artificial Intelligence and Decision Support, Standard and Custom Reporting, and System Management and Administration.

SMARTNET Platform consists of the following list of developed modules:

- Module 1 - Entrepreneurs Management
- Module 2 - Mentors Management
- Module 3 - Investors Management
- Module 4 - Intellectual Property (IP) Management
- Module 5 - Integration Web Services
- Module 6 - Artificial Intelligence and Decision Support
- Module 7 - Standard and Custom Reporting
- Module 8 - System Management and Administration

as well as two auxillary modules:

- Module 9 - Web Portal (Content Management System)
- Module 10 - e-Learning Platform (ME-Learning)

and a seamless Single-Sign-On integration with an external portal:

- Projects and Funds Portal (Funding Opportunities)

Architecture

The architectural design of the SMARTNET Platform follows the Model-View-Controller (MVC) architectural pattern, providing a structured and modular approach to organizing the system's components and facilitating separation of concerns. The MVC pattern divides the application into three interconnected components: the Model, the View, and the Controller, each responsible for distinct responsibilities in the system.

Technology Stack

The SMARTNET Platform is developed using C#, a widely adopted programming language for building robust and scalable web applications. It leverages the Microsoft .NET framework, providing a rich set of libraries and tools for rapid development and deployment.

The platform utilizes ASP.NET MVC framework to implement the MVC architectural pattern and facilitate the development of web-based user interfaces. For data persistence, a relational database management system (Microsoft SQL Server) is employed, ensuring efficient storage and retrieval of data. Additionally, the platform utilizes various front-end technologies such as HTML, CSS, and JavaScript to create a responsive and interactive user interface.

By adhering to the MVC architectural pattern and leveraging C# and associated technologies, the SMARTNET Platform achieves a modular, scalable, and maintainable architecture. The clear separation of concerns between the Model, View, and Controller components enables better code organization, facilitates independent development and testing, and enhances the overall flexibility and extensibility of the system.

Project Timeline and Milestones

On **November 4, 2022**, the Information Technologies department of YTU provisioned the server for the Smartnet MIS Platform. The necessary hardware resources, including CPU, RAM, and storage, were allocated to support the platform's operations. VPN and RDP information were provided to facilitate secure remote access to the server.

On **November 21, 2022**, the first test deployment of the Smartnet MIS Platform took place. The System Management Module and the preliminary version of the Content Management Module (for the public-facing Web Portal) were integrated and deployed on the domain **smartnet.yildiz.edu.tr**. This initial deployment allowed for testing and validation of the platform's core and basic functionalities.

To avoid confusion among YTU students and external users, on **December 15, 2022**, the domain name was changed to **test-smartnet.yildiz.edu.tr**. Additionally, updated modules, including the preliminary version of the Entrepreneur Management module, were deployed on this date. This deployment expanded the functionality of the platform and paved the way for the platform to start internal alpha-testing of the essential features required for managing entrepreneurs.

The same day, ME-Learning platform was also deployed to its respective server and the single sign-on (SSO) integration between the Smartnet MIS Platform and ME-Learning was configured and tested.

Starting on **January 24, 2023**, closed alpha-testing commenced on the developed modules deployed on the domain **test-smartnet.yildiz.edu.tr**. This phase involved the deployment and integration tests for the completed System Management Module including User and Role Management, Login Subsystem, Password Recovery, Content Management Module, and the updated Entrepreneur Management Module. ERA members actively participated in the testing process, providing valuable feedback and insights to improve the platform's functionality and user experience.

Upon the completion of the Entrepreneur Module on **March 15, 2023**, the production server was provisioned under the domain name **smartnet.global**. Subsequently, on **March 20, 2023**, the first beta-program was initiated, inviting approximately 30 entrepreneurs to participate. This beta-testing phase allowed for the first real-world user feedback and further validation of the platform's performance and usability.

Building upon the feedback received from the beta-program and with the approval of ERA, the TAT proceeded with the deployment and opening of modules of the Smartnet MIS Platform. On **March 28, 2023**, the first call for entrepreneurs on the live system was initiated. This was followed by the deployment and opening of the Mentorship Module on **April 3, 2023** and the Investor module on **April 17, 2023**, after a successful beta-testing period conducted by ERA members and a closed group of invited users.

On **May 22, 2023**, the IPR module was deployed to the production server. This module provided functionalities related to managing and protecting intellectual property rights and best practices within the Smartnet MIS Platform, catering to the needs of the ERA and other institutional partners and stakeholders in the ecosystem.

While the Reporting Module was present by design in all available modules, **May 22, 2023** saw the final operationalisation of the module on the Smartnet MIS Platform enabling the generation of standard and custom reports, providing users with data export capabilities, valuable insights and data-driven decision-making capabilities.

The final module deployment occurred on **May 26, 2023**, with the deployment of the AI Module. This module leveraged Artificial Intelligence (AI) technologies to enhance decision support and provide advanced features to both the users and the administrators of the Smartnet MIS Platform.

Final Acceptance Testing (AT) for the SMARTNET Platform was finalised on **June 26, 2023**, with the signature of the SMARTNET Platform Sign-Off Document indicating that the Platform has been thoroughly tested and evaluated by the ERA, Partners and stakeholders against the defined acceptance criteria and providing a testament to their satisfaction with its performance and readiness for production deployment.

3. KEY FEATURES AND FUNCTIONALITY

Throughout this section, we will present the key features and functionality of each module of the SMARTNET Platform, including the Entrepreneur, Mentors, Investors, Intellectual Property Rights (IPR), Artificial Intelligence and Decision Support, Content Management and Publishing, e-Learning, and System Management/Administration modules. We will examine the user interfaces, data structures, and interactions within and between these modules.

3.1 Entrepreneurs Management Module

The Entrepreneurs Management module of the SMARTNET Platform provides a comprehensive set of functionalities tailored specifically for entrepreneurs. This module focuses on empowering entrepreneurs by facilitating their interaction with mentors, investors, and the system administrators, as well as offering essential tools for managing their profiles and accessing valuable resources.

Entrepreneur Registration and Authentication:

The module begins with the Entrepreneur Registration and Authentication process. Entrepreneurs can register by providing the necessary information and creating an account in the SMARTNET system. Once registered, entrepreneurs can log in using their credentials and access the full range of module features.

Entrepreneur Profile Management:

Entrepreneurs have the ability to create, view and edit their Entrepreneur Profile. This profile includes detailed information about their venture, allowing entrepreneurs to showcase their business ideas, objectives, and achievements. As time progresses, the entrepreneurs can update their entrepreneur profiles, ensuring the accuracy and relevancy of the provided information.

Mentor and Investor Interaction:

The Entrepreneurs Management module facilitates the interaction of entrepreneurs with mentors and investors. Entrepreneurs can browse and list available mentors and investors within the system. They can send connection requests to mentors or investors they find suitable and receive replies in return. This functionality enables entrepreneurs to establish valuable connections and seek guidance and funding opportunities for their ventures.

Communication and Messaging:

Entrepreneurs can utilize the built-in messaging system to communicate with mentors and investors as well as the platform administrators. This feature enables entrepreneurs to ask questions, seek clarifications, and exchange information with relevant stakeholders. System administrators have access to all messaging activities, ensuring efficient communication and oversight of the platform's operations.

Entrepreneur-Specific Reports and Performance Monitoring:

The Entrepreneurs Management module provides the platform administrators with access to various reports specific to their performance and progress. Performance reports and report cards offer valuable insights into the venture ecosystems growth, achievements, and areas for improvement. By monitoring these reports, platform administrators can assess the development of the Smartnet Ecosystem and make informed decisions regarding new strategies.

Administrative Functions:

The module also includes several administrative functions available to Smartnet Platform administrators. Administrators have the authority to manage entrepreneurs' accounts, including creating new accounts, enabling, or disabling entrepreneurs, and overseeing the matchmaking process between entrepreneurs and mentors/investors. The Matchmaking Management menu allows administrators to view the history of interaction between entrepreneurs, mentors, and investors, including requests, replies, and reviews.

3.2 Mentors Management Module

The Mentors Management module of the SMARTNET Platform is designed to facilitate efficient mentorship interactions and support the growth and development of mentors. This module encompasses various screens, functions, and workflows to ensure seamless mentor registration, profile management, and mentor-mentee matching. It also provides comprehensive management functions for responsible personnel, enabling evaluation of mentor performances, generation of mentor scorecards, and other reporting capabilities.

Mentor Registration and Authentication:

The module begins with the Mentor Registration and Activation process. Mentors can register by providing the required information and creating an account within the SMARTNET system. Once registered, mentors can log in using their credentials and access the full range of module features.

Mentor Profile Management:

Mentors have the ability to create and manage their Mentor Profile, which highlights their expertise and experience. This profile includes detailed information about their professional background, skills, and areas of specialization. Mentors can view and edit their profiles to ensure accuracy and relevance, showcasing their strengths to entrepreneurs seeking guidance.

Mentor-Entrepreneur Interaction:

The Mentors Management module facilitates interaction between the mentors and the entrepreneurs within the platform. Mentors can browse and list available entrepreneurs within the SMARTNET system. They can view contact requests sent by entrepreneurs and accept or reject them, along with providing a reply. Upon accepting a contact request, mentors can score their perception of the entrepreneur and provide valuable feedback. They can also review the entrepreneurs they have accepted, aiding in the continuous improvement of the matching process.

Communication and Messaging:

Like the Entrepreneurs Management module, the Mentors Management module includes a built-in messaging system. Mentors can utilize this feature to communicate with entrepreneurs, system administrators, and other stakeholders. This functionality fosters effective communication, enabling mentors to address inquiries, provide guidance, and engage in collaborative discussions.

Mentor Performance Evaluation and Reporting:

The Mentors Management module incorporates performance evaluation and reporting functions. Smartnet administrators have the responsibility to review and score Mentor Profiles to determine their eligibility for listing in the Mentors List. This evaluation process ensures that the listed mentors possess the necessary qualifications and expertise. Additionally, administrators can generate mentor scorecards and other management reports, providing insights into the performance and effectiveness of mentors within the system.

Administrative Functions:

The module also includes administrative functions available to SMARTNET Platform Administrators. Administrators can list all registered mentors, manually create mentor accounts, and enable/disable mentor profiles. The Matchmaking Management menu allows administrators to view the history of interactions between mentors and entrepreneurs, including contact requests, replies, and reviews. Furthermore, administrators have access to all messaging activities within the system, ensuring efficient communication oversight.

3.3 Investors Management Module

The Investors Management module of the SMARTNET Platform aims to facilitate the invitation, registration, and interaction of potential investors with entrepreneurs within the ecosystem. This module provides investors with the tools and functionalities to create detailed profiles, specify their investment preferences, and streamline the matching process with entrepreneurs. The module incorporates smart algorithms to match interest areas, sectors, and calculate eligibility percentages, enabling efficient and effective connections. Additionally, the module includes management screens for administrators to oversee and report on investor matchmaking activities.

Investor Invitation and Activation:

The module begins with the Investor Invitation and Activation process. Potential investors will be invited by the Platform Administrators to register and activate an investor user account. SMARTNET Platform Administrators will manually enter investor accounts and send invitations to potential/eligible investors. Once the account is activated, investors can log in to the platform using their credentials.

Investor Profile Management:

Investors have the ability to create and manage their Investor Profile, which includes detailed information about their investment choices, focus sectors, interests, funds, and previous investments. This profile serves as a comprehensive overview of their investment preferences and helps streamline the matching process with entrepreneurs. Investors can view and update their profiles to ensure accuracy and relevance.

Investor-Entrepreneur Interaction:

The Investors Management module facilitates interaction between investors and entrepreneurs. Investors can browse and list available entrepreneurs within the SMARTNET Platform. Entrepreneurs can send connection requests to investors, and investors can accept or reject these requests. Once an investor accepts a connection request, they can view the full venture profile of the entrepreneur. Investors can reply to entrepreneurs' requests with their interest and further discuss potential investments. This functionality enables seamless communication and collaboration between investors and entrepreneurs.

Smart Matching Algorithms:

The module incorporates smart algorithms to enhance the matching process between investors and entrepreneurs. These algorithms consider factors such as interest areas, sectors, verticals, and eligibility percentages to suggest potential matches. By leveraging these algorithms, the system can efficiently identify suitable investment opportunities for investors based on their preferences. This feature streamlines the matching process, saving time and effort for both investors and entrepreneurs.

Communication and Messaging:

Like other modules, the Investors Management module includes a built-in messaging system that facilitates communication between investors, entrepreneurs, and system administrators. Investors can contact entrepreneurs to discuss investment opportunities, seek additional information, or provide feedback. System administrators have access to all messaging activities, ensuring smooth communication and overseeing the platform's operations.

Administrative Functions:

Administrative functions are available to SMARTNET Platform Administrators within the Investors Management module. Administrators can list all registered investors, manually create investor accounts, and enable/disable investor profiles. The Matchmaking Management menu provides administrators with a comprehensive overview of the request history between entrepreneurs and investors, including replies and reviews. Additionally, administrators can monitor all messaging activities within the system, ensuring efficient communication oversight.

3.4 Intellectual Property Rights (IPR) Management Module

The Intellectual Property Rights (IPR) Management module of the SMARTNET Platform aims to streamline the recording, analysis, and communication of intellectual property data among stakeholders. This module provides users with the tools and functionalities to manage and analyse IP data, including patent applications and portfolio information. The module incorporates dynamic classification criteria, prepared by system administrators, to effectively organize and categorize IP data.

User Registration and Authentication:

The IPR Management module begins with beneficiary organisation/institution registration by the SMARTNET Platform administrators. Potential IPR Management Module users receive invitations from SMARTNET Platform Administrators and can activate their accounts to access the platform. Once activated, users can log in using their credentials and start utilizing the module's functionalities.

Institution Profile Management:

IPR Module users have the ability to view and manage the profile of their respective institutions or organizations. The Institution Profile screen allows users to input and update detailed information about their institution and its IP portfolio, ensuring accurate representation within the platform. Users can view and modify their institution profiles as needed.

Best Practices Sharing:

The module promotes knowledge sharing and collaboration by allowing users to list and add Best Practices. Users can browse and access Best Practices uploaded by other IPR Module users within the SMARTNET system. They can also contribute by adding Best Practices from their own institutions, showcasing successful approaches and strategies. Users have the ability to edit and update Best Practices belonging to their respective institutions, ensuring accurate and relevant information.

Portfolio Management:

The IPR Management module enables users to manage their institution's intellectual property portfolio. Users can view, add, edit, and update various portfolio items, including "Brand", "Design", and "Patent/Useful Model" entries. This functionality allows users to maintain a comprehensive and up-to-date record of their institution's intellectual property assets. By centralizing portfolio information, the module facilitates efficient analysis and decision-making related to intellectual property management.

Communication and Messaging:

The module includes a built-in messaging system that enables communication between IPR Module users and system administrators. Users can contact system administrators for inquiries, support, or any necessary assistance via the messaging system. This feature ensures seamless communication and facilitates efficient collaboration within the platform.

Administrative Functions:

Administrative functions are available to Smartnet administrators within the IPR Management module. Administrators can list all beneficiary institutions that have access to the SMARTNET Platform. They can add and edit beneficiary institutions, as well as create IPR Module Users for these institutions and send invitations. Administrators also can enable/disable IPR Module User accounts. Additionally, administrators can access and review institution profiles, view all Best Practices loaded within the

module, and review portfolio items uploaded by users. These administrative functions enable efficient oversight and management of the IPR Management module.

3.5 Integration Web-Services Module

The Integration Web-Services module of the SMARTNET Platform serves as a crucial component for seamless data interchange and automation tasks between the SMARTNET Platform and other authorized applications or systems. This module exposes a set of well-defined Application Programming Interfaces (APIs) that enable the integration of selected functions and data between the SMARTNET Platform and external systems, such as existing Technology Transfer Intermediary (TTI) systems and databases.

API Design and Documentation:

The Integration Web-Services Module provides APIs that are carefully crafted to provide a standardized and secure approach for accessing and exchanging data between the SMARTNET Platform and potential external systems. The API design focuses on list, get and put functionality for major entities in the system, namely Entrepreneur, Mentor, Investor and IPR Entry which ensures consistency, scalability, and flexibility in handling various integration requirements. Each comes with clear and comprehensive API documentation, outlining the endpoints, request/response formats, authentication mechanisms, and available functionalities crafted for integration with external services.

Data Interchange and Integration:

The module enables authorized applications or systems to interact with the SMARTNET Platform by exchanging data. Through the exposed APIs, external systems can request and retrieve data from the SMARTNET Platform, as well as submit data for processing. The integration capabilities allow for the seamless transfer of information between different systems, enabling efficient data synchronization and eliminating the need for manual data entry or duplication.

Authentication and Authorization:

To ensure secure and controlled access, the Integration Web-Services module implements authentication and authorization mechanisms. Authorized external applications or systems are granted access to the APIs based on predefined roles and permissions. Authentication protocols, such as OAuth or API keys, are employed to verify the identity of external systems and ensure data security. Role-based access controls are implemented to define granular permissions and restrict access to sensitive data or functionalities.

3.6 Artificial Intelligence and Decision Support Module

The Artificial Intelligence and Decision Support module of the SMARTNET Platform plays a pivotal role in providing advanced machine learning (ML) and data processing algorithms to assist decision makers within the ERA and other stakeholders. The module's primary objective is to leverage the collected data from all other modules and generate valuable insights and decision proposals to identify high-quality business ideas with a higher potential for commercialization. Additionally, the module incorporates self-learning capabilities, continuously improving its performance based on past decisions and feedback.

Integration with Other Modules:

The module integrates seamlessly with other modules within the SMARTNET Platform to access and utilise the relevant data for decision support. It leverages the data collected from modules such as

Entrepreneurs Management, Mentors Management, Investors Management, and Intellectual Property (IP) Management to enhance its decision-making capabilities. The integration ensures a holistic approach to decision support by incorporating data from multiple sources and modules, providing a comprehensive view of the ecosystem.

3.7 Standard and Custom Reporting Module

The Standard and Custom Reporting module of the SMARTNET Platform is an integrated critical component designed to facilitate the comprehensive analysis and presentation of data collected within the SMARTNET Platform. This module aims to provide users with rich listing, tabling, exporting, and visual analysis capabilities, enabling them to gain valuable insights from the data collected across various modules. The reporting module incorporates flexible querying functionalities, extensive filtering options, and support for multiple document formats, empowering users to generate standard and customized reports tailored to their specific requirements.

Reporting Formats and Exporting:

The module provides extensive support for multiple document formats, allowing users to generate reports in formats such as PDF, Excel, CSV, or HTML. Users can choose the desired format based on their reporting requirements and the intended audience. The module ensures that the generated reports are formatted consistently, presenting the data in a clear and organized manner. Furthermore, users have the option to export the reports to external systems or share them with stakeholders through various communication channels.

3.8 System Management and Administration Module

The System Management and Administration module of the SMARTNET Platform is a crucial component designed to provide administrators with comprehensive control and management capabilities over the SMARTNET Platform. This module caters to personnel from the ERA and stakeholders who possess administrator-user privileges. It enables them to perform a range of administrative tasks, including role and user management, authorization management, activity logging, custom report designing, error tracking and debugging, as well as managing integration services and APIs available on the SMARTNET Platform.

Role and User Management:

The System Management and Administration module allows administrators to define and manage roles within the system. They can create different user roles with specific privileges and assign users to these roles. The module provides a user-friendly interface for managing user accounts, including adding, modifying, and disabling user accounts. Administrators have the authority to assign role-based permissions and access levels to ensure proper system security and data confidentiality.

Authorisation Management:

Administrators can manage authorization rules and access control settings through the System Management and Administration Module. They can define fine-grained permissions for various system functionalities and modules based on user roles. This enables administrators to control the actions and operations that each user or user group can perform within the SMARTNET Platform. The module ensures that users only have access to the functionalities relevant to their roles and responsibilities.

Activity Logging and Audit Trail:

The module includes comprehensive activity logging and audit trail functionalities. It tracks and records all user activities and system events, capturing information such as user login/logout, data modifications, and administrative actions. The logging feature helps administrators monitor system usage, troubleshoot issues, and maintain data integrity. The audit trail provides a detailed history of system activities, allowing administrators to review and analyse user interactions with the platform.

Custom Report Designers:

The System Management and Administration module provides custom report design capabilities for administrators. They can create and modify reports using intuitive report design tools, allowing them to tailor reports according to specific business requirements. Administrators can upload report templates, select data sources, apply filters, and choose display formats to generate custom reports.

3.9 Web-Portal Content Management Module

The Web-Portal Content Management Module of the platform serves as the public-facing component of the SMARTNET Platform, enabling effective communication and interaction with both the public and project stakeholders. This module provides a user-friendly interface for managing and publishing media-rich content, including project activities, outputs, documents, announcements, events, calls, and calendars. It seamlessly interacts with the Platform's MIS components to present comprehensive and engaging information about entrepreneurs, mentors, activities, best practices, funding opportunities, and more.

Content Management System:

The Web-Portal Content Management Module incorporates a robust content management system (CMS) that allows administrators to create, edit, and organize various types of content. Administrators can easily upload and publish project documents, reports, and other relevant resources. The CMS supports a range of media formats, including images, videos, and downloadable files. It also provides features for categorizing and tagging content, facilitating easy navigation and searchability.

Events, Announcements, and Calls:

The Web-Portal Content Management Module enables administrators to create and manage event listings, announcements, and calls for participation. They can create event calendars, specify event details, and publish event-related documents. The module also facilitates the promotion and registration of participants for events and training programs. Users visiting the platform can view upcoming events, access event-related materials, and submit applications or registrations as necessary.

Responsive Design and Accessibility:

The Web-Portal Content Management Module adopts a responsive design approach, ensuring that the platform is accessible and optimised for various devices, including desktop computers, tablets, and mobile devices. The user interface is designed to provide a seamless and intuitive experience across different screen sizes and resolutions. Accessibility features, such as text alternatives for images, keyboard navigation support, and compliance with web accessibility standards, are implemented to ensure inclusivity and usability for all users.

The Web-Portal Content Management Module of the SMARTNET Platform plays a vital role in facilitating effective communication, knowledge sharing, and interaction between the SMARTNET Project and its stakeholders.

3.10 E-Learning Module

The E-Learning module of the SMARTNET Platform serves as a crucial component for the commercialization acceleration system, targeting entrepreneurs and mentors. This module provides a comprehensive e-learning system that delivers customized training programs and resources to meet the specific needs of each participant. The module utilizes the ME-LEARNING framework, integrating seamlessly with other components to ensure a unified experience, single sign-on functionality, and data exchange for training completion, achievements, analytics, and other relevant information.

Individualized Training Programs:

The E-Learning module allows administrators to define mandatory training programs tailored to each participant's requirements. Participants, including entrepreneurs and mentors, can access their personalized training programs upon login. These programs may include a combination of self-learning modules, multimedia resources, interactive presentations, and documents. The module enables participants to progress through the training content at their own pace, providing a flexible and self-directed learning experience.

Multimedia Learning Resources:

To facilitate effective learning, the E-Learning module provides a wide range of multimedia resources. These resources may include video tutorials, audio recordings, interactive simulations, case studies, and e-books. Participants can access these resources within the platform and leverage various formats to enhance their understanding and knowledge acquisition. The module supports the seamless integration of multimedia content, ensuring an engaging and interactive learning environment.

Performance Evaluation and Exams:

The module incorporates evaluation mechanisms to assess participants' performance and knowledge retention. Participants can undergo online exams to test their comprehension and progress. The module enables the creation of exams related to both online and classroom training sessions. Exam results are recorded and stored within the Platform's MIS component, allowing administrators to query and analyse the data. This evaluation process helps track participants' learning outcomes, identify areas for improvement, and provide valuable feedback.

Achievement Tracking and Analytics:

The E-Learning module tracks participants' achievements and progress throughout the training programs. It captures data on completed modules, exams, certifications, and other milestones. This information is stored within the MIS Component and can be accessed by participants and administrators. The module also provides analytics and reporting capabilities, allowing administrators to generate insights and assess the overall effectiveness of the e-learning system. Data on participant engagement, completion rates, and performance metrics can be leveraged to enhance the training programs and optimize learning outcomes.

Seamless Integration and Single Sign-On:

To ensure a seamless user experience, the E-Learning module integrates with the rest of the SMARTNET Platform using a single sign-on (SSO) mechanism, eliminating the need for participants to log in separately to access the e-learning platform. The module leverages the data stored in the MIS Component, such as participant profiles and training progress, to provide a unified and consistent learning environment.

4. DOCUMENTATION

In this section, we will outline the key documentation that has been prepared throughout the development and implementation phases of the SMARTNET Platform. Each document has been carefully curated to serve as a valuable reference for understanding the platform's architecture, functionalities, configurations, and operational procedures.

These documents serve as a valuable repository of knowledge, encompassing the entire journey of the SMARTNET Platform's development, implementation, and testing phases. Available documentation prepared by the Contractor regarding the SMARTNET Platform available on ERA's archives:

1. Technology Selection Document (TSD)
2. Approach Paper and Roadmap on Artificial Intelligence in Smartnet Project (AP-AI)
3. Software Requirement Specifications (SRS) and Database Design Document (DDD)
4. Software Design Descriptions (SDD)
5. Test Specifications (TS) Document
6. Test Plan (TP) and Results Covering Alpha (ATR) and Beta (BTR) Tests
7. Penetration Test Plan (PENTEST-P) and Results (PENTEST-R)
8. User Guide for Entrepreneurs and Mentors (UG)
9. System Admin Manual and Public Portal Admin Manual
10. System Integration (SI) and Deployment Report (DR)
11. Training Plan Document (TPD)
12. Maintenance Plan Document (MP) and the Help Desk Platform (HD)
13. Acceptance Test Plan (ATP) and Acceptance Test Results (ATR)
14. Handover Document (HD)

Each document provides a detailed insight into the various aspects of the SMARTNET Platform, from the initial technology selection and roadmap on Artificial Intelligence to the intricate Software Requirement Specifications and Database Design. The documentation also includes the test specifications, penetration test results, and user guides tailored for entrepreneurs and mentors.

Moreover, we have incorporated the detailed Test Plan and Results from the Alpha and Beta testing phases, ensuring that all testing procedures and outcomes are meticulously documented. The Maintenance Plan and Help Desk Platform documentation outline the strategies and resources dedicated to sustaining the SMARTNET Platform's optimal performance.

Furthermore, the Acceptance Test Plan and Results signify the extensive verification and validation processes undergone to ensure that the SMARTNET Platform aligns with the defined acceptance criteria. Lastly, this Handover Document encapsulates all the vital information required to facilitate a seamless transition of platform management to the operational team.

As the Consultant, we would like to emphasize the importance of these documents in supporting the continued success of the SMARTNET Platform. These resources are intended to empower the ERA's operational team with the knowledge and tools they need to confidently navigate the SMARTNET Platform's operations and maximize its potential for fostering entrepreneurship, mentorship, and investment endeavours.

5. SUPPORT AND MAINTENANCE

After the full deployment of the SMARTNET Platform on **May 26, 2023**, the **Software Assurance (Warranty) Period** (SAP) has started with the Contractor's pledge to provide two years of software assurance and support to address any potential issues, bugs, or defects in the SMARTNET Platform.

This Maintenance Plan (MP) and Help Desk (HD) document already shared with the ERA outlines in detail the strategies, procedures, and responsibilities for maintaining and supporting the SMARTNET Platform during the Software Assurance (Warranty) Period aimed to ensure the platform's continued efficiency, stability, and performance.

The Consultant's approach to the Software Assurance (Warranty) Period consists of the following three-pillars:

1. **Help Desk and Support Line:** Help Desk will serve as the first point of contact for stakeholders and users experiencing incidents or requiring assistance.
2. **Support Process:** As issues, defects, or corrections are identified or reported, the Consultants Support Process ensures that appropriate updates and fixes are promptly implemented to keep the platform in optimal condition.
3. **Monthly Service Reports:** The Consultant will provide regular Monthly Service Reports to ERA, detailing the status of support activities, response times, resolutions, and ongoing enhancements.

The Help Desk can be reached 24/7 by sending a mail to **support@swanleuco.com** for non-urgent matters and queries. For urgent matters or critical functionality defects, our phone support line is **+90 (553) 328 81 69** with our committed Help Desk dispatcher on the line to resolve issues promptly.

After the commencement of the Calls for Mentors and Entrepreneurs (indicatively in September 2023), an integrated module for ticket processing will also be made available in the SMARTNET Platform which will provide an User-Friendly interface providing user convenience where the users can submit their support tickets and access assistance in a more simple and straightforward manner.

6. CONCLUSION

In culmination, we proudly present this Handover Document, a testament to the successful completion of the SMARTNET Platform, an ambitious endeavour that embodies innovation, collaboration, and dedication. As we reflect on this journey, we extend our heartfelt gratitude and appreciation to the End Recipient of Action (ERA), Yıldız Technical University and all partners and stakeholders who have contributed to the realization of this transformative project.

The SMARTNET Platform stands as a testament to our shared vision of empowering entrepreneurs, mentors, and investors, fostering a thriving community where knowledge, innovation, and collaboration

converge. We firmly believe that this platform will be a catalyst for positive change and growth in the entrepreneurial landscape.

As we formally hand over the platform's management to the ERA and the operational team, we trust that our meticulous documentation, training materials, and support resources will serve as a guiding light to ensure a seamless transition and sustained success. Our commitment to providing ongoing support and collaboration remains steadfast, and we are excited to witness the SMARTNET P platform's future achievements and impact.

The contents of this publication are the sole responsibility of SwanLeuco in consortium with Evoluxer, Asturex, RRDA, StartUp Division, Inycon and can in no way taken as the view of the European Union and the Ministry of Industry and Technology of the Republic of Türkiye.