DESTINI

SMART DATA PROCESSING AND SYSTEMS OF DEEP INSIGHT

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Smart Data Processing and Systems of Deep Insight

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Minutes of the Industrial and Market Strategic Advisory Board (vol. 2)

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1. Introduction

This deliverable provides information about the discussions that were held between members of the consortium and stakeholders who participate into the Advisory Board of DESTINI project. It outlines the main outcomes of the communication with the Advisory Board, the opportunities for collaboration and their suggestions that mostly guided us to explore new research areas related to smart data processing and systems of deep insight.

The Advisory Board consists of seven (7) major players in the regional/national economy, including representatives from the government, industry and businesses that align with the Smart Specialisation Strategy of Cyprus (S^3Cy).

The aim of the Advisory Board was to meet with the consortium every six (6) months to provide advice and support for applied technological research related to the area of smart data processing and systems of deep insight and their application to real-world problems.

The rest of the document is structured as follows: Section 2 presents the members of the Advisory Board, while section 3 presents the outcomes of the meetings and discussions that weld held between members of the consortium and members of the Advisory Board during the second phase of the project that spanned the period from . Finally, section 5 concludes the deliverable by referring to the main challenges faced as well as to the main outcomes of the discussions.

2. Members of Advisory Board

During the first months of the project the covid-19 virus outbreak and the corresponding restrictive measures, including the lockdowns in each of the participating countries but especially in Cyprus, did not permit the full rolling of the relevant activities for engaging the stakeholders and the project's Advisory Board as much as desired and planned.

Despite the difficulties faced due to covid-19, the consortium managed from the beginning to identify the target-stakeholders for the Advisory Board and define an initial list of companies, organizations, public and governmental bodies that were contacted and agreed to participate into the Advisory Board of DESTINI project.

The members of the Advisory Board were:

- The Cypriot Ministry of Industry, Commerce, Energy and Tourism: This is the governmental body to plan and exercise policies in the sectors it covers, namely Industry, Commerce, Energy and Tourism. All these sectors, but especially the last one, are considered as the strongest pillars of the Cypriot economy.
- Hellenic Bank Ltd: This is one of the largest banks on the island of Cyprus both in terms of branches and of customers.
- The Water Board of Lemesos: WBL is a semi-governmental organization and one of CUT's strategic partners with a long history of collaboration in various projects.
- Paradisiotis Group: This is one of the leading industries in Cyprus and its activities for poultry meat production include chicken breeding, slaughtering, mixing and packaging.
- Limassol Municipality: Limassol Municipality is one of the most active municipalities in Cyprus in the area of smart cities. It has participated in numerous related projects, both national and EU-funded, some of which were in collaboration with CUT. The municipality has an extensive experience in DESTINI's research areas and it is the main body of policy making for the city of Limassol as regards new approaches that will help to make the city smarter. Therefore, it is considered a key member of the Advisory Board that will help the consortium exploit the benefits of smart data processing and systems of deep insight for supporting smart cities.
- Uniteam Marine Ltd: Uniteam Marine is an international ship management organisation headquartered in Cyprus that provides industry-leading services to ship owners and ship managers across a wide range of countries and jurisdictions.
- The Cyprus Institute of Neurology and Genetics: CING was established in 1990 as a bi-communal (Greek- and Turkish-Cypriot), non-profit, private, academic, medical center.

The vision of CING is to function as an International Centre of Excellence and a Regional Referral Centre in the areas of Neurology, Genetics, Biomedical, Medical and other similar and related Sciences.

Each of the above organizations played a different role and offered its expertise in a target-area or market segment which is considered important for the economy of Cyprus, the Mediterranean region and the European Union.

3. Minutes of Discussions with Advisory Board

The Advisory Board assisted the consortium to perform applied research and identify problems and challenges in specific areas related to smart data processing and systems of deep insight. On average two (2) meetings were performed with each member of the AB. The main outcomes between members of the consortium and members of the Advisory Board are outlined below:

I. Cypriot Ministry of Industry, Commerce, Energy and Tourism

- Discussions between the partners and representatives of the ministry initially revealed synergies in the area of smart manufacturing (or Industry 4.0), on which the ministry places great emphasis and would like to boost in the upcoming years. Subsequent discussions were held to investigate further the possibilities of collaboration with the ministry, which also suggested directing efforts towards using Cypriot factories for experimentation.
- DESTINI followed the suggestion of the ministry and indeed became a test-bed for applying proof-of-concept models, tools or techniques based on smart data processing by offering solutions for optimizing production and by offering models, such as smart digital twins, for production monitoring and control. This was demonstrated through the collaboration with another member of the Advisory Board, Paradisiotis Group (see below), addressing challenges within the factory and submitting a new proposal under the national RIF call CO-DEVELOP.

II. Hellenic Bank Ltd.

- Several discussions with key-persons of the bank (e.g. the General Manager of Corporate Development & Products and the General Manager of Human Resources) indicated that there is fertile ground for collaboration on a number of challenges the bank faces, that range from smart models and algorithms for fraud detection and credit scoring to visualization & analytics of business data and recruitment support tools.
- Hellenic Bank agreed during our meetings to direct DESTINI's effort for applied research in the banking and financial sector.

III. The Water Board of Lemesos

- Recent and previous discussions with the Director of WBL and the Head of Technical Services were intensified towards leakage detection, water supply management as well as the processing of huge volumes of data from dispersed

sources and different types of sensors across the water network are of paramount importance to them.

- WBL assisted the consortium to focus more on investigating applied smart processing techniques for critical public infrastructure such as water networks. It also facilitated the communication and collaboration with the Sewerage Board of Limassol and the Water Development Department. These two large public organizations have similar challenges and open problems that may be greatly benefitted by the outcomes of DESTINI.

IV. Paradisiotis Group

- Paradisiotis Group is one of the few companies in Cyprus that has high-tech equipment installed at their premises, ex. equipment that automatically monitors living conditions in a chicken farm and controls temperature, humidity and ventilation. All the new equipment hold rich volumes of data that were explored by members of the consortium.
- Discussions with the owner and director of the group, as well as technicians at various levels, led to the preliminary identification of areas of collaboration that aided DESTINI direct its research and scientific efforts towards real-world industrial problems.
- Paradisiotis Group showed tremendous interest in submitting joint national proposals, in the context of DESTINI's research areas. To this end, a joint proposal was prepared and submitted in collaboration with CUT, Sapienza and Paradisiotis Group in the context of a national call CO-DEVELOP (Research and Innovation Foundation of Cyprus). The main objective of the proposal was to combine smart data processing, business process management and Blockchain in a modern technologically advanced industrial environment. The 3 critical targets of the proposal are:
    - Reduction of energy consumption
    - Enhancement of food quality produced by Paradisiotis Group
    - Assurance of the security of important data
- Additionally, during the brainstorming sessions all involved parties showed a tremendous potential for addressing additional challenges in the line of business of Paradisiotis Group, to
    - enhance monitoring and visualization
    - identify bottlenecks on the process of breeding chickens,

- enhance packaging activities and preparation of food in a technologically modern mill

- Both parties agreed to continue the collaboration after the conclusion of the DESTINI project and try to exploit synergies for promoting applied research and delivering solutions to the aforementioned challenges

V. Limassol Municipality

- Discussions between members of the consortium and members of the municipality board that are responsible for the issues revolving around smart cities were held. The main outcomes from the discussions revealed that various topics explored by the DESTINI's consortium can be utilized to tackle numerous challenges that the municipality is currently facing such as:
    - optimization of routes for garbage collection
    - smart traffic management
    - pollution detection
    - crowd assembling avoidance in cases such as major events
- Members of CUT presented to the municipality's personnel the project's final outcomes along with the new research areas. Some of the most important objectives of the municipality which align perfectly to DESTINI's research interests are the following:
    - Transformation of the city of Limassol into a Smart City, using cutting edge technologies such as machine learning, blockchain, digital twins. All these technologies combined with smart data processing and systems of deep insight can contribute to the municipality's strategic plan and DESTINI's objectives as follows:
        - Digital Twins: Monitor of the Smart City as an entity, using IoT devices for different sectors, such as traffic management, energy conservation, safety measures, etc.
        - Blockchain: Using the Blockchain technology , the city of Limassol can assure the interoperability, immutability and security of crucial data. Blockchain layers can be applied to almost any developed software system.
        - Smart Data Processing: Smart data processing techniques can be used where applicable, making the processing of the data more efficient, optimizing processes and reducing energy consumption

of energy-intensive machinery or services. Special attention can also be given to the environment as well.

- To this end, Limassol Municipality indicated its interest in submitting joint national proposals. Currently we are in depth discussions with the responsible persons of the municipality to submit a joint proposal for optimizing the garbage collection routes within the city centre.

VI. Uniteam Marine Ltd.

- Initial discussions revolved around technical management and crew management with smart data processing techniques and models.
- With this in mind, the consortium decided to apply to the Deputy Ministry of Shipping for further advise. Indeed, meetings were held at the deputy ministry where DESTINI was presented and explained. The minister showed great interest in the project's knowledge developed and suggested new sub-sectors of maritime to focus on, such as digital twins for maritime and bunkering, visualization and analytics platforms, predictive maintenance tasks, ways to improve the quality of living for the seafarers.

VII. The Cyprus Institute of Neurology and Genetics

- Preliminary discussions with the ERA chair holder of CING were performed during which it was agreed that there is strong ground for collaboration between DESTINI and CING's Bioinformatics ERA Chair based on a high level of synergy and complementarity of the skills and competencies between the two teams, on data analysis, modelling, estimation, prediction and decision support.
- Open discussions that were held between members of the consortium and members of CING outlined how smart data processing techniques can contribute to the solution of several problems in two main sectors:
  - Proteomics
  - Genomics
- CING as well as all the other partners were invited as presenters in the 2nd summer school of DESTINI. The topic of presentation of CING was: Complex Patterns of Biological Information Decoded with Network-based Bioinformatics.
- During our last meetings with CING we discussed the possible ground for collaboration on submitting joint proposals in European calls.

4. Conclusions

The covid-19 virus outbreak and the corresponding restrictive measures, including the lockdowns in each of the participating countries but especially in Cyprus, did not permit the full rolling of the relevant activities engaging more the members of the Advisory Board and exploiting their expertise better.

Despite the covid-19 virus continuing restrictions, the consortium succeeded to have several meetings and discussions with its Advisory Board, each member of which played a different role and offered expertise in a specific target-area or market segment which is considered important for the economy of Cyprus, the Mediterranean region and the European Union.

Virtual and physical meetings held between the partners and members of the Advisory Board managed to direct DESTINI to a set of challenges and open problems in each area of interest. They also produced new ideas through brainstorming, and enabled applying new models and techniques developed in the project to real-world problems. In its turn, this resulted in the creation of strong collaboration links in the areas of smart data processing and systems of deep insight by.

Finally, as previously mentioned, the consortium worked closely with the Advisory Board for the preparation of proposals to attract additional EU and national funding. In this context, one new proposal was prepared and submitted by CUT for attracting EU-funding in which some stakeholders who participated in the Advisory Board participated.