LAMBDA - Learning, Applying, Multiplying Big Data Analytics

Project Presentation
for VIDIS Kick-off Meeting
January 28, 2021

LEARNING, APPLYING, MULTIPLYING BIG DATA ANALYTICS

Project Funding

❑ This project has received funding from the European Union's Horizon 2020 research and innovation programme under GA No 809965

❑ Project Partners

➢ Institute Mihajlo Pupin, Serbia (Coordinator)

➢ Fraunhofer Institute for Intelligent Analysis and Information Systems, Germany

➢ Institute for Computer Science - University of Bonn, Germany

➢ Department of Computer Science - University of Oxford, UK

Vision and Primary Objectives

Strengthening the Human capital and Education, Research and Development capacities of "Mihajlo Pupin" Institute the leading Serbian R&D institution in information and communication technologies in order to serve as a **Big Data & Analytics HUB** that connects and integrates scientists and professionals from the West Balkans and the entire region into the European Research Area.

Decreasing the existing European regional R&I disparity by Fostering excellence in the Big Data Ecosystem areas unlocking and raising the scientific profile of academics institutions from Serbia and the region while contributing to European progress beyond the state-of-the-art of related research and technology, as well as establishing productive and fruitful long-term cooperation.

institute **MIHAILO PUPIN**

- Innovation Leaders
- Strong Innovators
- Moderate Innovators
- Modest Innovators

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European Innovation Scoreboard 2020

- Leading Serbian R&D institution in information and communication technologies (ICT)

- The oldest (1946) R&D Institute in ICT area in the whole Southeastern Europe

- World Bank SEE Knowledge Economy report for 2004 and 2011: "Internationally competitive"

- EU Commissionaire Janez Potočnik – "Pupin as the best practice example for bridging academia and industry"

- 90% of turnover via TT
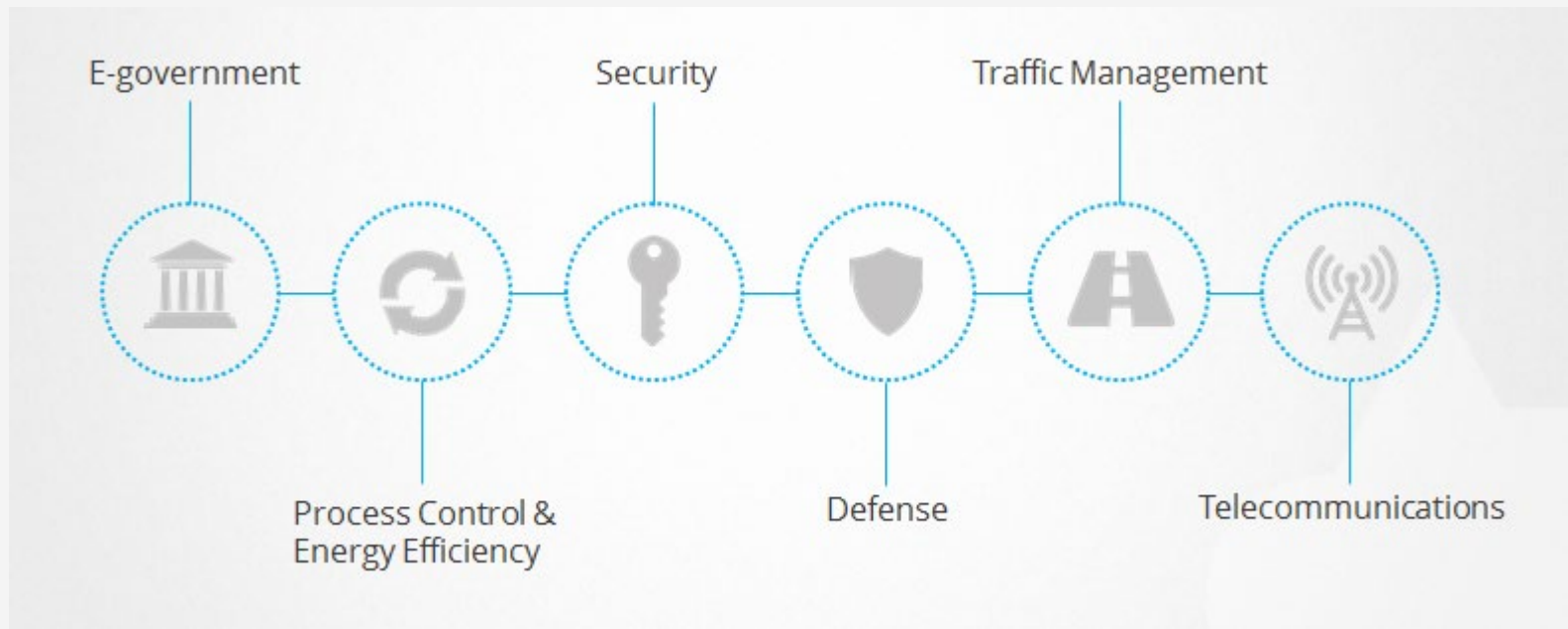
LAMBDA aims to define the **scientific strategy for stepping up and stimulating the scientific excellence and innovation capacity**, while increasing the research capacities and unlocking the research potential **of PUPIN in domain of Open Data and Big Data technologies**.

LAMBDA – How we do it

Phase 1: Setting up the initiative

Phase 2: Implementation

Phase 3: Evaluation and Impact Analysis

Outputs

Sustainable Development Plan

Learning & Open Education

Applying Knowledge & Expertise exchange

Multiplying via Dissemination and outreach

MOOC

Learning and Consulting Platform

LAMBDA-NoE

Partner

Partner

Partner

Partner

Academia

NGOs

Industry

Stakeholders Database
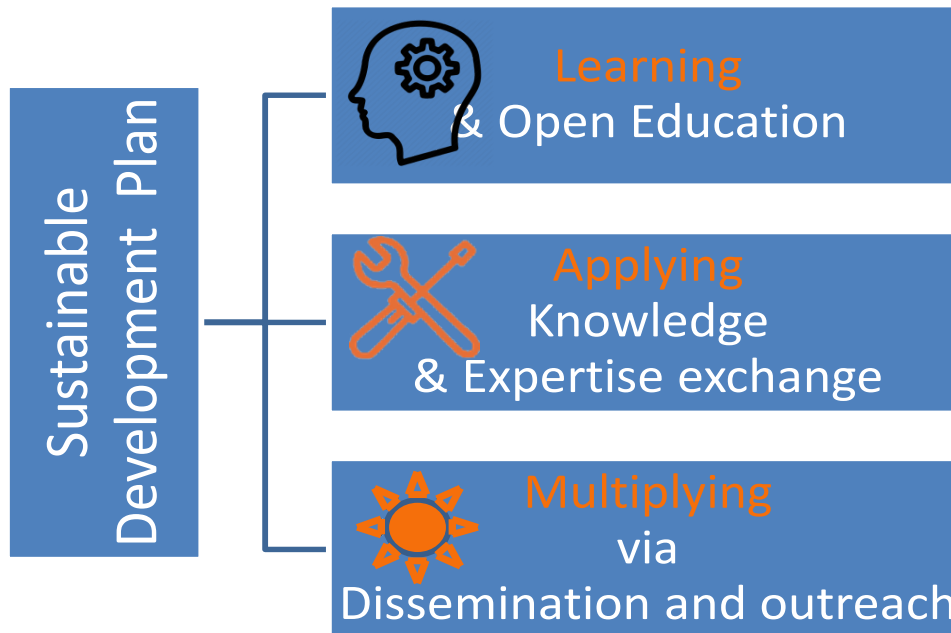
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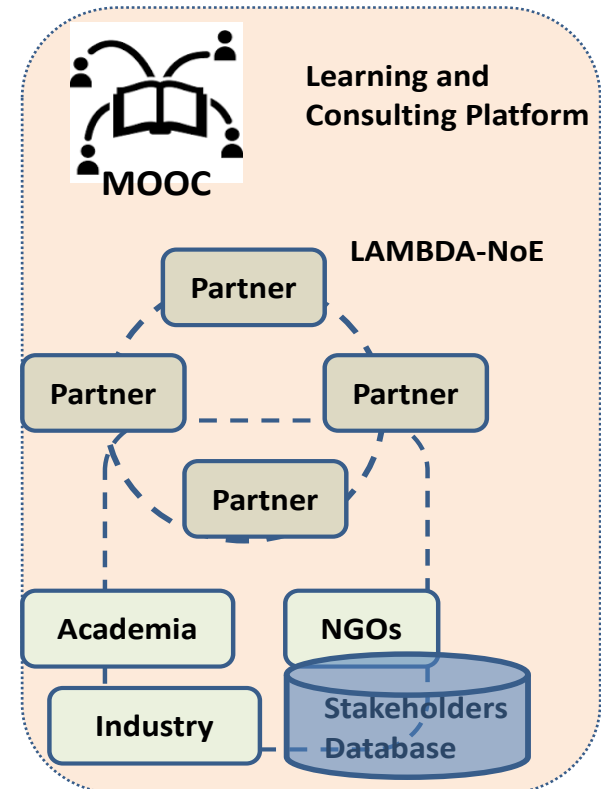
LAMBDA Specific Objectives - Key Success Factors

OBJ 1: Strategic Partnership - Establishment and development of productive and fruitful long-term cooperation that continues after project completion

- 4 partners, 3 different countries (Serbia, Germany, UK)

OBJ 2: Boosting scientific excellence of the linked institutions and capacity building of the widening country and the region in Big Data Analytics and semantics

- Joint papers (BOOK)
- Different capacity building activities implemented
  - 2 editions of the Big Data Analytics Summer School)

LAMBDA Specific Objectives - Key Success Factors

OBJ 3: Spreading excellence and disseminating knowledge throughout the West Balkan and South-East European countries

- Workshops at International conferences in Serbia and the region
  - 2 Special Sessions at ICIST, CECIIS – Croatia, ESWC - Slovenia
- Thematic meetings on key societal challenges (Data Strategy, Energy efficiency, Circular economy, 5G)
- Public Webinars with participates from WB, SEE, Europe

OBJ 4: Sustainability of research related to key societal challenges (sustainable transport, sustainable energy, security, societal wellbeing) and financial autonomy in the long run

- Networking with other PUPIN projects - **21 H2020** (NEON, AI-PROFICIENT, HESTIA, SINERGY, TRAPEZE, BorderUAS, PLATOON, TRINITY, IDEAS, REACT, LAMBDA, ….)
- Networking with COST Actions (NexusLinguarum, Distributed Knowledge Graphs)

LAMBDA Results

Open Education

- Repository of LAMBDA lectures
- Adoption of the results in Serbia and West Balkan
- Publishing the lectures via the SlideWiki OpenCourseWare

Curriculum Development

- Business Intelligence
- Semantic Web Technologies
- Knowledge Graphs for Financial Reasoning
- SW Technologies for eGovernment

10 Lectures/Modules
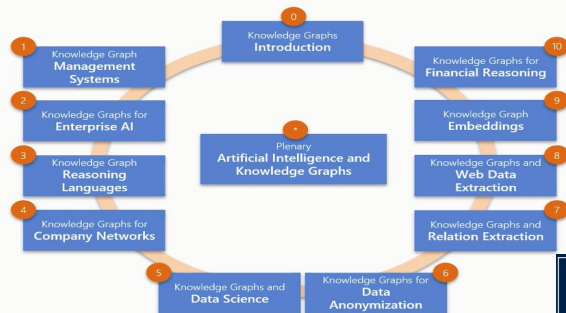
	Left curriculum	Right curriculum
1	Introduction to Business Intelligence	Introduction to Business Intelligence
2	Business Intelligence archtectures	Business Intelligence archtectures
3	Data warehouse technology	Data warehouse technology
4	Massive real-time data warehouses	ETL & OLAP, ROLAP, MOLAP, HOLAP
5	Business performance management (BPM) methodologies	Business performance management (BPM) methodologies
6	BPM Tools and applications	BPM Tools and applications
7	Knowledge discovery and Data mining I	Introduction to Big Data
8	Knowledge discovery and Data mining II	Knowledge discovery and Data mining I
9	Knowledge discovery and Data mining III	Knowledge discovery and Data mining II
10	Knowledge discovery and Data mining IV	Knowledge discovery and Data mining III
11	ETL & OLAP	New methods for data integration & Data Lake concept
12	OLAP, ROLAP, MOLAP, HOLAP	Semantic technologies and Web services
13	On Demand Decision support systems	Big Data Architectures
14	New Trends in Business Intelligence - I	Hadoop Ecosystem
15	New Trends in Business Intelligence - II	New Trends in Business Intelligence (ORACLE, SAP, SAS)

NEW LECTURES

UNIVERSITY OF OXFORD

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LAMBDA Results - Benefits for PUPIN

Applying
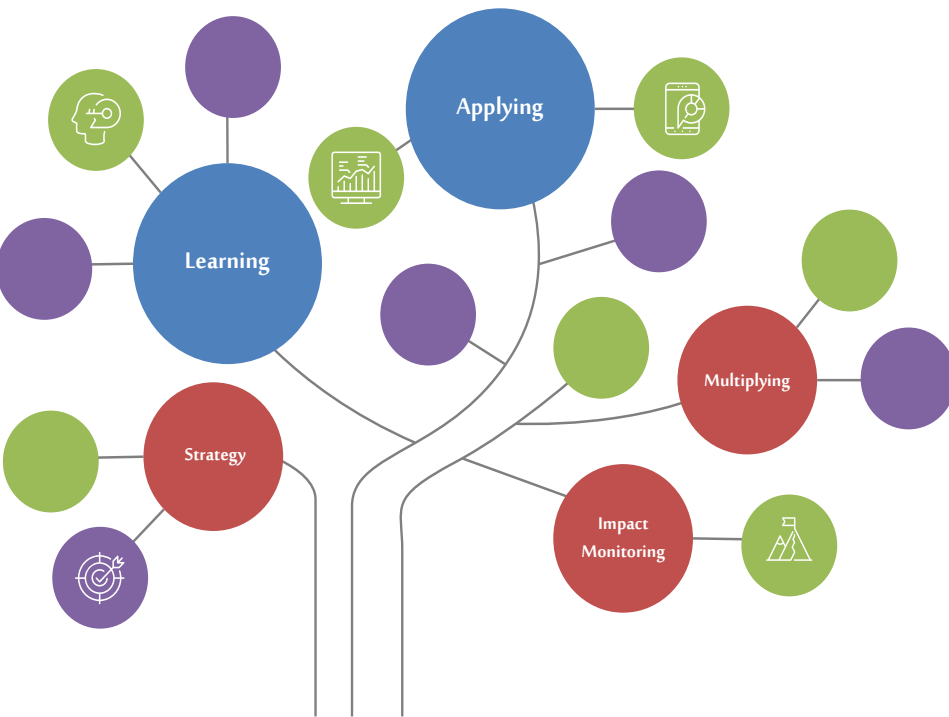
Impact – Adoption of knowledge

- Design of innovative **software architectures** (inBetween, PLATOON)

- Implementation of **analytical services** for energy domain

- Development of **prototypes** with Fraunhofer to be offered on EU market

- **Experimentation**

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LAMBDA Results - Benefits for PUPIN

Capacity Building

State-of-the-Art Survey

LNCS 12072

Valentina Janev
Damien Graux
Hajira Jabeen
Emanuel Sallinger (Eds.)

Knowledge Graphs and Big Data Processing

OPEN ACCESS

Springer

LEARNING, APPLYING, MULTIPLYING BIG DATA ANALYTICS

Table of Contents

LAMBDA Results - Networking

LAMBDA Results - Benefits for PUPIN

Capacity Building Topics

- Knowledge Graphs
- Explainable AI
- Big Data Tools (catalogue of tools)
- **Semantics & Innovative Scenarios**
- **Analytics services**
- **Interoperability**
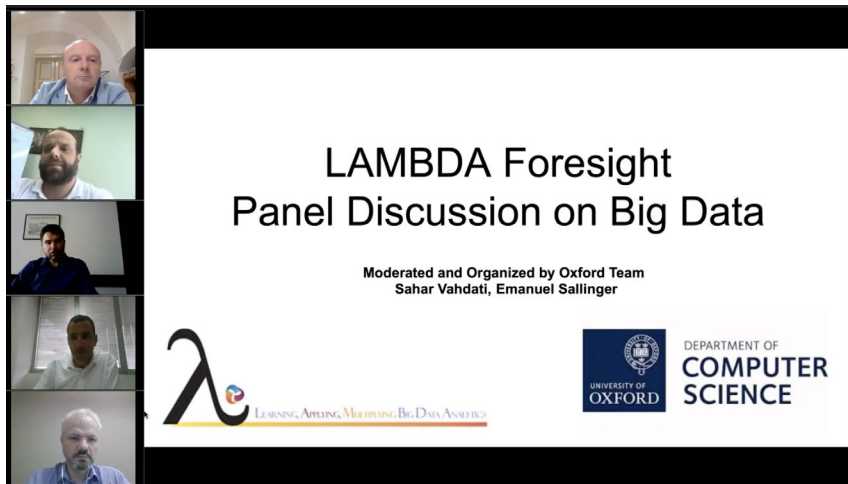
Software Architecture (Example)
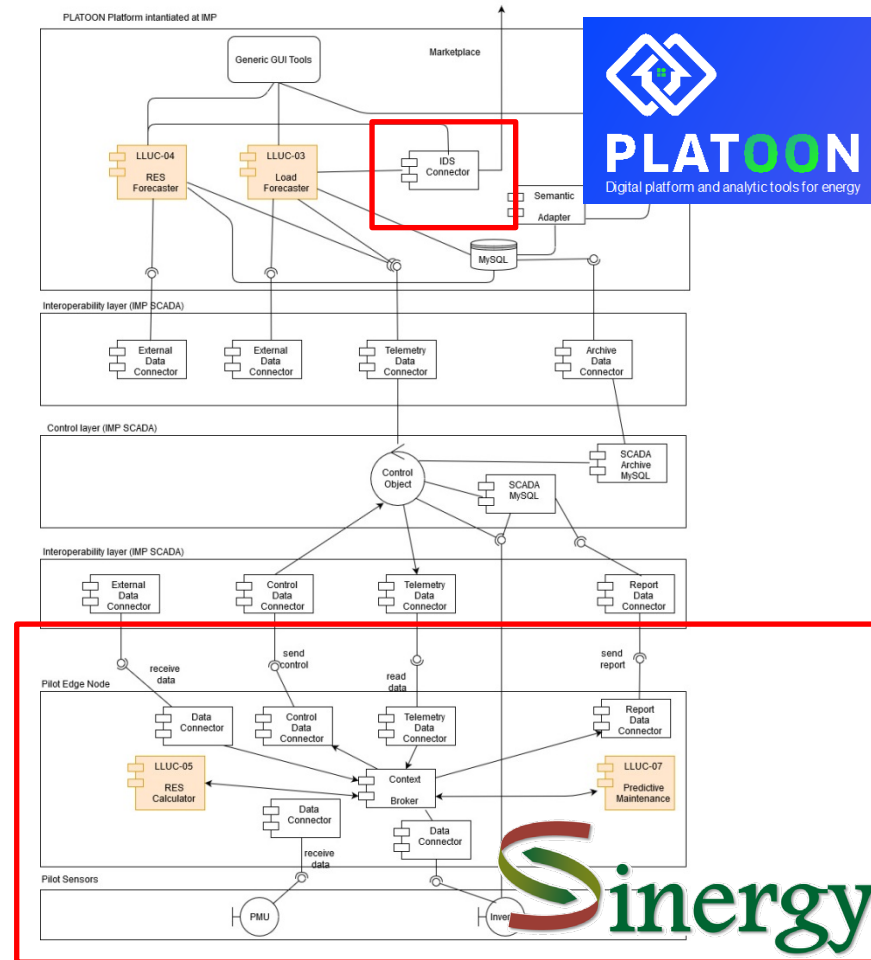
LAMBDA Results - Benefits

Foresight Exercises

Panel Discussions, Thematic Events

- AI Strategy for Serbia

LAMBDA Results - Adoption

> 15 Speakers (Germany, Bulgaria, UK, Italy, Austria, Romania, Serbia)
> 60 participants, > 20 different organizations

Open Education (June 2020)

Spreading Excellence (AB)

Home   Project   Summer Schools   eLearning   News & Events   Results

Join Us

The following invited experts have confirmed participation at the LAMBDA Advisory Board:

- Log in

- Sören Auer, Director, German National Library for Science and Technology

- Atanas Kiryakov, OntoText

- László Kovács, Hungarian Academy of Sciences

- Maria Esther Vidal, Head of Scientific Data Management Research Group, German National Library for Science and Technology

- Daniel Pop, Research Institute e-Austria Timisoara / West University of Timisoara

- Gabriel Iuhasz West University of Timisoara

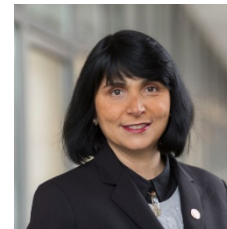- Mari Carmen Suárez-Figueroa, Department de Inteligencia Artificial, Universidad Politécnica de Madrid

LAMBDA in Year 3

Plan

- PhD Colloquium

- 3rd edition of BDA School (topics from energy)

- Intensify the PUPIN – Fraunhofer collaboration in domain of Industrial Data Spaces

- Involvement in BDVA Task Force on Energy

Thank You for Your Attention !

Institute Mihajlo Pupin

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