

UBITECH Company Presentation



UBITECH - Ubiquitous Technologies Limited

Thessalias 8 & Etolias, 15231 Chalandri, Greece

W: www.ubitech.eu

T: +30 216 5000 500

F: +30 216 5000 599

Contents of the Presentation

- UBITECH Facts and Figures
- Capacity, Experience and Technological Expertise
- Indicative, Recent Research Projects
- Technological Know-How

The “Ubiquitous Technologies Company”

- **UBITECH** is a highly **innovative software house**, **systems integrator** and **technology provider**
 - established in Athens (Greece) back in 2005
 - concentrated initially in the **Greek** and **Balkan** market
 - acquiring several **EC** grants for sophisticated **R&D** initiatives
 - extending currently our operations with **international activities**
 - though our subsidiaries and offices in **Limassol** (Cyprus), **Brussels** (Belgium) and **Buenos Aires** (Argentina)
- Established to provide leading edge
 - **ubiquitous secure technologies**
 - **intelligent technical solutions**
 - **consulting services**to businesses, organizations and government

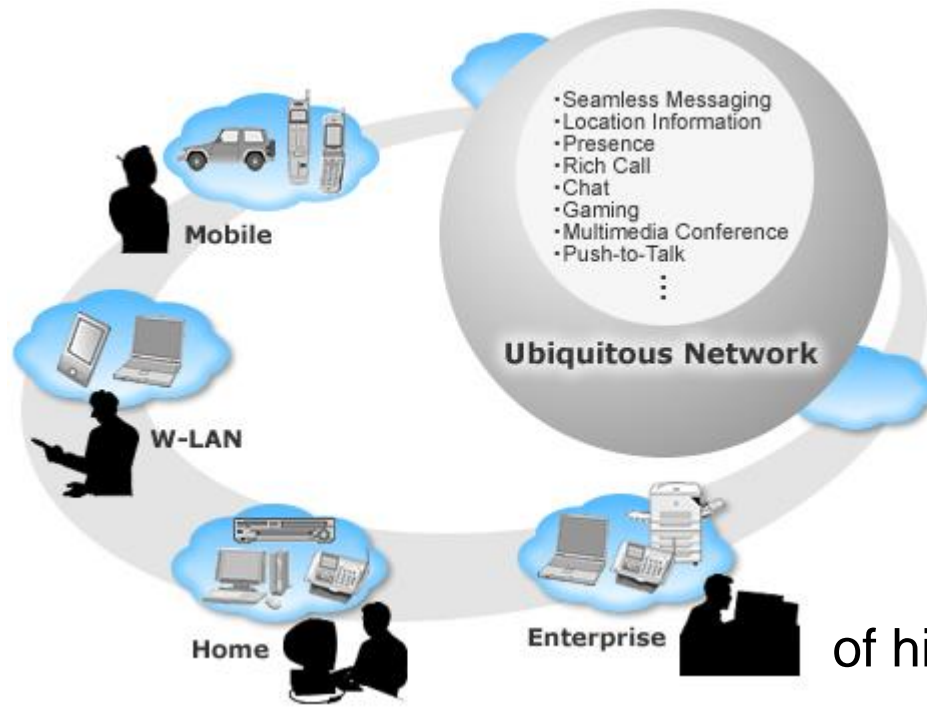


Towards a “Secure Ubiquitous Networked Society”

- Our motto:
 - Secure Access

Any Service, Any Information,

Anytime, Anywhere



Our vision:

From e-everything
to u-everything

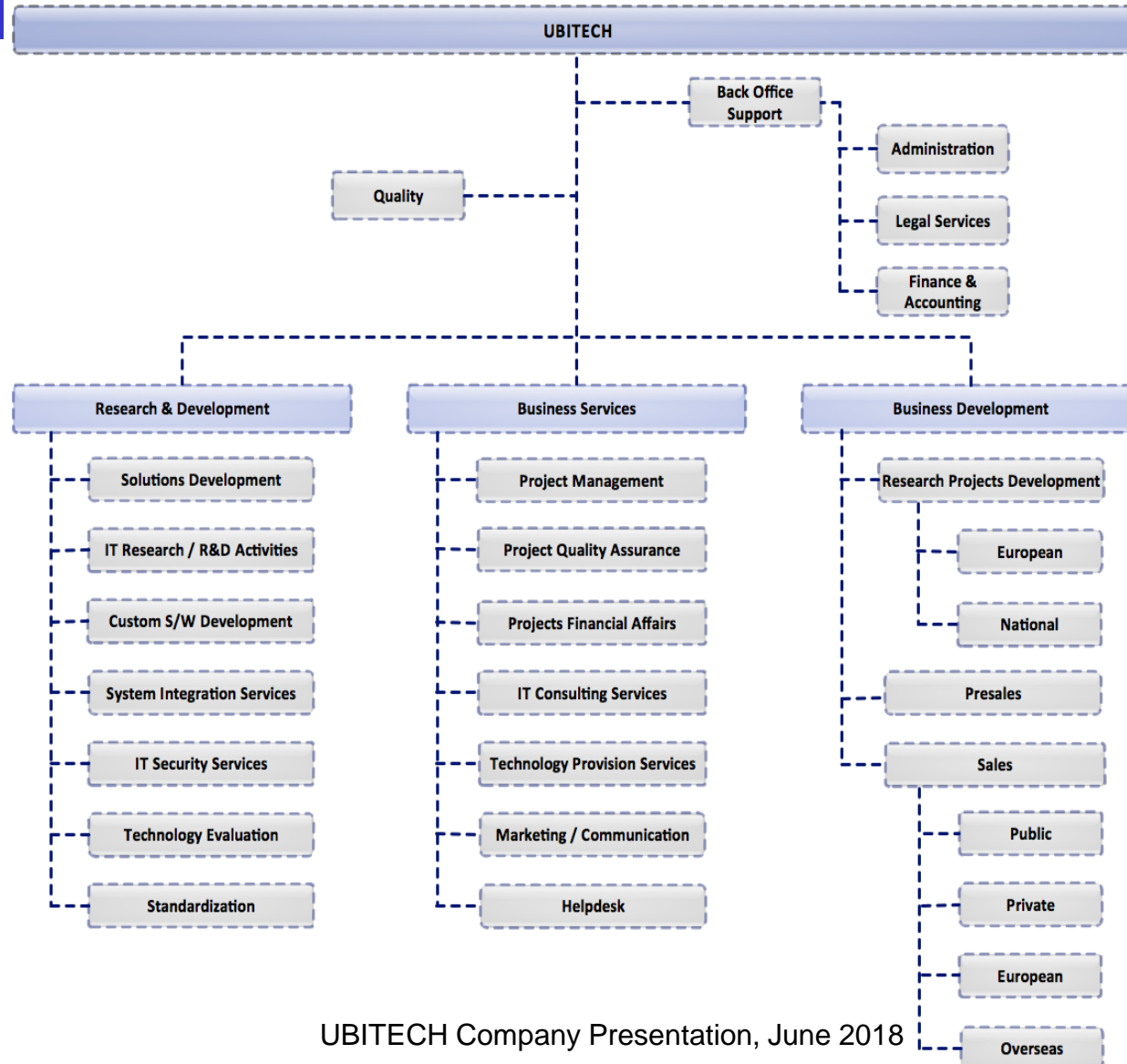
Towards the creation
of highly innovative, intelligent
ubiquitous network micro-societies

What makes UBITECH unique?

- Our **expertise** is in the area of **ubiquitous secure technologies**
- We are **your** passport to the “**Secure Ubiquitous Networked Society**”
- We have **engineered** from the ground up **innovative solutions**
- Our **staff** has many years of **experience** in
 - **systems analysis, design, development** and **integration** (software engineers / developers)
 - in several **European-wide research projects** (R&D engineers)
- We have **long-term vision**
- We focus to **provide** the **best solutions** in the industry



Company's Organizational Structure



Organizational structure principles & criteria:

- Profound and distinct interconnection of each Business Unit with its activities
- Definition of the personnel's responsibilities for the avoidance of any possible overlapping
- Flexibility during the decision-making process
- Continuous sharing and flow of the available know-how
- Effective and in-time confrontation of business challenges.

Certifications and Awards

■ Quality Management

- UBITECH operates a **certified quality management system**, compatible with the **EN ISO 9001:2015**, for
 - “the design, development, integration, production, installation, deployment, hosting and technical support of software solutions and information technology systems”, and
 - “the design, development, execution, management and delivery of research and technological development information technology projects“

■ European Business Awards

- UBITECH has been selected as a **National Champion** representing **Greece** for the **RSM Entrepreneur of the Year Award** category (that is the main awards category in the **2013/14 European Business Awards** (that is the Europe's largest awards programme).



Our Main Business Activities (1/2)

■ European and National Co-funded Research Programs

- Participation in research activities and projects, co-funded by the European Union's 6th, 7th and H2020 Research Framework Programs
- Participation in research programs by the General Secretariat for Research and Technology of Greece, as well as by the Research Promotion Foundation of Cyprus

■ System Integration and Custom Software Development

- Design and development of Integrated IT Solutions and Tailor-made Software, utilizing custom software development frameworks and including training, help-desk and outsourcing activities
- Design, development, customization, deployment and support of enterprise-driven custom software applications and solutions, e-business (B2B) and e-commerce (B2C) solutions, e-government (G2G, G2B and G2C) and e-health solutions, as well as brand new software products and services.

Our Main Business Activities (2/2)

■ e-Services and e-Processes

- Design and development of (transactional) portals exposing workflow-based e-services for customers, citizens and businesses
- Target Organizations: Public Administration and Central Government, Regional Administration and Local Government, and Private Sector

■ Technology Provision and IT Consulting

- Combining emerging technologies so as to help organizations to meet their business strategy goals and benefit from the power of technology innovation
- Definition of the IT Strategy, Infrastructure and Enterprise Architecture required for organizations to achieve their business objectives
- Increase of the R&D capacity of our business partners, staffing their project teams with our highly qualified and experienced research engineers, adding value and ensuring the robustness and success of the research and technological development process

Our Professional Services


- We design, develop, customize and apply
 - enterprise-driven **custom software applications** and **solutions**
 - **e-business** (B2B) and **e-commerce** (B2C) solutions
 - **e-government** (G2G, G2B and G2C) and **e-health** solutions
 - applications, services and systems **integration solutions**
 - brand new **software products** and solutions



- Other services:

- **(re-)selling** of hi-tech software and hardware products
- software **quality assurance**
- **technical support** and **maintenance**
- technology **consultancy** and **outsourcing**

How we work / reach the target

- Establishing **contact** with our potential customer
 - Identifying potential customer **needs** and **contracting**
 - Customer **requirements** gathering and **analysis**
 - **In detail design** of customer's case-specific solution
 - Custom solution **development** and **implementation**
 - System testing, **debugging** and **fine-tuning**
- 
- **Deployment** and **initialization**
 - Technical **support**, **maintenance** and **operation**

Contents of the Presentation

- UBITECH Facts and Figures
- Capacity, Experience and Technological Expertise
- Indicative, Recent Research Projects
- Technological Know-How

Our Personnel Expertise in Software Engineering (1/3)



Our personnel:

- more than **40** people
- **R&D consultants** and **business analysts**
- **software engineers** and **system architects**
- **application developers** and **testers**

- System Architectures
 - **N-tier** architecture
 - Service-oriented architecture (**SOA**)
 - **Micro-services** architecture
- Component-based Development
 - **J2EE** and **.NET** frameworks
 - **Python** and **GoLang** languages
- Polyglot Persistency Schemes
 - **Relational** databases
 - **NoSQL** engines
 - **Graph** databases
- Software Lifecycle Management, **Continuous Integration & Security**

Our Personnel Expertise in Software Engineering (2/3)

- We **emphasize** on a **best-of-breed technological stack** that combines:
 - **Spring-based implementation** of back-end services (mainly in **Java 8**)
 - Adoption of **micro-service architecture** that guarantees **horizontal scalability**
 - Usage of **Polyglot persistency schemes** that combine the merits of
 - **relational** databases for transactional purposes (e.g. MySQL, MS SQL Server, PostgreSQL, MariaDB)
 - **NoSQL** engines for scalable read-once/write-many operations (e.g. Mongo, Cassandra)
 - **Graph** databases for efficient graph queries(e.g. Neo4J)
 - Complete separation of front-end and back-end business logic using **REST** layer, while using **Thymeleaf** for rendering
 - Adoption of **responsive** templates

Our Personnel Expertise in Software Engineering (3/3)

- ... and it incorporates:
 - **End-to-end security** through the combination of both symmetric and asymmetric encryption techniques with digital signing, sealing and verification techniques
 - **Big Data** frameworks (e.g. Spark, Hadoop) &
 - **Streaming** frameworks (e.g. Kafka)
 - **Business Process Management** frameworks (e.g. JBPM)
 - **Rule-based Management & Processing** engines (e.g. Drools)
- while it benefits from the usage of:
 - several **low-level hypervisor** APIs (e.g. KVM, ESXI);
 - several **application and balancing servers**, such as Jboss, Apache, Tomcat, WebLogic, Resin, NginX and Haproxy

Our Software Lifecycle Management Methodology

it is our commitment that every project or product is treated with the same sense of professionalism, irrelevant to its size or cost

- For guaranteeing that the delivered projects or products meet the highest qualitative standards, we use state-of-the-art tools, such as
 - **Git** for Version Controlling,
 - **Jenkins** for Continuous Integration,
 - **Sonar** for Quality control,
 - **MAVEN** for Project Organization, and
 - **Nexus** for Artifact Management.
- For addressing the significant increase of security threats that potentially affects the integrity of any customers of ours, we adopt
 - specific methodologies (e.g. **security audits**, **regular pen-testing**)
 - tools (e.g. **Acunetix**, **BurpSuite Pro**)

to guarantee the security of our delivered projects & products

Our Technologies & R&D Competencies (1/5)

- Computing Systems, Software and Services
 - **Cloud Computing** technologies (Software-as-a-Service, Platform-as-a-Service, Infrastructure-as-a-Service)
 - **Edge** Computing and **Fog** Computing technologies
 - **Heterogeneous** Cloud models (micro local clouds, private enterprise clouds, aggregated and hybrid cloud models)
 - Cloud Service Providers **Interoperability** and **Data Portability**
 - **Policy-aware Multi-Cloud Orchestration** and **Optimal Placement** of Microservices-based Distributed Apps
 - Cloud Services **Brokerage**, **Discovery** and **Composition**
 - **High-Performance** and **High-Throughput Computing**
 - **Integrated Programming Models** and **Code & Resources** (data, computing and networking) **abstraction**
 - Software **Quality** (development, verification, validation and/or qualification tools) and **Reusability** (storing, tracking, searching and analysing software artefacts)

Our Technologies & R&D Competencies (2/5)

- Autonomous Networks, IoT and Network Softwarization
 - **Autonomous Computing** (decentralized overlay networks, ad-hoc networking and routing, ad-hoc decentralized overlays for service provision)
 - **Swarm Intelligence** (self-organization, self-configuration, self-healing, self-awareness)
 - Peer-to-Peer (**P2P**) Decentralized Network Architectures
 - **Ubiquitous** and **Mobile** Computing, **Wireless** Infrastructures and **Telematics**
 - **5G** Technologies, **Software Defined Networks** (SDN) and **Network Function Virtualization** (NFV), **Network Slicing**
 - End-to-End **Network Services** & **Vertical Apps Orchestration**
 - **Cyber Physical Systems** and **Internet of Things**
 - (Semantic) **Sensor Networks** and **Sensor Data Fusion**
 - **Energy-aware**, **Energy-efficient** and **Low-power** Computing

Our Technologies & R&D Competencies (3/5)

- Data Science and Intelligent Computing
 - **Privacy-preserving Machine Learning** and **Deep Learning**
 - **Distributed Machine Learning** methodologies & technologies
 - **Big Data** (storage, management, processing and analytics)
 - Extract-Transform-Load (**ETL**) techniques
 - **Real-time Analytics** and **Stream Processing**
 - Real-time Complex Events Processing (**CEP**)
 - (Big) **Data Mining and Analytics** (classification, association, clustering, regression, forecasting, geospatial queries)
 - **Extreme-scale analytics**, deep analysis & precise predictions
 - **Decision making** support and Big Data **visualization**
 - Data **Marketplaces**, Data **Brokerage** and **Data-as-a-Service**
 - **Big Data Value Chains** in vertical industries (maritime, aviation, healthcare, transportation, fintech, agri-food, public safety)

Our Technologies & R&D Competencies (4/5)

- Knowledge and Social Technologies
 - **Ontologies** and **Semantic Web Services** technologies
 - **Semantic Interoperability** technologies
 - **Dynamic Data Mediation**, Metadata Alignment and Ingestion
 - Semantic **Sensor Networks** and Sensor **Data Fusion**
 - **Linked Data** and **Open Data** Technologies
 - **Social Networks** and **Collaborative Working Environments**
 - Natural Language Processing (**NLP**)
 - Name-Entity Recognition (**NER**)
 - **Opinions and Arguments Modeling** and Extraction
 - **Sentiment** Analysis
 - Distributed & Mobile **Multi-agent** Systems

Our Technologies & R&D Competencies (5/5)

- Digital Security and Trusted Computing
 - **Privacy-preserving** and **Privacy-by-Design** technologies
 - (**XACML**-based) **access policy model** and **enforcement**
 - **GDPR-compliance** and Privacy Impact Assessment (**PIA**)
 - **Blockchain** and **distributed ledger** technologies
 - Cybersecurity **risk assessment** and management
 - **Secure execution environments** (Trusted Platform Modules - **TPMs**, Trusted Execution Environments - **TEEs**)
 - **Secure operating systems** and **virtualization security**
 - **Machine learning**, **Deep learning** & **Analytics** for cybersecurity
 - **Encrypted network traffic** handling and **anomaly detection**
 - **Evidence-based security** and **security-by-design** principles for emerging technologies (CPS/IoT ecosystems, virtualised and softwarized infrastructures, service-oriented systems/networks)

Application Domains and Vertical Industries

■ Healthcare

- e-Health, m-Health, telecare, homecare, bioinformatics, chemo-informatics, drug discovery, chronic disease management, ambient assisted & independent living

■ Industry 4.0

- Digital Factories, Knowledge Factories, Factories of the Future, Smart Manufacturing, Logistics, Cooperative Production, Supply Chains, Collaborative Product and Process Design

■ Telecom

- Communication networks and infrastructure, networks virtualization and softwarization, automated service provision over communication networks

■ Energy

- Electrical Power and Energy Systems, Smart Grid, Energy Supply & Demand

■ Transportation

- Intelligent Transportation Systems, Connected Vehicles, Autonomous Driving, Human Mobility

■ Agri-food

- Precision Agriculture, Precision Livestock Farming

■ Energy Efficient Buildings

- Building management systems, energy-aware behavior and lifestyle

Current Status of UBITECH R&D Activities

- Participation in R&D and Large-scale IT Projects
 - UBITECH has completed successfully **more than 70 R&D and Large-scale IT projects** in the last 8 years
 - UBITECH is **currently running** (or is at contract preparation phase in) **about 40** co-funded research programmes and large-scale information technology projects
- Standardization Activities
 - UBITECH has chaired and led the **DIN SPEC 91337** technical committee standardizing the management and control of the life cycle of an application that is executed in a Platform-as-a-Service (PaaS) cloud provider
 - UBITECH R&D Director participates as Member of Technical Committee of **OASIS Cloud Application Management for Platforms** (CAMP) led by Oracle and Red Hat for the formulation, creation and standardization a Cloud Platform-as-a-Service Management API
 - UBITECH has strongly participated in the formulation and creation of the ETSI (European Telecommunications Standards Institute) Recommendation: **Autonomic network engineering for the self-managing Future Internet** (AFI)
 - UBITECH participates in the ADMS (**Asset Description Metadata Schema**) Working Group of ISA Unit of European Commission
- Scientific Publication Activities
 - UBITECH Personnel has Authored / Co-Authored more than 40 research papers in scientific conferences and international journals

Research Partners Network



- Extensive network of research partnerships and business alliances (**more than 100 partners**) that is considered as the main facilitators for our expansion both in Europe and Latin America
- Our main research and business partners are coming from **more than 30 countries**, representing the **Industry**, the **Research** community, the **Academia** and Other **Organizations** of public interest

Our Research Partners (1/4)

■ Industry (*indicative list*)

- ATOS (Spain) & BULL (France)
- THALES (France)
- Infineon (Austria & Germany)
- Ericsson (Sweden, Italy & Slovenia)
- IBM Zurich (Switzerland) & IBM Haifa (Israel)
- Mellanox (Israel)
- NEC (Germany)
- Huawei (Germany)
- Redhat (Israel)
- Intrasoftware International (Luxembourg)
- Engineering (Italy)
- Software AG (Germany)
- SIVICO (Romania)
- Eurescom (Germany)
- Telefonica (Spain)
- Orange (France & Romania)
- COSMOTE (Greece)
- Telecom Italia (Italy)
- Telenor (Norway)

Our Research Partners (2/4)

■ **RTD Performing SMEs** (*indicative list*)

- Suite5 (Cyprus & UK)
- LeanXcale (Spain)
- ExxpertSystems GmbH (Germany)
- Nurogames GmbH (Germany)
- CAS Software AG (Germany)
- SixSq Sarl (Switzerland)
- Booreiland (Netherlands)
- Easy Global Market SAS (France)
- Exmile Solutions Limited (UK)
- Hyperborea s.r.l. (Italy)
- Softeco Sismat Srl (Italy)
- Incelligent Limited (Greece)
- Wings ICT (Greece)
- Synelixis Solutions Ltd. (Greece)
- Intelen Services Limited (Cyprus)
- INTERNET INSTITUTE (Slovenia)
- Mandat International (Switzerland)
- Archimede Solutions SARL (Switzerland)
- Montimage (France)

Our Research Partners (3/4)

■ **Research Community** and **Academia** (*indicative list*)

- Fraunhofer FOKUS & FIT (Germany)
- Technical University of Berlin TUB (Germany)
- University of Stuttgart (Germany)
- BIBA (Germany)
- Austrian Institute of Technology (Austria)
- University of Vienna (Austria)
- AALTO University (Finland)
- KTH (Sweden)
- SINTEF (Norway)
- Poznan University of Technology (Poland)
- BioSense (Serbia)
- University of Surrey (UK)
- University of Bristol (UK)
- CNIT (Italy)
- CINECA (Italy)
- Polytechnic University of Madrid UPM (Spain)
- Barcelona Supercomputer Center BSC (Spain)
- University of Murcia (Spain)
- Institute of Communications and Computer Systems ICCS (Greece)
- University of Piraeus Research Center UPRC (Greece)
- University of Cyprus

Our Research Partners (3/4)

■ Other Organizations (*indicative list*)

- European Digital SME Alliance (Belgium)
- European Federation for Missing and Sexually Exploited Children (Belgium)
- Child Focus (Belgium)
- Red Cross (Greece)
- The Smile of Child (Greece)
- Bulgarian Chamber of Commerce and Industry (Bulgaria)
- DIN German Institute for Standardization (Germany)
- Steinbeis Foundation (Germany)
- Bundesverband IT-Mittelstand e.V. (Germany)
- SEVT Federation of Hellenic Food Industry (Greece)
- TÜRSAB Association of Turkish Travel Agencies (Turkey)
- TURKIYE BILISIM VAKFI (Turkey)
- Latvian Information and Communications Technology Association (Latvia)
- Game Co-operative Malmö (Sweden)

Contents of the Presentation

- UBITECH Facts and Figures
- Capacity, Experience and Technological Expertise
- Indicative, Recent Research Projects
- Technological Know-How

Computing Systems, Software and Services

■ PrEstoCloud H2020-732339

- Proactive Cloud Resources Management at the Edge for Efficient Real-Time Big Data Processing



■ UNICORN H2020-731846

- A Novel Framework for Multi-Cloud Services Development, Orchestration, Deployment and Continuous Management Fostering Cloud Technologies Uptake from Digital SMEs and Startups

UNICORN

■ PaaSword H2020-644814

- A Holistic Data Privacy and Security by Design Platform-as-a-Service Framework Introducing Distributed Encrypted Persistence in Cloud-based Applications



■ ARCADIA H2020-645372

- ARCADIA – A Novel Reconfigurable by Design Highly Distributed Applications Development Paradigm over Programmable Infrastructure



ARCADIA

■ INPUT H2020-644672

- In-Network Programmability for next-generation personal clouD service support



Network Softwarization and Internet of Things

■ MATILDA H2020-761898

- A Holistic, Innovative Framework for the Design, Development and Orchestration of 5G-ready Applications and Network Services over Sliced Programmable Infrastructure



MATILDA

■ 5GTANGO H2020-761493

- 5G Development and validation platform for global industry-specific network services and Apps



5Gtango

■ CONFIG (Public-Private Partnership)

- Control Networks in 5G



■ ENTROPY H2020-649849

- Design of an Innovative Energy-aware IT Ecosystem for Motivating Behavioral Changes towards the Adoption of Energy Efficient Lifestyles Technologies



ENTROPY

■ SUBSOL H2020-642228

- bringing coastal SUBsurface water SOLutions to the market

Sub
Sol

Data Science and Intelligent Computing

■ **BigDataStack H2020-779747**

- High-performance data-centric stack for big data applications and operations



■ **UPTIME H2020-768634**

- Unified Predictive Maintenance System

UPTIME

■ **ICARUS H2020-780792**

- Aviation-driven Data Value Chain for Diversified Global and Local Operations



ICARUS

■ **BigDataOcean H2020-732310**

- Exploiting Ocean's of Data for Maritime Applications



■ **AEGIS H2020-732189**

- Advanced Big Data Value Chain for Public Safety and Personal Security



UBITECH
ubiquitous solutions

Knowledge and Social Technologies

■ BIMERR H2020-820621

- BIM-based holistic tools for Energy-driven Renovation of existing Residences

■ ChildRescue H2020-780938

- Collective Awareness Platform for Missing Children Investigation and Rescue

■ RB-LOG E!11553

- Autonomous Robotic Deliveries for Small Logistics

■ FALCON H2020-636868

- Feedback mechanisms Across the Lifecycle for Customer-driven Optimization of iNnovative product-service design

■ LinDA FP7-610565

- Enabling Linked Data and Analytics for SMEs by Renovating Public Sector Information

UBITECH Company Presentation, June 2018



CHILD
RESCUE



ROBOTIC
LOGISTICS



LINDA PROJECT
LINKED DATA



Digital Security and Trusted Computing

■ **ASTRID H2020-786922**

- Addressing Threats for Virtualized Services



■ **FutureTPM H2020-779391**

- Future Proofing the Connected World: A Quantum-Resistant Trusted Platform Module



■ **TagItLedger (*TagItSmart Cascading Grants*)**

- Tag Driven Supply Chain Ledger Service for Enhanced Product Transparency



■ **SecureIoT H2020-779899**

- Predictive Security for IoT Platforms and Networks of Smart Objects



■ **ANASTACIA H2020-731558**

- Advanced Networked Agents for Security and Trust Assessment in CPS/IOT Architectures



Contents of the Presentation

- UBITECH Facts and Figures
- Capacity, Experience and Technological Expertise
- Indicative, Recent Research Projects
- Technological Know-How

Microservices Engineering

- Extensive use of **Spring** development stack
 - **Spring Cloud**
 - configuration management and service discovery (**Eureka**, **Consul**)
 - circuit breakers (**Feign**)
 - load balancing (**Zuul**, **Traefik**)
 - **Hystrix** and **Netdata** -based monitoring
 - **Spring Security**
 - Experience in both
 - Service Mesh patterns (**Envoy**, **Linkerd**), and
 - API Gateway patterns (**Spring Cloud**)
 - Addressing Threats for Virtualized Services
 - **Spring Data** (using abstractions, e.g. **JPA**, **Hibernate**)
 - **Spring HATEOAS**
 - **Spring Rest**
 - **Google gRPC stack** (protobuf abstractions)
- Extensive use of **messaging subsystems** and protocols for **asynchronous** patterns (**Kafka**, **RabbitMQ**)

DevOps

- Experience in deploying and operating several **Private & Public IaaS APIs**
 - **Openstack** (versions from Liberty to Rocky)
 - **Amazon AWS, Google Cloud Platform**
 - Native **KVM** (LibVirt) , **XEN** Hypervisors
- Cloud Orchestration
 - **Kubernetes**
 - **Docker SWARM**
 - using our own (internally developed) **MAESTRO Multi-Cloud Orchestrator** (for smart policies)
- Container Engines
 - **Docker, LXC**
- PaaS deployments
 - **Openshift**
- Elasticity Management using **Drools** rule engine
- Optimal placement using **optaplanner** using linear optimization engine

Polyglot Persistence

- Relational Databases
 - Oracle
 - MariaDB
 - PostgreSQL
 - experience in clustering and high availability
 - Galera Cluster
- NoSQL Databases
 - MongoDB
 - Cassandra
 - Hive
- Graph Databases
 - Neo4J
- Indexing
 - Solr
 - Elasticsearch
 - experience in large-scale, real-life operational deployments
 - Big Data Repository of Hellenic Police (more than **140TeraBytes**)

Front-end

- Enterprise-grade Web application development
 - **HTML/CSS**
 - **Angular 6+**
 - **Bootstrap 4**
 - **SASS**
 - **Ionic Framework 4**
 - **React**
 - **vue.js**
- Hybrid mobile application development
 - **Ionic Framework 4**
- Hybrid Web/Desktop offline/online applications
 - **Angular 6**
 - **ElectronJS**
- Native mobile application development
 - Android(**Kotlin**)
 - iOS(**Swift 4**)

Big Data and Analytics Frameworks

- Big Data frameworks
 - **Spark**
 - **Hadoop**
 - Apache **Flink**
- Analytics frameworks
 - **Spark MLib** for analytics
 - **R** suite for statistical computing
 - **Parallel-R** and **OpenCPU** for large-scale analytics
- Business Intelligence suites
 - **Pentaho** ETL and Analytics Engine
- Complex Analytics Flows
 - Apache **NiFi**
 - **StreamSets**

Security, Networking and IoT Development

- Information security and trust
 - Use of **Symmetric** and **Asymmetric Encryption** libraries
 - Usage of **PKCS11** for **Electronic Signing** and **Timestamping**
 - **TPM2.0**-based **attestation** techniques
 - **ABAC** engine for authorization
 - **penetration testing** services (by **OSCP** certified personnel)
- Network programmability
 - **OpenFlow** -based network programmability
- IoT development and networking
 - development with **Java compact-profile** for Raspberry Pi
 - customization of **Rasbian Linux-based OS**
 - successful **Mesh** deployments using **802.11s**