**Small or medium-scale focused research project (STREP) proposal**

**ICT Call 5**

FP7-ICT-2009-5

**Autopilot cars for roads in Serbia**

**Special arrangements apply for the preparation of proposal Part B in the Objectives ICT-2009.9.2 and ICT-2009.9.5. See Annexes 7 and 8 of the Guide for applicants**

**APS**

**Small or medium scale focused research project (STREP)**

**Date of preparation**: 13.11.2017.

**Version number**: 1.0

**Work programme topic addressed**

Internet of Things - ICT-27-2018-2020

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|  |  |  |  |
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**Proposal abstract**

*(copied from Part A, if not in English include an English translation)*

*U Srbiji je изузетно отежано кретање моторним возилима, због многобројних рупа на путевима, недовољне обележености, означености путева и лошег осветљења појединих деоница. Ovo znatno otezava koriscenje autopilot vozila. Trenutne tehnologije su konstruisane tako da prepoznaju samo kvalitetne I neostecene signalizacije, te su se pokazale neprilagodljivim ovakvim uslovima na putevina Srbije. The objective of the proposed project is to а се возилима увезеним из Кореје (KIA, Hyundai, Daewoo) прилагоди софтвер за путеве у Србији тако што ће се побољшати систем за препознавање рупа на путу и изменити систем који прати линије на путевима тако што ће акценат бити на удаљености од ивице пута и возила испред и иза. Ovo moze omoguciti velikom broju ljudi da koristi autopilot vozila, ili kod ljudi koji nisu sposobni za voznju, da koriste vozila uopste. Takodje, ideja moze predstavljati podsrtek drugim zemljama da prate ovaj primer. Planirano je detaljno testiranje na statisticki dovoljno velikom broju vozila, 4 proizvodjaca.*

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**Section 1: Scientific and/or technical quality, relevant to the topics addressed by the call**

*(Maximum length for the whole of Section 1 – twenty pages. This does not include the Gantt chart, Pert diagram or tables 1.3a-e)*

**1.1 Concept and objectives**

Explain the concept of your project. What are the main ideas that led you to propose this work?

Describe in detail the S&T objectives. Show how they relate to the topics addressed by the call, which you should explicitly identify. The objectives should be those achievable within the project, not through subsequent development. They should be stated in a measurable and verifiable form, including through the milestones that will be indicated under section 1.3 below.

The major concept behind this proposal is to connect the following fields:

* AMI (Automotive industry)
* ECE (electrical and computer engineering)
* WSN (wireless sensor networks)
* INT (Internet technology)
* SEM (software engineering methodology)
* DMS (data mining systems)

in order to achieve using autopilot cars more comfortable.

This major strategy is fully compatible with major goals expressed in call: Internet of Things - ICT-27-2018-2020.

Our approach in this proposal is a continuation (follow-up) of other existing project: Pattern matching for recognising car licence plates. Essentially, while working on previous project, idea was generated, to give an even greater contribute to the Automotive industry and helping people with special needs.

The main idea of this project is to adjust software for cars imported from South Korea, in order to make it compatible to roads in Serbia.

The following are the main project objectives:

Objective 0: Project management

The goal of this objective is to make sure that absolutely each and every detail of this proposal, if it is awarded, be properly taken care of, which means:

(a) All deliverables delivered in time

(b) All deliverables delivered at quality levels that satisfy the highest H2020 standards

(c) All deliverables delivered in a form which is consistent and understandable.

Success criteria:

• Optimization of the reporting processes involved in the project (deadlines)

• Optimization of the control processes involved in the project

• Optimizing finances of the project

Objective 1: Generating use cases

Use cases will be generated through a series of brainstorming meetings, with the purpose of taking into account a variety of applications of interest for the Automotive industry (this includes both, the generation of new ideas and improvements of the existing ones). An active two-way exchange of results between all partners and the EU researchers will be done through seminars and workshops. All application use cases will be properly documented.

Success criteria:

• Opinion of beneficiaries on the need for the generated applications

• Opinion of beneficiaries about the functionalities provided

Objective 2: Import vehicles from South Korea

The main objective is to develop a collaboration with KIA, Daewoo, Hyndai and SsangYong. Licence is required in order to change their product.

Success criteria:

• Imports are done in arranged deadlines

• Needed licences are obtained

Objective 3: Obtain software from Tesla

The main objective is to develop a collaboration with Tesla. Licence is required in order to base our software on theirs.

Success criteria:

• Needed licences are obtained

Objective 4: Detailed study on road conditions in Serbia

The main objective is to make a detailed study on conditions of Serbian roads, because of many damages, inadequate signalisation and inappropriate visibility. The goal is to have a complete analysis on all possible problems, which will be covered by software.

Success criteria:

• List of all possible problems on Serbian roads made

Objective 5: Software implementation

The main objective is to adjust Tesla`s software for cars imported from South Korea, by improving damage recognition system, side-line following system and car distance system.

Success criteria:

• System for damage recognition can detect and avoid road damages off any size and types.

• System for side-line following can maintain required distance from each side-line in straight driving and in both left and right curves and turning.

• System for car distance can measure distance from both cars in front and behind and optimize speed to keep it constant.

• Software covers statistically significant number of different road issues.

Objective 6: Testing

The main objective is to test one representing car of each developer in different types of roads. Adjusted cars from each car manufacturer (KIA, Daewoo, Hyndai and SsangYong) we will test on highways, mountain roads and city streets.

Success criteria:

• Test cases developed according to the needs of the beneficiary industry

• All 12 test combinations passed successfully.

Objective 7: **To do constantly a public dissemination about this project**

The special sessions, seminars and car shows will be open events to achieve the maximum dissemination impact and spread knowledge to cognate industries and institutions for maximal regional benefit. Suitable media events will be used to further spread information about the benefits of applications. This will enable us, to gain a more competitive position on the world market and consequently boost the local economy.

Success criteria:

• Number of papers presented at most famous international car magazines (one per months, for three years)

• Number of participants at automotive seminars and sessions, one a year, for three years

**1.2 Progress beyond the state-of-the-art**

Describe the state-of-the-art in the area concerned, and the advance that the proposed project would bring about. If applicable, refer to the results of any patent search you might have carried out.

What follows is an analysis of existing approaches worldwide. The analysis to follow concludes the following: although the latest and most advanced researches nowadays, do contribute a number of innovative approaches, none of them is compatible with roads in Serbia, which is where this proposal goes beyond state of the art. Problems are described in Objective 4: Detailed study on road conditions in Serbia.

The main producer of autopilot cars is Tesla. Even though, having the most advanced technologies, being in top 5 selling autopilot cars and has achieved remarkable properties of cars with autopilot, Tesla has proven itself extremely unreliable and dangerous [1] even on more quality roads then the ones in Serbia. That is why we want to improve it’s software and sensors. The main idea is to base on a software with great possibilities, and improve it’s defects regarding safety and compatibility in order to create world-class autopilot software.

References:

1. YADRON, Danny; TYNAN, Dan. Tesla driver dies in first fatal crash while using autopilot mode. The Guardian, 2016, 1.
2. LARI, Adeel; DOUMA, Frank; ONYIAH, Ify. Self-driving vehicles and policy implications: current status of autonomous vehicle development and minnesota policy implications. Minn. JL Sci. & Tech., 2015, 16: 735
3. KESSLER, Aaron M. Elon Musk Says Self-Driving Tesla Cars Will Be in the US by Summer. The New York Times, 2015, B1.
4. BRADLEY, Ryan. Tesla autopilot, the electric-vehicle maker sent its cars a software update that suddenly made autonomous driving a reality. 2016.

**1.3 S/T methodology and associated work plan**

**1.3.1 Describing the overall strategy of the work plan**

In order to achieve the overall project objectives, the following items are considered as crucial:

* Competent researchers well aware of the state of the art in the research field and able to take the research forward;
* State of the art research infrastructure;
* Ability to work, communicate and collaborate with researchers from various backgrounds, in various circumstances and environments;
* Large network of contacts in the research community;
* Public awareness of the benefits of the research in a chosen field and promotion of research results and achievements.

The project is organized in **8** work packages as follows:

* WP0: Project management
* WP1: Generating use cases
* WP2: Import vehicles from South Korea
* WP3: Obtain software from Tesla
* WP4: Detailed study on road conditions in Serbia
* WP5: Software implementation
* WP6: Testing
* WP7: Dissemination

The main body of work is included in three work packages (WP1, WP2, WP3, WP4 and WP5). The activities planned in these work packages correspond to the main strands of the project as described above. It is the responsibility of the project management team (WP0) to coordinate these activities to maximize the impact and benefits for everyone involved. Work packages WP6 and WP7 are treated as pillars that support the main body of work.

**1.3.2 Work packages - Gantt chart**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Months | | | | | | | | | | | | | | | | | | | | | | | |
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| WP0  Project management |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| WP1  Generating use cases |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| WP2  Import vehicles  from South Korea |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| WP3  Obtain software  from Tesla |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| WP4  Detailed study on  road conditions in Serbia |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| WP5  Software implementation |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| WP6  Testing |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| WP7  Dissemination |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**1.3.3.a Work package list**

* + - Description of each work package (please use table 1.3d)
    - Summary effort table (1.3e)

iv) Provide a graphical presentation of the components showing their interdependencies (Pert diagram or similar)

v) Describe any significant risks, and associated contingency plans

Note: The number of work packages used must be appropriate to the complexity of the work and the overall value of the proposed project. The planning should be sufficiently detailed to justify the proposed effort and allow progress monitoring by the Commission.

*Table 1.3a: Template - Work package list*

**Work package list**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Work package No[[1]](#footnote-1)** | **Work package title** | **Type of activity[[2]](#footnote-2)** | **Lead  partic no.[[3]](#footnote-3)** | **Lead partic. short name** | **Person-months[[4]](#footnote-4)** | **Start month****[[5]](#footnote-5)** | **End month** |
| WP0 | Project management | MGT |  | RT-RK | 48 | M1 | M21 |
| WP1 | Generating use cases | RTD |  | MATF | 8 | M2 | M3 |
| WP2 | Import vehicles from South Korea | RTD |  | TTTECH | 4 | M4 | M5 |
| WP3 | Obtain software from Tesla | RTD |  | ETF | 8 | M4 | M5 |
| WP4 | Detailed study on road conditions in Serbia | RTD |  | TTTECH | 70 | M6 | M12 |
| WP5 | Software implementation | RTD |  | MATF | 160 | M10 | M18 |
| WP6 | Testing | RTD |  | OBLO | 60 | M13 | M19 |
| WP7 | Dissemination | DEM |  | RT-RK | 24 | M13 | M24 |
|  | TOTAL |  |  |  | 384 |  |  |

**1.3.3.b List of Deliverables**

**1.3.3.b List of Deliverables**

*Table 1.3b: Template - Deliverables List*

**List of Deliverables**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Del. no. [[6]](#footnote-6)** | **Deliverable name** | **WP no.** | **Nature[[7]](#footnote-7)** | **Dissemi-nation  level [[8]](#footnote-8)** | **Delivery date[[9]](#footnote-9)**  **(proj.**  **month)** |
| D0.1 | Progress report for the six months of work | 0 | R | PU | M6 |
| D0.2 | Progress report for the six months of work | 0 | R | PU | M12 |
| D0.3 | Progress report for the six months of work | 0 | R | PU | M18 |
| D0.4 | Progress report of whole project | 0 | R | PU | M24 |
| D1 | Documentation of use cases | 1 | R | CO | M4 |
| D2 | Confirmation on import success | 2 | R | PP | M6 |
| D3 | Confirmation on Tesla’s software receiving success | 3 | R | PP | M6 |
| D4 | Report on detailed study on Serbian roads | 4 | R | CO | M13 |
| D5.1 | Documented code | 5 | R | CO | M14 |
| D5.2 | Final version of software implementation | 5 | P | CO | M18 |
| D6.1 | Documented testing procedures | 6 | R | CO | M14 |
| D6.2 | Report on testing results | 6 | R | PU | M20 |
| D7.1 | Number of participants at automotive seminars and sessions | 7 | D | PU | M24 |
| D7.2 | Number of car shows organized | 7 | D | PU | M24 |
| D7.3 | Number of arcticles in international car magazines | 7 | D | PU | M24 |

**1.3.3.c Milestones**

*Table 1.3c Template - List of milestones*

**Milestones**

Milestones are control points where decisions are needed with regard to the next stage of the project. For example, a milestone may occur when a major result has been achieved, if its successful attainment is a required for the next phase of work. Another example would be a point when the consortium must decide which of several technologies to adopt for further development.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Milestone number** | **Milestone name** | **Work package(s) involved** | **Expected date [[10]](#footnote-10)** | **Means of verification[[11]](#footnote-11)** |
| M0.1 | Checking on optimization of the reporting processes involved in the project (deadlines) | WP0 | M6 |  |
| M0.2 | Checking on optimization of the control processes involved in the project | WP0 | M12 |  |
| M0.3 | Checking on optimizing finances of the project | WP0 | M12 |  |
| M1.1 | Checking on opinion of beneficiaries on the need for the generated applications | WP1 | M3 |  |
| M1.2 | Checking on opinion of beneficiaries about the functionalities provided | WP1 | M4 |  |
| M2.1 | Checking if imports are done in arranged deadlines | WP2 | M5 |  |
| M2.2 | Checking if needed licences are obtained | WP2 | M5 |  |
| M3.1 | Checking if needed licences are obtained | WP3 | M5 |  |
| M4.1 | Checking if list of all possible problems on Serbian roads is made properly | WP4 | M13 |  |
| M5.1 | Checking on system for damage recognition | WP5 | M18 | System can detect and avoid road damages off any size and types. |
| M5.2 | Checking on system for side-line following | WP5 | M18 | System can maintain required distance from each side-line in straight driving and in both left and right curves and turning. |
| M5.3 | Checking on system for car distance | WP5 | M18 | System can measure distance from both cars in front and behind and optimize speed to keep it constant. |
| M5.4 | Checking if software covers statistically significant number of different road issues | WP5 | M18 |  |
| M6.1 | Checking if test cases are developed according to the needs of the beneficiary industry | WP6 | M13 |  |
| M6.2 | Checking if all 12 test combinations passed successfully. | WP6 | M20 |  |
| M7.1 | Checking on number of papers presented at most famous international car magazines | WP7 | M24 | Number must match plan: one per months, for three years |
| M7.2 | Checking on number of participants at automotive seminars and sessions | WP7 | M24 | Number must match plan: one a year, for three years |

*Table 1.3d: Template - Work package description*

**1.3.3.d Description of each work package**

**Work package description**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Work package number** | WP0 | | **Start date or starting event:** | | | | M1 | | |
| **Work package title** | Project management | | | | | | | | |
| **Activity type[[12]](#footnote-12)** | MGT | | | | | | | | |
| **Participant number** | 2 | 5 | | 1 |  |  | |  | Total |
| **Participant short name** | RT-RK | TTTech | | MATF |  |  | |  |  |
| **Person-months per participant** | 24 | 12 | | 12 |  |  | |  | 48 |
| **Objectives**  The objectives of WP0 are the overall management, progress monitoring and stakeholders management of the project. WP0 aims at:  Setting up, operating and maintaining the project administrative and scientific management infrastructure.  Ensuring the overall scientific and technical coordination of the project.  Ensuring collaboration and coordination with relevant government bodies regarding research programmes.  Performing a self-assessment of the project progress.  Conducting progress reviews on M6, M12, M18 and M24 | | | | | | | | | |
| **Description of work** (possibly broken down into tasks) and role of partners | | | | | | | | | |
| **Deliverables** (brief description) and month of delivery | | | | | | | | | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Work package number** | WP1 | | **Start date or starting event:** | | | | M2 | | |
| **Work package title** | Generating use cases | | | | | | | | |
| **Activity type[[13]](#footnote-13)** | RTD | | | | | | | | |
| **Participant number** | 1 | 3 | |  |  |  | |  | Total |
| **Participant short name** | MATF | ETF | |  |  |  | |  |  |
| **Person-months per participant** | 6 | 2 | |  |  |  | |  | 8 |
| **Objectives** | | | | | | | | | |
| **Description of work** (possibly broken down into tasks) and role of partners | | | | | | | | | |
| **Deliverables** (brief description) and month of delivery | | | | | | | | | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Work package number** | WP2 | | **Start date or starting event:** | | | | M4 | | |
| **Work package title** | Import vehicles from South Korea | | | | | | | | |
| **Activity type[[14]](#footnote-14)** | RTD | | | | | | | | |
| **Participant number** | 5 | 4 | |  |  |  | |  | Total |
| **Participant short name** | TTTech | OBLO | |  |  |  | |  |  |
| **Person-months per participant** | 2 | 2 | |  |  |  | |  | 4 |
| **Objectives** | | | | | | | | | |
| **Description of work** (possibly broken down into tasks) and role of partners | | | | | | | | | |
| **Deliverables** (brief description) and month of delivery | | | | | | | | | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Work package number** | WP3 | | **Start date or starting event:** | | | | M4 | | |
| **Work package title** | Obtaining software from Tesla | | | | | | | | |
| **Activity type[[15]](#footnote-15)** | RTD | | | | | | | | |
| **Participant number** | 3 | 1 | |  |  |  | |  | Total |
| **Participant short name** | ETF | MATF | |  |  |  | |  |  |
| **Person-months per participant** | 6 | 2 | |  |  |  | |  | 8 |
| **Objectives** | | | | | | | | | |
| **Description of work** (possibly broken down into tasks) and role of partners | | | | | | | | | |
| **Deliverables** (brief description) and month of delivery | | | | | | | | | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Work package number** | WP4 | | **Start date or starting event:** | | | | M6 | | |
| **Work package title** | Detailed study on road conditions in Serbia | | | | | | | | |
| **Activity type[[16]](#footnote-16)** | RTD | | | | | | | | |
| **Participant number** | 5 | 4 | | 2 |  |  | |  | Total |
| **Participant short name** | TTTech | OBLO | | RT-RK |  |  | |  |  |
| **Person-months per participant** | 35 | 21 | | 14 |  |  | |  | 70 |
| **Objectives** | | | | | | | | | |
| **Description of work** (possibly broken down into tasks) and role of partners | | | | | | | | | |
| **Deliverables** (brief description) and month of delivery | | | | | | | | | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Work package number** | WP5 | | **Start date or starting event:** | | | | M10 | | |
| **Work package title** | Software implementation | | | | | | | | |
| **Activity type[[17]](#footnote-17)** | RTD | | | | | | | | |
| **Participant number** | 1 | 3 | | 2 |  |  | |  | Total |
| **Participant short name** | MATF | ETF | | RT-RK |  |  | |  |  |
| **Person-months per participant** | 80 | 40 | | 40 |  |  | |  | 160 |
| **Objectives** | | | | | | | | | |
| **Description of work** (possibly broken down into tasks) and role of partners | | | | | | | | | |
| **Deliverables** (brief description) and month of delivery | | | | | | | | | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Work package number** | WP6 | | **Start date or starting event:** | | | | M13 | | |
| **Work package title** | Testing | | | | | | | | |
| **Activity type[[18]](#footnote-18)** | RTD | | | | | | | | |
| **Participant number** | 4 | 5 | | 2 |  |  | |  | Total |
| **Participant short name** | OBLO | TTTech | | RT-RK |  |  | |  |  |
| **Person-months per participant** | 30 | 10 | | 10 |  |  | |  | 50 |
| **Objectives** | | | | | | | | | |
| **Description of work** (possibly broken down into tasks) and role of partners | | | | | | | | | |
| **Deliverables** (brief description) and month of delivery | | | | | | | | | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Work package number** | WP7 | | **Start date or starting event:** | | | | M13 | | |
| **Work package title** | Dissemination | | | | | | | | |
| **Activity type[[19]](#footnote-19)** | DEM | | | | | | | | |
| **Participant number** | 2 | 1 | | 3 |  |  | |  | Total |
| **Participant short name** | RT-RK | MATF | | ETF |  |  | |  |  |
| **Person-months per participant** | 16 | 4 | | 4 |  |  | |  | 24 |
| **Objectives** | | | | | | | | | |
| **Description of work** (possibly broken down into tasks) and role of partners | | | | | | | | | |
| **Deliverables** (brief description) and month of delivery | | | | | | | | | |

*Table 1.3e Summary of effort*

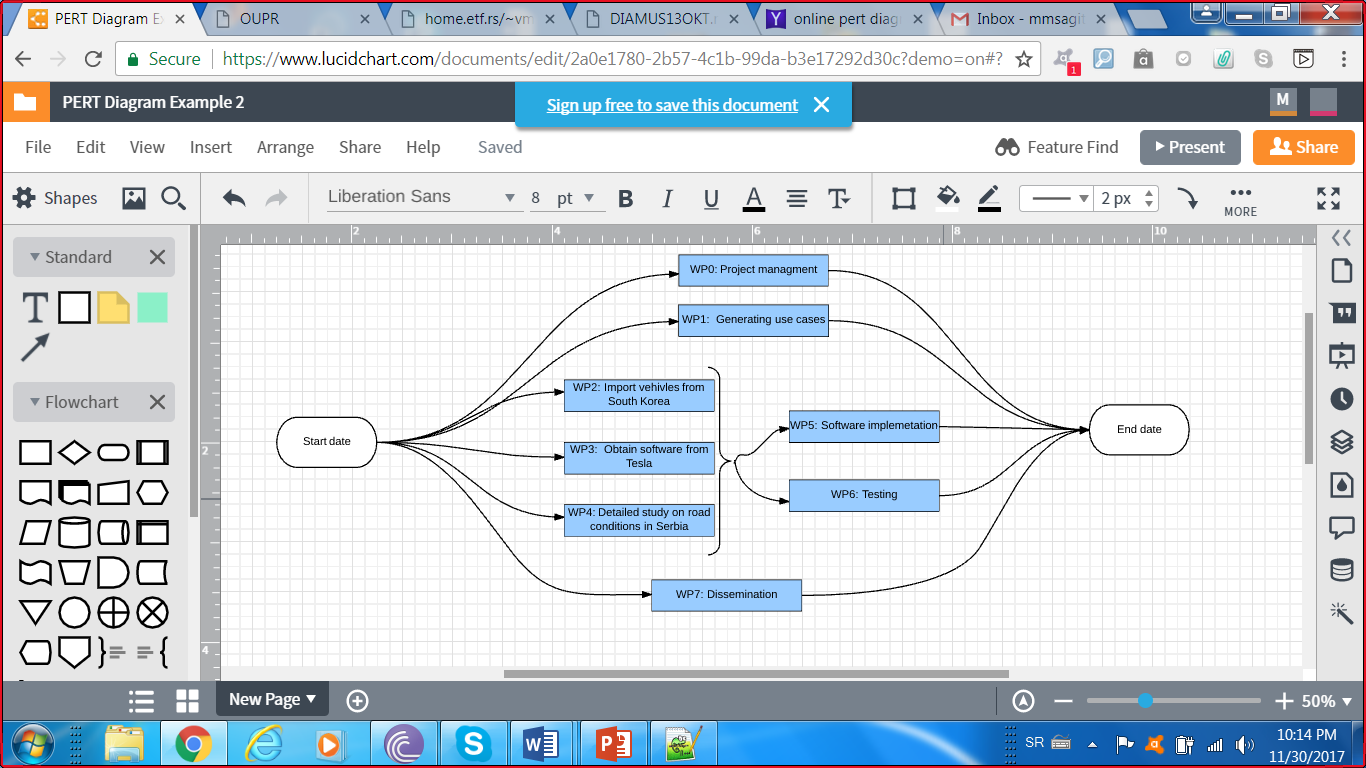
**1.3.3.e Summary of effort**

**Summary of effort**

A summary of the effort is useful for the evaluators. Please indicate in the table number of person months over the whole duration of the planned work, for each work package by each participant. Identify the work-package leader for each WP by showing the relevant person-month figure **in bold**.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Partic. no.** | **Partic. short name** | **WP0** | **WP1** | **WP2** | **WP3** | **WP4** | **WP5** | **WP6** | **WP7** | **Total person months** |
| **1** | **MATF** | 12 |  |  |  |  |  |  |  |  |
| **2** | **RT-RK** | 36 |  |  |  |  |  |  |  |  |
| **3** | **ETF** |  |  |  |  |  |  |  |  |  |
| **4** | **OBLO** |  |  |  |  |  |  |  |  |  |
| **5** | **TTTech** | 12 |  |  |  |  |  |  |  |  |
| **Total** |  | 60 |  |  |  |  |  |  |  |  |

**1.3.4. A graphical presentation of the components showing their interdependencies (Pert diagram or similar)**



**1.3.5. Describe any significant risks, and associated contingency plans**

The research project is continuously monitored by project management and thoroughly evaluated twice per year at special risk analysis meetings. All identified risks will be ranked in terms of a potential impact on the project and probability of a risk actually taking place (impact multiplied by probability). The project will focus on 3 top risks:

* Completing in time and with appropriate quality all tasks specified in this proposal.
* Ensuring that all teams do communicate with each other in an effective manner.
* Ensuring efficiancy of communication with other associates (KIA, Tesla, …).

Specific measures to counteract the risks will be defined for each risk and action point assigned to people responsible for following them up. The progress will be followed up regularly until the risk is neutralized. Between the risk analysis meetings, it will be an ongoing responsibility of the project management to identify potential risks.

**Section 2. Implementation**

*(Maximum length for Section 2.1 - five pages)*

**2.1 Management structure and procedures**

Describe the organisational structure and decision-making mechanisms of the project. Show how they are matched to the complexity and scale of the project.

The basic project management approach for the project is to have a scientific coordinator focus on the technology and to have an administrative coordinator handle the overall operational and day-to-day business. A clearly defined project management structure will be set up, including precise management processes and decision rules. This will ensure that the project meets its objectives and delivers the results in time and with high quality, using the following project management structure:

**The project operational steering board (OSG)** will be in charge of evaluation and approval of the overall project objectives, targets and general directions, approaches and progress reports.

**Project manager The Project Manager (PM)** will be in charge of overall co-ordination of the project execution and inter-partner co-operation Maintenance of project plan, risk analysis, liaison with all partners, deliverables Financial distribution, public relations and dissemination of project results through professional channels.

**S&T Manager** will be in charge of coordination of the scientific and technical activities of the project, driving the project’s S&T strategy**,** avoiding any technical risk or resolving any conflict and maintaining regular communications with the PM.

**Work package leaders** will be in charge of communication with S&T Manager and Task Leaders, proposing: methodology for carrying out the work in the corresponding WP and S&T Manager dissemination activities, perform full reviews of the deliverables and submit final Deliverables to the Project Manager.

**Task Leaders (TL)** will be in charge of compiling the Table of Contents of the corresponding deliverables, collecting contributions from participating partners and edit the deliverables, allocating work to the involved partners in the specific task and submitting the deliverable to the WP leader for review and approval.

**All Partners** will be in charge of preparing individual management reports and submitting them to the PM, following closely the project plan and respect project’s defined procedures and fulfilling the required financial procedures (e.g., audit certificates).

**2.2** **Individual participants**

*(Maximum length for Section 2.2: one page per participant. However, where two or more departments within an organisation have quite distinct roles within the proposal, one page per department is acceptable.*

*The maximum length applying to a legal entity composed of several members, each of which is a separate legal entity (for example an EEIG), is one page per member, provided that the members have quite distinct roles within the proposal.)*

For each participant in the proposed project, provide a brief description of the legal entity, the main tasks they have been attributed, and the previous experience relevant to those tasks. Provide also a short profile of the individuals who will be undertaking the work.

1. Faculty of Mathematics, University of Belgrade (MATF)

......

Miroslav Misljenovic .....

1. RT-RK Institute for Computer Based Systems

......

Marina Nikolic.....

1. Faculty of Electrical Engeneering, University of Belgrade, Serbia

....

Milos Stojanovic

1. OBLO Living

…

Djordje Pesic

1. TTTech Computertechnik AG

....

Jovan Petrovic

**2.3 Consortium as a whole**

*(No maximum length for Section 2.3 – depends on the size and complexity of the consortium)*

Describe how the participants collectively constitute a consortium capable of achieving the project objectives, and how they are suited and are committed to the tasks assigned to them. Show the complementarity between participants. Explain how the composition of the consortium is well-balanced in relation to the objectives of the project.

If appropriate describe the industrial/commercial involvement to ensure exploitation of the results.

**i) Sub-contracting:** If any part of the work is to be sub-contracted by the participant responsible for it, describe the work involved and explain why a sub-contract approach has been chosen for it.

**ii) Other countries:** If a one or more of the participants requesting EU funding is based outside of the EU Member states, Associated countries and the list of International Cooperation Partner Countries[[20]](#footnote-20), explain in terms of the project’s objectives why such funding would be essential.

An excellent mix of competencies, research interests and approaches is present in the consortium. This versatility and mix of complementary skills combined with the mutual understanding gained in previous collaborations will be utilized to the greatest possible extent to cross fertilize the best practices and increase research potential of everyone involved. The resources needed for research support and management activities are integrated from a variety of academic organizations and a large multinational company.

Research focus and expertise covered by the involved organizations spans the complete problem area covered by this proposal. In addition to that, both academic and industry oriented views of the research problems and challenges and consequently approaches are present in the project which ensures a holistic view of the research domain and is an additional added value of the consortium.

Also, where and when necessary, sub-contracting and engagement of experts will be done. Budget for this comes from the S&T coordinator’s budget.

* Sub-contracting: For the amount of money up to 4% of the value of the project, coordinator institution can sub-contract (from its share) external organization, for implementing any activity for which the whole consortium determines that is mission critical. All subcontracting activities must be approved by the project leader and the entire consortium.
* Expert-engagement: Three external experts from the US will be engaged in the project. These experts are experienced and well-known researchers. They will present the state-of-the-art research in the US, as well as future research directions and will significantly contribute to the overall project objectives.

**2.4 Resources to be committed**

*(Maximum length for Section 2.4 – two pages)*

Describe how the totality of the necessary resources will be mobilised, including any resources that will complement the EC contribution. Show how the resources will be integrated in a coherent way, and show how the overall financial plan for the project is adequate.

In addition to the costs indicated on form A3 of the proposal, and the effort shown in section 1.3 above, please identify any other major costs (e.g. equipment). Ensure that the figures stated in Part B are consistent with these.

**Section 3. Impact**

*(Maximum length for the whole of Section 3 – ten pages)*

**3.1 Expected impacts listed in the work programme**

Describe how your project will contribute towards the expected impacts listed in the work programme in relation to the topic or topics in question. Mention the steps that will be needed to bring about these impacts. Explain why this contribution requires a European (rather than a national or local) approach. Indicate how account is taken of other national or international research activities. Mention any assumptions and external factors that may determine whether the impacts will be achieved.

**3.2 Dissemination and/or exploitation of project results, and management of intellectual property**

Describe the measures you propose for the dissemination and/or exploitation of project results, and how these will increase the impact of the project. In designing these measures, you should take into account a variety of communication means and target groups as appropriate (e.g. policy-makers, interest groups, media and the public at large).

Describe also your plans for the management of knowledge (intellectual property) acquired in the course of the project.

**Section 4. Ethical Issues**

*(No maximum length for Section 4 – depends on the number and complexity of the ethical issues involved)*

Describe any ethical issues that may arise in their proposal. In particular, you should explain the benefit and burden of their experiments and the effects it may have on the research subject. The following special issues should be taken into account:

**Informed consent**: When describing issues relating to informed consent, it will be necessary to illustrate an appropriate level of ethical sensitivity, and consider issues of insurance, incidental findings and the consequences of leaving the study.

**Data protection issues**: Avoid the unnecessary collection and use of personal data. Identify the source of the data, describing whether it is collected as part of the research or is previously collected data being used. Consider issues of informed consent for any data being used. Describe how personal identify of the data is protected.

**Use of animals:** Where animals are used in research the application of the 3Rs (Replace, Reduce, Refine) must be convincingly addressed. Numbers of animals should be specified. State what happens to the animals after the research experiments.

**Human embryonic stem cells**: Research proposals that will involve human embryonic stem cells (hESC) will have to address all the following specific points:

* the necessity to use hESC in order to achieve the scientific objectives set forth in the proposal.
* whether the applicants have taken into account the legislation, regulations, ethical rules and/or codes of conduct in place in the country(ies) where the research using hESC is to take place, including the procedures for obtaining informed consent;
* the source of the hESC
* the measures taken to protect personal data, including genetic data, and privacy;
* the nature of financial inducements, if any.

Identify the countries where research will be undertaken and which ethical committees and regulatory organisations will need to be approached during the life of the project.

Include the Ethical issues table below. If you indicate YES to any issue, please identify the pages in the proposal where this ethical issue is described. If you are sure that none of the issues apply to your proposal, simply tick the YES box in the last row.

Notes:

1. For further information on ethical issues relevant to ICT, see annex 5 of the Guide for applicants.

2. Only in exceptional cases will additional information be sought for clarification, which means that any ethical review will be performed solely on the basis of the information available in your proposal.

**ETHICAL ISSUES TABLE**

|  |  |  |
| --- | --- | --- |
|  | **YES** | **PAGE** |
| **Informed Consent** |  |  |
| * Does the proposal involve children? |  |  |
| * Does the proposal involve patients or persons not able to give consent? |  |  |
| * Does the proposal involve adult healthy volunteers? |  |  |
| * Does the proposal involve Human Genetic Material? |  |  |
| * Does the proposal involve Human biological samples? |  |  |
| * Does the proposal involve Human data collection? |  |  |
| **Research on Human embryo/foetus** |  |  |
| * Does the proposal involve Human Embryos? |  |  |
| * Does the proposal involve Human Foetal Tissue / Cells? |  |  |
| * Does the proposal involve Human Embryonic Stem Cells? |  |  |
| **Privacy** |  |  |
| * Does the proposal involve processing of genetic information or personal data (eg. health, sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction) |  |  |
| * Does the proposal involve tracking the location or observation of people? |  |  |
| **Research on Animals** |  |  |
| * Does the proposal involve research on animals? |  |  |
| * Are those animals transgenic small laboratory animals? |  |  |
| * Are those animals transgenic farm animals? |  |  |
| * Are those animals cloned farm animals? |  |  |
| * Are those animals non-human primates? |  |  |
| **Research Involving Developing Countries** |  |  |
| * Use of local resources (genetic, animal, plant etc) |  |  |
| * Impact on local community |  |  |
| **Dual Use** |  |  |
| * Research having direct military application |  |  |
| * Research having the potential for terrorist abuse |  |  |
| **ICT Implants** |  |  |
| * Does the proposal involve clinical trials of ICT implants? |  |  |
| **I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL** |  |  |

1. Workpackage number: WP 1 – WP n. [↑](#footnote-ref-1)
2. Please indicate one activity per work package:

   RTD = Research and technological development; DEM = Demonstration; MGT = Management of the consortium [↑](#footnote-ref-2)
3. Number of the participant leading the work in this work package. [↑](#footnote-ref-3)
4. The total number of person-months allocated to each work package. [↑](#footnote-ref-4)
5. Measured in months from the project start date (month 1). [↑](#footnote-ref-5)
6. Deliverable numbers in order of delivery dates. Please use the numbering convention <WP number>.<number of deliverable within that WP>. For example, deliverable 4.2 would be the second deliverable from work package 4. [↑](#footnote-ref-6)
7. Please indicate the nature of the deliverable using one of the following codes:

   **R** = Report, **P** = Prototype, **D** = Demonstrator, **O** = Other [↑](#footnote-ref-7)
8. Please indicate the dissemination level using one of the following codes:

   **PU** = Public

   **PP** = Restricted to other programme participants (including the Commission Services).

   **RE** = Restricted to a group specified by the consortium (including the Commission Services).

   **CO** = Confidential, only for members of the consortium (including the Commission Services). [↑](#footnote-ref-8)
9. Measured in months from the project start date (month 1). [↑](#footnote-ref-9)
10. Measured in months from the project start date (month 1). [↑](#footnote-ref-10)
11. Show how you will confirm that the milestone has been attained. Refer to indicators if appropriate. For example: a laboratory prototype completed and running flawlessly; software released and validated by a user group; field survey complete and data quality validated. [↑](#footnote-ref-11)
12. Please indicate one activity per work package:

    RTD = Research and technological development; DEM = Demonstration; MGT = Management of the consortium. [↑](#footnote-ref-12)
13. Please indicate one activity per work package:

    RTD = Research and technological development; DEM = Demonstration; MGT = Management of the consortium. [↑](#footnote-ref-13)
14. Please indicate one activity per work package:

    RTD = Research and technological development; DEM = Demonstration; MGT = Management of the consortium. [↑](#footnote-ref-14)
15. Please indicate one activity per work package:

    RTD = Research and technological development; DEM = Demonstration; MGT = Management of the consortium. [↑](#footnote-ref-15)
16. Please indicate one activity per work package:

    RTD = Research and technological development; DEM = Demonstration; MGT = Management of the consortium. [↑](#footnote-ref-16)
17. Please indicate one activity per work package:

    RTD = Research and technological development; DEM = Demonstration; MGT = Management of the consortium. [↑](#footnote-ref-17)
18. Please indicate one activity per work package:

    RTD = Research and technological development; DEM = Demonstration; MGT = Management of the consortium. [↑](#footnote-ref-18)
19. Please indicate one activity per work package:

    RTD = Research and technological development; DEM = Demonstration; MGT = Management of the consortium. [↑](#footnote-ref-19)
20. See CORDIS web-site, and annex 1 of the work programme. [↑](#footnote-ref-20)