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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Trainee** | | **Last name(s)** | | **First name(s)**  **Learning Agreement**  **Student Mobility for Traineeships** | **Date of birth** | | **Nationality**[[1]](#endnote-1) | | **Sex [M/F]** | | **Study cycle**[[2]](#endnote-2) | | **Field of education**[[3]](#endnote-3) | |
| MOZO BIGÑOTTE | | ERISLANDY | 17/06/1985 | | Cuban | | M | | 3RD | | ELECTRONICS AND COMPUTING | |
| **Sending Institution** | | **Name** | | **Faculty/ Department** | **Erasmus code**[[4]](#endnote-4) (if applicable) | | **Address** | | **Country** | | **Contact person name**[[5]](#endnote-5)**; email; phone** | | | |
| MONDRAGON UNIBERTSITATEA | | FACULTY OF ENGINEERING | E MONDRAG01 | | Loramendi 4,  20500 Mondragon | | SPAIN | | Dr. Modesto Mateos Heis  INTERNATIONAL RELATIONS COORDINATOR  [mmateos@mondragon.edu](mailto:mmateos@mondragon.edu)  Tel: +34 943794700 | | | |
| **Receiving** **Organisation/Enterprise** | | **Name** | | **Department** | **Address; website** | | **Country** | | **Size** | | **Contact person[[6]](#endnote-6) name; position; e-mail; phone** | | **Mentor[[7]](#endnote-7) name; position;**  **e-mail; phone** | |
| German Aerospace Center | | Institute of Communi-cations and Navigation | www.dlr.de/kn/en | | Germany | | < 250 employees  > 250 employees | | Stephan Sand  [stephan.sand@dlr.de](mailto:stephan.sand@dlr.de)  +49 8153 281464 | | Paul Unterhuber  [paul.unterhuber@dlr.de](mailto:paul.unterhuber@dlr.de)  +49 8153 282291 | |
| **Before the mobility** | | | | | | | | | | | | | | |
|  | ***Table A - Traineeship Programme at the Receiving Organisation/Enterprise*** | | | | | | | | | | | | | |
| **Planned period of the mobility: from [month/year]: 05/2020 to [month/year] : 08/2020** | | | | | | | | | | | | | | |
| **Traineeship title: Automatic Train Operation with Future IEEE 802.11 based Train-to-Train Communications** | | | | | | | | | **Number of working hours per week: 39** | | | | | |
| **Detailed programme of the traineeship:**  The main objective of the research is to evaluate the performance of the IEEE802.11bd NGV protocol in railway scenarios, to support its application in relation to train  safety, maintenance and operation. To achieve this objective, the following tasks have been defined:  • Background: Literature review of vehicular communication protocols (IEEE802.11p and IEEE802.11bd NGV), as well as communication protocols used in the current  Railway infrastructure.  • Scenario Definition: Literature review of channel models in railway and vehicular communications to define the scenarios and communication manoeuvres that will  be employed.  • Evaluation: Evaluation of the performance of the IEEE802.11bd NGV protocol for different scenarios and configurations based on numerical simulations in Matlab. In  addition, evaluation the performance of the protocol as a function of Doppler shift. Different performance metrics will be used such as PER (Packet Error Rate),  EVM (Error Vector Magnitude), and BER (Bit Error Rate).  • Payload Testing: Development of a study the effect of packet length variation on system performance when different coding schemes are used (Convolutional and  LDPC). This test is vital due to the variety of application requirements that this protocol must support.  • Increase range: Development of a study the effect of using Dual Constellation modulation (DCM) to increase the transmission range.  LDPC). This test is vital due to the variety of application requirements that this protocol must support.  • Pilot Carriers Testing: Development of a survey to determine the optimal choice of the pilot carrier number to be used, as well as of the interpolation algorithm.  • Channel Estimation: Development of a survey to determine the optimal choice of the channel estimation algorithm to be used (based on pilot increment or  Midamble).  • Configuration Selection: Selection of the parameters and processing algorithms that have the best performance.  • Proposal Analysis: Propose performance improvements to the oncoming IEEE802.11bd NGV protocol. | | | | | | | | | | | | | | |
| **Knowledge**, **skills and competences to be acquired by the end of the traineeship (expected Learning Outcomes):**  • Validation that the techniques and proposed methods improve the performance of IEEE802.11p in railway scenarios, and its possible use in applications such as  ATO (Autonomous Train Operation) among others.  • The student will acquire the relevant knowledge and skills to design, implement and evaluate wireless communication systems.  • The student will submit at least one paper in a relevant conference and/or journal.  • The student and hosting researcher will develop the foundation for future scientific collaboration: PhD students’ exchanges and European project. | | | | | | | | | | | | | | |
| **Monitoring plan:**  Monthly meetings will be held where the doctoral student will report the progress made during that period. A supervisor from both the host and origin site must will participate in these meetings. | | | | | | | | | | | | | | |
| **Evaluation plan:**  The evaluation plan includes two categories: satisfactory or unsatisfactory. The satisfactory category is obtained if 85 percent of the stay objectives  are met , where a publication in a scientific Journal or International Congress must be done. | | | | | | | | | | | | | | |
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| The level of **language competence[[8]](#endnote-8)** in English [*indicate here the main language of work*] that the trainee already has or agrees to acquire by the start of the mobility period is: *A1*  *A2*  *B1*  *B2*  *C1*  *C2*  *Native speaker* | | | | | | | | | | | | | | |

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| ***Table B - Sending Institution***  *Please use only one of the following three boxes:* **[[9]](#endnote-9)**   1. The traineeship is **embedded in the curriculum** and upon satisfactory completion of the traineeship, the institution undertakes to:  |  |  | | --- | --- | | Award …0….. .…ECTS credits (or equivalent)[[10]](#endnote-10) | Give a grade based on: Traineeship certificate  Final report  Interview | | Record the traineeship in the trainee's Transcript of Records and Diploma Supplement (or equivalent). | | | Record the traineeship in the trainee's Europass Mobility Document: Yes  No | |  1. The traineeship is **voluntary** and, upon satisfactory completion of the traineeship, the institution undertakes to:  |  |  |  | | --- | --- | --- | | Award ECTS credits (or equivalent): Yes  No | | If yes, please indicate the number of credits: …. | | Give a grade: Yes  No | If yes, please indicate if this will be based on: Traineeship certificate  Final report  Interview | | | Record the traineeship in the trainee's Transcript of Records: Yes  No | | | | Record the traineeship in the trainee's Diploma Supplement (or equivalent). | | | | Record the traineeship in the trainee's Europass Mobility Document: Yes  No | | |  1. The traineeship is carried out by a **recent graduate** and, upon satisfactory completion of the traineeship, the institution undertakes to:  |  |  | | --- | --- | | Award ECTS credits (or equivalent): Yes  No | If yes, please indicate the number of credits: …. | | Record the traineeship in the trainee's Europass Mobility Document *(highly recommended)*: Yes  No | |   **Accident insurance for the trainee**   |  |  | | --- | --- | | The Sending Institution will provide an accident insurance to the trainee (if not provided by the Receiving Organisation/Enterprise): Yes  No | The accident insurance covers:  - accidents during travels made for work purposes: Yes  No  - accidents on the way to work and back from work: Yes  No | | The Sending Institution will provide a liability insurance to the trainee (if not provided by the Receiving Organisation/Enterprise): Yes  No | | | | | | | |
| ***Table C - Receiving Organisation/Enterprise***   |  |  |  | | --- | --- | --- | | The Receiving Organisation/Enterprise will provide financial support to the trainee for the traineeship: Yes  No | | If yes, amount (EUR/month): ……….. | | The Receiving Organisation/Enterprise will provide a contribution in kind to the trainee for the traineeship: Yes  No  If yes, please specify: …. | | | | The Receiving Organisation/Enterprise will provide an accident insurance to the trainee (if not provided by the Sending Institution): Yes  No | The accident insurance covers:  - accidents during travels made for work purposes: Yes  No  - accidents on the way to work and back from work: Yes  No | | | The Receiving Organisation/Enterprise will provide a liability insurance to the trainee (if not provided by the Sending Institution):  Yes  No | | | | The Receiving Organisation/Enterprise will provide appropriate support and equipment to the trainee. | | | | Upon completion of the traineeship, the Organisation/Enterprise undertakes to issue a Traineeship Certificate within 5 weeks after the end of the traineeship. | | | | | | | | |
| By signing this document, the trainee, the Sending Institution and the Receiving Organisation/Enterprise confirm that they approve the Learning Agreement and that they will comply with all the arrangements agreed by all parties. The trainee and Receiving Organisation/Enterprise will communicate to the Sending Institution any problem or changes regarding the traineeship period. The Sending Institution and the trainee should also commit to what is set out in the Erasmus+ grant agreement. The institution undertakes to respect all the principles of the Erasmus Charter for Higher Education relating to traineeships (or the principles agreed in the partnership agreement for institutions located in Partner Countries). | | | | | |
| **Commitment** | **Name** | **Email** | **Position** | **Date** | **Signature** |
| Trainee | Erislandy Mozo | emozo@mondragon.edu | PhD Student |  |  |
| Responsible person[[11]](#endnote-11) at the Sending Institution | Modesto Mateos | mmateos@mondragon.edu | INTERNATIONAL RELATIONS COORDINATOR |  |  |
| Supervisor[[12]](#endnote-12) at the Receiving Organisation | Stephan Sand | stephan.sand@dlr.de | Group leader vehicular applications |  |  |

**During the Mobility**

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|  | ***Table A2 - Exceptional Changes to the Traineeship Programme at the Receiving Organisation/Enterprise***  (to be approved by e-mail or signature by the student, the responsible person in the Sending Institution and the responsible person in the Receiving Organisation/Enterprise) | |
| **Planned period of the mobility: from [month/year] ……………. till [month/year] …………….** | | |
| **Traineeship title: …** | | **Number of working hours per week: …** |
| **Detailed programme of the traineeship period:** | | |
| **Knowledge**, **skills and competences to be acquired by the end of the traineeship (expected Learning Outcomes)**: | | |
| **Monitoring plan:** | | |
| **Evaluation plan:** | | |

**After the Mobility**

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| ***Table D - Traineeship Certificate by the Receiving Organisation/Enterprise*** |
| **Name of the trainee:** |
| **Name of the Receiving Organisation/Enterprise:** |
| **Sector of the Receiving Organisation/Enterprise:** |
| **Address of the Receiving Organisation/Enterprise** [street, city, country, phone, e-mail address]**, website:** |
| **Start date and end date of traineeship: from [day/month/year] …………………. to [day/month/year] ………………..** |
| **Traineeship title:** |
| **Detailed programme of the traineeship period including tasks carried out by the trainee:** |
| **Knowledge, skills (intellectual and practical) and competences acquired (achieved Learning Outcomes):** |
| **Evaluation of the trainee:** |
| **Date:** |
| **Name and signature of the Supervisor at the Receiving Organisation/Enterprise:** |

1. **Nationality:** Country to which the person belongs administratively and that issues the ID card and/or passport. [↑](#endnote-ref-1)
2. **Study cycle:** Short cycle (EQF level 5) / Bachelor or equivalent first cycle (EQF level 6) / Master or equivalent second cycle (EQF level 7) / Doctorate or equivalent third cycle (EQF level 8). [↑](#endnote-ref-2)
3. **Field of education:** The [ISCED-F 2013 search tool](http://ec.europa.eu/education/international-standard-classification-of-education-isced_en) available at <http://ec.europa.eu/education/international-standard-classification-of-education-isced_en> should be used to find the ISCED 2013 detailed field of education and training that is closest to the subject of the degree to be awarded to the trainee by the sending institution. [↑](#endnote-ref-3)
4. **Erasmus code**: a unique identifier that every higher education institution that has been awarded with the Erasmus Charter for Higher Education (ECHE) receives. It is only applicable to higher education institutions located in Programme Countries. [↑](#endnote-ref-4)
5. **Contact person at the sending institution**: a person who provides a link for administrative information and who, depending on the structure of the higher education institution, may be the departmental coordinator or will work at the international relations office or equivalent body within the institution. [↑](#endnote-ref-5)
6. **Contact person at the Receiving Organisation**: a person who can provide administrative information within the framework of Erasmus+ traineeships. [↑](#endnote-ref-6)
7. **Mentor**: the role of the mentor is to provide support, encouragement and information to the trainee on the life and experience relative to the enterprise (culture of the enterprise, informal codes and conducts, etc.). Normally, the mentor should be a different person than the supervisor. [↑](#endnote-ref-7)
8. **Level of language competence**: a description of the European Language Levels (CEFR) is available at: <https://europass.cedefop.europa.eu/en/resources/european-language-levels-cefr> [↑](#endnote-ref-8)
9. **There are three different provisions for traineeships**:

   1. Traineeships embedded in the curriculum (counting towards the degree);

   2. Voluntary traineeships (not obligatory for the degree);

   3. Traineeships for recent graduates. [↑](#endnote-ref-9)
10. **ECTS credits or equivalent**: in countries where the "ECTS" system it is not in place, in particular for institutions located in Partner Countries not participating in the Bologna process, "ECTS" needs to be replaced in all tables by the name of the equivalent system that is used and a web link to an explanation to the system should be added. [↑](#endnote-ref-10)
11. **Responsible person at the sending institution**: this person is responsible for signing the Learning Agreement, amending it if needed and recognising the credits and associated learning outcomes on behalf of the responsible academic body as set out in the Learning Agreement. The name and email of the Responsible person must be filled in only in case it differs from that of the Contact person mentioned at the top of the document. [↑](#endnote-ref-11)
12. **Supervisor at the Receiving Organisation**: this person is responsible for signing the Learning Agreement, amending it if needed, supervising the trainee during the traineeship and signing the Traineeship Certificate. The name and email of the Supervisor must be filled in only in case it differs from that of the Contact person mentioned at the top of the document. [↑](#endnote-ref-12)