

Training Opportunity for Portuguese Trainees

| Onboard computers Oncourse of the Unit missions: The Software Systems division has the responsibility in domain of software engineerin 0TUhttp://www.esa.int/Our_Activities/Space_Engineering/Software_SystemsU0T In particular the division covers verification and validation techniques for checking mission-critical software, software technology for flight as well as ground systems, real-time software embedded in spacecraft systems and payloads; ground facilities software, including electrical ground support equipment, testbenches, databases and simulation and modelling tools; The division is supporting all ESA satellite projects in the above domains. The Flight Software Systems Section offer a training opportunity: Overview of the field of activity proposed: Most computers used onboard todays spacecraft are traditionally initiated through a Bootloader function which resides in each computer. The Bootloader executes basic tests of various logical functions as well as memory before loading and starting application sw. The Bootloader provides a highly critical function and might jeopardise the spacemission if not correctly executed. The SpaceWire protocol, Mttp://www.spacewire.esa.int which is becoming more frequently used onboard has a dedicated low level protocol, RMAP, Remote Memory Access Protocol, which enables capability to remotely load memory and thereby bypass or override a Bootloader. The objective of the training opportunity is to evaluate the capability of RMAP to support implementation of Bootloader functions identifying the mandatory functions needed (anayse RMAP capability as well as limitations in general as well as dedicated target processor LEON3FT or alternative processor Outline and define a number of Bootloader strategies utilising RMAP especially considering functionality, aperformance and robustness Implement and test a selection of the defined strategies as use cases <li< th=""><th>Reference</th><th>Title</th><th>Duty Station</th></li<> | Reference | Title | Duty Station |
|---|--|---|--|
| The Software Systems division has the responsibility in domain of software engineerin OTUhttp://www.esa.int/Our_Activities/Space_Engineering/Software_SystemsUOT In particular the division covers verification and validation techniques for checking mission-critical software, software technology for flight as well as ground systems, real-time software embedded in spacecraft systems and payloads; ground facilities software, including electrical ground support equipment, testbenches, databases and simulation and modelling tools; The division is supporting all ESA satellite projects in the above domains. The Flight Software Systems Section offer a training opportunity: Overview of the field of activity proposed: Most computers used onboard todays spacecraft are traditionally initiated through a Bootloader function which resides in each computer. The Bootloader executes basic tests of various logical functions as well as memory before loading and starting application sw. The Bootloader provides a highly critical function and might jeopardise the spacemission if not correctly executed. The SpaceWire protocol Mttp://www.spacewire.esa.int which is becoming more frequently used onboard has a dedicated low level protocol, RMAP, Remote Memory Access Protocol, which enables capability to remotely load memory and thereby bypass or override a Bootloader. The objective of the training opportunity is to evaluate the capability of RMAP to support implementation of Bootloader functionality and to identify and assess limitatio wirt to operability, functionality and performance. The training opportunity will compile the following tasks: Analyse the Booloader functions identifying the mandatory functions needed target processor LEON3FT or alternative processor Outline and define a number of Bootloader strategies utilising RMAP especially considering functionality, as well as performance of use cases. <li< th=""><th>PT-2016-TEC-SWS(1)</th><th></th><th>ESTEC</th></li<> | PT-2016-TEC-SWS(1) | | ESTEC |
| Most computers used onboard todays spacecraft are traditionally initiated through a Bootloader function which resides in each computer. The Bootloader executes basic tests of various logical functions as well as memory before loading and starting application sw. The Bootloader provides a highly critical function and might jeopardise the spacemission if not correctly executed. The SpaceWire protocol http://www.spacewire.esa.int which is becoming more frequently used onboard has a dedicated low level protocol, RMAP, Remote Memory Access Protocol, which enables capability to remotely load memory and thereby bypass or override a Bootloader. The objective of the training opportunity is to evaluate the capability of RMAP to support implementation of Bootloader functionality and to identify and assess limitatio wrt to operability, functionality and performance. The training opportunity will compile the following tasks: Analyse the Booloader functions identifying the mandatory functions needed target processor LEON3FT or alternative processor Outline and define a number of Bootloader strategies a utilising RMAP especially considering functionality, operability, performance and robustness Implement and test a selection of the defined strategies as use cases Characterise functionality as well as performance of use cases. Elaborate on operability wrt to a satellites operational scenarios (Safe Mode an availability) Required Education: Applicants should have good interpersonal and communication skills and should be able to work in a multi-cultural environment, both independently and as part of a team. | The Software Systems d 0TU <u>http://www.esa.int/(</u> particular the division c mission-critical software real-time software ember software, including elect simulation and modelling The division is supportin | ivision has the responsibility in domain of <u>Dur_Activities/Space_Engineering/Softwa</u> overs verification and validation technique, software technology for flight as well as edded in spacecraft systems and payload crical ground support equipment, testben g tools; g all ESA satellite projects in the above of | are_SystemsU0T In ues for checking s ground systems, s; ground facilities ches, databases and domains. |
| Bootloader function which resides in each computer. The Bootloader executes basic tests of various logical functions as well as memory before loading and starting application sw. The Bootloader provides a highly critical function and might jeopardise the spacemission if not correctly executed. The SpaceWire protocol http://www.spacewire.esa.int which is becoming more frequently used onboard has a dedicated low level protocol, RMAP, Remote Memory Access Protocol, which enables capability to remotely load memory and thereby bypass or override a Bootloader. The objective of the training opportunity is to evaluate the capability of RMAP to support implementation of Bootloader functionality and to identify and assess limitatios wrt to operability, functionality and performance. The training opportunity will compile the following tasks: Analyse the Booloader functions identifying the mandatory functions needed target processor LEON3FT or alternative processor Outline and define a number of Bootloader strategies utilising RMAP especially considering functionality as well as performance of use cases. Implement and test a selection of the defined strategies as use cases Characterise functionality as well as performance of use cases. Elaborate on operability wirt to a satellites operational scenarios (Safe Mode an availability) | Overview of the field | of activity proposed: | |
| Analyse the Booloader functions identifying the mandatory functions needed Anayse RMAP capability as well as limitations in general as well as dedicated target processor LEON3FT or alternative processor Outline and define a number of Bootloader strategies utilising RMAP especially considering functionality, operability, performance and robustness Implement and test a selection of the defined strategies as use cases Characterise functionality as well as performance of use cases. Elaborate on operability wrt to a satellites operational scenarios (Safe Mode an availability) Required Education: Applicants should have just completed, or be in their final year of a University course at Masters Level (or equivalent) in a technical or scientific discipline preferable Electronics . Applicants should have good interpersonal and communication skills and should be able to work in a multi-cultural environment, both independently and as part of a team. | Bootloader function which tests of various logical for application sw. The Boot the spacemission if not of http://www.spacewire.ed dedicated low level proto capability to remotely lo The objective of the train support implementation | ch resides in each computer. The Bootload unctions as well as memory before loadin tloader provides a highly critical function correctly executed. The SpaceWire protoc sa.int which is becoming more frequently ocol, RMAP, Remote Memory Access Prot ad memory and thereby bypass or overr ning opportunity is to evaluate the capab of Bootloader functionality and to identif | der executes basic og and starting of and might jeopardise col y used onboard has a ocol, which enables ide a Bootloader. pility of RMAP to |
| Applicants should have just completed, or be in their final year of a University course at Masters Level (or equivalent) in a technical or scientific discipline preferable Electronics . Applicants should have good interpersonal and communication skills and should be able to work in a multi-cultural environment, both independently and as part of a team. | Analyse the Book Anayse RMAP ca target processor Outline and defin considering funct Implement and to Characterise funct Elaborate on ope | pader functions identifying the mandator pability as well as limitations in general a LEON3FT or alternative processor e a number of Bootloader strategies utili tionality, operability, performance and ro est a selection of the defined strategies a ctionality as well as performance of use o | as well as dedicated sing RMAP especially obustness as use cases ases. |
| work in a multi-cultural environment, both independently and as part of a team. | Masters Level (or equivaler | nt) in a technical or scientific discipline prefer | able Electronics . |
| | work in a multi-cultural env | vironment, both independently and as part of | a team. |

Applicants must be fluent in English, the working languages of the Agency.