



## DESEM Projects

*Some Personal Opinions on what makes a good DESEM project*

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## Objectives

- Address two central questions
- What makes a good DESEM Project?
- What makes a good DESEM thesis?



## Results - Can Work

- Students often use Results to show the value of their project
- Results only show that a project **CAN work**
- Results are rarely sufficient to show that your project is **dependable**
  - Results are *desirable/necessary* , but *not sufficient* for a good DESEM project



## Can work vs Can Not Fail

- A good DESEM thesis should highlight why a project **CAN-NOT Fail**
- You must convince the reader that your project is “bullet proof”!
- A “dependable system” like Telecommunications Software has a specified down-time limit of 10 seconds per Decade!!
  - Under normal, real-world usage
- Can we expect the same level of dependability from your project?
- How will you convince a reader of its dependability?
  - Your thesis should highlight dependability aspects: *requirements, design, implementation, testing, Agile process, formal model etc*



## Project

- 20 ECTS - 33% of the total degree marks
- Previous projects are described under previous summer schools
- <http://erasmusmundus.nuim.ie/courses/desem/programme-details/project-work>
- You should also look at the various Prize winners (overall prize winners and prize winners at each individual university)
  - Why did these project win?
  - What did they do that the other projects did not?



## Some hints and tips

- Projects generally focus on solving some computer science issue
  - Either practical or theoretical in nature
- However you want to bring your DEPENDABILITY expertise to bear on the project
  - You are the dependability experts.
  - Make this expertise *shine through* while conducting the project And especially when writing your final thesis.



## Some hints and tips

- See the “**Dissertation Guidelines**” document
  - 22,000 words,
  - Possible sections
- Maynooth Plagiarism Policy
  - Do NOT present the work of others as your own!
- TurnItIn self-check
  - See TurnItIn page on Moodle
  - Originality report (make sure you have a reasonable amount of referenced material)

## Project Process

- Look at dependability from the **process** perspective
  - See Git repository, which is checked by the examiner
- Why is your software development **process** dependable?
  - why does it result in dependable software (or other output)?
  - Can you highlight some of your dependability expertise in your process?
- Highlight the dependability of your development process in your thesis

## Product

- Describe the model/tool you have developed
  - Use cases, class diagram, maybe some snippets of code
- Make the reviewer believe the artefact that you developed, actually functions the way you claim it does
  - Perhaps use formal specifications and even verify your programs behaviour.
  - Testing tools & code coverage?
- Why should somebody believe it may function correctly under “unforeseen circumstances”
  - Have you developed a product whose operation is reliable and dependable?
  - If so, illustrate that fact

## Dependability Issues in your Thesis

- Functional and non-functional Requirements Lists
- Unit testing
  - Code coverage
- Integration testing
- Acceptance Testing
- Formal Software Design Reviews or even walkthroughs
  - With Report and follow-up reports

## Results

- You need to show the reviewer **why** your results are correct.
  - Show some simple test cases
  - Unit and/or integration tests
  - Include and some realistic examples, where we know the correct output. And you can validate the correct behaviour of your system.
- Does it work?
  - Here you could focus more on test data and results
  - (you will probably naturally focus on this anyway, but this section of your thesis will probably not really highlight any **dependability** issues).

## Conclusion

- You are the experts in dependability
- You need to demonstrate this expertise
  - While conducting your project
  - Especially when writing your final thesis
- The **focus** of your project should be on solving your research “main” question, but highlight a thread of dependability **throughout** your project/thesis
- Not all my hints and tips will be applicable in a project. They are not the only means of demonstrating dependability.
- Demonstrate dependability in a manner that best suits your project