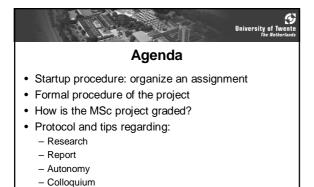


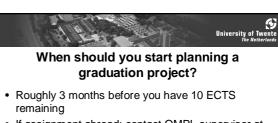


- Startup procedure: organize an assignment
- · Formal procedure of the project
- How is the MSc project graded?
- · Protocol and tips regarding:
 - Research
 - Report
 - Autonomy
 - Colloquium
- · Research projects & graduation options at OMPL

http://www.mb.utwente.nl/ompl

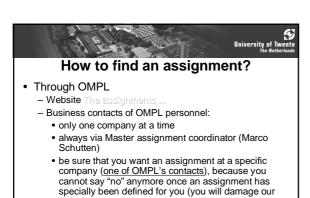


Research projects & graduation options at OMPL
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 If assignment abroad: contact OMPL-supervisor at an earlier stage

http://www.mb.utwente.nl/ompl



http://www.mb.utwente.nl/ompl

network)!

How to find an assignment?

• Find an assignment <u>yourself</u>

– Do not contact too many companies at the same time.

– Be honest about having multiple options

– You may use intermediaries, such as Integrand or AIESEC, but be careful: what they call "Master Assignment IEM" is generally <u>not</u> an approved assignment by OMPL → ask the Master project coordinator (Marco Schutten; Purchasing: Jan Telgen) in time whether a specific assignment is suitable for graduation to prevent disappointments!

• A graduation project abroad

 Drawback: supervision from UT is more difficult http://www.mb.utwente.nl/ompl



Criteria suitability of assignment

- Logistical / operations management elements
 - Also: aviation strategy (Heerkens), purchasing (Telgen)
- · Quantitative ("OR") elements
- Research aspects (approach and solution not known beforehand or more or less trivial)
- Obvious urgency of the problem for the company
- Involved supervisor of company (single problem owner)
- · Required data available or can be collected
- Feasible within 30 EC

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Contacting the company

- Be honest to companies about having other options
- Contracts: only signed by company and student (not UT supervisors)
- Confidentiality
- · Negotiate yourself: labor conditions
 - Salary, reimbursements of (travel) costs
 - Holidays, time off to do final courses
 - Office and pc close to company supervisor
- One company supervisor at least a BSc educated and who can take decisions on research directions

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Supervisor selection (1st and 2nd)

- · Responsibility of Marco Schutten (OMPL)
 - Make an appointment with him
 - Purchasing assignment: also appointment Jan Telgen
- First supervisor must have a PhD
- 2nd supervisor may be a PhD student (if the project is in his / her research area) or staff without PhD
- At least one member from OMPL staff

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Start of the project

- Fill in and sign "start of MSc project" form (BOZ MB)
 - First supervisor signs this form
- All relevant courses completed (for example: preferably no assignment on spare part optimization if you skipped REMM)
- · Email all your contact data to supervisors
 - Address, phone, email...
- 2nd supervisor optional at this stage
 - Only if her/his expertise is required to determine scope
 - Select 2nd supervisor when scope project becomes clear (and not later)

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Role of 2nd supervisor

- independent judgment of your work ("second opinion").
- specific expertise input next to the expertise of the first supervisor where relevant
- consider second supervisor from other discipline where relevant
- second supervisor will generally <u>not</u> read all intermediary reports and <u>not</u> attend all meetings: help on request when the expertise of the first supervisor is insufficient

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Formal procedure of the project

- Contents 30 ECTS (duration ≥ 6 months)
- After few weeks after start: "project green light" meeting with first supervisor from UT and first supervisor from company
 - Agreement on project scope, goals, approach and time schedule
 - Preferably with tour of company if relevant to understand project
- · Regular progress meetings with first supervisor
 - Initiative: student
 - Frequency: variable

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Formal procedure of the project:

- · Green light 3 weeks before colloquium
- · Meeting with all supervisors
- Hand in a <u>complete</u> report, including conclusions, management summary, title page, etc.
- · Often requires more than one attempt

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Agenda

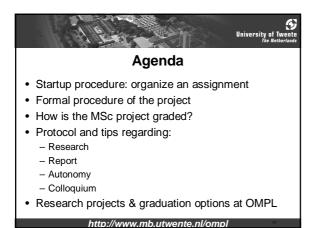
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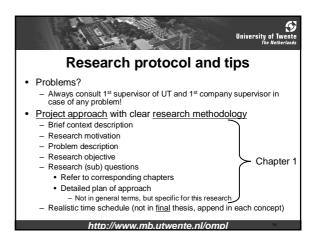
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How is the project graded?

- · On the day of the colloquium
 - By UT supervisors, input from company supervisor
 - 1st supervisor has decisive voice
- 4 sub-grades, judged individually:
 - Research (methodology, depth, sound-/thoroughness,...)
 - Report (style, grammar, accuracy, readability for UT and company)
 - Autonomy / project management
 - Colloquium (presentation and defense)







Report protocol and tips

Contents of thesis is almost always roughly as follows:

- 1. Introduction (see previous slide)
- 2. Context analysis
 - System, control, performance
 - Conclusions à demarcation scope
- 3 Literature
- 4. Solution design
 - Alternative solutions / interventions
- 5. Solution tests
- 6. Conclusions and recommendations
 - · organizational implementation

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Report protocol and tips

- Build-up & write the report throughout the project
- Choose between UK and US English, be consistent
 - Analyse/analyze, modelling/modeling, labour/labor (UK/US)
- Dutch: requires permission exam committee
- Buy: Elements of Style (Strunk & White, ± 15 €)
- Aim for at most 60 pages (excl. appendices)
- A report is not a log book
- Confidentiality
 - Put confidential data in appendix that can be removed easily
 - Make data anonymous, e.g. remove product labels, supplier labels or use index numbers

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Report protocol and tips

- · Clarity and readability of the report is your foremost goal
 - Write concisely, but clarity should not suffer
 - Use examples, figures, tables if they explain something that might otherwise not be understood by the reader
- · Always be conscious about what the reader has read so far, and what is the next logical thing to write about
 - Structure as early as possible (chapters, sections, paragraphs)
 - Guide the reader throughout the text
- · Avoid use of vague language
 - Rather, somewhat, more or less, a bit

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Report protocol and tips

- Tables and figures
 - In English, "Figure 5.1" is a name, so use a capital F (same for chapters, sections, tables, appendices, ...)
 - Discuss all tables, figures in main text and refer to them explicitly
 - So do not write "in the figure above", but "in Figure 3.2"
 - Any table or figure should have a clear caption
 - Tables and figures should be self contained (the reader should be able to understand them without having to read surrounding text).
 - So: use clear table headers, clearly show which quantities are shown on the x-axis and y-axis of figures, T=?, n=?, use clear legends if a figure contains multiple graphs, etc.

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Report protocol and tips

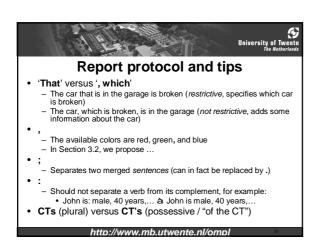
- Every chapter should have clear conclusions (except Chapter 1)
- It is generally a good structure to devote a single chapter to each research question (so, you should have 4-6 main research questions); provide a clear answer to the research question at the end of the chapter

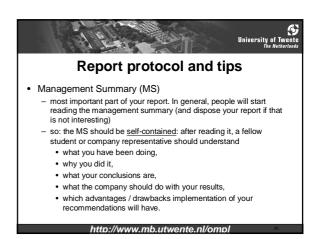
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Report protocol and tips

- · Use active, not passive voice
 - Active: we conclude that ("we" = author and the reader)
 - Passive: it is concluded that (who concludes?)
 - Active: Figure 1 displays
 - Passive: In Figure 1 ... is displayed
- Only use "we" where you emphasize the author's opinion/role/choices/etc.
 - $\underline{\text{We conclude}},$ $\underline{\text{we recommend}},$ $\underline{\text{we assume}},$ $\underline{\text{we choose}}$
 - NOT: In Figure 1 we display..., but: Figure 1 displays ("we" isn't needed here)



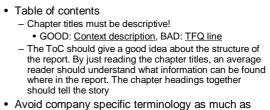




recommendations (point-by-point: show clearly how many recommendations you have). See conclusions.

After having read the MS, the reader should be eager to read the whole report: Make it the flag on your ship!

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Report protocol and tips

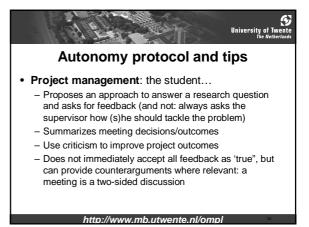
University of Two

- Avoid company specific terminolog possible
 - · How to obtain good example graduation reports

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- Guards the progress, takes initiative when stuck
- Makes appointments with committee if necessary
- Prepares agenda for meeting, takes notes
- Sends document for preparation
 - In time (discuss the term with supervisors)
 - With "bookmarker" (instructions what to read / comment on)
- Send previous version with comments
- Instructs supervisors what to read, where input is required à Be aware of scarce time of your supervisors!





Autonomy protocol and tips

- Plan meetings through OMPL secretary (phone 3912)
 - Indicate preparation and travel time
- What can you expect from the UT supervisors
 - Role 1st supervisor
 - Always present
 - Role 2nd supervisor
 - Less frequently present, only if specific expertise required or for important decisions

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Research projects & graduation options at OMPL

- · Internal assignments
- External assignments
- Assignments on website:
 - http://www.mb.utwente.nl/ompl/graduation (misc.)
 - $-\ \underline{\text{http://www.choir.utwente.nl/projecten}}\ (\text{healthcare})$