Department of Computer Science, UCL
COMP3001 Project Management Coursework academic year 2015-2016

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Purpose of your coursework
The coursework is aimed at assessing your team's ability to create a project plan and manage your project through the phases of research, requirements gathering, architecture, design, development, testing and delivery of an app or other deliverable.

Your team will be required to provide a summary plan and then update this as you progress through the coursework. An up-to-date also aids communications and teamwork within your project and with organisations you have asked for help. It also engenders trust if you have realistic estimates that take into account risk information.

Teams need to agree the process they will follow to deliver a project, they need to be clear on what they are doing during each week of the project and this needs to be open and accessible to each member of the team. This project will give you specifically: the opportunity to demonstrate you can contribute to the planning, monitoring and control of the project, and show that the team have taken into consideration reflective practices, process improvement, ethical and privacy issues.

Increasingly (big) data is being analysed to improve and optimise business processes. This project will give you an insight and experience in this rapidly expanding field, for which employers increasingly seek skills. You will also realize that many traditional project management methods may need to be adapted, as your teams will find a research or an agile approach more appropriate. Iterative processes are especially likely when selecting data sets. Sometimes after cleaning data and visualizing data sets your team may realise that alternative data sets may provide more useful information.

This research project is aligned to UCL Grand Challenges particularly in relation to encouraging researchers to consider their work in relation to sustainable cities and human wellbeing. This project also aligns with the aspirations of the PMI, APM, BCS and IET professional bodies.

Background to your project
There is considerable concern over the risks of air pollution in major cities and studies have shown that this situation adversely affects, and contributes to shortening of,

lifespans in London.[1] Increasingly organisations are expected to encourage healthy lifestyles and protect those within their organization and the wider community. The solution your team designs should help individuals to recognise when it might be better to work from home, when pollution levels are predicted to be adverse to health.

Project Outline

Your team will examine and visualize data sets to build visualisations or an app so that an organization your team select, such as UCL, can alert students and staff of predicted adverse increases in air pollution and to recommend those with COPD (Chronic Obstructive Pulmonary Disease) or asthma to work from home.

Marks will be awarded according to the Department of Computer Science marking guidelines. This means that an innovative solution, which helps individuals and/or an organization, will achieve considerably more marks than a simple visualization of one data set. You need not be restricted by the suggestion in the previous paragraph; instead you can choose to develop any visualisation or solution you wish provided your development helps to improve the health of a specified group by avoiding or being aware of high levels of air pollution.

(As a further example, at a recent Hackathon at Future Cities Catapult, one team designed an app to help hospitals understand the increases in staff needed when air pollution levels were predicted to be high. Here the aim was to ensure that those being admitted would receive timely care and that the hospital would be adequately staffed.)

As part of this work you will need to establish what your team believes to be appropriate levels of air pollution. You may wish to research air quality guidelines from supranational organisations such as the EU to strengthen the business case for the project.

It is anticipated students will use use mainly open data sets to predict air pollution levels in London. Suggestions for open data sets you may wish to consider include data provided by DEFRA[2] and London Air Quality Network.[3] You may wish to integrate these with Google Maps and Met Office open data[4] to initially understand the problem. Teams will be encouraged to seek help from external organisations such as Future Cities Catapult, data providers such as Inmarsat and research groups within UCL such as CASA, which is part of the Bartlett, UCL's Faculty of the Built Environment.

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[1] London becomes first world city to quantify the health effects of nitrogen dioxide (NO_2), London.gov.uk http://london.gov.uk/media/mayor-press-releases/2015/07/london-becomes-first-world-city-to-quantify-the-health-effects < Accessed 12th September 2015 >

[2] http://uk-air.defra.gov.uk

[3] http://www.londonair.org.uk/LondonAir/Default.aspx

[4] http://www.metoffice.gov.uk/datapoint

We expect team members to help one another and, if using a Scrum approach, understand that the ScrumMaster is there to encourage the team to follow the project management and engineering processes that the team has agreed. It is also expected that you develop ground rules for how you work e.g. everyone turns up, everyone contributes and everyone stays for the length of the agreed development period.

It's likely your team will adopt current approaches, such as Test Driven Development, however this should not presuppose that you know what the organization wants. It is vital that you get customer input and feedback and accelerate your development cycle so that through your initial feedback and acceptance testing you actually deliver what your client wants.

When you deliver the task for the coming week whether shown by sprints or otherwise make sure that it is clear to your team and those viewing your project, who is doing what and when.

Planning this research project will invariably generate several courses of action. As part of the planning process your team will have to determine which of the alternate courses is the most appropriate to select.

Facilities required
Students ought to be able to do the work on their laptops and they should have adequate programming skills by now. The data will typically be available in suitable formats such as XML or JSON. Tools, such as MongoDB, Rapid Miner, ElasticSearch, Neo4j, Tableau etc., are open source; however students need to examine and select appropriate tools and use whatever they deem necessary.

Deliverables
Each week a short (one page maximum) retrospective report, covering, ideally in bullet points:
• What the team accomplished in the past week
• What went well and what did not go so well?
• What actions will need to taken in the coming week; these may include improvements to the technical or project management processes, requests for help or research needed. Include any revisions to the original plan.
Retrospectives to be submitted on 23rd and 30th October 6th, 13th, 20th, 27th November and 4th December 2015.

By the end of Friday 16th October 2015, the team should also produce the overall initial schedule, a plan on one page. There should be no more than 12 main activities on this plan.

Final deliverables required to be submitted Friday 11th December 2015. Consisting of:

• A report, 1000 words maximum for the main body of the report excluding appendices
• A video, maximum length 3 minutes, describing their goals and a short demo of their visualizations or app
• Both the report and video must include your coursework identifier (COMP3001 project management coursework 2015/2016), team number provided, project name that the team decide and who is in the team, including first and second name.

Assessment
Assessment will use the structure, used in other faculty of engineering modules; 40% for the Group Report (which includes the initial plan and the weekly one page report), 20% for the Video and 40% for Individual Peer Review, where students offer their views in the form of a rating for themselves and the other team members on their contribution. These peer review scores are not automatically taken forward as the final score for this component but are used by staff to aid arriving at the final score.

The group report and video will be assessed 50% on technical aspects and 50% on project management aspects. The generic marking criteria for the department of computer science coursework is used and therefore, for students to obtain marks above 80%, they will be expected to cite research papers and critically evaluate their research. Students adding further innovation, such as creating a website or mobile app and discussing this in terms of sustainability and business relevance will gain further credit. Part of the project plan that teams produce should include a section addressing how they would tackle ethical and privacy issues. For marking purposes, the retrospectives will be considered at the same time as the reports.

Additional credit will be given to teams who involve an "independent" member when they complete their weekly retrospective - either from another team on the course, from elsewhere in UCL or their selected client. The idea is that the independent person agreeing to this role provides constructive comments, as an outsider may, on what could be done or what may not be clear in goals or in who is doing what during the following week. An ideal situation is that the weekly retrospective is carried out in less than one hour period towards the end of the week. The volunteering "independent" member helps clarify points or suggests items not considered and the team summarise the retrospective covering both project and technical points and post it on Moodle immediately. This retrospective is meant to be a support document for the team to provide an indication of where further research or help is needed.
Note the submission time is by 23:55 for the relevant submission day. This time is outlined within the coursework section of the CS teaching and learning pages:
http://www.cs.ucl.ac.uk/teaching_learning/teaching_matters/#c10836