MaSEE
Management System for
Engineering Education

THIS GUIDE IS TO BE READ IN CONJUNCTION WITH QUICK GUIDE TO DOCUMENT MANAGEMENT

Pedagogical Advantages

Among the competencies required by Engineers Australia's Stage 1 Professional Standards is to be "aware of common document identification, tracking and control procedures" (34(c)). Project Document Management processes explicitly address this standard.

The competencies needed for effective document management include:
- selecting and preparing the right documents for any given purpose and audience
- making sure the right people have access to the information when needed throughout the project
- identifying what information is most current
- tracking the development of ideas and improvements

The Document Management process helps to develop drafting and editing skills required across undergraduate programs by making students explicitly think about document changes. It also requires students to actively consider who needs access to their documentation as well as authorship and collaboration, contributing to the development of effective teamwork and communication practices.

As engineers, students will be required to be transparent and effective communicators with all key stakeholders - not just the project team - and operate methodically with attention to detail. This process helps to develop these competencies.

Assessment

For a given project, develop a Document Control Plan. Use an example format provided or research and find a format that meets the minimum requirement of document name, where it can be accessed, who needs access to it, who is responsible for managing changes and access to it. Include a Version Control Protocol for each document. The protocol should include how each document will be numbered and when numbering will change.

Use the Document Control Plan and Version Control Protocol for key project documents, as a minimum project meeting minutes, reports and documents providing design specifications. The plan and protocols may also be applied to other documents including scope documents, briefings, schedules and review. (See Indicative Assessment)

Note that the Assessment is both a learning activity and a means of evaluating progress and performance.

Marking can be limited to confirming whether a suitable document management plan, including version control protocols, were developed and used consistently appropriately using a rubric (see Indicative Rubric). Teacher time can then be used to design a robust design task that assesses technical knowledge and competencies, and to provide informal feedback on the development and application of the Project Document Management Plan.

Assessment loadings should reflect time students are expected to take to conduct and record meetings.

Implementation

This process augments the work already done on Design Verification and Design Review processes and on the Project Meeting Minutes process in which documents were created. This process is also integral to Project Planning.

Ideally, this process should be taught and assessed in conjunction with a project requiring the production of multiple documents, including as a minimum project meeting minutes, design specifications and progress reports. The required documents will need to be reviewed, revised/updated and circulated at least once during the implementation/execution stage of the project as well as the original drafting at the Initiation and Planning stages and finalising at the Closure stage. The connection to the Monitoring and Review stage should also be addressed.

Plans can also include file naming protocols and storage protocols as well as version control protocols.
- File naming example: file name = document name-document owner-date created-version number
- Including file path in the footer is good practice
- Storage protocols may include: password protections, where current and previous versions are kept, and use of URL links to sole copy and use, rather than attaching copies to emails

Discuss and establish consistent definitions for what constitutes minor and major changes, e.g.
- Minor change may be minor corrections to spelling, grammar, typos, or pagination
- Major change is any change to the substance of the content or design

Also discuss and establish consistent definitions for labels such as 'draft', 'issue', 'release', 'authorised', 'controlled' and 'uncontrolled' documents. Definitions should be consistent with project management and engineering industry practice.

While the example of a Document Version Control numbering system is numerically based, any other system can be used provided it is consistent with industry practice. Students can be required to use a specified system or choose between a limited number of options or research and select a suitable system.

Indicative Assessment

The project team develop a Document Management Plan which includes Version Control Protocols. Your plan must include:
- which documents/document types it covers
- how, when and where changes such as revisions and updates will be recorded
- where the documents will be stored
- who has access

Each team member must then follow the plan consistently for all listed documents throughout the project until completion.

As a minimum, the plan must address how project meeting minutes, documents that contain design specifications and reports are managed.

Sample instructions

At your project team's initial planning meeting develop a Document Management Plan which includes Version Control Protocols. Your plan must be documented and as a minimum include:
- which documents/document types it covers
- how, when and where changes such as revisions and updates will be recorded
- where the documents will be stored
- who has what type of access.

Ideally, your plan will also include protocols for:
- naming of files
- numbering of documents and allocation of numbering
- storing and archiving documents

and identify who is responsible for:
- creating and maintaining document (Owner)
- making what type of changes
- ensuring timely and appropriate distribution to relevant parties

Submit with other project documents in line with designated timelines.

You will be assessed not only on your plan and protocols (as a group) but also on the consistent application of these (as individuals).

Indicative Rubric

	Not Satisfactory	Satisfactory	Very Good - meets Satisfactory criteria plus…
Document management plan	No plan provided or incomplete Plan does not include key project documents Plan not followed or followed inconsistently	Plan provided Plan includes details for Minutes, Reports, Design specifications Plan includes the following details: which documents/document types it covers how, when and where changes such as revisions and updates will be recorded where the documents will be stored who has what type of access. Plan followed consistently	Plan includes details for all relevant documents Plan includes protocols for: naming of files storing and archiving documents and identify who is responsible for: creating and maintaining document (Owner) making what type of changes ensuring timely and appropriate distribution to relevant parties
Version control protocols	No or incomplete version control protocol provided Protocol not followed or inconsistently followed	Version control protocol provided Protocol defines: numbering system when numbering is changed Version control protocol followed	Protocol defines: How changes are summarised Version control protocols followed for all relevant project documents

Frequently asked questions

1. How detailed do the plans need to be?

Plans should be concise. Provided all relevant and necessary information is addressed, a Plan may be as brief as 1-2 pages. If a plan exceeds 5-6 pages it may need to be edited for clarity and focus. Use of diagrams, tables and bullet-pointed/numbered lists should be encouraged.

2. When should it be conducted in the assessment cycle?

As document management is required from the beginning of the project initiation and planning stages, coverage of this process should be addressed prior to or as preparation for undertaking a design project.

The documents to be controlled will vary depending on the project complexity, timeframe and deliverables. The assessment should be a discrete element of the larger project assessment.

Ideally, students will have the opportunity to receive informal/formative feedback during the preparation of their plans and the application of their documented protocols.

3. How much guidance should be given to students upfront?

It would be useful to provide a few example plans (see Further Reading & References). Additionally, students should have access to a range of examples of project management/engineering documents where appropriate protocols have been applied.

If this process is covered early in the students' degree and/or will be covered at multiple points of the degree, the Document Management Plan can be provided in the first instance. This way students can become familiar with the following Version Control and File Naming protocols before having to develop a plan for themselves.

4. How can grades be allocated when it is part group work and part individual work?

It is recommended that the preparation and documentation of the Document Management Plan be undertaken by the project team. This is so there is a single plan to be followed by all team members.

This assumes that the project for which documents will be created will be undertaken by a team. Where the project is an individual one, then each individual will need to develop and document their own plan.

Each individual is responsible for applying the plan to the documents they handle. By allocating individual marks for application the team as a whole will not be prejudiced if a team member does not follow the plan.

Team and individual marks can be combined to provide a total individual mark so there may be some variation among team members.

If preferred, all marks can be based on a group plan and group application.

Further Reading & References:

Accreditation criteria guidelines. Retrieved from https://www.engineersaustralia.org.au/sites/default/files/content-files/2016-12/G02_Accreditation_Criteria_Guidelines.pdf

A new approach to document version numbers. Retrieved from http://www.its-all-design.com/a-new-approach-to-document-version-numbers/

Control – part 20 - Document control procedures. Retrieved from https://project-management-basics.com/project_management/project_management_094_control_part_20_document_control_procedures

Document management plan preparation guidelines. Retrieved from Qatar national project management:
https://www.psa.gov.qa/en/knowledge/qnpm/Documents/7%20Document%20Management/Document%20Management%20Preparation%20Guidelines.PDF

Guidance on the requirements for documented information of ISO 9001:2015. Retrieved from https://www.iso.org/files/live/sites/isoorg/files/archive/pdf/en/documented_information.pdf

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Kouprine, V., Fontaine, M. K., & Cook, T. (2010). Project management documentation for engineering and construction projects. *Projectmanagement.com*. Retrieved from
https://www.projectmanagement.com/articles/284153/Project-Management-Documentation-for-Engineering-and-Construction-Projects

Project management fact sheet: Document control, Version 1.3. (2008). Retrieved from http://www.dpac.tas.gov.au/__data/assets/pdf_file/0006/509298/Document_Control_Fact_Sheet.pdf

Project management: Creating a document control plan for your roject. (2009). Retrieved from https://pmtips.net/article/creating-document-control-plan-project

Stage 1 Competency standard: Professional engineer. Retrieved from https://pmtips.net/article/creating-document-control-plan-project