

Cardiff University

School of Computer Science and Informatics



Initial Plan:

The integration of the Annual Module Review process between the
School of Computer Science and Informatics and the School of
Mathematics

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Module Credits: 40 Credits

Project Description

Cardiff University has approved and confirmed that the School of Computer Science and Informatics, along with the School of Mathematics will move to a new, state of the art building, which is currently in the early stages of preparation working with the architects ^[1].

Both Schools will share the facilities and resources in the new building, which will provide a high level of quality teaching for their students, as well as provide a space for all types of students to excel and develop ^[1]. Furthermore, the building will also facilitate the opportunity for academic colleagues and faculty to pursue their research interests ^[1].

With this planned move, an opportunity has arisen in terms of examining process integration between the schools, and if time permits, process optimisation and efficiency as well. Previously with both schools being geographically dispersed, certain School activities and processes needed to be carried out individually.

However, now the School of Computer Science and Informatics and the School of Mathematics will be co-located, resources can be conserved, and utilised more effectively when completing certain School activities and processes, through integration, only needing to complete tasks once between the two schools rather than twice individually.

Through discussions with Professor Stuart Allen (Head of the School of Computer Science and Informatics), we identified that the Annual Module Review process could be integrated between the School of Computer Science & Informatics and the School of Mathematics. Additionally, if time permits, explore the optimisation of that integrated process or range of processes, by researching the methods and models of the Annual Module Review process used by other Schools, and developing a relevant optimisation criterion to compare those models against, meanwhile ensuring they meet the appropriate, justified and integrated constraints, conditions and rules.

At the centre of this project, will be a business process, specifically, the Annual Module Review process. According to Appian, which provide Business Process Management (BPM) tools to organisations, a business process is a set of activities and tasks, once completed, will accomplish an organisation goal. The process must involve clearly defined inputs and a single output ^[2]. Bill Curtis defined a process as a partially ordered set of tasks or steps undertaken towards a specific goal ^[3]. And finally, Hammer and Champy define business processes as a set of activities that, together, produce a result of value to the customer ^[4].

In organisations, individuals are given responsibility to own processes, meaning they are accountable, reliable and dutiful to ensure people around them understand their processes, and are able to follow them with no confusion. This highlights the challenge and stage within the knowledge management lifecycle of sharing knowledge ^[7]. Within processes, when trying to communicate across the intricacies, details and minutiae of them, the content (e.g. conditions) is often explicit knowledge, for example:

- A customer can only request a refund if the purchase occurred less than 30 days ago
- A manager is only authorised to validate and approve a refund
- A Customer purchasing more than 5 products receive a 20% discount

In this scenario, the art and act of codifying (technology) explicit knowledge ^[7] is the most effective way to aid in the communication of these processes, especially the conditions and constraints, allowing others in the organisation to digest that information easily and act upon it in the future.

As a result, for this project, I will be making use of business rules with an emphasis on human readability over machine readability, using semi-formal rules to articulate and clearly describe the Annual Module Review process for the School of Maths, and the School of Computer Science and Informatics.

Business Rules are structured and well-defined pairs of condition and action statements, a rule is independent and atomic, as this makes them easy to test and execute ^[6], as well as easy to communicate to others (sharing explicit knowledge).

This project is about learning (single & double loop) and understanding both Annual Module Review processes in the Schools of Computer Science & Informatics and Mathematics. Then articulating and defining those processes using Business Rules. Followed by analysing the processes' compatibility and the identification of conflicts between those two processes. Then using rationale and logic, based on the strength of assumptions and justifications, to overcome those conflicts, and succeed in the integration of the two processes. And finally, if time permits, develop an optimisation criterion, to refine the process, taking inspiration from other schools in the University who may do their Annual Module Review process with significant variation from the new integrated process, weighting potential models against the optimisation criterion.

Ultimately, this project attempts to explore the integration of the Annual Module Review process between the School of Computer Science & Informatics and the School of Mathematics.

Projects Aims and Objectives

The following aims and objectives clearly define and sets out what this project attempts to specifically achieve. I have identified four deliverables, each one is expected to be delivered at the end of each month, except the final deliverable which is the report itself, which will be delivered at the beginning of May. The aims and objectives listed below are in no order of priority, but do provide chronological outline of planned achievement.

At Minimum:

- An understanding and modelling of the Annual Module Review process in the School of Computer Science and Informatics
 - Talk with Dr. Martin Chorley (process owner) to learn and understand the Annual Module Review process currently used
 - Build a semi-formal rule based model to structure and articulate the current Annual Module Review process in Computer Science

- **Deliverable 1:** *Computer Science Module Review Process*
- An understanding and modelling of the Annual Module Review process in the School of Mathematics
 - Talk with Beatrice Allen (School Manager) to identify the process owner in the School of Mathematics for their Annual Module Review process
 - Build a semi-formal rule based model to structure and articulate the current Annual Module Review process in Maths
 - **Deliverable 2:** *Mathematics Module Review Process*
- The identification and resolution of conflicts and incompatibilities between the two Annual Module Review processes
 - Comparing the two individual models, highlighting key sticking points which prevent the two processes being integrated
 - Communicating with both process owners and schools in regard to the conflicts, understanding their assumptions and justifications for those steps that are causing issues, assessing rationale and logic to argue potential removal or adjustment
- The creation, development and successful integration of the Annual Module Review processes between the two schools
 - Build a semi-formal rule based model to structure and articulate the integrated Annual Module Review process which satisfies the logical and rational conditions and requirements of both schools.
 - **Deliverable 3:** *Integrated Module Review Process*
- A detailed report of the findings of the project
 - Produce a report covering the overall project background, approach to delivering the goals and objectives including details of findings.
 - **Deliverable 4:** *Final Year Project Report*

If Time Permits (Extra):

- An understanding of how another school within the University conduct their Annual Module Review process
- The creation of variations of the integrated approach, refining the process with an emphasis on optimisation or a certain weighted factor which could be compromised if another factor is prioritised instead
 - Example: Prioritise diligence and detail over speed or vice versa would see variation in the models
 - **Optional Deliverable 5:** *Models*
- Develop an optimisation criterion to compare the varied models against based on weights
 - **Optional Deliverable 6:** *Optimisation Criterion*

Work Plan

WEEK	1	2	3	4	5	6	7	8	9	10	11	12	13	>14
W/C	05/02/2017	12/02/2017	19/02/2017	26/02/2017	05/03/2017	12/03/2017	19/03/2017	26/03/2017	02/04/2017	09/04/2017	16/04/2017	23/04/2017	30/04/2017	07/05/2017
Tasks														
Learn & understand about Computer Science Module Review Process														
Structure Computer Science Module Review Process using business rules														
M: Deliverable 1 - Computer Science Module Review process														
Learn & understand about Mathematics Module Review Process														
Structure Mathematics Module Review Process using business rules														
M: Deliverable 2 - Mathematics Module Review process														
Identify conflicts & incompatibilities between the two processes														
Resolve the conflicts & incompatibilities between the two schools														
Structure the integrated Annual Module Review process														
M: Deliverable 3 - Integrated Module Review process														
Report Writing														
M: Deliverable 4 - Final Year Project Report														
Viva														

- Please note this work plan does not take into account the extras and additional work if time permits.
- Meetings will take place with Professor Alun Preece every other week
- Major reviews will take place after every deliverable

References

- [1] Cardiff University. Top Architects Chosen for £23m maths and computer science centre. [Online]. Available at: <https://www.cardiff.ac.uk/news/view/946431-top-architects-chosen-for-23m-maths-and-computer-science-centre> [Accessed 1st Feb 2018]
- [2] Appian. Business Process Definition. Available at: <https://www.appian.com/bpm/definition-of-a-business-process/> [Accessed 1st Feb 2018]
- [3] Curtis, B., Kellner, M.I. and Over, J.: "Process Modelling", *Communications ACM*, 35, (9), pp. 75-90, 1992
- [4] Hammer M., and Champy, J., "Reengineering the Corporation", Harper Business, 1993, New York.
- [5] Harvard Business Review. Double Loop Learning in Organizations. Available at: <https://hbr.org/1977/09/double-loop-learning-in-organizations> [Accessed 1st Feb 2018]
- [6] IBM, A. Lieberman B. Requirements for Rule Engines, Capture and Communication of Complex Business Rules. Available at: <https://www.ibm.com/developerworks/library/os-rulesengines/index.html> [Accessed 5th Feb 2018]
- [7] D. Stenholm, J. Landahl, D. Bergsjö. Knowledge Management Lifecycle: An Individual's Perspective. International Design Conference, pp. 5, 2014