

<b>Lecturer Name:</b>	Finbarr Sheehy
<b>Subject:</b>	MScDT – Lean Sigma 4.0
<b>Assignment Title</b>	Lean Sigma 4.0 – Utilise technology and principles of Lean Thinking and Six Sigma to improve a conceptual digitalisation of a business.

The learning outcomes for this module are as follows,

1. critically assess the effectiveness of established 'operational excellence' models utilised to drive business success across a range of industries;
2. develop detailed knowledge of the key factors that underpin a successful operational excellence (OE) implementation as part of a digital transformation in a scientific environment;
3. critically investigate the concepts of lean thinking, six sigma and design for six sigma and demonstrate their application in the life science sector;
4. select an appropriate range of concepts and tools, to develop and evaluate an operational excellence strategy in an industrial situation;
5. apply a range of tools in the design of a digitalisation solution of a life science process.

### Background

Business success is achieved by having a clear vision; products and services of value; clear efficient and agile processes; competent people; supportive culture; effective measurement and decision making and resourcing improvements for the future.

Lean Thinking outlines the importance of understanding customer expectations and providing value through an integrated agile process which has minimal waste and ideally produces the product or service when required.

Six Sigma provides a process to define an improvement benefit; understand the current situation; establish the root cause; develop an effective solution; test the impact of the solution and sustain the improvement, resulting in the reduction in variation or addressing root causes to problems.

This assignment is to allow the learner to understand the principles above by identifying and mapping a business/system and then through the utilisation of technology solutions, develop a more effective and robust business/system. The learner will develop a value stream map of the business/system, map the flow of materials and data through the process and then propose technological solutions that will utilise the digital lean tools of 5S, SMED, Poka Yoke, Kanban, TRIZ, Pugh Matrix and others in a digital context. The benefits will be reflected in the redrafting of the value stream map as well as the process maps.

1. The VSM can be of any business/system. It does not have to be a life science, pharma or medtech business.
2. You can use some of the examples that are provided as templates and you can edit them for your VSM.
3. You can use estimates for data. You do not need to contact organisations and ask for data.
4. You cannot take an existing piece of work that your organisation has completed and present it as your own work.
5. You can submit the assignment on Moodle as one document or multiple documents.

Assignment Details	Percentage
<p>1. In Excel (or other software if preferred), construct a Value Stream Map of a medium sized Business Enterprise or System. This enterprise can be of your own choosing, does not need to be pharma/medical device related, but must outline the following items,</p> <ul style="list-style-type: none"> <li>• Details of the Customers</li> <li>• Details of the Customer Requirements – Products, Quantities, Frequencies, Deliveries</li> <li>• Demand for raw materials on Suppliers</li> <li>• An outline of the key steps in the internal process flow</li> <li>• For each process step outline some critical parameters, examples could include duration, inventory, yield, wastage, resources, etc.</li> <li>• An identification of Value-Add Activities and Non-Value Add Activities</li> <li>• Details of Customer deliveries</li> </ul>	<p><b>20%</b></p>
<p>2. Construct a process flow diagram of a typical transaction starting from the customer, right through manufacture to delivery to customer, also indicating the flow of information and the systems used to record and transact such information. Identify potential wastes, constraints and other issues that impact on the flow of materials and information.</p>	<p><b>20%</b></p>
<p>3. Identify how the introduction of technological solutions (digitisation, digitalisation or transformation) can improve the business by implementing the principles of Lean Thinking and Six Sigma in a digital environment. Develop suggestions on how to improve the processes using lean tools of 5S, SMED, Kanban, error proofing or solutions derived from TRIZ or other means.</p>	<p><b>30%</b></p>
<p>4. Construct a revised process flow diagram showing the integration of technology. Describe how the use of technology can provide a more integrated, leaner process.</p>	<p><b>10%</b></p>
<p>5. Complete a 5-minute video summarising your assignment.</p> <ul style="list-style-type: none"> <li>• Discuss sections 2,3 and 4 above in the video.</li> </ul>	<p><b>20%</b></p>

<b>Word/Page count:</b>	Overall Assignment is 5- 10 pages	<b>Total %:</b>	100% of marks for the module
<b>Submission details:</b>	Submit softcopy of assignment on Moodle. Assignment can be submitted as a single document or as multiple documents.		
<b>Additional Information:</b>	<b>Marks Awarded for under the following headings:</b>		
	<b>Clarity of the Value Stream Map (VSM)</b>	<b>Clarity on current process flow</b>	<b>Clarity on improvements using integrated technology solutions</b>
	<b>Clarity on the revised Process flow and VSM and video</b>		
	20	20	30
			30

<b>Grading Scheme for the Assignment</b>				
<b>Criteria Descriptor</b>	<b>Clarity of the Value Stream Map (VSM)</b>	<b>Clarity on current process flow</b>	<b>Clarity on improvements using integrated technology solutions</b>	<b>Clarity on the revised Process flow and VSM and video</b>
<b>Weighting to total 100</b>	20	20	30	30
<b>80-100</b>	Great clarity in the explanation of the proposed value stream. The VSM is well constructed and described in a language that is understood. The VSM has excellent detail in terms of it components – customer, product/service, process steps, measurements and symbols. Extensive evidence of reading of top quality sources.	Great clarity in the explanation of current process flow and how materials and information flows through the process. All data transactions are recorded and discussed in the analog domain. Extensive examples of the data used in the business and how that data is collected and recorded.	Great clarity in the explanation of how aspects of technology can be integrated to the VSM to implement the principles of Lean and Six Sigma. A significant range of tools are identified and explained in detail. Very significant use of diagrams, layouts, graphs, etc. are used.	Exceptional clarity on how the revised process flow and value stream. A complete set of technological solutions is provided for all aspects of the business. The principles of Lean and Six Sigma are integrated to the value stream and the benefits are well documented. The video is an excellent summary of the assignment.
<b>70-79</b>	Very good clarity in the explanation of the proposed value stream. The VSM is well constructed and described in a language that is understood. The VSM has excellent detail in terms of it components – customer, product/service, process steps, measurements and symbols. Extensive evidence of reading	Very good clarity in the explanation of current process flow and how materials and information flows through the process. Many of the data transactions are recorded and discussed in the analog domain. Many examples of the data used in the business and how that data is collected and recorded.	Very good clarity in the explanation of how aspects of technology can be integrated to the VSM to implement the principles of Lean and Six Sigma. A significant range of tools are identified and explained in detail. Very significant use of diagrams, layouts, graphs, etc. are used.	Very good clarity on how the revised process flow and value stream. A complete set of technological solutions is provided for all aspects of the business. The principles of Lean and Six Sigma are integrated to the value stream and the benefits are well documented. The video is a very good summary of the assignment.

	of top quality sources.			
<b>60-69</b>	Good clarity in the explanation of the proposed value stream. The VSM is well constructed and described in a language that is understood. The VSM has excellent detail in terms of it components – customer, product/service, process steps, measurements and symbols. Extensive evidence of reading of top quality sources.	Good clarity in the explanation of current process flow and how materials and information flows through the process. Many data transactions are recorded and discussed in the analog domain. Extensive examples of the data used in the business and how that data is collected and recorded.	Good clarity in the explanation of how aspects of technology can be integrated to the VSM to implement the principles of Lean and Six Sigma. A good range of tools are identified and explained in detail. Very significant use of diagrams, layouts, graphs, etc. are used.	Good clarity on how the revised process flow and value stream. A complete set of technological solutions is provided for all aspects of the business. The principles of Lean and Six Sigma are integrated to the value stream and the benefits are well documented. The video is a good summary of the assignment.
<b>51-59</b>	The explanation of VSM is clear but needs some interpretation and simplification. Some elements of 'cut and paste' evident in the explanation. The VSM has reasonable detail in terms of it components – customer, product/service, process steps, measurements and symbols.	The explanation of the process flow is clear but needs some interpretation and simplification. Some elements of 'cut and paste' evident in the explanation. Some examples of the data used in the business and how that data is collected and recorded.	Reasonable clarity in the explanation of how aspects of technology can be integrated to the VSM to implement the principles of Lean and Six Sigma. A reasonable range of tools are identified and explained in detail. Reasonable use of diagrams, layouts, graphs, etc. are used.	Reasonable clarity on how the revised process flow and value stream. A complete set of technological solutions is provided for all aspects of the business. The principles of Lean and Six Sigma are integrated to the value stream and the benefits are reasonably well documented. The video is an reasonable summary of the assignment.
<b>40-50</b>	The explanation of VSM is provided but needs some interpretation. Strong elements of 'cut and paste' evident in the explanation. The VSM is referenced from limited sources, some of which are considered of reasonable quality.	The explanation of the process flow is barely adequate and needs some interpretation and simplification. Some elements of 'cut and paste' evident in the explanation. Some examples of the data used in the business and how that data is collected and recorded.	Barely adequate clarity in the explanation of how aspects of technology can be integrated to the VSM to implement the principles of Lean and Six Sigma. A very limited range of tools are identified and explained in detail. Limited use of diagrams, layouts, graphs, etc. are used.	Barely adequate clarity on how the revised process flow and value stream. A very limited set of technological solutions is provided for all aspects of the business. The principles of Lean and Six Sigma are integrated to the value stream and the benefits are poorly documented. The video is poor and barely adequate.
<b>31-39</b>	The explanation of VSM is poorly provided. Significant elements of 'cut and paste' evident in the explanation. The model is referenced from	The explanation of the process flow is inadequate and poorly provided. Significant elements of 'cut and paste' evident in the explanation. The	Inadequate clarity in the explanation of how aspects of technology can be integrated to the VSM to implement the principles of Lean and Six Sigma.	Inadequate clarity on how the revised process flow and value stream. A very limited set of technological solutions is provided for all aspects of the business. The

	extremely limited and/or unknown sources, blogs articles, Wikipedia, etc.	elements are referenced from extremely limited and/or unknown sources, blogs articles, Wikipedia, etc.	An extremely limited range of tools are identified and explained in detail. Limited use of diagrams, layouts, graphs, etc. are used.	principles of Lean and Six Sigma are integrated to the value stream and the benefits are poorly documented.
<b>0-30</b>	The explanation of VSM is unclear with no evidence of research and explanation. Significant evidence of 'cut and paste' in the explanation. A significant lack of references of quality or relevance.	The explanation of the process is very poorly provided. Significant elements of 'cut and paste' evident in the explanation. The content is referenced from extremely limited and/or unknown sources, blogs articles, Wikipedia, etc.	Inadequate or irrelevant description of the use of technology and how it can be integrated to the VSM to implement the principles of Lean and Six Sigma. An extremely limited range of tools are identified and explained in detail. Limited use of diagrams, layouts, graphs, etc. are used.	Inadequate or irrelevant clarity on how the revised process flow and value stream. Extremely limited set of technological solutions is provided for all aspects of the business. The principles of Lean and Six Sigma are not integrated to the value stream and the benefits are not documented. The video is very poor or not provided.

<b>Academic Misconduct</b>	See Griffith College Policies & Procedures
<p>As defined in QAE J6 Academic Misconduct Procedure:</p> <p><b>Plagiarism:</b> <i>Plagiarism includes copying or incorporating material derived from pre-existing work (published or unpublished) without the permission of the originator or without an established form of acknowledgement. It includes verbatim quotation, paraphrasing, imitation or other devices, which give the impression of being a learner's original work. It also includes the exploitation of ideas from others without proper acknowledgement, which mostly occurs in research, project work or assignments</i></p> <p>This allegation, if found to be true, represents a case of <b>Academic Misconduct</b> under Griffith College Rules.</p> <p>As per the procedure, the penalty for Minor Academic Misconduct, which has taken place for the first time: The learner is given zero in that element of the coursework that was proved to have resulted from academic misconduct. The learner must resubmit only that element of the coursework in which academic misconduct was detected. The result in that element of coursework shall be capped at 40%. If the learner does not resubmit the element within the prescribed timeframe, he / she shall receive a fail result for the entire piece of coursework. A record of the offence will be held internally.</p> <p>You must include your watermark (name) in the document to prove it is original.</p> <p>Examples of plagiarism in this assignment could include, but are not limited to,</p> <ul style="list-style-type: none"> <li>• Submitting an infographic that is not entirely your own work. The infographic must be constructed by you.</li> <li>• Submitting screenshots only of infographics that cannot be edited if requested to do so.</li> <li>• Submitting an infographic that is constructed from more than one existing infographics.</li> <li>• Submitting an infographic from another student/work colleague.</li> <li>• Submitting an infographic which is part of a work initiative or project from your place of work or other business – corporate plagiarism.</li> <li>• Submitting a reference list that is not of your own making – copying an existing reference list from another source.</li> <li>• Submitting a video that is not of your own making. This includes voice overs from other sources.</li> <li>• Submitting work that has been completed by others – thesis factories, online help sites, collaboration with others.</li> </ul>	