



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **MSS403024A Work within a constrained process**

**Release: 1**

## **MSS403024A Work within a constrained process**

### **Modification History**

New unit

### **Unit Descriptor**

This unit of competency covers the skills and knowledge required to apply the theory of constraints to a process which has a constraint.

### **Application of the Unit**

This unit applies to individuals who, as part of their work, are able to apply the theory of constraints to improve the operability of a constrained process (a process with at least one constraint) where it occurs in their team or work area or as part of their responsibilities. This unit identifies and works within the imposed constraint. This process may be colloquially known as 'drum-buffer-rope' approach. This unit does not seek to remove or reduce the constraint (see MSS405024A Apply the theory of constraints). The unit will normally be applied as part of an organisation's improvement strategy and in conjunction with other competitive systems and practices units.

The person will typically be a technician, team leader or other person who works with others in the bringing of change to an organisation as part of a formal team or otherwise. The unit includes liaison and communication with others, as required.

### **Licensing/Regulatory Information**

Not applicable.

### **Pre-Requisites**

Not applicable.

## Employability Skills Information

This unit contains employability skills.

### Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

### Elements and Performance Criteria

1	Identify the system constraint (bottleneck)	1.1	Identify desired output from process/system
		1.2	Determine throughput of process/system steps
		1.3	Identify capacity constrained resource (bottleneck)
		1.4	Confirm maximum/optimum throughput for this capacity constrained resource
2	Manage capacity constrained resource (drum)	2.1	Determine required time buffers for capacity constrained resource
		2.2	Translate time buffer into physical buffers, as appropriate
		2.3	Establish required buffers
		2.4	Examine capacity constrained resource to ensure optimum use of capacity
3	Determine schedule based on capacity constrained resource	3.1	Implement supply schedule appropriate for capacity constrained resource
		3.2	Determine delivery schedule based on capacity of capacity constrained resource
		3.3	Compare delivery schedule with externally required

delivery rate and take appropriate action

- 4    Examine operation of system/process
  - 4.1    Determine throughput of process/system steps
  - 4.2    Identify any additional/new capacity constrained resource
  - 4.3    Take appropriate action

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

Required skills include:

- identifying steps and processes in current operations
- identifying current performance against key performance indicators (KPIs)
- determining where performance, especially sub-optimal performance, relates to unique factors or is a manifestation of other symptoms/circumstances
- manipulating data to determine capacity, buffers, delivery schedule, throughput and other required information
- communicating with relevant people and asking leading questions
- applying resources to maximise output of capacity constrained resource (drum-buffer-rope approach)

### Required knowledge

Required knowledge includes:

- theory of constraints, including:
  - concepts of weakest link (often colloquially known as the drum)
  - duration (in production applications this is often known as material release buffer or inventory to protect the weakest link/constraint)
  - release timing of buffer (colloquially called 'rope')
- organisation processes, products and internal and external customers

## Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

<p><b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b></p>	<p>A person who demonstrates competency in this unit must be able to provide evidence of the ability to:</p> <ul style="list-style-type: none"> <li>• identify capacity constrained resource</li> <li>• manage capacity constrained resource (drum)</li> <li>• determine schedule based on capacity constrained</li> </ul>
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	resource.
<b>Context of and specific resources for assessment</b>	<p>Assessment of performance must be undertaken in a workplace using or implementing one or more competitive systems and practices.</p> <p>Access may be required to:</p> <ul style="list-style-type: none"> <li>workplace procedures and plans relevant to work area</li> <li>specifications and documentation relating to planned, currently being implemented, or implemented changes to work processes and procedures relevant to the assessee</li> <li>documentation and information in relation to production, waste, overheads and hazard control/management</li> <li>reports from supervisors/managers</li> <li>case studies and scenarios to assess responses to contingencies</li> <li>minutes of meetings and other records relevant to determining and dealing with the core conflict.</li> </ul>
<b>Method of assessment</b>	<p>A holistic approach should be taken to the assessment.</p> <p>Competence in this unit may be assessed by using a combination of the following to generate evidence:</p> <ul style="list-style-type: none"> <li>demonstration in the workplace</li> <li>workplace projects</li> <li>suitable simulation</li> <li>case studies/scenarios (particularly for assessment of contingencies, improvement scenarios, and so on)</li> <li>targeted questioning</li> <li>reports from supervisors, peers and colleagues (third-party reports)</li> <li>portfolio of evidence.</li> </ul> <p>In all cases it is expected that practical assessment will be combined with targeted questioning to assess underpinning knowledge.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.</p>
<b>Guidance information for assessment</b>	<p>Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the candidate and the work being performed.</p>

## Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<p><b>Competitive systems and practices</b></p>	<p>Competitive systems and practices may include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• lean operations</li> <li>• agile operations</li> <li>• preventative and predictive maintenance approaches</li> <li>• monitoring and data gathering systems, such as Systems Control and Data Acquisition (SCADA) software, Enterprise Resource Planning (ERP) systems, Materials Resource Planning (MRP), and proprietary systems</li> <li>• statistical process control systems, including six sigma and three sigma</li> <li>• Just in Time (JIT), kanban and other pull-related operations control systems</li> <li>• supply, value, and demand chain monitoring and analysis</li> <li>• 5S</li> <li>• continuous improvement (kaizen)</li> <li>• breakthrough improvement (kaizen blitz)</li> <li>• cause/effect diagrams</li> <li>• overall equipment effectiveness (OEE)</li> <li>• takt time</li> <li>• process mapping</li> <li>• problem solving</li> <li>• run charts</li> <li>• standard procedures</li> <li>• current reality tree</li> </ul> <p>Competitive systems and practices should be interpreted so as to take into account:</p> <ul style="list-style-type: none"> <li>• the stage of implementation of competitive systems and practices</li> <li>• the size of the enterprise</li> <li>• the work organisation, culture, regulatory</li> </ul>
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	environment and the industry sector
<b>Constraint/capacity constrained resource</b>	A capacity constrained resource refers to: <ul style="list-style-type: none"> <li>the step in a process or part of a system which limits the output of the entire system or process (colloquially known as a bottleneck)</li> </ul>
<b>Drum</b>	The capacity constrained resource is often referred to as the drum, as its output provides the 'drumbeat' for the output of the entire system or process
<b>Buffer</b>	Buffer refers to: <ul style="list-style-type: none"> <li>the slack time required in the system to protect the capacity constrained resource (drum) against disruption (in a physical process this is usually represented by work in progress)</li> </ul>
<b>Optimum use of capacity</b>	Optimum use of capacity refers to: <ul style="list-style-type: none"> <li>ensuring the capacity constrained resource is not diverted or prevented from producing at its limit</li> </ul>
<b>Supply schedule ('rope')</b>	Supply schedule refers to: <ul style="list-style-type: none"> <li>ensuring the capacity constrained resource has what it needs when it needs it (often referred to as 'the rope' – the system which releases supply as needed)</li> </ul>
<b>Delivery schedule</b>	Delivery schedule refers to: <ul style="list-style-type: none"> <li>what the system/process is actually able to deliver from the capacity constrained resource once it has been appropriately buffered and supplied</li> </ul>
<b>Appropriate action</b>	Appropriate action may include: <ul style="list-style-type: none"> <li>advising customers and stakeholders of the actual production capacity</li> </ul>

## Unit Sector(s)

Unit sector

Competitive systems and practices



## **Custom Content Section**

Not applicable.