# SKILLS FRAMEWORK FOR PRECISION ENGINEERING  
**TECHNICAL SKILLS AND COMPETENCIES (TSC) REFERENCE DOCUMENT**

<table>
<thead>
<tr>
<th>TSC Category</th>
<th>Network Technology Management</th>
<th>Internet of Things Management</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TSC Description</strong></td>
<td>Interrelate computing devices, equipment and machines' data in a networked environment to provide specific solutions</td>
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<thead>
<tr>
<th>TSC Proficiency Description</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
<th>Level 6</th>
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**Knowledge**

- Knowledge basic virtual and/or digital database works
- Internet of things (IoT) systems interface
- Data analytics for operating robotics through system connections
- Big data dashboards for task optimisation
- Industry 5S approach in integration using IoT

- Knowledge of how virtual and/or digital database works
- Internet of things (IoT) system interface
- Data analytics for operating robotics through system connections
- Big data dashboards for task optimisation
- Industry 5S approach in integration using IoT
- Documentation through IoT
- Knowledge of scheduling tools integration with networks

- IoT concepts and technical knowledge of IoT implementation in manufacturing
- Connectivity in manufacturing using sensors, smart devices and other technologies for data collection and manufacturing control
- Equipment automation
- Factory automation
- Advanced process control
- Manufacturing execution system (MES)
- Security and privacy applications for IoT
- IoT guidelines and communication standards

- IoT and the architecture reference model (ARM)
- Smart automation applications and technologies
- Large-scale monitoring and analytics applications and technologies
- Data modelling, collection and management

**Abilities**

- Operate automated tools and information
- Utilise system information integration
- Interpret control room and dashboard information
- Interpret robotics and network information to despatch tasks

- Perform troubleshooting
- Analyse automated tools and information
- Perform systems information integration to analyse big data
- Interpret the control models, process control algorithms and strategies

- Analyse big data to correlate data from different sources to devise control actions
- Identify applicable areas for implementing IoT solutions for manufacturing improvement

- Design and develop an IoT applications in a team-based environment
- Conceptualise and articulate solutions making use of IoT
- Manage data in IoT applications
<table>
<thead>
<tr>
<th>Practical Skills</th>
<th>Technical Skills</th>
<th>Implementation Skills</th>
<th>Analysis Skills</th>
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<tbody>
<tr>
<td>• Perform tasks to interact with IoT in an automated plant behind the automated systems. Interpret robotics and network information to perform and/or schedule maintenance work. Perform task to interact with IoT in an automated plant.</td>
<td>• Use simulation tools to analyse and predict performance improvements. Implement dashboard reporting for manufacturing KPI management. Monitor the effectiveness of IoT solutions.</td>
<td>• Design applications and automations using smart devices. Synthesise data visualisation and exploration business intelligence tools.</td>
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