

# Technical Description

*EuroSkills Graz 2020  
Mechanical Engineering – CAD (5)*

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# 1 Introduction

## 1.1 Name and description of the Skill Competition

### 1.1.1 The name of the skills competition is

Mechanical Engineering - CAD

### 1.1.2 1.1.2 Description of the associated work role(s) or occupation(s)

Computer aided design is the use of computer systems to assist in the creation, modification, analysis, or optimization of an engineering design. CAD software is used to increase the productivity of the designer, improve the quality of design, improve communication through documentation, and create a database for manufacturing. CAD output is often in the form of electronic files for print, manufacturing or other manufacturing processes.

The technical and engineering drawings and images must convey information such as materials, processes, dimensions and tolerances according to application-specific conventions. CAD may be used to design curves and figures in two-dimensional (2D) space or curves, surfaces and solids in three-dimensional (3D) space. CAD is also used to produce computer animation for the special effects used in, for example, advertising and technical manuals.

CAD is an important industrial art and is the way projects come true. It is extensively used in many applications, including automotive, ship building and aerospace industries, and in industrial design. The CAD process and outputs are essential to successful solutions for engineering and manufacturing problems.

CAD software helps us explore ideas, visualize concepts through photorealistic renderings and movies and simulates how the design project will perform in the real world.

## 1.2 The content, relevance and significance of this document

This document incorporates a Role Description and Standards Specification which follow the principles and some or all of the content of the WorldSkills Standards Specifications. In doing so WSE acknowledges WorldSkills International's (WSI's) copyright. WSE also acknowledges WSI's intellectual property rights regarding the assessment principles, methods and procedures that govern the competition.

Every Expert and Competitor must know and understand this Technical Description.

In the event of any conflict within the different languages of the Technical Descriptions, the English version takes precedence.

## 1.3 Associated documents

Since this Technical Description contains only skill-specific information it must be used in association with the following:

- WSE – Competition Rules
- WSI – WorldSkills Standard Specification framework
- WSE – WorldSkills Europe Assessment Strategy
- WSE – Online resources as referenced in this document
- Host Country – Health and Safety regulations

## 2 The Standards Specification

### 2.1 General notes regarding WSSS / WSESS

Where appropriate WSE has utilised some or all of the WorldSkills International Standards Specifications (WSSS) for those skills competitions that naturally align between the two international Competitions. Where the skill is exclusive to the EuroSkills Competition, WorldSkills Europe has developed its own Standards Specification (WSESS) using the same principles and framework to that used for the development of the WSSS. For the purposes of this document the use of the words “Standards Specification” will refer to both WSSS and WSESS.

The Standards Specification specifies the knowledge, understanding and specific skills that underpin international best practice in technical and vocational performance. It should reflect a shared global understanding of what the associated work role(s) or occupation(s) represent for industry and business. ([www.worldskills.org/WSSS](http://www.worldskills.org/WSSS)) (TBA for WorldSkills Europe) Helpfully, for the global consultation on the WSSS in 2014, around 50 per cent of responses came from European industry and business.

Each skill competition is intended to reflect international best practice as described by the Standards Specification, and to the extent that it is able to. The Standards Specification is therefore a guide to the required training and preparation for the skill competition.

In the skill competition the assessment of knowledge and understanding will take place through the assessment of performance. There will not be separate tests of knowledge and understanding.

The Standards Specification is divided into distinct sections with headings and reference numbers added.

Each section is assigned a percentage of the total marks to indicate its relative importance within the Standards Specification. The sum of all the percentage marks is 100.

The Marking Scheme and Test Project will assess only those skills that are set out in the Standards Specification. They will reflect the Standards Specification as comprehensively as possible within the constraints of the skill competition.

The Marking Scheme and Test Project will follow the allocation of marks within the Standards Specification to the extent practically possible. A variation of five percent is allowed, provided that this does not distort the weightings assigned by the Standards Specification.

## 2.2 Standards Specification

SECTION	RELATIVE IMPORTANCE %
<b>1 Work organization and self-management</b>	<b>5</b>
<p><b>The individual needs to know and understand:</b></p> <ul style="list-style-type: none"> <li>• The various purposes and uses for CAD designs</li> <li>• Current internationally recognized standards (ISO)</li> <li>• Standards currently used and recognized by industry</li> <li>• Health and safety legislation and best practice including specific safety precautions when using a visual display unit (VDU) and in a work station environment</li> <li>• Relevant theory and applications of mathematics, physics, and geometry</li> <li>• Technical terminology and symbols</li> <li>• Recognized IT systems and related professional design software</li> <li>• The importance of accurate and clear presentation of designs to potential users</li> <li>• The importance of effective communications and inter-personal skills between co-workers, clients and other related professionals</li> <li>• The importance of maintaining knowledge and skill in new and developing technologies</li> <li>• The role of providing innovative and creative solutions to technical and design problems and challenges</li> </ul>	

**SECTION**
**RELATIVE  
IMPORTANCE %**
**The individual shall be able to:**

- Apply consistently the internationally recognized standards (ISO) and standards currently used and recognized by industry
- Apply and promote health and safety legislation and best practice in the workplace
- Apply a thorough knowledge and understanding of mathematics, physics and geometry to CAD projects
- Access and recognize standard component and symbol libraries
- Use and interpret technical terminology and symbols used in preparing and presenting CAD drawings
- Use recognized IT systems and related professional design software to consistently produce high quality designs and interpretations
- Deal with systems problems such as error messages received, peripherals which do not respond as expected, and obvious faults with equipment or connecting leads
- Produce work that consistently meets high standards of accuracy and clarity in the design and presentation of designs to potential users
- Demonstrate effective communications and inter-personal skills between co-workers, clients, and other related professionals to ensure that the CAD process meets requirements
- Describe to clients and other professionals the role and purposes for CAD designs
- Explain complex technical images to experts and non-experts, highlighting key elements
- Maintain proactive continuous professional development in order to maintain current knowledge and skill in new and developing technologies and practices
- Provide and apply innovative and creative solutions to technical and design problems and challenges
- Visualize the desired product in order to fulfil the client's brief accurately

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**2 Materials, software and hardware**
**10**


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**The individual needs to know and understand:**

- Computer operating systems to be able to use and manage computer files and software correctly
  - Peripheral devices used in the CAD process
  - Specific specialist technical operations within design software
  - The range, types and uses of specialist product available to support and facilitate the CAD process
  - The production process for designs
  - The limitations of design software
  - Formats and resolutions
  - The use of plotters and printers
-

SECTION	RELATIVE IMPORTANCE %
<p><b>The individual shall be able to:</b></p> <ul style="list-style-type: none"> <li>• Power up the equipment and activate the appropriate modelling software</li> <li>• Set up and check peripheral devices such as keyboard, mouse, 3D mouse, plotter, and printer</li> <li>• Use computer operating systems and specialist software to create and manage and store files proficiently</li> <li>• Select correct drawing packages from an on-screen menu or graphical equivalent</li> <li>• Use various techniques for accessing and using CAD software such as a mouse, menu, or tool bar</li> <li>• Configure the parameters of the software</li> <li>• Plan the production process effectively to produce efficient work processes</li> <li>• Use plotters and printers to print and plot work</li> </ul>	
<p><b>3 3D modelling</b></p>	<p><b>30</b></p>
<p><b>The individual needs to know and understand:</b></p> <ul style="list-style-type: none"> <li>• Programmes in order to be able to configure the parameters of the software</li> <li>• Computer operating systems in order to use and manage computer files and software</li> <li>• Mechanical systems and their functionality</li> <li>• Principles of technical drawing</li> <li>• How a component is assembled</li> </ul>	
<p><b>The individual shall be able to:</b></p> <ul style="list-style-type: none"> <li>• Model components, optimizing the constructive solid geometry</li> <li>• Create families of components</li> <li>• Ascribe characteristics to the materials (density)</li> <li>• Ascribe colours and textures to the components</li> <li>• Produce assemblies from 3D models of components</li> <li>• Structure assemblies (sub-assemblies)</li> <li>• Review base information to plan work effectively</li> <li>• Access information from data files</li> <li>• Model and assemble base components of project pieces</li> <li>• Estimate approximate values for any missing dimensions</li> <li>• Assemble modelled parts into sub-assemblies as required</li> <li>• Apply graphics decals such as logos as required onto images</li> <li>• Save work for future access</li> </ul>	
<p><b>4 Create photo rendering images (2D) and creation of animations</b></p>	<p><b>10</b></p>



SECTION	RELATIVE IMPORTANCE %
<p><b>The individual needs to know and understand:</b></p> <ul style="list-style-type: none"> <li>• The use of lighting, scenes and decals to produce photo rendered images</li> <li>• How to demonstrate the working of an image</li> </ul>	
<p><b>The individual shall be able to:</b></p> <ul style="list-style-type: none"> <li>• Save and label images to access for further use</li> <li>• Interpret source information and accurately apply to the computer generated images</li> <li>• Apply material properties using information supplied from source drawings</li> <li>• Create photo rendered images of components or assemblies</li> <li>• Adjust colours, shading, backgrounds and camera angles to highlight key images</li> <li>• Use camera settings to show better angles of the project</li> <li>• Print completed images for presentation purposes</li> <li>• Create functions relative to the operation of the system being designed using industry programmes</li> <li>• Create animations that demonstrate how different parts work or are assembled</li> </ul>	
<p><b>5 Reverse engineering of physical models</b></p>	<p><b>15</b></p>
<p><b>The individual needs to know and understand:</b></p> <ul style="list-style-type: none"> <li>• Materials and processes for obtaining unprocessed work pieces:           <ul style="list-style-type: none"> <li>• Castings</li> <li>• Welding</li> <li>• Machining</li> <li>• Simulation</li> </ul> </li> <li>• The process to transfer a real object to a 3D image/3D model and then to a technical drawing</li> </ul>	
<p><b>The individual shall be able to:</b></p> <ul style="list-style-type: none"> <li>• Determine dimensions on physical parts by using industry accepted instruments</li> <li>• Create freehand sketches</li> <li>• Use measuring instruments to produce accurate replicas</li> <li>• 3D Scanning of models</li> </ul>	
<p><b>6 Technical drawing and measuring</b></p>	<p><b>30</b></p>

SECTION	RELATIVE IMPORTANCE %
<p><b>The individual needs to know and understand:</b></p> <ul style="list-style-type: none"> <li>• Working drawings in ISO standard together with any written instruction</li> <li>• Standards for conventional dimensioning and tolerancing and geometric dimensioning and tolerancing appropriate to the ISO standard</li> <li>• Rules of technical drawing and the prevailing latest ISO standard to govern these rules</li> <li>• The use of manuals, tables, list of standards, and product catalogues</li> </ul>	
<p><b>The individual shall be able to:</b></p> <ul style="list-style-type: none"> <li>• Generate working drawings in ISO standard together with any written instructions</li> <li>• Apply standards for conventional dimensioning and tolerancing and geometric dimensioning and tolerancing appropriate to the ISO standard</li> <li>• Apply the rules of technical drawing and the prevailing latest ISO standard to govern these rules</li> <li>• Use manuals, tables, lists of standards, and product catalogues</li> <li>• Insert written information such as explanation balloons and parts lists with more than one column using annotation styles that meet ISO standards</li> <li>• Create 2D detail technical drawings</li> <li>• Create exploded isometric views</li> </ul>	
<p><b>Total</b></p>	<p><b>100%</b></p>

## 3 The assessment approach & principles

### 3.1 General guidance

**Note: this Section and Section 4 summarize a great deal of new information and guidance regarding assessment. Please refer to the Competition Rules for greater detail.**

The Competition Development Committee (CDC) establishes the principles and techniques to which assessment at the EuroSkills Competition must conform.

Expert assessment practice lies at the heart of the EuroSkills Competition. For this reason it is the subject of continuing professional development and scrutiny. The growth of expertise in assessment will inform the future use and direction of the main assessment instruments used by the EuroSkills Competition: the Marking Scheme, Test Project, and Competition Information System (CIS).

Assessment at the EuroSkills Competition falls into two broad types: measurement and judgement. Where the earlier terms “objective” and “subjective” still occur, these must be understood to mean measurement and judgement for all procedural and practical purposes. All assessment will be governed by explicit benchmarks, referenced to best practice in industry and business.

The Marking Scheme must include these benchmarks and follow the weightings within the Standards Specification. The Test Project is the assessment vehicle for the skill competition, and also follows the Standards Specification. The CIS enables the timely and accurate recording of marks, and has expanding supportive capacity.

The Marking Scheme, in outline, will lead the process of Test Project design. After this, the Marking Scheme and Test Project will be designed and developed through an iterative process, to ensure that both together optimize their relationship with the Technical Description and the principles for assessment as set out in the WSE Assessment Strategy. They will be agreed by the Experts and submitted to WSE for approval together, in order to demonstrate their quality and conformity with the Standard Specification.

Prior to submission for approval to WSE, the Marking Scheme and Test Project will be reviewed by the WSE Skill Advisors in order to benefit from the capabilities of the CIS.

## 4 The Marking Scheme

### 4.1 General guidance

This Section describes the role and place of the Marking Scheme, how the Experts will assess Competitors' work as demonstrated through the Test Project, and the procedures and requirements for marking.

The Marking Scheme is the pivotal instrument of the EuroSkills Competition, in that it ties assessment to the standards that represent the skills to be tested. It is designed to allocate marks for each assessed aspect of performance in accordance with the weightings in the Standards Specification.

By reflecting the weightings in the Standards Specification, the Marking Scheme establishes the parameters for the design of the Test Project. Depending on the nature of the skill and its assessment needs, it may initially be appropriate to develop the Marking Scheme in more detail as a guide for Test Project design. Alternatively, initial Test Project design can be based on the outline Marking Scheme. From this point onwards the Marking Scheme and Test Project should be developed together.

Section 2.1 above indicates the extent to which the Marking Scheme and Test Project may diverge from the weightings given in the Standards Specification, if there is no practicable alternative.

The Marking Scheme and Test Project may be developed by one person, or several, or by all Experts. The detailed and final Marking Scheme and Test Project must be approved by the whole Expert Jury prior to submission for independent quality assurance. The exception to this process is for those skill competitions which use an external designer for the development of the Marking Scheme and Test Project.

In addition, Experts are encouraged to submit their Marking Schemes and Test Projects for comment and provisional approval well in advance of completion, in order to avoid disappointment or setbacks at a late stage. They are also advised to work with the CIS Team at this intermediate stage, in order to take full advantage of the possibilities of the CIS.

In all cases the complete and approved Marking Scheme must be entered into the CIS at least eight weeks prior to the Competition using the CIS standard spreadsheet or other agreed methods.

### 4.2 Assessment criteria

The main headings of the Marking Scheme are the Assessment Criteria. These headings are derived in conjunction with the Test Project. In some skill competitions the Assessment Criteria may be similar to the section headings in the Standards Specification; in others they may be totally different. There will normally be between five and nine Assessment Criteria. Whether or not the headings match, the Marking Scheme must reflect the weightings in the Standard Specification.

Assessment Criteria are created by the person(s) developing the Marking Scheme, who are free to define criteria that they consider most suited to the assessment and marking of the Test Project. Each Assessment Criterion is defined by a letter (A-I).

The Mark Summary Form generated by the CIS will comprise a list of the Assessment Criteria.

The marks allocated to each criterion will be calculated by the CIS. These will be the cumulative sum of marks given to each aspect of assessment within that Assessment Criterion.

### 4.3 Sub criteria

Each Assessment Criterion is divided into one or more Sub Criteria. Each Sub Criterion becomes the heading for a EuroSkills marking form.

Each marking form (Sub Criterion) has a specified day on which it will be marked.

Each marking form (Sub Criterion) contains Aspects to be assessed and marked by measurement or judgement. Some Sub Criteria have assessment by both measurement and judgement, in which case there is a separate marking form for each method

## 4.4 Aspects

Each Aspect defines, in detail, a single item to be assessed and marked together with the marks, or instructions for how the marks are to be awarded. Aspects are assessed either by measurement or judgement and appear on the appropriate marking form.

The marking form lists, in detail, every Aspect to be marked together with the mark allocated to it, the benchmarks, and a reference to the section of the Standards Specification.

The sum of the marks allocated to each Aspect must fall within the range of marks specified for that section of the Standards Specification. This will be displayed in the Mark Allocation Table of the CIS, in the following format, when the Marking Scheme is reviewed from C-8 weeks. (Section 4.1).

CRITERIA											Total marks per section
		A	B	C	D	E	F	G	H	I	
	1										
	2										
	3										
	4										
	5										
	6										
	7										
	8										
	9										
											100

SAMPLE OF TABLE FROM CIS

## 4.5 Assessment and marking by judgement

In addition to measurement, Experts are expected to make professional judgements. These are normally judgements about quality. Benchmarks will be designed, agreed and recorded during the design and finalization of the Marking Scheme and Test Project in order to steer and support these judgements.

Marking through judgement uses the following scale:

- 0: performance below industry standard to any extent, including a non-attempt
- 1: performance that meets industry standard
- 2: performance that both meets industry standard and surpasses that standard to some extent
- 3: excellent or outstanding performance relative to industry standards and expectations.

## 4.6 Assessment and marking by measurement

Unless otherwise stated, only the maximum mark or zero will be awarded. Where they are used, partial marks will be clearly defined within the Aspect.

## 4.7 Assessment overview

For both measurement and judgement there will be three Experts in the assessment team.

Good practice in assessment comprises measurement and judgement applied both specifically and broadly. The final proportions of measurement and judgment, whether specific or broad, will be determined by the standards, their weightings and the nature of the Test Project.

## 4.8 Completion of skill assessment specification

This section defines the assessment criteria and the number of marks (judgement and measurement) awarded. The total number of marks for all assessment criteria must be 100. The content of this Table is advisory only and can be adapted as required.

Section	Criterion	Marks		
		Judgement	Measurement	Total
A	Module 1	2	35	<b>37</b>
B	Module 2	3	34	<b>37</b>
C	Module 3	2	24	<b>26</b>
<b>Total =</b>		<b>7</b>	<b>93</b>	<b>100</b>

Each Test Project module will be worth 37/37/26 marks. Consistency shall be maintained for the weight of criteria with respect of the Test Project definition.

All Test Project marking schemes modules shall be based on 40 marking aspects. Total value of marking aspects shall be 37/37/26 marks for each Test Project module.

## Trade assessment procedures

The trade assessment criteria are clear concise aspect specifications which explain exactly how and why a particular mark is awarded.

### Module 1:

- Use of parametric functions
- Correctness of modification (partial Judgement)
- Necessary dimensions
- Simulation
- Number of parts modified
- 

### Module 2:

- Part positioning
- Assembly required for dimensions
- Exploded view (simulation)
- Nomenclature
- Presentation (Judgement)

### Module 3:

- Presence of part features
- Accuracy of dimensions
- Limits and Fits
- Surfaces
- Presentation and View selection (Judgement)

## 4.9 Skill assessment procedures

The Chief Expert will divide the Experts into assessment teams. They will ensure that there is a mixture of experienced and inexperienced WorldSkills and/or EuroSkills in each team.

Each team will be responsible for marking a balanced number of Aspects in one of the three Test Project modules.

There are no special processes to be followed during marking.

## 5 The Test Project

### 5.1 General notes

Sections 3 and 4 govern the development of the Test Project. These notes are supplementary.

Whether it is a single entity, or a series of stand-alone or connected modules, the Test Project will enable the assessment of the skills in each section of the Standards Specification.

The purpose of the Test Project is to provide full and balanced opportunities for assessment and marking across the Standards Specification, in conjunction with the Marking Scheme. The relationship between the Test Project, Marking Scheme and Standards Specification will be a key indicator of quality.

The Test Project will not cover areas outside the Standards Specification, or affect the balance of marks within the Standards Specification other than in the circumstances indicated by Section 2.1.

The Test Project will enable knowledge and understanding to be assessed solely through their applications within practical work.

The Test Project will not assess knowledge of the EuroSkills Competition's rules and regulations.

This Technical Description will note any issues that affect the Test Project's capacity to support the full range of assessment relative to the Standard Specification. Section 2.1 refers.

### 5.2 Format/ structure of the Test Project

Test Project assessed at end of Competition

Test Project with separately assessed modules

Test Project assessed in stages

Series of standalone modules

Other

If other, please specify here:

### 5.3 Test Project design requirements

Skills that could be tested in the different modules could cover:

#### Module one – Mechanical Design Challenge

- Fulfilment of the Design Brief (part judgement);
- Physical Simulation (part judgement);
- Exploded view (simulation) (part judgement);
- Photo rendering (part judgement);
- 3D Printing (part judgement).



## Module two – Mechanical Fabrication

- Sheet Metal Parts and Assemblies;
- Frame Parts and Assemblies;
- Fabrication Drawing Details;
- Drawing Views and Presentation (part judgement).

## Module three - Mechanical Assemblies and Detail Drawing for Manufacture

- Part Modelling;
- Assembly Modelling;
- Dimensioning including GDT;
- Drawing Views and Presentation (part judgement);

## Module four – Reverse Engineering from a Physical Model

- Presence of part features;
- Accuracy of dimensions;
- Tolerances;
- Surface Texture;
- Presentation (judgement).
- 3D Scanning

A combination of the above skills is allowed in each module but different competencies must be tested in each module.

This Skill Competition is classed as “fault finding” on all days, therefore no Expert and Competitor communication during the competition time including breaks and lunch period will be allowed.

The Competition is divided into 3 modules covering the following categories:

### Drawings from a physical model:

Data:

- Physical component(s) and assembly(ies)
- File of parts and assemblies
- All the necessary additional information
- Functionality informations

Work requested:

- Making files and layout from dimensions taken from a physical component using measuring instruments that are part of the official list on point 8.2
- Produce drawings for manufacturing, based on the dimensions taken from the part
- The use of systems enabling the memorization of scaled drawings or shapes is prohibited (Photographs, malleable putty, ink pad, etc)
- The Competitor could have to produce sketches on paper which will serve as the basis for producing the 3D modeling of the components or assemblies.
- The physical component(s) will be given to the Competitors for 2 hours and then confiscated.
- The Competitor will then continue his task on the basis of the sketches and information collected previously.
- The use of the computer is allowed during all the competition time.

Results expected:

- 3D models of components or assemblies
- Fabrication drawing of components or assemblies

- Rendered views

### **Assembly drawings:**

Data:

- Finished drawings of components
- 3D models of components or assemblies
- Nomenclature
- All necessary additional information

Work requested:

- To produce an assembly
- Components not supplied in the form of files will have to be modeled

Results expected:

- Assembly file
- Drawing of the assembly (overall drawing)
- Nomenclature
- Exploded view
- Rendered views
- Simulation

### **Detail drawings:**

Data:

- Assembly (File of the assembly + files of the components)
- Nomenclature
- Drawing of components or assemblies
- All necessary additional information

Work requested:

- To produce a fabrication drawing of one or more components

Results expected:

- 3D model(s) of one or more components
- Fabrication drawing(s) of parts or assemblies
- Rendered views

### **Modification of product (design change):**

Data:

- Assemblies (3D models)
- Layout (assemblies and components)
- Technical specifications for the design change to be applied
- All necessary additional information

Work requested:

- To implement the design change
- Update all files and drawings

Results expected:

- Modified files (components and assemblies)

- Fabrication drawing of the components
- Assembly drawing of the components
- Exploded view

### Output format

- Use of Autodesk Inventor Professional. The version will be determined by the Chief Expert 6 months before the Competition
- Drawing plotted on sizes A1 and smaller
- Charts, table and documents printed by laser printers on paper sizes A3.
- Screenshots, rendering on colour printer to a maximum size of A3
- Files, components, assemblies, etc according to the instructions for the test

During the competition, each competitor is allowed no more than 2 checking prints of each drawing. The final printing will take place at the end of each competition day.

## 5.4 Test Project development

The Test Project MUST be submitted using the templates provided by WSE. Use the Word template for text documents and DWG template for drawings. Please contact [jordy.degroot@worldskillseurope.org](mailto:jordy.degroot@worldskillseurope.org) for guidance.

### 5.4.1 Who develops the Test Projects or modules

The Test Project / modules are developed under the supervision of the Jury President and Chief Expert by:

All Experts

Some Experts

Nominated Experts

External designer

Chief Expert, Deputy Chief Expert under supervision of the Jury President

### 5.4.2 How and where is the Test Projects or modules developed

The Test Project or modules are developed:

Jointly on the Discussion Forum

By an external enterprise

Independently

Other

NOTE: The external enterprise is to produce four Test Projects (Modules), three to use in the Competition and one more as a backup plan, including the marking scheme.

The Test Project must be developed in Autodesk Inventor, and all files must come along with the Test Project.

All the physical models to Module three (one for each Competitor), must be provided by the external enterprise to WorldSkills Europe, one month before Competition.

### 5.4.3 When is the Test Project developed

The Test Project is developed according to the following timeline:

TIME	ACTIVITY
Six (6) months before the current Competition	The Test Project is to be developed
One (1) month before the Competition	The Test Project must be submitted to WorldSkills Europe for validation

## 5.5 Test Project validation

At the competition site.

## 5.6 Test Project selection

- By vote of Experts at the previous Competition
- By vote of Experts on the Discussion Forum
- By vote of Experts at the current Competition
- By random draw by Technical Director 3 months before the current Competition
- Other

If other, please specify here

Developed by External Enterprise for the actual Competition

## 5.7 Test Project circulation

The Test Project is circulated via the website as follows:

- Submitted to the Secretariat for circulation 3 months before the current Competition
- Not circulated

Other

If other, please specify here

## 5.8 Test Project coordination (preparation for competition)

Coordination of the Test Project will be undertaken by:

Skill Management Team

Chief Expert

Chief Expert and Deputy Chief Expert

Chief Expert and Workshop Manager

Chief Expert with selected Experts

Chief Expert with Competition Organizer

Experts

Other

If other, please specify here:

## 5.9 Test Project change at the competition

Not applicable.

## 5.10 Material or manufacturer specifications

Not applicable.

## 6 Skill management and communication

### 6.1 Discussion forum

Prior to the EuroSkills Competition, all discussion, communication, collaboration, and decision making regarding the skill competition must take place on the skill specific Discussion Forum, which can be reached via [www.worldskillseurope.org](http://www.worldskillseurope.org). Skill related decisions and communication are only valid if they take place on the forum. The Chief Expert (or an Expert nominated by the Chief Expert) will be the moderator for this Forum. Refer to Competition Rules for the timeline of communication and competition development requirements.

### 6.2 Competitor information

All information for registered Competitors is available from the WorldSkills Europe website [www.worldskillseurope.org](http://www.worldskillseurope.org). Please contact [jordy.degroot@worldskillseurope.org](mailto:jordy.degroot@worldskillseurope.org) for guidance.

The information includes:

- Competition Rules
- Technical Descriptions
- Marking Schemes
- Test Projects
- Infrastructure List
- Health and Safety documentation
- Other Competition-related information
- List of material that can be used to build templates and not been provided by the host

### 6.3 Test Projects and Marking Schemes

Circulated Test Projects will be available at the WorldSkills Europe website from [www.worldskillseurope.org](http://www.worldskillseurope.org). Please contact [jordy.degroot@worldskillseurope.org](mailto:jordy.degroot@worldskillseurope.org) for guidance.

### 6.4 Day-To-Day management

The day-to-day management of the skill competition during the EuroSkills Competition is defined in the Skill Management Plan that is created by the Skill Management Team led by the Chief Expert. The Skill Management Team comprises the Jury President, Chief Expert and Deputy Chief Expert. The Skill Management Plan is progressively developed in the six months prior to the Competition and finalized at the Competition by agreement of the Experts. The Skill Management Plan can be viewed at [www.worldskillseurope.org](http://www.worldskillseurope.org). Please contact [jordy.degroot@worldskillseurope.org](mailto:jordy.degroot@worldskillseurope.org) for guidance.

## 7 Skill specific safety requirements

Refer to Host Country/Region Health and Safety documentation for Host Country/Region regulations.

## 8 Materials and equipment

### 8.1 Infrastructure List

The Infrastructure List details all equipment, materials and facilities provided by the Competition Organizer.

The Infrastructure Lists will be available at the WorldSkills Europe website from [www.worldskillseurope.org](http://www.worldskillseurope.org). Please contact [jordy.degroot@worldskillseurope.org](mailto:jordy.degroot@worldskillseurope.org) for guidance.

The Infrastructure List specifies the items and quantities requested by the Experts for the next Competition. The Competition Organizer will progressively update the Infrastructure List specifying the actual quantity, type, brand, and model of the items. Items supplied by the Competition Organizer are shown in a separate column.

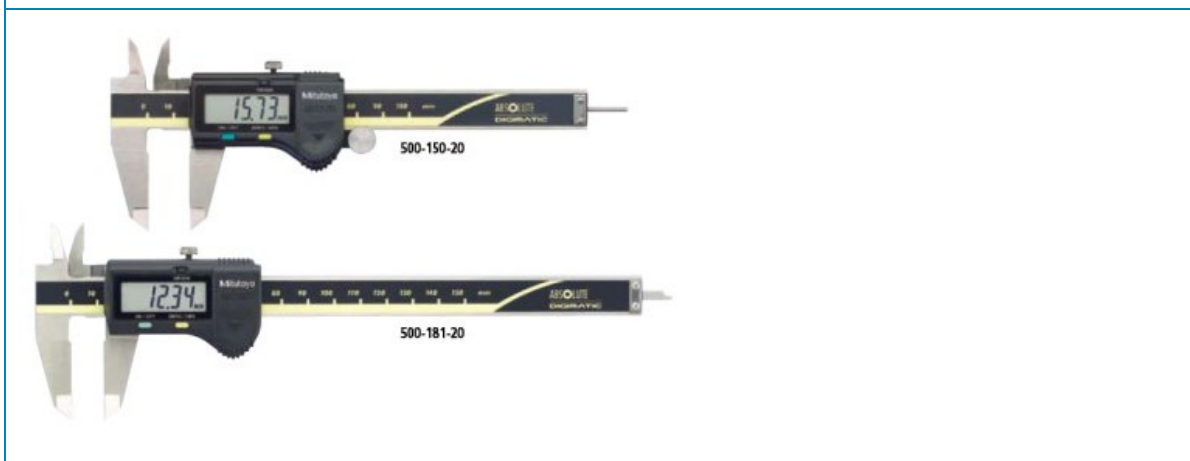
At each Competition, the Experts must review and update the Infrastructure List in preparation for the next Competition. Experts must advise the Technical Director of any increases in space and/or equipment.

At each Competition, the Technical Observer must audit the Infrastructure List that was used at that Competition.

The Infrastructure List does not include items that Competitors and/or Experts are required to bring and items that Competitors are not allowed to bring – they are specified below.

### 8.2 Materials, equipment and tools supplied by Competitors in their toolbox

Digital Caliper (0-150mm or 0-200mm)





### Offset Centerline Caliper



### Digital or Universal Protractor



### Radius Gages (0,4 to 25mm)



### External Metric Thread Pitch Gage (0.35 to 6mm)



### Internal Metric Thread Pitch Gage (0.35 to 6mm)

Use of screws/thread plugs is allowed



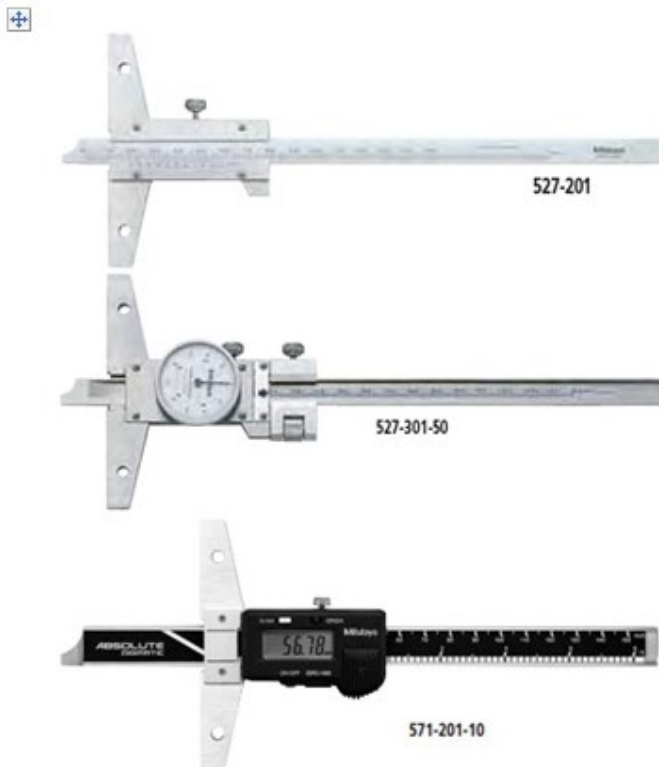
### Surface comparator gauges (Ra)



Metalic Ruler (0-300mm)



Vernier/Dial/ Digital Depth Gage Caliper (0-150mm)



## 8.3 Materials, equipment and tools supplied by the organizing country

Not applicable.

## 8.4 Materials and equipment prohibited in the Skill area

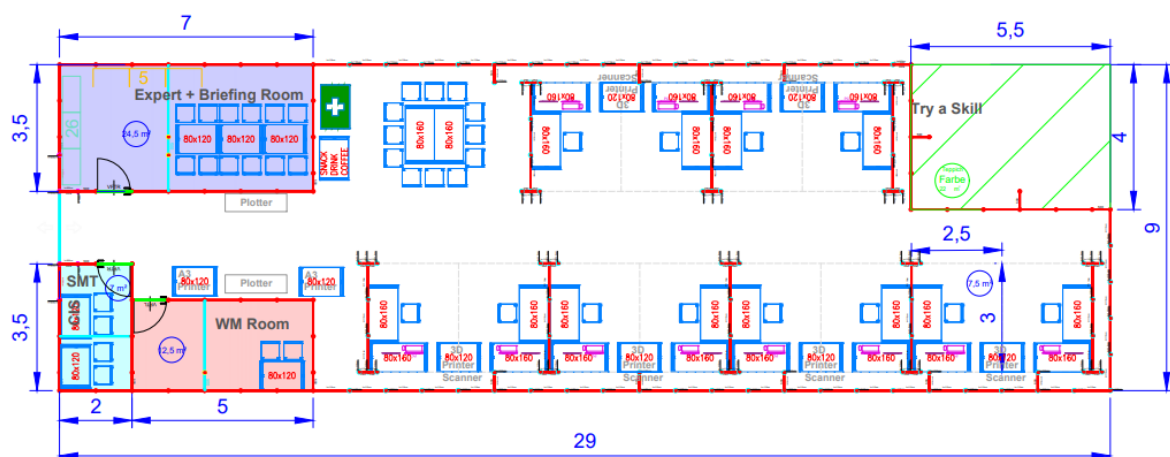
IT-based information (e.g. data, programs etc.) and equipment allowing wireless contact outside the skill area (mobile-phones, laptops, etc.):

- are prohibited for Competitors.
- may be used by Experts in the Skill Area as defined by the Chief Expert before the Competition.
- The use of any other PC than that provided during the Competition is strictly prohibited.
- Competitors must work with the software provided only.

## 8.5 Proposed workshop and workstation

Workshop layouts from previous competitions are available by contacting the Competition and IT Coordinator at: [jordy.degroot@worldskillseurope.org](mailto:jordy.degroot@worldskillseurope.org)

For workshop development, please check the forums.



## 9 Visitor and media engagement

- Try a trade
- Display screens
- Test Project descriptions
- Enhanced understanding of Competitor activity
- Competitor profiles
- Career opportunities
- Daily reporting of competition status
- Time based parts of the Test Project

## 10 Sustainability

- Recycling
- Use of 'green' materials
- Use of completed Test Projects after Competition