worldskills

Technical Description

Web Technologies

WorldSkills International, by a resolution of the Competitions Committee and in accordance with the Constitution, the Standing Orders, and the Competition Rules, has adopted the following minimum requirements for this skill for the WorldSkills Competition.

The Technical Description consists of the following:

1 Introduction

1.1 Name and description of the skill competition

1.1.1 The name of the skill competition is

Web Technologies

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

Web technology encompasses many different skills and disciplines in the design, development, production, and maintenance of websites and web applications. The skills required of a web developer are diverse, often to the point where it is difficult for a developer to excel in all aspects. As a result, a team may cover the web design process, with each member of the team having their own strengths, specialities, and role in the development process.

Web technologies involve implementing specific solutions by using web technologies that follow the business rules and objectives outlined by the client. Web developers develop a professional relationship with their clients, interacting with them to develop a deep understanding of the requirements, and convert these into a website specification. Strong communication skills, coupled with research techniques and a grasp of target audiences, markets and trends, will ensure client satisfaction.

Having completed the website content strategies, system architecture planning, working with the user interface and user experience design, the web developer integrates the website with third party tools and platforms. The development process is an iterative one where the web developer implements the design, create dynamic functionalities and test and debug their work using a variety of devices. Web developers may integrate the website with a variety of social media platforms.

A web developer has many employment opportunities. This can range from being a self-employed freelancer, or an entrepreneur, to being employed by advertising agencies and web development companies across a variety of organizations. Web developer positions may be broad in scope or specialize in an area such as graphic design for the web, user interface design, digital user experience design, front end development, back-end development, content management system development as well as client and project management. Whichever role a web developer chooses to specialize in, they may need access to Information Communication Technology (ICT) facilities, open-source libraries, and frameworks.

High performing web developers may have broad or specialist web-related skills. They must understand artistic values, have a solid understanding of user interface design and programming skills and take personal responsibility for being constantly at the forefront of trends and web technology. They must also be responsive to clients and can work in structured and unstructured teams and groups. These qualities enable the web developer to contribute and take advantage of this rapidly developing aspect of modern communications technology.

1.1.3 Number of Competitors per team

Web Technologies is a single Competitor skill competition.

1.1.4 Age limit of Competitors

The Competitors must not be older than 22 years in the year of the Competition.

1.2 The relevance and significance of this document

This document contains information about the standards required to compete in this skill competition, and 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:

- WSI – Code of Ethics and Conduct
- WSI – Competition Rules
- WSI – WorldSkills Occupational Standards framework
- WSI – WorldSkills Assessment Strategy
- WSI online resources as indicated in this document
- WorldSkills Health, Safety, and Environment Policy and Regulations
- WorldSkills Standards and Assessment Guide (skill-specific)

2 The WorldSkills Occupational Standards (WSOS)

2.1 General notes on the WSOS

The WSOS specifies the knowledge, understanding, skills, and capabilities that underpin international best practice in technical and vocational performance. These are both specific to an occupational role and also transversal. Together they should reflect a shared global understanding of what the associated work role(s) or occupation(s) represent for industry and business (www.worldskills.org/WSOS).

The skill competition is intended to reflect international best practice as described by the WSOS, to the extent that it can. The Standard 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 only be separate tests of knowledge and understanding where there is an overwhelming reason for these.

The Standard 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. This is often referred to as the “weighting”. The sum of all the percentage marks is 100. The weightings determine the distribution of marks within the Marking Scheme.

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

The Marking Scheme will follow the allocation of marks within the Standards to the extent practically possible. A variation of up to five percent is allowed, if this does not distort the weightings assigned by the Standards.

2.2 WorldSkills Occupational Standards

Section		Relative importance (%)
1	**Work organization and management**	**5**
	The individual needs to know and understand: • The principles and practices that enable productive teamwork • The principles and behaviour of computer systems • The aspects of systems that contribute to sustainable products, strategies, and practices • How to show initiative and use creative problem solving • How to identify, analyse and evaluate information from a variety of sources • How to identify multiple solutions to a problem and offer them as options against time, and other constraints • How to optimize code for deployment	

Section		Relative importance (%)
	The individual shall be able to: • Troubleshoot common web design and development problems • Work within specified time limitations and deadlines • Use a computer with a range of software packages • Apply research techniques and skills to keep up to date with industry best practices • Apply deployment optimization, such as page loading, with industry best practices • Ensure the work is completed according to a given schedule • Include linked images, fonts, native files, and production file format when archiving • Use software version control systems such as git	
2	**Communication and interpersonal skills**	**5**
	The individual needs to know and understand: • How to identify a problem, research, analyse and generate a solution • How to prototype and write user and functional testing • How to express design concepts by creating wire frames and flowcharts • Software design concepts and techniques including flowchart and ER diagrams	
	The individual shall be able to: • Read and understand specifications documents • Read and use provided source code of front-end and back-end technologies • Deliver products that respond to client requirements and specification • Gather, analyse, and evaluate information • Interpret standards and requirements • Match client requirements • Present concepts to meet business requirements	
3	**Design implementation**	**25**
	The individual needs to know and understand: • How to follow design principles and patterns to produce aesthetically pleasing, creative, and accessible interfaces • Issues relating to the cognitive, social, cultural, accessible, technological, and economic contexts for design • Various graphic formats and when to use the appropriate format to implement a design • Different target markets and the elements of design which satisfy each market • Protocols for maintaining a corporate identity, brand, and style guide	

Section		Relative importance (%)
	• The limitations of internet enabled devices and screen resolutions • World Wide Web Consortium (W3C) standards for HTML and CSS • Usability and interactive design • Cross browser compatibility • Multi device compatibility • Search Engine Optimization (SEO) and performance optimization • How to embed and integrate animations, audio and video where needed • Accessibility and communication for users with special needs including World Wide Web Consortium (W3C) standards for WCAG	
	The individual shall be able to: • Create, analyse, and develop visual response to communication problems including understanding hierarchy, typography, aesthetics, and composition • Create, manipulate, and optimize images for the internet • Identify target markets and create concept for designs • Implement responsive designs that function correctly on multiple screen resolutions and/or devices • Critique draft concepts, colour, and typography choices • Create wireframes, interactive prototypes, and design of user interfaces that consider user experience • Create code that conforms to and validates with the W3C standards including the accessibility guidelines • Create accessible and usable web interfaces for a variety of devices and screen resolutions • Use CSS or other external files to modify the appearance of web interfaces • Use CSS pre/post-processors • Create and update web interfaces for proper user experience and to assist with search engine performance • Use CSS to develop animations and interactive user interfaces	
4	**Front-End Development**	**25**
	The individual needs to know and understand: • ECMAScript (JavaScript) • How to integrate libraries, frameworks and other systems or features with JavaScript • How to use JavaScript pre/post processors and task running workflow • Coding best practices including troubleshooting, unit testing and test-driven development • Best practices for application deployment • Linux command line Interface	

Section		Relative importance (%)
	The individual shall be able to: • Create website animations and functionalities to assist in context explanations and add visual appeal • Create and update JavaScript code to enhance websites' functionality, usability, and aesthetics • Manipulate data and custom media with JavaScript • Create modular and reusable JavaScript code • Write documentation including comments in code • Use open-source JavaScript libraries • Manipulate graphical elements and content elements using JavaScript • Write test cases and execute automated testing for JavaScript implementation • Handle errors in code, debug code and fix bugs • Use the Linux CLI to interact with the remote server to deploy an application on the remote server • Document deployment steps for applications as required	
5	**Back-End Development**	**40**
	The individual needs to know and understand: • Object-oriented programming • PHP and/or NodeJS • Open-source server-side libraries and frameworks • How to connect to servers through SSH (including sFTP) • File system permissions and ownership • How to design and implement databases • How to manage data exchange between server and client systems • Software design patterns including MVC (Model View Controller) • Web application security • Coding best practices including troubleshooting, unit tests and test-driven development • Best practices for application deployment • Linux command line interface	
	The individual shall be able to: • Manipulate data making use of programming skills • Protect against security exploits • Integrate with existing code using APIs (Application Programming Interfaces), libraries and frameworks • Create or maintain database tables to support system requirements considering data normalization, key constraints and correct data types • Create code that are modular and reusable • Write documentation and comments in code • Write test cases and execute automated testing for back-end implementation	

Section		Relative importance (%)
	• Handle errors in code, debug code and fix bugs • Use the Linux CLI to interact with the remote server to deploy an application on the remote server • Document deployment steps for applications as required • Configure the webserver for given applications	
	Total	**100**

3 The Assessment Strategy and Specification

3.1 General guidance

Assessment is governed by the WorldSkills Assessment Strategy. The Strategy establishes the principles and techniques to which WorldSkills assessment and marking must conform.

Expert assessment practice lies at the heart of the WorldSkills 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 WorldSkills Competition: the Marking Scheme, Test Project, and Competition Information System (CIS).

Assessment at the WorldSkills Competition falls into two broad types: Measurement and Judgement. For both types of assessment, the use of explicit benchmarks against which to assess each Aspect is essential to guarantee quality.

The Marking Scheme must follow the weightings within the Standards. The Test Project is the assessment vehicle for the skill competition, and therefore also follows the Standards. The CIS enables the timely and accurate recording of marks; its capacity for scrutiny, support, and feedback is continuously expanding.

The Marking Scheme, in outline, will lead the process of Test Project design. After this, the Marking Scheme and Test Project will be designed, developed, and verified through an iterative process, to ensure that both together optimize their relationship with the Standards and the Assessment Strategy. They will be agreed by the Experts and submitted to WSI for approval together, to demonstrate their quality and conformity with the Standards.

Prior to submission for approval to WSI, the Marking Scheme and Test Project will liaise with the WSI Skill Advisors for quality assurance and 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 WorldSkills Competition, in that it ties assessment to the standard that represents each skill competition, which itself represents a global occupation. It is designed to allocate marks for each assessed aspect of performance in accordance with the weightings in the Standards.

By reflecting the weightings in the Standards, the Marking Scheme establishes the parameters for the design of the Test Project. Depending on the nature of the skill competition 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, if there is no practicable alternative.

For integrity and fairness, the Marking Scheme and Test Project are increasingly designed and developed by one or more Independent Test Project Designer(s) with relevant expertise. In these instances, the Marking Scheme and Test Project are unseen by Experts until immediately before the start of the skill competition, or competition module. Where the detailed and final Marking Scheme and Test Project are designed by Experts, they must be approved by the whole Expert group prior to submission for independent validation and quality assurance. Please see the Competition Rules for further details.

Experts and Independent Test Project Designers are required to submit their Marking Schemes and Test Projects for review, verification, and validation well in advance of completion. They are also expected to work with their Skill Advisor, reviewers, and verifiers, throughout the design and development process, for quality assurance and in order to take full advantage of the CIS's features.

In all cases a draft Marking Scheme must be entered into the CIS at least eight weeks prior to the Competition. Skill Advisors actively facilitate this process.

4.2 Assessment Criteria

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

Assessment Criteria are created by the person or people developing the Marking Scheme, who are free to define the 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 Assessment Criteria, the allocation of marks, and the assessment methods, should not be set out within this Technical Description. This is because the Criteria, allocation of marks, and assessment**

methods all depend on the nature of the Marking Scheme and Test Project, which is decided after this Technical Description is published.

The Mark Summary Form generated by the CIS will comprise a list of the Assessment Criteria and Sub 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 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 WorldSkills marking form. Each marking form (Sub Criterion) contains Aspects to be assessed and marked by Measurement or Judgement, or both Measurement and Judgement.

Each marking form (Sub Criterion) specifies both the day on which it will be marked, and the identity of the marking team.

4.4 Aspects

Each Aspect defines, in detail, a single item to be assessed and marked, together with the marks, and detailed descriptors or instructions as a guide to marking. Each Aspect is assessed either by Measurement or by Judgement.

The marking form lists, in detail, every Aspect to be marked together with the mark allocated to it. The sum of the marks allocated to each Aspect must fall within the range of marks specified for that section of the Standards. 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 refers.)

		CRITERIA								TOTAL MARKS PER SECTION	WSSS MARKS PER SECTION	VARIANCE
STANDARDS SPECIFICATION SECTION		A	B	C	D	E	F	G	H			
	1	5.00								5.00	5.00	0.00
	2		2.00					7.50		9.50	10.00	0.50
	3								11.00	11.00	10.00	1.00
	4			5.00						5.00	5.00	0.00
	5				10.00	10.00	10.00			30.00	30.00	0.00
	6		8.00	5.00				2.50	9.00	24.50	25.00	0.50
	7			10.00				5.00		15.00	15.00	0.00
TOTAL MARKS		5.00	10.00	20.00	10.00	10.00	10.00	15.00	20.00	100.00	100.00	2.00

4.5 Assessment and marking

There is to be one marking team for each Sub Criterion, whether it is assessed and marked by Judgement, Measurement, or both. The same marking team must assess and mark all Competitors. Where this is impracticable (for example where an action must be done by every Competitor simultaneously, and must be observed doing so), a second tier of assessment and marking will be put in place, with the approval of the Competitions Committee Management Team. The marking teams must be organized to ensure that there is no compatriot marking in any circumstances. (Section 4.6 refers.)

4.6 Assessment and marking using Judgement

Judgement uses a scale of 0-3. To apply the scale with rigour and consistency, Judgement must be conducted using:

- benchmarks (criteria) for detailed guidance for each Aspect (in words, images, artefacts, or separate guidance notes). This is documented in the Standards and Assessment Guide.
- the 0-3 scale to indicate:
  - 0: performance below industry standard
  - 1: performance meets industry standard
  - 2: performance meets and, in specific respects, exceeds industry standard
  - 3: performance wholly exceeds industry standard and is judged as excellent

Three Experts will judge each Aspect, normally simultaneously, and record their scores. A fourth Expert coordinates and supervises the scoring, and checks their validity. They also act as a judge when required to prevent compatriot marking.

4.7 Assessment and marking using Measurement

Normally three Experts will be used to assess each Aspect, with a fourth Expert supervising. In some circumstances the team may organize itself as two pairs, for dual marking. Unless otherwise stated, only the maximum mark or zero will be awarded. Where they are used, the benchmarks for awarding partial marks will be clearly defined within the Aspect. To avoid errors in calculation or transmission, the CIS provides a large number of automated calculation options, the use of which is mandated.

4.8 The use of Measurement and Judgement

Decisions regarding the choice of criteria and assessment methods will be made during the design of the competition through the Marking Scheme and Test Project.

4.9 Skill assessment strategy and procedures

WorldSkills is committed to continuous improvement including reviewing past limitations and building on good practice. The following skill assessment strategy and procedures for this skill competition take this into account and explain how the marking process will be managed.

Competitors are given all the necessary materials prior to the commencement of each module.

Criteria for Measurement Marking

There can be four different types of measurement criteria in the Test Project. In the table below is the explanation of the types.

Type	Example	Maximum marks	Correct	Not correct
Full or zero marks	Site Map dynamically linked to menu	0.25	0.25	0

Type	Example	Maximum marks	Correct	Not correct
Deduct from full marks	Code validates to HTML 1.0 Strict [deduct 0.25 mark for each type of error]	2.00	2.00	0-1.5

Each Expert will perform as a member of a module group of the final Test Project.

Experts are divided into module groups allocating equal Measurement and Judgement Marking where possible. The composition of the module groups is decided by the Skill Competition Manager and Chief Expert with the aim of having a balance of new and experienced Experts in each.

Experts are divided into different cultural groups for Judgement Marking where possible.

Technologies such as frameworks and open-source Content Management Systems (CMS) are selected and finalized in the WorldSkills Discussion Forum during Competition Preparation Week. All technologies must have a minimum of three Experts who have a high-level understanding of the technology.

For the speed Test Project module:

- Experts can submit mini speed Test Project modules.
- There are 2 marks for each WorldSkills Occupational Standard section. For all the submitted speed Test Projects modules, the SCM and the Independent Test Project Designer will mark each mini Test Project module to be three levels:
  - 0.5 marks: expected to take less than 15 minutes to finish;
  - 1 mark: expected to take 15-25 minutes to finish;
  - 1.5 mark: expected to take 30 minutes to finish.

For any mini Test Project module that has larger scope that 1.5 marks, the SCM will either reject it or split it.

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 applied knowledge, skills, and behaviours set out in each section of the WSOS.

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

The Test Project will not cover areas outside the Standards or affect the balance of marks within the Standards other than in the circumstances indicated by Section 2. This Technical Description will note any issues that affect the Test Project's capacity to support the full range of assessment relative to the Standards. Section 2.1 refers.

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 WorldSkills rules and regulations.

Most Test Projects and Marking Schemes are now designed and developed independently of the Experts. They are designed and developed either by the Skill Competition Manager, or an Independent Test Project Designer, normally from C-12 months. They are subject to independent review, verification, and validation. (Section 4.1 refers.)

The information provided below will be subject to what is known at the time of completing this Technical Description, and the requirement for confidentiality.

Please refer to the current version of the Competition Rules for further details.

5.2 Format/structure of the Test Project

Test Project modules are to be developed within the framework of the WorldSkills Occupational Standards.

Each mini speed Test Project modules should take 15 minutes to 30 minutes

5.3 Test Project design requirements

Test Projects should reflect the purposes, structures, processes, and outcomes of the occupational role they are based on. They should aim to be a small-scale version of that role. Before focusing on practicalities, SMTs should show how the Test Project design will provide full, balanced, and authentic opportunities for assessment and marking across the Standards, as set out in Section 5.1.

5.4 Test Project coordination and development

The Test Project MUST be submitted using the templates provided by WorldSkills International (www.worldskills.org/expertcentre). Use the Word template for text documents and DWG template for drawings.

5.4.1 Test Project coordination (preparation for Competition)

Coordination of the Test Project/modules will be undertaken by the Skill Competition Manager.

5.4.2 Who develops the Test Project/modules

The Test Project/modules are developed by an Independent Test Project Designer in collaboration with the Skill Competition Manager.

5.4.3 When is the Test Project developed

The Test Project/modules are developed according to the following timeline:

Time	Activity
Ten (10) months prior to the Competition	The Independent Test Project Designer is identified and a Confidentiality Agreement between WSI and the ITPD is organized.
Nine (9) months prior to the Competition	Every Expert can develop a mini speed Test Project module.
Three (3) months prior to the Competition	Experts shall propose mini speed Test Project modules to the Skill Competition Manager. The Skill Competition Manager will ensure the speed Test Projects are within scope.
One (1) month prior to the Competition	The Test Project documents are sent to the WorldSkills International Skills Competitions Administration Manager.
At the Competition on C-3	The secretly designed Test Project is presented to Experts. Mini speed Test Project modules for each WSOS group are selected randomly.
At the Competition at the beginning of each Competition Day	The Test Project/modules are presented to Competitors.

5.5 Test Project initial review and verification

The purpose of a Test Project is to create a challenge for Competitors which authentically represents working life for an outstanding practitioner in an identified occupation. By doing this, the Test Project will apply the Marking Scheme and fully represent the WSOS. In this way it is unique in its context, purpose, activities, and expectations.

To support Test Project design and development, a rigorous quality assurance and design process is in place (Competition Rules sections 10.6-10.7 refer.) Once approved by WorldSkills, the Independent Test Project Designer (ITPD) is expected to identify one or more independent expert(s), and trusted individuals initially to review the Independent Test Project Designer's ideas and plans, and subsequently to verify the Test Project, prior to validation.

A Skill Advisor will ensure and coordinate this arrangement, to guarantee the timeliness and thoroughness of both initial review, and verification, based on the risk analysis that underpins Section 10.7 of the Competition Rules.

5.6 Test Project validation

The Skill Competition Manager coordinates the validation of the Test Project/modules and will ensure that it can be completed within the material, equipment, knowledge, and time constraints of Competitors.

The final Test Project modules are validated by the Skill Competition Manager and the Chief Expert and Experts are assigned to the respective module groups prior to the Competition. The Skill Competition Manager will provide assistance to module groups to the Experts for the validation of projects. Module groups, Skill Competition Manager and Chief Expert, and Experts will ensure that:

- The module can be completed in the specified time;
- The module can be completed with the provided material and media files;
- The Marking Schemes are appropriately developed;
- The Test Project meets the WorldSkills Occupational Standards.

5.7 Test Project circulation

The Test Project/modules are not circulated prior to the Competition. The TestProject/modules are presented to Experts on C-3 and to Competitors every morning of each Competition Day.

5.8 Test Project change

Due to the Test Project being developed by an Independent Test Project Designer (ITPD), there is no change required to be made to the Test Project/modules at the Competition. Exceptions are amendments to technical errors in the Test Project documents and according to infrastructure limitations.

5.9 Material or manufacturer specifications

Specific material and/or manufacturer specifications required to allow the Competitor to complete the Test Project will be supplied by the Competition Organizer and are available from www.worldskills.org/infrastructure located in the Expert Centre. However, note that in some cases details of specific materials and/or manufacturer specifications may remain secret and will not be released prior to the Competition. These items may include those for fault finding modules or modules not circulated.

6 Skill management and communication

6.1 Discussion Forum

Prior to the Competition, all discussion, communication, collaboration, and decision making regarding the skill competition must take place on the WorldSkills skill-specific Discussion Forum. (http://forums.worldskills.org). Skill related decisions and communication are only valid if they take place on the WorldSkills Discussion Forum. The Chief Expert (or an Expert Lead appointed by the Skill Management Team) will be the moderator for this Discussion Forum. Refer to the Competition Rules for the timeline of communication and competition development requirements.

6.2 Competitor information

All information for registered Competitors is available from the Competitor Centre (www.worldskills.org/competitorcentre).

This information includes:

- Competition Rules
- Technical Descriptions
- Mark Summary Form (where applicable)
- Test Projects (where applicable)
- Infrastructure List
- WorldSkills Health, Safety, and Environment Policy and Regulations
- Other Competition-related information

6.3 Test Projects and Marking Schemes

Circulated Test Projects will be available from www.worldskills.org/testprojects and the Competitor Centre (www.worldskills.org/competitorcentre).

6.4 Day-to-day management

The day-to-day management of the skill competition during the Competition is defined in the Skill Management Plan that is created by the Skill Management Team. The Skill Management Team comprises the Skill Competition Manager, Chief Expert, and the Expert Leads. The Skill Management Plan is progressively developed in the six (6) months prior to the Competition and finalized at the Competition. The Skill Management Plan can be viewed in the Expert Centre (www.worldskills.org/expertcentre).

6.5 General best practice procedures

General best practice procedures clearly delineate the difference between what is a best practice procedure and skill-specific rules (section 9). General best practice procedures are those where Experts and Competitors CANNOT be held accountable as a breach to the Competition Rules or skill-specific rules which would have a penalty applied as part of the Issue and Dispute Resolution procedure including the Code of Ethics and Conduct Penalty System. In some cases, general best practice procedures for Competitors may be reflected in the Marking Scheme.

Topic/task	Best practice procedure
Test Projects	• Uncirculated speed modules are presented on C-3 by the Skill Competition Manager • Translation process begins after Test Projects Modules are released. Translation needs to be submitted to Skill Competition Manager and Chief Expert by 11:59am, the day before each Test Project begins. • Interpreter may use translation devices and laptop with internet to translate the Test Projects.
Equipment	• The Experts and Workshop Manager have the right to disallow certain equipment brought by Competitors.
Equipment failure	• In the occurrence of equipment failure Competitors must notify Experts immediately by raising their hand or by pressing the “beep” button to notify experts if there is one installed. Experts will take note of the time that the Competitor is not able to make use of their equipment. Any time lost due to equipment failure is provided to the Competitor at the end of the standard Module time. • No additional time is granted for work not saved prior to the equipment failure.
Final Test Projects	• Completed Test Projects for all Competitors are backed up and made available to all Competitors at the conclusion of the competition.
Competitors’ internet station	• An independent internet workstation will be available to competitors during the competition. Competitors can use this workstation only twice per day on each day of the competition. A maximum of ten minutes is allocated for each session and any unused time cannot be re-allocated. These sessions cannot be used consecutively; a minimum of one session must separate the use of the internet workstation.
Competitors’ workstation Internet	• During the competition, Competitors may have access to a limited number of internet resources as required for each individual Module. Not all Modules will make use of internet resources.
Music	• Competitors can provide a memory stick containing a maximum of 20 un-edited songs on Familiarization Day to a maximum of 200MB in total. All music will be collated and shared with all Competitors.
Familiarization Day	• Prior to completing Familiarization, all Competitors need to clean their respective computers removing all the files created/used to test the software. This includes the removal of all databases which have been created. • Competitors will have 30 minutes to configure their computers on C1
Marking	• Experts – All mark deductions must be accompanied by a short description as to why the mark was not awarded. This description can be made in the results column.

Topic/task	Best practice procedure
Module Questions	• Experts – All questions about the Test Project must be asked in the WorldSkills Discussion Forum prior to the day that the module is to be completed. Module Experts will then answer questions where required. No questions will be answered unless the question has been asked within the WorldSkills Discussion Forum. • Competitors – All questions about the Test Project must be communicated through your Expert except as indicated below.
Module Briefing	• Experts – No communication can be made with your Competitor during the Module Briefings. • Competitors – No questions can be asked about the Test Project during the Module Briefings. • Competitors will have a total of 15-minutes to both read the module documentation and ask questions.
Breaks	• Competitors - No extra time is given to Competitors who stop work during competition to go to the bathroom or for those who take a break for food and/or drink. All Competitors must stop working as soon as the module timer has run out unless they have been granted additional time.

7 Skill-specific safety requirements

7.1 Personal Protective Equipment

Refer to WorldSkills Health, Safety, and Environment Policy and Regulations for Host country or region regulations.

Task	Sturdy shoes with closed toe and heel
General PPE for safe areas	√

8 Materials and equipment

8.1 Infrastructure List

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

The Infrastructure List is available at www.worldskills.org/infrastructure.

The Infrastructure List specifies the items and quantities requested by the Skill Management Team for the next Competition. The Competition Organizer will progressively update the Infrastructure List specifying the actual quantity, type, brand, and model of the items. Note that in some cases details of specific materials and/or manufacturer specifications may remain secret and will not be released prior to the Competition. These items may include those for fault finding modules or modules not circulated.

At each Competition, the Skill Management Team must review and update the Infrastructure List in preparation for the next Competition. The Skill Competition Manager must advise the Director of Skills Competitions 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 for the upcoming WorldSkills 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 Competitors toolbox

Competitors are not allowed to send a toolbox to the Competition. All tools are provided by the Competition Organizer.

8.3 Materials, equipment, and tools supplied by Competitors

It is not applicable for Competitors to bring materials, equipment, and tools to the Competition. However, Competitors are allowed to bring keyboard, mouse, headphones, and highlighters in the morning of C-2 on Familiarization Day.

Competitors are allowed to bring music (see section 6.5).

8.4 Materials, equipment, and tools supplied by Experts

Experts are required to supply their own Personal Protective Equipment as specified in section 7 skill-specific safety requirements.

Experts are responsible that Interpreters bring their PPE.

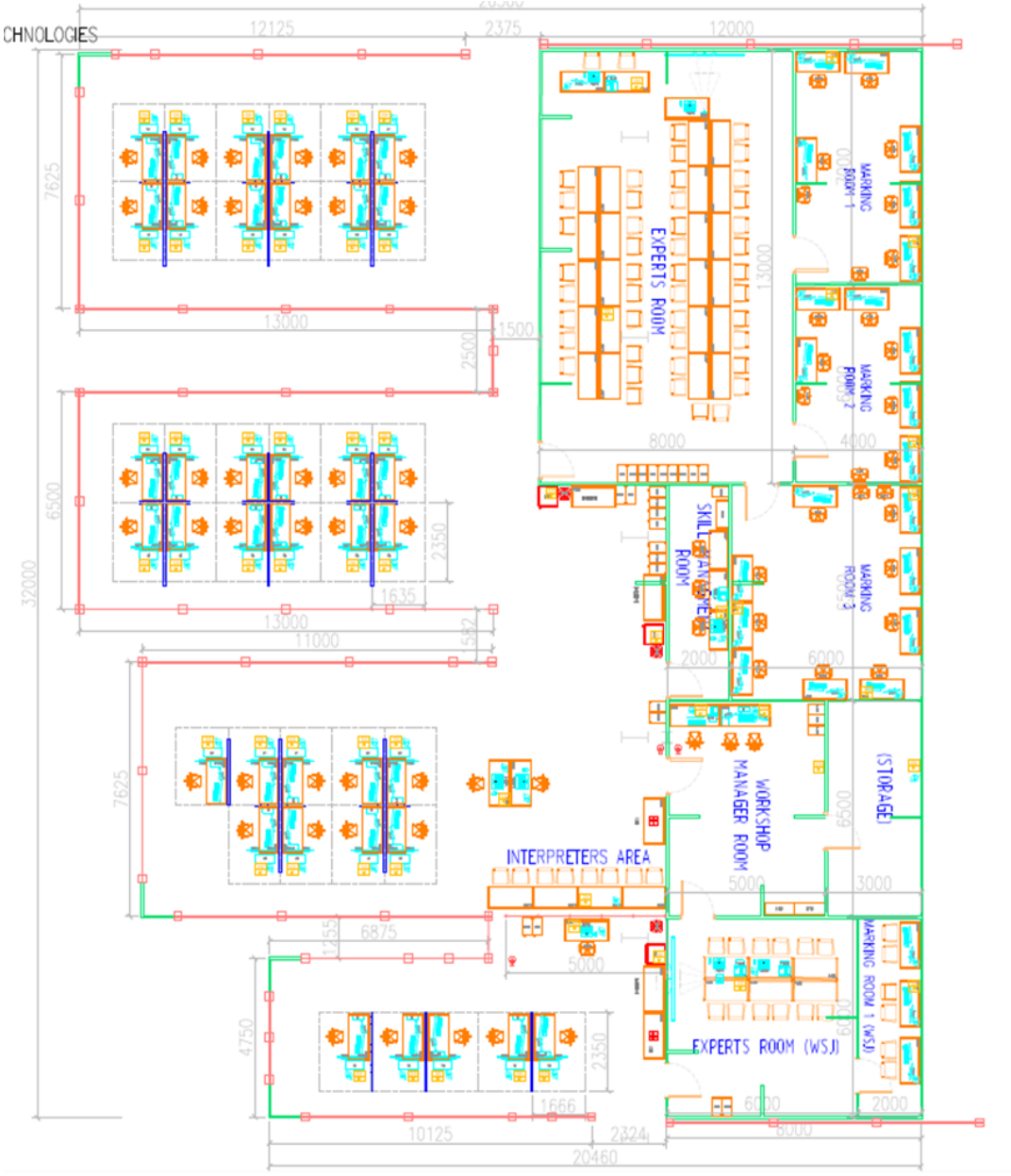
8.5 Materials and equipment prohibited in the skill area

Competitors and Experts are prohibited to bring any materials or equipment not listed in section 8.3 and section 8.4.

8.6 Proposed workshop and workstation layouts

Workshop layouts from previous competitions are available at www.worldskills.org/sitelayout.

Example workshop layout



9 Skill-specific rules

9.1 General notes

Skill-specific rules cannot contradict or take priority over the Competition Rules. They do provide specific details and clarity in areas that may vary from skill competition to skill competition. This includes but is not limited to personal IT equipment, data storage devices, Internet access, procedures and workflow, and documentation management and distribution. Breaches of these rules will be solved according to the Issue and Dispute Resolution procedure including the Code of Ethics and Conduct Penalty System.

9.2 Skill-specific rules

Topic/task	Skill-specific rules
Use of technology – USB, memory sticks	• Skill Competition Manager, Chief Expert, Experts, and Interpreters are allowed to bring USB/memory sticks into the Expert meeting room. USB/memory sticks are allowed to be taken outside of the meeting room at the end of each day. • Competitors are not allowed to bring USB/memory sticks into the workshop. If Competitors do bring them into the workshop, they should lock them in their locker. They can be removed at lunchtime or at the end of each day.
Use of technology – personal laptops	• Skill Competition Manager, Chief Expert, Experts, and Interpreters are allowed to bring laptops into the Expert meeting room. Laptops are allowed to be taken outside of the meeting room at the end of each day. • No laptops are allowed in the workshop. If Competitors do bring them into the workshop, they should lock them in their locker. They can be removed at lunchtime or at the end of each day.
Use of technology – personal cameras	• Skill Competition Manager, Chief Expert, Experts, and Interpreters are allowed to bring cameras into the Expert meeting room. Cameras are allowed to be taken outside of the meeting room at the end of each day. • No cameras are allowed in the workshop until the completion of competition on C4. The Expert with Special Responsibilities for photographs is exempt from this rule if approved by the Skill Competition Manager and Chief Expert. • Note that cameras, laptops, or any other electronic devices may be allowed on C4 with approval from the Skill Competition Manager because C4 is usually a Test Project that tests only communication and organization skills, where Competitors team up into groups. A change to this rule for C4 only is at the discretion of the Skill Competition Manager and should be documented.

Topic/task	Skill-specific rules
Use of technology – mobile devices	• Chief Expert, Experts, and Interpreters are not allowed to take any electronic devices to any Competitor workstations under any circumstances except with the approval of the Chief Expert and acknowledgement of the SCM. • Competitors must leave electronic devices (including smart devices) in their bags (switched off or on silent) within the lockers provided. • No electronic devices are to be brought to Competitors workstations under any circumstances unless with the approval of the Chief. If Competitors do bring them into the workshop, they should lock them in their locker. They can be removed at lunchtime or at the end of each day. • The Skill Competition Manger is exempt from this rule.
Source file/notes	• Skill Competition Manager, Chief Expert, Experts, Competitors, and Interpreters may not bring notes into the workshop under any circumstances. All notes made at the Competitor workstation must remain at the Competitor's desk at all times. The SCM will collect any notes each evening and lock them away for safe keeping and redistribute the following morning during preparation. No notes may be taken outside of the workshop. This is applicable for C-2 and C1 to C4.
Internal Storage	• All materials brought into the workshop by the Competitors must not have any internal memory storage devices. Approved mice and keyboards may be allowed (see below)
Keyboards	• Competitors can bring a keyboard to the competition. Keyboards cannot contain internal storage that allows code, macros or any text to be saved and/or displayed. Competitors must submit their keyboard make and model through their Expert to the WorldSkills Discussion Forum three (3) months prior to the competition and must be approved by the Skill Competition Manager and Chief Expert. Competitors can bring a basic keyboard for their country layout as a backup keyboard. Wireless keyboards must have a Bluetooth dongle or wire.
Mouse	• Competitors can bring a mouse to the competition. The mouse cannot contain internal storage that allows code, macros or any text to be saved and/or displayed. Competitors must submit their mouse make and model through their Expert to the WorldSkills Discussion Forum three (3) months prior to the competition and must be approved by the Skill Competition Manager and Chief Expert. A wireless mouse must have a Bluetooth dongle or wire.
Headphones	• Competitors can bring headphones to the competition. Only wired headphones are allowed and cannot have wireless functionality.

Topic/task	Skill-specific rules
Competitors Internet Workstation	• During the time on the Internet workstation, Competitors are only allowed to surf the web. Competitors are not allowed to chat or communicate with others during the time on the internet workstation. Experts will supervise the internet workstation when it is in use by a Competitor.
Competitors Workstation Internet	• Except for specific internet resources, Competitors will not have access to the internet from the Competitor workstations.
Familiarization Day	• During Familiarization Day Competitors cannot use the available time to work on or solve any tasks related to the Competition.
Marking Rooms	• Chief Expert and Experts are not allowed to bring additional items in or out of the Marking Rooms unless approved by the Chief Expert. • Competitors are not allowed in the Marking Rooms. • The Skill Competition Manager is exempt from this rule.

10 Visitor and media engagement

10.1 Engagement methods

Following is a list of possible ways to maximize visitor and media engagement:

- Two mirrored monitors displayed for the public to view Competitors screens;
- Display screens showing a presentation on what Competitors are currently working on;
- Enhanced understanding of Competitor activity;
- Career opportunities;
- People’s Choice awards.

11 Sustainability

11.1 Sustainable practices

This skill competition will focus on the sustainable practices below:

- Recycling – No printing for Competitor workstations;
- No printing of Test Projects. Test Projects are provided within media files;
- Use of completed Test Projects after Competition;
- Limit the amount of software to be installed on Competitor workstations;
- Open-source software.

12 References for industry consultation

12.1 General notes

WorldSkills is committed to ensuring that the WorldSkills Occupational Standards fully reflect the dynamism of internationally recognized best practice in industry and business. To do this WorldSkills approaches a number of organizations across the world that can offer feedback on the draft Description of the Associated Role and WorldSkills Occupational Standards on a two-yearly cycle.

In parallel to this, WSI consults three international occupational classifications and databases:

- ISCO-08: (http://www.ilo.org/public/english/bureau/stat/isco/isco08/)
- ESCO: (https://ec.europa.eu/esco/portal/home)
- O*NET OnLine (www.onetonline.org/)

12.2 References

This WSOS (Section 2) appears most closely relate to Web Developer: https://www.onetonline.org/link/summary/15-1134.00

and/or Web Developer:
http://data.europa.eu/esco/occupation/c40a2919-48a9-40ea-b506-1f34f693496d

Adjacent occupations ban also be explored through these links.

ILO 2513

Adjacent occupations may also be explored through these links.

The following table indicates which organizations were approached and provided valuable feedback for the Description of the Associated Role and WorldSkills Occupational Standards in place for WorldSkills Lyon 2024.

Organization	Contact name
Crossthinker Network and Design Company Limited	Samuel Chan, Developer/Owner
Germs Digital Pte. Ltd.	Artino Moniaga, Technical Director
Jala Designs	Jarrad Langdon, Managing Director
Moa Information & Technology	Sungmin Lee, CEO
Ridgeon Network Ltd	David Bowen, Senior Developer

13 Appendix

13.1 Appendix information

Not applicable.