worldskills

Technical Description

3D Digital Game Art

Skill 50

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

3D Digital Game Art

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

The games development sector comprises three occupations or work roles: the designer, the artist, and the programmer. The 3D Digital Game Artist takes a designer's brief and, through a combination of conceptualization, creativity, selectivity, technical, and specialist skills, and delivers results that meet and exceed clients' expectations. The 3D Digital Game Artist receives, conceptualizes, and interprets design briefs on the basis of their market knowledge and skill sets, and the given scope and limits of the briefs. The skills required of the 3D Digital Game Artist can be broken down further into 2D concept art, texture painting, 3D modelling, rigging, and animating.

After interpreting a brief, the 3D Digital Game Artist must produce a 2D digital concept of the required assets for the game, which could include objects, characters, and environments. This requires the development of good silhouettes, so that the designs can be immediately recognised even without the fine detail, with greyscale values that highlight the important details of an asset, in order to define a colour scheme based on the Artist's knowledge of colour balance, saturation, and mixing.

The 3D Digital Game Artist must then produce a 3D mesh of the asset, making decisions for geometry, triangle count, symmetry, and silhouette, and modelling the edgeflow. UV unwrapping is used to flatten a 3D model into a 2D set of shells that a texture can be painted onto. This requires the ability to assign enough 3D mesh from the model for the model to render sufficient detail. The placement of the UV shells is a meticulous job. Artists must account for the bleeding effect of colour on smaller versions of textures, depending on hardware capabilities, so these UV shells should be grouped by base colour.

Textures are then produced to create materials that may be applied to the 3D model, taking into account the colours, specularity, and opacity of various parts of a model. Some textures are painted by hand; some require the use of photographic references and others require a digital process to calculate ambient occlusion and normal maps for shadows and detail. Next, the model may be rigged with bones in the 3D software in order to animate it either in the 3D software or the games engines.

An artist may work in a team led by an Art Lead or Director, or in small companies with a programmer and designer. Artists may work in open areas for creative sharing, or in isolation on a strictly confidential basis.

With the tremendous growth in the sector, and the evolution and splitting of the role into specialisms,the 3D Digital Game Artist's role has evolved but otherwise remained constant, with an ongoing appreciation of aesthetics, colour, structure, and form as well as movement. The most accomplished artists are able to lead art teams, resolve visual challenges, and produce assets that push thr limits of available technology, creating the most immersive experiences possible in a video game..

1.1.3 Number of Competitors per team

3D Digital Game Art 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: • Regulations and requirements for safe working practices • Terminology specific to the sector and role • How to plan for and manage time and tasks • The importance of making regular backups of work to avoid file corruption • File management and structure for interpretation by the team and for optimal use when transferring between hardware.	

Section		Relative importance (%)
	The individual shall be able to: • Conform to professional standards at all times • Take responsibility for all production processes • Set up and maintain file structures and naming conventions • Manage workload under pressure and within time constraints • Recover from setbacks • Communicate and work with others for the collective benefit.	
2	**Communication and Interpersonal Skills**	**5**
	The individual needs to know and understand: • The importance of active listening skills and seeking clarification when in doubt • Strategies for interpreting game design briefs and technical guidelines (such as game platform specifications, restrictions, and opportunity to afford polygon counts and texture sizes) • Sustainable strategies for prioritising game assets by evaluating their reusability to minimise resource wastage (polycounts, texture and sizes) and energy consumption. • The importance of building and maintaining productive working relationships • The importance of resolving misunderstandings and conflicting demands.	
	The individual shall be able to: • Listen, reflect, and respond positively and constructively to feedback from stakeholders • Adhere to game design briefs and technical guidelines, transforming them into sustainable deliverables (as defined in the asset list), and present outcomes to stakeholders • Professionally present creative ideas or concepts • Manage effective verbal, and written communications with stakeholders • Reflect on and respond appropriately to questions and ideas from stakeholders.	
3	**Concept Art**	**15**
	The individual needs to know and understand: • Innovative approaches to generating original creative ideas • Strategies for visualising to create and adapt artwork in a specific, defined art style • The creation of silhouettes of objects and characters to portray shape, mood, mass, and movement • Values of greyscale to draw viewers' attention to important aspects of the asset	

Section		Relative importance (%)
	• Colour theory for choosing base colours, secondary, mixing, and balance.	
	The individual shall be able to: • Use imagination and inspiration to generate original visuals • Conform to the defined art style, colours, and themes • Digitally paint to demonstrate form, line, shading, perspective, proportion, light, and shadow • Use digital techniques to produce appropriate effects and make efficient use of time • Choose appropriate software to paint concept art pieces with maximum production in the swiftest time • Review and select each piece of concept art to inform the look of finished 3D models.	
4	**3D Modelling**	**25**
	The individual needs to know and understand: • The impact of creating highly optimised and efficient 3D game models which can result in reduced energy consumption of computer software and minimise resource waste • Geometrical principles in determining how to build the assets • Symmetry in creating a base model that allows for efficient use of materials later on in the process • Polygon counts that are proportional to detail and focus on the asset/s. • Edgeflow that evenly distributes vertex points over models for a balanced texel density and even silhouette.	
	The individual shall be able to: • Use innovative and optimisation techniques on the 3D game models to ensure the scalability and sustainability of the game production • Select appropriate 3D modelling software to begin models, e.g., 3DS Max or Maya for hard surface modelling, or a sculpting tool for organic sculpts • Utilise skills in sculpting, edge modelling, or box modelling to produce the basic form of models • Use tools and modifiers to create further details on models • Constantly review models from all angles to determine refinements, improvements, and additional detail.	
5	**UV Unwrapping**	**10**
	The individual needs to know and understand: • The impact of re-using UVs to gain efficiency whichreduces energy consumption of computer software	

Section		Relative importance (%)
	• Mirroring shells to maximize texture space and texel density • Equitable proportions for important sections of assets • The spacing of shells that maximizes the usage of texture sheets while avoiding colour bleeding between shells • The grouping of shells by colour to further avoid colour bleeding.	
	The individual shall be able to: • Use innovative and optimisation techniques on the UVs to increase productivity of the game production • Use UV unwrapping tools to project maps onto all the surfaces of 3D assets • Separate surfaces into appropriate shells to flatten them over the UV space • Organize shells to make the most of space • Group shells with similar colours together • Export UV coordinates to texture tools or painting software • Bake UV from 3D assets.	
6	**Texturing**	**18**
	The individual needs to know and understand: • The impact of creating highly optimised and efficient game textures which can reduce energy consumption of computer software and minimise resource waste • How to paint colours and details to represent a variety of physical materials such as wood, plastic, metal, and fabrics • Diffuse colour maps that represent the base colours of materials • Specular maps that represent shine to produce realistic metal, plastic, or wet and oily surfaces • Opacity maps that use alpha maps to produce complex objects on a 3D flat plane, e.g., grass, hair, branches, or wire • Normal maps and the production of high-resolution models, projected using cages onto low resolution models • Ambient occlusion that uses the 3D data to render shadows onto flat textures based on the proximity of polygons.	
	The individual shall be able to: • Use innovative and optimisation techniques on the game textures to ensure the scalability and sustainability of the game production • Select appropriate software to produce textures and materials • Paint a variety of physical materials and adapt to the art style set out in the brief (e.g., hand-painted and/or PBR) • Paint or engineer specular maps to control shine and glossiness of surfaces • Paint opacity maps, as required, to handle complex objects or sections of assets	

Section		Relative importance (%)
	• Export a variety of maps (normal, specular, ambient occlusion, etc.) from appropriate pieces of software and import into the preferred 3D software.	
7	**Rigging and Animation**	**12**
	The individual needs to know and understand: • The purpose and construction of bones to move 3D models in a game engine • Forward kinematics (FK) and inverse kinematics (IK) • The tool and methods to set up appropriate IK chains with relevant constraints • The purpose of skinning, and methods for skinning a model • The purpose and principles of keyframe animation • How to create and apply animation to an asset.	
	The individual shall be able to: • Create an appropriate bone structure to form a functional rig for the in-game asset • Set up a parent-child structure for FK or IK chains • Skin the mesh and paint weights to define how the bones influence the 3D model • Set keyframes to test and refine the motion of the asset in a game engine.	
8	**Mastery of the Game Engine**	**10**
	The individual needs to know and understand: • Concepts and processes involved in the life cycle development of game assets, including ideation, assets creation, testing, and deploying the assets within a game engine to ensure the scalability, sustainability and maintainability of a game • Principles of real-time rendering in modern game engines to optimise asset performance, visual quality, and interactivity • How to utilise material shaders and lighting to represent assets and their most important aspects • The correct set up for export files to import them into game engines • The options for importing files, based on the selected game engines • User interface (UI) and user experience (UX) considerations, along with the use of visual scripting tools in game engines to simulate interactive gameplay.	

Section		Relative importance (%)
	The individual shall be able to: • Conduct performance testing and performance tuning of game assets • Choose and use a renderer, pose the object, and select appropriate lighting and settings to highlight the best qualities of the asset • Export 3D models and rig/animation into a game engine • Select an appropriate game engine and stress test the asset for model, UV, and deformation errors • Integrate and refine assets within a real-time environment, ensuring they respond smoothly and effectively during gameplay or interaction • Develop and implement interactive elements and behaviours by creating and managing them through visual scripting systems in the game engines.	
	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 Assessment Design and Practice

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
		A	B	C	D	E	F	G	H			
STANDARDS SPECIFICATION SECTION	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.

Assessment is based on process and outcome, using measurement and judgement marking.

There is daily marking to the extent that does not limit Competitors' reasonable choice of timing and sequence.

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

The Test Project is a series of separately assessed modules.

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.

The Test Project is developed within the agreed Assessment Criteria framework.

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 (ITPD) 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	Action
Fifteen (15) months prior to the Competitio	The ITPD is identified and a Confidentiality Agreement between WSI and the ITPD is organized.
Two (2) months prior to the current Competition	The Independent Test Project Designer submits the completed Test Project and SCM submits the completed Marking Scheme to the WorldSkills International Skills Competitions Administration Manager. Advice on the scope and limits of software is circulated to Competitors and Experts on the WorldSkills Discussion Forum.
At the Competition on C1	The Test Project is presented to Experts and 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.

5.7 Test Project circulation

The Test Project/modules are not circulated prior to the Competition. The Test Project/modules are presented to Experts and Competitors on C1.

Advice on the scope and limits of software is circulated three (3) months prior to the competition via the WorldSkills Discussion Forum.

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
Equipment failure	• In the occurrence of equipment failure Competitors must notify Experts immediately by raising their hand. 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 to be recorded on the “Competitor Time Out” form. Additional time 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.
Release and translation of Test Project	• The entire Test Project documentation is released on C1 during the briefing time. This briefing is 30 minutes in length which is followed by Compatriot Communication for 15 minutes. An additional 10 minutes of briefing and Q&A time is scheduled each morning of C2, C3, and C4. • Interpreters may use a dictionary or translation device with no Wi-Fi capacity when translating Test Project documents.
Attending to a Competitor	• Experts must not attend a Competitor at their workstation without another Expert. The compatriot Expert may attend at this time to observe or translate if there is no Interpreter. Interpreters can only interpret when they are asked to do so.
Other	• The Workshop Manager (or Workshop Manager Assistant) is the only person allowed to load any software/devices onto the Competitor’s competition computer.

7 Skill-specific safety requirements

7.1 Personal Protective Equipment

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

Task	Sturdy shoes with closed toe and no 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 required to supply their own Personal Protective Equipment as specified in section 7 skill-specific safety requirements.

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 own 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.

It is prohibited to bring any of the following:

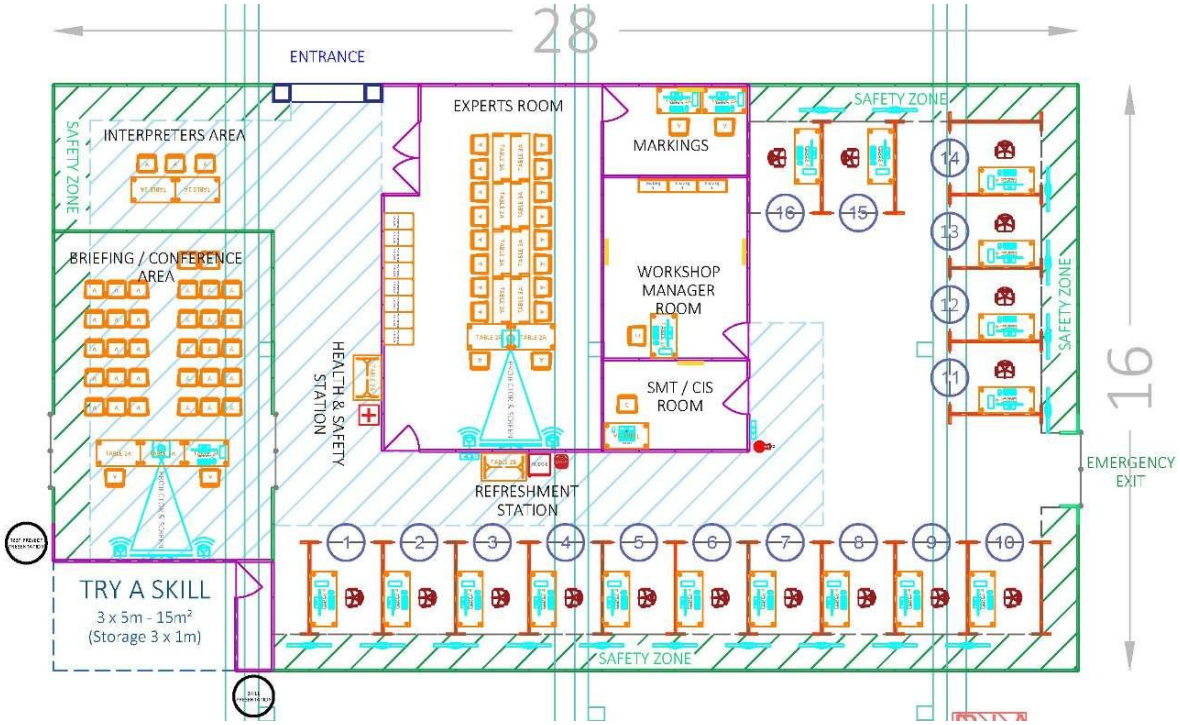
- Extra RAM;
- Extra hard drives;

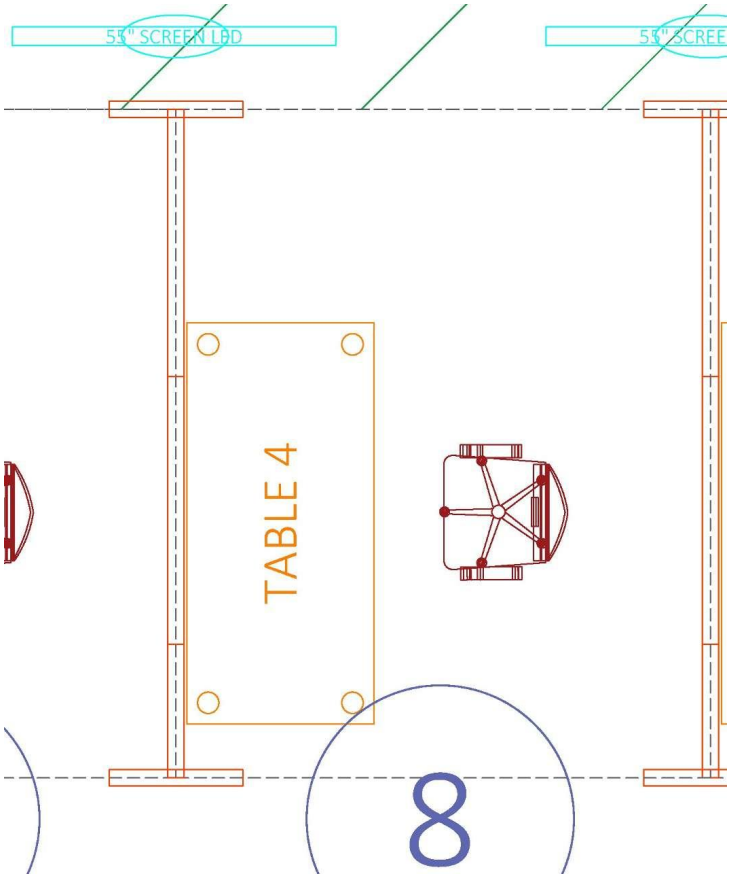
- Books with design references;
- Images/clip art;
- Mobile phone;
- Tablet equipment;
- Photo/video equipment;
- Memory stick;
- Equipment with internal memory storage device

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 rule
Use of technology – USB, memory sticks	• Skill Competition Managers, Chief Expert, Competitors, Experts, and Interpreters must not bring any form of digital storage (ram/ hard drive) into the workshop.
Use of technology – personal laptops, tablets and mobile phones	• Skill Competition Managers, Chief Expert, Experts, and Interpreters are allowed to use personal laptops, tablets, and mobile phones during competition hours. Personal tablets and laptops brought to the competition must remain locked in the workshop until the conclusion of competition on C4. Mobile phones can be taken out of the workshop at lunchtime and at the end of each day. • Competitors are not allowed to use personal laptops, tablets, or mobile phones in the workshop. Personal tablets and laptops brought to the competition must remain locked in the workshop until the conclusion of competition on C4. Mobile phones must remain locked in the workshop until the end of each Competition day.
Use of technology – personal photo and video taking devices	• Chief Expert, Experts, Competitors, and Interpreters are allowed to use personal photo and video taking devices in the workshop at the conclusion of the competition only on C4.
Use of technology – other devices	• Skill Competition Manager, Chief Expert, Experts, Competitors, and Interpreters must not bring a keyboard or mouse with internal memory.

Topic/task	Skill-specific rule
Tools/infrastructure	• Competitors are not allowed to access the Internet while in the workshop. • Skill Competition Manager, Chief Expert, Experts, Competitors, and Interpreters are allowed to access the Internet while in the workshop. • Competitors are not allowed to use the following: ◦ Books with design references ◦ Images/clip art
Drawings, recording information	• Chief Expert, Experts, Competitors, and Interpreters are not permitted to bring notes into the workshop under any circumstances. • All notes made at the Competitor workstation must remain on the Competitor's desk at all times. No notes may be taken outside of the workshop until the competition has concluded on C4.

10 Expert knowledge and experience

10.1 Requirements

Experts appointed for this skill competition must have the following knowledge and experience for the appropriate occupation or work role as documented in **section 1.1.2**.

This section is currently under development for WSC2026.

11 Visitor and media engagement

11.1 Engagement methods

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

- Try-a-Skill;
- Display screens showing a combination of Competitor profile and screen capture of current work;
- Display Test Project descriptions;
- Enhanced understanding of Competitor activity;
- Career opportunities;
- People's Choice Award

12 Sustainability

12.1 Sustainable practices

This skill competition will focus on the sustainable practices below:

- Recycling - No printing for Competitor workstations;
- Use of “green” materials;
- Use of completed Test Projects after Competition;
- Limit the amount of software to be installed on Competitor workstations;
- Use of open source software

13 References for industry consultation

13.1 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/)

13.2 References

This WSOS (Section 2) is closest to Multimedia Artists and Animators:
https://www.onetonline.org/link/summary/27-1014.00

and also to Digital Artist:
http://data.europa.eu/esco/occupation/d5c4ab26-c293-4f4d-ad89-fe776f49a67f.

These links can also be used to review adjacent occupations.

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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 Shanghai 2026.

Organization	Contact name
IADGE - International Alliance for Digital Game Education	Shadow Hong, Board Member – Competitions
Autodesk	Dorothee Anne Schmid, Strategic Partnership Manager

14 Appendix

14.1 Appendix information

Not applicable.