

TECHNICAL DESCRIPTION

技术描述

PROTOTYPING

原型设计

The technical description includes the following sections:

技术描述包括以下内容:

1. INTRODUCTION.....	3
1.1. PROFESSIONAL SKILL NAME AND DESCRIPTION	3
1.2. RELEVANCE AND SIGNIFICANCE OF THIS DOCUMENT	5
1.3. ASSOCIATED DOCUMENTS.....	5
2. WORLDSKILLS STANDARDS SPECIFICATION (WSSS).....	6
2.1. GENERAL WORLDSKILLS STANDARDS SPECIFICATION (WSSS) INFORMATION.....	6
3. ASSESSMENT STRATEGY AND TECHNICAL FEATURES OF ASSESSMENT	13
3.1. MAIN REQUIREMENTS.....	13
4. MARKING SCHEME	14
4.1. GENERAL GUIDANCE.....	14
4.2. ASSESSMENT CRITERIA	16
4.3. SUB CRITERIA.....	17
4.4. ASPECTS.....	17
4.5. JURY'S OPINION (JUDGEMENT SCORE).....	18
4.6. MEASURABLE ASSESSMENT.....	19
4.7. USE OF MEASURABLE AND JURY'S ASSESSMENTS	20
4.8. SKILL ASSESSMENT SPECIFICATION	20
4.9. ASSESSMENT STANDING ORDERS.....	22
5. TEST PROJECT	24
5.1. MAIN REQUIREMENTS.....	24
5.2. TEST PROJECT STRUCTURE.....	25
5.3. TEST PROJECT DEVELOPMENT REQUIREMENTS	26
5.4. TEST PROJECT DEVELOPMENT	26
5.5. TEST PROJECT APPROVAL.....	30
5.6. MATERIALS PROPERTIES AND MANUFACTURER'S INSTRUCTIONS.....	30
6. SKILL MANAGEMENT AND COMMUNICATION.....	31
6.1. DISCUSSION FORUM	31
6.2. INFORMATION FOR COMPETITORS	31

6.3. ARCHIVE OF TEST PROJECTS	32
6.4. SKILL MANAGEMENT	32
7. OCCUPATIONAL SAFETY AND HEALTH REQUIREMENTS	32
7.1 OCCUPATIONAL HEALTH AND SAFETY REQUIREMENTS AT THE COMPETITION	32
7.2 SKILL-SPECIFIC OCCUPATIONAL HEALTH AND SAFETY AND ENVIRONMENTAL REQUIREMENTS	32
8. MATERIALS AND EQUIPMENT	33
8.1. INFRASTRUCTURE LIST	33
8.2. MATERIALS, EQUIPMENT AND TOOLBOX TOOLS	34
8.3. MATERIALS AND EQUIPMENT PROHIBITED ON SITE.....	35
8.4. PROPOSED COMPETITION WORKSHOP LAYOUT.....	36
9. SPECIAL RULES FOR THE 14–16 AGE GROUP.....	36

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1. INTRODUCTION 简介

1.1. PROFESSIONAL SKILL NAME AND DESCRIPTION

专业技能名称和说明

1.1.1 Professional skill name: 专业技能名称

Prototyping 原型设计

1.1.2 Professional skill description. 专业技能描述

Practitioner on prototyping involved in the development, creation, testing and modification of prototypes. In many areas, there is great uncertainty as to whether the new development will actually meet expectations. New developments often entail unexpected problems. A prototype is often used in the product development process in order to give engineers and designers an opportunity to explore several solution options, to test different theoretical concepts and to verify real characteristics prior to the production of a new product. A prototyping practitioner should use his experience to make prototypes taking into account the individual unknown variables still present in the proposed design. For example, some prototypes are used to confirm the interest of the consumer in the proposed design, while other prototypes are intended for verification working characteristics or checking suitability of a particular design solution.

原型设计的从业者参与原型的开发，创建，测试和修改。在许多领域，新开发项目是否真正符合预期存在很大的不确定性。新开发往往带来意想不到的问题。产品开发过程中经常使用原型设计，以便工程师和设计人员探索多种解决方案，测试不同的理论概念并在生产新产品之前验证其真实特征。原型设计的从业者可以利用他的经验制作原型，同时考虑到拟设计中仍然存在的各种未知变量。例如，一些原型用于确认消费者对所提出设计的兴趣程度，一些原型用于验证工作特性或检查特定设计解决方案的适用性。

In general, as a series of sequential prototypes are designed, created and tested, the final development version is formed and prepared for production. In most cases, sequential development of new prototypes allows to gradually improve the design parameters. Practice, when the development, testing, evaluation and subsequent changes to the design are made on the basis of prototypes analysis, is quite common.

通常，随着一系列连续的原型设计，创建和测试，最终的版本已经形成并准备用于生产。在大多数情况下，新原型的顺序开发允许逐步改进设计参数。在原型分析的基础上进行设计的开发，测试，评估和后续更改时，实践是非常普遍的。

Many organizations involved in the development of new products employ prototyping specialists. They have specialized education and skills in the area of common methods and techniques of production, that allow to move from theoretical development to a production of real prototypes. For companies involved in the rapid prototyping process and production or functional testing, creation of prototypes is critically important for identifying and resolving potential problems in the design and development.

许多参与新产品开发的单位都使用原型设计专家。在现有的生产方法和技术领域，他们拥有专业的教育和技能，可以从理论发展转向实际原型的生产。对于参与快速原型制作过程、生产或功能测试的公司而言，识别和解决原型设计和开发中的潜在问题至关重要。

A team with excellent interpersonal and communication skills will ensure that customers are confident that the expert advice and recommendations based on prototyping are fully compatible with their production plans. Prototyping engineer must possess a number of skills, such as knowledge of 3DCAD systems and CAM systems, including milling, printing and other kinds of CAM machining, vacuum casting, prototyping using hand tools and machinery, as well as spray painting and finishing.

具有良好人际关系和沟通技巧的团队将确保客户确信基于原型设计的专家建议与其生产计划完全兼容。原型设计工程师必须具备许多技能，例如 3DCAD 系统和 CAM 系统的知识，包括铣削，印刷和其他类型的 CAM 加工，真空铸造，使用手工工具和机械的原型设计，以及喷涂和精加工。

1.2. RELEVANCE AND SIGNIFICANCE OF THIS DOCUMENT

本文件的相关性和重要性

The document contains information on standards imposed on competitors in order for them to be able to participate in the competition, as well as the principles, methods and procedures which regulate the competition. Therewith WSR has acknowledged the WorldSkills International (WSI) copyright. Furthermore, WSR acknowledges the WSI intellectual property rights in relation of assessment principles, methods and procedures.

该文件包含对参赛者施加的标准信息，以及规范比赛的原则，方法和程序，以使他们能够参加比赛。因此，WSR 承认了世界技能（WSI）的版权。此外，WSR 承认 WSI 在评估原则，方法和程序方面的知识产权。

Every expert and competitor must know and understand this Technical Description.

每位专家和竞争对手必须了解并理解本技术说明。

1.3. ASSOCIATED DOCUMENTS 相关文件

Since this Technical Description contains only the information pertaining to the relevant professional skill, it must be used in association with the following documents:

由于本技术说明仅包含与相关专业技能相关的信息，因此必须与以下文档一起使用：

- WSR, Competition Standing Orders;
俄罗斯世界技能，竞争常规

- WSR, online resources referenced in this document.
俄罗斯世界技能，本档中引用的在线资源
- WSR, Policy and statutory regulations
俄罗斯世界技能，政策和法规
- Skill-specific occupational health and safety instruction
与该技能相关的职业健康和安全管理指导

2. WORLDSKILLS STANDARDS SPECIFICATION (WSSS)

世界技能的标准规范（WSSS）

2.1. GENERAL WORLDSKILLS STANDARDS SPECIFICATION (WSSS) INFORMATION

通用的世界技能标准规范（WSSS）信息

The WSSS determines knowledge, understanding and specific skills that underpin best international practices of technical and professional work performance levels. It should reflect a shared global understanding of what associated working specialty or profession means for industry and business.

WSSS 确定了支持技术和专业工作绩效水平的最佳国际实践的知识，理解和具体技能。它应该反映出对相关工作专业或职业对工业和商业意味着什么的全球共识。

The skill competition purpose is to demonstrate best international practices as described by the WSSS to the extent they are able to be implemented. The WSSS is therefore a guide to the required training and preparation for the skill competition.

技能竞赛的目的是只要能够实施，展示 WSSS 所描述的最佳国际实践。因此，WSSS 是技能竞赛所需培训和准备的指南。

In skill competitions knowledge and understanding will be checked through the assessment of the performance of practical work. There will be no separate tests of knowledge and understanding.

在技能竞赛中，将通过评估实际工作的绩效来检查知识和理解。不再对知识和理解进行单独的测试。

The WSSS is divided into clearly-defined sections with numbers and headings.
 WSSS 分为明确定义的部分，包括数字和标题

Each section is assigned with a relative percentage of importance within the WSSS framework. The sum of all relative importance percentages is 100.

在 WSSS 框架中，每个板块都分配了相应的百分比。所有板块的百分比之和为 100。

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

评分方案和测试项目将仅评估 WSSS 中列出的那些技能。他们将在技能竞赛的限制范围内尽可能全面地反映 WSSS。

The marking scheme and the test project will reflect the allocation of marks within the WSSS to the maximum possible extent. 5% fluctuations are allowed upon the condition they will not distort the weightings specified by the WSSS conditions.

评分方案和测试项目将在最大可能范围内反映 WSSS 中的分数分配。在不扭曲 WSSS 条件规定的权重情况下，允许 5% 的分数波动。

Section 模块		Importance (%) 百分比 (%)
1	Work organization and management 工作组织和管理	5
	A specialist shall know and understand: 专家应了解和知道: <ul style="list-style-type: none"> principles and applications of safe working procedures generally and as applied to prototyping; 安全工作程序的原则和应用，一般适用于原型制作; 	

	<ul style="list-style-type: none"> • the purposes, use, care and maintenance of all equipment and materials, together with their safety implications; 所有设备和材料的用途，使用，保养和维护，以及它们的安全使用； • environmental and safety principles and their application to good housekeeping in the work area; 环境和安全原则及其在工作区内良好管理的应用； • principles and methods for work organization, control and management; 工作组织，控制和管理的原则和方法； • principles of communication and collaboration; 沟通和协作的原则； • the scope and limits of one's own and other's roles, responsibilities and duties individually and collectively; 个人和他人的角色，责任和义务的范围和限制； • parameters within which activities need to be planned; 需要计划活动的参数； • principles and techniques for time management. 时间管理的原则和技巧。 	
	<p>A specialist shall know how: 专家应该知道怎么办</p> <ul style="list-style-type: none"> • prepare and maintain a safe, tidy, and efficient work area; 准备并保持工作区域的安全，整洁，高效； • prepare himself (herself) for the tasks in hand, including full regard to health and safety; 为自己的任务做好准备，充分考虑健康和安 • plan work to maximize efficiency and minimize the schedule disruption; 计划工作以最大限度地提高效率并尽量减少进度中断； • select and use all equipment and materials safely and in compliance with manufacturer's instructions; 安全地选择和使用所有设备和材料，并遵守制造商的说明； • apply (or exceed) the health and safety standards relative to the environment, equipment, and materials; 选 用（或超过）与环境，设备和材料有关的健康和安全标准； • restore the work area to an appropriate condition; 将工作区恢复到适用的条件； • contribute to teamwork and organizational performance 	

	<p>both in general and specifically;</p> <ul style="list-style-type: none"> • 总得来说，有助于团队合作和组织绩效; • give and take feedback and support. • 给予并接受反馈和支持。 	
2	Prototyping 原型设计	5
	<p>A specialist shall know and understand:专家应了解和知道:</p> <ul style="list-style-type: none"> • an intended purpose of the end device for which the prototype is made; • 制造原型的终端设备的预期目的; • development principles; • 发展原则; • the importance of effective collaboration with other professionals; • 与其他专业人士进行有效合作的重要性; • principles and methods of formal and informal communication. • 正式和非正式沟通的原则和方法。 	
	<p>A specialist shall know how:专家应该知道怎么办</p> <ul style="list-style-type: none"> • to capture and visualize complex and abstract ideas; • 捕捉和可视化复杂和抽象的想法; • to substantiate in the development of descriptive text, in writing or in oral form; • 以书面或口头形式证实描述性文本的发展; • to discuss design concepts with clients or colleagues; • 与客户或同事讨论设计概念; • to understand complex technical drawings and implement them in developments; • 了解复杂的技术图纸并在开发中实施; • to provide expert advice and guidance on limitations and new opportunities for clients and colleagues; • 为客户和同事提供有关局限性和新机会的专家建议和指导; • to collaborate with product developers and engineers for helping in development and testing of components; • 与产品开发人员和工程师合作，帮助开发和测试组件; • to present innovative solutions for problems and tasks. • 为问题和任务提供创新的解决方案。 	
3	Technical drawings 技术图纸	15
	<p>A specialist shall know and understand:专家应该了解和知道</p> <ul style="list-style-type: none"> • capabilities of available for use CAD systems; 	

	<ul style="list-style-type: none"> • 可用于CAD系统的功能; • technical terminology and symbols used in technical drawings and specifications. • 技术图纸和规范中使用的技术术语和符号。 	
	<p>A specialist shall know how:专家应了解和知道:</p> <ul style="list-style-type: none"> • to prepare accurate 2D technical drawings reflecting accurate and unequivocal information for future users; • 准备准确的二维技术图纸, 为未来的用户提供准确, 明确的信息; • to prepare and adjust dimensions on 2D technical drawing of from 3D CAD data; • 从3D CAD数据准备和调整2D技术图纸的尺寸; • to provide drawings with clear marking; • 提供清晰标记的图纸; • to measure accurately dimensions and transfer them onto drawings and into technical specifications. • 准确测量尺寸并将其转移到图纸和技术规格中。 	
4	Computer-aided design (CAD)计算机辅助设计 (CAD)	20
	<p>A specialist shall know and understand:专家应了解和知道:</p> <ul style="list-style-type: none"> • advantages, limitations and benefits of different CAD systems. • 不同 CAD 系统的优点, 局限和好处。 	
	<p>A specialist shall know how:专家应该知道怎么办</p> <ul style="list-style-type: none"> • to work efficiently and creatively with world known and recognized 3D CAD systems; • 与世界知名和公认的3D CAD系统高效、创造性地合作; • to create 3D CAD prototype data in general and for components in disassembled form; • 创建3D CAD原型数据和部件的拆卸形式; • to be able to assign accurate and clear dimensions. • 能够分配准确和清晰的尺寸。 	
5	Prototyping 原型设计	45
	<p>A specialist shall know and understand:专家应了解和知道:</p> <ul style="list-style-type: none"> • types and characteristics of materials used in the process of creating models of prototypes; • 在创建原型模型过程中使用的材料类型和特征; • methods of prototyping; • 原型制作方法 • the importance of precision in parts and dimensions; 	

	<ul style="list-style-type: none"> ● 零件和尺寸精度的重要性; ● methods of finishing prototype models; ● 完成原型模型的方法; ● use and maintenance of tools and equipment that was used for prototyping. ● 使用和维护用于原型制作的工具和设备。 	
	<p>A specialist shall be able to: 专家应该能够:</p> <ul style="list-style-type: none"> ● produce prototypes in accordance with requirements to design, indicated materials and specifications; ● 根据设计要求, 指明材料和规格生产原型; ● transfer and manufacturing of components copies; ● 转移和制造组件副本; ● fitting prototypes taking into account some unknown quantities, which are still present in the proposed development; ● 考虑到一些未知数量的拟合原型, 这些未知数量仍然存在于拟开发项目中; ● use manual tools and mechanisms for prototyping; ● 使用手动工具和机制进行原型设计; ● finishing treatment of the prototype surface; ● 原型表面的精加工处理; ● use of measurement devices; ● 使用测量装置; ● use of CAM software and milling machines for manufacturing precise models, production prototypes and engineering components; ● 使用CAM软件和铣床制造精密模型, 生产原型和工程组件; ● use of 3D CAD data for generating trajectories for cutter using specialized machine software; ● 使用3D CAD数据, 使用专用机器软件生成刀具轨迹; ● production of models from standard plastics; wood pulp with polyurethane, resin casting, gelcoat, resin for lamination, acrylic glass, polyurethane, aluminum, mixtures, PVC, etc.; ● 用标准塑料生产模型; 木浆用聚氨酯, 树脂浇铸, 凝胶涂层, 树脂层压, 丙烯酸玻璃, 聚氨酯, 铝, 混合物, PVC等; ● use of polyurethane and resin casting for rapid production of individual parts and the precise components for pre-production assembly; 	

	<ul style="list-style-type: none"> ● 使用聚氨酯和树脂铸造来快速生产单个零件和用于预生产装配的精确零件; ● use of different types of resin to produce components that can be transparent, heat resistant, non-flammable and flexible; ● 使用不同类型的树脂生产透明, 耐热, 不易燃和柔韧的部件; ● fitting of resins to be painted and pigmented, adding glass filler in order to give rigidity, casting and molding; ● 装配要涂漆和着色的树脂, 加入玻璃填料以提供刚性, 铸造和模塑; ● performing production tasks: cutting, processing by sand paper, gluing; ● 执行生产任务: 切割, 砂纸加工, 胶合; ● use of positive and negative molding; ● 正负模的使用; ● correction of secondary product details; ● 修正二次产品细节; ● creation and assembly of components; ● 组件的创建和组装; ● adjustment of the prototypes in accordance with the feedback received from engineers and potential users. ● 根据工程师和潜在用户的反馈调整原型。 	
6	Painting and finishing of prototypes 原型的绘画和精加工	10
	<p>A specialist shall know and understand: 专家应了解和知道:</p> <ul style="list-style-type: none"> ● types of paints and paint coatings needed for the prototype; ● 原型所需的油漆和油漆涂料类型; ● a purpose of labels and stickers; ● 标签和贴纸的目的; ● safe use of paints and grinding materials. ● 使用油漆和研磨材料。 	
	<p>A specialist shall know how: 专家应该知道</p> <ul style="list-style-type: none"> ● to do finishing treatment of prototype surfaces; ● 对原型表面进行精加工处理; ● to do painting of the prototype by aerosol spray; ● 用气溶胶喷雾对原型进行涂装; ● to do polishing of the painted models; ● 对油漆模型进行抛光; ● to equip models with appropriate labels; 	

	<ul style="list-style-type: none"> • 为模型配备适当的标签; • to apply and test new types of paints and finishing coats in order to meet customer needs. • 应用和测试新型涂料和面漆, 以满足客户需求。 	
Total 总计		100

3. ASSESSMENT STRATEGY AND TECHNICAL FEATURES OF ASSESSMENT 评估策略与评估的技术特征

3.1. MAIN REQUIREMENTS 主要需求

The Strategy establishes the principles and techniques to which the WSR assessment and marking must conform.

该战略确定了 WSR 评估方法和评分方法必须符合的原则和技术。

Expert assessment is the cornerstone of WSR competitions. For this reason, it is the subject of continuous professional improvement and scrutiny. The accumulated assessment experience will determine the future use and development direction of main assessment tools used on WSR competitions: The Marking Scheme, competition task and Competition Information System (CIS).

专家评估是俄罗斯世界技能大赛的基石。因此,它是持续专业改进和审查的主题。累积的评估经验将决定用于俄罗斯世界技能大赛中的主要评估工具的未来使用和发展方向:评分方案,竞赛任务和竞争信息系统(CIS)。

Assessment on the WSR competitions falls within one of the two categories: measurements and jury's decision. For both types of assessment, the use of explicit benchmarks against which to assess each aspect is essential to guarantee quality.

俄罗斯世界技能比赛的评估属于两个类别之一:测量决定或陪审团的决定。对于这两种类型的评估,使用明确的基准来评估每个方面对于保证质量至关重要。

The Marking Scheme must follow the WSSS weightings. The Test Project is the assessment vehicle for the skill competition, and should also follow the WSSS.

The CIS enables timely and accurate recording of marks, and has an expansive supportive capacity.

评分方案必须遵循 WSSS 权重。测试项目是技能竞赛的评估工具，也需要遵循 WSSS。CIS 能够及时准确地记录评分，并具有广泛的支持能力。

The Marking Scheme, in outline, will lead the process of Test Project design. During the further development the Marking Scheme and the Test Project will be designed and developed through an interactive process in order to ensure joint optimization of inter-relations within the scope of the WSSS and the Assessment Strategy. They will be submitted to the Skill Competition Manager for approval together in order to demonstrate their quality and conformity with the WSSS.

大纲中的评分方案将指导测试项目设计的过程。在评分方案的进一步发展过程中，将通过互动过程设计和开发评分方案和测试项目，以确保在 WSSS 和评估策略范围内联合优化之间的相互关系。他们将被提交给技能竞赛经理一起批准，以确保他们的质量以及和 WSSS 的一致性。

4. MARKING SCHEME 评分方案

4.1. GENERAL GUIDANCE 一般指导

This section describes the role and place of the Marking Scheme, how the Experts will assess the competitor's work demonstrated through the Test Project performance, as well as the procedures and requirements for marking.

本节描述了评分方案的作用和用处，专家将如何评估参赛对手通过测试项目绩效展示的工作，以及标记的程序和要求。

The Marking Scheme is the main tool of WSR competitions and defines the compliance of the Test Project assessment with the WSSS. It is intended for the allocation of points between each assessed aspect which can be related to only one WSSS module.

评分方案是俄罗斯世界技能大赛的主要工具，并且定义了测试项目评估与 WSSS 的合规性。它旨在用于对每个评估模块之间进行分数分配，这些模块仅与一个 WSSS 模块相关。

Through the reflection of the weightings specified in the WSSS, the Marking Scheme sets out the Test Project development parameters. Depending on the skill nature and the requirements to its assessment it can be helpful to develop the Marking Scheme in detail early on so it can be used as a guide for the Test Project development. Otherwise the Test Project development shall be based on the generalized Marking Scheme. Further development of the Test Project is accompanied by the development of assessment criteria.

通过反映 WSSS 中指定的权重，评分方案设定了测试项目开发参数。根据技能性质和评估要求，可以在早期详细制定评分方案，这样可以作为测试项目开发的指南。否则，测试项目开发应基于广义评分方案。测试项目的进一步发展伴随着评估标准的制定。

Section 2.1 specifies the maximum acceptable variation percentage, the Test Project Marking Schemes based on the weightings provided in the Standards Specification.

第 2.1 节规定了可接受的最大百分比变化，即基于标准规范中提供权重的测试项目评分方案。

The Marking Scheme and the Test Project may be developed by one person, or a group of experts, or a third-party developer. Detailed and final Marking Scheme and Test Project shall be approved by the Skill Competition Manager.

评分方案和测试项目可以由一个人，一组专家或第三方开发者开发。详细和最终的评分方案和测试项目是由技能竞赛经理批准。

Furthermore, all experts are encouraged to submit their proposals on the development of marking schemes and test projects to the Discussion Forum for their further review by the Skill Competition Manager.

此外，鼓励所有专家向论坛提交关于评分方案和测试项目开发的建议，供技能竞赛经理进一步审查。

In all cases a complete marking scheme approved by the Skill Competition Manager shall be entered into the CIS at least two days prior to the competition, with the use of a standard CIS spreadsheet or other agreed-upon methods. The Chief Expert is responsible for this process.

在所有情况下，由技能竞赛经理批准的完整的评分方案应至少在比赛开始前两天进入 CIS，并使用标准的 CIS 电子表格或其他商定的方法。首席专家负责这一过程。

4.2. ASSESSMENT CRITERIA 评估标准

The main headings of the Marking Scheme are the assessment criteria. In some skill competitions assessment criteria may match the WSSS section headings; in others they may be completely different. There are usually from five to nine assessment criteria, that said, there should be at least three assessment criteria. Whether or not they match the headings, the Marking Scheme must reflect the weightings specified in the WSSS.

标分方案的主要标题是评估标准。在一些技能比赛中，评估标准可能与 WSSS 部分标题相符；在其他人看来，他们可能完全不同。通常有五到九个评估标准，也就是说应该至少有三个评估标准。无论它们是否与标题相符，评分方案必须反映 WSSS 中规定的权重。

The Assessment Criteria are created by a person(s) developing the Marking Scheme, who is free to define the criteria he or she considers most suited to the assessment of the Test Project performance.

评估标准由开发评分计划的人员创建，评分计划可自由定义他或她认为最适合评估测试项目绩效的标准。

The Mark Summary Form generated by the CIS will comprise a list of the assessment criteria.

CIS 生成的标记摘要表将包含评估标准列表。

The number of points allocated to each criterion is calculated by the CIS. This will be the cumulative sum of points awarded to each aspect within that assessment criterion.

分配给每个标准的点数由 CIS 计算。这将是该评估标准中每个模块的累计积分总和。

4.3. SUB CRITERIA 子标准

Each assessment criterion is divided into one or more sub criteria. Each subcriterion becomes a heading in the Marking Scheme.

每个评估标准分为一个或多个子标准。每个子标准都成为评分方案的标题。

Each (sub criteria) marking form is specified with a certain date on which it will be filled.

每个（子标准）评分表单都指定了一个日期，需要在指定日期前完成它。

Each (sub criteria) marking form contains assessable aspects that are subject to assessment. Each assessment method is assigned with a special marking form.

每个（子标准）评分表格包含可评估的评估方面。每种评估方法都分配有一个特殊的评估表格。

4.4. ASPECTS 模块

Each aspect describes in detail one of the assessed indicators, as well as possible marks or marking instructions.

每个模块都详细描述了评估指标之一，以及可能的评分或评分说明。

A marking form lists in detail each marked aspect together with the number of points allocated for its assessment.

评分表格详细列出了每个需要评分的方面以及为其评估分配的分数。

The sum of the points allocated to each Aspect must fall within the range of points specified for each skill section in the WSSS. It will be displayed in the CIS point allocation spreadsheet in the following format:

分配给每个模块的分数总和必须符合 WSSS为每个技能指定的分数范围。它将以下格式显示在CIS分数分配表格中：

Criterion 标准										Total points for the WSSS section WSSS部分的总分	WSSS POINTS FOR EACH SECTION WSSS每个模块的分数点	VARIANCE 变动	
WorldSkills Standard Specification (WSSS) Sections 世界技能标准规范 (WSSS) 部分		A	B	C	D	E	F	G	H				
	1			2.75	1.00	1.25	0.25	1.00			6.25	6.00	0.25
	2		4.25				2.00		0.50	1.00	7.75	6.00	1.75
	3	11.00	9.75								20.75	22.00	1.25
	4			10.25	11.00						21.25	22.00	0.75
	5					9.50	10.00	1.50			21.00	22.00	1.00
	6					2.00		7.00	14.00		23.00	22.00	1.00
Total points for criterion 标准总分		11.00	14.00	13.00	12.00	14.75	10.25	10.00	15.00	100.00	100.00	6.00	

4.5. JURY'S OPINION (JUDGEMENT SCORE) 陪审团的意见 (判决分数)

Decisions are made using a scale of 0–3. In order to apply the scale in a clear and consistent manner the jury must carry out a decision with due regard to:

采用0-3分制 进行 决策 。为了清晰一致 地应用该量表，陪审团必须适当考虑以下事项后作出决定：

- (criteria) comparison standards as detailed guides to each aspect
- (标准) 各方面详细指南的比较标准

- 0–3 scale, where:
- 0-3 分制，其中：
 - 0: performance does not meet the industry standard;
 - 0: 性能不符合行业标准;
 - 1: performance meets the industry standard;
 - 1: 性能符合行业标准;
 - 2: performance meets and, in specific respects, exceeds the industry standard;
 - 2: 性能满足，并在特定方面超过行业标准;
 - 3: performance wholly exceeds the industry standard and is assessed as excellent
 - 3: 性能完全超过行业标准，并被评定为优秀

Each aspect is assessed by three experts, each expert must perform assessment, after that the allotted marks will be compared. In case the expert marks vary by more than 1 point, the experts must bring up the assessment of this aspect for discussion and eliminate the variance.

每个模块由三位专家评估，每位专家必须进行评估，评估之后分配的分数将进行比较。如果专家评分变化超过1分，专家必须提出对这个模块评估的讨论并消除差异。

4.6. MEASURABLE ASSESSMENT可衡量的评估

Each aspect shall be assessed by three experts. Unless otherwise specified, only the maximum mark or zero will be awarded. If within some aspect it is possible to award marks below the maximum one, it shall be described in the Marking Scheme with the specification of measurable parameters.

每个模块应由三位专家评估。除非另有说明，否则仅给予最高分数或零。如果在某些模块可以给予低于最大值的评分，则应在评分方案中描述可测量参数的规范。

4.7. USE OF MEASURABLE AND JURY'S ASSESSMENTS

使用可衡量和陪审团的评估

The final understanding of measurable and jury's assessments will become available after the approval of the Marking Scheme and the Test Project. The provided table contains approximate information and is intended for the development of the Marking Scheme and the Test Project.

在评分方案和测试项目获得批准后，可以获得对可衡量和陪审团评估的最终理解。提供的表格包含大致信息，用于开发评分方案和测试项目。

Criterion 标准		Points 分数		
		Jury's opinion 裁判意见	Measurable 可测量性	Total 总分
A	Safety 安全性		5	5
B	Commissioning, start-up and adjustment (working capacity) 调试, 启动和调整 (工作能力)		5	5
C	Technical drawings 技术图纸		10	10
D	Computer modeling 电脑模型		15	15
E	Prototyping (including on CNC machine) 原型设计 (包括在 CNC 机器上)		40	40
F	Assembly, installation and connection of parts 零件的装配, 安装和连接		10	10
G	Treatment of surfaces, painting and decoration (design) 表面处理, 油漆和装饰 (设计)	5	5	10
H	Design solution 设计方案	5	0	5
Total		10	90	100

4.8. SKILL ASSESSMENT SPECIFICATION 技能评估规范

The Test Project assessment will be based on the following criteria (modules):

测试项目评估将基于以下标准 (模块) :

Module A - Development of 3D CAD – 100 % measurement

模块A - 3D CAD的开发 - 100%测量

A.1. Completeness of 3D models of the product adequate to the drawing, the presence of appropriate surfaces (measurement)

产品3D模型的完整性，适合绘图，适当表面的存在（测量）

A.2. Availability of design color scheme (yes/no)

设计配色方案的可用性（是/否）

Module B - Drawings preparation - 100 % measurement

模块B - 图纸准备 - 100%测量

B.1. The presence of the required number of views and sections on 2D drawings that fully disclose the entire configuration and geometry of the product (measurement)

在2D图纸上存在所需数量的视图和模块，完全公开产品的整个配置和几何形状（测量）

B.2. The presence of the required number of dimensions sufficient for the production of the prototype of the product (measurement)

所需数量的尺寸足以生产产品原型（测量）

Module C - Modeling from a triangulated model (STL) – 100 % measurement

模块C-从三角模型（STL）建模 - 100%测量

C.1. The compliance of the constructed CAD models (a solid model) – issued by the polygonal triangulated model (STL) (measurement)

所构建的CAD模型（实体模型）的符合性 - 由多边形三角模型（STL）（测量）发布

C.2. The presence of developed design solution (measurement)

开发的设计解决方案（测量）的存在

Module D - Modeling/production 20 % assessment and 80 % measurement

建模/生产 20%评估和80%测量

D.1. The originality of the development (assessment)

发展的原创性（评估）

D.2. Development functionality (assessment)

功能开发（评估）

D.3 Compliance with specifications (measurement)

符合规格（测量）

D.4 Compliance with the specified dimensions (measurement)

符合规定尺寸（测量）

D.5 Compliance with 2D- и 3D- drawings (measurement)

符合2D - 3D绘图（测量）

D.6. Compliance with 3D-drawings (assessment)

符合3D绘图（评估）

Module E - Painting - 50 % assessment and 50 % measurement

模块E - 绘画 - 50%评估和50%测量

D.1. Finishing treatment of painted surface (measurement)

涂漆表面的精加工处理（测量）

D.2. Attractive color scheme-design (assessment)

有吸引力的配色方案设计（评估）

4.9. ASSESSMENT STANDING ORDERS评估常规

Assessments are calculated by calculating the CIS "Ranked matching".
Subtraction from the assessment is in the form of a percentage of the maximum score.

通过计算CIS“排名匹配”来计算评估。从评估中减去的是最大分数的百分比形式。

Lengths长度

Deviation +/-0.15 mm, subtraction 0 %

偏差+/- 0.15 mm, 减法0%

Deviation +/-0.15 mm, subtraction 20 %

偏差 \pm 0.15 mm, 減法20%

Deviation \pm 0.2 mm, subtraction 40 %

偏差 \pm 0.2 mm, 減法40%

Deviation \pm 0.25 mm, subtraction 60 %

偏差 \pm 0.25 mm, 減法60%

Deviation \pm 0.3 mm, subtraction 80 %

偏差 \pm 0.3 mm, 減法80%

Deviation over \pm 0.3 mm, subtraction 100 %

偏差超过 \pm 0.3 mm, 減法100%

Angles角度

Deviation \pm 0.5°, subtraction 0 %

偏差 \pm 0.5° , 減法0%

Deviation \pm 1.0°, subtraction 50 %

偏差 \pm 1.0° , 減法50%

Deviation over \pm 1.0°, subtraction 100 %

偏差超过 \pm 1.0° , 減法100%

Plastic edges and overhangs塑料边缘和悬垂

Deviation \pm 0.5 mm, subtraction 0 %

偏差 \pm 0.5 mm, 減法0%

Deviation \pm 1.0 mm, subtraction 40 %

偏差 \pm 1.0 mm, 減法40%

Deviation \pm 1.5 mm, subtraction 70 %

偏差 \pm 1.0 mm, 減法70%

Deviation over \pm 1.5 mm, subtraction 100 %

偏差 \pm 1.0 mm, 減法100%

At least one edge, offset, and angle should be measured.

至少应测量一个边缘, 偏移和角度。

If Experts have a possibility to measure dimensions for measurement assessment by a digital measuring instrument, the Experts may decide and organize it at the Competition. In this case, the measurement will be done by a professional assistant who is familiar with the procedure.

如果专家有可能通过数字测量仪器测量评估的尺寸，专家可以在比赛中决定和组织它。在这种情况下，测量将由熟悉程序的专业助理完成。

If within the module framework there is a judgement of a judicial assessment by measurable parameters, at first it is necessary to make an assessment on measurable parameters (every day when the assessment is made).

如果在模块框架内存在可测量参数的司法评估，首先需要对可测量的参数进行评估（评估的每一天）。

Progressive marking is used for each completed module

逐步标记用于每个完成的模块

A judge's assessment form identical to that used by experts is provided to each competitor to ensure transparency.

为每位参赛者提供与专家使用的评估表相同的评估表，以确保透明度。

5. TEST PROJECT 测试项目

5.1. MAIN REQUIREMENTS 主要需求

Sections 2, 3 and 4 regulate the development of the Test Project (TP). The recommendations in this section provide additional explanation of the TP content.

第 2,3 和 4 节规定了测试项目（TP）的发展。本节中的建议提供了 TP 内容的其他说明。

The Test Project duration shall be not less than 15 and not more than 22 hours (for 14+ not more than 12 hours).

测试项目的持续时间不得少于 15 小时且不超过 22 小时（14 小时不超过 12 小时）。

Age qualification of participants to perform the Test Project is from 16 to 22 years and from 14 to 16 years.

参与测试项目的人员年龄范围是 16 至 22 岁，14 至 16 岁。

Regardless of the number of modules, the TP shall include the assessment of each of the WSSS sections.

无论模块数量多少，TP 都应包括对每个 WSSS 部分的评估。

The test project shall not fall outside of the WSSS.

测试项目不得超出 WSSS 范畴。

A competitor's knowledge shall be assessed exclusively through the practical performance of the Test Project.

参赛者的知识水平应通过测试项目的实际表现进行评估。

Knowledge of the WSR rules and regulations is not assessed during the Test Project performance.

在进行测试项目期间，不评估有关 WSR 规则和法规的知识。

5.2. TEST PROJECT STRUCTURE 测试项目结构

The total time for the Test Project has to be between the minimum and maximum time.

测试项目的总时间必须介于最短和最长时间之间。

Module A. Development of the proposed Test Project from 2D-drawings using 3D CAD.

模块 A. 使用 3D CAD 从 2D 绘图开始开发拟议的测试项目。

Module B. Creation of 2D drawing based on your own 3D CAD model from module A.

模块 B. 基于你的模块 A 的 3D CAD 模型创建 2D 绘图。

Module C. - Modeling from a triangulated model (STL).

模块 C. - 从三角模型 (STL) 建模。

Module D. Prototyping based on 3D models and the drawing created by the participant (modules: A, B, C). Finishing surface treatment and decoration.

模块 D.基于 3D 模型的原型设计和参赛者创建的图纸（模块： A ， B ， C ）。完成表面处理和装饰。

Module E. Prototype painting and design.

模块 E.原型绘画和设计。

5.3. TEST PROJECT DEVELOPMENT REQUIREMENTS

测试项目的开发要求

Any new products or something well known to the General public around the world may be used for Test Project.

任何新产品或世界各地公众熟知的东西都可用于测试项目。

A 2D drawing of the prototype of the product and documents with instructions for all modules, that are subsequently provided to the contestants, are developed.

随后给参赛者提供产品原型的 2D 图纸和所有模块的说明文档。

Test Project may include some parts of the product for modification.

测试项目可能包括产品某些部分的修改。

The drawing of the Test Project must include at least 50 established dimensions.

测试项目的绘图必须包括至少 50 个既定尺寸

Models of STL Test Project must have at least 15 explicit surfaces.

STL 测试项目的模型必须至少有 15 个显式曲面。

Test Project may include standard elements, as well as structural reference elements (physical ready-made prototypes) for building their models on the basis of measurements and measurements made by the participant.

测试项目可以包括标准元素，以及结构参考元素（物理现成原型），用于根据参赛者的测量建立其模型。

5.4. TEST PROJECT DEVELOPMENT测试项目开发

The test project is developed based on the samples provided by the Skill Competition Manager on the WSR forum (<http://forum.worldskills.ru>). The provided Test Project samples shall be changed once a year.

测试项目是根据 WSR 论坛 (<http://forum.worldskills.ru>) 上的技能竞赛经理提供的样本开发的。提供的测试项目样本应每年更换一次。

5.4.1. WHO DEVELOPS TEST PROJECTS/MODULES

组织开发测试项目/模块的主体

The Skill Competition Manager is responsible for overall management and the Test Project approval. The following individuals may be involved in the Test Project development:

技能竞赛经理负责整体管理和测试项目批准。以下人员可能参与测试项目开发:

- Certified WSR experts;
- 认证的 WSR 专家;
- Third-party developers;
- 第三方开发者;
- Other interested parties.
- 其他感兴趣的团体。

In case of the introduction of 30 % of changes into the Test Project, the following individuals participate in the process of preparation to each competition:

如果将 30% 的变更引入测试项目, 则以下个人参与每个竞赛的准备过程:

- Chief Expert;
- 首席专家
- Certified skill expert (if present at the competition);
- 经认证的技能专家 (参加过比赛);
- Assessing experts (if required to be involved by the Chief Expert).
- 评估专家 (如果需要由首席专家参与)。

The introduced 30 % of Test Project changes shall be approved by the Skill Competition Manager in a mandatory manner.

引入的 30% 的测试项目变更应由技能竞赛经理以强制方式批准。

When introducing 30 % of changes into the Test Project, the above referenced people shall be guided by the principles of objectivity and impartiality. The changes shall not affect the test project complexity or relate to other professional areas not described in the WSSS, as well as exclude any WSSS units. Furthermore, the introduced changes shall be performable using the infrastructure list approved for the competition.

在将 30% 的变更引入测试项目时，上述相关人员应遵循客观性和公正性原则。这些更改不应影响测试项目的复杂性，也不应与 WSSS 中未描述的其他专业领域相关，也不得排除任何 WSSS 单元。此外，引入的更改应使用为竞赛批准的基础设施列表来执行。

5.4.2. HOW IS THE TEST PROJECT DEVELOPED

如何开发测试项目

Test projects for each competition are developed based on the unified Test Project approved by the Skill Competition Manager and posted on the Discussion Forum. Test projects can be developed both in their entirety or in modules. The Discussion Forum is the main Test Project development tool.

每个比赛的测试项目都是基于技能比赛经理批准并在论坛上发布的统一测试项目开发的。测试项目可以完整开发，也可以模块化开发。讨论论坛是测试项目主要的开发工具。

5.4.3. WHEN THE TEST PROJECT IS DEVELOPED

测试项目开发时间

The Test Project is developed in accordance with the following schedule which defines documentation preparation periods for each competition type.

测试项目是根据以下时间表开发的，该时间表定义了每种竞赛类型的文档准备时间。

Time frames 时间框架	Local competition	Qualification competition	National competition 全国比赛
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	本地比赛	资格赛	
Test Project template 测试项目模块	The test project of the previous National Competition shall be taken from the Discussion Forum in the unmodified form 先前的全国比赛的测试项目应以未经修改的形式从论坛中获取	The test project of the previous National Competition shall be taken from the Discussion Forum in the unmodified form 先前的全国比赛的测试项目应以未经修改的形式从论坛中获取	It is developed based on the previous competition taking into account the skill competition execution experience and the industry standards 6 months prior to the competition 它是在之前的比赛基础上开发的，考虑到比赛前6个月的技能比赛执行经验和行业标准
Approval of the Chief Competition Expert responsible for the TP development 负责TP开发的首席竞争专家批准	2 months prior to the competition 比赛前 2 个月	3 months prior to the competition 比赛前开始 3 个月	4 months prior to the competition 比赛前 4 个月
TP publication (if applicable) TP 发行 (如适用)	1 month prior to the competition 比赛前 1 个月	1 month prior to the competition 比赛前 1 个月	1 month prior to the competition 比赛前 1 个月
Introduction and approval of 30 % of changes into the TP by the Skill Competition Manager 由技能竞赛经理介绍并批准30%的TP变更	On Day C-2 C-2 天	On Day C-2 C-2 天	On Day C-2 C-2 天
Submission of suggestions on the Discussion Forum on modernization of the TP, BD, IL, TD, EN, and GR 提交关于TP, BD	On Day C+1 C+1 天	On Day C+1 C+1 天	On Day C+1 C+1 天

5.5 TEST PROJECT APPROVAL 测试项目的批准

The Chief Expert and the Skill Competition Manager render a decision on the performability of all modules and if required should prove the feasibility of its performance. Time and materials shall be taken into consideration.

首席专家和技能竞赛经理对所有模块的可执行性做出决定，如果需要，应证明其性能的可行性。统筹考虑比赛的时间和材料。

A Test project may be approved in any form convenient for the Skill Competition Manager.

测试项目可以以方便技能竞赛经理的任何形式获得批准。

5.6. MATERIALS PROPERTIES AND MANUFACTURER'S INSTRUCTIONS

材料特性和制造商的说明

In case in order to perform a test project a competitor is required to become familiar with any material use manual or a manufacturer's manual, he or she will receive them in advance by the decision of the Skill Competition Manager or the Chief Expert. If required, during the familiarization, a Technical Expert may organize an on-site demonstration.

为了执行测试项目，参赛者需要熟悉任何材料使用手册或制造商手册，他或她将根据技能竞赛经理或首席专家的决定提前收到手册。如果需要，在熟悉期间，技术专家可以组织现场演示。

Materials selected for the modules to be used by the competitors (except for the cases where materials are brought by the competitors themselves) shall belong to the type of materials available from a variety of manufacturers and can be bought freely in the region of the competition.

各模块中，为参赛选手使用的材料（材料由参赛选手自己携带的情况除外）应属于各种制造商提供的材料类型，并且可以在竞赛区域内自由购买。

6. SKILL MANAGEMENT AND COMMUNICATION 技能管理与沟通

6.1 DISCUSSION FORUM 讨论论坛

All pre-competition discussions are held on a special forum (<http://forum.worldskills.ru>). Solutions for the development of competence should be taken only after a preliminary discussion on the forum. Also the notification on all important events relevant to the skill shall take place on the forum. This forum is moderated by the International Expert and (or) the Skill Competition Manager (or an Expert assigned by them).

所有赛前讨论都在一个特别的论坛上进行（<http://forum.worldskills.ru>）。只有在论坛上进行初步讨论后，才能采取能力发展的解决办法。与技能相关的所有重要事件的通知也应在论坛上进行。本论坛由国际专家和（或）技能竞赛经理（或其指派的专家）主持。

6.2. INFORMATION FOR COMPETITORS 为参赛者提供的信息

The information for competitors is published in accordance with the Standing Orders of the carried out competition. The information may include:

参赛选手的信息按照所开展的比赛常规公布。信息可能包括：

- Technical description; 技术描述;
- Test projects; 测试项目
- Assessment Summary Form; 评估汇总表;
- Infrastructure List; 基础设施列表
- OHSE Instruction; 职业健康安全指令
- Additional information. 附加信息

6.3. ARCHIVE OF TEST PROJECTS 测试项目档案

The test projects are available at <http://forum.worldskills.ru>.

测试项目可在 <http://forum.worldskills.ru> 上找到。

6.4. SKILL MANAGEMENT 技能管理

General skill management is carried out by the International Expert and the Skill Competition Manager with a potential involvement of the expert community.

一般技能管理由国际专家和技能竞赛经理执行，专家群体可能参与其中。

Skill management within a specific competition is carried out by the Chief Skill Expert in accordance with the Competition Standing Orders.

特定比赛中的技术管理由首席技术专家根据比赛常设命令进行。

7. OCCUPATIONAL SAFETY AND HEALTH REQUIREMENTS

职业安全和健康需求

7.1 OCCUPATIONAL HEALTH AND SAFETY REQUIREMENTS AT THE COMPETITION 比赛过程中的职业健康和安全需求

Refer to the OHSE documentation provided by the Competition Organizing Committee.

参考竞赛组织委员会提供的职业健康安全环境文件。

7.2 SKILL-SPECIFIC OCCUPATIONAL HEALTH AND SAFETY AND ENVIRONMENTAL

REQUIREMENTS技能特定的职业健康和安全与环境要求

- It is forbidden to use pneumatic tools for prototyping.
禁止使用气动工具进行原型制作。
- Only hand-held power tools with a dust collector are allowed, if this position is not included in the infrastructure list.

如果基础设施列表中不包括此位置，则只允许使用带除尘器的手持电动工具。

8. MATERIALS AND EQUIPMENT 材料与设备

8.1. INFRASTRUCTURE LIST 基础设施清单

The infrastructure list includes all the infrastructure, equipment and expendable materials required for the Test Project execution. The Infrastructure List must contain an example of such equipment and its clear and coherent characteristics in case it is possible to obtain this equivalent analogs.

基础设施列表包括测试项目执行所需的所有基础设施，设备和消耗性材料。基础设施清单必须清晰连贯，且包含此类设备的示例，以防可能获得等效类似物。

During the development of an infrastructure list for a specific competition, the process must be guided by the Infrastructure List posted on the Discussion Forum by the Skill Competition Manager. It is mandatory for all infrastructure list changes to be agreed upon by the Skill Competition Manager.

在为特定竞赛开发基础设施列表期间，该过程必须由技能竞赛经理在论坛上发布的基础设施列表进行指导。所有基础设施列表更改必须由技能竞赛经理首肯。

At each competition, the Technical Expert should maintain accounting of infrastructure elements. The list should not include elements that were asked to be included by the experts or the competitors, as well as prohibited elements.

在每次竞赛中，技术专家应保持对基础设施要素的核算。该清单不应包括被要求包括在专家或参赛者中的要素，以及禁止的要素。

Following the competition results, if required, the Technical Expert and the Chief Expert must present to the Competition Organizing Committee and the Skill Competition Manager recommendations on the Infrastructure List changes.

根据比赛结果，如果需要，技术专家和首席专家必须向竞赛组委会和技能竞赛经理提交关于基础设施清单变更的建议。

8.2. MATERIALS, EQUIPMENT AND TOOLBOX

TOOLS材料，设备和工具箱工具

Maximum size of the toolbox is 0.3 m³.

工具箱的最大尺寸为 0.3 m³。

Individual Competitors must bring their things such as working shoes and clothes. Competitors may use only their own hand tools. A tool list is provided below for reference.

个人参赛者必须携带工作鞋和衣服等物品。参赛选手只能使用自己的手工工具。下面提供了工具列表以供参考。

Mouse and keyboard 鼠标和键盘

- The laptop or computer with pre-installed CAD software

Manual tools for treatment.

具有预安装 CAD 软件的笔记本电脑或计算机手动处理工具

- Chisels, planers, cutting tools such as knives and files.

凿子，刨床，刀具和文件等切割工具。

- Electrical tools for processing (only tools with dust collectors can be used), if this item is not included in the infrastructure list.

如果此项目未包含在基础结构列表中，则可以使用用于处理的电动工具（仅可使用带集尘器的工具）。

Measurement instruments 测量装置

- Measurement instruments such as scale rulers, calipers, depth meters, etc., except for high-precision measurement instruments.

测量仪器，如刻度尺，卡尺，深度计等，高精度测量仪器除外。

Tools for processing of resin materials 用于加工树脂材料的工具

- Putty knife 油灰刀

Painting tools 绘画工具

- Gas masks conforming to safety, health and environmental standards in the host country, if this item is not included in the infrastructure list.

符合东道国安全、健康和环境标准的防毒面具（如果该项目未列入基础设施清单）。

- Protective adhesive tape, if this item is not included in the infrastructure list.

保护胶带，如果该项目不在基础设施清单中。

8.3. MATERIALS AND EQUIPMENT PROHIBITED ON SITE 现场禁止的材料和设备

It is forbidden to use pneumatic tools for prototyping.

禁止使用气动工具进行原型制作。

Only hand-held power tools with a dust collector are allowed, if this position is not included in the infrastructure list.

如果此位置未包含在基础结构列表中，则仅允许携带有集尘器的手持式电动工具。

It is forbidden to use ready-made components and tools for the production of the product within the Test Project.

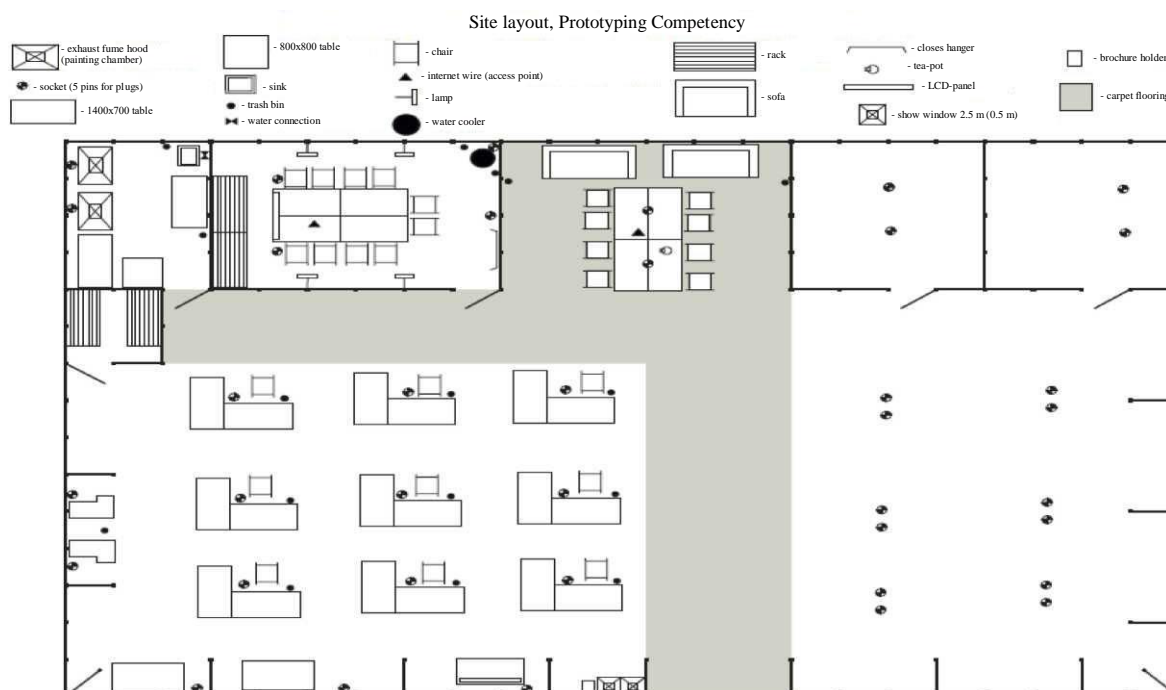
禁止在测试项目中使用现成的组件和工具来生产产品。

TASKS AND ASSIGNMENTS 任务和工作分配	SKILL-SPECIFIC RULES 特定技能规则
Use of technology — USB, memory sticks 使用技术-USB、记忆棒	<ul style="list-style-type: none"> • Competitors, Experts are not allowed to bring memory sticks to the workshop. Chief Expert and Deputy Chief Expert don't have to obey this rule. • 竞争对手、专家不得将记忆棒带到车间。首席专家和副首席专家不必遵守这条规则。
Use of technology — personal laptops, tablets and mobile phones 技术的使用-个人笔记本电脑、平板电脑和移动电话	<ul style="list-style-type: none"> • Experts are not allowed to bring personal laptops, tablets, personal devices for photo and video recording and mobile phones to the workshop. Chief Expert and Deputy Chief Expert don't have to obey this rule. • 专家不得将个人笔记本电脑、平板电脑、用于拍照和录像的个人设备以及手机带到车间。首席专家和副首席专家不必遵守这条规则。
Use of technology — personal photo and video recording devices. 技术的使用.个人照片和视频记录装置	<ul style="list-style-type: none"> • Competitors, experts are allowed to use personal devices for photo and video recording in the workshop only until day C1 and from day C+1. • 参赛者、专家只能在C1天和C+1天之前使用个人设备在车间进行拍照和录像。

Templates, manuals, etc. 模板、手册等。	<ul style="list-style-type: none"> Contestants are forbidden to bring and use their own templates and supporting tools at any point in time. 参赛者不得在任何时间携带和使用自己的模板和辅助工具。
Drawings, recordings 图纸、记录	<ul style="list-style-type: none"> Contestants are forbidden to bring drawings a prepared information to the workshop from day C-4 till day C+1. 从C-4日到C+1日，参赛者不得将准备好的图纸和资料带到车间。
Test Project and assessment 试验项目及评价	<ul style="list-style-type: none"> Competitors are forbidden to take out the workshop Test Project drawings and Marking Schemes from day C-4 till the end of the Competition. 参赛者自C-4日起至比赛结束时，不得携带车间试验项目图纸和标识方案。
Equipment failure 设备故障	<ul style="list-style-type: none"> In case of tools or equipment failure brought by a Competitor, no additional time is provided. 如果参赛选手带来的工具或设备故障，则不提供额外时间。

8.4. PROPOSED COMPETITION WORKSHOP LAYOUT 竞赛现场布局

Competition site layout (*refer to the illustration*). 竞赛现场布局图



9. SPECIAL RULES FOR THE 14–16 AGE GROUP

14-16岁年龄组的特别规则

The test project performance time shall not exceed 4 hours per day.

测试项目的执行时间每天不得超过 4 小时。

During the development of the Test Project and the Marking Scheme, it is required to consider the specific features and the limitations of the applied OHSE rules for this age group. It is also required to take into account anthropometric, psychophysiologic and psychological characteristics of this age group. This way, the Test Project and the Marking Scheme can cover not all of the WSSS units and areas depending on the specific features of the skill.

在测试项目和评分方案的开发过程中，需要考虑该年龄组所适用的 OHSE 规则的具体特征和限制。同时，还需要考虑该年龄组的人体测量学，生理学和心理学特征。因此，测试项目和评分方案不能覆盖所有的 WSSS 单元和区域，具体取决于技能的具体特征。