WorldSkills International briefing paper

Digital Services for remote assessment in competitions and for work competence

Contents

1. Purpose of this document

This document is a briefing paper for colleagues within the WorldSkills International (WSI) core team which explores the subject of digital services in remote assessment for competitions and for work competence. The purpose of this document is to outline the opportunities and implications for WSI.

The document works from an understanding of WSI assessment practice documented in training used for the WorldSkills Kazan 2019 Competition[1] . Expectations and concerns about remote assessment were given by WSI Members at a meeting held on 24 August 2020[2], and learning was taken from cases studies of remote assessment for work competence. Skills competitions were run by some WorldSkills Members in the 2020 pandemic and these examples are also considered in this document.

2. Executive Summary

This briefing paper considers how digital services can be used for assessments against WorldSkills Occupational Standards in competitions and in assessments for work competence. Digital services have been widely used for assessments of work competence for several years and the COVID-19 pandemic has probably accelerated their use. Skills competitions have been run remotely in Russia, UK and Canada using digital services through 2020 and provide examples we can learn from.

Examples show that remote assessments can be used for skills competitions. Though the 2020 competitions could not use assessments of taste and smell, or entirely remove the possibility of off-camera coaching of competitors, WorldSkills stakeholders accepted these issues in return for being able to hold competitions. The improved reach of competitions which digital services provides is likely to continue to be attractive after the pandemic. WorldSkills national competition organisers in 2020 did not find a way to support networking opportunities, which are seen as one of the most important benefits of competitions, but plenty of examples exist of how technology can be used for this purpose: conferences have continued in all other fields of work through 2020.

Assessment of work competence against WorldSkills Occupational Standards, using digital services or not, would require a more substantial change to WorldSkills strategy than use of remote assessment for competitions. The pressures of competition require that fine and defendable comparisons can be made between candidates (assessment Reliability), but this can be at the cost of alignment to real work competence (an aspect of Validity). Even where, in the strictest technical sense, the assessments can be seen as valid tests against WorldSkills Occupational Standards, the standards themselves may be narrower than those developed purely for employability purposes. Candidates in hairdressing may, for instance, not be assessed on their ability to deal with a wide variety of real-life customers, some aspects of managing the work environment are not included in standards, and nor are working relationships. Even though the current WorldSkills Occupational Standards do include some important aspects of work relevance, such as Safety, the extreme pressures of competition are peculiar to that environment. If WSI wishes to move into assessment of work competence there would need to be a strategic response to this challenge: giving clarity about what the WorldSkills Occupational Standards do not cover and embedding the standards in

[1] WorldSkills International's Mandatory Assessment Training PowerPoint presentation used as a part of preparation for the competition in Kazan in 2019

[2] WorldSkills Strategic Development Opt-in meeting (Round 1) working group on Topic 2b: notes of 24 August 2020 meeting WS P132 T2b online training content and assessment Meeting 5

broader training structures, or developing additional standards and different assessment methodologies for work competence.

3. WSI objectives and approach

WSI is exploring new ways of building and supporting assessment which:

1. allow competitions to be run remotely as an alternative (or addition) to centrally located events, and as a way to improve outreach through better support of regional and national events. This implies the use of assessments in competitions which are under the direct oversight of WSI, but also competitions which use WorldSkills Occupational Standards but are not under WSI oversight.

2. allow a growing, but remote, community of people to have their performance assessed against WorldSkills Occupational Standards to prove their achievements to peers and employers. This implies use of Occupational Standards to benchmark learners entirely outside competition environments as a measure of work competence.

Many learners use digital services as a part of their learning, work and assessments, so use of digital services by WSI would also help ensure WorldSkills Occupational Standards and assessments continue to feel relevant to its target audience.

WSI has already converted its Competition Standards to a format which is compatible with their use outside formal competition environments, and the standards are now termed Occupational Standards. WSI applies a set of Essential Elements to assessment design and these fall into categories outlined in the figure below.

Figure 1: Essential Elements of Assessment (WSI)

4. Developments in digital services for remote assessment

Digital services are used extensively to support remote assessment for technical education and training. Their use ranges from simple assessment over standard videoconferencing platforms to management or automation of complex assessment tasks. Employers can also, increasingly, see the performance of a prospective employee, directly and in detail, through digital credentialing platforms without the need for a third-party assessment. The digital nature of assessment and

employment offers the ability to capture and present information in a way that allows flexibility without losing security:

1. ePortfolios are assessment workflow tools for assessments of work competence. They offer transparent and trustworthy assessments that employers and Higher Education establishments can depend on.
2. digital services commonly use Blockchain technology to offer a level of security that can be trusted across borders; UNESCO publications on the use of eCredentialing across borders[3] shows their promise.
3. learners can upload evidence of work competence (including videos or audio files) or can be assessed in real-time remotely. Many platforms allow people to make these files available to prospective employers so that they can see relevant skills first-hand.
4. credentialing of skills to a granular level supports smaller chunks of learning which have an immediate business value, but which can be accumulated in a way that supports broader statements of competence.

The platforms which support these digital services were increasingly considered standard even before the COVID-19 pandemic. It seems likely that the adoption of these technologies has accelerated during the COVID-19 pandemic with many platform providers reporting a significant increase in interest and usage. Skills competitions through 2020 have used remote assessment with Russia, UK and Canada showing good examples of practice.

5. Examples of remote assessment in competitions and competency-based assessment

This section outlines four examples of the use of remote assessment using digital services: two examples of assessment of work competence, and two examples from WorldSkills Members' national competitions run during the COVID-19 pandemic in 2020. All four examples show that benefits of improved access to assessment, and improved rigour in some aspects of assessment, can be achieved in a cost-effective way. Work for most skills can be seen or submitted digitally and, where there is a physical product, these can be couriered to a central location.

The examples also show common areas where investment is needed:

1. The specification of the assessment environment and the test project must be detailed and requires more preparation than physical assessment. Skills competitions were run in Alberta (Skills Canada) during 2020 and an example contest description is included in the appendix.
2. Ensuring access to technology and the right physical environment should be central part of planning with clear ownership.
3. Each skill must be considered separately. There is no direct translation of assessment methods from the physical environment to the remote assessment environment, so the opportunities and limitations of the new assessment environment must be considered separately for each skill.

[3] Chakroun, Borhene; Keevy, James 2018. *Digital credentialing: implications for the recognition of learning across borders.* Programme and meeting document ED-2018/WS/29 eng. Paris, UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000264428

4. Assessors must be well trained and prepared, though where standard platforms are used this is a light requirement. The implication is that candidates must be equally well prepared.
5. The technology which supports the assessment must be reliable so assessment organisers use standard platforms or invest heavily in IT support.

The two examples of remote assessment in WorldSkills Members competitions both showed that the technical aspects of the competition could be run remotely if participants accepted that judgements of taste and smell could not be included in assessments. Stakeholders in these examples accepted this as a trade-off for being able to run competitions during a pandemic.

5.1 Example 1: Use of videoconferencing in Apprenticeships in England[4]

Apprenticeships in the UK use an End Point Assessment (EPA) which is a work task, somewhat similar to WSI's Test Project in concept, which allows the apprentice to demonstrate their competence. Before the pandemic, EPAs were delivered by external agencies who supplied an assessor who would physically visit and assess the candidate. The pandemic has forced an environment in which regulators allow, and service providers support, Remote Assessment over standard videoconferencing platforms such as MS Teams or Zoom.

The similarities of EPAs to WSI's Test Project are substantial as assessments are:

- Real-time
- External
- Graded

The experience of learners and providers was good: all users found the changes easy to manage and minimal training was needed for assessors.

Important points of learning on how to make Remote Assessment work are:

- Access to technology – it is important to use communications technologies that everyone has access to.
- Access to a suitable location – not all candidates had easy access to a suitable location so this was included in assessment planning.
- Assessors need to check the physical environment – this is a remotely managed activity including a "virtual" tour.
- Fair assessment checks are made in the moment – if an assessor is concerned by anything in the assessment environment during the assessment, they should ask questions and seek assurances immediately, during the assessment.
- Additional (but limited) training is needed for assessors.

[4] https://www.instituteforapprenticeships.org/about/news-events/apprentices-seeing-the-benefits-of-remote-assessment/

5.2 Example 2: Recorded video evidence stored and assessed in ePortfolios in Canada

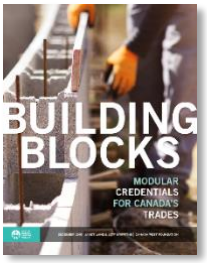
The acceptance of Remote Assessment in Canada by regulators and employers is encouraging the development of digital service providers such as VA Metric. Digital services can increase the rigour of assessments and decrease their costs, but assessors must be trained in assessment practice.

REMOTE ASSESSMENT

Technology makes it possible

Third-party assessment of competency can be an expensive proposition, particularly in a country as large and sparsely populated as Canada. The cost of bringing a qualified third-party assessor to verify the competency of an individual in a workplace setting is one of the principal arguments cited against the use of practical tests of competency. However, technology now exists to allow this assessment to be done remotely and asynchronously by trained assessors. One system, by Vametric (www.vametric.com), uses video streaming technology to provide reliable, remote, evidence-based assessment of competency at surprisingly low cost. The system has been used for military and defence, medical/health care, skilled trades, education and other industries – essentially, any criterion-based competency can be assessed, and a permanent record of competence maintained, using this approach.

VAMETRIC



5.3 Example 3 WorldSkills UK competitions

WorldSkills UK has used Remote Assessment as a part of their competitions in 2020 in order to be able to run competitions, but also to gain benefits of:

- Sharing best practice
- Improved access for learners to assessment
- Reduced travel and assessment costs associated with assessment

The main elements of the assessment are:

1. Video submission can be used in many skills: Cooking/ Stonemasonry/ Floristry/ Electronics/ Visual Merchandising.
2. Submission of finished pieces by courier (e.g. Stonemasonry) to a central location can be used in some skill areas.
3. Peer to peer virtual marking (all via zoom) with Expert and independent experts overseeing the process
4. Electronic platforms such as Electude for Auto Tech.
5. Zoom interviews/ surveys/ quizzes: testing knowledge/ understanding

The enablers of assessment are:

1. Gadgets: use of gimbals to film active demonstrations/ practical submissions (A device that allows for steady camera action footage for video submission)
2. Google classrooms: Allows electronic upload of work and sharing of feedback and assessment
3. Electronic teaching and assessment platform: including Electude simulator training and assessment tool.
4. Communication platform: Zoom/ Teams/ Skype to allow for Q&A/ presentations/ peer assessment and one-to-one feedback.

Concerns raised by WorldSkills UK:

1. Although there is increased/adapted communication methods between expert and squad members, there is a reduction in relationship-building opportunity between expert and squad members

2. Heavy reliance on Wi-Fi connectivity/external resources: and not all have equality of access to good Wi-Fi

3. Restrictions on facilities/space/equipment for each squad member

4. Additional costs for equipment: to establish multiple training venues (sent to each squad member rather than using one training facility)

5. Lack of opportunity to create high pressure environments.

5.4 Example 4 WorldSkills Russia Competitions

WorldSkills Russia used Remote Assessment as a part of their national competition through 2020. Their model allowed for a wide physical distribution of competition locations, with Cooking carried out in 83 locations. Overall their experience has been good, and has been well-received by competitors and other stakeholders. The main features of their model is:

1. The use of standard business platforms rather than tailored or purpose-built services for video surveillance, video conferencing, screen recording and the Competition Information System. A standard Learning Management System was used to distribute tasks and collect results.
2. The competition organiser is responsible for ensuring availability of ICT infrastructure, including physical equipment, in the same way they would be responsible for the venue in physical competitions.
3. A “level playing field” was ensured by issuing minimum standards for workbenches. Each workbench had 3 cameras for surveillance. The cameras, and the workbenches as a whole, were set up according to detailed specifications. No-one has access to the competition area for a specified period before the start of the competitions.
4. Taste or Smell were the only two types of judgement that had to be removed from assessment design.

5. The competition management team, and most of the experts, were all located in one place, with a few exceptions such as Plastering where an expert was located at the workshop.
6. In some competitions there was both an expert centrally, and one in the workshop.
7. Where there was a physical product produced as the Test Project, this was sent to the central location for assessment.

The first substantial use of the model was in semi-finals where many issues were discovered, including a large number of challenges and complaints about assessment decisions. However, by the finals, the team felt that these issues were largely identified and managed. In the finals, there were fewer than 5 complaints about assessment decisions. The main points of learning between the semi-finals and the finals were:

1. Training is needed on how technology should be used for competition tasks, even with standard platforms.
2. ICT management is important, ensuring availability of systems and communication between them.
3. More time was needed for competition preparation than physical competitions.
4. Each skill had to be viewed in its own right, some requiring very detailed specification for judgements and measurement.
5. Much more clarity about roles and responsibilities required

There were some issues:

1. The larger competitions had a test window which lasted several days which introduced a risk to the security of the Test Project. This risk was accepted in return for improved access to assessment and it was trusted that competitors in one location would not hand advantage to a competitor in another location by exposing the test project. In Canada (see the appendix) this risk was not accepted and tightly time-bound competitions were run simultaneously in all locations.
2. Some skills were run better than others, so there is more to learn.
3. There were few safeguards against verbal coaching from off-screen, though this could have been seen by experts who were making the assessments.

Though there are clear advantages of access, the WorldSkills Russia team felt that Remote Assessment would not have been used in competition without the crisis caused by COVID-19. Russia will return to physical competitions after the pandemic simply to ensure that one of the basic benefits of WorldSkills competitions (networking) is available, but Remote Assessment is now a tool available to them for smaller competitions and outreach.

6. Assessment for competition and for work competence

The general principles of assessment which apply in competitions and for work competence are:

1. Validity - assessment tasks and associated criteria should effectively measure candidate attainment of the intended outcomes at the appropriate level. In its purest sense this can refer only to whether the assessment assesses competencies as stated in standards but, in work competence, it can also refer to whether the assessment meets broader employer expectations about real world relevance.
2. Reliability - assessment should be comparable over time and between locations, requiring clear and consistent processes for the setting, marking, grading and moderation of assignments.
3. Authenticity - the work being assessed should be solely that of the candidate.
4. Sufficiency - the work being assessed should cover all expected elements of the standards.
5. Currency - the work being assessed is relevant at the time of assessment.
6. Access - how easy it is for candidates to have access to assessment.

Assessments related to job roles are designed to allow assessors to make judgements about a candidate's performance against Occupational Standards. International norms on Occupational Standards require that they, collectively, describe occupational competence: what it means to be competent in a work role[5]. To be fit for purpose, a set of Occupational Standards will address:

- Technical Requirements – these include the occupational skills and knowledge that the person needs, for example bricklaying, cleaning, developing organizational strategy, giving a presentation
- Managing the Work Process – for example identifying resource needs, planning work, monitoring quality, solving problems, reflective practice and finding better ways of doing things
- Working Relationships – for example, relationships with customers, team members or colleagues
- Managing the Work Environment – for example ethical considerations and health and safety

WorldSkills competitions are, by contrast, for people who are already able to show performance against the Occupational Standards, and the purpose of the assessment is to apply a marking scheme which grades competitors and allows them to be rank ordered. The competition environment is intended to be in an environment which is similar to the world of work but, essentially, it is not: the candidate is not working in teams, the tasks are timebound in a way that suits competition, and learners are under a different kind of pressure to those normally found in work. WorldSkills Occupational Standards therefore differ from the standard format generally used for Occupational Standards in that they are very demanding on the Technical Requirements, but are lighter on Managing Work Process and the Work Environment, and almost absent on Working Relationships. These features of WorldSkills Occupational Standards make them fit-for-purpose in competitions, providing the basis for an exciting and engaging competition, but are an imperfect fit for assessment of work or job-role competence.

The pressures of competition also drives an assessment strategy which is different from assessment for employment. There is a trade-off between assessment principles, notably Validity and Reliability: an assessment which is extremely Reliable usually requires a highly controlled environment which can make is less Valid as a measure of performance in the real world (even where Occupational

[5] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/304239/nos-guide-for-_developers-2011.pdf

Standards written specifically for the workplace). Reliability predominates in competition where assessments result in medals and contestable rankings; Validity predominates in assessment of work competence which is about a person's ability to perform in a real workplace. This Validity:Reliability trade-off comes under further pressure when attempting to improve Access. Access to assessment is highly restricted in competitions and expensive controls on Reliability, such as ensuring each candidate has been provided with identical equipment, is acceptable. As access is increased the ability to control the environment will become difficult and, with it, some Reliability can be lost.

7. Remote assessment and marking in competitions and work competence

The aspects of Assessment and Marking Schemes outlined in WSI's Essential Elements are Assessment Method, Assessment Vehicle, Quality Assurance & Control. Each is considered separately in this section.

7.1 Assessment Method

The assessment types used are categorises as Measurement and Judgement.

- Measurement: is used to show compliance with a standard and the marking scheme may allow for divergence from the standard with lower marks given for greater divergence. Measurement will include the use of a standard measure such as a rule, feeler gauge or machine. In single-location competitions these rules can be provided, in remote assessment they will need to be provided or specified.
- Judgement: is used to assess quality by comparison with a chosen industry standard and marking is given on a 4-point scale. Judgements from 3 assessors are coordinated and moderated by a 4th supervising assessor who will also step in to make an assessment where one of the initial 3 are conflicted (e.g. marking a compatriot).

Implications of remote assessment on assessment method:

1. No implication on marking scheme.
2. Measurement devices will need to be either provided or specified.
3. Judgement for Remote Assessment in competitions will have to support the predominance of test Reliability over Validity. This implies that the approach which uses 4 assessors, as in WorldSkills competitions today, should be preserved and WSI should ensure that only attributes which can be assessed on-line are specified in the Industry Benchmark. The only implication of this cited in the examples in section 5 above is that smell and taste cannot be used to assess the work in skills such as Cooking or Bakery. WSI Members have indicated that this reduction of Validity is acceptable in return for preserving Reliability[6].
4. The output of Test Projects to an assessment location where there is a physical output. This adds operational complexity and may be hard to achieve at scale. The outputs of test projects

[6] WorldSkills Strategic Development Opt-in meeting (Round 1) working group on Topic 2b: notes of 24 August 2020 meeting WS P132 T2b online training content and assessment Meeting 5

can become lost or damaged, and so WSI would need to consider liability for artefacts and their disposal.

Implications of assessment for work competence on assessment method

1. No implication on marking schemes
2. Measurement devices will need to be either provided or specified.
3. Judgement for Assessment of Work-Readiness must support the predominance of Validity and the importance of Access. This will require, for instance, a reversal of the approach for Competitions: smell, taste and touch are likely to be seen as essential parts of an assessment designed to be convincing to a potential employer. This, in turn, implies that an assessor must be in the same location as the learner. The most common options for achieving this are:
    a. Allowing assessors who are internal to the training or working environment (an internal assessor) to give their judgements. This introduces significant problems of test Reliability which could be partially managed by introducing a layer of quality assurance by employing External Verifiers who visit locations infrequently, randomly and without warning to test the work of internal assessors.
    b. External assessors traveling to the place of learning or employment of a test candidate. This can be costly as there may be few assessment-ready competitors at each location and the assessor spends considerable time travelling.
    c. Competitors travelling to a test location which employs External Assessors. This can be run efficiently in that a single assessor could carry out a large number of assessments in any one day. This might imply WSI licensing their standards to providers of testing facilities.

The implications of Remote Assessment and Employment Assessment on Assessment Method drives a need for WSI to make strategic choices:

1. Will remote assessment for competitions remove all assessments which cannot be carried out on-line from assessment design? The need for Reliability suggests that it should.
2. Will assessment for work competence include judgements which cannot be carried out on-line? The need for Validity suggests that is should. This drives the need for a further decision on whether assessment by internal assessment is allowed, or whether relationships are built with third parties to supply distributed external assessment.

7.2 Assessment Vehicle

The WSI competitions use a standard Test Project as the vehicle for assessment. Learners are given access to appropriate materials, tools and environment with which they carry out the Test Project. Both the product and process of the Test Project provide opportunities for assessment. The Test Project is well suited to competition because it provides a single assessment event. It is also consistent with assessment for work competence; a good parallel being provided by End Point Assessment as applied to Apprenticeships in England where external assessors judge a competitor's

performance on standardised tasks which are designed to cover key elements of the Occupational Standards.

Implications of remote assessment in competition on assessment vehicle:

1. The standardised conditions of the Test Project would need to be replicated in all locations. This would require that the specifications of the test environment would need to be clear on all important attributes of available materials and workspace. The predominance of test Reliability over Validity may require that standardised materials are used at the expense of faithfulness to real-world environments e.g. the use of a mannequin head for Hairdressing would be easy to standardise across multiple locations and over time.
2. Test standardised test conditions should include technology which enables the assessment, including appropriately placed cameras and quality of internet connection.
3. Where competitions are carried out across time-zones, WSI would need to consider the start time of the test so that it occurs during reasonable working hours in each time-zone. Where this is not possible, and different start times are unavoidable, measures for test security will need to be considered: ensuring that the details of the Test Project are not leaked to competitors ahead of their start time.

Implications of remote assessment for work competence on assessment vehicle:

1. The standardised conditions of the Test Project would need to be replicated for all assessments. This would require that the specifications of the test environment would need to be clear on all important attributes of available materials and workspace. Valid assessments for Work-Readiness may require genuine work-like conditions which militate against standardisation e.g. Hairdressing carried out with a real person rather than a standardised mannequin head. This implies an acceptance of a possible drop in test Reliability.
2. Test standardised test conditions should include technology which enables the assessment, including appropriately placed cameras and quality of internet connection.
3. Test Projects will become known by the wider community of practitioners after they are used. If WSI wishes to ensure that there is good Access to assessment, then it is impractical to have a worldwide single test date when the Test Project becomes known. Instead WSI will need to take measures on Validity which might include:
    - Having several Test Projects, or variants, which are different enough that it is hard to prepare for them all.
    - Ensure Test Projects measure desired attributes directly where possible. This can be hard to achieve where desired attributes require a response to unknown situations e.g. problem solving. It is possible, however, to have a large number of minor variants to a Test Project which make preparation for all eventualities difficult to achieve.
    - Accept some impairments to test Validity in return for improved Access.

7.3 Quality Assurance & Control

The Quality Assurance & Control approach in competitions today comprises a number of elements:

1. Externality of assessment. Assessors are independent of the competitor (external) or the training/work environment they come from.
2. Training and selection of assessors. This includes mandatory training and an assessment of their competence
3. Conflict of interest. Assessors are not allowed to assess compatriots
4. Ethical practice. The WSI Code of Ethics and Conduct covers subjects such as non-compliance, obstruction, tactical marking or scoring.
5. A system of assessor moderation and oversight. Judgements are made by three assessors and overseen by a supervising assessor.

Implications of remote assessment in competition on Quality Assurance

1. Quality Assurance elements continue to apply in remote assessment. Carrying out current practice through a digital medium, however, offers opportunity to record key events and decision which could be explored.
2. Where assessors are remote from the competitor there is a new problem of Authenticity to consider: is the work solely that of the competitor? This requires ensuring that the person doing the task is who they say they are, and that they are unaided. There are two methods to consider for ensuring Authenticity and WSI will need to choose a preferred approach:
    - Invigilation. This requires a new role of Invigilator, someone who is in the same physical location as the competitor but independent of them who confirms identity and that there are no unfair aids for the competitor in the test environment.
    - Remote confirmation of Authenticity. This method, used in English Apprenticeship End Point Assessment simply requires the assessor, who will be using standard video-conferencing platforms, to check visual ID and ask to be given a 'virtual tour' of the test environment.

    The use of remote confirmation prevents invention of new roles and so this option should be explored before considering invigilation.
3. Collaboration spaces for Assessors need to be built in order to support the workflow and to support best-practice sharing and relationship building which is one of the benefits of competitions.
4. Training for assessors, especially if remote confirmation of Authenticity is used, will be required. If standard platforms are used the experience from England's End Point Assessment methodology for remote assessment suggests that the additional training is not substantial.

Implications of remote assessment for work competence on quality assurance

Externality of assessment should be preserved where possible, however the strategic choice made under Assessment Method will drive precise approach:

- If any assessments are accepted by people who are not independent of the competitor (internal assessment) then additional layers of externality must be built in. This might require an External Verifier checks a proportion of the assessments carried out by the internal assessor. Inevitably this requires an acceptance of a reduction in test Reliability which would only be acceptable in

return for increases in Access: if WSI wishes to allow people in remote locations to be benchmarked against WorldSkills Occupational Standards, then this gain may be worth a loss in Reliability.

- If no internal assessment is accepted or used, then the assessment externality is not compromised and there are no implications for current practice.

7.4 Competition Information System (CIS)

The CIS used by WSI today is designed to support the competition workflow in a single centralised location. Primarily, therefore, it supports marking and scoring by a group of professionals who are working in the same place and at the same time. Remote assessment for competitions and for work competence may both require systems which support workflows which are asynchronous, multi-site and where assessors cannot physically meet. Fortunately, several platforms exist and are considered normal in many learning and assessment environments:

- Standard videoconferencing platforms –provide controlled access to communications forums which can be made open to anyone who has internet access. These provide virtual rooms in which an assessor can meet and assess a candidate, or where a group of assessors can meet.
- Mark entry and results platforms – in essence the current WSI CIS is one of these, but others exist. Most UK Awarding Bodies have systems to support this workflow and several third-party suppliers offer digital services in this area.
- ePortfolios – are designed to support the accumulation of evidence against occupational standards. Though they were originally designed for accumulation of evidence over time, they are able to support single-event tests such as a competition or End Point Assessment, including selection of short video clips to support Measurement or Judgement type assessments.
- Digital credentials – allow the validation of assessed outcomes which, in aggregate, give a view of a candidates performance against occupational standards in a way that can be used to prove work-readiness.

These technologies can be used to support remote assessment and work competence. Additionally, they can be used to support collaboration between attendees at events, supporting one of the key benefits that members see in WSI membership.

Though there are many well-established options, they impose varying levels of demand users of their digital expertise, funds and equipment. There is also significant cross-over between the platform e.g. many ePortfolios have entry and results processing capability, and most Digital Credentials platforms include evidence storage and retrieval. WSI should therefore select a standard set of platforms to meet its requirements, including selection of a conferencing platform which can support evidence capture. The principles for selection of a platform, or platforms, should include:

- Interoperability – if more than one platform is chosen to cover all the requirements, then information should be sharable between platform.
- Ease of use – the use of the platforms should require minimal training, preferably using standard platforms where possible.
- Security – both the process of assessment and the assessed outcomes themselves should not be “hackable”. Blockchain technology is routinely used to secure credentials, and limited and

defined user role access prevents digital platforms introducing new risks to the assessment processes.

- Ability to scale – can the CIS manage results entry and marking across the number of assessments which WSI aspires to?
- Data ownership and control – most platforms would conform to the principle of a competitor's ownership of their evidence (the principle of Self-Sovereignty), and that implies that platforms must support management of intellectual property and consent.
- Business continuity – the loss of a platform during a competition would be catastrophic and so systems must have adequate safeguards.

8. Summary of considerations

The requirements of remote assessment for competitions and Employability Assessment will require changes to the WSI assessment practice which should be included in updated WSI assessment manuals. Key strategic decisions are:

1. Should attributes which cannot be assessed remotely (taste, smell) be included in either remote assessment in competitions or for work competence. The recommendation is that they are not for competition assessment but that they are for work competence.
2. To what extent should highly standardised materials be used in each environment. Mannequin heads, for instance, would seem appropriate for competition but not for work competence.
3. Will WSI allow the introduction of internal assessment into assessment practice in return for improved Validity or Access? This might be to allow judgements based on taste and smell to be more easily included in remote assessment. The trade-off for internal assessment is a likely loss in Reliability and the need to add a new layer of External Verification.

The implications of remote assessment and assessment for work competence are summarised in the table below. Additionally, a concern raised by Members which is not directly relevant to remote assessment but which is a consequence of it, is that relationship-building opportunities will be lost in a move to remote competitions. The reason for raising the subject in this briefing note is that the technologies adopted for assessment also have functionality which can help meet this concern: the standard platforms which would be used to support assessment are essentially collaboration tools. Configuration of systems for competitions in particular should use the functionality available to promote collaboration and relationship building which would be expected in a physical, centrally located, competition.

Table 2: summary of considerations

	Consideration	Remote assessment in competitions	Assessment of work competence
1	Standards	No impact on explicit standards, however WSI Members cite "competition stress" as an important element of performance. WSI should consider whether they wish to preserve this element and whether to include it explicitly in standards.	WorldSkills Occupational Standards are incomplete when compared to international norms (e.g. working relationships). A strategic response is needed. This could be simply to clarify their content for stakeholders or to add new content.
2	Assessment Strategy	• Reliability predominates at the cost of Access and Validity (against expectations for real world competence) • Authenticity is a new consideration as competitors are not physically present • Currency is not a consideration as assessment is real-time.	• Validity predominates and Access is a high priority. Trade-offs in Reliability are accepted. • Authenticity and Currency must be ensured.
3	Assessment Method	There is a strategic decision to be made by WSI: • For competitions, is WSI happy that assessments will only include attributes which can be assessed remotely i.e. not those which require taste and smell? • Should assessment of work competence include judgements which cannot be done remotely such as taste and smell? The implications below assume the answer to both above is yes.	
		• No implications on marking scheme • Need to provide or finely specify Measurement devices • WSI Assessment Guidance should add requirement that only attributes which can be measured remotely can be included.	• No implications on marking scheme. • Need to provide or finely specify Measurement devices • WSI to consider the use of internal assessors, or use of third-party agencies to support Judgement type assessment where candidates are dispersed.
4	Assessment Vehicle	• No implications on choice of assessment vehicle (Test Project) • Test conditions must be specified to a level which allows their replication in many locations.	• Test Project is also a good assessment vehicle in this context. • Test conditions must be specified to a level which allows their replication.

		• Test conditions should include standard technology to enable assessment including cameras and internet access. • Standardised materials should be used even to the expense of real-world validity e.g. mannequin heads for Hairdressing. • Competitions across time-zones should consider how to manage a common start time or build new processes for test security.	• Test conditions should include standard technology to enable assessment including cameras and internet access. • Real-world Validity should trump Reliability e.g. real people for assessments in Hairdressing. • Design of Test Project should be resilient to test exposure. This might mean having a large series of test projects which are selected at random for each competitor.
5	Quality Assurance and Control	• All aspects of current practice still apply. • Add considerations of test Authenticity to WSI assessment practice - recommendation is to favour use of remote Authentication rather than invent new Invigilator role. • Collaboration spaces for Assessors need to be built in order to support the workflow and to support best-practice sharing and relationship building which is one of the benefits of WSI. • Add training in remote assessment for WSI Assessors and QA staff - recommendation use English remote EPA as baseline.	• Preserve Externality of Assessment in assessment practice. If internal assessment is accepted as a part of WSI's assessment strategy then a new External Verification layer should be added.
		New opportunity: recording of evidence and workflow on digital mediums can support improved scrutiny and appeals processes	
6	Competition Information System	Select a WSI platform or set of platforms to support assessment and workflows – recommendation to favour use of industry standard platforms but build them into workflow. Consider the ability of current CIS to support remote assessment at scale.	

Appendix:
Skills Alberta Contest Description for Automobile technology.

CONTEST AREA: AUTOMOBILE TECHNOLOGY	**LEVEL:** Secondary
PROJECT DEADLINES: • **MAY 5TH-BY 4:00PM COMPETITOR REGISTRATION DEADLINE** • **MAY 6TH-EMAIL TO ALL REGISTERED COMPETITORS ON CDX COMPETITION LOGIN** • **MAY 14TH -8:00AM CDX SAFETY EXAM OPENS (ONLINE) 1 HR TIME LIMIT** • **MAY 15TH – 8:00AM CDX FINAL EXAM OPENS (ONLINE) 3 HR TIME LIMIT**	**PROJECT SUBMISSION LINK:** • https://form.jotform.com/SkillsAB/2020SAVC. • Multiple files can be uploaded at once, each file has a maximum size of 1G. If file sizes are larger than 1G, please follow alternate instructions through the submission link. Accepted file types: pdf, doc, docx, xls, xlsx, csv, txt, rtf, html, zip, mp3, wma, mpg, flv, avi, jpg, jpeg, png, gif.
EVENT FORMAT: Once registered online, competitors will follow the contest description and submit their projects via the link to the above by the listed deadline. Questions regarding the contest description can be sent to Whitneyk@skillsalberta.com. **Please note, late submissions sent after the date and time specified above will not be accepted.**	
SAFETY: ALL competitors must complete AND submit a Safety Checklist with your project submission. The Safety Checklist is located online with your Contest Description. **Please note**: **Submissions will NOT be judged if the completed Safety Checklist is not included.**	
Please visit the following link for more information regarding the 2020 Skills Alberta Virtual Competition: https://skillsalberta.com/skills-alberta-virtual-comp	
IMPORTANT DATES • Registration opens online through SCA portal on **April 29, 2020 at 8:30AM** • Deadline for students work to be submitted to SCA on **May 15, 2020 at 4:00PM** • Students work to be evaluated by **May 22, 2020** • Results to be announced during the Virtual Awards Ceremony on **May 29, 2020 at 6:30PM**	

CONTEST INTRODUCTION

To identify and evaluate a competitor's knowledge of the Automotive Technology trade. The competitor will display their understanding of specific areas of the automobile. They will demonstrate their knowledge of operation, maintenance and repair related to those areas.

SKILLS AND KNOWLEDGE TO BE TESTED

Automotive Technicians perform preventative maintenance, diagnose faulty operations and repair automotive vehicles and light trucks. The competitor will be tested on their ability to follow written

instruction, complete self-study sections, Analyze specific scenarios and complete all assigned quizzes and exams.

PROJECT DESCRIPTION

The competition will be conducted using CDX online learning. The competitors will be enrolled in 7 courses that must be completed prior to a Final Exam.

Safety Exam: There will be a 20-question Safety Exam that will be accessible on May 14th at 8:00am. Competitors will have 1 hour from the time they start the exam to complete the exam.

Final Exam: There will be a 120-question Final Exam that will be accessible on May 15th at 8:00 am. Competitor will have a 3 hour time limit from the time they start the exam to finish the exam. **The exam will be closed at 4:00 PM on May 15th.**

Online CDX course areas are as follows:

Safety

- Identify general shop safety rules and procedures.
- describe and explain requirements for personal safety.
- describe and explain common workplace hazards.

Brake Systems

- Explain braking system fundamentals.
- Describe the purpose and function of hydraulic braking system components.
- Explain the purpose, operation, and components of the brake system.

Suspension and Steering Systems

- Describe the functions and features of wheels and tires
- Describe the purpose, function and main types of steering systems
- Describe the purpose, function and main types of suspension systems
- Explain the purpose and function of wheel alignment and the alignment angles

Manual Drivetrain

- Explain the principles and operation of manual transmission and transaxles.
- Explain the principles and operation of clutches and release mechanisms.
- Explain the principles and operation of final drives differentials and drive shafts.

Electrical

- Explain the basic fundamentals of electricity
- Demonstrate knowledge of electrical/electronic series, parallel, and series-parallel circuits, using principles of electricity (Ohm's law)
- Describe the function and purpose of electronic components.
- Use wiring diagrams during the diagnosis (troubleshooting) of electrical/electronic circuit problems.
- Perform basic Virtual electrical circuit testing and diagnosis using a variety of Virtual basic electrical testing tools and simulations.

Engine Mechanical

- Describe and explain Cylinder Head components
- Describe and explain Engine Block components
- Describe and explain Engine MACHINING PROCEDURES

Engine Performance

- Describe and explain the purpose and functions of the components in an ignition system.
- Describe and Explain the purpose and functions of the fuel supply system.
- Describe and Explain the purpose and functions of the engine management system.
- Describe and Explain the purpose and functions of the onboard diagnostic system.

EQUIPMENT & MATERIALS

An internet capable device and connection to the internet.

Virtual Competition Resource Support Form

A $40 competition resource subsidy is available to all competitors of the Skills Alberta Virtual Competition. It is intended for items that were purchased to support competitors (e.g. food supplies, materials, technical equipment, tools, etc.). Please complete the following form- https://form.jotform.com/SkillsAB/support

JUDGING CRITERIA

Each competitor will be judged for their ability to complete the assigned tasks. All tasks are equally weighted, and the total is comprised of an average of all tasks combined. There will be a final exam that includes all the task areas assigned. **The course material will be closed 12 hours prior to the final exam on May 15th, 2020.**

TIE BREAKING PROCESS

In the event of a tie the competitor's safety mark will be added into their total mark. The competitor with the highest total points will be the winner. In the event of a second tie, the competitor will be given points based on their standing in each individual competition area.

SAFETY

The health, safety, and welfare of all individuals involved with Skills Canada Alberta are of vital importance. Safety is a condition of participation with Skills Canada Alberta and shall not be sacrificed for the sake of expediency. As a result of Alberta's restrictions to protect Albertans' health and limit the spread of COVID-19. During this event please insure you are respecting the mandated physical distancing requirements.

ALL competitors must complete AND submit a Safety Checklist with your project submission. The Safety Checklist is located online with your Contest Description.
Please note: **Submissions will NOT be judged if the completed Safety Checklist is not included.**
CONTEST AREA SPECIFIC SAFETY REQUIREMENTS

The contest will be conducted completely using an online learning system. There are **no** hands-on practical tasks assigned and competitors should not be working on vehicles in an uncontrolled location.

RELATED CAREER AND TECHNOLOGY STUDIES COURSES

Descriptions of all modules are located at the following website:
https://education.alberta.ca/media/160539/mec_sum.pdf

MEC1040: Engine Fundamentals	MEC2090: Electrical Components	MEC3030: Engine Diagnosis
MEC1090: Electrical Fundamentals	MEC2110: Braking Systems	MEC3040: Engine Tune-up
MEC2030: Lubrication & Cooling	MEC2130: Drive Line	MEC3060: Engine Reconditioning- Head
MEC2040: Fuel & Exhaust Systems	MEC2140: Transmissions/Transaxles	MEC3070: Engine Reconditioning – Block
MEC2060: Ignition Systems	MEC2150: Suspension Systems	MEC3090: Computer Systems
MEC2070: Emission Controls	MEC2160: Steering Systems	MEC3130: Automatic Transmissions

ADDITIONAL INFORMATION

Ethical Conduct: We recognize that participants will be competing individually in their own unique environments and therefore not all competition conditions can be monitored. However, we expect all competitors to compete fairly, respecting and abiding by the established rules in the true spirit of Skills Canada Alberta.

Competition Results and Progression: The 2020 Skills Alberta Virtual Competition is a stand-alone event and does not progress to another level of competition. Medals will be awarded to gold, silver and bronze placements (packages will be sent in the mail after the virtual Awards Ceremony). A full ranking of competition results will be posted online.

Letter of Participation: Competitors who participate in the 2020 Skills Alberta Virtual Competition are eligible for a Letter of Participation that can be downloaded on the Registration Portal after the competition ends.