QUALIFICATION FILE – Standalone NOS

Capstone Industry project for Application Development / Data Science



☐ Horizontal/Generic ☒ Vertical/Specialization

☒ Upskilling ☐ Dual/Flexi Qualification ☐ For ToT ☐ For ToA

☐General ☒ Multi-skill (MS) ☒ Cross Sectoral (CS) ☒ Future Skills

NCrF/NSQF Level: 5.0

Submitted By:

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Section 1: Basic Details

<table>
<tr><td>1.</td><td>NOS-Qualification Name</td><td colspan="2">Capstone Industry project for Application Development / Data Science</td></tr>
<tr><td>2.</td><td>Sector/s</td><td colspan="2">IT-ITES</td></tr>
<tr><td>3.</td><td>Type of Qualification ☒ New ☐ Revised</td><td>NQR Code & version of the existing /previous qualification: (change to previous, once approved) : NG-05-IT-02660-2024-V1-HCL</td><td>Qualification Name of the existing/previous version: (previous, once approved)
NA</td></tr>
<tr><td>4.</td><td>National Qualification Register (NQR) Code & Version (Will be issued after NSQC approval.)</td><td>Capstone Industry project for Application Development / Data Science</td><td>5. NCrF/NSQF Level: 5.0</td></tr>
<tr><td>6.</td><td>Brief Description of the Standalone NOS</td><td colspan="2">This NOS is an education integrated program, designed fior students to do their final year project or interships on a particular topic, getting familiar with project management and life cycle management, other than gaining an indepth understanding of the technology / language / discipline</td></tr>
<tr><td>7.</td><td>Eligibility Criteria for Entry for a Student/Trainee/Learner/Employee</td><td colspan="2">a. Entry Qualification & Relevant Experience:
<table>
<tr><th>S. No.</th><th>Academic/Skill Qualification (with Specialization - if applicable)</th><th>Relevant Experience (with Specialization - if applicable)</th></tr>
<tr><td>1</td><td>Completed 3rd year of UG in relevant field*
(OR)
Pursuing 3rd year of UG and continuing education
*Relevant filed - IT/CSE/EEE/ECE</td><td>No Experience Required</td></tr>
</table>
b. Age: NA</td></tr>
<tr><td>8.</td><td>Credits Assigned to this NOS-Qualification, Subject to Assessment (as per National Credit Framework (NCrF))</td><td>3 Credits (90 Hours)</td><td>9. Common Cost Norm Category (I/II/III) (wherever applicable): I</td></tr>
<tr><td>10.</td><td>Any Licensing Requirements for Undertaking Training on This Qualification (wherever applicable)</td><td colspan="2">No</td></tr>
</table>

11. Training Duration by Modes of Training Delivery *(Specify **Total Duration** as per selected training delivery modes and as per requirement of the qualification)*

☐ **Offline Only** ☐ **Online Only** ☒ **Blended**

Training Delivery Modes	Theory + Scrum call + (Hours)	Practical (Hours)	Presentation (Hours)	Total (Hours)
Classroom (offline)				
Online				
Blended (Virtual Classrooms)	15	75		90 (20% will be instructor led)

(Refer Blended Learning Annexure for details)

12. Assessment Criteria

Awarding assessment Criteria Theory (Marks)	Practical (Marks)	Project (Marks)	Viva (Marks)	Total (Marks)	Threshold (Marks)
10		70	20	100	**60**

Certification assessment Criteria (Minimum 120 mins)

Relation to domain-based user stories	Implementation architecture, design, code & unit testing	Compliance to Standards – Coding, NFR , Security	Understand DevOps CI/CD pipeline, Sprint plans	Participate in Scrum calls and daily stand-up meetings	Total (Marks)
5	70	10	10	5	100

The candidates will be tested for a proficiency level of **Novice/Beginner**.
Technical Competency – 80% of the scenarios focus on domain specific problems. 20% focus on concepts, principles and Agile methodology.

		Job relevant communication and cognitive tests will be an integral part of the certification assessment. • Develop and deploy applications using DevOps tools, enhance collaboration, improve project efficiency, and ensure the development and delivery of a high-quality application: o Relating to domain-based user stories o Implementing architecture, design, code in line with user stories and perform unit testing; DevOps Tools – Jenkins, Maven o Complying with the coding standards, security, performance and NFR guidelines o Understanding DevOps CI/CD pipeline, Sprint plans o Participating in Scrum calls and daily stand-up meetings
13.	**Is the NOS Amenable to Persons with Disability**	☒ **Yes** ☐ **No** **If "Yes", specify applicable type of Disability:** Physical Disability. Hearing and speech impaired
14.	**Progression Path After Attaining the Qualification, wherever applicable** *(Please show Professional and Academic progression)*	**Career Progression:** Junior Developer → Senior Developer → Technical Lead →Solution Architect / Project Manager
15.	**How participation of women will be encouraged?**	Almost all companies today have signed up improving gender diversity, as well as recruit women from rural India (ESG compliance). We believe that the industry relevant programs can build more confidence in women to apply to multi-national companies. The program has been designed to encourage candidates even from non-Engineering/non-Science backgrounds to embrace tech careers. Given the fact that globally including India, women participation in STEM careers is below 20%, we believe only such skilling programs can encourage gender diversity.
16.	**Other Indian languages in which the Qualification & Model Curriculum are being submitted**	Hindi and English
17.	**Is similar NOS available on NQR-if yes, justification for this qualification**	☐ **Yes** ☒ **No** **URLs of similar Qualifications:**

18.	**Name and Contact Details Submitting / Awarding Body SPOC** *(In case of CS or MS, provide details of both Lead AB & Supporting ABs)*	**Name:** Shanthi Venkatraman **Designation:** Global Lead - Customer Assurance **Email:** shanthi.venkatraman@hcl.com **Contact No.: +91 9600122611** **Website:** https://www.hcltech.com/	
19.	**Final Approval Date by NSQC: 30 May 2024**	**20. Validity Duration: 3 Years**	**21. Next Review Date: 30 May 2027**

Section 2: Training Related

1.	**Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*	Graduation with min. of 5 years' experience in Application Development or its equivalent
2.	**Master Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*	Graduation with min. of 8 years' experience in Scrum based Application Development or its equivalent
3.	**Tools and Equipment Required for the Training**	☒Yes ☐No (*If "Yes", details to be provided in Annexure)* • Computer installed with a modern browser and connected to the Internet with required bandwidth. • Virtual machine with DevOps tools installed – Source Code maintenance, CI/CD pipeline • IDE depending on the programming language
4.	**In Case of Revised NOS, details of Any Upskilling Required for Trainer**	NA

Section 3: Assessment Related

1.	**Assessor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	Graduate with min. of 5 years' experience in Application Development or its equivalent
2.	**Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines), (wherever applicable)*	Graduation with min. of 5 years' experience in Computer Science – Experience in Application Development
3.	**Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	Graduation with min. of 8 years' experience in Computer Science or its equivalent
4.	**Assessment Mode** *(Specify the assessment mode)*	Online / Proctored / AI Proctored (Blended)
5.	**Tools and Equipment Required for Assessment**	☒ Same as for training ☐ Yes ☐ No *(details to be provided in Annexure-if it is different for Assessment)*

Section 4: Evidence of the Need for the Standalone NOS

Provide Annexure/Supporting documents name.

1.	Government /Industry initiatives/ requirement (Yes/No): Industry initiative
2.	Number of Industry validation provided: NA
3.	Estimated number of people to be trained: Approx. 15,000 learners to be trained in the year 2024
4.	Evidence of Concurrence/Consultation with Line/State Departments (In case of regulated sectors): (Yes/No): Yes, HCLTech has been working to employ local candidates from diverse backgrounds in Tier 2 towns like Madurai, Vijayawada and Lucknow, as part of agreement with State Governments. We have been using this NOS for skilling and employment. If "No", why: NA

Section 5: Annexure & Supporting Documents Check List

Specify Annexure Name / Supporting document file name

1.	**Annexure:** NCrF/NSQF level justification based on NCrF/NSQF descriptors *(Mandatory)*	Annexure: Evidence of Level
2.	**Annexure:** List of tools and equipment relevant for NOS *(Mandatory, except in case of online course)*	Annexure: Tools and Equipment
3.	**Annexure:** Performance and Assessment Criteria *(Mandatory)*	Annexure: Performance and Assessment Criteria
4.	**Annexure:** Assessment Strategy *(Mandatory)*	Annexure: Assessment Strategy
5.	**Annexure:** Blended Learning *(Mandatory, in case selected Mode of delivery is Blended Learning)*	Annexure: Blended Learning
6.	**Annexure:** Acronym and Glossary *(Optional)*	Annexure: Acronym and Glossary
7.	**Annexure/Supporting Document:** Standalone NOS-Performance Criteria Details Annexure/Document with PC-wise detailing as per NOS format (Mandatory- Public view)	Annexure: Standalone NOS Performance Criteria
8.	**Supporting Document:** Model Curriculum *(Mandatory – Public view)*	Model Curriculum – Capstone Industry project for Application Development Data Science

Annexure: Evidence of Level

NCrF/NSQF Level Descriptors	Key requirements of the job role/ outcome of the qualification	How the job role/ outcomes relate to the NCrF/NSQF level descriptor	NCrF/NSQF Level
Professional Theoretical Knowledge/Process	1. Gain the understanding of Agile methodology and DevOps principle and practices. 2. Learn DevOps tools installation and usage. 3. Understand architecture diagram, user stories, Scrum team activities, Sprint planning and execution. 4. Learn various techniques for continuous development, Continuous integration, and testing. 5. Explore containerization of application.	1. Relate to domain-based user stories. 2. Implement Software Version Control, working with requirement branches, CI/CD pipeline, etc. 3. Apply appropriate coding concept, choose efficient libraries, programming constructs and data structures to develop efficient cloud-based solution. 4. Implement containerization. 5. Adopt proficiency to develop efficient solutions for a range of issues.	5.0
Professional and Technical Skills / Expertise / Professional Knowledge	1. Read domain-based user stories and understand the design document and scope of work. 2. Participate in user story discussion, product backlog understanding and familiarize with project management tool. 3. Perform segregation of activities to be performed in database and application server. 4. Implement wireframe design as per the design document. 5. Write reusable modularized code. 6. Apply appropriate testing methods to test the application developed.	1. Apply agile methodology and DevOps principles in project completion. 2. Adopt Sprint plans and Scrum team-based working. 3. Demonstrate clarity of microservices architecture implementation. 4. Apply technical concepts and skills in a wide range of activities / tasks. 5. Possess ability work in teams and follow task allocation timelines. 6. Apply CI/CD pipeline for development. 7. Use DevOps testing tools for CI/CT.	5.0
Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill	1. Agile Methodology, DevOps principles 2. Communication skills 3. Recall / refer manuals to configure applications. 4. Daily Scrum calls 5. Testing capability 6. Essential digital skills	1. Participate in daily stand-up and communicate the status of the work completed, challenges faced, resolutions and work to be started. 2. Participate in retrospective calls. 3. Comply with coding standards.	5.0

NCrF/NSQF Level Descriptors	Key requirements of the job role/ outcome of the qualification	How the job role/ outcomes relate to the NCrF/NSQF level descriptor	NCrF/NSQF Level
	7. Ability to read and understand user stories. 8. Potential to create user manuals. 9. Getting ready for apprenticeship & Jobs	4. Demonstrate practical skills to develop industry standard applications. 5. Document test case and test artifacts	
Responsibility	1. Use standard software development process to develop the software. 2. Seek guidance and advice from peers or supervisors. 3. Basic requirements to prepare High Level Design (HLD). 4. Checklists for coding standards of programming structure. 5. Communicate with peers and supervisor to complete project.	Individuals in this job are responsible for design and maintenance of domain-based applications that comprise of static and dynamic contents. This includes Sprint planning, Scrum-based working and implementing application containerization.	5.0

Annexure: Tools and Equipment (lab set-up)

List of Tools and Equipment

Batch Size: NA, as it on a Cloud based lab

S. No.	Tool / Equipment Name	Specification	Quantity for specified Batch size
1.	Computer	i5 with 16 GB RAM	One per learner
2.	Virtual Machine	With 8 GB RAM and 70 GB Disk space	Client access software Installed on the computer
3.	IDE	Any IDE required for app development	To be installed on VM
3.	Backend	Any database	To be installed on VM
4.	Project management tool	JIRA 8.20.1 or latest version	Installed on the computer

Classroom Aids

The program is virtual classroom enabled.

The aids required to conduct sessions in the classroom / virtual are:

1. Projector or MS Teams (for virtual) with Wi-Fi Connectivity
2. Computer system (1 per learner)

Annexure: Industry Validations Summary

Not Applicable - ***vide Guidelines for Creditisation of Skilling and Training Courses and Qualifications of MNCs and Leading Indian Enterprises***

Annexure: Training Details

Training Projections:

Year	Total Candidates		Women		People with Disability	
	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities
2024	3250	3120	975	936	200	180
2025	4875	4680	1463	1424	500	450
2026	6499	6240	1950	1853	1000	900

Data to be provided year-wise for next 3 years.

Given that this is an industry led skilling program, the recruiters and the employers will need to invest very minimal to get the candidates productive.

Annexure: Blended Learning

Blended Learning Estimated Ratio & Recommended Tools:

Refer NCVET "Guidelines for Blended Learning for Vocational Education, Training & Skilling" available on:
https://ncvet.gov.in/sites/default/files/Guidelines%20for%20Blended%20Learning%20for%20Vocational%20Education,%20Training%20&%20Skilling.pdf

S. No.	Select the Components of the NOS	List Recommended Tools – for all Selected Components	Platform orchestrated (Online) / Instructor Led (In-class or virtual)
1	☒Theory/ Lectures - Imparting theoretical and conceptual knowledge	Career Shaper platform	20:80
2	☒Imparting Soft Skills, Life Skills and Employability Skills /Mentorship to Learners	Career Shaper platform, MS Teams	10:90
3	☒Showing Practical Demonstrations to the learners	DevOps and Project management tool demonstration	0:100
4	☒Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shop floor training	VM based Capstone Project Execution	0:100
5	☒Tutorials/ Assignments/ Drill/ Practice	AI based Learning Assistant, Discussion Forum	0:100
6	☒Proctored Monitoring/ Assessment/ Evaluation/ Examinations	Online AI Proctored Assessment (Theory and Lab based)	0:100
7	☒On the Job Training (OJT)/ Project Work Internship/ Candidate Training	Industry domain-based Project	NA

Annexure: Standalone NOS - Performance Criteria details

1. Description:

Capstone – Application Development will enhance application development competency that is required to enhance career in IT industry. Capstone Application Development with Scrum Teams and DevOps Implementation involves the integration of Agile project management principles, specifically Scrum, and DevOps practices into the capstone project. This program will help a learner to understand aspects of Product backlog, Sprint plans, Scrum teams, Standup calls, DevOps principles, Agile methodology, CI/CD pipeline, while embarking on a career in the industry. The qualification will also provide them with job relevant problem-solving competencies.

2. Scope:

The scope covers the following:

- Transform the application storyboards / use cases to functional software – **100+ user stories across Banking, Retail, Healthcare, hospitality, Automobile domains.**
- Agile methodology and DevOps principles and practices**.**

- Sprint planning and product backlog understanding.
- Design, build and maintain reusable code in time-bound development cycles (Sprints)
- Develop attractive User interface, business logic and establish CI/CD pipelines.
- Develop high quality code and participate in code reviews.
- Participate the Daily Scrum calls and retrospective meetings.

3. Elements and Performance Criteria

Getting familiar Capstone Project Environment - 15 Hours

To be competent, the user/individual on the job must be able to:
PC1. Understand domain-based problem statement.
PC2. Understand Business Requirement Document (BRD)
PC3. Understand System Requirement Specifications
PC4. Understand agile methodology terms and DevOps principles.
PC5. Understand project management tool and Sprints.
PC6. Implement Installation of IDEs, database, and DevOps tools in the provisioned Virtual Machine

Continuous Development, Integration and Testing – 60 Hours

To be competent, the user/individual on the job must be able to:
PC7. Participate in daily scrum call.
PC8. Understand the assigned sprint task.
PC9. Understand Functional Specification Document.
PC10. Apply code Checkout from the remote repository to local machine (if required)
PC11. Implement the functional specification requirements.
PC12. Perform unit testing of the implemented task.
PC13. Implement Code Check-in – push the local machine code changes back to the remote repository.
PC14. Practice continuous integration and deployment (CI/CD) pipeline.
PC15. Integrate tests to CI/CD pipeline to run tests automatically on code changes.

System Testing and Containerization – 15 Hours

To be competent, the user/individual on the job must be able to:

PC16. Document performance metrics that matter most for the application (response time, throughput, resource utilization).
PC17. Assess the scalability of application by gradually increasing the load to identify performance bottlenecks.
PC18. Implement application Dockerization by creating Dockerfiles that define the environment and dependencies.
PC19. Apply Docker Compose to define and manage multi-container applications to orchestrate different services requirement.
PC20. Implement Kubernetes for container orchestration, providing features like automatic scaling, load balancing, and self-healing.

4. Knowledge and Understanding (KU):

The individual on the job needs to know and understand:

KU1. How to document domain-based problem stamen walkthrough.

KU2. How to read and interpret the Business Requirement document.

KU3. How to navigate through different sections of Software Requirement Specification.

KU4. Application and exact usage of Agile methodology terminology

KU5. How to utilize the project management tool

KU6. Implementation of Sprint plans in the tool

KU7. How to access the sprints and read the sprint status details

KU8. How to connect to Virtual Machine

KU9. Installation of required software in VM (IDE, Databases, DevOps tools).

KU10. How to work in Scrum Teams

KU11. Participation in daily Scrum call.

KU12. How to communicate the challenges faced in completing the task.

KU13. How to discuss the resolution identified for the issues.

KU14. How to do code checkout.

KU15. Implementation the Sprint task.

KU16. Application of coding best practices.

KU17. Implementation of unit tests for the new code branch addition

KU18. Participation in code reviews.

KU19. Implementation Code Checkout.

KU20. How to perform continuous integration and deployment (CI/CD) pipeline.

KU21. How to assess application scalability.

KU22. How to create Docker files and define environment dependencies.

KU23. Application of Docker Compose to manage different service requirements.

KU24. Implementation of Kubernetes for container orchestration.

KU25. Integration of security testing and performance testing to identify vulnerabilities.

5. **Generic Skills (GS):**
   User/individual on the job needs to know how to:
   GS1. Follow instructions, guidelines, and procedures.
   GS2. Listen effectively and communicate information accurately.
   GS3. Apply formatting features to achieve the desired results.
   GS4. Practice Agile and DevOps principles.

Annexure: Assessment Criteria

Detailed PC-wise assessment criteria and assessment marks for the NOS are as follows:

PC No.	Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
	Core: Getting familiar Capstone Project Environment - 15 Hours	**20**	**5**	**-**	**-**
PC1	Understand domain-based problem statement	2	-	-	-
PC2	Understand Business Requirement Document (BRD)	2	-	-	-
PC3	Understand System Requirement Specifications	3	-	-	-
PC4	Understand agile methodology terms and DevOps principles	4	-	-	-
PC5	Understand project management tool and Sprints	4	-	-	-
PC6	Implement Installation of IDEs, database, and DevOps tools in the provisioned Virtual Machine		5	-	-
	Core: Continuous Development, Integration and Testing – 60 Hours	**5**	**-**	**60**	**-**
PC7	Participate in daily scrum call		-	5	-
PC8	Understand the assigned sprint task	2.5	-	-	-
PC9	Understand Functional Specification Document	2.5	-	-	-
PC10	Apply code Checkout from the remote repository to local machine (if required)		-	5	-
PC11	Implement the functional specification requirements		-	10	-
PC12	Perform unit testing of the implemented task	-	-	10	-
PC13	Implement Code Check-in – push the local machine code changes back to the remote repository	-	-	10	-
PC14	Practice continuous integration and deployment (CI/CD) pipeline	-	-	10	-
PC15	Integrate tests to CI/CD pipeline to run tests automatically on code changes	-	-	10	-
	Core: System Testing and Containerization – 15 Hours	-	-	-	**10**
PC16	Document performance metrics that matter most for the application (response time, throughput, resource utilization)	-	-	-	2
PC17	Assess the scalability of application by gradually increasing the load to identify performance bottlenecks	-	-	-	2
PC18	Implement application Dockerization by creating Dockerfiles that define the environment and dependencies	-	-	-	2

PC No.	Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC19	Apply Docker Compose to define and manage multi-container applications to orchestrate different services requirement	-	-	-	2
PC20	Implement Kubernetes for container orchestration, providing features like automatic scaling, load balancing, and self-healing	-	-	-	2
	Total Score	**25**	**5**	**60**	**10**
	Weightage	**100%**	**100%**	**100%**	**100%**
	Final Score	**25**	**5**	**60**	**10**

Annexure: Assessment Criteria for Certification

S. No.	Assessment Criteria for Outcomes	Concept (Marks)	Industry Application (Marks)
1	**Relation to domain-based user stories**	**5**	
1.1	Understand domain-based problem statement		
1.2	Understand Business Requirement Document		
2	**Implementation architecture, design, code & unit testing**		**70**
2.1	Usage of Agile methodologies		
2.2	Understand the assigned sprint task		
2.3	Complete the task using the architecture outlined		
2.4	Perform unit testing		
2.5	Participate in code reviews		
2.6	Implement DevOps – CI / CD pipeline		
2.7	Integrate tests to CI/CD pipeline		

S. No.	Assessment Criteria for Outcomes	Concept (Marks)	Industry Application (Marks)
3	**Compliance to Standards (Coding, NFR, Security, Performance, NFR)**	**5**	**5**
3.1	Comply with Coding Standards		
3.2	Preparing and adhering to NFR guidelines		
3.3	Application performance and Security Optimization		
4	**Understand DevOps CI/CD pipeline, Sprint plans**	**5**	**5**
4.1	Code checkin and checkout – Manage code between local and remote repository		
4.2	Manage versions with Software version control too		
5	**Participate in Scrum calls and daily stand-up meetings**		**5**
5.1	Participate in Scrum calls		
5.2	Participate in retrospective meeting		

Annexure: Assessment Strategy

This section includes the processes involved in identifying, gathering, and interpreting information to evaluate the Candidate on the required competencies of the program.

1. **Assessment System Overview & 2. Test Environment**

#	Functions	Feature (Career Shaper™)	Career Shaper™ Feature Description
1	**Test administration**	**Inbuilt Configuration manager**	**Examinee invitation, registration and slot scheduling with test monitoring controls**
1a	User management	Inbuilt user management	User creation and assigning to user groups
1b	Assessment Management	Inbuilt assessment management	Assessment scheduling, setup and controls
1c	Realm management	Inbuilt Realm management	Institution (re-seller) creation and management
1d	Batch management	Inbuilt batch management	Slot creation and management with examinee assignment

2	**Test launch**	**Inbuilt test launch**	**Online web-based test launch with secure window feature**
3	**Testing & proctoring**	**Inbuilt test taking and proctoring**	**Supports major test types and formats, Image and screen proctoring**
4	**Scoring**	**Inbuilt scoring**	**Customizable scoring system**
5	**Instant reporting**	**Inbuilt reports**	**Customizable test reports available instantly for end-users**
6	**Data warehouse reports**	**Inbuilt data warehouse reports**	**Reports Factory built on PowerBI**
7	**Certificate generation**	**Inbuilt certificates**	**Customizable certificate templates**

#	Functions	Feature (Career Shaper™)	Career Shaper™ Feature Description
8	**Examinee Experience**	**Inbuilt EXP***	**Seamless examinee experience and clean UX/UI**
8a	Examinee Registration/ Profile updates	Inbuilt registration	Link based examinee registration, profile updation
8b	Examinee Test calendar & reschedule	Inbuilt Test calendar	Test and batch rescheduling
8c	Examinee onboarding & online assistant	Inbuilt examinee onboarding, AI based assistant (jordy)	Onboarding video and examinee user manual, Plugin available for online assistant
8d	Score Viewer & Download	Inbuilt result publishing	Instant Test score and report publishing to examinee
8e	Certificate Viewer & Download	Inbuilt certificate viewer and Download	Certificate publishing to examinee
8f	Skills & Job recommendation	Inbuilt recommendation engine	Skill & Assessment recommendation
9	**Technical Helpdesk**	**End-user tech support**	**Plugin available for end-user online tech support**

10	**Assessment Development**	**Inbuilt assessment development**	**Assessment Item and pack development**
10a	Item Creation & attribution	Inbuilt item creation	Assessment item creation and bulk item upload, classification & tagging
10b	Pack Creation & mapping	Inbuilt assessment pack creation	Assessment pre-packaging and test mapping configurations
10c	Randomization	Inbuilt randomisation	Assessment item randomization
10d	Assessment item statistics	Inbuilt assessment item statistics	Item level examinee attempt statistics

3. **Assessment Quality Assurance levels/Framework:**

Assessment Quality Assurance framework ensures that the end-to-end activities encompassing the assessment life cycle, consistently meet the intended objectives and meet the stakeholder satisfaction.

3.1 – Assessment Content Assurance

- Assessments are crafted based on our Industry Expertise, in consultation with practitioners and Subject Matter Experts (SME)
- The assessment methodology is based on scientific and well-established approaches to assessment design, development and validation. This is further validated using by external consultants, experts with assessment and domain related expertise.
- Assessments are designed, piloted and outcomes analyzed to ensure Face Validity, Construct Validity and Criterion Validity
- Sample QC checks are done on contents, to ensure alignment to outcomes.

5.2 – Assessment Platform Assurance

- Independent Testing of the platform functionalities are regularly conducted, using standard test cases as and when enhancements and product bug fixes are implemented.

5.3 – Assessment Process Assurance

- **o** Quarterly independent audits are conducted to validate process adherence.
- Findings recorded for action and monitored for effectiveness

Note :- The content and platform dimensions are customizable.

4. **Types of evidence or evidence-gathering protocol:**

- Assessments are hosted and deployed digitally on our secure, tested platform which enables logging of all transactions and footprints of users and enables greater traceability and transparency.

5. **Method of verification or validation:**

- Through digital verification of identity, proctoring functionalities and logs of all transactions on the platform

6. **Method for assessment documentation, archiving, and access**

- All assessment reports are available in HCL Tech archives for agreed on duration.
- Digital logs for each activity of each role holder recorded and stored with privacy and confidentiality requirements taken care of.
- Individual and group reports generated for each assessment event.
- Feedback taken from multiple stakeholders after assessment completion.

Annexure: Acronym and Glossary

Acronym

Acronym	Description
AA	Assessment Agency
AB	Awarding Body
NCrF	National Credit Framework
NOS	National Occupational Standard(s)
NQR	National Qualification Register
NSQF	National Skills Qualifications Framework

Glossary

Term	Description
National Occupational Standards (NOS)	NOS define the measurable performance outcomes required from an individual engaged in a particular task. They list down what an individual performing that task should know and also do.
Qualification	A formal outcome of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards

Qualification File	A Qualification File is a template designed to capture necessary information of a Qualification from the perspective of NSQF compliance. The Qualification File will be normally submitted by the awarding body for the qualification.
Sector	A grouping of professional activities on the basis of their main economic function, product, service or technology.