NSQF QUALIFICATION FILE

Approved in 22nd NSQC, 19 December 2018

CONTACT DETAILS OF THE BODY SUBMITTING THE QUALIFICATION FILE

Name and address of submitting body:
IT-ITeS Sector Skills Council NASSCOM (SSC NASSCOM)
Plot No. – 7, 8, 9 & 10
Sector – 126, Noida
Uttar Pradesh - 201303

Name and contact details of individual dealing with the submission

Name: Ms Divya Gupta

Position in the organisation: Solutions & Partner Ecosystem lead

Address if different from above: Same as above

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List of documents submitted in support of the Qualifications File

1. Functional Analysis Document
2. Occupational Analysis Document
3. Qualification Pack
4. Occupational Map
5. Model Curriculum
6. Summary Sheet
7. Industry Validations

SUMMARY

1	**Qualification Title**	AI – Data Architect
2	**Qualification Code, if any**	SSC/Q8107
3	**NCO code and occupation**	NCO-2015/ 2521.NIL

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4	**Nature and purpose of the qualification (Please specify whether qualification is short term or long term)**	- This is a Qualification Pack (QP) containing National Occupational Standards for the job role "AI – Data Architect" - The purpose of the qualification is to help individuals become responsible for designing, implementing and maintaining data architectures. This qualification will help them gain the relevant knowledge, critical thinking and decision making skills that are required for the role.
5	**Body/bodies which will award the qualification**	SSC NASSCOM
6	**Body which will accredit providers to offer courses leading to the qualification**	IT-ITeS SSC Presently, Accreditation is not prescribed; affiliation is one of the models.
7	**Whether accreditation/affiliation norms are already in place or not, if applicable (if yes, attach a copy)**	Yes. SMART norms for accreditation and SSC norms are available for affiliation on SMART portals
8	**Occupation(s) to which the qualification gives access**	Artificial Intelligence and Big Data Analytics
9	**Job description of the occupation**	Individuals at this job must be responsible for designing and implementing the component specifications of various elements of data architecture such as databases, data warehouses, data lakes and data pipelines. They are also responsible for updating and migrating the data architecture based on standards and the organization's requirements. They need to be well organized with excellent critical thinking and decision making abilities. They need to have superior team management and communication skills to work with customers and decision makers across multiple teams.
10	**Licensing requirements**	NA
11	**Statutory and Regulatory requirement of the relevant sector (documentary evidence to be provided)**	Though some standards for cyber security exist, currently no standards specific to Statutory and Regulatory exist for AI & BDA.
12	**Level of the qualification in the NSQF**	8

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13	**Anticipated volume of training/learning required to complete the qualification**	712 hours (237 hours theory, 475 hours practical)
14	**Indicative list of training tools required to deliver this qualification**	• Whiteboard and Markers • LCD Projector and Laptop for presentations • Lab equipped with the following: - • PCs/Laptops • Internet with Wi-Fi (Min 2 Mbps Dedicated) • Chart paper and sketch pens
		• Latest version of statistical software packages and IDEs • Chart paper, markers, picture magazines and old newspapers
15	**Entry requirements and/or recommendations and minimum age**	Graduate in any discipline preferably Science/Computer Science/Electronics and Engineering /Information Technology who is at least 21 years of age with industry experience of 5-10 years in product / technical architecture or related roles
16	**Progression from the qualification (Please show Professional and academic progression)**	This entry should refer to one or more of the following: - access to other qualifications at the same NSQF level – Solutions Architect, Senior Database Administrator - access to related qualification(s) at a lower NSQF level – Data Engineer, Associate Solutions Architect
17	**Arrangements for the Recognition of Prior learning (RPL)**	- Response to market forces for RPL. - RPL assessments will be the same as our normal assessments.
18	**International comparability where known (research evidence to be provided)**	Not Yet Established
19	**Date of planned review of the qualification.**	31st December 2019
20	**Formal structure of the qualification** **Mandatory components**	

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	Title of component and identification code/NOSs/Learning outcomes	Estimated size (learning hours)	Level
(i)	Bridge Modules	87	-
(ii)	SSC/N8109 (Design new data architectures as per specifications)	75	8
(iii)	SSC/N8110 (Maintain existing data architectures)	75	7
(iv)	SSC/N9001 (Manage your work to meet requirements)	50	6
(v)	SSC/N9002 (Work effectively with colleagues)	50	6
(vi)	SSC/N9004 (Provide data/information in standard formats)	50	6
(vii)		25	6
(viii)	SSC/N9005 (Develop your knowledge, skills and competence)	25	6
(ix)	SSC/N9006 (Build and maintain relationships at the workplace)	25	8
	SSC/N9009 (Empower the team)		
(x)	SSC/N9010 (Convince others to take appropriate action in different situations)	25	6
	Sub Total (A)	487	
	Optional components		
	Title of component and identification code/NOSs/ Learning outcomes	Estimated size (learning hours)	Level
(i)	SSC/N8111 (Implement data storage network solutions)	75	7

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(ii)	**SSC/N8112 (Develop data integrations as per specifications)**	150	7
	Sub Total (B)	225	
Total (A+B)		**712**	

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SECTION 1
ASSESSMENT

21	**Body/Bodies which will carry out assessment:** SSC NASSCOM will carry out the assessment along with the assessment partners.
22	**How will RPL assessment be managed and who will carry it out?** • *RPL assessment will be online, objective evaluation in a highly secure and proctored environment.* • *RPL assessments will be the same as our normal assessments.* • *All procedures followed will be similar to the normal assessment methodology.* • *Issuance of the qualification will be through the centralise SDMS (NSDC).* • *Quality assurance – By equating performance amongst the multiple affiliated assessment provider (AAP) and periodic analytical review and sensitivity analysis for the reliability and validity of all aspects of assessments.*

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23	**Describe the overall assessment strategy and specific arrangements which have been put in place to ensure that assessment is always valid, reliable and fair and show that these are in line with the requirements of the NSQF.** • *SSC NASSCOM carries out online assessments through very robust platforms and proctoring methodology.* • *Conduct of assessment are through trained and certified proctors under the assessment agency, partnering with SSC NASSCOM* • *AAP affiliated to SSC NASSCOM come with strong industry references and long experience and analytical ability in assessment methodologies.* • *Periodic workshops are held with the vendors to bring them to a common understanding of the job role, its NSQF level, difficulty level as well as format and sample of assessment items.* • *Internal moderations further ensure the validity and reliability of the assessments and consistency of difficulty levels of the test questions across AAPs.* • *AAPs work with hirers on similar job roles, they use SMEs from their network to get industry relevant scenarios and assessment items aligned to the expected outcomes of the job role/QP.* • *Curriculum and real time scenarios facilitate further understanding the scope of the QP with reference to process knowledge and skills.* • *In addition, we conduct workshops with AAPs w.r.t. beta testing, review of the assessment analytics, performance of the test platform, moderation of NSQF levels, deployment and invigilation patterns and infrastructure requirements including malpractice avoidance.* • *Inferences from benchmarking and analytics patterns are taken into consideration in the development and revision of the assessment criteria and format of assessment items.* • *Reliability and validity of assessment items is standardised among AAPs.* • *Difficulty level of test items with reference to NSQF levels are ensured, so that the outcomes with reference to performance criteria of the constituent NOSs are in line with the NSQF level descriptors. This is achieved through the detailed test matrix design.*

Please attach most relevant and recent documents giving further information about assessment and/or RPL.

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Give the titles and other relevant details of the document(s) here. Include page references showing where to find the relevant information.

ASSESSMENT EVIDENCE

Complete a grid for each component as listed in "Formal structure of the the qualification" in the Summary.

NOTE: this grid can be replaced by any part of the qualification documentation which shows the same information – ie Learning Outcomes to be assessed, assessment criteria and the means of assessment.

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24. Assessment evidences

Title of Component:

Job Role	AI – Data Architect
Qualification Pack	SSC/Q8107
Sector Skill Council	IT-ITeS

Guidelines for Assessment:

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criterion.
6. To pass a QP, a trainee should score an average of 70% across generic NOS' and a minimum of 70% for each technical NOS.
7. In case of *unsuccessful completion*, the trainee may seek reassessment on the Qualification Pack.

Title of NOS/Unit/Component:

Assessment outcomes	Assessment Criteria for outcomes	Total Marks	Out Of	Theory	Skills Practical
1. SSC/N8109 Design new data architectures as per specifications	PC1. define the technical and business requirements for the data architecture	100	3	0	3
	PC2. review the capabilities, strengths, and limitations of various		3	0	3

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data architectures				
PC3. formulate strategies and methodologies and identify the best technologies to implement various architectures	3	0	3	
PC4. define storage design considerations with relevant business and technical stakeholders	7	2	5	

Assessment outcomes	Assessment Criteria for outcomes	Total Marks	Out Of	Theory	Skills Practical
	PC5. evaluate changes in cross-border data governance issues, PII (Personally Identifiable Information) regulations, GDPR (General Data Protection Regulations), global-scale, security, and monitoring		5	2	3
	PC6. define security standards in alignment with existing governance standards		7	2	5
	PC7. analyse common data patterns for transactional systems, time		5	2	3

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series, and hybrid data solutions				
PC8. design architecture that uses data from various sources	10	3	7	
PC9. stage the data for processing	7	2	5	
PC10. determine approach to load data, i.e. either batch-driven or event-driven	7	2	5	
PC11. determine the right data format depending on whether the application is batch or real-time driven	7	2	5	
PC12. define data segmentations as per requirements	8	2	6	
PC13. define reliable and scalable data pipelines or integrations	7	2	5	
PC14. evaluate the potential evolution of the data technology stack	5	0	5	
PC15. create documentation on designed data	3	0	3	

Assessment outcomes	**Assessment Criteria for outcomes**	**Total Marks**	**Out Of**	**Theory**	**Skills Practical**
	architectures for appropriate people				

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	PC16. validate data architecture with appropriate people		3	0	3
	PC17. monitor data architecture performance and recommend suitable improvements		5	2	3
	PC18. troubleshoot and resolve issues with new data architectures		5	2	3
	Total		**100**	**25**	**75**
2. SSC/N8110 Maintain existing data architectures	PC1. review existing data architectures based on business and technology requirements, performance and scalability	100	20	5	15
	PC2. optimize existing data architectures and recommend efficiencies to data storage and retrieval		30	10	20
	PC3. optimize existing data architectures and recommend efficiencies to data processing		30	10	20
	PC4. monitor changes in governance standards and update architectures		15	5	10
	PC5. update documentation for designed data architectures for appropriate people		5	0	5

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	Total		**100**	**30**	**70**
3. SSC/N9001 Manage your work to meet requirements	PC1. establish and agree your work requirements with appropriate people	100	6.25	0	6.25
	PC2. keep your immediate		12.5	6.25	6.25

Assessment outcomes	**Assessment Criteria for outcomes**	**Total Marks**	**Out Of**	**Theory**	**Skills Practical**
	work area clean and tidy				
	PC3. utilize your time effectively		12.5	6.25	6.25
	PC4. use resources correctly and efficiently		18.75	6.25	12.5
	PC5. treat confidential information correctly		6.25	0	6.25
	PC6. work in line with your organization's policies and procedures		12.5	0	12.5
	PC7. work within the limits of your job role		6.25	0	6.25
	PC8. obtain guidance from appropriate people, where necessary		6.25	0	6.25
	PC9. ensure your work meets the agreed requirements		18.75	6.25	12.5
	Total		**100**	**25**	**75**
4. SSC/N9002 Work effectively	PC1. communicate with colleagues clearly, concisely and accurately	100	20	0	20

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with colleagues	PC2. work with colleagues to integrate your work effectively with them	10	0	10
	PC3. pass on essential information to colleagues in line with organizational requirements	10	10	0
	PC4. work in ways that show respect for colleagues	20	0	20
	PC5. carry out commitments you have made to colleagues	10	0	10
	PC6. let colleagues know in good time if you cannot carry out your	10	10	0

Assessment outcomes	Assessment Criteria for outcomes	Total Marks	Out Of	Theory	Skills Practical
	commitments, explaining the reasons				
	PC7. identify any problems you have working with colleagues and take the initiative to solve these problems		10	0	10
	PC8. follow the organization's policies and procedures for working with colleagues		10	0	10
	Total		**100**	**20**	**80**

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5. SSC/N9004 Provide data/information in standard formats	PC1. establish and agree with appropriate people the data/information you need to provide, the formats in which you need to provide it, and when you need to provide it	100	12.5	12.5	0
	PC2. obtain the data/information from reliable sources		12.5	0	12.5
	PC3. check that the data/information is accurate, complete and upto-date		12.5	6.25	6.25
	PC4. obtain advice or guidance from appropriate people where there are problems with the data/information		6.25	0	6.25
	PC5. carry out rule-based analysis of the data/information, if required		25	0	25
	PC6. insert the data/information into the agreed formats		12.5	0	12.5
	PC7. check the accuracy of your work, involving		6.25	0	6.25

Assessment outcomes	Assessment Criteria for outcomes	Total Marks	Out Of	Theory	Skills Practical
	colleagues where required				
	PC8. report any unresolved anomalies in the data/information to appropriate people		6.25	6.25	0

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	PC9. provide complete, accurate and up-to-date data/information to the appropriate people in the required formats on time		6.25	0	6.25
	Total		**100**	**25**	**75**
6. SSC/N9005 Develop your knowledge, skills and competence	PC1. obtain advice and guidance from appropriate people to develop your knowledge, skills and competence	100	10	0	10
	PC2. identify accurately the knowledge and skills you need for your job role		10	0	10
	PC3. identify accurately your current level of knowledge, skills and competence and any learning and development needs		20	10	10
	PC4. agree with appropriate people a plan of learning and development activities to address your learning needs		10	0	10
	PC5. undertake learning and development activities in line with your plan		20	10	10
	PC6. apply your new knowledge and skills in the workplace, under supervision		10	0	10

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PC7. obtain feedback from appropriate people on your knowledge and skills and how effectively you apply	10	0	10

Assessment outcomes	Assessment Criteria for outcomes	Total Marks	Out Of	Theory	Skills Practical
	them				
	PC8. review your knowledge, skills and competence regularly and take appropriate action		10	0	10
	Total		**100**	**20**	**80**
7. SSC/N9006 Build and maintain relationships at the workplace	PC1. build rapport with appropriate people at the workplace	100	10	3	7
	PC2. develop new professional relationships		10	3	7
	PC3. build alliances to establish mutually beneficial working arrangements		10	3	7
	PC4. foster an environment where others feel respected		10	4	6
	PC5. identify and engage a diverse range of influential contacts		10	4	6
	PC6. obtain guidance from appropriate people, wherever necessary		10	3	7
	PC7. attentively listen to ideas and give constructive feedback		10	3	7

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	PC8. promptly resolve conflicts between self or others		10	2	8
	PC9. work with colleagues to deliver shared goals		10	2	8
	PC10. recognize the contributions made by your colleagues		10	3	7
	Total		**100**	**30**	**70**
8. SSC/N9009 Empower the	PC1. encourage teams to set goals aligned to the vision and objectives of the	100	10	5	5
Assessment outcomes	**Assessment Criteria for outcomes**	**Total Marks**	**Out Of**	**Theory**	**Skills Practical**
team	organization				
	PC2. express confidence on the team's ability to accomplish certain tasks		10	5	5
	PC3. encourage team members with diverse view points to express their concerns		10	5	5
	PC4. recognize individual contributions and acknowledge team accomplishments		20	5	15
	PC5. assist team members in delivery of their work		15	5	10
	PC6. support team members in taking independent action		15	5	10

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	PC7. develop mechanisms to incorporate and develop ideas from the team		20	5	15
	Total		**100**	**35**	**65**
9. SSC/N9010 Convince others to take appropriate action in different situations	PC1. gather needs of concerned people	100	10	0	10
	PC2. adapt arguments to consider diverse needs		15	0	15
	PC3. use small wins as milestones to gain support for ideas		25	10	15
	PC4. persuade with the help of concrete examples or evidences		25	10	15
	PC5. take structured actions to reach consensus on the course of action		25	10	15
	Total		**100**	**30**	**70**

Elective 1: Data Storage Networking **Total Marks: 100**				**Marks Allocation**	
Assessment outcomes	**Assessment Criteria for outcomes**	**Total Marks**	**Out Of**	**Theory**	**Skills Practical**
1. SSC/N8111 Implement data storage networking solutions	PC1. evaluate storage design considerations for the data architecture	100	10	3	7
	PC2. describe assessment goals, objectives and methodology of storage networks		10	3	7

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	PC3. implement specified storage networks for the data architecture		20	7	13
	PC4. create documentation on storage networks for appropriate people		5	0	5
	PC5. validate storage networks with appropriate people		5	0	5
	PC6. monitor system storage performance and recommend suitable improvements		20	7	13
	PC7. perform regular port and throughput exercises		15	5	10
	PC8. resolve data storage networking issues		15	5	10
	Total		**100**	**30**	**70**
Elective 2: Data Integrations **Total Marks: 100**				**Marks Allocation**	
Assessment outcomes	**Assessment Criteria for outcomes**	**Total Marks**	**Out Of**	**Theory**	**Skills Practical**
1. SSC/N8112 Develop data integrations as per	PC1. evaluate whether the application is batch or realtime driven	100	3	0	3
specifications	PC2. evaluate whether the application is using an SQL or NoSQL database		3	0	3

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PC3. evaluate feasibility and level of effort to integrate data	5	2	3
PC4. evaluate different data warehouse, lake or pipeline designs	5	2	3
PC5. evaluate available hardware if an on-premise solution is being designed	5	2	3
PC6. determine the right data format depending on whether the application is batch or real-time driven	5	2	3
PC7. partition or size the data as appropriate	5	2	3
PC8. transform data into other formats	5	2	3
PC9. develop, test and troubleshoot data pipelines	5	1	4
PC10. combine tools into either macro or micro data pipelines	5	1	4
PC11. design and implement ETL (Extract-Transform-Load) processes	5	1	4
PC12. use data integration processes to populate and refresh the data warehouse	5	1	4
PC13. define data onboarding and transformation processes to design the data lake	5	1	4

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	PC14. create and execute proof-of-concepts for demonstrating the viability of the design approach for the data lake	5	2	3
	PC15. select appropriate applications to design and scale the data lake as per requirements	5	1	4
	PC16. develop the data lake and define appropriate mechanisms to query the data lake	5	2	3
	PC17. load data, metadata and other required categories into the data lake	5	1	4
	PC18. develop mechanisms for error and fault handling, and system availability for the data lake	5	1	4
	PC19. define performance criteria for the data integrations such as response time	5	2	3
	PC20. optimize the data integrations on the basis of the defined performance criteria	5	2	3
	PC21. create documentation on developed data integrations for appropriate people	2	0	2

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	PC22. validate data integrations with appropriate people		2	0	2
	Total		**100**	**28**	**72**

Outcomes to be assessed/NOSs to be assessed	**Assessment criteria for the outcome**

Means of assessment 1

Proctored online assessments (LAN and Web based), carried out using a variety of question formats applicable for linear / adaptive methodologies; performance criteria being assessed via situation judgement tests, simulations, code writing, psychometrics and multiple-choice questions etc.

Means of assessment 2

NA

Pass/Fail

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criterion.
6. To pass a QP, a trainee should score an average of 70% across generic NOS' and a minimum of 70% for each technical NOS.
7. In case of *unsuccessful completion*, the trainee may seek reassessment on the Qualification Pack.

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SECTION 2

25. EVIDENCE OF LEVEL

Title/Name of qualification/component: AI – Data Architect			**Level:** 8
NSQF Domain	**Key requirements of the job role**	**How the job role relates to the NSQF level descriptors**	**NSQF Level**

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Process, professional knowledge and professional skill	**Comprehensive, cognitive, theoretical knowledge and practical skills to develop creative solutions to abstract problems. Undertakes self-study; demonstrates intellectual independence, analytical rigour and good communication.** • define storage design considerations with relevant business and technical stakeholders • define security standards in alignment with existing governance standards • design architecture that uses data from various sources • define approaches to load data, i.e. either batch-driven or event-driven • define reliable and scalable data pipelines or integrations • different methodological approaches for business continuity, data replication, data backup architecture and methods, and an overview of storage infrastructure & security • different enterprise IT infrastructure components, serverstorage connectivity, virtualization technologies, storage devices • different types of storage system	The individual in this role needs to have a comprehensive understanding of the objective of the type of data, different data assets and the way they are utilized in the organization. The individual should be able to use standard and nonstandard processes to design elements of the data architecture such as storage networks, databases, or data integrations. The individual should have a strong understanding of different standards and approaches for data storage, security, privacy and monitoring. The individual should also be able to clearly define the interactions between different elements of data architecture such as the various enterprise IT infrastructure components, storage devices and systems, virtualization technologies and integrations. They should be capable enough to use tools and scripting languages to design or optimize these systems.	8

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	architecture, RAID, storage systems, storage area network and network attached storage		

Title/Name of qualification/component: AI – Data Architect			Level: 8
NSQF Domain	**Key requirements of the job role**	**How the job role relates to the NSQF level descriptors**	**NSQF Level**

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	• different SQL and NoSQL databases such as MongoDB, Redis • different tools for designing data integrations such as Hive or Kafka • how to query and write scripts to acquire and understand the data		
Core skill and responsibility	**Exercise management and supervision in the context of work / study having unpredictable changes; responsible for the work of others.** • review the capabilities, strengths, and limitations of various data architectures • evaluate changes in cross-border data governance issues, PII regulations, GDPR, security and monitoring standards • determine the right data format depending on whether the application is batch or real-time driven • evaluate the potential evolution of the data technology stack • monitor data architecture performance and recommend suitable improvements • different types of information that team members might need and the importance of	The individual in this role is responsible for overseeing any changes in data architecture design based on internal and external factors. The individual should be able to review the capabilities and limitations of the existing data architecture and recommend modifications to it based on changes in external factors such as fluctuations in global data standards or internal factors such as required performance. The role also requires the individual to also work with a team that manages databases or data integrations and provide the necessary information to assist them with their work. They should also develop mechanisms that can enable the team to perform independently and recognize any individual or team accomplishments.	8

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	providing this information when required • recognise individual contributions and acknowledge team accomplishments • assist team members in delivery of their work		

Title/Name of qualification/component: AI – Data Architect			**Level:** 8
NSQF Domain	**Key requirements of the job role**	**How the job role relates to the NSQF level descriptors**	**NSQF Level**
	• support team members in taking independent action		

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SECTION 3
EVIDENCE OF NEED

26	**What evidence is there that the qualification is needed? What is the estimated uptake of this qualification and what is the basis of this estimate?** Data Architecture plays a key role in the continuous evolution of emerging data technologies. Wellmanaged Data Architectures and AI technologies are poised to drive future innovations in IT, which will bring in better opportunities for businesses through technological disruptions. AI requires a sound Data Architecture with best practices of Data Storage and Data Governance to support organizational goals. Organizations today require a well-defined and structured Data Architecture that accommodates Big Data, IoT, and AI while complying with all the applicable regulations. Increasing availability of data required for AI operations means that there is an improved adoption rate of architectures and databases. All these factors are triggering the size of the data management market. According to Stratistics MRC, the Data Management Market accounted for $68.60 billion in 2016 and is expected to reach $142.67 billion by 2023 growing at a CAGR of 11.0% from 2016 to 2023. Source: https://www.reuters.com/brandfeatures/venture-capital/article?id=24923 The problem with companies which are trying to migrate to advanced data architecture models is that very often, companies are seeking to transform their existing (often legacy) data architectures. They are restricted by siloed data architecture that lacks scalability and performance to process the volume, variety, and velocity of data. To reorient the existing data architecture toward specialized capabilities (that leverage a broad range of data management, governance, integration, integrity, and analytics and data services), there is a need for Data Architects who have the advanced skills to implement such data architectures. Data architects are therefore expected to intelligently manage data, where the intelligence will be derived from machine learning–based constant monitoring, diagnostics, prediction, and prescription.

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27	**Recommendation from the concerned Line Ministry of the Government/Regulatory Body. To be supported by documentary evidences** In place. MeitY has approved all the 19th QPs w.r.t. AI & BDA. Currently, there are no regulations on AI & Big data by the government or any other industrial body. However, NASSCOM is working with NITI Aayog to build national policies.
28	**What steps were taken to ensure that the qualification(s) does (do) not duplicate already existing or planned qualifications in the NSQF? Give justification for presenting a duplicate qualification** *Cleared by QRC at NSDC. There is only no other qualification in the NQR with respect to the Artificial Intelligence and Big Data Analytics, which is – 'AI - Data Architect.' This is a specific role that is responsible for performing different aspects of data quality management.*
29	**What arrangements are in place to monitor and review the qualification(s)? What data will be used and at what point will the qualification(s) be revised or updated? Specify the review process here** • *Monitoring and review of the qualifications is a project executed every two years.* • *While adoption by industry and academia is one good indicator for the usefulness of a qualification pack, we adopt multiple approaches for periodic review and maintenance of the qualifications.* 1. *Sub-sector wise Industry council, headed by council chair is a formal part of our governing structure. The council participates and steers the qualifications creation and upkeep. This council is a body elected by over 1800 member companies of NASSCOM.* 2. *Special interest groups are formed for a more focused and detailed review of the qualifications in the light of emerging knowledge and skill areas.* 3. *Events and workshops are conducted periodically to validate, monitor and review the qualification.* 4. *As a part of due diligence process for affiliating Training providers, we do ask them for validation from their hirers – thus covering even medium, small and micro segment of the hiring companies.* 5. *Any institution / individual is welcome to send feedback, which is recorded and considered during next review cycle.* *The above data is used to update the Qualification and this revision is published annually. Nonetheless, if a major feedback is received prior to the planned review period, the change is considered in consultation with the industry council.*

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Please attach most relevant and recent documents giving further information about any of the topics above. Give the titles and other relevant details of the document(s) here. Include page references showing where to find the relevant information.

- NASSCOM Talent Demand and Supply Report - AI and Big Data Analytics

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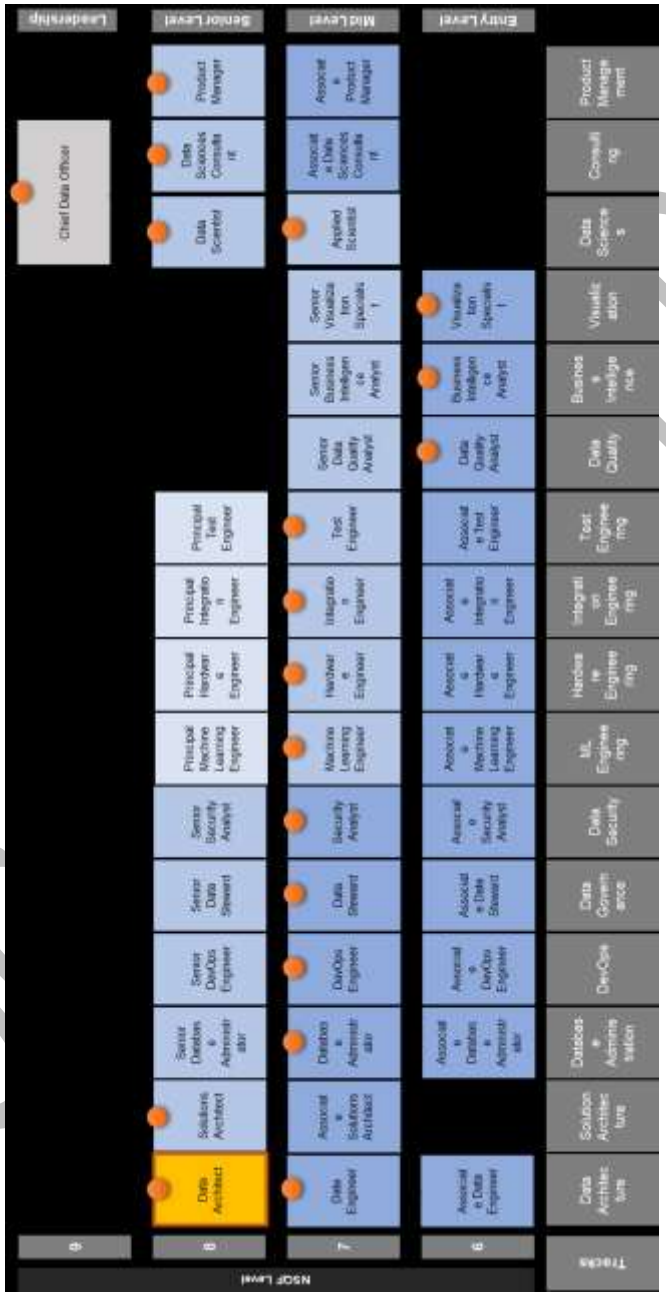
SECTION 4
EVIDENCE OF PROGRESSION

30	**What steps have been taken in the design of this or other qualifications to ensure that there is a clear path to other qualifications in this sector?** ***Show the career map here to reflect the clear progression***  The Career /Occupational Map reflects horizontal and vertical mobility emanating from' Job Families' and 'Tracks' across NSQF and experience levels . Presently 19 of the most popular job roles/ QPs in this AI& BDA Occupation have been articulated as per IT-ITeS industry's direction and aspirations.

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NSQF QUALIFICATION FILE

Please attach most relevant and recent documents giving further information about any of the topics above. Give the titles and other relevant details of the document(s) here. Include page references showing where to find the relevant information.

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