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CATALYSING INDUSTRY GROWTH \ TRANSFORMING BUSINESS TRANSFORMING INDIA

# Competency Standards

The common language across Government, Industry & Academia on hiring, training & skilling/reskilling.

# COMPETENCY STANDARDS: Our Vision

Create common language across academia, industry and government to drive talent transformation initiatives at scale since they provide common understanding and terminology when discussing job roles & skills.

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# WHAT IS Competency Standard?

Knowledge

Function

Skills

- Simply put, Competency Standards classify competencies required to perform a job.

- It lists down the knowledge required to perform the job, key functions that need to be undertaken and the skills required to do so effectively.

**Key Takeaway:** Competency Standards sets a benchmark of competency & performance to do the job.

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# STANDARDS FOR ORGANISATIONS: How does it help?

**Set benchmarks of performance & competency**

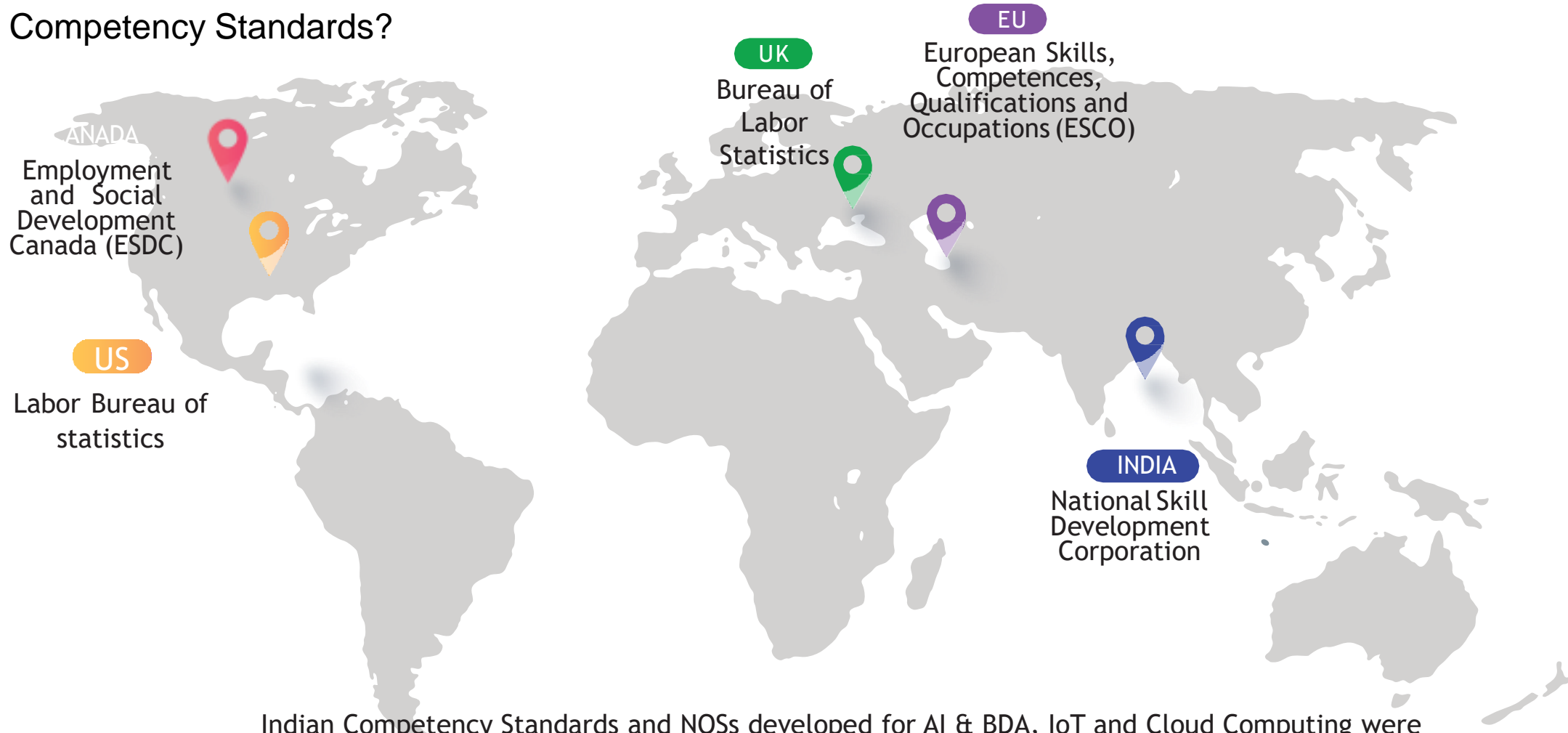**Incentivize supply ecosystem for quality resources**

**Expand the talent pool and choose the best**

**Flexibility to create own job descriptions**

**Key Takeaway:** Standards for Organizations can develop a common language that can move the talent transformation narrative to industry wide collaborative action instead of working in organizational silos.

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# WHERE ARE OTHER COUNTRIES
## on Competency Standards?

**CANADA**
Employment and Social Development Canada (ESDC)

**US**
Labor Bureau of statistics

**UK**
Bureau of Labor Statistics

**EU**
European Skills, Competences, Qualifications and Occupations (ESCO)

**INDIA**
National Skill Development Corporation

Indian Competency Standards and NOSs developed for AI & BDA, IoT and Cloud Computing were benchmarked across the Competency Standards developed in US, Canada, EU and UK
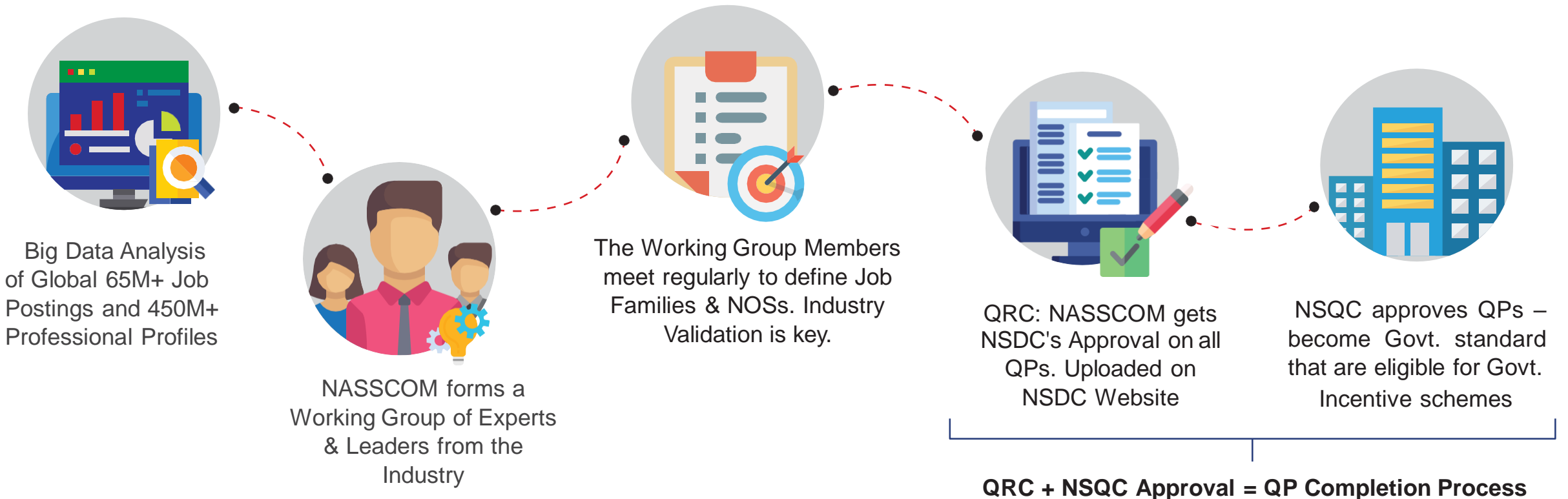
**Key Differentiator:** In India, Competency Standards have been defined for roles specific to technologies such as AI/IoT/Cloud instead of generic IT roles.

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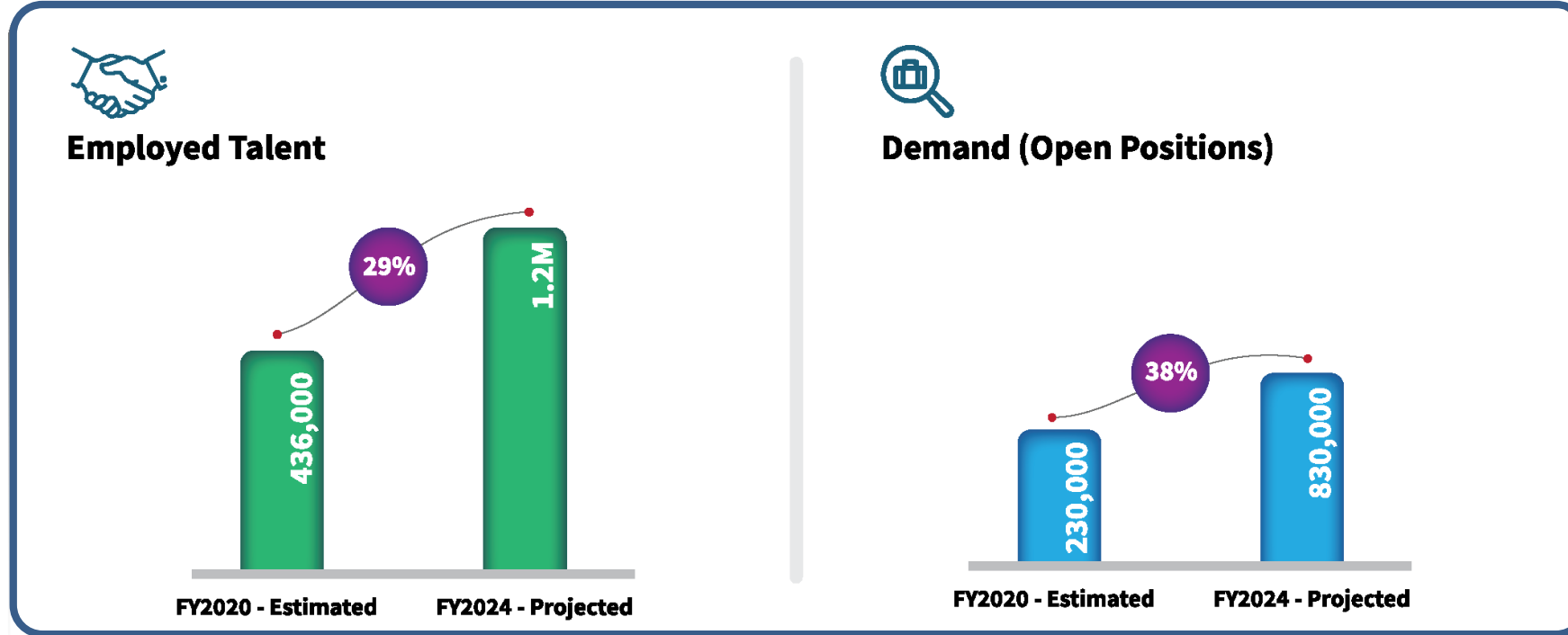# COMPETENCY STANDARDS FOR JOBS OF THE FUTURE

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# HOW ARE COMPETENCY STANDARDS DEVELOPED? The Process

- **Genesis:** Led by BCG, a research was conducted to understand the shape of future skilling/reskilling landscape.
- **Leading Research Firm Zinnov** helped build the standards together with Industry representatives.
- **80+ Industry validations** helped us define job standards for job roles across 4 technologies – AI & BDA | IOT | Cloud Computing | Cyber Security

Big Data Analysis of Global 65M+ Job Postings and 450M+ Professional Profiles

NASSCOM forms a Working Group of Experts & Leaders from the Industry

The Working Group Members meet regularly to define Job Families & NOSs. Industry Validation is key.

QRC: NASSCOM gets NSDC's Approval on all QPs. Uploaded on NSDC Website

NSQC approves QPs – become Govt. standard that are eligible for Govt. Incentive schemes

**QRC + NSQC Approval = QP Completion Process**

- The National **Occupational Standards (NOS)** specify the standards of performance, knowledge & understanding while carrying out a job in the workplace
- A set of NOSs, aligned to a job role, is called a **Qualification Packs (QPs),** that would be available for every job role in each industry sector.
- Job roles are aligned to the **National Skill Qualifications Framework (NSQF)** at various proficiency levels

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# **Demand Supply** AI/BDA demand growing faster than employed talent

**Employed Talent**

| | 29% | 1.2M |
|---|---|---|
| 436,000 | | |
| FY2020 - Estimated | | FY2024 - Projected |

**Demand (Open Positions)**

| | 38% | 830,000 |
|---|---|---|
| 230,000 | | |
| FY2020 - Estimated | | FY2024 - Projected |

**The 9 QPs covered under AI & Big Data Analytics cover approximately 75% of the total employed talent and demand of all AI & Big Data Analytics job roles in India**
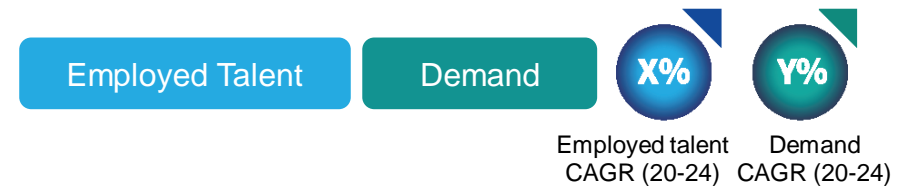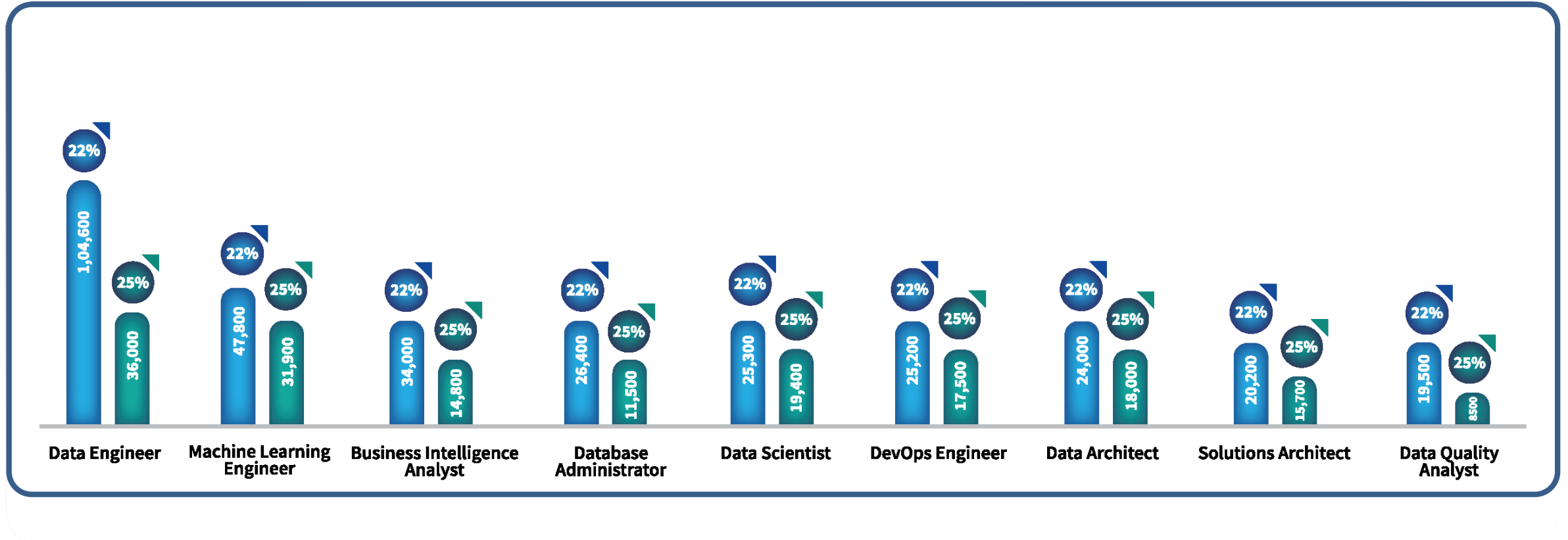
Legend

| Employed Talent | Demand | CAGR (FY 2020-24) |
|---|---|---|

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# **Demand Supply** Employed talent across 9 AI/BDA QPs is 327,000



| Role | Employed Talent | Demand |
|---|---|---|
| Data Engineer | 1,04,600 (22%) | 36,000 (25%) |
| Machine Learning Engineer | 47,800 (22%) | 31,900 (25%) |
| Business Intelligence Analyst | 34,000 (22%) | 14,800 (25%) |
| Database Administrator | 26,400 (22%) | 11,500 (25%) |
| Data Scientist | 25,300 (22%) | 19,400 (25%) |
| DevOps Engineer | 25,200 (22%) | 17,500 (25%) |
| Data Architect | 24,000 (22%) | 18,000 (25%) |
| Solutions Architect | 20,200 (22%) | 15,700 (25%) |
| Data Quality Analyst | 19,500 (22%) | 8500 (25%) |

Employed Talent    Demand    X% Employed talent CAGR (20-24)    Y% Demand CAGR (20-24)

The employment data is estimated using Zinnov research. Out of total headcount of 327,000 there is 25% overlap with other Future Skills technologies. Hence, the unique headcount of the 9 QPs is around 240,000

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# BUILD COMPETENCIES for Talent pipeline

## Perform Data Analysis

## Develop Visualization

## Pre-Process Data

## Import Data

Leverage the Competency framework established by the Industry and approved by the Government

| 01 | 02 | 03 |
|---|---|---|
| **Flexible** | **Modular** | **Stackable** |

| AI / BDA | Cloud Computing | Cyber security | Internet of Things | Web & Mobile Development |
|---|---|---|---|---|
| Technical Competencies | Technical Competencies | Technical Competencies | Technical Competencies | Technical Competencies |
| **23** | **37** | **35** | **32** | **34** |

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# Artificial Intelligence & Big Data Analytics: Create your own Job role



**Popular Job Roles**

**Job Categories**

**Technical Competencies**

| Analysis | 9 | Data Quality Analyst |
| Architecture | 7 | Business Intelligence Analyst |
| Engineering | 2 | Data Scientist |
| Administration & Governance | 5 | Data Engineer |

Data Architect

Solution Architect

Machine Learning Engineer

Database Administrator

DevOps Engineer

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# Analysis Job Category and List of Competencies
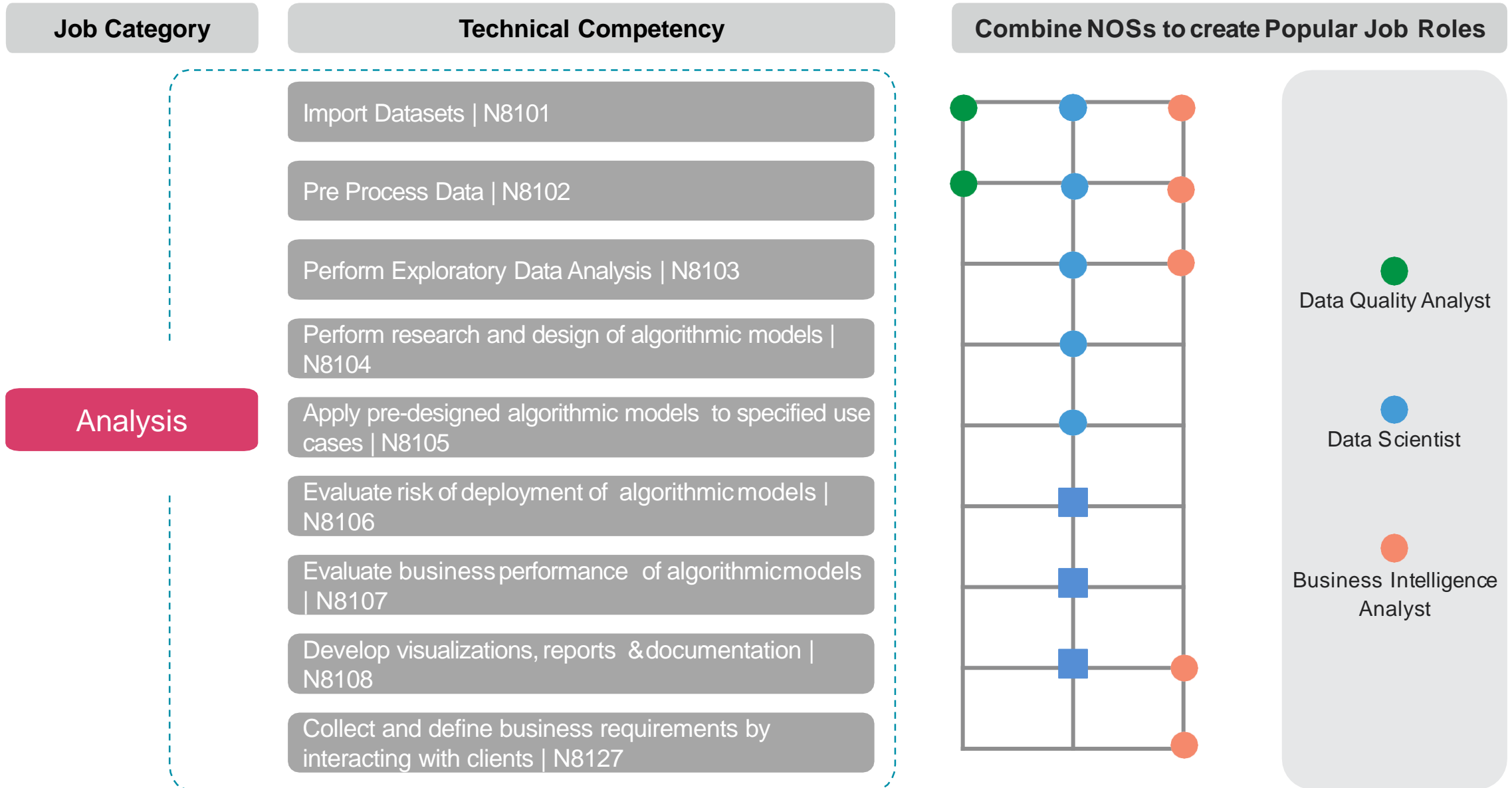
| Job Category | Technical Competency | Combine NOSs to create Popular Job Roles |
|---|---|---|

**Analysis**

- Import Datasets | N8101
- Pre Process Data | N8102
- Perform Exploratory Data Analysis | N8103
- Perform research and design of algorithmic models | N8104
- Apply pre-designed algorithmic models to specified use cases | N8105
- Evaluate risk of deployment of algorithmic models | N8106
- Evaluate business performance of algorithmic models | N8107
- Develop visualizations, reports & documentation | N8108
- Collect and define business requirements by interacting with clients | N8127

Data Quality Analyst

Data Scientist

Business Intelligence Analyst

⬤ Compulsory     ◼ Elective

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# Architecture Job Category and List of Competencies

| Job Category | Technical Competency | Combine NOSs to create Popular Job Roles |
|---|---|---|

**Architecture**

Design data architectures as per specifications I N8109

Maintain existing data architectures I N8110

Implement data storage network solutions I N8111

Develop data integrations as per specifications I N8112

Design new solution architectures as per specifications I N8113

Maintain existing architectures for solutions I N8114

Define data governance processes and structures | N8119

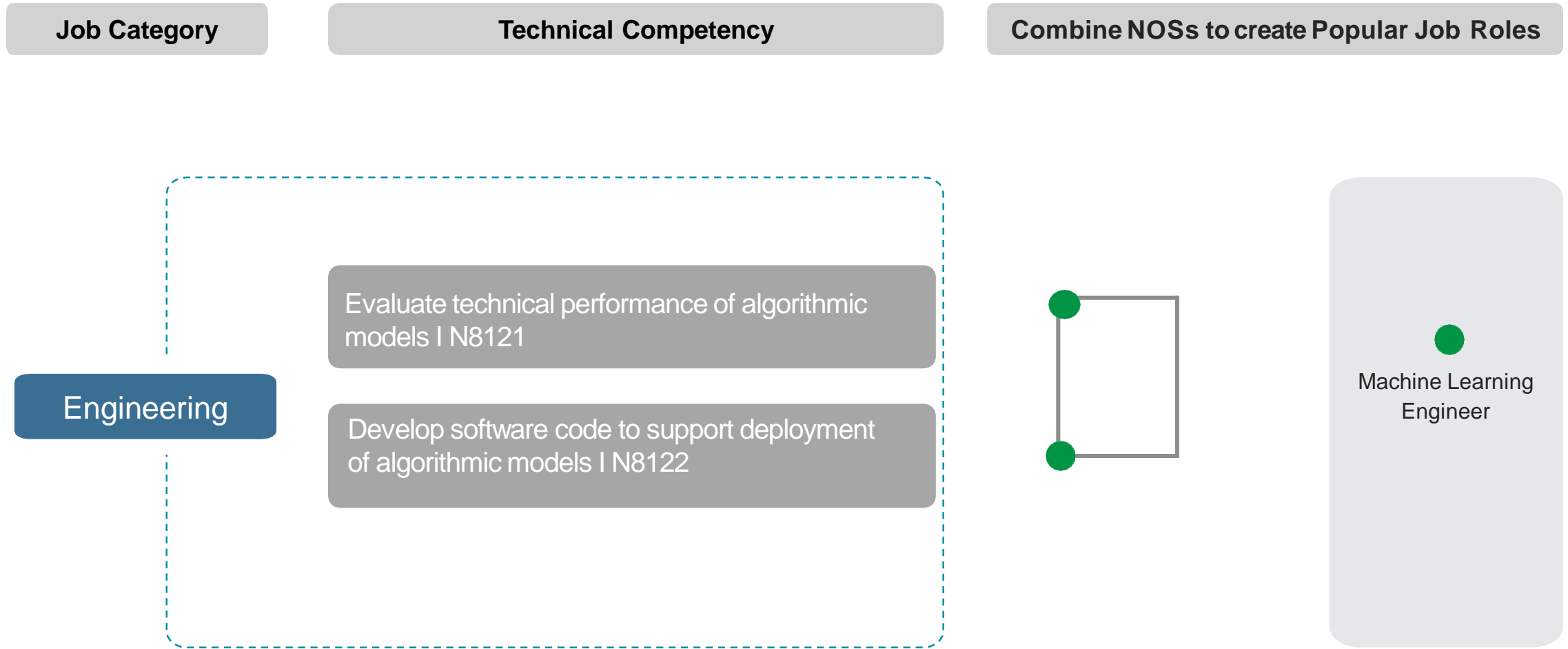- Data Engineer
- Solutions Architect
- Data Architect

Note: The NOSes and Job category are developed in collaboration with various members of the industry, across multiple verticals.
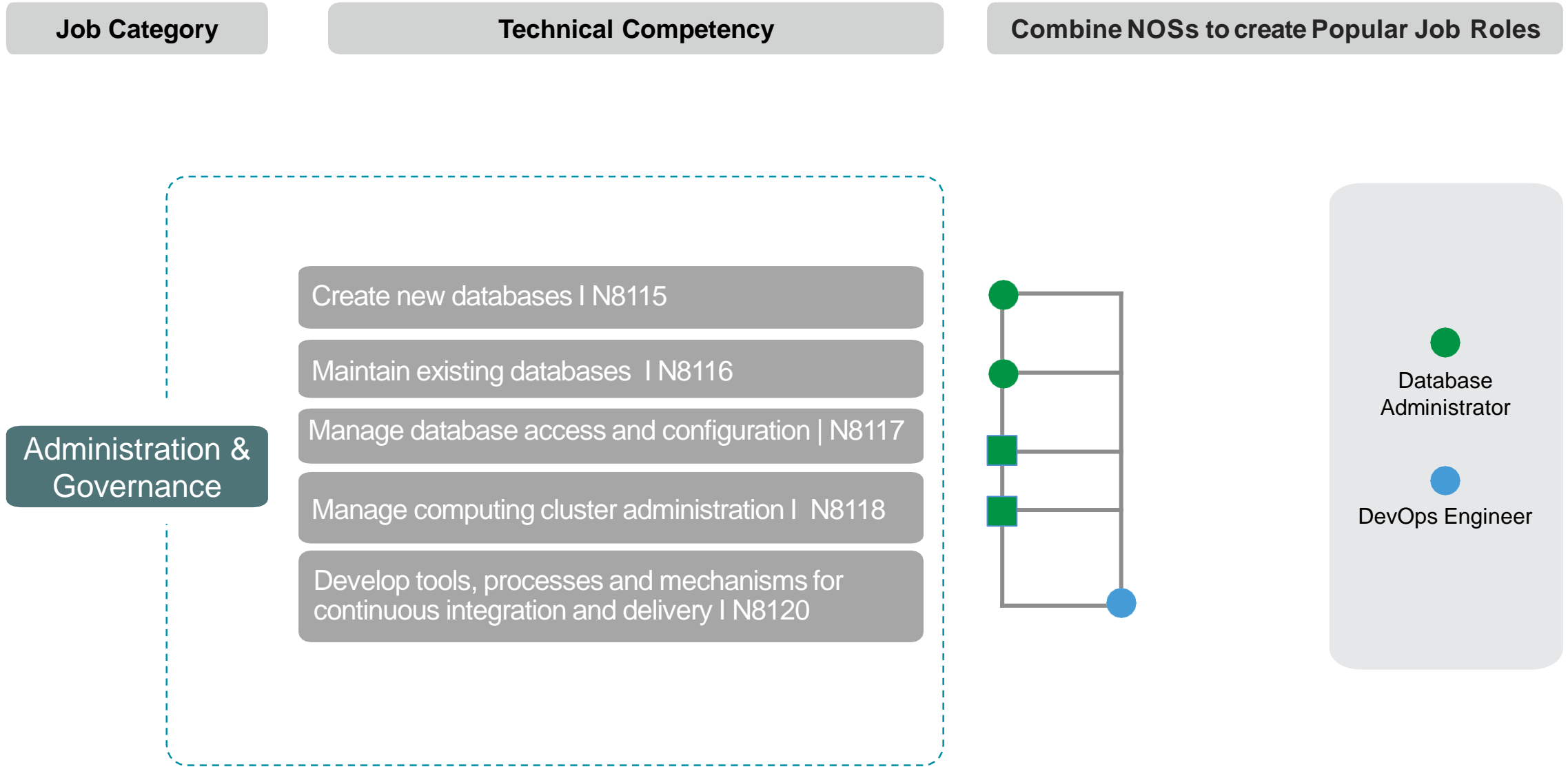
◯ Compulsory     ▢ Elective

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# Engineering Job Category and List of Competencies

| Job Category | Technical Competency | Combine NOSs to create Popular Job Roles |

**Engineering**

Evaluate technical performance of algorithmic models I N8121

Develop software code to support deployment of algorithmic models I N8122

Machine Learning Engineer

Note: The NOSes and Job category are developed in collaboration with various members of the industry, across multiple verticals.

● Compulsory        ▢ Elective

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# Admin & Governance Job Category and List of Competencies

| Job Category | Technical Competency | Combine NOSs to create Popular Job Roles |
|---|---|---|

**Administration & Governance**

- Create new databases I N8115
- Maintain existing databases I N8116
- Manage database access and configuration | N8117
- Manage computing cluster administration I N8118
- Develop tools, processes and mechanisms for continuous integration and delivery I N8120

Database Administrator

DevOps Engineer

Note: The NOSes and Job category are developed in collaboration with various members of the industry, across multiple verticals.

⬤ Compulsory     ⬜ Elective

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# Sample NOS Illustration

Every NOS is characterized by Performance Criteria, Knowledge & Understanding and Skills

| | |
|---|---|
| NOS Code | SSC/N8101 |
| NOS Title | Import data as per specifications |
| Description | This unit is about using a variety of techniques to import data into datasets or data frames. |
| NSQF Level | 6 |

| Scope | | |
|---|---|---|
| | Elements | Define data type and sources, acquire the data |
| | File Formats | xlsx, csv, json, html, xml, txt, pdf, jpg, png |

| Performance Criteria | | | |
|---|---|---|---|
| | Define data type and sources | PC1. | define the type of data to be imported |
| | | PC2. | Identify the objective of the analysis |
| | | PC3. | Define the volume of data to be imported |
| | | PC4. | Define the key variables to be imported |
| | | PC5. | Identify suitable sources for the data |
| | Acquire the data | PC6. | Perform operations to acquire the data and store it in datasets or data frames |
| | | PC7. | Populate metadata for the imported data |
| | | PC8. | Validate imported data using appropriate tools & processes |
| | | PC9. | Validate the desired output with the relevant stakeholders within the organization, if required |

| | | | | |
|---|---|---|---|---|
| **Performance Criteria** | Organizational Context | | KA1. | the purpose and aims of the statistical analysis being undertaken |
| | | | KA2. | organizational policies, procedures and guidelines which relate to importing data |
| | | | KA3. | different data sources and how to access documents and information from data sources |
| | | | KA4. | organizational policies and procedures for sharing data |
| | | | KA5. | who to consult when importing data |
| | | | KA6. | the range of standard templates and tools available and how to use them |
| | Technical Knowledge | | KB1. | The difference between various types of data. For example: enterprise vs consumer data, qualitative vs quantitative data, processed vs unprocessed data |
| | | | KB2. | Different statistical analysis sohwares, packages, libraries and tools that can be used to import & validate data such as R or Pandas |
| | | | KB3. | different functions to read data from various file formats and import it to a dataset or dataframe |
| | | | KB4. | the metadata associated with imported data and how to populate it |
| | | | KB5. | how to store and retrieve information |
| | | | KB6. | how to work on various operating systems such as linux, ubuntu, or windows |
| **Skills** | Core / Generic Skills | Reading Skills | SA1. | follow instructions, guidelines, procedures, rules and service level agreements |
| | | Analytical Thinking | SA2. | impact analysis of the various actions performed and disseminating relevant information to others |
| | | Attention to Detail | SA3. | check your work is complete and free from errors |

# COMPLETE SOLUTION : A common language across industry, academia and government



**Job Role & Technical Competency Standards**



**Technical, Behavioral and Functional Skills Analysis**



**Courses aligned to standards – Expert validated**



**SSC Assessment & Certification for Competency standards**

# NASSCOM FutureSkills Certifications

- Industry Endorsed
- Expert Validated
- Flexible Test Delivery Models
- Vendor Neutral Certifications
- Multiple Proctoring methods - Physical, Online and Auto proctoring

- Successful assessment and certification is the culmination of a learner's skilling journey and signals their proficiency on skills acquired

- Certifications are validated by experts and place the learner in an exclusive pool of certified individuals that industry can draw from..

- Certifications are available for Foundation and competency levels

- Can be deployed in two modes—retail mode for individual learners and batch mode for groups.

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# NASSCOM FutureSkills Certifications (contd)

## LEARNER BENEFITS



Get a credible assessment of your skills

Grow your career prospects

Join large community of IT Skills Talent pool

Break into the industry

Build your confidence

If you are a **fresher**, these certifications can open new doors for employability.
For **experienced professionals**, these help pave the way for upward career mobility

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