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Technology Enabled Education

2016

- Future Disruptions
- Workforce of the Future
Transforming Skills & Education Impact- Technology in Education
- ‘Technology’ Transforming Higher Education & Skills Development
Leading to an Improved Employability landscape
- Questionable Perceptions: United States Higher Education System
and other Examples
- Shared Challenges
- Systemic Transformation: The Role of Technology in the Path to the Future
- Navigating Culture
- Scaling Best Practices
- Conclusion and Recommendations





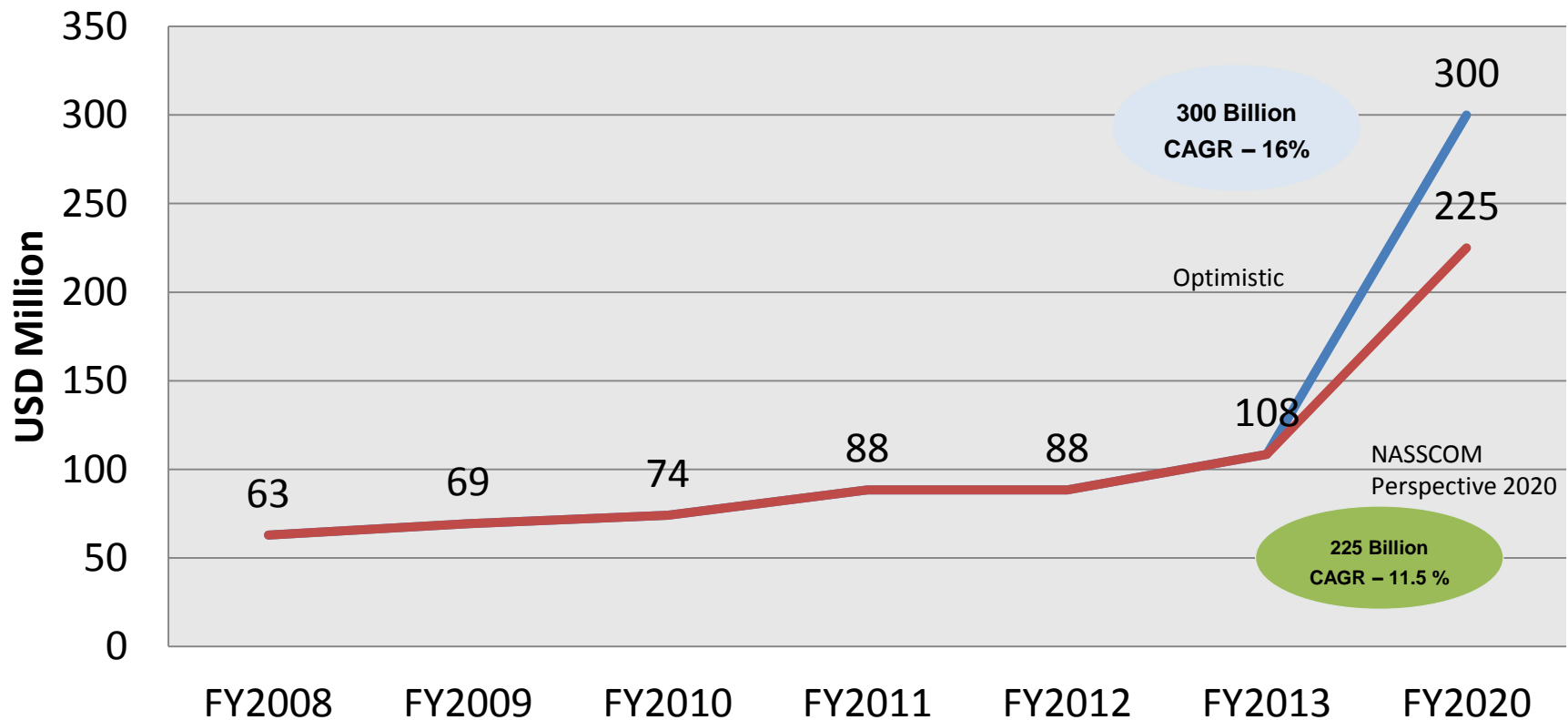
- During the next 20 years the labor force in the industrialized world is expected to decline by 4%, while in India it will increase by 32%.
- Estimated average age in India by 2020 will be 29 as against 46, 40 and 47 in Europe, USA and Japan.
- Massive multiple disruptions are predicted in the next 10 years driven by Connectivity, Technology, an Aging Global Population and Humungous Urbanization.
- There will be more than a trillion objects connected to the internet by 2025.
- The way we live, learn and work will redefine the new age entrepreneurs & jobs thereof

In view of this the Prime Minister of India desires of making India
the “Global Human Resource Capital” –
wherein the skilled Indian labor workforce could not only meet Indian needs
but also fill-in the global shortfall.

Total Revenue Projection - 2020

- Industry to most likely grow at 13% CAGR to USD 230 Billion
- Domestic market will grow to USD 50 Billion

Total Revenue (2008-2020)

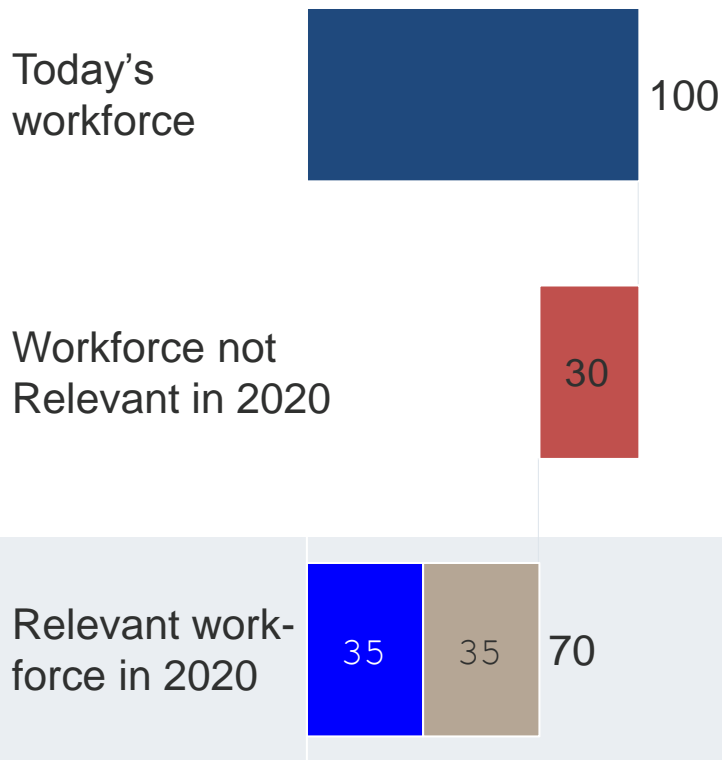


Future Disruptions & the Relevance of Today's IT Workforce

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~30 per cent of workforce will not be relevant in 2020;
50 to 60 per cent of the remaining will need to be reskilled

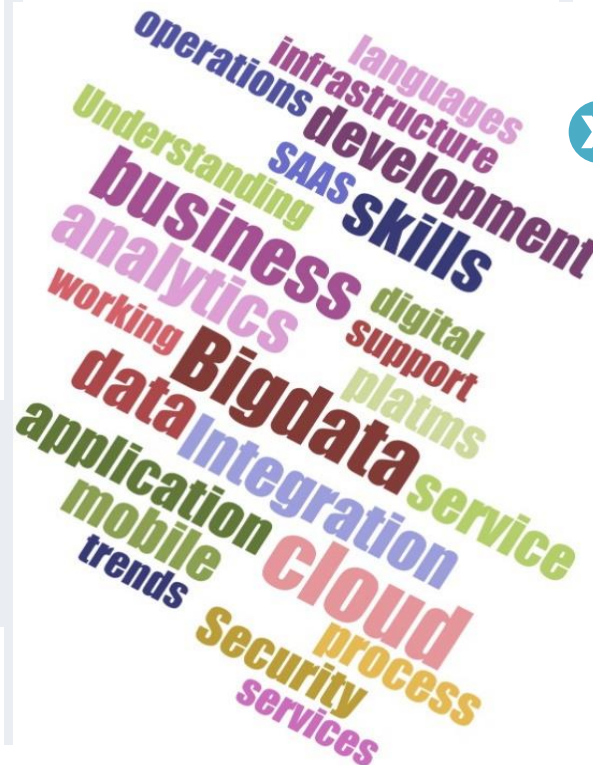
Per cent



Type of reskilling needed

Disguised CXO responses

- Traditional, transformative and Disruptive organization co-exists



Reskilling of talent

- Less than 50 per cent of the talent would be relevant without reskilling
- 60 to 70 per cent talent would be relevant with reskilling

Part-I

- Higher requirement of process engineers, energy scientists
- Shift towards electrical and electronics, embedded software engineer requirements and not just mechanical requirements
- Skills in advanced and alternate materials like plastics, composites, carbon fiber



Re-skilling

AUTOMOTIVE EXAMPLE

Shift in R&D employees 2010-30,
Powertrain R&D example
FTE thousands

Mechanical engineering +8

Thermo-dynamics -2

Software/IT -12

Chemistry/
Material Science -23

Electrical Engineering -32



New Roles, Capabilities Needed to Excel in Digital Retail

RETAIL EXAMPLE
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Part-II

Role as Described in Job Postings

Online content strategist	<i>“Combine data analysis, user research, benchmarking, and content audits to make content decisions and orchestrate content development”</i>
Search engine optimization lead	<i>“Understand customer search behaviour and be able to translate those findings into meaningful, actionable and measurable insight”</i>
Community manager	<i>“Grow the help community in Amazon.com, Facebook & Twitter...identify and develop power users to promote crowdsourcing”</i>
User experience architect	<i>“Evangelize the customer point of view... for the development multichannel experiences... connecting site, mobile and store”</i>
Mobile payments product	<i>“Drive compelling mobile user experiences and be able to develop innovative mobile payments products”</i>
Social media associate	<i>“Will assist with all social media marketing/PR efforts, from strategy and planning, to implementation and analysis”</i>
Machine learning scientist	<i>“Millions of customers, billions of transactions, petabytes of information – use this data to optimize the experience of buyers online”</i>

SOURCE: Live company job postings, May 2012

‘Technology’ Transforming Higher Education & Skills Development
Leading to an Improved Employability landscape’

Leveraging technology as a platform and an enabler for education:

- Inclusiveness
 - outreach via Webinar, Webex , Audio Video conferencing via a range of hardware, SMAC
- Affordability
 - Scale /Cheaper online learning ;Analytics; Big Data; database BI; loans & learning
- Efficiencies addressing
 - standardization -quality benchmarks /outcomes (learning pedagogy+ animation & gamming)
 - academic & administrative governance impacting educational outcomes
 - scope/ range of relevant knowledge available
 - latest hardware providing connectivity (mobile, wearable, embedded)
 - speed of accessibility
 - multiple learning styles, customized learning using blended methods - leaner and branched
 - self paced learning and assessment
 - flip class rooms & collaborative learning & research
 - assessments measuring competencies

Case Study:

Use of technology in institutions virtual /open; continuing education for real time updating of employment related competencies ; MOOCS: IIT Madras; Andhra Pradesh ;Telangana; Anna University FSIPD; Australia; UK; Canada;

‘Systemic Transformations’



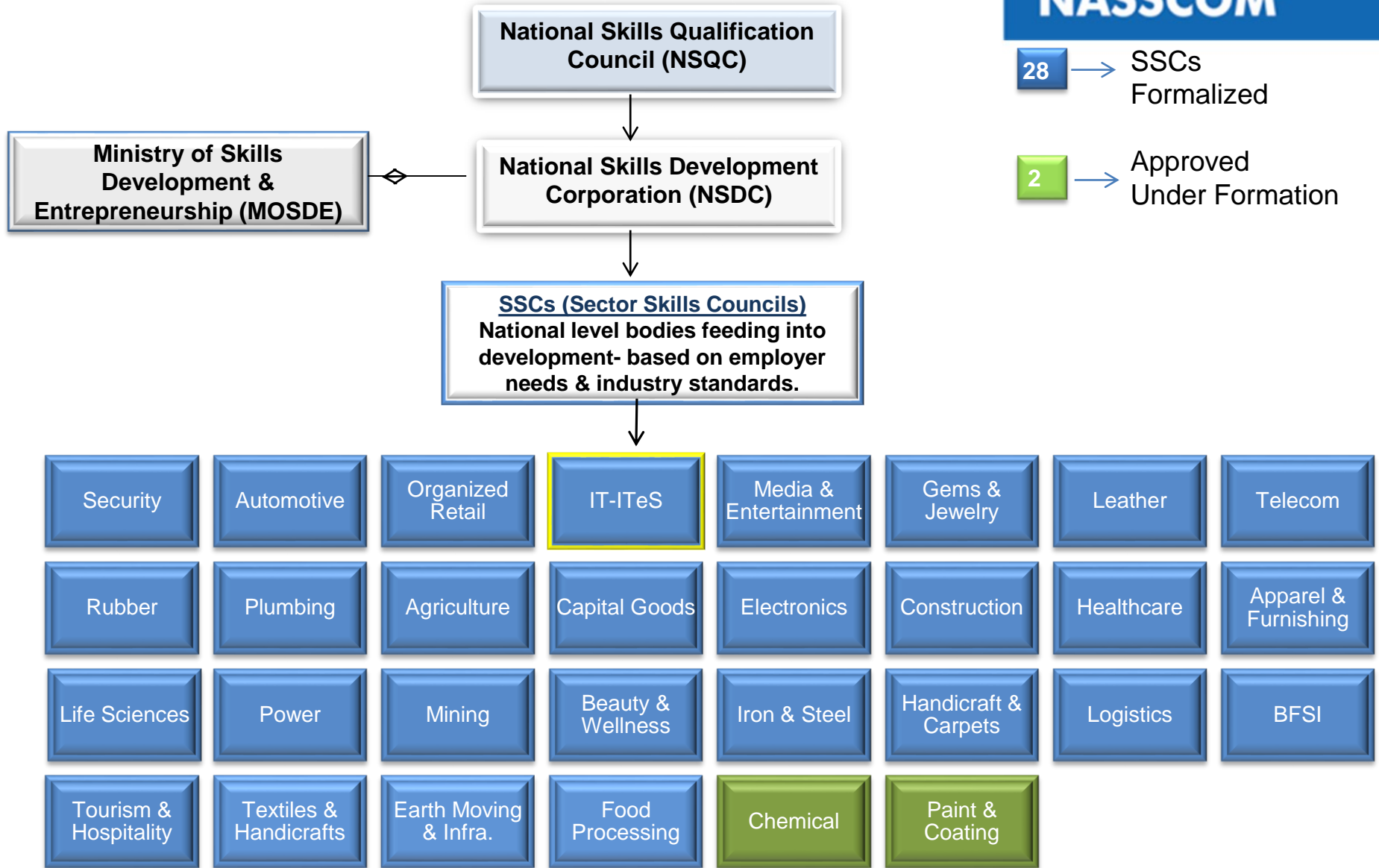
Our Vision

‘Systemic Transformation’ should:

- Create a sustainable industry-ready talent pipeline by scaling quality capacity
- Enhance employability at all levels, leveraging technology and our experience in large-scale skill development, in a sustainable manner across skill sectors
- Nurture diversity and inclusive growth to stimulate economic activity relevant to the local ecosystem
- Make education inclusive, affordable & efficient

Systemic Transformation: Sector Skills Councils in India

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28 → SSCs Formalized

2 → Approved Under Formation

Capacity building for Present & Emerging Occupations -Right Candidate for the Right Job

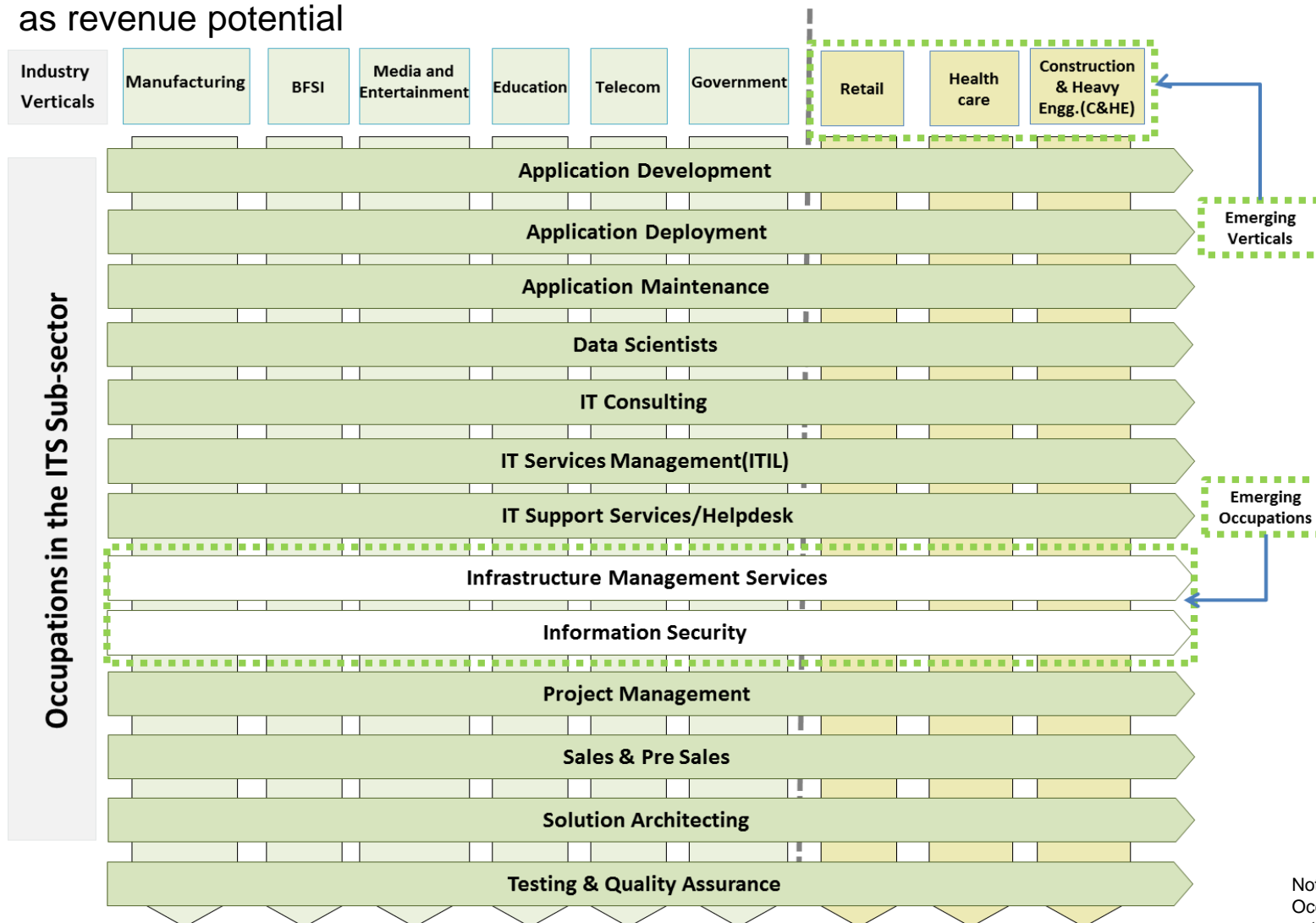
Industry Structure & QPs

IT-ITeS
Industry
Sector

Industry Sub-Sector	Domestic	Transnational		
		Entry- Level	Middle-Level	Leadership Level
ITS (IT Services)	1	19	91	25
BPM (Business Process Management)	5	16	111	30
ERD (Engineering and R & D)	0	15	48	54
SPD (Software Products and Development)	0	18	63	21
Total	6	68	313	130

ITS Sub-sector: Matrix Structure

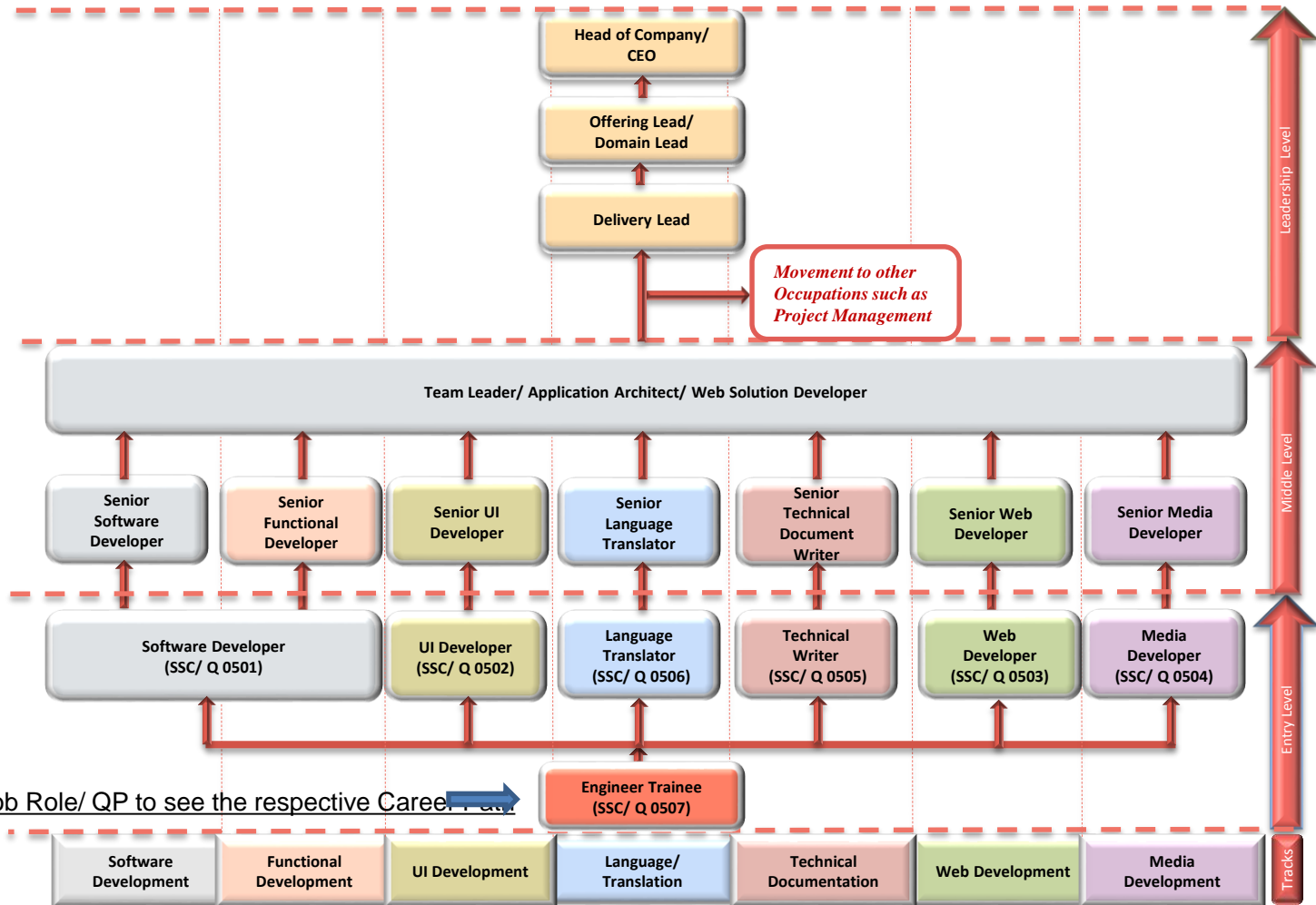
Infrastructure Management Services(IMS) and Information Security are seeing a lot of movement in terms of skill development as well as revenue potential



Note: All the Horizontals - Occupations, Tracks and Job Roles cut across the Industry Verticals.

Career Map for Application Development

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N-S-D-C
National Skill Development Corporation

QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR IT-ITes INDUSTRY

What are Occupational Standards(OS)?

- OS describe what individuals need to do, know and understand in order to carry out a particular job role or function
- OS are performance standards that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding

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Introduction

Qualifications Pack-Security Analyst

SECTOR: IT-ITES

SUB-SECTOR: IT Services

OCCUPATION: Information Security

REFERENCE ID: SSC/ Q 0901

Security Analyst in the IT-ITes Industry is also known as a Information Security Analyst/Engineer.

Brief Job Description: Individuals at this job are responsible for protecting information and information systems from unauthorized access, use, disclosure, disruption, denial, misuse, denial, inspection, recording, or destruction. They also need to ensure the confidentiality, integrity and availability of data to the 'right' users within/outside of the organisation.

Personal Attributes: This job may require the individual to work independently and take decisions for his/her own area of work. The individual should be result oriented and have a high attention for detail. The individual should also be able to demonstrate communication skills, logical thinking along with willingness to undertake desk-based job with long hours.

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Qualifications Pack For Security Analyst

N-S-D-C
National Skill Development Corporation

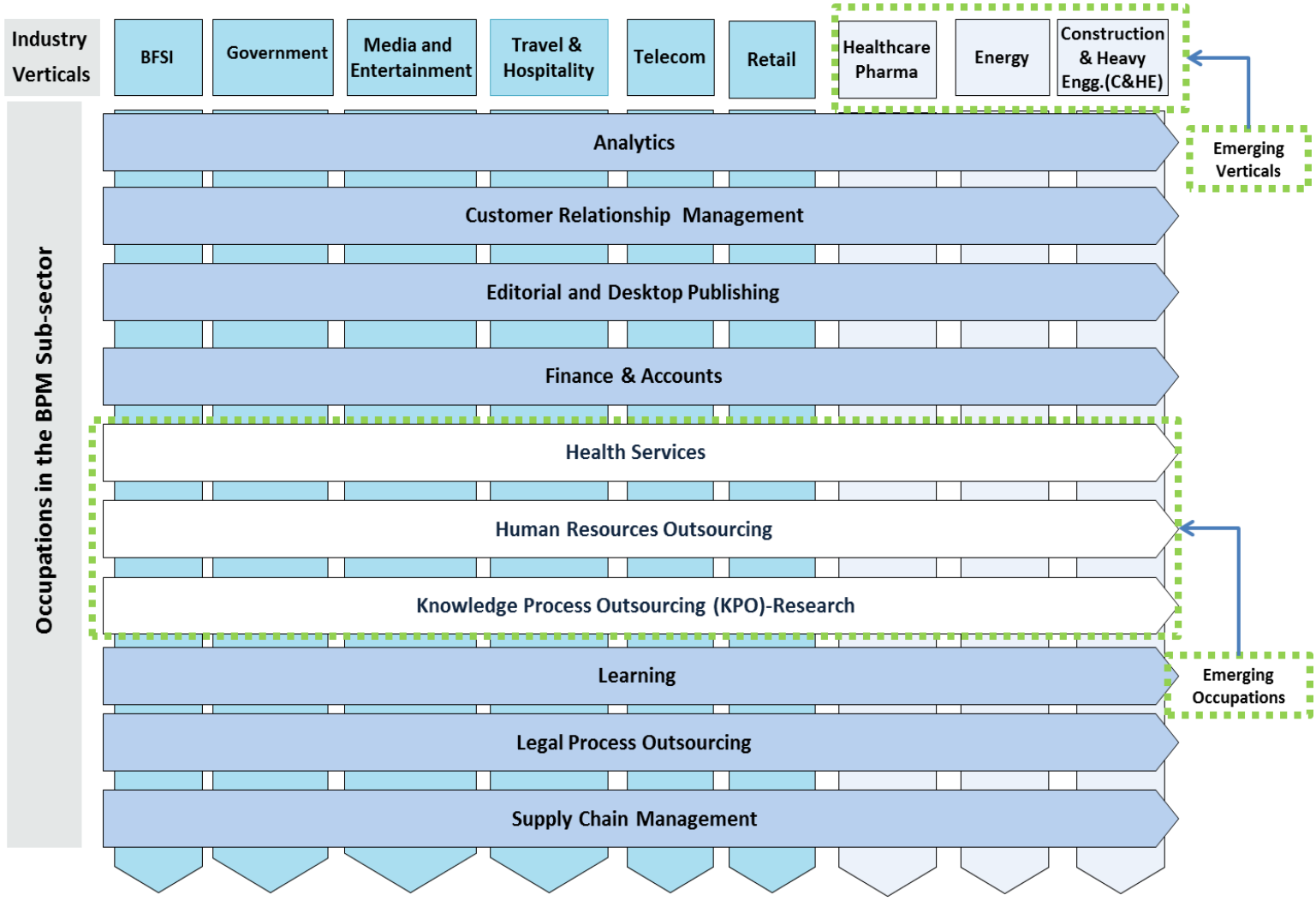
Job Details

Qualifications Pack Code	SSC/ Q 0901		
Job Role	Security Analyst <small>This job role is applicable in both national and international scenarios</small>		
Credits(NVEQF/NVQF/NSQF)	Version number	0.1	
Sector	Drafted on	30/04/13	
Sub-sector	Last reviewed on	30/04/13	
Occupation	Next review date	30/06/14	

Job Role	Security Analyst (Information/System Security Analyst/Engineer,
Role Description	Ensure the confidentiality, integrity and availability of system and data to the 'right' users within/outside of the organisation.
NVEQF/NVQF level	7
Minimum Educational Qualifications	Diploma in Engineering or any graduate course
Maximum Educational Qualifications	Bachelor's Degree in Science/Technology/Computers
Training (Suggested but not mandatory)	Certification in Information systems or related fields, Basic soft skills training
Experience	0-2 years of work experience/internship in security
Applicable National Occupational Standards (NOS)	<p>Compulsory:</p> <ol style="list-style-type: none"> 1. SSC/ N 0901 (Contribute to managing information security) 2. SSC/ N 0902 (Co-ordinate responses to information security incidents) 3. SSC/ N 0903 (Install and configure information security devices) 4. SSC/ N 0904 (Contribute to information security audits) 5. SSC/ N 0905 (Support teams to prepare for and undergo information security audits) 6. SSC/ N 9001 (Manage your work to meet requirements) 7. SSC/ N 9002 (Work effectively with colleagues) 8. SSC/ N 9003 (Maintain a healthy, safe and secure working environment) 9. SSC/ N 9004 (Provide data/information in standard formats) 10. SSC/ N 9005 (Develop your knowledge, skills and competence) <p>Optional: Not Applicable</p>
Performance Criteria	As described in the relevant OS units

BPM Sub-sector- Matrix Structure

Analytics, Health, HRO and KPO are seeing a lot of movement in terms of skill development as well as revenue potential. Consequently, these require maximum skill development efforts

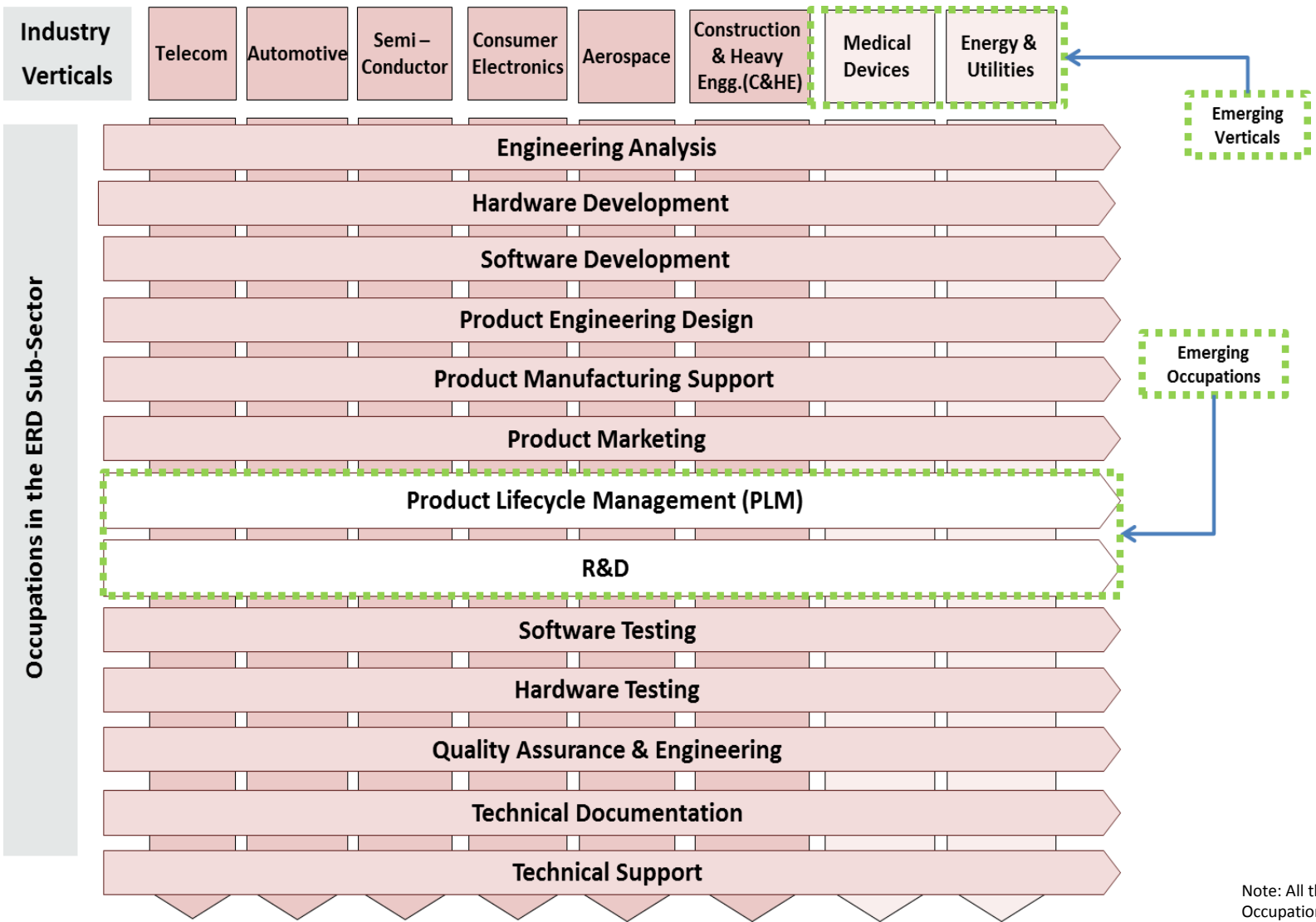


Note: All the Horizontals - Occupations, Tracks and Job Roles cut across the Industry Verticals.

ER&D Sub-sector- Matrix Structure



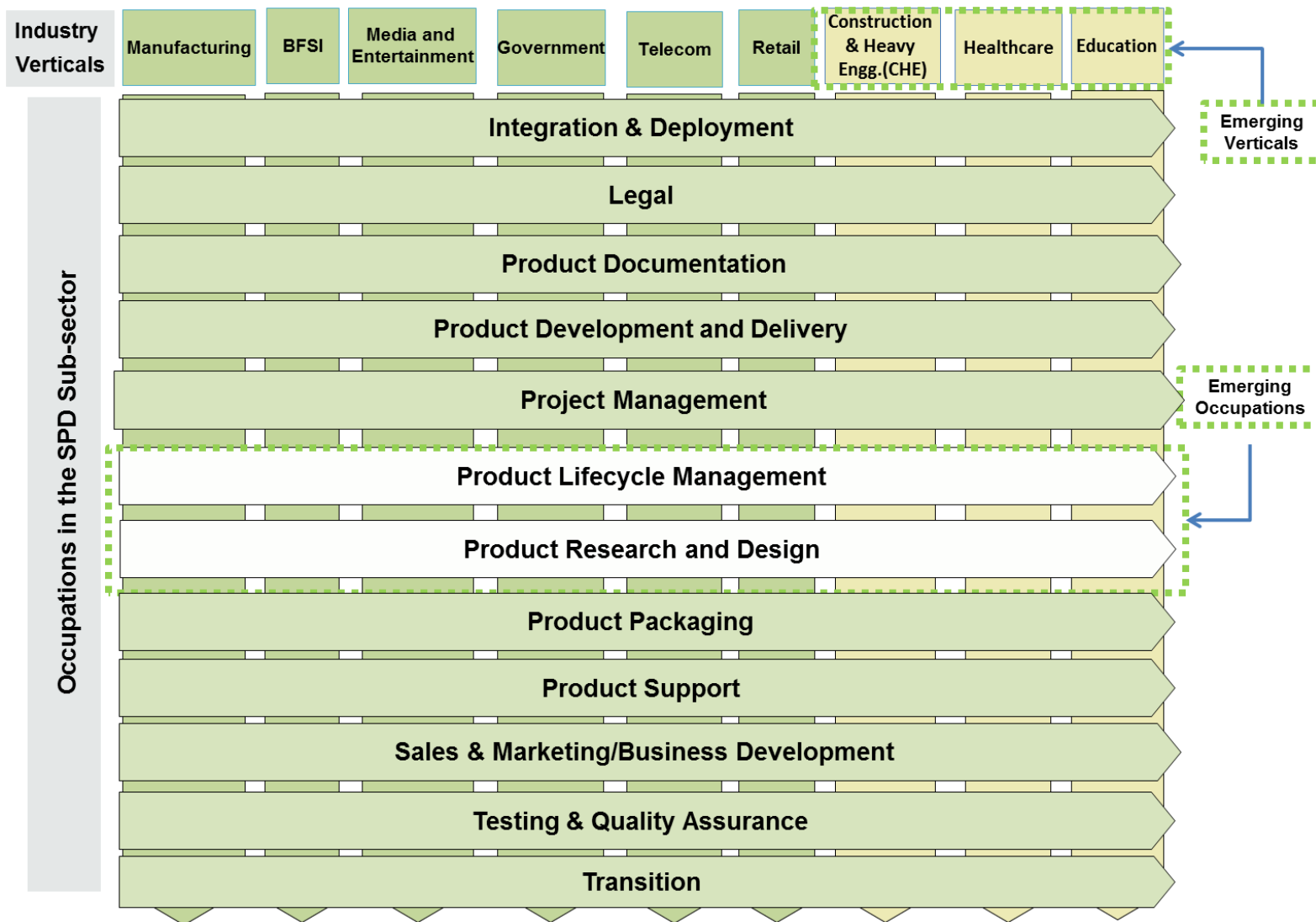
R&D and PLM are the emerging 'occupations' in the R&D space. Skills required for R&D are extremely high end, but in terms of revenue and employability R&D has a cascading effect on the downstream activities



Note: All the Horizontals - Occupations, Tracks and Job Roles cut across the Industry Verticals.

SPD Sub-sector- Matrix Structure

SPD too has a similar trend in terms of Product R&D and PLM being the emerging occupations. Trend is towards managing an entire lifecycle of product as against one time product development.



Note: All the Horizontals - Occupations, Tracks and Job Roles cut across the Industry Verticals.

Proposed BVOC Framework

For : **IT-ITeS Industry – ITS, ERD, SPD**

NSQF

Year 1 & 2

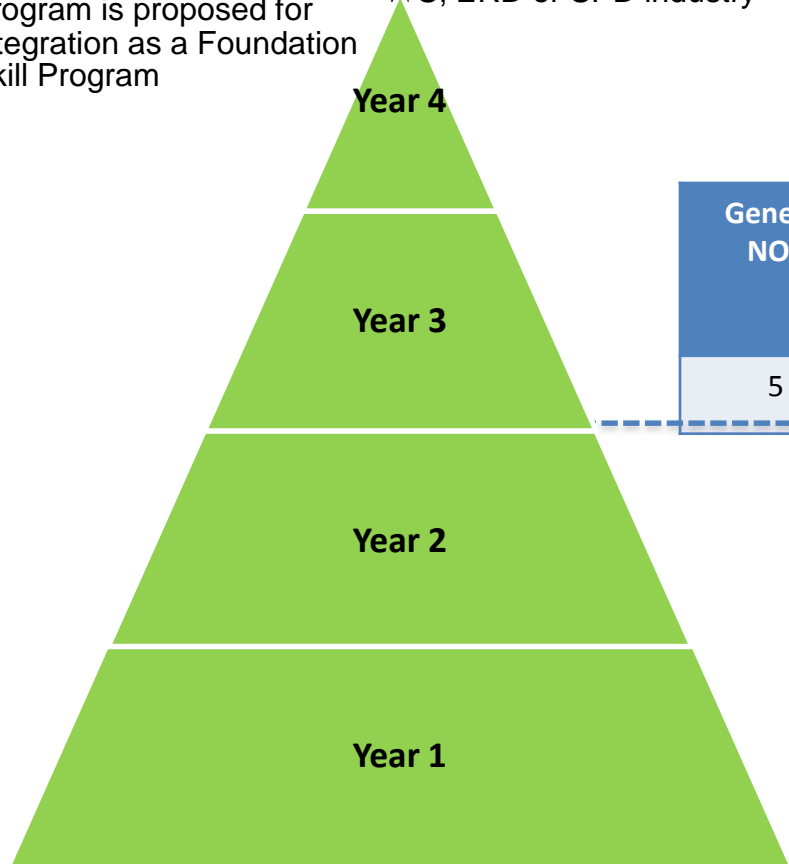
Students complete **Foundation Skills Program** along with current curriculum
 Current **FSIT or FSIPD** Program is proposed for integration as a Foundation Skill Program

Year 3 & 4

Students select any of the **3 Specialization offerings + Internship Program** with ITS, ERD or SPD industry

Certification

Successful Completion of the Program awards a **NOS Certificate for ERD or SPD Industry**



Generic NOS	Specialized QP's – based on sub-sector
5	17+16+18

Year 4 Specialization + Internship

Year 3 Specialization

Year 2 Foundation Skills

Year 1 Foundation Skills

Job Roles offered as Specialization in Year '3' for ITS, ERD & SPD Industry :
 (a) Testing
 (b) Data Analytics
 (c) SMA

Bachelors of Science / Bachelor of Science + F&A

Bachelors of Vocation / Bachelors of Vocation + F&A

Challenges & Perceptions

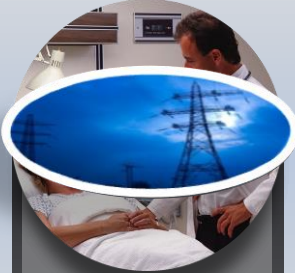
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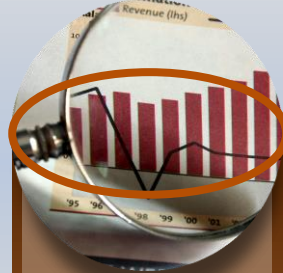
Education



Efficiencies



Inclusiveness



Affordability
/Economic
Development



National
Growth

Technology In Education