



WORLD BANK GROUP
Jobs



SOLUTIONS
FOR YOUTH
EMPLOYMENT

Using Artificial Intelligence for Job Matching Platforms

Thursday, February 20, 2020 | 9:30am – 11:00am EST | G8-090 & Webex

Skilllab

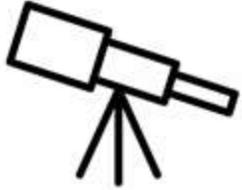
Karim Bin-Humam, Director of Project Delivery

Skilllab

AI-based competency
profiling for labour market
inclusion

Skillob Vision & Mission

We outlined our “North Star” to guide us over a three year horizon...



Vision

A world in which everyone is empowered to follow their dreams and access opportunities regardless of their background to contribute socially and economically to their society.



Mission

To help uncover personal pathways to social and economic participation based on a person’s skills, interests, and values.



Partners

Public, private, and civil society organizations working to support the inclusion of people traditionally excluded from labour markets

Labour market marginalization

Traditional labour market approaches exclude disadvantaged groups

Who are you?



Syrian, Woman, Refugee

Exclusion



Titles



- Project manager
- Transfer pricing consultant
- Education specialist
- Athletics director

Degrees



- Bachelor of Science (B.Sc.)
- Master of Fine Arts (MA)
- Certified Public Accountant (CPA)
- Doctor of Medicine (MD)

Networks



- Employers & academic references
- Industry associations and trade groups
- References

Labour market inclusion

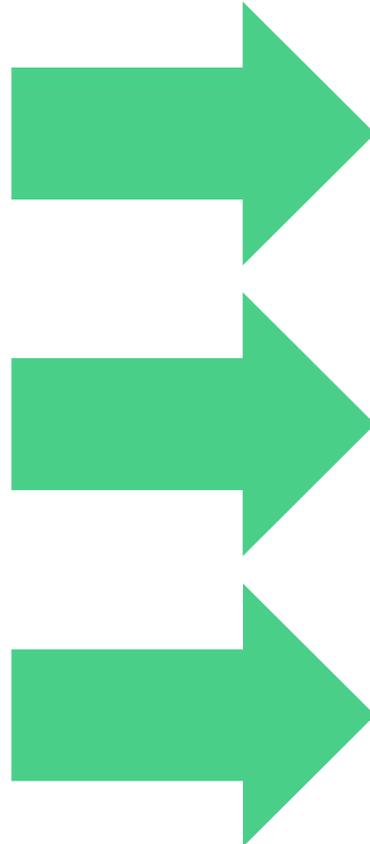
Competency profiling makes skills visible and marketable

What can you do?



Reem Nouh

Inclusion



Skills



- Sterilization techniques
- Handle customer expectations
- Utilize measurement instruments
- Cater meals for large events

Knowledge



- Organic chemistry
- Human physiology
- Clinical cytology
- Event planning & coordination
- Industrial cooking processes

Ambitions

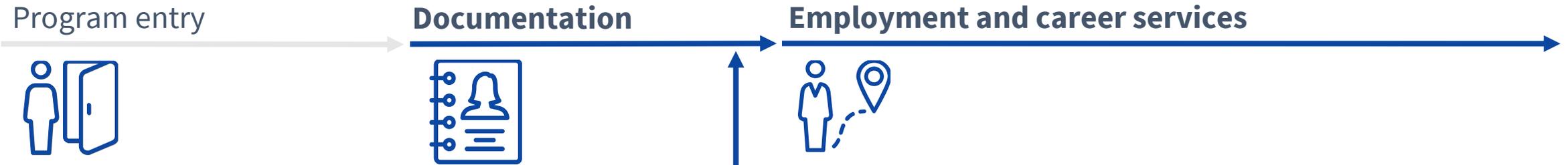


- Flexible hours to support a family
- Human interaction
- Culture
- Event planning & coordination

Use Case: Refugees in Europe



Use Case: Refugees in Europe



An AI-based skill profiling tool generate rich skill profiles for job seekers fast and in any language.



Key features



Job seekers use mobile app in **native language** and results get automatically translated



Independently performed skill assessment, using a **database of 13,485 skills**



Skill-based matching to 2,942 occupations in the European labour market



Culturally and sector specific **resume templates** to export results

Our Solution: Competency Profiling with AI

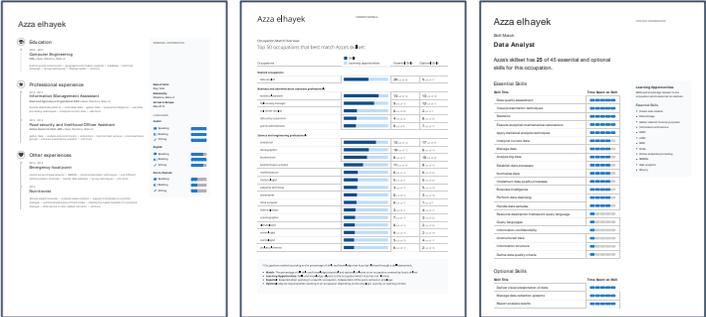
Our Skill assessment is always embedded in existing services



Job Seekers

Use mobile app to perform skill assessment and explore results

Invites



Skill Assessment is used for:



Career Counselling by showing how a job seekers skill set fits into the job market



Skill and competence-based **job matching**



Identify learning opportunities to recommend **vocational training**



Counsellor

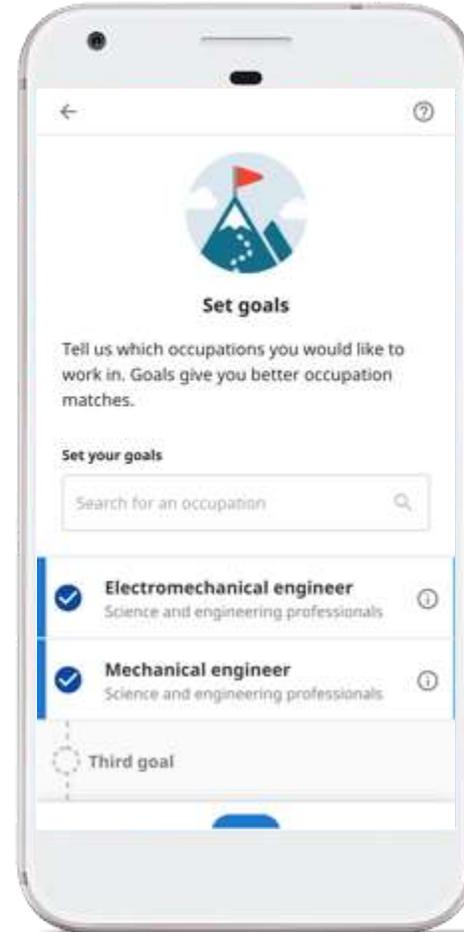
Can access the results of skill assessment via admin portal

Mobile application: On-boarding

As a first step, job seekers register to perform the skill assessment

Invitation

- 1 Career advisors invite job seekers by email
- 2 Job seekers install app or register online for skill assessment.
- 3 Job seekers register and provide personal information for resume



Intuitive workflow

The mobile app is designed for ease of use and allows job seekers to develop their skill profile independently and on their own device

Mobile application: Timeline

Job seekers build a timeline of all their jobs, education and other experiences

Timeline

Job seekers add all relevant experiences

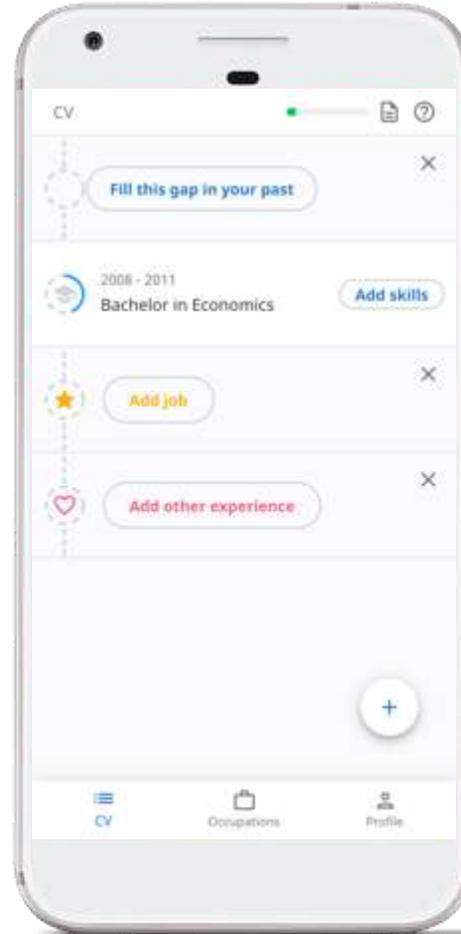
Jobs



Education



Other



Guidance to complete timeline

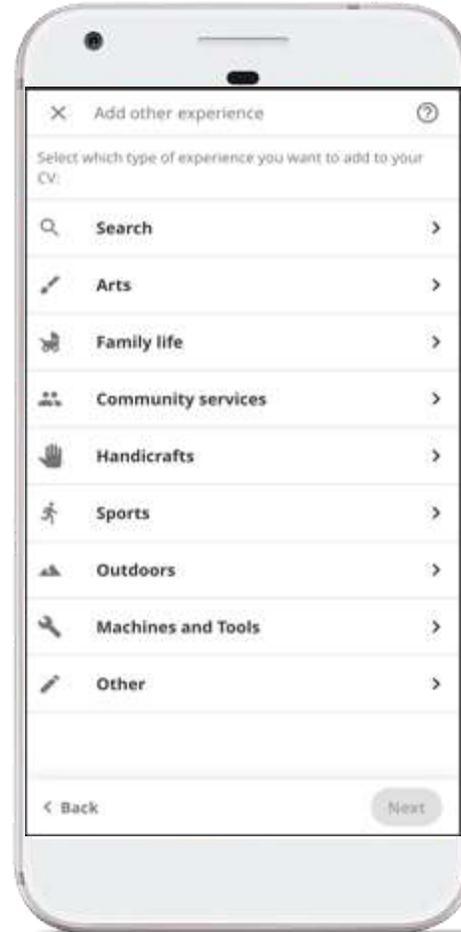
Messages guide the user to file all relevant experiences

Mobile application: Timeline

Job seekers build a timeline of all their jobs, education and other experiences

Timeline

Capture informal experiences during which skills are learned



Skills are captured outside of the formal workforce

Parenting for example requires child care skills, planning and logistics, and many other skills

Mobile application: Skill assessment

Job seekers perform a skill assessment for every experience on their timeline

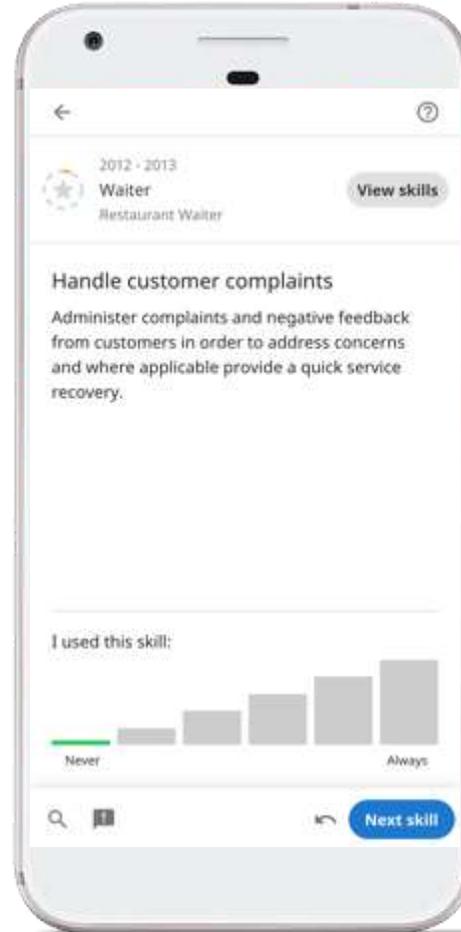
Assessment

Progress indicator

The assessment continues till the assessment engine explored experience

Experience intensity

Job seekers indicate if and how intensely they used a skill



Interview by assessment engine

Drawing on a database of 13,485 skills, our Artificial Intelligence (AI) interviews the job seeker

Mobile application: Occupation Matches

Job seekers use the occupation match overview to orient themselves in the labour market

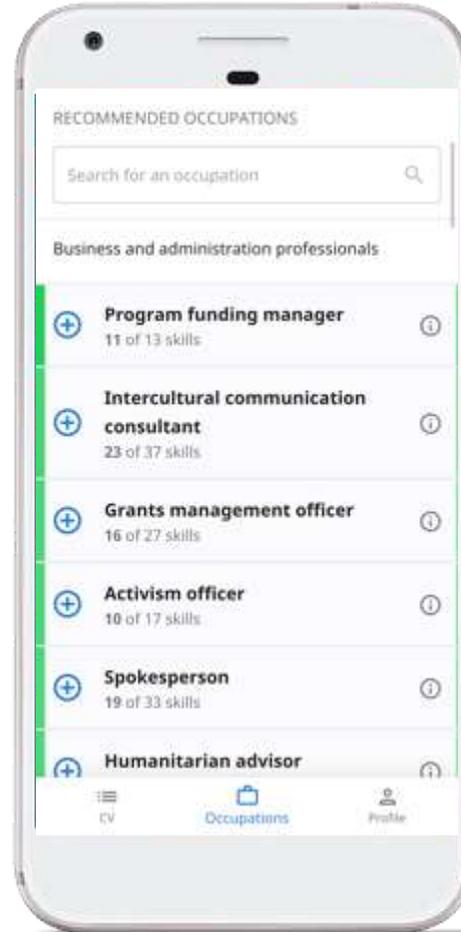
Career goal orientation

Users can browse occupations, review their suitability, and adapt their stated career goals

Ranked matches

A comprehensive list of occupations ranked by skill fit

Occupation Matches



Searchable list of occupations

Users can explore how their skill set matches to any of nearly 3,000 recognized occupations

Mobile application: Skill matches

Users can explore in detail how their skills match any occupation

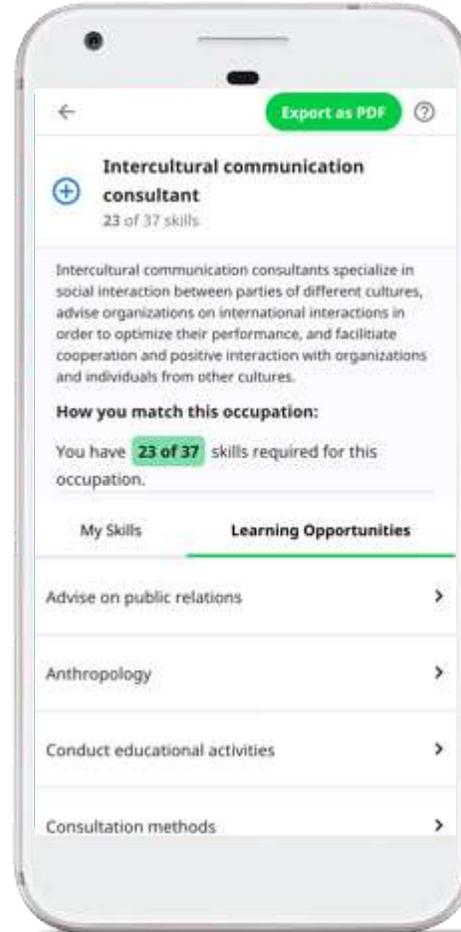
Occupation description

The user can use the model to explore specific occupations in greater depth

Skill Matches

Relevant skills

A breakdown of which skills the user has which are relevant to a occupation



Learning opportunities

Highlights the skill gap of the user for an occupation, and forms the basis for targeted upskilling and training

Skill profile: Resume

A visually appealing overview of all experiences and the main skills acquired during those

Automatic generation

Job seekers choose a design template and export their resume as PDF document in any of the 27 supported languages

Explore Results

Azza elhayek

Education
2002 - 2007
Computer Engineering
IUG - Gaza, Palestine, State of
leather goods components • geographic information systems • database • technical drawings • survey techniques • dispose waste • +3 more

Professional experience
2014 - 2017
Information Management Assistant
Food and Agriculture Organization FAO - Gaza, Palestine, State of
identify statistical patterns • normalize data • gather data • business intelligence • use data processing techniques • interpret current data • +48 more

2013 - 2014
Food security and livelihood Officer Assistant
Action Contre la Faim ACF - Gaza, Palestine, State of
gather data • analyze economic trends • economics • monitor field surveys • interview focus groups • conduct quantitative research • +47 more

Other experiences
2014 - 2018
Emergency focal point
record survey measurements • SAB000 • visual presentation techniques • use different communication channels • handle data samples • survey techniques • +12 more

2012
Nutritionist
discuss weight loss plan • prepare lesson content • support individuals on nutrition changes • nutritional adequacy of food intake • identify the health benefits of nutritional changes • offer advice on diet-related concerns • +5 more

PERSONAL INFORMATION
Date of birth
May 1984
Nationality
Palestine, State of
Arrival in Europe
May 2018

LANGUAGES
Arabic
Speaking: ██████████
Reading: ██████████
Writing: ██████████
English
Speaking: ██████████
Reading: ██████████
Writing: ██████████
Dutch; Flemish
Speaking: ██████████
Reading: ██████████
Writing: ██████████

Application-ready resume

Listing all experiences and skills, job seekers can include this document in any application

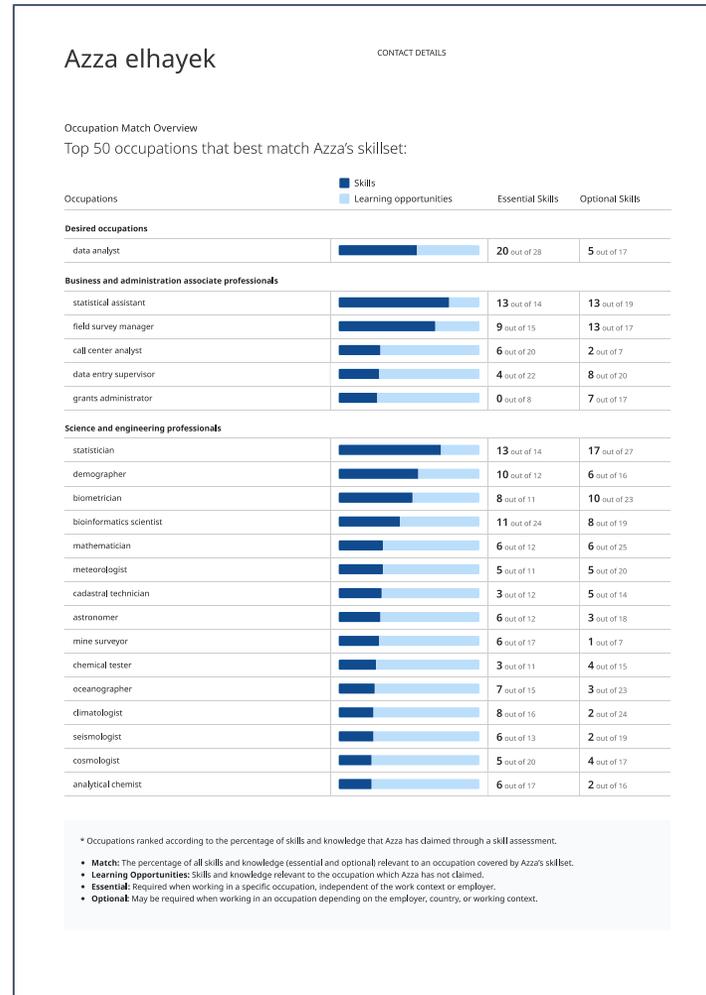
Skill profile: Occupation overview

A ranked list of occupations to which a job seeker's skills match best

Skill-based matching

Based on their skill assessments, job seekers are matched to 2,942 occupations. All occupations are ranked by their skill match, and show any learning opportunities.

Explore Results



Orientation in the labour market

An ideal foundation for career advisors to propose new employment opportunities and educational pathways

Skill profile: Skill match

A detailed analysis of how a job seeker's skill set matches to a specific occupation

Detailed overview

At one glance, career advisors see all the skills a job seeker holds or needs to learn to pursue a specific occupation

Explore Results

Azza elhayek

CONTACT INFORMATION

Skill Match

Data Analyst

Azza's skillset has 25 of 45 essential and optional skills for this occupation.

Essential Skills

Skill Title	Time Spent on Skill
Data quality assessment	██████████
Visual presentation techniques	██████████
Statistics	██████████
Execute analytical mathematical calculations	██████████
Apply statistical analysis techniques	██████████
Interpret current data	██████████
Manage data	██████████
Analyze big data	██████████
Establish data processes	██████████
Normalize data	██████████
Implement data quality processes	██████████
Business intelligence	██████████
Perform data cleansing	██████████
Handle data samples	██████████
Resource description framework query language	███
Query languages	███
Information confidentiality	███
Unstructured data	███
Information structure	███
Define data quality criteria	███

Learning Opportunities

Skills and knowledge relevant to the occupation which Azza has not claimed.

Essential Skills

- Create data models
- Data storage
- Gather data for forensic purposes
- Information architecture
- LDAP
- LING
- MDX
- N1QL
- Online analytical processing
- SPARQL
- Web analytics
- XQuery

Optional Skills

Skill Title	Time Spent on Skill
Deliver visual presentation of data	██████████
Manage data collection systems	██████████
Report analysis results	██████████

Personalized career advise

Career advisors get an ideal foundation to propose new employment opportunities and educational pathways

Administration portal: Review user profiles

Detailed review of individual skill profiles for improved career services

Individual Skill Profiles

Review in detail any individual's complete skill profile

Browse & Search

Search for specific skills and occupation matches

The screenshot displays the SkillMap administration portal for a user profile. The browser address bar shows the URL: .app/projects/admin/amsterdam/profiles/513. The page title is "SkillMap Proof of Concept". The user profile is for "Mohammed [REDACTED]". The profile status is "Active". The user has 6 experiences and 188 skills. The last activity was 12 days ago. The profile is viewed in the "SKILLS" tab. A search bar is present above the "Experience Skills" table. The table lists various skills with their corresponding strength bars, job titles, and keywords.

Search	Strength	Experiences	Experience Types	Keywords
Experience Skills				
Follow health and safety procedures in construction	■■■■■	Bouwerker, Carpe...	job	bicycle mechanic, ...
Work ergonomically	■■■■■	Bouwerker, Carpe...	job	bicycle mechanic, ...
Use safety equipment in construction	■■■■■	Bouwerker, Carpe...	job	bicycle mechanic, ...
Maintain work area cleanliness	■■■■■	Bouwerker, Carpe...	job	bicycle mechanic, ...
Keep personal administration	■■■■■	Bouwerker, Carpe...	job	bicycle mechanic, ...
Maintain relationship with suppliers	■■■■■	Bouwerker, Motor...	job	bicycle mechanic, ...
Inspect construction supplies	■■■■■	Bouwerker, Carpe...	job	carpenter, constru...
Provide customer follow-up	■■■■■	Fracht, Ma...	job	bicycle mechanic, ...

Generate Documentation

Automatically generate skill profile documents for the job seeker

Skill profile access

Job seekers and career advisors access the Skill Profile in four formats



Mobile Application

Mobile application: Job seekers explore all results directly on their mobile phone



Admin Portal

Web interface that career advisors use to administer and monitor Skill Profiles



Documents

Skill profile can be exported as PDF, using different design templates



API connection

Skillob's skill assessment tool can be integrated into external systems via an API feed

Results



 **Google AI**
Winner Impact Challenge

Google.org Impact Challenge
Award winning use of AI for social good

Why AI?

The benefits of using AI to capture competencies



Navigate Complexity

Quickly zero in on the relevant competencies among thousands



Aided Expression

Reduce the burden of self-expression by guiding the user to navigate their experiences and competencies



Exponential Improvement

Reduce the burden of self-expression by guiding the user to navigate their experiences and competencies

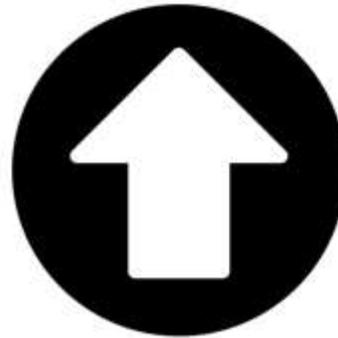
Benefits for marginalized job seekers

Uncovering one's own hidden talents

"I was embarrassed because I haven't worked for the past few year while I was raising my children. But to see "Home Manager" on my resume and all the skills I gained was really exciting!"

Rasha, Syria

Confidence



"At first I was too embarrassed to participate because I know I have no work experience, but now I feel confident because I believe that I have skills to offer."

Anwar, Iraq

"I was really happy that I could comfortably express myself in my native language, knowing that employment services would see the results in Finnish"

Abdallah, Syria

Help job seekers take ownership and control over their career planning

"After seeing the results, I feel encouraged to be more ambitious about my future. I have the feeling that I used to underestimate my abilities"

Hiba, Iraq

Benefits for marginalized job seekers

A new way to explore one's own skills and discover opportunities

"The application helped me to dust off skill from my past that I had even forgotten I even had."

Taha, Sudan

"I've been in Amsterdam for four years now. If I had this application when I arrived, it would have saved so much time and effort to plan my future here."

Jalal, Yemen

Inspiration



Help job seekers explore themselves and new opportunities

"Before using the app, I really struggled capture and express the skills I got in my past jobs here in Greece."

Moses, Gambia

"I was completely surprised that I am not too far from being a 3D animator which could be a great option if a can't find work as a game developer"

Regis, Brazil

Benefits for marginalized job seekers

Taking ownership over the job-placement process

“Employment services only ask us about our certificates. They never ask us what we can actually do. I think the skill profile covers the gap of information that our counsellors badly need.”

Majed, Palestine

“For the first time I feel that I have a plan that I created myself and want to follow. I know what I want to reach.”

Abeer, Iraq

Empowerment



Help job seekers take ownership and control over their career planning

“This application is the best application I used in this context. It will help me hold employment services accountable for better career support.”

Ahmed, Syria

“Interviews with counsellors take a lot of time and effort and even reflect our abilities. I would recommend my friends to use this app rather than relying on their counsellor”

Mohammed, Iraq

Benefits for career service providers

Skilllab's service improves the effectiveness and efficiency of employment and career services while empowering job seekers



Process efficiency

More time for personalised career advice, as job seekers use app autonomously before consultations.

"We had a waiting list of one month for consultations. We can't process people quickly enough and provide personalized service. This tool would help us do that."

**Career Counsellor, Blue Refugee Center
Thessaloniki, Greece**

"We have seen other tools but this is much more sophisticated and detailed. It gives a much more granular sense of a client's skills"

**Job Counsellor
INE/GSEE**



Greater Detail

A better sense for a person's capabilities helps to provide more personalized career services



Better outcomes

Access all Skill Profiles at any time in the Admin Portal and achieve a higher success rate in job placement.

"I've never had clients so excited to meet and discuss the next steps in their careers with me before doing this skill assessment"

**-Fadma, Case worker
City of Amsterdam**

Partnering for inclusion



Licenses

Get as many user licenses for the skill assessment mobile app and admin portal as you need



Branding

Get as many user licenses for the skill assessment mobile app and admin portal as you need



Support

Book additional workshops, webinars, trainings and remote support to get the most out of the product



Customisation

Add additional language support, special data hosting requirements, integration with your IT systems, etc.

Pilots performed

Skilllab already successfully performed pilots with cities and organisations across Europe



Want to learn more?

We partner directly with CDA to meet your needs



Schedule a demo

See in detail how our application works



Test it out

Have us set up a test account for you to try the application in real life



Schedule a discussion

Describe your ideas and programs and inquire whether our application could be useful to you and how



Skilllab

www.Skilllab.io

info@Skilllab.io

JobKred

Gary Gan, Co-founder

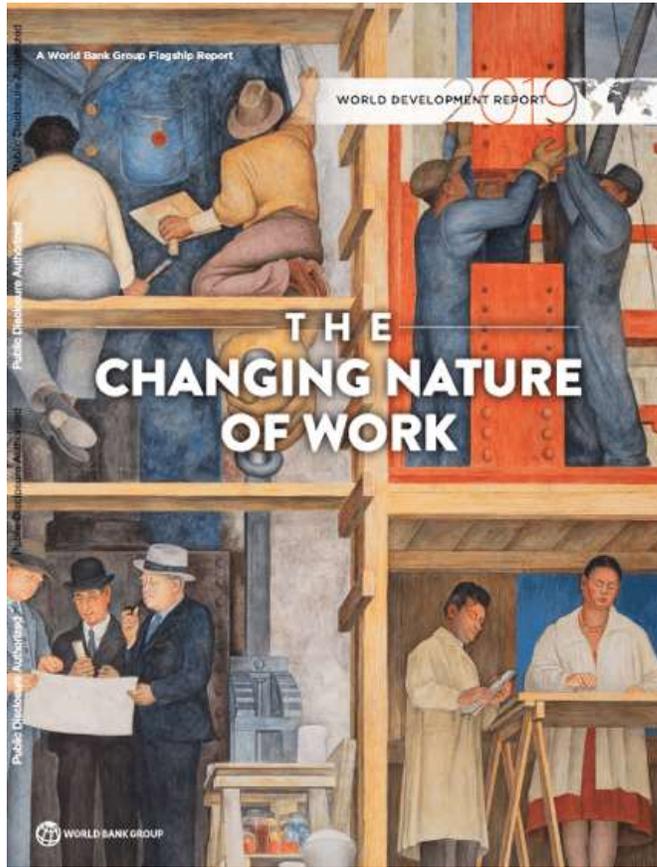


JobKred

Using AI for Job Matching

Gary Gan
Co-Founder and CEO, JobKred, Singapore
gary@jobkred.com, +65 9792 4393

World Bank SAYE Webinar, 20 Feb 2020, Thur, 9.30 – 11.00 am



*World Development Report
2019, World Bank*

“The most significant investments that people, firms, and governments can make in the changing nature of work are in enhancing human capital.”

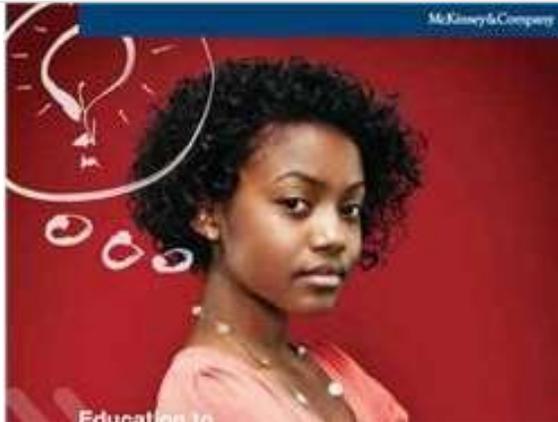
Changing Talent Landscape

More pronounced changes to ensue in the new decade

McKinsey
& Company

11 DEC 2012

72% of Education Providers Believe That Their Graduates are Ready For Work But Less Than Half of Students and Employers Agree



START OF THE DECADE

BUSINESS
INSIDER
SINGAPORE

18 JUN 2019

3 in 4 Singaporeans say they weren't taught enough skills to excel at work – and millennials feel the worst prepared



END OF THE DECADE

Deloitte.

Global Business
Coalition For
Education

18 SEP 2018

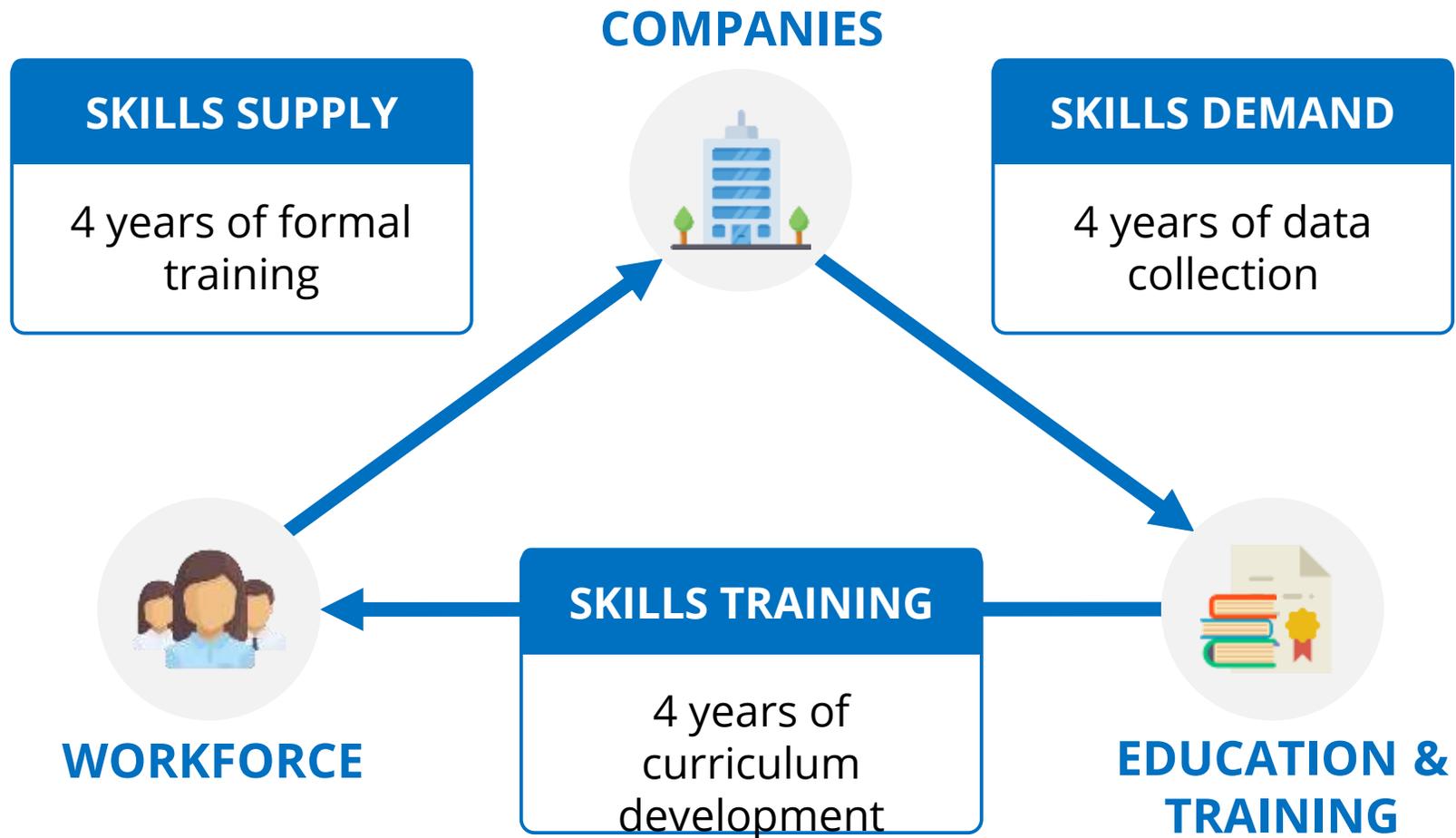
By 2030, two billion youth worldwide will lack skills to participate in the workforce



THE NEXT DECADE

JobKred

Slow and unfocused HR planning



Current Methods of Skills Demand Assessment



Direct Industry Consultation

- Not standardized
- Slow
- Small sample
- Subjective



Surveys and Focus Groups

- Not skills-based
- Slow
- Expensive
- Outdated quickly



Skills Frameworks

- Not granular
- Slow
- Expensive
- Outdated quickly



Rethinking skills anticipation and planning

Fast, agile and targeted HR planning



Big Data Analytics to decode **employer demand** and predict **future skill requirements**



Intelligent skill-gap analysis and **personalised** digital career guidance

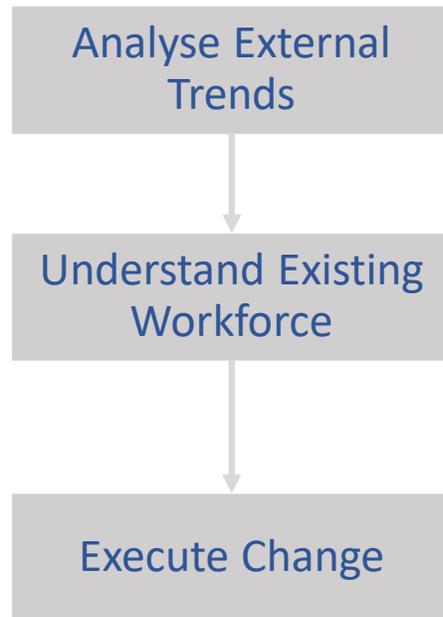


Automatic mapping of curriculum to **granular skills** and **modular education** for youth and adults

Taking an AI-driven Approach

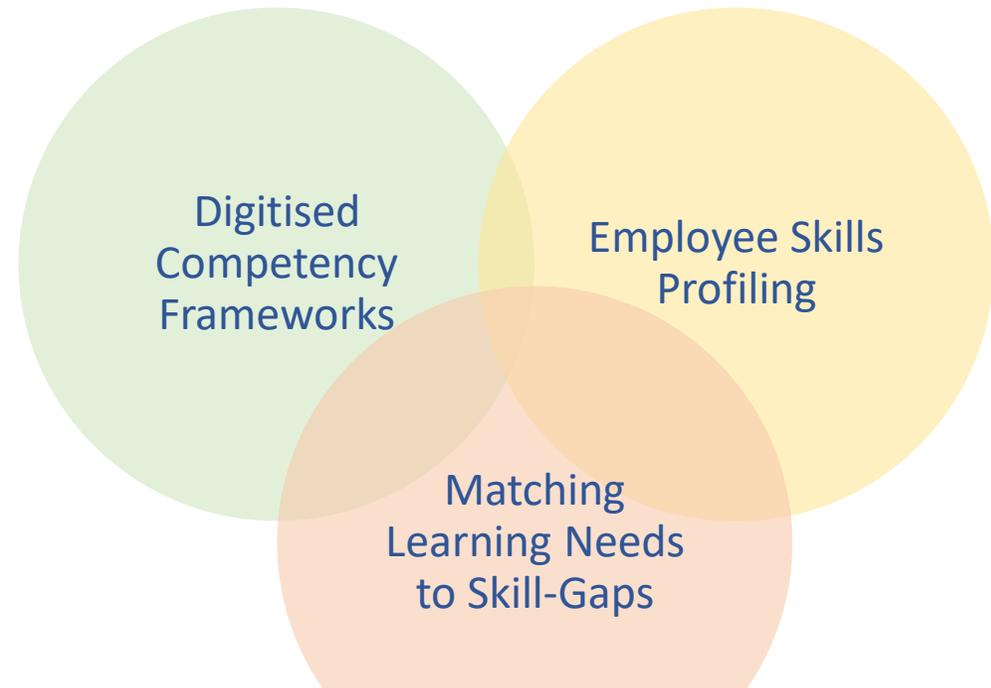
Embracing technology in HR Development

Traditional



Repetitive Cycle With Short Relevance

Embracing Technology



Building an Adaptive Learning Ecosystem

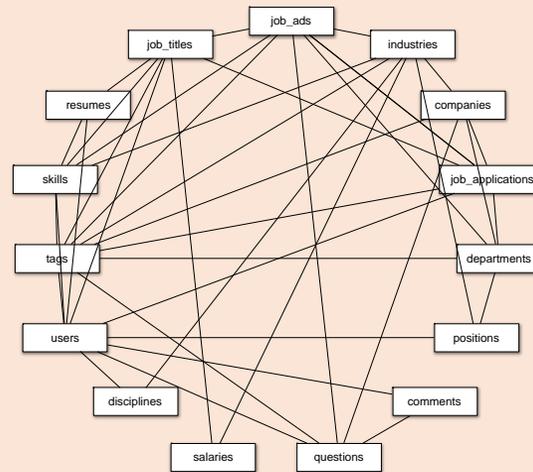
Reinventing the future of workforce... with data-driven insights

DEPARTMENT OF
STATISTICS
SINGAPORE



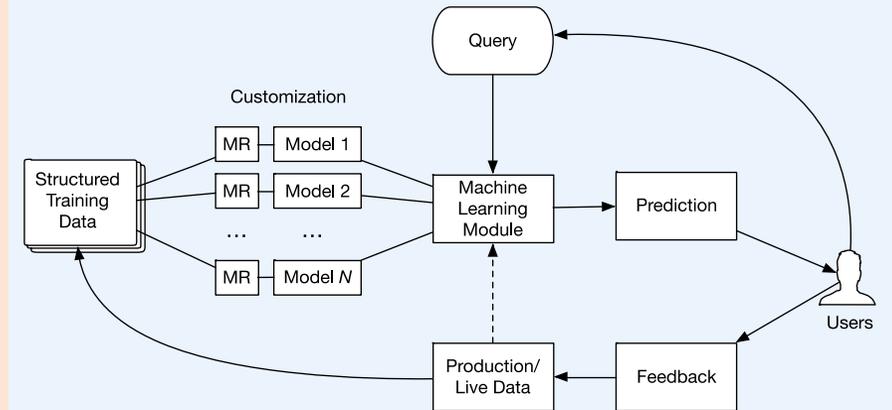
Data Mining

Indexing data from multiple sources



Statistical Analysis

Data cleansing and relational extraction



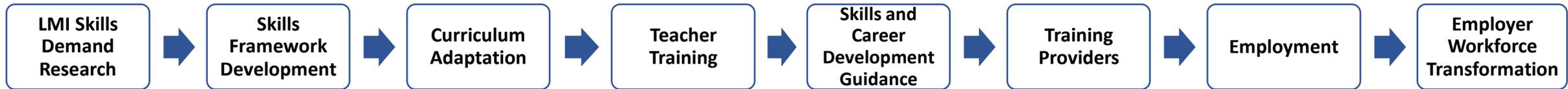
Predictive Modelling

Customized model based on required context

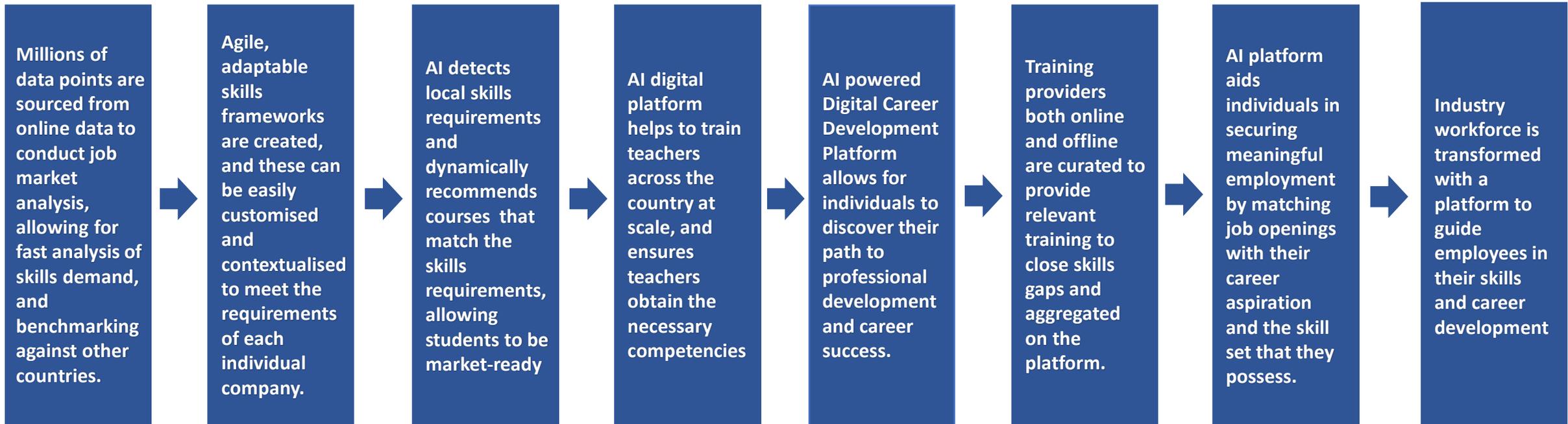
BACKGROUND OF WORKFORCE TRANSFORMATION

- 1.** In the ever-changing world of work, it is critical to ensure that the skills supply of the working population matches the skills demand of the industry
- 2.** The key challenges are to effectively identify current industry skills demand, then personalize training and career recommendations to each individual student or working adult, to help close skills gaps and land high quality jobs
- 3.** By adapting the best technology, experts, training providers and practices in Education and Workforce Transformation from Singapore, your country can ensure that your citizens are future-ready for Industry 4.0

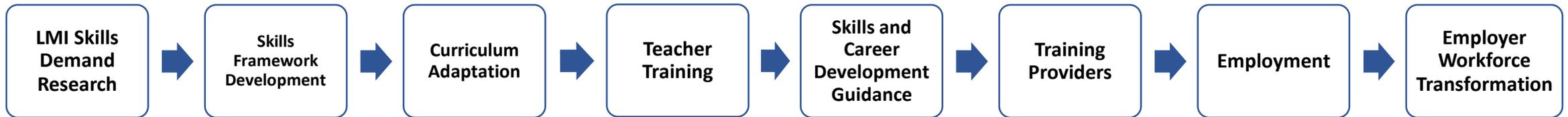
STEPS TAKEN FOR TRANSFORMATION



INNOVATION IN STEPS TAKEN



Workforce Transformation Value Chain



- Essential to quickly and effectively match skills supply to skills demand
- AI can learn from real-time LMI to recommend careers, training and jobs
- Existing case studies from other countries already utilizing such technology
- AI technology can be utilized in both developing and developed nations

LMI SKILLS DEMAND RESEARCH

With the ever-changing future of work, new methodologies are needed to understand, in real-time, the skills demand of the country. Traditionally, surveys, interviews and focus groups would be conducted with stakeholders in the labour market, such as employers and industry associations. The results are then compiled into a report to inform policy makers. This normally takes years of work, and is a very expensive and tedious process for all parties involved.

CASE STUDY: MYANMAR LABOUR MARKET ANALYSIS

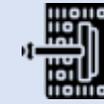


JobKred collaborated with JobNet, a Myanmar job portal, for local data collection of key sectors and job titles for analysis. Data cleansing then took place in order to obtain most in-demand job roles and skills requirements in Myanmar, and they were mapped using JobKred's taxonomies. Data analysis was then conducted to identify high-demand job titles and sectors, and to obtain changes and trends.

HOW IT WORKS



Data collection



Data Cleansing



Data Analysis

JOBKRED'S VALUE TO MYANMAR'S LABOUR MARKET RESEARCH

JobKred's AI is trained by millions of data points from online data sources, user profiles, job postings, social media, government sources, etc. Using big data, data science and predictive analytics, data can be used to identify high-demand/high growth sectors and occupations, examine demand for key skills and benchmark local labour market intelligence against global labour market information. Over 20,000 data points were collected and cleaned up before information regarding employer demand for labour and skills relevant to the job titles were obtained. Data was cleaned and processed into a report within a few weeks, rather than across multiple months in traditional labour market research.

PARTNERS

Consultancies such as EY and PwC can complement JobKred's big data analysis with traditional surveys, focus groups and interviews, as well as conduct consultancy sessions with policy makers to make sense of the data.

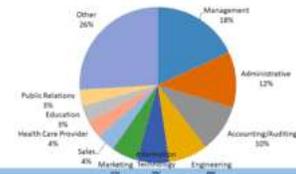


LMI Skills Demand Research (Example)

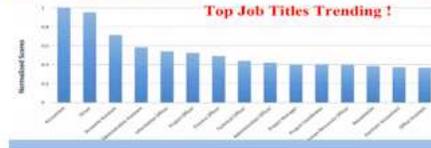
TEVET Policy Review
Malawi

Figure 1.20 Examples of insights from the Myjobs.com jobsite

Decoding job demand trends 2016-2018:
Top job function trends in Malawi



Malawi: Decoding demand for paid jobs:
The top 15 job titles trending in 2016 to 2018



Top 100 job titles in demand in Malawi
Trending in 2016-2018

16 Procurement Officer	31 External Auditor	65 Janitor	81 Operations Officer	94 General Labourer
17 Teacher	32 Nurse	66 Accountant	82 Program Manager	95 Administrator
18 Technician	33 Security Officer	67 Administration Assistant	83 Logistics Coordinator	96 Field Officer
19 Laboratory Technician	34 Marketing Officer	68 Medical Officer	84 Project Assistant	97 Program Assistant
20 Communications Officer	35 Secondary School Teacher	69 Security Guard	85 Project Assistant	98 Human Resources
21 Administrative Manager	36 General Manager	70 Sales Executive	86 Warehouse	99 Engineer
22 Secretary	37 Marketing Manager	71 Hospital Assistant	87 Marketing Executive	100 Procurement Specialist
23 Coordinator	38 Human Resources	72 Chief Executive Officer	88 Information Specialist	101 Innovation Manager
24 Supervisor	39 Program Coordinator	73 Chief	89 Logistics Assistant	102 Compliance Officer
25 Finance Manager	40 Operations Manager	74 Executive Officer	90 Machine Operator	103 Machine Operator
26 Sales City Clerk	41 Programme Manager	75 Accounts Clerk	91 Personnel Assistant	104 Personnel Assistant
27 Programme Officer	42 Manager	76 Development Officer	92 IT Officer	105 Technical Advisor
28 Sales Representative	43 Cashier	77 Program Officer	93 Quality Control Officer	106 Quality Controller
29 Machine	44 Clerk	78 Production Teacher	94 Research Assistant	107 Research Officer
30 Assistant	45 Operator	79 Management Consultant	95 Education Officer	108 Specialist
31 Investment	46 Pharmacy Technician	80 Executive Director	96 Call Centre	109 Call Operator
32 Executive	47 Business Technician	81 Head Teacher	97 Research Assistant	110 JVA Operator

Malawi: Identifying skills in high demand in 2016-2018:
What's trending in Administrative, Management, Accounting, Engineering?

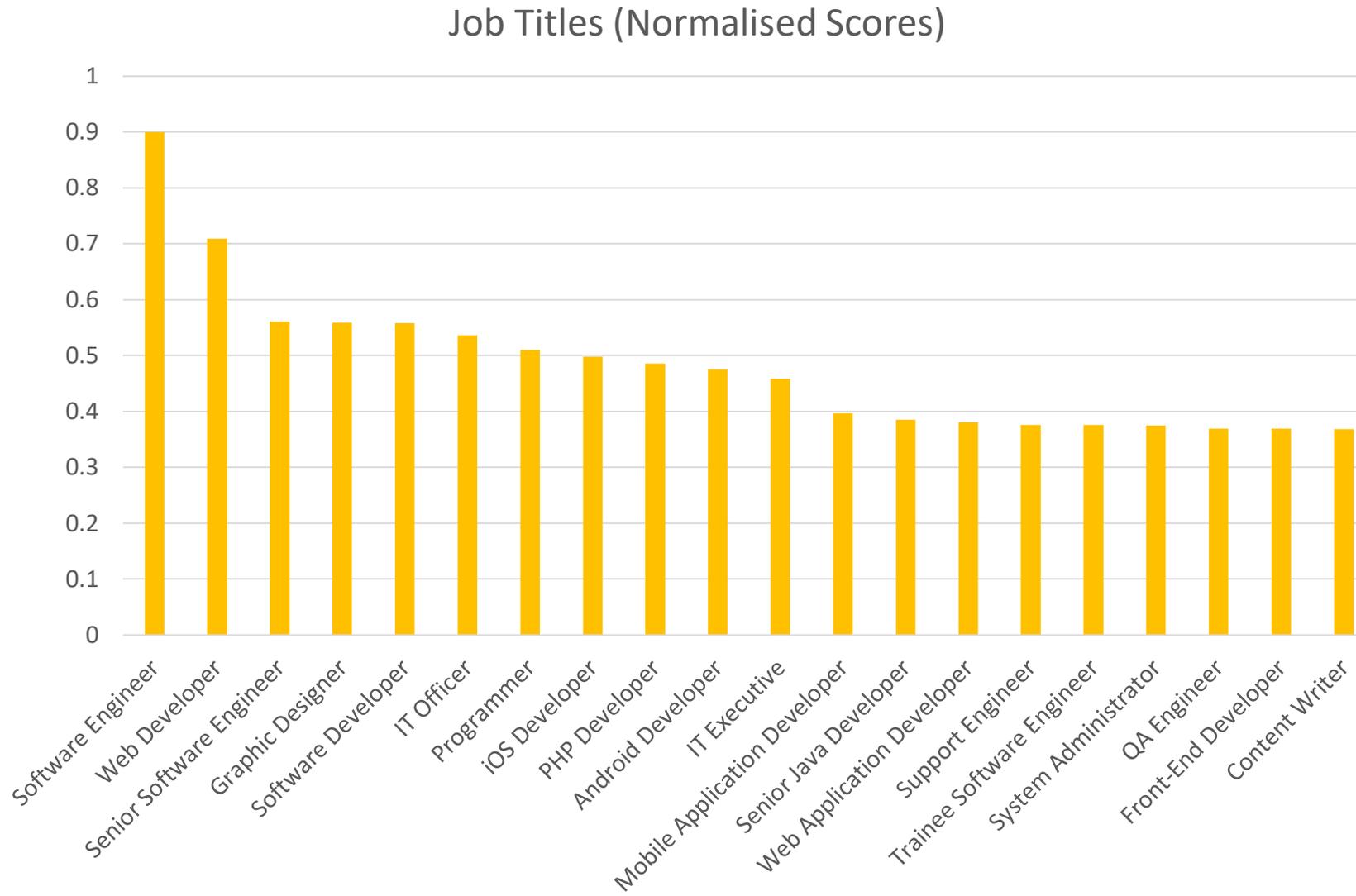
Management	Administrative	Accounting/Auditing	Engineering
1 Resilibility	1 Microsoft Office	1 Tax	1 User Manufacturing
2 Business Management	2 Microsoft Excel	2 Financial Reporting	2 Continuous Improvement
3 Networking	3 PowerPoint	3 Financial Analysis	3 Six Sigma
4 Lead	4 Microsoft Word	4 Corporate Tax	4 Drilling
5 Restaurant Management	5 Customer Service	5 Auditing	5 Oil/Gas
6 Change Management	6 Social Media	6 Income Tax	6 Electronics
7 Typing	7 Research	7 Internal Controls	7 Commissioning
8 Project Management	8 Teamwork	8 Tax Preparation	8 Product Development
9 Program Management	9 Public Speaking	9 Budgets	9 Project Engineering
10 Team-Building	10 Event Planning	10 Forecasting	10 Upstream

Decoding skills demand in Malawi: For Accountants

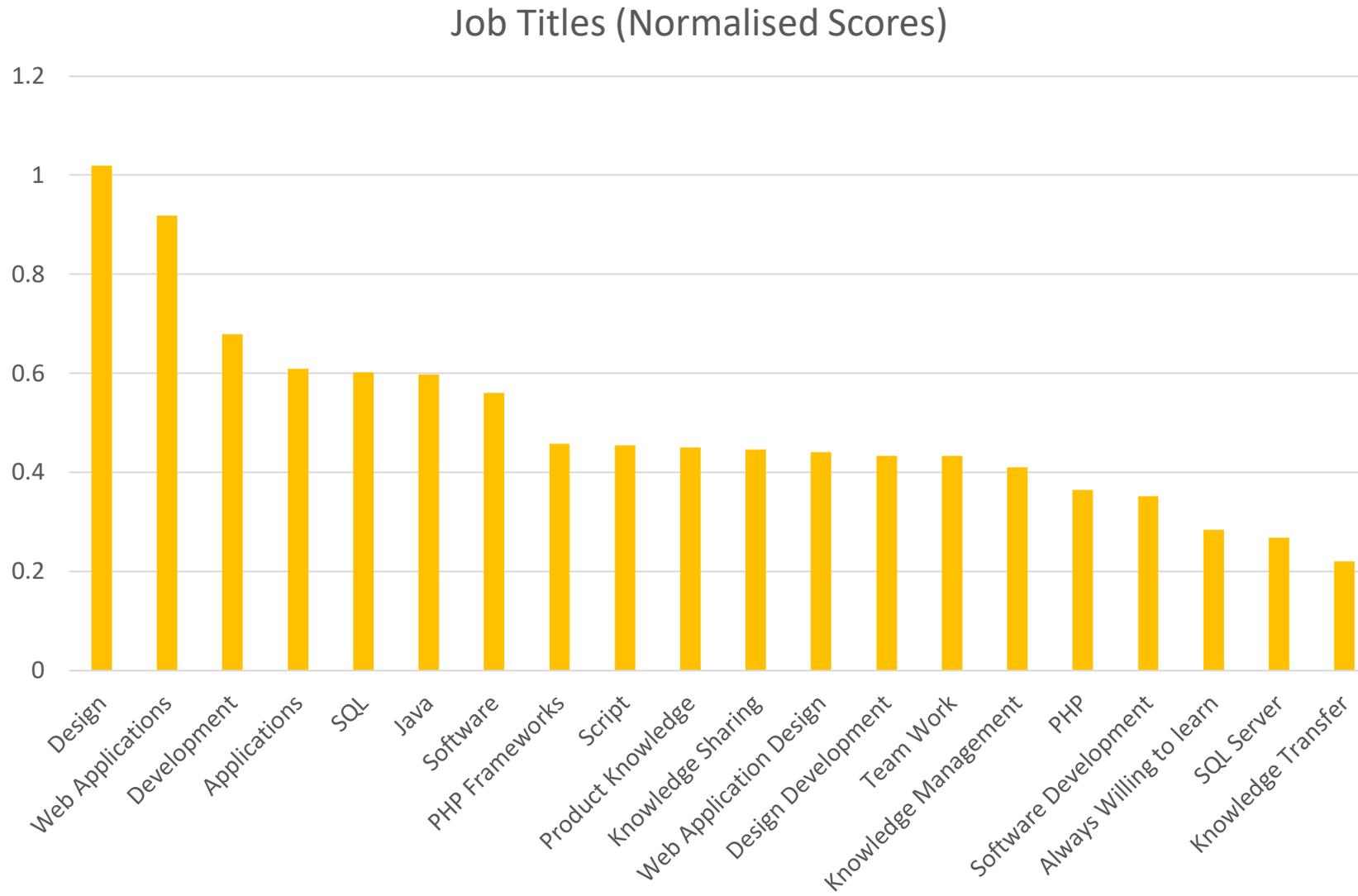


Source: authors' elaboration of big data/BI analysis powered by JobKred.com and data provided by Myjobs.com

Regional Market Insights – top 20 job titles by demand (for IT sector)



Regional Market Insights – top 20 skills by demand (for IT sector)



Information Technology

#1

Job Demand by Industry

Top 10 Skills for Software Engineer

01	Web Applications
02	Design
03	Software Development
04	SQL
05	Development
06	Applications
07	Software
08	Web Application Design
09	Knowledge Management
10	SQL Server

Top 10 Skills for Web Developer

01	Java
02	PHP
03	Script
04	SQL
05	PHP Frameworks
06	Web Applications
07	CSS JavaScript
08	Product Knowledge
09	Web Application Design
10	Development

Top 10 Skills for iOS Developer

01	Applications
02	GIS Applications
03	Design
04	Web Applications
05	Mobile Applications
06	Development
07	Mac OS
08	Always Willing to learn
09	Mobile Phone Apps
10	Mac OS X

SKILLS FRAMEWORK DEVELOPMENT

Skills Frameworks are typically created by countries to guide the development of the industry or sector. Examples include USA's Employability Skills Framework, Europe's European Qualifications Framework, and Singapore's Skills Framework. These frameworks would cover the type of jobs in the industry, the skills and competencies required, and even the definitions of jobs and skills, down to the proficiency level of each skills. Individuals can use the Skills Framework to make informed choices on career development and skills upgrading. Employers design progressive human resource practices to recognise skills and make informed decisions on skills investment. Training providers can develop industry-relevant programmes to respond quickly to employers' and individuals' needs.

CASE STUDY: SKILLSFUTURESG

SKILLSfuture SG

In partnership with consultancies and industry associations, data was gathered quickly and easily from stakeholders, using JobKred's AI engine. Global data was also instantly available from JobKred for overseas benchmarking. This data was used to quickly create, review and update Skills Frameworks, reducing the lag time to understand industry changes and requirements.

HOW IT WORKS



Global Data
Collection



Reference Skills
Framework



Own
Data

JOBKRED'S VALUE TO CREATION OF SKILLS FRAMEWORKS

Industry demands are constantly changing, and traditional methods of creating Skills Frameworks makes them obsolete the moment they are created. JobKred is able to provide the customisation and contextualisation of Skills Frameworks, benchmarked using Big Data Analytics against local and global standards. For countries without an existing Framework, JobKred can easily leverage on our experience working with Singapore government, and our global data, to help create Skills Frameworks localized to the country's context, in a fraction of the time traditional methods take. This allow for faster transformation of the country.

PARTNERS

JobKred can partner with consultancies like EY to create industry specific Skills Frameworks. EY has helped Singapore create half of their existing frameworks, and also utilizes JobKred's data in their work.



JobKred

Skills Future Frameworks

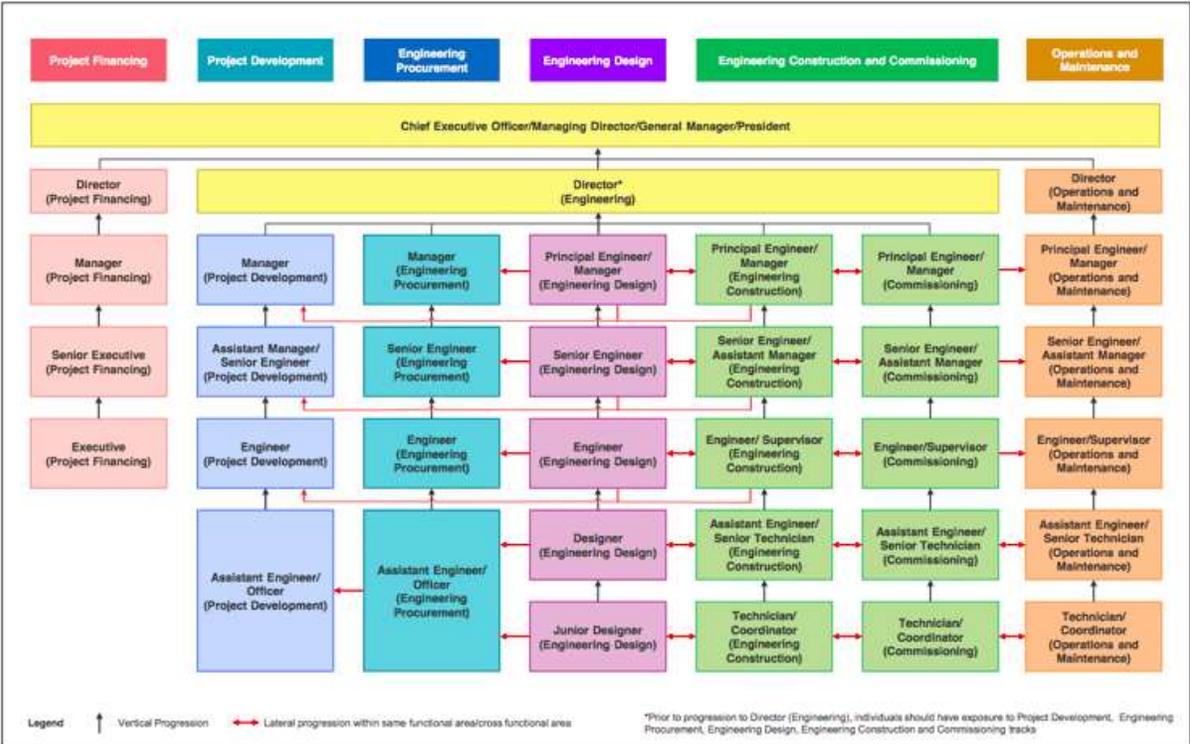
SKILLS FRAMEWORK FOR RETAIL Career Pathways



Front-of-House comprises the Retail Operations track
Back-of-House comprises the Brand Management, Marketing, Merchandising and E-Commerce (Omni-Channel) tracks

↑ Denotes vertical career progression
↔ Denotes lateral (cross-functional) career progression across tracks

SKILLS FRAMEWORK FOR ENGINEERING SERVICES Career Pathways



Legend ↑ Vertical Progression ↔ Lateral progression within same functional area/cross functional area

*Prior to progression to Director (Engineering), individuals should have exposure to Project Development, Engineering Procurement, Engineering Design, Engineering Construction and Commissioning tracks

The Career Map serves as a reference to reflect the available job roles and possible career pathways in the Engineering Services sector, which may vary depending on each company's structure and business context. The career progression pathways would depend on individual performance, capability, experience, aspiration, as well as company needs.

CURRICULUM ADAPTATION

With the awareness of local labour market skill and jobs requirements, countries will consider changes to their curriculum or even their educational courses to ensure that skills supply matches skills demand. Educational institutions may also discuss with local employers, to better ensure their curriculum matches their needs.

This process can take ten years or more, to understand local skills requirements, make changes to curriculum, implement these changes, and guide students and parents to understand these changes.

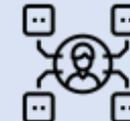
CASE STUDY: ADAPTIVE CURRICULUM SYSTEM

JobKred worked with a Technical Vocational Institute in Singapore to design a system to use JobKred's global and local data to instantly understand skills demands, then map the schools curriculum to the skills requirements, and implement a recommendation engine to help recommend the right courses dynamically to students, based on local skills demand. This would cut down the lag time in pushing the right courses to students and ensure graduating students have market ready skills.

HOW IT WORKS



Course Mapping



Skills Gap
Analysis



Course
Recommendations

JOBKRED'S VALUE TO CURRICULUM ADAPTATION

JobKred is able to change the status quo in the maintenance of curriculums for educational institutes, and ensure easy implementation of curriculum updates and course recommendations to students.

AI powers recommendations for careers, courses and micro-learning. Students can now craft their own personalised learning journey and ensure their skills match current labour market demands. For example, students will be able to select modules that are more relevant for them to pursue a certain career in the future

PARTNERS

For educational institutions who find that they do not have the necessary courses or cannot adopt the curriculum that the market needs, a temporary measure can be to provide courses from online providers, or bring in external training providers with the capabilities to deliver relevant courses to students.. JobKred partners with global MOOCs like Udemy, Coursera, Udacity, or Singapore educational institutions like Singapore Polytechnic, to provide the right training the country needs.



TEACHER TRAINING

Once the curriculum is adapted to suit the needs of students, the staff who teach the curriculum also have to be trained in order to deliver the curriculum effectively.

Countries may have to train thousands of teachers across a large geographical area, and ensure that training needs is done for each teacher, the right training interventions are pushed to the teacher, and track the competency and capabilities for all teachers. This is expensive and time consuming, thus curriculum changes tended to be slow to push out, and teachers slow to learn and adopt changes, leading to students not being able to benefit.

CASE STUDY: NATIONAL UNIVERSITY OF SINGAPORE



Using our AI workforce development platform, JobKred is able to help NUS modernize their entire competency and training framework for all 13,000 academic and non-academic staff. Implementation is also easy for the school, with the AI taking care of skills gap analysis, training recommendations and training delivery, so that the school could transform their workforce quickly, easily and at low cost.

HOW IT WORKS



Skills Gap
Analysis



Training
Recommendations



Training Delivery
Nationwide

JOBKRED'S VALUE TO TEACHER TRAINING

JobKred is able to change the status quo in the maintenance of curriculums for educational institutes, and ensure easy implementation of curriculum updates and course recommendations to students.

AI powers recommendations for careers, courses and micro-learning. Students can now craft their own personalised learning journey and ensure their skills match current labour market demands. For example, students will be able to select modules that are more relevant for them to pursue a certain career in the future

PARTNERS



SKILLS AND CAREER DEVELOPMENT GUIDANCE

With the rapidly changing world of work, effective career guidance can help individuals understand where they fit in and what path to take. Singapore for example has two career guidance teams, one for students and one for working adults. Student guidance counsellors are attached to every secondary school all the way to tertiary level, and guide students on career choices and job seeking advice. Adult counsellors help the unemployed and those seeking to change careers. The challenge comes when the world of work moves too fast for human guidance counsellors to keep up, and also when there is a rapidly increasing need for guidance, leading to a lack of counsellors, and expensive programs to train and hire more counsellors.

CASE STUDY: NATIONAL TECHNOLOGICAL UNIVERSITY (NTU)



National Technology University required a platform where 30,000 students would be able to explore career options and visualise the steps that they would need to take in order to work towards a career of their choice. A mentorship feature was also required so that the students could be attached to mentors in order to learn more about the industry they want to work in.

HOW IT WORKS



SPRI



Setting up of mentorship

JOBKRED'S VALUE TO SKILLS AND CAREER DEVELOPMENT

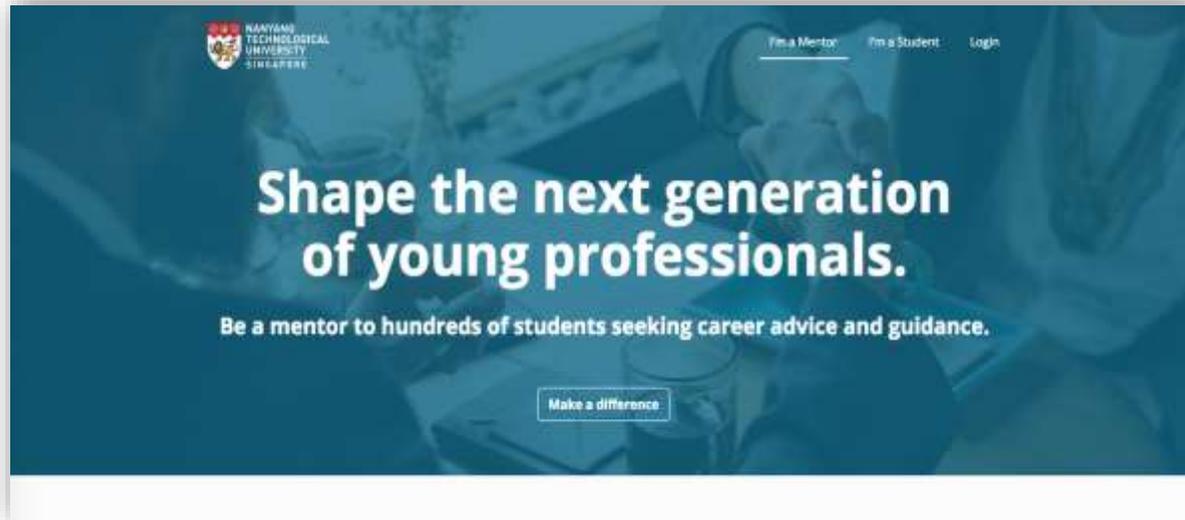
JobKred's AI powered Digital Career Development Platform helps students and working professionals to discover their paths to professional development and career success. The system guides users to the right careers and identify skills gaps. Users will be empowered to build their personal profile articulate their skills through through system recommended skill based vocabulary. The users' skill sets are then analysed to recommend careers and highlight skill gaps in career recommendations. It empowers users in the discovery of new relevant career option.

90% of users said it helped them to better identify their skillset. 72% of users said it helped to them to discover more career options and discover more career transition pathways. 82% of users said it better helped them to identify their learning needs.

PARTNERS

JobKred can work with Singapore's National Career Development Association to train & Certify Career Coaches, so that there is a combination of technology to address career guidance needs at scale, but also trained and qualified human coaches to provide high-touch guidance.



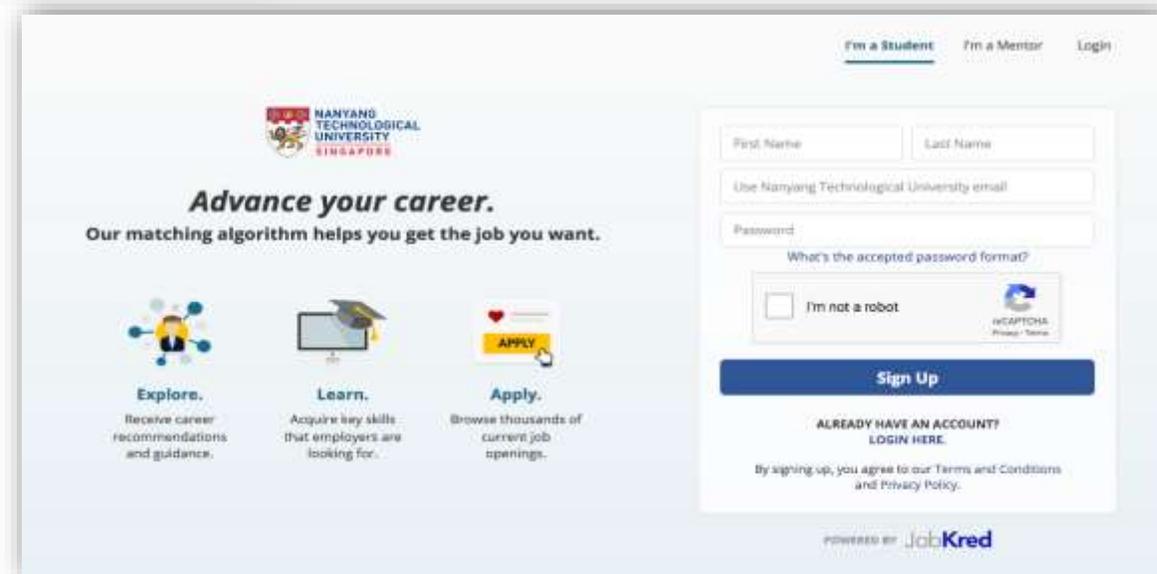


For Mentors

Mentors are encouraged to assist their mentees in setting career goals, giving them the guidance needed to reach those goals and allow them to network effectively.

For Students

Students will identify their career goals and options, exploring various career recommendations that are personalised to them.



TRAINING PROVIDERS

Training providers can be aggregated into one platform to help provide a catalogue of training courses for citizens to access. The problem comes when there are too many courses to select from, such that citizens do not know what courses are relevant for them.

CASE STUDY: MY SKILLS FUTURE



My Skills Future (My SF) is a one-stop portal that enables Singaporeans of all ages to make informed learning and career choices, so that they can pursue their skills and career development throughout their lives. Individuals are able to discover a career path that is suitable for them, explore the various industries available and upskill themselves to find jobs. JobKred provides AI matching technology to My SF.

HOW IT WORKS



Skills Gap Analysis



Training Recommendations

JOBKRED'S VALUE TO THE PROVISION OF TRAINING

JobKred is able to aggregate data from our partners into an online platform and push out course recommendations relevant to the career choices that the user is interested in. It enables users to instantly identify skills gaps and close skills gaps through course recommendations. This allows for personalised training for all citizens. When users are able to visualise their skill gaps through our system and have a wide variety of courses at their finger tips, they feel more incentivized to embark on their own personal development, which allows for them to be able to aspire for the careers that they wish to take up in the future.

PARTNERS

JobKred has a ready platform, similar to My SF portal, to deliver skills gap analysis, course recommendations and training content nationally. JobKred has also partnered with a number of training providers, to offer a wide variety of courses that help individuals learn new skills, no matter what industry that may be working in currently.



EMPLOYMENT

Employers need a place to effectively reach out to talent such as students, graduates and current workforce, to inform them of their job openings and manage the applicants. Jobseekers need an easy place to receive job opening information and find the ones that match their skills and career aspirations. Government needs to track the data of matches in real time.

The challenge is doing the job posting and job matching at scale. Currently, Singapore has a national online jobs portal used by 200,000 citizens every week, and tens of thousands of employers.

CASE STUDY: MYCAREERSFUTURE

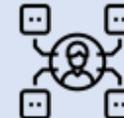


MyCareersFuture.sg (MCF) is a portal that aims to provide Singapore Citizens with a free job search service that matches them to relevant jobs based on the jobseeker's skills. MyCareersFuture.sg complements the Singaporean Government's efforts to build an adaptable and competent workforce to prepare for careers of the future, based on skills and competencies. JobKred's AI powers MCF with job matching.

HOW IT WORKS



Job Posting



Skills Analysis



Job Matching

JOBKRED'S VALUE TO EMPLOYMENT

JobKred is able to connect jobseeker to career opportunities that are relevant to their skills. Thus, this reduces potential job mismatches as jobseekers will be able to identify jobs that are best matches to the skills they have. This is made possible through JobKred's job market analysis which is able to identify the skills required for certain job titles and map it back to the job seeking individual who possesses that skill.

The end product of job matching will be a workforce where individuals are able to find a job that matches their skill set well and employers are able to hire people who are the best fit for their company's skill requirements.

PARTNERS

JobKred can work with Trade Associations and Industry Associations from Singapore to help operationalize job matching systems in other countries and offer jobs in Singapore. JobKred already deploys specialized job matching portals for the ICT and Arts Sectors in Singapore.



In summary



The Future of Skills

A traditional talent development and skills strategy will no longer suffice. Future skill sets need to be personalised, versatile and transferable



Learning Intervention

Organisations & nations need to find an efficient way to identify suitable learning interventions and enable employee and citizen access to these new skills quickly



HR and Technology

HR must lead the way to be data driven and embrace technology tools to manage HR services, staff learning experiences and adopt an anticipatory approach towards capability building and lifelong learning



About JobKred

Proven track record serving government and international organisations for skills upgrading

GLOBAL



Labour Market Information Research

Online labour market data & skills demand analysis

Bangladesh
Myanmar
Sri Lanka
Malawi

GOVERNMENT



Singapore's National Jobs Portal

Personalised career and training and recommendations

200,000
Weekly Users

UNIVERSITIES



Student Career and Skills Guidance

Scalable personalised career guidance and skills gap analysis

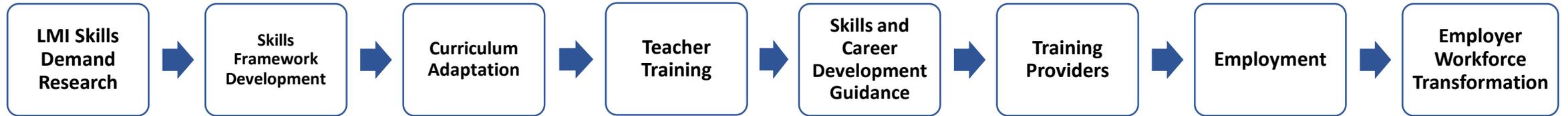
>33,000 Skills reported,
12,000 Careers favoured

IMDA GREEN LANE
Quality / Security assurance & compliance

WHOLE-OF-GOVT PILOT
MOM, MOE, IRAS, NEA

**World Bank, ADB
UNESCO, NAC, SGTech**
Enabler of workforce transformation

Technology to integrate for effective and efficient implementation



Skills Frameworks and LMI Data



JobKred

90% Cost & Time Savings for Talent Transformation

HRMS & LMS



Staff's Data and Records

Talent

Recommendations



Using Big Data and Artificial Intelligence, our **proprietary software** decodes the inter-dependent relationships among industries, careers, jobs and skills.

- Our technologies guide individuals to profile the portfolio of skills they have, and what they need to learn in order to work towards their desired careers.
- On a larger scale, we inform teams, organisations, industries and nations of their skill profiles to enable effective interventions in workforce development and talent management.

Developing The Brain JobKred

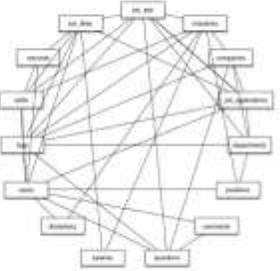
-  **Data Mining**
Indexing data from multiple sources
-  **Statistical Analysis**
Data cleansing and relational extraction
-  **Predictive Modelling**
Customized model based on required context

Confidential and Restricted

Statistical Analysis JobKred

Assumptions:

- k-partite relationship**
 - Jobs-Skills
 - Jobs-Industries
 - Jobs-Salaries
 - Jobs-Tasks
 - Disciplines-Skills
 - Disciplines-Jobs
 - Jobs-Industries-Skills
- Importance**
 - Large enough sample size
 - Normalized frequency (occurrence)



Confidential and Restricted

Tech Stacks JobKred

Infrastructure



Applications



Data Science



Confidential and Restricted

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JobKred

Using AI for Job Matching

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World Bank SAYE Webinar, 20 Feb 2020, Thur, 9.30 – 11.00 am

Q&A Discussion

Using Artificial Intelligence for Job Matching Platforms
Thursday, February 20, 2020 | 9:30am – 11:00am EST | G8-090 & Webex