Engineers for Europe Monitoring Report 3

What Engineers Want

A detailed analysis of needs of engineering professionals as regards career development innovation in six pilot countries (Edition 2020)

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Editor

September 2019 (template)

ENGINEERS *for* EUROPE (E4E)

Preface

The Engineers Europe Advisory Group (EEAG) was launched in Brussels on 11 September 2018 with the aim to promote the engineering profession. The EEAG consists of signatories which are professional organisations of engineers, employer associations and institutions of higher education in engineering. A list of signatories is added to this report.

The EEAG immediately initiated a project to improve the engineering education in Europe, to bridge the skills gap and enhance engineering careers. The project is called "Engineers for Europe" or E4E. A list of partners is added to this report.

One of the three main outcomes of the project[1] will be the Engineers Europe Career Development Services (CDS). CDS will start by developing two essential career development services for engineering professionals:

1) Engineers Europe Badges (EEB)
An E4E backed certificate to acknowledge competence acquired, independent of the learning context. The badges will be piloted in six countries.[2]

2) Engineers Europe Expert Portal
A portal to match future demand and supply for engineering positions, funding opportunities, traineeships, mentors and mentees across the wider Europe. Terms of Reference will be drafted and a feasibility study will be held covering the six pilot countries.

Work on CDS is preceded by a detailed analysis (mapping) of needs of engineering professionals as regards career development innovation and existing tools to address these needs in the six pilot countries laid down in this report. Mapping was focussed on three key aspects:

- Recognition of competences
- Job search and recruitment practices
- Career development support mechanisms

The report contains first findings on the prevalence of weaker and stronger correlations found in the six pilot countries. A more complete picture will be provided in the 2022 edition. The mapping in the report will help to design the E4E career development tool and make sure they respond to the needs of the engineering profession in the pilot countries

The report is the result of desk research, partner- and expert hearings, analyses, writing and editing. Desk research was done in June-September 2019. Hearings were held in September-

[1] The other two outcomes are the Engineer Europe Monitor (EEM) and the Engineers Europe Education Reform Accelerator (ERA).
[2] France, Germany, Ireland, Italy, Portugal and Sweden.

November 2019. Analyses, writing and editing took place in December 2019 and January 2020. The report was published in February

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Abbrev.

Content

Annex 1

What Engineers Want

Germany

Recognition of competences

Describe what tools exist in Germany to recognise competences acquired instead of next to those encompassed in bachelor, master and doctorate degrees. Is there a system in place, which facilitates rapid recognition of learning acquired through short courses (i.e. micro credentials) or work experience? Provide figures of uptake (cases completed per year. Indicate trends (upwards, downwards, stable). Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

Job search and recruitment practices

Describe what tools exist in Germany to facilitate job search and recruitment of engineers (public and private labour and recruitment agencies, dedicated national or European portals, informal recruitment through colleagues, friends and relatives). What percentages of vacancies are filled through these tools? Indicate trends in uptake (upwards, downwards, stable). What is the average vacancy time in the main engineering categories in per category (civil, mechanical etc.)? Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

Most of the listed practices are not specific for engineers but general practices.

			STUDENTS	GRADUATES	ACTIVE ENGINEERS	EMPLOYERS
	Data found	**Source**				
University						
Career Services Job placement (internships, student work, starting positions for graduates) job fairs to initiate contacts between students and companies	After the recommendation of the German Rectors Conference in 2011 most of the universities in Germany have established Career Services.	https://www.hrk.de/positionen/beschluss/detail/empfehlung-career-services/	x	x		
Job placement via network of lecturers an professors (=informal			x	x		

recruitment & networking)						
World Wide web						
Online job exchange		*list of selected websites attached, THGA Career Service	x	x	x	
Social media: skills profiles, vacancies, contacts to HR managers and recruiters		www.xing.de www.linkedin.com	x	x	x	x Company profiles, active use of social media for recruitment
Web search for appropriate companies (job offers on company websites)			x	x	x	x Company web pages with vacancies
Public Sector						
Public employment agency EURES (European Employment agencies)		www.arbeitsagentur.de https://ec.europa.eu/eures/public/de/homepage	x	x	x	x
Private Sector						
Commercial job fairs		**list with examples for the Ruhr region attached, THGA Career Service	x	x	x	x
Informal Recruitment : 60-70 percent of all vacancies are filled informally (networks, recommendations, personal contacts)	VDI: Verband Deutscher Ingenieure	https://karrierebibel.de/verdeckter-stellenmarkt/ (24.06.2019)	x	x	x	x

Example: Networking in professionals associations	VDE: Verband der Elektrotechnik Elektronik Informationstechnik					
Recruitment Strategies						
Employees recruit employees		https://de.statista.com/statistik/daten/studie/241995/umfrage/relevanz-von-personalbeschaffungskanaelen-deutscher-firmen/	(x)	(x)	(x)	x
Building up talent pools			(x)	(x)	(x)	x
Establishing Dual Study Programs			(x)			x
Special marketing activities for students and graduates		Example: https://karriere.mckinsey.de/event/eintauchen	(x)	(x)		x
Trainee Programs				(x)		x
Recruiting agencies/ Head Hunting					(x)	x
Journals, newspapers		Example: VDI-Nachrichten	(x)	(x)	(x)	x
Personnel leasing				(x)	(x)	x

(x) Passive practice
x Active practice

Percentages of vacancies filled through these tools

The Table shows search- and job matching strategies of German companies in 2015 (not specific for engineers but for graduates).

Tabelle 2

Such– und Besetzungswege bei Neueinstellungen 2015 nach Qualifikation

Anteile in Prozent

	Verwendete Suchwege[1]			Besetzungsweg			Erfolgsquote		
	Ungelernt	Mittlere Qualifikation[2]	Akademiker	Ungelernt	Mittlere Qualifikation[2]	Akademiker	Ungelernt	Mittlere Qualifikation[2]	Akademiker
Eigene Inserate in Zeitungen oder Zeitschriften	36*	39*	22*	13*	16*	7*	35*	41*	34*
Eigene Homepage	40*	51*	72*	4*	12*	18*	9*	23*	26*
Internet-Jobbörsen[3]	35*	38*	55*	7*	10*	26*	21*	25*	47*
Soziale Medien[3]	16*	14*	17*	2*	1*	2*	10	6	10
Kontakt zur Arbeitsagentur[4]	55*	52*	32*	17*	15*	6*	30*	29*	18*
Bewerberliste oder Initiativbewerbungen	43*	27*	27*	15*	9*	8*	35	32	30
Private Arbeitsvermittlung	11	9	10	2*	3*	6*	21*	29*	62*
Interne Stellenausschreibung	11*	23*	37*	3	2	2	23*	8*	6*
Über eigene Mitarbeiter/persönliche Kontakte	62*	48*	41*	36*	29*	20*	58*	60*	50*
Auswahl aus Azubis/Leiharbeitern/Praktikanten	3*	7*	7*	2*	4*	2*	-	-	-
Sonstige Wege	1*	3*	3*	0*	1*	2*	-	-	-

* Die Unterschiede zwischen den Qualifikationsanforderungen sind mindestens auf dem 5%-Niveau signifikant.

[1] Mehrfachnennungen sind möglich. [2] Personen mit Berufsausbildung, Techniker und Meister. [3] Ohne Internetdienste der Arbeitsagenturen. [4] Kontakt zur BA oder BA-Jobbörse.

Lesebeispiel: Bei 36 Prozent aller Neueinstellungen auf Positionen für Ungelernte wurden eigene Inserate in Zeitungen und Zeitschriften für die Suche genutzt. 13 Prozent aller Neueinstellungen in diesem Segment wurden über diesen Weg besetzt, was einer Erfolgsquote von 35 Prozent entspricht. Die Erfolgsquote ist die Relation aus dem gewählten Suchweg und dem erfolgreichen Besetzungsweg x 100.

Quelle: IAB-Stellenerhebung.

Source: http://doku.iab.de/kurzber/2016/kb0416.pdf (06.08.2019)

	Search Strategies	Way of staffing	Success rate
Advertisements in newspapers and journals Company homepage Online job exchange Social media Public Employment Agency Talent pool or unsolicited applications Private employment agencies Internal job advertisement Employees recruit employees/ networks Apprenticeships, Internships, Temporary work Other ways of recruiting	Right column = Graduates	Right column = Graduates	Right column = Graduates

Trends

Upwards trends: Company Hompages and Social Media, Informal recruitment

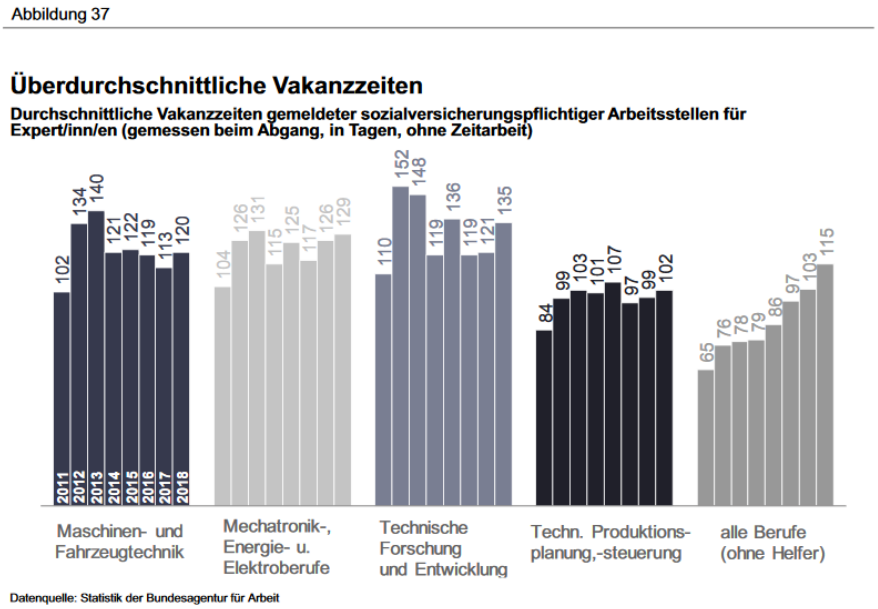
Downwards trends: Avertisements in Newspapers and journals

Sources and gaps in data

Most of the data are not specific for the engineers' labour market.

Average vacancy time in the main engineering categories

The image shows, average vacancy times (number of days) in the main engineering categories “machine and vehicle technologies”, “mechatronics, energy sector, electrical and electronic engineering” “Research and development”, “Production planning and control”. The last column shows other professions by comparison.



Source: https://statistik.arbeitsagentur.de/Statischer-Content/Arbeitsmarktberichte/Berufe/generische-Publikationen/Broschuere-Akademiker.pdf (06.08.2019

*Online-Jobbörsen

Die besten allgemeinen Jobbörsen für Ingenieure in Deutschland:[3]

StepStone Deutschland	www.stepstone.de
Staufenbiel Institut	www.staufenbiel.de
XING Stellenmarkt	www.xing.com
Indeed.de	https://de.indeed.com
Monster Deutschland	www.monster.de

Berufs- und branchenspezifische Börsen

Stellenbörse des VDI	https://jobs.ingenieur.de
Stellenbörse mit ausführlichen Unternehmensprofilen	www.get-in-engineering.de/jobsuche
Stellenbörse für Ingenieure allgemein	www.ingenieurjobs.de/
Stellenbörse für Ingenieure allgemein	www.meinejobs-ingenieure.de
IT, Science und Engineering	https://jobtensor.com
Jobbörse v. a. Maschinenbau, Elektrotechnik, Verfahrenstechnik	www.ingenieurweb.de
Jobbörse der Geo-Branche	www.geojobs.de/
Karriereportal der Elektronik	www.mut-job.de

Regionale Jobbörsen

Stellenangebote in Bochum	www.jobs-in-bochum.de
Stellen im Ruhrgebiet	https://ruhrgebietjobs.de
Jobbörse für Studierende im Ruhrgebiet	www.jobportal-edu.de
Jobbörse der RUB	www.stellenwerk-bochum.de

Jobangebote im öffentlichen Dienst

Stellenportal des Öffentlichen Dienstes	www.interamt.de
Öffentlicher Dienst in NRW	www.stellenmarkt.nrw.de

[3] Quelle: https://crosswater-job-guide.com (03.01.2019)

Stellenangebote des Bundes	www.service.bund.de

Stellenangebote in Wissenschaft und Forschung

Hochschulen und Forschungseinrichtungen	www.academics.de
Akademische Stellenbörse der ZEIT	https://jobs.zeit.de

**Jobmessen & Karrieretage

Der Besuch von Jobmessen ist ein guter Weg, Unternehmen direkt kennenzulernen.

Die THGA veranstaltet jeweils am letzten Dienstag im Oktober die hausinterne Jobmesse **„Kontakt: Ingenieur“**, dieses Jahr am **29. Oktober 2019 von 11.00-16.00 Uhr.**

Ausgewählte Jobmessen

Jobmesse „Einstieg“: Dortmund, 06.-07. September 2019, Messe Dortmund

www.einstieg.com/messen/dortmund.html

VDI Recruiting Tag: Dortmund, 13. September 2019, Kongresszentrum Westfalenhallen

www.ingenieur.de/recruiting-tage/dortmund

Jobmesse Essen: 28.-29. September 2019, Grugahalle Essen

www.jobmessen.de/essen

Bonding Firmenkontaktmesse Bochum: 15.-16. Oktober 2019, RUB Bochum

www.bochum.firmenkontaktmesse.de

Jobvector Career Day Düsseldorf: 15. November 2019, Classic Remise Düsseldorf

www.jobvector.de/karrieremesse/duesseldorf

Stellenwerk Jobmesse: 21.- 22. April 2020; RUB Bochum

www.stellenwerk-jobmesse.de/bochum

Career development support mechanisms

Describe what tools exist in Germany to support career development (e.g. personal development plans, training, mentoring). Do all engineers have access to these tools? How is the uptake per category (civil, mechanical etc.) and age group (students, graduates up to 35, active engineers up to 50 and older)? Indicate trends in uptake (upwards, downwards, stable). Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

What **tools** exist to support career development in Germany?
The table shows selected examples.

STUDENTS		
	Data found	**Source**
Career services at universities Objectives: • Information on labour market • Develop individual career pads • Prepare the start into working life • Support employability of students Tools • Career advice in general • Analysis of competences • Individual coaching • Workshops (social and personal competencies etc.) • Mentoring programs in different stages of engineering study • Publications etc.	(example) Mentoring program for young students in the engineering sciences (Universität Duisburg-Essen)	https://csnd.de/ (12.08.2019) www.uni-due.de/iw/de/studium/mentoring.php (12.08.2019)
Networks for special student groups Objectives: • Contact and exchange with experienced	Examples VDI: mentoring programme etc.	https://zukunftspiloten.vdi.de/zukunftspiloten/mentoring/ (12.08.2019)

engineers • Build up networks • Get in contact with companies • Access to knowledge • Acquire needed skills an competences Tools: • Mentoring Programs • Summer schools • Seminars and workshops • Network events • Excursions	Women of Wind Energy: Network, Mentoring, Career Building FemTec: international career platform for women in sciences and technics; including Career Building Programme	https://womenofwindenergy.wildapricot.org/ (12.08.2019) https://www.femtec.org/de/studentinnen (12.08.2019)
Internships and bachelor/master thesis in companies Objectives: • Deepen theoretical knowledge • Get work experience/ work in relevant fields • Access to companies and vacancies	Internship placement and search for thesis topics via university or search by students (via internet etc.)	(example) https://praktika.ingenieur.de/ (12.08.2019)
Start-up initiatives at universities Objectives: • Information and advice • Develop skills an competences regarding entrepreneurship • Accompaniment trough the start phase Tools: • Workshops and seminars • Individual advice • Start-up competitions/ Pitches	Examples: Start-Up imitative of the University Duisburg-Essen Start-up initiative of the TU Dresden	www.uni-due.de/innovationhub www.dresden-exsits.de (13.08.2019)
GRADUATES		
Trainee programmes in companies: 12 to 18 month entry-programmes for graduates, mostly in larger, international companies Objectives: • Candidate selection for different positions in the company • Prepare graduates for a long-term employment in the company • Transfer of needed skills and competences/ initial training Tools: • Job Rotation within several departments • Temporary work stays abroad • Network meetings	Trainee-examples for engineers Accenture: Trainee Software Engineering – Java Schott AG: Trainee Product Management / International Graduate Program Rexroth: Trainee - Graduate Specialist Program - Technical Sales Mobile Hydraulics	www.stepstone.de (13.08.2019)
Further training/ HR development in companies		

Objectives: • Transfer of needed skills and competences/ • Prepare young employees for higher positions • Development planning Tools: • annual employee review/ target agreements/ development plans • training courses • training on the job • etc.		
Career advice and coaching in the private sector Objectives: • Individual career counselling, for example for people, planning a job change • Individual career counselling, for special groups, for example people after parental leave • Individual (external) coaching during different stages in professional life Tools: Individual advice and coaching	Example career counselling for engineers Example parental leave Example external coaching for Professionals	www.coaching-personalmanagement.de/karriereberatung-ingenieure https://karriereberatung-pfeffer.de/berufsruckkehrer/ https://www.strobel-coaching.de/fuehrungskraefte-coaching.html (13.08.2019)
ACTIVE ENGINEERS		
Further training/ HR development in companies (see information above) Support for specialist or management careers • Technical/experts seminars • Individual Coaching • Mentoring programmes • Management Trainees • Job shadowing		
Career advice and coaching in the private sector (see information above)		
Support for entrepreneurs Objectives: • Acquire needed skills an competences • Develop a business plan and concept • Accompaniment trough the start phase	Start-up competitions “Senkrechtstarter”: Business plan competition in the Ruhr Area Public business start-up	www.senkrechtstarter.de/

Tools: • Workshops and seminars • Individual coaching • Mentoring • Start-up competitions	initiatives Start-up initiative of the German government Chamber of industry and commerce Private counselling and advice for entrepreneurs	 https://www.existenzgruender.de/ www.ihk.de/gruendungsberatung (example) www.imc-services.de/gruendungsberatung.php (13.08.2019)
EMPLOYERS		
	Data found	**Source**
See mentioned information above, for example HR-development tools and trainee programs…		

Do all engineers have access to these tools?

There are no valid data accessible for the group of engineers.

Career development support for students

In general, (nearly) all students do have access to the mentioned offers, but access to mentoring and career programs or to internships etc. happens on a competitive basis.

Furthermore, places in seminars and workshops at universities are limited.

Trainee programs

➔ access mostly through multi-level application procedure

HR-development in Companies

http://www.bmas.de/SharedDocs/Downloads/DE/PDF-Publikationen/a876-monitor-personalentwicklung.pdf?__blob=publicationFile&v=4 (13.08.2019)

As above-mentioned publication shows, access to HR-development depends on the size of the company. Small companies do not have own HR-development departments.

Advice and Coaching in the private sector

Private counselling and coaching has to be paid individually, access depends on the private financial situation.

Support for entrepreneurs

➔ most offers are open for all interested people

How is the uptake per category (civil, mechanical etc.) and age group (students, graduates up to 35, active engineers up to 50 and older)?

➔ No valid data accessible

Indicate trends in uptake (upwards, downwards, stable)

➔ No valid data accessible

France

Recognition of competences

Describe what tools exist in France to recognise competences acquired instead of next to those encompassed in bachelor, master and doctorate degrees. Is there a system in place, which facilitates rapid recognition of learning acquired through short courses (i.e. micro credentials) or work experience? Provide figures of uptake (cases completed per year. Indicate trends (upwards, downwards, stable). Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

➔

Job search and recruitment practices

Describe what tools exist in France to facilitate job search and recruitment of engineers (public and private labour and recruitment agencies, dedicated national or European portals, informal recruitment through colleagues, friends and relatives). What percentages of vacancies are filled through these tools? Indicate trends in uptake (upwards, downwards, stable). What is the average vacancy time in the main engineering categories in per category (civil, mechanical etc.)? Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

Career development support mechanisms

Describe what tools exist in France to support career development (e.g. personal development plans, training, mentoring). Do all engineers have access to these tools? How is the uptake per category (civil, mechanical etc.) and age group (students, graduates up to 35, active engineers up to 50 and older)? Indicate trends in uptake (upwards, downwards, stable). Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

Italy

Recognition of competences

Describe what tools exist in Italy to recognise competences acquired instead of next to those encompassed in bachelor, master and doctorate degrees. Is there a system in place, which facilitates rapid recognition of learning acquired through short courses (i.e. micro credentials) or work experience? Provide figures of uptake (cases completed per year. Indicate trends (upwards, downwards, stable). Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

Job search and recruitment practices

Describe what tools exist in Italy to facilitate job search and recruitment of engineers (public and private labour and recruitment agencies, dedicated national or European portals, informal recruitment through colleagues, friends and relatives). What percentages of vacancies are filled through these tools? Indicate trends in uptake (upwards, downwards, stable). What is the average vacancy time in the main engineering categories in per category (civil, mechanical etc.)? Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

Career development support mechanisms

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Portugal
➔

Recognition of competences

Describe what tools exist in Portugal to recognise competences acquired instead of next to those encompassed in bachelor, master and doctorate degrees. Is there a system in place, which facilitates rapid recognition of learning acquired through short courses (i.e. micro credentials) or work experience? Provide figures of uptake (cases completed per year. Indicate trends (upwards, downwards, stable). Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

Job search and recruitment practices

Describe what tools exist in Portugal to facilitate job search and recruitment of engineers (public and private labour and recruitment agencies, dedicated national or European portals, informal recruitment through colleagues, friends and relatives). What percentages of vacancies are filled through these tools? Indicate trends in uptake (upwards, downwards, stable). What is the average vacancy time in the main engineering categories in per category (civil, mechanical etc.)? Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

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Sweden

Recognition of competences

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Job search and recruitment practices

Describe what tools exist in Sweden to facilitate job search and recruitment of engineers (public and private labour and recruitment agencies, dedicated national or European portals, informal recruitment through colleagues, friends and relatives). What percentages of vacancies are filled through these tools? Indicate trends in uptake (upwards, downwards, stable). What is the average vacancy time in the main engineering categories in per category (civil, mechanical etc.)? Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

Career development support mechanisms

Describe what tools exist in Sweden to support career development (e.g. personal development plans, training, mentoring). Do all engineers have access to these tools? How is the uptake per category (civil, mechanical etc.) and age group (students, graduates up to 35, active engineers up to 50 and older)? Indicate trends in uptake (upwards, downwards, stable). Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

Ireland

Recognition of competences

Describe what tools exist in Ireland to recognise competences acquired instead of next to those encompassed in bachelor, master and doctorate degrees. Is there a system in place, which facilitates rapid recognition of learning acquired through short courses (i.e. micro credentials) or work experience? Provide figures of uptake (cases completed per year. Indicate trends (upwards, downwards, stable). Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

Job search and recruitment practices

Describe what tools exist in Ireland to facilitate job search and recruitment of engineers (public and private labour and recruitment agencies, dedicated national or European portals, informal recruitment through colleagues, friends and relatives). What percentages of vacancies are filled through these tools? Indicate trends in uptake (upwards, downwards, stable). What is the average vacancy time in the main engineering categories in per category (civil, mechanical etc.)? Mention sources and gaps in data. Suggest ways to overcome the gaps (e.g. E4E partner surveys).

Career development support mechanisms

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