



CoE HOTSPOTS OF THE WORLD

NOVEMBER 2020

zinnoV



20 YEARS **250+** CUSTOMERS **450+** EMPLOYEES **7** GLOBAL OFFICES

Zinnov is a global management consulting firm committed to empowering the world's leading technology companies with their business strategy. We help our clients in tackling organizational challenges to improve performance and build institutional capability.

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AND PLATFORM
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Outsourcing Advisory
Start-up Engagement
Digital Transformation

Global Engineering Optimization
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Strategy & GTM
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SEMICON & ELECTRONICS



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HEAVY ENGINEERING & INDUSTRIAL



HEALTHCARE



BFSI



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COUNTRY DEEP DIVES

NORTH AMERICA

CANADA

EASTERN EUROPE

ROMANIA, ESTONIA, LITHUANIA, BULGARIA, BELARUS,
CZECHIA, POLAND

LATAM

MEXICO, BRAZIL

APAC

PHILIPPINES, CHINA, INDIA

Where are the top CoE hotspots of the world?

OBJECTIVE

TO IDENTIFY CENTERS OF EXCELLENCE HOTSPOTS
IN THE WORLD WHERE COMPANIES CAN:

**BUILD SCALABLE
AND FULL
SOFTWARE
PRODUCT
ENGINEERING
TEAMS**

**LEVERAGE A
MATURE
ECOSYSTEM**

**HAVE HIGH
EASE OF DOING
BUSINESS**

**BUILD TEAMS
AT AFFORDABLE
COSTS**

TALENT

ECOSYSTEM

EASE OF BUSINESS

COST

ABOUT THE REPORT

TARGET AUDIENCE

CXOs; Strategy, Operations and HR Leadership from Global MNCs, Private Equity Firms

IMPORTANT NOTE

Selection of the countries to be studied was made based on the fact that these countries show high potential for software engineering as observed over 18 years of Zinnov's experience working with global organizations, which have shown interest in these countries.

DISCLAIMER

By no means is this an exhaustive list of countries where companies can set up software engineering teams. The study is a Zinnov's point of view on potential locations for building Centers of Excellence with analysis based on Zinnov's database, primary and secondary research.

DEEP DIVES

The report contains a deep-dive on software engineering capability of the countries below:

- Eastern Europe- Poland, Czechia, Bulgaria, Romania, Lithuania, Estonia and Belarus
- North America- Canada and USA
- APAC- India, China and Philippines
- LATAM- Mexico and Brazil

TAXONOMY

- **Z1000 Database:** Database of top 1,000 global ER&D spenders across 20+ verticals. The cumulative list has a coverage of 80% of all the global companies investing in engineering R&D across industry verticals
- **Zinnov Service Provider Database:** Database of 600+ ER&D Service Providers tracked across the globe
- **Start-ups:** Companies established in the last 5 years with core tech offerings and must be at a prototype stage or have an MVP
- **Unicorns:** Privately held start-ups with over \$1 billion valuation (as of March 2020)
- **Software Engineering Talent:** The talent pool employed in global product companies primarily responsible for building computer system software and application software
- **Time to Hire:** The total time spent (in weeks) from the time of posting the job description regarding a role till the time of extension of the first offer
- **Attrition rate:** Rate of employee turnover in a year across software engineering companies
- **Salary growth:** Year-on-year growth rate in average salaries(across roles and years of experience) for software engineering companies
- **Higher educational institutions:** Top-tier engineering schools based out of that location

SOFTWARE ENGINEERING JOB ROLES

- **Software Development Engineer:** Software Developer, Front-End Developer, Application Developer, Software Engineer, Web Developer, Mobile Application Developer, IT Developer
- **QA Engineer:** Quality Assurance Engineer, QA Manual Engineer, QA Automation Engineer, Test Automation Engineer
- **Database Administrator:** Database Engineer, Database Specialist, Database Developer, SQL Server Database Administrator
- **DevOps Engineer:** DevOps Developer, DevOps Specialist, Platform Engineer, Reliability Engineer
- **Architect:** Software Architect, Application Architect, Enterprise Architect, Infrastructure Architect

IN THIS REPORT



Evaluation framework for countries' analysis



Global software engineering landscape



Deep dive analysis of each country

Evaluation Framework for Countries' Analysis

The countries in this report have been evaluated on 4 key lenses as shown below:

1 TALENT AVAILABILITY

- Availability of relevant talent in a country
- Attrition of software engineering talent in a country
- Time to hire
- Average notice period
- Overall gender diversity
- Number of STEM graduates per year

2 SOFTWARE ENGINEERING ECOSYSTEM MATURITY

- Z1000 global companies and their centers across these countries
- Number of start-ups and unicorns
- Revenue generated from the IT services industry
- Number of engineering schools and focus areas of research

3 EASE OF DOING BUSINESS

- Geopolitical stability
- IP and Data privacy
- English capability
- Others –
 - Corporate tax
 - Government incentives
 - Employment law complexity
 - SEZs available (if any)

4 COST ANALYSIS

- Talent Cost
- Center set up cost (real estate and build out cost, assuming IT infrastructure cost would be same across countries)
- Average salary growth per year
- Average inflation rate per year

CoE Potential of the following countries is studied in this report

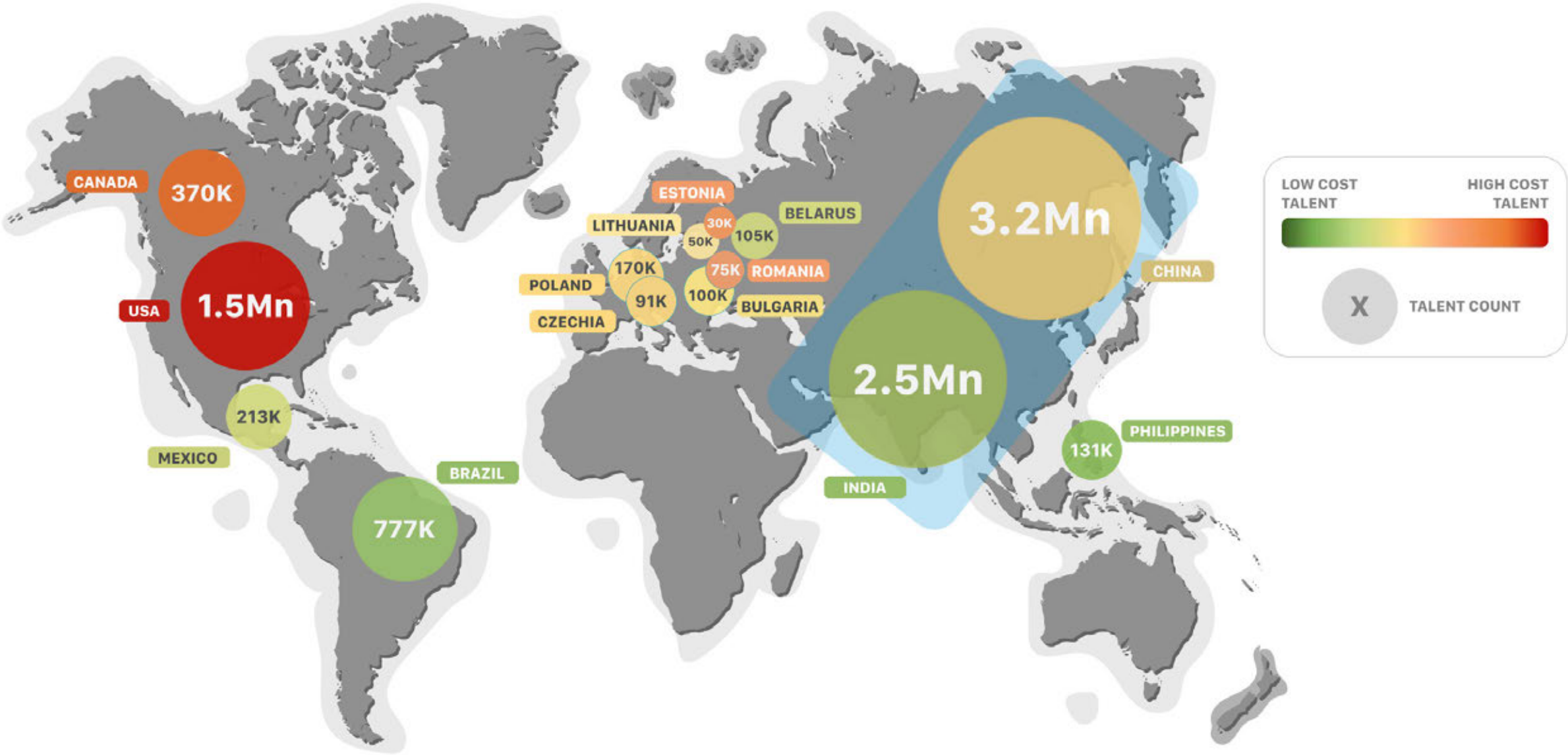


NOTE : CERTAIN COUNTRIES LIKE UKRAINE HAVE NOT BEEN EVALUATED, AS IN RECENT YEARS, THE GEOPOLITICAL SITUATION IN THOSE LOCATIONS HAS LED TO THEM LOSING THEIR ATTRACTIVENESS AS PREFERRED LOCATIONS FOR CoEs

GLOBAL SOFTWARE ENGINEERING LANDSCAPE

IN THIS SECTION, WE PROVIDE A COMPARATIVE ANALYSIS OF
THE GLOBAL SOFTWARE ENGINEERING LANDSCAPE

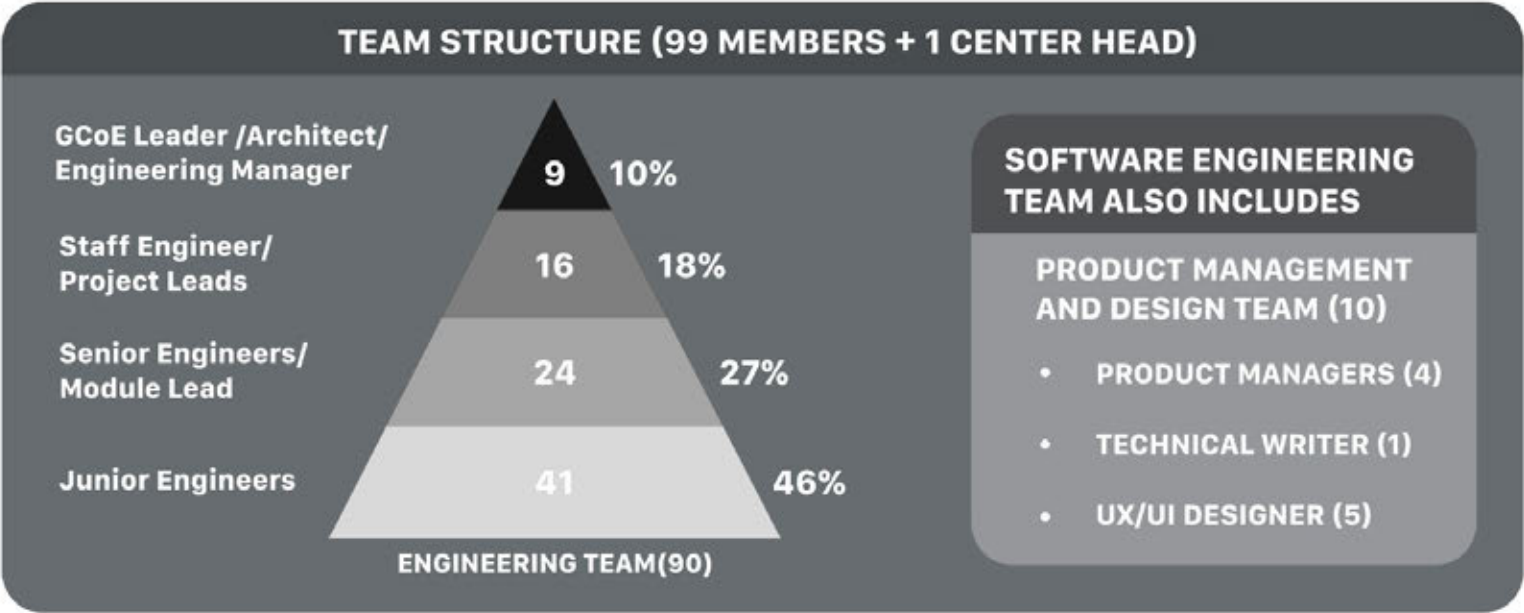
Global Software Engineering Talent Availability and Cost



Assumed Talent Pyramid for a 100-member Software Engineering team to build a CoE

As part of this analysis, we have assumed a software engineering team size of 100.

We have divided the software engineering team into 2 different functions: engineering team and product management & design team.

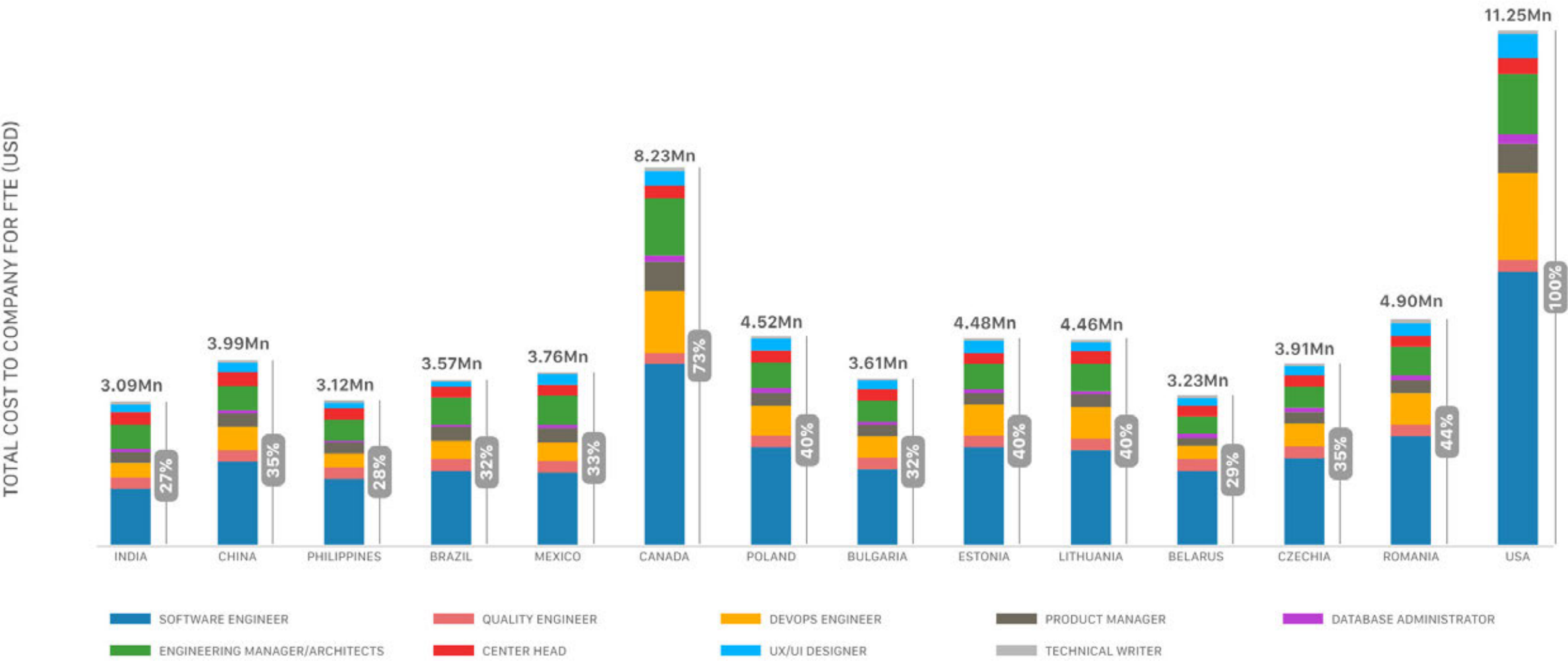


ENGINEERING TEAM	HEADCOUNT	1-4 YoE	3-6 YoE	5-8 YoE	8+ YoE
Software Development Engineer	57	33	16	8	
Quality Engineer	14	8	4	2	
DevOps Engineer	8		3	5	
Database Administrator	2		1	1	
Engineering Manager/Architect	8				8
Center Head	1				1
TOTAL	90	41	24	16	9

PRODUCT MANAGEMENT AND DESIGN TEAM	HEADCOUNT	1-4 YoE	3-6 YoE	5-8 YoE	8+ YoE
Product Manager	4				4
Technical Writer	1		1		
UX/UI Designer	5		2	3	
TOTAL	10	0	3	3	4



Salary Costs for a 100-member Software Engineering team in each country, relative to cost in USA



Please note: Average salaries numbers across YoE have been used in this analysis, however when setting up engineering teams in a new location, it is recommended to adjust salary percentile suitable to attract top local talent

Team Scalability Analysis - 100-member Team: Software engineering talent availability as a function of 'number to hire' in comparison with USA



JOB ROLE	NUMBER TO HIRE	INDIA	CHINA	PHILIPPINES	POLAND	BULGARIA	ROMANIA	LITHUANIA	BRAZIL	MEXICO	ESTONIA	CZECHIA	BELARUS	CANADA	UNITED STATES
Software Development Engineer	57	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Quality Engineer	14	●	●	●	●	●	●	●	●	●	●	●	●	●	●
DevOps Engineer	8	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Database Administrator	2	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Architect	2	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Engineering Manager	6	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Product Manager	4	●	●	●	●	●	●	●	●	●	●	●	●	●	●
UX/UI Designer	5	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Technical Writer	1	●	●	●	●	●	●	●	●	●	●	●	●	●	●

*Availability is for all levels of experience - not restricted to 3-6 years

<100X AVAILABILITY

100X AVAILABILITY

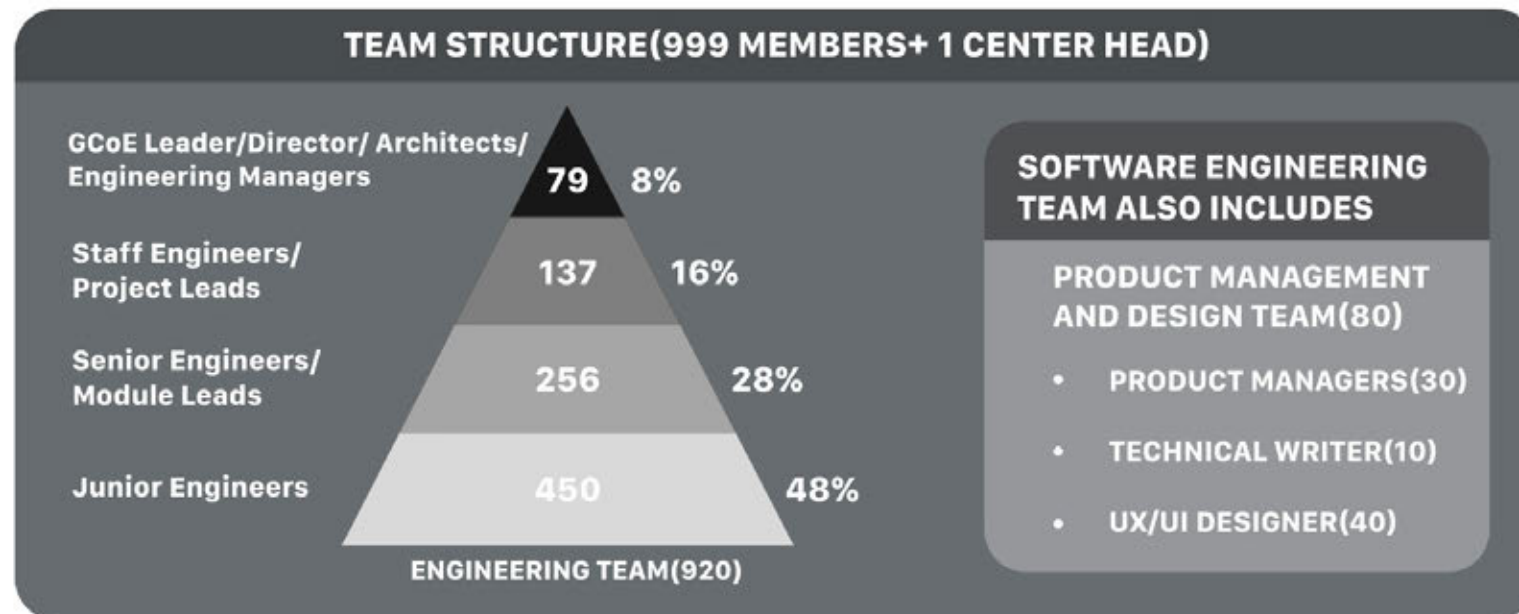
500X AVAILABILITY

Assumed Talent Pyramid for a 1000-member Software Engineering team to build a CoE

To determine the scalability potential and cost, we also looked at a talent pyramid of 1000-member software engineering team.

We have divided the software engineering team into 2 different functions: Engineering Team and Product Management & Design Team

The 1000-member pyramid is relatively flatter at the bottom and the functional roles like DevOps and QA are not increased proportionally as we scale from 100 to a 1000-member team



ENGINEERING TEAM	HEADCOUNT	1-4 YoE	3-6 YoE	5-8 YoE	8+ YoE
Software Development Engineer	616	330	188	100	
Quality Engineer	155	83	47	25	
DevOps Engineer	60	32	18	10	
Database Administrator	10	5	3	2	
Engineering Manager/Architect	73				73
Director	5				5
Center Head	1				1
TOTAL	920	450	256	137	79

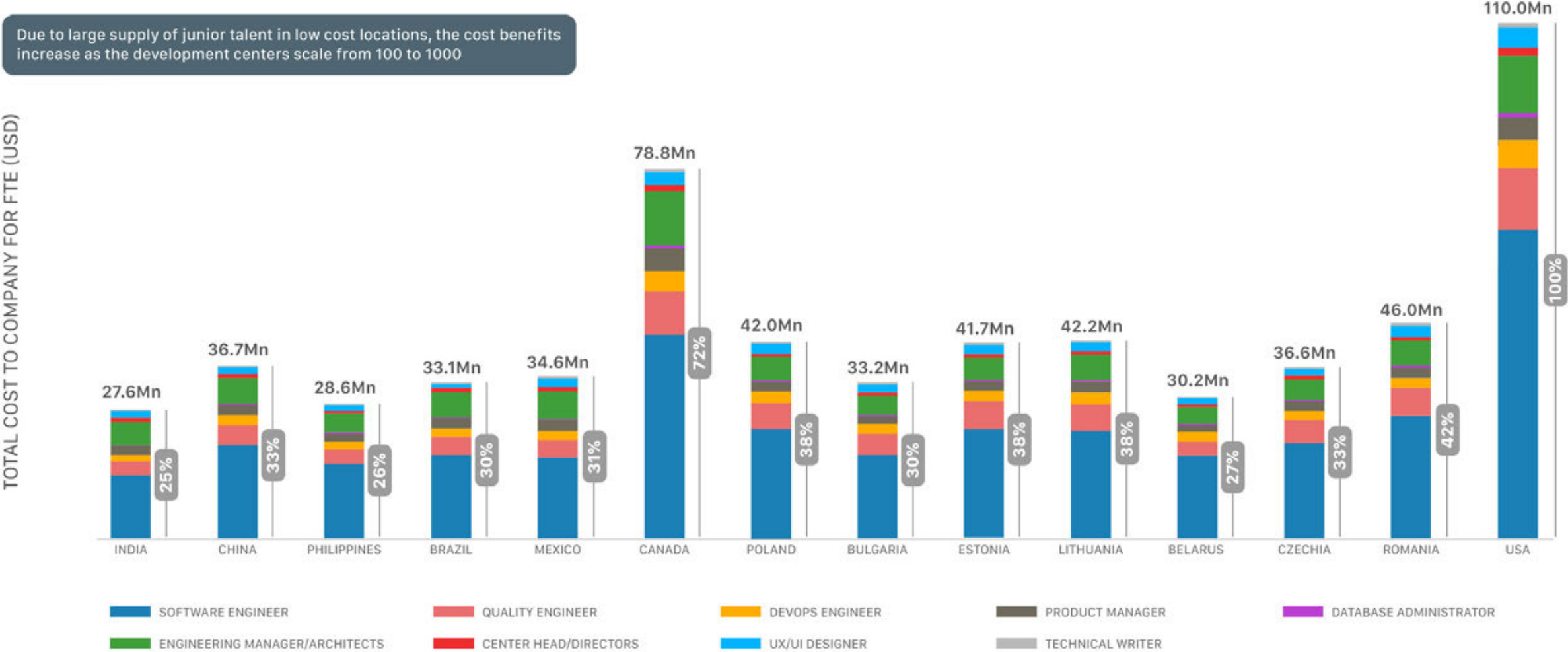
PRODUCT MANAGEMENT AND DESIGN TEAM	HEADCOUNT	1-4 YoE	3-6 YoE	5-8 YoE	8+ YoE
Product Manager	30				30
Technical Writer	10		10		
UX/UI Designer	40		20	20	
TOTAL	80		30	20	30



Salary Costs for a 1000-member Software Engineering team in each country, relative to cost in USA



Due to large supply of junior talent in low cost locations, the cost benefits increase as the development centers scale from 100 to 1000



Please note: Average salaries numbers across YoE have been used in this analysis, however when setting up engineering teams in a new location it is recommended to adjust salary percentile suitable to attract top local talent

Team Scalability Analysis - 1000-member team: Software engineering talent availability as a function of 'number to hire' in comparison with USA





JOB ROLE	NUMBER TO HIRE	INDIA	CHINA	PHILIPPINES	POLAND	BULGARIA	ROMANIA	LITHUANIA	BRAZIL	MEXICO	ESTONIA	CZECHIA	BELARUS	CANADA	UNITED STATES
Software Development Engineer	616	500X	500X	100X	100X	<100X	<100X	<100X	500X	100X	<100X	100X	<100X	500X	500X
Quality Engineer	155	500X	500X	<100X	<100X	<100X	<100X	<100X	100X	<100X	<100X	<100X	<100X	100X	500X
DevOps Engineer	60	500X	500X	100X	100X	<100X	100X	<100X	100X	<100X	<100X	<100X	<100X	500X	500X
Database Administrator	10	500X	500X	<100X	<100X	<100X	<100X	<100X	100X	<100X	<100X	<100X	<100X	100X	500X
Architect	10	500X	500X	100X	100X	<100X	100X	100X	500X	100X	<100X	<100X	<100X	500X	500X
Engineering Manager	63	500X	500X	<100X	100X	<100X	<100X	<100X	<100X	100X	<100X	100X	<100X	500X	500X
Product Manager	30	500X	500X	<100X	100X	<100X	<100X	<100X	<100X	100X	<100X	<100X	<100X	500X	500X
UX/UI Designer	40	500X	500X	100X	100X	100X	100X	100X	500X	100X	<100X	100X	<100X	500X	500X
Technical Writer	10	500X	500X	100X	100X	100X	100X	100X	<100X	100X	<100X	<100X	<100X	500X	500X

It is evident that global companies would struggle to scale 1000-member teams in almost all the countries except India, China, Canada, and US

*Availability is for all levels of experience - not restricted to 3-6 years

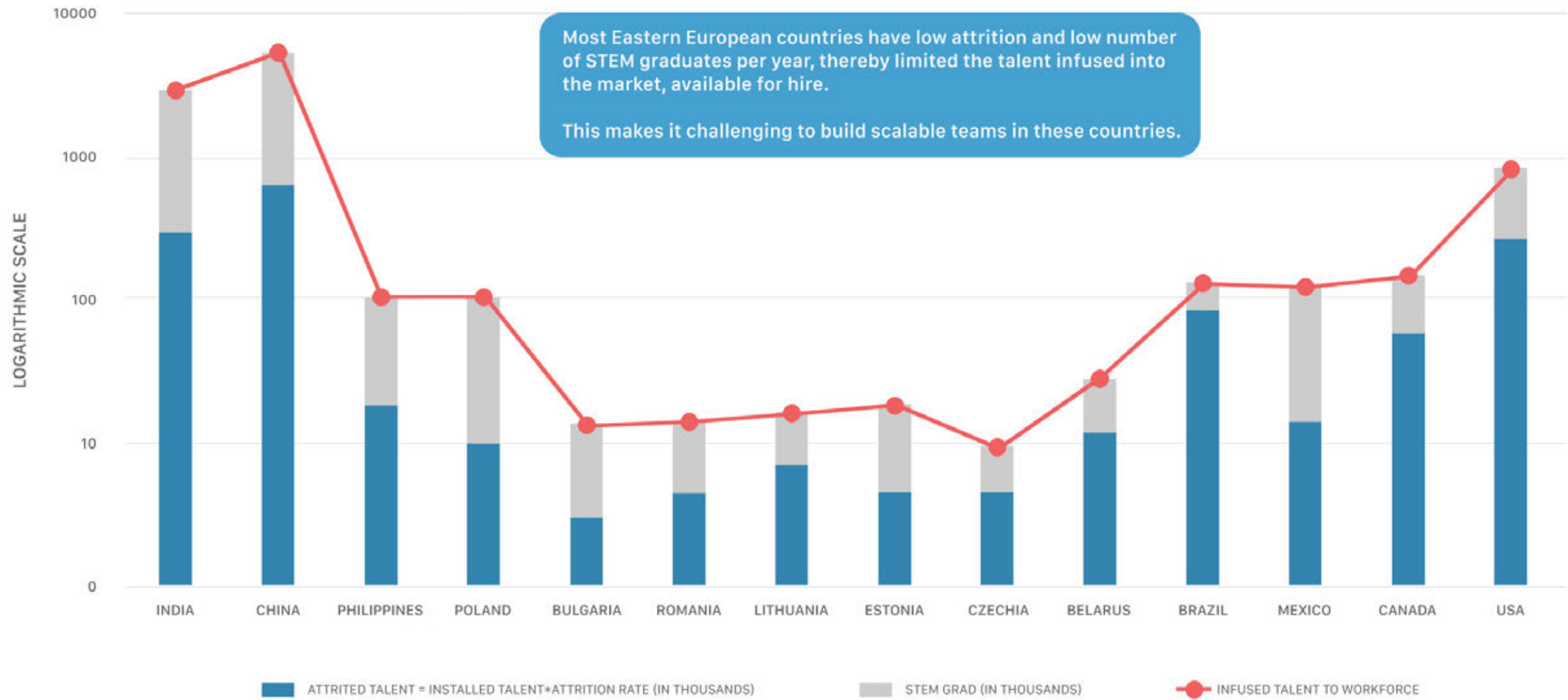
**<100X AVAILABILITY**

**100X AVAILABILITY**

**500X AVAILABILITY**

Talent available to hire = f(Attrited Talent + STEM graduates)

High number of STEM graduates + High number of attrited talent = High number of infused talent to workforce

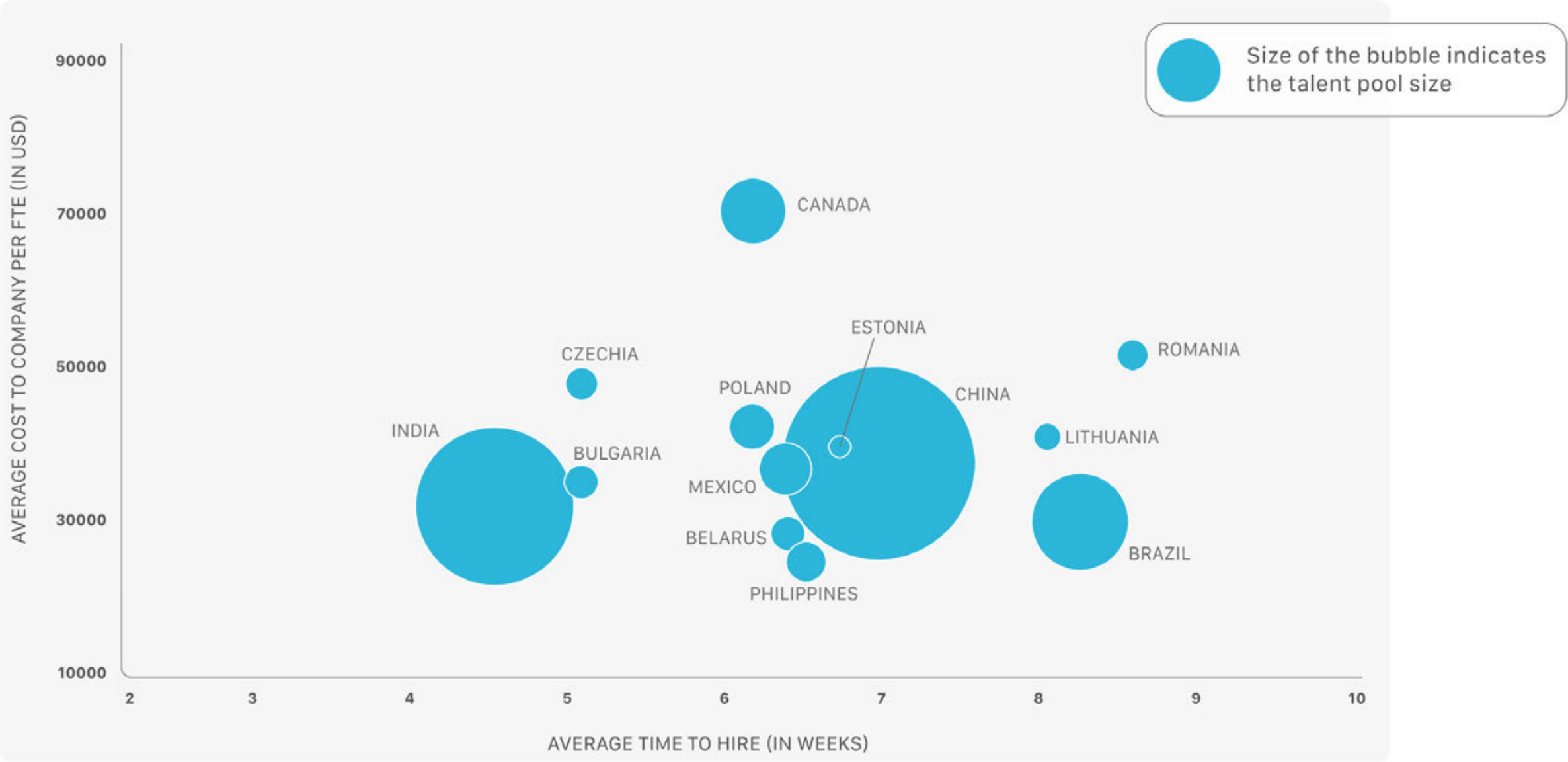


SOFTWARE ENGINEERING: TALENT POOL AND COST ANALYSIS

IN THIS SECTION, WE DELVE INTO THE FOLLOWING ANALYSES

- TALENT AVAILABILITY ANALYSIS FOR SOFTWARE ENGINEERING ROLES
- COST (TALENT COST, SETUP COST) ANALYSIS

Talent Pool, Cost, and Time to Hire Analysis

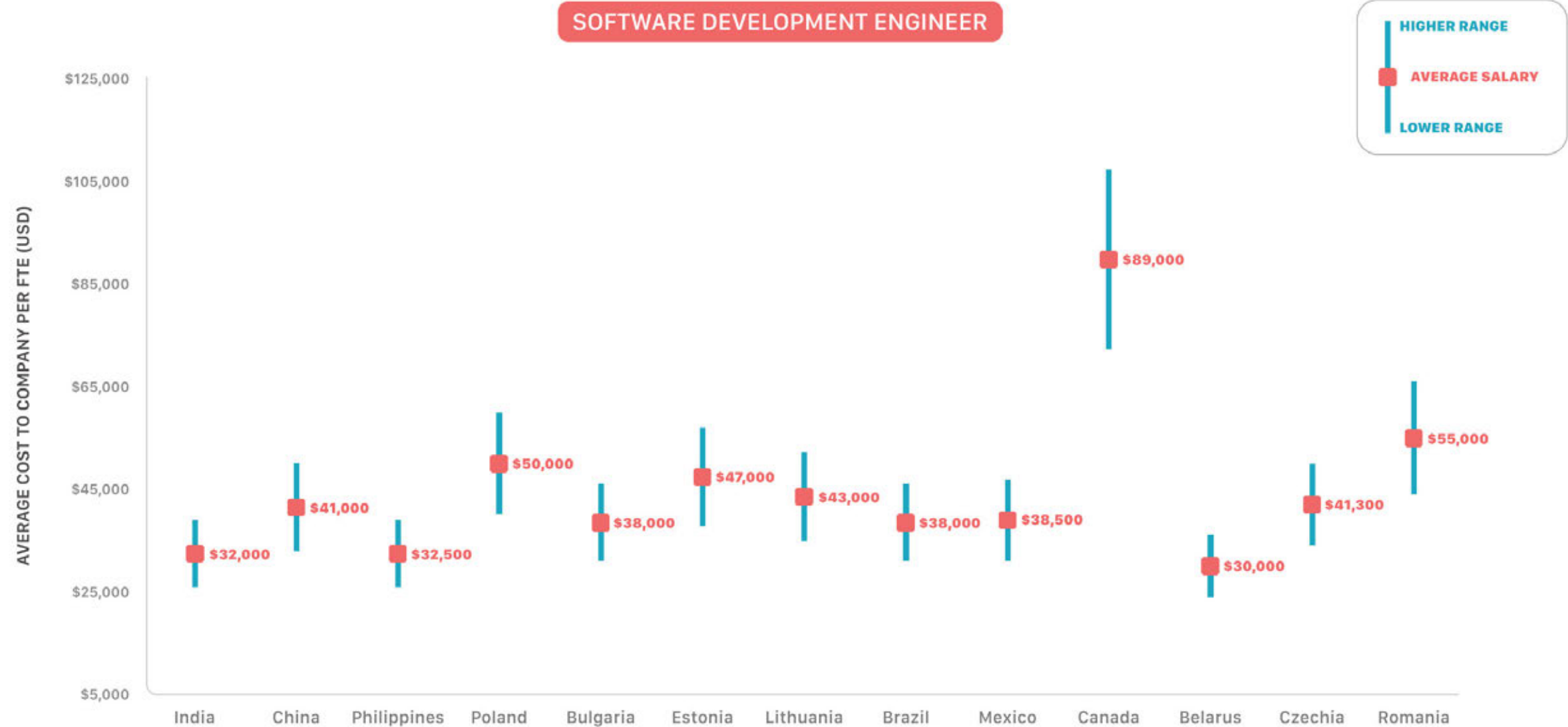


Comparative Talent Cost Analysis across shortlisted countries

1/9



SOFTWARE DEVELOPMENT ENGINEER



Note: Average salary has been considered across all the years of experience of the tech talent available in the country

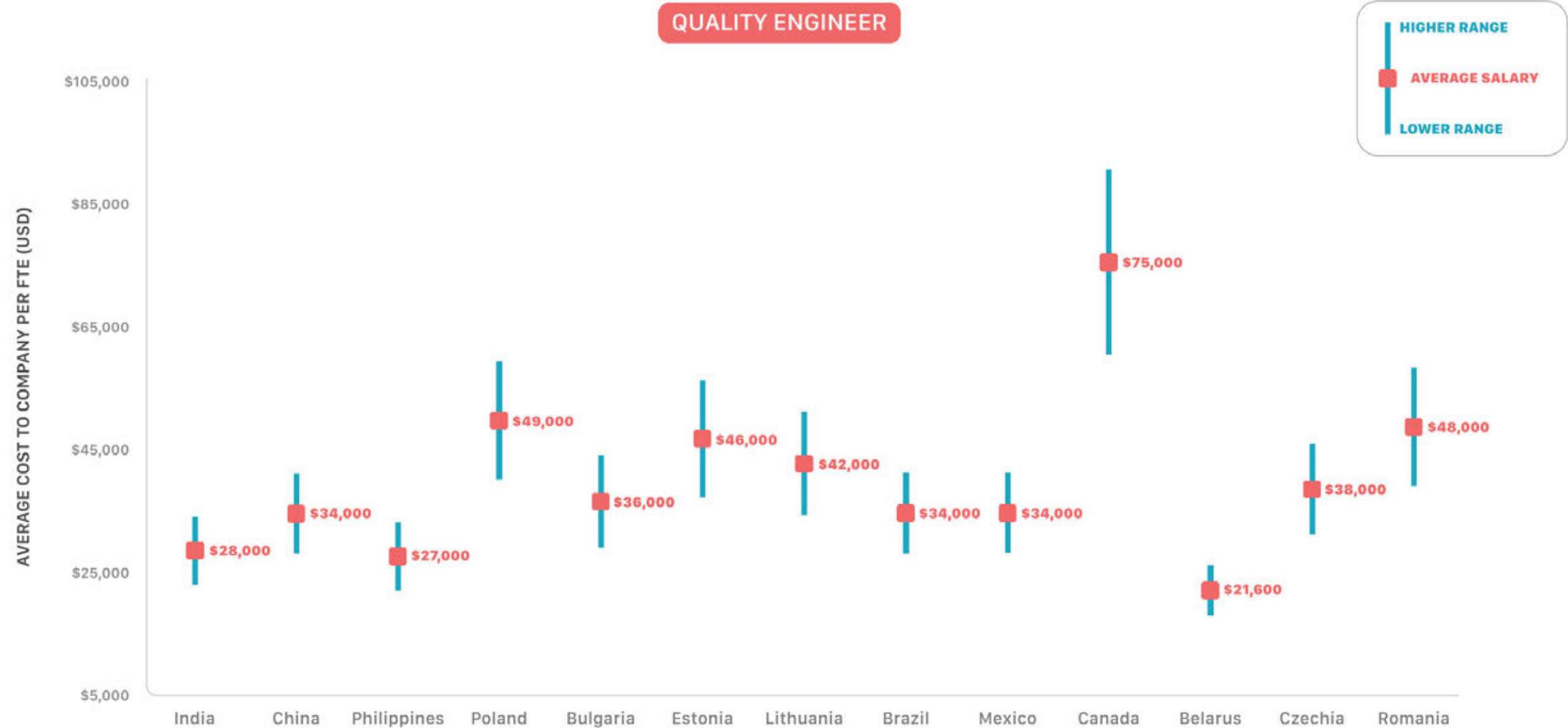
Source: DRAUP, Zinnov Primary Research

Comparative Talent Cost Analysis across shortlisted countries

2/9



QUALITY ENGINEER



Note: Average salary has been considered across all the years of experience of the tech talent available in the country

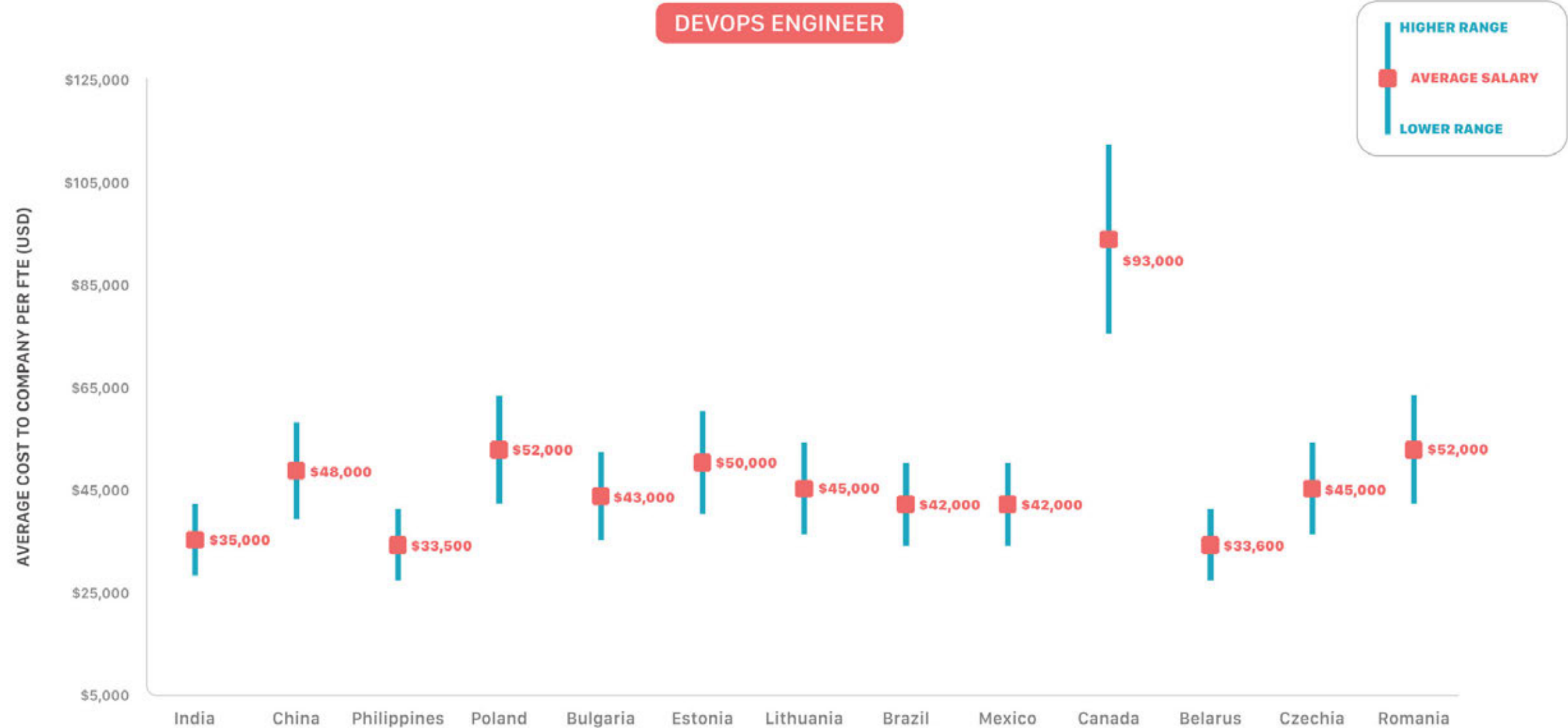
Source: DRAUP, Zinnov Primary Research

Comparative Talent Cost Analysis across shortlisted countries

3/9



DEVOPS ENGINEER



Note: Average salary has been considered across all the years of experience of the tech talent available in the country

Source: DRAUP, Zinnov Primary Research

Comparative Talent Cost Analysis across shortlisted countries

PRODUCT MANAGER



Note: Average salary has been considered across all the years of experience of the tech talent available in the country

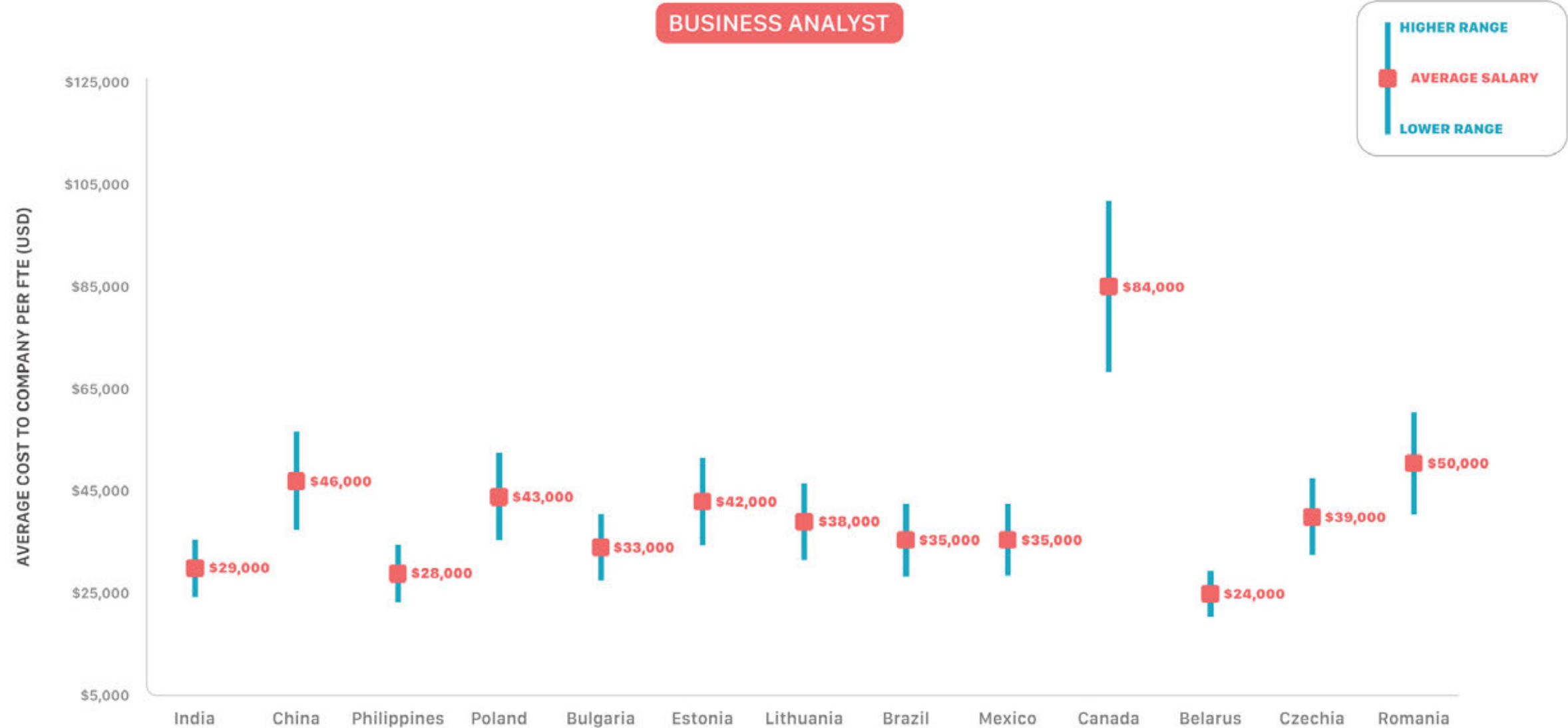
Source: DRAUP, Zinnov Primary Research

Comparative Talent Cost Analysis across shortlisted countries

5/9



BUSINESS ANALYST



Note: Average salary has been considered across all the years of experience of the tech talent available in the country

Source: DRAUP, Zinnov Primary Research

Comparative Talent Cost Analysis across shortlisted countries

ARCHITECT

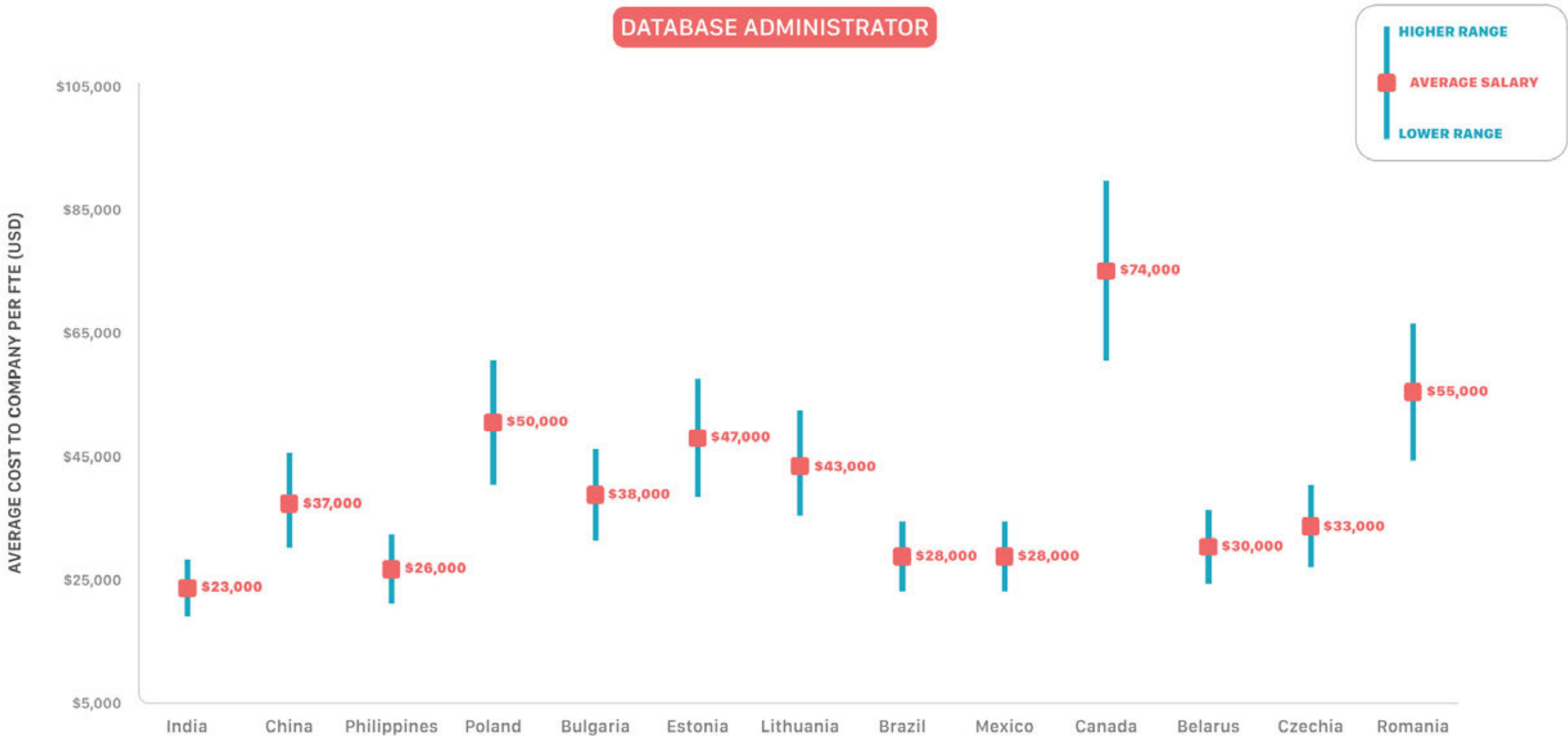


Note: Average salary has been considered across all the years of experience of the tech talent available in the country

Source: DRAUP, Zinnov Primary Research

Comparative Talent Cost Analysis across shortlisted countries

DATABASE ADMINISTRATOR

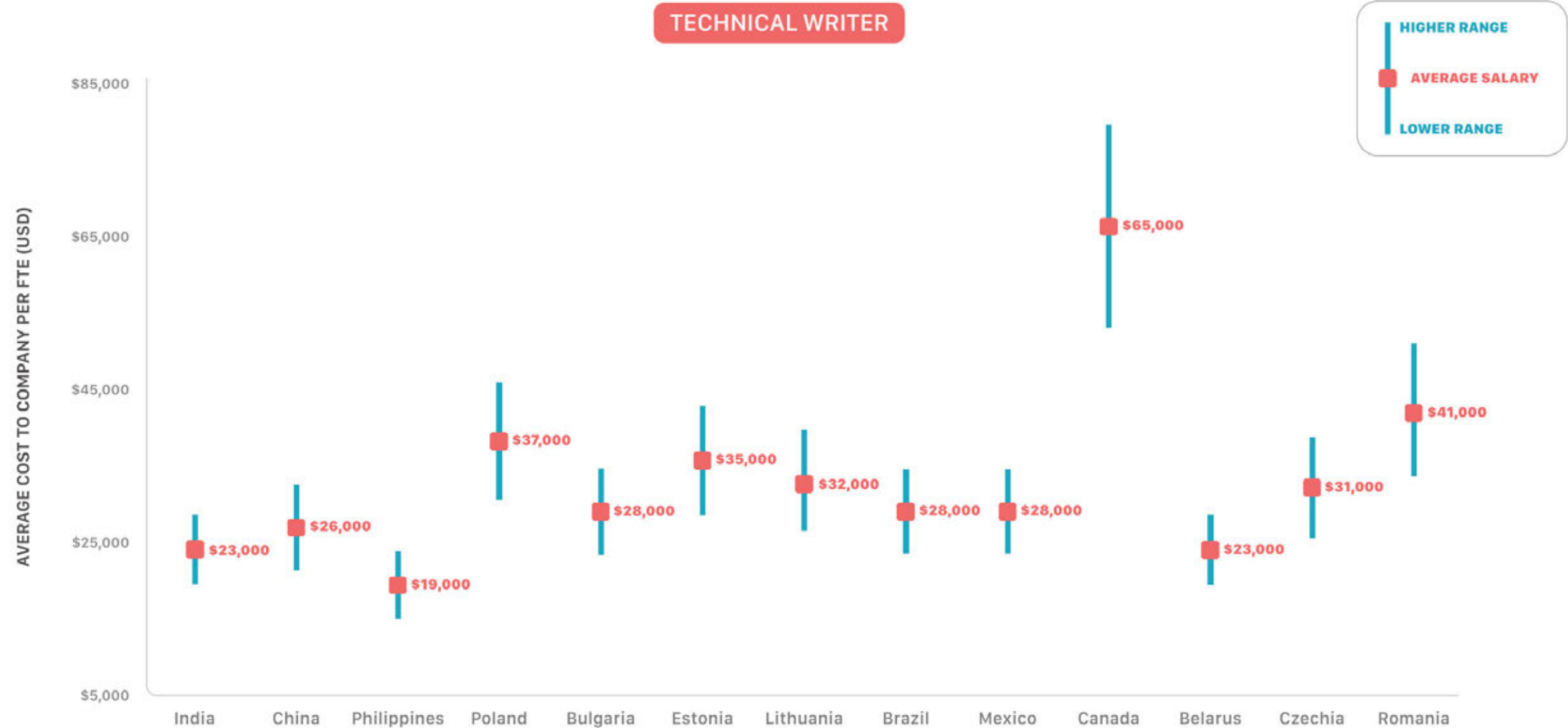


Note: Average salary has been considered across all the years of experience of the tech talent available in the country

Source: DRAUP, Zinnov Primary Research

Comparative Talent Cost Analysis across shortlisted countries

TECHNICAL WRITER

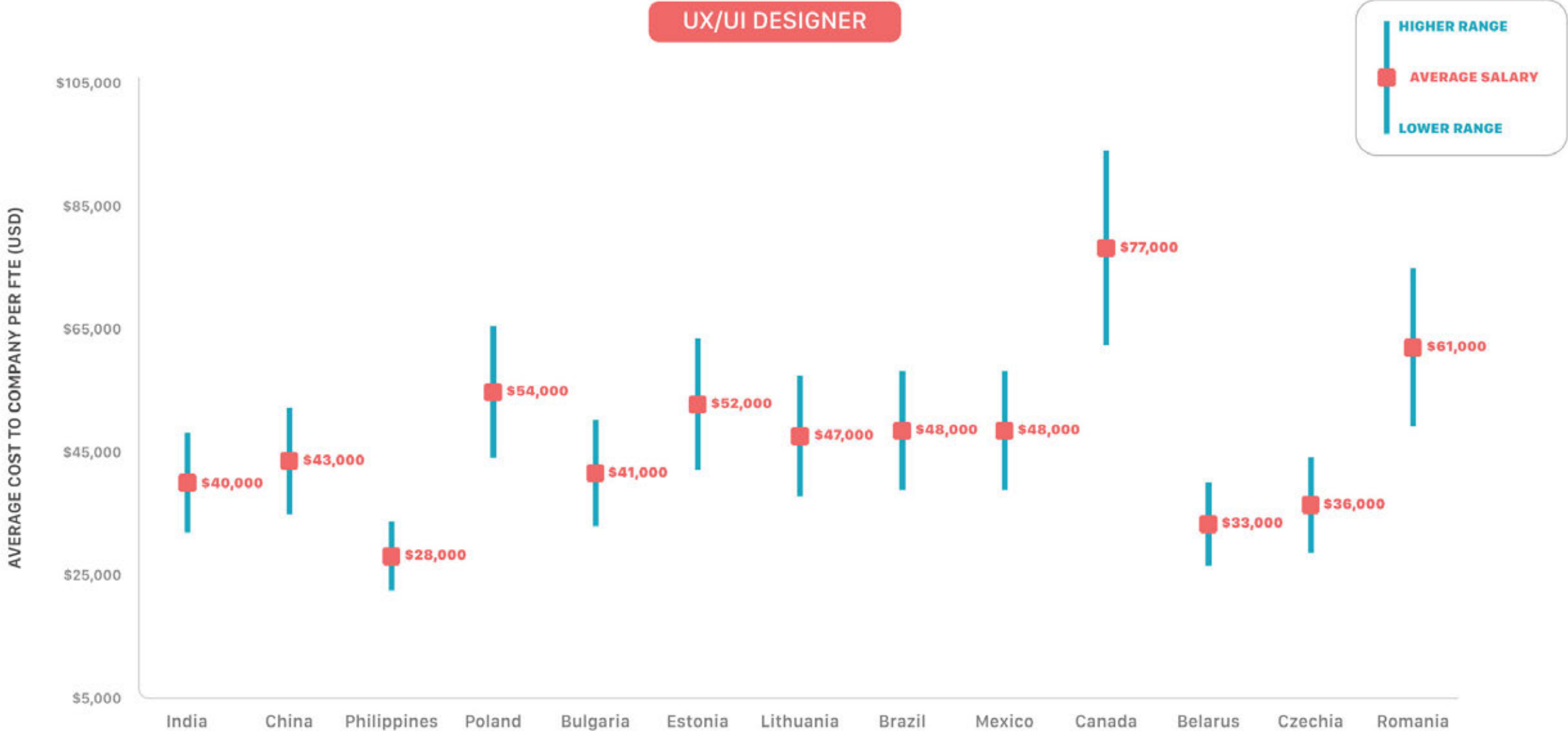


Note: Average salary has been considered across all the years of experience of the tech talent available in the country

Source: DRAUP, Zinnov Primary Research

Comparative Talent Cost Analysis across shortlisted countries

UX/UI DESIGNER



Note: Average salary has been considered across all the years of experience of the tech talent available in the country

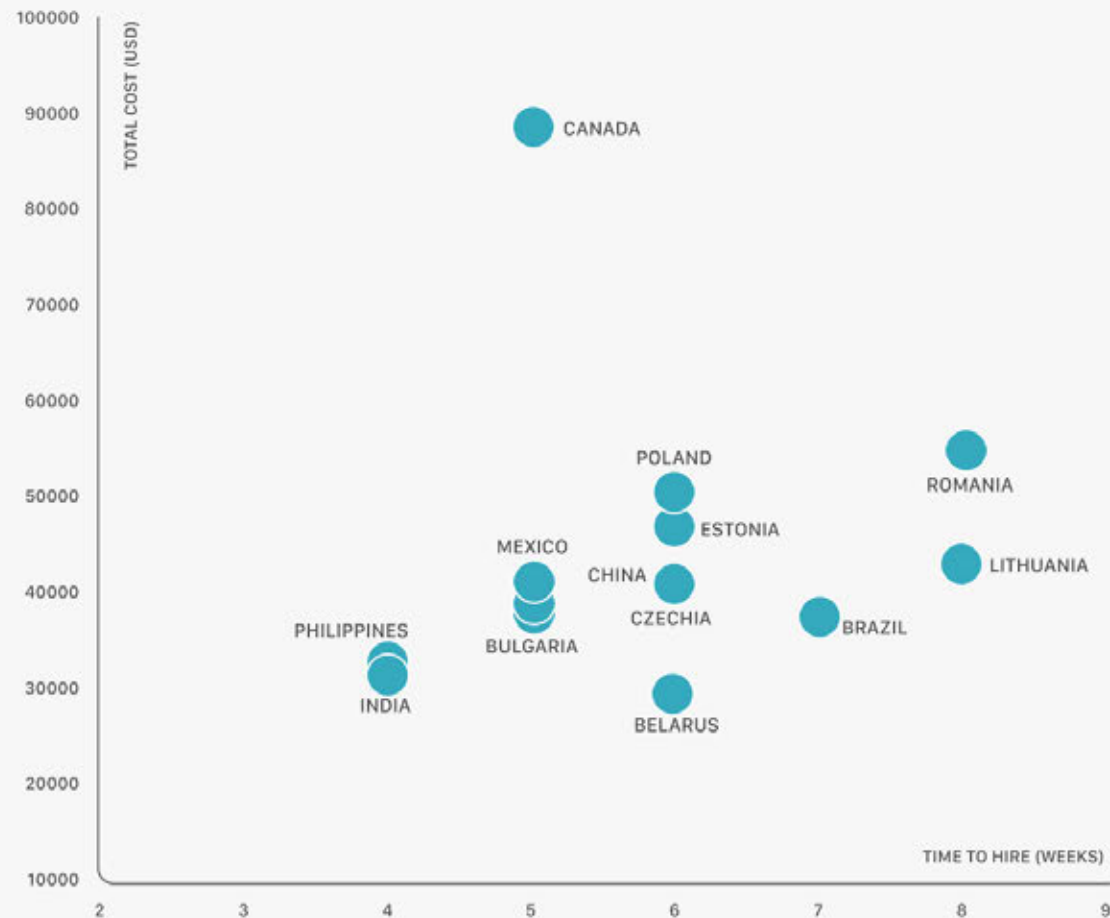
Source: DRAUP, Zinnov Primary Research

Comparative Talent Cost vs Time-to-hire Analysis across shortlisted countries

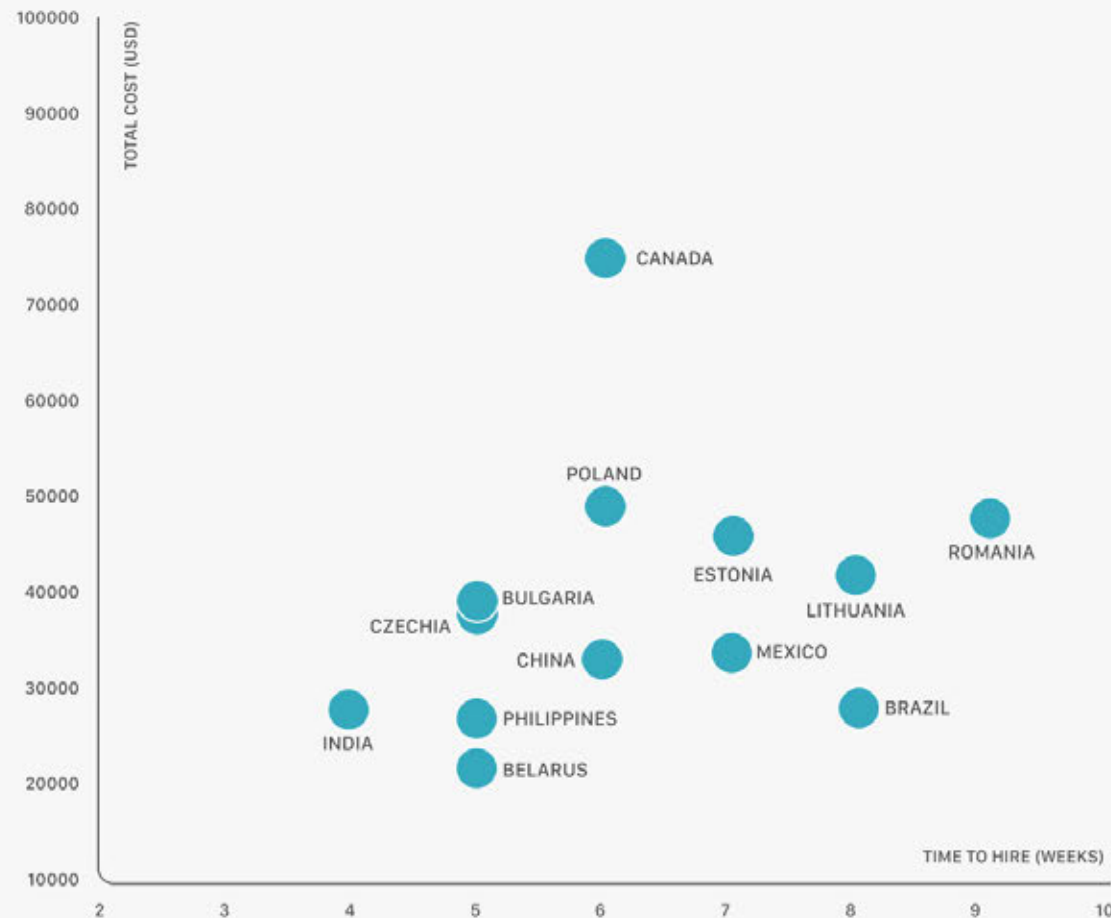
1/5



SOFTWARE DEVELOPMENT ENGINEER



QA ENGINEER

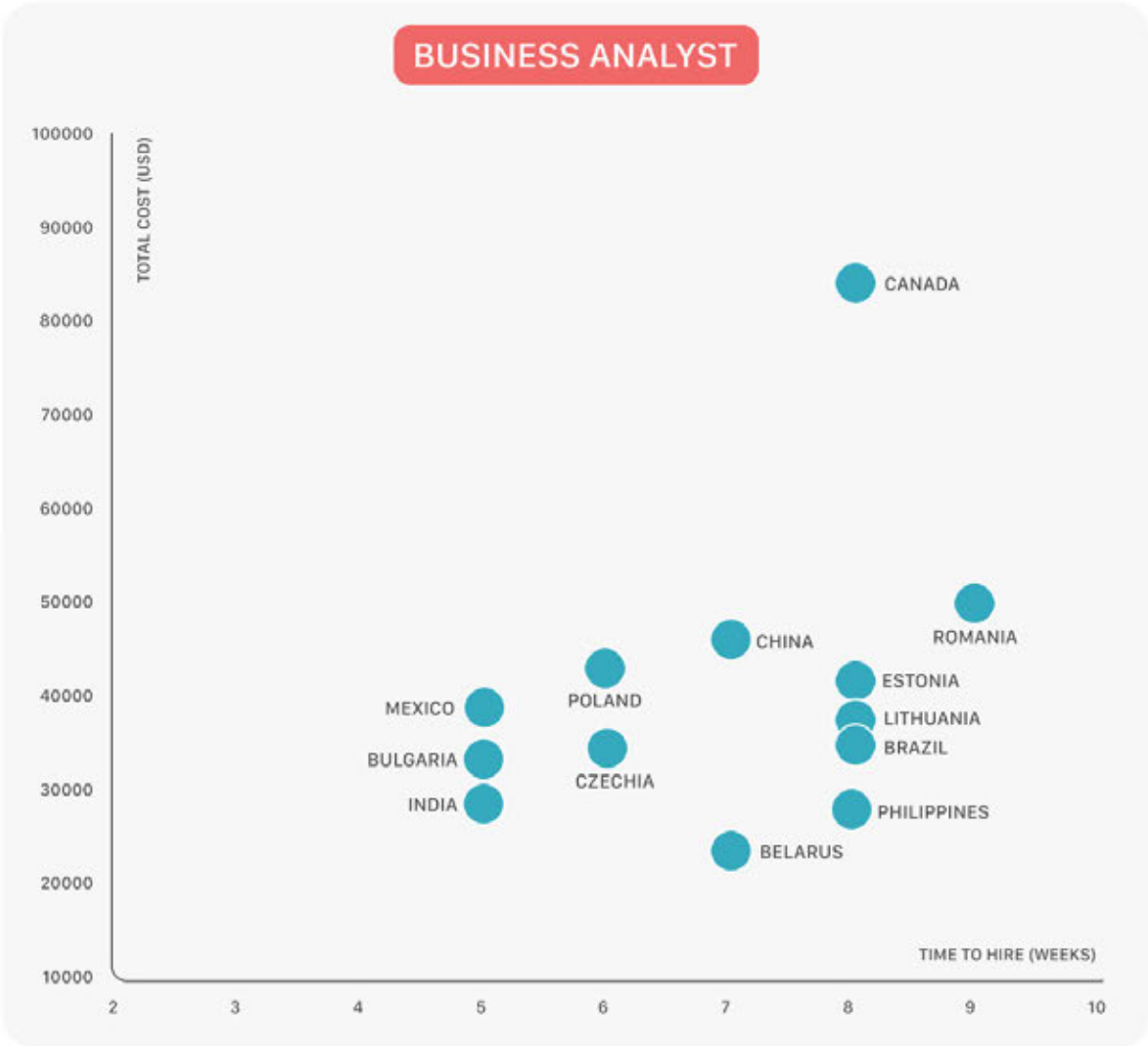
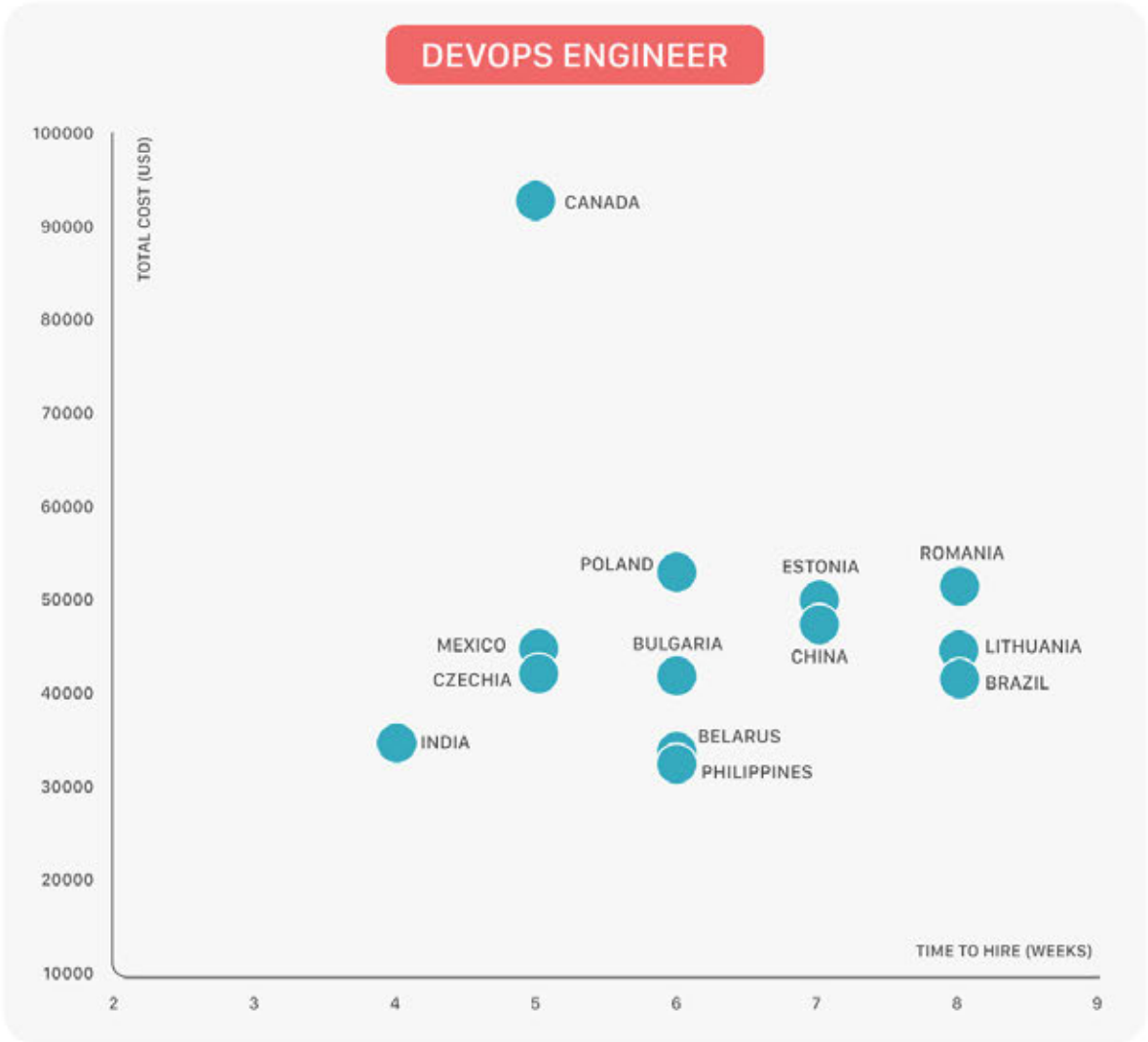


Note: Average salary has been considered across all the years of experience of the tech talent available in the country

Source: DRAUP, Zinnov Primary Research

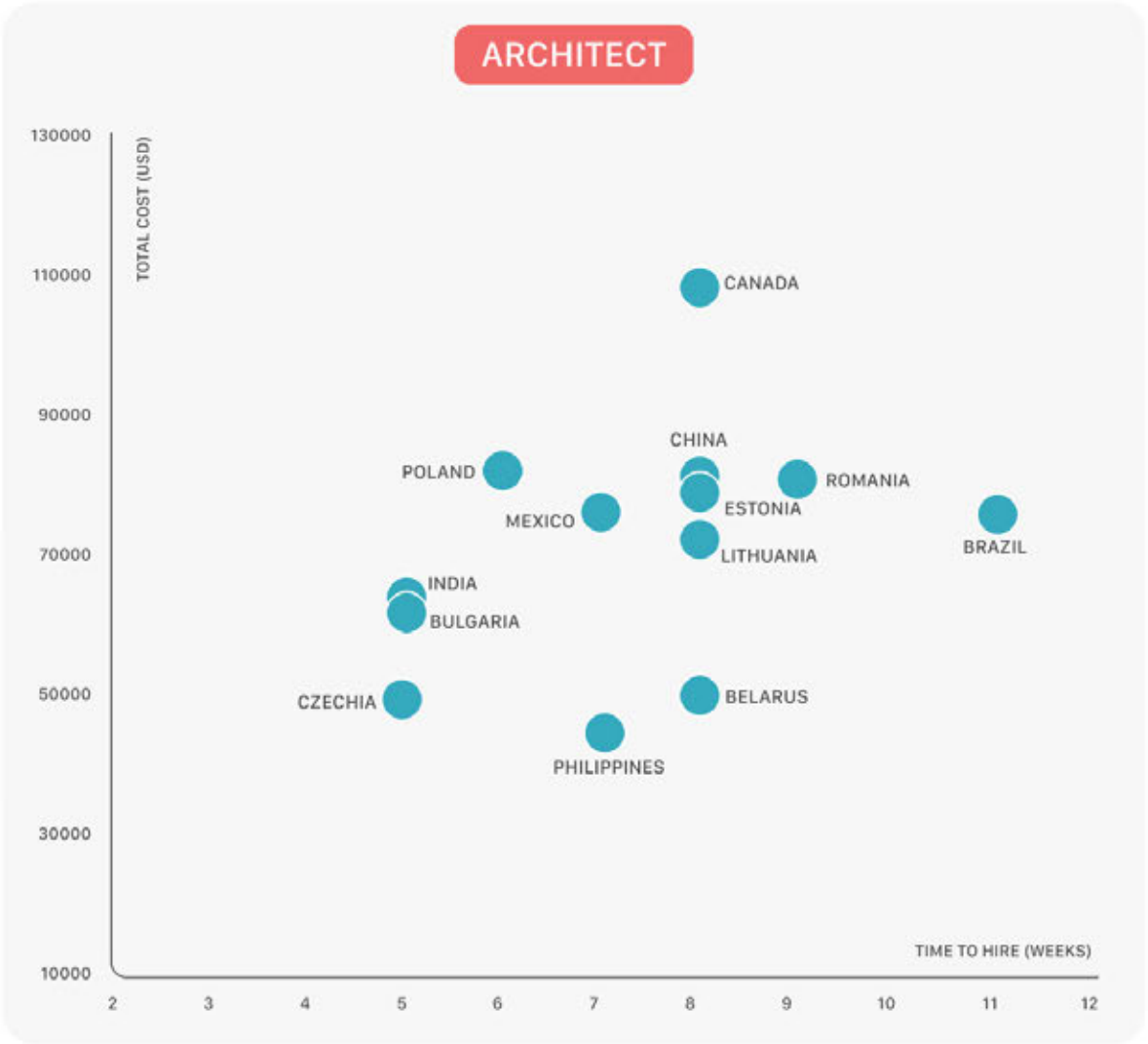
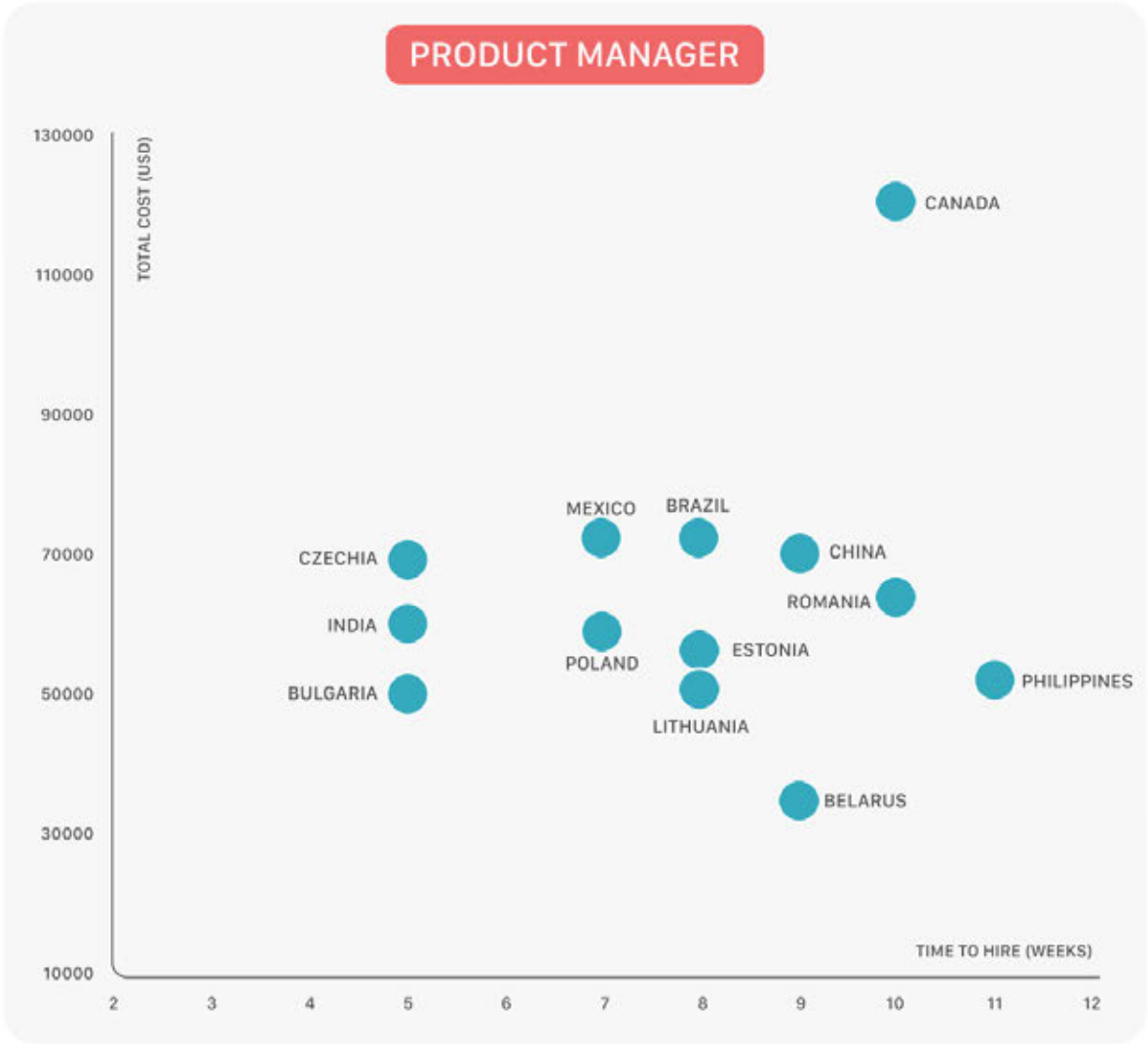
Comparative Talent Cost vs Time-to-hire Analysis

2/5



Comparative Talent Cost vs Time-to-hire Analysis

3/5

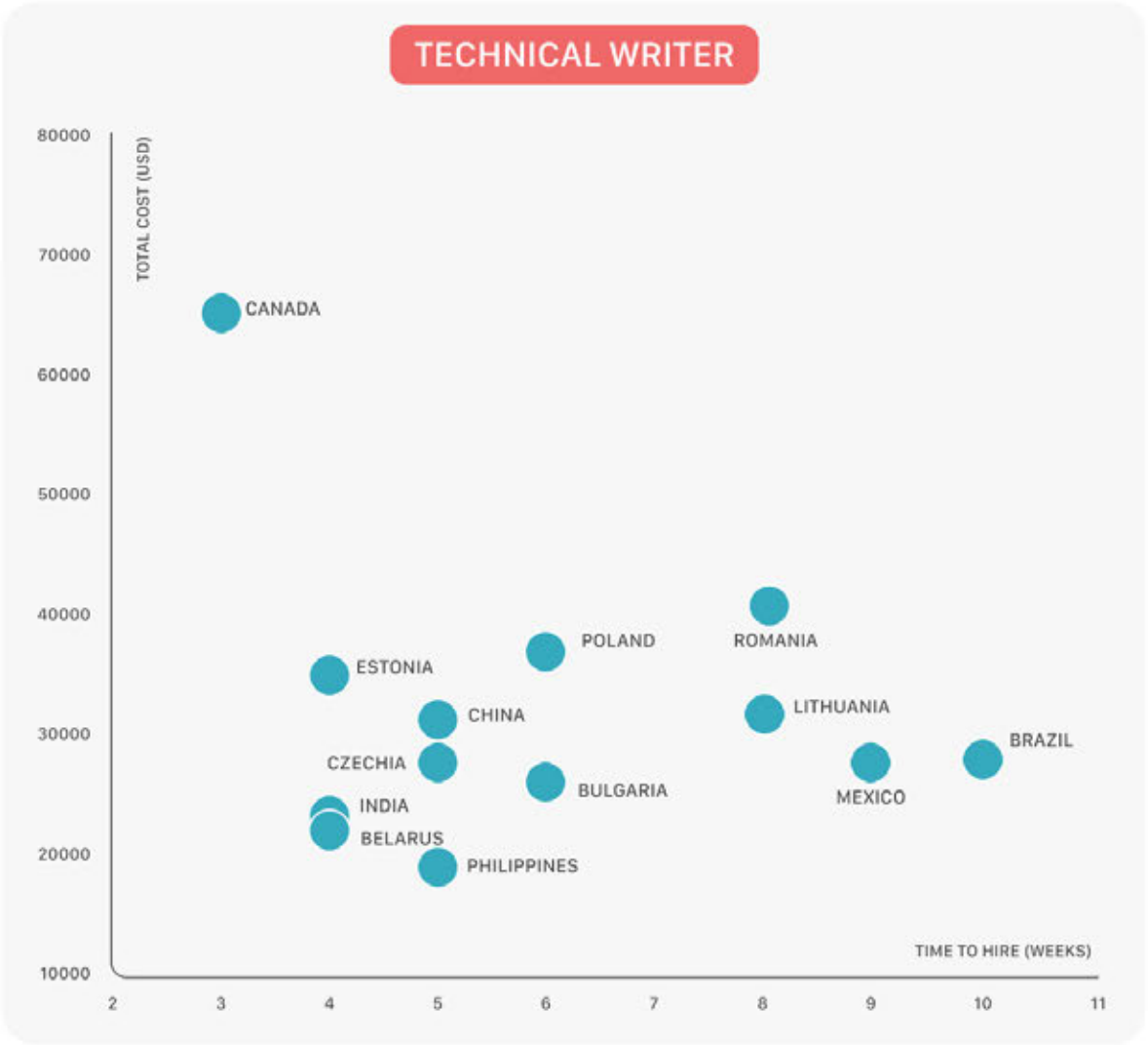
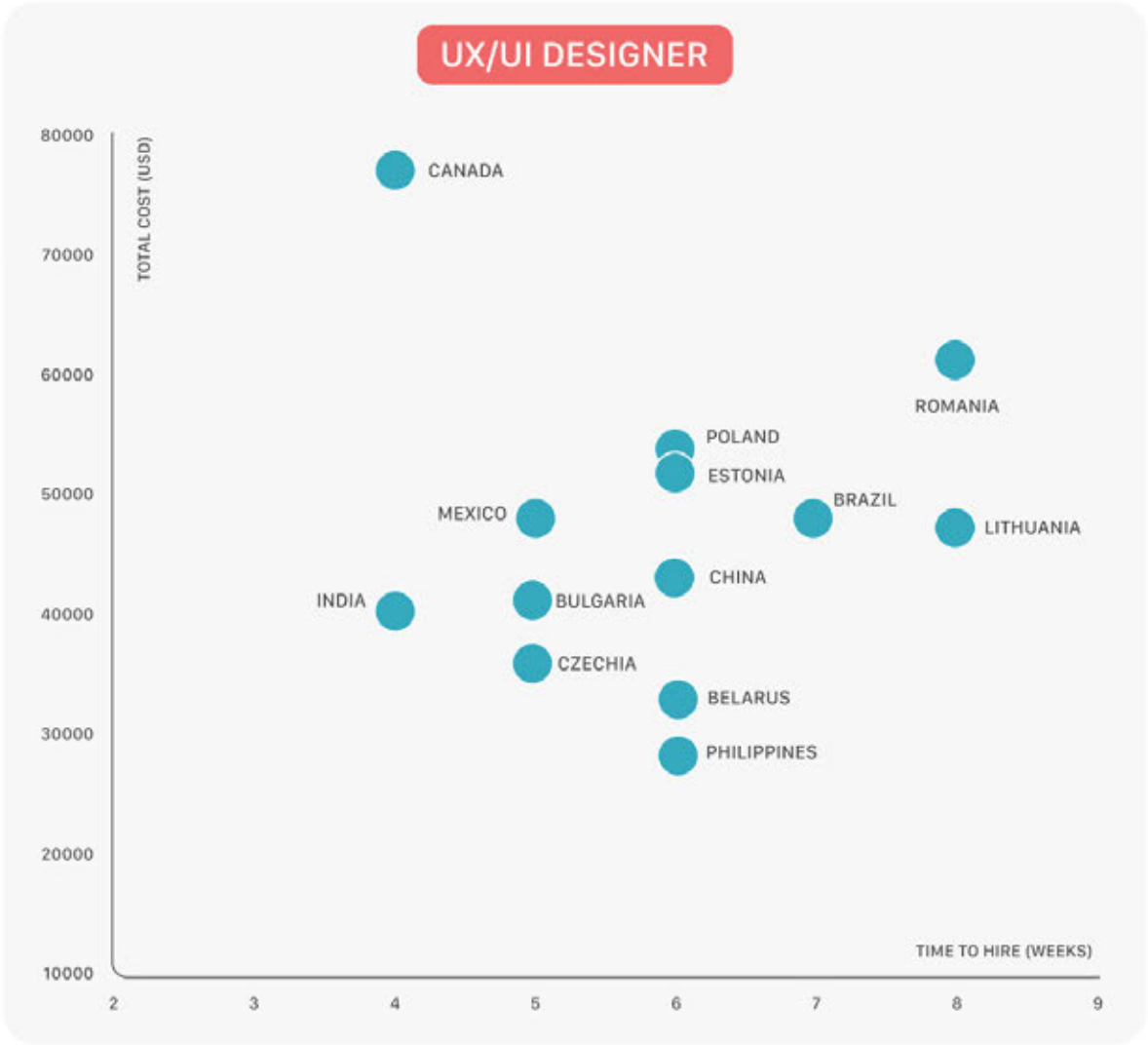


Note: Average salary has been considered across all the years of experience of the tech talent available in the country

Source: DRAUP, Zinnov Primary Research

Comparative Talent Cost vs Time-to-hire Analysis

4/5

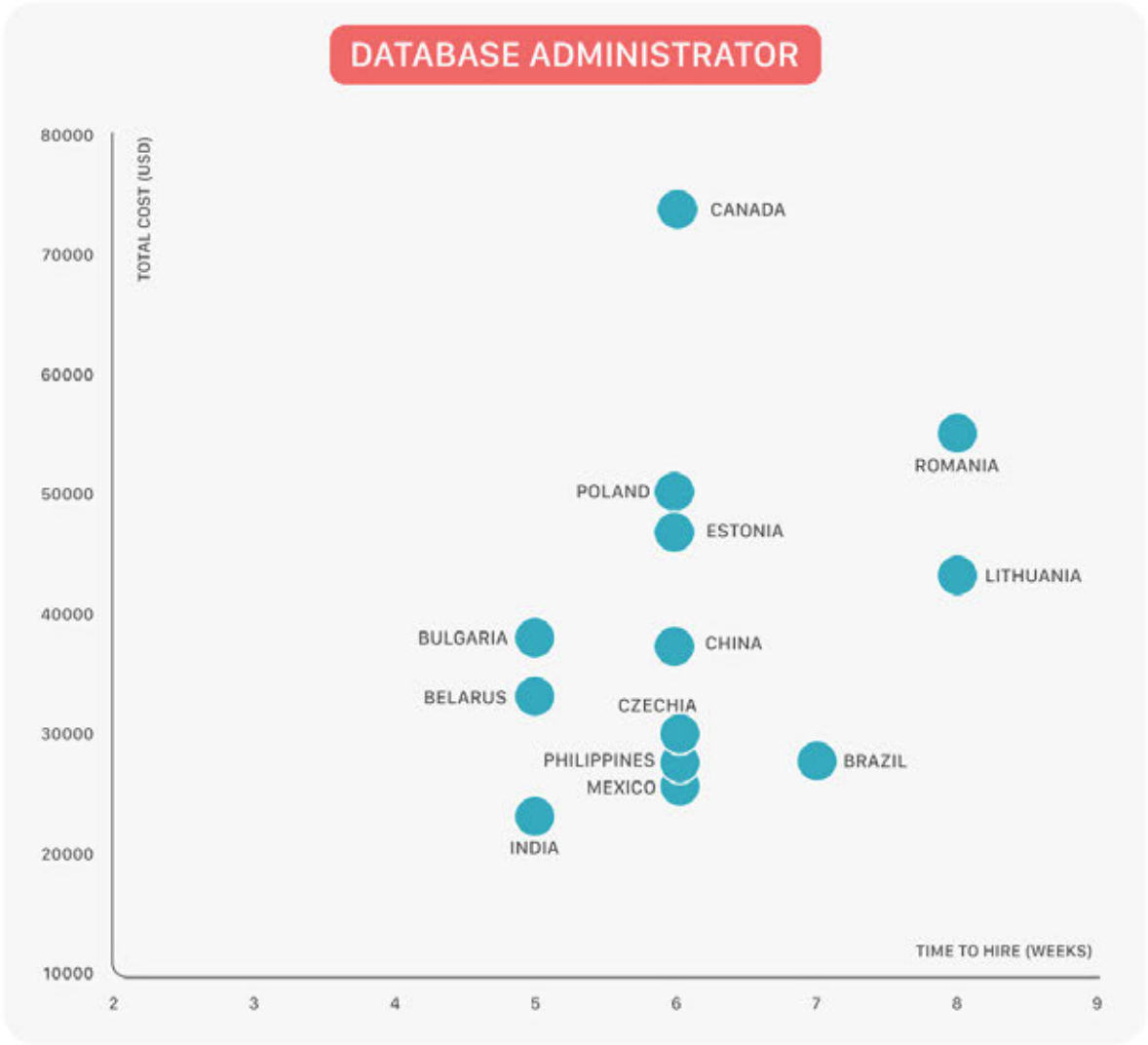


Note: Average salary has been considered across all the years of experience of the tech talent available in the country

Source: DRAUP, Zinnov Primary Research

Comparative Talent Cost vs Time-to-hire Analysis

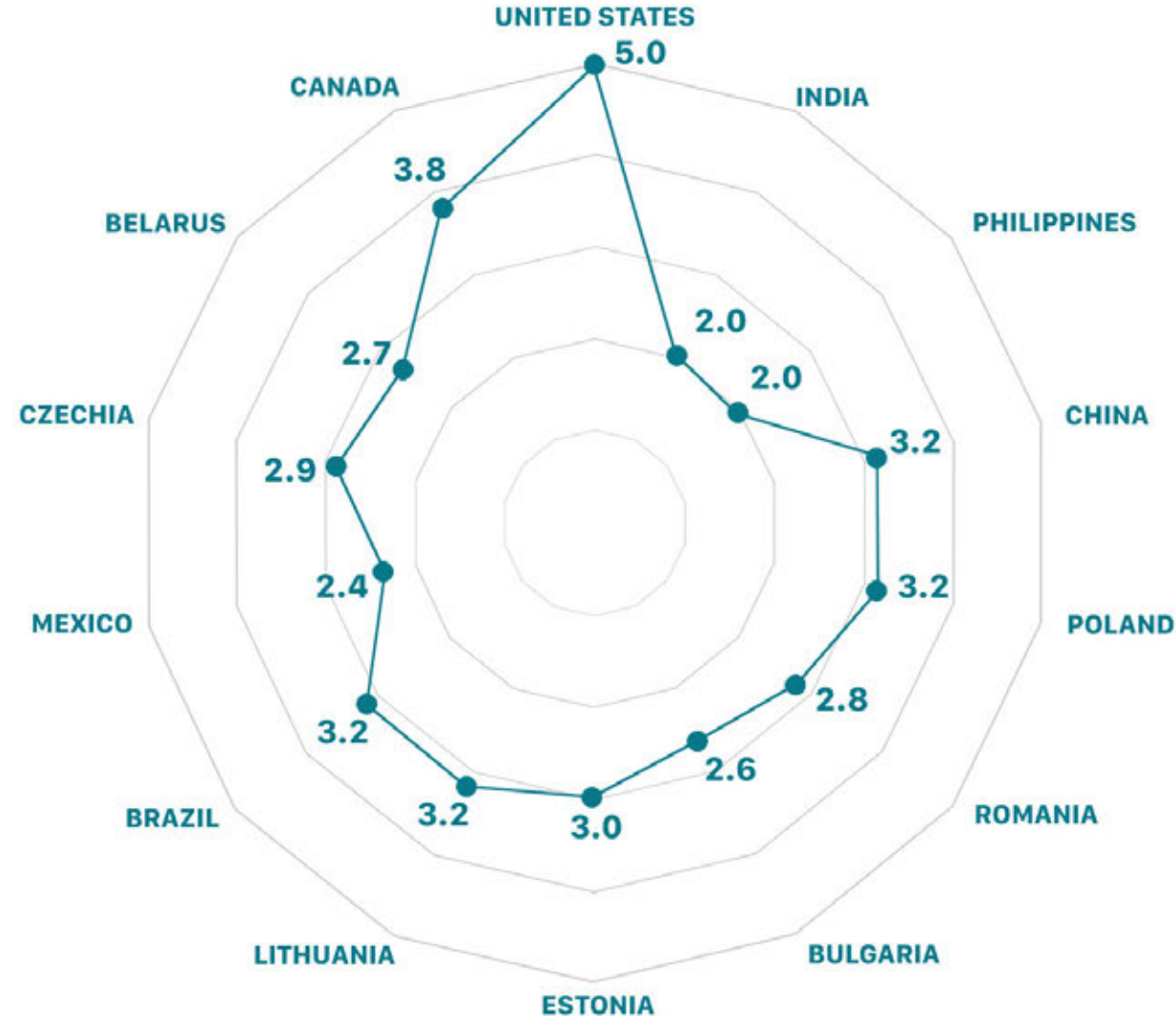
5/5



Office Build-out Cost Comparative Analysis across shortlisted countries

As part of the analysis, we have analyzed the build-out cost of offices in these countries.

For each of these countries, we have given a score (on a scale of 1-5). Higher score implies higher cost and vice versa.



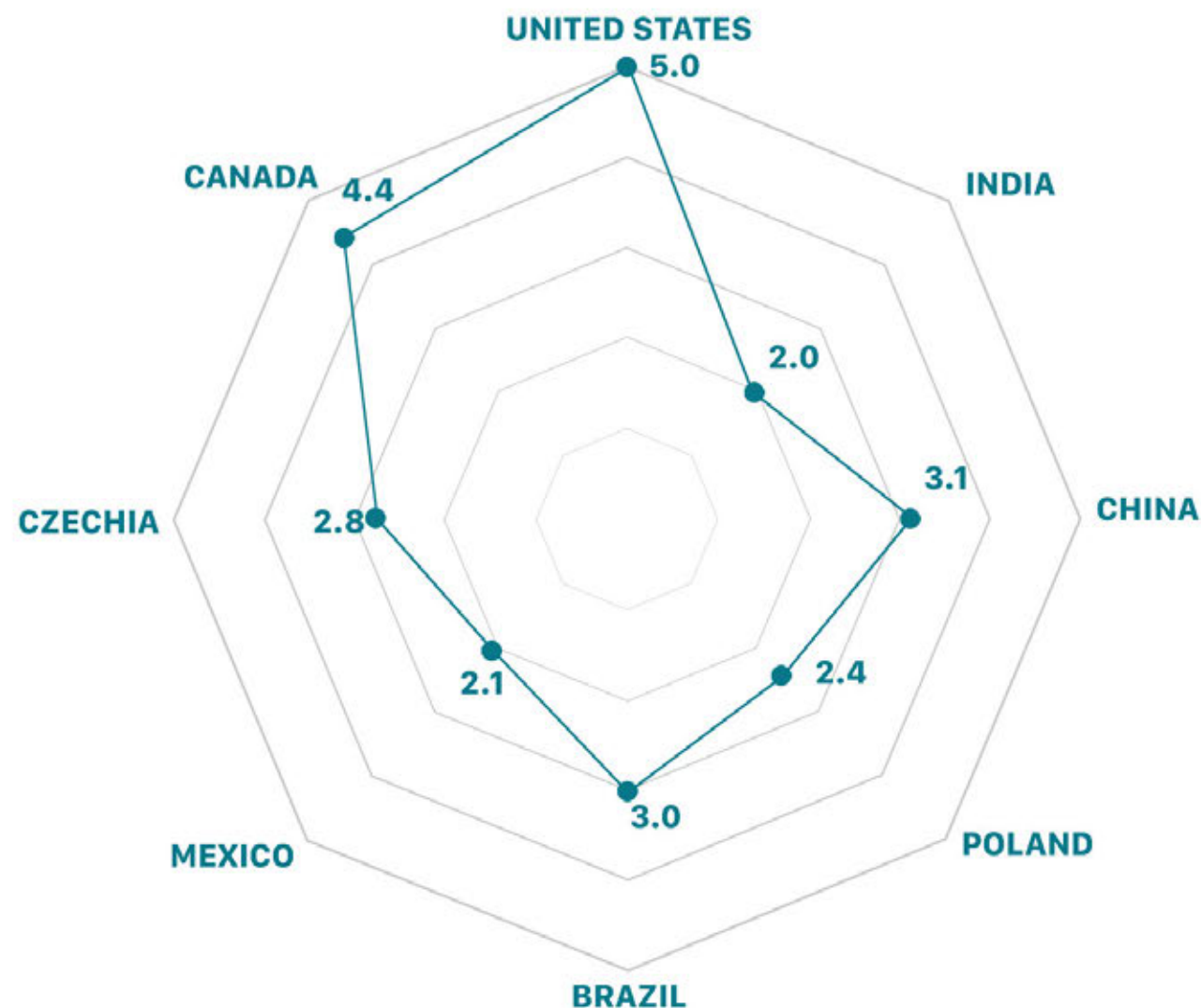
Office Space Cost for International Plug-and-play options

As part of the analysis, we have analyzed the setup cost of offices in these countries.

For each of these countries, we have given a score (on a scale of 1-5) on the basis of cost of plug-and-play offices at WeWork centers in these countries. Higher score implies higher cost and vice versa.

WeWork offices are not present in the following countries:

- Philippines
- Romania
- Estonia
- Bulgaria
- Lithuania

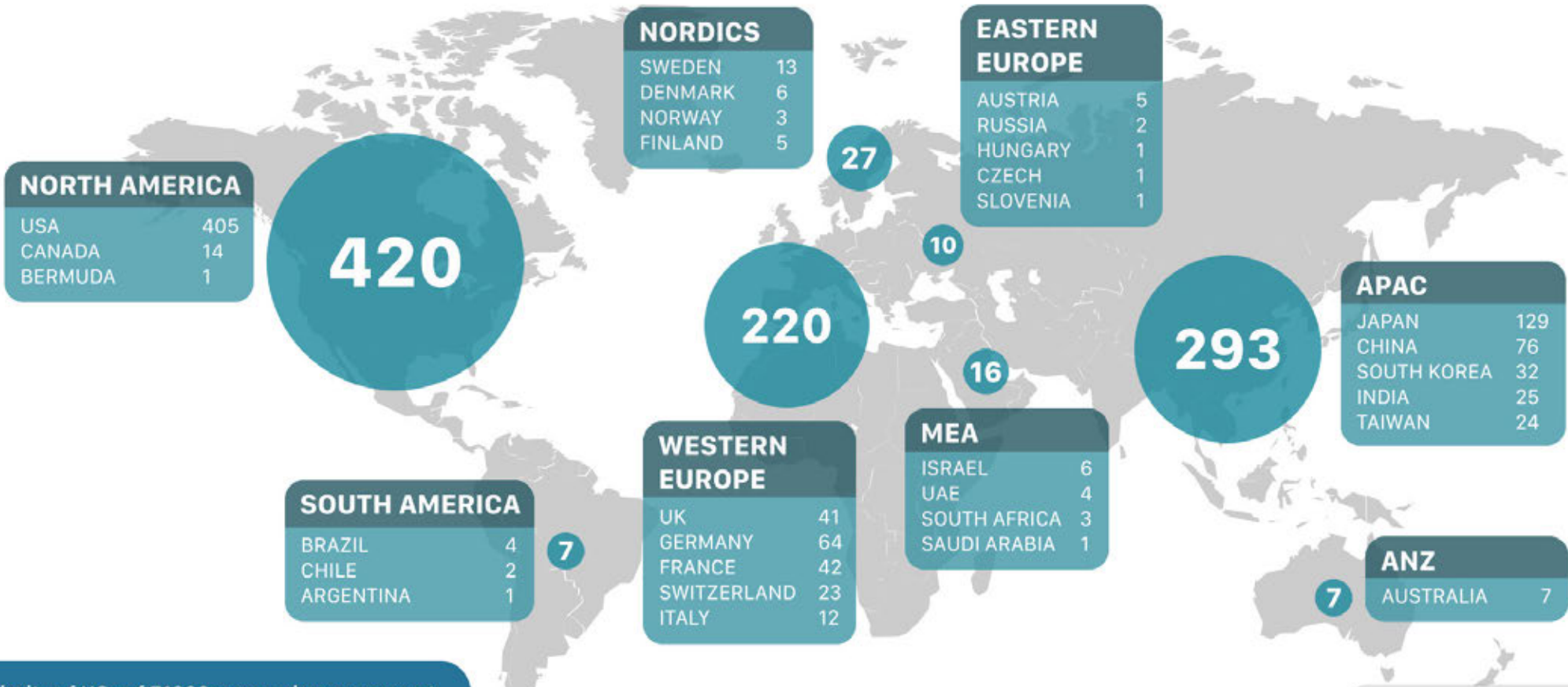


ECOSYSTEM MATURITY AND EASE OF DOING BUSINESS

THIS SECTION LOOKS AT A COMPARATIVE ANALYSIS OF COUNTRIES FROM A POINT OF VIEW OF

- SOFTWARE ECOSYSTEM MATURITY (Z1000 COMPANIES GLOBAL CENTERS, TECH START-UP ECOSYSTEM, IT SERVICE PROVIDERS REVENUE GENERATION, ENGINEERING SCHOOLS AVAILABILITY)
- EASE OF DOING BUSINESS (GEOPOLITICAL STABILITY, IP AND DATA PRIVACY, SPOKEN ENGLISH CAPABILITY)

Z1000 Companies' Headquarters



Top 5 countries having presence of Z1000 Companies' Headquarters.

- 1. USA
- 2. Japan
- 3. China
- 4. Germany
- 5. France

Majority of HQs of Z1000 companies are present in North America.

However, in the last several decades, there has been a surge of APAC-based companies and they currently account for 29% of the headquarters.

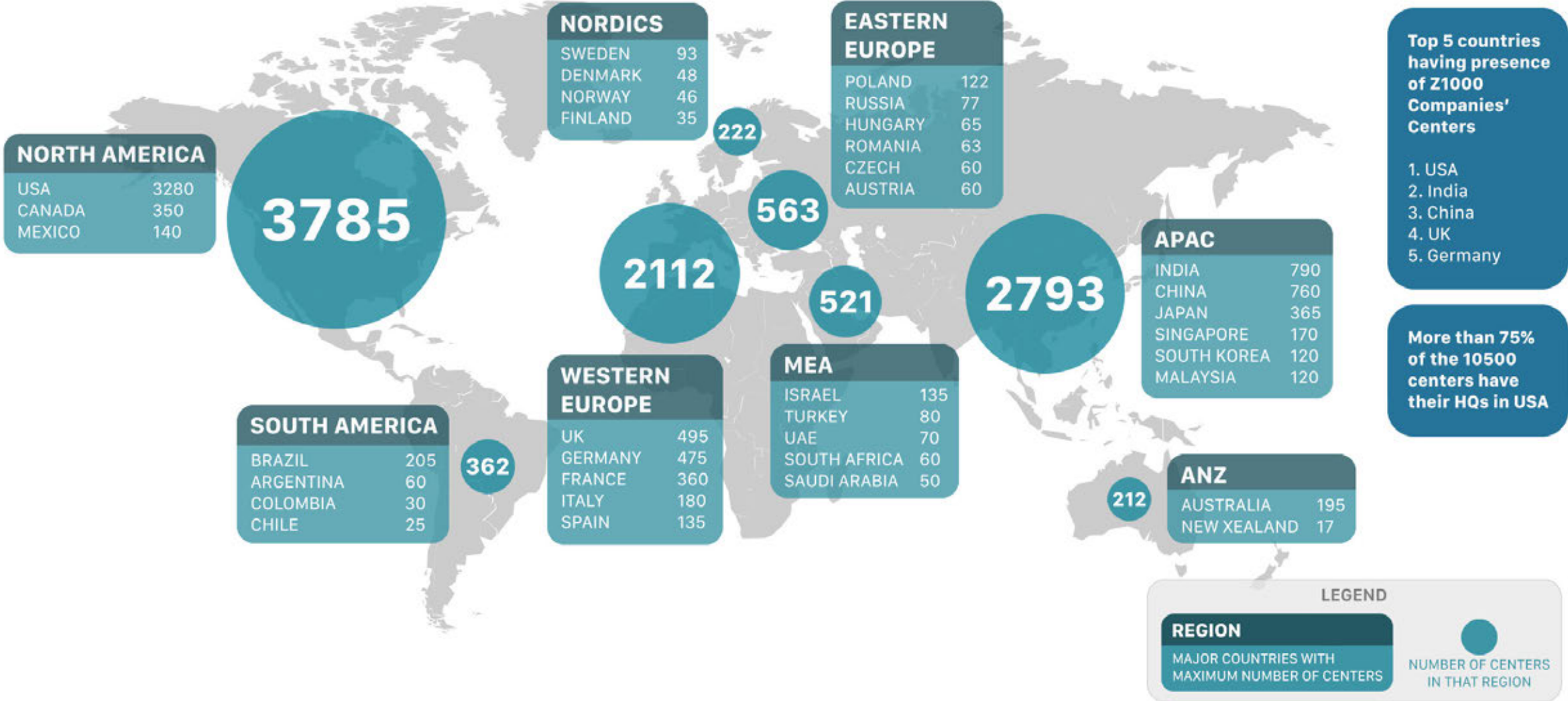
LEGEND

REGION

MAJOR COUNTRIES WITH MAXIMUM NUMBER OF CENTERS

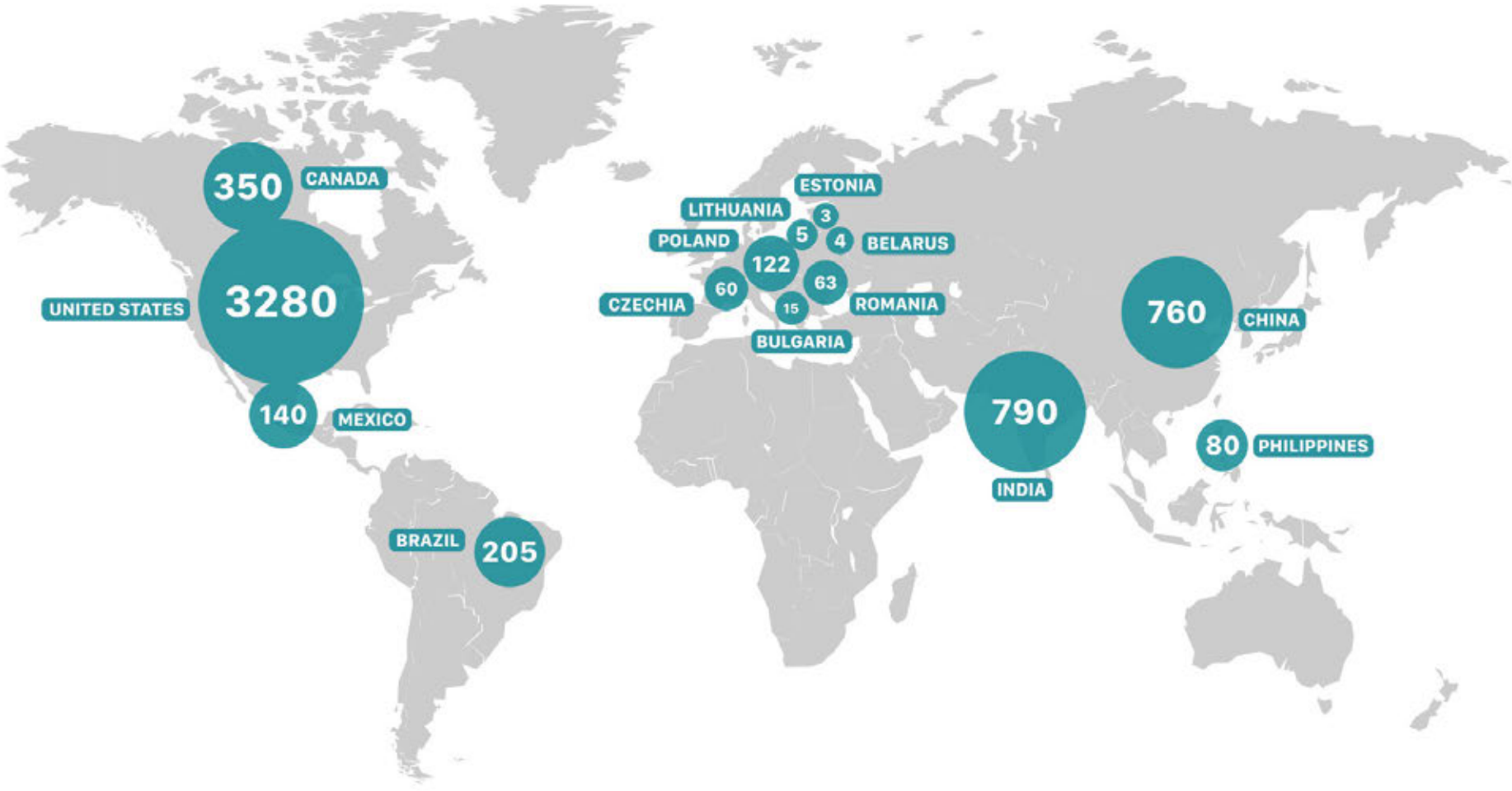
NUMBER OF CENTERS IN THAT REGION

Global Z1000 Companies have over 10,500 centers* across the world supporting R&D, Engineering, and IT functions



* Excludes 6,600+ centers with headcounts less than 50 focussed on sales, business development and support activities. Also excludes BPO and related centers.

Presence of Z1000 Companies' Global Centers across shortlisted countries



The centers considered for the shortlisted countries have a headcount of over 50 employees.

Countries like Poland, India, China, Mexico, Canada, and Brazil have attracted a lot more Z1000 companies to establish their centers.

Major Industries in which Z1000 Companies are investing across shortlisted countries



*Other Industries include Energy, Pharmaceuticals, Biotechnology, Healthcare, Retail, Transportation, Mining
Source: DRAUP

Countries like India, China, Canada are favored destinations across industries shown below by Z1000 companies to set up global centers

AUTOMOTIVE



BFSI



CONSUMER ELECTRONICS



INDUSTRIAL



SOFTWARE AND INTERNET



TELECOMMUNICATIONS



AEROSPACE AND DEFENCE

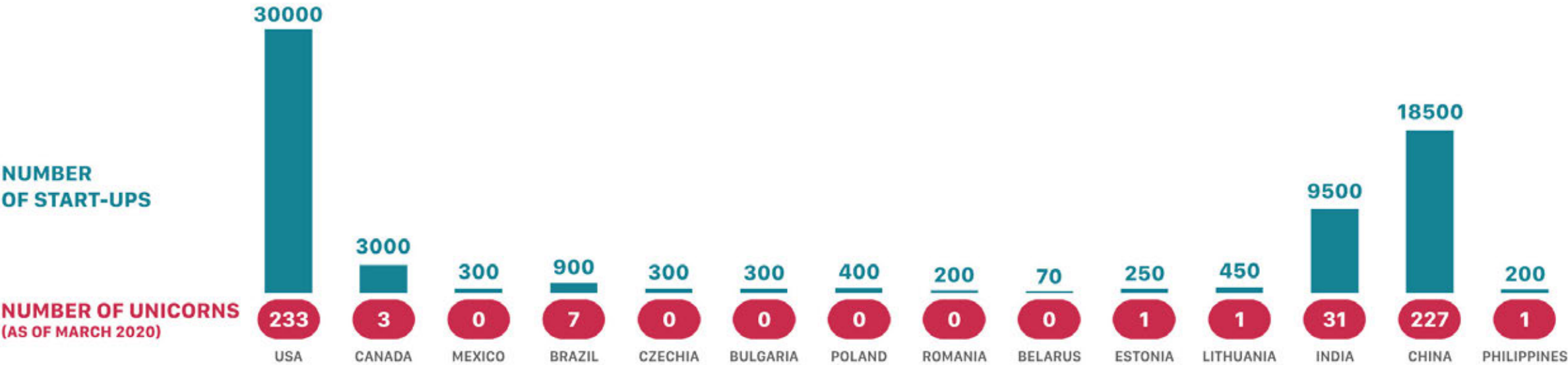


FMCG

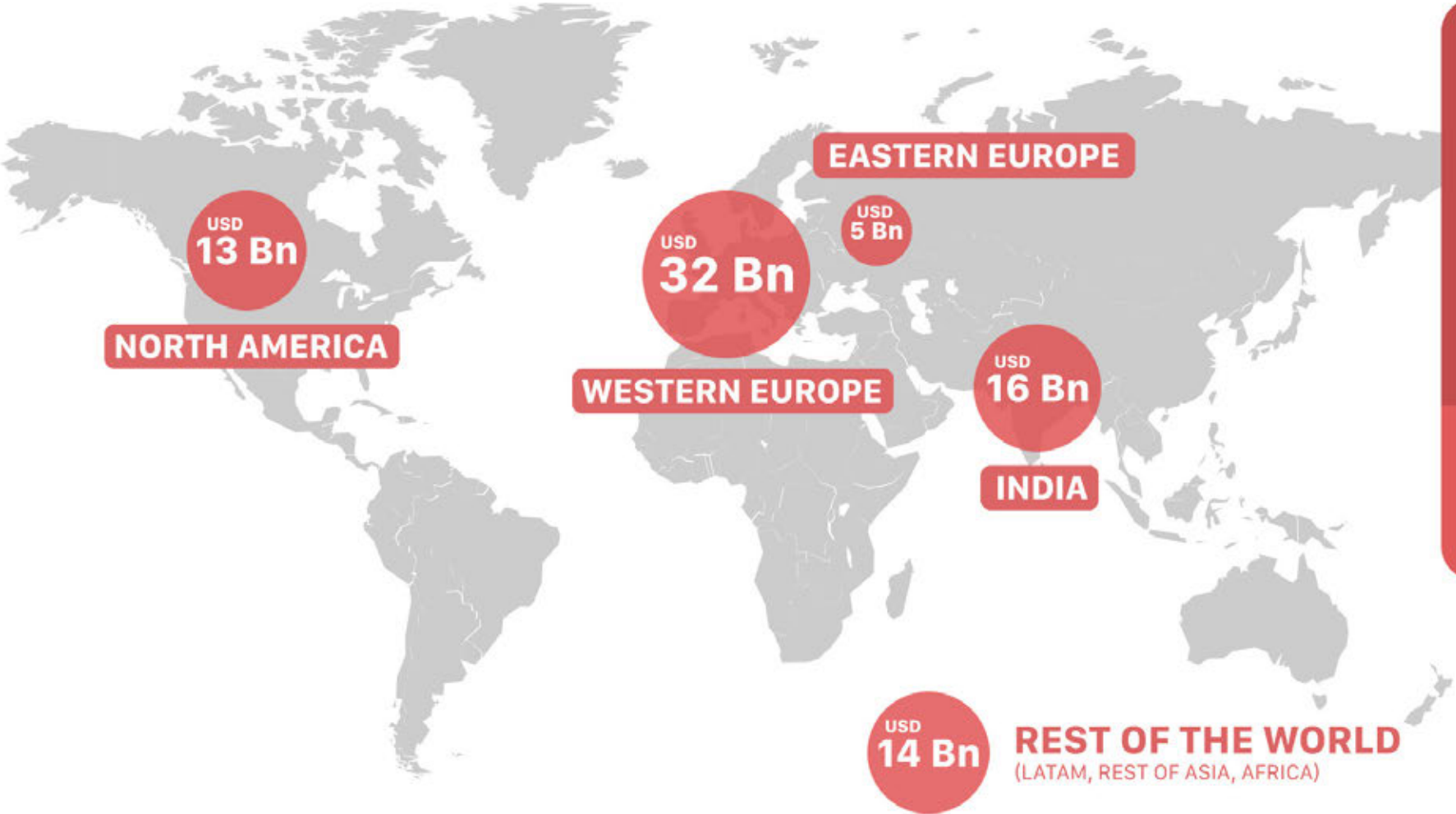


INDIA AND CHINA SEEM TO BE AMONGST THE TOP 5 COUNTRIES OF CHOICE BY Z1000 COMPANIES ACROSS ALL INDUSTRIES. LIKEWISE, CANADA ALSO RANKS IN ALL TOP 5 INDUSTRIES, EXCEPT FMCG INDUSTRY.

Vibrant Tech Start-up Ecosystems are present in most of these countries, especially in Canada, India, China, along with a growing number of unicorns



Global IT Service Providers' Revenue Landscape



USD 80 BILLION

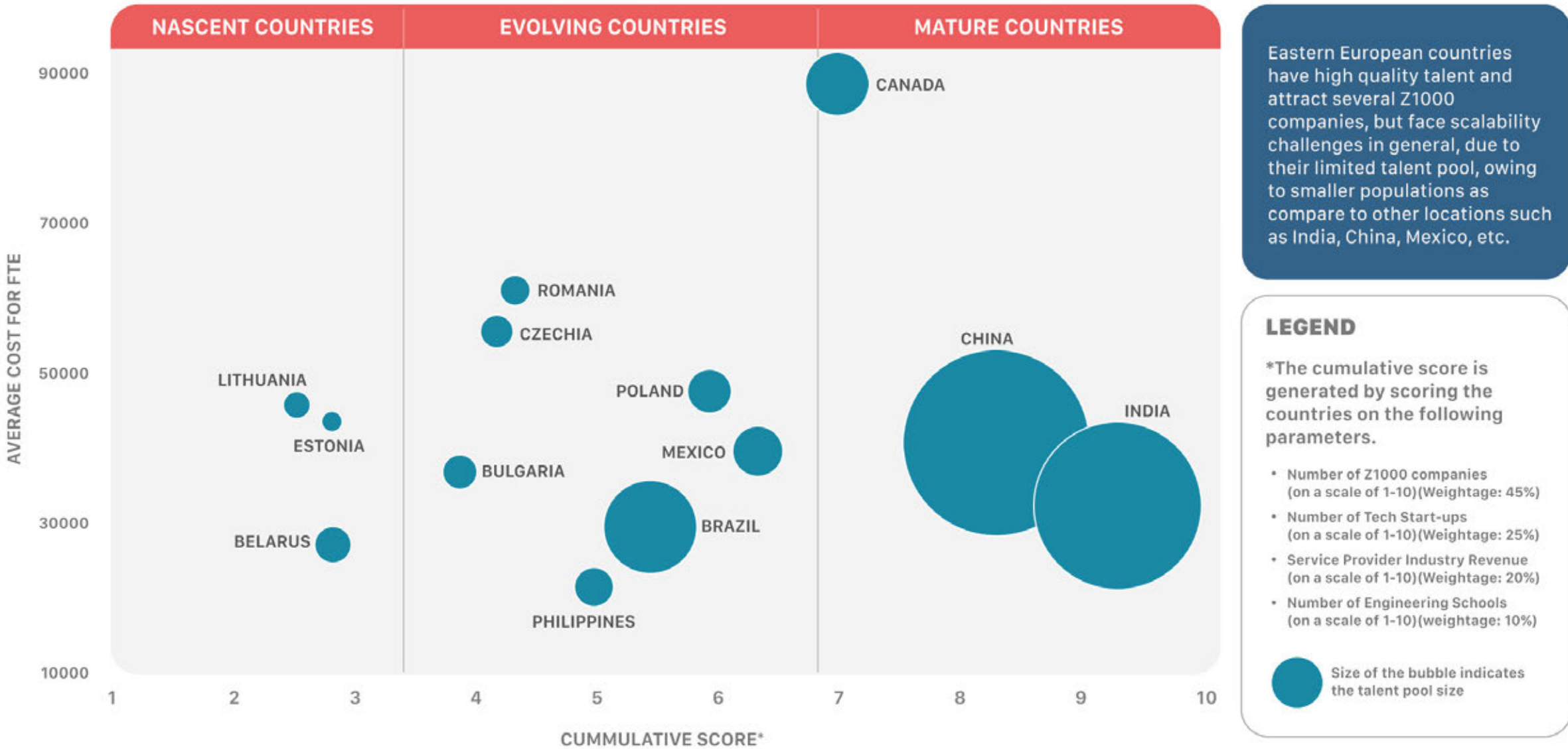
TOTAL MARKET SIZE
ADDRESSED BY
SERVICE PROVIDERS

EASTERN EUROPE

HIGHEST GROWTH RATE IN
ADDRESSED MARKET YoY AT 15%+

Note: Service Providers have been classified based on HQ as well as dominant delivery location. For instance, though EPAM's HQ is in North America, it has been considered in Eastern Europe for the analysis.

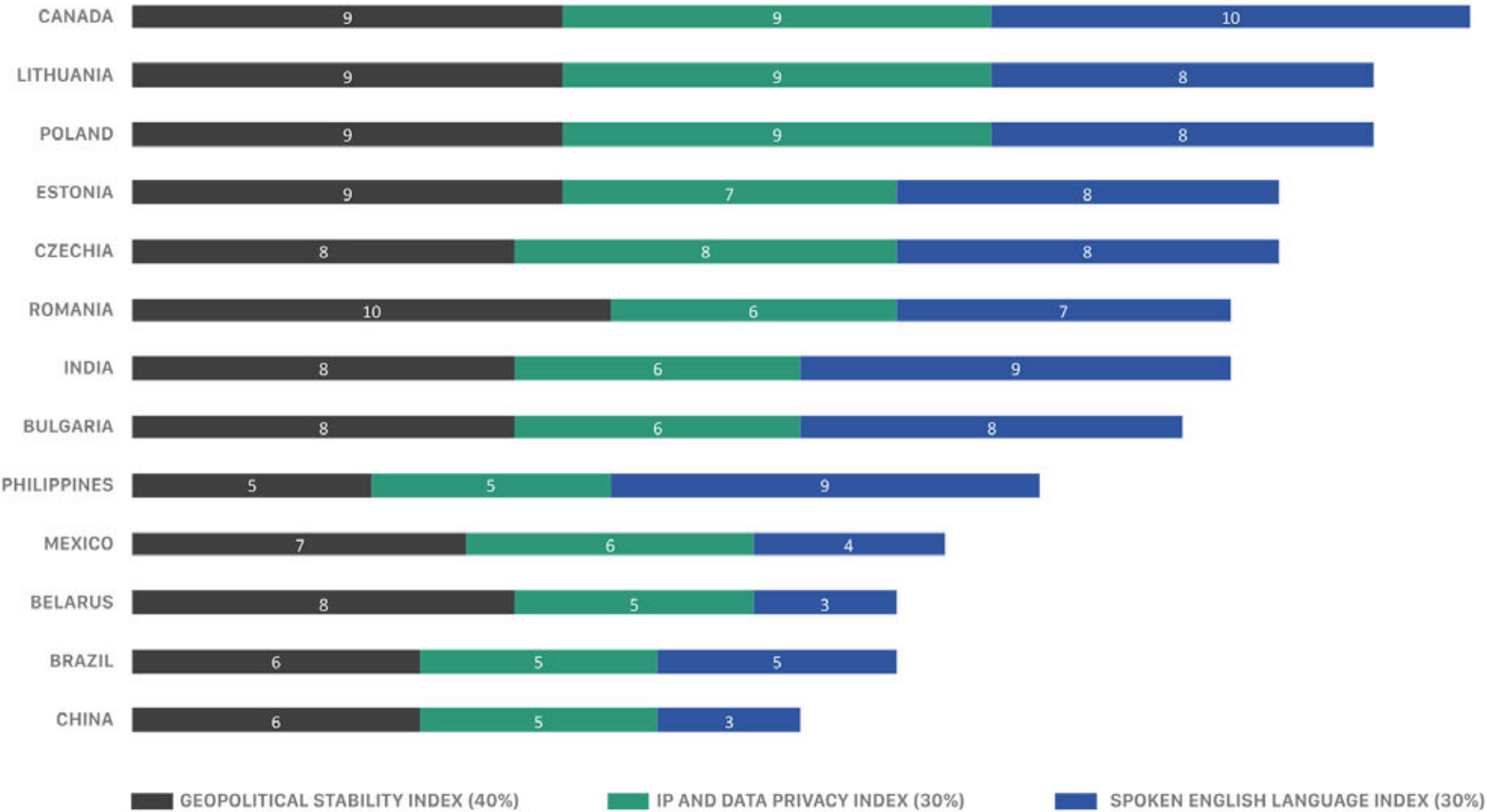
Software Engineering Ecosystem maturity Analysis



COUNTRY CoE POTENTIAL RANKING

THIS SECTION LOOKS AT A COMPARATIVE ANALYSIS OF
COUNTRIES FROM THEIR POTENTIAL TO BUILD CoEs

Ease of Business Analysis from a Geopolitical Stability, IP & Data Privacy, English Capability lens



FACTORS TAKEN INTO CONSIDERATION

1. Geopolitical Stability Index

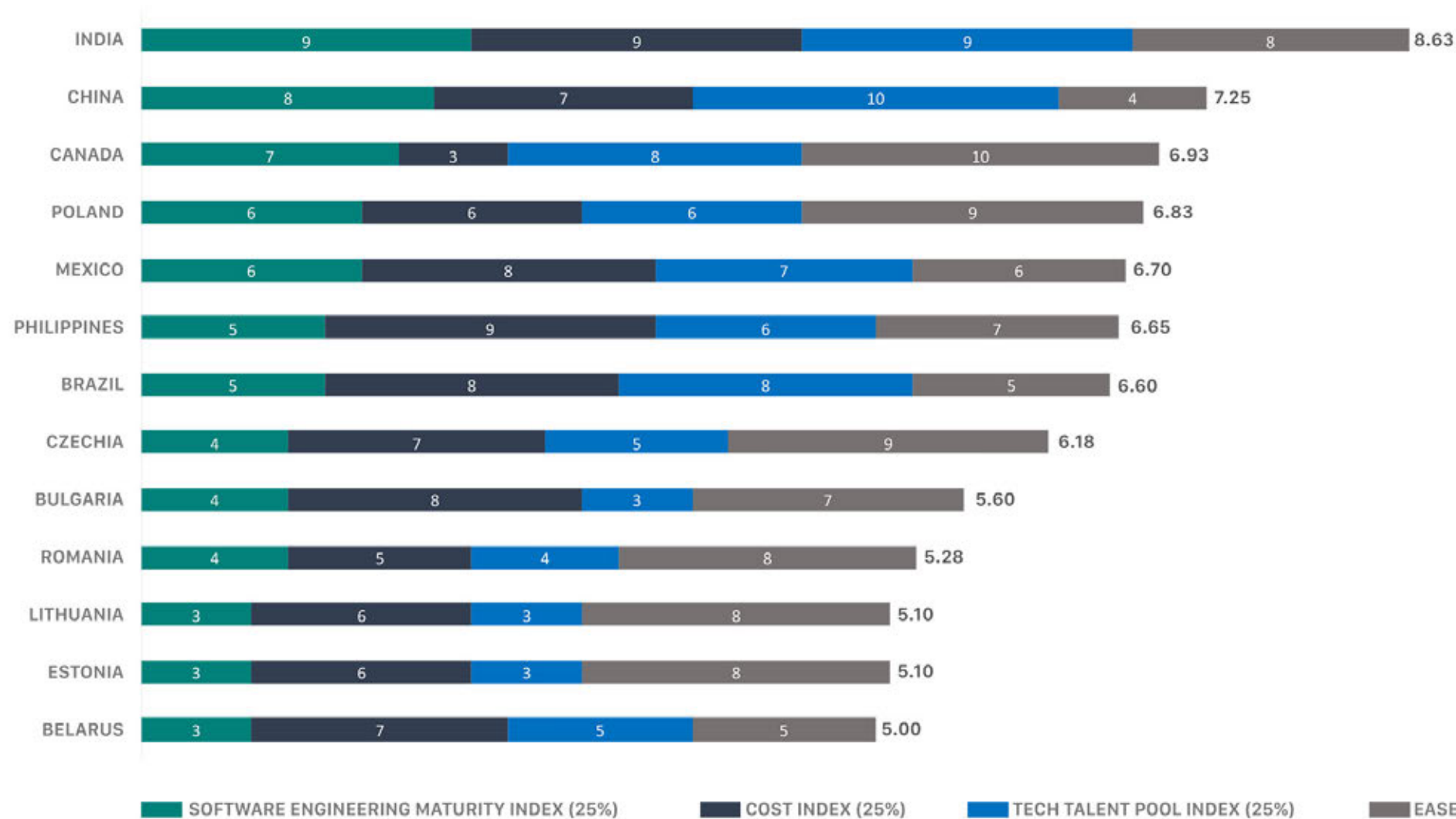
- Governmental political stability index
- Trade balance as a percentage of GDP
- Regional trade agreements
- Security threat index (both internal and external)
- International corruption perception index

2. IP and Data Privacy Index

- IP rights global index
- Cybersecurity index

3. Spoken English language index

Country Ranking based on their potential to build a CoE



Software Engineering Maturity: A higher maturity accounts for a higher score

Cost (Talent Cost and Office Setup Cost): A lower cost accounts for a higher score

Tech Talent Pool: A higher pool size accounts for a higher score

Ease of Doing Business: A greater ease of doing business accounts for a higher score

Top 5 Countries for CoE Hotspots of the World



Samsung AI center in Toronto aims at bolstering core AI capabilities for the company in collaboration with major Canadian universities like University of Montreal



Cisco's innovation center in Toronto developed a unique Wi-Fi tracking methodology to control lighting and temperature at the University of British Columbia, thereby reducing greenhouse emissions by 7%



Toronto Montreal



Guadalajara Mexico City

Sao Paulo



Amazon created Amazon Rechargeable, a debit card exclusively for unbanked Mexican shoppers. In 2018, Amazon piloted Alexa in the Latin market by launching in Mexico



Uber considers Mexico the biggest market in Latin America for its mobility innovation. Major presence of JUMP, Uber's dockless bike sharing and e-scooter service is based in Mexico City



BNP Paribas Warsaw office pioneered the usage of robotics in their banks across other global locations



Developer of Sofia Robot, Hansen Robotics to spearhead the creation of hubs for ethical AI in 2020

Over 40% of AI-based companies in Poland are based out of Warsaw



Tallinn Vilnius Minsk
Krakow Prague Warsaw
Sofia Bucharest



Pune Bengaluru Hyderabad
Hangzhou Beijing
Shanghai Guangzhou
Manila



Edison, GE Healthcare's intelligence platform designed to help achieve greater efficiency and services offered, was built out of India office



25% of Global VMware R&D Headcount is based out of India



Ericsson's Global AI Accelerator (GAIA) based out of Bengaluru, India is one of the only 3 global AI CoEs focusing on modernizing telecom using AI and ML

India comprises of around 18% of Global New-Age talent like AI and NLP



Innovation center based out of Shanghai provides innovative training methods and improvements in the local Healthcare industry in rural parts of the country



RPA Center of Excellence launched in Shenzhen in partnership with Blue Prism provides RPA deployments for Chinese businesses looking to improve operational agility



COUNTRY DEEP DIVES

CLICK ON ANY COUNTRY TO NAVIGATE TO ITS DEEP DIVE REPORT

EASTERN EUROPE



NORTH AMERICA



APAC



LATAM





ROMANIA



Romania: Country Overview



zinnoV

COUNTRY

- ✓ Ranks 2nd in the list of fastest growing economies in EU¹.
- ✓ Ranks 55th out of 190 countries in Ease of Doing Business rankings as per the World Bank.
- ✗ Ranks 70th out of 198 countries as per the Corruption Perception Index 2019.

INFRASTRUCTURE & LABOR MARKET

- ✓ 2nd in Europe in terms of peak average internet speed and connectivity – Strong Broadband Network.
- ✓ Ranks 58th out of 176 countries as per ICT development index 2017.
- ✗ Poor Public Transport Infrastructure – needs ~EUR 70Bn investment for development of infrastructure.

TAXATION & GOVERNMENT REGULATIONS

- ✓ The corporate income tax rate is 16%, medium, when compared to other Eastern European countries and 3rd lowest, when compared to all 13 countries in the study. The R&D tax incentive gives tax savings of 8% of the costs.
- ✓ 0% income tax for employees hired as Software Developers or hired in Research and Development companies.
- ✓ The average cost for registering a private company in Romania is lowest in comparison to the countries in the study and the EU average.²



TOP LANGUAGES

Romanian, Hungarian, French, English

45% Gender Diversity in Software Engineering Companies

TECH NUGGET

UiPath recorded a staggering growth of 690% in its annual recurring revenue in 2017 and grew from an employee strength of 400 (2017) to 3000 (2020)

TOP INDUSTRIES OF Z1000 COMPANIES INVESTING IN ROMANIA

AUTOMOTIVE



SOFTWARE & INTERNET



INDUSTRIAL



Romania: Talent & Innovation Ecosystem



zinnoV

TALENT POOL

~75,000

SALARY GROWTH (YOY)

7%

ATTRITION RATE (ANNUAL)

6%

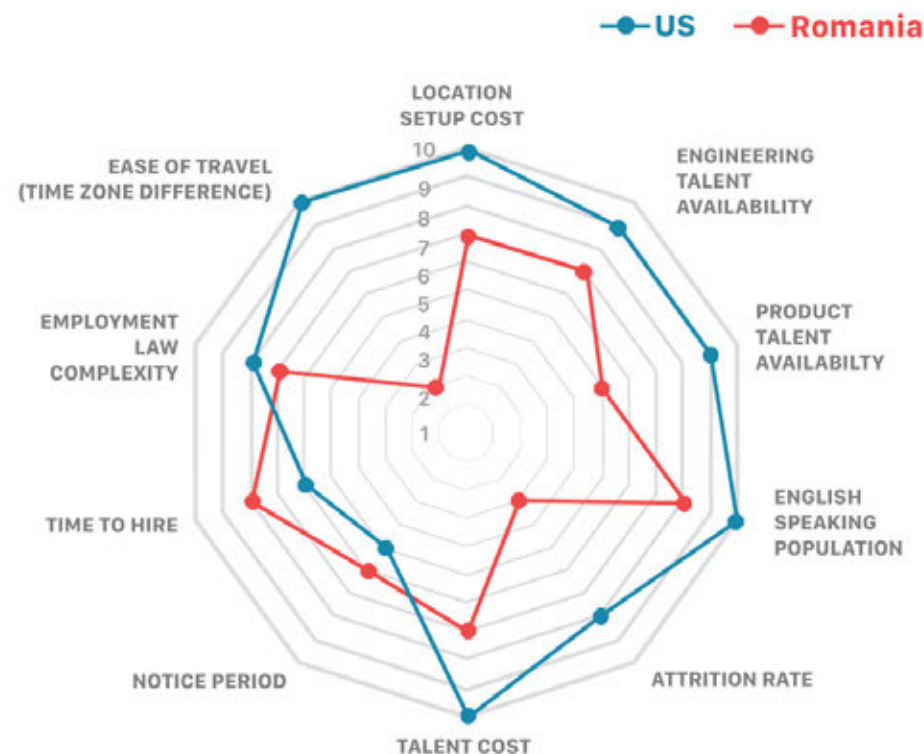
AVERAGE NOTICE PERIOD

2-6 WEEKS

INSIGHTS

- Scaling teams beyond 100+ within a year is a challenge due to limited talent availability.
- With almost 60% lower talent cost than US, Romania has a mature tech pool of niche skills like AI/ML, Neural Networks, 3D printing, AR/VR. JAVA/Linux stack talent is widely available.
- Fresh graduates usually intern for 2-3 years. The salaries are relatively low and increase significantly after 3+ years when the candidates have gained enough on job experience.
- Ranks 14th in Europe as per EF's English Proficiency Index.
- Romanian talent is attracted to companies with strong leaders. Technology to be worked on is an important criteria for Romanian tech talent in deciding on a job. There is a strong culture of referral.
- Romanian tech start-ups raised \$62.3 Mn in 2017 – a three-fold increase over 2016.

COMPARATIVE LOCATION INDEX US & ROMANIA



A lower score in the spider chart implies a lower value for the specified parameter and vice versa

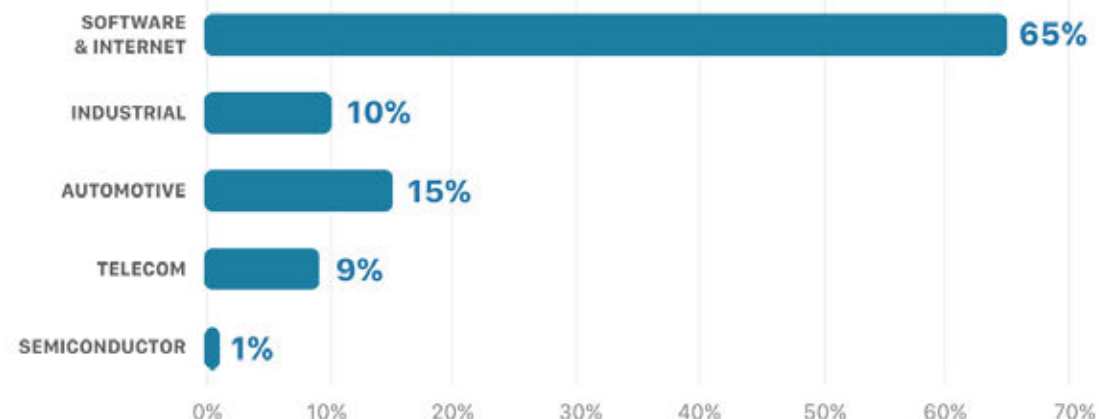
Romania: Presence of Global Companies



SOME INTERNATIONAL COMPANIES WITH SOFTWARE ENGINEERING CENTERS IN ROMANIA



IT AND TECH TALENT SPLIT ACROSS INDUSTRIES IN ROMANIA



- **UiPath:** First Romanian tech Unicorn develops Enterprise RPA Platforms.
- **Bitdefender:** Romania's cybersecurity company has over 600+ engineers developing enterprise anti-virus software.
- **HP, Capgemini, Wipro, Huawei, Ericsson** have Global e-Business Operation and Development centers across Romania, employing more than 10,000+ workforce.
- **Microsoft** with more than 500 employees has two Global Support centers operating since 1996 in Bucharest and Timisoara, Romania.
- **Oracle and CGS Global** (IT outsourcing company) both employ a workforce of over 3000+ employees working out of support centers across Romania.
- **Genpact** with a workforce of 2,000+ employees, is one of the biggest outsourcing service providers in Romania.

Romania: Tier-1 Academic Institutions and Industry Relationships



zinnoV

KEY INSIGHT

Romania has 17 universities in top 350 EECA (Eastern Europe & Central Asia) universities (only 2 in top 50). **ANIS Scholarships program** was launched in 2018 to stimulate the efforts of teachers – lecturers and university assistants. The sponsors are **Adobe, Atos, Bitdefender, Cornerstone Technologies, Deutsche Bank, Endava, Enea, Qualitance, Wipro.**

92 HEIs Higher Education Institutions

~10K STEM graduates per year

	QS WORLD TOP 600 UNIVERSITIES IN COMPUTER SCIENCE	QS EECA TOP 350 UNIVERSITIES
UNIVERSITY OF BUCHAREST	451	42
BABES-BOLYAI UNIVERSITY	454	40
ALEXANDRU IOAN CUZA UNIVERSITY	-	68
TECHNICAL UNIVERSITY OF CLUJ-NAPOCA	483	119

INSTITUTE OF COMPUTER SCIENCE BABEȘ-BOLYAI UNIVERSITY

RESEARCH FOCUS

Big Data Analytics, High Performance Computing, NLP

INDUSTRY PARTNERSHIPS

BOSCH **IBM** **accenture** **amazon** **Google**

DEPARTMENT OF COMPUTER SCIENCE ALEXANDRU IOAN CUZA UNIVERSITY

RESEARCH FOCUS

Applied Distributed Systems, NLP, Evolutionary Computing, Cryptography, Combinatorial Optimization

INDUSTRY PARTNERSHIPS

Microsoft **IBM** **ORACLE**

THE FACULTY OF MATHEMATICS AND COMPUTER SCIENCE UNIVERSITY OF BUCHAREST

RESEARCH FOCUS

Big Data Analytics, High Performance Computing, NLP

INDUSTRY PARTNERSHIPS

Infosys

Romania: Start-up Ecosystem



zinnoV

200+

Technology start-ups

1

Number of Unicorns

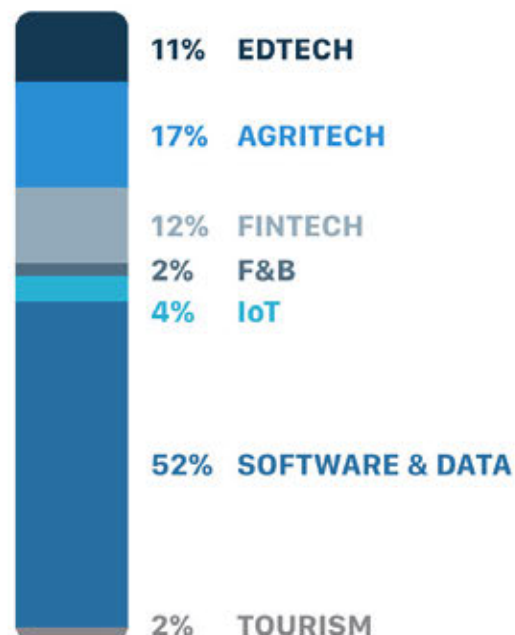
\$568 Mn

KEY INSIGHT

Investment raised in Series D round
by UiPath in 2019

ADVANCED TECH START-UPS IN ROMANIA 2019-2020

SECTOR-WISE BREAKUP OF START-UPS



credia

Credia - Credit aggregation platform for retailers and Service Providers offering POS.

FUNDING TILL
MARCH 2020

\$54 K

SanoPass

SanoPass - Medical Service Providers to sell preventive medical package to firms.

\$434 K

AGRICLOUD

AgriCloud - Provides precision agriculture solutions and uses IoT Technology.

NA

ENDPOINT
PROTECTOR

Endpoint Protector - A leading developer of DLP solutions and security software.

\$5 Mn

DRUID

DRUID - an AI-powered enterprise chatbot platform for easy development of chat.

\$2.7 Mn

Romania: Illustrative Compensation Structure



	(IN USD)
TOTAL GROSS INCOME (A)	100,000
1. Social (pension) Insurance (25% of gross income)	25,000
2. Health Insurance (10% of gross income)	10,000
3. Income tax (10% of gross income)	10,000
TOTAL EMPLOYEE CONTRIBUTION (1 + 2 + 3) (B)	45,000
NET SALARY (A-B)	55,000
4. Work Insurance Contribution (2.25% of gross pay)	2,250
5. Disability Fund (4% of gross pay)	4,000
TOTAL EMPLOYER CONTRIBUTION (4 + 5) (C)	6,250
TOTAL EMPLOYMENT COST (A + C)	106,250

EMPLOYMENT TERMINATION LAW

HIGHLY EMPLOYEE FAVORING

NEUTRAL

HIGHLY EMPLOYER FAVORING

There is no statutory severance pay in Romania unless conditions have been set in a collective agreement.

The termination ground can either be based on subjective grounds, such as repeated disciplinary offences, poor performance, professional unfitness or economic grounds.

When an employee is dismissed on economic grounds, they are entitled to benefit from active measures designed to limit unemployment.



ESTONIA

Estonia: Country Overview



zinnoV

COUNTRY

- ✓ Ranks 18th out of 190 countries in Ease of Doing Business rankings as per the World Bank¹.
- ✓ Ranks 11th out of 198 countries as per Corruption Perception Index 2019.

INFRASTRUCTURE & LABOR MARKET

- ✓ Low unionization because of government providing needed benefits and services.
- ✓ 99.9% bank transactions are online; 98% of companies are established online².
- ✓ Estonia boasts of strong digital infrastructure. As per global Cybersecurity Index, Estonia ranks 4th in Europe and 5th globally. As per ICT development index 2017, Estonia is 17th out of 176 countries.

TAXATION & GOVERNMENT REGULATIONS

- ✓ e-Tax is an electronic tax filing system set up by the Estonian Tax and Customs Board. 95% of taxes are declared online in Estonia. It takes around 5 hrs/year to comply with corporate taxes as compared to 42 hrs/year in OECD countries.³
- ✓ Corporate tax - As a government initiative, there is 0% income tax for retained and reinvested profits. 20% tax on distributed profits.³



TOP LANGUAGES

Estonian, English, Russian

40% Gender Diversity in Software Engineering Companies

TECH NUGGET

As a complete paperless country, Estonia allows anybody in the world to apply for its e-Residency program and start a business completely online.

TOP INDUSTRIES OF Z1000 COMPANIES INVESTING IN ESTONIA

BFSI



SOFTWARE & INTERNET



CYBERSECURITY



Estonia: Talent & Innovation Ecosystem



TALENT POOL

~30,000

SALARY GROWTH (YOY)

4.8%

ATTRITION RATE (ANNUAL)

15%

AVERAGE NOTICE PERIOD

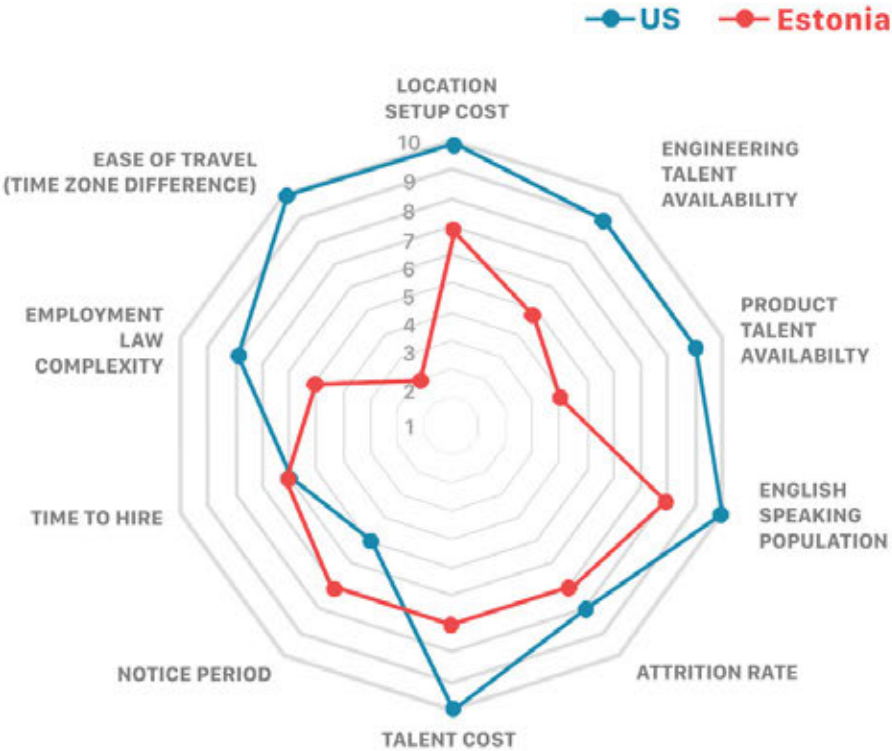
2-12 WEEKS

(HIGHER THE TENURE, HIGHER THE NOTICE PERIOD)

INSIGHTS

- Scaling teams beyond 100+ within a year is a challenge due to shortage of talent.
- High availability of Product Managers, Business Analysts, Database administrators.
- Multi-lingual workforce : Russian, English, and Estonian are commonly spoken languages. 88% of adult population knows at least 1 foreign language, making the country conducive for services industry.
- Foreign recruitment grant worth € 3,000 is setup to support recruitment of foreign tech specialists to solve for the country's shortage of talent.
- Investment aid setup to support international shared service and R&D centers to increase their international competitiveness.
- Strong tech ecosystem. Start-ups such as Skype, Hotmail, Transferwise, Playtech, and Bolt have been pioneers of this ecosystem.

COMPARATIVE LOCATION INDEX US & ESTONIA

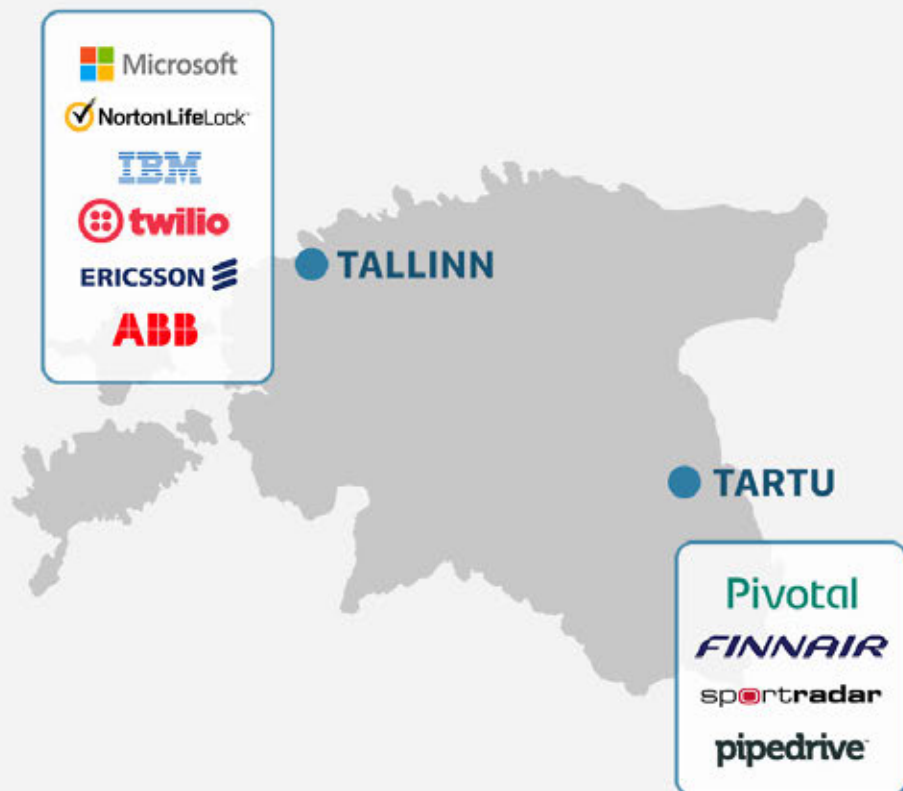


A lower score in the spider chart implies a lower value for the specified parameter and vice versa

Estonia: Presence of Global Companies



SOME INTERNATIONAL COMPANIES WITH SOFTWARE ENGINEERING CENTERS IN ESTONIA



INSIGHTS

- **IBM, Microsoft, Twilio, Fujitsu, CGI, and Ericsson** are some global companies with their centers in Estonia, employing over 20,000 multi-lingual workforce.
- Estonia is recognized as an Innovation and R&D hub by global companies with its Technology Incubators and Accelerators, Private Equity & Venture Capital Association, and a Tech-savvy government which support the vibrant start-ups ecosystem.
- Apart from global companies, Tallinn is also dominated by indigenous tech start-ups with a focus on Cyber Security, IT Services, and Software sector, including **Pipedrive, Transferwise, Nortal, and Taxify (Bolt)**, which successfully serve global customers.
- Based on the demographics of the workforce, Software Development roles within Estonian start-ups are dominated by millennials with less than 10 years of experience.

Estonia: Tier-1 Academic Institutions and Industry Relationships



zinnoV

KEY INSIGHT

Estonia has only 3 universities in top 350 EECA university and 1 university in top 600 university for computer science. However, the number of STEM graduates increased by 540% from 2,500 to ~14,000 between 2018/19 and 2019/20¹

20 HEIs Higher Education Institutions

~14K STEM graduates per year

	QS WORLD TOP 600 UNIVERSITIES IN COMPUTER SCIENCE	QS EECA TOP 350 UNIVERSITIES
UNIVERSITY OF TARTU	259	4
TALLINN UNIVERSITY OF TECHNOLOGY	-	22
TALLINN UNIVERSITY	-	71

COMPUTER AND SYSTEM ENGINEERING TALLINN UNIVERSITY OF TECHNOLOGY

RESEARCH FOCUS

Graph Theory, Image Processing, NLP,
Cyber Security, Space Technology

INDUSTRY PARTNERSHIPS

ERICSSON  CGI  SIEMENS  SAMSUNG  systemair 

START-UP INCUBATION

EXCITE, MEKTORY

SCHOOL OF DIGITAL TECHNOLOGIES TALLINN UNIVERSITY

RESEARCH FOCUS

Gamification Design, Interaction Design,
Human-Computer Interaction

INSTITUTE OF COMPUTER SCIENCE UNIVERSITY OF TARTU

RESEARCH FOCUS

AI/ML, NLP, CGI, Big Data,
IOT, CRYPTO, Computational
Neuroscience

INDUSTRY PARTNERSHIPS

HUAWEI  FUJITSU  fortumo 

Estonia: Start-up Ecosystem



250+

Technology start-ups

1

Number of Unicorns

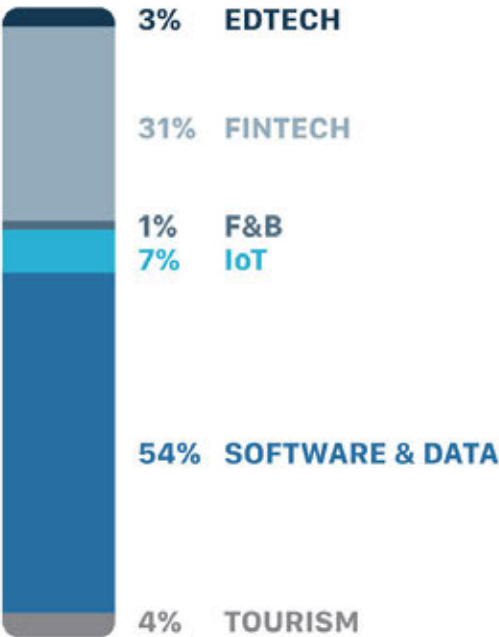
15%

Of start-up founders in Estonia are female

KEY INSIGHT

ADVANCED TECH START-UPS IN ESTONIA 2019-2020

SECTOR-WISE BREAKUP OF START-UPS



SPARQ

Sparq - Community-based personal finance platform.

\$108 K

SPEAKLY

Speakly - An Edtech tool used for language learning.

\$970 K



Dashbird - AWS lambda monitoring and debugging platform.

\$2.9 Mn

aligner

Aligner - Helps users to keep all multilingual content aligned.

\$200 K



Fully Verified - An identity verification solution that eliminates 90% of identity frauds.

NA

FUNDING TILL MARCH 2020

Estonia: Illustrative Compensation Structure



	(IN USD)
GROSS PAY (A)	100,000
1. Pension (usually 2% of gross pay, some cases 3%)	2,000
2. Unemployment tax (employee part: 1.6% of gross pay)	1,600
3. Income tax (20% of gross pay)	20,000
TOTAL EMPLOYEE CONTRIBUTION (1 + 2 + 3) (B)	23,600
NET SALARY (A-B)	76,400
4. Unemployment tax (employer part: 0.8% of A)	800
5. Social Tax(33% of A)	33,000
TOTAL EMPLOYER CONTRIBUTION (4 + 5) (C)	33,800
TOTAL EMPLOYMENT COST (A+C)	133,800

EMPLOYMENT TERMINATION LAW

HIGHLY EMPLOYEE FAVORING

NEUTRAL

HIGHLY EMPLOYER FAVORING

The severance pay is one month's average salary of the employee. If tenure is more than five years, insurance benefit that can amount to maximum of two months' average salary.

Employers in Estonia need to justify termination in writing as per Employment Contracts Act.

Employer needs to inform in advance about the termination in case of unsuitability wherein, the notice period depends upon the tenure of employment with the company.



LITHUANIA



Lithuania: Country Overview



zinnoV

COUNTRY

- ✓ Ranks 11th out of 190 countries in Ease of Doing Business rankings as per the World Bank.
- ✓ **One-stop-portal for information:** Among Top 5 EU countries for digital public service portal for businesses.

INFRASTRUCTURE & LABOR MARKET

- ✓ Lithuania has a strong e-infrastructure. As per the global Cybersecurity Index, Lithuania ranks 3rd in Europe and 4th globally.
- ✓ Lithuania is the regional leader in Fibre-Optic and Wi-Fi bandwidth infrastructure.
- ✓ Ranks 9th globally for 4G service coverage and availability across the country.
- ✓ Ranks 41st out of 176 countries as per ICT development index 2017, prepared by the International Telecommunication Union.

TAXATION & GOVERNMENT REGULATIONS

- ✓ **i.MAS:** IT-based Tax Administrative system. Among the top 10 EU countries in ease of paying taxes.
- ✓ MSMEs (<10 employees; <\$300,000 gross revenue) can avail 0% corporate tax in the 1st year..
- ✓ For the first 6 years, the corporate income tax is 0% in Free Economic Zones.
- ✓ Average time for Entity Registration is 2-3 weeks and the average cost for same is lower than the EU avg.



TOP LANGUAGES

English, Polish, German

35% Gender Diversity in Software Engineering Companies

TOP INDUSTRIES OF Z1000 COMPANIES INVESTING IN LITHUANIA



SOFTWARE & INTERNET



BFSI



LIFE SCIENCES



TECH NUGGET

35% of Global Business Services companies in Lithuania are using advanced process automation. One of the success stories, WesternUnion, has currently deployed over 100 robots that have completed over 2 million tasks.

Lithuania: Talent & Innovation Ecosystem



zinnoV

TALENT POOL

~50,000

SALARY GROWTH (YOY)

7.5%

ATTRITION RATE (ANNUAL)

14%

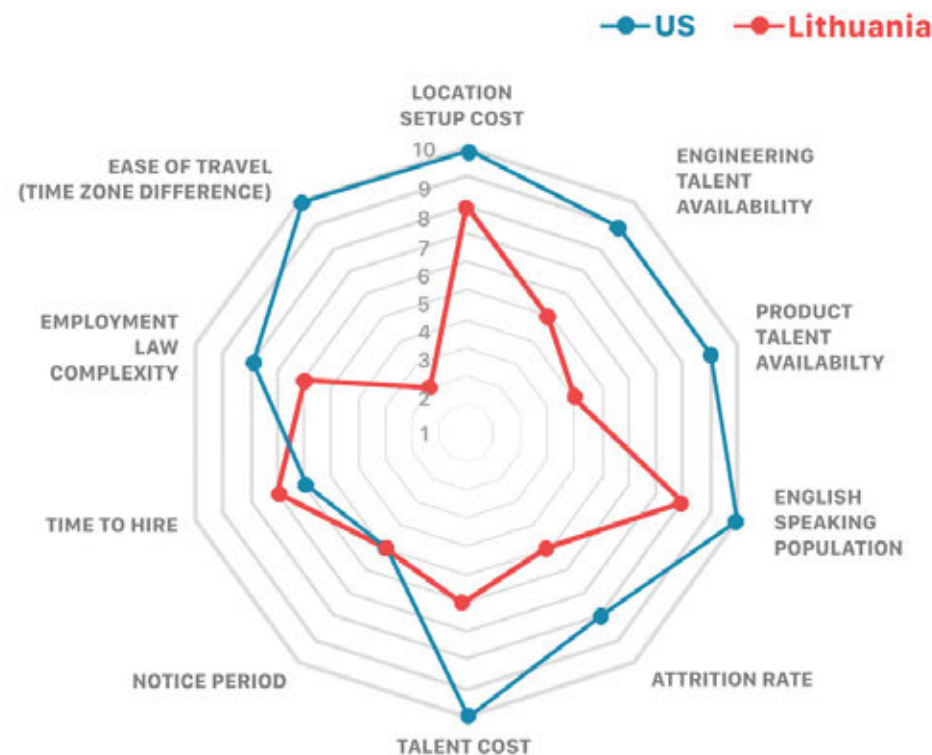
AVERAGE NOTICE PERIOD

2-4 WEEKS

INSIGHTS

- 50.2% of ICT (Information and Communication Technology) specialists in Lithuania are younger than 35 years of age.
- Highly multi-lingual working population, with almost 97% of the population well-versed in more than one foreign language.
- Lithuania hosts 13 of the top 20 ICT companies of Baltic States.
- Lithuania ranks 29th in Global Entrepreneurship index of 2018, only Canada and Estonia rank higher than Lithuania amongst the studied countries in the report.
- 1st in the CEE (Central & Eastern Europe) region for maximum university-business collaborations for Innovation and R&D as one-fourth of students are enrolled in STEM courses.
- 65% increase in R&D spend by Lithuanian government from 2006-13 (\$483 Mn) to 2014-20 (\$798 Mn).

COMPARATIVE LOCATION INDEX US & LITHUANIA

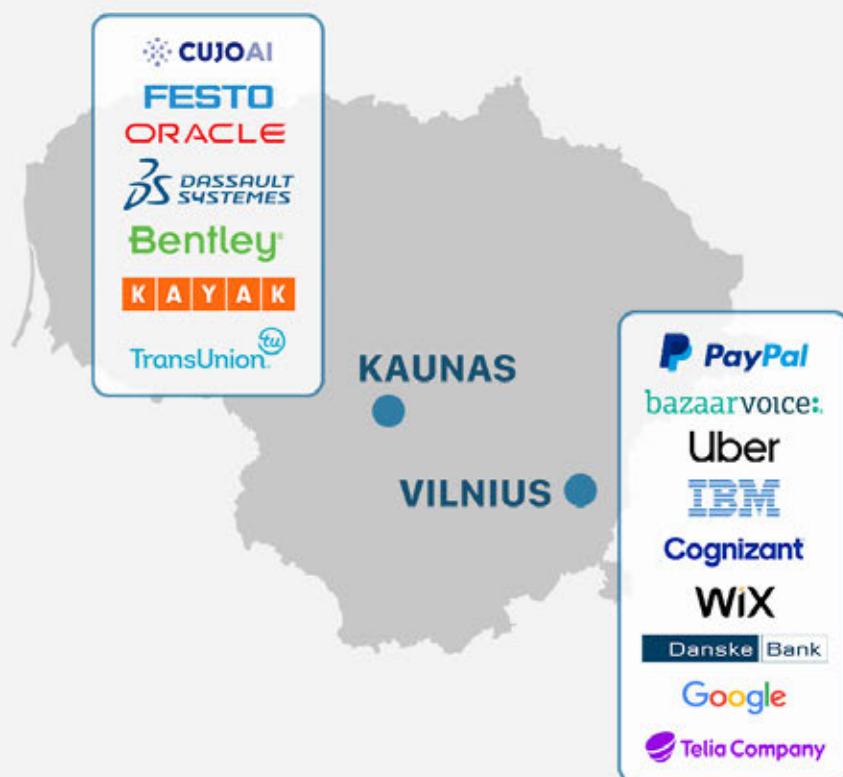


A lower score in the spider chart implies a lower value for the specified parameter and vice versa

Lithuania: Presence of Global Companies



SOME INTERNATIONAL COMPANIES WITH SOFTWARE ENGINEERING CENTERS IN LITHUANIA



INSIGHTS

- **Oracle** has been operating out of their Kaunas office since 2002, employing highly skilled IT professionals for their Strategic Security Solution division.
- **Uber's** Vilnius office is their Global Critical Site Reliability center responsible for the company's 50% of core Infrastructure with a workforce of around 50 employees.
- **Danske Bank & Western Union Bank** employ around 6000 workforce working across IT Software & Development, Product Management, Business Development, Finance & Accounting, Customer Support. However, 30% of the workforce are IT specialists developing FinTech applications.
- **Telia Lietuva** has a strong presence in IT and Telecommunication sector in Lithuania.
- Apart from FinTech companies, **Cognizant, Bazaarvoice, Nasdaq, Rocket Software, Unity, DXC Technologies, Festo** employ around 3000+ IT talent.
- Cyber security company **Arxan** and leading Artificial Intelligence company **CujoAI** opened their development centers in Lithuania for testing and improving their technology as well as to expand their software testing, system operations, and support workforce.

Lithuania: Tier-1 Academic Institutions and Industry Relationships



KEY INSIGHT

Lithuania has 8 universities in the top 350 EECA universities (2 in top 50) and is 3rd highest in the EU in terms of share of youth (25-34 years) with tertiary education : 56% (Eurostat 2018)

47 HEIs Higher Education Institutions

~9.5K STEM graduates per year

	QS WORLD TOP 600 UNIVERSITIES IN COMPUTER SCIENCE	QS EECA TOP 350 UNIVERSITIES
VILNIUS UNIVERSITY	459	18
VILNIUS GEDIMINAS TECHNICAL UNIVERSITY	562	32
KAUNAS UNIVERSITY OF TECHNOLOGY	-	53
VYTAUTAS MAGNUS UNIVERSITY	-	61

FACULTY OF INFORMATICS KAUNAS TECHNOLOGY UNIVERSITY

RESEARCH FOCUS

Big Data Analytics, neural networks

INDUSTRY PARTNERSHIPS



START-UP INCUBATION

National Innovation & Entrepreneurship Centre

FACULTY OF INFORMATICS VYTAUTAS MAGNUS UNIVERSITY

RESEARCH FOCUS

AI, Computational Linguistic, Applied Informatics

START-UP INCUBATION

Centre for Enterprise Practices (CEP)

KAUNAS

VILNIUS

DEPARTMENT OF COMPUTER SCIENCE VILNIUS UNIVERSITY

RESEARCH FOCUS

Big Data Analytics, ML, Cyber-Crime

INDUSTRY PARTNERSHIPS



START-UP INCUBATION

Vilnius University Tech Hub

INSTITUTE OF COMPUTER SCIENCE VILNIUS GEDIMINAS TECHNICAL UNIVERSITY

RESEARCH FOCUS

Mobile Applications, Unmanned Aerial Vehicles, AI, Big Data

INDUSTRY PARTNERSHIPS



START-UP INCUBATION

LinkMenų fabrikas

Lithuania: Start-up Ecosystem



zinnoV

450+

Technology start-ups

1

Number of Unicorns

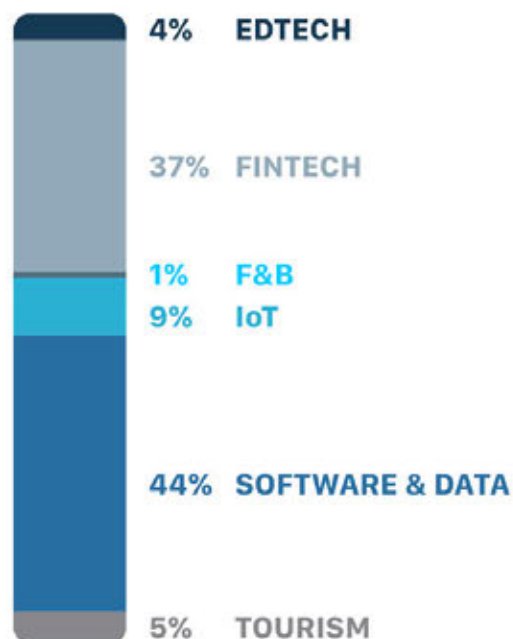
15th

KEY INSIGHT

Rank in terms of global start-up ecosystem strength¹

ADVANCED TECH START-UPS IN LITHUANIA 2019-2020

SECTOR-WISE BREAKUP OF START-UPS



SketchAR - Company that builds deep tech mobile products using AI.

FUNDING TILL
MARCH 2020

\$1.1 Mn



Pixevia - AI for retail: fully autonomous stores powered by AI and sensors.

\$1.6 Mn



WoraPay - Helps retailers order and self check-out on mobile.

\$900 K



LastMile - Provides a layer to launch e-commerce and delivery services to retailers.

\$108 K



Cogastro - Core management system for edible insect farms.

\$270 K

Lithuania: Illustrative Compensation Structure



(IN USD)		
GROSS PAY (A)		
100,000		
Taxes paid by the employee (B)		
39,500		
Personal Income Tax (from Gross Salary)	20%	20,000
Social Security and Health Insurance (from Gross Salary)	19.50%	19,500
NET SALARY (A-B)		
60,500		
TAXES PAID BY THE EMPLOYER (C)		
1,770		
Employers Social Security contribution (incl. Guarantee fund, Long-term unemployment fund)	1.77%	1,770
TOTAL EMPLOYMENT COST (A+C)		
101,770		

EMPLOYMENT TERMINATION LAW

HIGHLY
EMPLOYEE
FAVORING

NEUTRAL

HIGHLY
EMPLOYER
FAVORING

- The severance pay amounts to two times the employee's average remuneration (avg. calculated on the basis of their salary over the three calendar months prior to termination month) if tenure was more than 1 year.
- Employers in Lithuania need to justify termination reason in writing.
- Employee's unsatisfactory performance can be used as a reason to terminate given an improvement plan was drafted for at least two months and the performance in that period was also unsatisfactory.
- The employment contract shall be terminated by giving the employee notice of one month in advance.

- Maximum earnings taxable by social insurance equal to €136,344 of annual income
- If annual income exceeds €136,344, Personal Income Tax increases to 27%
- Mandatory social insurance contribution varies from 21.29% to 24.29%



BULGARIA



Bulgaria: Country Overview



zinnov

COUNTRY

- ✓ Ranks 61st out of 190 countries in Ease of Doing Business rankings as per the World Bank.
- ✓ 60% of the working population (25-64 years) is fluent in at least one foreign language. However, the English proficiency is low, as only around a quarter of the population speaks English.
- ✗ Ranks 74th out of 198 countries as per Corruption Perception Index 2019.
- ✗ Bulgaria has experienced Political instability in the past as it has a multi-party system, such that no single party can be in power alone, but the situation has improved since 2015.

INFRASTRUCTURE & LABOR MARKET

- ✓ Bulgaria has a cost-effective commercial real estate sector as property tax rates are relatively lower as compared to other European countries, varying between 0.1% to 0.45%.
- ✓ Ranks 50th out of 176 countries as per ICT development index 2017, prepared by the International Telecommunication Union.

TAXATION & GOVERNMENT REGULATIONS

- ✓ Bulgaria has the lowest tax rate in the EU for both personal and corporate businesses, at Flat 10%.
- ✓ Bulgaria provides relaxation in corporate taxes upto 100% on taxable profits from investments in high unemployment or less industrialized regions.



TOP LANGUAGES

Bulgarian, English, German, French

39% Gender Diversity in Software Engineering Companies

TECH NUGGET

Under the Investment Promotion Act, the State defines the targeted sectors, and companies can set up tech centers with lowered financial requirements for investment.

TOP INDUSTRIES OF Z1000 COMPANIES INVESTING IN BULGARIA

BFSI



SOFTWARE & INTERNET



FMCG



Bulgaria: Talent & Innovation Ecosystem



zinnoV

TALENT POOL

~100,000

SALARY GROWTH (YOY)

10%

ATTRITION RATE (ANNUAL)

3%

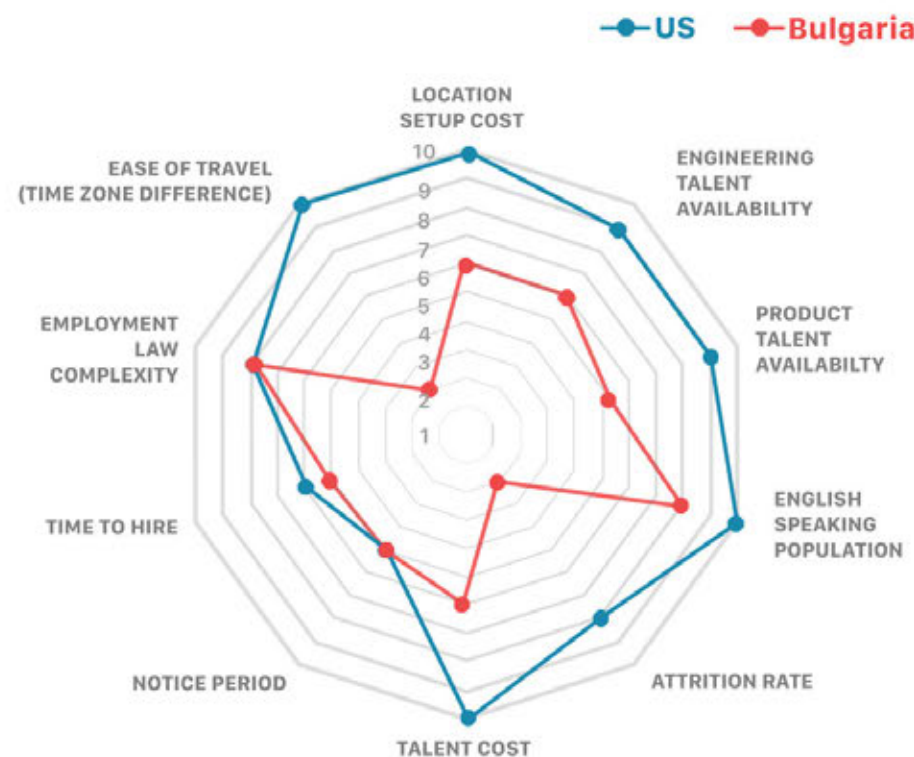
AVERAGE NOTICE PERIOD

4-12 WEEKS

INSIGHTS

- Bulgaria gets high customer support talent from surrounding countries such as Romania, Serbia, Macedonia, Greece, and Turkey.
- 90% of the outsourcing work / contracts are catered to local / regional customers, which are mainly driven by regional common languages or local native languages. This has given Bulgaria a strong regional presence in the outsourcing landscape.
- 80% of the working age population have secondary or tertiary higher education.
- Bulgaria ranks 47th out of 194 countries in AI readiness.
- Bulgaria ranks amongst the lowest in EU in terms of R&D spending.
- Bulgaria is 3rd in Europe and 10th worldwide with certified IT specialists (as per certifications) per capita.
- Software market is changing from outsourcing viewpoint to partnering with local companies for product developments.

COMPARATIVE LOCATION INDEX US & BULGARIA



A lower score in the spider chart implies a lower value for the specified parameter and vice versa

Bulgaria: Presence of Global Companies



SOME INTERNATIONAL COMPANIES WITH SOFTWARE ENGINEERING CENTERS IN BULGARIA



INSIGHTS

- **VMware's** Global Development center is the largest in the EMEA region, while it is their 3rd largest R&D site globally out of Sofia, Bulgaria.
- **Cisco's** Sourcing Services Center and Sofia R&D center employ around 200 ICT professionals working across software and server application development, network administration, BPO roles covering the spectrum of software research and development.
- **CSC's** Software Solutions center has a workforce of over 650 IT specialists developing .Net and Java applications, data warehouse solutions, Insurance policy management solutions for their Financial sector clients.
- **SAP's** R&D Technological center is responsible for developing SAP's platform for business processes and applications. More than 500 employees work on the SAP HANA (cloud), Lifecycle Management, and SAP's Identity and Access Management software solutions.
- **IBM, Microsoft, Bosch, Jonson control, ATOS, HP** developed their R&D centers in Sofia, Bulgaria, employing more than 3000 employees. The mentioned companies are delivering cost-efficient, scalable solutions to business problems.

Bulgaria: Tier-1 Academic Institutions and Industry Relationships



KEY INSIGHT

Only 2 universities feature in the top 350 universities of EECA.
There are no universities featured in the top 600 world universities for computer science.

51 HEIs

Higher Education
Institutions

~10.5K STEM graduates
per year

	QS WORLD TOP 600 UNIVERSITIES IN COMPUTER SCIENCE	QS EECA TOP 350 UNIVERSITIES
SOFIA UNIVERSITY ST. KLIMENT OHRIDSKI	-	49
AMERICAN UNIVERSITY IN BULGARIA	-	170

FACULTY OF COMPUTER SYSTEMS AND TECHNOLOGIES TECHNICAL UNIVERSITY OF SOFIA

RESEARCH FOCUS

Smart Grid Technologies, Computer
Visualization, Graphic Design

INDUSTRY PARTNERSHIPS



FACULTY OF MATHEMATICS AND INFORMATICS SOFIA UNIVERSITY ST. KLIMENT OHRIDSKI

RESEARCH FOCUS

Computer Networks

INDUSTRY PARTNERSHIPS



RESEARCH CENTER

Centre for Information Society
Technologies (CIST)

SOFIA

STARA ZAGORA

BLAGOEVGRAD

AMERICAN UNIVERSITY IN BULGARIA

RESEARCH FOCUS

network systems and data communications,
Web designing, database designing, AI, ML

INDUSTRY PARTNERSHIPS



FACULTY OF ENGINEERING AND TECHNOLOGIES TRAKIA UNIVERSITY

RESEARCH CENTER

Information and Computer
Security

Bulgaria: Start-up Ecosystem



zinnoV

300+

Technology start-ups

0

Number of Unicorns

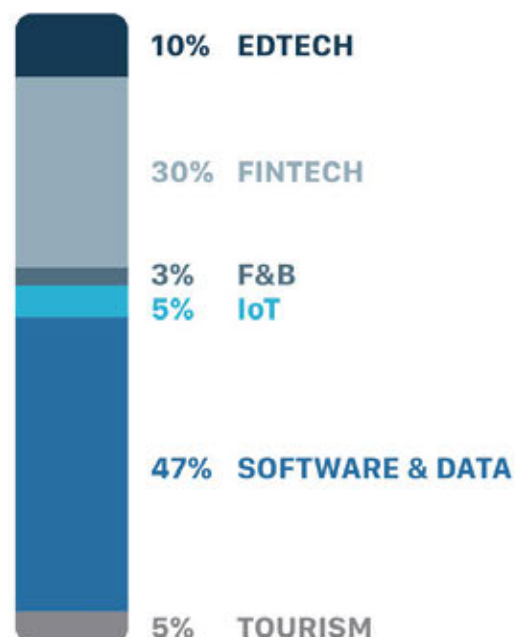
3rd

KEY INSIGHT

In CEE (Central & Eastern Europe) Tech hubs based on number of investment rounds

ADVANCED TECH START-UPS IN BULGARIA 2019-2020

SECTOR-WISE BREAKUP OF START-UPS



Phos - Phos is offering the first phone-agnostics software POS.

FUNDING TILL
MARCH 2020

\$1.8 Mn



OneAcademy - All-in-one online platform for training providers.

\$400 K



Fundraise.space - Virtual one-stop shop for start-up acceleration.

NA



365 Data Science - An Edtech website for aspiring business intelligence analysts and scientists.

\$100 K



Eduplanet KK - An investment management company for education sector.

\$22 Mn

Bulgaria: Illustrative Compensation Structure




	(IN USD)
GROSS PAY (A)	100,000
1. Insurance sum (paid by employee) (13.78% of gross pay)	13,780
2. Income tax (10% of gross pay)	10,000
TOTAL EMPLOYEE CONTRIBUTION (1 +2) (B)	23,780
NET SALARY (A-B)	76,220
Insurance sum (paid by employer) (18.92% of gross pay) (C)	18,920
TOTAL EXPENSES FOR THE EMPLOYER (A + C)	118,920

INSIGHT

Income exceeding € 1,533.51 per month or € 18,402.11 per year is the maximum cap for social security tax (18.92%).

EMPLOYMENT TERMINATION LAW

HIGHLY
EMPLOYEE
FAVORING



HIGHLY
EMPLOYER
FAVORING

The severance pay is as per agreed-upon terms and should not be less than four months' salary.

An employer may terminate an employment contract by giving the employee and labor Union 30 days' prior written notice or no longer than 3 months notice.

There are special groups of employees under protection, and in this case, the dismissal requires consent from the labor inspectorate.



BELARUS



Belarus: Country Overview



zinnoV

COUNTRY

- ✓ ~5 days required to register a property as compared to the OECD average of 22 days. According to World Bank, Belarus entered top 10 countries for having business-friendly reforms.
- ✗ Belarus is currently going through an internal political unrest with protests against the current president for assuming an authoritarian rule over the last 26 years.
- ✗ Ranks 66th out of 198 countries as per Corruption Perception Index 2019.

INFRASTRUCTURE & LABOR MARKET

- ✓ Infrastructure- Ranks 32nd out of 176 countries as per ICT development index 2017.

TAXATION & GOVERNMENT REGULATIONS

- ✓ Hi-Tech Parks (HTP): Belarus has HTP with a special tax regime that provides benefits and preferences for IT companies based in HTPs.
- ✓ Individual Income Tax is fixed at 9% for Hi-Tech Park company employees (vs 15% income tax outside).
- ✓ Belarusian government's initiatives exempt any company set up in FEZ (Free Economic Zone) from corporate taxes, profit tax (vs 18% in General) and customs duties. They are charged 10% VAT (Value Added Tax) (vs 20% in General)¹.
- ✓ Software is protected by copyright in Belarus. A computer program is automatically protected by copyright as soon as it is created, and no formalities are required.



TOP LANGUAGES

Belarusian, Russian, English

38% Gender Diversity in Software Engineering Companies

TOP INDUSTRIES OF Z1000 COMPANIES INVESTING IN BELARUS

ELECTRONICS & SEMICONDUCTORS



SOFTWARE & INTERNET



TELECOMMUNICATIONS & SECURITY



TECH NUGGET

CBIP (China-Belarus Industrial Park) developed with help from China, helps IT companies with tax and other benefits, special rules for use of land and natural resources

Belarus: Talent & Innovation Ecosystem



TALENT POOL

~105,000

SALARY GROWTH (YOY)

5%

ATTRITION RATE (ANNUAL)

10-15%

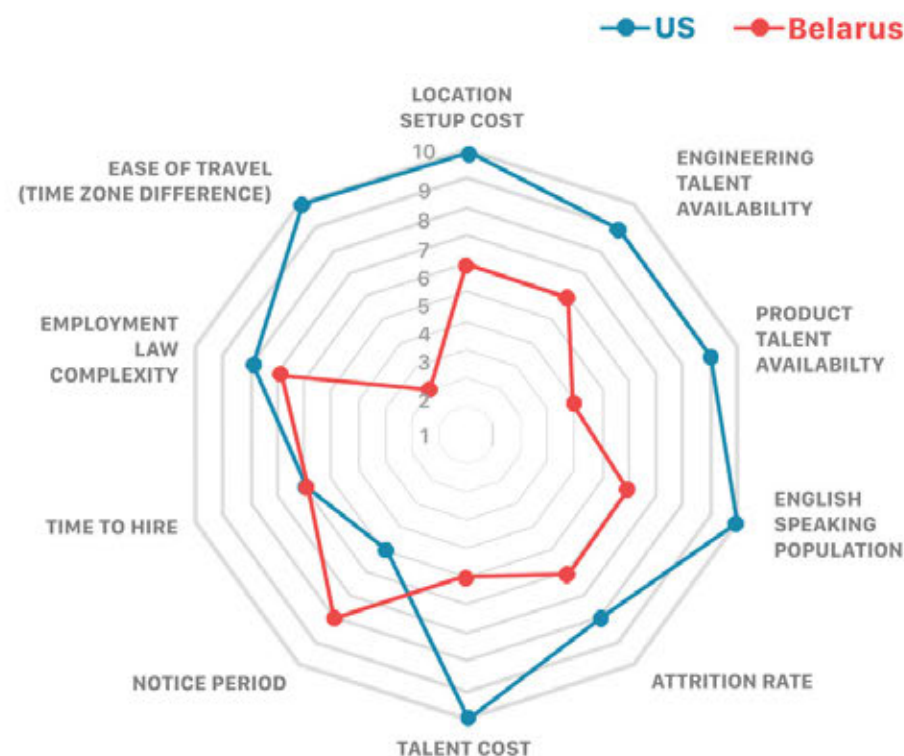
AVERAGE NOTICE PERIOD

4-8 WEEKS

INSIGHTS

- Scaling teams beyond 100+ in a year is a challenge due to shortage of talent.
- Belarus has a young tech talent workforce. 67% of IT specialists are between the age of 21-30.
- Belarusians are multi-lingual and can speak English, Russian, and German as the main business languages, forming a potential workforce for professional services teams.
- 91.9% of the software developed in the HTP account for exports.

COMPARATIVE LOCATION INDEX US & BELARUS



A lower score in the spider chart implies a lower value for the specified parameter and vice versa

Belarus: Presence of Global Companies



SOME INTERNATIONAL COMPANIES WITH SOFTWARE ENGINEERING CENTERS IN BELARUS



INSIGHTS

- The EPAM Systems development center is the largest Hi-Tech Park resident and Belarus' largest company in the IT products and services segment. EPAM employees 8,000 employees in Belarus.
- Yandex - Employees in the Minsk office are involved in creating, developing, and testing Yandex Search and Yandex. Developers in the Minsk office use iOS and Android as well as JavaScript, C++, Python, and Java. Yandex has 150 employees in Belarus.
- Gameloft in Minsk is a production studio that uses iOS and Android for development in close collaboration with the international team. As of 2017, the studio is also working on virtual reality technologies and Apple TV. Gameloft has 50 employees in Belarus.
- Rakuten Viber - The Minsk development center is responsible for the client parts of an application for iPhone, Android, and Windows Phone as well as for the development of a desktop version and billing and sticker-market web development. Rakuten Viber has 126 employees in Belarus.

Belarus: Tier-1 Academic Institutions and Industry Relationships



KEY INSIGHT

Belarus has only 4 universities in top 350 EECA universities (only 1 in top 50) and no university in top 600 universities for Computer Science. This has led to a critical shortage of qualified workers.

48 HEIs Higher Education Institutions

~16K STEM graduates per year

	QS WORLD TOP 600 UNIVERSITIES IN COMPUTER SCIENCE	QS EECA TOP 350 UNIVERSITIES
BELARUSIAN STATE UNIVERSITY	-	25
BELARUSIAN NATIONAL TECHNICAL UNIVERSITY	-	103
BELARUSIAN STATE UNIVERSITY OF INFORMATICS AND RADIO ELECTRONICS	-	158

INFORMATION TECHNOLOGIES AND ROBOTICS FACULTY

BELARUSIAN NATIONAL TECHNICAL UNIVERSITY

RESEARCH FOCUS

Databases Design, Computer Integration into Networks, Information Security

RESEARCH CENTER

Research and Innovation Laboratory of Production Automation

FACULTY OF APPLIED MATHEMATICS AND COMPUTER SCIENCE

BELARUSIAN STATE UNIVERSITY

RESEARCH FOCUS

Geoinformatics, Computer Physics

INDUSTRY PARTNERSHIPS



RESEARCH CENTER

Innovation laboratory SAP
Next-Gen Lab

MINSK

BELARUS STATE UNIVERSITY OF INFORMATICS AND RADIOELECTRONICS

RESEARCH FOCUS

Semiconductors, Micro & Nano-electronics, Coding and Digital Information Processing

INDUSTRY PARTNERSHIPS



Belarus: Start-up Ecosystem



zinnoV

70+

Technology start-ups

0

Number of Unicorns

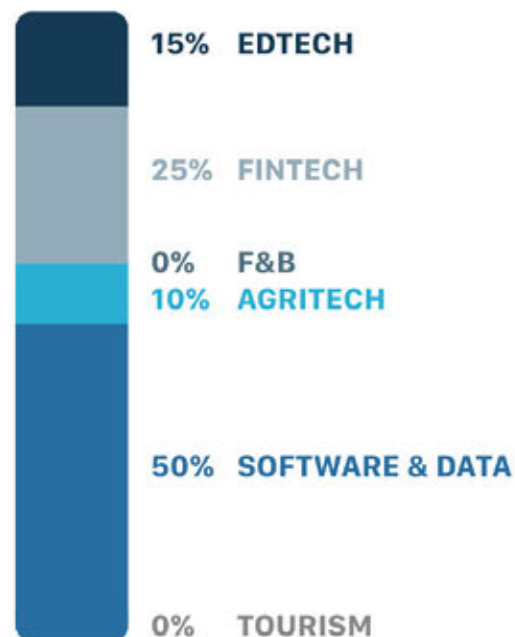
30th

KEY INSIGHT

World Bank Ranking of starting a company out of 190 countries¹

ADVANCED TECH START-UPS IN BELARUS 2019-2020

SECTOR-WISE BREAKUP OF START-UPS



OneSoil

OneSoil - Disruptive AI-powered platform for every farmer on earth.

FUNDING TILL
MARCH 2020

\$500 K

synesis

Synesis Group - Builds large scale services for government and global services.

\$11 Mn

BookYourStudy

Bookyourstudy - Online booking website for educational classes.

\$300 K

APALON

Apalon - Apalon is a successful mobile development company.

NA

tr

Touring App - Global scheduling and touring system for the entertainment industry.

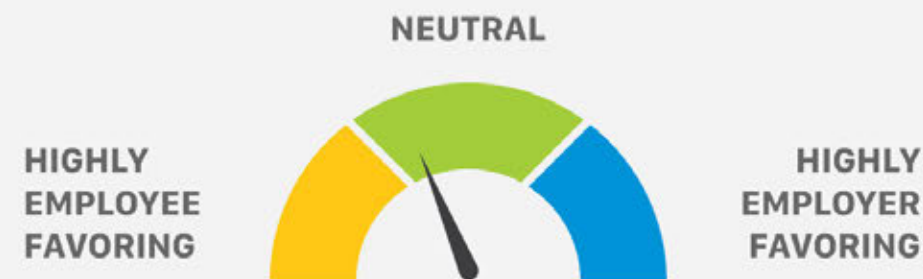
\$390 K

Belarus: Illustrative Compensation Structure



	(IN USD)
GROSS PAY (A)	100,000
1. Employee Expense: Compulsory social security contributions (1% of gross pay)	1,000
2. Income tax (13% of gross pay)	13,000
TOTAL EMPLOYEE CONTRIBUTION (1 +2) (B)	14,000
NET ANNUAL INCOME PER EMPLOYEE (A-B)	86,000
3. Employer Expense: Social Security Contribution (34% of gross pay)	34,000
4. Employer Expense: Professional Pension insurance contribution (9% of gross pay)	9,000
5. Employer Expense: Insurance of Work-related accident and occupational illness (0.6% of gross pay)	600
TOTAL EMPLOYER CONTRIBUTION (3 + 4 + 5) (C)	43,600
TOTAL EMPLOYMENT COST (A+C)	143,600

EMPLOYMENT TERMINATION LAW



- The severance pay can be a minimum of two weeks to a maximum of three months w.r.t. tenure with the employer.
- Employment law protects employees in Belarus by restricting the grounds on which an employer can dismiss staff.
- **Employer Expense: Social Security Contribution** - The contribution is calculated at 34% of the gross monthly salary, but of no more than \$ 2,582 (average salary in Belarus multiplied by five).
- **Employer Expense: Professional Pension insurance contribution** - The contribution is calculated at a maximum rate of 9% of the gross monthly salary, but of no more than \$ 1,549 (the average salary in Belarus multiplied by three) **Employee Expense: Compulsory social security contributions** - The contribution is calculated at 1% of the gross monthly salary, but of no more than \$ 2,582 (the average salary in Belarus multiplied by five).



CZECHIA



Czechia: Country Overview



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COUNTRY

- ✓ First country to prepare and sign the Memorandum of Understanding on Cyber Defence in NATO.
- ✓ Moderate rate of inflation (2.5%).
- ✓ Ranks 41st out of 190 countries in Ease of Doing Business rankings from the World Bank.
- ✓ Ranks 44th out of 198 countries as per Corruption Perception Index 2019.

INFRASTRUCTURE & LABOR MARKET

- ✓ Czechia is 43rd out of 176 countries as per ICT development index 2017, prepared by the International Telecommunication Union.
- ✗ The saturation of commercial office spaces in Prague's city center is impacting companies' ability to attract talent with captivating office offerings within the city.

TAXATION & GOVERNMENT REGULATIONS

- ✓ Personal income is subject to a flat tax rate of 15%.
- ✓ The government provides a special tax allowance of up to 100% of specific R&D expenses (or costs). These R&D costs are claimed twice – first as a normal tax-deductible cost and second as a special tax allowance.
- ✗ Higher corporate tax rate (19%) than other countries in Eastern Europe such as Romania (16%), Lithuania (15%), Bulgaria (10%).



TOP LANGUAGES
Czech, English

29% Gender Diversity in Software Engineering Companies

TOP INDUSTRIES OF Z1000 COMPANIES INVESTING IN CZECHIA

AUTOMOTIVE



INDUSTRIAL



SOFTWARE & INTERNET



TECH NUGGET

Czechia is the first country in the European Union to draft a legal framework that protected Critical Information Infrastructure (CII)

Czechia: Talent & Innovation Ecosystem



zinnoV

TALENT POOL

~91,000

SALARY GROWTH (YOY)

12%

ATTRITION RATE (ANNUAL)

5%

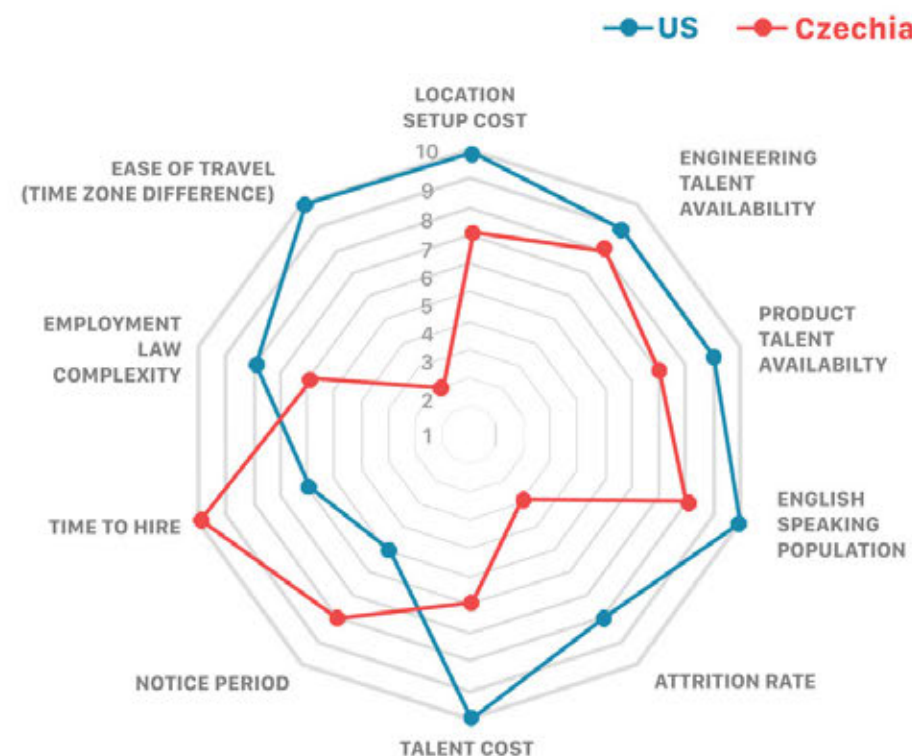
AVERAGE NOTICE PERIOD

8 WEEKS

INSIGHTS

- One of the best start-up ecosystems in CEE - captured €3.4B of the EU's Horizon 2020 R&D fund.
- Czechia is ranked 29th in Global Competition index and 27th in Global Innovation index.
- According to Eurostat, 42% of Czech companies are Innovative (Moderate Innovators), below Europe's average of around 49%.
- Due to a mature cyber security talent, the country acts as a strong cybersecurity hub in Eastern Europe.
- Czechia is a very competitive market for hiring/retaining IT talent. For every 1 talent there are around 10 possible opportunities in the market.
 - This high demand of Software Engineers has led to a steady salary growth and higher additional benefit expectations.

COMPARATIVE LOCATION INDEX US & CZECHIA



A lower score in the spider chart implies a lower value for the specified parameter and vice versa

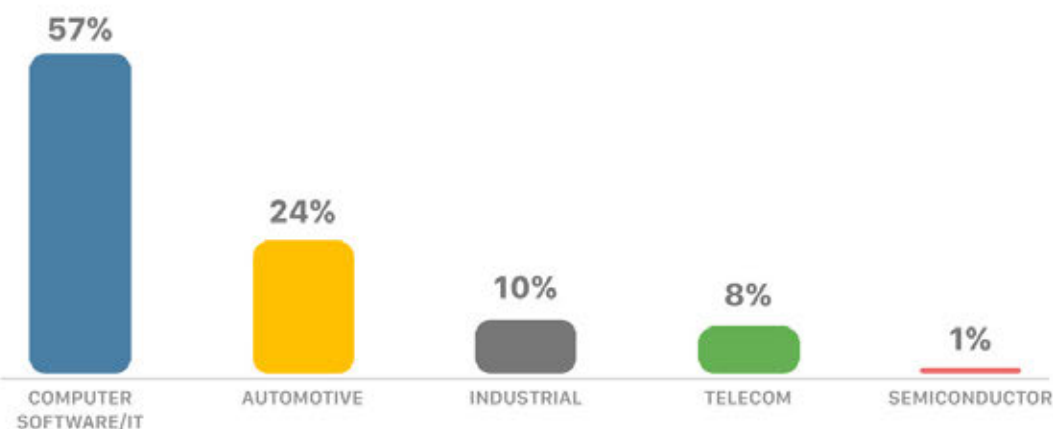
Czechia: Presence of Global Companies



SOME INTERNATIONAL COMPANIES WITH SOFTWARE ENGINEERING CENTERS IN CZECHIA



IT AND TECH TALENT SPLIT ACROSS INDUSTRIES IN CZECHIA



- Automotive is the largest industry in Czechia, such that global automotive companies' Centers of Excellence (CoEs) employ around 150,000 professionals.
- **IBM, SAP, Microsoft, Kiwi.com, and Skoda** are top amongst the employers that together employ over 10,500 IT specialists.
- Banking, Financial Services vertical has created around 17% of the total jobs while Software & IT vertical has created about 8.5% of the total jobs in Czechia.
- **DELTA Programme** – A major initiative by the Czech government in driving technological innovations. A large number of global technology giants such as **IBM, Oracle, Cisco, Microsoft** are engaged in these initiatives.

Czechia: Tier-1 Academic Institutions and Industry Relationships



zinnoV

KEY INSIGHT

Czechia has 18 universities in top 350 EECA universities (5 in top 50). Major universities like Czech Technical University have adjunct professors from global companies like Rockwell Automation. This collaboration creates a strong brand attraction for companies that students want to join post graduation

68 HEIs Higher Education Institutions

5K+ STEM graduates per year

	QS WORLD TOP 600 UNIVERSITIES IN COMPUTER SCIENCE	QS EECA TOP 350 UNIVERSITIES
CHARLES UNIVERSITY	129	5
CZECH TECHNICAL UNIVERSITY IN PRAGUE	214	9
MASARYK UNIVERSITY	31	10
BRNO UNIVERSITY OF TECHNOLOGY	459	23

FACULTY OF MATHEMATICS & PHYSICS CHARLES UNIVERSITY

RESEARCH FOCUS

Intelligent Systems and Computing, Theoretical Computer Science, and Combinatorics

INDUSTRY PARTNERSHIPS

ORACLE SAP Microsoft

RESEARCH CENTER

Centre for Knowledge and Technology Transfer

PRAGUE

FACULTY OF INFORMATION TECHNOLOGY CZECH TECHNICAL UNIVERSITY IN PRAGUE

RESEARCH FOCUS

Artificial Intelligence, Computer Graphics, Computer Vision, and ML

INDUSTRY PARTNERSHIPS

amazon Rockwell Automation SKODA

RESEARCH CENTER

Czech Institute Of Informatics, Robotics And Cybernetics

FACULTY OF INFORMATION TECHNOLOGY BRNO UNIVERSITY OF TECHNOLOGY

RESEARCH FOCUS

Supercomputing, Automatic Speech and Language Processing, AI, ML

INDUSTRY PARTNERSHIPS

Microsoft IBM NVIDIA

RESEARCH CENTER

National Supercomputer Centre

BRNO

Czechia: Start-up Ecosystem



zinnoV

300+

Technology start-ups

0

Number of Unicorns

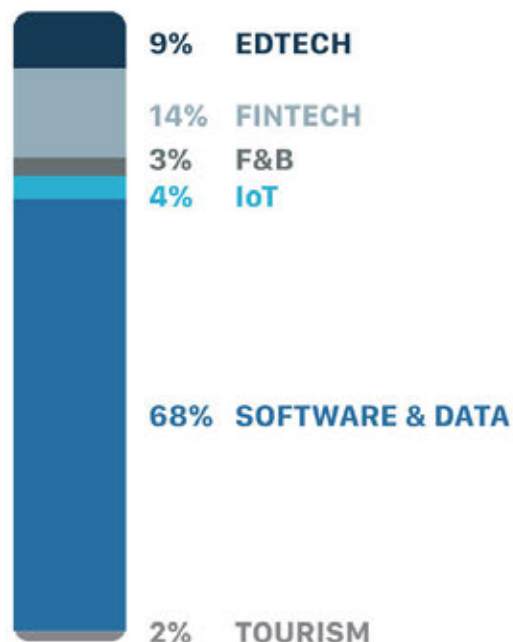
20%

Percentage of start-ups in Czechia that are foreign owned

KEY INSIGHT

ADVANCED TECH START-UPS IN CZECHIA 2019-2020

SECTOR-WISE BREAKUP OF START-UPS



Socialbakers - Leading AI-powered social media marketing platform.

FUNDING TILL
MARCH 2020

\$34 Mn



Time is Ltd - Offers software to analyze intercompany time productivity.

\$330 K



Avast - Security software development company protects threats on internet.

\$100 Mn



ROI Hunter - SAAS platform helping e-commerce companies achieve better ROI at scale.

\$517 K



Trisbee - Cashless payment platform.

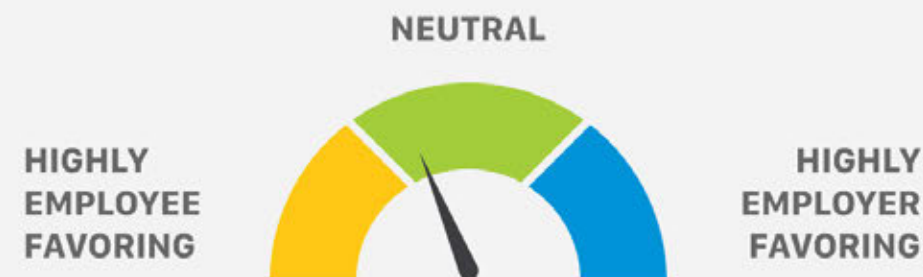
\$382 K

Czechia: Illustrative Compensation Structure



	(IN USD)
GROSS PAY (A)	100,000
1. Employee Contribution: Health Insurance Contribution (4.5% of gross pay)	4,500
2. Employee Contribution: Pension Insurance (6.5% of gross pay)	6,500
TOTAL EMPLOYEE CONTRIBUTION (1 +2) (B)	11,000
NET ANNUAL INCOME PER EMPLOYEE (A-B)	89,000
3. Employer Contribution: Health Insurance Contribution (25% of gross pay)	25,000
4. Employer Contribution: Pension Insurance (9% of gross pay)	9,000
5. Employer Contribution: Sickness Insurance (2.3% of gross pay)	2,300
6. Employer Contribution: Unemployment Insurance (1.2% of gross pay)	1,200
TOTAL EMPLOYER CONTRIBUTION (3 + 4 + 5 + 6) (C)	37,500
TOTAL EMPLOYMENT COST (A+C)	137,500

EMPLOYMENT TERMINATION LAW



Severance pay depends on the duration of full-time employment with the employer, therefore, can range from a month to three months pay.

Employers need to give a two-month notice period to the employee and trade union body, after an initial warning has been issued for termination of employment in Czechia.

Termination shall be done in consultation with trade union. As per the Labor Code, the consultation must be concluded before the dismissal notification is handed to the employee.

The length of trial period after termination if challenged by an employee is around 6 months for Manager level while 3 months for other workers.



POLAND



Poland: Country Overview



zinnoV

COUNTRY

- ✓ Ranks 40th out of 190 countries in Ease of Doing Business rankings as per the World Bank.
- ✓ Ranks 41st out of 198 countries as per Corruption Perception Index 2019.
- ✓ With over 20 years of steady GDP growth, Poland boasts of business-friendly environment to investors.

INFRASTRUCTURE & LABOR MARKET

- ✓ Ranks 49th out of 176 countries as per ICT development index 2017, prepared by the International Telecommunication Union.

TAXATION & GOVERNMENT REGULATIONS

- ✓ In 2018, introduced the New Investment Support Act, under which companies benefit in the form of Corporate Income Tax (19%) or Personal Income Tax (17% to 32%) exemption for a certain period based on fulfilment of certain location-dependent conditions.
- ✗ Long average time to start a business and lengthy procedure to enforce a contract (can take ~685 days)¹.
- ✗ Minimum paid-in capital requirement in Poland is quite high (10.7% of income per capita).
- ✗ Higher corporate tax rate (19%) than other countries in Eastern Europe such as Romania (16%), Lithuania (15%), Bulgaria (10%).



TOP LANGUAGES

Polish, German, English

32% Gender Diversity in Software Engineering Companies

TECH NUGGET

As per a Bloomberg 2018 report, Poland is the 25th most innovative economy of the world. Its revenue has grown beyond 25% since the 2008 recession period.

TOP INDUSTRIES OF Z1000 COMPANIES INVESTING IN POLAND

AUTOMOTIVE



SOFTWARE & INTERNET



INDUSTRIAL



Poland: Talent & Innovation Ecosystem

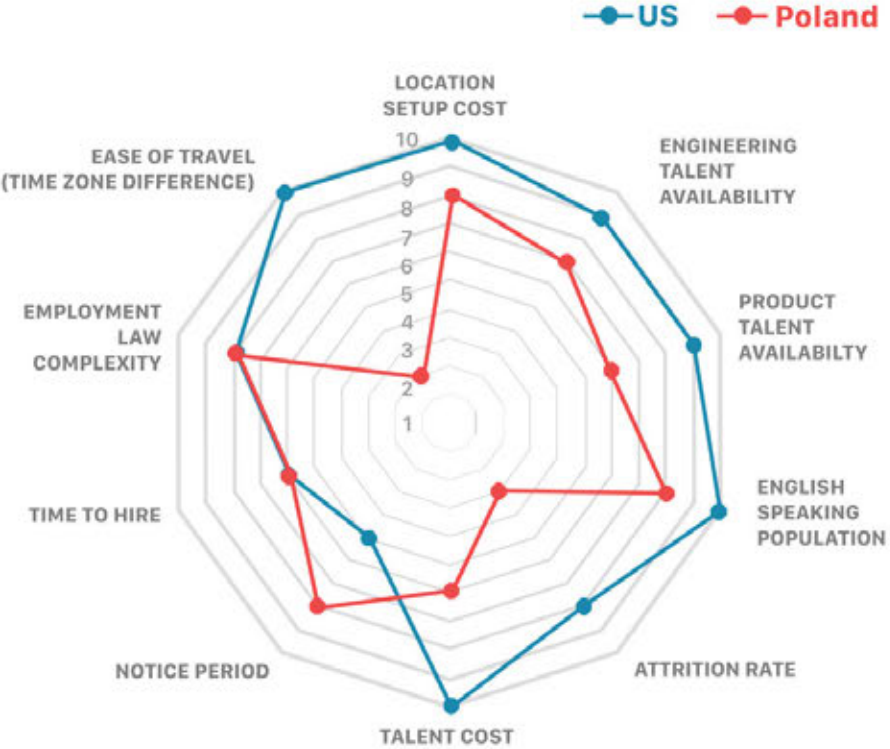


TALENT POOL ~170,000	SALARY GROWTH (YOY) 8%
ATTRITION RATE (ANNUAL) 6%	AVERAGE NOTICE PERIOD 4-12 WEEKS

INSIGHTS

- Developers of Poland are ranked the 3rd best by HackerRank (China is 1st, Russia is 2nd).
- Warsaw and Krakow are the top locations employing ~55% of the total technology talent pool in Poland.
- Almost 600 Centers of Excellence in Poland provide software development processes and IT support services, of these 35% of the centers handle processes in more than five foreign languages. Therefore, the talent in Poland is well-educated, highly skilled, and multi-lingual.
- Poland ranked as the 3rd best start-up hub in the globe by the World Bank.
- Start-ups in Poland are focused on tech, including Big Data (15%), Internet of Things (14%), analytics (13%) and developer's tools (9%).

COMPARATIVE LOCATION INDEX US & POLAND



A lower score in the spider chart implies a lower value for the specified parameter and vice versa

Poland: Presence of Global Companies



SOME INTERNATIONAL COMPANIES WITH SOFTWARE ENGINEERING CENTERS IN POLAND



IT AND TECH TALENT SPLIT ACROSS INDUSTRIES IN POLAND



- Poland is an R&D hub for global companies operating in various industries.
- **IBM, Nokia, Intel, Motorola, and Samsung** are some top companies in Poland which together employ over 15,000 IT specialists.
- **Sii, Luxoft, Intive, IT Kontrakt, GlobalLogic, and EPAM** are the top Service Providers in Poland.
- Besides the capital Warsaw, medium-sized cities like Wroclaw, Krakow, and Poznan are attractive locations for IT services companies due to good technical universities, a large talent pool, and moderate cost.

Poland: Tier-1 Academic Institutions and Industry Relationships



KEY INSIGHT

Poland has 25 universities in top 350 EECA universities (4 in top 50). Almost 50% of STEM graduates in the CEE (Central & Eastern Europe) region are from Poland.

428 HEIs Higher Education Institutions

94K STEM graduates per year

	QS WORLD TOP 600 UNIVERSITIES IN COMPUTER SCIENCE	QS EECA TOP 350 UNIVERSITIES
UNIVERSITY OF WARSAW	129	7
WARSAW UNIVERSITY OF TECHNOLOGY	222	14
JAGIELLONIAN UNIVERSITY	400	6
AGH UNIVERSITY OF SCIENCE AND TECHNOLOGY	462	52

FACULTY OF MATHEMATICS, COMPUTER SCIENCE AND MECHANICS

UNIVERSITY OF WARSAW

RESEARCH FOCUS

Supercomputing calculations,
Computational complexity,
Distributed systems

RESEARCH CENTER

Interdisciplinary Centre for
Mathematical and Computational
Modelling

FACULTY OF MATHEMATICS AND COMPUTER SCIENCE JAGIELLONIAN UNIVERSITY

RESEARCH FOCUS

Bioinformatics, Software Engineering,
3D Modelling, Artificial Intelligence,
ML, Analytical Computer Science

RESEARCH CENTER

Jagiellonian Center of Innovation

FACULTY OF MATHEMATICS AND INFORMATION SCIENCE WARSAW UNIVERSITY OF TECHNOLOGY

RESEARCH FOCUS

Geometrical modelling, parallel
calculations, neural networks,
Artificial Intelligence,
decision-making facilitation

RESEARCH CENTER

Center for Innovation and
Technology Transfer Management

WARSAW

KRAKOW



400+

Technology start-ups

0

Number of Unicorns

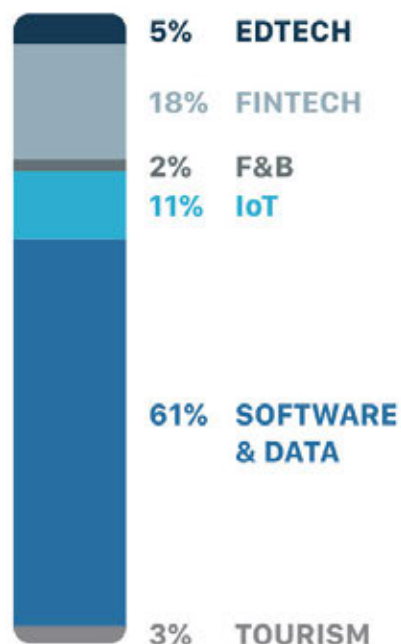
4th

Rank in most start-up friendly countries in Europe

KEY INSIGHT

ADVANCED TECH START-UPS IN POLAND 2019-2020

SECTOR-WISE BREAKUP OF START-UPS



inSTREAMLY - Automates the displaying of contents on multiple live stream channels.

FUNDING TILL
MARCH 2020

\$1 Mn



Airly - Has accurate data about air pollution in your community.

\$2.2 Mn



Renderro - An IT company providing cloud workspace for AV content creators.

\$362 K



LOFI Robot - Help investors learn basics about coding, electronics and mechanics.

NA



Neptune.ai - Committed to creating a standard for data scientists.

\$10 Mn

START-UP OVERVIEW

Warsaw, Krakow, Wroclaw, Gdansk, and Poznan are the most developed start-up hubs in Poland. Start-ups in Poland are focused on tech, including Big Data (15%), Internet of Things (14%), Analytics (13%), and developer's tools (9%).

Poland leads Central and Eastern Europe by total venture capital in which VCs have invested \$ 722Mn since 2013.

Poland start-up accelerators have ranked 12th globally around the world. The majority of start-ups build technologies in the areas of Big Data, Analytics, the Internet of Things (IoT), developer tools, and life sciences.

Poland: Illustrative Compensation Structure



(IN USD)

GROSS PAY (A)

100,000

EMPLOYEE EXPENSES:

1. Pension (9.7% of gross pay)	9,700
2. Disability (1.5% of gross pay)	1,500
3. Sickness (2.4% of gross pay)	2,400
4. Health NFZ (7.7% of gross pay)	7,700
5. Income tax (6.6% of gross pay)	6,600

TOTAL EMPLOYEE CONTRIBUTION (1 + 2 + 3 + 4 + 5) (B) 27,900

EMPLOYEE NET SALARY (A - 1 - 2 - 3 - 4 - 5) 72,100

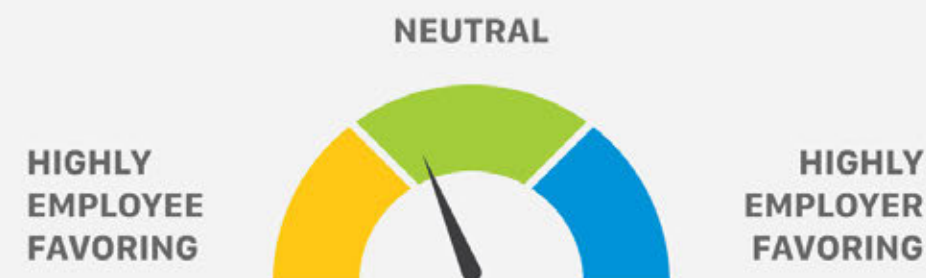
EMPLOYER CONTRIBUTIONS:

6. Pension (9.7% of gross pay)	9,700
7. Disability (6.5% of gross pay)	6,500
8. Accident (1.8% of gross pay)	1,800
9. Labor Fund (2.4% of gross pay)	2,400

TOTAL EMPLOYER CONTRIBUTION (6 + 7 + 8 + 9) (C) 20,400

TOTAL EMPLOYMENT COST (A+C) 120,400

EMPLOYMENT TERMINATION LAW



Severance pay depends on the duration of employment with the employer, therefore can range from a month to even 3 months pay.

Employers in Poland need to inform the trade union, which represents the employee, of the intention to terminate, including reasons for dismissal. The written notice needs to be given to the employee personally.



CANADA

Canada: Country Overview



COUNTRY

- ✓ Canada is 2nd only to Japan among G7 countries in terms of political stability.
- ✓ Canada is seen as the 2nd least corrupt country among G20 members and 12th globally out of 198 countries as per Corruption Perception Index 2019.
- ✓ Ranks 23rd out of 190 countries in Ease of Doing Business rankings as per the World Bank.

INFRASTRUCTURE & LABOR MARKET

- ✓ Canada has three of the world's 10 most liveable cities- Calgary (#5), Vancouver (#6), Toronto (#7).
- ✗ The saturation of commercial downtown office market and low vacancy rates in Toronto, Vancouver, Ottawa, Montreal is impacting a companies' ability to attract talent with its captivating and amenity-rich office offerings within the city.

TAXATION & GOVERNMENT REGULATIONS

- ✓ Canada's R&D tax credit program allows companies to deduct eligible expenditures and claim a 15% non-refundable tax credit.
- ✓ Canada has the soundest banking system among G7 countries and ranks 6th in the world.
- ✓ Immigrant worker applications post employer approval can be accelerated to receive work permits within two weeks.



TOP LANGUAGES
English, French

35% Gender Diversity in Software Engineering Companies

TOP INDUSTRIES OF Z1000 COMPANIES INVESTING IN CANADA

AUTOMOTIVE



SOFTWARE & INTERNET



INDUSTRIAL



TECH NUGGET

Canada is a lucrative market for US Tech companies in terms of nearshoring and minimal time zone differences

Canada: Talent & Innovation Ecosystem



zinno

TALENT POOL

~440,000

SALARY GROWTH (YOY)

2.7%

ATTRITION RATE (ANNUAL)

16%

AVERAGE NOTICE PERIOD

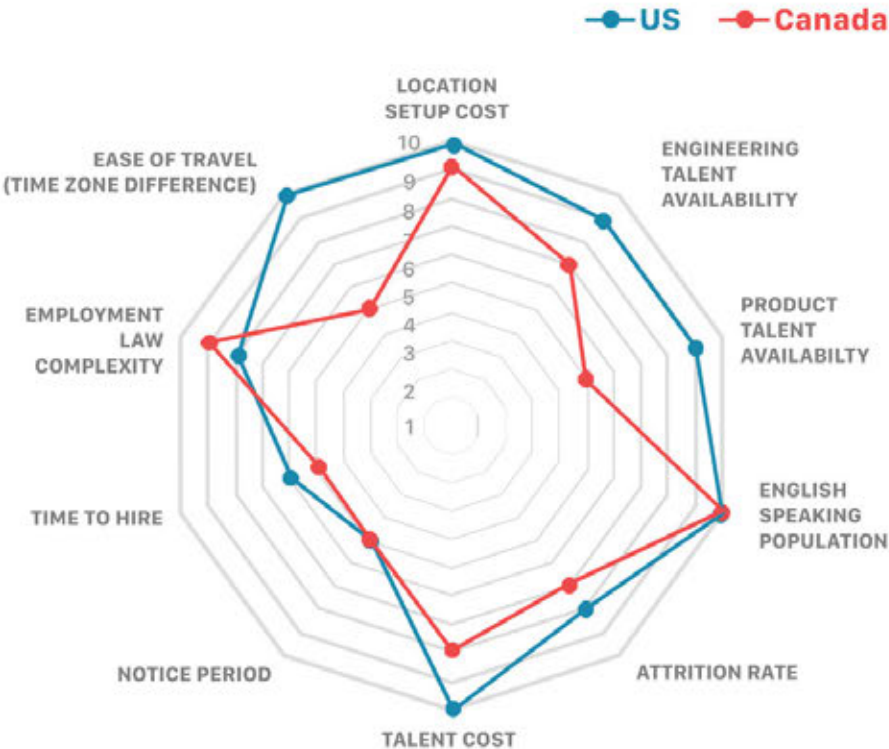
1-12 WEEKS

(DEPENDS ON DURATION OF SERVICE)

INSIGHTS

- Software companies in Canada benefit from a strong market growth; latest numbers show a 5.9% increase in revenues for Canadian software and computer industries.
- Canada is 3rd after US and Switzerland as per Global Entrepreneurship index 2018.
- Canada is now the 6th largest cyber security innovation hub in the world by venture capital deals (2016-2019) and has taken key steps to recognize the importance of cyber security.
- Canada continues to attract global talent and capital, with over 800 AI companies and some of the world's brightest minds in the field.
- Toronto, Vancouver, Montreal and Ottawa all rank in CBRE's top 20 tech talent markets in North America.
- Canada is 29th out of 176 countries as per ICT development index 2017, prepared by the International Telecommunication Union
- 40% of all Canadian R&D scientists work in the information and communication technologies (ICT) sector.

COMPARATIVE LOCATION INDEX US & CANADA



A lower score in the spider chart implies a lower value for the specified parameter and vice versa

Canada: Presence of Global Companies



SOME INTERNATIONAL COMPANIES WITH SOFTWARE ENGINEERING CENTERS IN CANADA



INSIGHTS

- Google plans to triple its workforce in Canada over the next 3 years to as many as 5000 employees across Toronto, Montreal, and Ontario region.
- Uber announced that it is launching a new engineering hub in Toronto. It will also expand its existing self-driving center in Toronto and invest more than \$200 Mn over five years.
- HSBC has opened its Global Data & Innovation Lab to accelerate development of technological solution for its clients using Artificial Intelligence and Machine Learning.
- Ernst & Young Global Limited has chosen Vancouver for its new EY Technology Center. This is part of the firm's two-year commitment to invest US \$1 Billion in new technology solutions, client services, innovation and its ecosystems.
- Mastercard has opened its new global intelligence and cyber center in Vancouver, creating 380 new jobs in the area of Artificial Intelligence and Internet of Things.

Canada: Tier-1 Academic Institutions and Industry Relationships



KEY INSIGHT

There are 26 universities featuring in top 1000 Universities of the world (3 in top 100) and 22 universities in top 600 universities for Computer Science (5 in top 100). Canadian universities have strong industry partnerships, such as University of Toronto and Fujitsu. Fujitsu launched the co-creation research lab in 2018 and the partnership has led to 10 patents, 30 joint research papers, and \$7.5 Mn in funding towards research in just 2 years.

100 HEIs Higher Education Institutions

90K+ STEM graduates per year

	QS WORLD TOP 600 UNIVERSITIES IN COMPUTER SCIENCE	QS WORLD UNIVERSITY RANKINGS
UNIVERSITY OF TORONTO	10	25
UNIVERSITY OF WATERLOO	24	166
UNIVERSITY OF BRITISH COLUMBIA	25	45
MCGILL UNIVERSITY	50-100	31

UNIVERSITY OF BRITISH COLUMBIA

RESEARCH FOCUS

Development of 5G Hubs with Rogers

INDUSTRY PARTNERSHIPS

ROGERS.

MCGILL UNIVERSITY

RESEARCH FOCUS

Telecom data analysis using AI/ML technology

INDUSTRY PARTNERSHIPS

ERICSSON

VANCOUVER

MONTREAL

WATERLOO **TORONTO**

UNIVERSITY OF WATERLOO

RESEARCH FOCUS

Distributed memory management for fast data processing

INDUSTRY PARTNERSHIPS

blink • AI

UNIVERSITY OF TORONTO

RESEARCH FOCUS

Co-creation research laboratory on Quantum Computing, Machine Learning, and smart cities

INDUSTRY PARTNERSHIPS

FUJITSU



3000+

Technology start-ups

3

Number of Unicorns

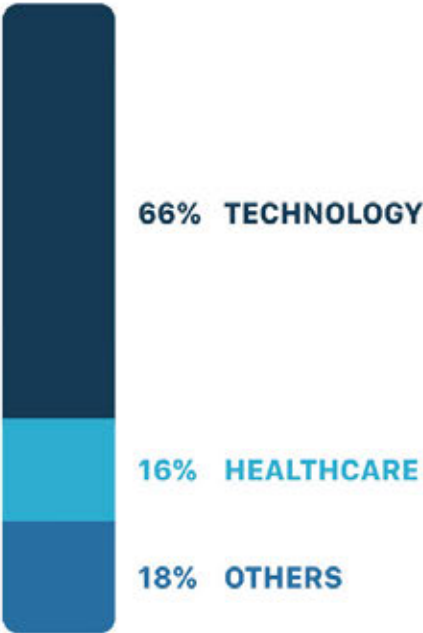
\$2.9 Bn

KEY INSIGHT

Venture Capital funding for the first six months of 2019 completing around 264 investments

ADVANCED TECH START-UPS IN CANADA 2019-2020

SECTOR-WISE
BREAKUP OF
START-UPS



lightspeed

Lightspeed - Provides point of sales software and analytics platform to retailers.

FUNDING TILL
MARCH 2020

\$347 Mn

Wealthsimple

Wealthsimple - Provides simple investing and money management solutions.

\$166 Mn

coveo

Coveo - Provides AI-powered search and recommendation engines.

\$167 Mn

RITUAL

Ritual - Innovative social ordering app for people to buy F&B online.

\$134 Mn

AlayaCare

AlayaCare - Provides a software platform for home care agencies to provide health solutions

\$99 Mn

Canada: Illustrative Compensation Structure



	(IN USD)
GROSS PAY (A)	100,000
1. Canada Pension Plan (4.95% of gross pay)	4,950
2. Employment Insurance (2.12% of gross pay)	2,120
3. Health Tax (1.95% of gross pay)	1,950
4. Medical Insurance (1.56% of gross pay)	1,560
TOTAL EMPLOYMENT COST (A + 1 + 2 + 3 + 4)	1,10,580

EMPLOYMENT TERMINATION LAW

HIGHLY
EMPLOYEE
FAVORING

NEUTRAL

HIGHLY
EMPLOYER
FAVORING

Severance pay depends on the duration of employment with the employer. **If employment is for less than a year, no severance to be paid by employer, else calculated at 2 days for each year if tenure is greater than a year.** However, in such cases, minimum entitlement is 5 days per year of employment.

Termination laws change based on territories such that depending on jurisdiction in some regions, no notice of termination is required if the employee has been dismissed for just cause.

Termination notification can either be given in writing or or verbal is also acceptable (termination without a reason).



PHILIPPINES

Philippines: Country Overview



zinnoV

COUNTRY

- ✓ UNCTAD (United Nations Conference on Trade and Development) 2018 listed Philippines in TOP 10 most promising countries for Foreign Investment.
- ✗ Ranks 138th in Ease of Doing Business as per the World Bank, while ranks 171 in starting a business.
- ✗ Ranks 113 out of 180 countries as per Corruption Perception Index 2019.

INFRASTRUCTURE & LABOR MARKET

- ✓ 296 IT Parks and Business Process Outsourcing centers across Philippines.
- ✓ 'Build, Build, Build' program is the centerpiece program of the Duterte administration to revamp Philippines' infrastructure.
- ✗ Ranks 101st out of 176 countries as per ICT development index 2017, prepared by the International Telecommunication Union.

TAXATION & GOVERNMENT REGULATIONS

- ✓ "Zero-contact policy" prevents government officials from interfering with business requests. "One-stop shop" pushes automation of permits and licenses. Both are aimed at promoting ease of doing business.
- ✓ Launched "Project Repeal: The Philippines' Anti-Red Tape Challenge" to remove regulations that are detrimental to the economy.
- ✗ Among ASEAN countries, Philippines has the highest corporate tax rate at 30%.



TOP LANGUAGES

Filipino, English

41% Gender Diversity in Software Engineering Companies

TECH NUGGET

The IT BPO sector is responsible for 60% contribution to GDP as more than 92% of Filipinos speak fluent English

TOP INDUSTRIES OF Z1000 COMPANIES INVESTING IN PHILIPPINES

SOFTWARE & INTERNET



SEMICONDUCTOR



BFSI



Philippines: Talent & Innovation Ecosystem



zinnoV

TALENT POOL

~131,000

SALARY GROWTH (YOY)

6%

ATTRITION RATE (ANNUAL)

14.6%

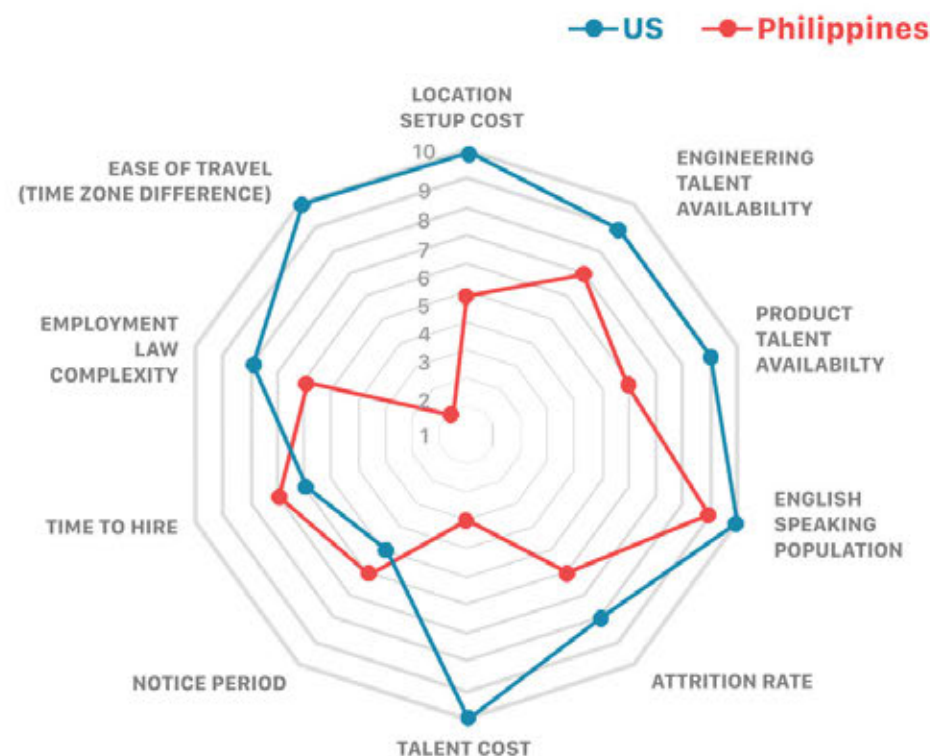
AVERAGE NOTICE PERIOD

4 WEEKS

INSIGHTS

- The median age of working population is 23 years that is younger than that of major European countries, USA, Thailand and Vietnam
- Philippines is rapidly becoming a FinTech, Blockchain, and Cryptocurrency hub
- The majority of tech talent based out of Philippines works in Professional Services as Customer Support Representative

COMPARATIVE LOCATION INDEX US & PHILIPPINES



A lower score in the spider chart implies a lower value for the specified parameter and vice versa

Philippines: Presence of Global Companies



SOME INTERNATIONAL COMPANIES WITH SOFTWARE ENGINEERING CENTERS IN PHILIPPINES



INSIGHTS

- **Revolution Precrafted**, Philippines' unicorn, is a property tech firm, that designs luxurious prefabricated homes.
- **BPO giants Accenture & Convergys** currently employ more than 130,000 Filipinos working out of a combined 50 delivery centers across Philippines.
- **Coins.ph, Ayannah, Citadax** are a few of Philippines' Fintech start-ups developing payment interfaces, lending marketplaces, and blockchain based products for businesses using Blockchain-based technology.
- Cost competitiveness, skilled IT workforce, Western accent, and culture similarities have attracted international firms such as **Google, Amazon, SAP, CSC**, etc., to establish Global Centers of Excellence (GCoEs) for software development.
- **Norton, McAfee, Symantec, Kaspersky** are a few of the global companies leveraging Philippines' skilled and creative workforce to create end-to-end security solutions consisting of anti-virus, internet security, malware, and anti-spyware.

Philippines: Tier-1 Academic Institutions and Industry Relationships



zinnoV

KEY INSIGHT

Philippines has 7 universities in the top 550 Asian universities (only 1 in top 100). Also, there is only 1 university featuring in the top 600 universities for Computer Science. As of 2016, only 53% of full-time faculty staff in HEI have postgraduate degrees.¹

500+ HEIs

Higher Education Institutions

86K STEM graduates per year

	QS WORLD TOP 600 UNIVERSITIES IN COMPUTER SCIENCE	QS ASIA TOP 550 UNIVERSITIES
UNIVERSITY OF PHILIPPINES	469	72
ATENEO DE MANILA UNIVERSITY	-	124
DE LA SALLE UNIVERSITY	-	156
UNIVERSITY OF SANTO TOMAS	-	179

DEPARTMENT OF INFORMATION SYSTEMS AND COMPUTER SCIENCE

ATENEO DE MANILA UNIVERSITY

RESEARCH FOCUS

Mobile Computing, Social Computing, Pedestrian and Traffic Computing, Management Information Systems

INDUSTRY PARTNERSHIPS

ERICSSON

RESEARCH CENTER

Ateneo Java Wireless Competency Center

MANILA

INSTITUTE OF INFORMATION AND COMPUTING SCIENCES

UNIVERSITY OF SANTO TOMAS

RESEARCH FOCUS
Data Science, Game Development, Network and Security, Web and Mobile App Development, Robotics

INDUSTRY PARTNERSHIPS

HUAWEI

RESEARCH CENTER

Thomas Aquinas Research Complex

COLLEGE OF COMPUTER STUDIES

DE LA SALLE UNIVERSITY

RESEARCH FOCUS

Automation Research, AI/ML, Networking & Information Security, Game Development

INDUSTRY PARTNERSHIPS

accenture SIEMENS

RESEARCH CENTER

Advanced Research Institute for Informatics, Computing and Networking

Philippines: Start-up Ecosystem



zinno

200+

Technology start-ups

1

Number of Unicorns

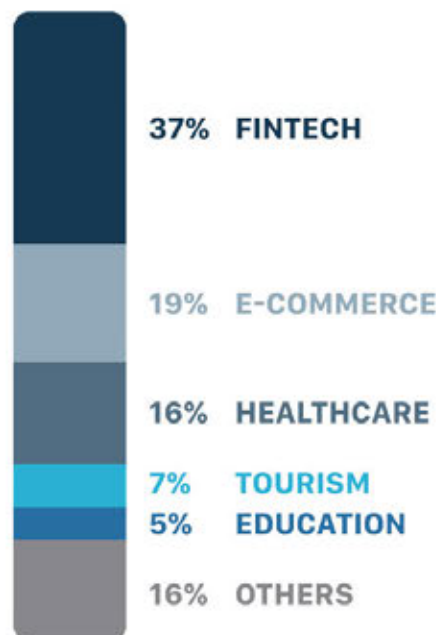
54th

KEY INSIGHT

Rank out of 100 in the world for start-up ecosystem in 2019; a jump of 16 places in two years

ADVANCED TECH START-UPS IN PHILIPPINES 2019-2020

SECTOR-WISE BREAKUP OF START-UPS



Price.com - Price comparison site for all kinds of electronic devices.

FUNDING TILL
MARCH 2020

\$5.5 Mn



Brainly Philippines - Homework help for students, by students.

NA



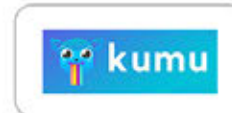
CloudEats - Largest cloud kitchen company preparing hot meals for medical staff, govt.

\$1.6 Mn



Inteluck - Provides data-driven logistics platform services across Southeast Asia.

\$7 Mn



KumuMedia International - Livestream and social media platform.

\$6.2 Mn

Philippines: Illustrative Compensation Structure



	(IN USD)
GROSS PAY (A)	100,000
EMPLOYEE EXPENSES:	
1. SSS contribution (3.7% of Gross pay)	3,700
2. Philhealth premium contribution (1.25% of Gross pay)	1,250
3. GSIS Contribution (9% of Gross pay)	9,000
TOTAL EMPLOYEE CONTRIBUTION (1 + 2 + 3) (B)	13,950
EMPLOYEE NET SALARY (A - B)	86,050
EMPLOYER CONTRIBUTIONS:	
4. SSS contribution (7.6% of Gross pay)	760
5. Philhealth premium contribution (1.25% of Gross pay)	1,250
6. GSIS Contribution (12% of Gross pay)	12,000
TOTAL EMPLOYER CONTRIBUTION (4 + 5 + 6) (C)	14,010
TOTAL EMPLOYMENT COST (A+C)	114,010

EMPLOYMENT TERMINATION LAW

HIGHLY EMPLOYEE FAVORING



HIGHLY EMPLOYER FAVORING

Severance pay depends on the tenure at the organization. Minimum is one month.

Termination in Philippines is as per Philippines' Labor Code, it is more beneficial for the employees as it is a complex process as per the law to terminate an employee.

Employers in Philippines need to justify the reason for termination in writing whether it's a **Just Cause** or **Authorized Cause**.



CHINA

China: Country Overview



zinnoV

COUNTRY

- ✓ China is a global Technology Superpower with "Made in China 2025" plans to become the most dominant global Technology Manufacturing hub.
- ✓ High consumer demand has been the driving force behind China's growing economy.
- ✓ Ranks 31st out of 190 countries in Ease of Doing Business rankings as per the World Bank.
- ✗ Approximately 400 Mn people in China are proficient in English, of which approximately 10 Mn (less than 3%) are fluent in the language.

TAXATION & GOVERNMENT REGULATIONS

- ✓ A Whole Foreign-Owned Enterprise (WFOE) in China is regarded as the most effective business structure apart from JVs, Partnerships as it allows complete ownership of company shares to the foreign investor. Also, it provides absolute protection to trademarks and patents which comply with international laws.
- ✓ China's Corporate Income tax is at 25% however, it provides tax exemptions for companies operating from the Special Economic Zones.
- ✓ Hong Kong offers the lowest corporate tax rate in Asia Pacific (8.25% for first HKD 2 million profits; 16.5% on remainder of profits).



TOP LANGUAGES

Mandarin, English

37% Gender Diversity in Software Engineering Companies

TECH NUGGET

With over 583 Mn fintech users, China has the world's highest mobile payment penetration

TOP INDUSTRIES OF Z1000 COMPANIES INVESTING IN CHINA

SOFTWARE & INTERNET



INDUSTRIAL



AUTOMOTIVE



China: Talent & Innovation Ecosystem

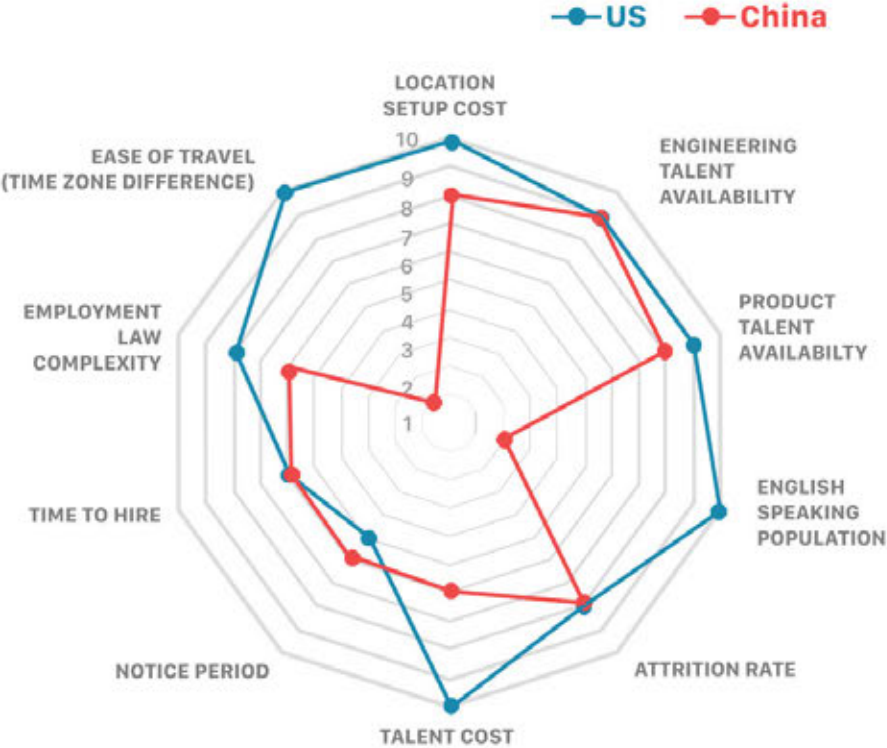


TALENT POOL	SALARY GROWTH (YOY)
~5,000,000	3.2%
ATTRITION RATE (ANNUAL)	AVERAGE NOTICE PERIOD
20%	4 WEEKS

INSIGHTS

- Beijing and Shanghai collectively employ ~37% of the total SDE talent of China.
- Attributes to attract top Chinese talent:
 - Higher salary
 - Accelerated Career Growth
 - Acceptance of resumes in Chinese
- Key initiatives have been undertaken such as Project 211, which aims to bring 100 Chinese universities up to a world-class standard, and Project 985, which aims to create **C9 league**, which has ambitions of becoming something like the US Ivy League.
- Zhangjiang Hi-tech Park in **Pudong** (Shanghai) has more than 400 research and development centers with around 50K researchers.

COMPARATIVE LOCATION INDEX US & CHINA

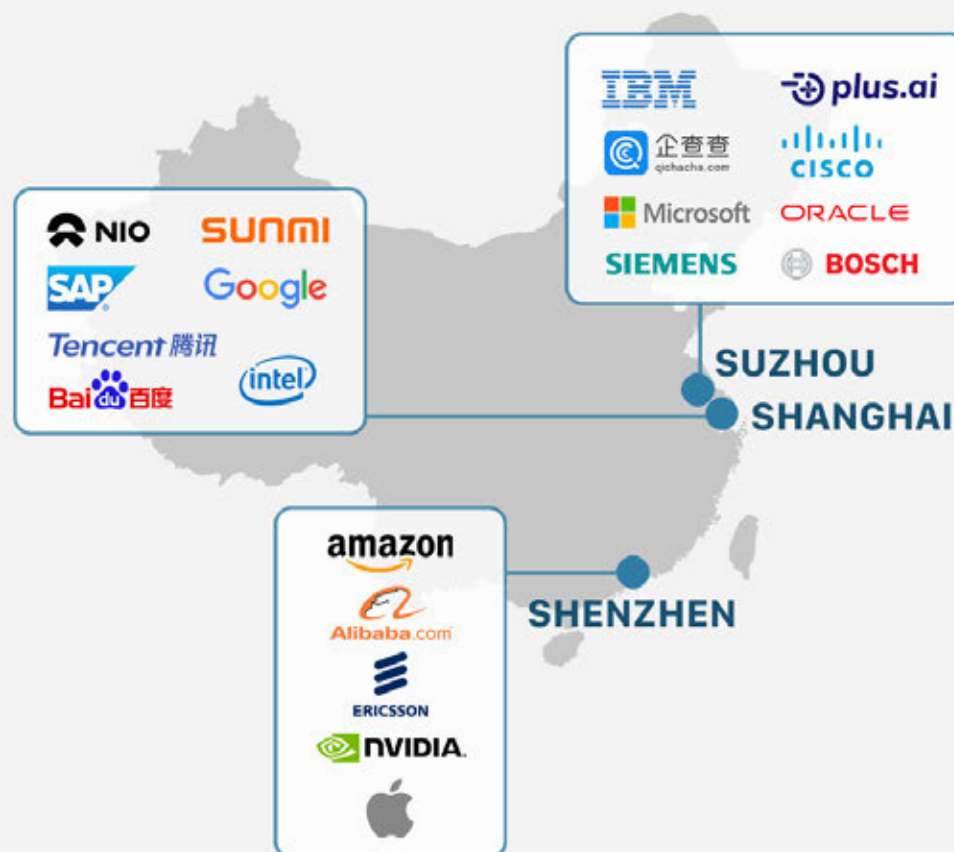


A lower score in the spider chart implies a lower value for the specified parameter and vice versa

China: Presence of Global Companies



SOME INTERNATIONAL COMPANIES WITH SOFTWARE ENGINEERING CENTERS IN CHINA



INSIGHTS

- Zhangjiang Hi-tech Park in **Pudong** (Shanghai) hosts IT companies **IBM, HP, Intel, TCS, SAP, Baidu** and R&D institutions.
- More than 30 Fortune 500 companies have their headquarters and research centers related to software and industrial sectors.
- **Yangpu** (Shanghai) has eight industrial parks to support start-ups like **Nio, Sunmi, Shoppo**, VC firms and entrepreneurs. The technological innovation and project incubation rate of Yangpu is higher than any other entrepreneurship nurseries in Shanghai City.
- **Suzhou Industrial Park** is the home for tech giants such as **Microsoft, Bosch, and Huawei**, boasts of a presence of ~100 Fortune 500 companies employing fresh talent in the field of software development, promoting open innovation that lead to China's technology reform and creation of native giants like Tradeshift, Innolight, and Realsil.
- **Nanshan, the tech district of Shenzhen**, is considered as China's technology and innovation hub with a presence of high-tech companies such as **Apple, Amazon, Nvidia, Ericsson, Alibaba, Huawei, ZTE, Oracle** and innovative start-ups and unicorns like **UBTech Robotics, WeBank, and Mini eye**.

China: Tier-1 Academic Institutions and Industry Relationships



KEY INSIGHT

China has one of the strongest education systems in Asia, with 118 universities in top 550 Asia university (24 in top 100). There 33 universities in top 600 university (7 in top 100) for Computer Science.

2663 HEIs

Higher Education Institutions

4.7Mn

STEM graduates per year

	QS WORLD TOP 600 UNIVERSITIES IN COMPUTER SCIENCE	QS ASIA TOP 550 UNIVERSITIES
TSINGHUA UNIVERSITY	21	4
PEKING UNIVERSITY	29	5
SHANGHAI JIAO TONG UNIVERSITY	46	17
UNIVERSITY OF SCIENCE & TECHNOLOGY OF CHINA	82	-

SCHOOL OF ELECTRONICS ENGINEERING & COMPUTER SCIENCE PEKING UNIVERSITY

RESEARCH FOCUS

Computer architecture, computer applications, computer software and theory

INDUSTRY PARTNERSHIPS



RESEARCH CENTER

National Engineering Research Center for Software Engineering

SCHOOL OF INFORMATION SCIENCE AND TECHNOLOGY UNIVERSITY OF SCIENCE AND TECHNOLOGY OF CHINA

RESEARCH FOCUS

High Performance Computing, Intelligent Science and Technology, Network and Security Computing

INDUSTRY PARTNERSHIPS



RESEARCH CENTER

National High Performance Computing Center (NHPCC)

SCHOOL OF INFORMATION SCIENCE AND TECHNOLOGY TSINGHUA UNIVERSITY PEKING UNIVERSITY

RESEARCH CENTER

Research Institute of Information Technology

INDUSTRY PARTNERSHIPS



BEIJING

HEFEI

SHANGHAI

SCHOOL OF ELECTRONIC INFORMATION AND ELECTRICAL ENGINEERING SHANGHAI JIAO TONG UNIVERSITY

RESEARCH FOCUS

Cyberspace Security, Advanced Computer Architecture, and Chip Technology

INDUSTRY PARTNERSHIPS



RESEARCH CENTER

National Engineering Laboratory for Information Content Analysis Technology



1100+

Technology start-ups

227

Number of Unicorns

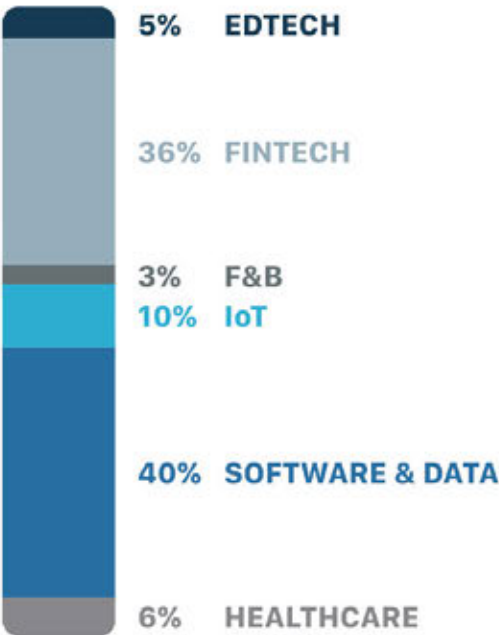
3rd

KEY INSIGHT

Beijing ranks 3rd in global start-up ecosystems out of 150

ADVANCED TECH START-UPS IN CHINA 2019-2020

SECTOR-WISE
BREAKUP OF
START-UPS



Inceptio Technology - Provides nation-wide freight network using driving trucks.

\$100 Mn

Huayin Health - Comprehensive medical and healthcare group.

\$85 Mn

ASR Microelectronics - A computer chip company.

\$300 Mn

Marknum Technology - Cyber security-focused AI solutions firm.

\$14 Mn

Westwell Lab - Shanghai-based AI chip maker.

\$14 Mn

FUNDING TILL
MARCH 2020

China: Illustrative Compensation Structure



(IN USD)

GROSS PAY (IN CONTRACT) (A)

100,000

EMPLOYER CONTRIBUTIONS:

1. Pension (19% of gross pay)	19,000
2. Unemployment (0.80% of gross pay)	800
3. Work Related (0.20% of gross pay)	200
4. Maternity (0.80% of gross pay)	800
5. Medical (10% of gross pay)	10,000
6. Housing Fund (12% of gross pay)	12,000

TOTAL EMPLOYEE CONTRIBUTION (1 + 2 + 3 + 4 + 5 + 6) (B) 42,800

TOTAL COMPANY COST (A+B) 142,800

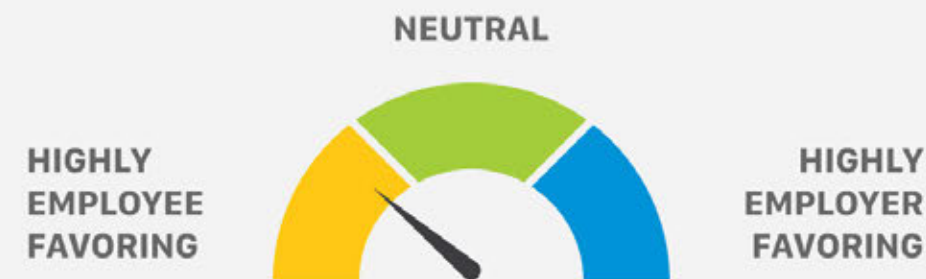
EMPLOYEE EXPENSES:

7. Pension (8% of gross pay)	8,000
8. Unemployment (0.50% of gross pay)	500
9. Medical (2% of gross pay)	2,000
10. Housing Fund (7% of gross pay)	7,000

EMPLOYEE NET SALARY (A - 7 - 8 - 9 - 10)

82,500

EMPLOYMENT TERMINATION LAW



- Severance pay depends on the duration of employment with the employer and shall be paid at the rate of one month's salary for every full year of service.
- For a period of service of less than six months, a worker shall be paid half a month's salary as severance pay.
- An employer may terminate an employment contract by giving the employee and labour union 30 days' prior written notice or giving them one month's salary in lieu of notice.
- Termination laws change based on province.
- Employee's unsatisfactory performance can be used as a reason to terminate only if, even after employee had undergone training or was transferred to a different position within the company yet, his performance was still unsatisfactory.

INSIGHT

Employees in China receive an additional 13th month salary in addition to the usual salary per annum.



INDIA

India: Country Overview



zinnoV

COUNTRY

- ✓ India is among the top three countries to produce the maximum number of STEM graduates every year.
- ✓ Ranks 63rd out of 190 countries in Ease of Doing Business rankings as per the World Bank.
- ✗ Ranks 80th out of 180 countries as per Corruption Perception Index 2019.

INFRASTRUCTURE & LABOR MARKET

- ✓ By 2025, 69 cities in India will have a population of over one million each. This is going to translate into a greater need for businesses to support livelihoods.
- ✓ Indian Government plans to invest \$1.5 Tn for developing infrastructure of tier-2 cities.

TAXATION & GOVERNMENT REGULATIONS

- ✓ Start-ups in India are eligible for getting 100% tax rebate on profit for a period of three years in a block of seven years, provided that annual turnover does not exceed INR 25 Crores in any financial year.
- ✓ Corporate tax has been cut to 25%, favoring more investment and expansion from foreign companies.



TOP LANGUAGES
English, Hindi

26% Gender Diversity in Software Engineering Companies

TECH NUGGET
India has the cheapest tariff for Internet data (\$ 0.26/GB) compared to the world average of USD 8/GB

TOP INDUSTRIES OF Z1000 COMPANIES INVESTING IN INDIA

SOFTWARE & INTERNET



INDUSTRIAL



AUTOMOTIVE



India: Talent & Innovation Ecosystem



TALENT POOL

~2,500,000

SALARY GROWTH (YOY)

9.9%

ATTRITION RATE (ANNUAL)

12%

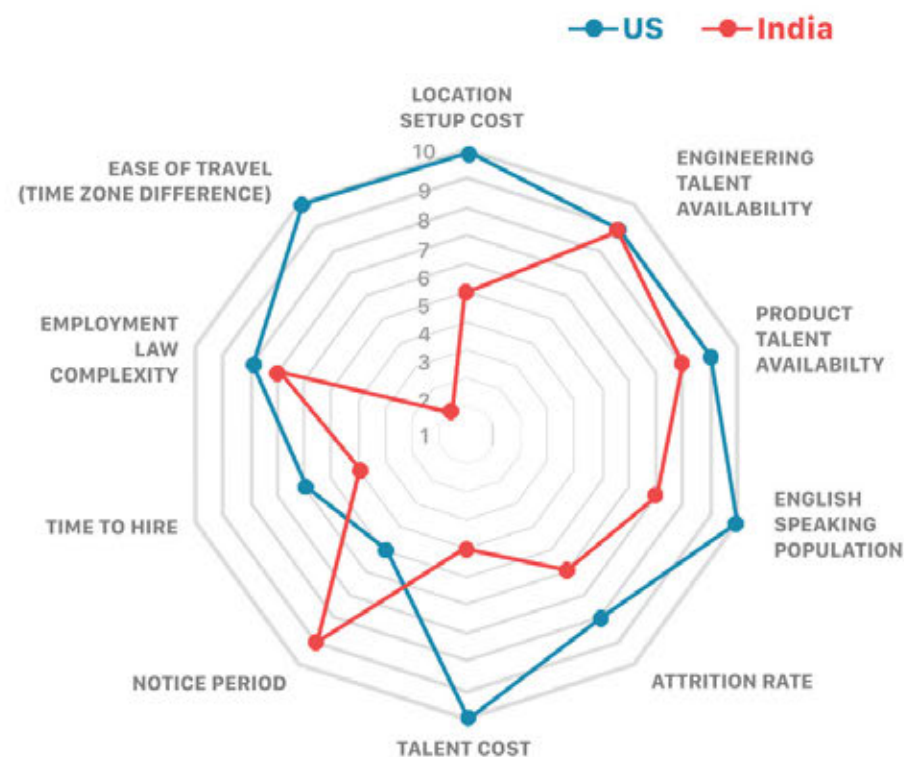
AVERAGE NOTICE PERIOD

8-12 WEEKS

INSIGHTS

- India has the 2nd highest talent pool after China, but has a better English-speaking population than China.
- Google opened a new AI research center in India in 2019; this move reflected Google's confidence in India's vast talent pool.
- Bangalore and Hyderabad cumulatively have 70% of Indian tech talent. They are also the fastest growing AI talent ecosystems in India.
- AI/ML, IoT, Data Analytics, and Cloud Computing are key digital focus areas for GCoEs in India.
- The start-up ecosystem in India is the world's third largest.. Tech start-ups in India have attracted over \$20 Bn in the past three years.

COMPARATIVE LOCATION INDEX US & INDIA



A lower score in the spider chart implies a lower value for the specified parameter and vice versa

India: New Age Skillset Talent Analysis



zinnoV

100K+

GCoE Talent Pool with New Age Tech Skills

1.5Mn

Fresh Graduates every year from colleges

\$40K

Fully Loaded Average FTE Cost at Global Centers

12%

Annual voluntary attrition in GCoEs

TALENT FOOTPRINT AT GCoEs IN INDIA

~35K
ANALYTICS

~20K
BIG DATA

~10K
MACHINE
LEARNING

~50K
MOBILE

~21K
UI / UX

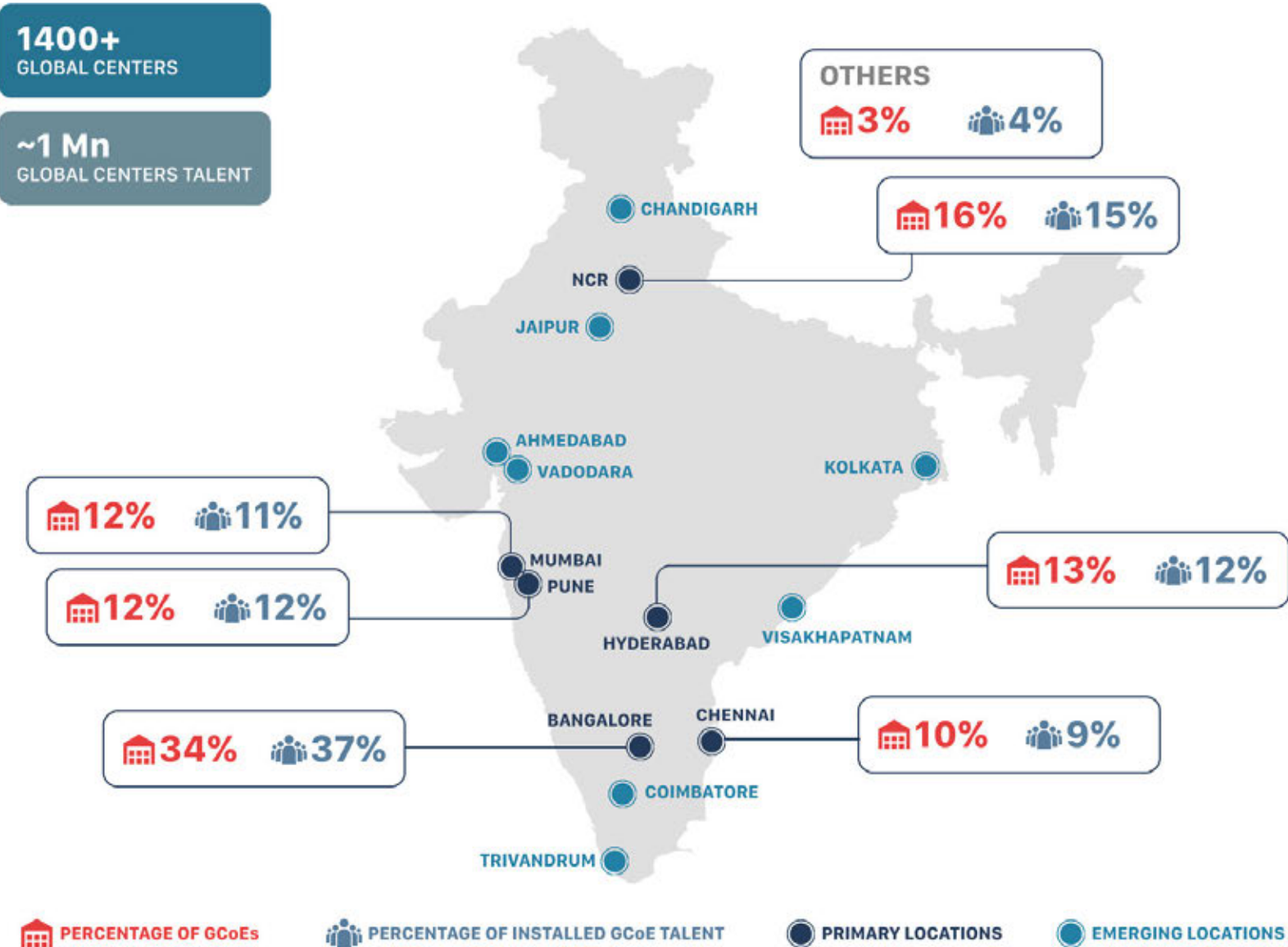
~20K
SECURITY

~25K
IoT

~50K
AUTOMATION/
RPA

~4K
ROBOTICS
(HW)

India: Presence of Global Companies



INSIGHTS

Bangalore continues to be the hub for Global centers' talent in India.

Tier-2 locations like Coimbatore, Ahmedabad, Vadodara are being leveraged by SPs and Global companies alike.

Cities like Pune and Chennai are dominated by their automotive domain expertise.

Hyderabad has witnessed an uptick in terms of new Global centers being set up.

India: Global companies' Work Portfolio Distribution



zinnov

\$15.7 Bn

ER&D Market size in India

80%

Global companies in India play a role in Cloud Transformation for the Global Organization

150+

GCoEs have RPA investments in India

WORK PORTFOLIO INTENSITY IN GLOBAL COMPANIES

	ER&D	IT	F&A	PROCUREMENT & LOGISTICS	SALES & MARKETING	TECHNICAL SUPPORT	KNOWLEDGE-BASED SERVICES	OTHERS
SOFTWARE	HIGH	MEDIUM	HIGH	LOW	LOW	HIGH	MEDIUM	LOW
AUTOMOTIVE	HIGH	MEDIUM	HIGH	HIGH	LOW	LOW	MEDIUM	LOW
PHARMACEUTICAL	HIGH	MEDIUM	HIGH	LOW	MEDIUM	LOW	MEDIUM	MEDIUM
BFSI	LOW	HIGH	HIGH	LOW	LOW	MEDIUM	MEDIUM	LOW
RETAIL	MEDIUM	HIGH	MEDIUM	MEDIUM	MEDIUM	LOW	HIGH	LOW
INDUSTRIAL	HIGH	LOW	HIGH	MEDIUM	LOW	MEDIUM	LOW	LOW

HIGH

MEDIUM

LOW

INDUSTRIAL HIGHLIGHTS



Developed a precision agriculture solution for farmers using Azure ML



Building IIoT (Industrial Internet of Things) platform for predictive maintenance and asset management



Leveraging the start-up ecosystem to drive disruptive solutions in smart cities, agritech, meditech, etc



Driving global business services from India including Finance & Accounting, HR, Procurement, etc



Created a smart demand forecasting solution for US stores



A significant portion of global commercial operations driven from Hyderabad



Global Automation initiative driven from India – led to the creation of 12,000+ bots

India: Tier-1 Academic Institutions and Industry Relationships



zinnoV

KEY INSIGHT

India's higher education system was ranked 26th in the world in the QS Higher education system Strength Rankings 2018. India has the 2nd strongest education system in Asia with 98 of top 550 Asian universities. There are 14 more Indian universities featuring in the top 600 Universities in Computer Science ranking. There is a strong focus around AI/ML.

3,400+ HEIs

Higher Education Institutions

1.5 Mn

STEM Graduates per year

	QS WORLD TOP 600 UNIVERSITIES IN COMPUTER SCIENCE	QS ASIA TOP 550 UNIVERSITIES
IIT BOMBAY	63	34
IIT DELHI	73	43
IIT MADRAS	102	50
IISc BANGALORE	117	51

AI RESEARCH LAB IIT BOMBAY

RESEARCH FOCUS

AI Applications, AI Agents, NLP, ML

INDUSTRY PARTNERSHIPS

accenture > NEC IBM

DOCTORATE IN RELEVANT STREAMS – PURSUING

815

MACHINE AND LANGUAGE LEARNING LAB IISc BENGALURU

RESEARCH FOCUS

Graph Theory, Image Processing, NLP, Fiber Optics, Mathematical Finance, Mechatronics

INDUSTRY PARTNERSHIPS

accenture > BOSCH ERICSSON NVIDIA

START-UP INCUBATION

Lab2Market

DOCTORATE IN RELEVANT STREAMS – PURSUING*

712

COE-AI IIT DELHI

RESEARCH FOCUS

Text and image comprehension, knowledge representation and reasoning

INDUSTRY PARTNERSHIPS

Google IBM Microsoft

DOCTORATE IN RELEVANT STREAMS – PURSUING

800

ROBERT BOSCH CENTRE FOR DATA SCIENCE AND AI IIT MADRAS

RESEARCH FOCUS

Deep learning, Reinforcement learning, Network analytics, Interpretable Machine Learning.

INDUSTRY PARTNERSHIPS

BOSCH

START-UP INCUBATION

DocsApp

DOCTORATE IN RELEVANT STREAMS – PURSUING

536



India: Start-up Ecosystem



zinno

3000+

Technology start-ups

31

Number of Unicorns

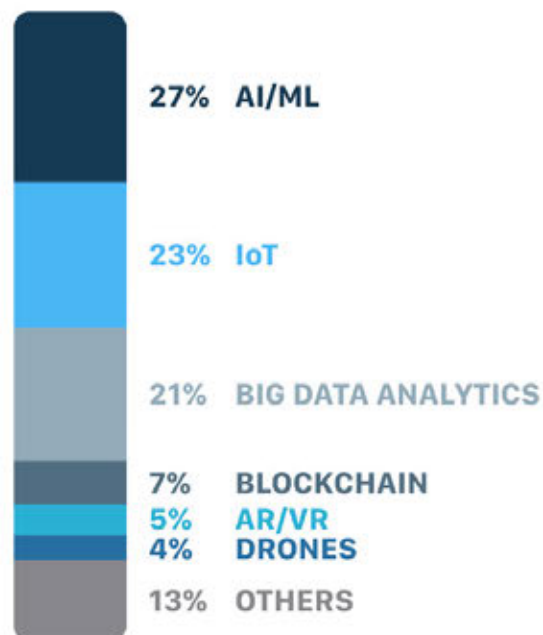
~18%

KEY INSIGHT

Share of advanced tech start-ups in India

ADVANCED TECHNOLOGY START-UPS IN INDIA - 2019

1600+ ADVANCED TECH START-UPS



Predible - Deep-learning algorithms enabled precise image recognition for early diagnosis.

FUNDING TILL
MARCH 2020

\$35.3 K



SigTuple - AI-driven Cloud-based low-cost high accuracy diagnosis.

\$44.8 Mn



Qure.ai - AI-driven radiology clinical decision support tool.

\$2.34 Mn



Datacogin - Low-cost AI-based clinical decision support solutions.

\$NA



Spectral Insights - Hyperspectral medical imaging solutions.

\$823.02 K



Fedo.ai - AI to predict lifestyle diseases.

\$NA



Netradyne - AI, ML, and Edge Computing to create safe driving standards.

\$37 Mn

India: Illustrative Compensation Structure

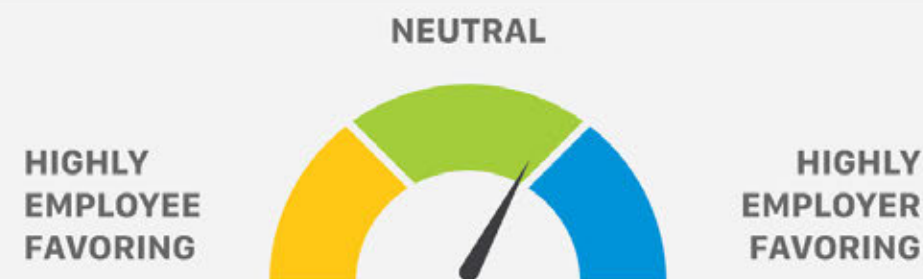


TOTAL GUARANTEED CASH (TGC)		\$ 100,000
Basic	45%	\$ 45,000
Cash Allowances	55%	\$ 55,000
Retirals (as a % of Basic)		\$ 7,565
Provident Fund	12%	\$ 5,400
Gratuity	4.8%	\$ 2,165
LTI (Long Term Incentives)(as a % of TGC)		\$ 8,000
Bonus	4%	\$ 4,000
RSUs (Restricted Stock Unit)	4%	\$ 4,000
Payroll Costs (TGC+Retirals+LTI)	88%	\$ 115,565
Total CTC (TGC + Retirals + Bonus)		\$ 115,565
Discretionary spend (as a % of Total People cost)	12%	\$ 15,759
Total Cost to Employer (CTC+ Discretionary spend)		\$ 131,323

The TGC section is divided between Basic and Cash Allowance. The percentage ratio varies between companies; however, industry analysis vouches for a 45:55 percentage breakup.

As part of LTI, companies can give either Bonus(4-15%) or a combination of Bonus and RSUs. Additionally, companies can give fixed amount in Bonus instead of a percentage of the TGC.

EMPLOYMENT TERMINATION LAW



S. NO.	SALARY COMPONENTS	NICE TO HAVE	MUST HAVE	MANDATORY
1	BASIC			Y
2	CASH ALLOWANCES			
2.a	House Rent Allowance (max 40% of basic salary)			Y
2.b	Telephone & internet Reimbursement	Y		
2.c	Leave Travel Allowance		Y	
2.d	Conveyance Allowance		Y	
2.e	Children Education Allowance	Y		
3	PROVIDENT FUND			Y
4	GRATUITY			Y
5	VARIABLE PAY (LTI)		Y	
6	BENEFITS (DISCRETIONARY SPEND)			
6.a	Food		Y	
6.b	Bus Pass, Parking		Y	
6.c	Vehicle, housing and personal loans	Y		
6.d	Medical Insurance (Employee)			Y
6.e	Medical insurance (Employee Family plus coverage for dependent Parents)	Y		



MEXICO



Mexico: Country Overview



COUNTRY

- ✓ Mexico has the 11th largest economy in the world.
- ✗ Mexico government's recent decisions of cancellation of Mexico city airport and combating drug trade-related violence are leading to geopolitical instability¹.
- ✗ Slow average economic growth between 1980-2018; just over 2%.
- ✗ Ranks 130th out of 198 countries as per Corruption Perception Index 2019.

INFRASTRUCTURE & LABOR MARKET

- ✓ Under the USMCA (United States-Mexico-Canada) deal 2020, Mexico has agreed to increase worker protection. The laws will also help Mexican workforce to unionize easily.
- ✗ Mexico ranks 87th out of 176 countries as per ICT development index 2017.

TAXATION & GOVERNMENT REGULATIONS

- ✓ Mexico passed a Fintech law, the first of its kind in Latin America, in March 2018 aimed at providing Fintech companies licenses to operate as financial institutions.
- ✓ USMCA deal of 2020 will boost businesses in some sectors such as automotive.
- ✓ **Benefits of SEZ:**
 - Forego of income tax for the first 10 years. Discount of 50% on income tax for the next five years.
 - 0% value-added tax (VAT) for providing service to the investor and acquiring goods to use in SEZ.



TOP LANGUAGES

English, Spanish, French

28% Gender Diversity in Software Engineering Companies

TECH NUGGET

Setting up large engineering teams in Mexico in comparison to US provides over 60% cost savings for global companies

TOP INDUSTRIES OF Z1000 COMPANIES INVESTING IN MEXICO

AUTOMOTIVE



FMCG



INDUSTRIAL



Mexico: Talent & Innovation Ecosystem



TALENT POOL

~213,000

SALARY GROWTH (YOY)

5%

ATTRITION RATE (ANNUAL)

7.75%

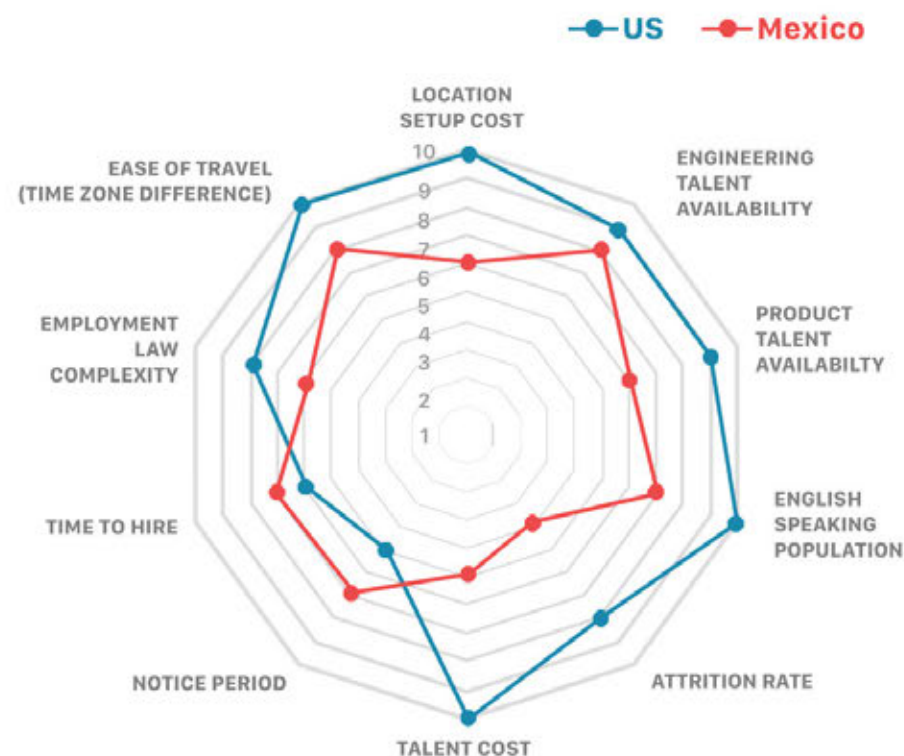
AVERAGE NOTICE PERIOD

2-12 WEEKS

INSIGHTS

- Mexico City, Guadalajara, and Monterrey collectively employ ~35% of SDE talent pool of Mexico.
- City-wise tech talent concentration:
 - Guadalajara: Mobile Developers, Back End Developers, and UX / UI Designers
 - Monterrey: Full Stack Developers, Back End Developers, and Project Managers
 - Mexico City: Full Stack Developers, Tech Supports, and System Admins
- Important attributes for career decisions by Mexicans:
 - Professional training & development
 - Secure employment
 - High Future Earnings
- Mexican start-ups received the second highest investment in Latin America.

COMPARATIVE LOCATION INDEX US & MEXICO



A lower score in the spider chart implies a lower value for the specified parameter and vice versa

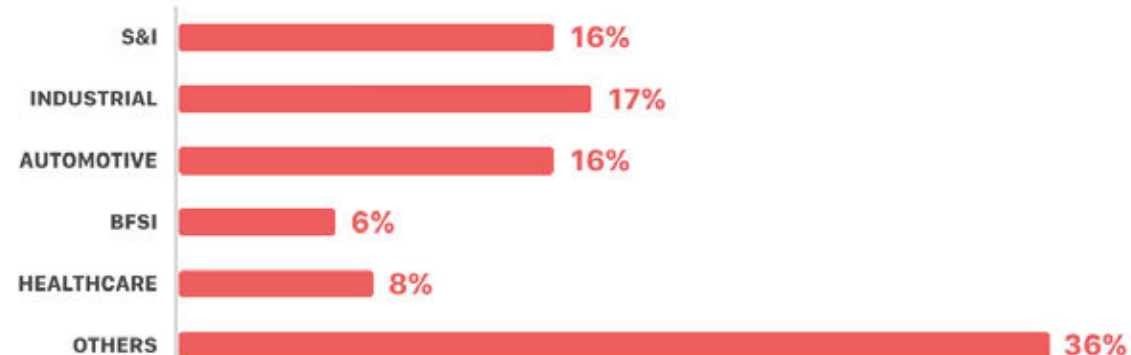
Mexico: Presence of Global Companies



SOME INTERNATIONAL COMPANIES WITH SOFTWARE ENGINEERING CENTERS IN MEXICO



TOP INDUSTRIES IN MEXICO EMPLOYING IT AND TECH TALENT



- Automotive manufacturing has led the way in Mexico over the past 10 years. More than \$23 Bn in auto company investment has entered the Mexican market in the past decade [2018].
- Mexico is the fifth largest medical device exporter in the world, the second largest market in Latin America and the leader supplier to the U.S. In 2018, Mexico exported more than \$9 Bn in medical equipment and supplies.
- Microsoft Mexico: Build and implement software components for enterprise software to assist clients as needed to leverage the services.
- HP Enterprise: Develop new features for Hewlett Packard Enterprise software and create mockups for new webpage.
- Continental: Develop powertrain electronic software modules for Hybrid and Electric Vehicles.

Mexico: Tier-1 Academic Institutions and Industry Relationships



KEY INSIGHT

Mexico has 63 universities out of the 400 top universities in the LATAM region, making it a strong education hub.

1250 HEIs

Higher Education Institutions

110K+

STEM graduates per year

	QS WORLD TOP 600 UNIVERSITIES IN COMPUTER SCIENCE	QS LATIN AMERICA TOP 400 UNIVERSITIES
UNIVERSIDAD NACIONAL AUTÓNOMA DE MÉXICO	139	-
TECNOLÓGICO DE MONTERREY	189	3
INSTITUTO POLITÉCNICO NACIONAL (IPN)	400	25
UNIVERSITY OF GUADALAJARA	516	46

SCHOOL OF ENGINEERING AND SCIENCES TECNOLÓGICO DE MONTERREY

RESEARCH FOCUS

Bio-inspired Algorithms, Machine Learning models, Data & Computational Science

RESEARCH CENTER

Tecnológico de Monterrey Network of Business Incubators

UNIVERSITY CENTRE OF EXACT SCIENCE AND ENGINEERING UNIVERSITY OF GUADALAJARA

RESEARCH FOCUS

Computational Mathematics,
Electronic Circuit Design,
Telecommunication

INDUSTRY PARTNERSHIPS

IBM Continental ORACLE a amdocs

SCHOOL OF ENGINEERING NATIONAL AUTONOMOUS UNIVERSITY OF MEXICO

RESEARCH FOCUS

Industrial Automation, Biomedical
Engineering, Imaging, AI & Robotics

INDUSTRY PARTNERSHIPS

Continental BOSCH Ford GE

RESEARCH CENTER

Mechanical Design and Technological
Innovation Centre

GUADALAJARA

MEXICO CITY

MONTERREY

Mexico: Start-up Ecosystem



zinno

300+

Technology start-ups

0

Number of Unicorns

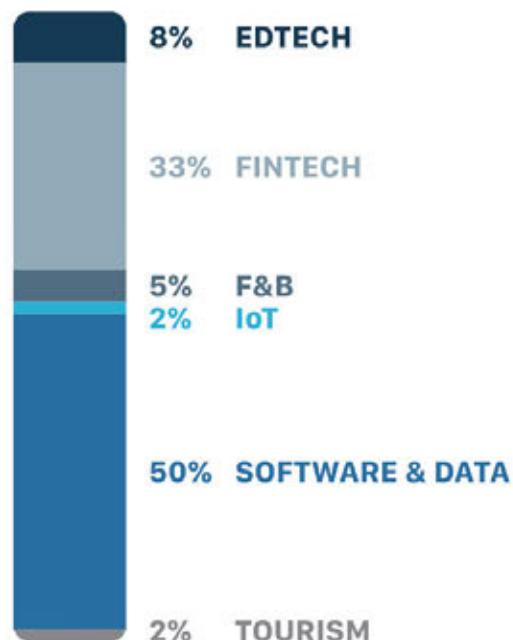
1st

KEY INSIGHT

Country in LATAM to pass a law to regulate Fintech

ADVANCED TECH START-UPS IN MEXICO 2019-2020

SECTOR-WISE BREAKUP OF START-UPS



Mozper - A debit card designed for kids and managed by parents.

FUNDING TILL
MARCH 2020

\$770 K



Dev.f - An Edtech company focused on developing people in an inclusive way.

\$1.4 Mn



BeeckerCo - Helps business in their digital transformation journey.

\$2 Mn



BrandMe - Creating tools that set the trend in influencer marketing.

\$50 K



Mazmobi - Marketplace and SAAS for corporate mobility on MAAS strategy.

\$50 K

Mexico: Illustrative Compensation Structure



(IN USD)

GROSS PAY (A)

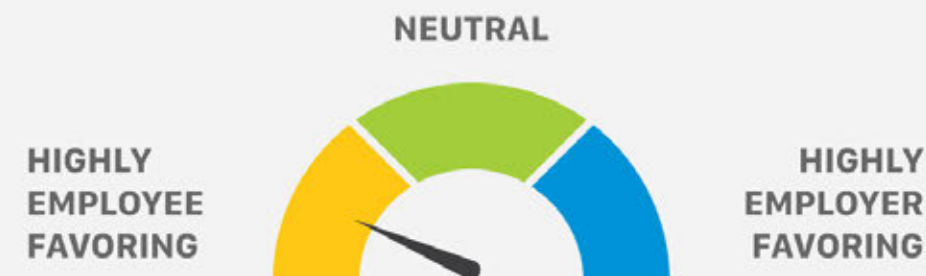
100,000

1. Social Security (26.35% of gross pay)	26,350
2. Retirement Fund (2% of gross pay)	2,000
3. Local Payroll Tax (3% of gross pay)	3,000
4. Health Insurance (0.9% of gross pay)	900
5. Meal Vouchers (0.9% of gross pay)	900
4. Housing Fund (0.5% of gross pay)	900

TOTAL EMPLOYER CONTRIBUTION (1 + 2 + 3 + 4 + 5) (B) 34,050

TOTAL COMPANY COST (A+B) 134,050

EMPLOYMENT TERMINATION LAW



Upon termination of employment without "Just Cause", employees are entitled to severance pay calculated at 3 months' salary plus 20 days of pay for every year the employee was employed, plus a seniority bonus.

Dismissals are justified only if the worker in the course of their employment is guilty of a dishonest or dishonorable act; date-wise actual proofs of the committed act are required.

A written notice with a specific reason as outlined in the labor code is required for termination.



BRAZIL



Brazil: Country Overview



zinnoV

COUNTRY

- ✗ Ranks 124th out of 190 countries in Ease of Doing Business rankings as per the World Bank.

INFRASTRUCTURE & LABOR MARKET

- ✓ More than 70% of the country's population is connected over the internet, 13% above the global average.
- ✗ Brazil has only invested around 2% of its GDP in developing its public infrastructure over the last two decades, while average spend on Infrastructure by the rest of Latin America is around 5%.

TAXATION & GOVERNMENT REGULATIONS

- ✓ The free trade zones may provide 88% to 100% reduction in import duty, 75% reduction on corporate income tax, and 10 years of exemption from paying business licenses fees.
- ✓ The Brazilian government is expected to enact General Data Protection Law (LGPD) in August to strengthen its digital economy. The law will provide a data governance framework and improve information security management.
- ✗ Brazil has the most time-consuming tax and obtaining necessary approvals for licenses and permits regime in the world due to high level of bureaucracy that makes the process difficult and involves a lot of time and effort.
- ✗ Long process of starting up a business – 11 procedures which takes around 4 months to complete.



TOP LANGUAGES

Portuguese, English, Spanish, French

28% Gender Diversity in Software Engineering Companies

TOP INDUSTRIES OF Z1000 COMPANIES INVESTING IN BRAZIL

AUTOMOTIVE



SOFTWARE & INTERNET



FMCG



TECH NUGGET

Brazil leads the LATAM region in terms of AI adoption. By 2035, AI is forecasted to contribute upto 0.9% to Brazil's overall GDP.

Brazil: Talent & Innovation Ecosystem



zinnoV

TALENT POOL

~777,000

SALARY GROWTH (YOY)

8%

ATTRITION RATE (ANNUAL)

11%

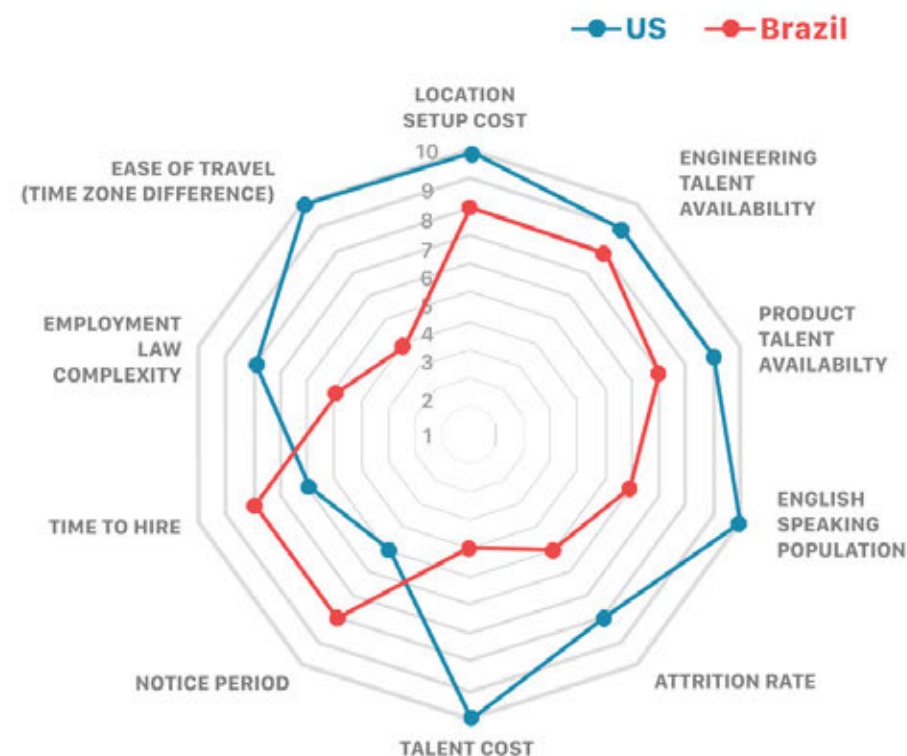
AVERAGE NOTICE PERIOD

4-12 WEEKS

INSIGHTS

- Companies can save 40%-60% of cost by setting up a team, when compared with prices in USA.
- The English proficiency is relatively low as compared to other countries in the report, as only 5% of the population is proficient in English.
- The investments received for new technologies in Artificial Intelligence (46.2% annual growth in AI) and Cloud Computing will be the key growth drivers for Brazil in 2020.
- The General Data Protection Law (LGPD) will create opportunities and requirements for cyber security and information security experts.
- Brazil ranks among the top 10 largest markets for IT investments, while number one in LATAM.
- The investments in IT sector increased by 9.8%, reaching \$47 Bn, such that the collective investment in ICT sector reached approximately \$105 Bn in 2017.
- Booming Fintech ecosystem: Brazil with almost 377 Fintech Start-ups in 2018 and a consumer adoption rate of 40% which is 7% higher than global average, has created opportunities for talent with experience in niche digital technologies and Information Security.

COMPARATIVE LOCATION INDEX US & BRAZIL



A lower score in the spider chart implies a lower value for the specified parameter and vice versa

Brazil: Presence of Global Companies



SOME INTERNATIONAL COMPANIES WITH SOFTWARE ENGINEERING CENTERS IN BRAZIL



INSIGHTS

- Campinas, Sao Paulo, is regarded as **Brazil's Silicon Valley** because of the concentration of innovative high-tech companies, research institutes, tech parks, and universities. Porto Digital Tech Park, Recife has a presence of high-tech ICT companies such as **Microsoft, IBM, Apple, Qualcomm, Uber** developing innovative software solutions.
- T-Systems, Capgemini, Accenture, and Wipro have acquired and invested in Brazilian IT companies to gain access into Brazilian IT market.
- TCS opened a new delivery center as a part of its expansion plan for Brazil to increase its employee headcount from 2200 to 4000 in 2019.
- IBM identified Brazil's talent potential and extended its Skill Academy initiative to reskill and retrain its current workforce and to leverage and train new STEM workforce coming into the market in digital fields of AI, Data Science, Cyber security, IoT, and Cloud.
- Brazil is the 13th largest game market in the world and leads in Latin America with an estimated market size of \$ 1.5 Bn and 75 Mn active players. **Microsoft** and **Sony** employ Brazilian workforce for Gaming R&D, UI/UX & Graphic Designing. **Aquiris Game Studio, Ballistic, Imax Games, Hoplon, Behold Studios** are some independent game producing companies deploying their games on Xbox, PlayStation.

Brazil: Tier-1 Academic Institutions and Industry Relationships



zinnoV

KEY INSIGHT

With 83 spots in the 400 top universities of LATAM region, Brazil has a strong education system

2300 HEIs

Higher Education Institutions

46K

STEM graduates per year

	QS WORLD TOP 600 UNIVERSITIES IN COMPUTER SCIENCE	QS LATIN AMERICA TOP 400 UNIVERSITIES
UNIVERSITY OF SAO PAULO	120	2
UNIVERSIDADE ESTADUAL DE CAMPINAS	122	5
PONTIFÍCIA UNIVERSIDADE CATÓLICA DO RIO DE JANEIRO	129	15
UNIVERSIDADE FEDERAL DO RIO DE JANEIRO	146	9

INSTITUTE OF EXACT SCIENCES FEDERAL UNIVERSITY OF MINAS GERAIS

RESEARCH FOCUS

Artificial Intelligence, Optimization in Networks, Mobile Robotics

RESEARCH CENTERS

Technological Transfer and Innovation Coordination CTIT

CENTER FOR SCIENCE AND TECHNOLOGY PONTIFICAL CATHOLIC UNIVERSITY OF RIO DE JANEIRO

RESEARCH FOCUS

Hypertext & Multimedia, Human-Computer Interaction, Theory of Computing, Computer Networks

RESEARCH CENTERS

Institute of Software Technology

MINAS GERAIS

SAO PAULO

RIO DE JANEIRO

FACULTY OF ELECTRICAL AND COMPUTER ENGINEERING UNIVERSIDADE ESTADUAL DE CAMPINAS

RESEARCH FOCUS

Automation, Computer Graphics, Digital Speech Processing, Intelligent Systems

INDUSTRY PARTNERSHIPS

Google Microsoft

INSTITUTE OF MATHEMATICS AND STATISTICS UNIVERSITY OF SAO PAULO

RESEARCH FOCUS

Data Science, Algorithms, Computer Theory, Machine Learning, AI, Computational Methods, Data Security

RESEARCH CENTERS

Research Center for Mathematics Applied to Industry

Brazil: Start-up Ecosystem



zinnoV

1000+

Technology start-ups

7

Number of Unicorns

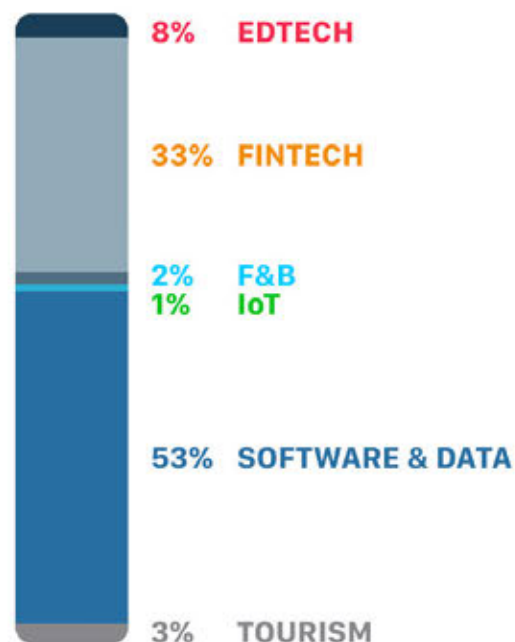
~20%

Accountability for the country's GDP growth

KEY INSIGHT

ADVANCED TECH START-UPS IN BRAZIL 2019-2020

SECTOR-WISE BREAKUP OF START-UPS



SANAR

Sanar - Leading healthcare educational platform in Brazil.

FUNDING TILL
MARCH 2020

\$11.5 Mn

sigalei

Sigalei - It uses legislative data, AI, and legal knowledge to develop technology.

\$247 K

ifood

iFood - Online food delivery portal that develops an innovative system.

\$591 Mn

Alude

Alude - Database company to simplify the process of buying real estate.

\$150 K

MODERN Logistics

Modern Logistics - One-stop logistics solution in Brazil.

\$105 Mn

Brazil: Illustrative Compensation Structure



(IN USD)

GROSS PAY (A)

100,000

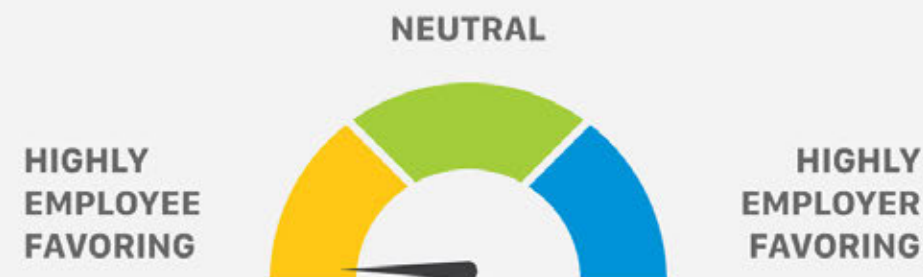
EMPLOYER CONTRIBUTIONS:

1. Vacations (30 Days) (8.33% of gross pay)	8,330
2. 13th-month salary (8.33% of gross pay)	8,330
3. Transportation (6% of gross pay)	6,000
4. Holidays (9.44% of gross pay)	9,440
5. Vacation Bonus (Gratuity) (2.78% of gross pay)	2,780
6. FGTS (Fundo de Garantia po Tempo de Servico) (11% of gross pay)	11,000
7. INSS (20% of gross pay)	20,000
8. ISR (15% of gross pay)	15,000
9. Liability Insurance (ARL) (3% of gross pay)	3,000

TOTAL EMPLOYER CONTRIBUTION SUMΣ(1 to 9)(B) 83,880

TOTAL COMPANY COST (A + B) 183,880

EMPLOYMENT TERMINATION LAW



Terminating employment in Brazil is a difficult and an expensive process when compared to other countries.

Employer will be required to pay high financial penalties for terminating an employee without a cause.

Upon termination of employment, employees are entitled to Unpaid Salaries, unused vacation days, 13th-month salary or Christmas bonus, access to a severance fund FGTS.

In case of com justa causa (dismissal with justified reason of employee misconduct) no severance pay is needed to be paid by the employer. However if the dismissal is com justa causa (dismissal not due to misconduct), the employer needs to pay 8% of worker's monthly earning as employer deposit to FGTS fund plus an additional 40% indemnity contribution plus another additional 10% of social security contribution to employee's FGTS Fund. A total contribution calculated at $40\% \times 8\% \times 10 \times \text{number of months of employment}$.

CONNECT WITH US



NILESH THAKKER

MANAGING PARTNER & GLOBAL HEAD



Nilesh has over two decades of Executive leadership experience in technology companies and has led operations in enterprise and consumer software, Cloud Computing and Product Management.



AMITA GOYAL

PRINCIPAL & HEAD OF GCOE PRACTICE



Amita has over 11 years of experience in New Product Development, R&D, Strategy, Innovation Management, and Project Management. Prior to Zinnov she worked at R&D HQ of Canon Inc, Tokyo and comes with a strong global experience in managing cross-cultural teams.

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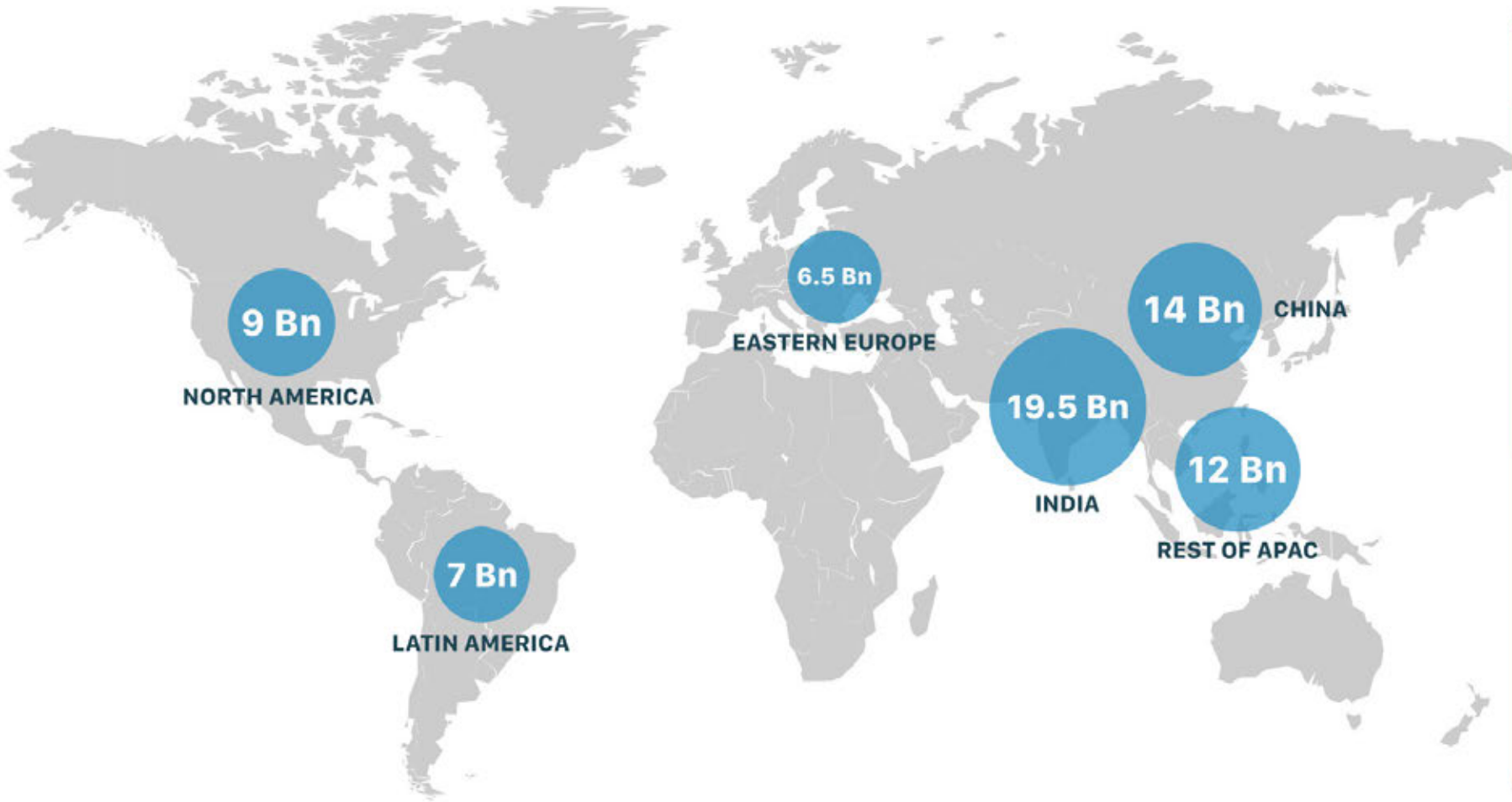
PROJECT LEAD I

**SPECIAL MENTION
TO ORGANIZATIONS
WE INTERVIEWED
FOR THIS REPORT**



APPENDIX

Engineering R&D spend in geographies by Global Companies



ER&D GLOBALIZATION

USD **50** BILLION

TOTAL SPEND ON ER&D GLOBALIZATION IN 2019

70%

CUMULATIVE ENGINEERING R&D SPEND BY GLOBAL COMPANIES IN INDIA & CHINA

Global Engineering R&D Landscape

	INDIA	CHINA	APAC	LATIN AMERICA	EASTERN EUROPE	NORTH AMERICA
ER&D SPEND	USD 19.5 Bn	USD 14 Bn	USD 12 Bn	USD 7 Bn	USD 7 Bn	USD 9 Bn
TOP VERTICALS	SOFTWARE AND INTERNET TELECOM AUTOMOTIVE	SOFTWARE AND INTERNET TELECOM AUTOMOTIVE	CONSUMER ELECTRONICS AUTOMOTIVE TELECOM	TELECOM AUTOMOTIVE ENERGY AND UTILITIES	SOFTWARE AND INTERNET AUTOMOTIVE TELECOM	SOFTWARE AND INTERNET PHARMACEUTICALS ENERGY AND UTILITIES
TOP LOCATIONS	BANGALORE HYDERABAD PUNE	BEIJING SHANGHAI HANGZHOU	PHILIPPINES MALAYSIA VIETNAM	MEXICO BRAZIL ARGENTINA	ROMANIA POLAND LITHUANIA	AUSTIN DALLAS MONTREAL
KEY ENTERPRISES DRIVING DIGITAL SKILLS ADOPTION (AI/ML, IoT, CLOUD)	     	    	     	     	    	     

Source: Zinnov Zones Database of Top 1,000 global ER&D Spenders across 20+ verticals. The cumulative list has a coverage of 80% of all the global companies investing in R&D globalization across industry verticals.



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