CoE HOTSPOTS OF THE WORLD

SUMMARY

NOVEMBER 2020

about zinnov

Operating at the focal point of global technology ecosystem

OFFERINGS

GLOBALIZATION CAPABILITY BUILDING
GCoE Design, Setup and Maturity
Global Engineering 2.0
Product and IT Outsourcing Effectiveness
Global Accelerator Platform

DIGITAL TRANSFORMATION
Intelligent Platforms (Cloud & AI)
Intelligent Automation (RPA)
Intelligent Everything (IOT)

STRATEGY AND GO TO MARKET
New Market Entry
Customer Intelligence
Startup Accelerator
Innovation Consulting

INVESTMENT ENABLEMENT AND VALUE CREATION
PE/VC Deal Sourcing
Commercial DD
Growth Strategy and Cost Optimization
Startup Engagement

DRAUP
Sales Enablement
Talent Intelligence

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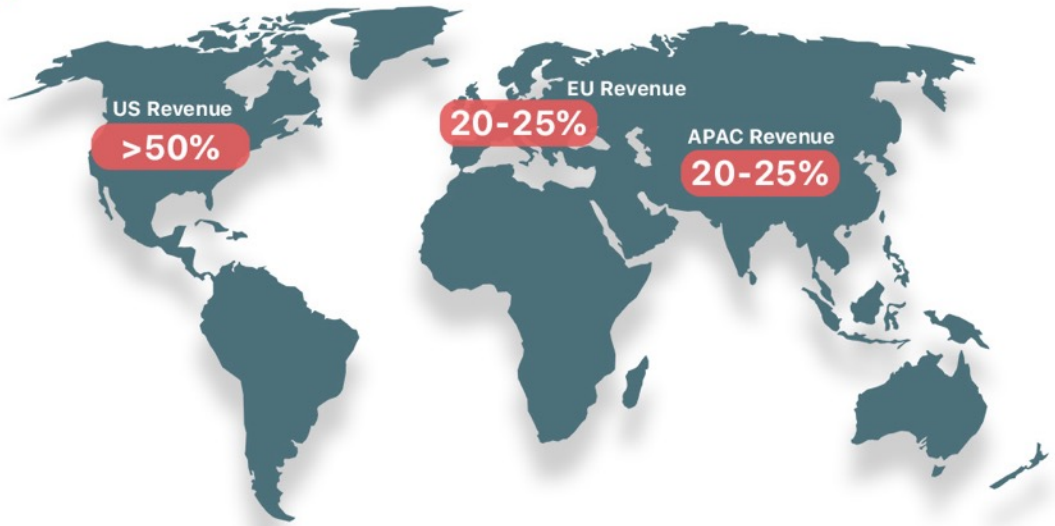


KEY **FOCUS** VERTICALS

- TECH PLATFORMS AND INTERNET SOLUTIONS
- AEROSPACE AND AUTOMOTIVE
- HEALTHCARE AND MED-DEVICES
- BANKING AND FINANCIAL SERVICES
- INSURANCE
- MEDIA AND ENTERTAINMENT
- TRAVEL AND HOSPITALITY
- RETAIL AND CPG

OUR CUSTOMERS

TECHNOLOGY CREATORS
- Technology Platforms
- Unicorns

TECHNOLOGY IMPLEMENTORS
- Digital Services
- Product Engineering

TECHNOLOGY USERS
- Enterprise Customers
- SMBs
- Federal

TECHNOLOGY INVESTORS
- Private Equity
- Venture Capital

Executive Summary

As part of this report, we have evaluated 13 countries for their potential to build Centers of Excellence (CoEs), i.e., to build full, scalable software engineering teams at affordable costs that can own and drive products and IT workloads. Based on Zinnov's vast experience, all countries included in this report have a proven potential for software engineering talent. The focus of this report is, however, to evaluate their potential to build CoEs.
Some countries like Ukraine have not been included in the list, owing to recent geopolitical situation in the last few years in those countries.
In this extensive report, we have evaluated 13 countries relative to US, based on the following 4 factors:

Talent Availability

- ***High-*** China, India, and Brazil have high talent availability which is supplemented by a high number of STEM graduates/year
- ***Medium-*** Canada, Mexico, and Poland
- ***Low-*** Philippines and the rest of the Eastern European countries

Note: Eastern European countries have evolved immensely technical talent development, however due to relatively small population hence limiting the talent pool and number of graduates combined with relatively low attrition rate the available talent pool is scarce and its hard to build teams at scale.

Cost

- ***High-*** Although Canada provides 20-30% talent cost benefit relative to US, it is still at a higher cost point in comparison with other countries in APAC, LATAM, and Eastern Europe evaluated in this report
- ***Medium-*** Brazil, Mexico, China, and Eastern European countries except Belarus, provide a cost benefit of 40% in comparison with US' talent cost
- ***Low-*** India, Philippines, and Belarus provide the highest cost benefit in comparison with US and other countries evaluated in this report

Ecosystem Maturity

- ***Mature-*** India, China, and Canada
- ***Evolving-*** Mexico, Brazil, Philippines, and some Eastern European countries like Poland, Bulgaria, Czechia, and Romania
- ***Nascent-*** Belarus, Lithuania, and Estonia

Note: Ecosystem maturity is evaluated as the collective presence of Z1000 companies, a huge number of tech start-ups, IT Service Providers, and technical institution

Ease of Doing Business

- ***High-*** Canada leads the charts for Ease of Doing Business, followed by Lithuania, Poland, Estonia, and Czechia
- ***Medium-*** India, Philippines, Bulgaria, and Romania have moderate ease of doing business

Eastern European countries listed above are part of the European Union, hence they score high on data and IP privacy, geopolitical stability, and a substantial number of English-speaking talent

- ***Low-*** Mexico, Brazil, Belarus, and China have low rankings in ease of doing business due to Data Privacy and Data Security issues and low proficiency in spoken English

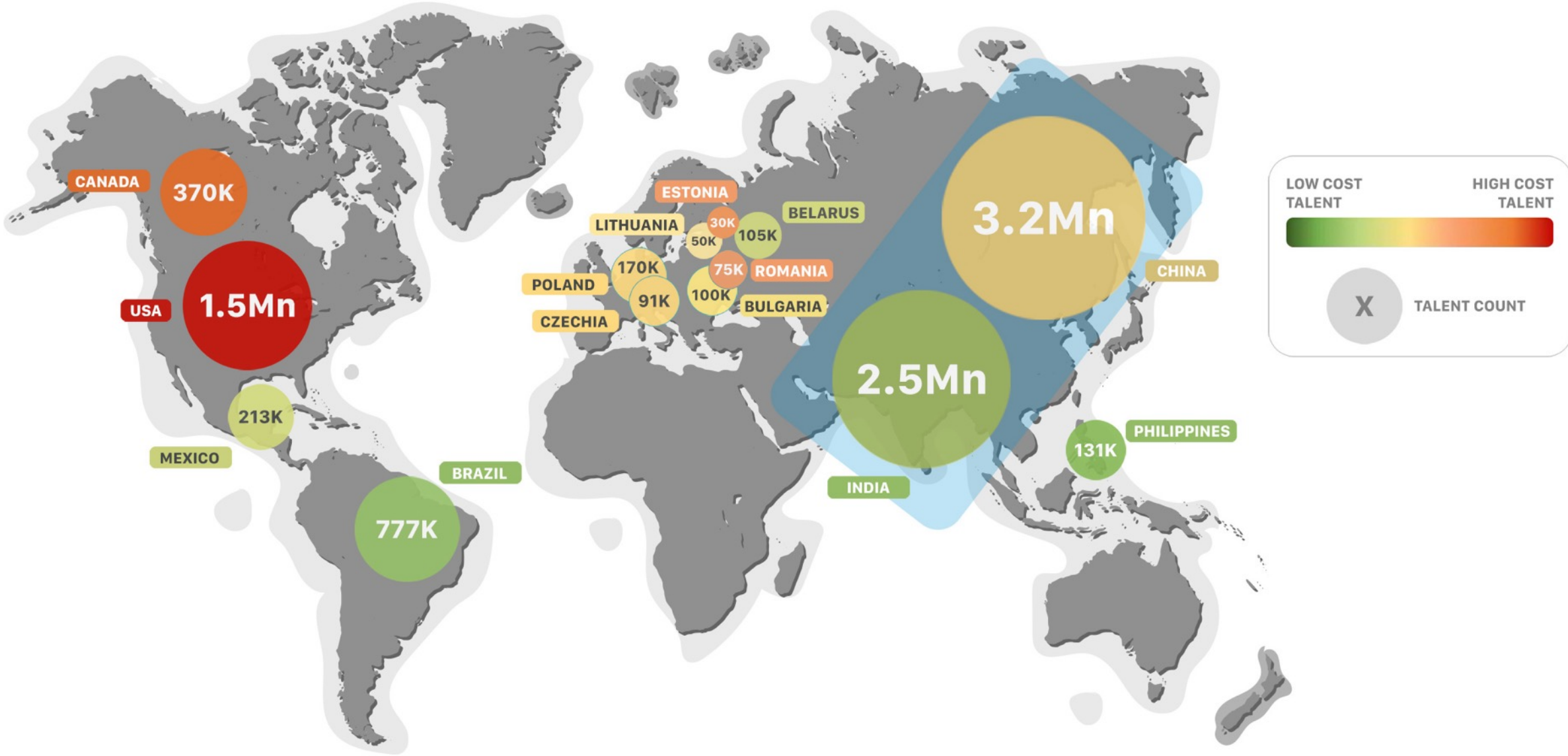
Note: Note: Ease of doing business is evaluated as a function of English-speaking talent, data, IP privacy, and geopolitical stability

Overall Analysis

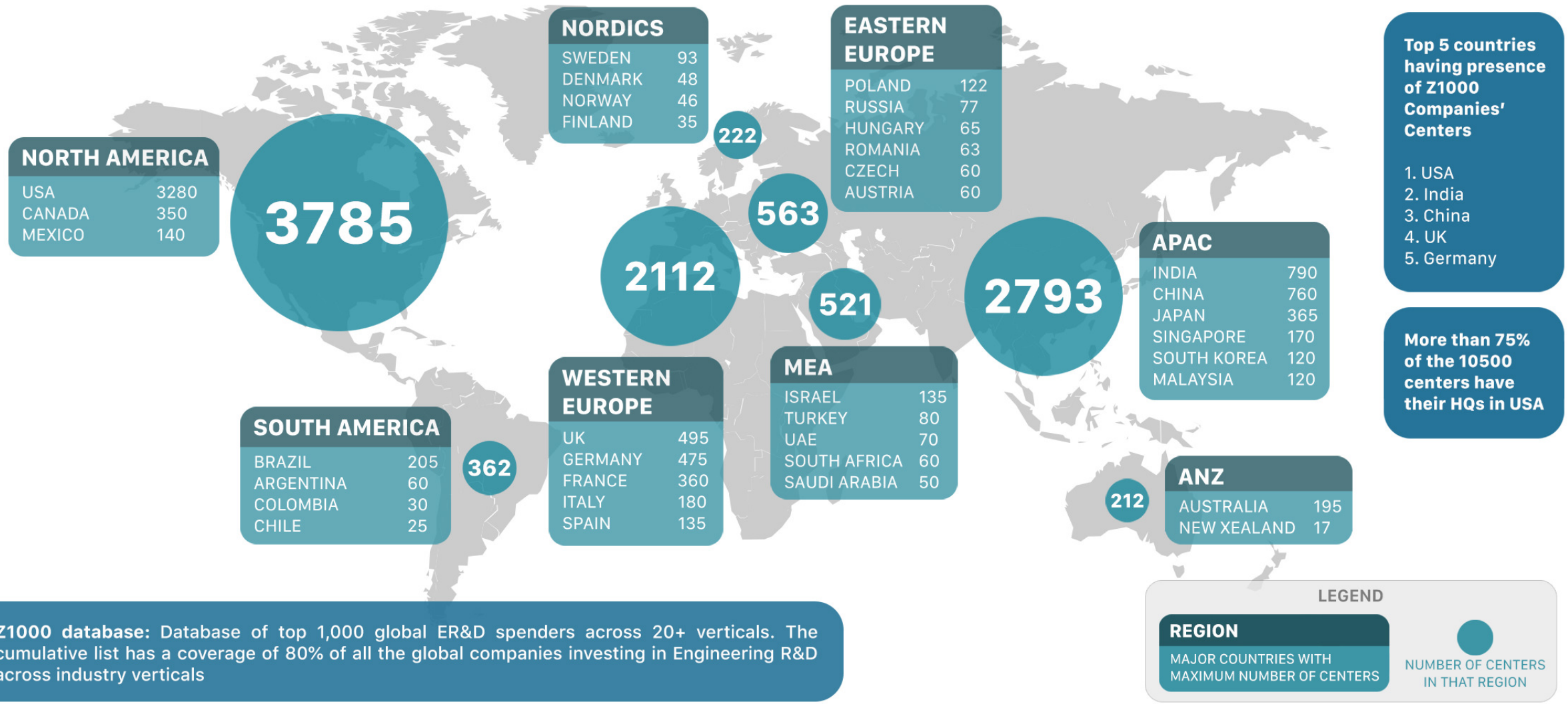
Based on our evaluation framework, the potential CoE Hotspots of the World have been ranked. The top 5 countries are:

India | China | Canada | Poland | Mexico

Global Software Engineering Talent Availability and Cost



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



Top 5 countries having presence of Z1000 Companies' Centers

1. USA
2. India
3. China
4. UK
5. Germany

More than 75% of the 10500 centers have their HQs in USA

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

LEGEND

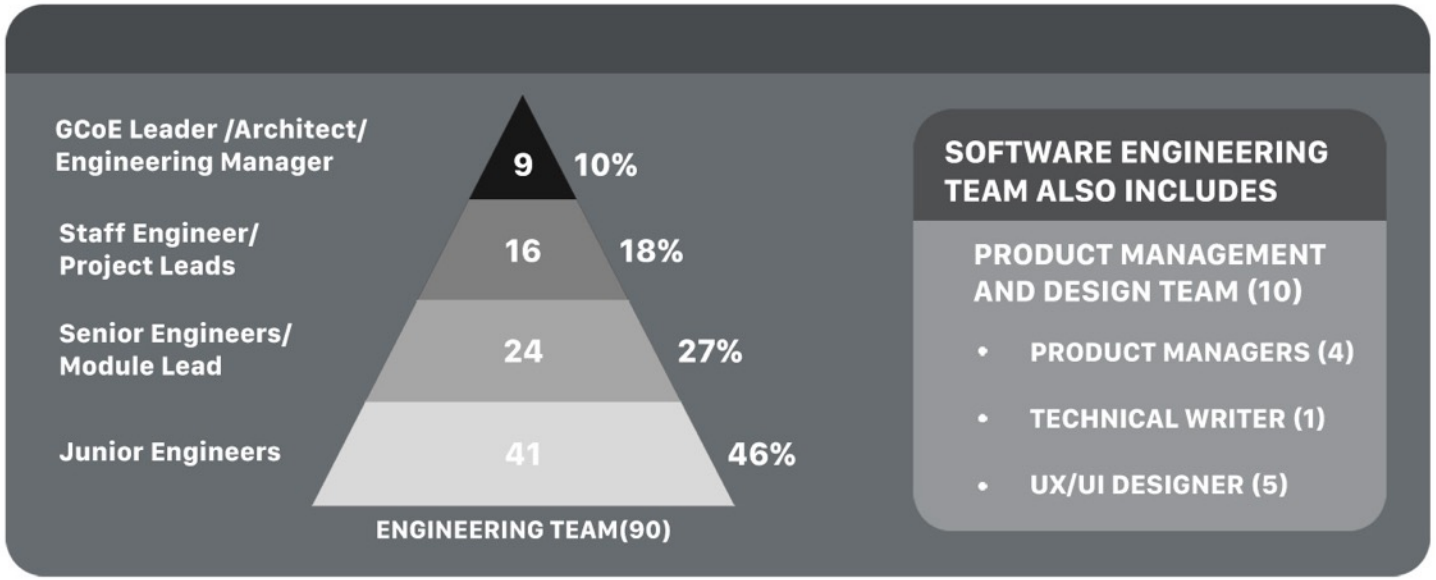
REGION — MAJOR COUNTRIES WITH MAXIMUM NUMBER OF CENTERS

NUMBER OF CENTERS IN THAT REGION

* Excludes 6,600+ centers with headcounts less than 50.

Source: DRAUP

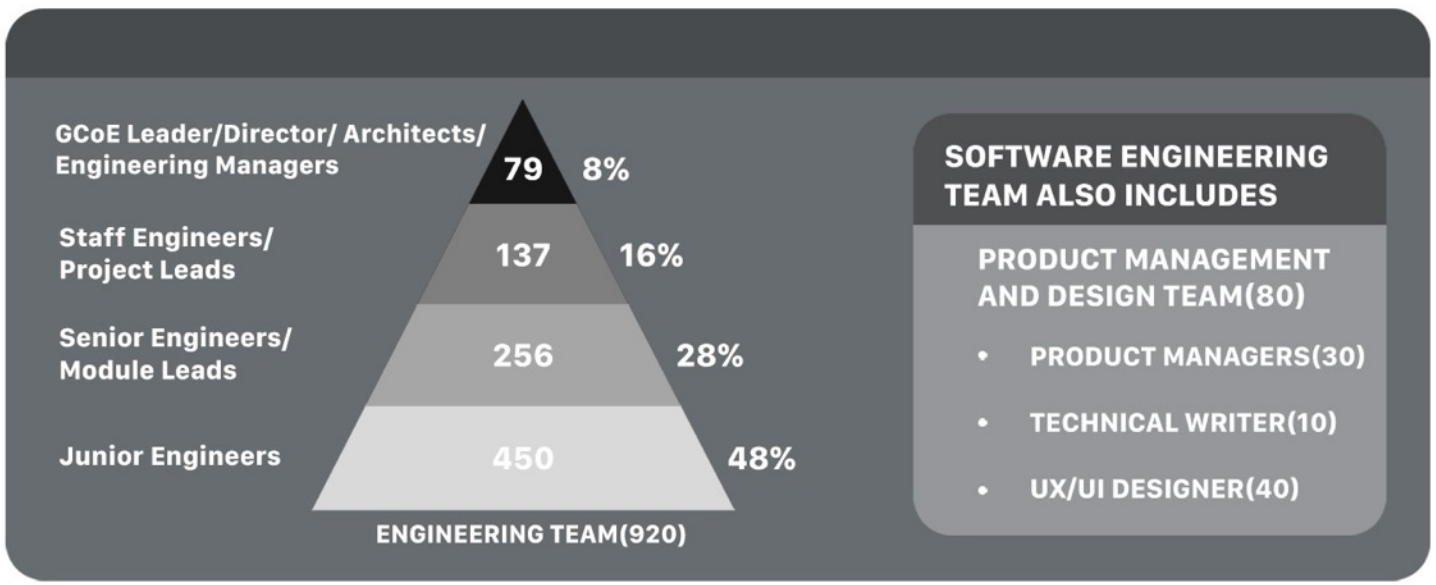
Assumed Talent Pyramid for 100 and 1000-member software engineering teams



SOFTWARE ENGINEERING TEAM ALSO INCLUDES

PRODUCT MANAGEMENT AND DESIGN TEAM (10)

- PRODUCT MANAGERS (4)
- TECHNICAL WRITER (1)
- UX/UI DESIGNER (5)



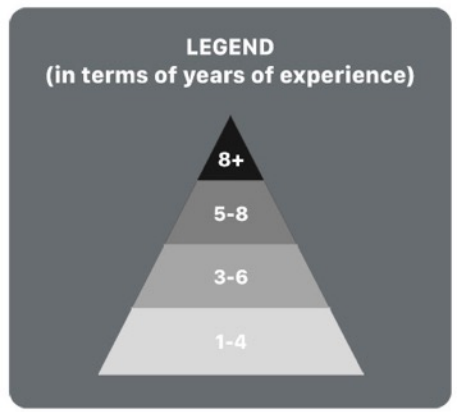
SOFTWARE ENGINEERING TEAM ALSO INCLUDES

PRODUCT MANAGEMENT AND DESIGN TEAM(80)

- PRODUCT MANAGERS(30)
- TECHNICAL WRITER(10)
- UX/UI DESIGNER(40)

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 a 100 to a 1000-member team



Team Scalability Analysis – 100 and 1000-member Software Engineering teams

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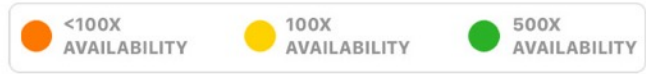


100-MEMBER TEAM

JOB ROLE	NUMBER TO HIRE	INDIA	CHINA	PHILIPPINES	POLAND	BULGARIA	ROMANIA	LITHUANIA	BRAZIL	MEXICO	ESTONIA	CZECHIA	BELARUS	CANADA	UNITED STATES
SOFTWARE DEVELOPMENT ENGINEER	57	500X	500X	500X	500X	500X	500X	500X	500X	500X	100X	500X	500X	500X	500X
QUALITY ENGINEER	14	500X	500X	100X	500X	500X	100X	100X	500X	100X	500X	100X	100X	500X	500X
DEVOPS ENGINEER	8	500X	500X	500X	500X	500X	500X	100X	500X	500X	100X	100X	100X	500X	500X
DATABASE ADMINISTRATOR	2	500X	500X	100X	100X	500X	<100X	<100X	100X	100X	<100X	<100X	<100X	100X	500X
ARCHITECT	2	500X	500X	100X	100X	500X	100X	100X	100X	100X	<100X	100X	<100X	500X	500X
ENGINEERING MANAGER	6	500X	500X	500X	500X	500X	100X	100X	100X	500X	<100X	500X	<100X	500X	500X
PRODUCT MANAGER	4	500X	500X	100X	500X	<100X	100X	100X	100X	500X	<100X	500X	<100X	500X	500X
UX/UI DESIGNER	5	500X	500X	500X	500X	100X	500X	500X	500X	500X	500X	500X	100X	500X	500X
TECHNICAL WRITER	1	500X	500X	500X	500X	<100X	100X	<100X	500X	100X	<100X	<100X	<100X	500X	500X

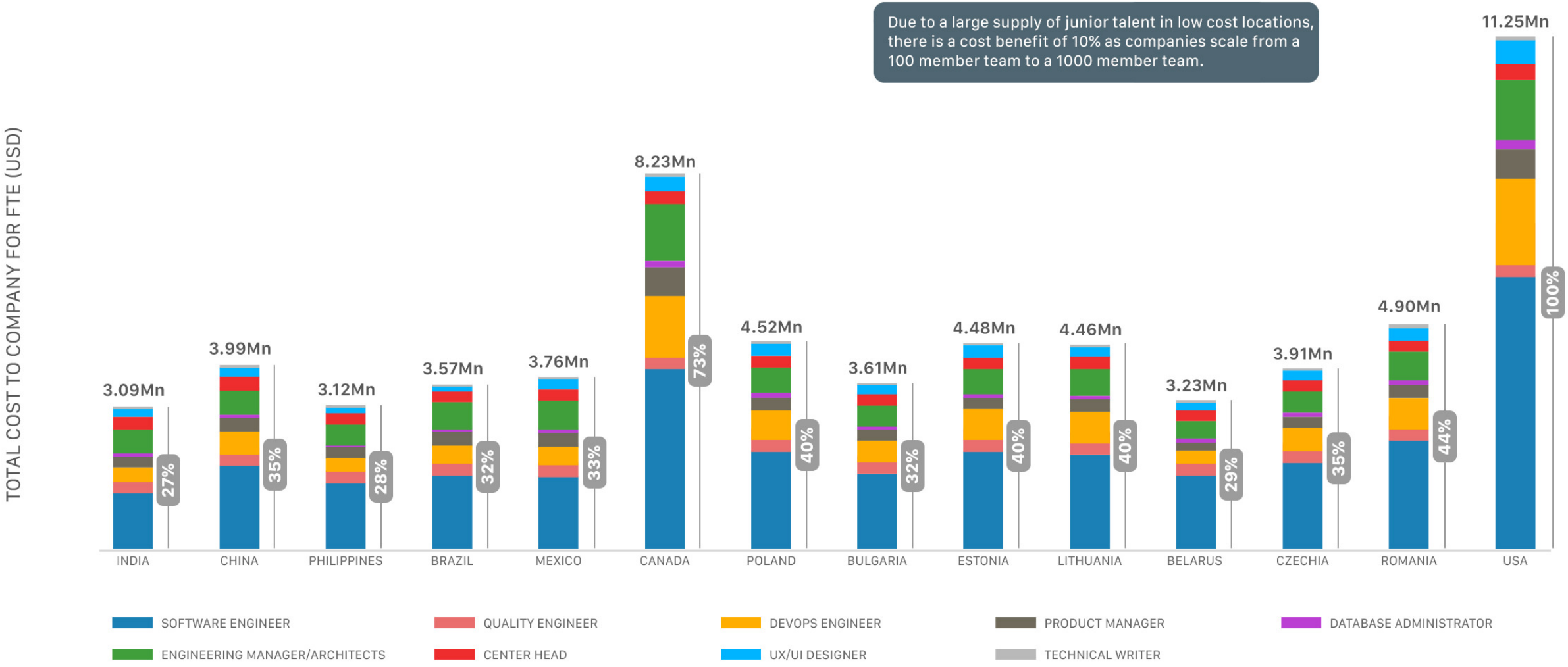
1000-MEMBER TEAM

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 to 1000-member teams in almost all countries except India, China, Canada, and US

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

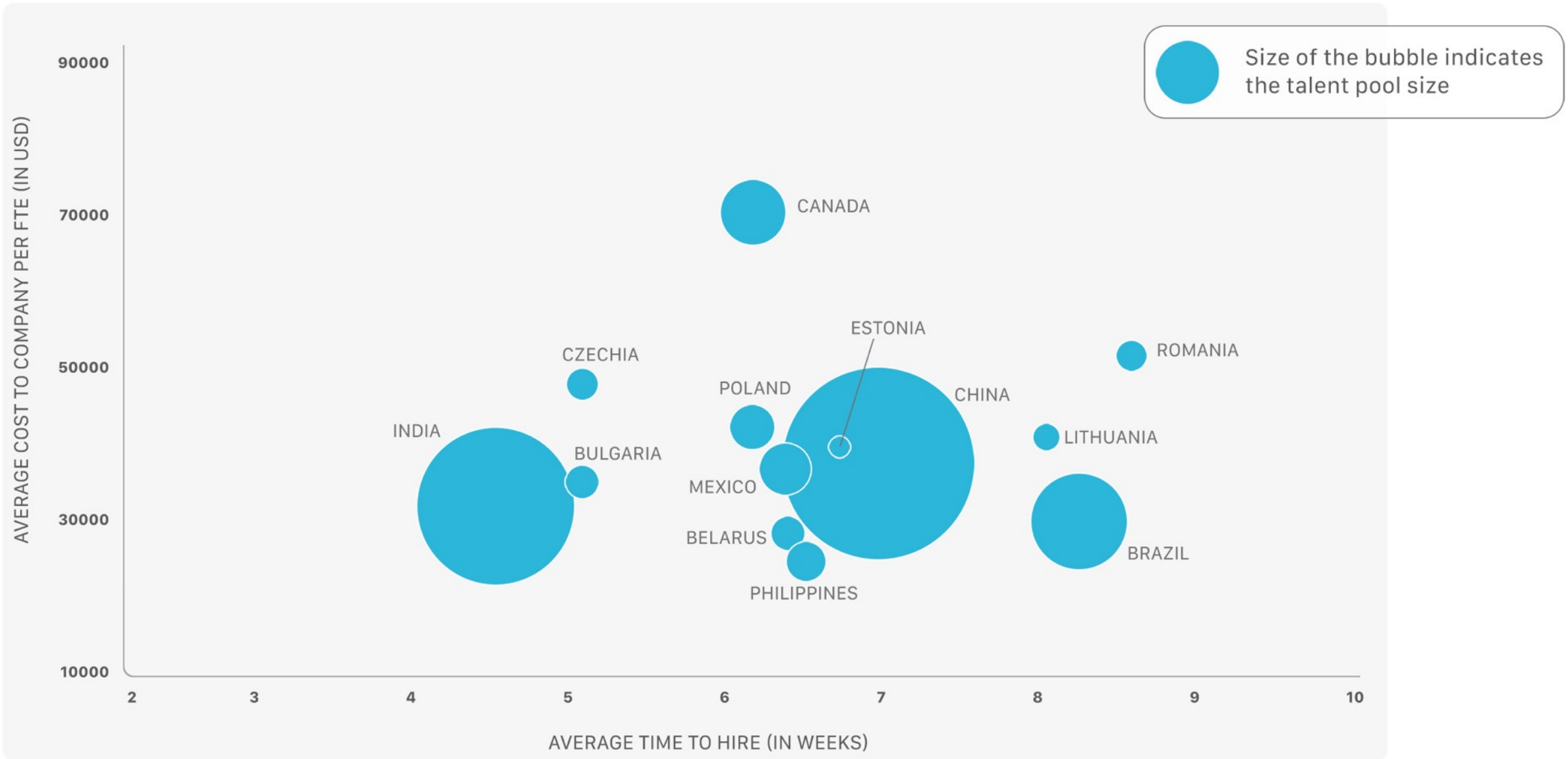
Salary Costs for a 100-member Software Engineering team in each country, relative to cost in USA



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

Source: DRAUP, Zinnov Primary Research

Talent Pool, Cost, and Time-to-hire Analysis for a Software Developer Engineer role



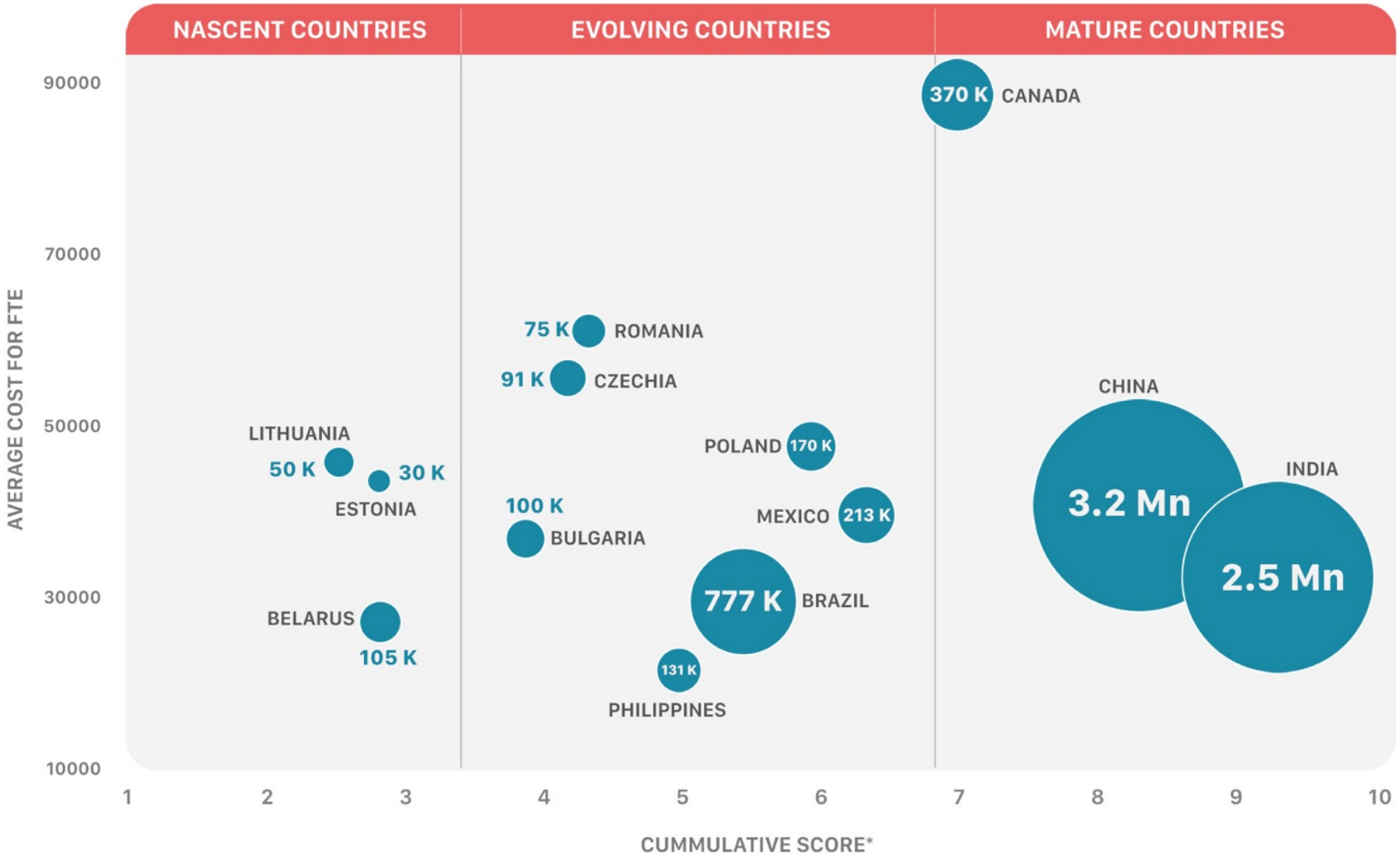
Source: DRAUP, Zinnov Primary Research

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

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.

Source: DRAUP

Software Engineering Ecosystem maturity Analysis



Eastern European countries have high quality talent and attract several Z1000 companies, but face scalability challenges in general, due to their limited talent pool, owing to smaller populations as compared to other locations such as India, China, Mexico, etc.

LEGEND

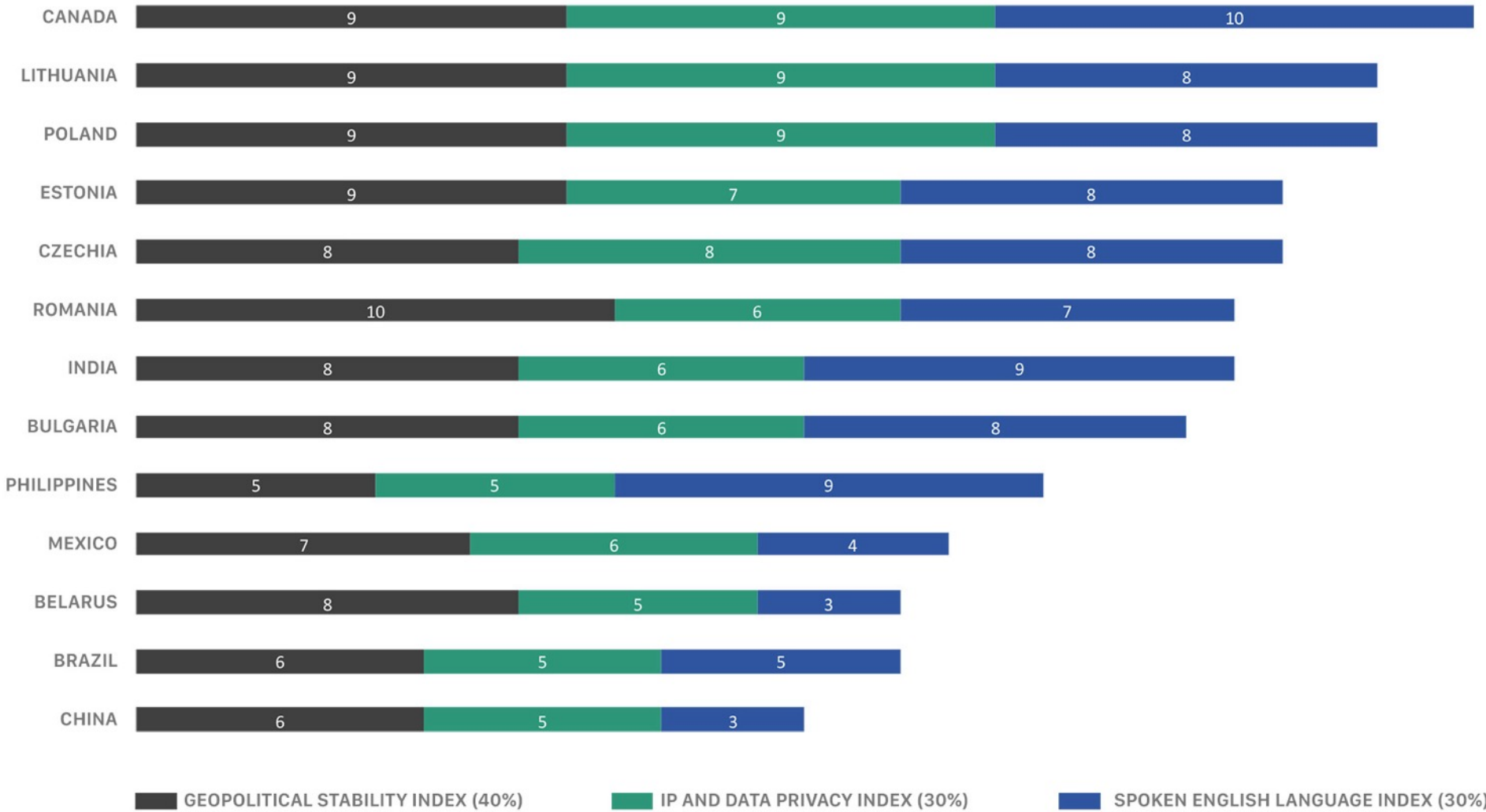
*The cumulative score is generated by scoring the countries on the following parameters.

- Number of Z1000 companies (on a scale of 1-10)(Weightage: 45%)
- Number of Tech Start-ups (on a scale of 1-10)(Weightage: 25%)
- Service Provider Industry Revenue (on a scale of 1-10)(Weightage: 20%)
- Number of Engineering Schools (on a scale of 1-10)(weightage: 10%)

Size of the bubble indicates the talent pool size

Source: DRAUP, Zinnov Zones, Zinnov Secondary Research

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

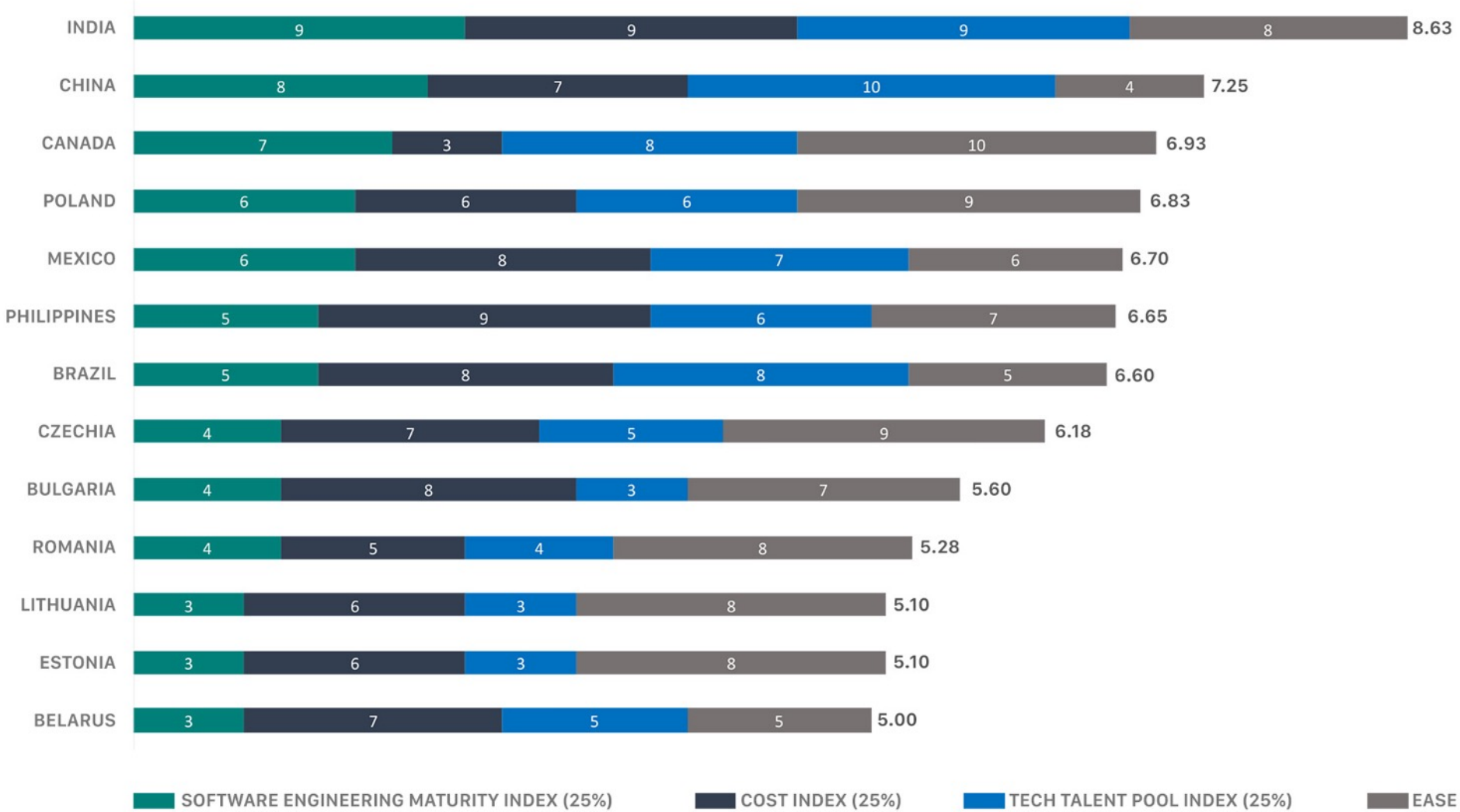


FACTORS TAKEN INTO CONSIDERATION

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**

Source: Zinnov Reports, Zinnov Secondary Research

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

Source: Zinnov Reports, Zinnov Secondary Research

Top 5 CoE Hotspots of the World

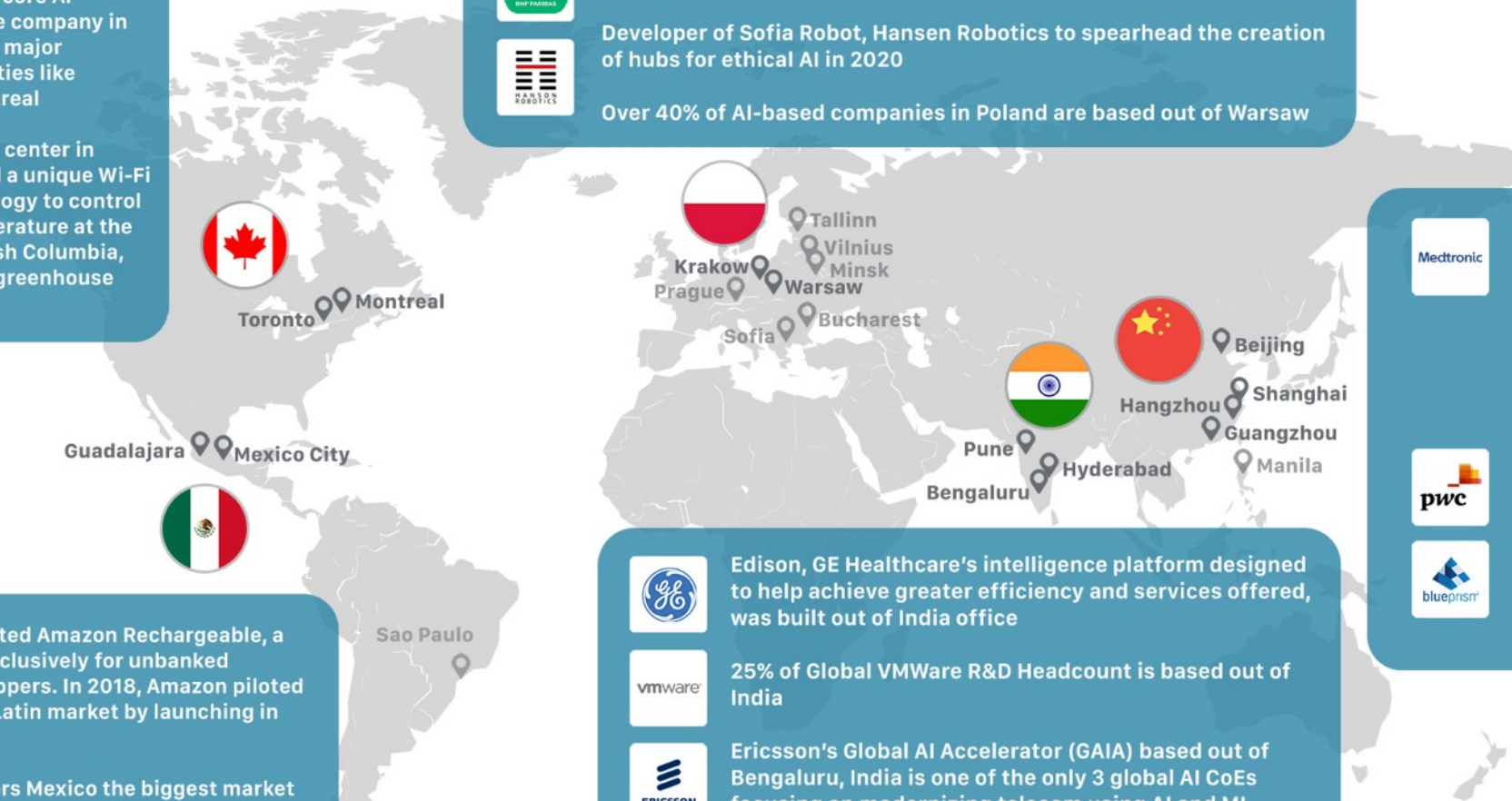
Samsung AI center in Toronto aims at bolstering core AI capabilities for the company in collaboration with major Canadian universities like University of Montreal

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%

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



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

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

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

Source: Zinnov Reports, Zinnov Secondary Research

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

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