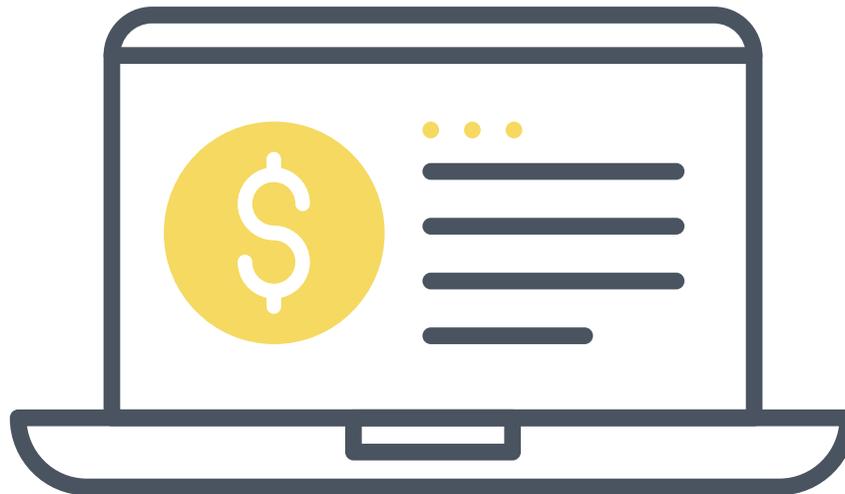


MARKET SEGMENT REPORT

TECHNOLOGY & COMMUNICATIONS



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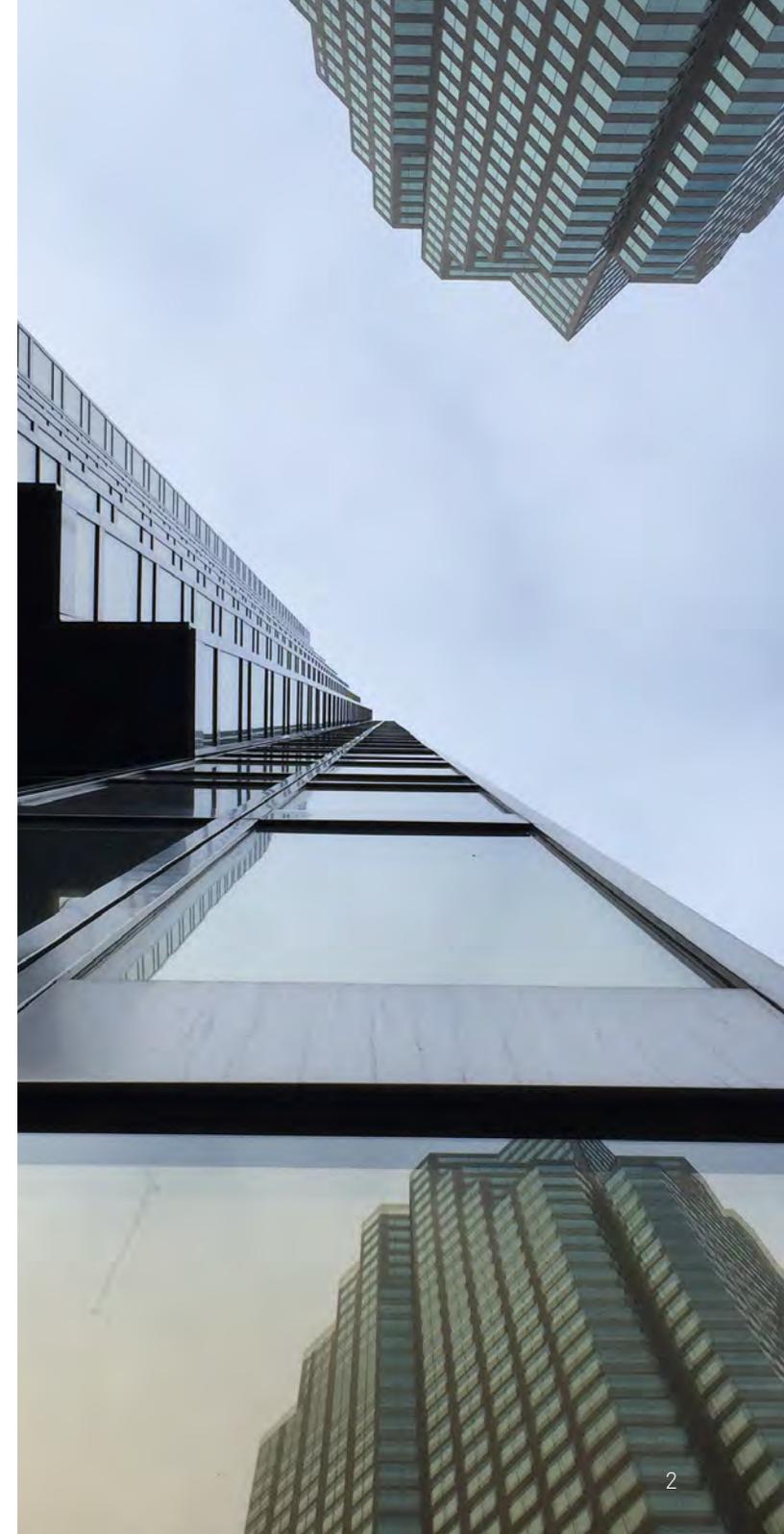
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MARCH 2019

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INDUSTRY OVERVIEW

Technology is the key driver of innovation as the world undergoes the Fourth Industrial Revolution.

Rapid advancements in artificial intelligence, robotics, machine learning and the Internet of Things are enabling work to be done more efficiently and faster - creating a new way of living within an autonomous world.

Inventions of new technology have a cascading effect creating new jobs and new skills that require a complete overhaul of the labor market as we know it today. New skillsets have emerged to include blockchain developers, AI technologists and more sophisticated security engineers that can discover vulnerabilities within new products.

This transformation comes with an abundance of challenges as it pertains to talent. The talent shortage is evident in all industries however Technology and Communications has felt this more than any other industry.

The demand for qualified professionals greatly outweighs the supply of candidates; causing a candidate-driven market. Companies must adjust their branding to entice candidates through opportunity, compensation and culture.

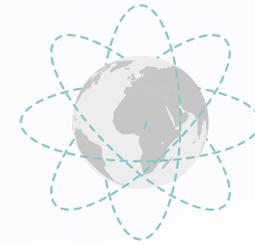
This report highlights the current state of the Technology and Communications industry by looking at recent performance, industry developments, growing markets for expansion, job market updates, talent availability and trends as well as regional highlights. In conclusion there is a summary of the current hiring challenges Pontoon's customers are likely experiencing and ways we can help resolve those pain points with our solutions.

ESTABLISHED AND EMERGING TECH MARKETS



WHERE ARE THE REGIONAL LEADERS

TECH MARKETS



Tech companies have ventured and established operations all over the world creating jobs and attracting talents in every location. These cities were selected based on the average salary, availability of funding and cost of living for technical and telecom professionals.

It will be critical for Pontoon to have a growing global presence to keep up with the ever expanding tech market.



Established Markets

Beijing, Berlin, San Francisco, Paris, Austin, Tel Aviv, Shanghai, Bangalore, New York, Singapore, London, Vancouver



Emerging Markets

Los Angeles, Waterloo (Canada), Milan, Pune, Boston, Amsterdam, Chicago, Seattle, Stockholm, Sydney, Prague, Madrid, Toronto

NEW MARKETS

LATIN AMERICA & SOUTH AMERICA

Talent is becoming more readily available in **Colombia, Argentina and Mexico** as a result of government initiatives, private investments and the drive of local citizens.

Brazil

São Paulo alone is home to over 2700 tech companies. Brazil is the fifth largest internet and mobile economy in the world

The Latin America IT Market has developed across many sectors including:

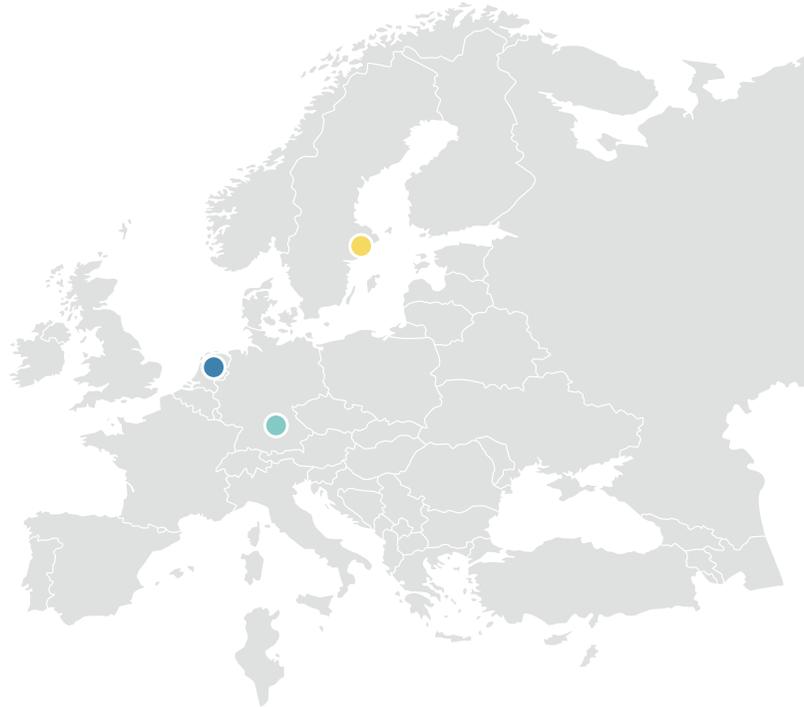
- Big Data and Analytics
- Infrastructure as a Service
- Data Center Services
- Managed Security Services
- IoT
- Mobile Device Management (MDM)

As more companies expand in this region, there is a need to manage talent programs and HR tasks that are scalable and can grow with the companies themselves.



OPPORTUNITIES FOR EXPANSION

EUROPE



Amsterdam is a rising star in the tech sector having brought in over \$2.2 Billion in VC funds between 2016 – 2018. The talent pool is also prime for new companies to expand with over 250,000 tech workers within the relatively small city, in comparison to other tech hubs.

93% OF PROFESSIONALS THINK THE TECH SCENE IN AMSTERDAM IS GROWING

Amsterdam also has the highest average net salary in tech at €4,036 compared to Berlin €3,179, Dublin €3,464, London €3,524 and Paris €3,369.

Source: Adecco GTCI Study, Hubspot- European Tech Scene

Stockholm comes in at #11 on Adecco's GTCI survey for 2019 ranking higher in enablement and retention categories compared to scores for London, Paris and Amsterdam

This city is a breeding ground for tech innovation having been rank #2 behind just silicon valley in 2017 and with the highest GDP.

output of 3.65% coming from Research and Development alone.

Munich has been recognized as a powerhouse in tech. Currently home to a growing talent pool of software and app developers which has reached to 98,000, only 2,000 less than Berlin.



ASIA PACIFIC

PUNE

Ranked in third place of Indian cities for IT exports, Pune is also recognized as the fastest growing for IT and IT-enabled services exports.

Growth in this city is a result of substantial financial incentives given to the industry leaders by the Maharashtra government. Tax breaks are also given as incentive to software companies at the residential rate rather than commercial rates. Companies are also eyeing Pune as a prime location to grow IoT brands over the coming years.

BENGALURU

This culturally rich city is on track to be the fastest growing city in Asia in the next 5-10 years

The city is home to nearly 1 million professionals specializing in Computer Software, Computer Networking, Internet, Telecommunications, Information Technology & Services, Computer & Network Security.

High availability of talent has contributed to cheaper labor costs which is enticing for new technology entrants to the market.

SHENZHEN

Significant investment in research and development has attracted many new technology and telecom companies to the area outside of the hardware manufacturing industry that the region is known for. Shenzhen has a higher GDP than Hong Kong but more availability in terms of talent and office space therefore making it a hotspot for expansion.

TRENDS IN TECHNOLOGY



IMMINENT ADVANCES ON THE HORIZON

WeForum identifies the following four trends as top industry growth drivers in Technology and Communications:

- Advances in devices bridging the human-machine device divide
- Adoption of new technology
- Advances in cloud technology
- Advances in computing power

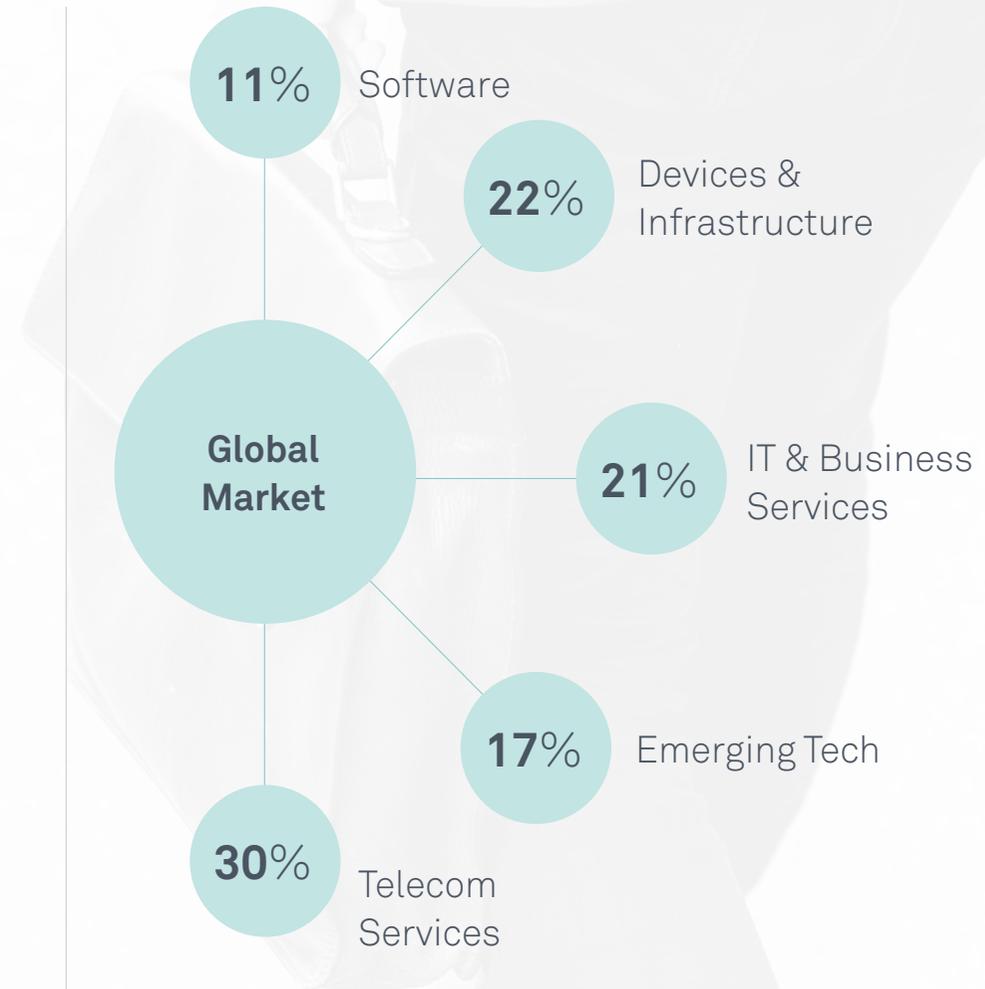
Functions	Skills	Demand
All Functions	Business Intelligence & Analytics	26%
Digital	Digitalization	14%
All Functions	Cloud Services & Solutions	10%
Digital	Mobility & Mobile Applications	6%
Intelligent	IoT	6%
Intelligent	AI	5%
Cybersecurity	Enterprise Resource Planning	5%
All Functions	Infrastructure & Data Center	5%
Intelligent	Automation	4%

N=2,800 respondents

Source: CEB analysis

Note: Out of 2,800 respondents, 26% of ... believe that business intelligence and analytics skills are the most important skills for business differentiation.

Source: WeForum, CompTIA



The figures in this chart represent percentage of global spend in each subcategory of the industry

EMERGING TECHNOLOGIES

Digital expertise in artificial intelligence (AI), cybersecurity, Internet of Things (IoT), blockchain are now more in demand than ever as the supply for these professionals is at an all time low.

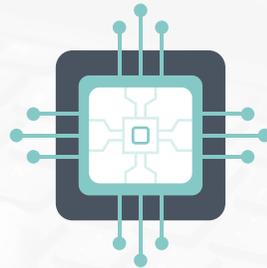


ARTIFICIAL INTELLIGENCE

Processes carried out by systems and applications that imitate human intelligence Behaviors are learned by acquiring new data, reasoning through algorithms and rules and applying learned knowledge in future situations.

Examples of AI driven technologies include:

- Autonomous vehicles
- Humanoid robots
- IoT smart home appliances



ROBOTIC PROCESS AUTOMATION

RPA is designed around business logic and structured input to replace 15-20 repetitive tasks at a time.

This technology is widely used to:

- Process transactions
- Manipulate data
- Trigger responses
- Communicate between systems
- Deploy automated bots

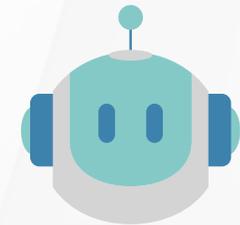


MACHINE LEARNING

A series of algorithms that enable applications to predict predictive outcomes. This algorithm customize outputs based on prior behavior.

Machine Learning is used for:

- Sales and marketing targeted ads
- Fraud detection
- Network security threat detection
- Predictive maintenance
- Building news feeds



CHATBOTS

Also know as virtual agents are capable of intaking requests, providing simple answers of performing requested tasks.

Chatbots are most often used for:

- Customer service
- Smart home or IoT functions
- Tech Support
- Simple banking requests

LOOKING AHEAD TO 2020

BY 2020, Automation and artificial intelligence will reduce employee requirements in business shared-service centers **by 65%** – Gartner

BY 2020, **40% of large enterprises** will have adopted an RPA software tool, up from less than 10% that was in place at the end of 2018

80% of sales and marketing leaders say they already use chatbots or plan to do so by 2020

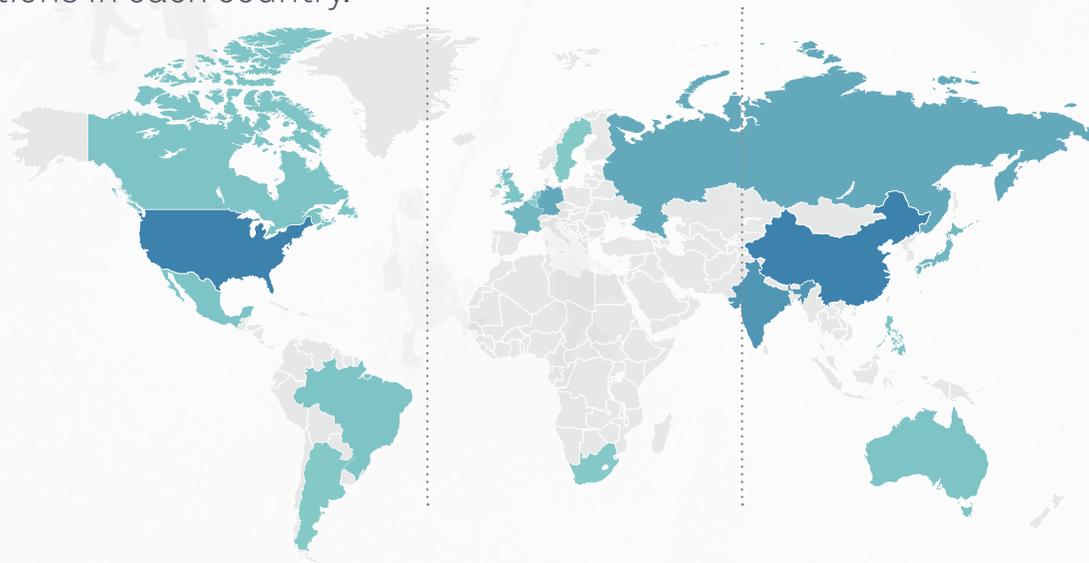
JOBS IN TECHNOLOGY AND COMMUNICATIONS



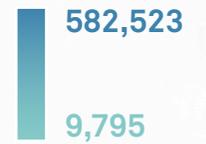
CURRENT OPEN JOBS BY COUNTRY

This map shows the number of positions currently open in Technology & Communications in each country.

OPEN JOBS BY COUNTRY



OPEN JOBS



696,505

JOBS OPEN IN AMERICAS

SOUTH AMERICA

Argentina	9,867
Brazil	39,023

NORTH AMERICA

Canada	29,142
Mexico	44,260
USA	574,213

323,255

JOBS OPEN IN EMEA

Belgium	12,672
France	57,995
Germany	96,495
Netherlands	13,316
Russia	82,366
Sweden	6,367
UK	44,279
South Africa	9,795

994,376

JOBS OPEN IN APAC

Australia	20,008
Philippines	27,369
China	582,523
India	234,124
Japan	66,902
Singapore	13,450

TRADITIONAL JOBS IN TECHNOLOGY & COMMUNICATIONS WILL SOON BE REPLACED

FUTURE OF JOBS



Emerging occupations

Advances in innovation will require a re-skilled workforce responsible for harnessing the capabilities of technology.

Data Analysts and Scientists

AI and Machine-Learning Specialists

Big Data Specialists

Software and Applications Developers and Analysts Innovation professionals

Information Security Analysts

New Technology Specialists

Blockchain Specialists

User Experience and Human-Machine Interaction Designers

Sales and Marketing Professionals



Diminishing occupations

Robotic Process Automation has replaced many of the functions traditionally completed within these roles. These roles were reduced by 34% in 2018

Data Entry Clerks

ICT Operations and User Support Technicians

Client Information and Customer Service Workers

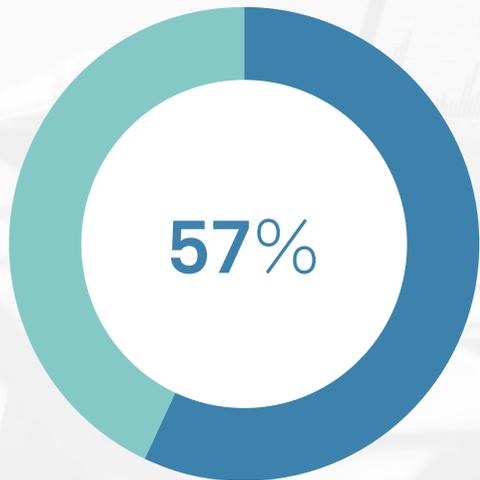
Business Services and Administration Manager

Electronics and Telecommunications Installers and Repairers

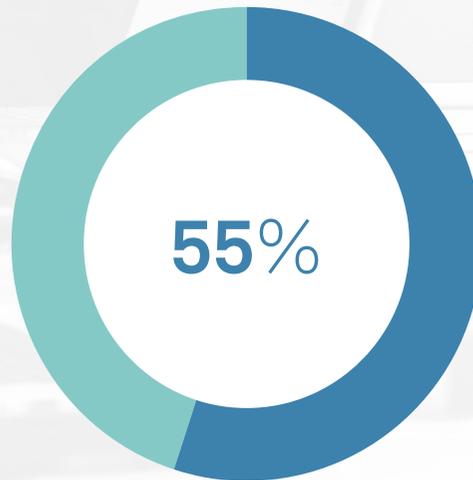
SHIFTING WORKFORCE

As new technology is introduced and woven into organizations, there will be a significant impact on the workforce. Hiring managers must prepare to hire specialized workers that can implement these new technologies. These progressive techs automate some day-to-day tasks therefore resulting in a reduction in some of the workforce. New technologies will also create efficiencies in the value chain which will modify relationships that exist today.

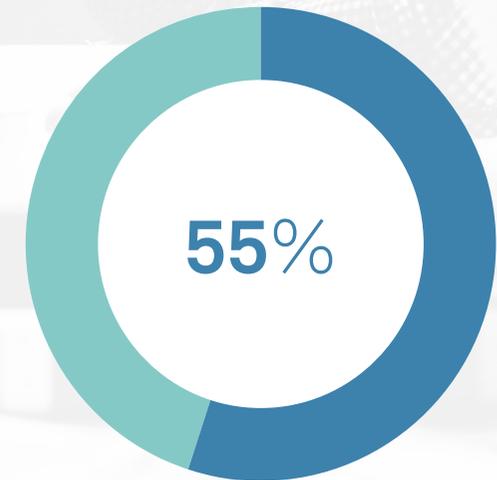
Industry executives expect the following changes within their workforce



said there will be an increase of task-specialized contractors



of execs expect plan to reduce their workforce due to automation



Cite plans to modify their value chain because of new technology capabilities.

TALENT LANDSCAPE



WORKFORCE SUPPLY IN TECHNOLOGY & COMMUNICATIONS

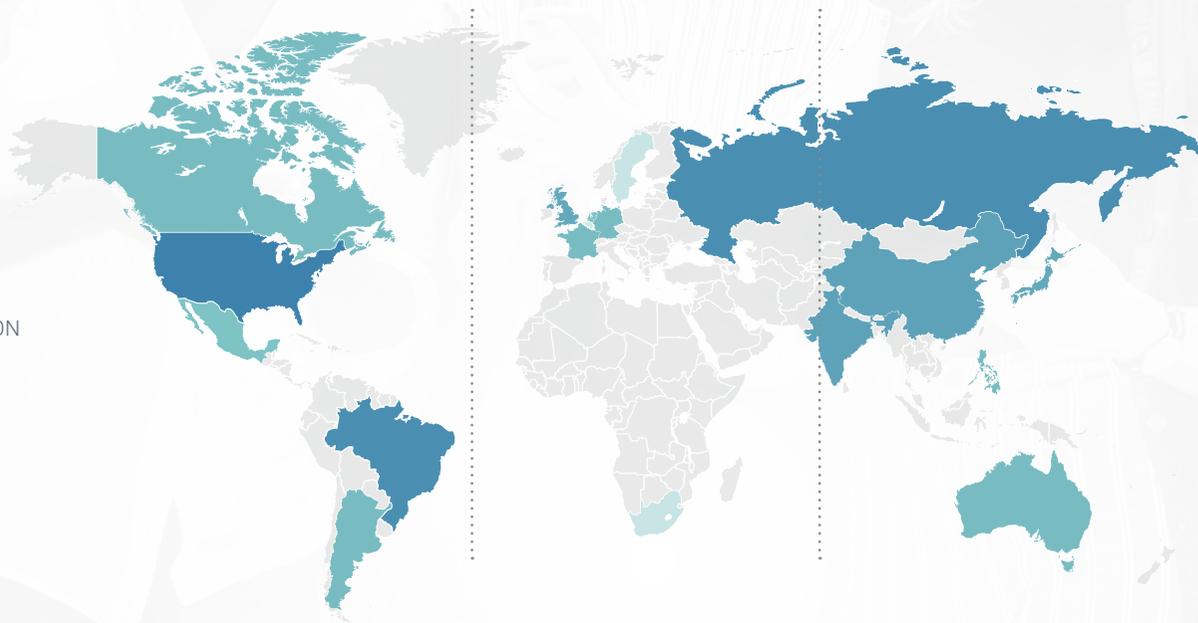
TALENT BY REGION

This map shows the current headcount of Technology & Communications professionals employed within each country

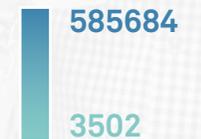
PROFESSIONALS IN THE WORKFORCE BY COUNTRY

DATA COLLECTED FROM TALENT SOURCING REPORT:

INFORMATION SERVICES; INFORMATION TECHNOLOGY AND SERVICES, COMPUTER SOFTWARE, TELECOMMUNICATIONS, COMPUTER NETWORKING, COMPUTER & NETWORK SECURITY, INTERNET



OPEN JOBS



9,955,000

PROFESSIONALS IN THE AMERICAS

SOUTH AMERICA

Argentina	845,000
Brazil	3,399,000

NORTH AMERICA

Canada	842,000
Mexico	384,000
USA	5,767,890

6,678,700

PROFESSIONALS IN EMEA

France	706,700
Germany	723,000
Netherlands	447,000
Russia	2,950,000
Sweden	182,000
UK	1,461,000
South Africa	209,000

7,333,600

PROFESSIONALS IN APAC

Australia	796,000
Philippines	872,500
China	2,461,000
India	1,955,500
Japan	1,150,000
Singapore	98,600

NEW WAYS OF ACCESSING TALENT IN TECH

Talent Cloud

Freelancers are gaining share in the talent pool of tech candidates.

Profiles of freelancers are housed in a Talent Cloud platform specific to their skillset.

The cloud creates an environment for freelancers to view posted jobs and for companies to vet candidates for their openings.

TPaaS

Talent Pipeline as a Service

Talent Pipelines consist of preidentified candidates that have been engaged through sources including job application, job board, talent community or recruitment event

These candidates have been vetted against common skillsets, qualifications and job requirements within the program and remain in the queue for the next opening

Having a strong Talent Pipeline is critical to improving time-to-fill expectations and securing talent in a limited labor market

Talent Analytics

Data is the foundation of smart business decisions and talent is no exception

Collecting workforce related analytics assist in the following areas:

- Benchmarking
- Retention and Turnover data
- Talent Availability
- Workforce Planning
- Hiring Performance
- Diversity and Inclusion Data

WORKFORCE TRENDS

Opportunity to Grow Skills

Candidates today are eager to learn new skills that help them reach both long and short term goals. Companies must offer opportunities for up-skilling on the job and re-skilling programs from internal learning and development teams or external training companies.

87% OF MILLENNIALS
PRIORITIZED PROFESSIONAL OR
CAREER GROWTH AND DEVELOPMENT
OPPORTUNITIES IN A JOB

69% OF NON- MILLENNIALS
CITED THE SAME

Incentives

Tech professionals are now looking for more than just a take home salary when considering new opportunities. Offer packages including unlimited PTO and remote flexibility are imperative to secure talent.

78% INCREASE IN
JOB POSTS
ON LINKEDIN THAT MENTION
WORK FLEXIBILITY

Job Hoppers

As of 2017, 42% of job-hoppers changed jobs between every 1 and 5 years, a rise from 34% in 2016.

With companies growing and hiring more than ever, professionals are always being tempted to leave for a better position/ company/ package. Retaining talented employees is critical to avoid setbacks and the costly process to backfill an employee.

Diversity & Inclusion in Tech

Candidates want to work for companies that have strong diversity and inclusion practices. Companies that promote diversity and positive corporate culture attract top talent and increases the employee retention rate.

According to McKinsey, companies are 15% more likely to outperform against industry medians when gender diversity is in place.

Higher female representation at the board level or in top management exhibit higher returns on equity, higher valuations and also higher payout ratios- Study by Credit Suisse.

CHALLENGES AND RISKS



CURRENT CHALLENGES IN HIRING TECH TALENT

War for Tech Talent

By 2020, the Bureau of Labor Statistics predicts, in the US alone, there will be 1.4 million open computer science related jobs and only 400,000 qualified candidates.

The IT industry's biggest challenge at the current time is facing a major lack of talent. New jobs in tech are rapidly outpacing the availability of people to work those jobs. This creates a domino effect that stall innovation and negatively disrupts the advancements being made.

Supporting Diversity in Tech

Diversifying the workforce is critical for success and stability. The Technology industry is one of the worst offenders of lacking diversity in the workforce. Tangible benefits of a diverse IT workplace include:

Innovative ideas

Products that are made for everyone

Creative solutions

Lacking principles on the importance of diversity in the workplace can be costly.

Reducing hiring bias will aid in creating a more diverse workforce and contribute positively to the bottom line of our clients.

Financially a one percentage point move toward representative diversity leads to a three-point increase in revenue.

Diversity efforts could net the IT industry an extra \$400 billion in revenue each year - CompTIA CEO Todd Thibodeaux

“ Unfair treatment in the workplace directly results in high turnover which amounts to \$16 billion per year in employee replacement costs. ”

– KAPOR CENTER FOR SOCIAL IMPACT

H1B VISA PROGRAM

Program changes present hardships for candidates and companies alike

Stricter requirements and the changing structure of the H1B visa processing will have detrimental effects on the availability of talent in the US job market.

Recent changes include:

- Adjudicators now have full discretion to deny applications, petitions, and requests without first issuing a Request for Evidence (RFE) or Notice of Intent to Deny (NOID).
- Premium processing has resumed as of January 28, 2019 after a suspension since September 2018.
- A new rule effective April 1, 2019 is intended to give preference to foreigners with advanced degrees obtained at US universities.

How to prevent disruption in the business?

Companies must allocate more work among their current workforce.

Upskill employees to learn tasks that would have otherwise been completed by visa holders.

Increase operations overseas – access skilled workers that reside in other countries.

Hiring and retention have been affected as a result of H1B program changes

26% OF EMPLOYERS
have seen a delay in projects

22% HAVE ALREADY
had to move work overseas

LEGAL UPDATES



LEGAL UPDATES

Data Privacy & Protection

EU

General Data Protection Regulation (or GDPR) plans to implement revisions for 'ePrivacy Regulation' as it relates to electronic marketing.

US

Commerce Department's National Institute of Standards and Technology will rollout voluntary privacy framework. Intention is to help organizations manage risk and protect data.

India

Plans to draft regulation called Personal Data Protection Bill ("PDPB") which is modeled after EU's "GDPR".



Legislative changes by country

UK

New Labor Reform- A single labor market body will enforce workers rights throughout the country.

Repealing Swedish derogation- equal pay for the same work for agency workers and permanent employees.

Brexit - British Chambers of Commerce in October found that around one in five UK firms expected to cut recruiting and reduce investment in their business in the event of no deal.

France

"GAFA Tax" - French government will impose a new tax on four of the world's biggest tech companies for the duration of 2019. Companies named have included Google, Apple, Facebook and Amazon.

Switzerland

In 2019, the Swiss government will adjust allotted number of Non-EU work permits:

Increase to 4,500 long-term (B) permits (+1,000 compared to 2018)

Short-term (L) permit will decrease to 4,000 (-500)

Germany

Revised legislation passed in Germany (12/2018) that will tighten rules on share purchases of German firms by non-EU companies. The effects will be most felt in high-tech companies. The new ruling will allow the government to review or block foreign purchases of stakes as low as 10%, down from 25% previously.

LEGAL UPDATES

US

In 2019, USCIS is expected to rollout 21 separate rules pertaining to regulatory agenda. Changes to the H-1B visa program will be part of this overhaul and will likely effect hiring of IT professionals from outside the US.

New regulations are expected in 2019 to monitor the security of supply chains providing technology and components to the US. Significant focus will be on products imported from China after 2018's immense allegations of malicious interference between the two countries.

United Arab Emirates

UAE's president pass a law for 2019 for testing future technologies. With the goal of attracting innovation in the region, companies can apply for temporary licenses to now test their new futuretech apps in safe environments.

India

2019 will bring amendments to India's Information Technology Act (Section 79) to combat the spread of Fake News. Tech giants including WhatsApp, Facebook, Google, Twitter, Telegram will be directly affected and will face large fines if the behavior continues. Penalties will amount to INR 15 crore (EUR 2 million) or 4 percent of the total turnover.

Japan

In September 2018, the Personal Information Protection Commission (the "PPC"), the independent Japanese data protection authority, published additional regulations for additional safeguards when EU data is sent to Japan.

Japan passed Workstyle Reform Bill with some of the effects taking place in April 2019 and others in 2023. Covers issues regarding: fair and equal workplace, upgraded freedom and flexibility to workers and the establishment of a labor management committees within companies.

HELPING OUR CLIENTS SOLVE HIRING OBSTACLES



GROWING THE SKILLS OF THE EXISTING WORKFORCE

SKILLS GAP IN TECH



ONLY **21%** OF U.S. WORKERS SURVEYED BY ACCENTURE

said they had received any formal training at work in the previous five years



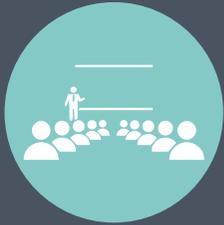
How to Close the Skills Gap

Offer external training courses to employees through **General Assembly**

Inter-department shadowing of colleagues to develop farther reaching skills

Learning and development courses to develop skills of existing workforce

TALENT SHORTAGE



32% of tech professionals
engage in IT skills training only
a few times a year



How to Win the War for Talent

Access to large
pools of
freelancers
candidates for
project based work
with **Yoss**

Upskill existing
workforce with
General Assembly
academic
programs

Partner with **Lee
Hecht Harrison** to
restructure the
current workforce
to best utilize
employees

ATTRACTING TALENT IN A LIMITED MARKET

COMPETING FOR TALENT



Prospective candidates want to join companies that offer opportunities for growth and outlets for creativity

Organizations must set themselves apart from the pack to attract top tier talent



Win Talent with a Strong Employer Brand

Promote a workplace that:

Fosters innovation among your workforce

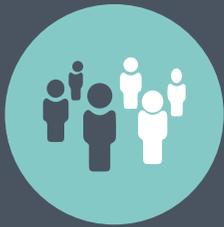
Provides learning opportunities for skills development with General Assembly

Offers competitive pay, benefits, bonuses, incentives

Offers flexible work arrangements

NEW COMPOSITION OF THE WORKFORCE

WORKFORCE 2.0 – FREELANCERS



Freelancers will make up

50% OF THE
WORKFORCE
BY 2025

“Legacy models of employment will be “dissolved and replaced with talent marketplaces driven by the surge of on-demand labor platforms and online work management solutions.” –Accenture

In the United Kingdom, France and the Netherlands, freelance growth has outpaced overall employment growth.

Ways to Prepare for the Gig Economy

Evaluate what part of the business can be outsourced to freelancer – project work, seasonal influxes

Tap into the freelancer talent pool by implementing an FMS tool like **Yoss**

ADDRESSING TRENDS & CHALLENGES WITH PONTOON'S ECOSYSTEM



BUILDING THE TALENT POOL BY UP-SKILLING AND RE-SKILLING

GENERAL ASSEMBLY

Pontoon's partnership with **General Assembly** faces this issue head on. GA aims to **identify skills** that are most in demand then **provide training** to **increase the number of skilled workers** in a given market

Today's skills gap is being felt across the globe and especially in technology and telecommunications. The workforce must evolve their skillsets to be able to keep up with the rapidly changing needs of organizations.

Employees can enroll in programs while working in their current role with plans to transition into the new position once the GA course is satisfactorily complete.



We must focus on developing the skills within the current workforce as the world of work rapidly transforms



YOSS

Yoss is a fast-growing pool of **highly-skilled technical and professional talent**. Their current pool of talent contains 40% data engineers; 20% technical project managers; 20% backend & CRM developers; 14% other professionals.

OVER 500 NEW FREELANCERS
ARE ADDED TO YOSS'S
TALENT POOL EVERY WEEK

As more professionals become independent workers favoring freelance and project based work over full time or contract work, employers must be ready to adapt. With talent already scarce, employers must have embrace and incorporate freelancers into their workload to stay efficient and complete tasks.

Yoss acts as the vital connector between companies and freelance technology professionals. Accessing this vast and growing pool for candidates will be essential as much of the workforce transitions to this style of engagement.



86% OF PROFESSIONAL FREELANCERS
CHOOSE FREELANCING - Field Nation



TRANSFORMING THE WORKFORCE

LEE HECHT HARRISON

Lee Hecht Harrison has the expertise to guide organizations through **strategic workforce transformation**. With **AI driven services including internal talent redeploy, outplacement and change management program**, LHH will guide companies to be most effective in the current tight labor market.

LHH has the capability to identify talented candidates through their powerful AI platform reaching of all levels and industries. Retaining and engaging talent is done through career development and coaching of both employees and leadership.

Employers can leverage Lee Hecht Harrison's industry insight to optimize their workforce, developing leaders be a consultative partner to best suit business needs.

“ The alignment between organizational talent needs and an individual's career goals can be a potent force that not only prepares your organization to meet the challenge of business transformation, but also boosts engagement, retention and productivity. ”

– MELANIE STAVE SVP, TALENT DEVELOPMENT PRACTICE LEADER, LHH

Thank you

Pontoon Solutions 2019
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