decide,

THE 2021 DIGITAL Acceleration

How to Bridge the Tech Skills Gap

What the IT and Software Job Market Looks Like in Houston

- What Skills Are in Demand
- What's Next for Your Career
- Who is Hiring
- Why 1 in 4 IT people will switch Jobs in 2021

ABOUT THIS E-BOOK

At Decide Consulting we collect a lot of data for our own market intelligence. We pull data from the **Bureau of Labor Statistics**, job board surveys, public APIs, our own surveys, and technical social media. Much of that data is used in this book. It paints a picture of the current state of the information technology and software **job market**, where it is going and what to expect.

For IT and Software Workers, this guide will give you understanding about:

- What skills are in demand
- Ways to get those skills
- Companies that are expected to be in growth mode
- How Digital Transformations will affect the Job Market
- What to expect as we emerge into the Post-Pandemic economy

For IT Employers, this guide will help you with:

- Understanding how technology can help you grow revenue
- Knowing how to attract the top technical talent
- What the top technical skills will be in the **Post-Pandemic** economy



HOW MANY PEOPLE WORK IN IT AND SOFTWARE IN THE US*?

January	2019	5,139,000	February	2020	5,672,000
February	2019	5,392,000	March	2020	5,653,000
March	2019	5,237,000	April	2020	5,735,000
April	2019	5,175,000	May	2020	5,763,000
May	2019	5,308,000	June	2020	5,990,000
June	2019	5,443,000	July	2020	5,856,000
July	2019	5,578,000	August	2020	5,533,000
August	2019	5,562,000	September	2020	5,209,000
September	2019	5,421,000	October	2020	5,351,000
October	2019	5,423,000	November	2020	5,223,000
November	2019	5,259,000	December	2020	5,614,000
December	2019	5,262,000	January	2021	5,692,000
January	2020	5,632,000	February	2021	5,870,000

Even with job losses from the pandemic, there are still 217,000 more people working in IT AND SOFTWARE in the last year and 633,000 more in the last 2 years. That is a 12.1% Gain in TWO YEARS.

Every month the Bureau of Labor Statistics publishes employment numbers.
Each month Decide digs into the BLS numbers a bit more and pulls out the data relating to Information Technology and Software. We create a monthly report based on this data. While the monthly IT and software jobs reported each month is based on the BLS statistical modeling, it does provide an accurate reflection to the direction of job gains.

IT AND SOFTWARE JOBS POSTED IN HOUSTON



At Decide Consulting, we pull all the jobs posted on well-known job boards. These include jobs posted by recruiting firms, consulting companies and origin companies. We define an origin company as any company NOT in the business of recruiting or providing information technology services. Think of an origin company as Exxon or Chase.



There is some seasonality to the job posting cycle, but it's not complicated. The rate of job posting slows down in June and July when many people are on vacation. Waiting for the CFO to come back from Cancun to sign off on the budget is a regular occurrence.

For the same reason, December is another slow month, while April and October tend to be the busiest months for job postings. Our pre-COVID expectation was to see over 1300 jobs posted each week in April. Instead, this was the number we saw posted over the entire month.

When COVID first came on the scene in early 2020, job postings and hiring took a nosedive and stayed down for a while. Job postings for IT and software positions have now surpassed their pre-COVID levels.

The number of IT and software job postings in Houston for January 2021 are at 111% of pre-COVID levels. Companies are hiring again with a vengeance. This is a clear sign companies are actively progressing on their 2021 Digital Transformation strategies. and hiring took a nosedive. Even before the first COVID case in Houston, companies tapped the breaks on bringing on new people. "There was a lot of uncertainty in the market. We saw the shutdowns in Asia and wondered if it could happen here." says David Moise, President of Decide Consulting.

"Job postings for software and IT people are a clear indicator how companies feel about investing in information technology. April was the worst point in 2020. The job postings were 25% of normal levels. We broke the thousand jobs posted a week level in the late summer, but as COVID cases went up, jobs went down."

"Depending on the time of year, we see as high as 1600-1700 jobs posted a week for IT and software people. We have been waiting for this moment. Companies are hiring IT and software people more than pre-COVID levels. With the number of companies moving to Texas, we expect fierce competition for technical talent. Google just announced they are opening a Houston office. Everyone is staffing up now."

When COVID first hit the news cycle in 2020, job postings



The greatest danger in times of turbulence is not the turbulence; it is to act with yesterday's logic.

– Peter Drucker

BREAKOUT OF HOUSTON POSTED IT AND SOFTWARE JOBS





Most consumers don't mind hearing from brands as long as it is a solution, where we are not trying to sell something, but we are trying to solve something.

> - Kelly Frederickson CEO of MullenLowe

Top Development Job Titles	Top Cloud Job Titles	
Software Engineer	AWS Developer	
.Net Developer	AWS Support Specialist	
Java Developer	Cloud Platform Engineer	
Full Stack Developer	Cloud Administrator	
Python Developer	Cloud Solution Architect	
Top Architect Job Titles	Top Data Science Job Titles	
Solutions Architect	Data Engineer	
Software Architect	Data Scientist	
Azure Architect	ETL Developer	
AWS Architect	Business Intelligence Analyst	

Big Data Architect

Machine Learning Engineer

if you dislike change, you're going to dislike irrelevance even more

– Eric Shinseki



WHAT JOBS ARE COMING -DIGITAL TRANSFORMATION



The companies that have done well during the COVID shutdown are the ones who have invested in **Digital Transformation**. What is Digital Transformation? Digital transformation can be a catch-all phrase and is often overused today. Let's nail down what it means with some examples.

On one end of the spectrum is Amazon with everything from drone deliveries and AWS powering the entire operation. On the other end is your local restaurant that offered online ordering with delivery. Both of these operations were able to remain sustainable, or even grow, during the COVID lockdown.

If you thought you heard the term 'Digital Transformation' a lot before COVID, get ready to hear it even more afterwards. Read any briefing by McKinsey, Bain, or Gartner and you'll see the importance they assign to digital transformation.

What does this mean for the everyday technology professional? Focus on jobs that have any of these as part of their skills package:



These job descriptions will include technical skills such as:

- AWS, Azure, GCP
- Python, R, PyTorch, Scala, Django
- C#, .NET Core, RESTful API
- Tensorflow, ML.NET, Keras, Spacy, NLP
- Recommender systems, Time series analysis, Bayesian inference
- SQL, NoSQL, Hadoop, Spark, Hive, MapReduce
- Kubernetes, Docker, Ansible, Puppet, Jenkins

- VMWare, Hyper, PowerCLI, Onyx, ESXTOP, HCI Bench
- Palo Alto, Fortinet, Cisco, Aruba
- Git, Jira, Confluence, Stash
- Java, Spring, Kafka, JPA
- ▶ iOS, Android SDK, Kotlin, Swift
- React, Angular, Vue, Node, Svelte, Javascript
- CISSP, CEH, OSCP, CISA, GCIH
- oWASP, GWEB, GSSP





WHO WILL BE HIRING?



One sector of companies will do very well in the COVID recovery: **Big 4 Consulting** firms and their direct competitors. When the Fortune 1000 wants to expand Agile or move to DevOps, these are the companies that typically get involved.

These companies are highly selective for many roles. Any client-facing employee needs to have the "consulting gene" and an acceptable academic pedigree. They like to hire from each other, because this raises the odds of a new hire having the "consulting gene." There's still plenty of room at these companies for the tech-heavy roles.

A.T. Kearney	Ernst & Young	PA Consulting	
Burwood Group	Sikich	Alvarez & Marsal	
Kable	Avasant	Deloitte	
Accenture	Gartner	Perficient	
Capgemini	Slalom Consulting	Aon Hewitt	
KPMG	BearingPoint	DXC Technologies	
Aecus	Grant Thornton	PWC	
Cognizant	Tata Consultancy	Arthur D. Little	
McKinsey	Booz Allen Hamilton	DynTek	
Agile IT	HPE / DXC	Sapient Consulting	
Crayon Software	Vology	Avanade	
Mercer Boston Consulting Grou		Cyclotron	
AlixPartners	IBM	WGroup	

Today is the slowest rate of change we will ever experience

– Jack Uldrich

REMOTE WORK WAS TRENDING BEFORE COVID



Since 2018, IT and software recruiters have been hearing more and more candidates say they want to **work remotely**. Over the last few years, it was not uncommon for an IT worker to ONLY consider remote options for their next assignment. Although IT workers have been requesting remote work for longer than that, it was really beginning to pick up steam in 2018 – 2019.

If you're a **Python/Hadoop developer** or a **DevOps engineer**, you're in **high demand**. It's not uncommon to hear from multiple recruiters every week. Switch your LinkedIn profile to **"open to new opportunities"** and you'll hear from even more recruiters. Pre-COVID, the unemployment rate for IT and software workers was hovering around 2%.

Heading into the Post-Pandemic world, these same in-demand workers had all done at least one remote assignment... and liked it. Can you blame them? They still accomplished the same goals and objectives—yet got more time with their families and didn't have to sit in traffic or step onto a plane.



Regardless, recruiters still struggled to explain to employers why they should consider changing their **come-to-the-office job** to a **remote one**. The employers were concerned about opening the **work-from-home floodgates**. Productivity was a concern. But that **Python developer** was in such high demand that she just had to wait for one potential employer to change their mind. It always happened.

In the **Post-Pandemic economy**, the work-from-home model has fully arrived. We see study after study saying how worker productivity has increased. Candidates and employers should be better matched moving forward.



I don't think we will ever go sit in a doctor's waiting room when we're sick again. We will use telemedicine. The technology that's available will change health care, will change education, will change a lot of things. And I think 5G is going to fuel that.

Tami Erwin – CEO of Verizon

SOFTWARE AND IT JOBS WILL DOUBLE IN 10 YEARS



In 2017, We made a bold statement: Software and IT jobs in the U.S. will double in 10 years. Three years later, we are ahead of pace. While Covid-19 slowed the pace, it did not derail the technology job growth. I am still confident we will see jobs double from the original date. I am also confident we will see IT and software jobs double from now in 10 years. The same reasons apply, and we have now added a few more that will accelerate things.

Each month, my company compiles an economic report based on the Bureau of Labor Statistics data. There were just under 4.7 million people working in IT and software in May 2017. Three years later in June of 2020, we had nearly 6 million. That is 100,000 jobs over the pace needed to double in 10 years.

EVEN WITH COVID-19

In normal times, the unemployment rate for IT and software workers averages 1.5 points lower than the national unemployment rate. When the U.S. unemployment rate was hovering around 4%, IT and software people saw theirs **hover around 2.5%**. Since Covid-19 began, the unemployment rate for IT and software people had its yearly high at **4.3%**. The November 2020 rate was **2.4%**. The IT/software segment has flipped back and forth with legal to have the lowest unemployment rate in the country.



There are two common ideas from recruiters across the country about who in IT lost their jobs — IT managers and people on a contract. Individuals with hands-on technical skills had much greater job security in 2020.

2021 WILL BE A BOOM YEAR

It is hard to read any **technology magazine** or **McKinsey report** that does not make a reference to digital transformation. When the C-suites are inundated with the same piece of advice, they do move in the same direction. A big message from 2020 to the C-suites in America was to embrace digital transformation or get left behind. But how is this going to play out to network engineers and software developers?

I believe big consulting firms are going to have a good year. They will be asked to bid on several DT projects. They need to hire hands-on technical people to work on these projects. Not every company feels the need to bring in Deloitte or Accenture. This does not mean they are going to ignore their own DT projects. Demand for people to do all the digital transformation work is going to be high.

What are the key skills for digital transformation projects? Agile, API programming, cybersecurity, cloud-related skills, DevOps, UI/UX/CX, IoT, big data, data science and ML/AI. In other words, many of the same skills that people already have are listed here, but they're used in slightly different ways.



ALL THE ORIGINAL REASONS IT JOBS WILL DOUBLE

Consider one sliver of the IT landscape — IoT devices. **IDC says** we will have 80 billion IoT devices by 2025. We have close to **5.8 enterprise IoT endpoints in 2020**. For every IoT device out there, we need to do the following:

- Write the embedded code.
- Secure and authenticate the devices.
- Write the API the device calls.
- Secure and authenticate the API.
- Build the network to carry stream data.
- Store the data in a database.
- Set up the servers and the cloud to house these databases.
- Employ a data scientist to make sense of the data.
- Use AI/ML to assist the data scientist.
- Implement multiple user interfaces to have the data make sense.

IoT devices tend to stream data, not send occasional updates. There is an incredible amount of work to be done to accommodate the additional devices coming in the next five years. If that seems like a lot to do, we still have all the work related to machine learning, 5G, mobilizing apps, big data and new projects with low-code/no-code. Then there is all the regular programming and network things we need to do.

HOW DOES THIS AFFECT MY COMPANY?

The competition for existing top technical workers will increase. Posting an ad on a job board is not going to be enough to get experienced people. Companies will need to market and recruit for technical talent differently and more aggressively.

Where are the people to fill these jobs going to come from? Colleges

and universities are creating new graduates in the hundreds, while businesses are demanding in the thousands. Bootcamps, online certifications and continuing education programs will be a big source of education for the new talent. Companies should consider a pipeline of these individuals. Consider reaching out to a local coding boot camp or a university extension that trains people interested in cybersecurity. Share with them your long-term plans for hiring and the technologies you use. Smart companies can get these programs to train potential employees in the technology they use.

It is a very good time to start a career in software development or information technology. The doors are open for more people. When companies are building plans for how to find talent, you want to be in that talent pool.



HOW BIG IS THE HOUSTON IT AND SOFTWARE MARKET?



From our January 2021 data, there are just over **123,000** individuals in the Houston metro area that work in IT and software. This makes up 3.3% of the Houston metro area workforce.

Nationwide, the IT and software make up about 3.0% of the workforce. Most IT and Software jobs are in metro areas, so Houston's tech population will exceed that.

Here is how Houston's IT and Software market breaks out by Skills



OTHER INTERESTING HOUSTON IT & SOFTWARE MARKET FACTS

Total Workforce

Analyst

Female - 21.6%

Male - 78.4%

Male - 62.8%

Female - 37.2%

Infrastructure

Female - 11.3%

Male - 88.7%

- Average Job Tenure 46 Months
- Went to a Texas University 33,285
- Went to a University Overseas 19,270
- Have a Graduate Degree 41,453
- Percentage of Data Science Workers with a Graduate Degree 59.7%
- Percentage of Helpdesk/Support Workers with a Graduate Degree 15.5%
- Number of Job Hoppers (last 3 jobs each less than 18 months) 18,654

We always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next ten.

- Bill Gates



FINDING AND HIRING IT AND SOFTWARE PEOPLE IS GOING TO BE HARDER

In the months prior to Covid-19, the job market for IT and software people was hot. According to the **Department of Labor Statistics**, the unemployment rate for IT people hovered near 2.3% for all of 2019. Even several months into the Covid-19 economy, the IT sector is competing with the legal profession to have the lowest unemployment rate in the country.



Prior to Covid-19, companies trying to hire top technical talent were **finding it more difficult** to do so. As we emerge from the Covid-19 economy to the recovery, it will become even more difficult to find and retain those software and IT personnel. There are several reasons why.

DIGITAL TRANSFORMATIONS

Pick up **any recent report** from Gartner, Inc., McKinsey & Company or any other top advisory group, and you are quickly **going to hear** some variant of the following statement: *Companies that have thrived during Covid-19 are the ones that invested in digital transformations. The ones that increase their investment in digital transformation first will be the first to recover.* They are correct. Most companies that can point to automation, Agile, DevOps, cybersecurity and cloud initiatives in their technology stack can also point to cost savings and efficiencies.

What exactly digital transformation means to a CIO or CTO can vary. The one constant is that whenever C-suite executives start saying "digital transformation," that translates to bringing in software developers, cloud engineers, scrum masters, QA/QC and all the other associated roles. As we move toward recovery, the topic coming from more C-suite executives will be digital transformation.

5G

The obvious thing about moving to 5G is the increased demand for telecom and infrastructure jobs. That's just the beginning. Around the country, there are mobile app product owners asking themselves, "What will our users want when their data bandwidth goes up 100X?" There is no shortage of answers. Down the hall, the data science team must plan on what to do when their data input goes up by 100X. Uber, Spotify, Instagram and thousands of other companies could not have the impact they do in a 3G world. They required the expanded bandwidth that came with 4G. 5G opens an entirely new tech ecosystem. We will use entirely new software SDKs all the way to new database tools to accommodate 5G.



ARTIFICIAL INTELLIGENCE/MACHINE LEARNING

In 2017, *The New York Times* had a story about graduates from top computer science schools, with training in artificial intelligence, receiving offers up to \$500,000. These are people with no work experience. Artificial intelligence and machine learning have yet to get a foothold in corporate America. It's coming. The best and brightest talents are positioning themselves for these high-paying jobs. This leaves a void for the technology they are not doing.

SPECIALIZATION OF SKILLS

The number of technical tools, libraries, frameworks, SDKs and languages has exploded in the last few years. Not so long ago, if a software developer had JavaScript and jQuery, they were a good candidate for many companies. Not so anymore. Now, it is JavaScript and Angular or React or Vue or Node or one of the 500-plus other frameworks out there. On top of that, the versions of each can be radically different. The same concept applies to every other specialty within IT.





Think of it like this: Just a few short years ago, if a company was looking for a .NET developer in a metaphorical cafeteria, they would have about 20 menu options and would need to match eight. Now, there are 75 options, and they need to match 25.

While there are more people working these jobs, each one is more specialized. The universe of candidates for each role gets smaller as we get more specialized.

WHERE ARE THEY COMING FROM?

If IT and software jobs are going to double, where are all these people going to come from?

Computer science schools are increasing their admissions and expanding programs. Even so, **universities are creating graduates in the hundreds while businesses are demanding in the thousands**. H1Bs have filled many roles, but that getting an H1B is more difficult than it used to be. Bootcamps, online learning and university extension programs are providing more certificates than before.

WHAT CAN A COMPANY DO?

Companies will need to look at backgrounds and educational pedigrees differently if they want the tech talent. Job openings that require a computer science degree may limit hiring options. There are many more ways for individuals to get technical skills.

Companies that are flexible in how people developed their skills will have more options. The technical skills one learns in a CS program are less relevant five years out. It matters much more how an individual continuously learns on their own.

Consider that women make up **less than 10%** of the available software developers. When there is such a demand for skills, companies need to bring in people from different backgrounds and educations if they want to get their work done.

There are many forces creating an increased demand for technical talent. The demand will only increase. How people get the skills to become the next round of talent is evolving. Regardless, today's cloud engineer or full stack developer is in the driver's seat for choosing where they work and for how much.





CAREER ADVICE TO RECENT GRADUATES



- GRAD SCHOOL If grad school was a possibility for you, now is the time to make it happen. There is no better time to be in school than when the economy is in the tank. Focus on a STEM degree and in two years your job prospects will be much better.
- Not in IT? You should consider it. IT and software will continue to have higher job growth and better pay than most other segments.

How to Get into Information Technology

- Nano Degrees Sites like Coursera and Udacity offer certificates you can complete in 3-6 months for about \$2000. You can focus on Data Science, Digital Marketing, Python and many others.
- Coding Bootcamps There are several private bootcamp locations in every major city. Iron Yard, Hack Reactor and Digital Crafts are a few well-known ones. These are immersive programs that boast high rates of employment for graduates.
- University Extensions These are immersive programs like the bootcamps, but are associated with universities like Texas, Texas A&M and Rice. It is common to see 12-24 week programs that cost around \$8500.
- Not Sure Which Direction Not sure if you should focus on -Cybersecurity or Data Science or Development. Take the FREE classes There are plenty of good options. Udacity and Coursera offer several free introductory courses. Google even allows people to take their Al course for free.



CAREER ADVICE TO

Many people are finding themselves in the job market now despite 8-12 years of experience because of COVID and/or **Oil Prices**. These individuals have some different criteria.

- Oil & Gas While Houston is relatively diversified, it is still oil and gas–centric. A lot of good talent were laid off in 2014 when prices dropped, and now there's COVID. When WTI is riding high, there are a lot of good-paying jobs. Every time an OPEC country feels like they need to make a statement, people in Houston lose their jobs. Working in IT gives one the ability to cross industries easier. This might be a time to ask yourself if you want to stay in O&G.
- How Technical are You If you have kept your hands in technology, it is a good time to focus on technology under the digital transformation umbrella – DevOps, data engineering, microservices, security, AI/ML, Azure/AWS/GCP and full stack are all good options.
- Less Technical If you've been less technically-focused, consider learning low-code and automation tools. Power Apps, Zapier, Betty Blocks and Trey.io are some good options. SMBs need to digitally transform also. These tools allow a company to do a lot of automation very quickly and cheaply. These tools are intended to be used by non-developers, but the more technically inclined will fare better with them.
- Education is Still Good Consider the same education advice we gave to new grads. If you still have 30 years left in your career, it could be a good time to invest in yourself.

There will be interruptions, and I don't know when they will occur, and I don't how deep they will occur, I do know they will occur from time to time, and I also know that we'll come out better on the other end

Warren Buffet

CAREER ADVICE TO THE EXPERIENCED



If you have **18+ years' work experience** and find yourself out of work, you have a different set of things to consider in addition to the same advice to those at mid-career.

- How Technical Are You? Someone mid-career taking a step back and learning Angular or React is one thing. Doing it after many years' experience is another. Many politicians have floated the idea of taking people who have never been technical, or not technical in the last ten years, and teaching them how to code. The market has been less than receptive of those individuals.
- Use Your Strengths If you have been doing project management for several years, consider getting a certified as a Scrum Master, SAFe or PMP. If you have been an Analyst involved in release management, consider get a DevOps Leader (DOL) certification or Certified Agile Process Owner (CAPO) certification. If you have an expired MSCE, renew it and get the Data Management and Analytics portion of it. Whatever the new technology is, there will be a need to have a "grown-up in the room," and there's typically a certification to go along with that.

If You are Still Working, But Nervous - Volunteer for that new technology project. Large companies are still doing the equivalent of 'Hello World' when it comes to AI/ML. If you have been with a company for 20 years, you have the advantage of knowing where all the data is—and which is the good data. AI/ML is useless without the proper datasets to learn from.

Have Multiple Versions of Your Resume – Have a version that emphasizes your project management experience. Another that emphasizes a specific technology. Maybe a third that focuses on vertical experience. When you interview, you already cater your answers to the job you're applying for. Why not do the same with your resume?

Life doesn't get easier or more forgiving, we get stronger and more resilient. Steve Maraboli



1 IN 4 PLAN TO SWITCH JOBS POST-PANDEMIC



According to Prudential's latest **Pulse of the American Worker Survey**, 26% of US workers plan to look for a job at a different company once the pandemic has subsided. While white-collar workers, think IT and software, will be eager to move around.

High-skilled technology workers with plenty of opportunities are the hardest to replace. This massive reshuffling also will create major headaches for employers. Millennials plan on leaving in even higher numbers (34%). Millennials make up the largest age group of the IT and software workforce.

Of those planning to leave their current job, 80% are concerned about career growth, and nearly 75% say the pandemic made them rethink their skill sets. "If there's one thing that keeps me up at night, it's the talent flight risk," said Prudential Vice Chair Rob Falzon.

Now that the pandemic's economic threat is easing up, business leaders "need to get back to looking more intently at our talent and ensuring we are giving them opportunities even in a remote environment, or we're going to lose them," Falzon said.



High-performing workers are the most concerned about career advancement in their current jobs, and they no longer feel geographically tied to local employers since remote work has become common.

Worker burnout will also contribute to the "talent shuffle," as workers put in more hours remotely, take less time off, juggle child care duties and deal with general pandemic stress. Some workers may believe they need to change jobs to get a better grip on work-life balance or find a place where they feel more connected.

Nearly half of employees surveyed by Prudential said they feel disconnected to their companies after a year of working remotely. They are missing the benefits of interacting with people outside their teams and getting "face time" with higher-ups in the office. The "culture decay" will lead people to be more likely to hop to a new employer.







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