



ETA NEWSLETTER

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Y2Q (Years to Quantum)

“Quantum technologies are difficult to understand, but that will not stop the disruption this set of emerging technologies will bring in the next few years!”
 - Kevin Coleman

WHAT IS Y2Q?

Y2Q stands for "Year to Quantum", which is the year when quantum computers are expected to be powerful enough to break current encryption standards, that protects our digital systems.



<https://nyweekly.com/tech/what-is-y2q/>

Quantum computers that could break current encryption methods, known as cryptographically relevant quantum computers (CRQCs)—may not exist for another 10 to 20 years, according to some experts. The largest quantum computer currently developed only has a small fraction of the necessary qubits for a CRQC. The inherent ability to represent information in diverse forms opens up the potential for automated information manipulation.

IMPLICATIONS OF Y2Q

The implications of Y2Q are far-reaching and could have a significant impact on our society. The organization remains vulnerable to hackers and stolen data.

Some specific examples of implications include -

- a) Financial institutions could be hacked and billions of dollars could be stolen.
- b) Governments could be attacked and sensitive information could be leaked.
- c) The global economy (\$50 billion) could be at risk.
- d) Research data could be compromised, leading to delays in scientific progress.
- e) Quantum computers could disrupt critical infrastructure, such as power grids, transportation systems, and communication networks.
- f) Personal devices could be hacked, risking sensitive data such as financial information .

CHRONICLES OF Y2Q

Y2Q is an explicit reference to Y2K, the computer bug that was feared to cause a global computer meltdown as we entered the year 2000. The Y2K bug was a major concern in the late 1990s. However, in the end, it turned out to be much less of a problem than anticipated. There were some minor disruptions, but nothing on the scale that had been feared. A lot of work was done to fix the problem. Governments, businesses, and organizations around the world spent billions of dollars to update their computer systems. The Y2K bug was a major wake-up call for the world. It showed how vulnerable our computer systems are to date-related errors. Y2K highlighted the importance of proactive system maintenance and revealed the potential consequences of overlooking software-related weaknesses.



<https://www.quora.com/What-was-the-Y2K-problem-and-how-was-it-solved>

PREPARATION FOR Y2Q

There are a number of things that organizations can do to prepare for Y2Q:

- Access their current security posture: This includes identifying the systems and data that are most at risk, as well as the current encryption standards in use.
- Start migrating to post-quantum cryptography: This is a new generation of encryption algorithms that are designed to be resistant to attack by quantum computers.
- Develop a contingency plan: This should include steps to mitigate the impact of a successful quantum attack, such as having a backup plan for data recovery.
- Develop a quantum security plan: This plan should include steps to protect data, systems, and applications from quantum attacks.

SHOCKING FACT !!!

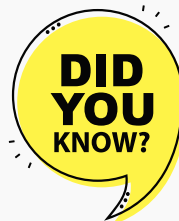


On 9th March 2022, the Cloud Security Alliance (CSA), Seattle, the world's leading organization began a countdown to April 14, 2030, the date by which CSA estimates that a quantum computer will be able to break present-day cybersecurity infrastructure. CSA's website featured a Years to Quantum (Y2Q) countdown clock to serve as a reminder of the threat's imminence and the need to find and implement new solutions.

3 Ways for Security Researchers to fight with Threat :

1. **Post Quantum Cryptography(PQC)**: The best way to protect data is to use hybrid way of encryption method.
2. **Quantum Key Distribution (QKD)** have the advantage of the laws of physics to distribute cryptographic keys more securely between two parties.
3. **MultiParty Computation (MPC)** give allowance to two or more parties to compute a function while keeping their inputs secret.

- The anticlimactic outcome of the "millennium bug" was in part due to pre-emptive measures fuelled by government spending to avoid calamity. According to BlackBerry, the U.S. spent upwards of \$100 billion in the preface of Y2K.
- The most recent **Facebook security breach**, involving the personal and browser data of 30 million users, exemplifies the risks inherent in such exchanges and the lack of immunity for anyone involved.



IMPACT ON INDUSTRIES

Y2Q could have a major impact on a wide range of industries, including:

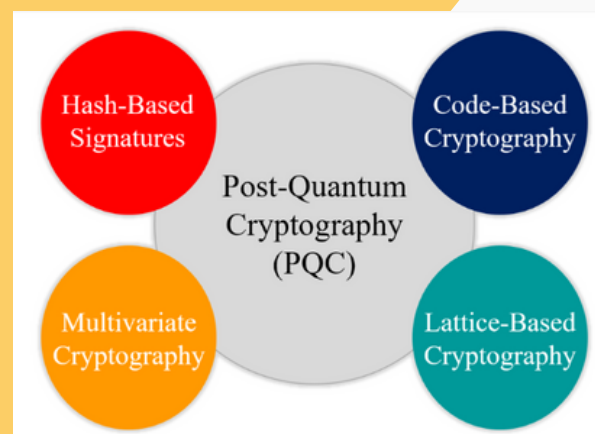
- Finance
- Pharmaceutical
- Material Science
- Cybersecurity
- Supply Chain
- Artificial Intelligence
- Weather Forecasting
- Aerospace

SECURITY:

Y2Q is a serious threat to the security of our networks and data, as it will be able to decrypt transmissions that are currently considered safe.

Ways to Fight With Threat :

- Using Quantum-Safe Cryptography
- Securing the supply Chain
- Educating Employees



Ways to secure data under PQC

<https://www.google.com/search?q=PQC+SECURITY&sca=>

RISKS IN Y2Q

The risks of Y2Q are complex and far-reaching.

Risks in Y2Q includes:

- 1)Financial fraud: Quantum computers could be used to break into financial systems and steal money.
- 2)Cyberattacks: Quantum computers could launch cyberattacks on critical infrastructure, such as power grids and communication networks.
- 3)Data breaches: Quantum computers could be used to decrypt sensitive data, such as personal information and intellectual property.
- 4)Espionage: Quantum computers could be used to spy on governments and businesses.
- 5)Weaponization: Quantum computers could be used to develop new weapons, such as quantum-enhanced nuclear weapons.

Y2Q can also have negative consequences such as disruption to the global economy, loss of trust in online systems, increased government surveillance.



<https://circle.cloudsecurityalliance.org/community-home1/digestviewer/viewthread?MessageKey=9b1a6831-ea8c-4c9f-ab2f-583442de7098&CommunityKey=1852507a-d005-4624-9ef7-a469e73ace07&bm=9b1a6831-ea8c-4c9f-ab2f-583442de7098>

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BE

1

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9.38 CGPI

2

Riddhesh Vanjara
9.35 CGPI

3

Harsh Dodiya
9.34 CGPI

TE

HEARTLY CONGRATULATIONS!!!

1

Vijay Patil
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2

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8.92 SGPI

3

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8.77 SGPI

SE

1

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9.09 SGPI

2

Rashmi Mote
8.57 SGPI

3

Kaushal Wadekar
8.32 SGPI

ALUMINI TALK



Dheeraj Singh Bisht

Let's have a look into the career journey of our Alumni (Batch 2018),

Working as Wipro Consultant, Salesforce Certified Developer who has previous experience as Business Technology Analyst at Deloitte, India .

-Interviewed by Shreya Darde (BE).

1) Can you share how was your work profile as a Business Technology Analyst?

Business Technology Analyst is responsible for analyzing and optimizing the technology systems used by a business. This involves working closely with both the business and technology teams to identify areas for improvement and develop strategies to increase efficiency and effectiveness. Work profile may vary from organization to organization for a business technology analyst but my responsibilities include gathering and analyzing data and requirements, developing sustainable strategies including different technology and infrastructure, collaborating with business, development, and DevOps teams to ensure alignment and integration which meets the business standard and goals.

2) Tell us about your experiences in college and your key learnings in the four years of Engineering?

College was a transformative experience for me as it provides a unique opportunity to learn new skills, explore different fields of study, and develop meaningful relationships with peers and mentors. Some of the key learnings from an engineering program include Problem-solving skills: Engineers are trained to identify and solve complex problems using a combination of analytical, critical thinking, and creative skills. Adaptability and resilience: Engineering projects can be challenging and require persistence and adaptability to overcome obstacles and find creative solutions. Collaboration and teamwork: Engineering projects often require collaboration and teamwork, which can help students develop strong communication, leadership, and interpersonal skills.

3) If you were given a choice to go back and change anything in your journey, what would you like to change?

While it's natural to have some regrets or wish that we had made different choices in the past, it's important to remember that our experiences and decisions shape who we are today. Without our past experiences, we wouldn't have the knowledge, skills, and perspective that we have now. There is nothing I want to change or do differently in my past events because I live in my present and I am very satisfied with all the things I have. The best way to shape our future is by taking action in the present moment and making choices that align with our values and goals.

4) What has been your most challenging or rewarding academic experience so far?

The most challenging academic experiences are often those that require them to push beyond our comfort zones and tackle new and complex ideas or skills. For me, it was final year research projects that require extensive effort and dedication these experiences were difficult at the time, but it was also incredibly rewarding as I and my team secured second place in VNPS 2018.

5) What is your valuable suggestions for us as a young engineers?

Keep learning: Engineering is a constantly evolving field, and it's important to stay up-to-date with the latest trends, technologies, and best practices. Build a strong network: Networking is essential for career development in any field, and engineering is no exception. Attend industry events, join professional organizations, and connect with colleagues and mentors to build a strong network of contacts who can offer support, advice, and career opportunities. Pursue your passions and interests, and seek out opportunities that align with your goals and values.

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