Quantum Computing (IT)

Agenda for Quantum Computing

- To depict the applications and benefits of Quantum computing in different sectors
- To understand how it can accelerate our revenue and why we need to invest in quantum computing now
- To implement the idea of quantum computing in our organization
- This slide is 100% editable. Adapt it to your needs & capture your audience's attention.
- This slide is 100% editable. Adapt it to your needs & capture your audience's attention.

QUANTUM COMPUTING

Table of Contents for Quantum Computing (1/3)

Table of Contents for Quantum Computing (2/3)

Table of Contents for Quantum Computing (3/3)

Table of Contents for Quantum Computing

QUANTUM COMPUTING

01

What is Quantum Computing?

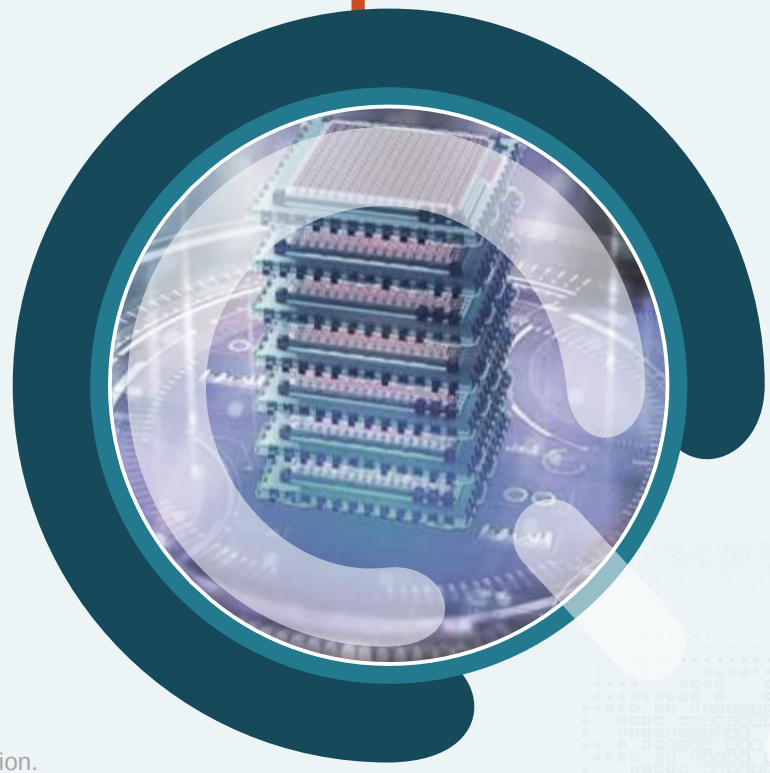
This slide depicts the meaning of quantum computing and what methods it uses for computation.

Quantum computing uses the mystical properties of quantum physics present in the universe to come up with a giant leap forward in data processing to solve complex problems faster and efficiently than classic computers can't solve

Quantum computers operate on QUBITS (Quantum Bits) which themselves are affected by quantum behavior –Superposition and Entanglement

Add Text Here

Add Text Here



Three Types of Quantum Computing

This slide represents three categories of quantum computing such as quantum annealer, analog quantum, and universal quantum, and how does each category process data.

Quantum Annealer

- Least excellent and most prohibited form of quantum computers
- Easy to build but can perform an only specific operation
- No advantage over classic computers

Application
Optimization Problems
Generality
Restrictive
Computational Power
Same as Traditional Computers

An exceptionally particular type of quantum computing with doubtful benefits over other specific types of classic computing

Analog Quantum

- Able to simulate complex problems that a classic or set of classic computers can't
- Will contain 50 to 100 qubits (an idea)

Application
Quantum Chemistry
Material Science
Optimization Problems
Sampling
Quantum Dynamics
Generality
Partial
Computational Power
High

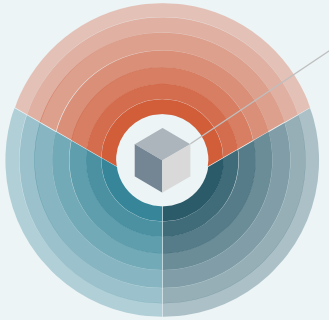
The most probable type of quantum registering that will initially show actual quantum speedup over classic computing. This could occur inside the following five years

Difficulty level

Universal Quantum

- Difficult to build but most powerful computer through complex technical challenges
- Estimate is that it will compromise of 100000 physical qubits

Application
Secure Computing Machine Learning Cryptography Quantum Chemistry Material Science Optimization Problems Sampling Quantum Dynamics
Searching
Generality
Complete With Known Speed Up
Computational Power
Very High

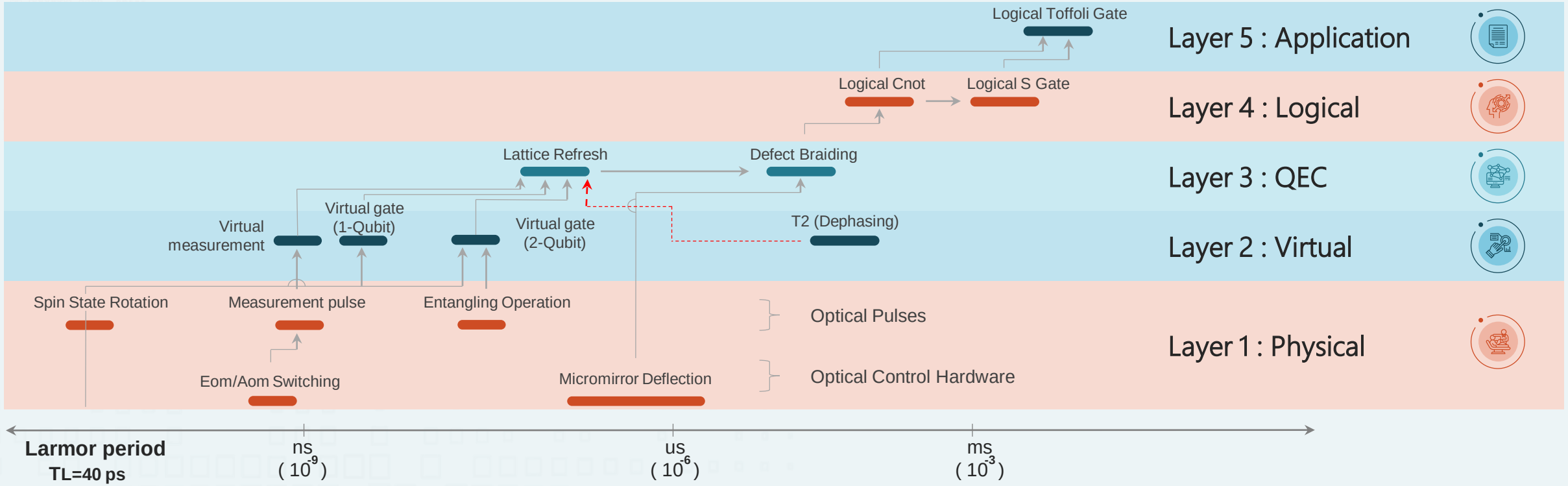


Big challenge in quantum computing that is it is exponentially faster than classic computers for various significant applications for science and organizations

Difficulty level

Layered Stack Architecture of Quantum Computer

This slide defines the layered stack architecture of quantum computing and how data goes through different gates from the application layer to the physical layer.



Key Takeaways

An architecture breaks down complex problems into manageable small sections

Layered architecture does it by abstract layers, and each layer is consists of a set of operations

Add text here

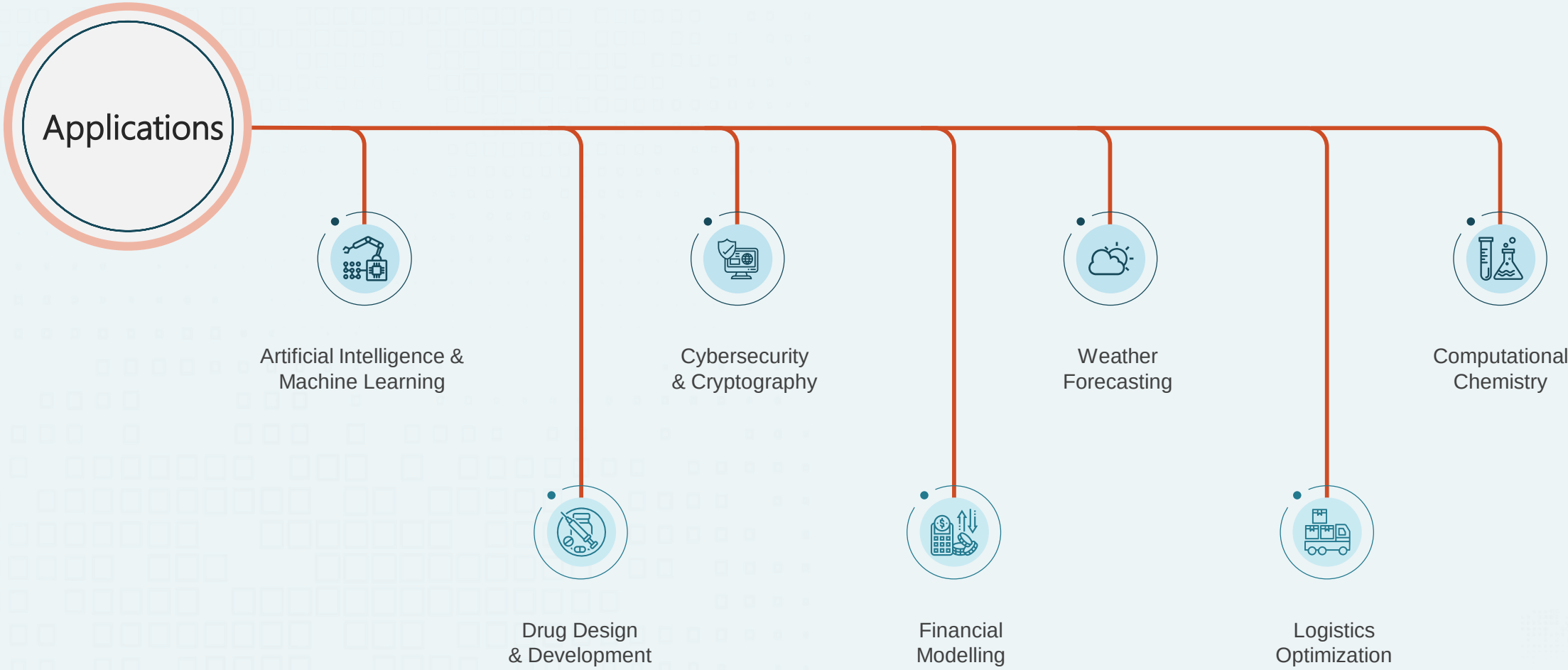
Table of Contents for Quantum Computing

QUANTUM COMPUTING

02

Applications of Quantum Computing

This slide represents Quantum computing applications in different sectors such as artificial intelligence and machine learning, drug design and development, cyber security, financial modeling, etc.



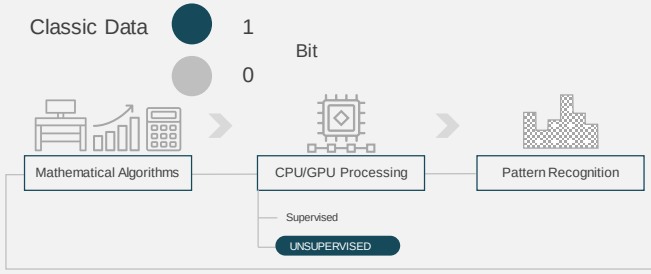
Artificial Intelligence & Machine Learning with Quantum Computing

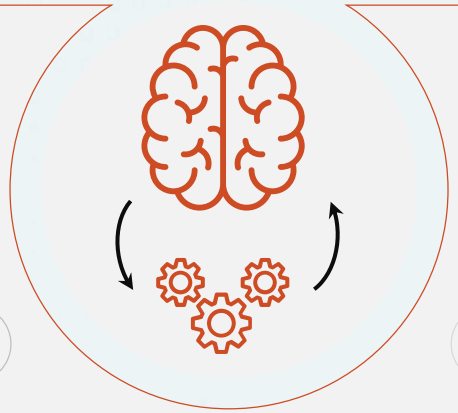
This slide depicts how quantum computing would be beneficial when using artificial intelligence and machine learning. It also shows that how data is processed in classic machine learning and quantum machine learning.

- Artificial intelligence and machine learning are growing faster, and it becomes difficult for classical computers to carry out complex problems in a short period
- Quantum computers will be helpful to execute complex problems and provide results in a concise period
- Add Text Here

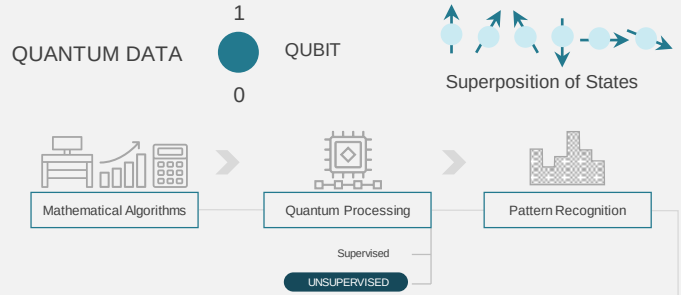
Machine Learning

Classic Machine Learning - CML

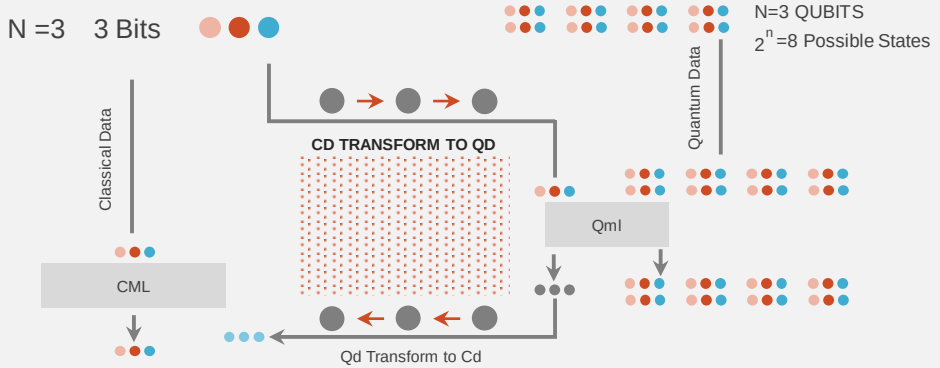




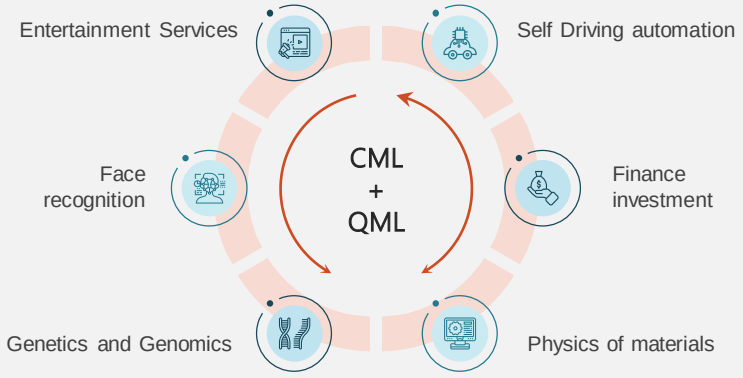
Quantum Machine Learning - QML



Processing Methods



Applications



Drug Design & Development with Quantum Computing

This slide represents drug design and development through quantum computing and how it would be time-saving and cost-saving for the medical industries.

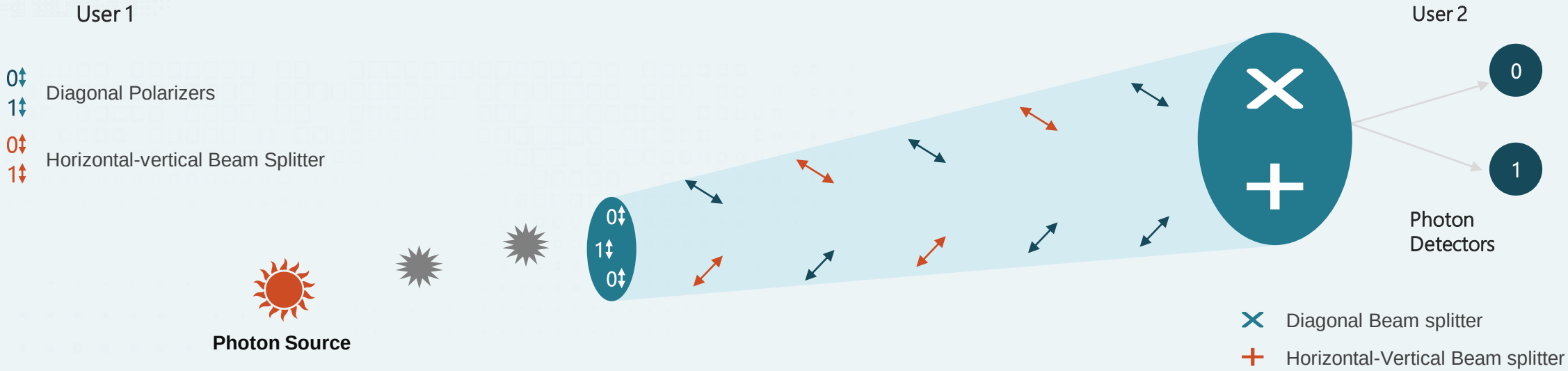
To design and develop a drug, using traditional computers is very difficult since it is a costly, time-consuming, and risky process

Quantum computing can be a powerful method of understanding the medications and their reactions on people, which will save lots of money and time for medical companies

Will allow companies to carry out more medication discoveries to find new clinical treatments for the better drug industry

Cybersecurity & Cryptography with Quantum Computing

This slide shows quantum computing in cybersecurity and cryptography and how data will be encrypted through quantum algorithms.



User1's bit sequence	1	0	0	1	0	0	1	1	0	0	0	1	0	0	
	+	X	+	+	X	X	+	+	X	+	X	X	+	+	User2's detection
	1	0	0	1	0	0	1	1	0	0	0	1	0	0	User2's detection
Sifted Key	1	-	-	1	0	0	-	1	0	0	-	1	-	0	Sifted Key

Key Takeaways

Cyber Security is the primary concern globally as the number of cyberattacks increases day by day. It is difficult for classic computers to combat these threats

Quantum computing with the combination of machine learning can help for building encryption methods known as quantum cryptography

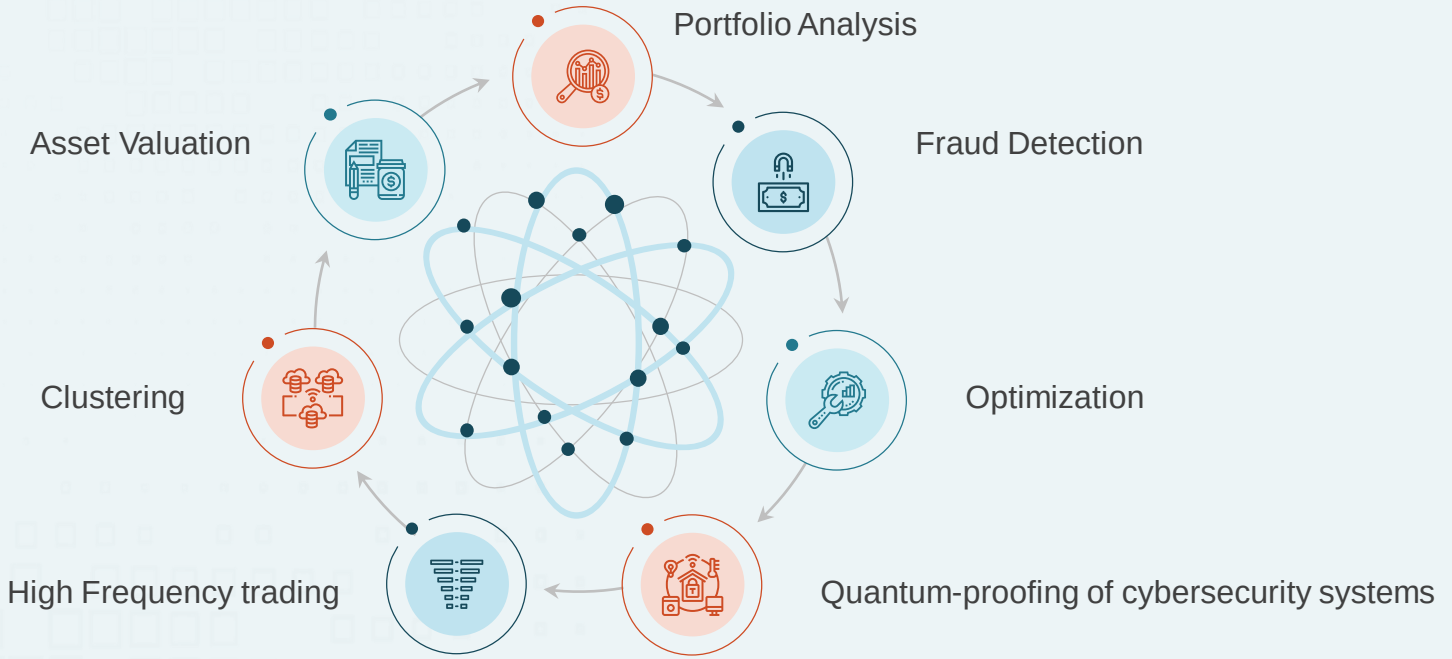
Quantum cryptography utilizes the standards of quantum mechanics to send secure messages, and dissimilar to mathematical encryption is un-hackable

Add text here

Financial Modelling with Quantum Computing

This slide represents the application of quantum computing in financial modeling, and it also depicts how current models are not sufficient for financial services.

Quantum Computing In Banking And Financial Services



Monte Carlo' simulations are used by Finance companies on classical computers to track down the correct blend for productive investments dependent on expected returns and the risk associated, which is very time consuming

Quantum technology can enhance the solution quality and save development time by performing large and complex calculations

Financial pioneers spend billions of dollars in business; even a tiny improvement in the expected return can be worthy for them

Add text here

Weather Forecasting with Quantum Computing

This slide defines how quantum computing will be helpful in weather forecasting, and scientists will be able to predict extreme weather conditions in advance.

- To analyze the weather conditions through the classic computers is time taking sometimes
- Quantum computing's ability to process a large amount of data quickly will change the weather forecast modeling and will be helpful to provide climate change information accurately and in no time
- Scientists will be able to predict extreme weather conditions accurately, and it will help to save lives
- Add text here




Sun	Mon	Tue	Wed	Thu	Fri	Sat
+25°C	+19 c°	+19 c°	+15°c	+10 c°	+8 c°	+20°C

Logistics Optimization with Quantum Computing

This slide depicts the logistic optimization through quantum computing and how it would be easy to know about traffic on a particular path in advance.

- Conventional computing is used to sync with operating models that need to continuously compute and recalculate optimal routes of traffic management, fleet activities, airport regulation, cargo and distribution, and that could seriously affect applications
- Some of these tasks are more complex for a classic computer but can perform quite efficiently with quantum computers
- Two common approaches to solve these issues are – Quantum Annealing and Universal Quantum
- Add text here

Quantum Computers

Improved speed

Stores more information

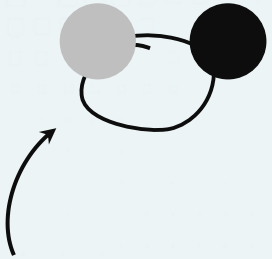
Uses less energy

- Advanced dynamic route optimization
- Maximize simultaneous packing of parcels
- Support adaptive reallocation of assets
- Enable quick testing of designs and materials for logistic use

Computational Chemistry with Quantum Computing

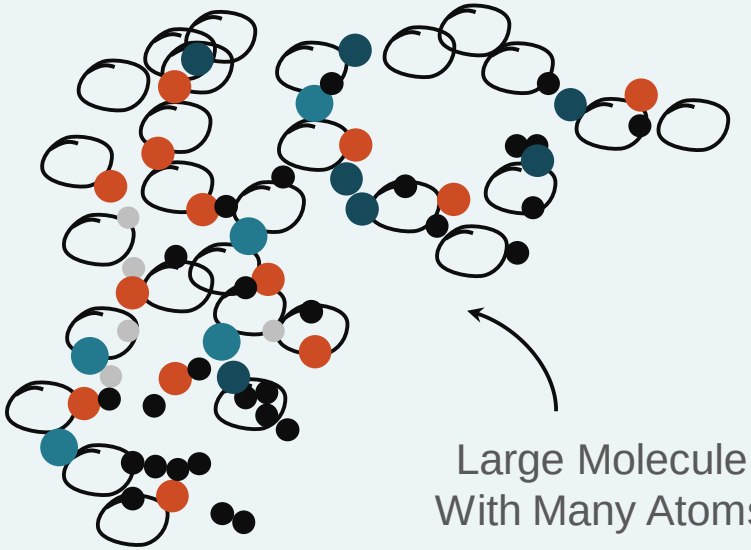
This slide represents the computation chemistry with quantum computing and how it would enhance the technology to carry out complex molecule experiments without testing on humans or animals.

Classical Computers Can Simulate



Small Molecule With A Few Atoms

Quantum Computers Could Simulate



Large Molecule
With Many Atoms

Key Takeaways

Quantity of quantum states, even in a smallest of a molecule, is tremendous, and in this manner, complex for traditional computing memory to handle that

Ability of quantum computers to focus on the presence of both 1 and 0 at the same time could give massive power to the machine to effectively map the molecules, which, thus, possibly opens opportunities for drug research

Add text here

Add text here

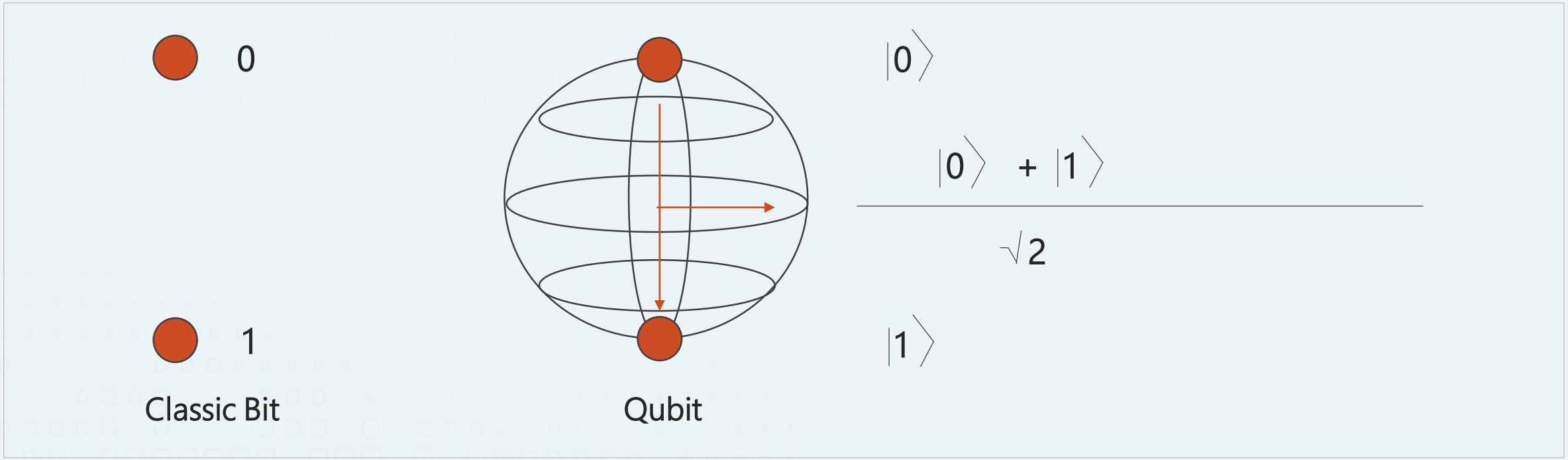
Table of Contents for Quantum Computing

QUANTUM COMPUTING

03

What are the Qubits (Quantum Bits)?

This slide depicts the meaning of qubit and how it operates differently than classic bits. It also shows how quantum bits can be in different states at a time.



Quantum computers operate on Qubits which can depict either “0” or “1” or any possible combination states

In quantum computing, data is encoded in qubits, and in classic computers, information was encoded in bits

Add text here

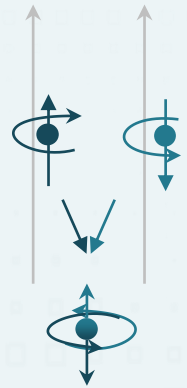
Add text here

Properties of Quantum Behavior – Superposition and Entanglement

This slide represents the superposition and entanglement of quantum behavior. It also shows how qubits can correlate with each other even if they are not physically connected.

Quantum Properties

Superposition



Existence of different states

Entanglement

Correlation of two qubits

Superposition

Unlike classic computers, quantum computers can represent either ‘0’, ‘1’ or both possible states at a time

Entanglement

Two qubits can strongly correlate with each other even if they are located light-years apart. In the quantum world, this entanglement is used to encode problems

Quantum Computing vs. Classic computing

This slide depicts the difference between quantum and classic computers based on data processing, error rate, and complexity.

Quantum Computing

- Operates with qubits that can represent 0 and 1 or both simultaneously
- Power increments dramatically with the number of qubits
- High error rates and need to be stored at ultracold temperature
- Best for complex tasks like optimization, data analysis and simulation

Vs.

Classical computing

- Operate transistors that can only depict either 0 or 1
- Power increments in 1:1 ratio with the number of transistors
- Low error rates and can perform at room temperature
- Best at performing everyday tasks

How do Quantum Computers Work? (1/2)

This slide comprises different parts that make the quantum computer to working namely super fluids, superconductors, control, superposition, and entanglement.

Super Fluids

- Super fluids are used to chill superconductors. We get these superconductors freezing – about a hundredth of a degree Celsius above supreme zero

Superconductors

- At the point when we put electrons through superconductors, they pair up into something referred to as Cooper combines that quantum tunnel through something many refer to as a Josephson intersection

Control

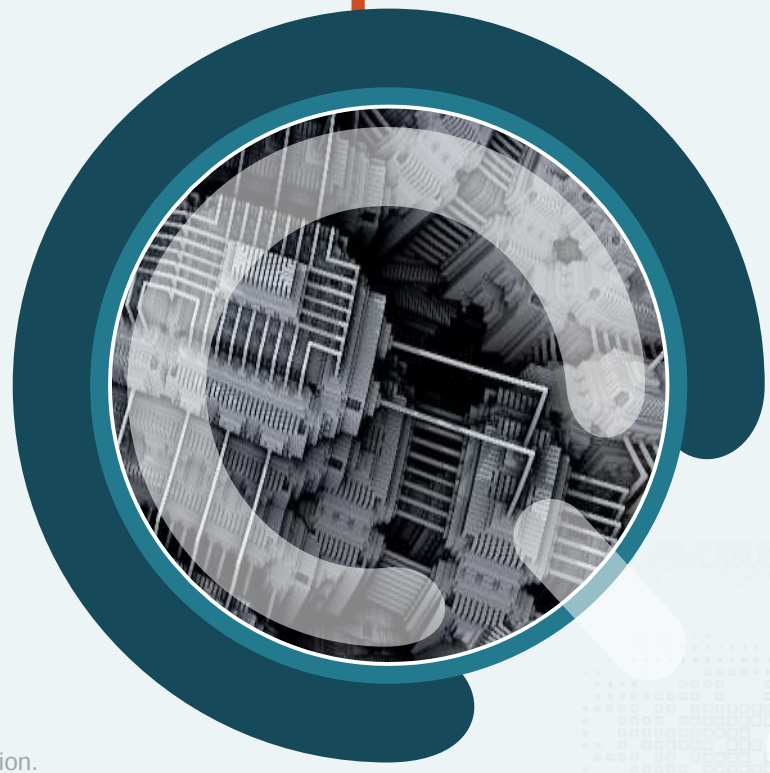
- This is a superconducting qubit. By terminating photons at the qubit, we can handle its conduct and get it to hold, change, and read out data

Superposition

- A qubit itself isn't extremely helpful. Nonetheless, by making numerous and associating them in a state called superposition, we can make immense computational spaces
- We at that point address complex issues in this space utilizing programmable gates

Entanglement

- Quantum entanglement permits qubits, which act randomly, to be related to one another
- Utilizing quantum algorithms that misuse quantum entanglement, explicit complex issues can be tackled more productively than on traditional computers



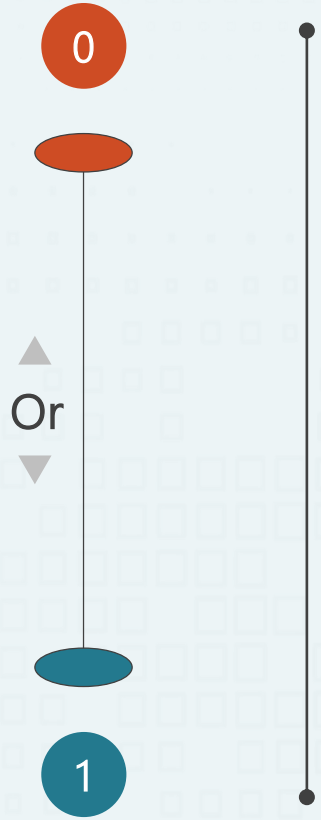
How Quantum Computer Works?(2/2)

This slide shows how quantum computers work with qubits and how it performs arithmetic operations and exponential multiplication per qubit and complex tasks quickly.

Standards of superposition permits parallelism in the computations

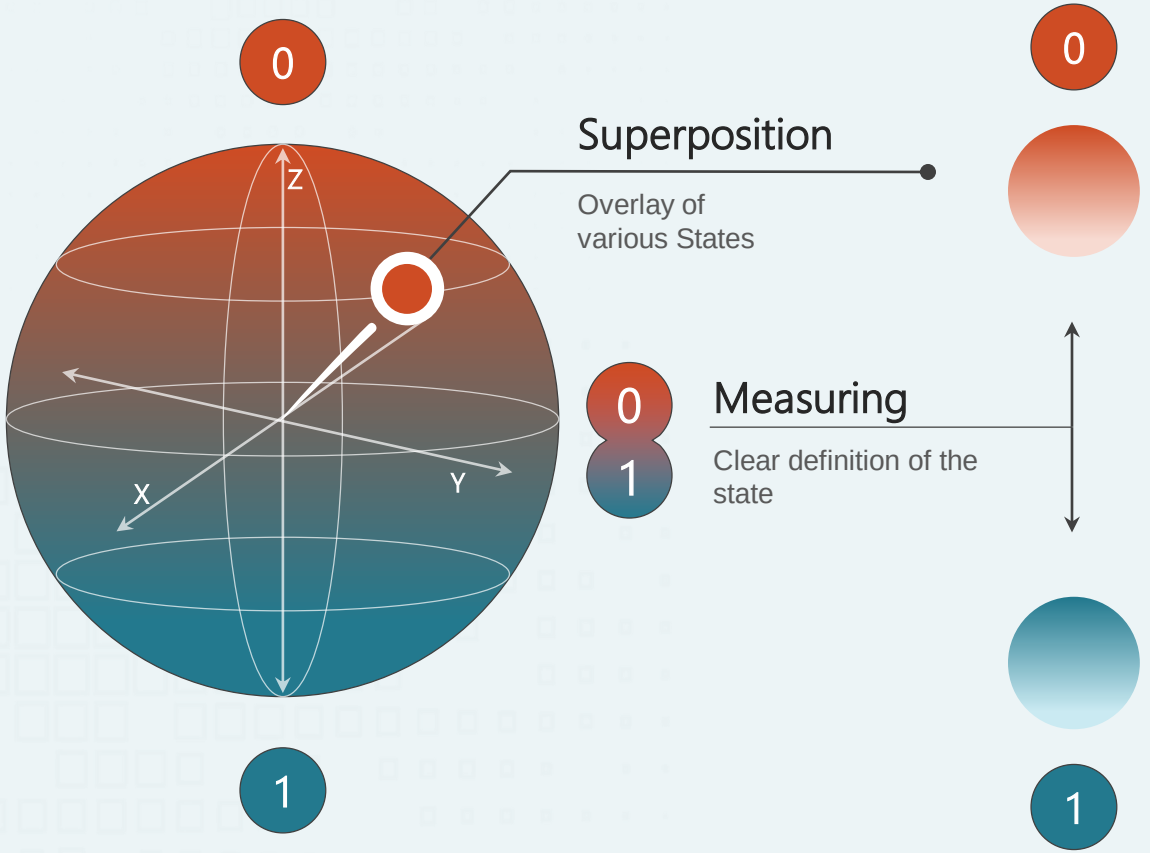
Classic Bit

Binary system



Qubit

Arbitrarily manipulable two-state Quantum system



Superposition

Overlay of various States

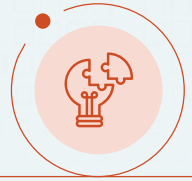
Measuring

Clear definition of the state

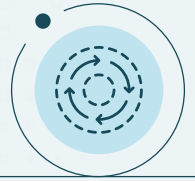
- Multiple arithmetic operations simultaneously
- Exponential multiplication per qubit
- Large amount of data is operational in reasonable time

Why do We Need Quantum Computers?

This slide represents the need for a quantum computer in today's world. It also defines that how currently used supercomputers are failed or take time to perform real complex problems.



- Supercomputers are not enough to solve complex problems
- Add Text Here

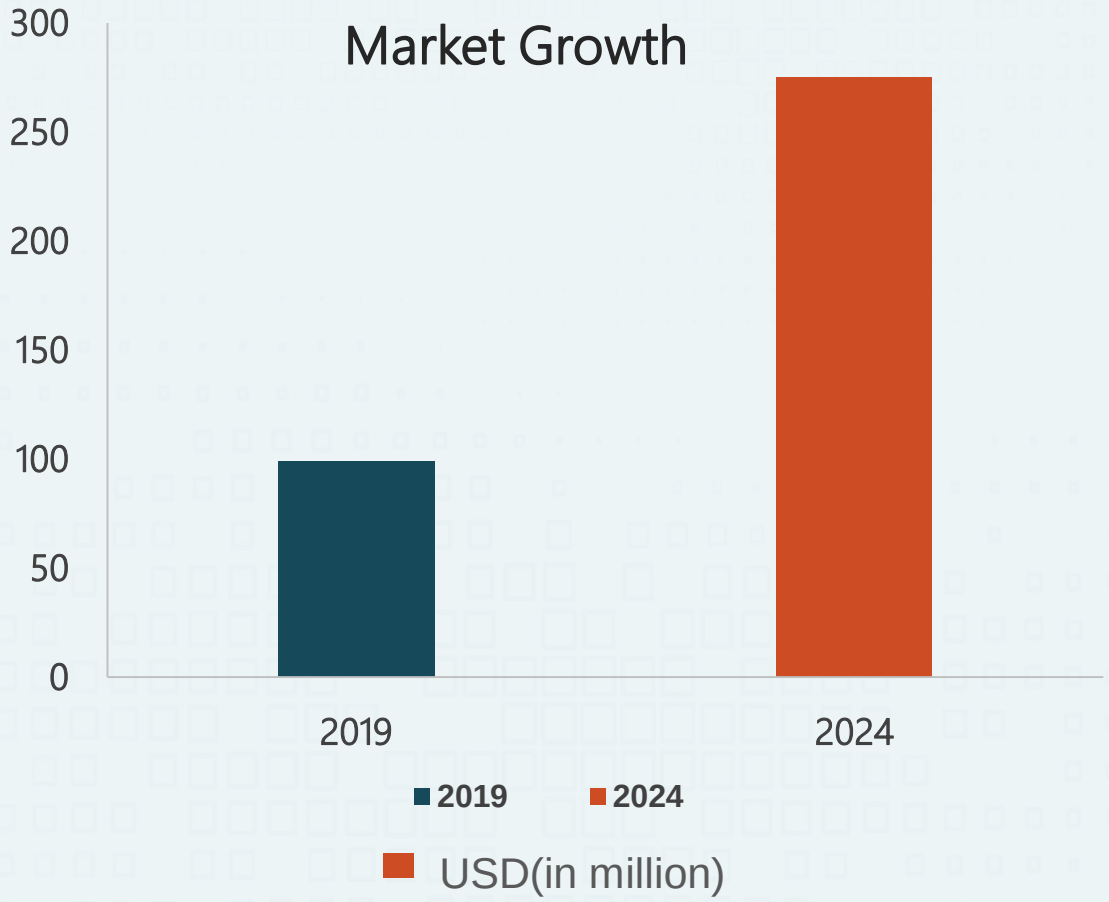


- Supercomputers need to break down every combination consistently, which can take quite a while
- Add Text Here

- Supercomputers don't have the functioning memory to hold the innumerable combinations of real-world issues
- Add Text Here

Reasons Why We Need to Invest in QC Now

This slide shows three reasons why we need to invest in QC right away; it also shows how different companies in the market are spending on QC.



Can increase the revenues of the company by 45%

Fast following approach is less effective to adopt quantum computing because of quantum computing's sheer learning curve that's why we need to invest now

To build quantum computers is a gradual process as it takes time to find suitable people to understand and implement quantum computing in business

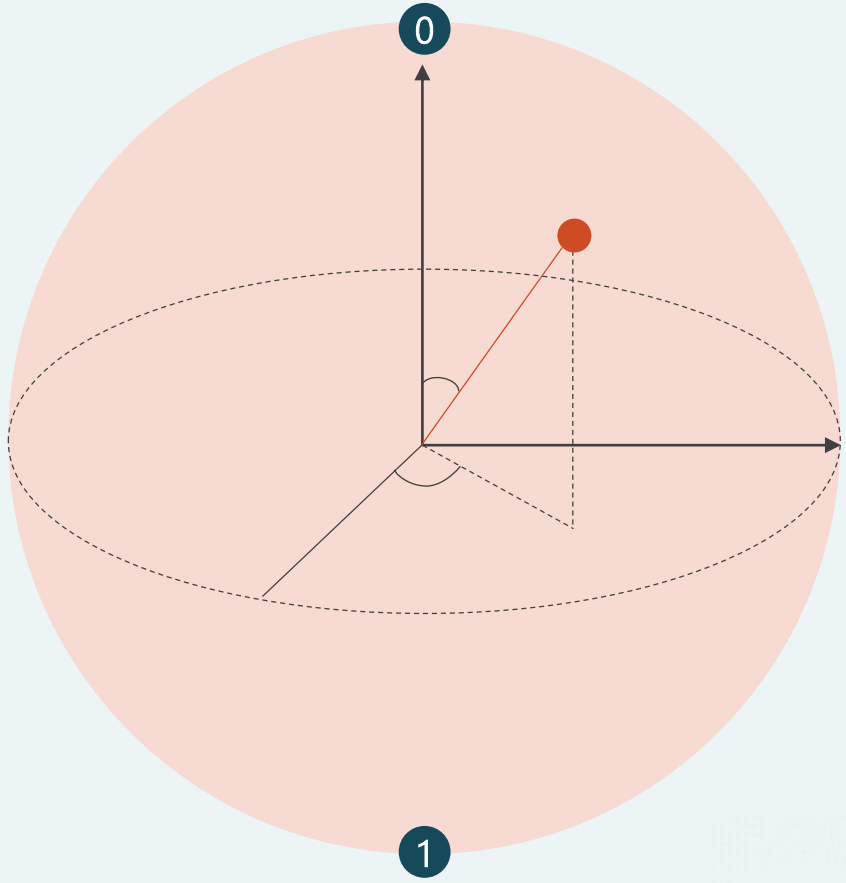
Table of Contents for Quantum Computing

04 QUANTUM COMPUTING

Key Requirements for Quantum Computing

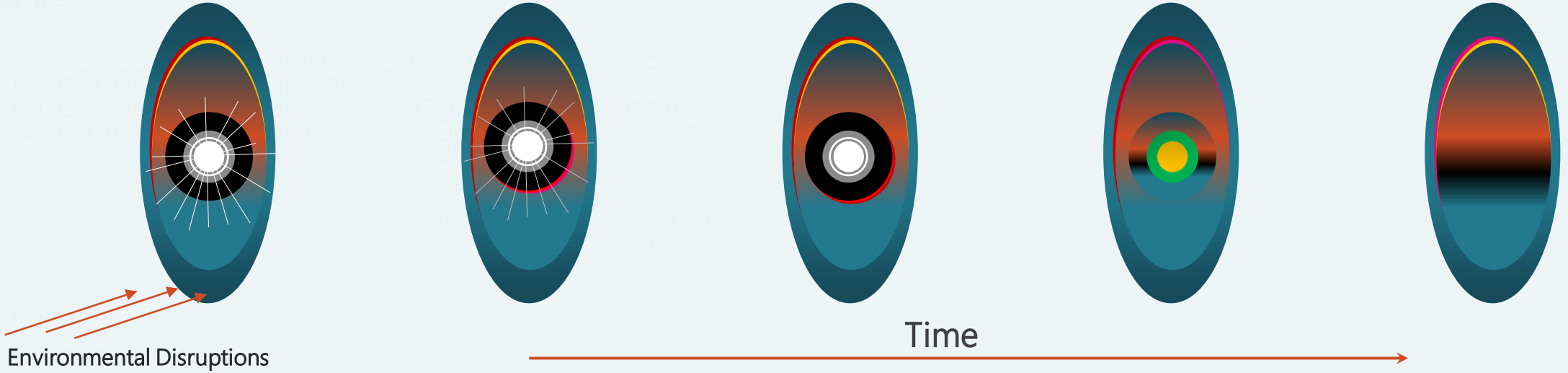
This slide depicts the critical requirements for quantum computing such as long coherence time, high scalability, universal quantum gates, efficient qubit state measurement capability, etc.

- Long Coherence Time
- High Scalability
- High Fault Tolerance and Quantum Error Correction
- Ability to Initialize Qubits
- Universal Quantum Gates
- Efficient Qubit-state Measurement Capability
- Faithful Transmission of Flying Qubits
- Add text here



Key Requirements - Long Coherence Time

This slide defines the long coherence time under essential requirements of quantum computing and how superpositions don't change when we observe them.



- Coherence time is the term over which the qubit state is viewed as not differing/changing

- How long does a quantum superposition state survive? The length of the time is called coherence time

- If there exists a positive stage connection between various qubit stages, the system is called coherent

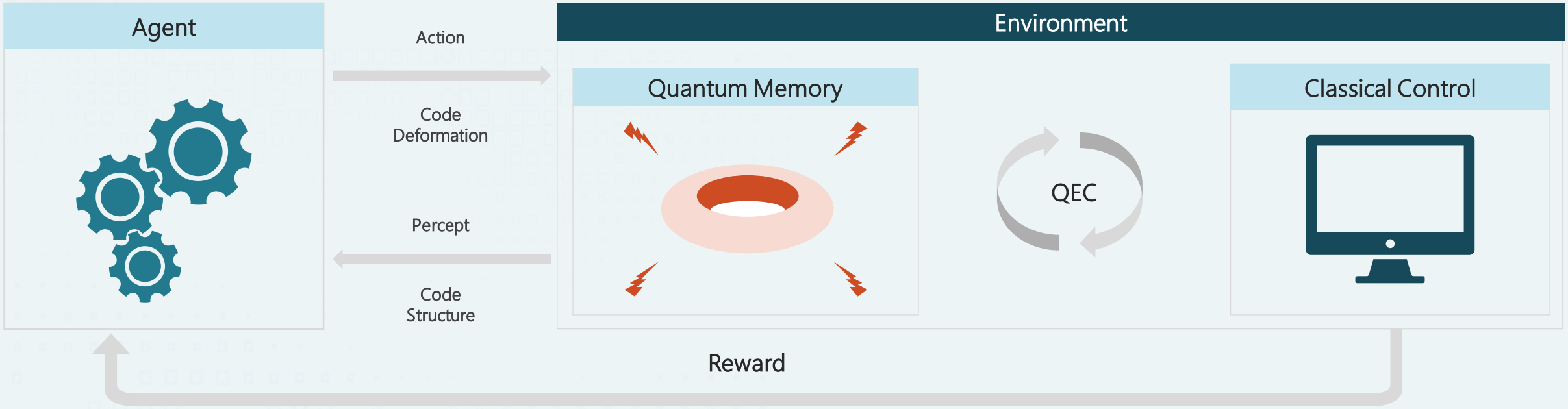
Key Requirements - High Scalability

This slide depicts the idea of high scalability in quantum computing which means that quantum computers should be able to process increased demands.

- Quantum computers should be capable work in a Hilbert space whose measurements might be developed dramatically without a remarkable expense in assets
- Ability to handle expanded processing requests
- Need to work not only on hardware but theoretical as well so that we can write practical algorithms

Key Requirements- High Fault Tolerance and Quantum Error Correction

This slide represents the role of high fault tolerance and quantum error correction in quantum computing as qubits are fragile and error-prone.



- Ability to correct an error caused by noise through error-prone resources

- QEC is utilized in quantum computing to shield quantum data from mistakes due to decoherence and another quantum noise

- Quantum error correction is complex because estimation of a quantum state generally disturbs the superpositions that they are supposed to prevent

Key Requirements- Ability to Initialize Qubits

This slide defines the ability to initialize qubits in a quantum system and how important it is to cool down a quantum framework.

Initialization alludes to the capacity to rapidly cool a quantum framework into a low entropy state

Models of quantum computing depend on playing out a certain procedure on a condition of qubit, lastly estimating/perusing out the outcomes, a methodology that is reliant upon the underlying condition of the framework

In a large portion of the cases, the approach to initialize a state is to allow the system to anneal into the ground state, and afterward, we can begin the calculation

Key Requirements- Universal Quantum Gates

This slide depicts the role of universal quantum gates in a quantum computer, and it also shows the various types of gates used in quantum systems.

01 System must have universal quantum logic gates and the large Hilbert Space accessible to run operations

02 On account of qubits, it is adequate to have a single analog qubit gate and any digital two-qubit logic operation such as controlled-NOT gate

03 Unlike many conventional gates, Quantum logic gates are reversible

Quantum Gates

Discreate Universal Gate Set

Example 1: Four – member “Standard” gate set

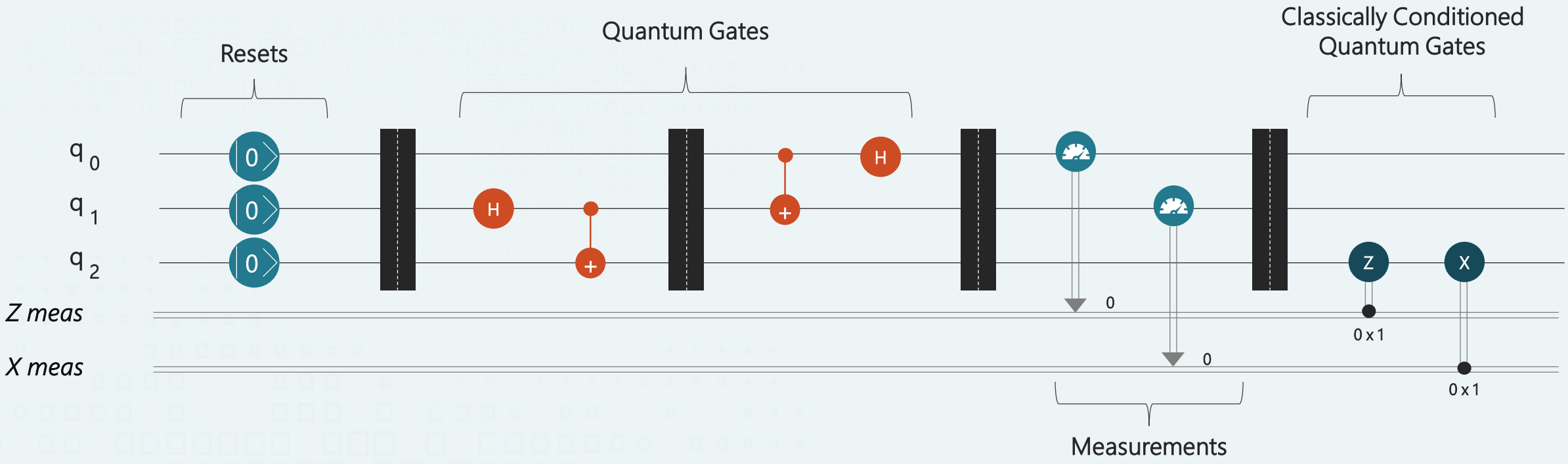
$$\begin{pmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & 1 & 0 \end{pmatrix} \quad \frac{1}{\sqrt{2}}\begin{pmatrix} 1 & 1 \\ 1 & -1 \end{pmatrix} \quad \begin{pmatrix} 1 & 0 \\ 0 & i \end{pmatrix} \quad \begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$$

CNOT **Hadamard** **Phase** $\pi/_8$ **(T) gate**

Example 2: {CNOT, Hadamard, Phase, Toffoli}

Key Requirements- Efficient Qubit-State Measurement Capability

This slide depicts that how a quantum computer should be able to measure qubit's states efficiently and how systems remain in the measured state after measurement.



Ability to rapidly decide the state of a qubit with the accuracy permitted by quantum mechanics

After this measurement, the system remains in the measured state

Further measurements always contain the same value. We can only take one bit of data from the state of a qubit

Key Requirements- Faithful Transmission of Flying Qubits

This slide represents the faithful transmission of flying qubits in quantum computers. It also shows that organizations are expecting to create quantum cryptography that will be helpful in the secure transmission of data.

When making sets of entangled qubits in some trial arrangement, usually, these qubits are stationary and can't be moved from the research lab

Quantum networks empower reliable communication by trading photonic qubits that can't be cloned

Organizations imagined creating an encryption key that two essentially classic parties share

KEY REQUIREMENTS

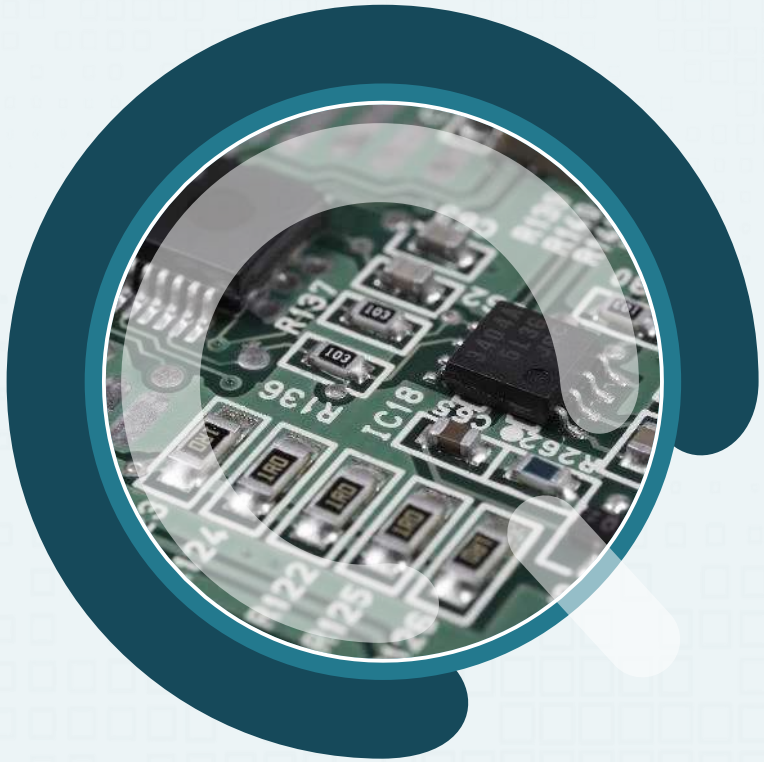
Table of Contents for Quantum Computing

QUANTUM COMPUTING

05

What is Quantum Supremacy?

This slide defines quantum supremacy and how quantum computers perform faster data processing compared to classic computers.



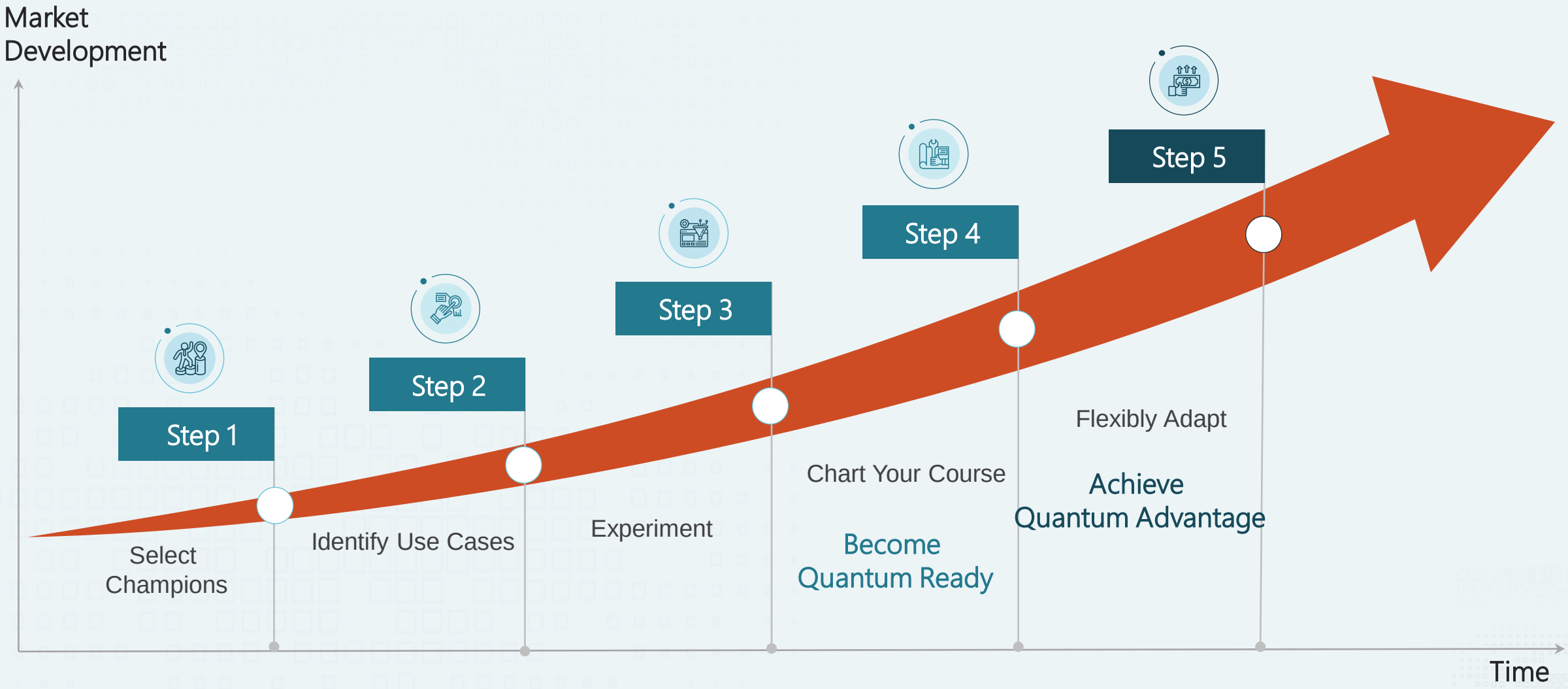
- Second in the time when quantum computer accomplish a task that a classical computer can’t because the quantum computer does it so much quicker
- Add text here

- Quantum processor required 200 seconds to carry out a computation that the world's quickest supercomputer, Summit, would have required 10,000 years to achieve
- Add text here

QUANTUM SUPREMACY

Step into Your Quantum Future with these Five Strategies (1/2)

This slide depicts the five strategies that every organization should adopt to implement quantum computing in the company successfully.



Step into Your Quantum Future with these Five Strategies (2/2)

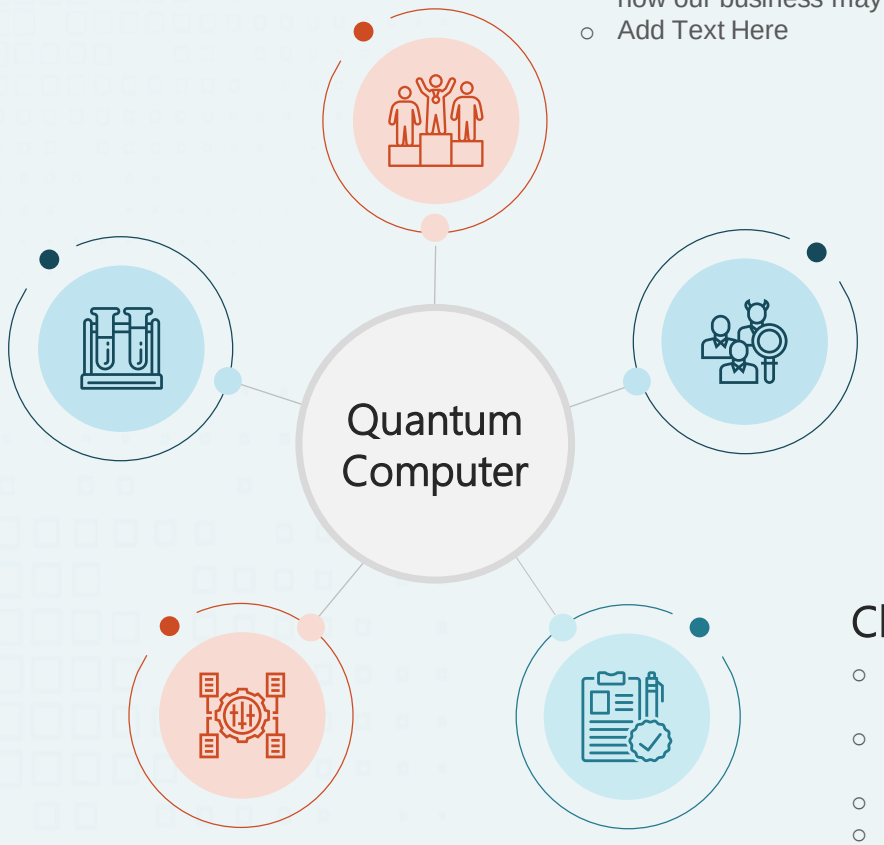
This slide represents the five strategies in detail needed to adopt for the successful implementation of quantum computing in the organization.

Select Champions

- Assign a portion of your experts as “Quantum Champions”
- Charge quantum professionals to understand quantum computing, its likely effects on our industry, how our rivals are reacting, and how our business may profit
- Add Text Here

Experiment

- Quantum experts will know how quantum computing is tackling business issues and interface with our current tools
- Quantum arrangement may not handle each business problem but quantum, so quantum champions should apply the quantum mechanics to those problems which classic computers can’t do



Identify Use Cases

- To recognize areas where we can apply Quantum computing and can do better than our rivals
- To track the progress of quantum application development to make sure when we can commercialize them
- Add Text Here

Flexibly Adapt

- To know about technologies and development toolkits that are turning into business standards
- Add Text Here
- Add text Here
- Add Text Here

Chart Quantum Course

- Need to develop a quantum figuring guide including the following practical stages
- Consider joining a developing quantum group to support your company become quantum ready faster
- Add text Here
- Add Text Here

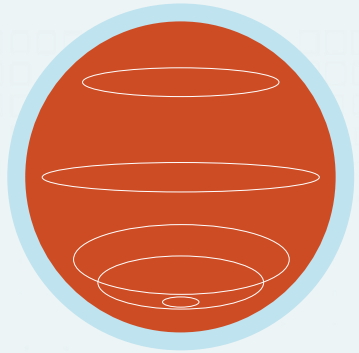
Table of Contents for Quantum Computing

QUANTUM COMPUTING

06

Why are Quantum Computers Faster than Classic Computers?

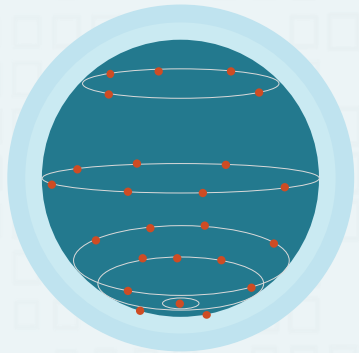
This slide depicts the mechanism of the quantum computers that made them faster than classic computers and how the problem is encoded in quantum computers.

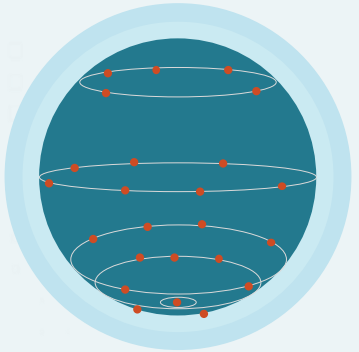


01

Activate the Spread

Machine is activated by making an equivalent superposition of every 2n state

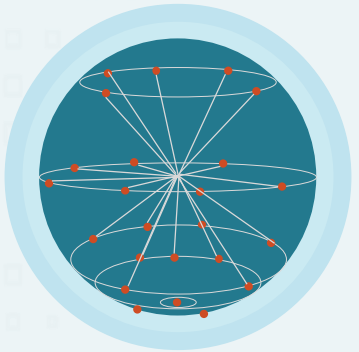


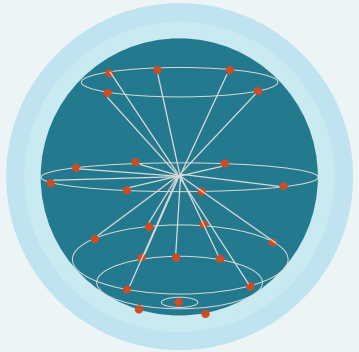


02

Encode the Problem

Task is encoded onto the framework by applying gates, which put data into the stages and amplitudes of every 2n state

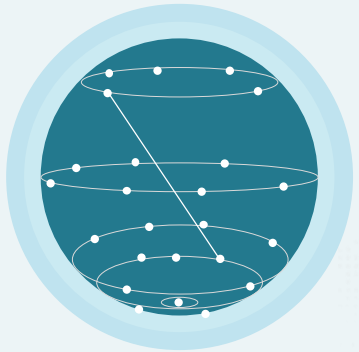




03

Unleash the power

Machine goes to an answer by utilizing the actual impedance standards to amplify the amplitude of the right solution and eliminate inaccurate answers. A few issues require emphasizing stages 2 and 3



Quantum Computing's Potential for Significant Speedup Over Classical Computers

This slide depicts the potential of quantum computers' speed compared to classic computers and how it performs operations in a short period that traditional computers take years to complete.

Types of Scaling	Time to Solve Problem				
Classical Algorithm with exponential Runtime	10 secs	2 min	330 years	3300 years	Age of the universe
Quantum Algorithm with Polynomial Runtime	1 min	2 min	10 min	11 min	~24 min

Table of Contents for Quantum Computing

QUANTUM COMPUTING

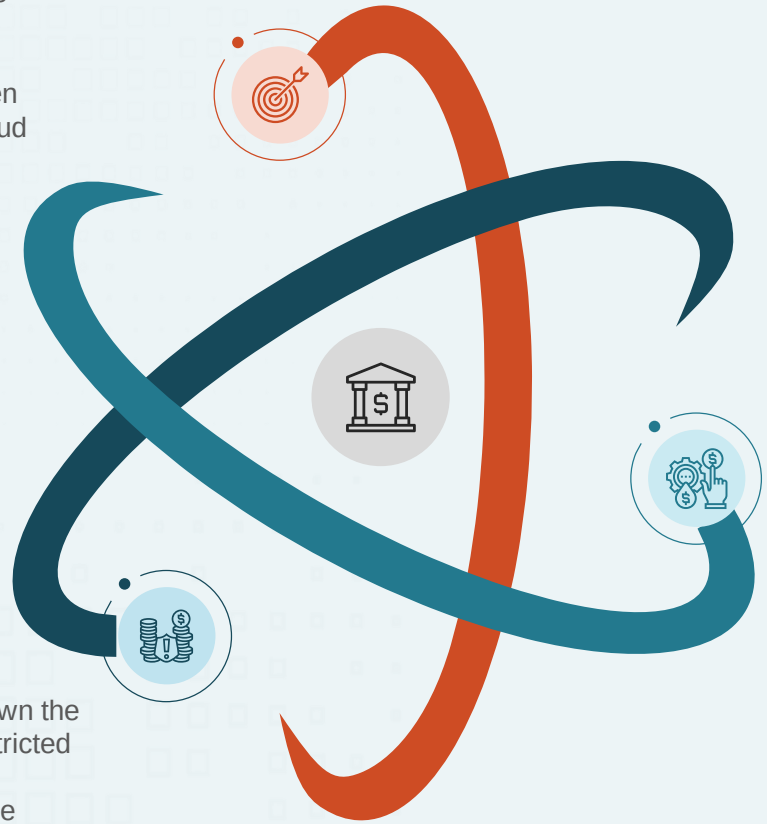
07

Quantum Computing in Banking and Financial Services

This slide represents the use of quantum computing in banking and financial services. It also shows how financial organizations would be able to predict their return after investment.

Targeting and Prediction

- 25% of small and medium-sized financial organizations lose clients because of offerings that don't focus on client expectations
- It is assessed that financial organizations are losing between USD 10 billion and 40 billion income a year because of fraud and poor information the board rehearses



Trading Optimization

- Valuation changes model for derivatives, the XVA umbrella, has significantly expanded in intricacy, presently including credit (CVA), debit (DVA), funding(FVA), capital (KVA), and margin (MVA)
- Add Text Here

Risk Profiling

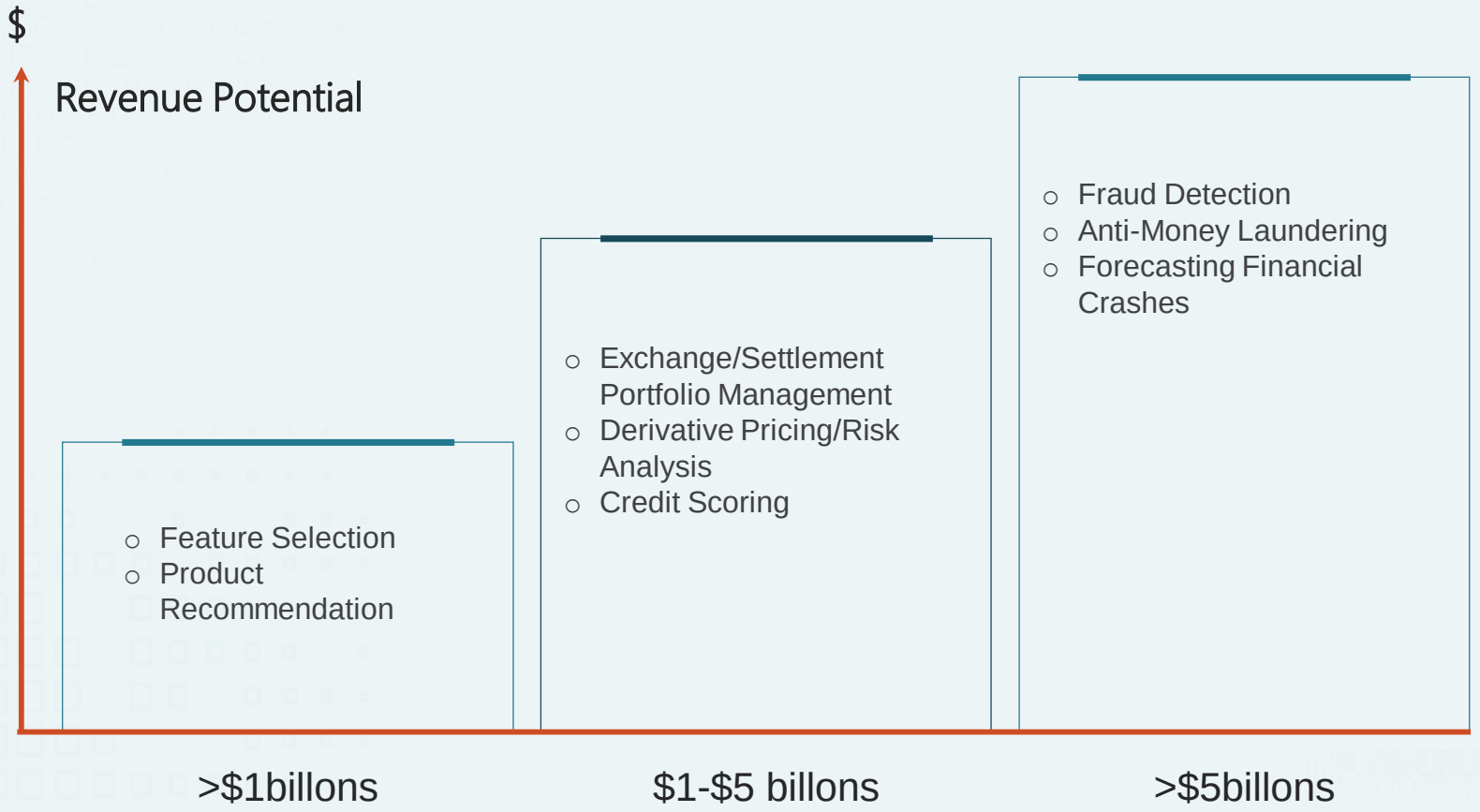
- Monte Carlo simulations—the favored strategy to break down the effect of risk and vulnerability in monetary models—are restricted by the scaling of the assessment error
- More modern risk profiling requests and rising administrative obstacles, the information processing abilities of quantum computers may accelerate risk scenario simulations with higher exactness while testing more results

Applying Emerging Quantum Technology to Financial Problems

This slide depicts that how emerging quantum technology would be able to solve financial problems. It also shows the drastic change in revenue of financial organizations after implementing QC .

Key Takeaways

- Improving venture gains
- Reducing capital necessities
- Opening new venture opportunities
- Improving the distinguishing proof and the executives of hazard and consistence
- Add text here



What can Quantum Computing do to Healthcare?

This slide represents the use of quantum computers in the healthcare field and how it will benefit scientists, patients, and researchers in invention and experiment.

Supersonic Medication Plan

- Requires quite a long while to get an appropriate comprehension of the impact of one medication in blend with others
- Quantum computing can fundamentally abbreviate the time frame, as it has sufficient computational ability to envision every one of the potential results

Reaching the Period of in Silico Clinical Trials

- Simulated clinical trials are not practical with current innovation and comprehension of science – yet however their improvement would be required to have significant advantages over current in vivo trials

Sequencing and Analyzing DNA Full Speed

- Quantum computing could give a massive push to the space: quicker sequencing, just as a more exhaustive and quicker examination of the whole genome, will be conceivable with it
- Quantum computing could take out the mystery from genomics and genetics for guaranteeing better wellbeing for everybody

Reaching the Ideal Decision Support Network

- Quantum computers could skim through all the investigations without a moment's delay, they could discover connections and causations that the natural eye could never discover, and it may unearth findings or treatment choices that the human specialist might have never sorted out by themselves

Making Patients Truly the Point of Care

- In 2013, the measure of advanced information included 4.4 zettabytes; by 2020, the digital universe – the data we make and duplicate every year – will arrive at 44 trillion gigabytes
- Quantum computers will sort out these gigantic information measures, including pieces and bits of health data. In addition, surveillance of patients through associated sensory systems may deliver actual medical clinics futile and genuinely make patients the mark of care

How will Quantum Computing Help Enterprises?

This slide represents the application of quantum computing in different industries and how it will enhance their business growth, income and security from cyber attacks.

Cut Development Time for Chemicals and Pharmaceuticals with Simulations

- Researchers hoping to grow new medications and substances frequently need to look at the specific design of a molecule to decide its properties and see how it may react with different atoms
- Quantum computers will help them to create such medications and researches that will improve healthcare and will discover new drugs as well
- Add Text Here
- Add Text Here

Solve Optimization Problems with Unprecedented Speed

- Across each industry, numerous complex business issues include a large group of variables, and they need to run programs or algorithms continuously with each variable to find the best solution
- Very time consuming and expensive process, but as quantum computers can work with many variables simultaneously in a short period so, It would be a cost-cutting and time-saving approach for the companies

Accelerate Autonomous Vehicles with Quantum AI

- Quantum computers along with AI could help to develop self-driven cars
- With this combination, engineers, could feed in a car system to make crucial decisions like when to speed up or when to take a turn
- Add Text Here
- Add Text Here

Transform Cybersecurity

- Quantum computers can easily break down the encryption that classical computers use since they can perform many calculations simultaneously
- Information secured with Quantum cryptography is hard to decode and can save digital data and assets from cyber attacks

When Quantum Computing Meets Cloud Computing

This slide represents the blend of quantum computing with cloud computing and how organizations that cannot own quantum hardware will run quantum algorithms on quantum mechanics by cloud computing.

Key Takeaways

- Cloud-based quantum computing enables researchers and companies to execute their quantum algorithms on real quantum computers through the cloud as quantum computers are expensive
- Cloud-based quantum computing acquiring its speed in the tech market
- Simulators, emulators, and quantum processors are easily accessible through cloud-based quantum computing
- Add text here

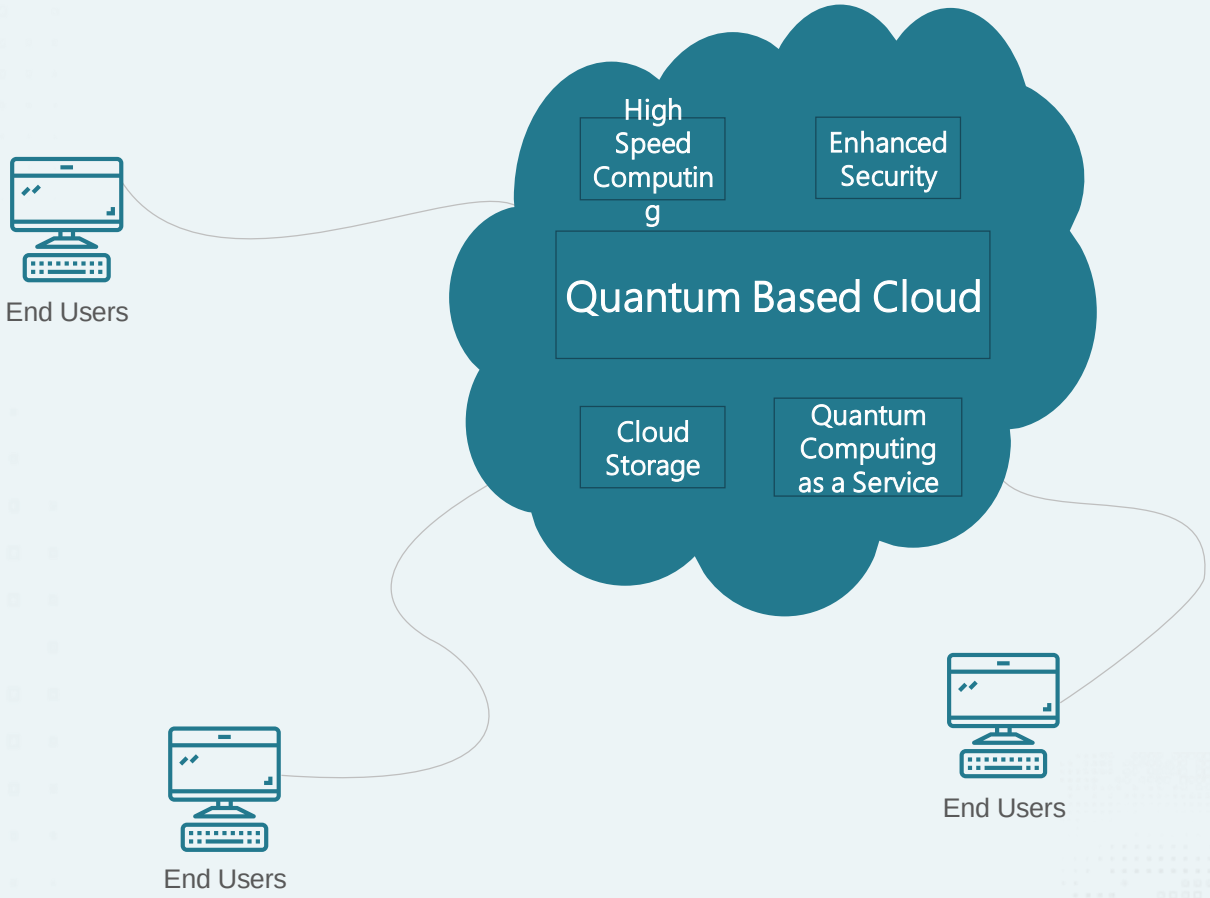


Table of Contents for Quantum Computing

QUANTUM COMPUTING

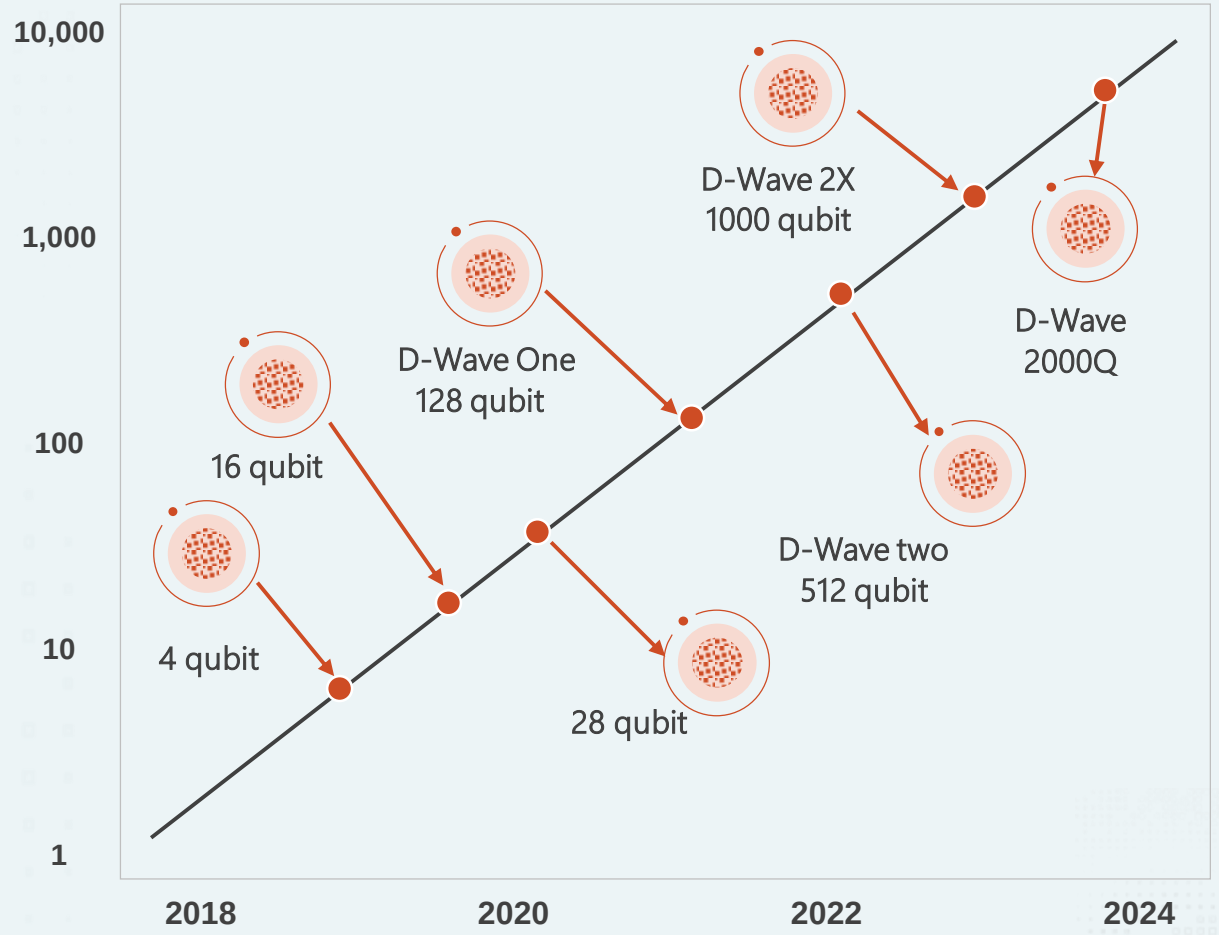
08

Future of Quantum Hardware

This slide depicts the quantum hardware in the future and how we will be able to build hardware that will operate on thousands of qubits simultaneously.

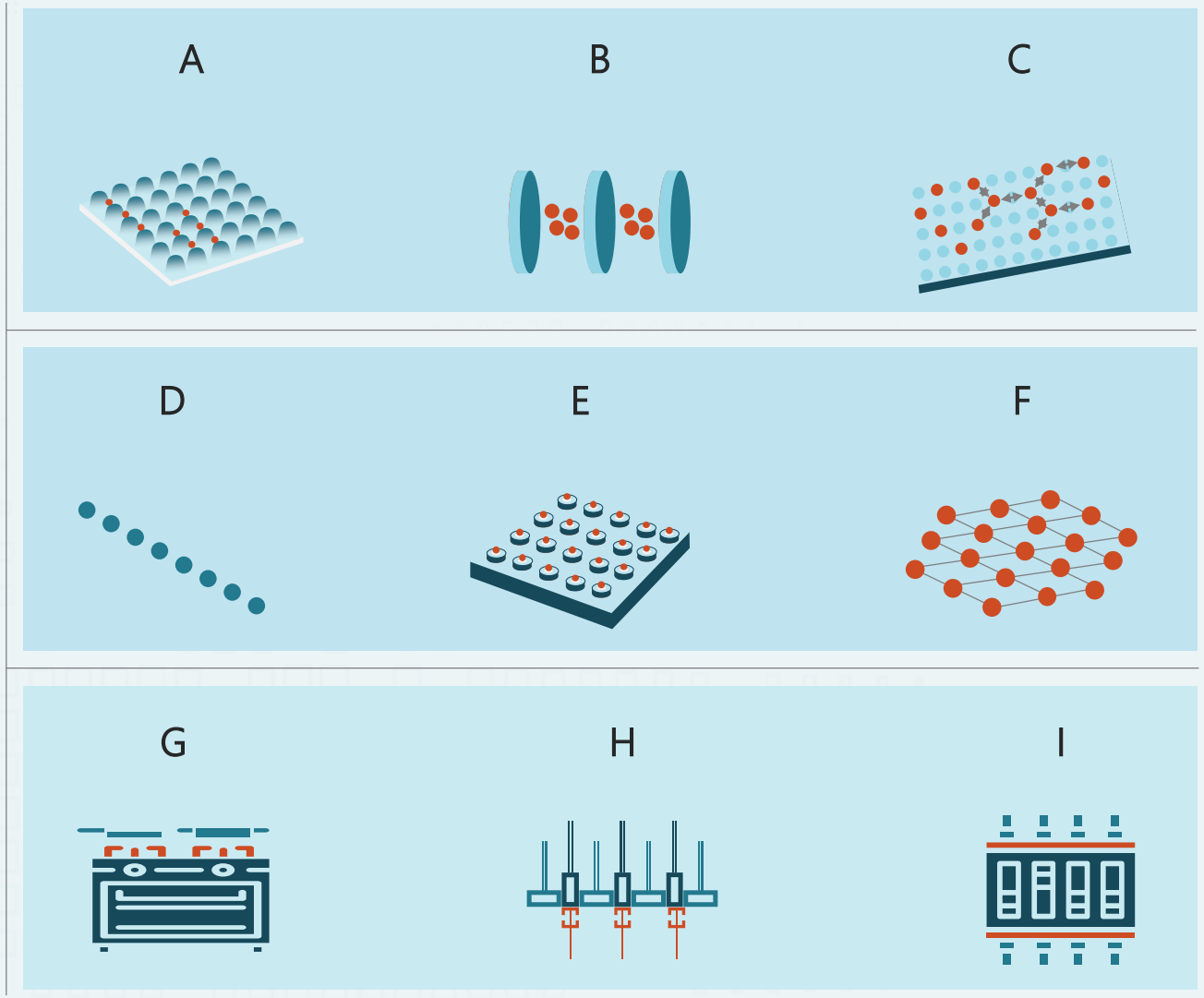
Key Takeaways

- To build devices that can efficiently perform mathematics calculations through the quantum computing techniques
- Quantity of qubits on D-Wave's QPUs has been consistently multiplying every year
- This pattern is relied upon to proceed
- To make QPUs with quantities of qubits up to around 10,000, the current manufacture interaction can basically be scaled to add more qubits similarly that they are arranged presently
- Add Text Here



Quantum Simulators for Complex Problems

This slide depicts the use of quantum simulators and how data is processed through atoms, ions, and electrons. It also represents how qubits are arranged in the form of arrays in simulators.



- Quantum test systems are an exceptional kind of quantum PCs that utilizes qubits to test complex interactions between particles
- Quantum simulators are intended to demonstrate explicit quantum measures, while quantum PCs are universally applicable to any ideal computation
- Quantum simulators comprised of small arrays of quantum bits that can each address various conditions of data all at once
- 2D arrays of qubits in addition to controls could be utilized to simulate different models in dense matter physics
- Add Text Here

Table of Contents for Quantum Computing

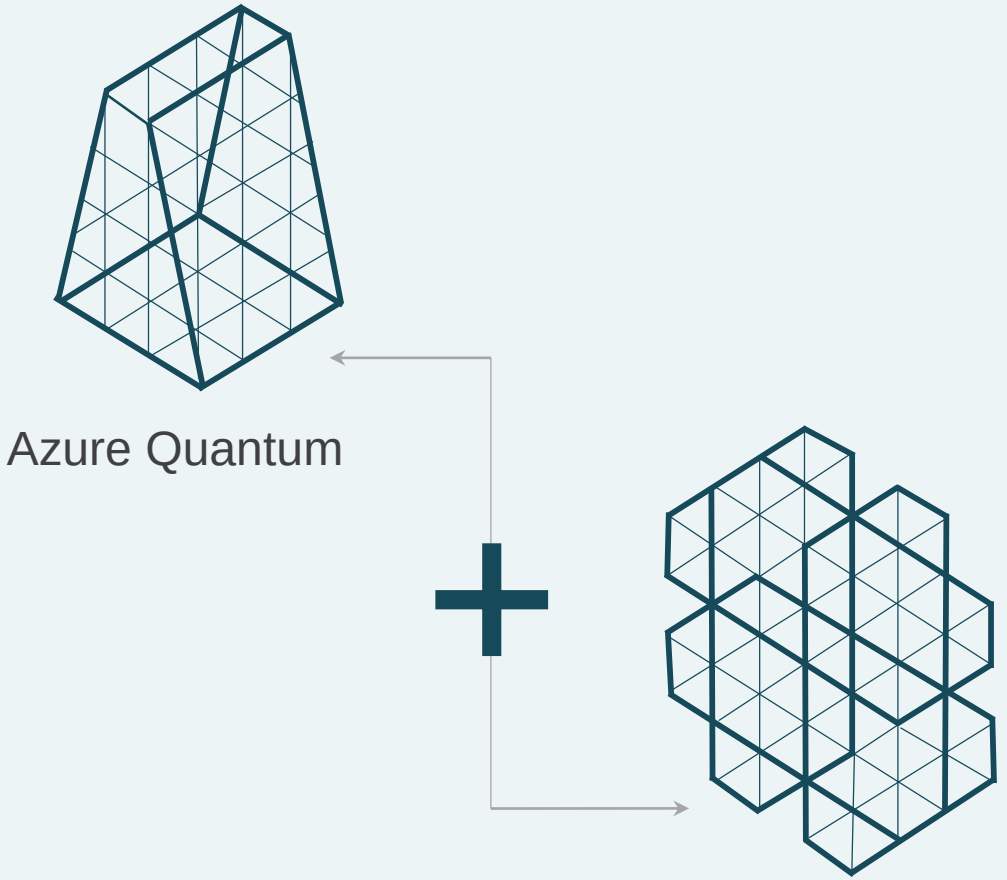
QUANTUM COMPUTING

09

Quantum Tools - Microsoft Quantum Development Kit

This slide shows Microsoft's quantum development kit, one of the quantum tools available over the web for public users to run quantum algorithms.

- 50 open-source quantum computing simulators available
- Microsoft has delivered a review variant of their Quantum Development Kit that seems to supercede their prior LIQUi|> programming
- Includes a recently named quantum programming language called Q#, joining with their Visual Studio development environment, simulators that sudden spike in demand for either a local system or their incredible Azure cloud stage, and rich libraries and code tests that can be utilized as building blocks
- Add Text Here
- Add Text Here



Quantum Tools - 5 Qubit Gate-level Quantum Processor

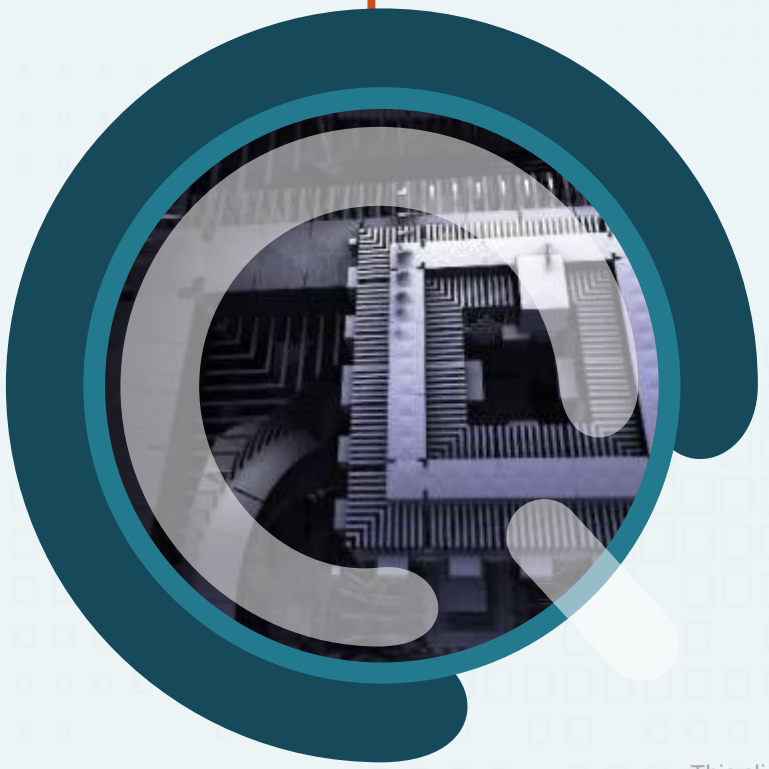
This slide represents one of the quantum tools called a 5-qubit gate level quantum processor released by IBM, which consists of 5 qubits and is available on the web.

Bus

Resonator

Control & Read-out Resonator

Qubit



IBM released an experimental 5 qubit gate-level quantum processor on the web and is permitting individuals from society to apply to get access to it

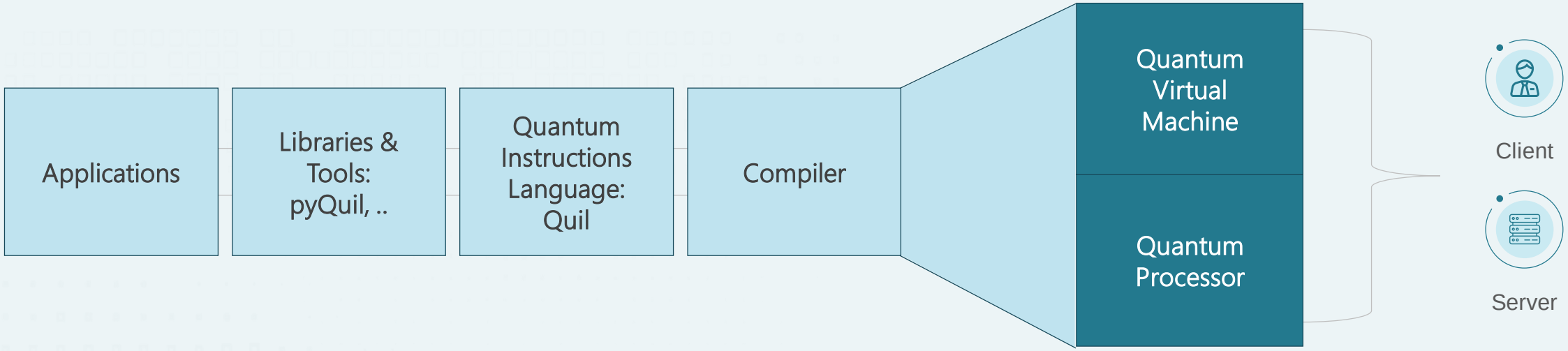
Simulator which permits one to test their configuration before running it on the real machine, last admittance to the actual device, which allows one to run their structure and view the outputs

IBM has also put a related programming API considered QISKIT that can be utilized with the IBM Quantum Experience, and one can get to it on GitHub

Add text here

Quantum Tools - Rigetti Forest Suite and Cloud Computing Services (QCS)

This slide depicts another quantum tool known as Rigetti forest suite and cloud computing services released by the Rigetti organization. It also shows how data is processed on this platform.



Key Takeaways

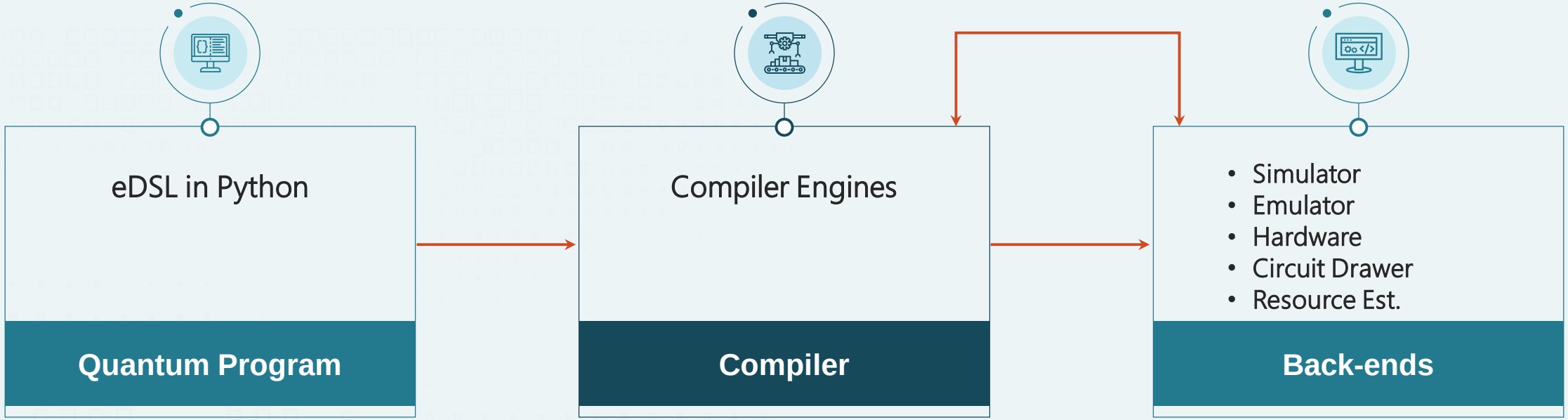
Rigetti Forest suite comprises of a quantum instruction language called Quil, an open-source Python library for development of Quil programs called pyQuil, a set of quantum programs called Grove, and a simulation environment known as QVM representing Quantum Virtual Machine

QCS gives a virtual conventional computing atmosphere that is co-situated with the Rigetti quantum equipment

Add text here

Quantum Tools – Project Q

This slide depicts another quantum tool called project Q. It also shows how anyone can execute their programs written in python through this platform as it is open source.



Key Takeaways

Project Q is an open-source programming structure for quantum processing executed in Python. It permits clients to carry out their quantum programs in Python utilizing an incredible and intuitive syntax

Add text here

Add text here

Quantum Tools – Cirq and CirqProjectQ

This slide depicts two other quantum tools, namely Cirq and cirqprjectq. It also shows which language is used to write programs or algorithms for both platforms.

Cirq

- Cirq is an open-source Python library for composing, controlling, and optimizing Noisy Intermediate Scale Quantum (NISQ) circuits and running them against quantum PCs and test systems
- As of now in an alpha delivery state and can be utilized with OpenFermion-Cirq as well
- Add Text Here
- Add Text Here

CirqProjectQ

- CirqProject Q is a port among ProjectQ and Cirq that works for two special functions -

1. ProjectQ backend that changes a ProjectQ algorithm to a cirq.Circuit
2. Can break ProjectQ standard` gates to local Xmon gates that can be utilized to simulate a Google quantum PC with ProjectQ

- Add Text Here

Table of Contents for Quantum Computing

QUANTUM COMPUTING

10

Ways Quantum Computing can Help Businesses

This slide depicts the seven ways in which quantum computing can help businesses to grow, such as cryptography, self-driven cars, medical research, aviation, etc.

Cryptography

- Quantum cryptography is much more vital for saving our digital information and assets

Self-Driving Cars

- With Quantum computing it will be possible to develop such cars that would run without drivers

Aviation

- Quantum technology could empower considerably more perplexing computers demonstrating like aeronautical situations

Medical Research

- Quantum computers can map the atoms of a molecule in different ways thus, it will help scientists in research

Data Analysis

- Quantum mechanics and quantum computers can help take care of issues such as geometric shapes behavior under topological analysis

Pattern Matching

- With quantum computers, drivers may know about the traffic routes prior 45 minutes

Forecasting

- To predict extreme weather conditions that can affect human lives

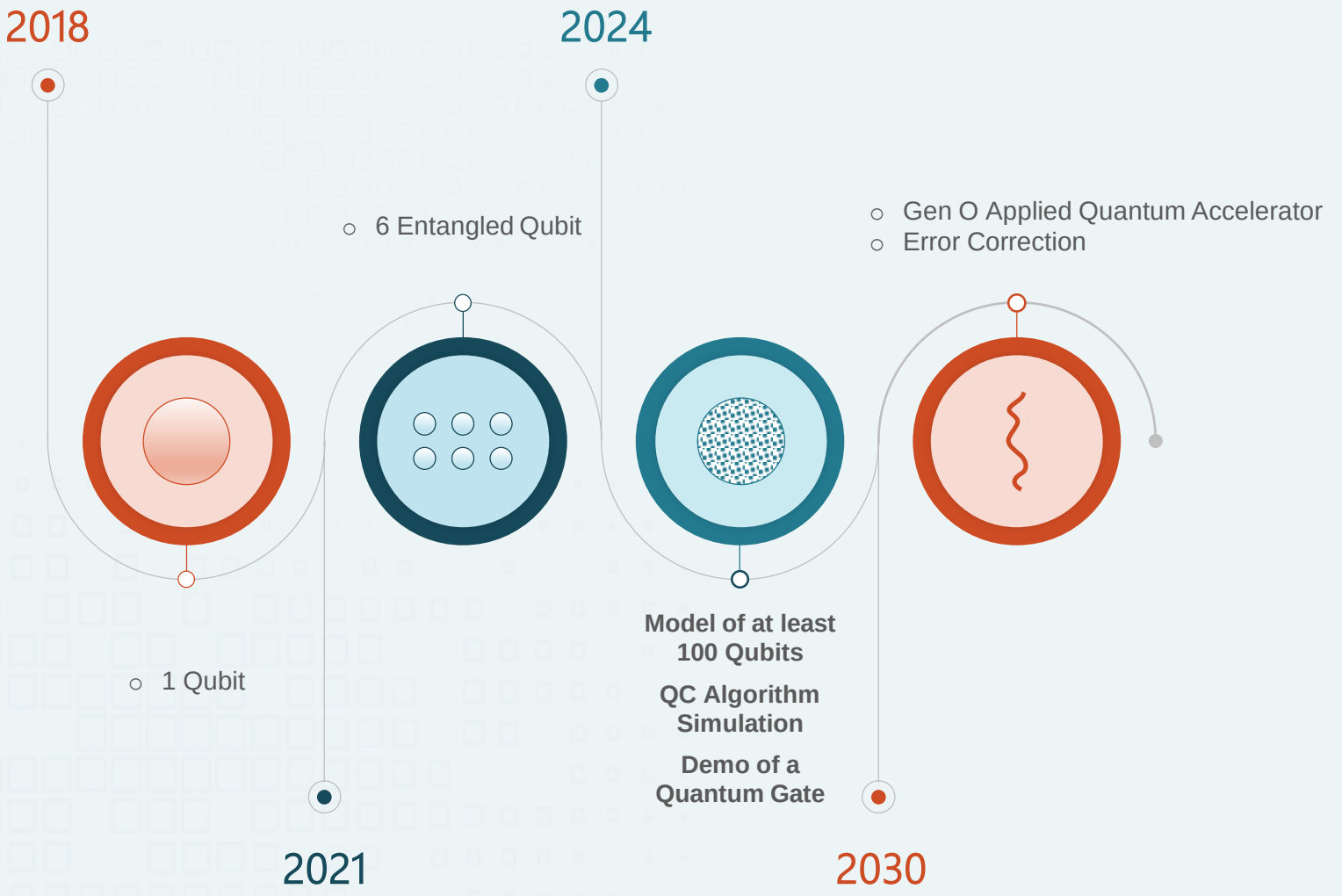
Table of Contents for Quantum Computing

QUANTUM COMPUTING

11

Roadmap to Integrate Quantum Computing in Business

This slide depicts the roadmap to implement quantum computing in business and how the company will grow eventually with the help of QC.



Quantum Computing Development Roadmap

This slide displays the development roadmap of quantum computing covering FY2019 to FY2026+. It also shows how quantum hardware will be developed between this period with a high number of qubits.

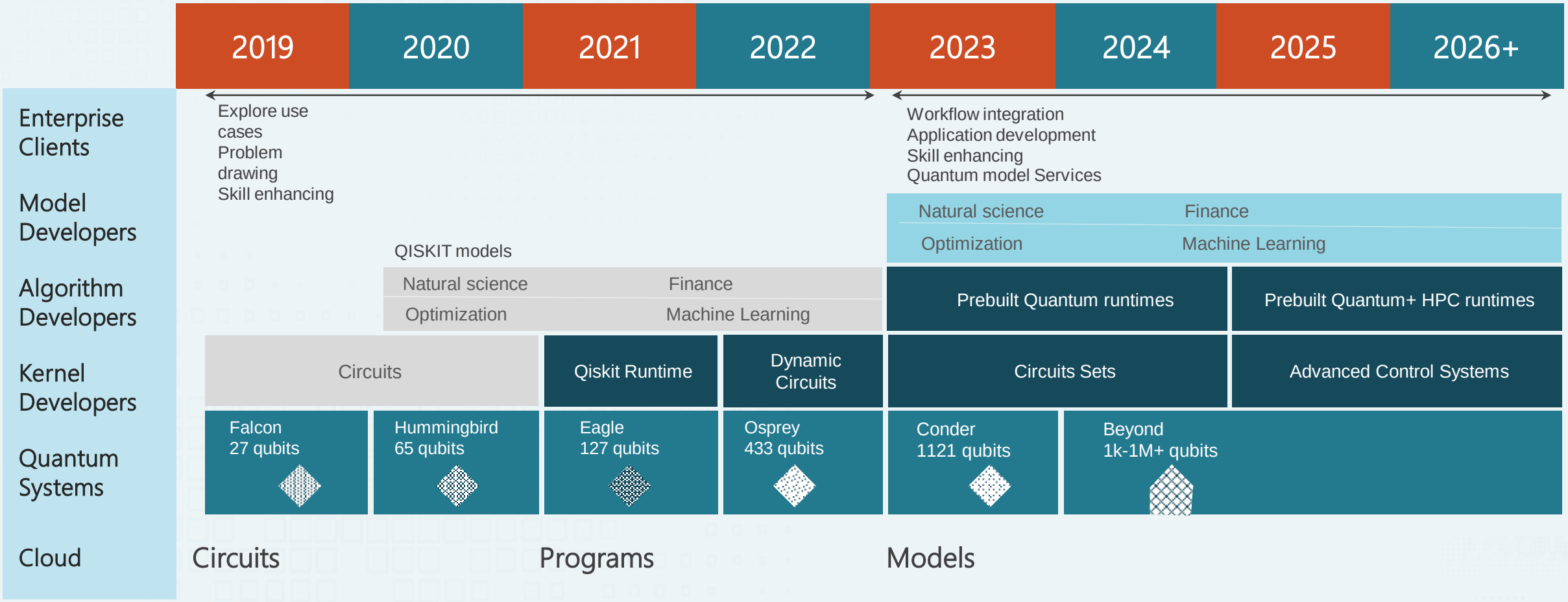


Table of Contents for Quantum Computing

QUANTUM COMPUTING

12

30-60-90 Days Plan for Quantum Computing

This slide depicts the 30-, 60- and 90-days plan of quantum computing implementation wherein the first 30 days, the professionals will prepare the quantum team. In the next 60 to 90 days, quantum programs or algorithms will be written and tested.

30 Days Plan		60 Days Plan	90 Days Plan
○ Hire Professionals		○ Explore use cases of Quantum Computing in the organization with the help of professionals	○ Run Algorithms on real quantum computers
○ Make a Quantum Champions Team	Edward Samuel Albert Jenna	○ Write Algorithms for each use case ○ Build Skillset	○ Detect errors ○ Rectify the errors ○ Execute algorithms again
○ Training Program	4 weeks training	○ Execute/Test Algorithms on simulators	○ Add text Here
○ New Hardware		○ Experiment with Algorithms	○ Add text Here
○ Prepare Quantum Lab		○ Add Text Here	

Table of Contents for Quantum Computing

QUANTUM COMPUTING

13

How Quantum Computing Improves Our Business?

This slide depicts the expected improvement in the organization after implementing quantum computing that how it will affect the business cost and investments in infrastructure.

Key Takeaways

- QC will increase the revenue of the organization by 2.5$ million by the end of FY2021, 3.5$ million by FY2023, and 4.5$ million by 2025
- Cost and investment in infrastructure will be lower in coming years by implementing quantum computing
- Add text here
- Add text here

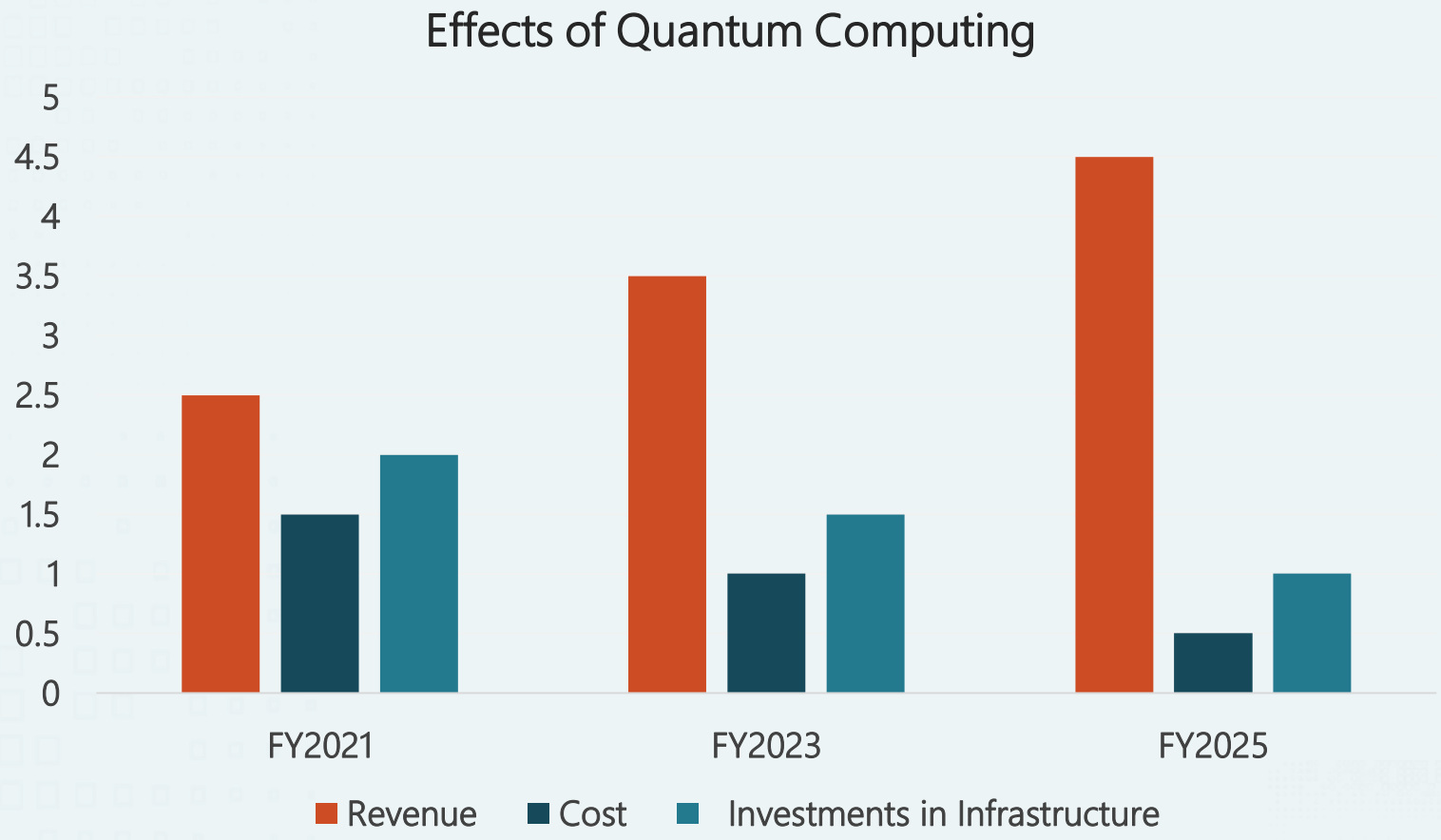


Table of Contents for Quantum Computing

QUANTUM COMPUTING

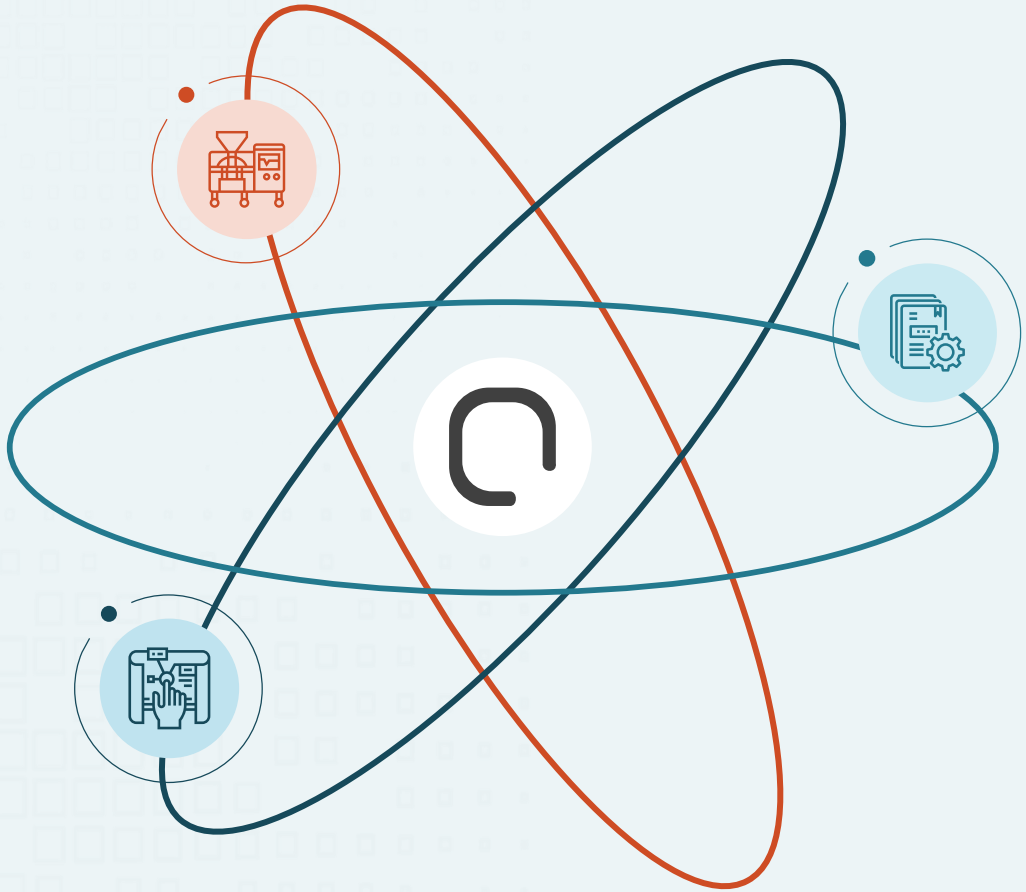
14

Commercialization of a Quantum Use Case

This slide depicts the use cases of quantum computing in different sectors such as machine learning, simulation, and optimization.

Machine learning

- Testing
- Versatile Vendor
- Client Interactions
- Decision Support
- Training



Optimization

- Travel & Transportation
- Logistics/ Store Network
- Network infrastructure
- Airport Regulation
- Work Scheduling
- Financial Services

Simulation

- Chemistry
- Pharmaceuticals
- Materials
- Electric Batteries

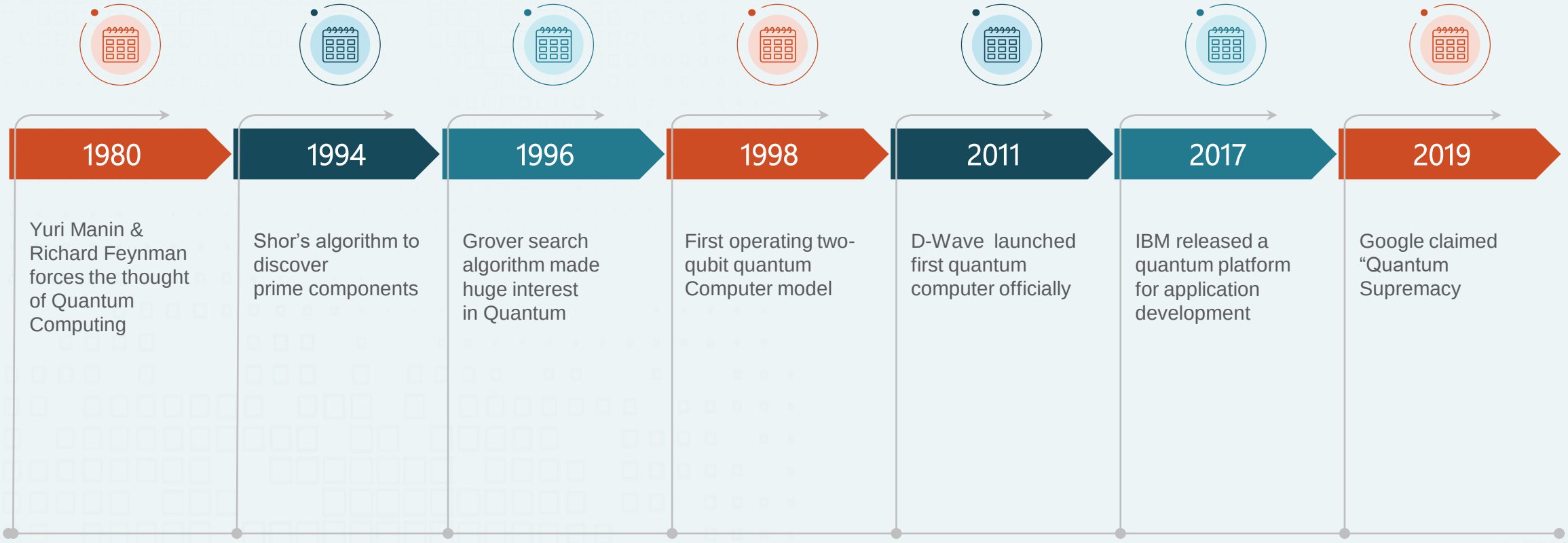
Table of Contents for Quantum Computing

QUANTUM COMPUTING

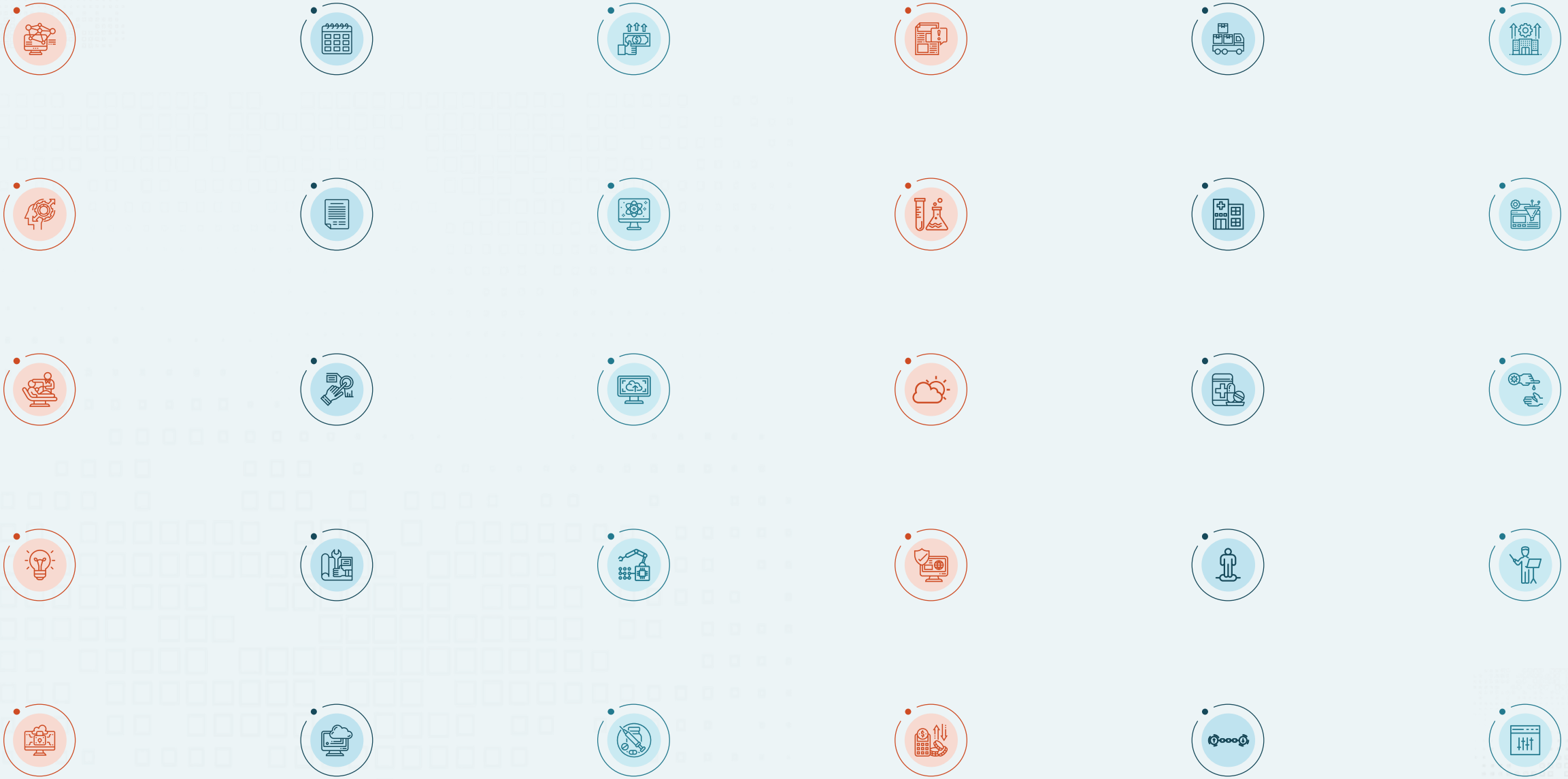
15

Quantum Computing at a Glance

This slide depicts the growth of quantum computers in different years, starting from the year 1980 to the year 2019.



Quantum Computing (IT) Icons Slide



Additional Slides

QUANTUM COMPUTING

Abouts Us

Our Company

This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

Values Client

This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

Premium Services

This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

ABOUTS US

Our Mission

Vision

This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

Mission

This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

Goal

This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

Column Chart

Product 01

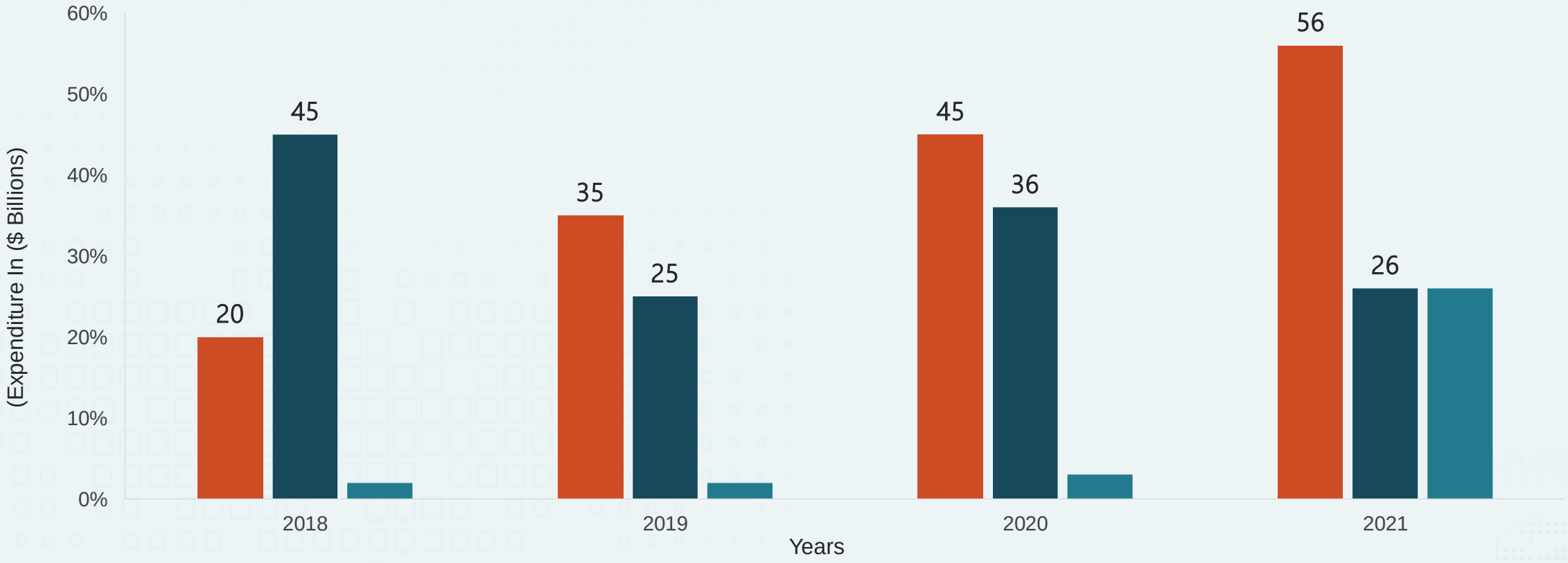
This graph/chart is linked to excel, and changes automatically based on data. Just left click on it and select “Edit Data”.

Product 02

This graph/chart is linked to excel, and changes automatically based on data. Just left click on it and select “Edit Data”.

Product 03

This graph/chart is linked to excel, and changes automatically based on data. Just left click on it and select “Edit Data”.



Line Chart

Product 01

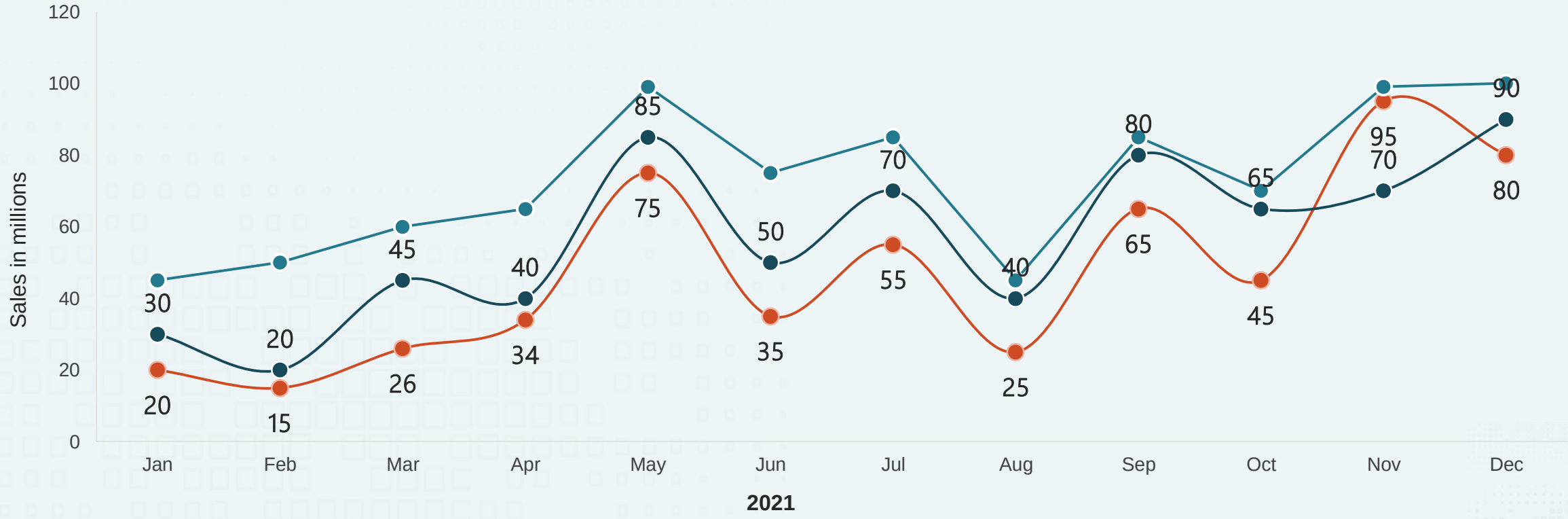
This graph/chart is linked to excel, and changes automatically based on data. Just left click on it and select “Edit Data”.

Product 02

This graph/chart is linked to excel, and changes automatically based on data. Just left click on it and select “Edit Data”.

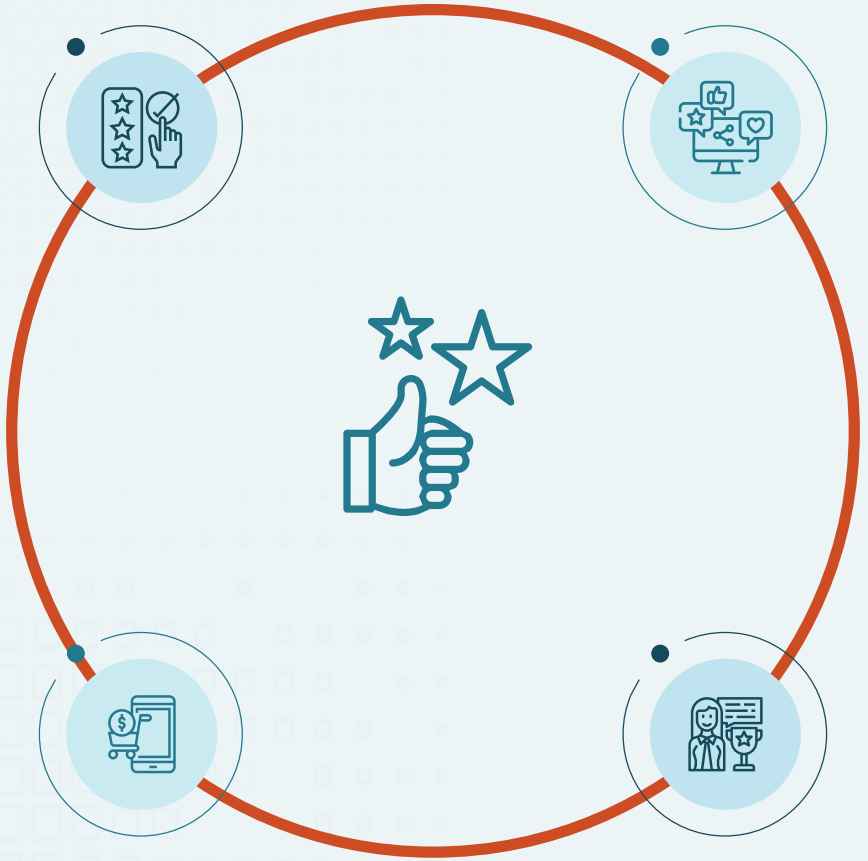
Product 03

This graph/chart is linked to excel, and changes automatically based on data. Just left click on it and select “Edit Data”.



Circular Process

Text Here
This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

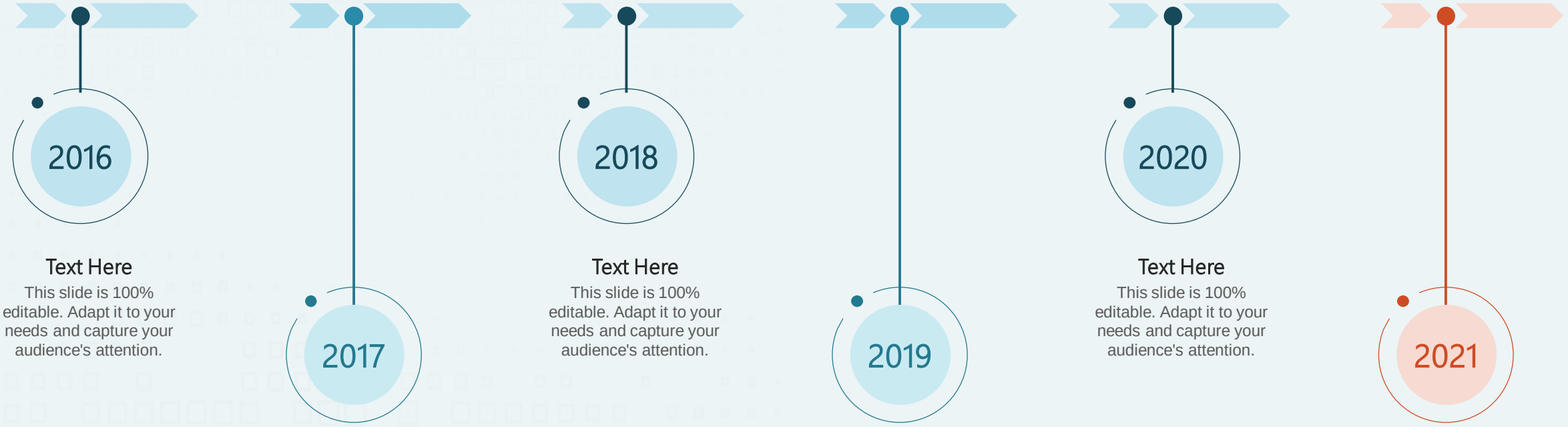


Text Here
This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

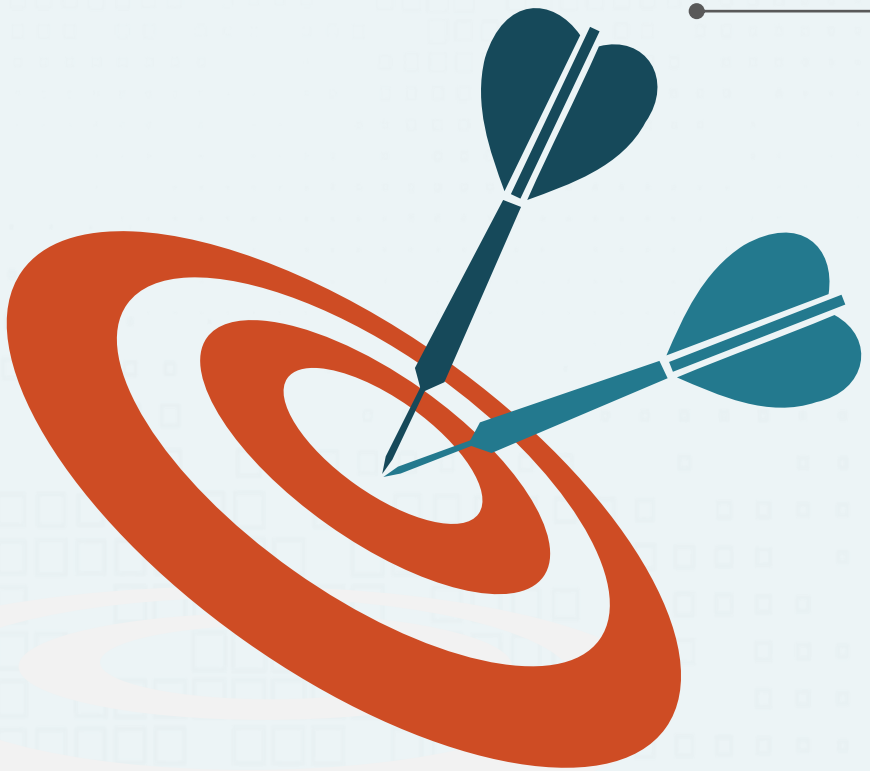
Text Here
This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

Text Here
This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

Timeline


2016
Text Here
This slide is 100% editable. Adapt it to your needs and capture your audience's attention.
2017
Text Here
This slide is 100% editable. Adapt it to your needs and capture your audience's attention.
2018
Text Here
This slide is 100% editable. Adapt it to your needs and capture your audience's attention.
2019
Text Here
This slide is 100% editable. Adapt it to your needs and capture your audience's attention.
2020
Text Here
This slide is 100% editable. Adapt it to your needs and capture your audience's attention.
2021
Text Here
This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

Our Target



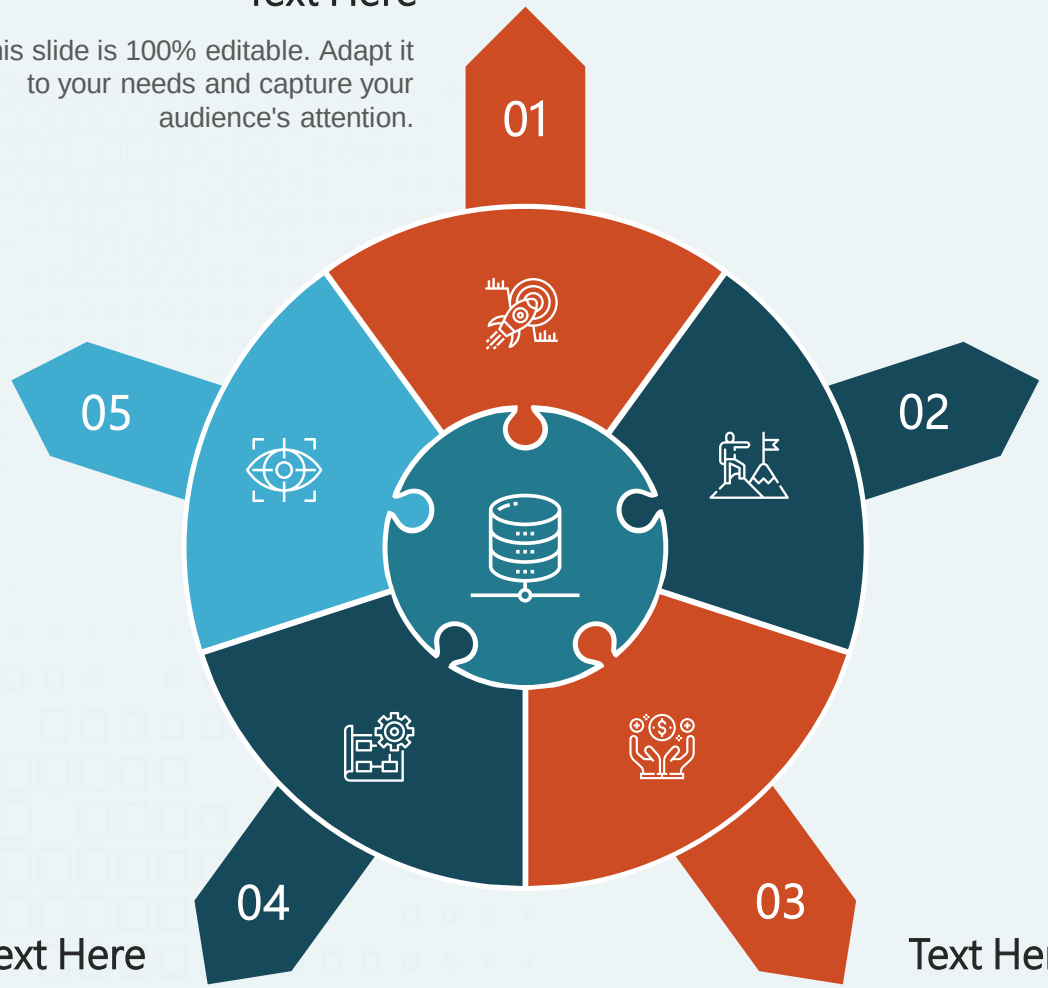
Text Here

This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

Text Here

This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

Puzzle Slide



Text Here

This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

Text Here

This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

Text Here

This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

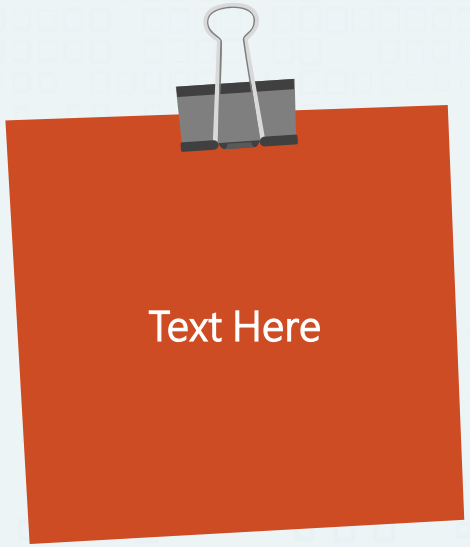
Text Here

This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

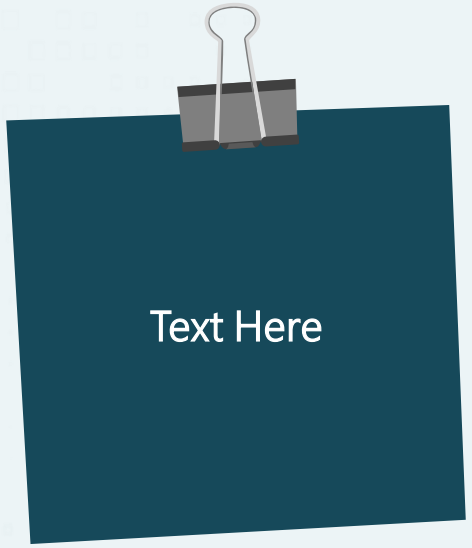
Text Here

This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

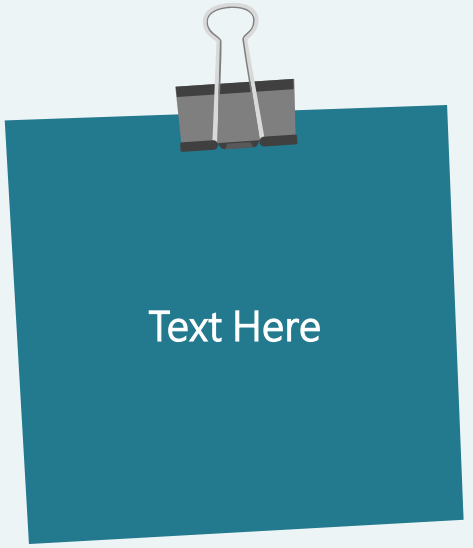
Post it Notes



This slide is 100% editable. Adapt it to your needs and capture your audience's attention.



This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

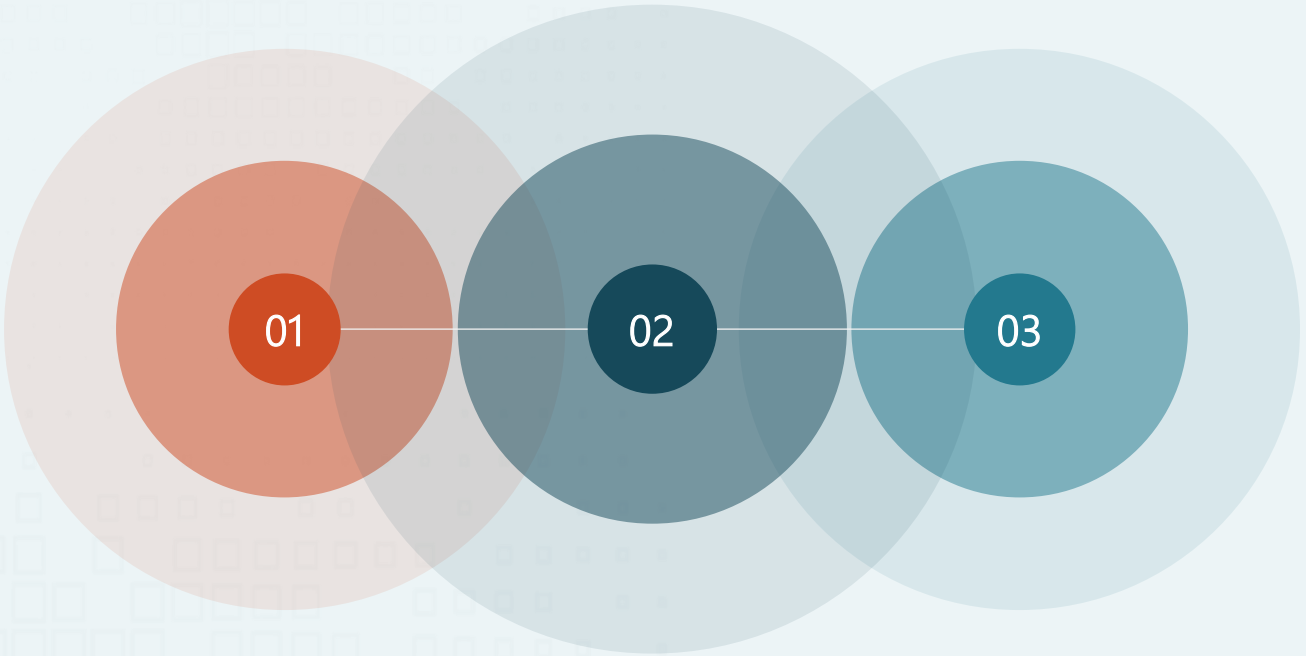


This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

Venn

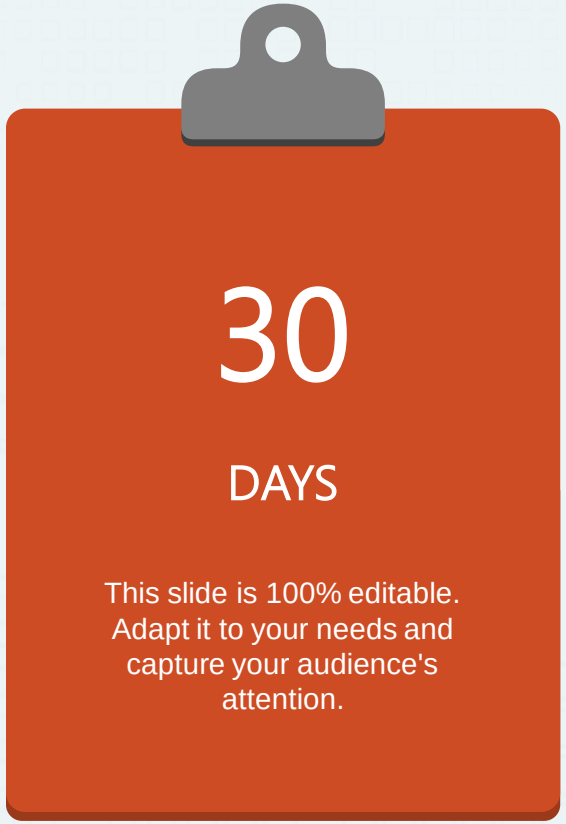
Text Here
This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

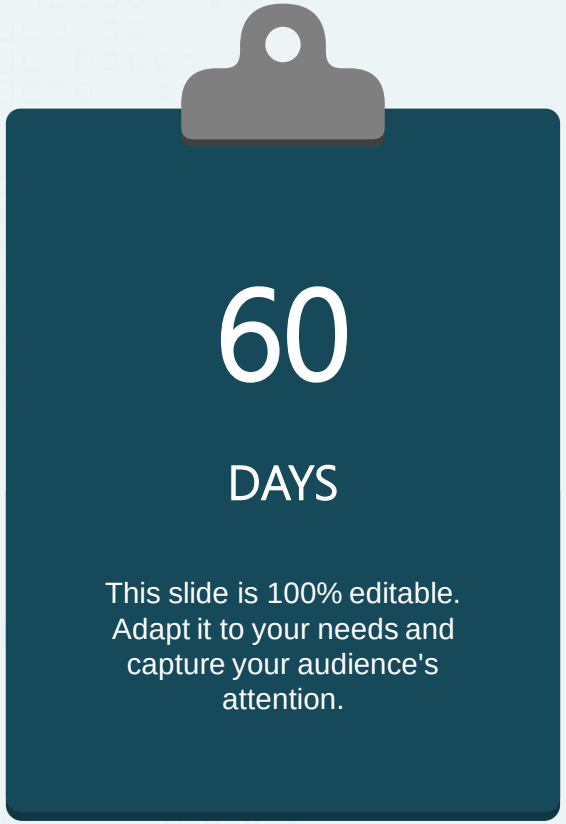
Text Here
This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

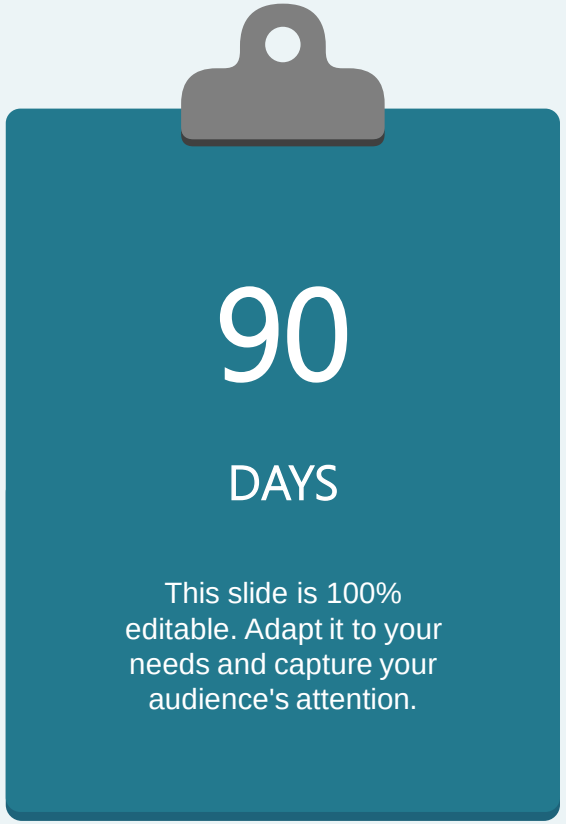


Text Here
This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

30 60 90 Days Plan







Thank you

Address
#street number, city, state

Contact Number
0123456789

Email Address
emailaddress123@gmail.com