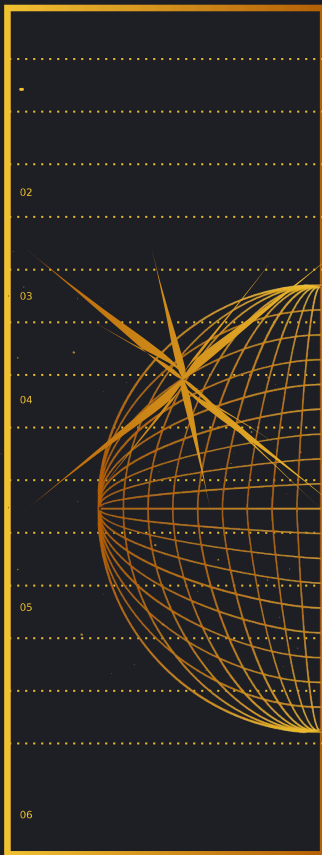




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Kepler
e-283

Kepler
e-62

THE THIRD

- Rihab Hoceini
- Rishi Koushik T
- Mohammad Zuhair Khan

KIND



QISKIT Quantum
Creative Winter Fest

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“Hello, Alice. I am Hal, your AI companion for our little trek through the universe. I hope you have slept well. After all, it has been 187 years since you were cryogenically frozen. Deep sleep does tend to alter your memories. But don’t fret, this is what I am here for.”

— Hal





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You were frozen in the year 27.
2231, if you used the old
calendar, as some still did. But
that is frowned upon. After all,
it was an emblem of the
ancestors, the same ancestors who
had doomed us to this fate.
Whether it was pride or
ignorance, I cannot say, but two
and a half centuries had gone by
since our existence was first
beamed across the universe. And
the universe had ears.





“It was a full two centuries before the first message came. And it certainly wasn’t the last. Defunct news sites with dwindling audiences were resurrected overnight, running story after story on the aliens. It is not hard to imagine why. After all, this was the biggest story since the bombing of the Panama Canal a decade earlier. Within a week, the narrative would shifted.”



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VIAJERO

The national Spanish news agency ETV started referring to them as Viajero, as in travellers. Others quickly followed suit.

Ospiti, Naapuri, Bondhu, Buddy, Dost, Amici – the synonyms were numerous and increasingly optimistic. 50 years later, the last segment aired by ETV before the landing was titled “Amigos”.

A landing that never happened.

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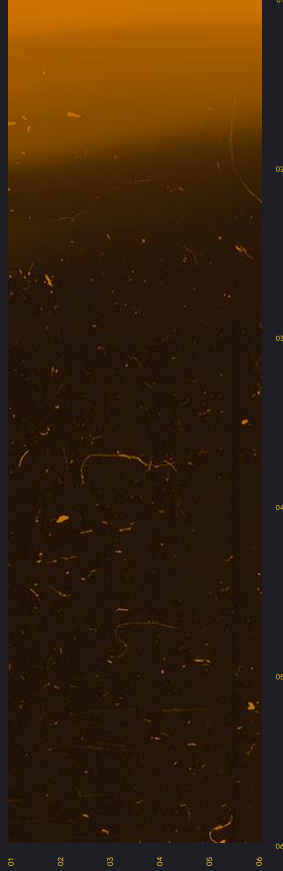
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12 Gigatons

That was what wiped out Nepal and Tibet. Pakistan and India were damaged too, as were Tajikistan and Afghanistan. China was nearly flattened, but the major population centres were intact. The tallest mountain in the world was nearly two kilometers shorter than the last one.



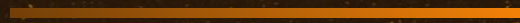
1 day

5 spaceships

46 million people



THE EARTH'S RESOURCES ARE DEPLETING



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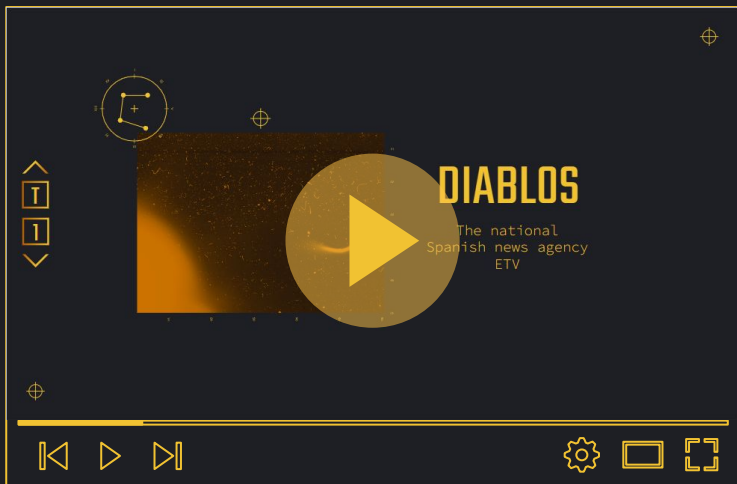


They took our
soil, our rocks,
our gravel.



They left us
misery, despair
and death.





DIABLOS

The next segment aired by ETV was titled “Diablos”. It is a name that has stuck. Earth got a new calendar. Its citizens got a new nightmare.

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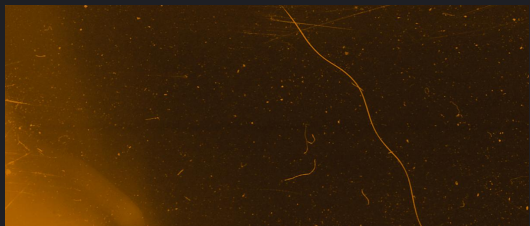
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A year later

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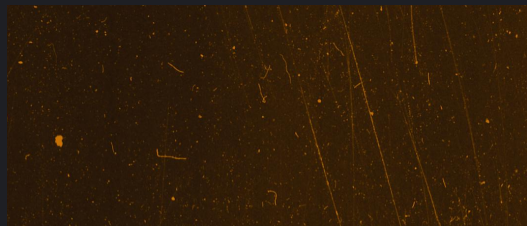
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8 spaceships

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124 million people



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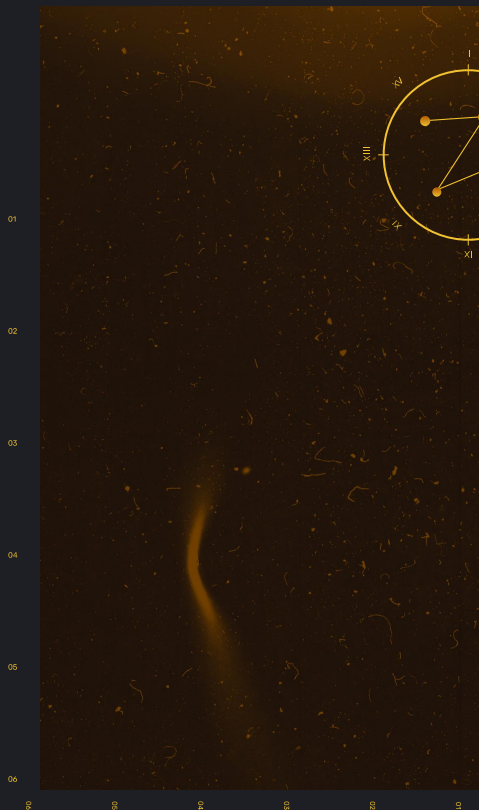


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The Andes?

Gone

The Oceans?

Flooded

The People?

On their last legs





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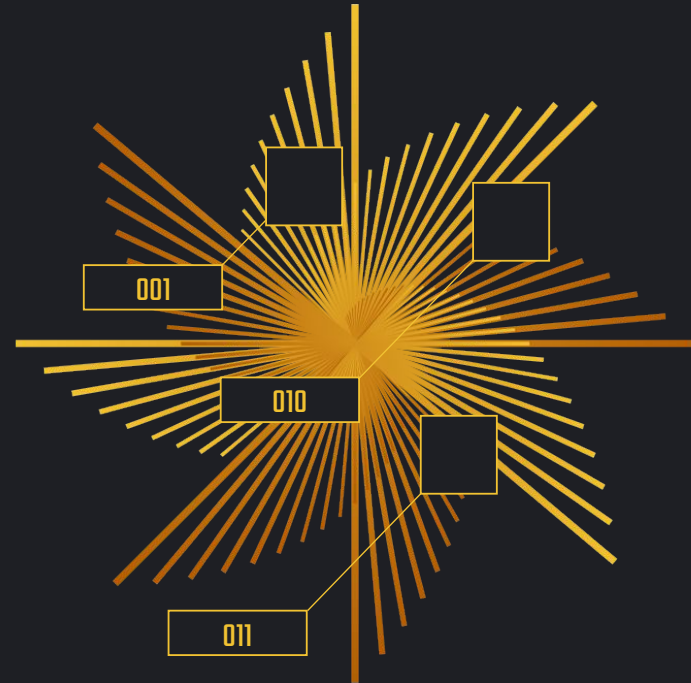
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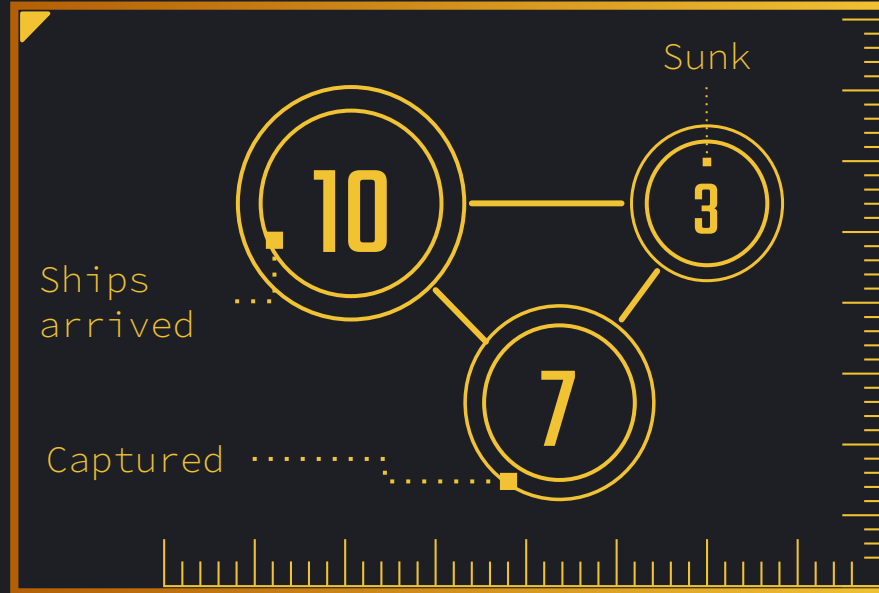
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That's where you come in

You, Alice, were just a graduate student, doing an internship at a Cyber Security company. However, drastic times called for drastic measures. Your team was assigned to decipher how the Diablos were communicating. And you succeeded! They were communicating over classical channels and thus, you were able to intercept their messages. This enabled Earth to complete its first counter attack!





The next attack was now known well in advance!
And the valiant defenders made the most of this moment





Unfortunately, the Diablos were no
fools. They were an interstellar
species, and we had not gone beyond
Mars. They quickly started
communicating over quantum channels.



Even if we intercepted these messages, we would not be able to send fake messages or clone the messages to slowly decode them.

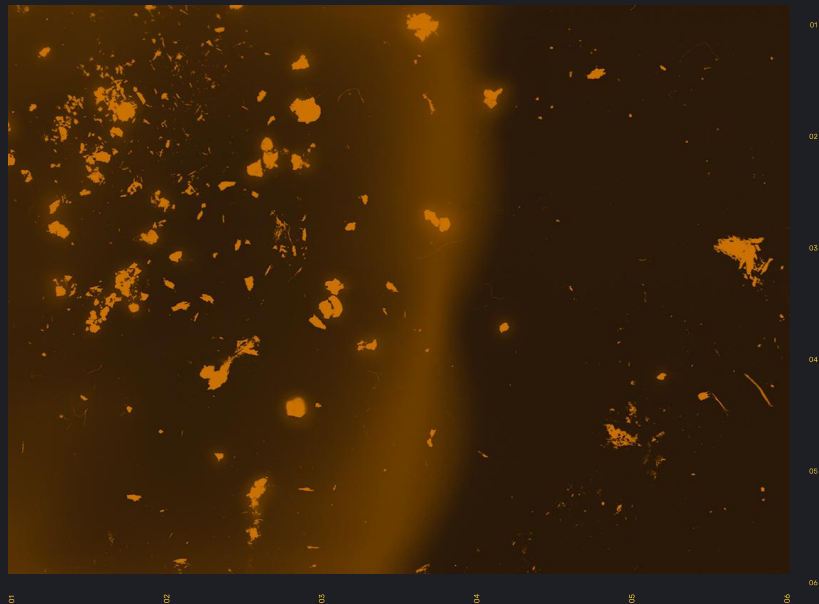


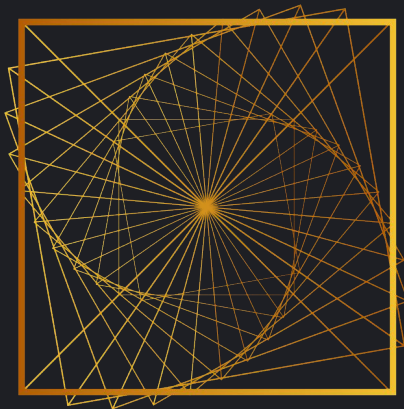
This was because of the **No cloning** and **No deleting** theorems. Our advantage was lost. Earth was back on the defensive.





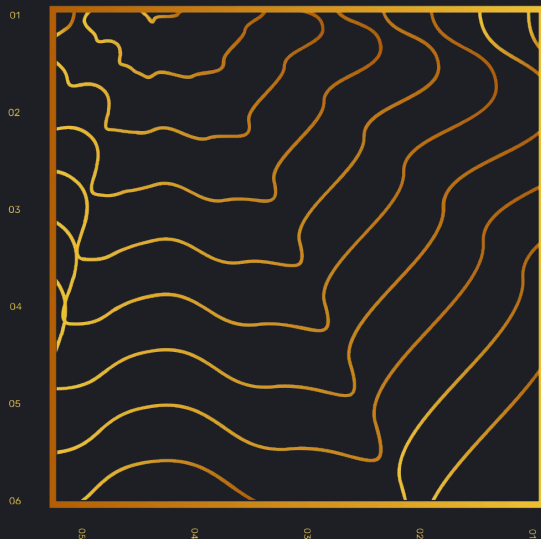
The Diablos didn't stop, they escalated. With their one flaw fixed, they leapt upon us with a vengeance. With a few years, the Blue planet became the murky brown planet - the lush greenery a relic of the past. Humanity was on its last legs. Death counts were no longer kept. A survivor's tally was used instead.





As the last vestiges of humanity, these 7 ships - α , β , γ , δ , ϵ , ζ and η - set out in a last-ditch effort to help humanity survive. And like a vengeful spirit, the Diablos gave chase. Whether it was in hopes of raiding the few morsels of resources we had, or a perverse sense of sadism, I cannot fathom, but they attacked with a vengeance. η fell near Jupiter, mere months into our journey.

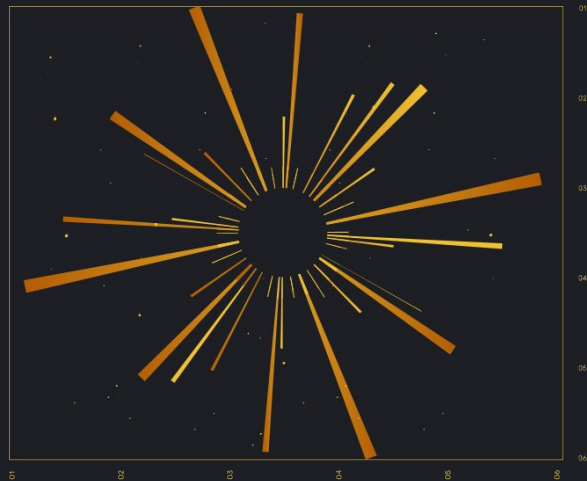




WARNING

The Diablos commander, Eve, personally oversaw the destruction, having tapped directly into our communication devices. Ironically, the same classical networks we used to capture the ships was used to sink η . You, Alice, Commander of ESS ζ took the initiative to shut down communications for all but the most severe communication.

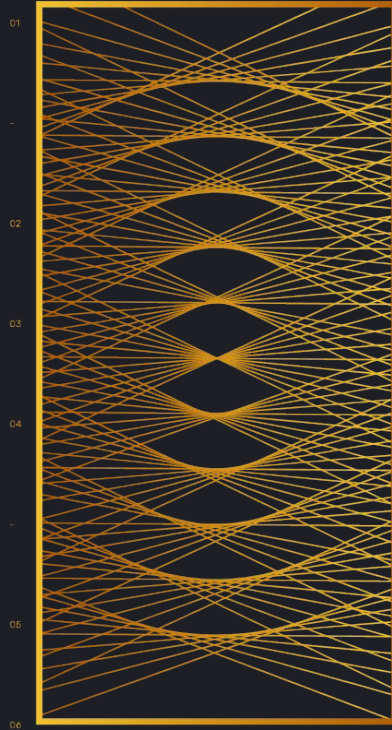




Two decades later, β and ε fell, having found the silence of the void too discomforting. Perhaps the ancestors felt the same when they screamed their existence into the universe.

That is when you chose to enter cryogenic sleep, to conserve both our scarce resources and your finite lifetime. You tasked me with waking you up when there was something worth waking you over. Well, I let you sleep. I let you sleep as we left our Solar System. I let you sleep as we left our arm of the Milky Way. And I let you sleep as we left our comrades α ; and δ fell.





But I have chosen to wake you up today with **good news**. Today is the first day of the year 215, and perhaps it is to mark this special occasion that we have received a message. It was broadcast over the universe via classical networks. It claims to be Bob, commander of the spaceship γ , and apparently, he has a message for us.

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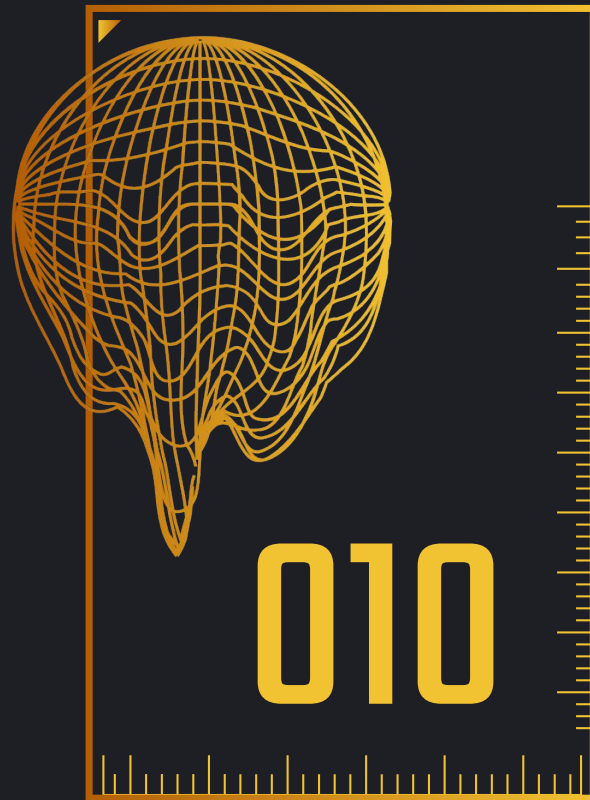
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But first, we must ensure
that we can communicate
securely with him. And for
that we need your help. Your
memory may be addled right
now, but you were one of the
greatest quantum computing
experts on Earth. You may
have forgotten the ins and
outs of quantum computing,
but your problem-solving
skills are something that no
one can take from you.





First, we must establish **secure communication** with Bob. Before takeoff, we distributed some entangled qubits between the spaceships. Now, this will help us verify that the message has come from Bob's spaceship. Next, we will receive a secret code from the spaceship that we can use to verify that this is Bob himself, and not someone else, such as Eve.



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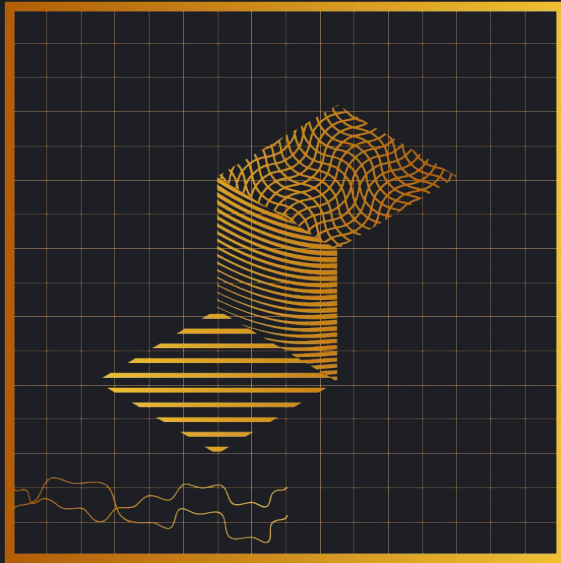
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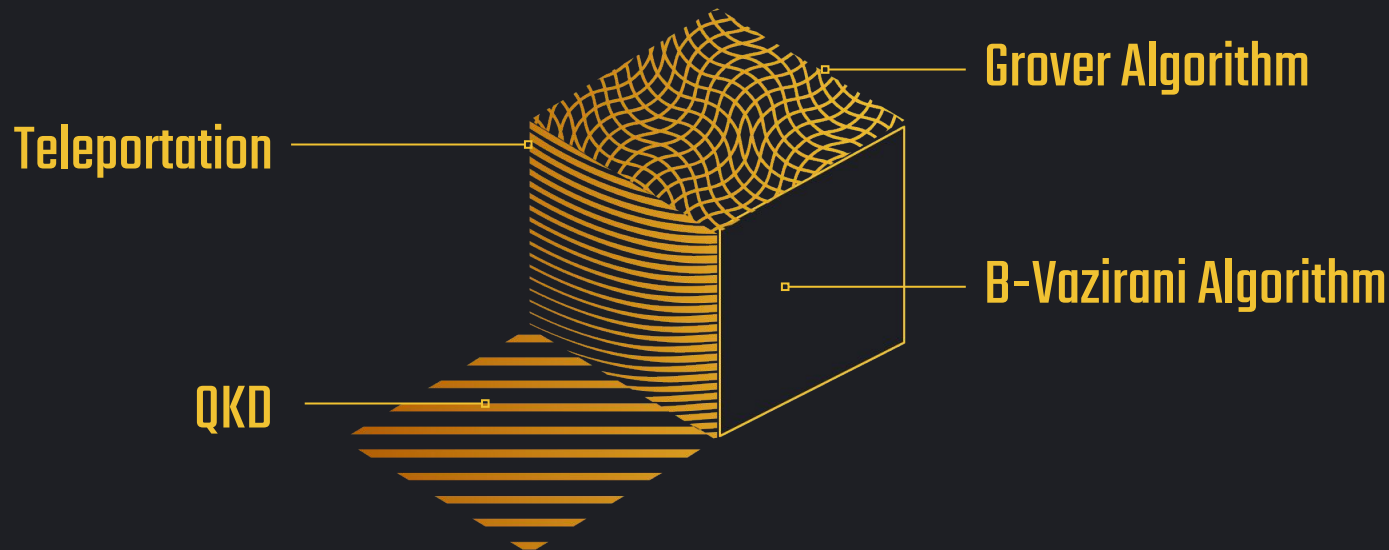


Then, we can set up an encrypted quantum communication network to communicate with Bob. Finally, we can use our quantum computers to work out what we need to do with this information. We had all of these programs ready, but now, due to the long journey, some of the code has disappeared!





THE PROGRAM





Liftoff!

Head over to the **Jupyter Notebook** and fill in the missing code to complete your mission!



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