TIM BERNERS-LEE

Cofounder, Inrupt

The next web needs a better foundation

We have an opportunity to steer the web back to its creators' original, secure, user-centric vision. But first, we must break the data monopolies

Our approach to data is fundamentally broken, Tim Berners-Lee—the inventor of the world wide web and cofounder of Inrupt—told the room in an agenda-setting first session. Monopolies, surveillance capitalism and fake news benefit from exploiting us and our data, rather than empowering us, as he first dreamed the web would do.

"People are locked into platforms and systems we can't control, the winner controls most data, the online economy exploits not benefits us, and we provide our data for so little in return," he pointed out. "Companies claim they're better than you at knowing what you want."

Most of the data we put online is siloed on the servers of companies and used to sell us as an audience for targeted advertising, he said. It is possible to download and delete our online histories, but we still can't move our data between services.

Inrupt, cofounded with cybersecurity entrepreneur John Bruce and cryptographer and privacy expert Bruce Schneier, aims to restore users' rightful ownership of their data using a platform called Solid, kick-starting the true purpose of Web3—"a mid-course correction", taking the web to where Berners-Lee and other early founders always wanted it to go in the first place.

This next step is held up by the fetishization of blockchain and the hijacking of the term Web3 by cryptocurrencies. "Blockchain is too slow, too expensive, too public," he said. "And actually, it's not Web 3.0-whatever-we-call-it."

Solid allows people to keep all their personal data in their own data "pod", located on a Solid server. The data owners, "not some big megacorp", will control their health, financial and other records, and give out granular access as they see fit. They can grant individual apps permission to read and write to their pod, selecting which data they can see. When people stop using an app, they revoke its access, but the data remains on their pod.

This doesn't just help users, Berners-Lee argued. "Every time a company puts out a new app, they build a custom backend database and start the process of collecting user data, and they do it over and over again. It means we fill out *a lot* of forms online."

Solid is rolling out services in parts of Belgium, with EU oversight, as "this not only does exactly what GDPR wants, it actually does more. It answers the spirit, not just the explicit demands."

Berners-Lee was challenged on how he planned to make money and how to drive uptake of Solid when millions of people are effectively locked into data silos already. The money, he said, they'd figure out in time. As for uptake?

"People belonged to AOL before the web," he replied, to laughter. "Somehow, they got all the people using AOL to commit to this funny web thing. We're not asking Facebook, 'please stop'. We're happy for all the different things to go on, just like AOL went on. If every year, 10,000 more people use it than the year before, then gradually it changes. That's what happened with web 1.0."

6.5 MILLION

The number of people living in Flanders in Belgium, all of whom now have access to a Solid Pod to store and control their personal data

WERNER VOGELS

CTO and VP of Amazon

Simulation's real impact

Computer models have transformed the physical world. New tools that let us simulate in responsive 3D will take this even further

To simulate is human, Amazon CTO Werner Vogels told the room—after all, we've been doing it since we could first use our imagination. Amazon customers, however, are "divinely discontent" according to his boss, Jeff Bezos. So Vogels' job is to simulate ways to keep humans happy—and democratizing quantum computing is the latest step in his quest.

"Technology helps us see things that used to be hidden," he explained. "But screens are 2D while our real world is 3D. A 3D model is worth 1,000 pictures—actually 129,600—but it's computationally intensive, there is no standardized image format like PDF, and even though we have enormous computing power in the cloud, there's many problems that can't be solved in a reasonable time."

In June, Vogels headed up the launch of the AWS Center for Quantum Networking in Pasadena, California, which focuses on basic science like building better qubits, and error-correction algorithms. It's building on Amazon Braket, which offers developers access to quantum computers from the likes of IonQ, Oxford Quantum Circuits, Rigetti and D-Wave, as well as software tools and simulators.

Amazon has also been investing heavily in O3DE, an AAA-capable, cross-platform open-source game engine for real-time 3D development that provides developers with a modular foundation for building games and 3D simulations across a variety of applications, including robotics, digital twins, automotive and healthcare.

"Why do we simulate?" Vogels asked. "To overcome physical limitations, to simulate dangers you would not want to play around with, and to accelerate time or slow it down to inspect things."

For the City Council of Amsterdam during the pandemic, Vogels recalled, this meant running scenarios on how to keep people one-and-a-half meters apart while shopping during lockdown. Working with AWS sims allowed them to experiment with covering the city in flowerpots to measure its effect—a massive endeavor in real life, but easy in a simulation.

For Amazon, effective 3D simulations could mean anything from modeling how shoes would look on customers' feet, or how lamps in their homes might work across an entire day, to allowing van drivers to map routes that missed low bridges, helping to design autonomous vehicles, or practicing robot routes through new factory layouts, he explained.

"One problem that we've been simulating is how patient autonomous trucks are," he admitted. "I've been in one of these trucks recently, making a left-hand turn. The trucks are worrying about doing things in the safest way. The biggest problem we have to simulate is the other idiots on the road, standing in front of you."

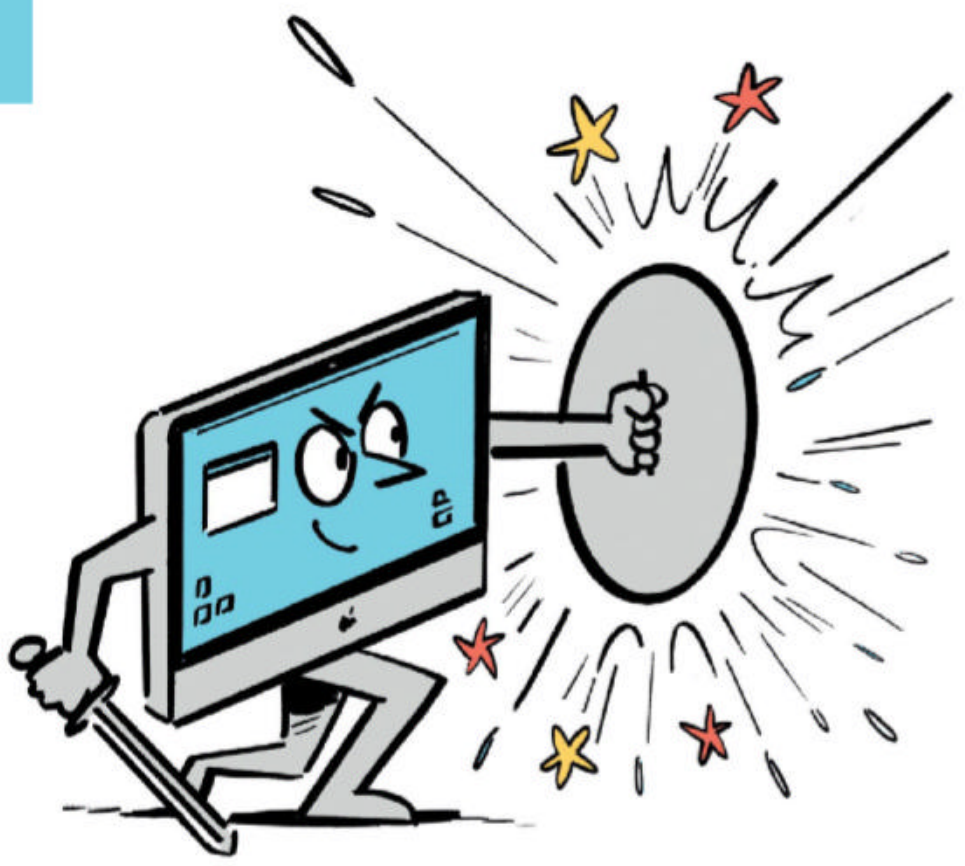
Quantum computing, he said, might solve density functional theory to simulate the behavior of molecules, or the problem of creating fertilizer cheaply and safely through simulation. But would it ever be able to model for idiots on the road?

PARISA TABRIZ

VP/GM Chrome Browser & Google Security 'Princess'

Think like a hacker to stay cybersecure

The next level of cybersecurity will come from fresh mindsets. As well as thinking like a baddie, diversities of background and expertise will bring new perspectives—and greater safety



Cybersecurity incidents in Europe increased by a factor of ten over the past four years, Parisa Tabriz, vice president, Chrome Browser at Google warned the crowd, and on average, a company will fall victim to a ransomware attack every eleven seconds, costing the world some $20 billion in 2021 alone. The answer, she told the audience, is to work with—and think like—hackers. "Our cybersecurity defenses and technologies have advanced quite a lot over the past 10 years," the self-appointed "security princess" explained. This is in part thanks to Google's vulnerability reward program, which pays hackers for finding and reporting flaws. In 2021, the program set a new record, with 696 researchers from 62 countries fixing 500 unique security bugs and paying out $8.7 million in rewards.

"One of the cool things that I've seen with these programs is getting to know other hackers, some of whom choose to donate their reward to charity," she beamed happily. As Google doubles charity donations, $300,000 went to good causes thanks to hackers helping to fix Google's products.

11 SECS

How frequently companies are falling victim to ransomware attacks. It cost them $20bn in 2021

Why is this important? As an ex-hacker, she knew that to advance defenses, you have to think like a hacker. Her team, called Project Zero, focuses on attacks that exploit unknown vulnerabilities, or "zero day" attacks. Thinking like hackers would have helped a government agency she'd worked with that had banned email attachments in case they spread malware.

"The result was employees using personal Gmail and Dropbox accounts to handle and share sensitive data, and so you had a less secure outcome," she shrugged. "And leaking government data, as we have seen play out, undermines trust in democratic processes and civil society."

To protect vulnerable organizations—especially with Russian hackers battling for cyberspace dominance over Ukraine—her team has helped develop Project Shield, an anti-distributed-denial-of-service protection.

"We now defend more than 200 websites, including those that belong to the government, news, human rights groups and election monitoring sites in Ukraine, countries in Europe, and North America and Africa" she told the room. "Project Shield allows Google computers to absorb the traffic that is stemming from denial-of-service attacks, shielding smaller sites."

Her three takeaways? First, keep working together, "because we're increasingly connected, and advancing security is a cross functional, cross organization, cross border endeavor."

Second, business leaders should tackle cybersecurity head-on and intentionally. "Always make sure that security is a key factor in how you're assessing or reassessing the technology stacks you are building your business on."

And finally, work towards a zero trust security model, constantly requiring verification for every person and device, and refusing to trust anything inside or outside a network.

The core approach isn't just hacker thinking—it's diverse thinking, she insisted. Her team includes graduates, dropouts, those with professional education in math or sciences, musicians, artists and historians. "And I'm finding people who studied psychology or law who are interested in security bringing new perspectives on trust boundaries," she explained. "Real talent is everywhere, especially with security."

HERMAN NARULA

CEO and cofounder, Improbable

The metaverse isn't what you think it is

The biggest technological, social and commercial shift in decades still has most of us scratching our heads. We need to focus on connection

Players in the metaverse are wasting money and time on "bullshit", Improbable's CEO Herman Narula warned the room. Investors and developers need to avoid this confusion, or they'll be at the wrong end of the next version of the dot.com bubble.

"If you define the metaverse in a way that includes smart TVs and Disney Glass, boy, are you going to be confused in what you invest in and where you go," he said to laughter. "The metaverse has nothing to do with technology or virtual 3D worlds in the same way a Kindle has nothing particularly to do with defining literature."

Even virtual reality headsets are "Facebook's poisonous distraction," he shrugged. "When you play a game of *Fortnite* with 100 players, that takes 10,000 operations per second on the backend. When you use WhatsApp, that service is handling about a million messages a second. In order to hang out and talk with 30,000 people watching a cricket match in the metaverse, it's billions of messages per second. But what's interesting is the world itself. We should be talking about Narnia, but we're discussing the wardrobe."

Founded in 2012, Improbable provides software to support large-scale online multiplayer games and, in 2022, raised $150m to launch its blockchain-based M² platform, supporting a network of interoperable metaverses and allowing people to transfer appropriate value between those worlds.

He admitted it was easier to say what the metaverse wasn't than define what it was. "It's a network of meaningful identities, objects, events and experiences that connects different socially constructed realities," he said. "Sport is a good example—value transfers from the world of sport to the real world. It's a game where someone wins the World Cup, which fundamentally doesn't matter—but its value in that world does transfer to the real world."

Value in the metaverse can be as simple as the labor of death—"If you've played a free-to-play action game online, the reason it's free to play is because your job is to die, while the people who have paid money have the opportunity to beat you," he explained. "Your work creates value for the company."

At this stage, however, fashion brands, sports leagues and music labels are ahead of gaming companies in their understanding, "because the idea of taking your LVMH handbag into a football match makes sense, while the idea of bringing a machine gun into Hogwarts makes little sense," he explained. "The metaverse is about related incorruptible content, a tapestry of meaning. You can't just willy-nilly mash things together any more than you can mash religions together in the real world and expect them to get along."

His advice to a brand or company is to start with one event or experience, see how your community interacts with you and with each other, then think about how to turn it into a conversation. Think like a sports brand rather than a gaming company, because "human experience is already a collection of the real world, thousands of ideas, other worlds and experiences," he said.

"It's not a question of whether we *need* the metaverse—we have always embraced this idea," he concluded. "The inner experience of our minds has so much more to offer us than we ever really accept."

150M

Dollars raised by Improbable to launch M², a system for moving assets between metaverses