Outshift by Ciscoのご紹介

Cisco Systems
Takahiro Ogura

2024/Oct

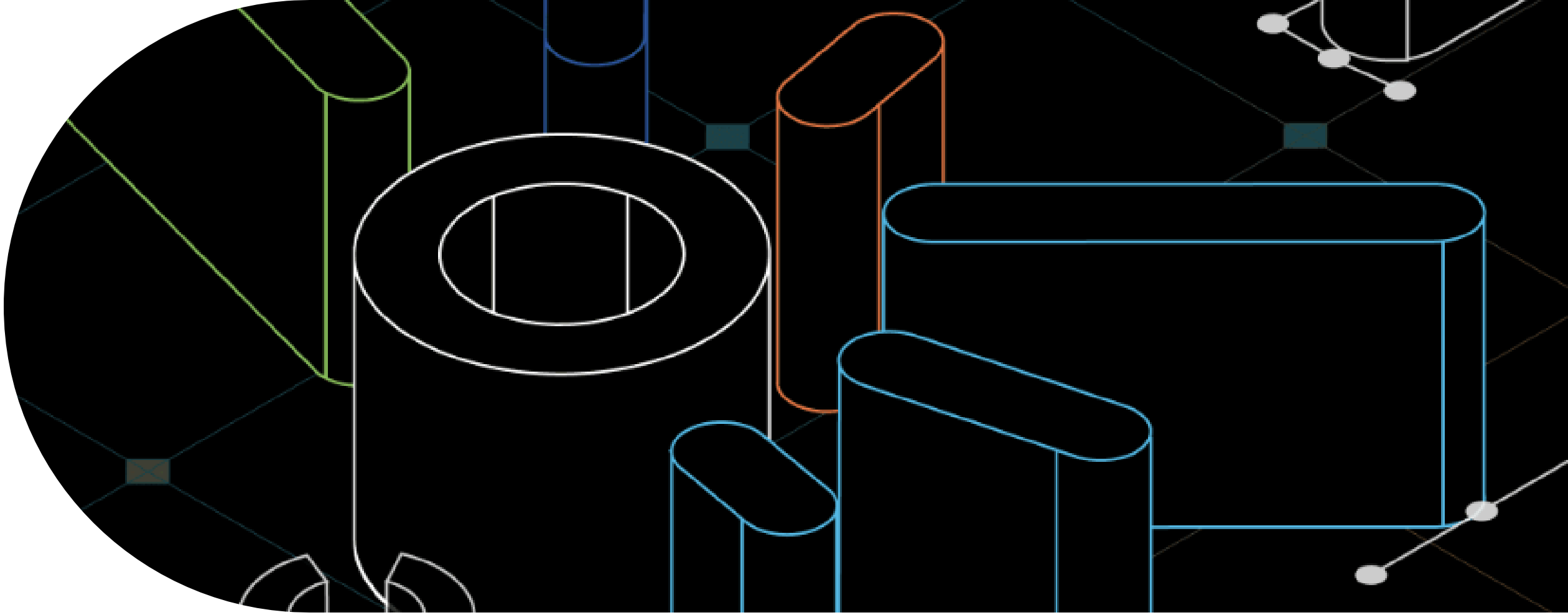
Who am I ?

- 小倉　隆啓 (Takahiro Ogura)
- シスコシステムズ合同会社
- Solutions Engineer

- サービスプロバイダのお客様担当
  Pre-Sales SE

Agenda

- Outshift by Cisco の活動
- Quantum Technologyの取り組み



Outshift by Cisco の活動

Who is outshift ?

outshift by CISCO

Outshift by Cisco is the **incubation** engine delivering what's next and new for Cisco: **Emerging** technologies that target new markets and **personas** to build **meaningful** businesses and achieve innovative results.

We turn ideas into awesome products — with solutions for modern cloud native applications, edge, quantum, and AI.

旧 ET&Iチーム

Innovation, full speed ahead

Products

Cloud Application Security | Generative AI Infra

Cisco
Research

Cisco
Open Source Program Office

Cisco
Responsible AI Committee

Where does outshift target ?

First Degree

Growing the Current Business

- Networking
- Security
- Collaboration
- Applications

Current Cisco Business Entities

Second Degree

Adjacent Markets

- Modern Apps
- Edge Ops/AI
- Data Security

Third Degree

Non-Adjacent Markets

- Disruptive Supply Chain
- Visibility & Observability
- Data Brokering

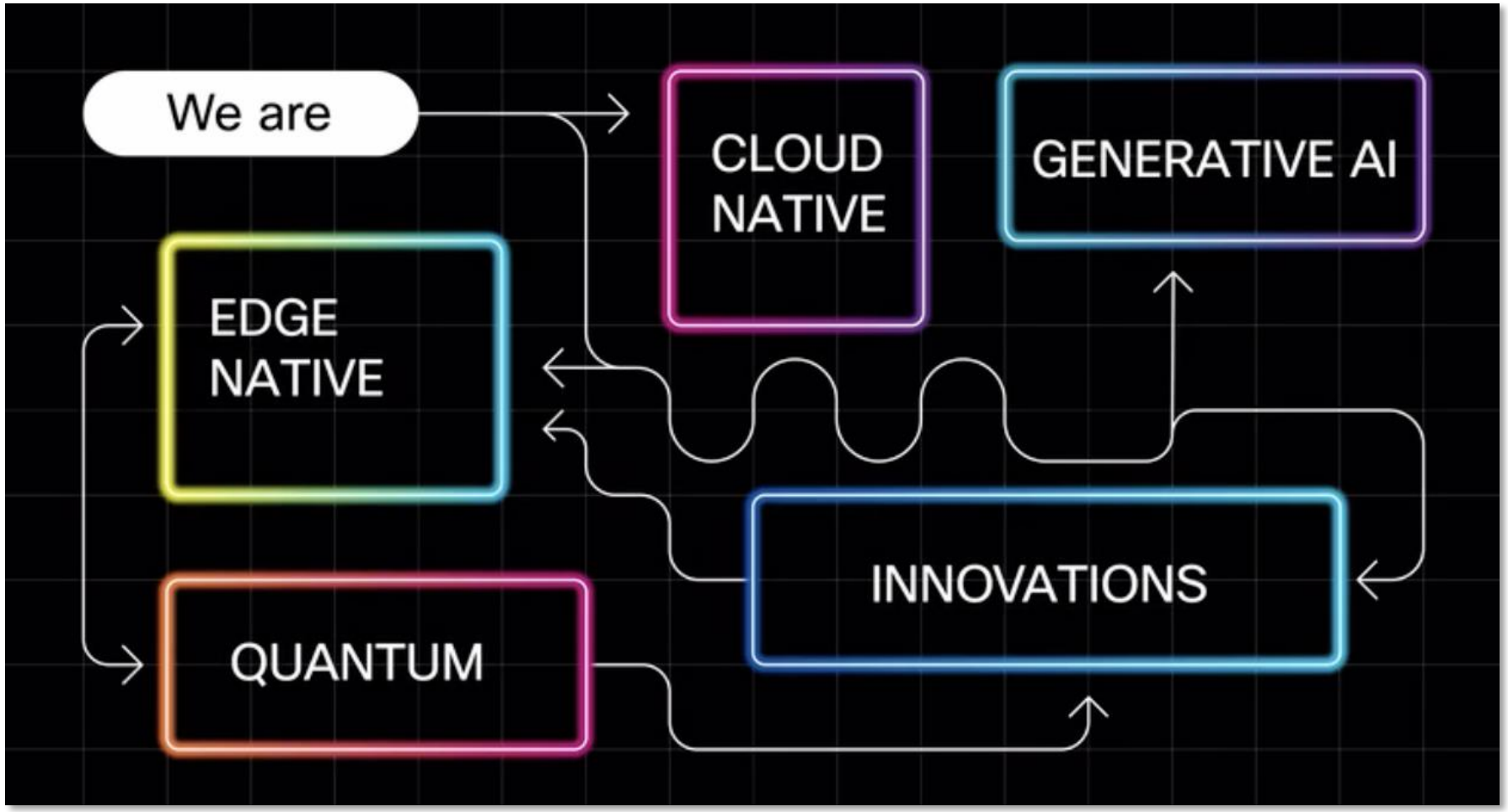
Nth Degree

Emerging Markets

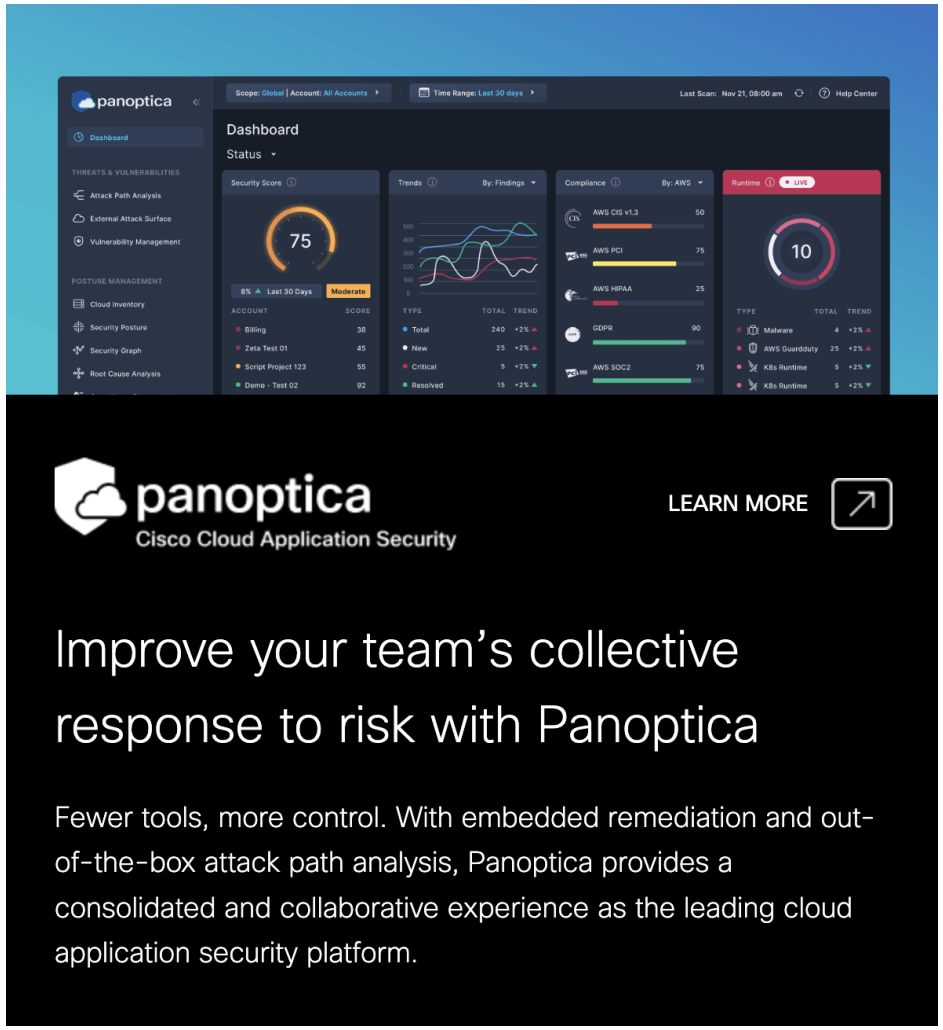
- GenAI
- Web3
- Quantum Networking

outshift by CISCO

Where does outshift innovate ?



Products



Panoptica (Cisco Cloud Application Security)

https://www.panoptica.app/

Panoptica (Cisco Cloud Application Security)

- Comprehensive Code to Cloud Security

Code + Build Security

Identify, prioritize, & remediate risk throughout SDLC & enforce continuous governance policies.

Cloud Security Posture Management

Automate compliance monitoring & simplify asset visualization, sorting, & grouping.

Cloud Workload Protection

Get continuous visibility, risk assessment & mitigation guidance across all your cloud workloads: VMs, containers/ Kubernetes, & serverless.

API Security

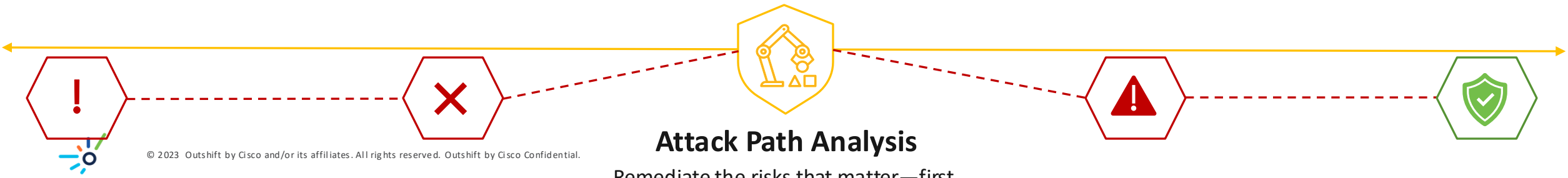
Secure, monitor & perform risk assessment of internal, external APIs, & API tokens.

Data Security

Inventory and assess your cloud data stores to prioritize mitigation of potential data breaches.

Cloud Detection and Response

Detect and respond to attacks in real time through the use of behavioral analysis, machine learning on data collected from cloud providers and runtime sensors



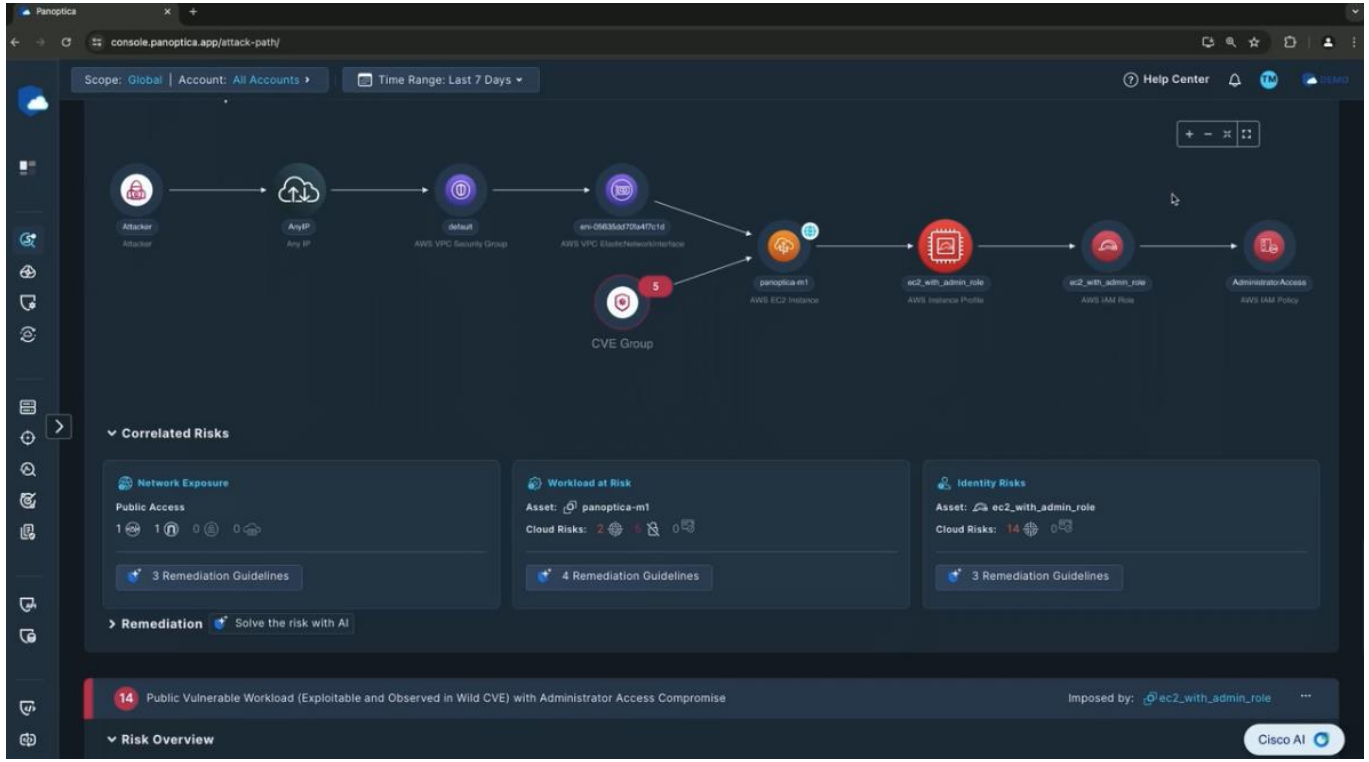
Attack Path Analysis

Remediate the risks that matter—first.

Panoptica (Cisco Cloud Application Security)

- Visibility, Prioritization, Remediation

数千の脅威から優先的に対処すべき事象を絞り込んでくれる



潜在的なAttack Pathを可視化

製品リリース以外の活動

Open source @ Cisco

VMClarity

VMClarity provides agentless detection and management of Software Bill of Materials (SBOMs) and because it is agentless, cloud native security and observability on VMs are enhanced without writing or modifying any code.

KubeClarity

KubeClarity is a tool for detection and management of Software Bill Of Materials (SBOM) and vulnerabilities of container images and filesystems.

APIClarity

Cloud native visibility tool for APIs. Uses a Service Mesh framework to analyze API traffic and identify potential risks. Works with OpenAPI specs.

Snort

It is an open source intrusion prevention system capable of real-time traffic analysis and packet logging.

TRex

TRex is an open source, low cost, stateful and stateless traffic generator fuelled by DPDK.

Joy

A package for capturing and analyzing network flow data and intraflow data, for network research, forensics, and security monitoring.

Cisco proudly sponsors

Gold — THE LINUX FOUNDATION

Premier — OPEN SOURCE INITIATIVE PREMIER

Premier — OpenSSF OPEN SOURCE SECURITY FOUNDATION

Platinum — CLOUD NATIVE COMPUTING FOUNDATION

Platinum — LF NETWORKING

Gold — OpenInfra FOUNDATION

PEN19 Foundation

LF PUBLIC HEALTH

Diamond — KubeCon

TODO

OPENAPI INITIATIVE

BYTECODE ALLIANCE

Events

様々な外部Eventで発信させていただいております。

Upcoming & Recent Events

Cisco Live EMEA 2025

February 9-14, 2025
Amsterdam, NL

AI takes center stage at Cisco Live 2025 Amsterdam, empowering you to expand your horizons and immersing you in the next wave of Cisco's transformative technologies. Learn to work faster, safer, and smarter and become part of the movement that will Go Beyond what's possible.

Learn More >

AWS re:Invent 2024

December 2 - 6, 2024
LAS VEGAS, NV

Come join us in Las Vegas for five exciting days of keynotes, breakout sessions, chalk talks, interactive labs, and career-changing connections. Your conversations with AWS leaders, experts, and peers will leave you feeling inspired and equipped to build nearly anything you can imagine—and tackle your most ambitious goals.

Learn More >

Past Events

Venture Beat AI Impact Tour

10 September, 2024
San Francisco, CA

Ai4 2024

August 12-14, 2024
Las Vegas, NV

Cisco Live US 2024

June 2-6, 2024
Las Vegas, NV

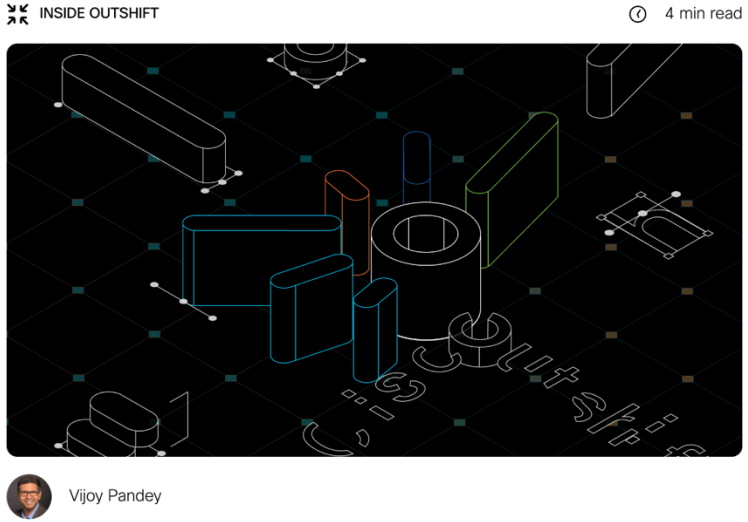
RSAC 2024

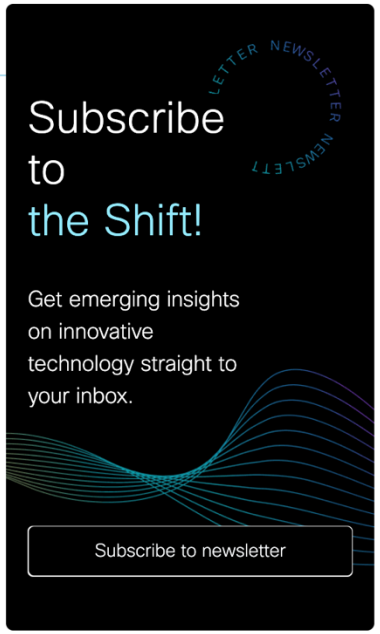
May 6-9, 2024
San Francisco, CA

https://outshift.cisco.com/the-latest

Blogs

積極的に発信しています！





INSIDE OUTSHIFT

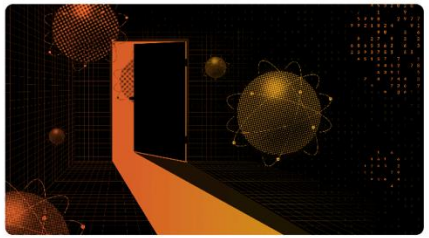
Accelerating innovation at Outshift with platform engineering director and CISO Hasith Kalpage

TEAM KUBERNETES

INSIGHTS

ModelSmith: Machine learning model optimization for real-world deployments

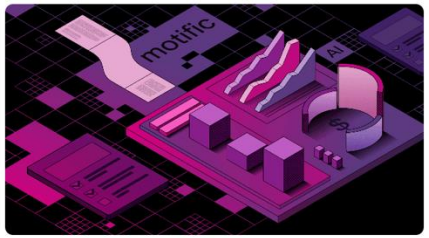
ARTIFICIAL INTELLIGENCE OPEN SOURCE RESEARCH



COLLABORATIONS

Tech trends 2024: From generative AI challenges to the rise of quantum computing

ARTIFICIAL INTELLIGENCE QUANTUM



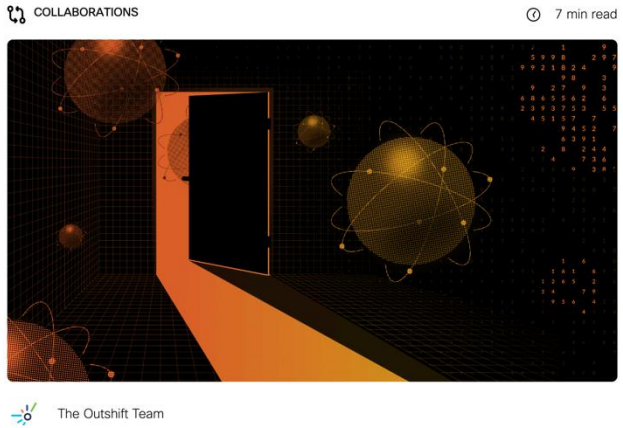
PRODUCT

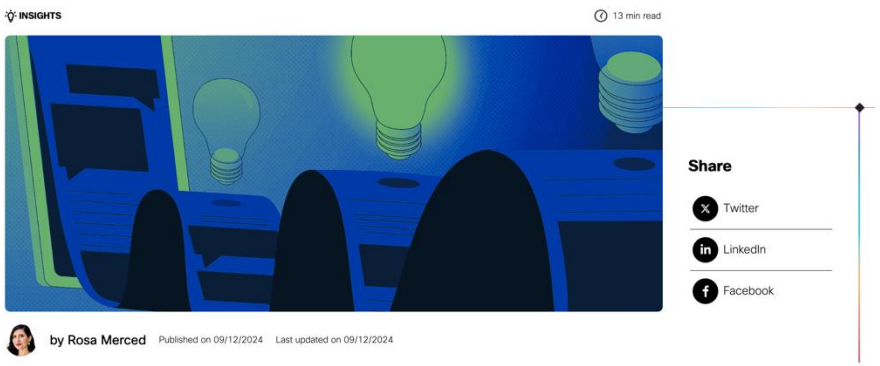
Reduce generative AI risks and improve compliance for your GenAI landscape

ARTIFICIAL INTELLIGENCE MOTIFIC

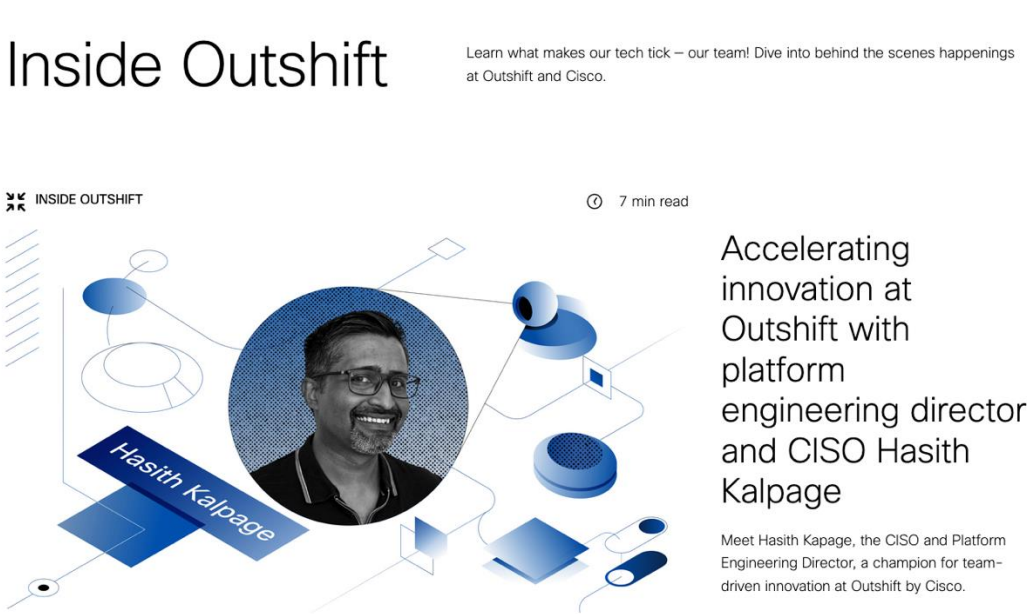
https://outshift.cisco.com/blog

Blogs



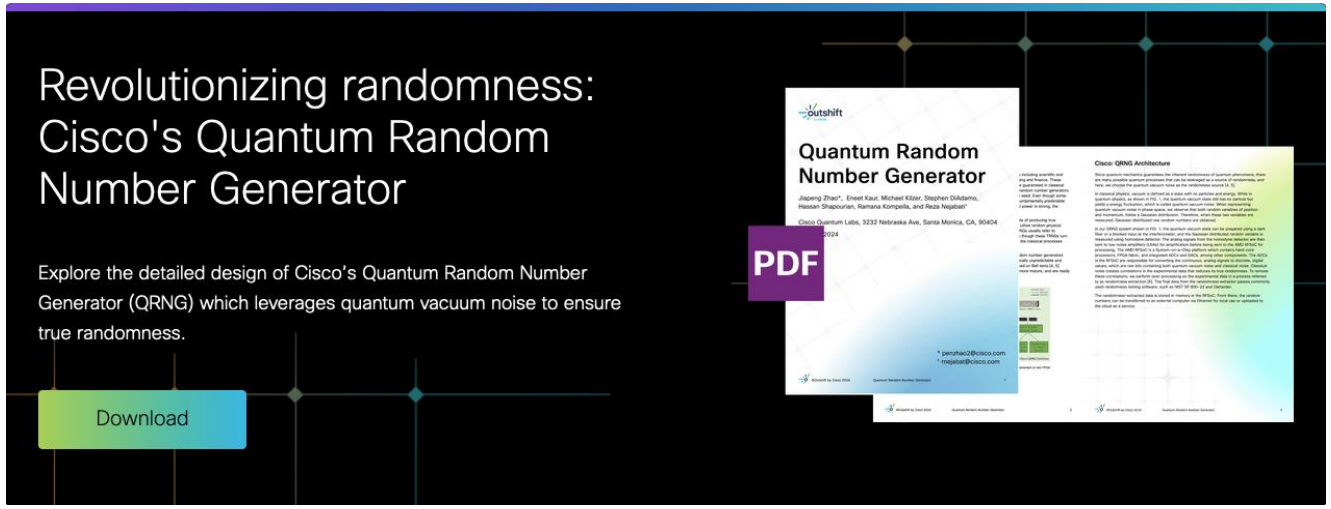


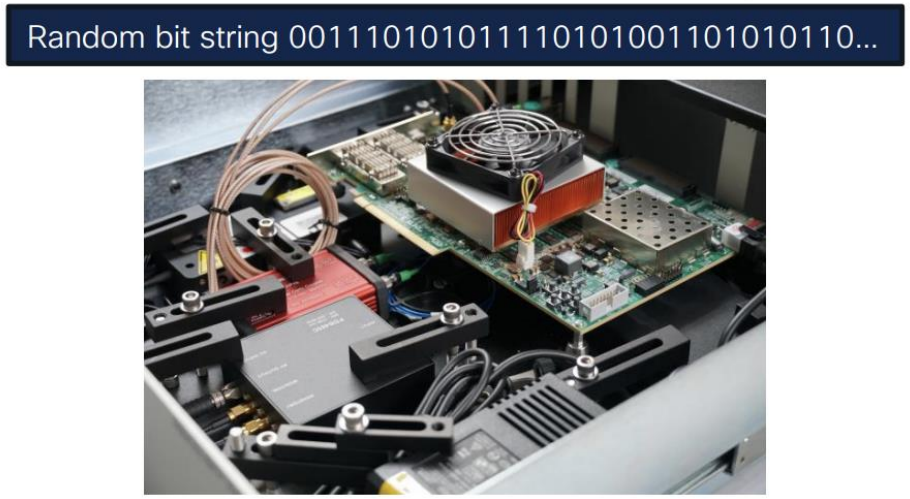
Tech トレンドやTips的なトピック



チームメンバーの紹介なんかも

QRNG (Quantum Random Number Generator)





古典的なRNG: PRNG/TRNG >> 数学的、古典物理法則の複雑性に依存するため、本質的にはDeterministic
QRNG: 量子力学の特性を利用したRNGは理論上”真”の乱数を生成可能
Quantum Vacuum noiseをソースとしたQRNGで高速データレートを実現可能

QRNGユースケース
暗号、ゲーム、抽選/宝くじ(lottery industry)、モンテカルロ・シミュレーションなど

https://outshift.cisco.com/blog/unlocking-power-true-randomness-Cisco-quantum-random-number-generator
https://outshift-headless-cms-s3.s3.us-east-2.amazonaws.com/CREA-690_Quantum-WP-draft04.pdf

R&D

Research Areas

Cisco Research connects Cisco engineers with world-class academic researchers to explore strategically promising technologies.

Systems and Networking

Networking is our core. We're deeply interested in all related topics, as well as adjacencies that drive change in the way networks need to operate.

Related publications >

Artificial Intelligence & Machine Learning

We explore machine learning, deep learning and algorithms to enrich and optimize the experience of our products and solutions.

Related publications >

Cybersecurity

We're investigating new technologies to increase trust and address a broad range of the Internet's security & privacy challenges.

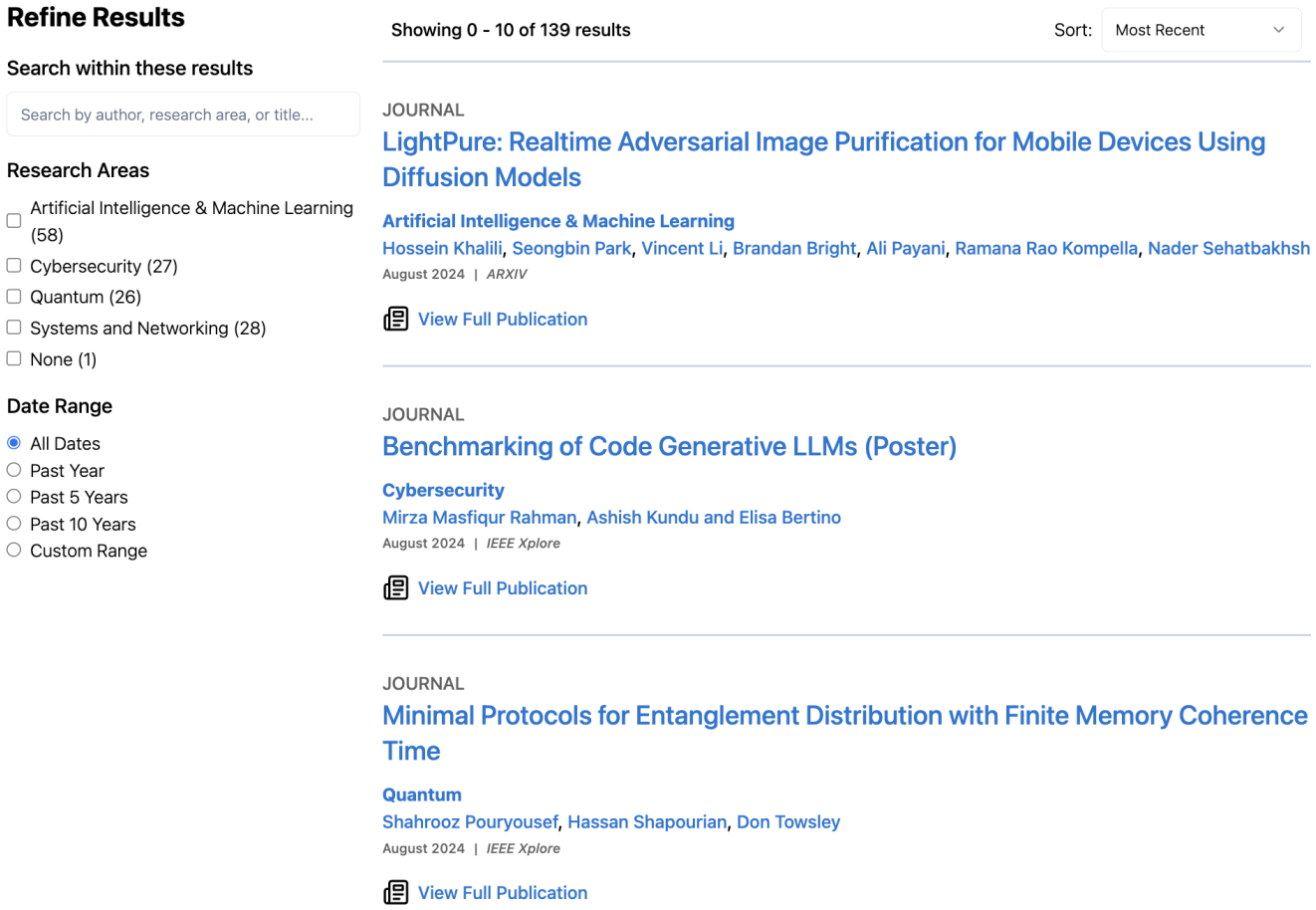
Related publications >

Quantum

We develop hardware and software technologies for quantum networking and quantum cryptography.

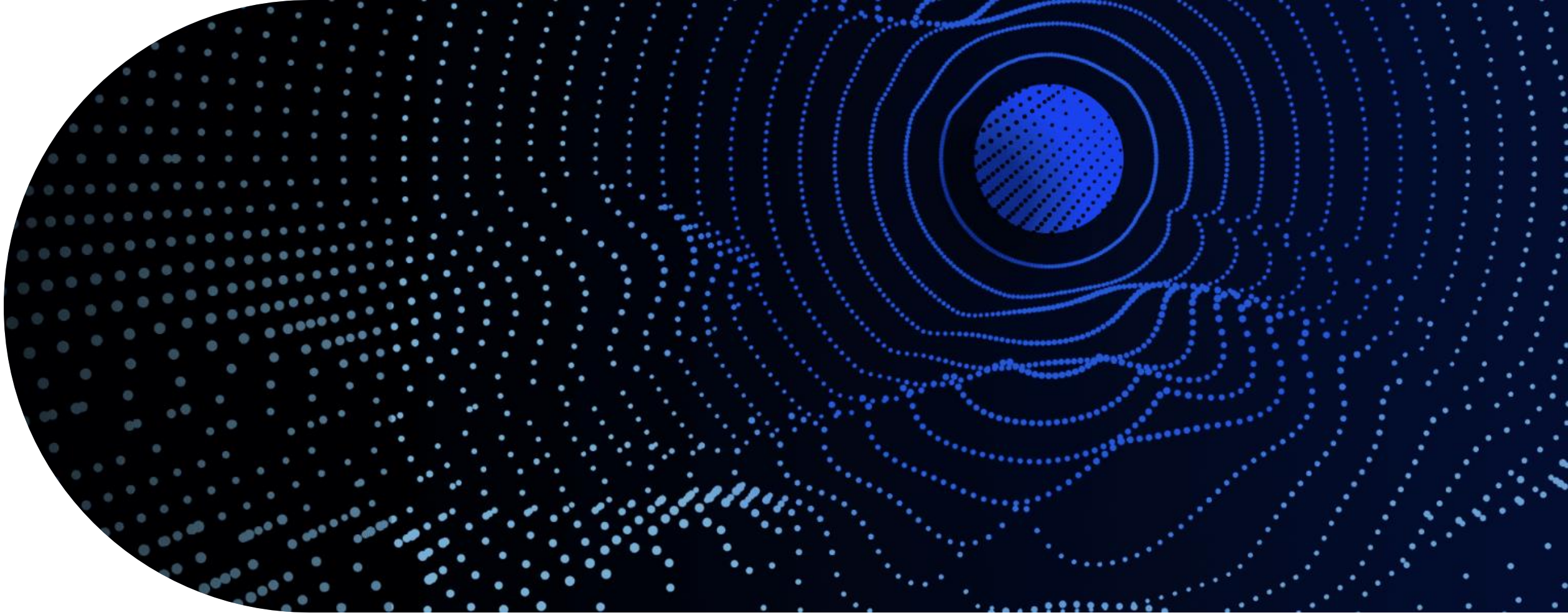
Related publications >

Cisco contributions in research



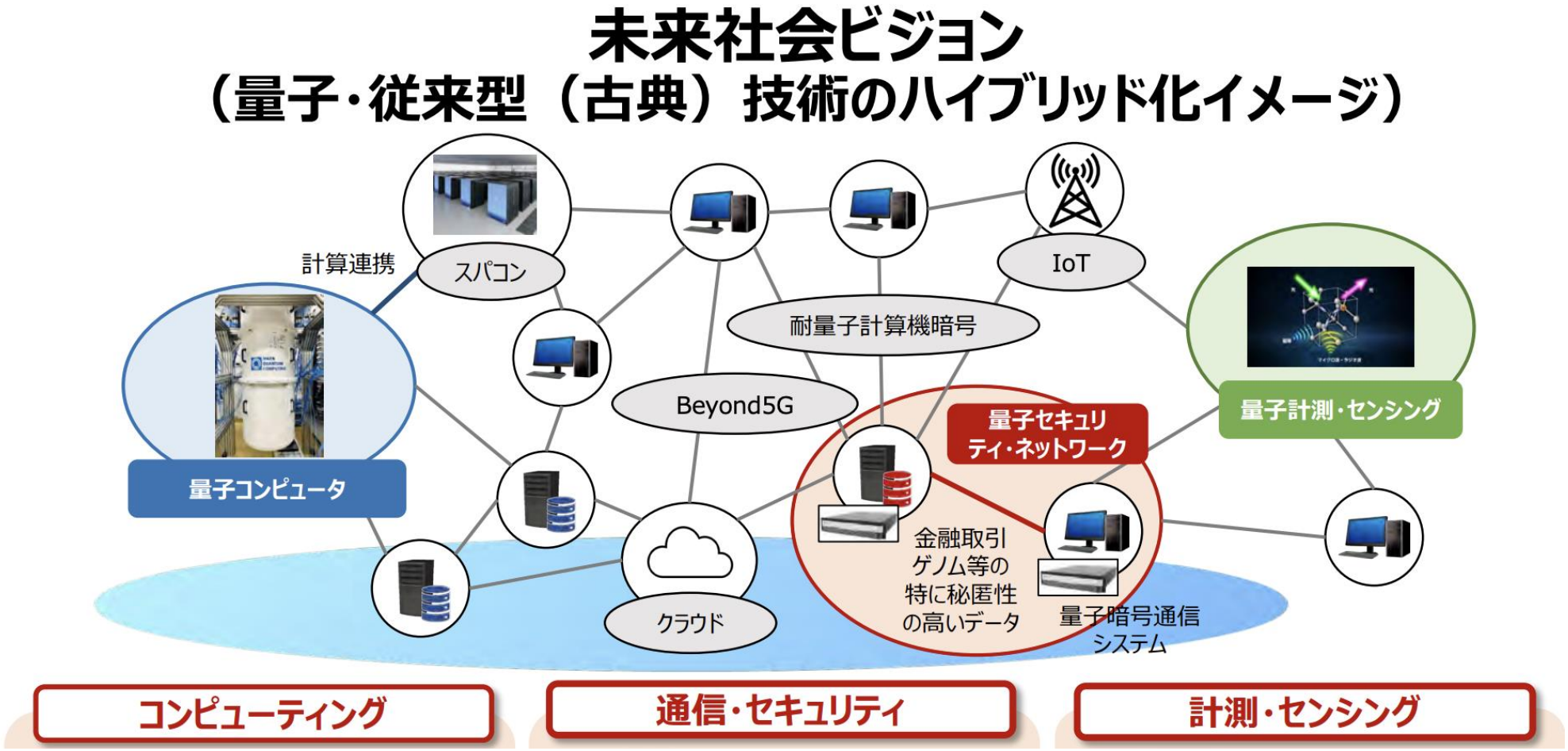
世界中の大学関係、様々な産業分野の方々と協業させていただいております。

https://research.cisco.com/publications



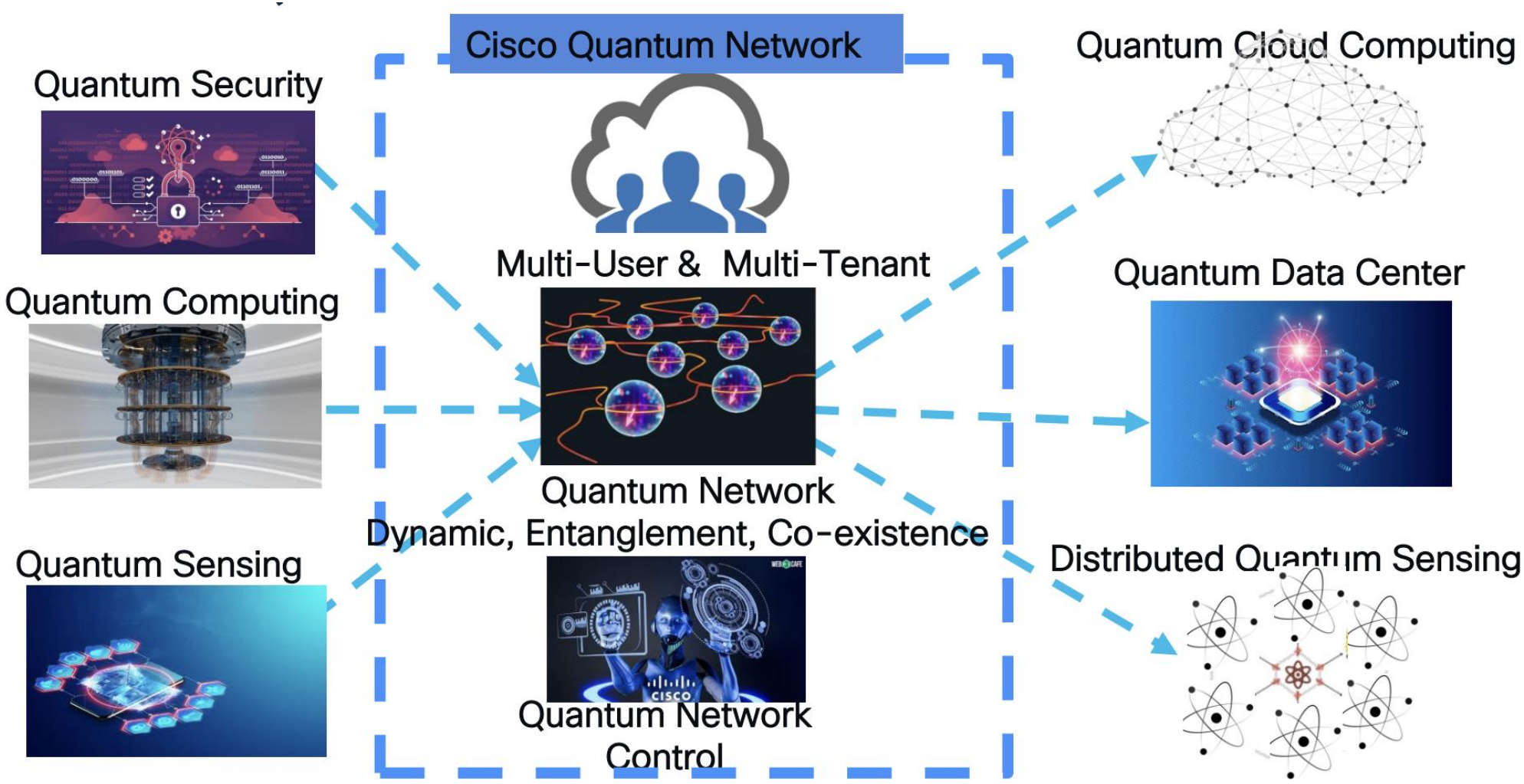
Quantum Networking Research & Development

量子技術の活用が期待されるエリア



量子未来社会ビジョン:内閣府 科学技術・イノベーション推進事務局
https://www8.cao.go.jp/cstp/ryoshigijutsu/ryoshi_gaiyo_print.pdf

Cisco Quantum vision



Cisco Quantum summit

年に1度、業界や学術関係者などをご招待し開催されるVirtual Event

Cisco Quantum Summit 2024

Tuesday, September 10, 2024

Agenda

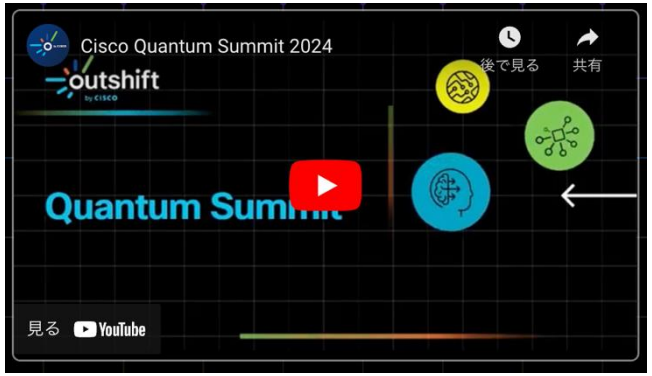
Time	Section title	Speaker
9:00 AM	Welcome: Cisco vision	Reza Nejabati, Head of Quantum Research, Cisco

Session 1: Keynotes and Panel Discussion

Time	Section title	Speaker
9:10 AM	Keynote: Building a practical quantum network from security to distributed quantum computing	Andrew Lord, Sr. Manager, Optical Networks and Quantum Research at British Telcom
9:35 AM	Keynote: Advances in Entanglement Distribution Protocols	Donald Towsley, Distinguished Professor, University of Massachusetts Amherst
10:00 AM	Keynote: Building Scalable Quantum Technologies for Network and Computing	Prof. Prineha Narang, UCLA
10:25 AM	Keynote: Network for Distributed Quantum Computing	Prof. Elham Kashefi, University of Edinburgh Chief Scientist NQCC
10:50 AM	Panel Discussion: Quantum Network Use Cases and Architecture from security to distributed computing	Host: Ramana Kompella, Head of Cisco Research
11:15 AM	Break	

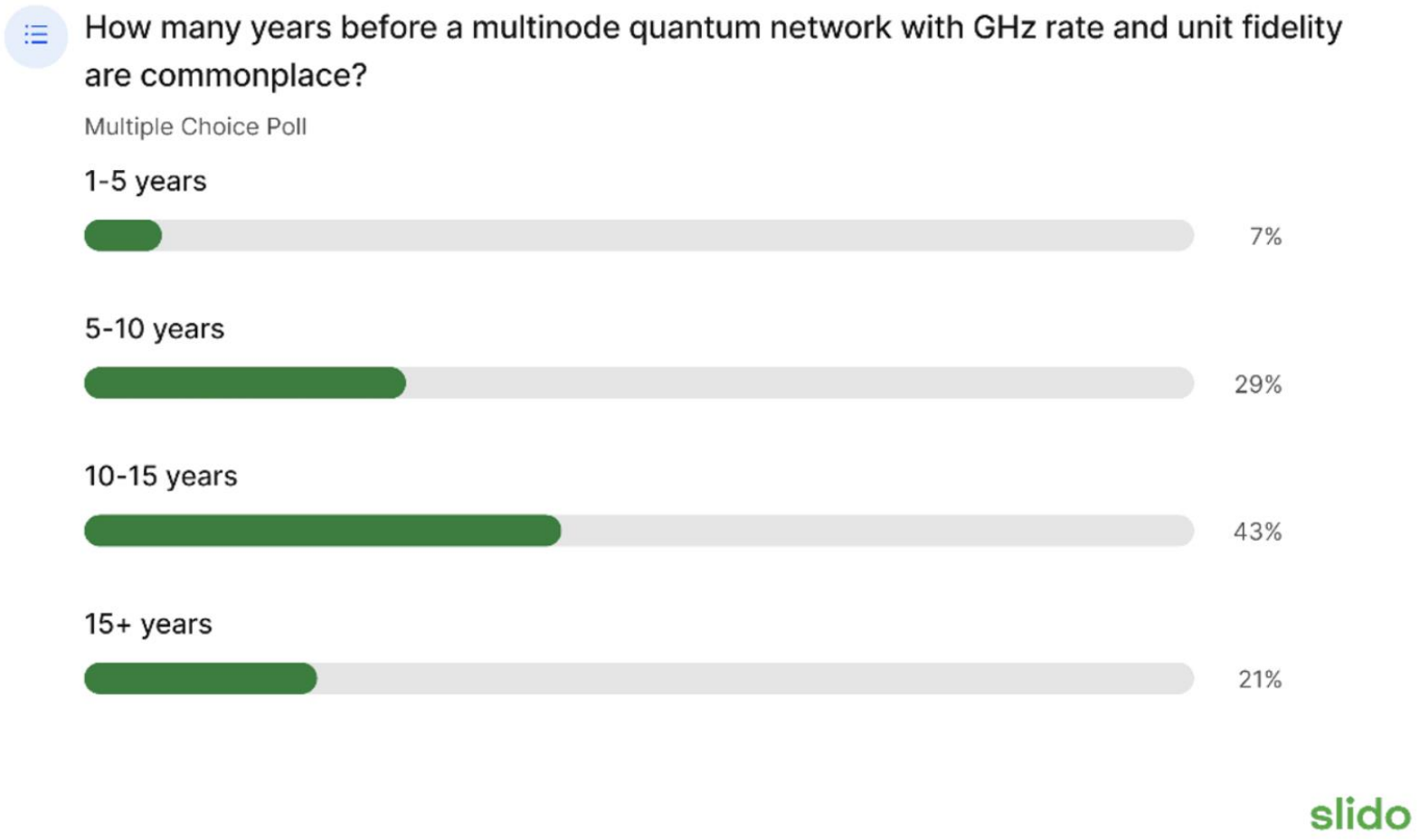
https://research.cisco.com/quantum-summit

録画あります！



https://youtu.be/f5VDYlmz4R8?si=zaMBK_XImC2ayOp_

Quantum summit 2023 recap



Quantum Computing & Networking :チャレンジ

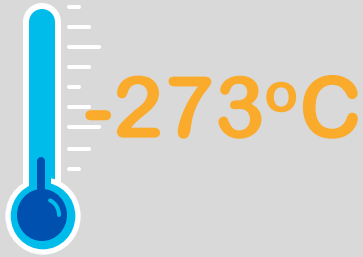
まだまだ多い。。基礎的な理論構築～デバイス開発まで

Developing Larger Quantum Computers
Current Record: 1180 qubits

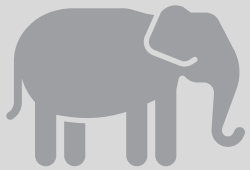
Achieving Longer Quantum Coherence
Current Record: 343 ms

Requiring Fewer Qubits for Error Correction
Current Record: 48

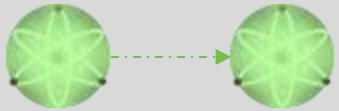
Extending Entanglement
Current Record: 248 km



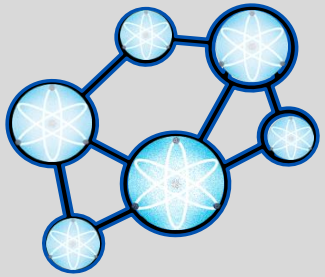
Raising Operating Temperatures



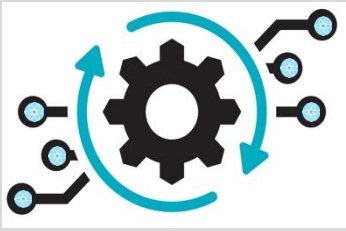
Achieving Longer Quantum Memory



Improving Quantum Transmission Fidelity



Planning & Modelling Quantum Networks



Developing Quantum Network Protocols

Lowering Costs

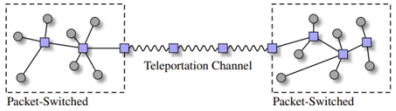
Steps to Building a Quantum Network

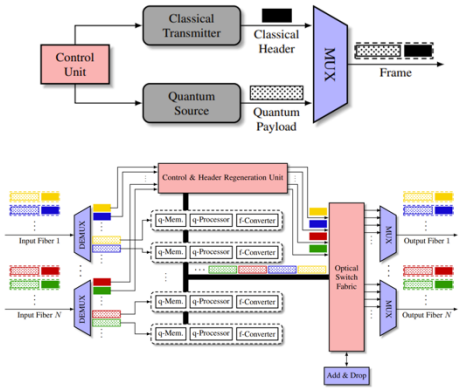
1) Quantum Network Research
2) Quantum Network Simulation
3) Quantum Network Lab testing

Quantum network Research

Modelling a Unified Classical & Quantum Internet

- "We are now with Quantum Internet where we were with the classical Internet in the 1960s"
- The Cisco Research team has published a paper on how can we design a network that can serve thousands and eventually millions of end nodes

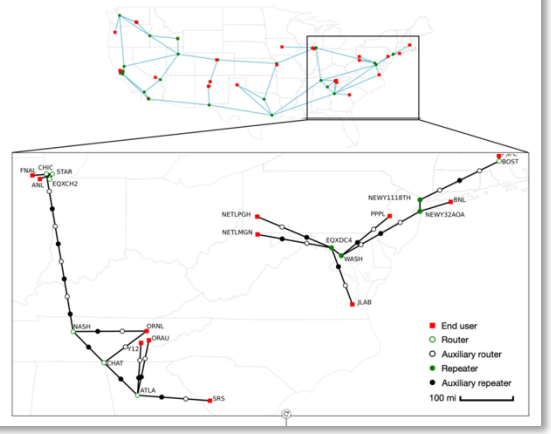




https://outshift.cisco.com/blog/making-a-quantum-ready-internet
https://arxiv.org/abs/2205.07507

Planning Quantum Networks Over Existing Fiber Networks

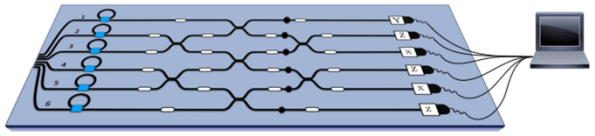
- In another paper, the Cisco Research team developed a framework to guide the first steps of planning a quantum network using the existing optical network infrastructure
- This framework was formulated as an optimization problem
  - Specifically as an Integer Linear Programming (ILP) problem



https://techblog.cisco.com/blog/first-steps-to-quantum-network-planning
https://arxiv.org/abs/2308.16264

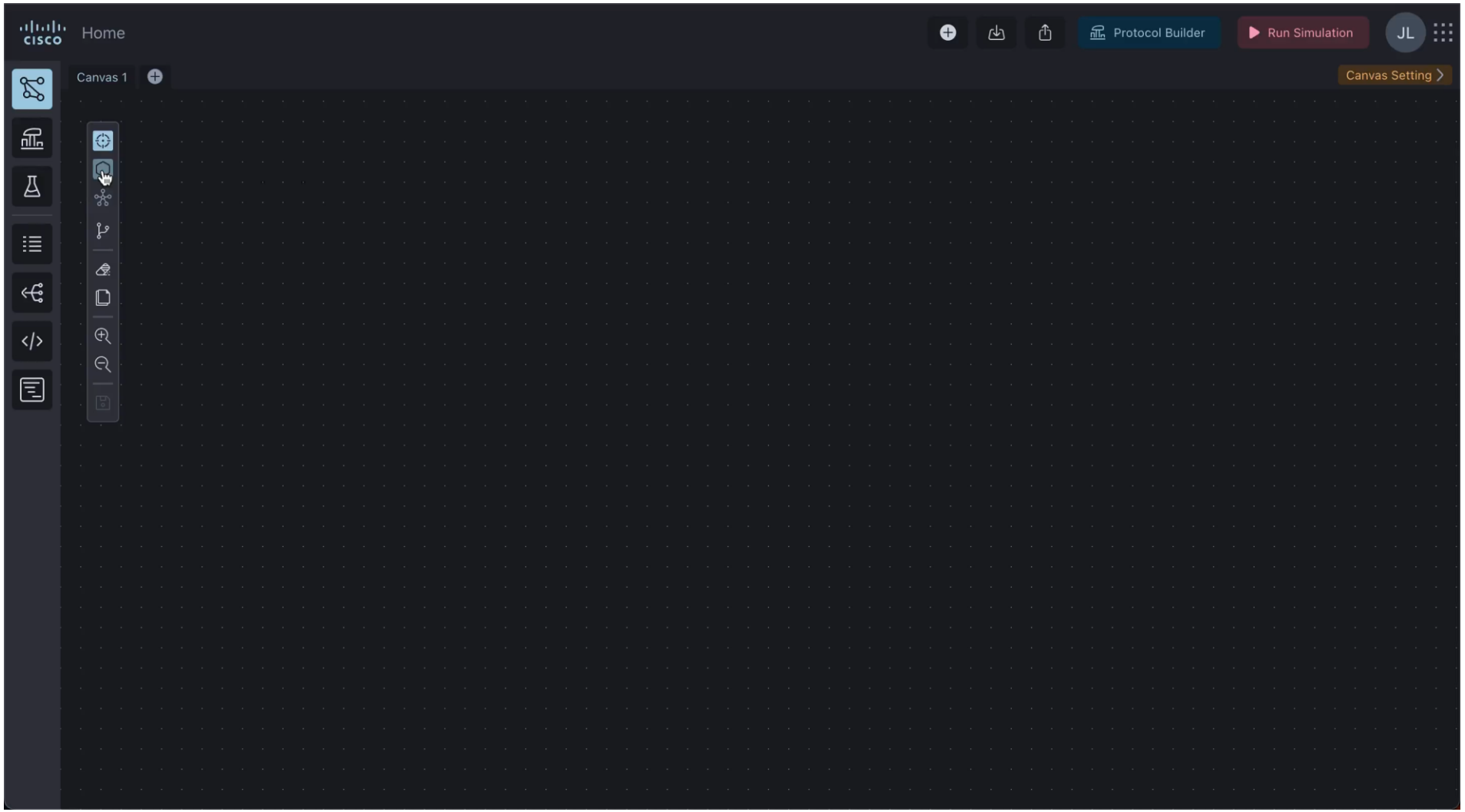
Photonic Quantum Processors

- Quantum photonics emerges as a promising platform for scalable quantum information processing
  - possibly at room temperature
- These directly enable quantum networking
  - by serving as a repeater for quantum error correction, or
  - as a server for distributed quantum computing resources



https://outshift.cisco.com/blog/how-powerful-are-photonic-quantum-processors

Quantum Network Design Kit (QNDK) Simulator

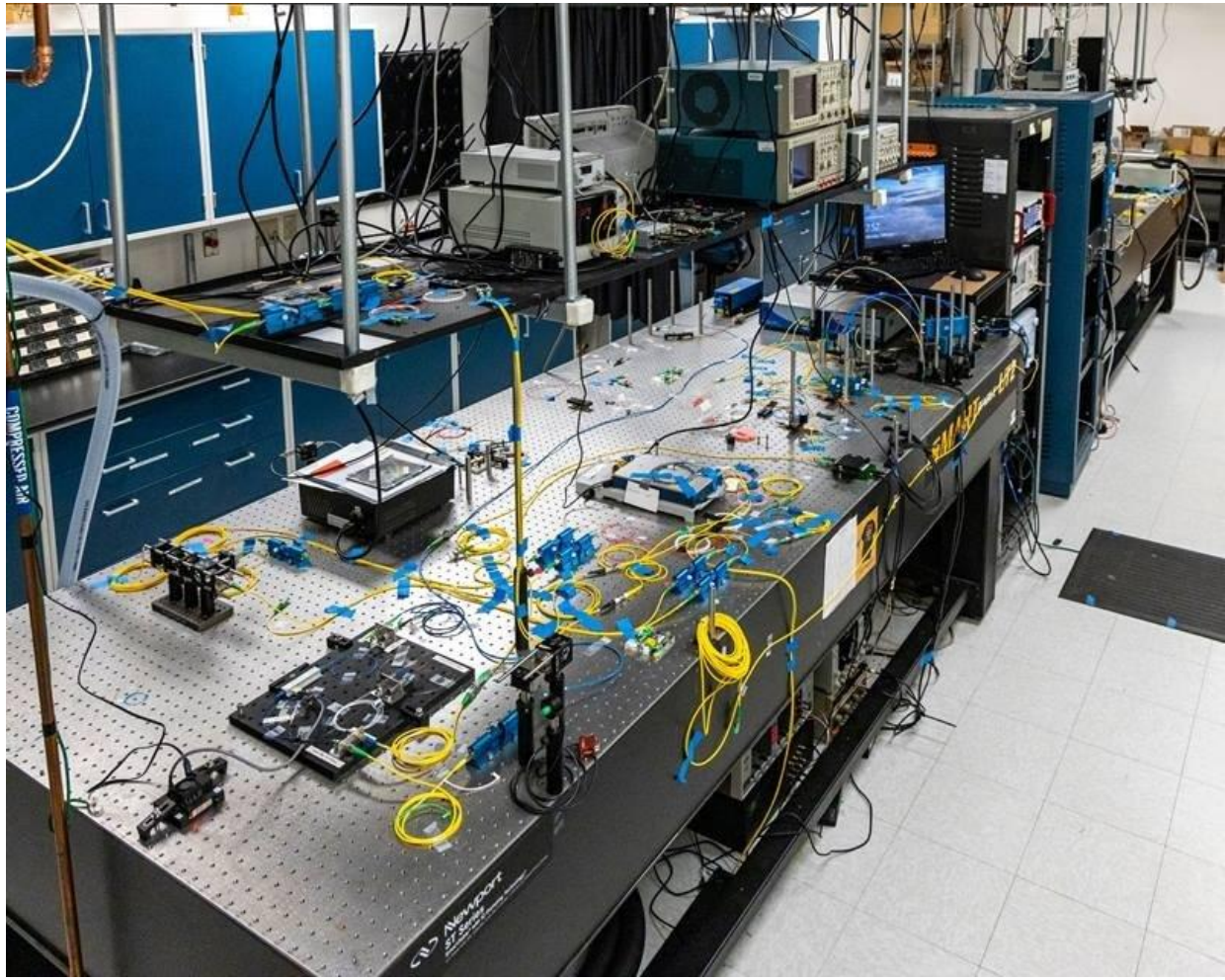


Simulation

https://research.cisco.com/research-projects/qnet-lab

Cisco Quantum Research Lab

- 2023年3月にCalifornia Santa Monicaにオープン



https://outshift.cisco.com/blog/quantum-research-lab-announcement

Summary

まとめ

- Outshift by Cisco

は新たなマーケット開拓しイノベーションをドライブするシスコのIncubation Engineです

- OutshiftのProductご紹介
  - Panoptica—Simplifying Cloud Native Application Security

- Quantum Technologyの取り組み


outshift
by CISCO