マイクロソフトの Open Compute Project 最新動向

Osamu Takazoe　(Microsoft Japan)

ベースセッション

https://youtu.be/ug0GwWAEZnA

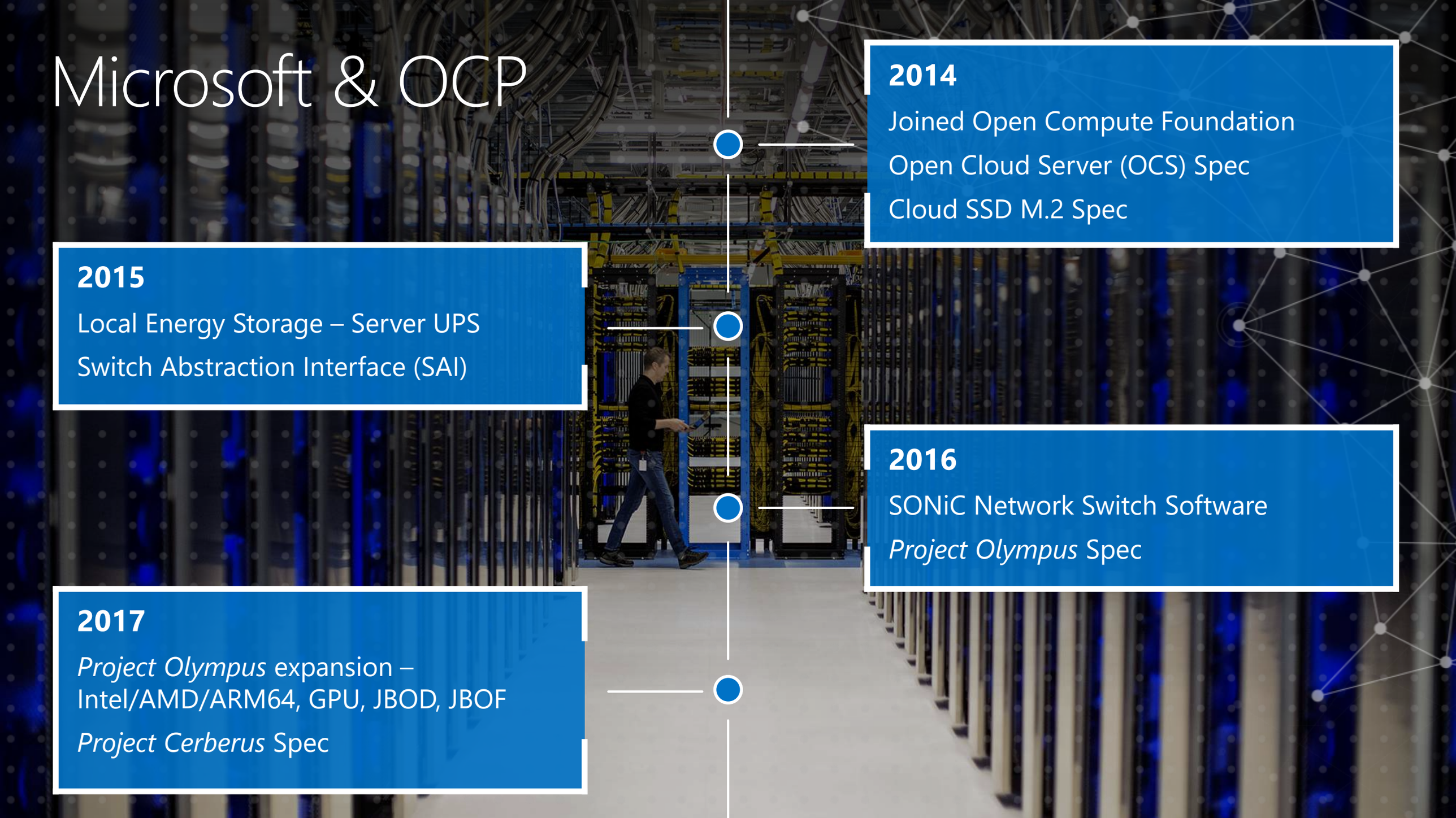
Cloud Scale Innovations for Security and Flash Storage

Kushagra Vaid
Distinguished Engineer & General Manager
Microsoft

OPEN HARDWARE. OPEN SOFTWARE. OPEN FUTURE.

OPEN Compute Project

Microsoft & OCP



2014

Joined Open Compute Foundation

Open Cloud Server (OCS) Spec

Cloud SSD M.2 Spec

2015

Local Energy Storage – Server UPS

Switch Abstraction Interface (SAI)

2016

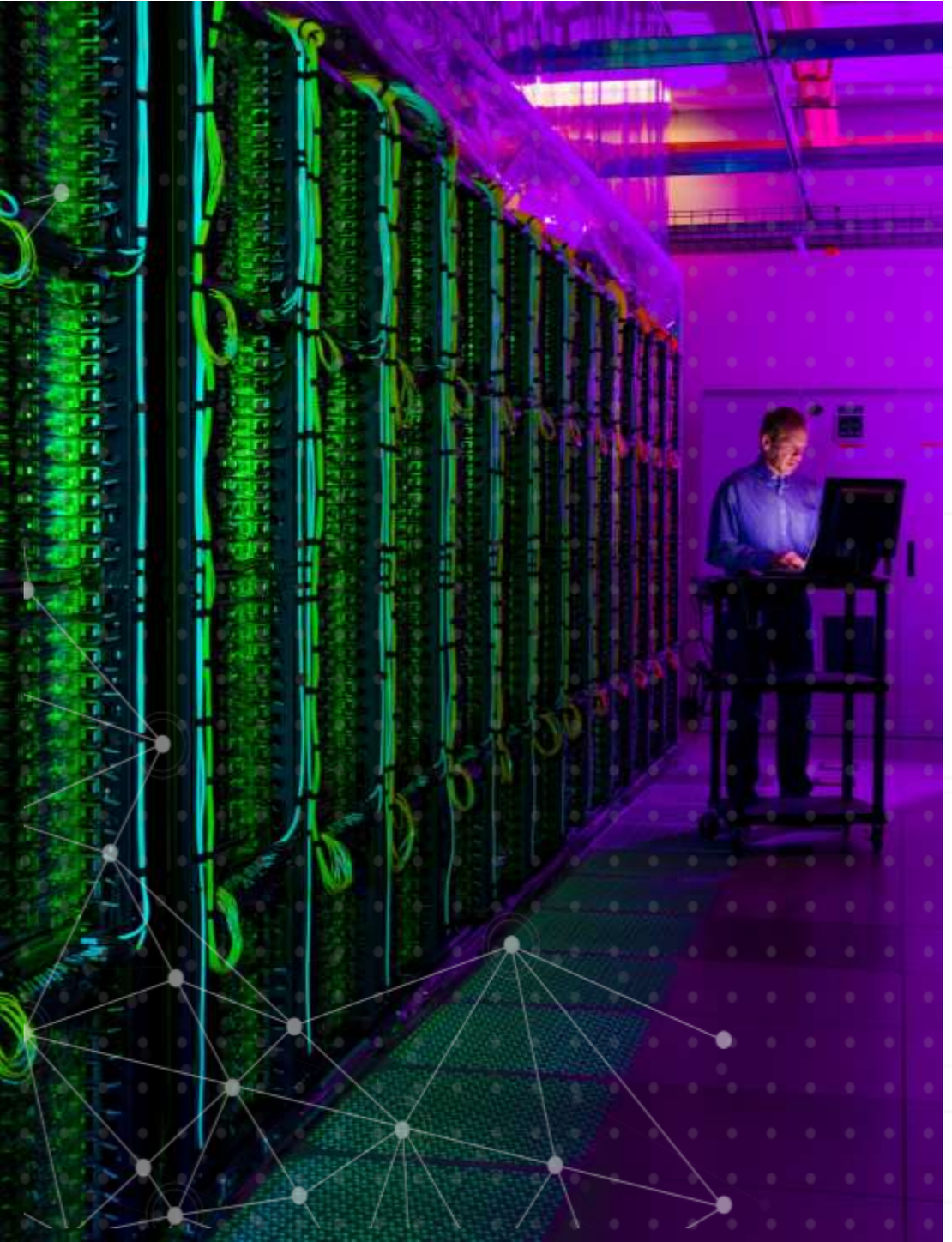
SONiC Network Switch Software

Project Olympus Spec

2017

Project Olympus expansion – Intel/AMD/ARM64, GPU, JBOD, JBOF

Project Cerberus Spec



Learn more

Tues March 20

1:30pm-1:45pm
Project Olympus: Top Ten Questions Answered

2:00pm-2:25pm
Project Olympus: Fulfilling the Promise of Open Hardware

Weds March 21

9:00am - 9:30am
Project Olympus: Open Sourced Systems Available Today

10:00am – 12:00pm
Security Team Work Session

10:00am –10:15am
Project Olympus: Expansion Chassis

10:30am - 10:50am
SONiC: Programmability, Extensibility and Beyond

10:30am - 11:00am
Denali: The Next-Generation High Density Storage Interface

1:00pm - 1:20pm
SIA Update and Looking Forward

1:00pm - 2:00pm
Project Cerberus

2:00pm - 3:00pm
Firmware, the Final Frontier: Achieving the Promise of OCP by Making OCP Nodes Truly Flexible

“Cybersecurity is like going to the gym. You can’t get better by watching others, you’ve got to get there every day.”

Satya Nadella
CEO, Microsoft

ハードウェアプラットフォームをセキュアに

セキュリティ開発ライフサイクル (SDL)

ハードウェアセキュリティ

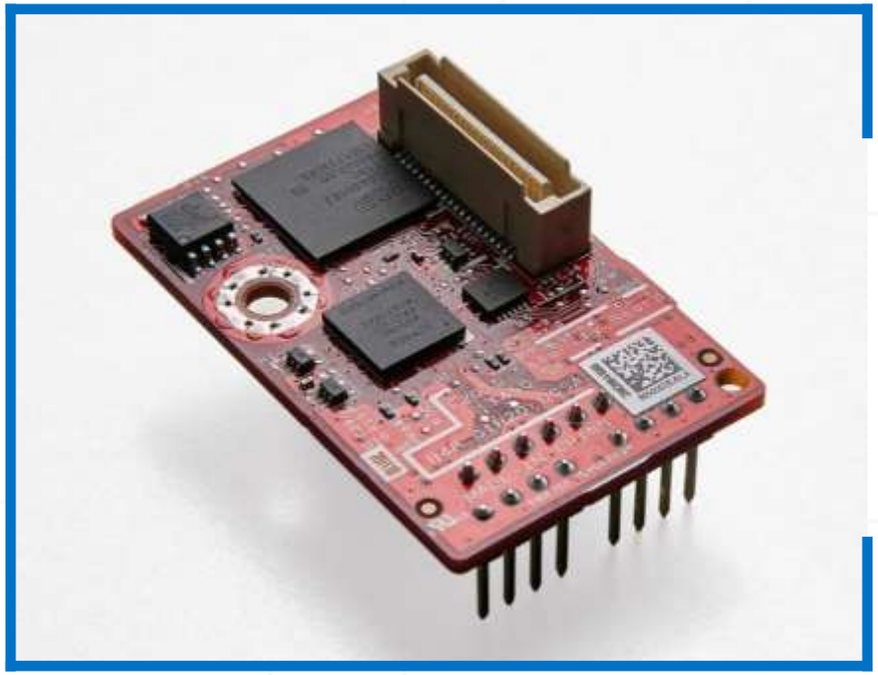
インフラストラクチャのセキュリティ制御

運用セキュリティコントロール

コンプライアンス

ファームウェアのサプライチェーン
UEFI セキュア & ブートのチェック
安静時の暗号化
コード整合性ポリシー
セキュアに稼働
認証

Project Cerberus | Hardware Root of Trust



Cerberus Riser Card

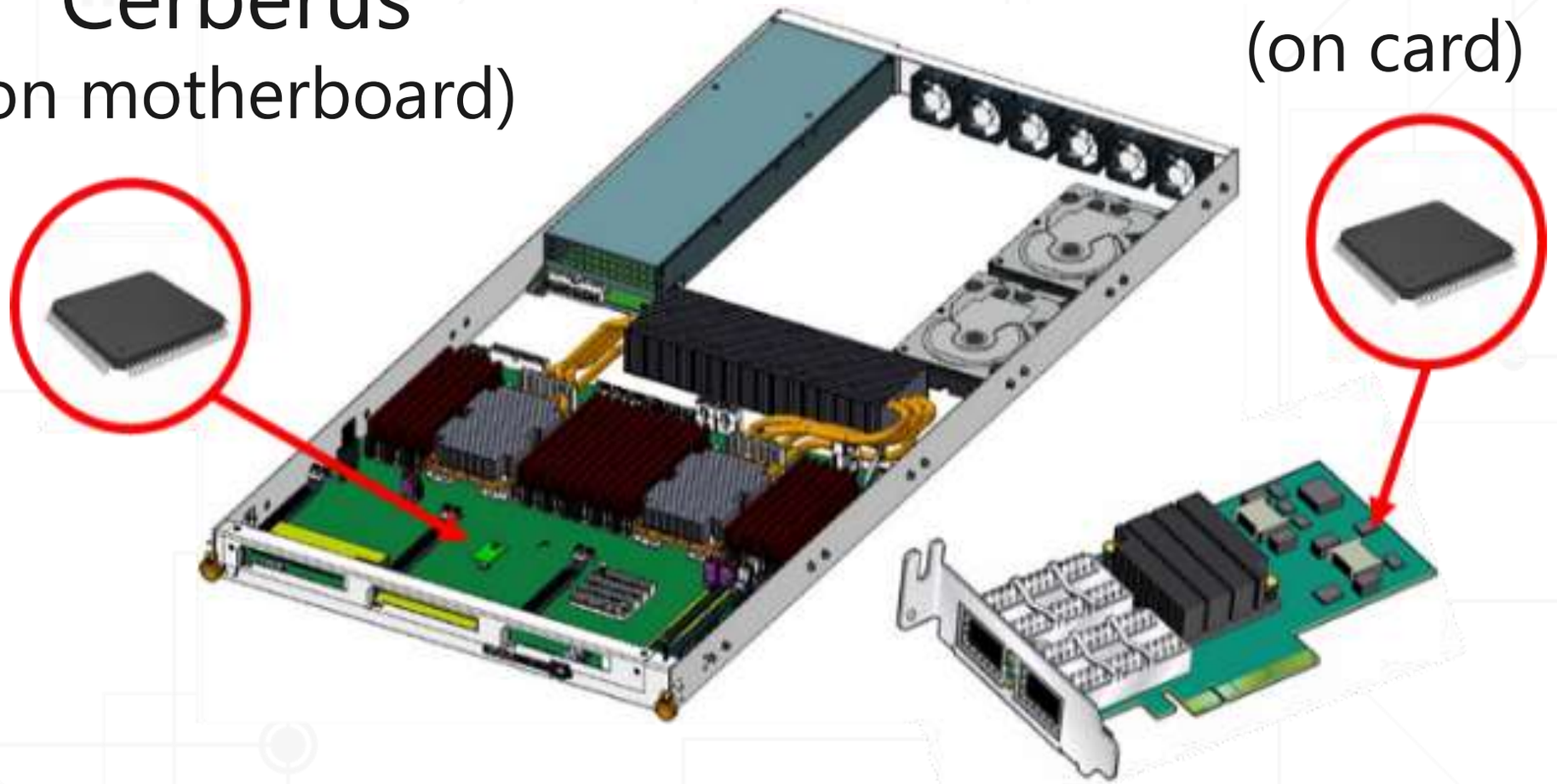
- 不正防止用 暗号化マイクロコントローラは すべてのファームウェアにデジタル署名を 適用
- 不正アクセスを防止
  ブート前、ブート時、実行時
- サプライチェーン攻撃に対する保護
- CPU および I/O ベンダに非依存

さまざまな場面で利用可能に

Cerberus
(on motherboard)

Cerberus
(on card)

Cerberus
(in device)



Project Cerberus | Ecosystem partners


Announcing
Project Denali

Challenges with current SSDs

Every generation is completely new

- Requires monolithic approach
- New media, controller, and firmware

Enterprise SSDs aren't designed for the Cloud

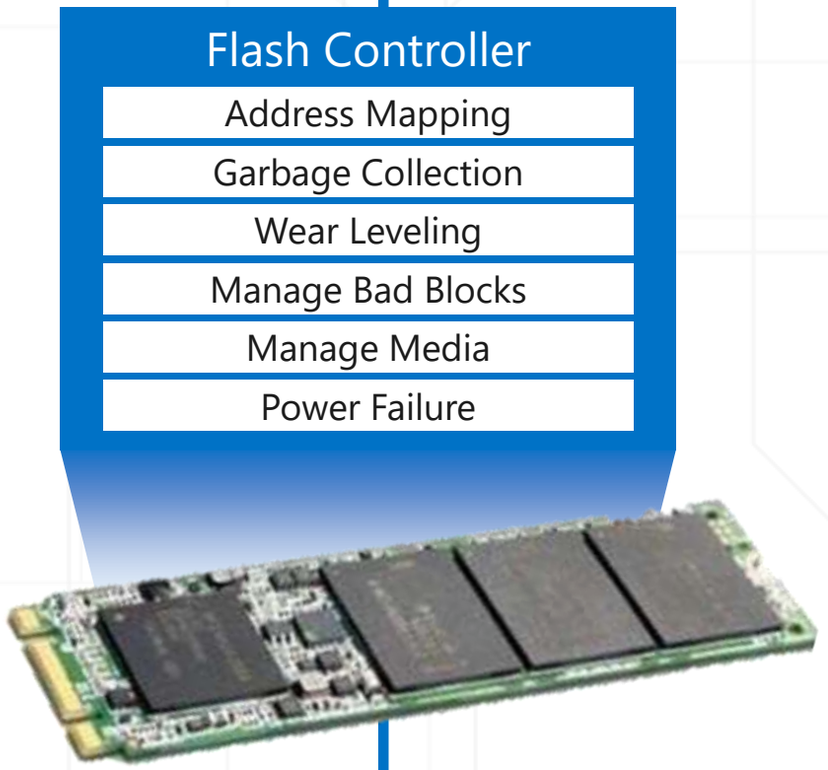
- Not adaptable to changing workload patterns
- Data layout statically managed

Becoming too complex with new services

- Object based interfaces
- Integrated applications / accelerators

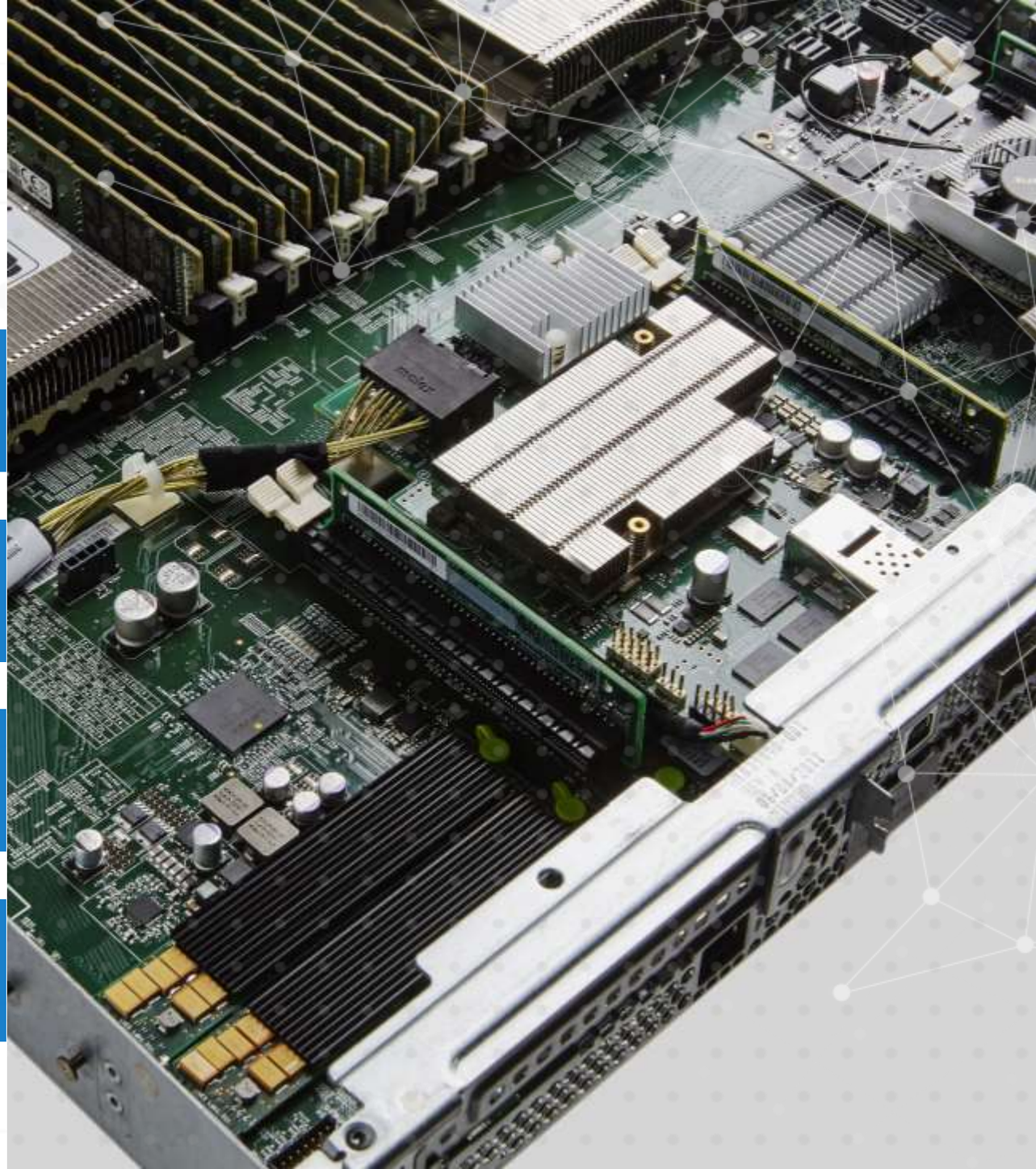
Industry fragmentation

- Limits innovation and adoption

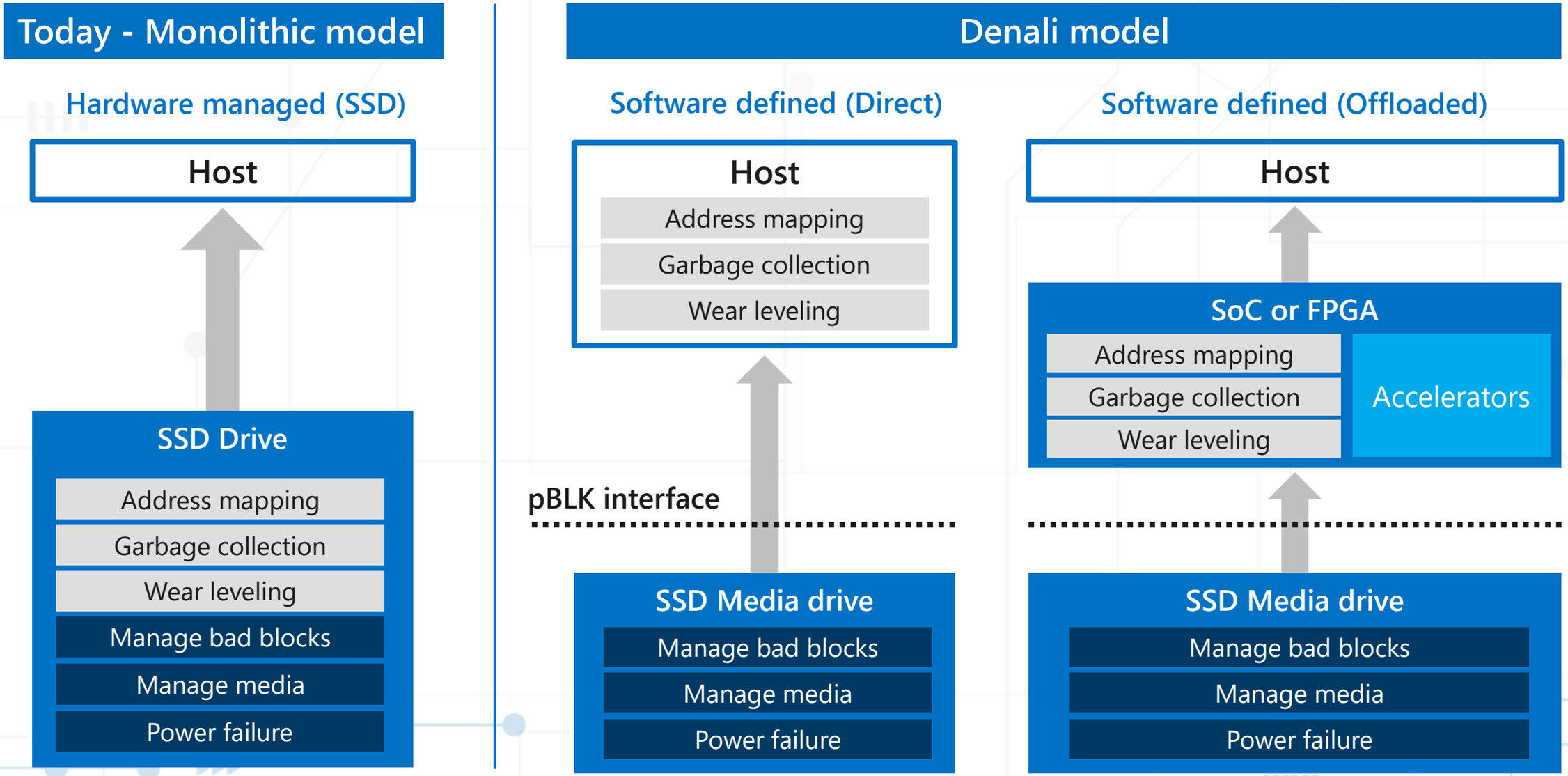


Project Denali

- Next generation SSD standard
  Cloud First
- Disaggregated architecture
  Choice and flexibility
- Agility for new NAND and storage class memory for the next decade
- Software Defined SSD driven by the application



The disaggregation of flash storage

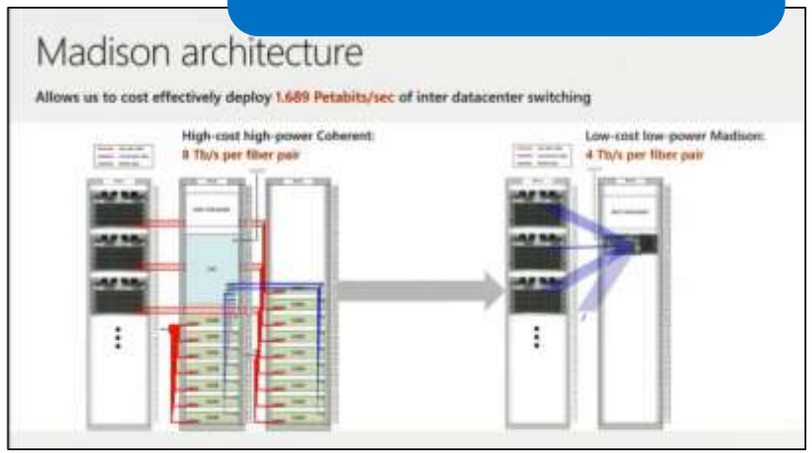


Project Denali | Ecosystem partners

おまけ

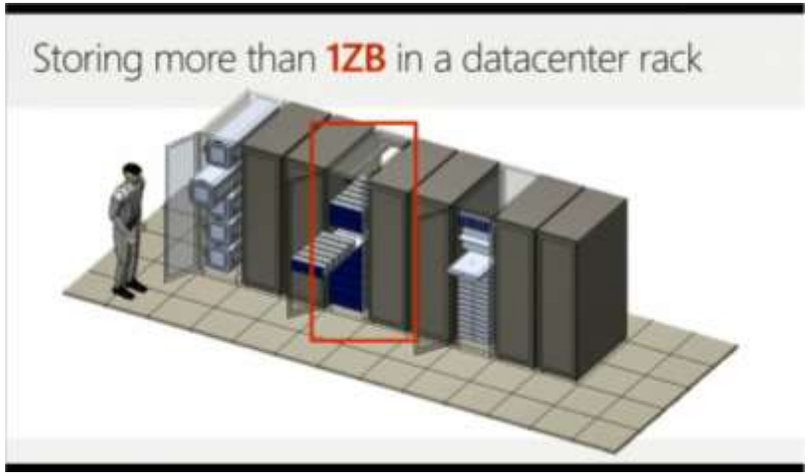
Speed & Capacity へのチャレンジ

データセンター間で
1.69 ペタバイト/秒



新しい記録媒体

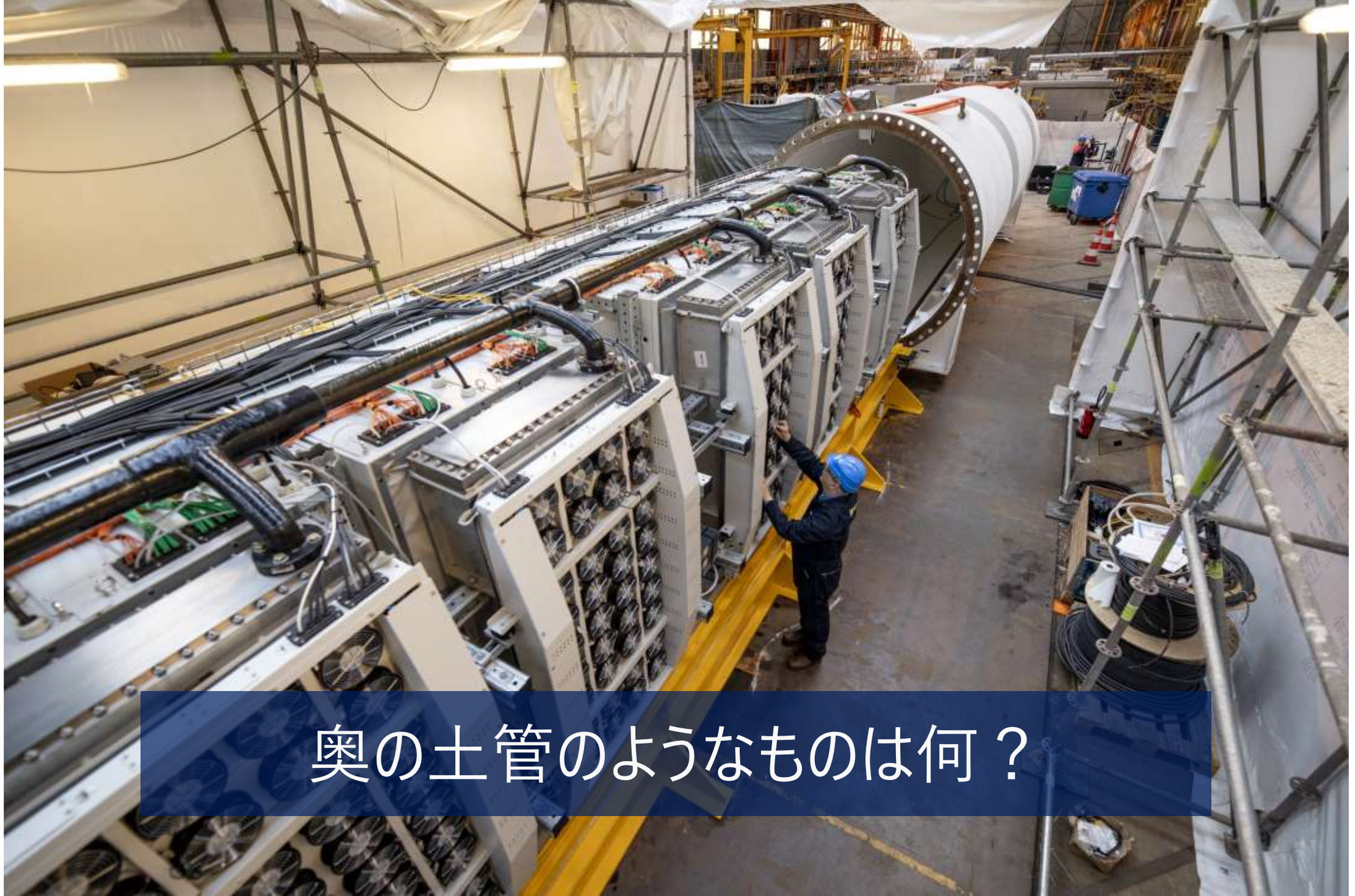
Project Palix
1ZB in a rack



MB → GB → TB → PB → EB → ZB → YB

研究は続く


何の作業をしているのでしょう？
Microsoft
Rack
E
Rack
F



奥の土管のようなものは何？

きれいな景色を見ている暇はない

レイテンシ(利用場所に隣接)、ほぼ無限の設置場所、
自然冷却装置、自然エネルギー ・・・

Microsoft

Azure