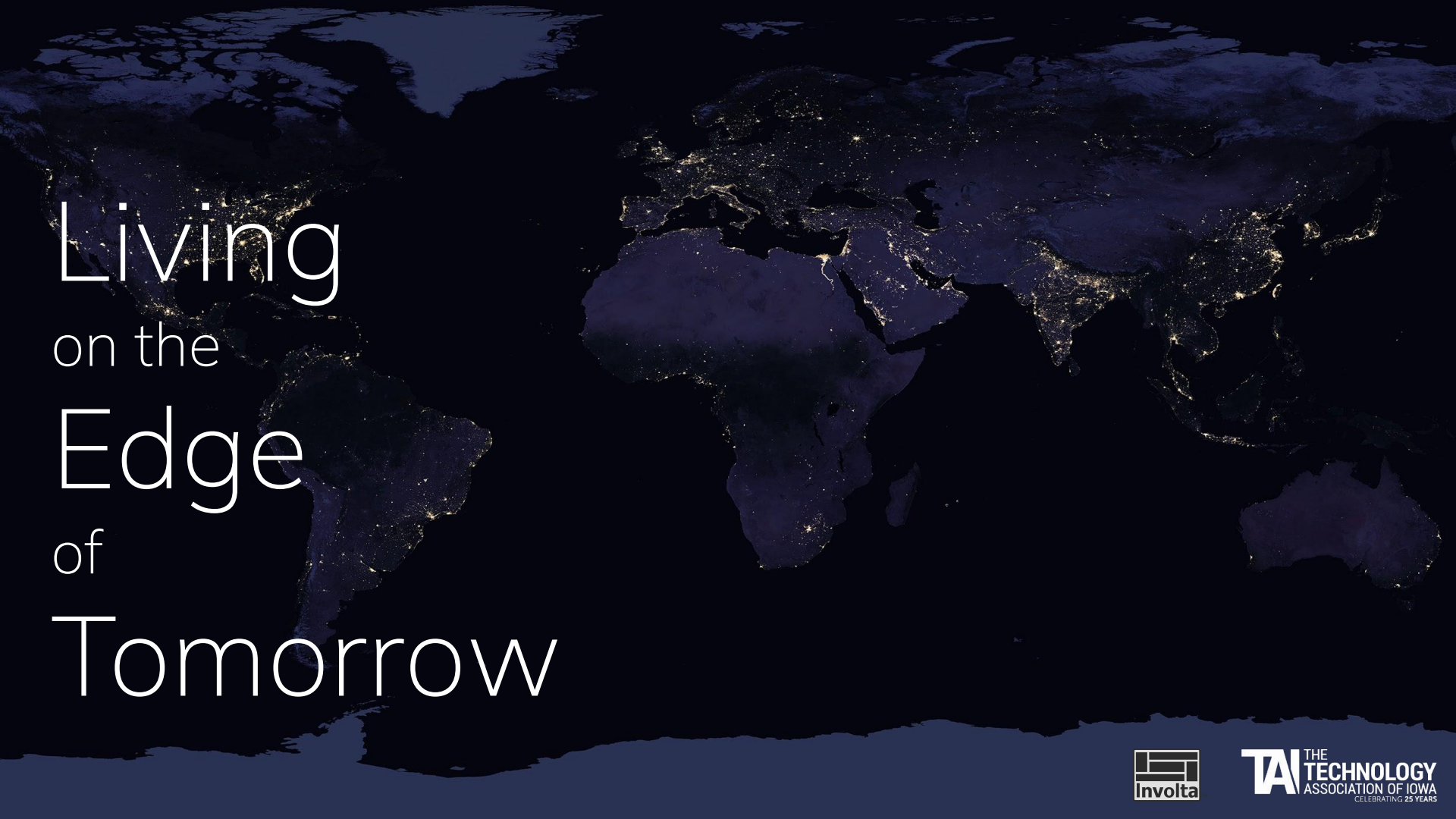
Living
on the
Edge
of
Tomorrow
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then and now

70s-80s

locally centralized

- Age of mainframes
- Universities
- Corporate data centers
- Timeshared

80s-00s

locally distributed

- Mid-range compute
- Corporate LANs
- Client-server apps

00s-20s

YOU ARE HERE

globally centralized

- Cloud services
- Hyperscale compute
- Internet apps
- Mobility
- Software-defined infrastructure

20s-??s

globally distributed

- Global edge
- Hybrid deployments
- Driven by low latency, exponential data growth, data sovereignty

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edge defined...ish

Edge computing is a distributed computing paradigm that brings computation and data storage closer to the location where it is needed, to improve response times and save bandwidth. – Eric Hamilton

Edge computing is a distributed computing model in which computing takes place near the physical location where data is being collected and analyzed, rather than on a centralized server or in the cloud. This new infrastructure involves sensors to collect data and edge servers to securely process data in real-time on site, while also connecting other devices, like laptops and smartphones, to the network. – Stratus.com

A part of a distributed computing topology in which information processing is located close to the edge – where things and people produce or consume that information. – Gartner

The edge is a network architectural model that brings technology resources, including compute and related infrastructure, closer to the end user—or to where the data is generated. It's a decentralized extension of cellular networks where data is processed and stored at the edge, with only key information transmitted to centralized data networks like the cloud. – Verizon

Centralized applications running close to users, either on the device itself or on the network edge - Cloudflare

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obvious

nebulous

myopic

key drivers

SPEED LIMIT

186

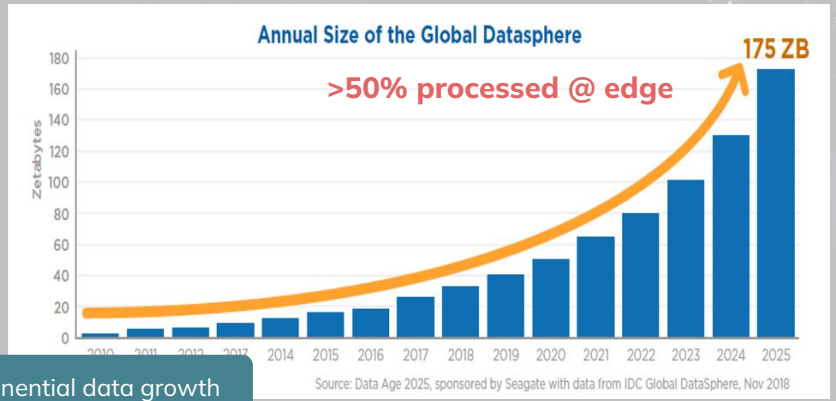
thousand mi/s

low latency

millisecond	186 miles
microsecond	< 2 miles
nanosecond	< 10 feet

safety critical systems

data sovereignty



exponential data growth

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why edge matters

- Augmented / virtual reality
- Gaming
- Immersive communications
- Interactive media
- Smart devices
- Autonomous vehicles

- assisted diagnosis
- medical research
- PACS
- Sensors
- Robotics
- Telehealth

- Autonomous devices
- Field service
- Predictive maintenance
- Quality control
- Smart factories
- Immersive operations

- Market prediction
- Expedited transactions
- Blockchain
- Personal kiosks
- POS personal offers
- Sensors (insurance)

"We have no right to assume that any physical laws exist, or if they have existed up until now, that they will continue to exist in a similar manner in the future."—Max Planck

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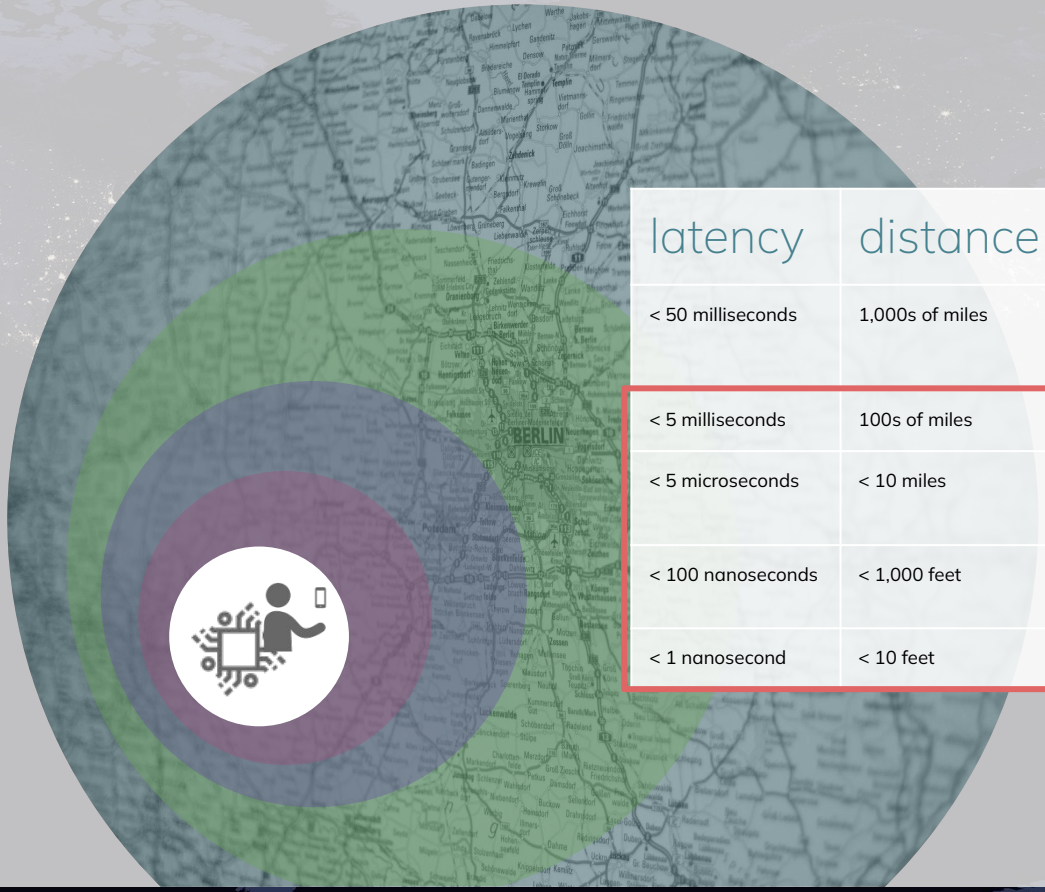
where is the edge?

closeness



latency	distance	scale	examples
< 50 milliseconds	1,000s of miles	regional data centers	hyperscale regions, national/continental enterprise data centers
< 5 milliseconds	100s of miles	local data centers	colocation providers
< 5 microseconds	< 10 miles	hyper local data centers, on premises	colocation providers, DIY
< 100 nanoseconds	< 1,000 feet	gateway edge devices	Jetson Nano, AWS Snowcone, server closets, Intel NUC
< 1 nanosecond	< 10 feet	local device / thing	iPhone, microcontrollers, SCADA

edge

where is the edge?

consumption

edge is here and there

"edge is close to my operations"

10s or less locations

example verticals

- healthcare
- manufacturing
- logistics

edge is everywhere

"edge is close to my customers"

100s or more locations

example verticals

- gaming
- ar/vr
- consumer electronics

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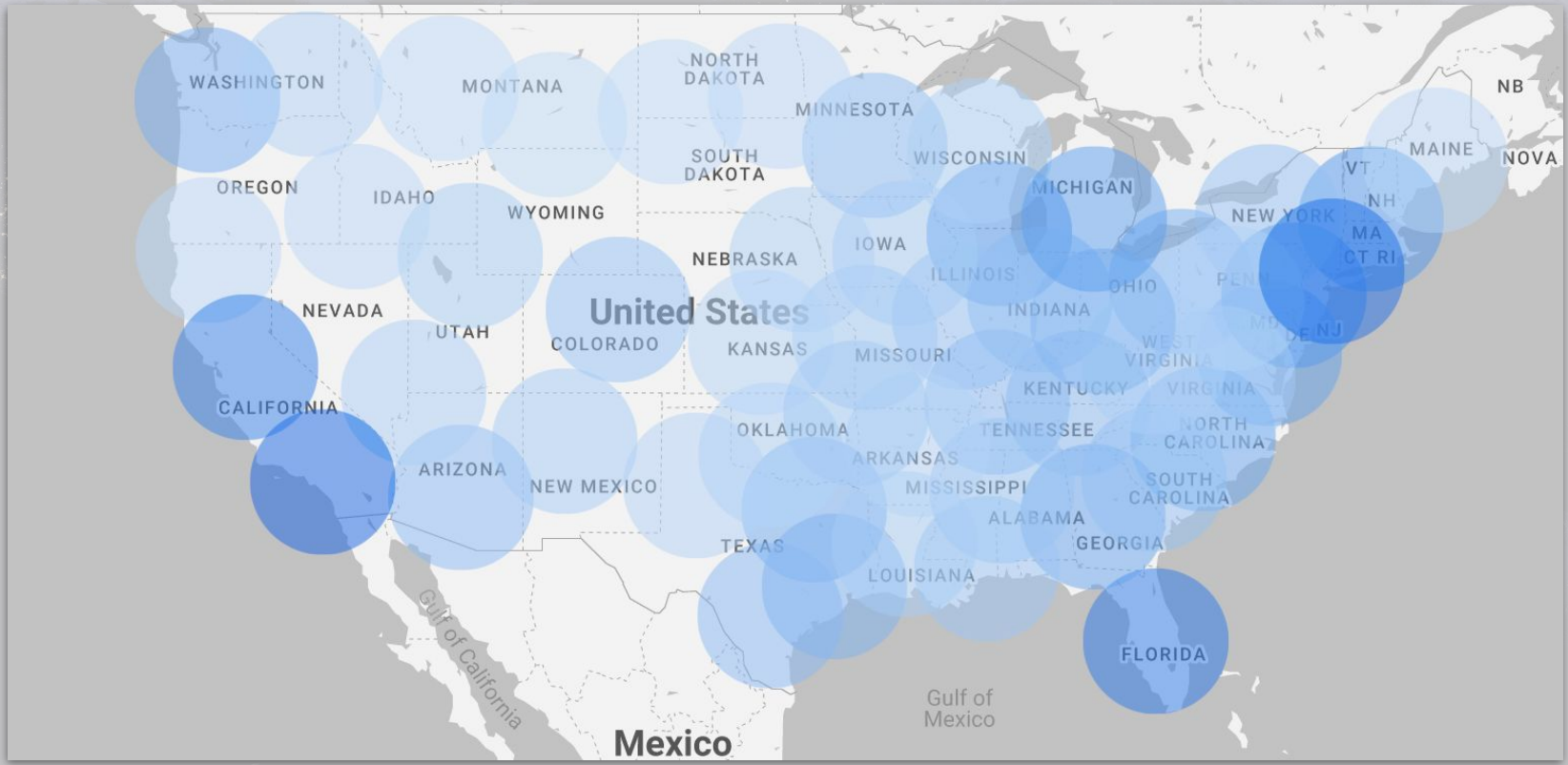
where is the edge?

geography



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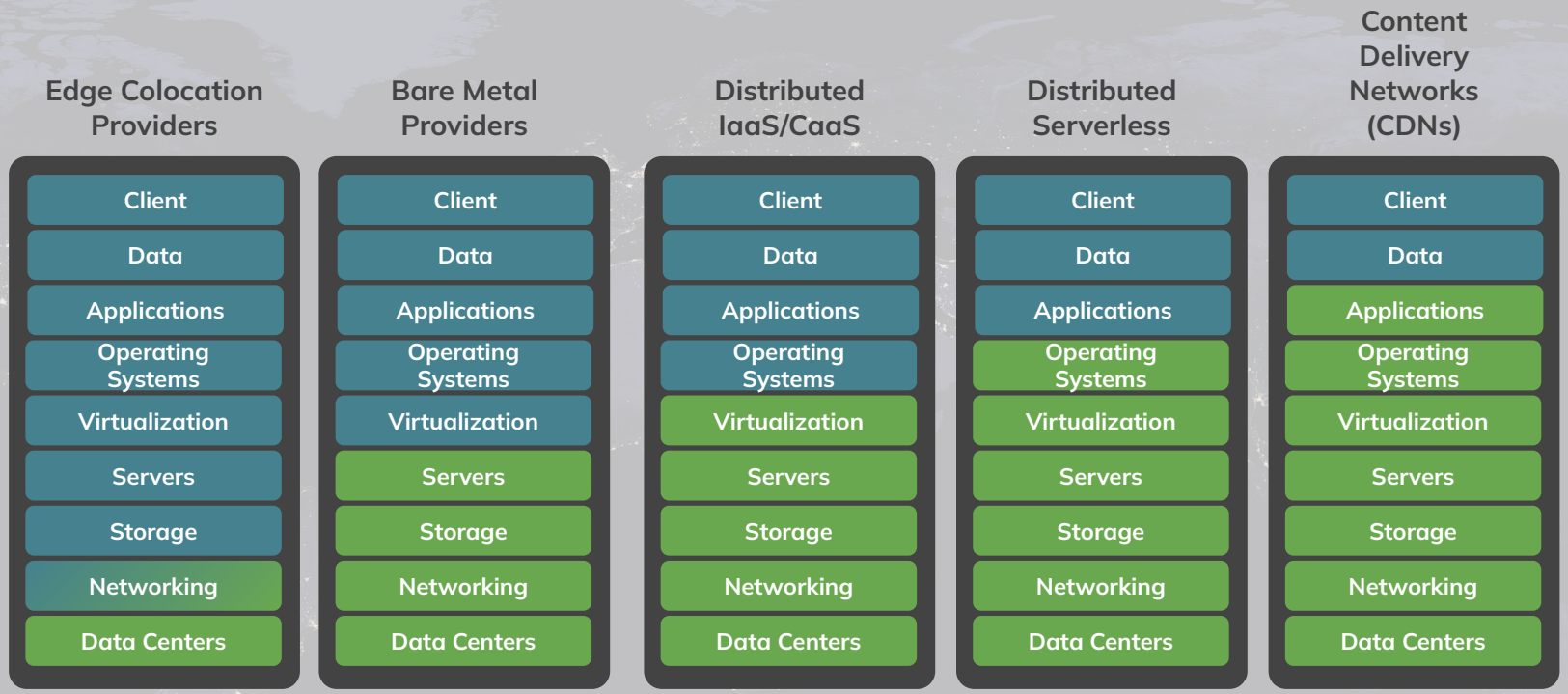
edge provider types



current marketscape

colocation providers

- edgevana
- Involta
- DIGITAL REALTY
- EQUINIX

bare metal providers

- EQUINIX METAL
- IBM Cloud
- rackspace
- ORACLE BARE METAL CLOUD SERVICE

distributed IaaS

DIY

- Anthos
- AWS Outposts
- Azure Stack
- VMware Tanzu
- RANCHER

distributed serverless

- CLOUDFLARE
- Akamai
- lambda@edge
- taubyte

content delivery networks

- Akamai
- CLOUDFLARE
- amazon cloudfront
- Cloud CDN
- GitHub Pages


looking forward
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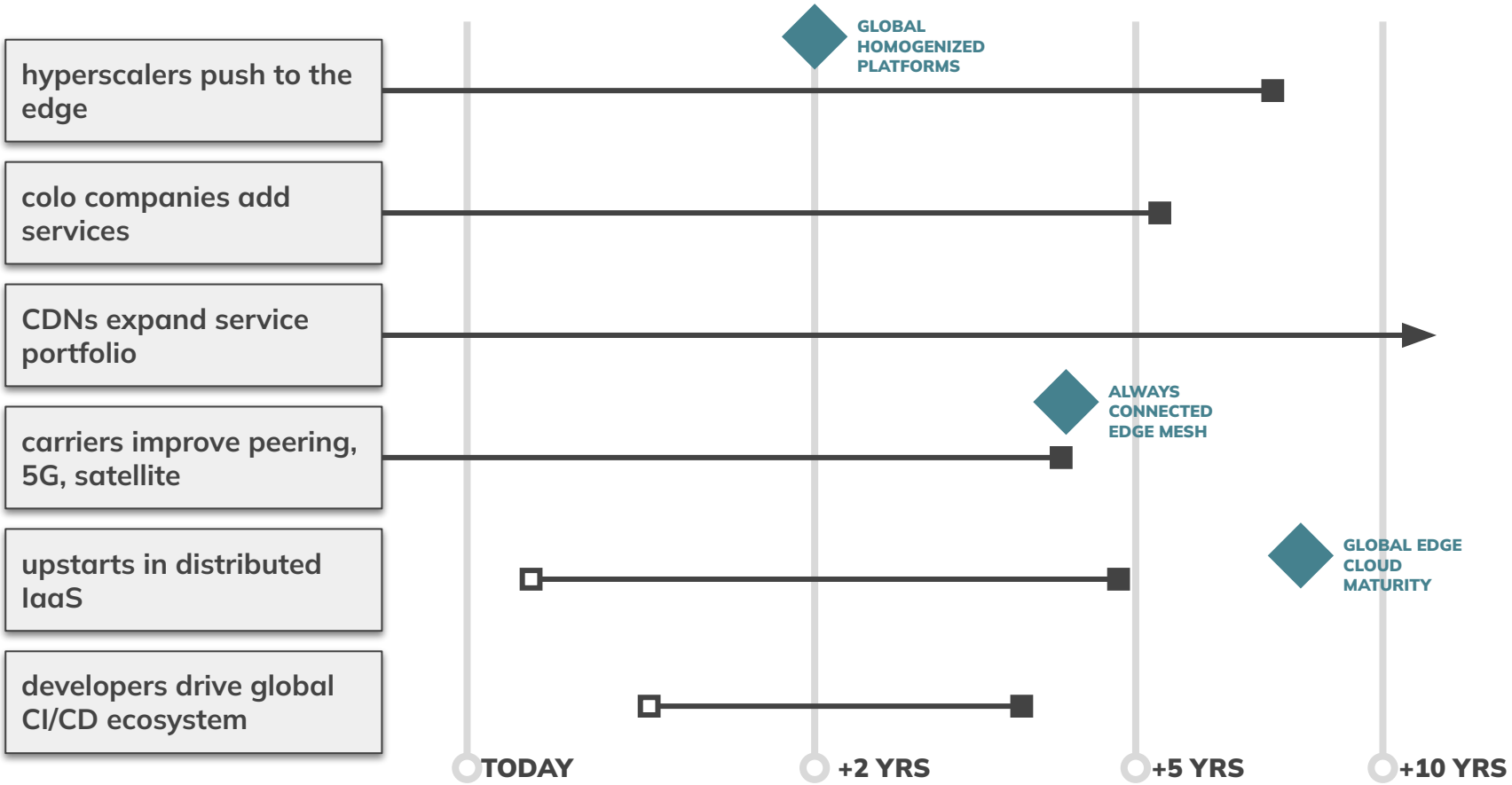
future predictions



Key assumptions:

1. Static content delivery is mature, and will not dramatically change due to edge use cases
2. Colocation is mature. Products will not evolve significantly, but procurement will
3. Bare metal will evolve, but adoption will stagnate as distributed IaaS improves
4. Distributed IaaS and Serverless will see the most evolution

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in conclusion...

edge is a broad and complicated topic

technical requirements will drive adoption

the market still needs to mature to make edge approachable for all

edge builds upon cloud principles to enable innovation and industry disruption

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questions?

continue the conversation

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