



WHY OPEN INFRASTRUCTURE MATTERS



HELLO!

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And ttx on Freenode IRC



0. A PARADOX

Is free software really free

DEVELOPMENT INFRASTRUCTURE



DEVELOPMENT INFRASTRUCTURE

- Proprietary operating systems (OS/X)



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- Proprietary services (GitHub)



DEVELOPMENT INFRASTRUCTURE

- Proprietary operating systems (OS/X)
- Proprietary services (GitHub)
- “Free software needs free tools”
(Benjamin Mako Hill)



The background is a dark, abstract composition featuring a dense array of glowing fiber optic cables. The cables are primarily blue, with some transitioning into red towards the right side. They create a sense of depth and movement, with many out-of-focus circular bokeh lights scattered throughout. A diagonal line divides the image, separating the blue-dominated left side from the red-dominated right side.

RUNTIME INFRASTRUCTURE

RUNTIME INFRASTRUCTURE

- Proprietary services (Amazon Web Services)

RUNTIME INFRASTRUCTURE

- Proprietary services (Amazon Web Services)
- Open infrastructure



1. INFRASTRUCTURE

Application deployers want programmable infrastructure

PILING UP ABSTRACTIONS



PILING UP ABSTRACTIONS

Market pressure

Commoditizing
the lower layers



PILING UP ABSTRACTIONS



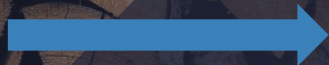
Market pressure

Commoditizing
the lower layers

Developers pressure

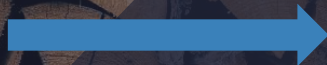
Abstracting differences
between lower layers

Users



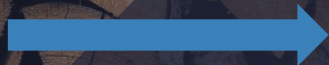
Applications

Users



Physical hardware

Users

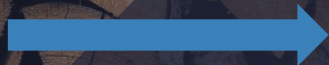


Application
developers
& deployers



Physical hardware

Users



Application
developers
& deployers

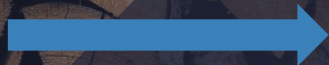


Hardware virtualization



Physical hardware

Users



Application
developers
& deployers



IaaS APIs

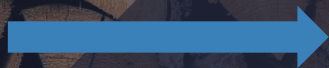


Hardware virtualization



Physical hardware

Users



Application
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Application deployment APIs



IaaS APIs



Hardware virtualization



Physical hardware

INFRASTRUCTURE EVOLUTION



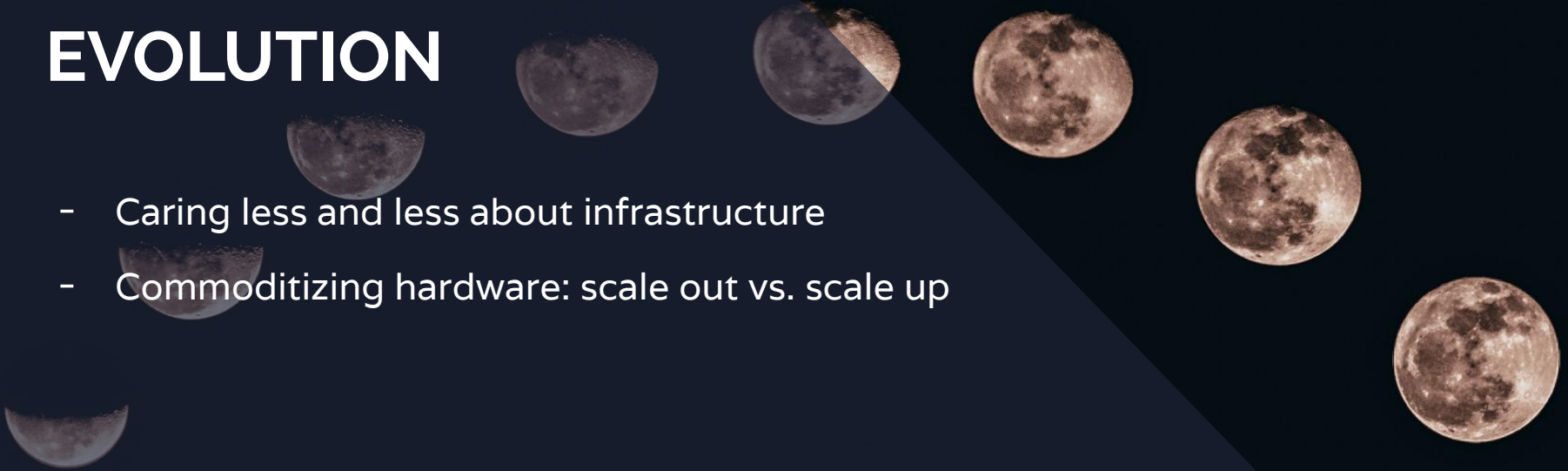
INFRASTRUCTURE EVOLUTION

- Caring less and less about infrastructure



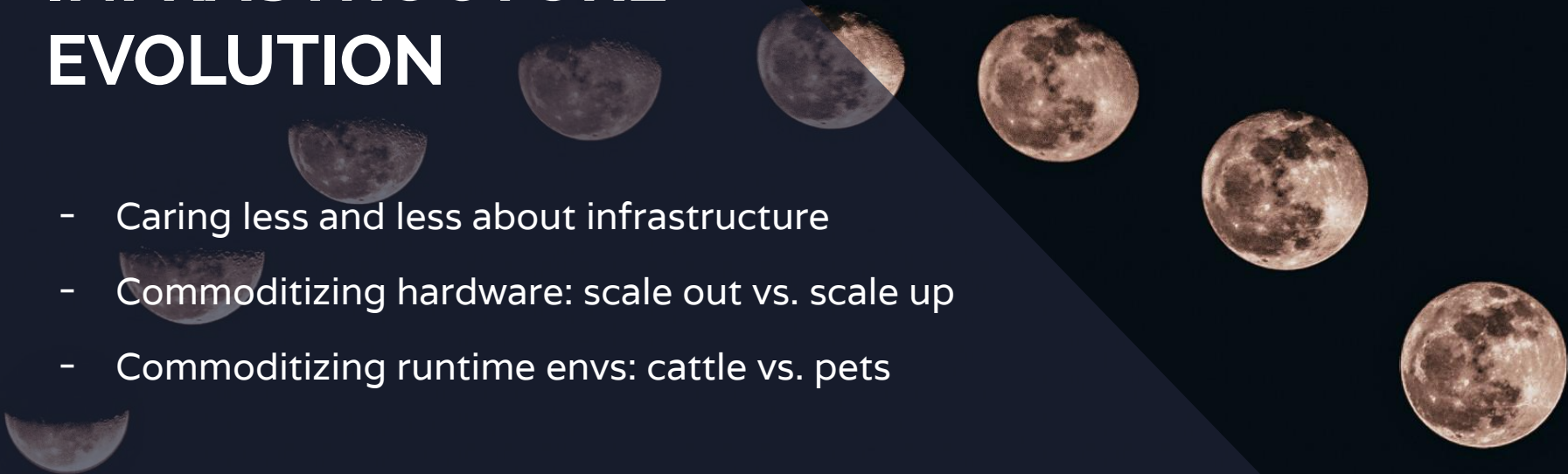
INFRASTRUCTURE EVOLUTION

- Caring less and less about infrastructure
- Commoditizing hardware: scale out vs. scale up



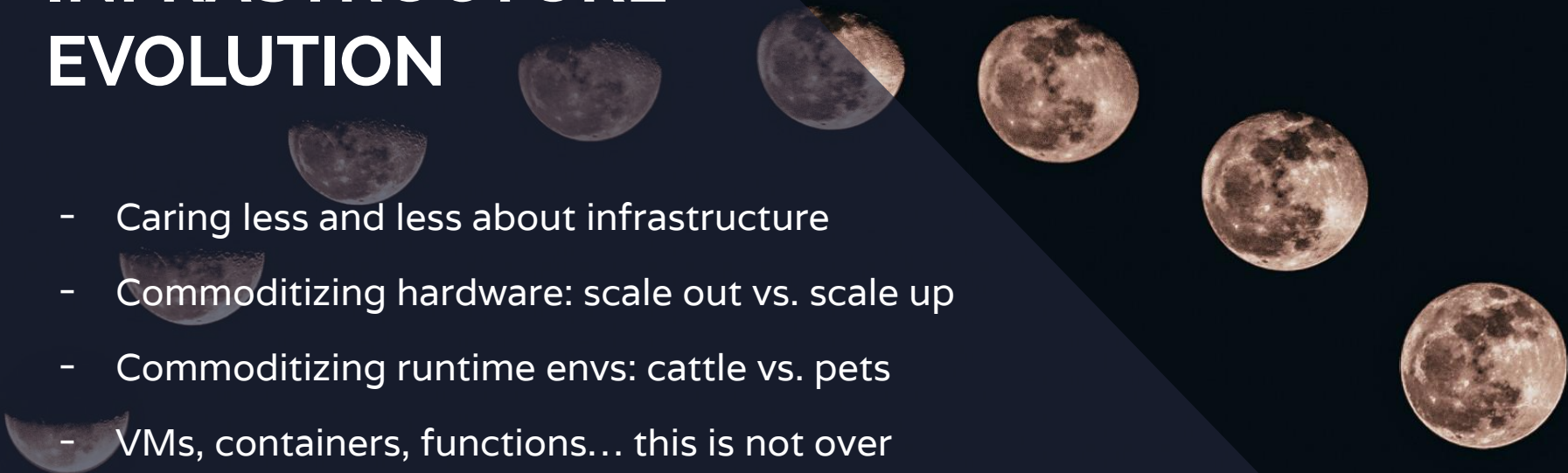
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- VMs, containers, functions... this is not over

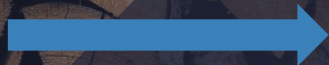


INFRASTRUCTURE EVOLUTION

- Caring less and less about infrastructure
- Commoditizing hardware: scale out vs. scale up
- Commoditizing runtime envs: cattle vs. pets
- VMs, containers, functions... this is not over
- More software, less hardware



Users

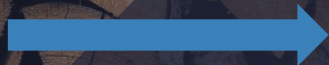


Application
developers
& deployers



Physical hardware

Users



Application
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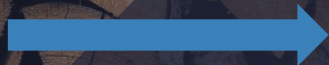


Hardware virtualization



Physical hardware

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IaaS APIs

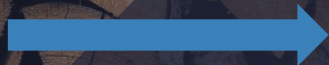


Hardware virtualization



Physical hardware

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Application
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Application deployment APIs



IaaS APIs

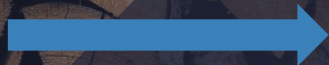


Hardware virtualization



Physical hardware

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Application
developers
& deployers



Infrastructure
providers





Infrastructure
providers





2. OPEN

Providing infrastructure using open source components



AVAILABILITY

Lack of barrier to trying out the software with all of its functionality.

Absence of friction in transitioning from experimentation to production.

A background image featuring several wind turbines silhouetted against a bright orange and yellow sunset sky. The foreground is dark, showing the silhouettes of palm trees and other vegetation. A diagonal line divides the image from the top-left to the bottom-right, separating a darker blue-grey area on the left from a lighter orange area on the right.

SUSTAINABILITY

Existence of a multi-vendor market able to provide maintenance services over the software, making the choice of a given organization to use the software less dependent on the health of the software vendor, and limiting the risk of lock-in.



FLUID JOB MARKET

Easy identification of potential recruits based on the open record of their contributions to the technology they are interested in.

Easily evaluation of recruiting organizations based on the open source technologies they are using.

TRANSPARENCY

A detailed close-up photograph of the internal mechanical movement of a watch. The image shows several interlocking brass gears of different sizes, some with black faces and white numbers. The gears are set against a dark, blurred background, highlighting the intricate craftsmanship of the timepiece.

Ability to look under the hood and understand how the software works, or why it behaves the way it does. Increases your speed in reacting to unexpected behavior or failures.

SELF-SERVICE

A man with white hair and glasses, wearing a striped polo shirt, is crouched and welding a large metal component. Sparks are flying from the welding point. The background is a blurred outdoor setting with other people.

Ability to find and fix issues by yourself,
without even depending on a vendor.
That further increases your speed in reacting
to unexpected behavior or failures.

INFLUENCEABILITY

Possibility to engage in the community developing the software, and to influence its direction by contributing directly to it.

Organizations that engage in the open source communities can make sure the software adapts to future needs by growing the features they will need tomorrow.



OPEN SOURCE BENEFITS

- Availability
- Sustainability
- Fluid job market
- Transparency
- Self-service
- Influenceability



3. THE THREE Cs

Capabilities, Compliance and Cost





CAPABILITIES

One size does not fit all.

Some features are just overpriced (GPUs).

Some features are just missing.

COMPLIANCE

Legal requirements around data locality.
Confidentiality around strategic companies.



COST

If you are interested by private infrastructure,
open infrastructure will keep the price low.

And if you want to provide public infrastructure,
you should not start from scratch.

4. INTEROPERABILITY

Facilitating hybrid cloud scenarios



Cost per CPU core



Number of cores

Cost per CPU core



Public cloud pricing

Number of cores

Cost per CPU core



Private cloud

Number of cores

Cost per CPU core



Number of cores

Cost per CPU core



Public infrastructure
makes more sense

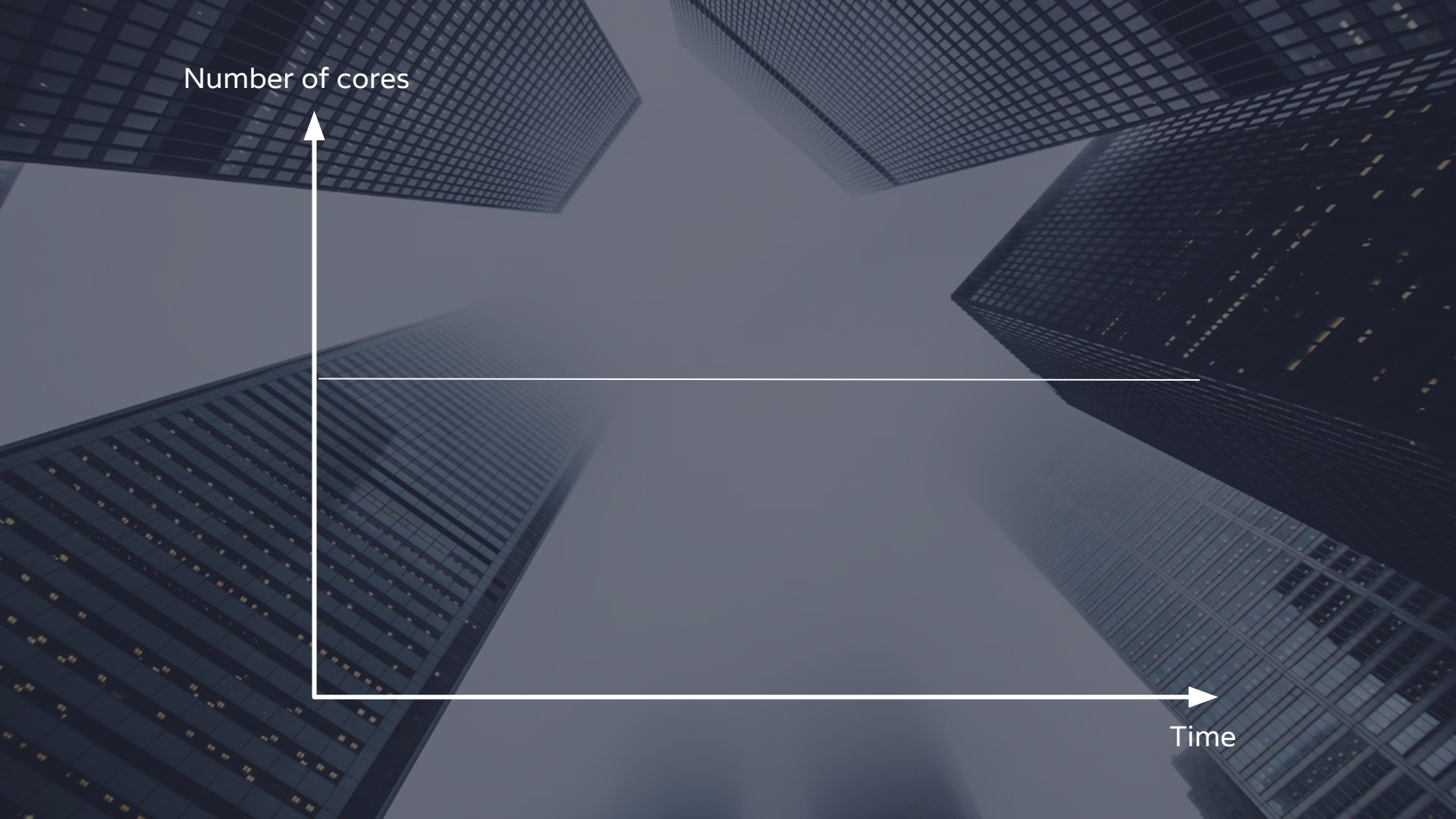
Private
infrastructure
makes more sense

Number of cores



Number of cores

Time



Number of cores



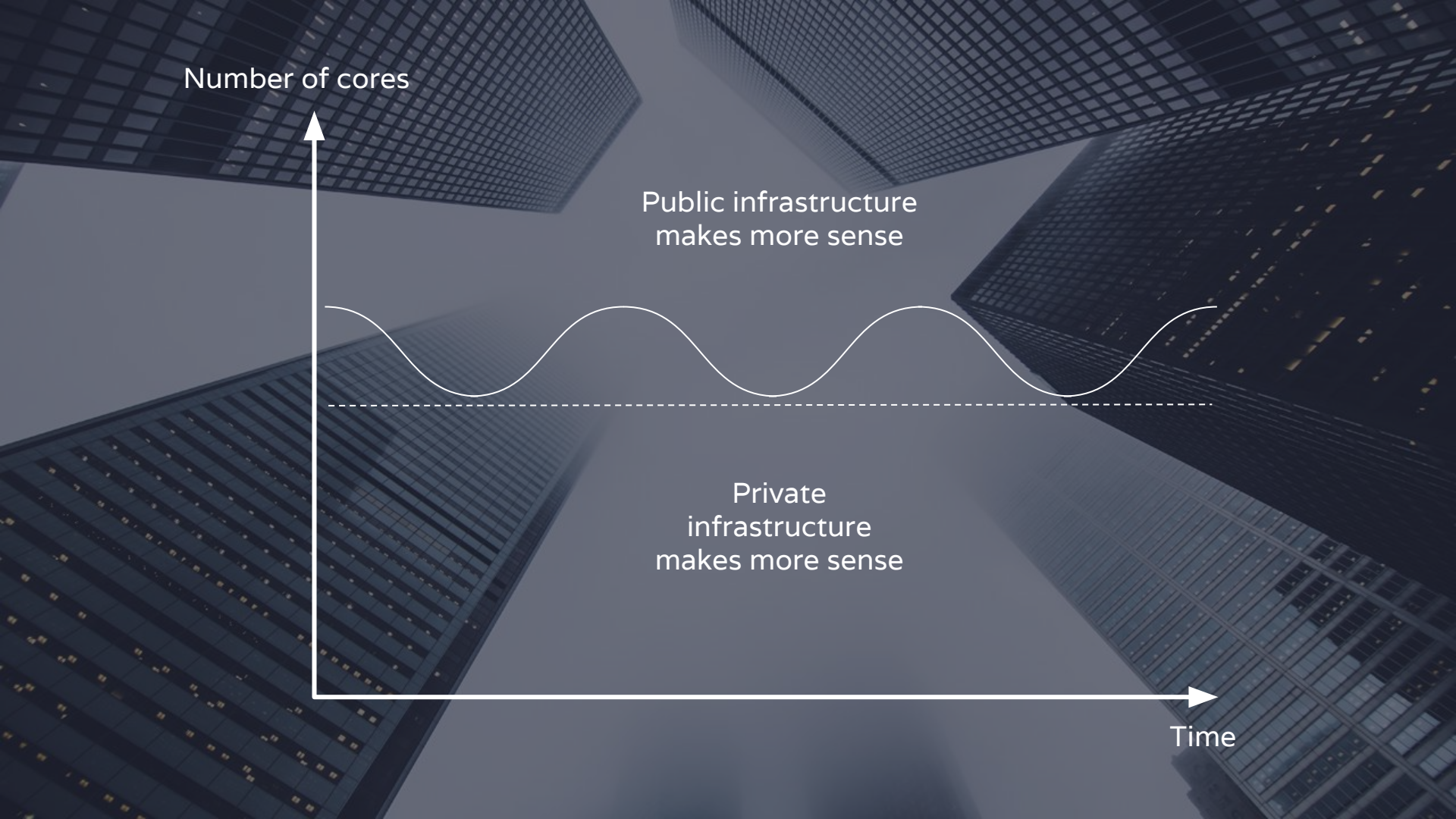
Time

Number of cores

Public infrastructure
makes more sense

Private
infrastructure
makes more sense

Time



HYBRID, INTEROPERABLE INFRASTRUCTURE



HYBRID, INTEROPERABLE INFRASTRUCTURE

- Hybrid clouds allow to optimize cost



HYBRID, INTEROPERABLE INFRASTRUCTURE

- Hybrid clouds allow to optimize cost
- Hybrid clouds enable capabilities & compliance



HYBRID, INTEROPERABLE INFRASTRUCTURE

- Hybrid clouds allow to optimize cost
- Hybrid clouds enable capabilities & compliance
- Interoperable public & private clouds reduce applications cost





INTEROPERABILITY IN OPEN INFRA

The background of the slide is a close-up photograph of many stacked logs. The logs are cut into circular cross-sections, showing the natural wood grain and some bark. A dark blue diagonal line runs from the top-left towards the bottom-right, dividing the image into two main sections. The text is overlaid on the darker, left-hand side of this division.

INTEROPERABILITY IN OPEN INFRA

OpenStack

Promises
interoperability at the
infrastructure layer

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INTEROPERABILITY IN OPEN INFRA

OpenStack

Promises
interoperability at the
infrastructure layer

Kubernetes

Promises
interoperability at the
app deployment layer

The background features a series of parallel, diagonal light streaks in shades of blue and white, creating a sense of depth and movement. A dark, diagonal line splits the image from the top-left to the bottom-right, separating a darker, more muted area on the left from a brighter, more vibrant area on the right.

5. FUTURE-PROOF

Investing in communities rather than in products

The background of the image is a cosmic scene featuring two distinct nebulae. The left side is dominated by a dark, brownish-orange nebula with intricate, swirling patterns. The right side, separated by a diagonal line, shows a vibrant nebula with green, yellow, and orange hues. The text "THE FUTURE" is overlaid on the left nebula in a white, bold, sans-serif font.

THE FUTURE

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- Abstractions will continue to be piled

THE FUTURE

- Abstractions will continue to be piled
- There is no miracle technology that will end all technologies

THE FUTURE

- Abstractions will continue to be piled
- There is no miracle technology that will end all technologies
- There will always be applications and infrastructure

BE FUTURE-PROOF



BE FUTURE-PROOF



- Open source allows to invest in communities, rather than products

BE FUTURE-PROOF

The background of the slide is a dark, artistic photograph of a camera lens. The lens is out of focus, creating a bokeh effect with warm, orange and yellow light spots. A diagonal line cuts across the image from the top left to the bottom right. In the center of the lens, there is a reflection of a circuit board, likely a GPU, with its various components and connectors visible.

- Open source allows to invest in communities, rather than products
- OpenStack community takes the angle of the infrastructure provider, and helps them build and operate open source solutions for infrastructure

SO... WHY CHOOSE OPEN INFRA ?

- Availability
- Sustainability
- Fluid job market
- Transparency
- Self-service
- Influenceability
- Compliance
- Capabilities
- Cost
- Interoperability
- Enabling hybrid usage
- Future-proof

A scenic landscape photograph featuring a stone path that leads from the foreground into a lush green field. In the background, there are rolling hills and mountains, some of which are shrouded in mist or low clouds. The sky is overcast. A dark, semi-transparent triangular shape is overlaid on the left side of the image, serving as a background for the text.

6. ENABLE INNOVATION

Creating ideal conditions for innovation everywhere

AVOID MONOPOLIES

It is not economically sane to have all of the world's infrastructure needs being provided by a couple of Internet giant companies.

AVOID MONOCULTURES

It is not safe to have all of the worlds infrastructure needs being provided by a couple of Internet giants





ENABLE EVERYONE

Giving everyone access to infrastructure providing technologies makes sure that we maximize innovation in the world.

A close-up photograph of a hand held palm up, with a thick layer of bright pink powder or pigment covering the entire surface of the hand and fingers. The background is dark and out of focus. A diagonal line, possibly a slide transition, runs from the top left towards the bottom right, passing over the hand.

THANKS!

Any questions?

Shy?

You can reach me at @tcarrez on Twitter

Or email me at thierry@openstack.org

Credits

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