Extending on-premise HPC to the cloud

Gabriel Broner, VP & GM of HPC, Rescale
HPC User Forum, September 2018

The Rescale HPC Platform

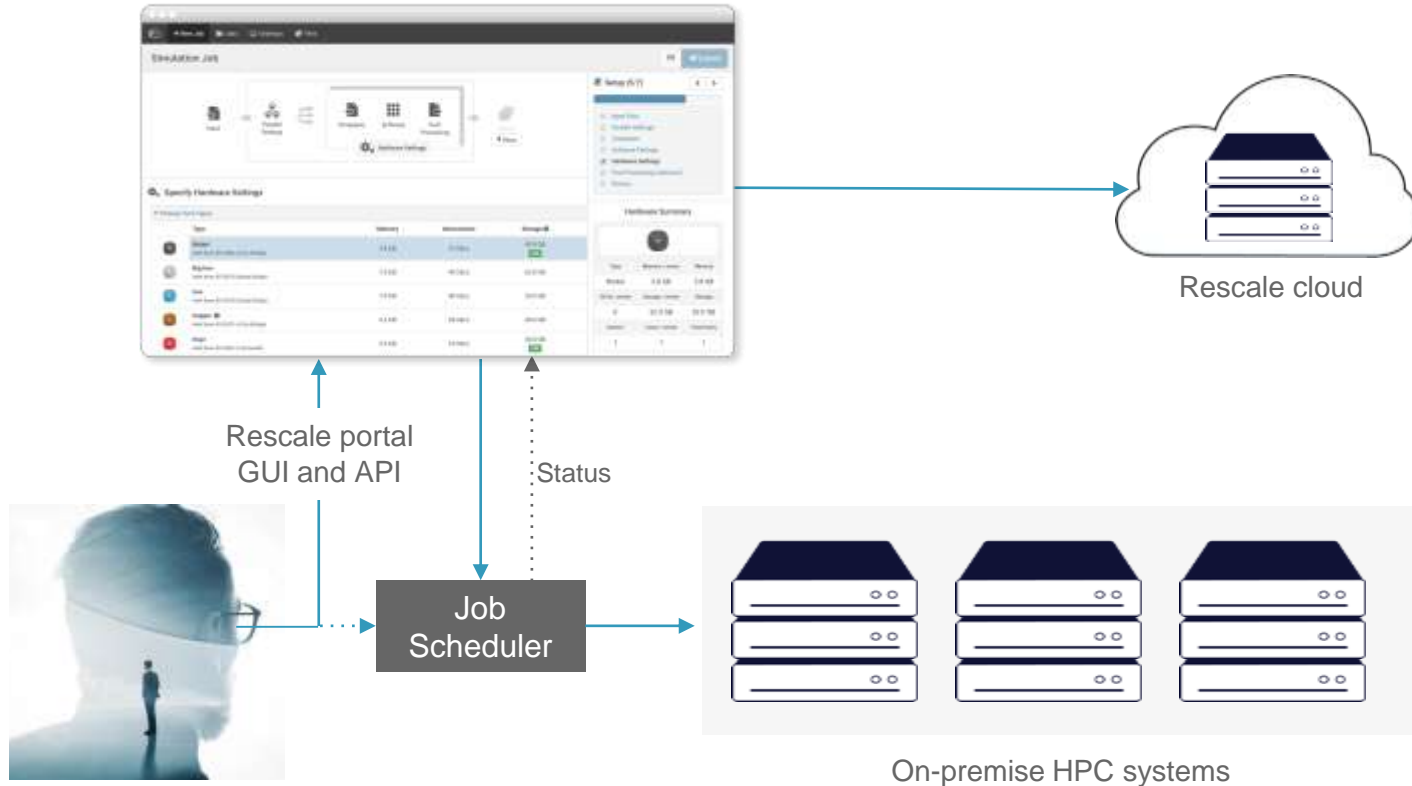FULLY INTEGRATED STACK OF ENTERPRISE DEPLOYMENT TOOLS

Rescale ScaleX Platform

- Enterprise big compute
- Innovation acceleration
- User-first platform
- Security and admin controls

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HPC with Rescale

Unified on-premise and cloud environment

Rescale cloud

Rescale portal
GUI and API

Status

Job
Scheduler

On-premise HPC systems

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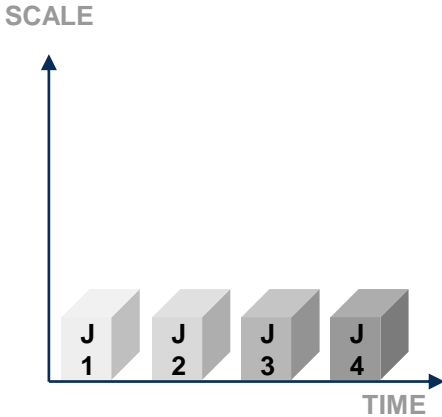
Scalability: faster results, shorter turnaround time

On-premise HPC

Jobs queued

HPC in the Cloud

Concurrent submission
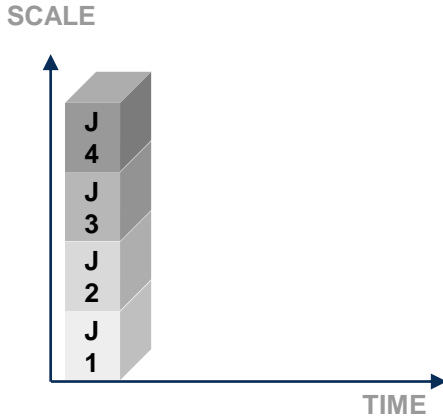
Optimized compute resources

SCALE — TIME

J1 J2 J3 J4

J4 J3 J2 J1

J8 J7 J6 J5 / J4 J3 J2 J1

J12 J11 J10 J9

J12 J11 J10 J9

ARCHITECTURE 1
ARCHITECTURE 2
ARCHITECTURE 3
ARCHITECTURE 4

COMPUTE

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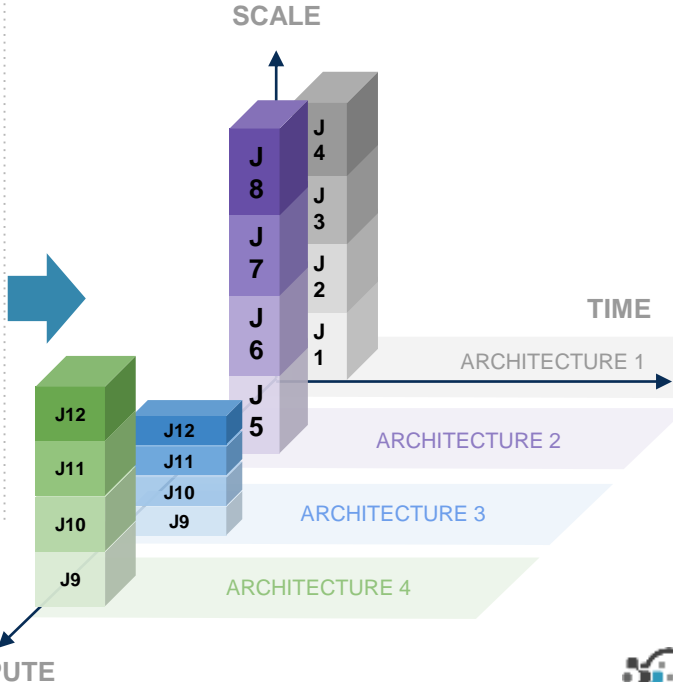
Advanced Rocket Design & Development

- Product development speedup of over 24X
- Instant 1,000+ CPU clusters simulating design performance

Scalability keeps American Axle on schedule

- On-demand licensing and instant scaling for Star-CCM CFD analyses
- Flexible compute resources enable tight deadlines to be consistently met
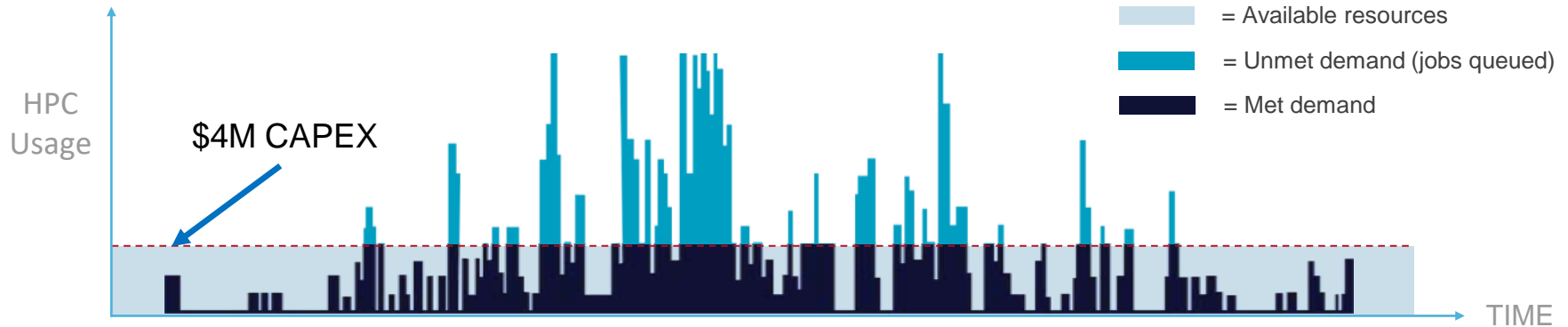
University Deployment

- Rescale as common HPC platform
- On-premise + public cloud
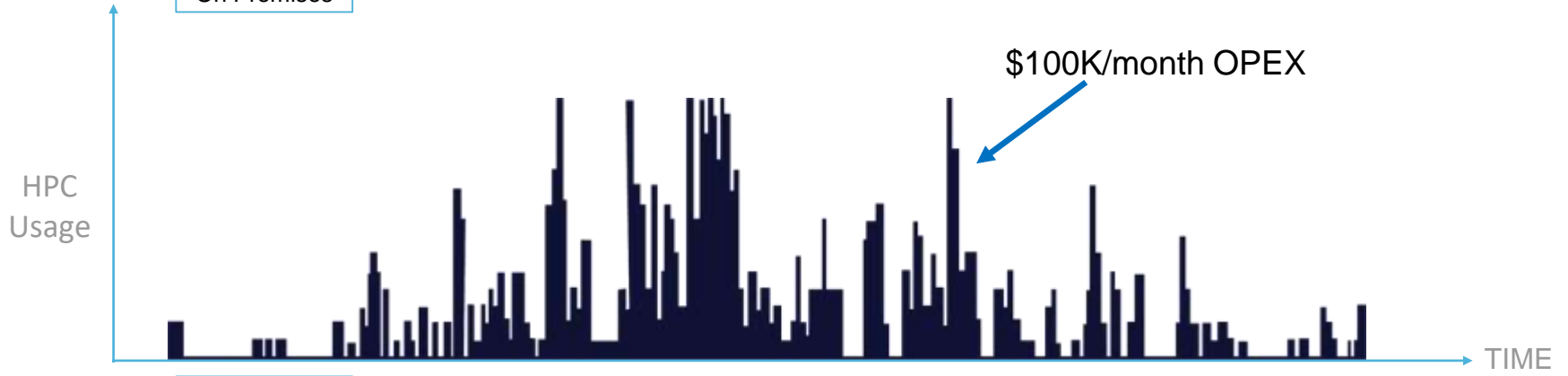- Supports large increase in new users (internal and external) and applications

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Cost of on-premise vs cloud

Tier 1 Automotive Supplier Example

Legend:
- = Available resources
- = Unmet demand (jobs queued)
- = Met demand

HPC Usage

$4M CAPEX

TIME

On Premises

$100K/month OPEX

HPC Usage

TIME

Cloud

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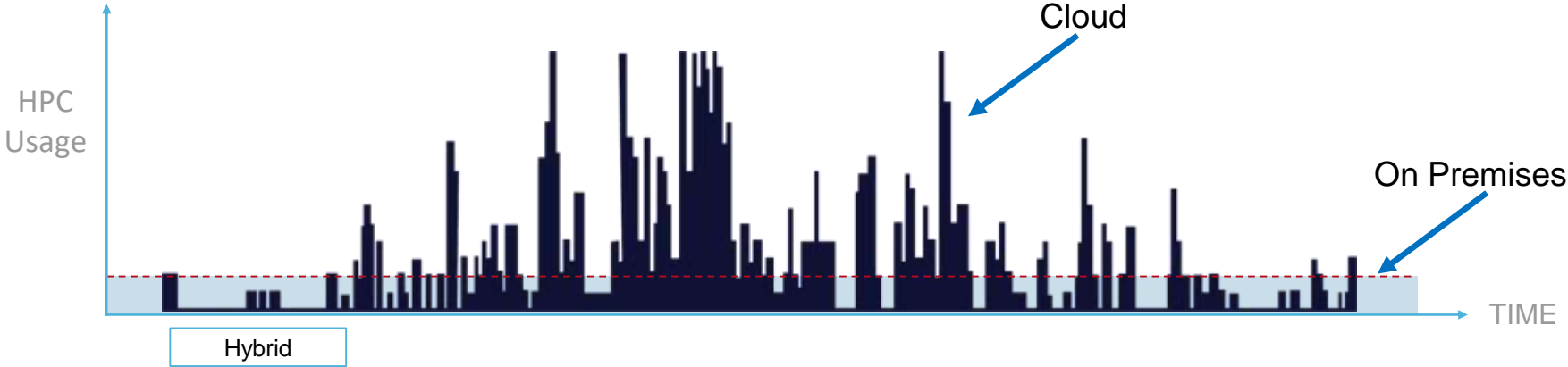
Optimizing cost with Hybrid

HPC Usage

Cloud

On Premises

Hybrid

TIME

Place workloads to achieve best possible result
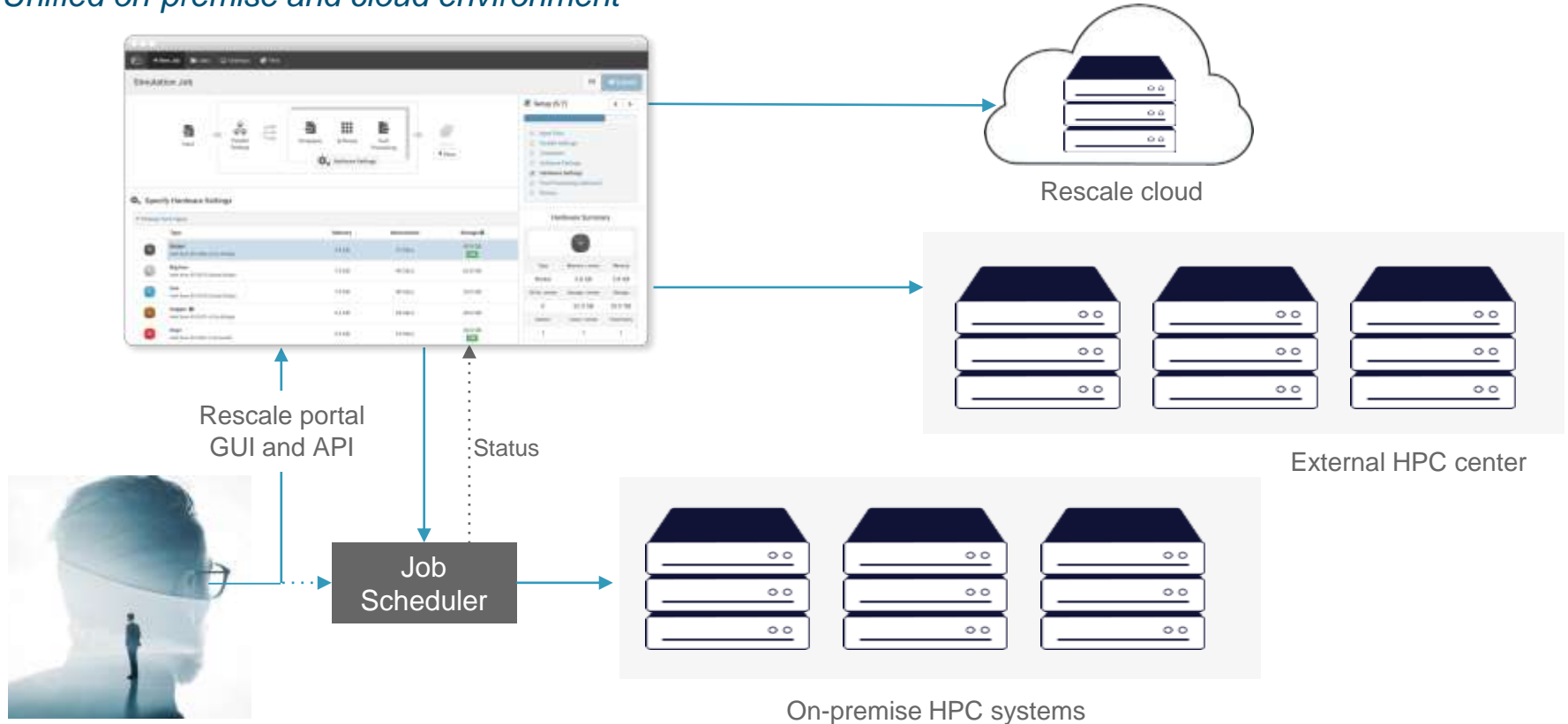
Transformative Benefits

A new approach to HPC

- Hybrid cloud with on-premise support
- Multi-cloud environment
- Access the latest architectures with no wait
- 250+ applications ported and tuned
- Recommends the best architecture for each job
- Configurable SaaS workflow reduces the need to develop and maintain custom scripts for each system
- Fast learning curve for new HPC users
- Pay per use for hardware and software
- One platform to access and administer all systems

HPC with Rescale

Unified on-premise and cloud environment

Rescale cloud

External HPC center

Rescale portal
GUI and API

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On-premise HPC systems

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Offer on-premise systems in the Rescale cloud

Enable external access to your on-premise systems

Rescale portal
GUI and API

Status

Rescale cloud

Job Scheduler

On-premise HPC systems
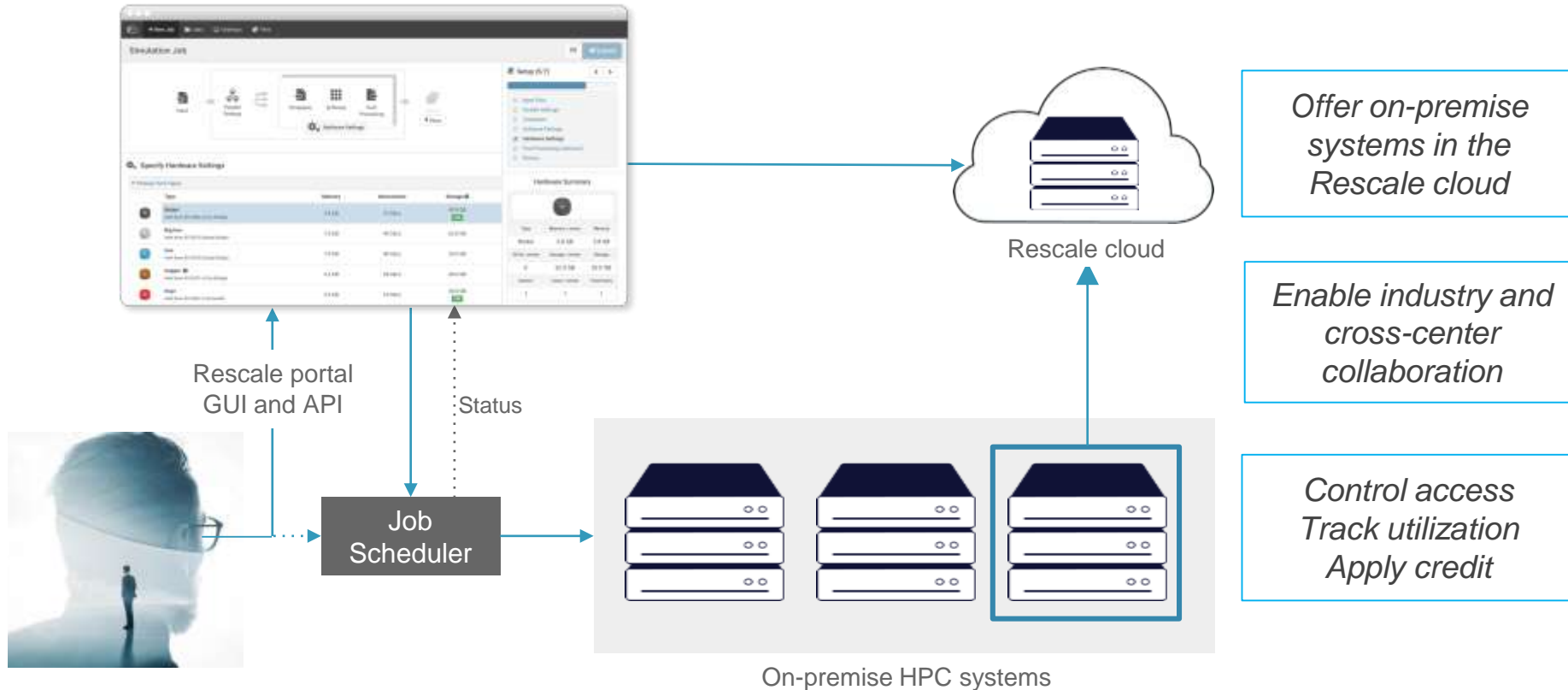
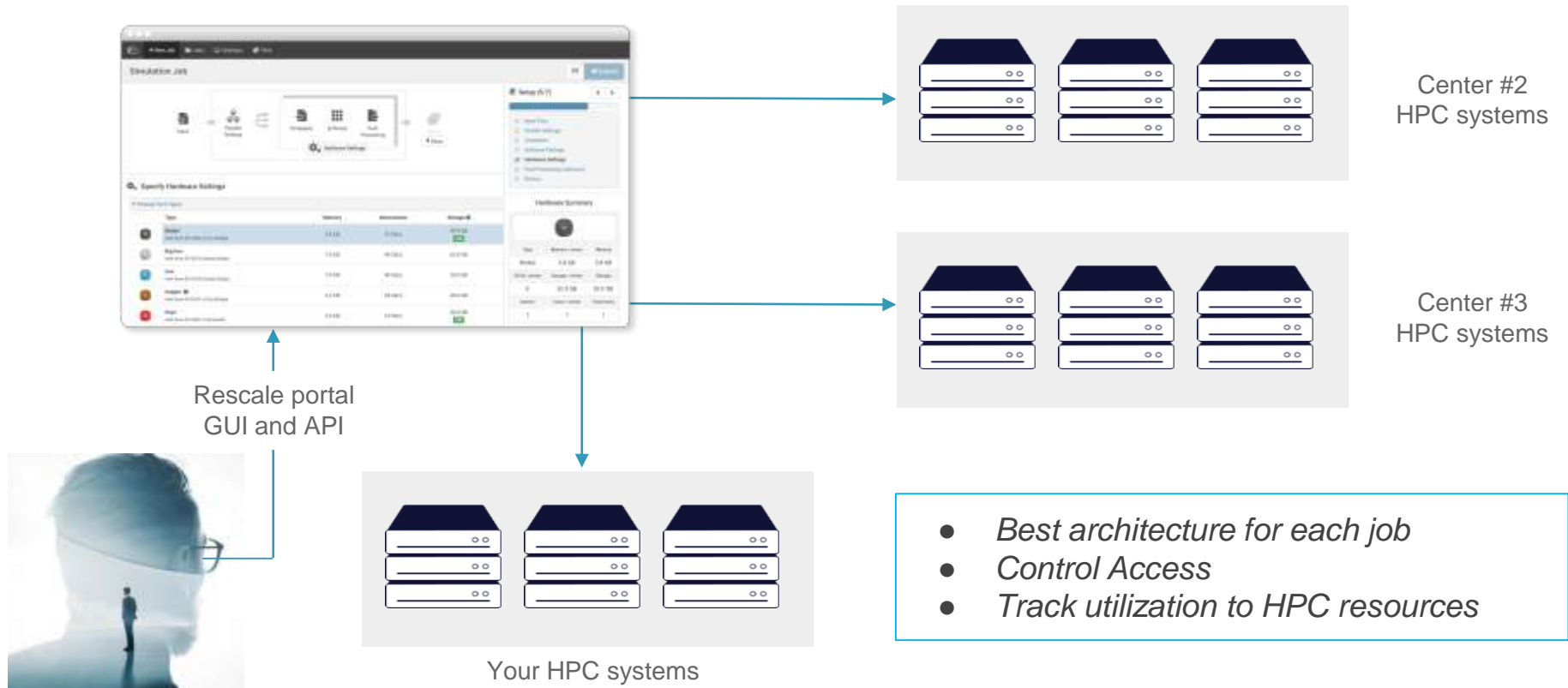*Offer on-premise systems in the Rescale cloud*

Enable industry and cross-center collaboration

*Control access
Track utilization
Apply credit*

Cross-center Collaboration with Rescale

Unified Access Across HPC Centers

Center #2
HPC systems

Center #3
HPC systems

Rescale portal
GUI and API

- *Best architecture for each job*
- *Control Access*
- *Track utilization to HPC resources*

Your HPC systems

Absolute enterprise security, delivered end-to-end

Rescale delivers best-in-class security layer across entire platform

Rescale is compliant with the strictest industry security standards

- Full administrative management and IT dashboard provide comprehensive controls and visibility

- Software defined security policy implementation tools to enforce proper IP handling

- Encryption in transfer with high-grade TLS and multi-layered encryption at rest with 256-bit AES

AICPA SOC	CSA cloud security alliance℠	ITAR International Traffic in Arms Regulations Compliant	HIPAA	FR FedRAMP
SOC 2 Type 2 Attested	CSA Registered	ITAR Compliant *	HIPAA Certified *	FedRAMP (pending)

* Not available in all geographical regions

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The Rescale Team

- Deep Expertise in HPC Applications

- Six years of experience with HPC in the Cloud

- Significant Experience with HPC customers

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Rescale at a Glance

FOUNDED	**2011**
LOCATED	**SAN FRANCISCO (+ LONDON, MUNICH, TOKYO, SEOUL, SINGAPORE)**
DELIVERS	**ENTERPRISE BIG COMPUTE PLATFORM**

FUNDED

ENDORSED

ADDRESSES

Aerospace **Automotive** **Industrials** **Life Sciences** **Universities** **Oil & Gas** **Semiconductor** **Financial Services**

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