



Connect

Open Source als Katalysator der Energiewende – digitale Souveränität durch offene Plattformen

Usman Malik

Core Architect Compute and Virtualization



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Solution Architect

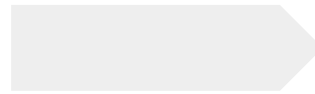
Red Hat



Die Energiewende: Von Zentral zu Verteilt



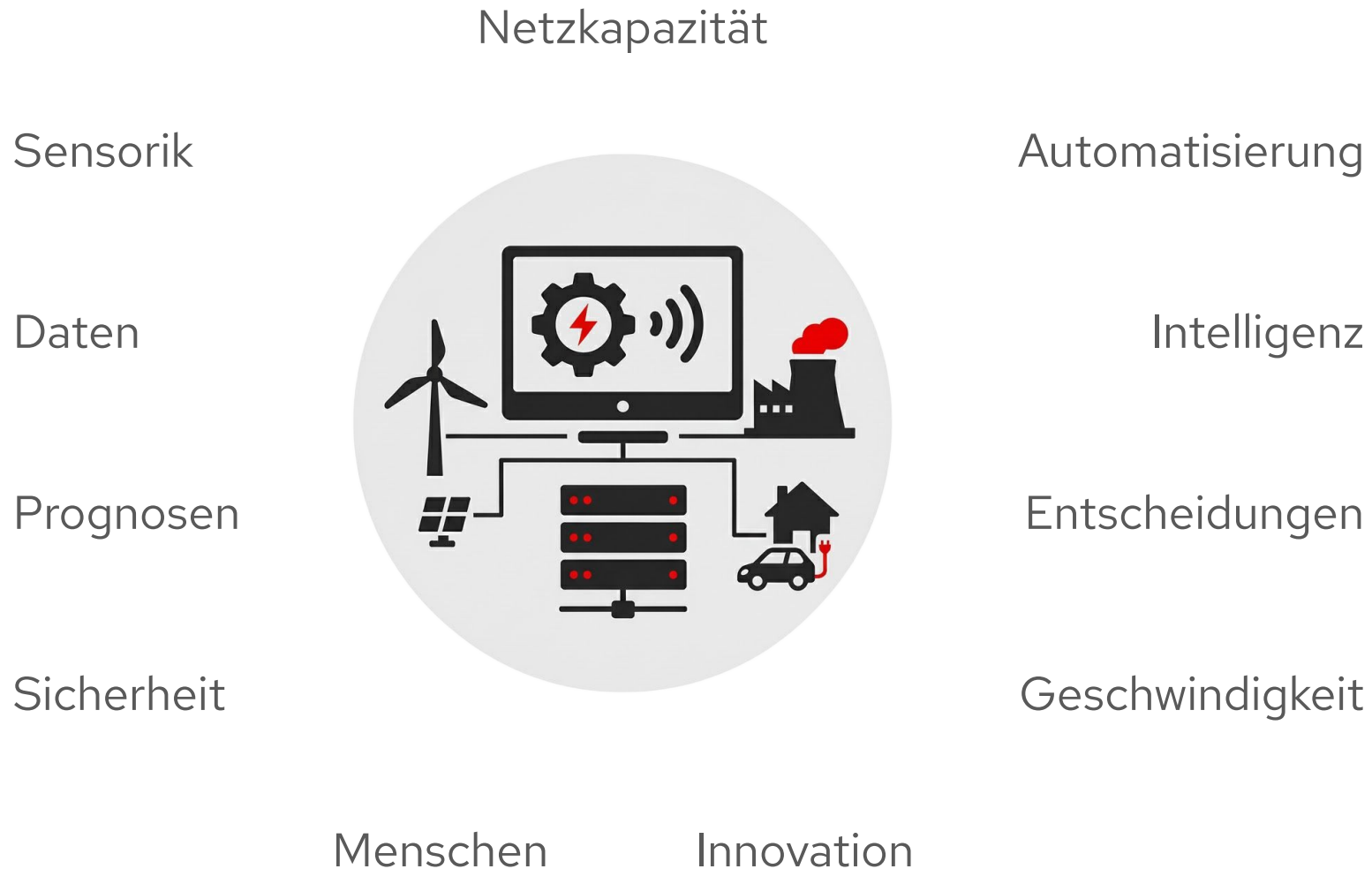
Zentralisiert
Planbar
Vorhersehbare Steuerung,
Prognose, Einsatzplanung



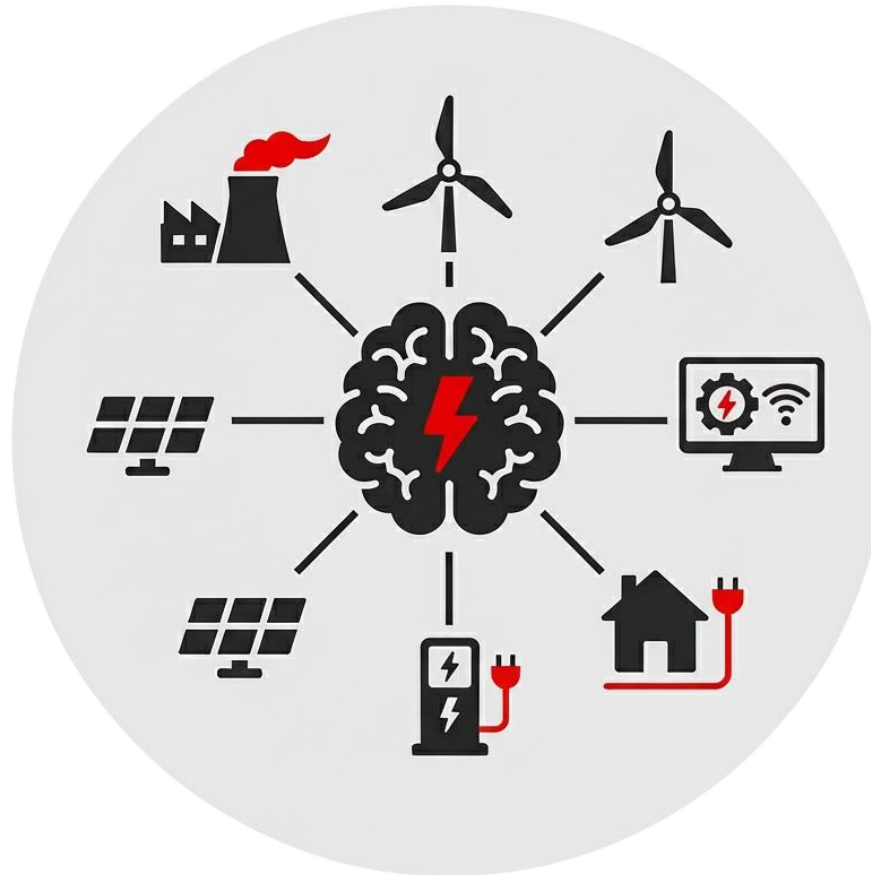
Dezentral
Volatile
Dynamisch
Erneuerbare Speicher
Echtzeit Koordination



Was braucht es für die erfolgreiche Energiewende in der Praxis? **Mehr!**



Die Strategie? **Ein digitales Gehirn** über der physischen Infrastruktur



Risikofaktor fehlende digitale Souveränität



Risiko für die Netzstabilität durch

- ⚡ Abhängigkeit von Anbietern
- ⚡ Eingeschränkte Handlungsfähigkeit im Krisenfall
- ⚡ Kosten- und Innovationsfalle



Mit Open Source zu mehr digitaler Souveränität



Transparenz und Nachvollziehbarkeit



Sicherheit und Resilienz



Freiheit von Vendor Lock-in



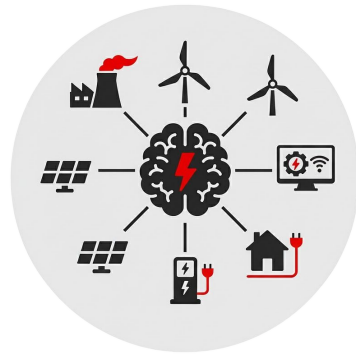
Anpassungsfähigkeit und regulatorische Konformität



Geteilte Innovation



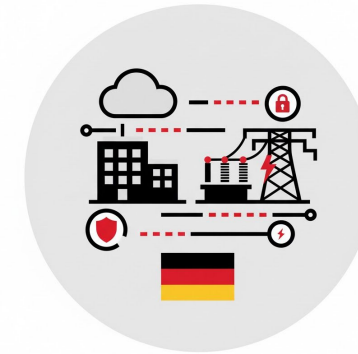
Open Source als Katalysator der Energiewende



Moderne, digitale Plattform



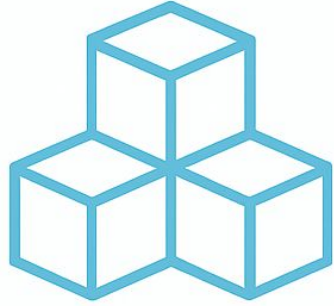
Open Source Software



Erfolgreiche Energiewende



Platform Design Principles



Infrastructure treated as modular products with clear interfaces



Layered architecture allows teams to build on top of standardized components



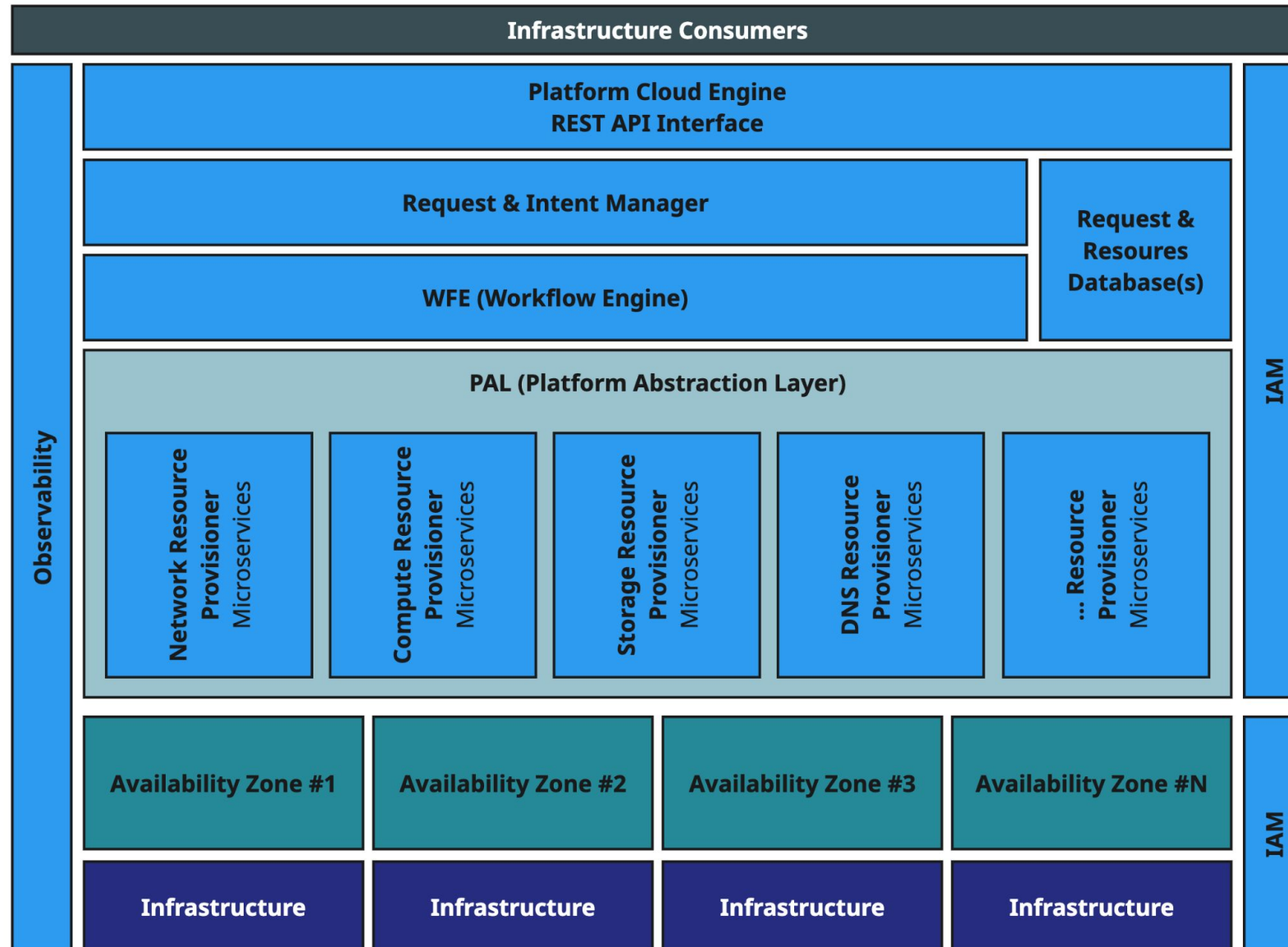
Avoid tightly-bound vendor-specific features to ensure long-operability



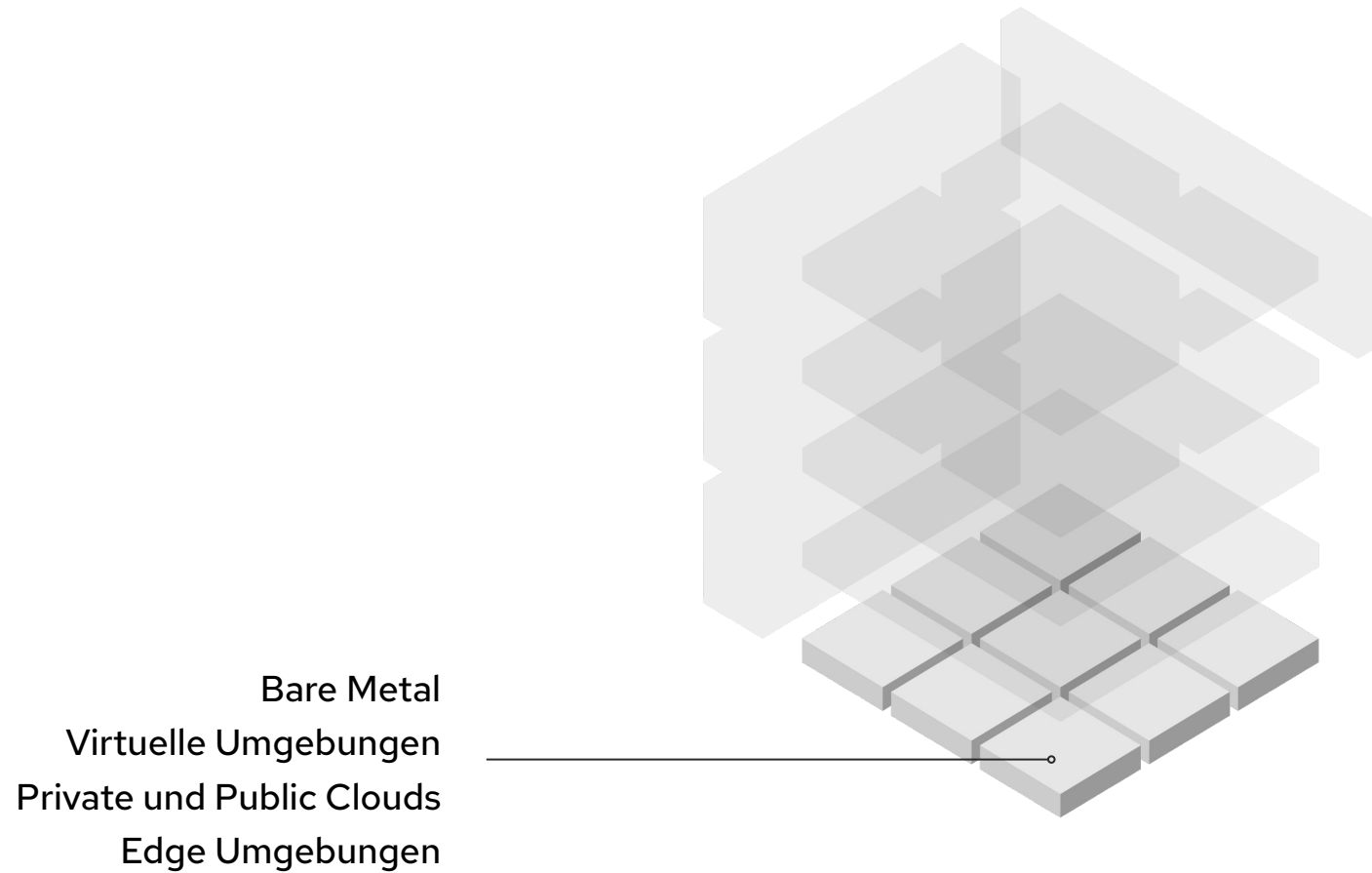
Increase predictability for higher-level grid applications, scheduling, forecasting and optimization



Platform Cloud Engine (PCE) Ecosystem

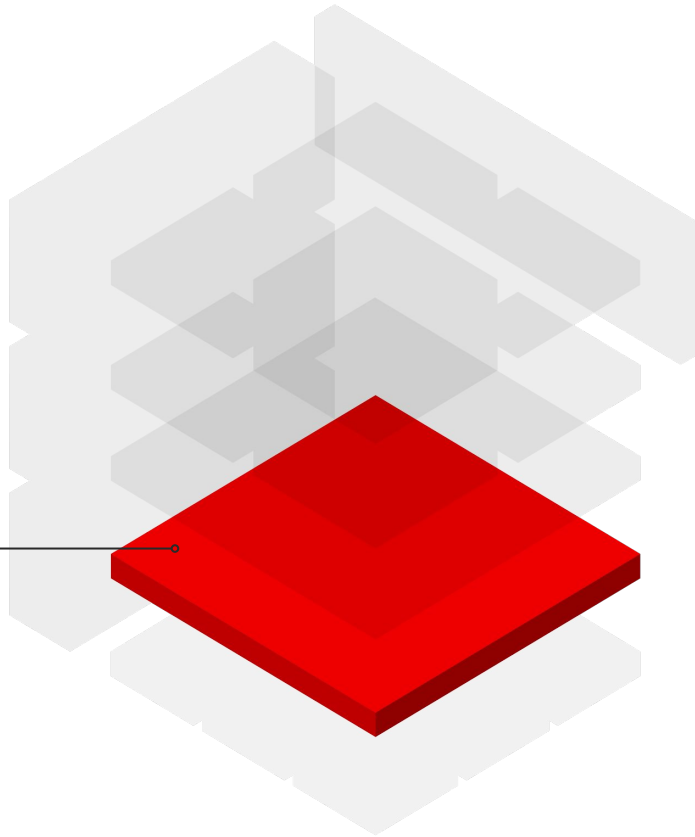


Zunehmende Vielfalt an Hardware



Ein konsistentes Fundament

Red Hat Enterprise Linux

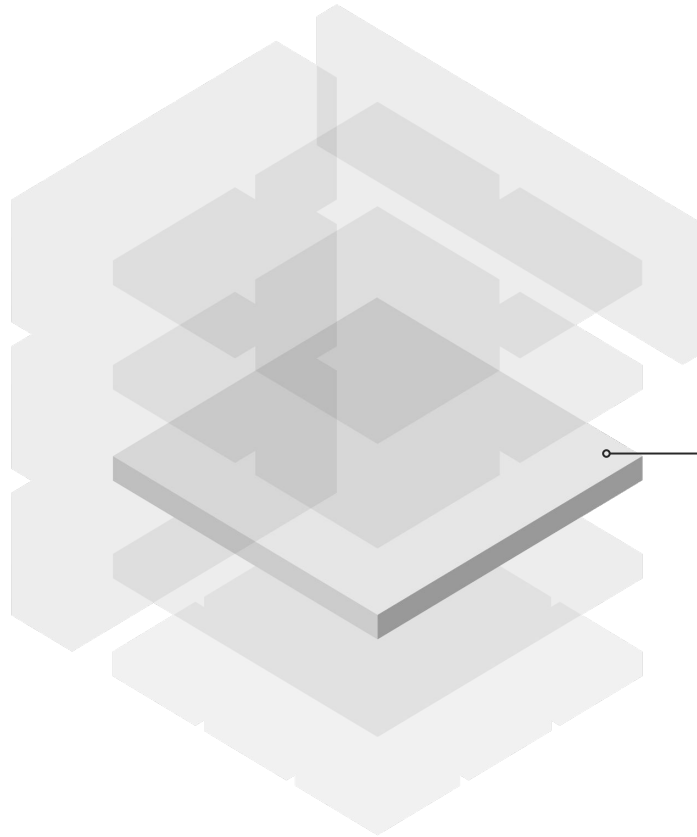


- ✓ Langer Lebenszyklus
- ✓ Hardware-Support
- ✓ Stabil, Gehärtet, Innovativ



Eine modernen Kubernetes Plattform

- ✓ Beschleunigte Entwicklung
- ✓ Hohe Skalierbarkeit
- ✓ Inhärente Fehlertoleranz

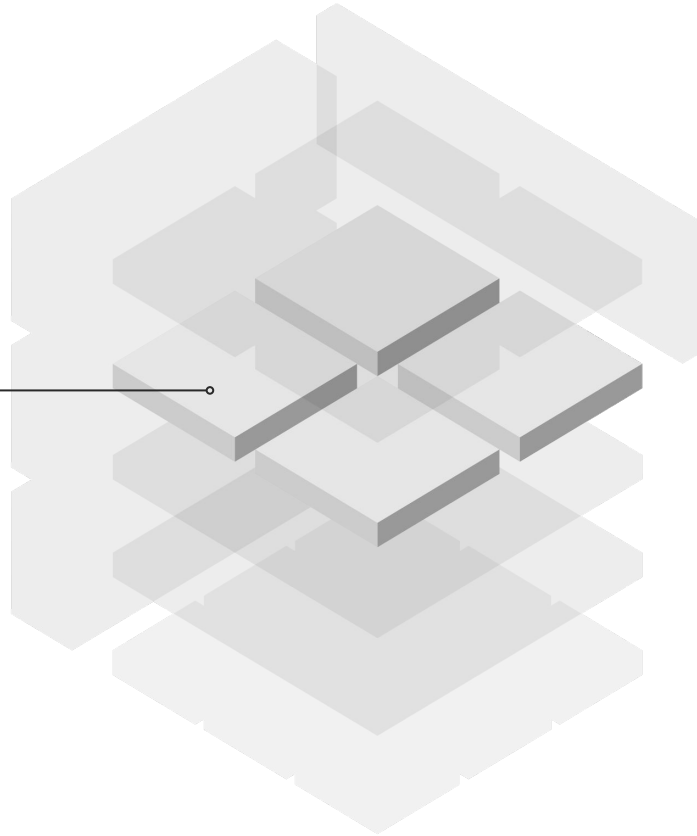


Kubernetes-Plattform



Identity Management und Authentifizierung im gesamten Stack

Red Hat Build of Keycloak
Red Hat Certificate System

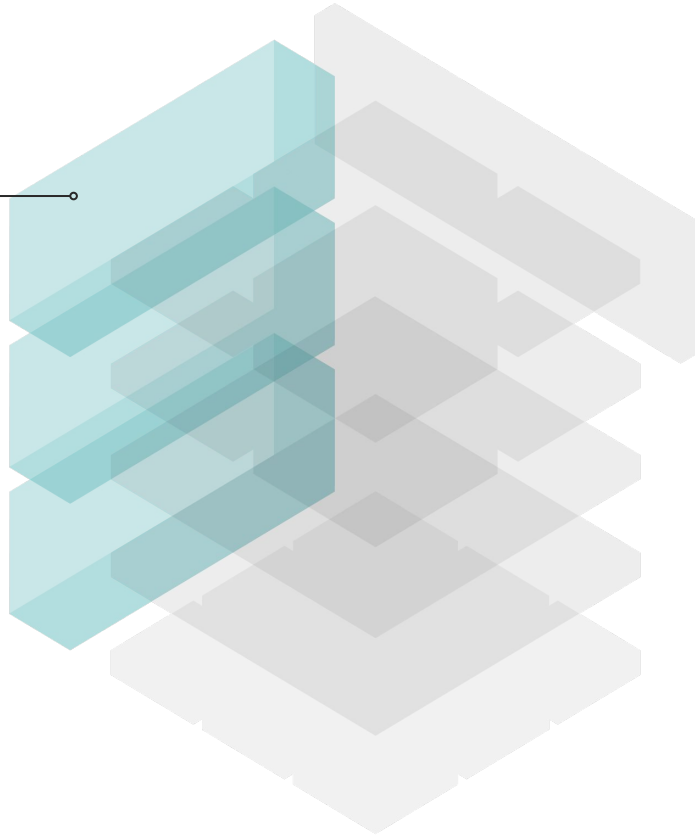


- ✓ Single Sign-on
- ✓ Host- und Benutzerbasierte Kontrolle
- ✓ Zentrale Governance



Automatisierung, Orchestrierung und Management

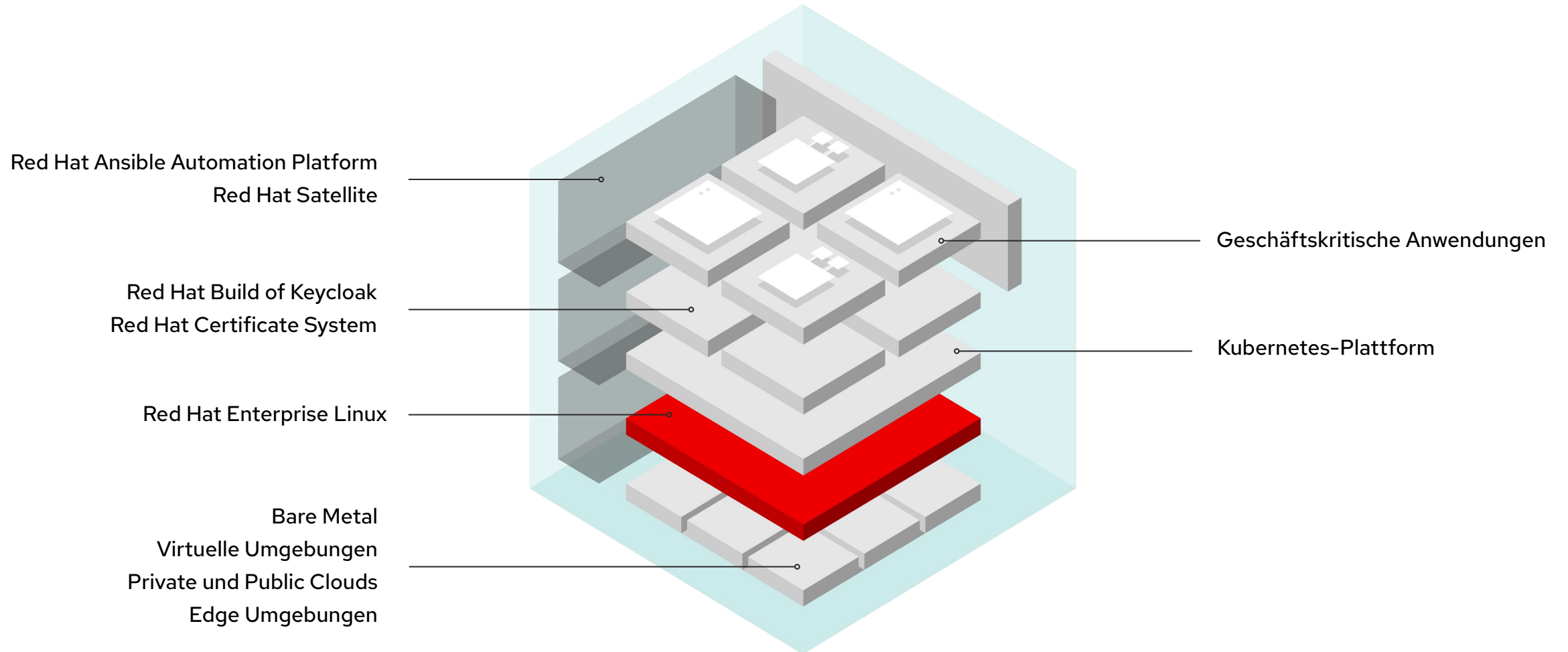
Red Hat Ansible Automation Platform
Red Hat Satellite



- ✓ Konfigurationsmanagement
- ✓ Workflow-Orchestrierung
- ✓ Auditierbarkeit



Eine stabile, modulare Open Source Plattform



- From MVP to a fully distributed digital platform
- Strengthening resilience, security, and sovereignty
- Expanding compute, network, and storage capabilities
- Preparing for future grid management and operations workloads
- Disconnected Environments



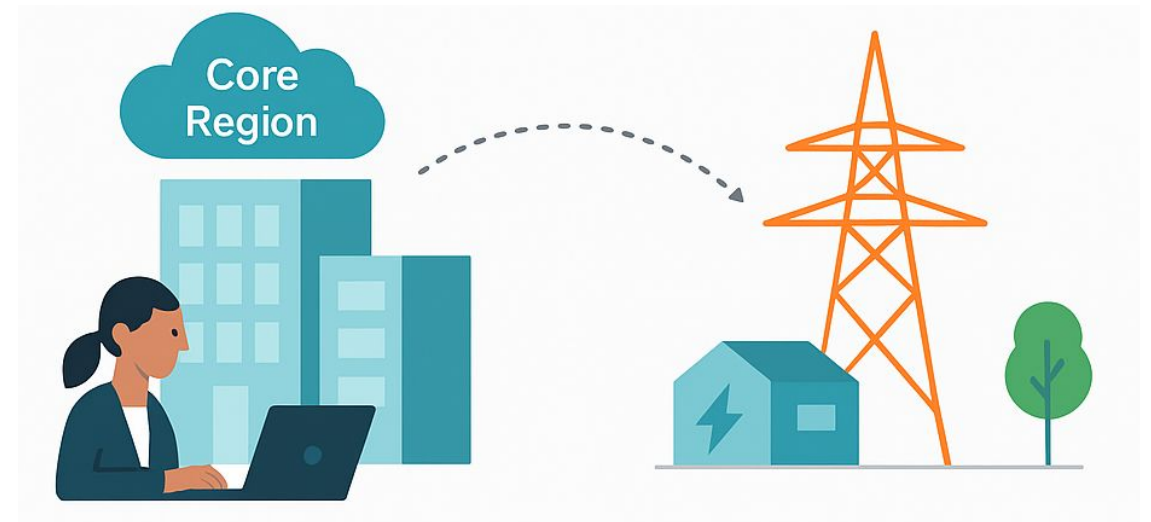
Core and Distributed Clouds Integration

Core Clouds:

- Regional deployments
- Multiple AZs per region
- Multiple physical locations

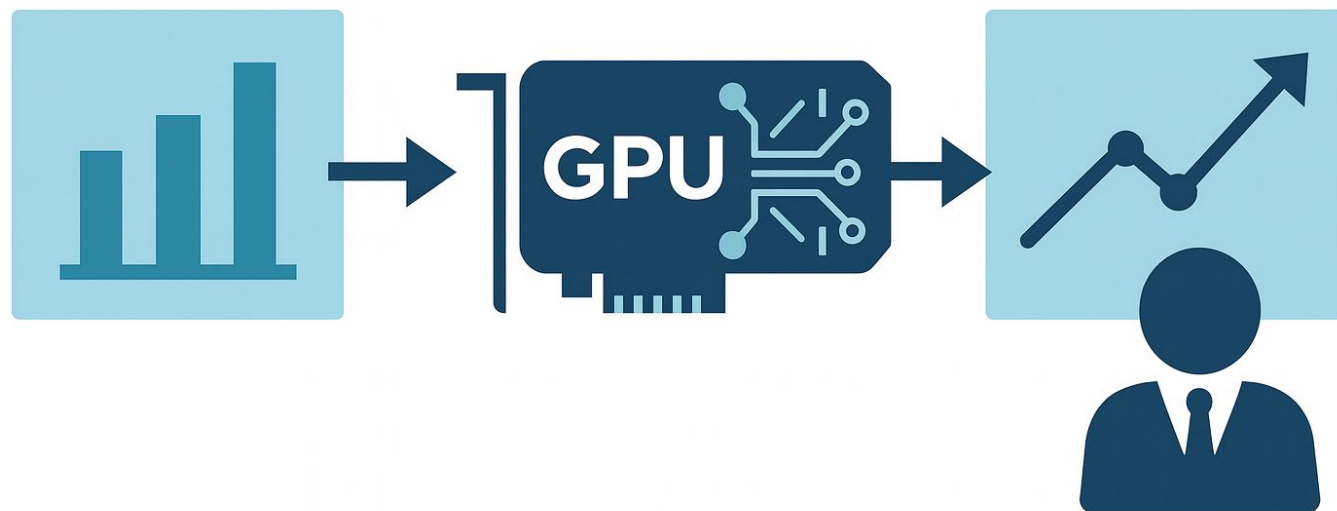
Distributed:

- Edge nodes near substations
- Local processing for low-latency control
- Reduces backhaul load to core regions



GPU Services for Workloads

- Supports forecasting
- High-performance calculations
- Real-time optimization models
- Future-proof compute foundation



Next-Gen Networking, Storage & Operating Models

Next-Gen Networking:

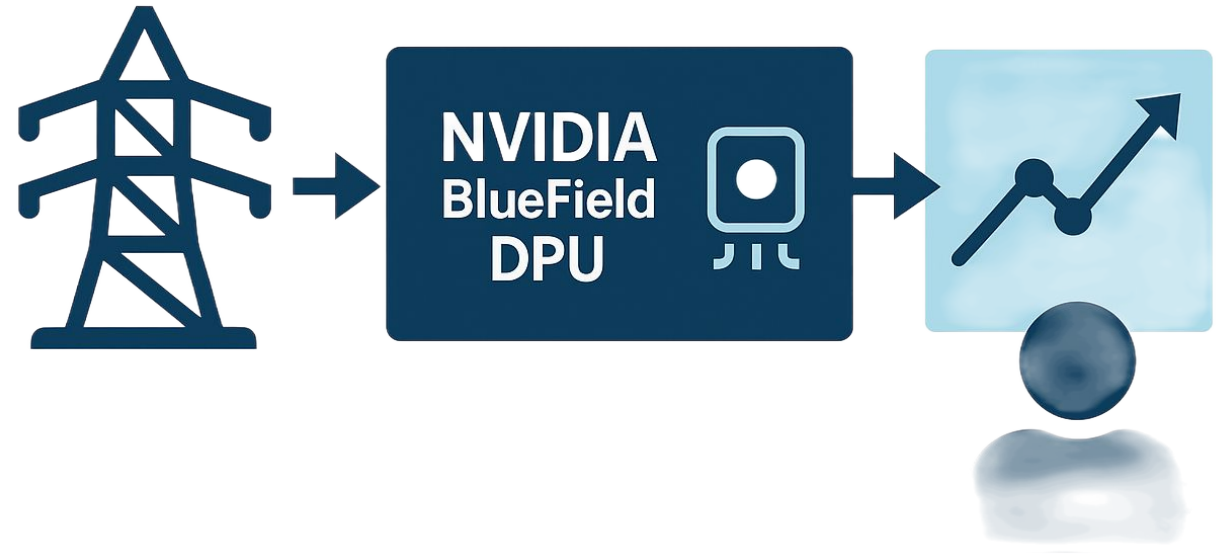
- NVIDIA BlueField DPUs
- Hardware offloading for networking & security

Storage:

- CEPH-based storage at large scale
- Multi-petabyte growth from sensor & telemetry data
- Data from power lines: wind, humidity, temperature, cable tension

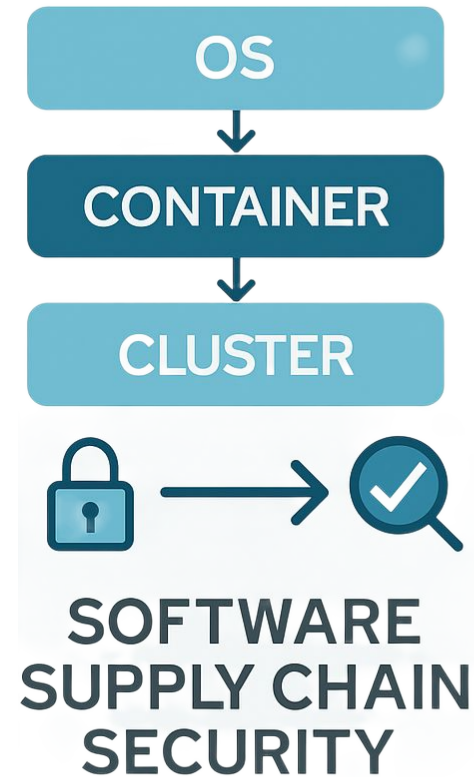
Operating Systems:

- Immutable OS for reproducibility
- Integrated into pipelines for consistent rollouts



Security, Confidential Computing & Supply Chain Integrity

- Confidential computing protections
- Signed artifacts from OS → containers → cluster
- Strong software supply chain controls
- Identity & certificate integration across layers





Jetzt Session bewerten!

Einfach QR-Code scannen,
Session aus der Liste wählen
und bewerten. **Vielen Dank!**

red.ht/rhsc-darmstadt-feedback