

Resource Sharing Framework for Sustainable Business Continuity through NRENs

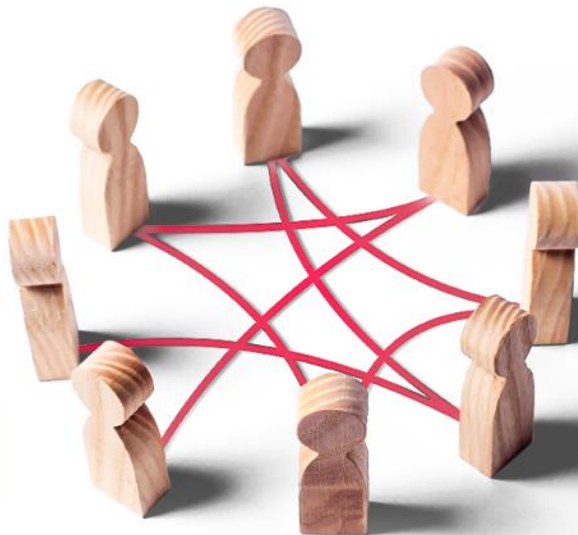
A collaborative framework enabling dynamic allocation of shared computing resources to enhance resilience, reduce costs, and ensure high availability for NRENs and their institutions.

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Understanding NRENs: Backbone of Research Connectivity

Specialized networks delivering high-performance, reliable services to support academia and innovation



National Research and Education Networks (NRENs) provide dedicated internet services tailored for research and educational institutions

They deliver high-performance connectivity and advanced networking services to meet academic and research demands

NRENs offer collaboration platforms that facilitate innovation and resource sharing among member institutions

Ensuring operational continuity and efficient resource use in NRENs is critical for supporting uninterrupted research activities

Maximizing Efficiency through Resource Sharing in NRENs

Pooling unused computing assets to enhance resilience, reduce redundancy, and support dynamic demand



Resource sharing pools computing assets like servers, storage, and network capacity from multiple institutions



Institutions contribute **unused capacity** to a central pool accessible when experiencing outages or peak demand



Dynamic access ensures rapid resource allocation, supporting **business continuity** and minimizing downtime



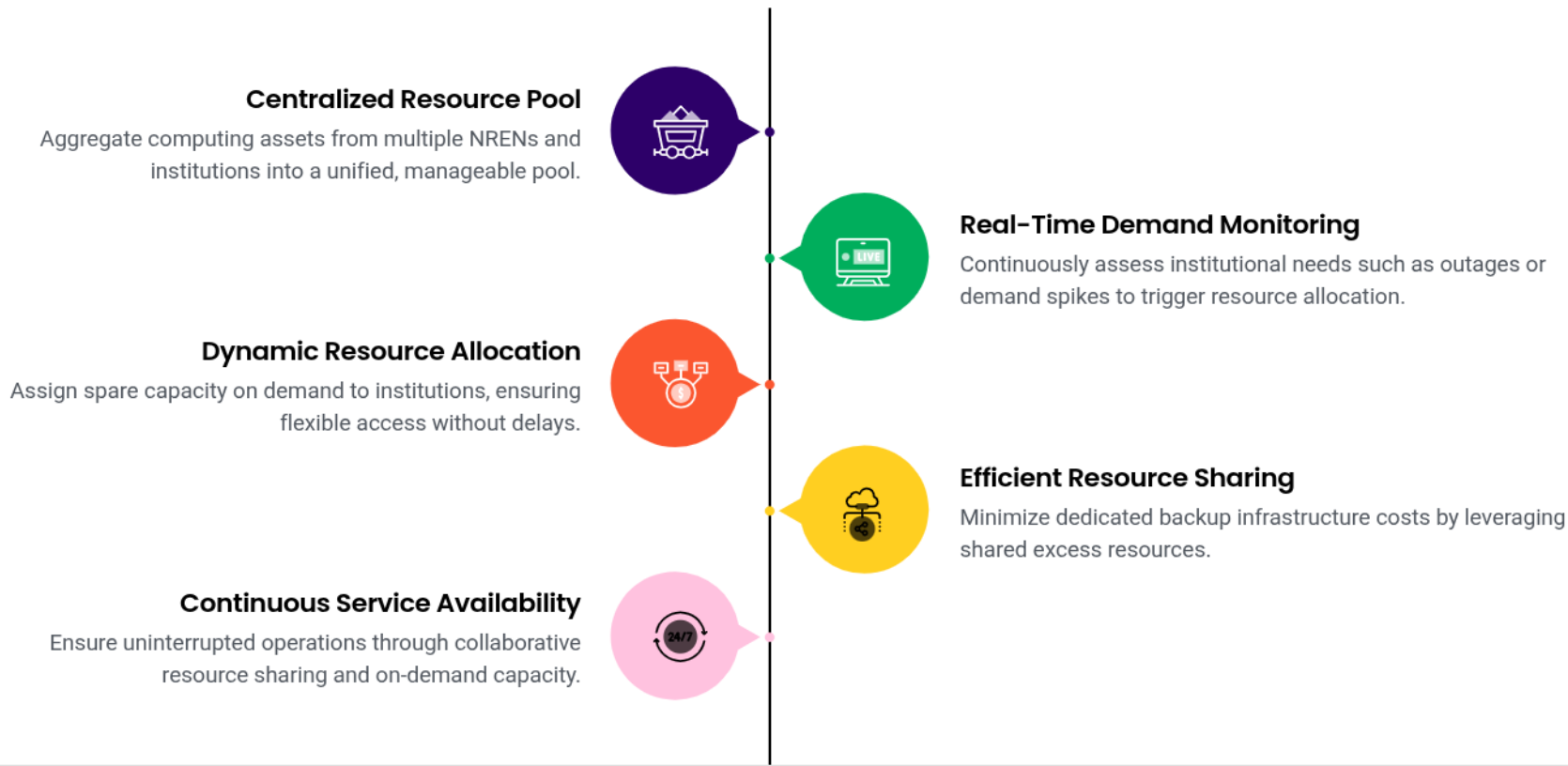
Collaborative sharing reduces **redundancy** and optimizes resource utilization across the NREN ecosystem



This model fosters overall **sustainability** and enhances **resilience** throughout the interconnected network

Centralized Resource Pool Enables Dynamic Allocation

Aggregating NREN and Institutional Computing Assets for Flexible, On-Demand Access



Essential Resources Shared in the Framework

Infrastructure components enabling flexible workload distribution and capacity availability among NRENs

Servers for computation power supporting dynamic research workloads

Storage systems managing large volumes of data securely and efficiently

Network capacity ensuring seamless connectivity and bandwidth for data transfer

Shared resources form the backbone of digital services in NRENs and research institutions

Flexible resource sharing enables workload balancing and ensures capacity availability where most needed

Safeguarding Operations: Managing Outages and Demand Surges

Leverage shared infrastructure to ensure seamless business continuity and rapid recovery



Enhances Business Continuity By Enabling Access To Shared Resources During Outages Or Demand Spikes



Minimizes Service Disruption, Maintaining Stable Operations Across Research And Education Services



Provides Redundancy And Rapid Recovery Without Requiring Costly Individual Backup Infrastructures



Maximizes Efficiency By Dynamically Allocating Pooled Resources To Institutions In Need

Maximizing Cost Savings and Infrastructure Efficiency

Shared resources reduce expenses and boost sustainable growth for NRENs and institutions.



Reduce Operational And Capital Expenses By Sharing Infrastructure Instead Of Duplicating Investments



Optimize Hardware Utilization By Pooling Unused Capacity Across Institutions



Lower Energy Consumption And Maintenance Costs Through Efficient Resource Use



Enable Sustainable Growth By Reallocating Savings Toward Core Research And Education Priorities

Building Trust Through Security and Identity

Ensuring authorized access and compliance across interconnected networks



Trust among institutions enables effective sharing of resources



Robust security measures prevent unauthorized access and network breaches



Identity management protocols ensure only authorized users access shared assets



Strong authentication and authorization maintain privacy and institutional compliance



These components collectively support secure and compliant resource sharing among NRENs

Overcoming Key Challenges in Resource Sharing

Building trust, integration, and security for effective collaboration



Establishing **mutual trust** among diverse institutions to enable cooperation



Integrating **heterogeneous systems** with varying technologies and protocols



Managing strict **data privacy** and compliance requirements across entities



Handling **coordination complexities** in dynamic resource allocation



Mitigating **performance bottlenecks** during distributed resource sharing



Implementing clear **governance models** and robust **security protocols**



Adopting **flexible technical architectures** to support evolving demands

Driving Seamless Adoption for Resource Sharing

Implement phased integration with stakeholder engagement and robust governance to ensure sustained operational success



Summary and Future Outlook

Key benefits and emerging advancements in resource sharing for NRENs



Enables sustainable business continuity by sharing unused computing resources across NRENs



Optimizes costs through dynamic allocation of servers, storage, and network capacity



Strengthens resilience via collaborative redundancy and trust-based governance



Prioritizes trust, security, and effective governance as foundations for success



Future growth driven by orchestration technologies enhancing scalability and security



Collaborative policies will evolve to meet emerging research and educational demands



Overall, the framework fosters efficient, secure shared infrastructures adaptable to future needs

THANK YOU

