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India SMART UTILITY Week 2025

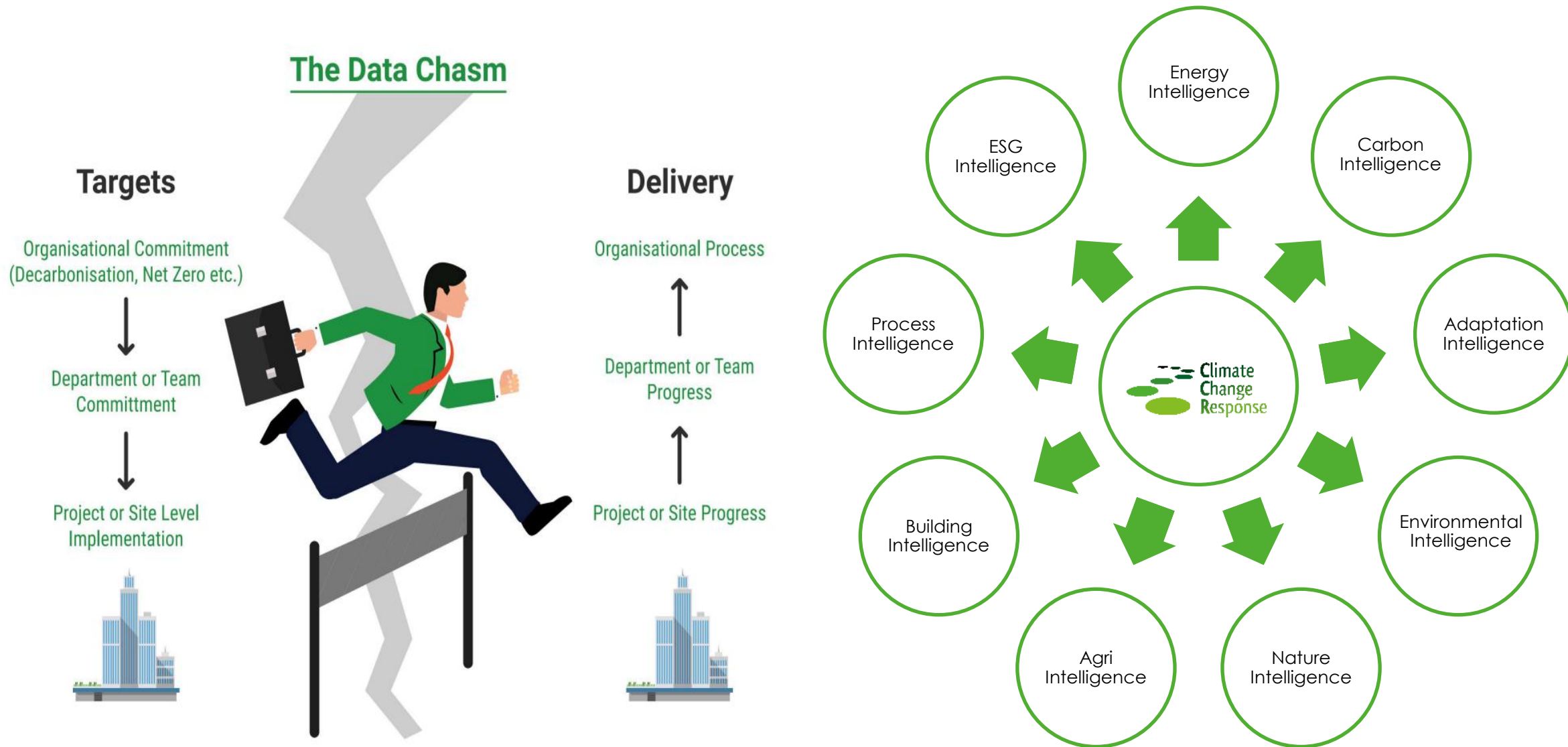
Session : Power System Flexibility and DERMS

POWER SYSTEM FLEXIBILITY AND DERMS

Presented By

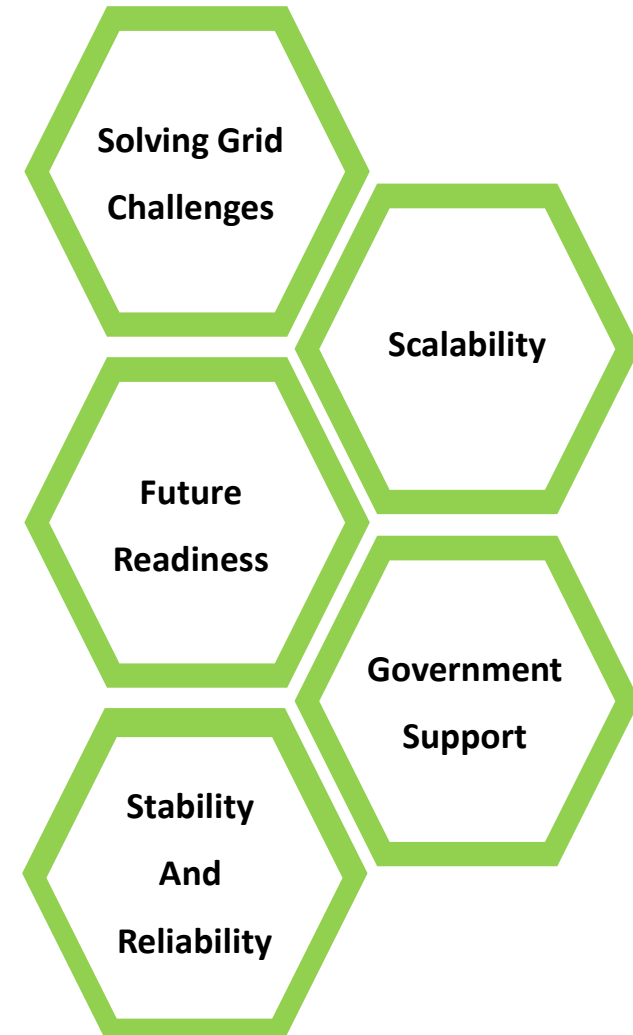
Dr Om Dubey, Managing Director, Climate Change Response Pty Ltd

INTRODUCTION



Ecosystem for Energy Systems, Intelligence, Advisory and Services

- **India's Energy Shift:** 100+ GW solar, 15 GW rooftop; PM Surya Ghar Yojana targets 30 GW rooftop by 2027.
- **Grid Challenges:** Renewable variability, distributed loads, and lack of real-time coordination.
- **Power System Flexibility:** Essential for balancing demand-supply fluctuations & ensuring reliability.
- **DERMS Advantage:** Real-time control, seamless DER integration, and grid stability enhancement.
- **India's Edge:** Strong digital & telecom infrastructure to scale DER adoption.
- **Orchestration for Stability:** DERMS synchronises solar, wind, EVs, storage, and demand response.
- **IEEE 2030.5:** Ensuring secure, standardised communication & market participation.
- **Towards a Low-Carbon Future:** Strengthening renewables, reducing fossil reliance, and optimising grid operations.

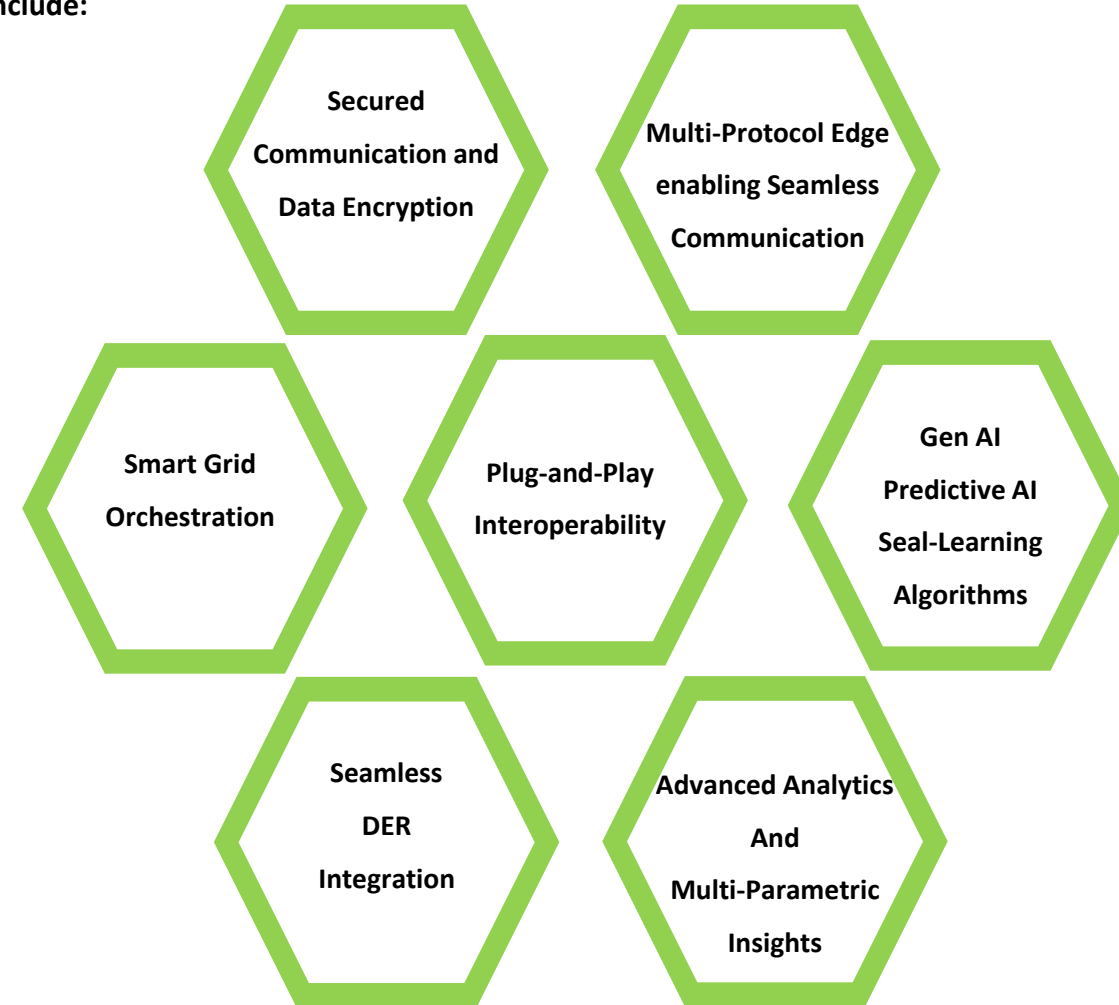


Some of the advanced features of CCR's Power flexibility and DER Management Solution include:

- Real-time monitoring & management for grid control
- Advanced analytics & multi-parametric insights
- Predictive AI for fault detection & grid health monitoring
- Generative AI for enhanced grid communication
- Optimised renewable energy orchestration
- Smart integration of solar, wind, storage, and EVs
- AI-driven load shifting & real-time demand response
- Substation monitoring for efficiency & resilience
- Automated risk mitigation & operational improvements

Key Features & Differentiators

- IEEE 2030.5 compliance for seamless DER-grid communication
- Interoperability across legacy & modern DER assets
- Secure remote monitoring, forecasting & control
- Scalable architecture for future grid expansion
- Peer-to-peer energy sharing capabilities
- Multi-protocol communication for diverse energy systems



Current Challenges in DERMS Implementation

- Challenges in DERMS implementation include compatibility issues with legacy systems, high workforce costs, infrastructure constraints, and grid reliability concerns due to unsynchronised distributed energy resources.

CCR's Multi-Protocol Edge Device (MED): A Game-Changer

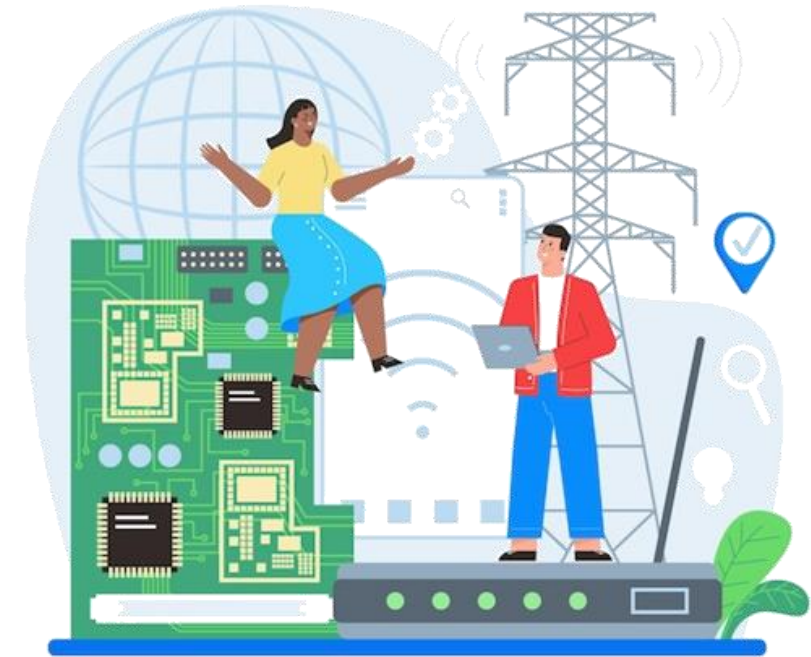
- Enabling seamless interoperability, MED bridges communication gaps across diverse energy assets, integrating legacy and modern systems into a unified, intelligent ecosystem.

India's Advantage in Early DERMS Adoption

- India's robust telecom network ensures seamless connectivity, its favourable climate reduces maintenance challenges, and its cost-effective workforce enables scalable, economical deployments.

Why India Should Prioritise DERMS Implementation

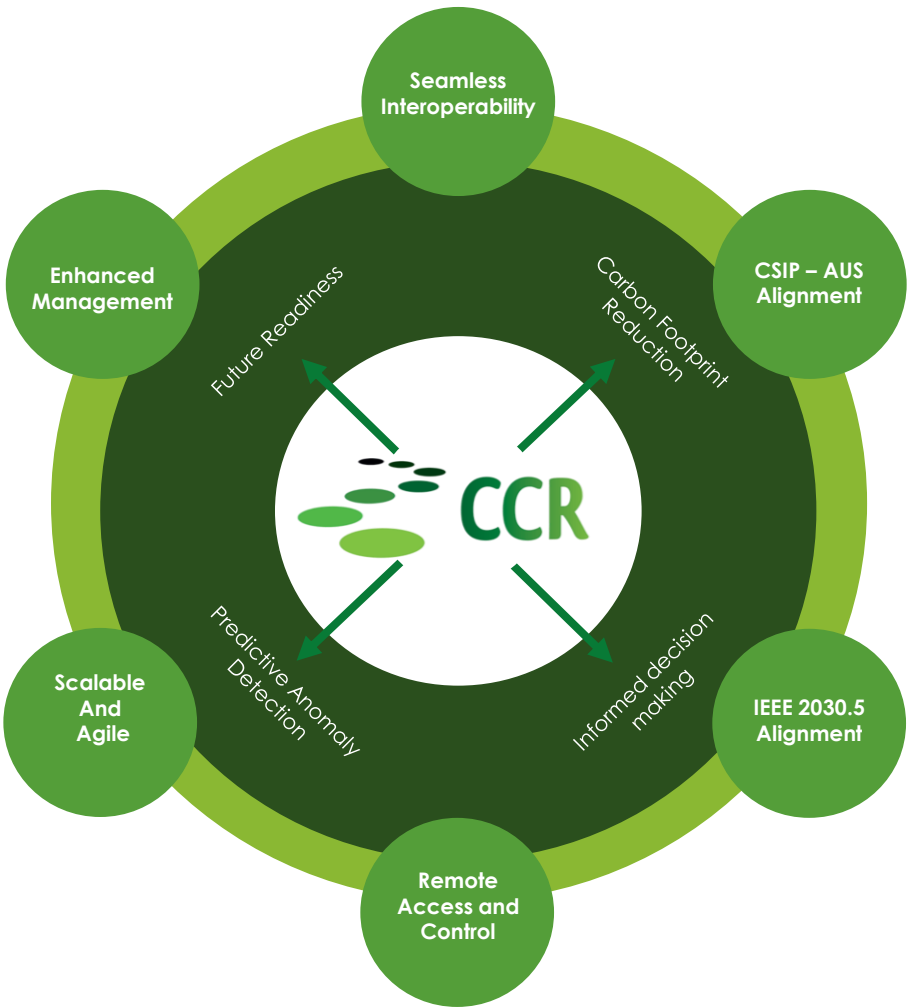
- Supports India's renewable energy targets (e.g., PM Surya Ghar Yojana's 30 GW rooftop solar initiative).
- Enhances grid resilience as more solar, wind, and EVs get connected.
- Reduces energy wastage and curtailment, optimising renewable utilisation.
- Prepares DISCOMs for the future by ensuring seamless grid integration and automation



CASE STUDY: Synergy Australia

Objective:

Support Synergy's Storage Mode Pilot in line with **CSIP-AUS & IEEE 2030.5** for BESS integration and Virtual Power Plant (VPP) enablement.



What we did	<ul style="list-style-type: none">Engineered and tested CCR's multiprotocol edge device (MED) for real-time remote control of BESS.Successfully established interoperability with synergy's 2030.5 utility server (pilot & production).Conducted site visits, firmware assessments, and factory testing for seamless der orchestration.Provided technical foundation for digital transformation roadmap within DER initiatives
Challenge	<ul style="list-style-type: none">Stakeholder alignmentMinimal site modificationsCompliance and alignment with certain local standards
Key Outcomes	<ul style="list-style-type: none">Validated MED's ability to execute remote battery control within set operational parameters.Validated frameworks for future DER integration across assets.Enabled seamless der integration for synergy's future VPP deployments.Minimal site modifications required for deployment at City of Armadale & other assets.
Future Potential	<ul style="list-style-type: none">Scale MED deployment across synergy's VPP-ready sites.Align with synergy's 2030.5-compliant vendor list for expanded grid flexibility.Enable a sustainable & scalable transition to operations with real-time grid orchestration.

KEY TAKEAWAYS

- DERMS is DERMS Ensures Grid Stability
- Future-Ready Solutions by CCR
- India's Strategic Edge
- Seamless Interoperability
- AI & Automation Drive Efficiency

KEY RECOMMENDATIONS

- Accelerate DERMS Adoption in India.
- Leverage CCR's Smart Grid Solutions
- Invest in AI-Driven Grid Management
- Standardise Communication Protocols
- Collaborate for a Smarter Energy Future

CCR is at the forefront of enabling power system flexibility through intelligent DERMS solutions, ensuring a seamless transition to a resilient, low-carbon energy future.
With India's strong telecom infrastructure and scalable workforce, the country is well-positioned to lead the adoption of smart energy management systems.

The future of energy is not just renewable—it's intelligent, interconnected, and adaptive.

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THANK YOU

For discussions/suggestions/queries email: isuw@isuw.in

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