Blockchain Powered Smart Grid Evolution

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P&U INDUSTRY IS UNDERGOING MASSIVE TRANSFORMATION

- Off-grid energy will reach cost and performance parity with grid-delivered energy — from 2021*
- Electric vehicles will reach cost and performance parity with combustion engine vehicles — from 2025
- The cost of distributing energy will exceed the cost of generating and storing it locally — from 2039

- Challenges will increase and revenues will be stretched.
- Industry will require flexible monitoring and control systems.
- Transaction complexities and risks will rise.
- The need to optimize cost efficiencies and maximize output will put pressure on balancing supply in real time.

Blockchain has the potential to deliver swift and secure digital solutions that support the transformation of the industry going forward

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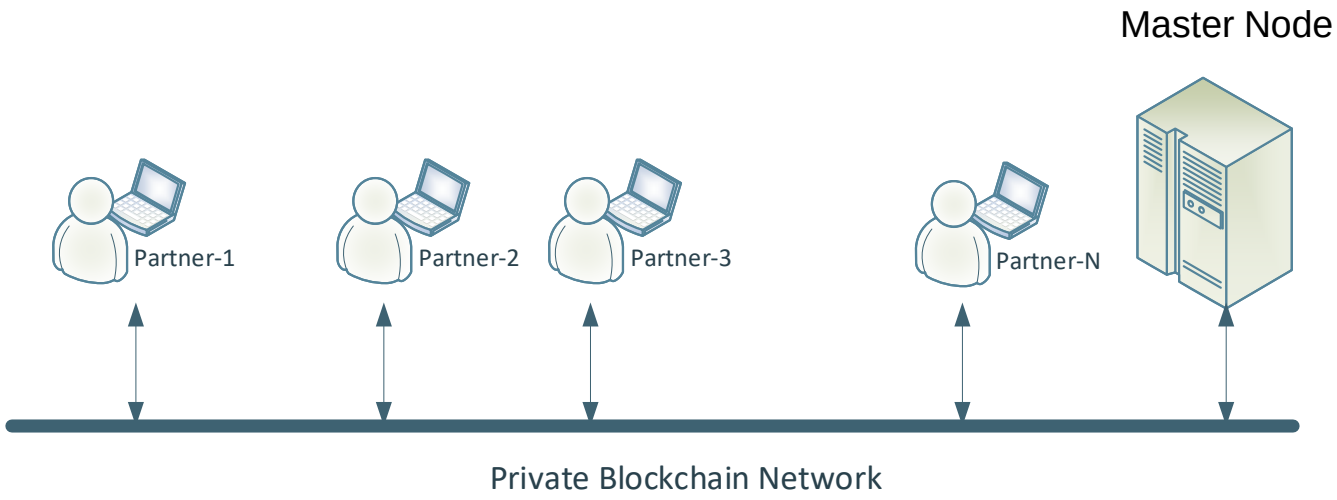
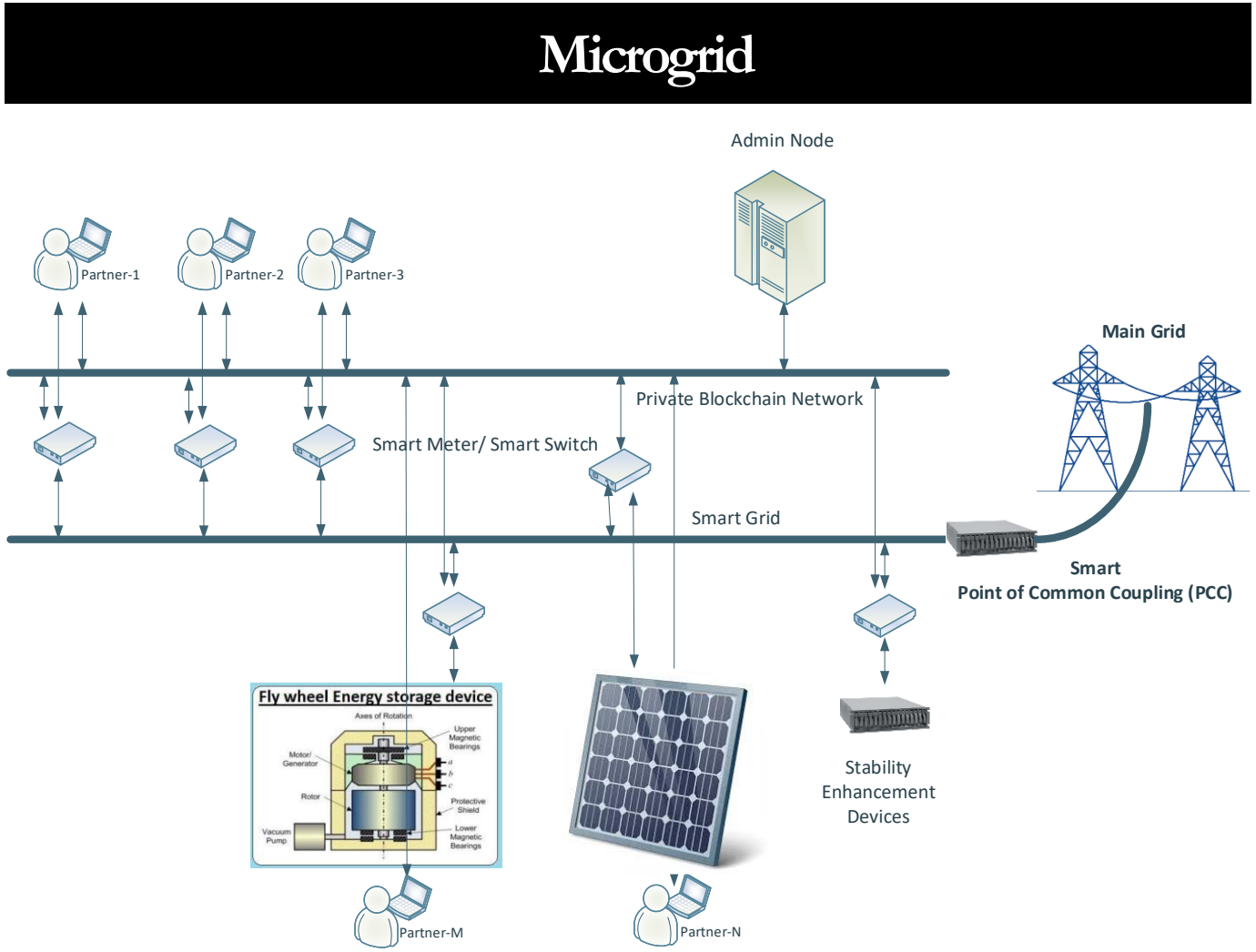
ENERGY TRADING USING BLOCKCHAIN



- Master Node and Partner Nodes are all connected to Blockchain Network
- All Data Exchange for Energy Trading proceeds through the Blockchain Network
- All Trading Settlement Information is Inserted by Master Node on the Blockchain
- Not all Partner Nodes will be a full Blockchain Node
- All Transaction/Settlements can be done using the Master Node's own cryptocurrency

BLOCKCHAIN POWERED SMART MICROGRID

- All Operation is decentralized and is done through Smart Contract deployed on the Blockchain
- Master Node is a Super-Node which consists of a high-availability cluster of Nodes
- Storage devices and Transient Stability Control devices are all operated through the Smart Contracts
- AI/Machine Learning based control algorithms in concert with Smart Contract will ensure overall power system stability



SUMMARY

- P&U Industry is Undergoing Massive Transformation
- Industry Will Require Flexible Monitoring and Control Systems to Balance Supply and Demand in Realtime
- Smart Contracts Running on a Private Blockchain Network will Shortly Control Overall Operation of the Smart Grid
- Blockchain Based Implementation Identifies Where the Energy is Coming from at what Price and at what Time
  - Better Transparency for all the Stake Holders

Blockchain has the Potential to Deliver Swift and Secure Digital Solutions that Support the Transformation of the Industry Going Forward

THANK YOU

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APPENDIX

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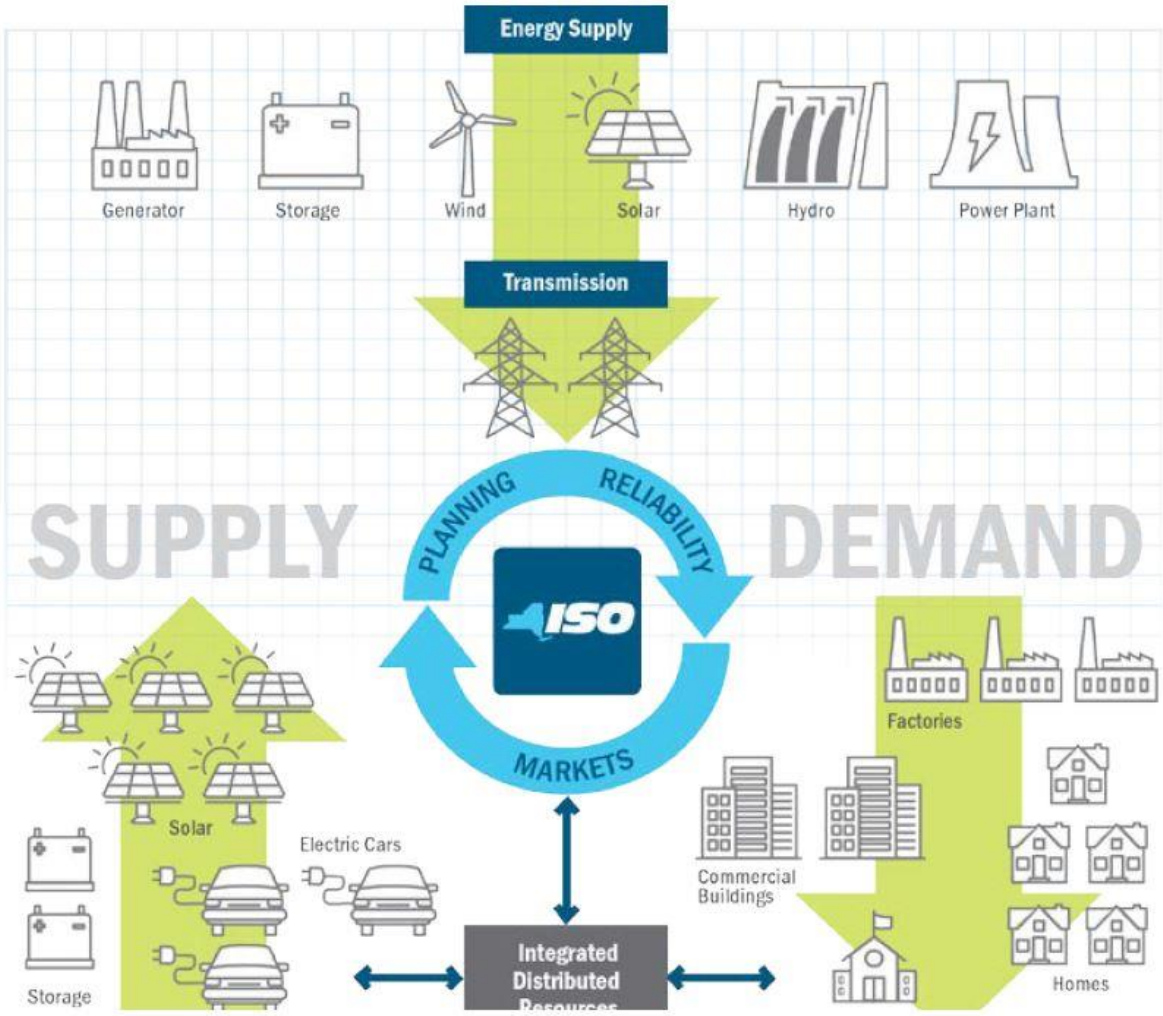
INFRASTRUCTURE OF THE FUTURE

- Large scale deployment of renewables and distributed energy sources are radically changing grid functionality*
- Historical demand patterns are no longer valid for future infrastructure planning.
- **Consumers are increasingly transitioning from purchasers of energy to active participants on the grid.**
- Consumers require complete transparency regarding where the Energy is Coming from at what Price and at what Time.
- **Blockchain technology can support this transformation.**



*New York ISO Strategic Plan 2018-2022