



IEM-AMR SOLUTION

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-: Marketing by :-

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Agenda

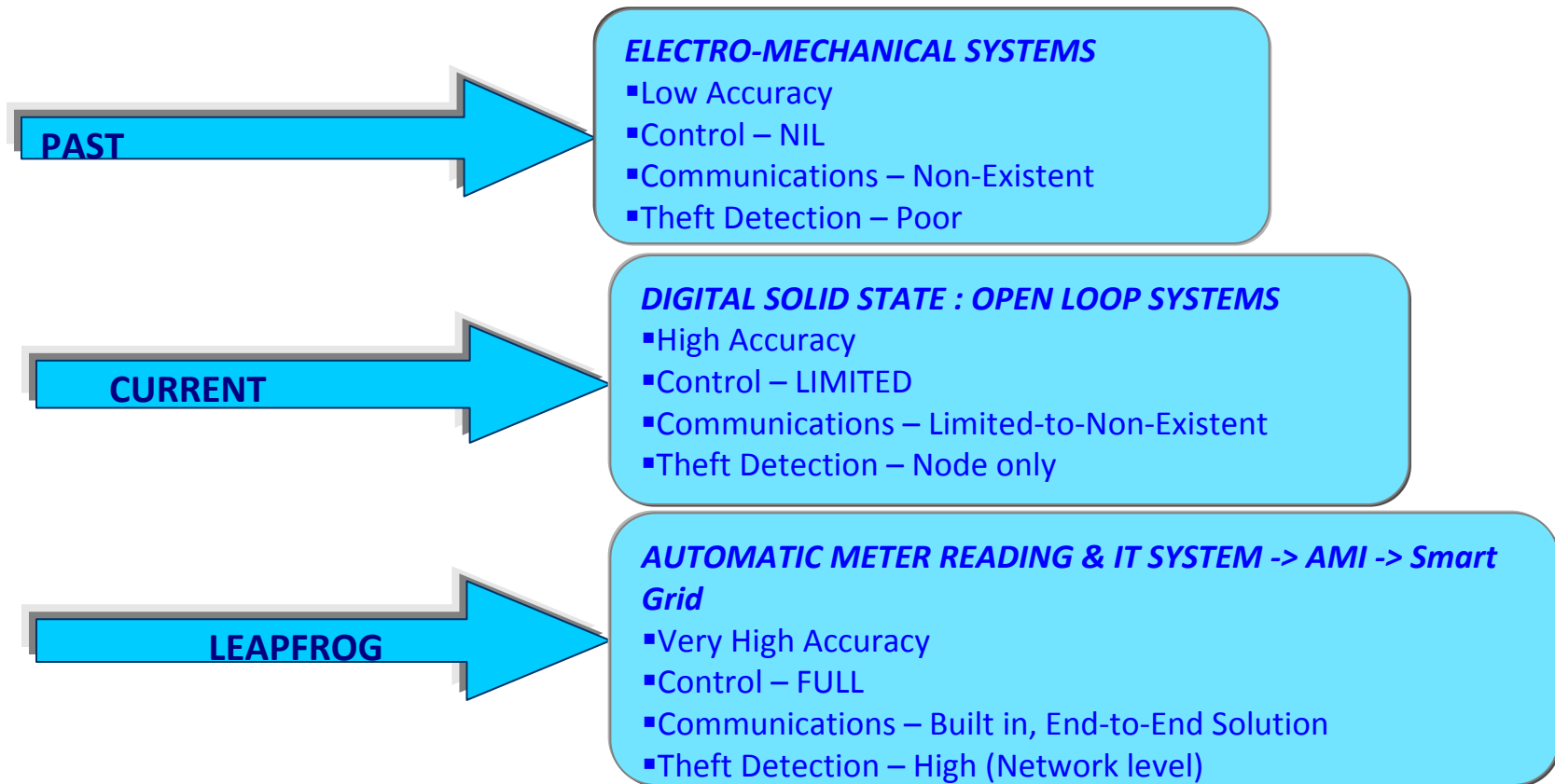
- Challenges
- Opportunity to Leapfrog
- Critical Benefits from AMR
- AMR Solution
- IEM Solution Features
- AMR Solution Differentiation
- Topology of AMR Solution
- Summary



Challenges with Stand-alone meter reading

- Highly Person dependant.
- Human errors cannot be avoided.
- Accessibility of meters in rural/ Agricultural zones.
- Energy Audits performed based on bill collection which is highly inaccurate.
- Billing done mainly on estimated/ monthly average basis
- Inability to monitor and control discrete loads
- Billing cycle requires excessive time.
- Meter data used only for billing, cannot help in analysis like demand analysis, energy audit, pinpointing losses, etc.

OPPORTUNITIES TO LEAPFROG





Critical Benefits from AMR

- Automatic Remote Meter Reading .
- Automating the process of measurement through digital communication techniques.
- Bring “intelligence” into the revenue cycle and manage it:
- Ability to detect tamper events and outage occurrences..
- Calculate transformer loading and sizing from interval data
- 15 minute interval data gives accurate load information for supply scheduling, switching operations, planning etc
- Monitor voltage at each premise to know conditions when to operate capacitor switches or regulators
- Consistent and granular data for improved accuracy
- Bring “intelligence” into the revenue cycle and manage it:

Metering ➡ Billing ➡ Operations ➡ Customer Service



AMR SOLUTION

- PLC-Based AMR Solution (Available Now)
 - Developed using PLC based technologies
 - Hardware + Software Solution
 - Available for demo with Meter Reading, Data Acquisition, Analysis and Transmission to Remote-End
 - Software Management for data acquisition, analysis and display of Energy, Load Parameters in Real-Time



IEM SOLUTION FEATURES

■ Edge Devices

- Automatic Meter Reading (AMR)
- Tamper, Theft Detection & Notification
- Remote DisConnect/Re-Connect based on customer operation/history/status*
- Real-time 2 Way Communication & Path to in-home display (HAN-Ready)*
- TOD Power Cost dissemination – Basic DR*

■ Loop Devices

- Outage Detection and Visibility
- Loss Measurements and Analysis
- Health Monitoring : Heat/Oil pressure/other health attributes
- Measurement of active/reactive energy flow
- Load control

■ Higher-Level Application

- End-to-End System Visibility and Analysis*
- System automation*

Note: * is part of Next Generation Products

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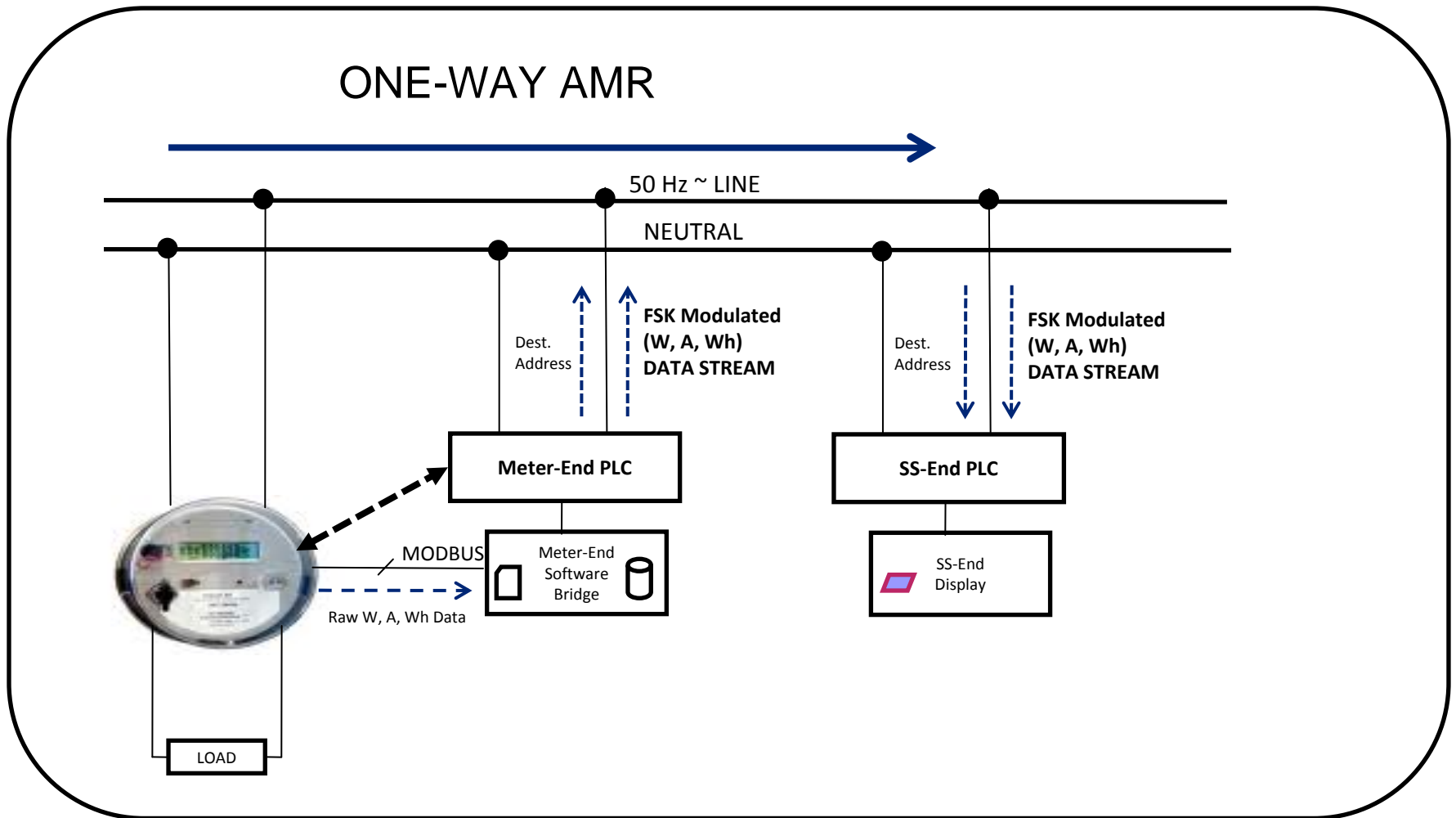
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AMR SOLUTION DIFFERENTIATION

- AMR Base : Power-Line Communication (PLC)
 - Most economically viable technology for transferring Meter data to Remote-End.
 - Need not recur additional operator cost of “overlay communication channel” as in GSM/Wireless Technologies
 - Uses existing power-line infrastructure belonging to Utility
 - Direct –to-Meter Solution
 - No issues about loss of signal for inaccessible meter locations such as Basements, Concrete/Industrial Structures
 - Mature & Reliable Technology
 - PLC has been used in Power Industry for Decades, but at low Bandwidths
 - Current solutions are Cost- and Data-optimized due to Standardization and Technological Advances

TOPOLOGY OF AMR SOLUTION





SUMMARY

- IEM's PLC based AMR solution for Intelligent Energy Management that offers following benefits currently
 - Smart automated processes instead of manual work
 - Accurate information from the network load to optimise maintenance and investments
 - Detection of tampering of Meters.
 - Consistent and granular data for improved accuracy
 - More intelligence to business planning.
- Backed by strong technical team as demonstrated with the prototype
- Expertise in the power domain
- Roadmap includes AMI (Advanced Metering Infrastructure) and SGS (Smart Grid Solutions)

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