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new smarts for the 21st century grid™

Smart Grid– A New Data Paradigm for Utilities

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Smart(er) Grid Is NOT

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Big Data Is NOT New

Data is NOT Information

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The Smart(er) GRID Evolution

15 Minutes

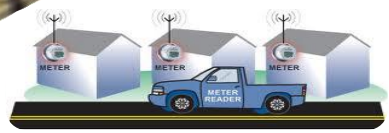
Hourly

1/Mo

1/Mo?

AMR

AMI



Drive-by

Manual

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The Smart(er) GRID Evolution

- Advanced Metering Infrastructure (AMI)
- Geographic Information Systems (GIS)
- Outage Management Systems (OMS)
- Field Staking Systems
- Automated Vehicle Location (AVL)
- Fiber Optic Cable for Communications
- RF Networks
- Broadband over Power Line (BPL)
- Digital Substations
- SCADA

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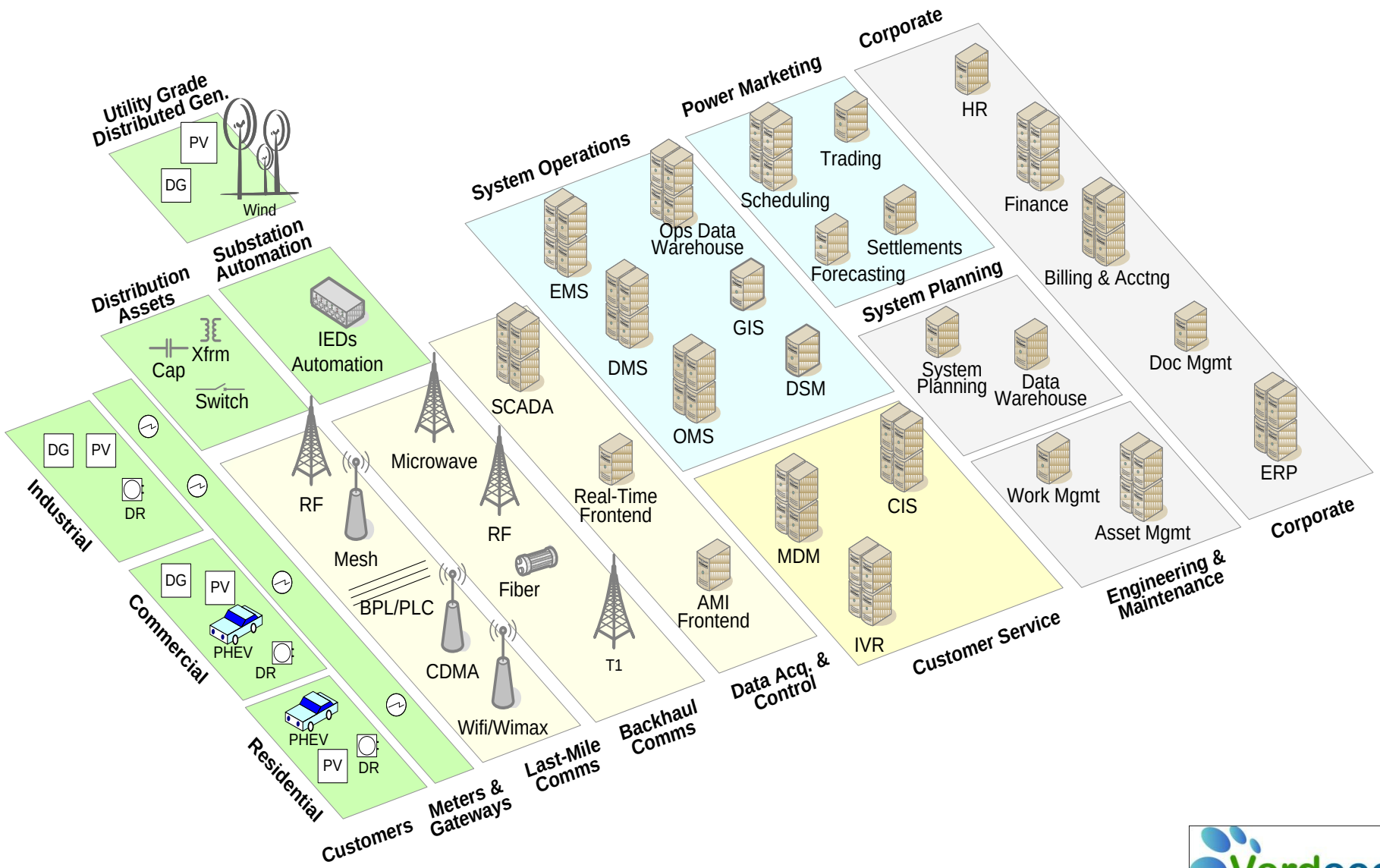
Smart(er) Grid = IT



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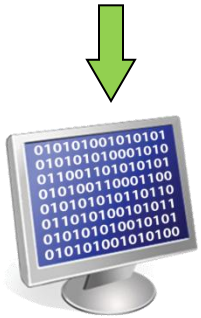
More Frequent Data

1 Reading/Month **35000 Readings/Year**



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Data Growth Example

100,000 Smart Meters → Interval Data – Online 250 GB
Other: Register Reads, Summary Tables, Staging – 50 GB = **300 GB Per Year**

Transactional Storage Capacity

1,000,000 Smart Meters →

- **Year 1 = 3TB**
- **Year 2 = 6TB**
- **Year 3 = 9TB**
- **Year 4 = 12TB**

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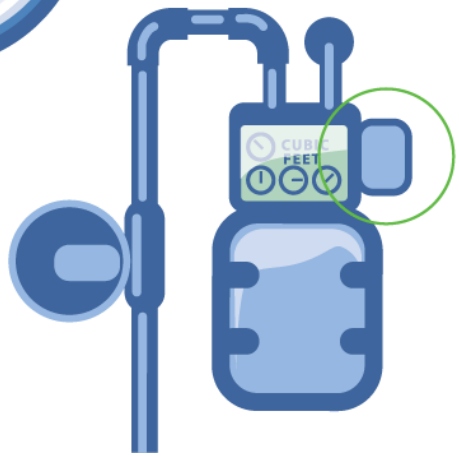
New Sources of Data



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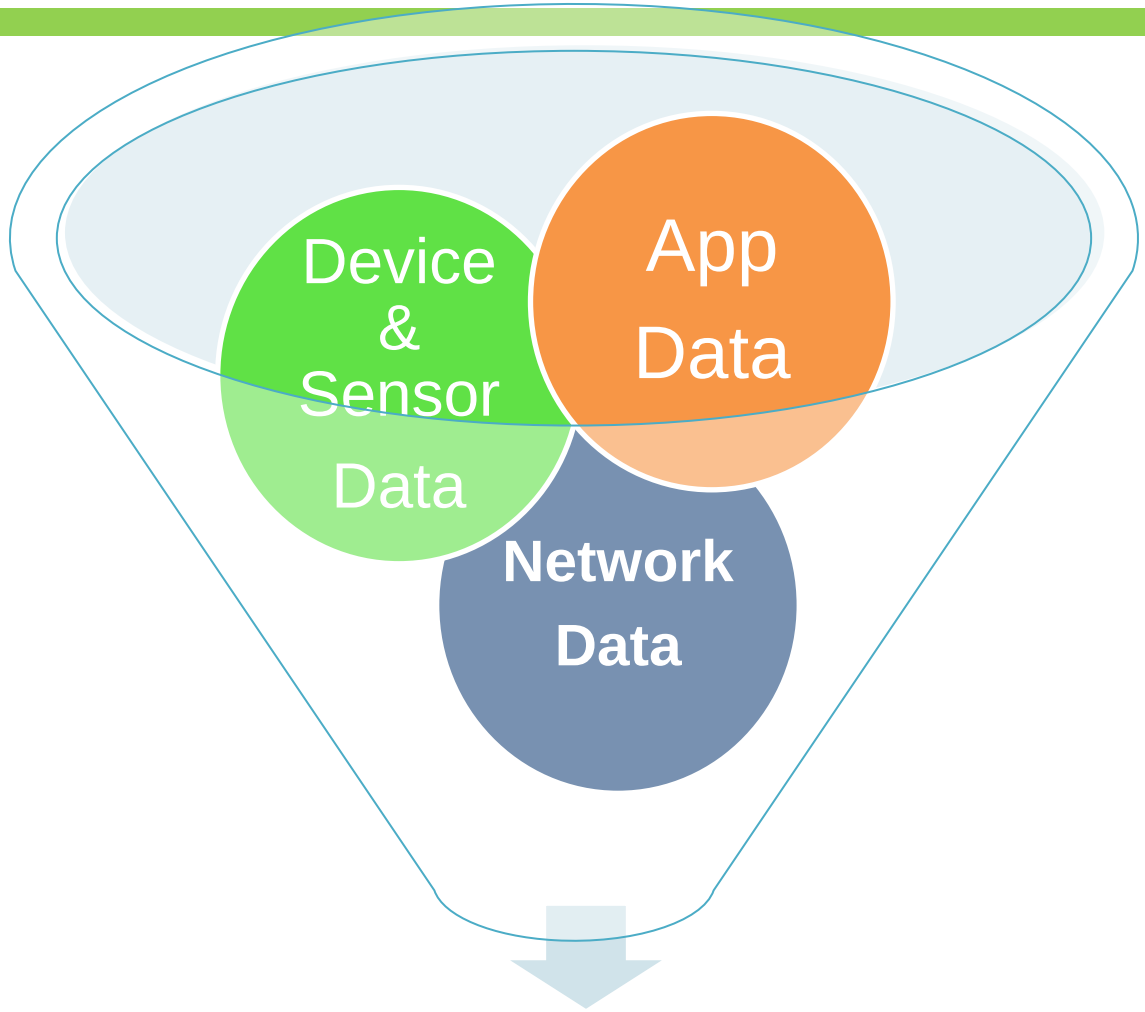
New Types of Data



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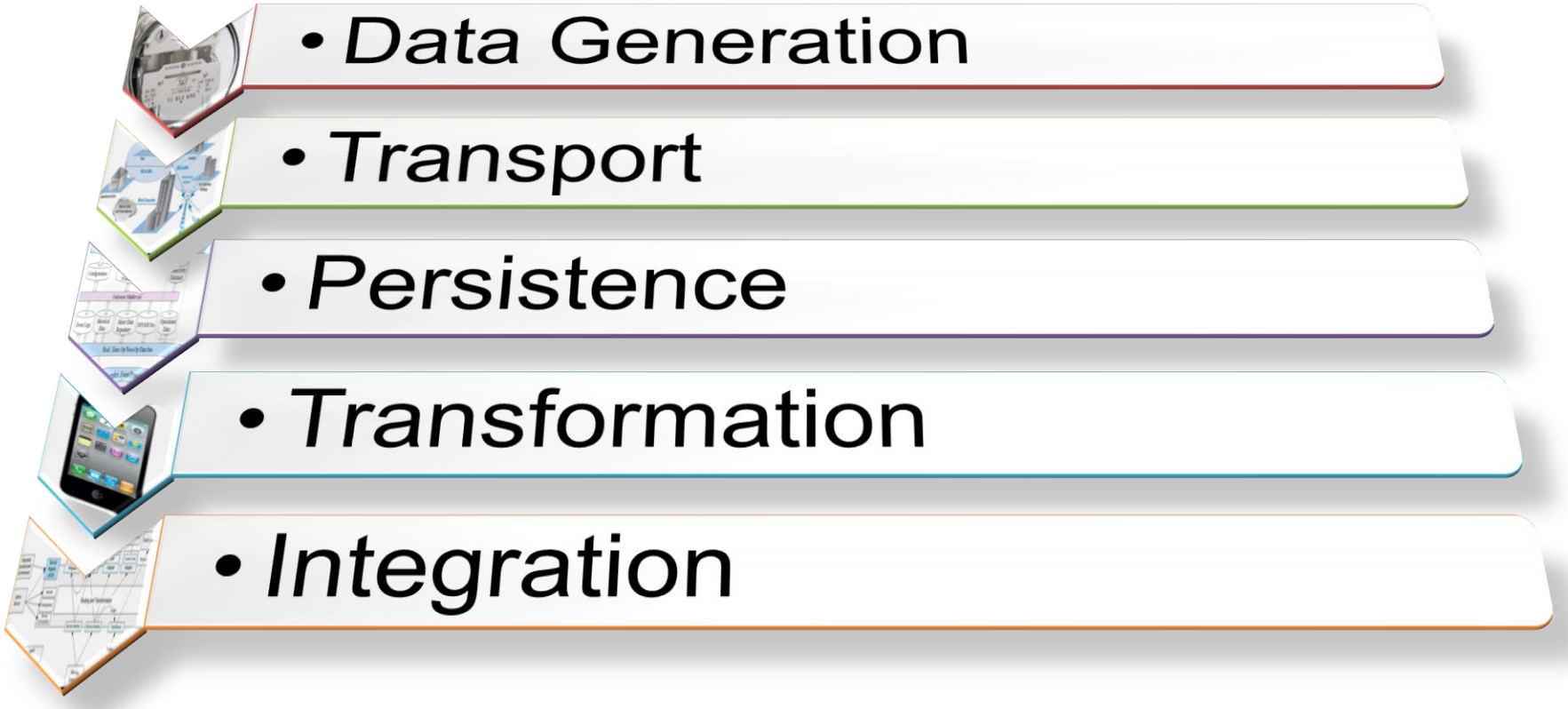
Five Stages of Smart(er) Grid Data



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Utility Back Office Under Stress

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Data Management Challenges Facing Utilities

Correlating Information

- Matching data acquisition infrastructure to required outcomes

Achieving Scale

- Learning to apply new tools, standards, and architectures to manage grid data at scale

Adapting New Processes

- Transforming business processes to take advantage of smart grid technology

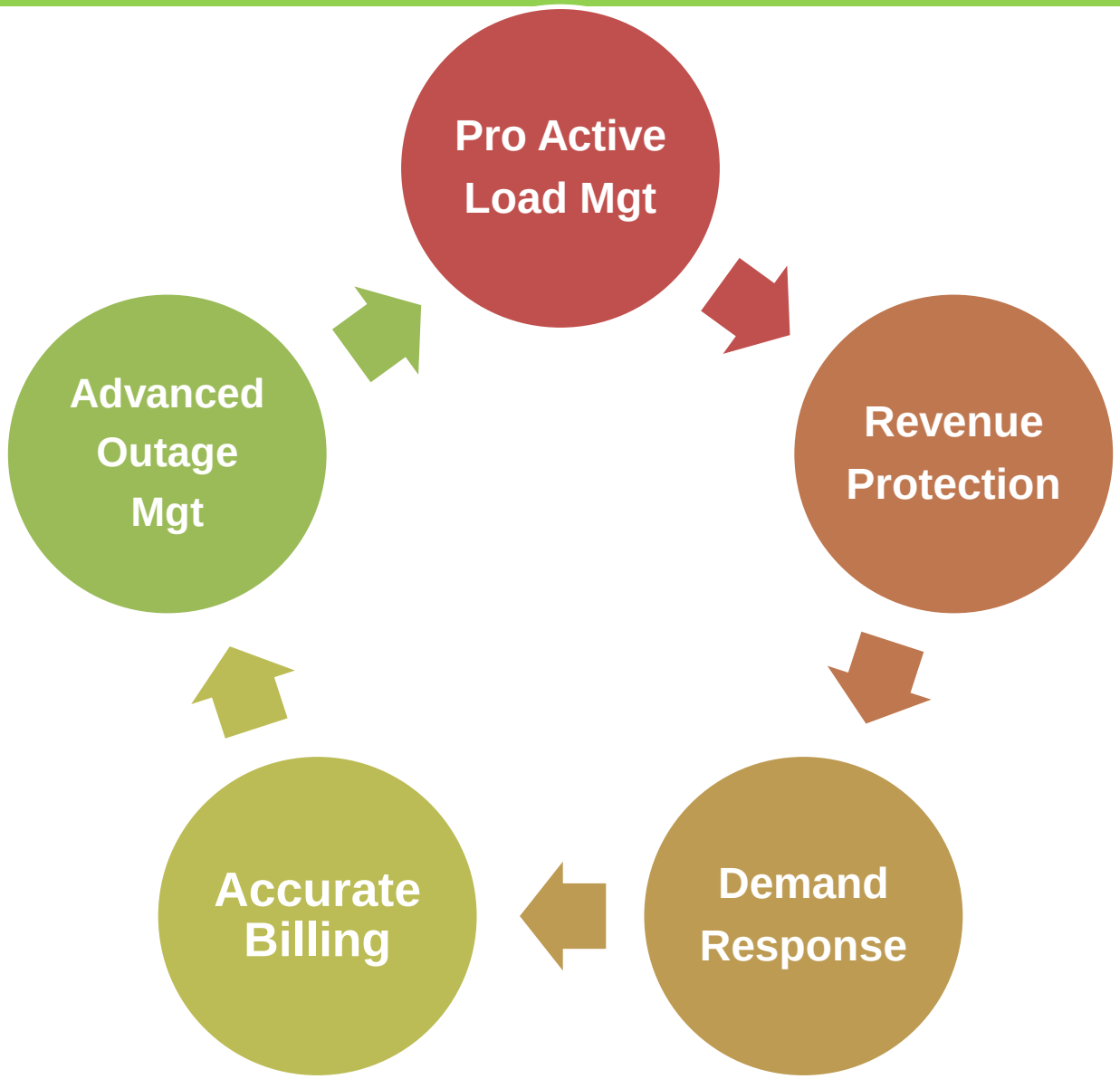
Managing New Silos

- Dealing with addition of new enterprise silos.

Managing Cost

- Infrastructure, Hardware, Storage, Bandwidth

New Data New Possibilities



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ROI to Utilities

-Revenue Protection:

-*Improvements of 2% - 4% of annual revenues*

-*Reduce maintenance cost*

- *Annual savings of 60K by reducing transformer losses*
- *100K+ Truck rollouts – $150 per rollout (30% false alarms)*

-Demand response: *Reduction in peak load by 5%*

-Voltage Optimization: *3.5% Voltage Reduction at Substation Bus with a CVR Factor of 0.85 Factor equals a 2.98% reduction of system load*

-Customer Service

-Identify billing inconsistencies

-*First call resolution Improvement by 50%*

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Data Management Vision

The Data are not created relevant,

they become so!

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Data Available Now

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Short Term Objectives

- **Derive value from existing systems and data through the use of advanced analytics**
- **Identify cost savings and efficiencies without committing millions in investment**
- **Establish business case with stronger ROI for future smart grid initiatives**

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Deficiencies in Existing Solutions

- **Cost of Analysis and Storage** on proprietary systems does not support trends towards more data
- **Limited Scalability** does not support trends towards more data
- **Closed and Proprietary Systems**

Gaps in Today's Data

- **Siloed**
- **Scale**
- **Scope**
- **Cost**

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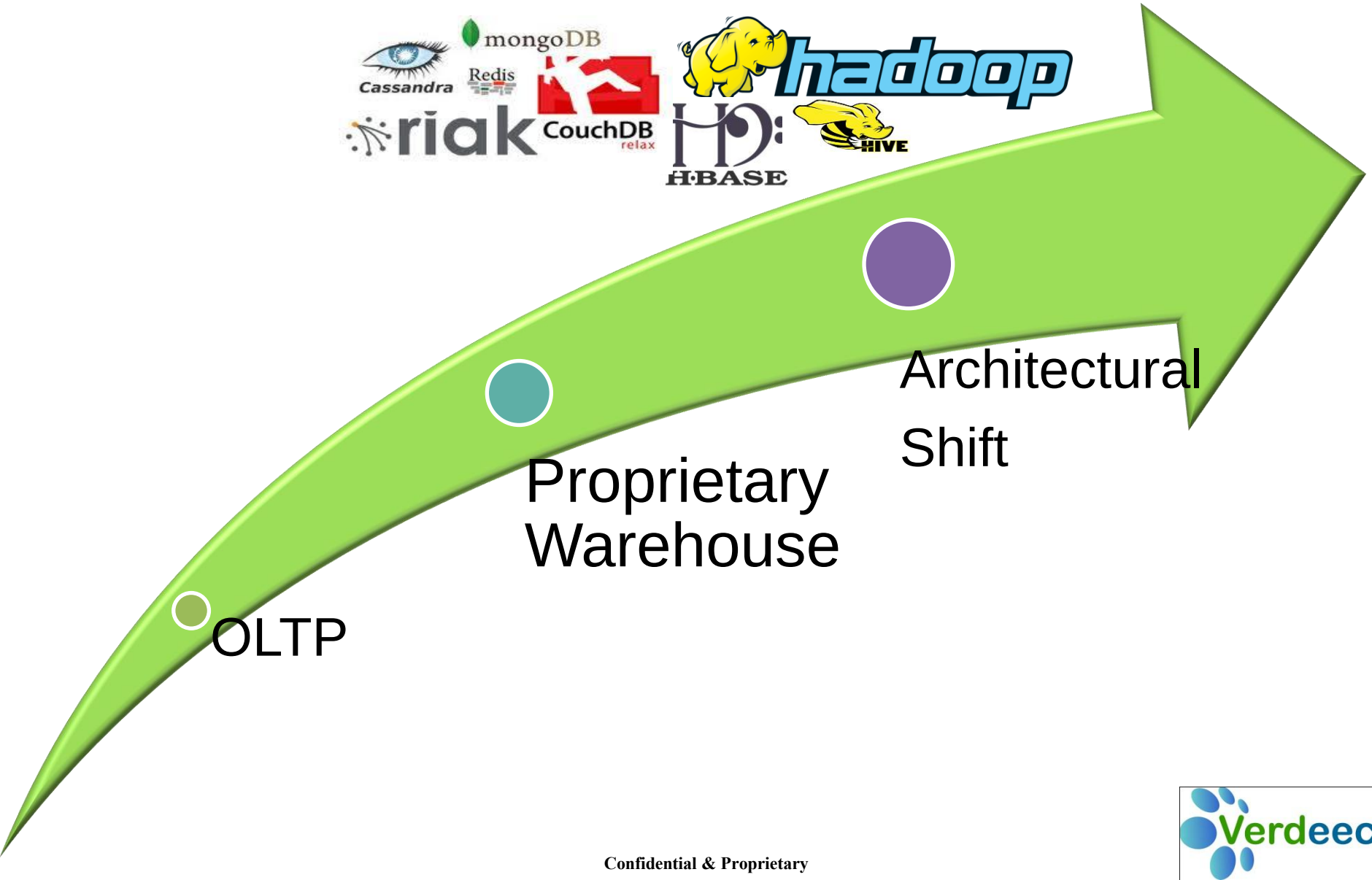
Solutions Driving Down Costs



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Smart(er) Grid Utilities

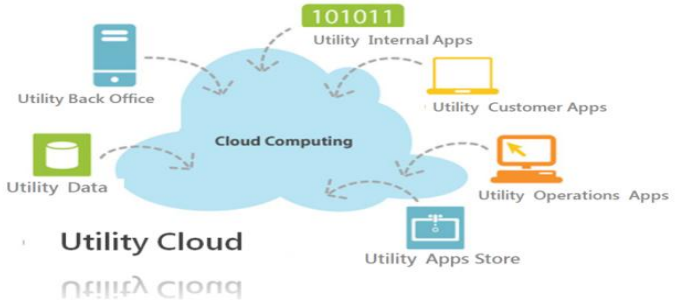
Cost & Risks

Plug in & Go!
Use As Needed

Right Sized,
Pay Per Use

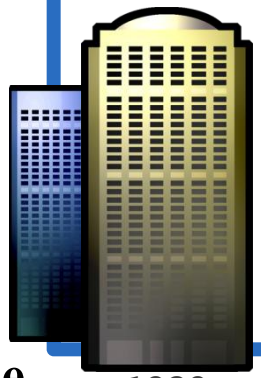
Ops Staff, IT
Infrastructure

Data Center,
NOC



- Low Cost
- Fully On Demand

- Utility Hosting
- Over Built or Under Built



- Highest Cost of Maintenance
- Traditional Infrastructure

Utility In House

1980 1990 2000 2010 2015

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Shift in Data Management Solutions

- Requirements Driven
- Enterprise Silo
- High Cost
- Long Implementation Cycles
- Custom Integrations

- Results Driven
- Hybrid
- Low Cost
- On Demand, Operational in Days
- No Custom Development

Data Management → System Evolution

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