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Using Big Data, IoT and Grid Analytics to Optimize Distribution Grids

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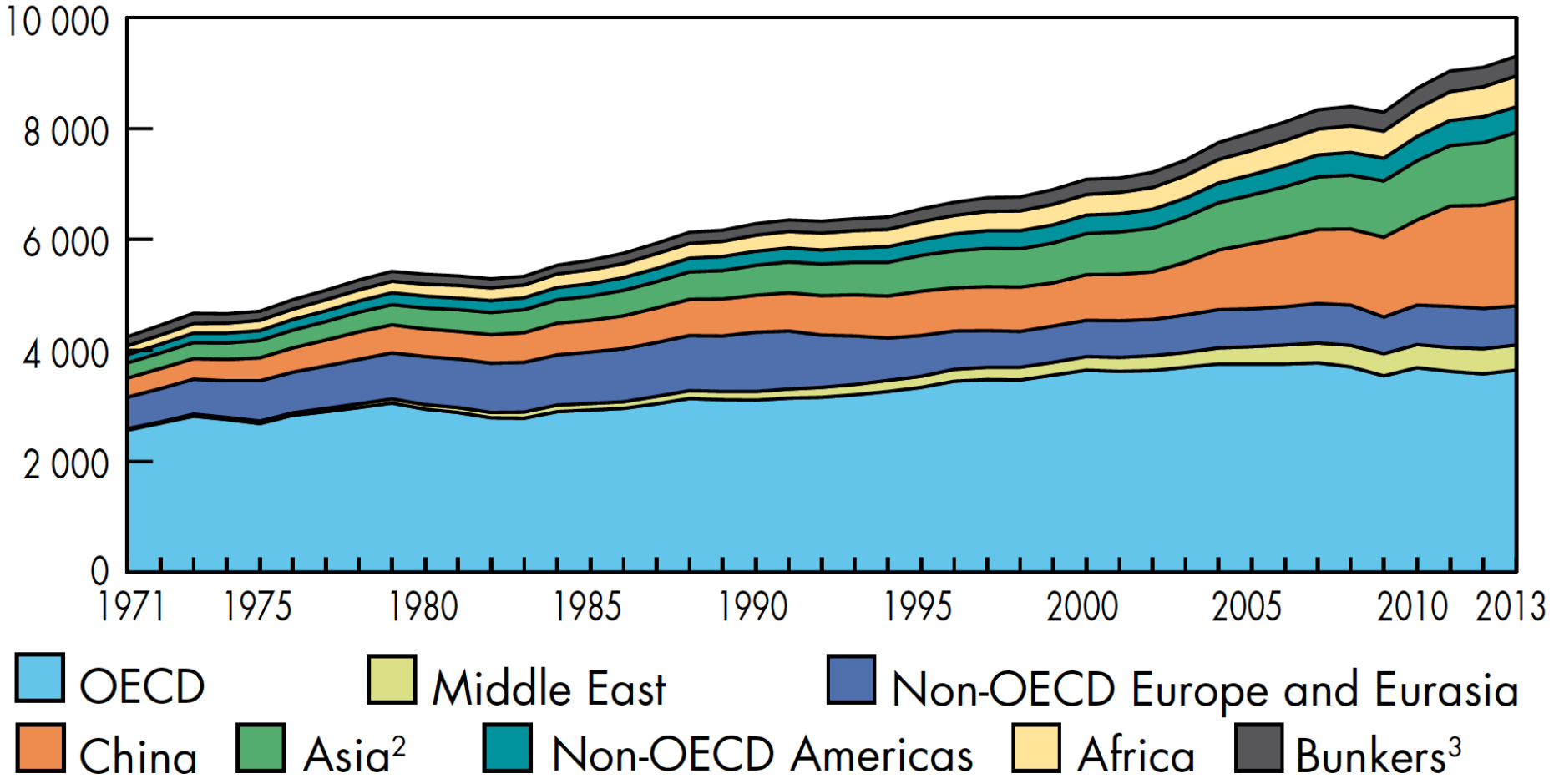
Global Energy Demand

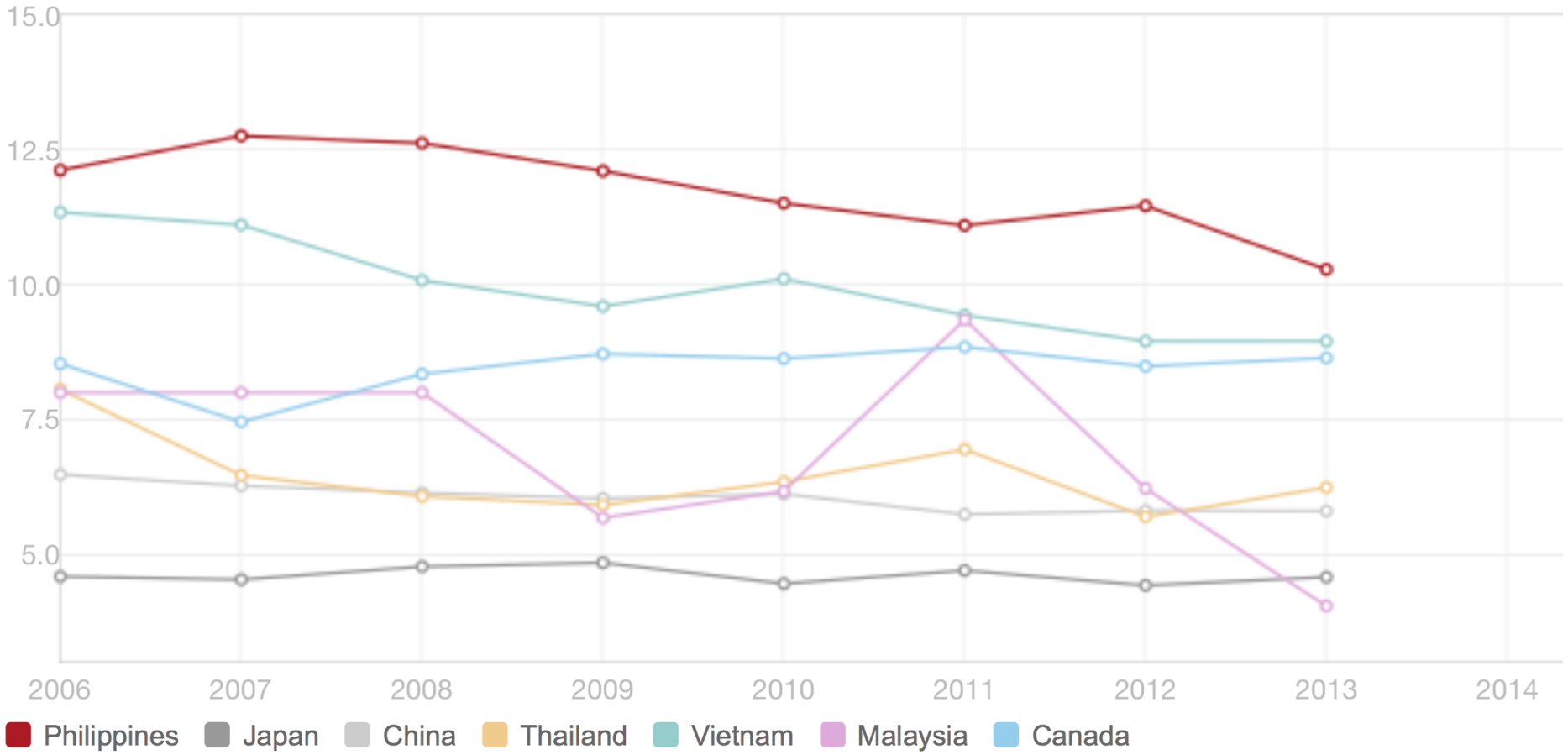
30% EU, 94% non-OECD

Global Energy Demand

World total final consumption from 1971 to 2013 by region (Mtoe)



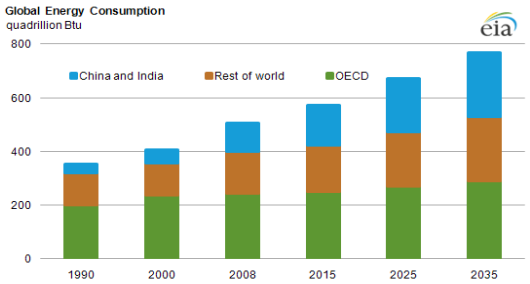
Losses Continue



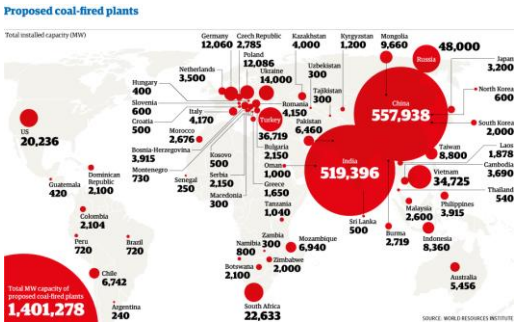
Data Source: World Bank

A Growing Global Issue

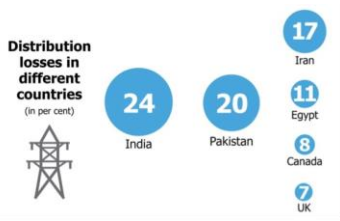
+50% Growth in Energy Demand



1200+ Coal Fire Plants Proposed



$202B USD/yr is Lost



Most in India and China

13B tonnes of CO_2 emissions

Rising 2.5% per year

A Global Problem

20M Tons of CO_2

2,250,000

3,600,000

1% Efficiency Gain in US

Disruption is Occurring

A Difficult Problem

Asia Pacific 2020

+500 million smart meters

But smart meters alone can't solve the problem

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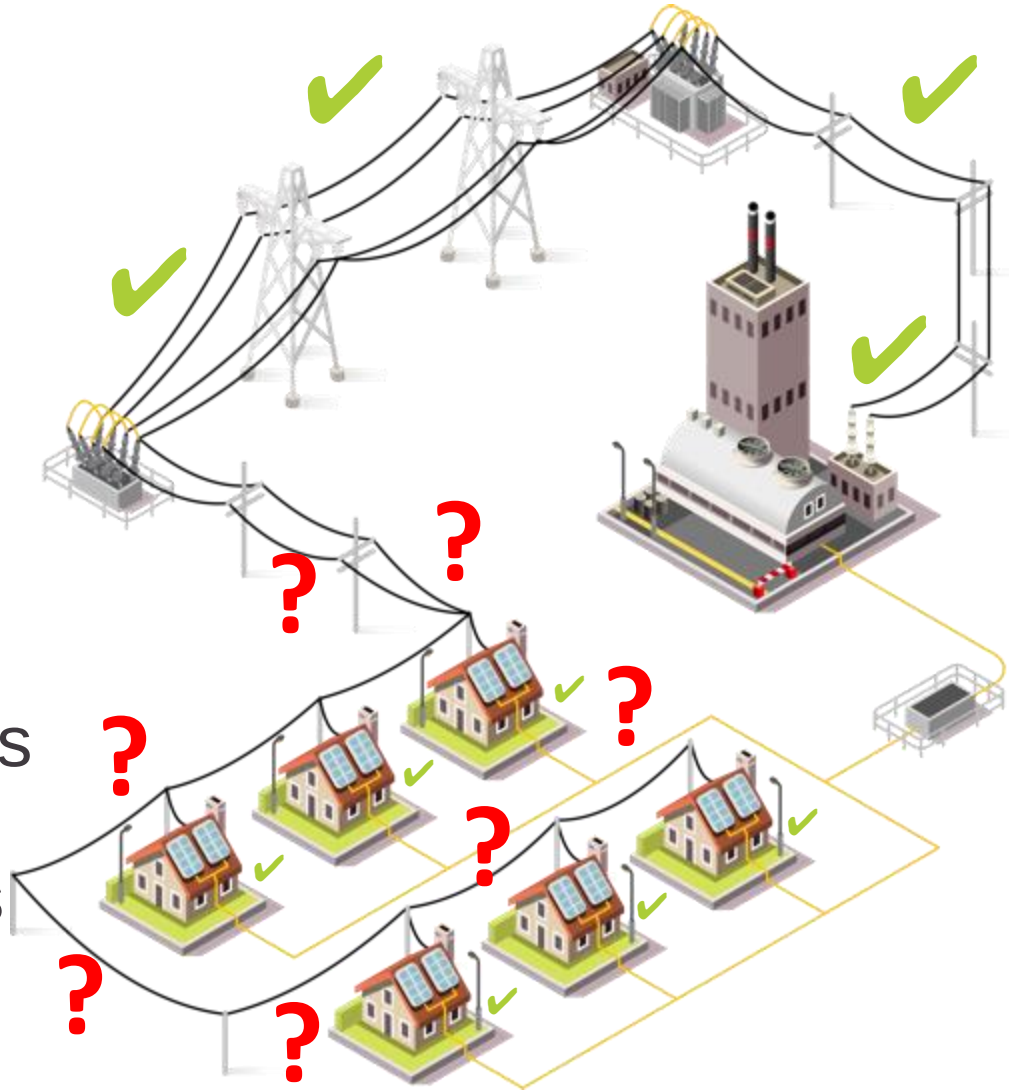
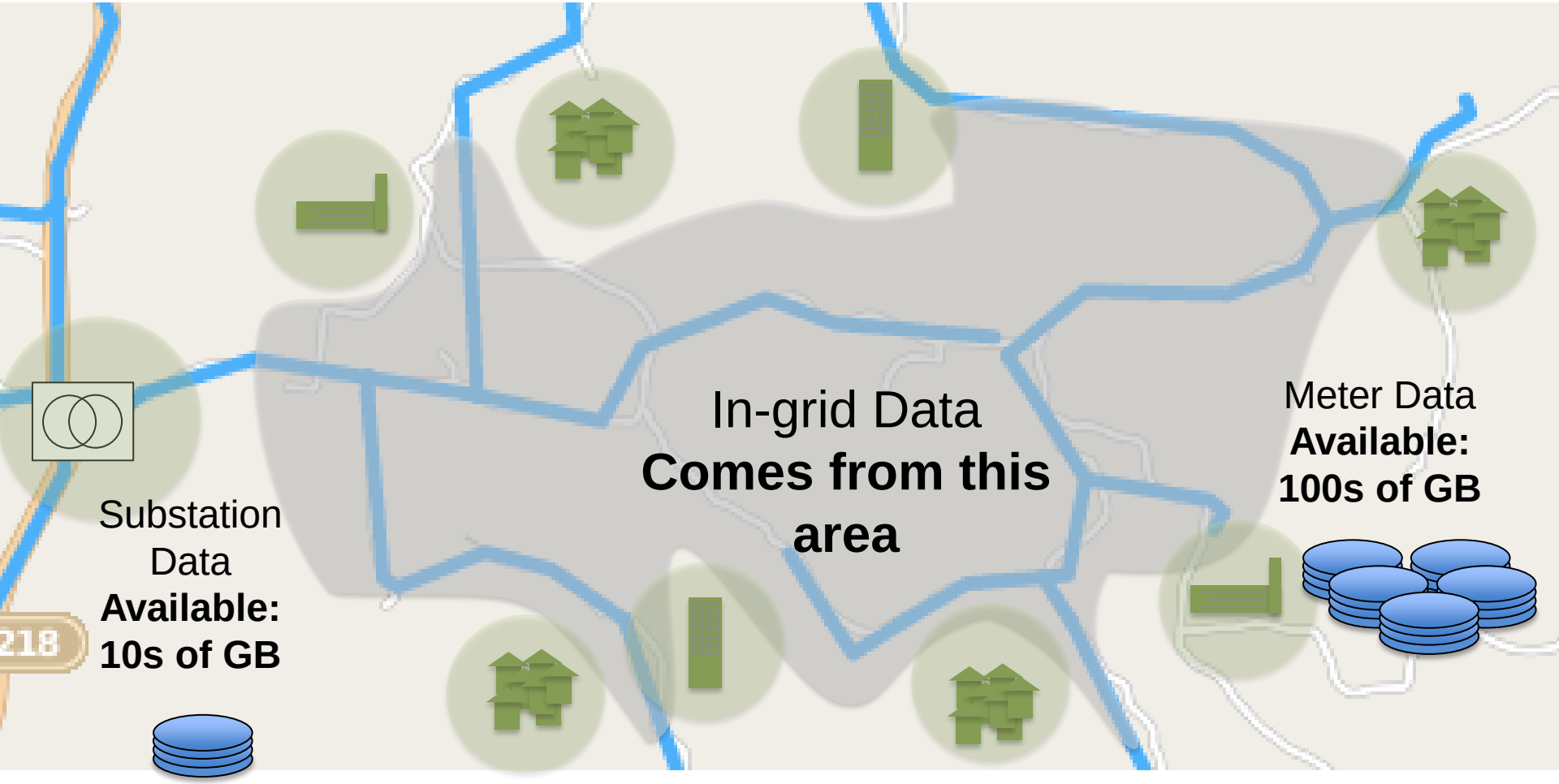
Why It's Hard to Detect

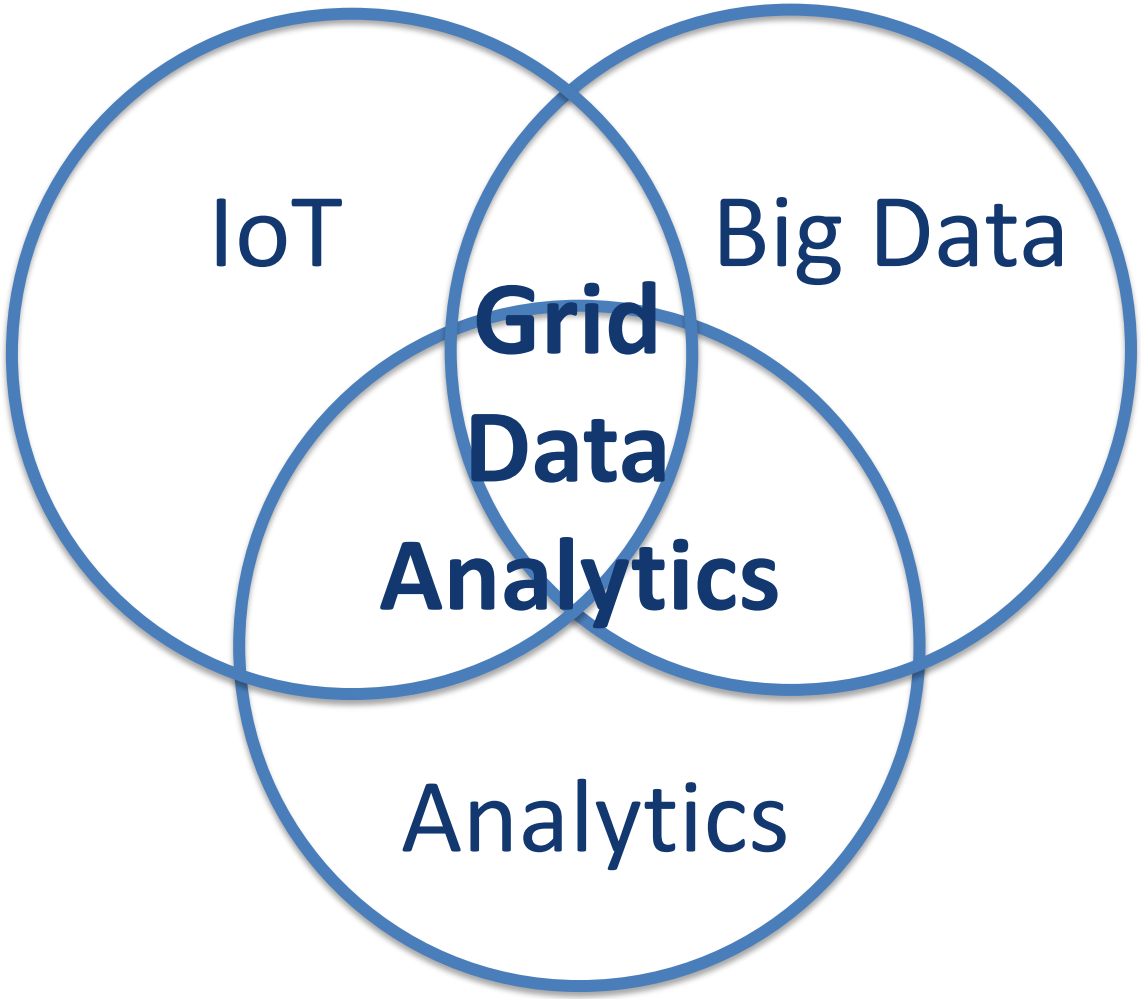
- Generation & transmission are well-monitored.
- Consumers also well monitored (especially with smart meters).
- MV distribution lines are poorly monitored.
- Pure analytics solutions relying only on smart meters are blind to this part of the grid.



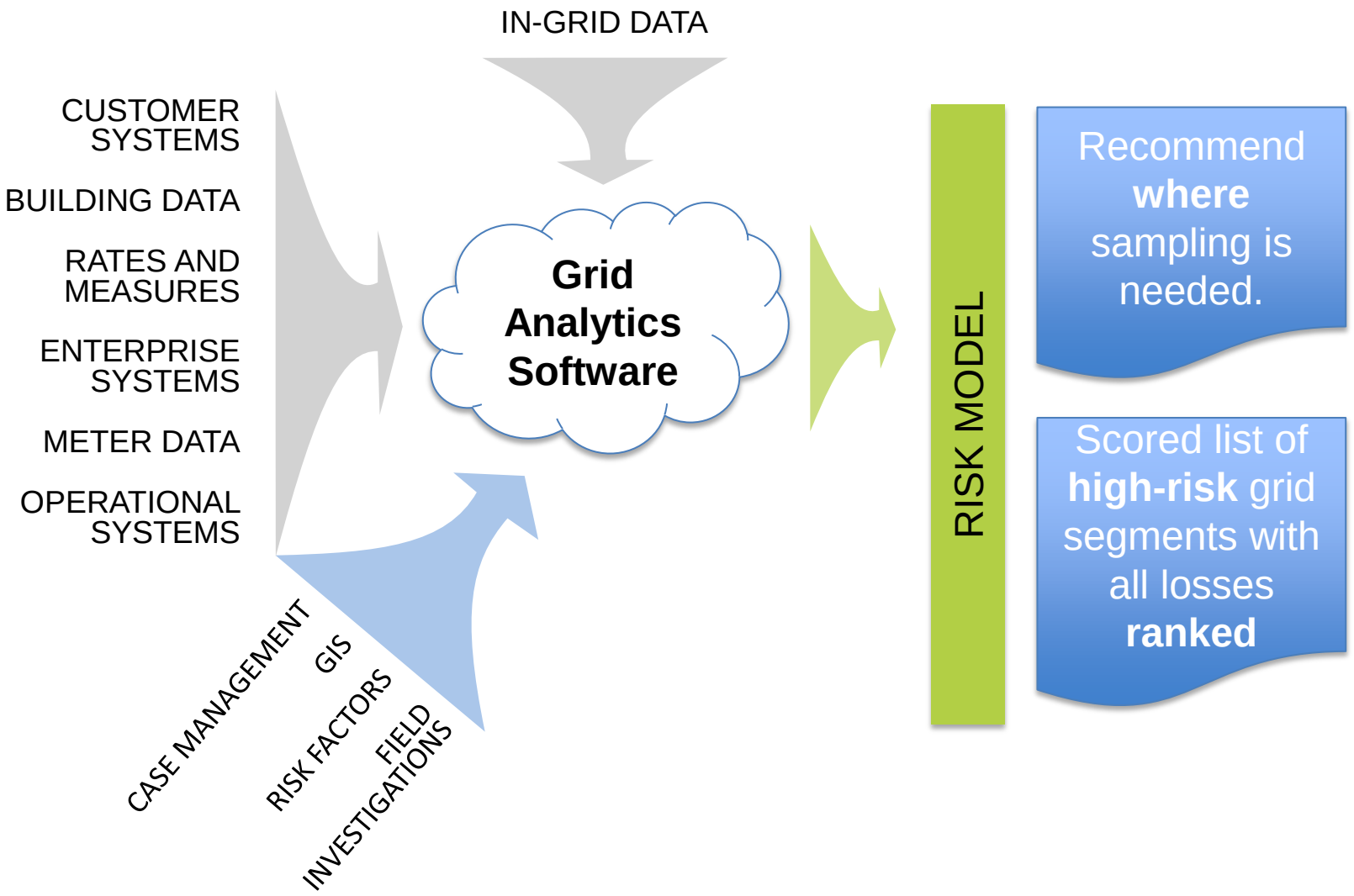
Solution: In-Grid Data



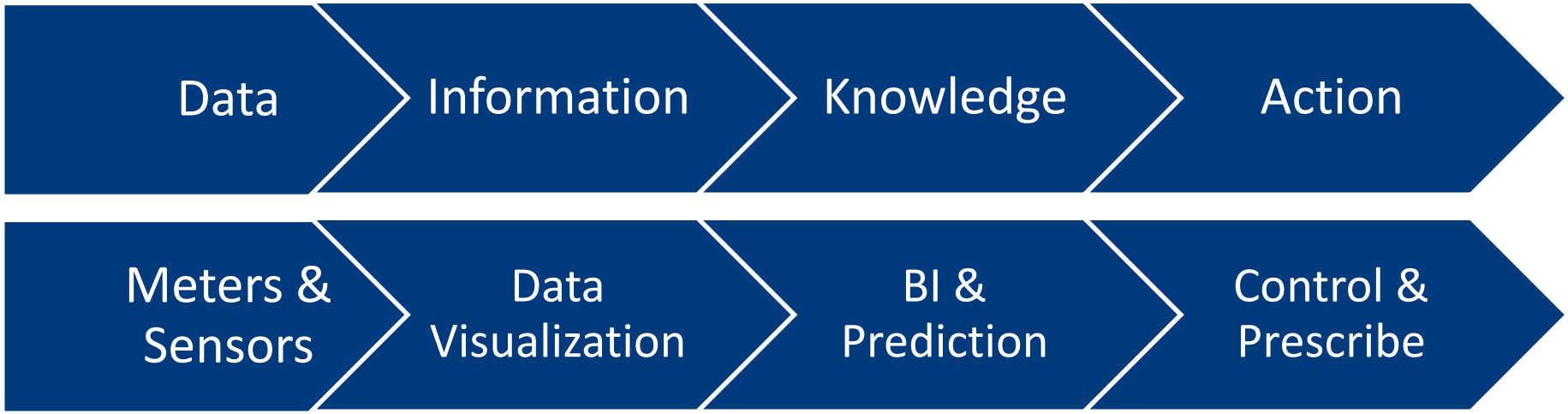
Combined Solution



Grid Analytics Software

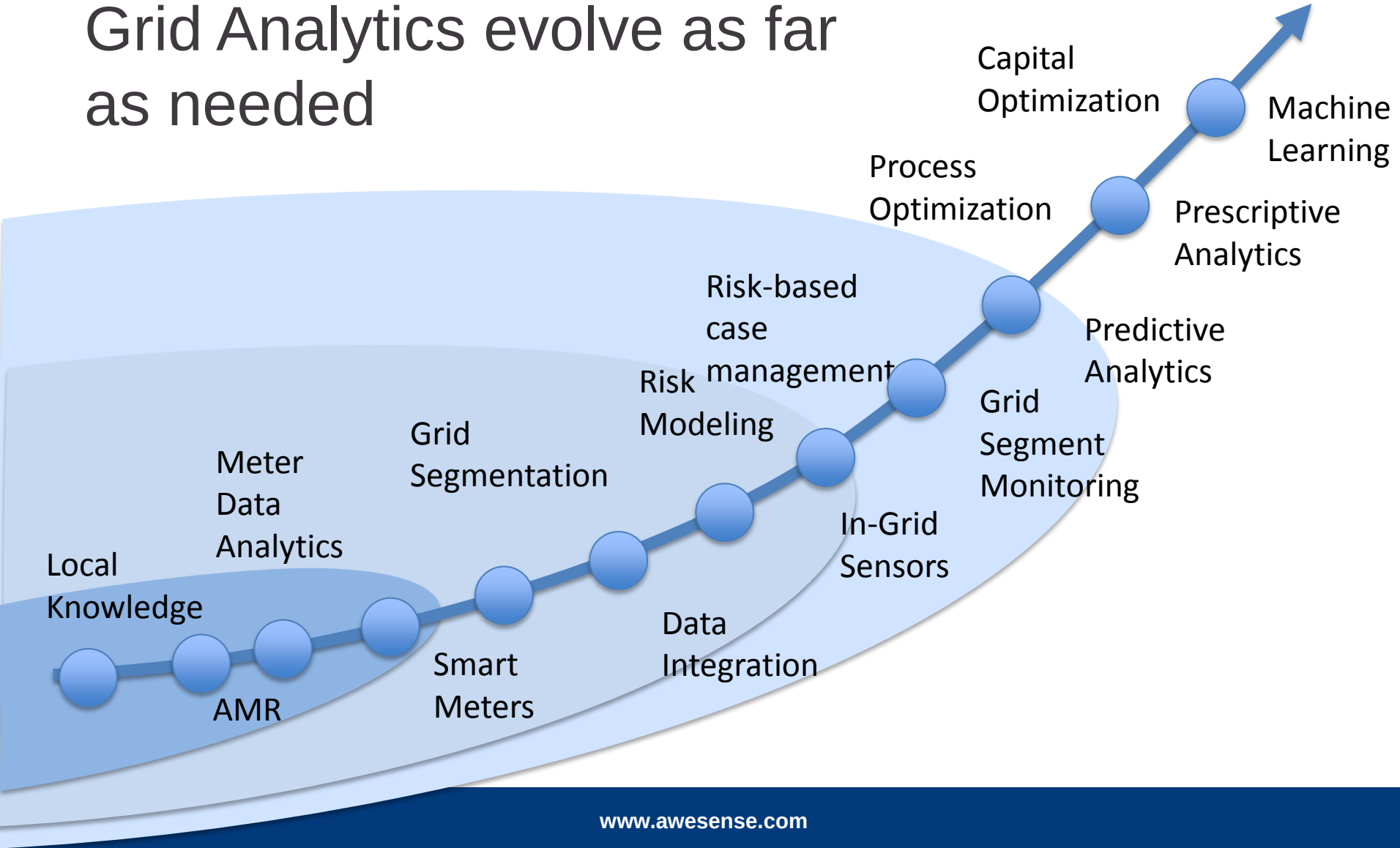


Value Chain of Data



Maturity Model

Grid Analytics evolve as far as needed



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Grid Efficiency Framework

1. Build risk model and define policy-based criteria to identify high-risk segments of the distribution network
2. Select highest risk cases: target grid segments that require in-grid data analysis
3. Integrated case management: using case and field investigation tools to collect & validate necessary data
4. Analyze and report on findings from in-grid data, meter data, billing data to identify and quantify losses
5. Learn, predict and prescribe: use machine learning and advanced analytics to determine the Next Best Actions

Questions?

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