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PRESENTATION

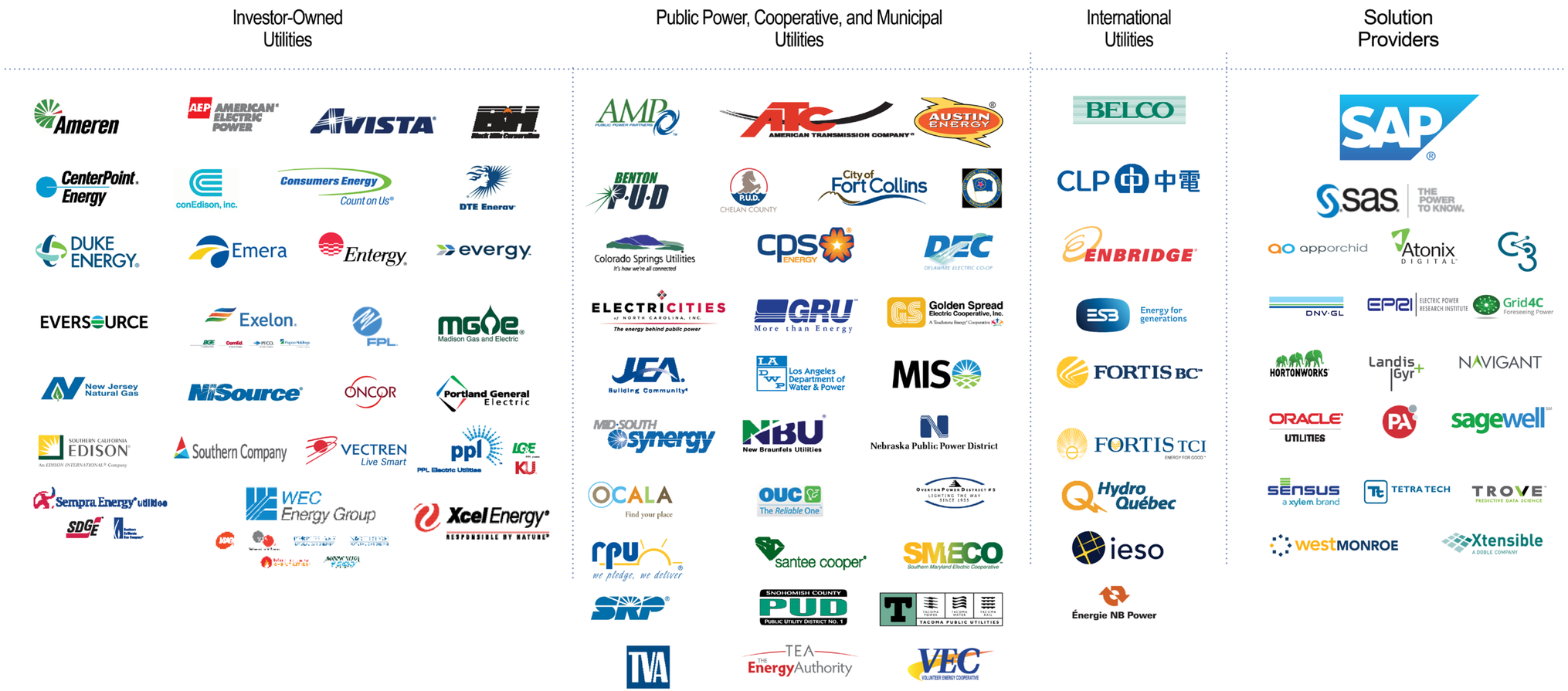
ANALYTICS PANEL AT THE EAC

Mark Johnson

Managing Director

UAI, T&D World

Mission: UAI is the Community Enabling Utility Transformation



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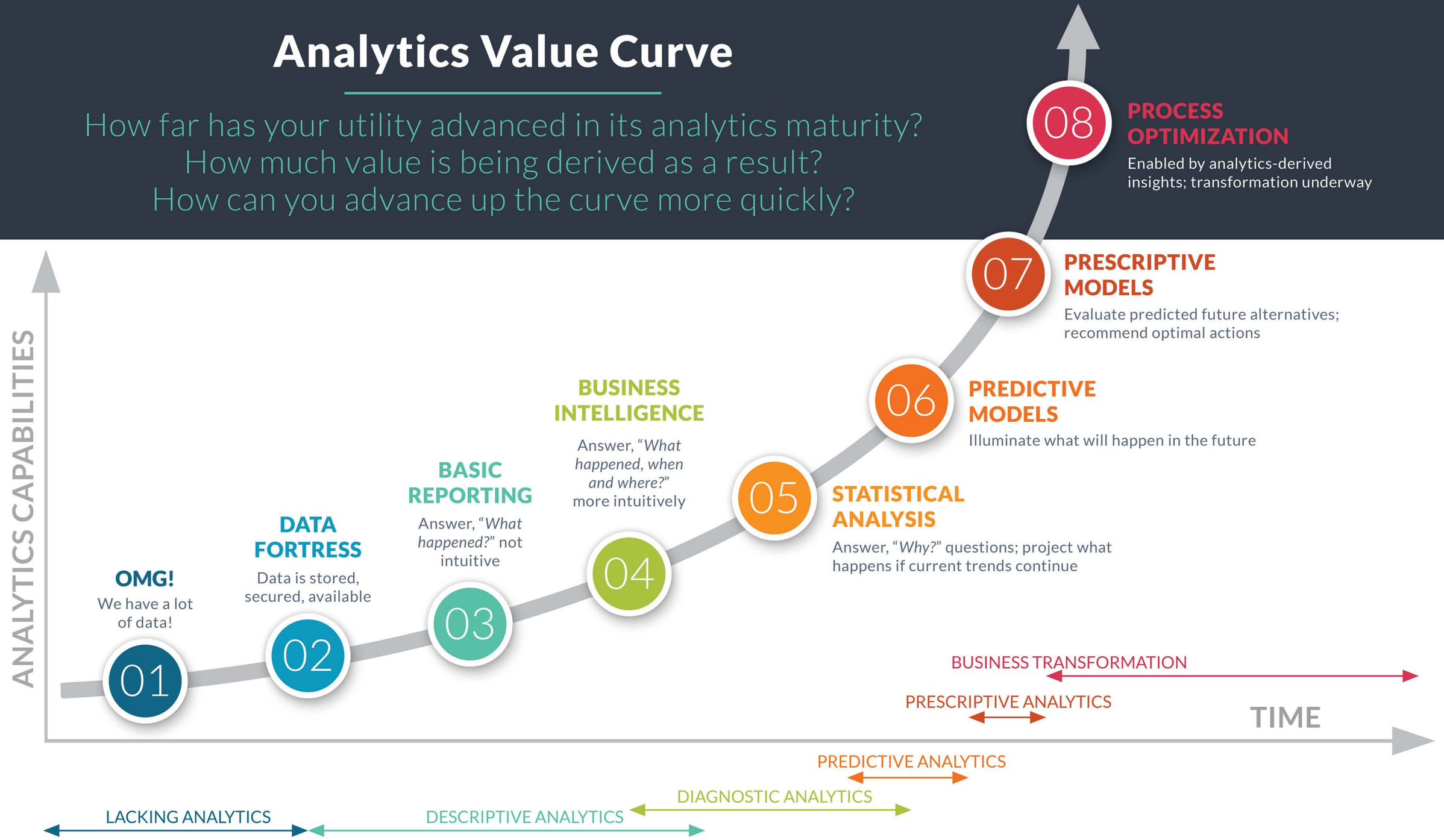
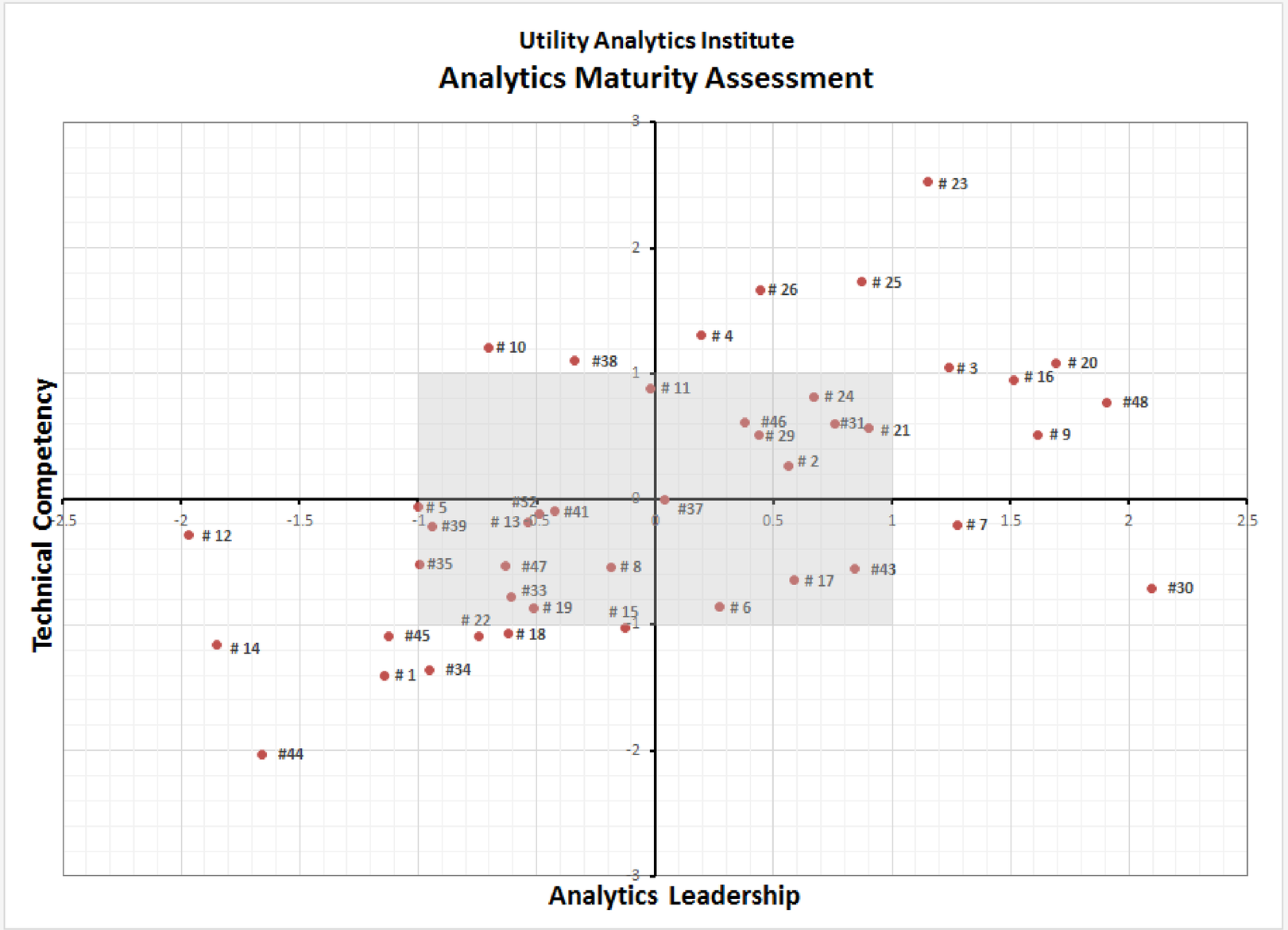
Analytics Value Curve

How far has your utility advanced in its analytics maturity?
How much value is being derived as a result?
How can you advance up the curve more quickly?



UAI Analytics Maturity Assessment



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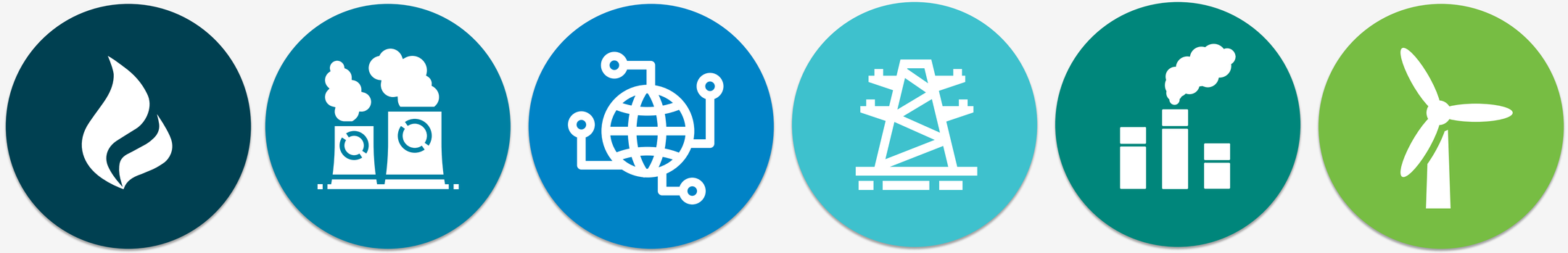
Long-Term Research Needs vs. Near-Term Trends

	NATURAL GAS	NUCLEAR POWER	DIGITAL TECHNOLOGY	DISTRIBUTION	CARBON CAPTURE	WIND & SOLAR
2000	Avoid gas-fired plants; fuel prices, volatile.	Nuclear power poised for a renaissance.	Digital tech driving more powerful processors & hard drive.	Boring. Just run it safely and reliably.	CCS grabs global focus and investment.	Not in long-range plans or capital budgets.
2015	Gas is king.	Nuclear renaissance stalled in US.	Digital tech focusing on batteries and energy.	Distribution system platform is the key enabler.	CCS research funding and interest on the decline.	Lion's share of new plants; front and center in planning.



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Source: Terry Boston presentation/EPRI

Advanced Analytics Being Used Today

- Turbine Failure using predictive (ML)
- Vegetation Management
- Customer Programs (ee/DR/new products) – Propensity modeling
- Credit & Collections
- Diversion
- Predictive meter failure
- Solar panel defects – Drones and ML
- Load forecasting
- Pattern Recognition for AM – Smart Gen
- System Management control & Automated FLISR
- RBA - Robotic process automation
- Digital Visualization
- NLP and chat bots
- Beginning to use ANN
- Forecasting in wind farms
- Underground cable failure

What's Next:

- GAN's - generative adversarial networks
- Analytics of Lidar – it's different than just big data
- Point solutions to Enterprise Analytics
- Move to the cloud (Amazon, Azure, Google) or hybrid cloud
- IoT (sensors, batteries, solar, EV's)
- AI / Human partnerships – Citizen Data Scientist. Alexa, what's wrong with my grid?
- AI -> ML -> Deep learning
- Microsoft Hololens
- Visualization – lots of tools - Tableau, Qlik, PowerBI, Oracle Visual Analyzer, SAS Visual Analytics, Tibco
- Scientists Gave This Robot Arm a 'Self Image' and Watched it Learn**. Visualization for the human is secondary, visualization for the ML/Deep learning will unlock massive potential.**

Stumbling Blocks:

- Rate of change in analytics is overwhelming
- Analytics understanding from executives
- What's in the model (Black Box)
- Intellectual Property
- Organization design / Skill set– What is data scientist, where does department live, etc. How to attract, hire and retain talent. Data engineers, Dev Ops, Information Architects, Data wrangler, etc.
- Data Management - collected, transported, cleaned, stored, and combined with other data sources.
- Privacy
- Capital vs. O&M
- Pilots to production
- Agile in IT, to agile in operations
- Integration. Each utility has a different combination of CIS, OMS, ADMS, MDM, GIS, Relays, Circuit Breakers, and each of those solutions may have a different version and customizations added.
- Data Governance, Data Governance, Data Governance

What we want analytics to be:

Source: Matt Croucher, Entergy

What analytics is:

Source: Matt Croucher, Entergy

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Recommendations:

- High quality, accurate, usable Government data
- API’s or interoperability tools
- Become more involved (EPRI, UAI, TDWI, other organizations)

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