



Empowering Energy Innovation

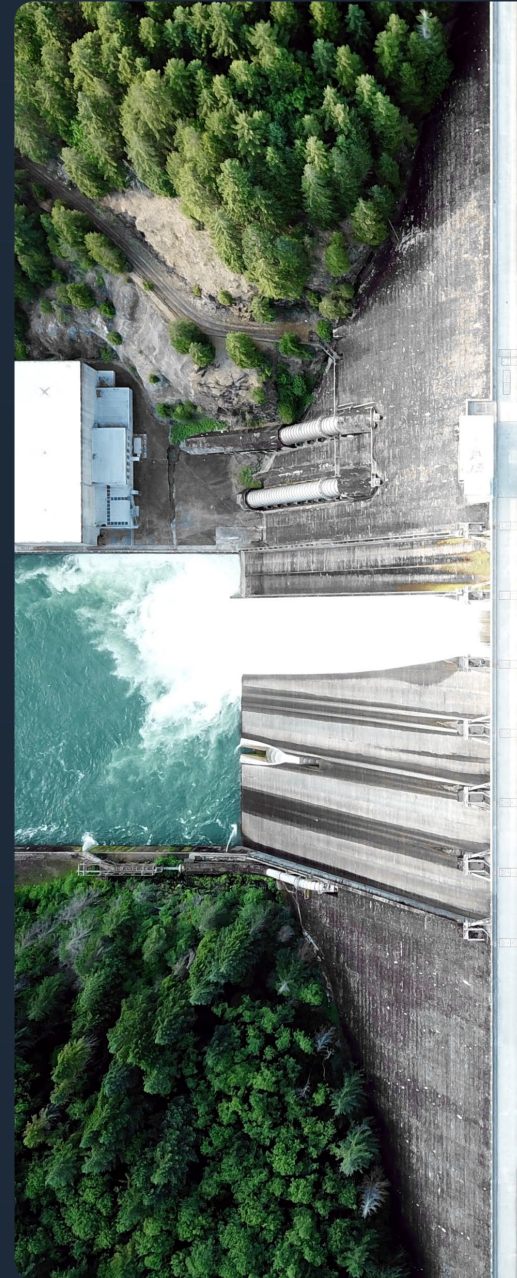
Collaboration Between IT and Business
for Energy Transformation

OG&E Technology Conference

Javier Martin, President and COO

PCI Energy Solutions

08/31/2023



Agenda

01

OG&E and PCI long-term partnership

02

Business Priorities

03

Examples of Innovations that support the business priorities

04

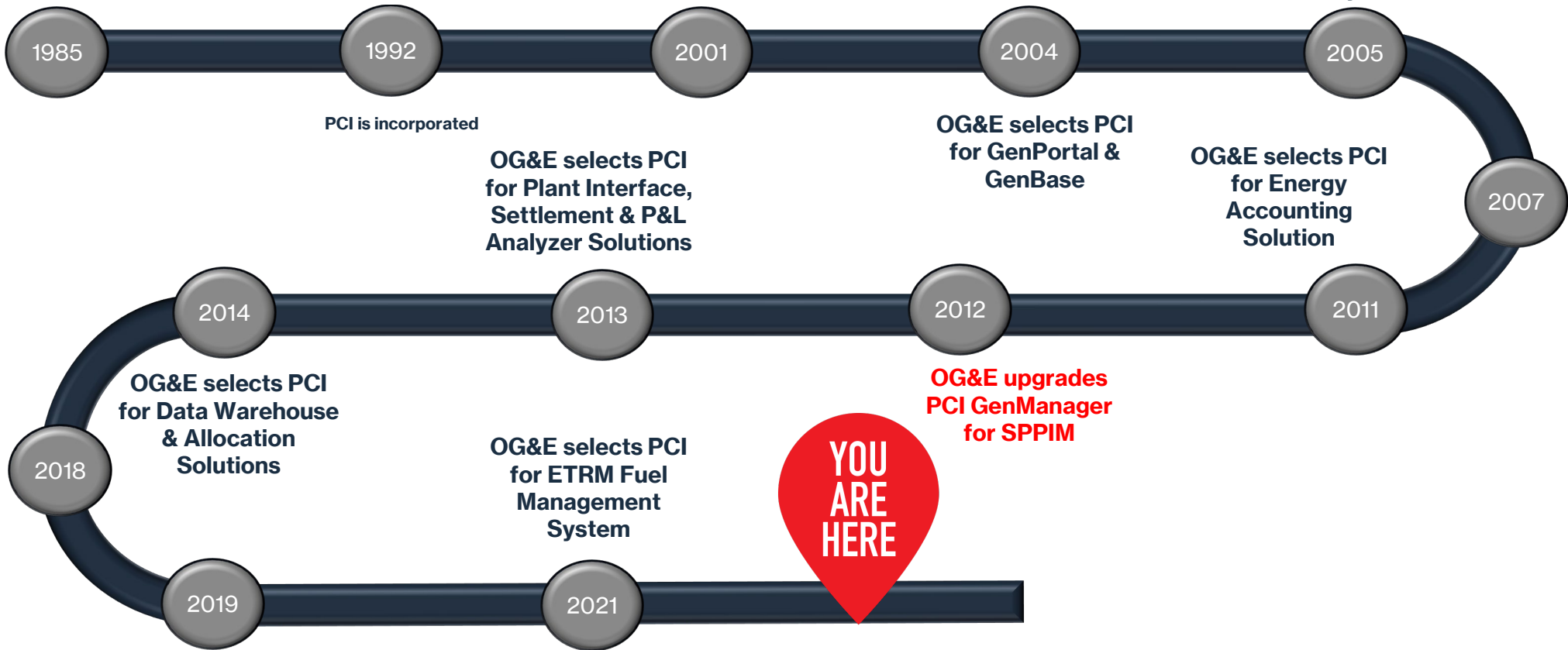
Succeeding in the future energy environment



OG&E funds research from two OU Professors

OG&E selects PCI for GenTrader Optimization Solution

OG&E upgrades PCI GenTrader Ancillary Services



1985

1992

2001

2004

2005

2007

2011

2012

2013

2014

2018

2019

2021

PCI is incorporated

OG&E selects PCI for Plant Interface, Settlement & P&L Analyzer Solutions

OG&E selects PCI for GenPortal & GenBase

OG&E selects PCI for Energy Accounting Solution

OG&E selects PCI for SPP GenManager Solution

OG&E upgrades PCI GenManager for SPPIM

YOU ARE HERE

OG&E selects PCI for Data Warehouse & Allocation Solutions

OG&E selects PCI for ETRM Fuel Management System

OG&E selects PCI for SSRP upgrade and Transmission Settlements Solution

OG&E selects PCI for Asset Operations & Cloud Hosting

Credit: PCI's fantastic account executive for OG&E, Kelly Birdwell

Major trends in the power industry

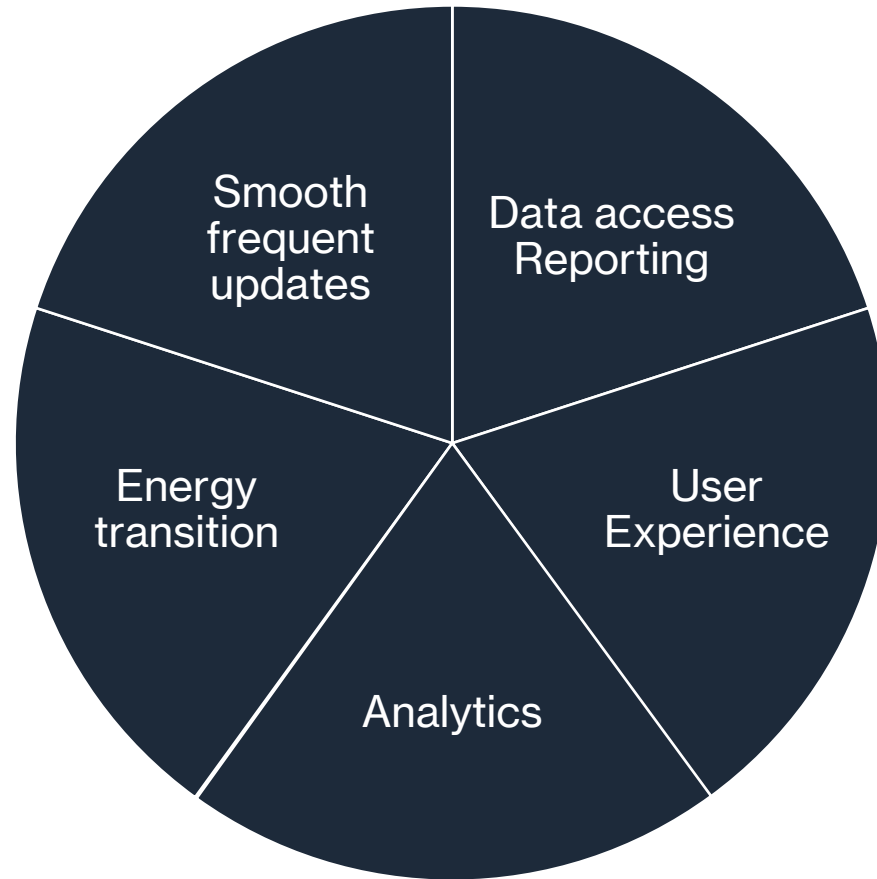
1. De-marginalization
2. Decentralization
3. Digitalization



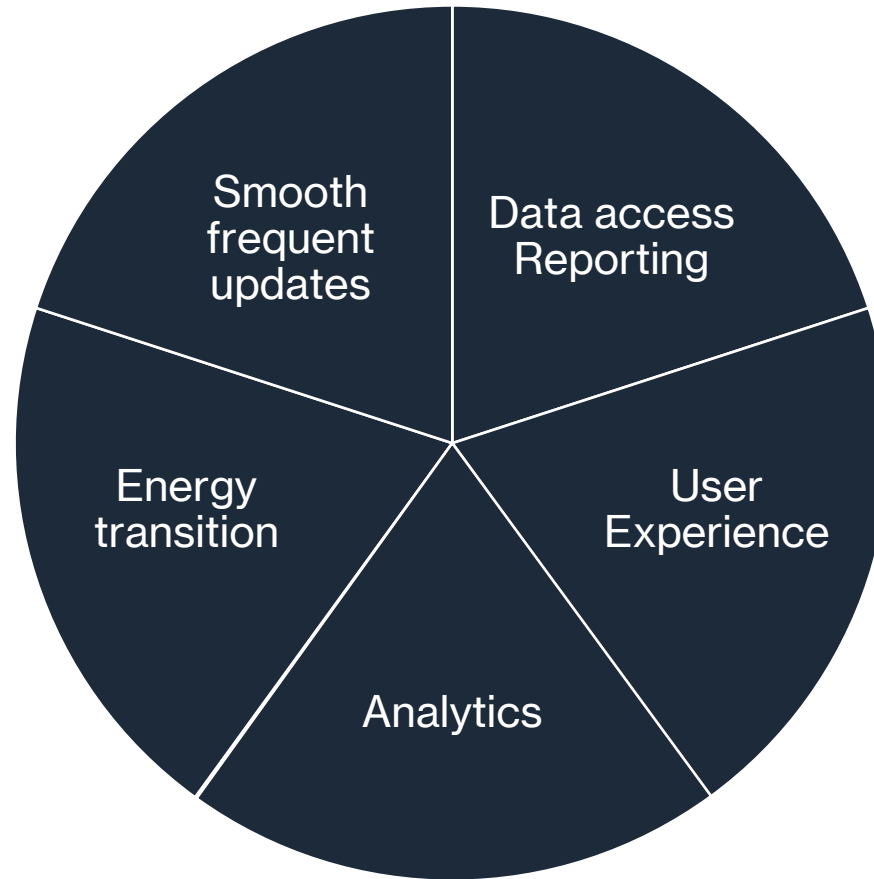
Credit: Midcontinent Symposium

Business Priorities

Results from 2022 PCI Client Survey



User experience



PCI First Auto-trader application

SEEMTRADER

- Admin
- Setup
- Plan
- Trade
 - Trade dashboard
 - Bids & offers
- Reports
- Support

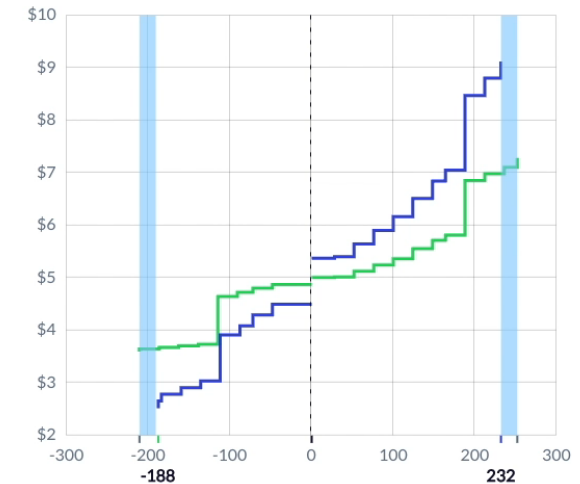
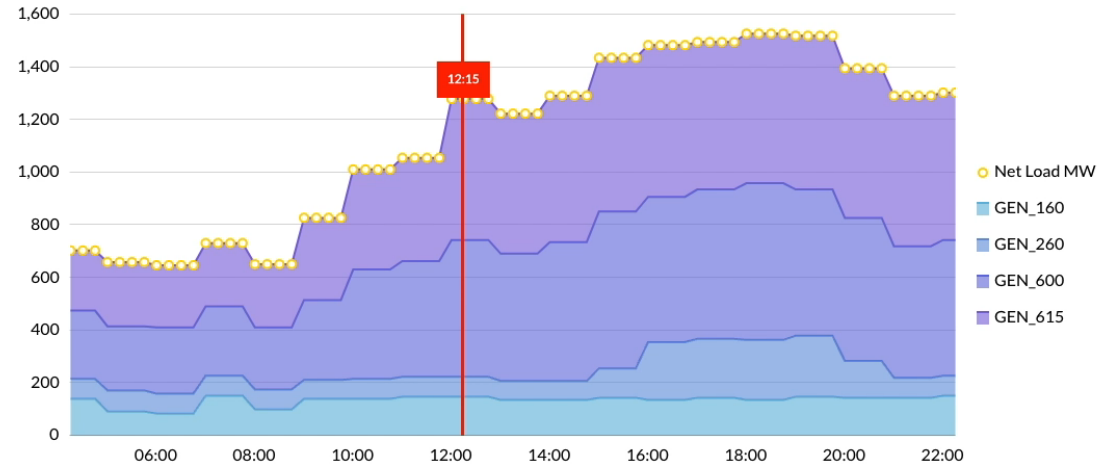
Participants
MarketParticipant

TimeZone
UTC-5

Logout

Current interval: 09/09/2022 12:15 pm Closing in: 14:24 Autosubmit:

Since: P&L: Offers (MWh): Bids (MWh):
Last 4 hrs: 3,548.75 400 2,000



Bids

RESOURCE	SINK	PLAN QUANTITY	PLAN COST	TRADE QUANTITY	TRADE PRICE
GEN_600	SC	24	\$4.88	24	\$4.50
GEN_600	SC	24	\$4.81	24	\$4.30
GEN_600	SC	24	\$4.73	24	\$4.09
GEN_600	SC	19	\$4.65	16	\$3.92
GEN_615	SC	24	\$3.74	24	\$3.04
GEN_615	SC	24	\$3.71	24	\$2.91

1 to 6 of 9

Offers

RESOURCE	SOURCE	PLAN QUANTITY	PLAN COST	TRADE QUANTITY	TRADE PRICE
GEN_600	SC	24	\$5.01	24	\$5.38
GEN_600	SC	4	\$5.02	4	\$5.41
GEN_260	SC	24	\$5.13	24	\$5.65
GEN_260	SC	24	\$5.25	24	\$5.91
GEN_260	SC	24	\$5.37	24	\$6.17
GEN_260	SC	24	\$5.56	24	\$6.52

1 to 6 of 12

https://stageapp.pctrader.com/app/trade/dashboard

Power Scheduling upgrade

PCI ETRM
Tag Availability Trade Templates

User View
Scheduling Date
Tag Linkage Status

☆
🔔¹⁰
KP
⚙️

Pre-Schedule
Real Time
Unresolved Tags

Time Zone

All 20
Available 10
Unavailable 10

New eTag
12 New eTags available...

Sort By

Filter Tags

X Clear Selected

Export

TSCO_CRSPM10190762_JACO
🔗

Start/End: \$ Buy Sell

mm/dd/yyyy 00:00

mm/dd/yyyy 00:00

⚡ Implemented

Tag Notes: POD: WACM.SYS

** TCL (Tacoma) POR: PSCO.400

purchase at system raw

Availability | Buy 5 / Sell 15 >

TSCO_CRSPM10190762_JACO
🔗

Start/End: \$ Buy Sell

mm/dd/yyyy 00:00

mm/dd/yyyy 00:00

⚡ Implemented

Tag Notes: POD: WACM.SYS

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🔗

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⚡ Implemented

Tag Notes: POD: WACM.SYS

** TCL (Tacoma) POR: PSCO.400

purchase at system raw

Availability | Buy 5 / Sell 15 >

TSCO_CRSPM10190762_JACO
🔗

Start/End: \$ Buy Sell

mm/dd/yyyy 00:00

mm/dd/yyyy 00:00

⚡ Implemented

Tag Notes: POD: WACM.SYS

** TCL (Tacoma) POR: PSCO.400

purchase at system raw

Availability | Buy 5 / Sell 15 >

PSCO_CRSPM10190762_WACM
🔗

Start/End: \$ Buy Sell

mm/dd/yyyy 00:00

mm/dd/yyyy 00:00

⚡ Implemented

Tag Notes: POD: WACM.SYS

** TCL (Tacoma) POR: PSCO.400

purchase at system raw

Availability | Buy 5 / Sell 25 >

TSCO_CRSPM10190762_JACO
🔗

Start/End: \$ Buy Sell

mm/dd/yyyy 00:00

mm/dd/yyyy 00:00

⚡ Implemented

Tag Notes: POD: WACM.SYS

** TCL (Tacoma) POR: PSCO.400

purchase at system raw

Availability | Buy 5 / Sell 15 >

PSCO_CRSPM10190762_WACM
🔗

Start/End: \$ Buy Sell

mm/dd/yyyy 00:00

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⚡ Implemented

Tag Notes: POD: WACM.SYS

** TCL (Tacoma) POR: PSCO.400

purchase at system raw

Availability | Buy 5 / Sell 25 >

PSCO_CRSPM10190762_WACM
🔗

Start/End: \$ Buy Sell

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⚡ Implemented

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** TCL (Tacoma) POR: PSCO.400

purchase at system raw

Availability | Buy 5 / Sell 25 >

PSCO_CRSPM10190762_WACM
🔗

Start/End: \$ Buy Sell

mm/dd/yyyy 00:00

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⚡ Implemented

Tag Notes: POD: WACM.SYS

** TCL (Tacoma) POR: PSCO.400

purchase at system raw

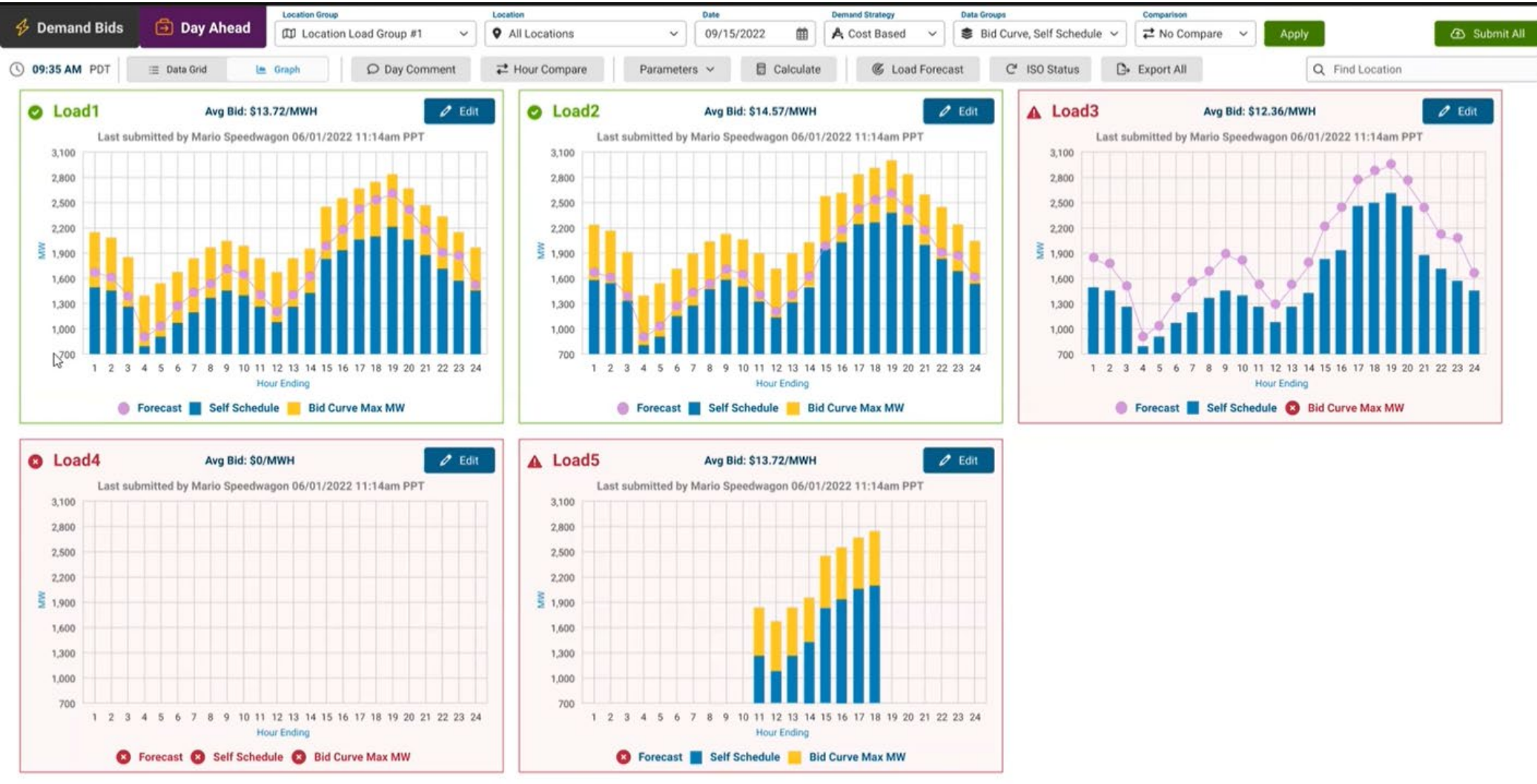
Availability | Buy 5 / Sell 25 >

Available
Linked

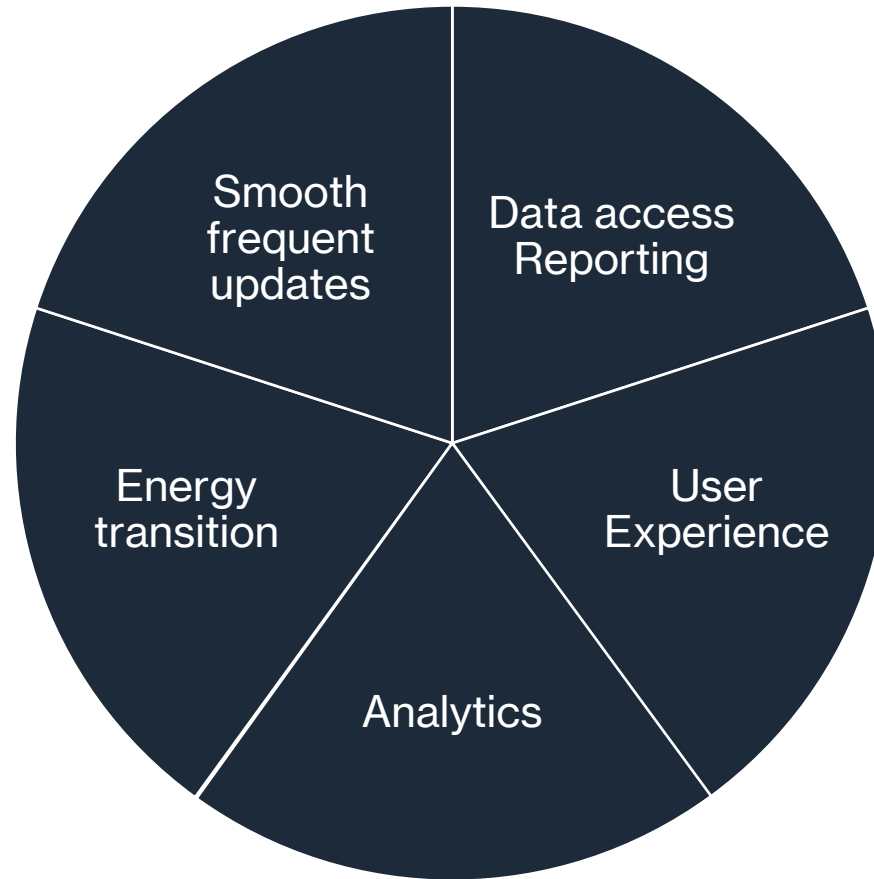
Override
Deal ID
Entity
Delivery Start
Delivery End
Availability



ISO Bidding upgrade

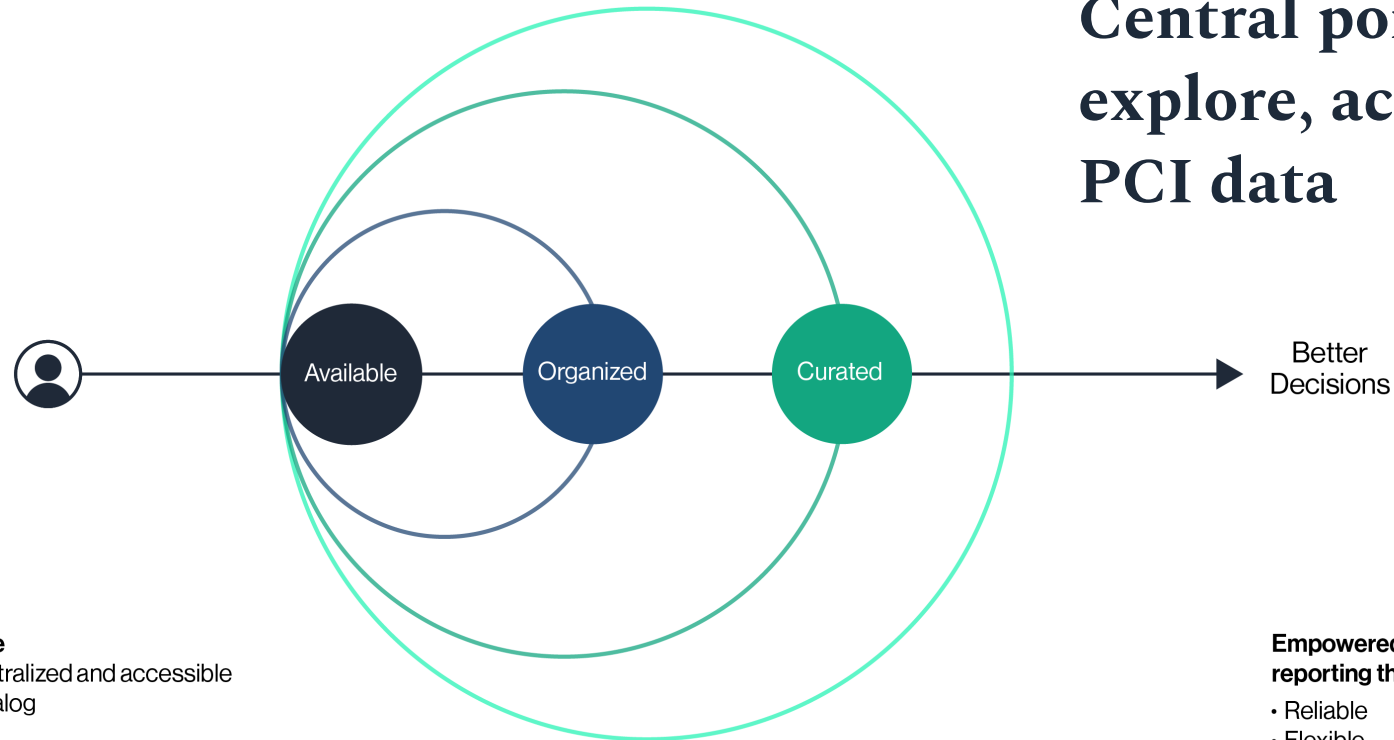


Data Access and Reporting



Data Access and Reporting PCI Data Hub

Central point to discover,
explore, access and report on
PCI data



- **Available**
One centralized and accessible data catalog
- **Organized**
Exploration and extraction of data so easy that anyone can do it
- **Curated**
Actionable out of the box reports you can customize and save

Empowered by reporting that is:

- Reliable
- Flexible
- Accessible
- Timely

PCI Data Hub preview

Market Participant

Asset Owner Name

Operating Date

Asset Type

✓ Apply

📄 Export

☰ Columns

Latest 5-minute Asset Settlement

Report 5-minute Asset charge code and billing determinant in the latest settlement type.

← Data Catalog

→ Design Report

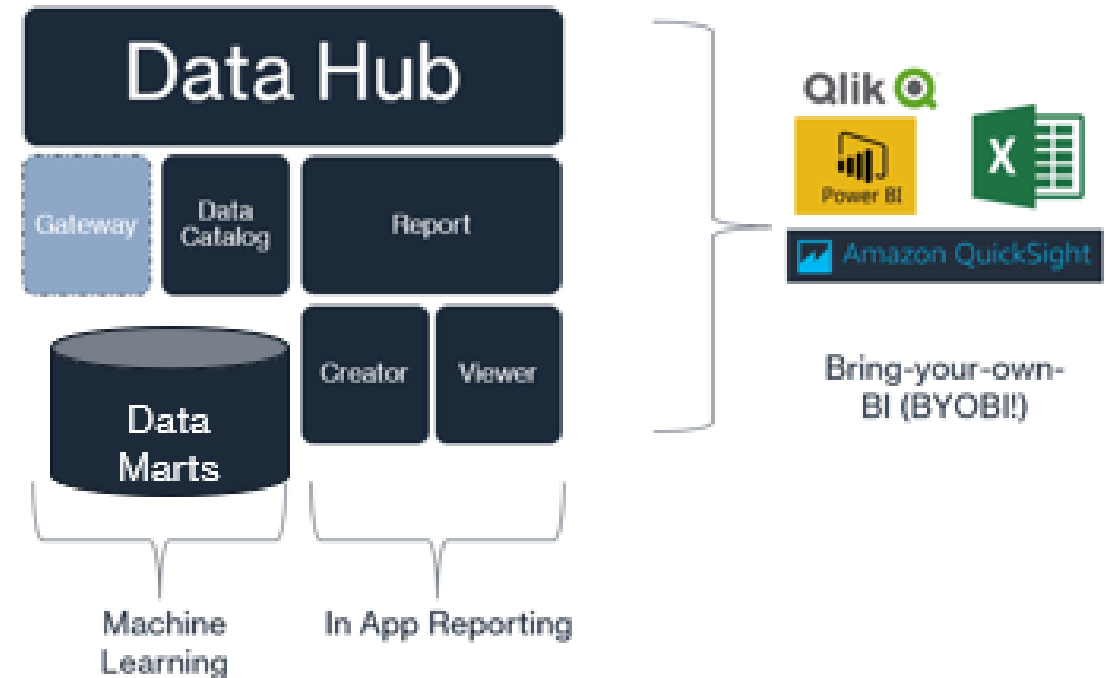
Market Participant	Asset Owner Name	Operating Date	Settlement Code	Settlement Date	Asset Name	Asset Type	Node ID	Begin Datetime	Begin Datetime (GMT)	Year	Month	Day
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MP.1	AO.2	3/28/2023	S7	4/4/2023	ASSET.3	GENRES	NDID.4	3/28/2023, 12:00:00 AM	3/28/2023, 5:00:00 AM	2023	3	
MP.1	AO.2	3/28/2023	S7	4/4/2023	ASSET.3	GENRES	NDID.4	3/28/2023, 12:05:00 AM	3/28/2023, 5:05:00 AM	2023	3	
MP.1	AO.2	3/28/2023	S7	4/4/2023	ASSET.3	GENRES	NDID.4	3/28/2023, 12:10:00 AM	3/28/2023, 5:10:00 AM	2023	3	
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MP.1	AO.2	3/28/2023	S7	4/4/2023	ASSET.3	GENRES	NDID.4	3/28/2023, 12:20:00 AM	3/28/2023, 5:20:00 AM	2023	3	
MP.1	AO.2	3/28/2023	S7	4/4/2023	ASSET.3	GENRES	NDID.4	3/28/2023, 12:25:00 AM	3/28/2023, 5:25:00 AM	2023	3	
MP.1	AO.2	3/28/2023	S7	4/4/2023	ASSET.3	GENRES	NDID.4	3/28/2023, 12:30:00 AM	3/28/2023, 5:30:00 AM	2023	3	
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MP.1	AO.2	3/28/2023	S7	4/4/2023	ASSET.3	GENRES	NDID.4	3/28/2023, 1:00:00 AM	3/28/2023, 6:00:00 AM	2023	3	
MP.1	AO.2	3/28/2023	S7	4/4/2023	ASSET.3	GENRES	NDID.4	3/28/2023, 1:05:00 AM	3/28/2023, 6:05:00 AM	2023	3	
MP.1	AO.2	3/28/2023	S7	4/4/2023	ASSET.3	GENRES	NDID.4	3/28/2023, 1:10:00 AM	3/28/2023, 6:10:00 AM	2023	3	
MP.1	AO.2	3/28/2023	S7	4/4/2023	ASSET.3	GENRES	NDID.4	3/28/2023, 1:15:00 AM	3/28/2023, 6:15:00 AM	2023	3	
MP.1	AO.2	3/28/2023	S7	4/4/2023	ASSET.3	GENRES	NDID.4	3/28/2023, 1:20:00 AM	3/28/2023, 6:20:00 AM	2023	3	

PCI Data Hub

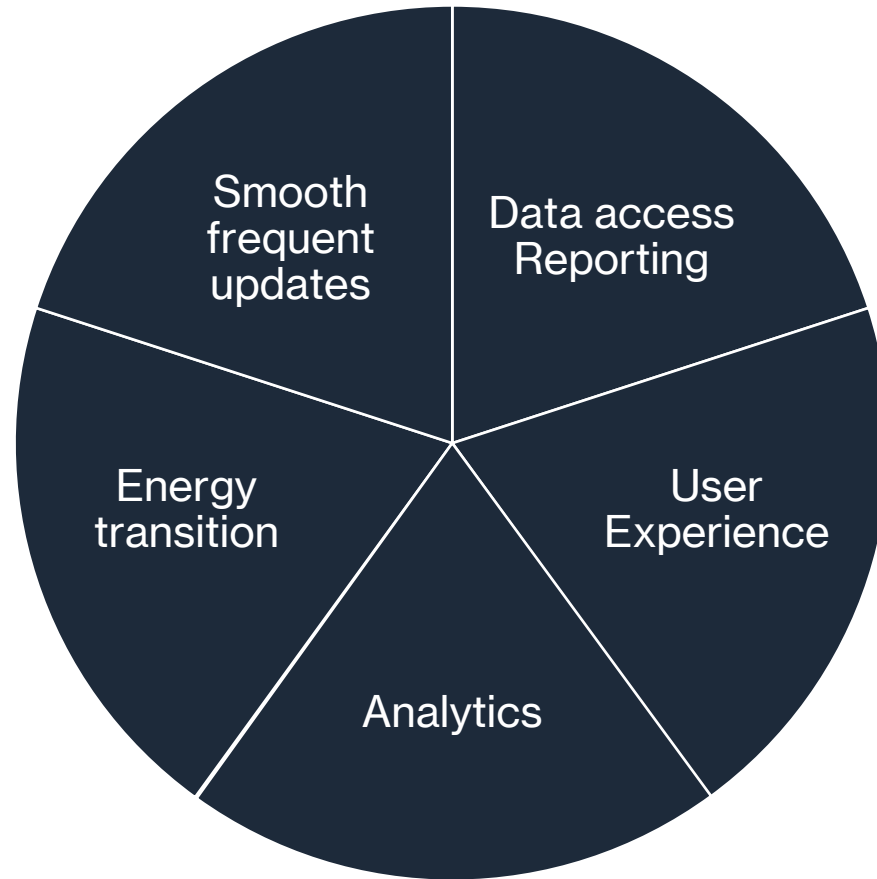
Data-marts and BI Support

Lessons learned:

- ✓ Data must be organized for the business
- ✓ Minimize number of steps to get to the data
- ✓ Make it easy to connect multiple BI and Analyst tools



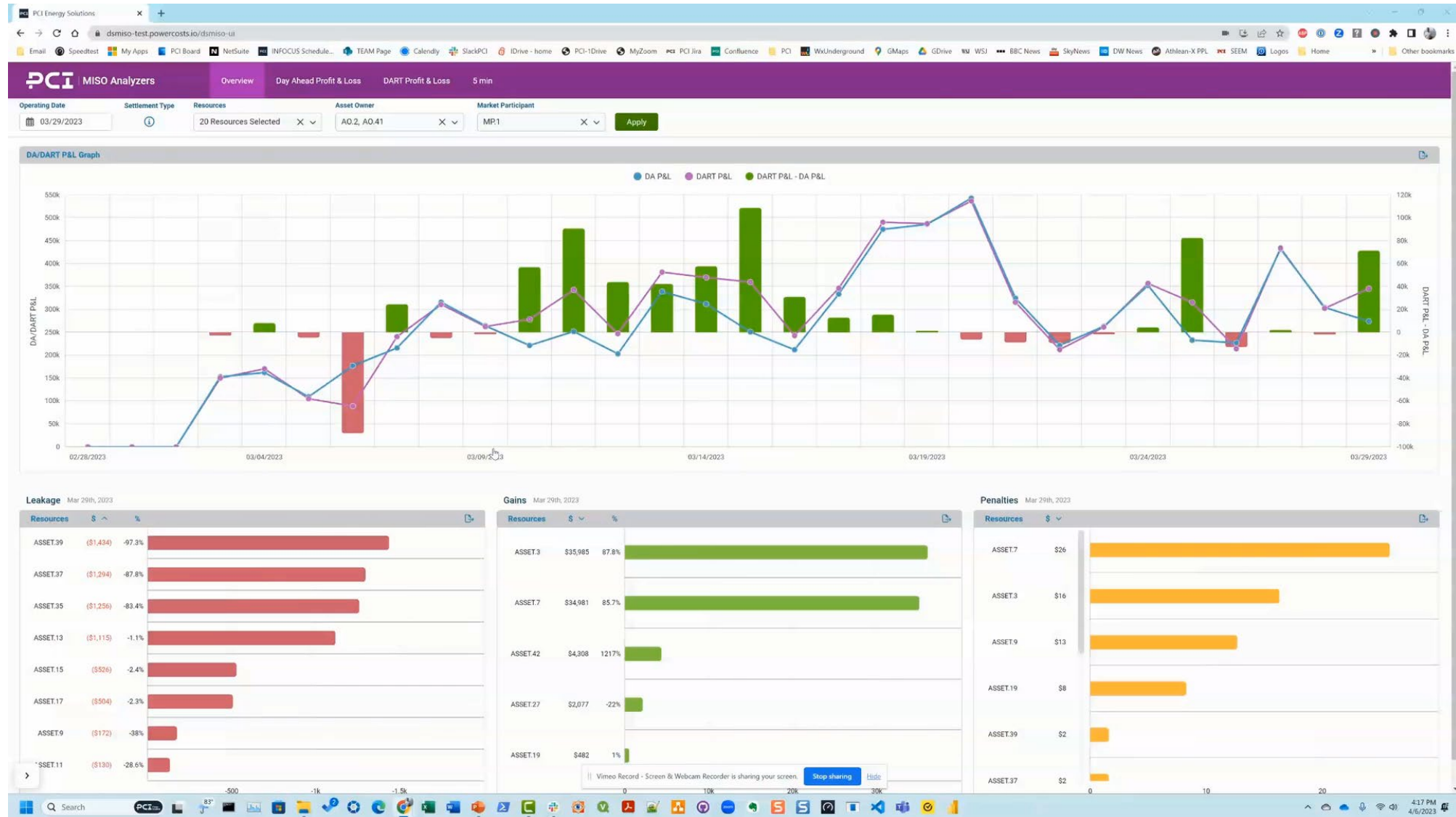
Analytics



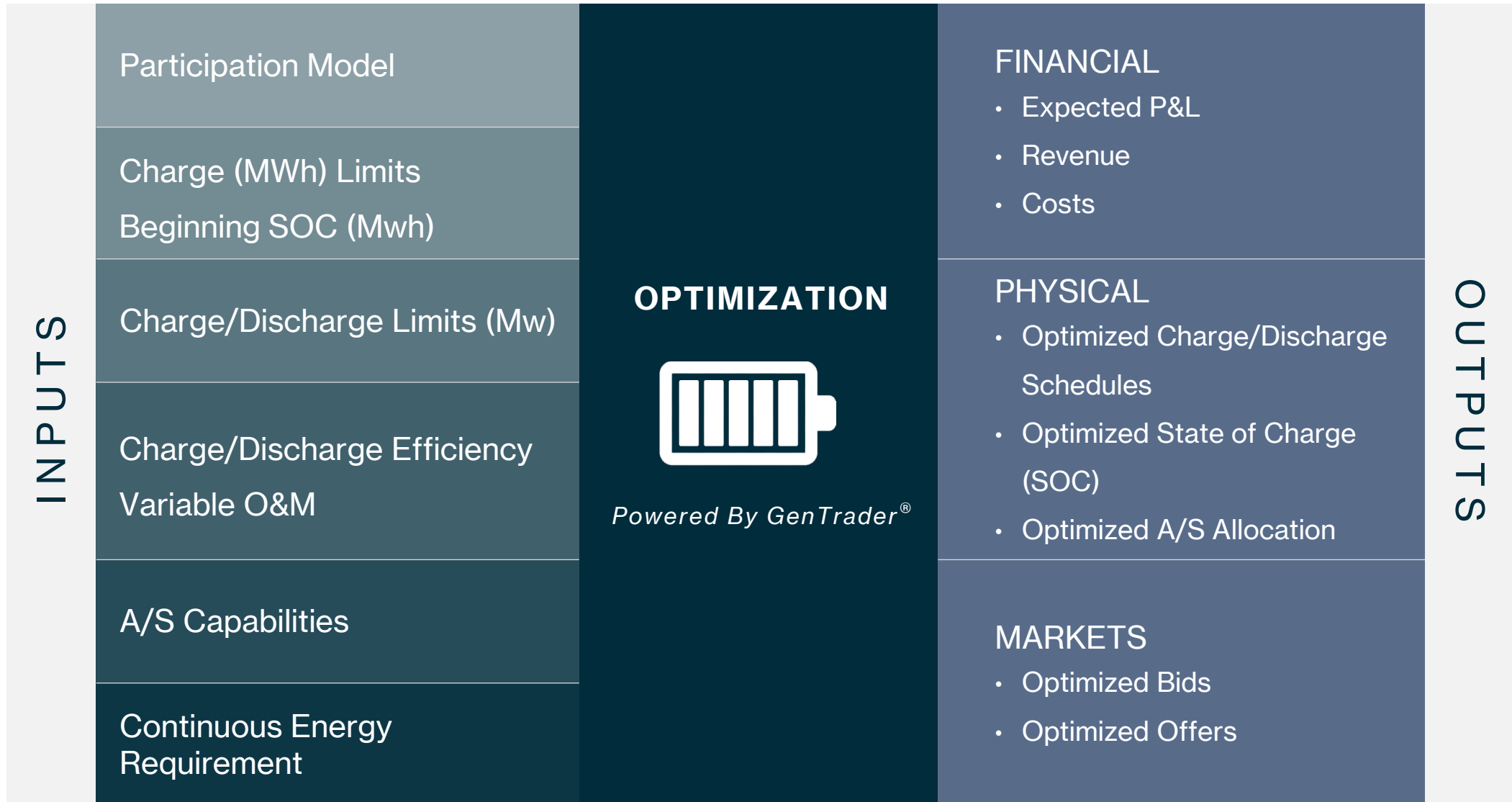


Things have changed...

RTO Market participation Insights

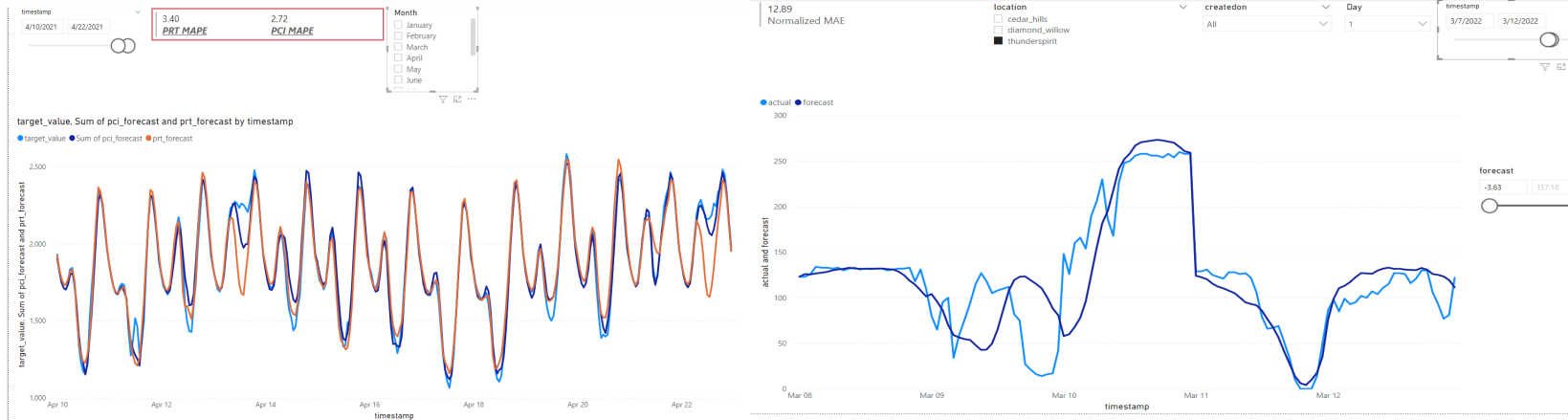


Battery storage optimization



Forecasting

Journey from Proof of Concept to Production



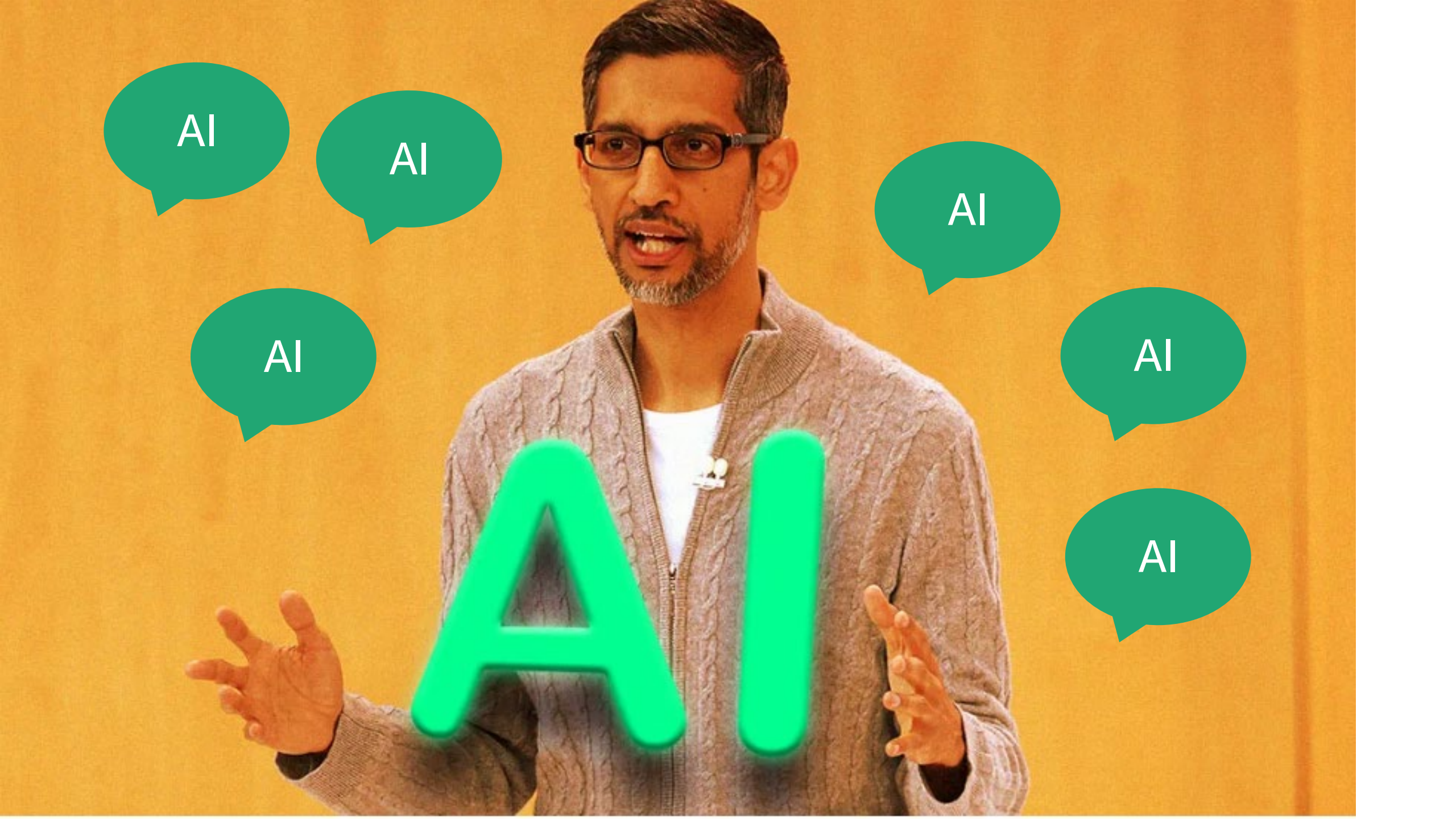
TECH SHEET

- Cloud-Native Service
- Integrates via RESTful endpoints
- Inputs: Your Meter Data
- Output: Continuous Load Forecast for up to 14-days at a 15-minute or Hourly resolution

Machine Learning - Load Forecasting Service in production with 4 clients.

Forecasting service provides reliable and consistent forecasting for Short-Term workflows such as **autonomous trading** out to 7-day horizon.

Began as multiple POC's with various clients in Load, Solar, Wind, Meter validation and Prices. Continuing POC partnerships in Solar, Wind, and Prices to support sustainable energy portfolios, increased automation, and improved decision making.



AI

AI

AI

AI

AI

AI

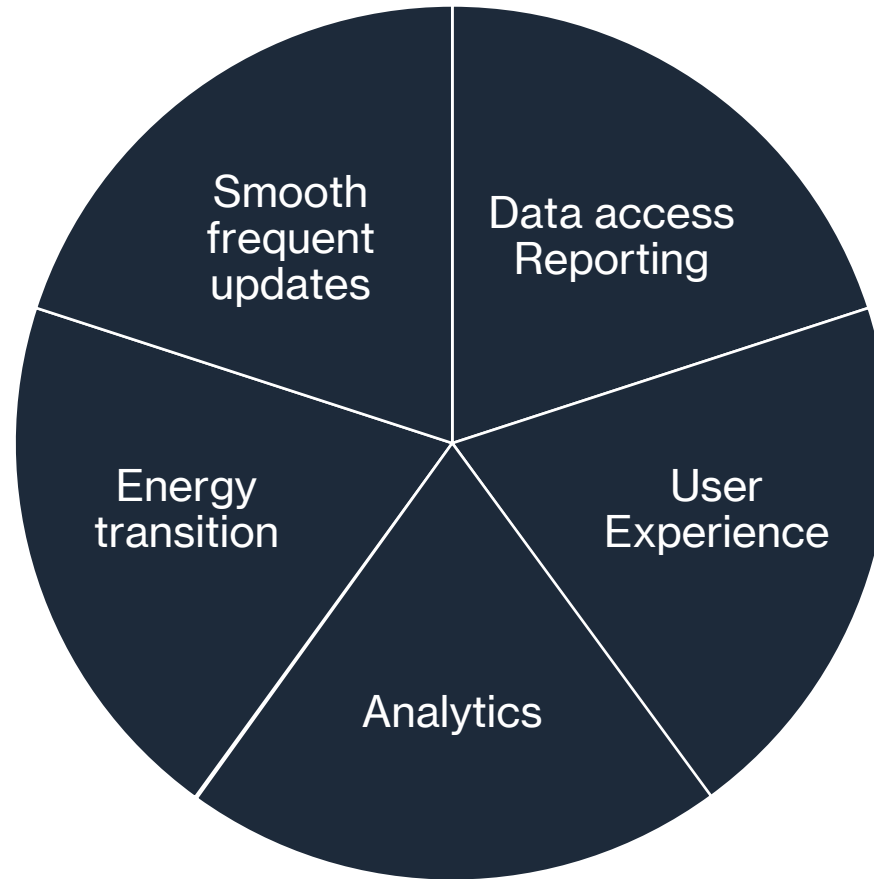
AI

Why people are betting heavily on energy alongside AI

"My whole view of the world is the future can be radically better and the two things that we really need for that are to lower the cost of energy and lower the cost of intelligence. And if we get those, we'll be quite surprised about how different and how much better the future is".

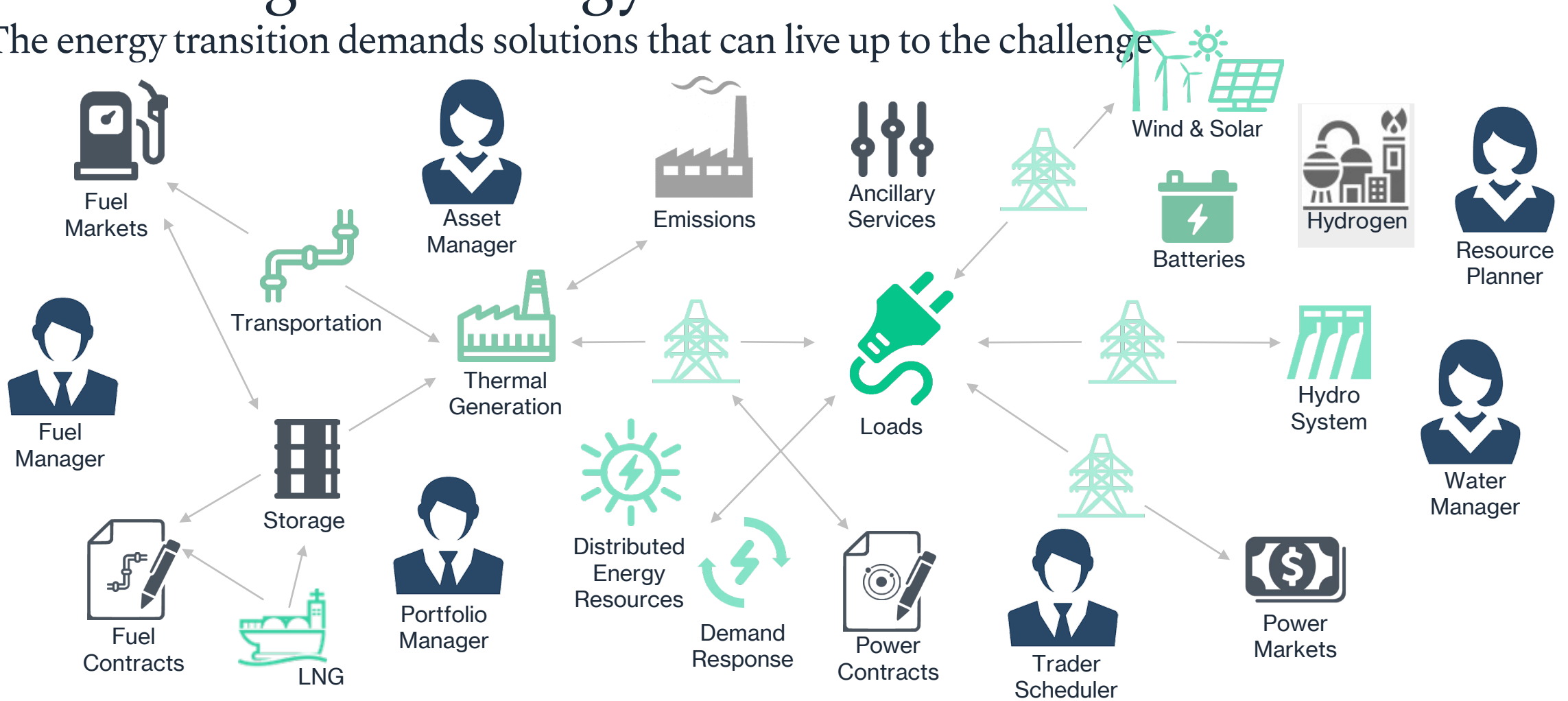
OpenAI CEO Sam Altman

Energy Transition



Mastering the Energy Transition

The energy transition demands solutions that can live up to the challenge



Energy Storage Resources

Renewable and Hybrid Configurations

Green Hydrogen production

Distributed Energy Resources

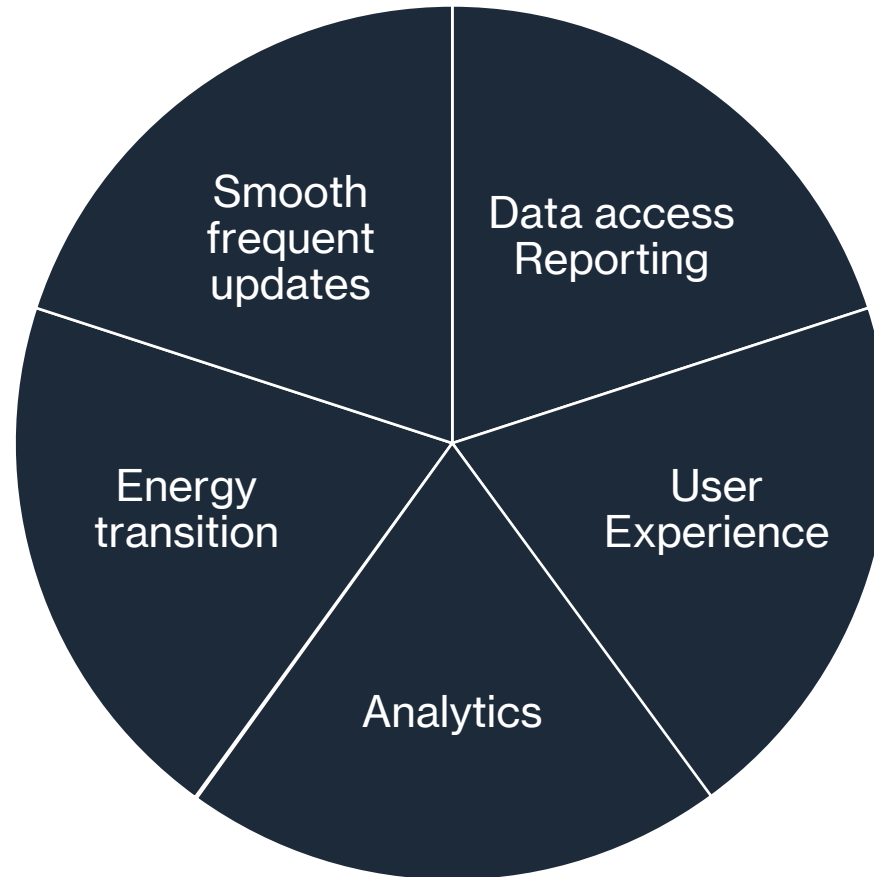
Power and Gas co-optimization

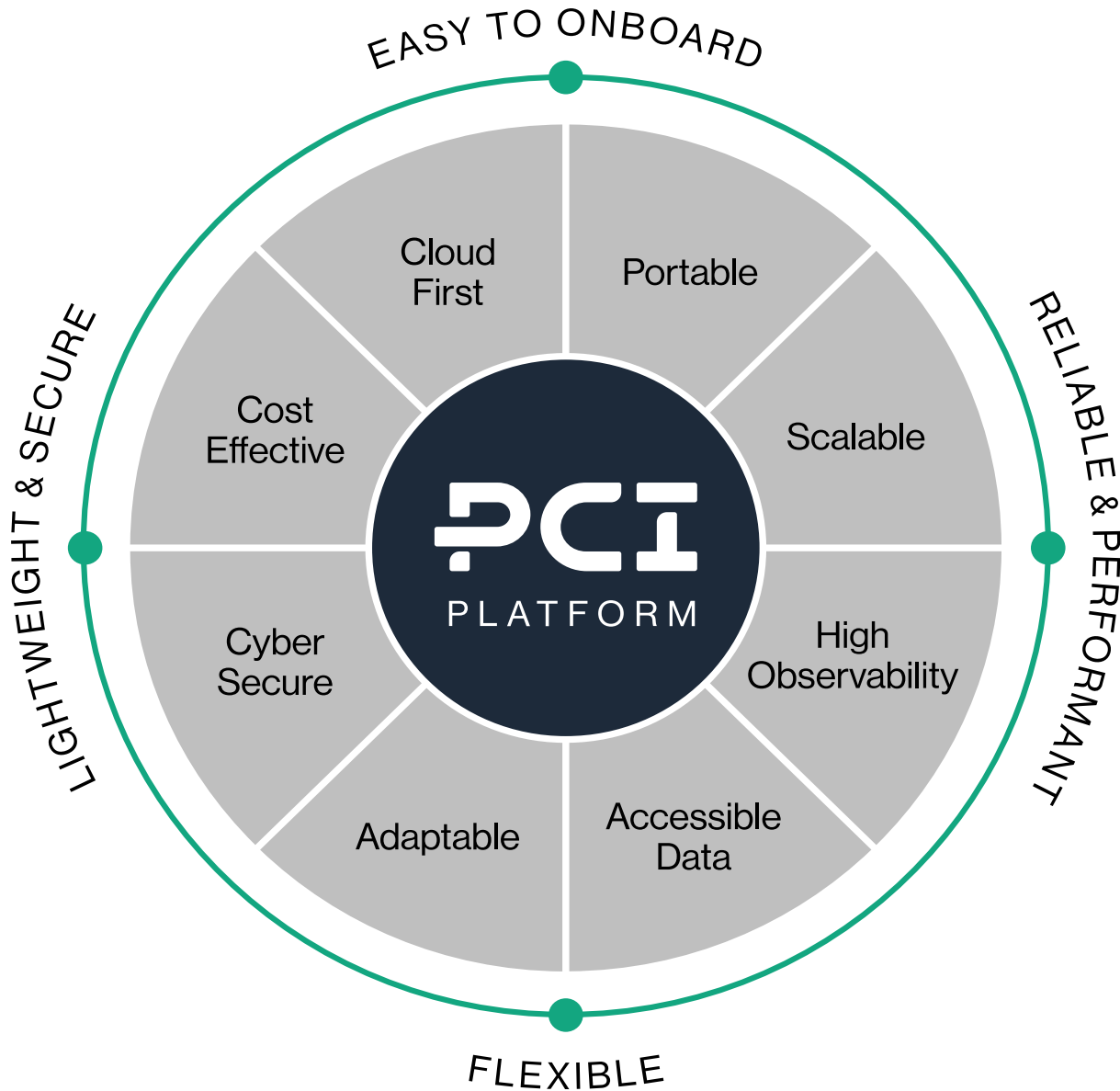
Power and Water co-optimization

Dynamic Transmission Ratings

Software updates

The need for continuous software delivery





Lightweight and Secure

Successfully navigate your digital transformation with software that constantly modernizes in the background. That means no more disrupted workflows or unsupported software during updates.

Cost Effective

Striking the right balance between cost and performance

Cyber Secure

We regularly exceed security requirements, lowering risk to your business

Succeeding in the ~~Future~~ Current Energy Environment



Fast Moving Market with Thin Margins

PRODUCTS SERVICES

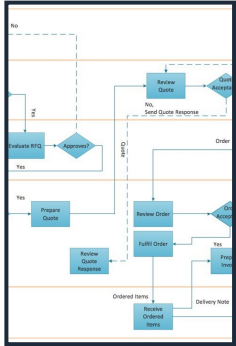
New Market Rules, Products, Services Introduced Constantly



Opportunities Come and Go Quickly



Increased Pressure to Attract and Retain Talent



Intelligent
Operations



Culture of
Innovation



Risk
Tolerance/"Fail
Fast"

~~IT as Business support~~ → IT as an Enabler of the business



INFOCUS 2024

April 15-17

Omni Tempe, AZ

SAVE THE DATE 