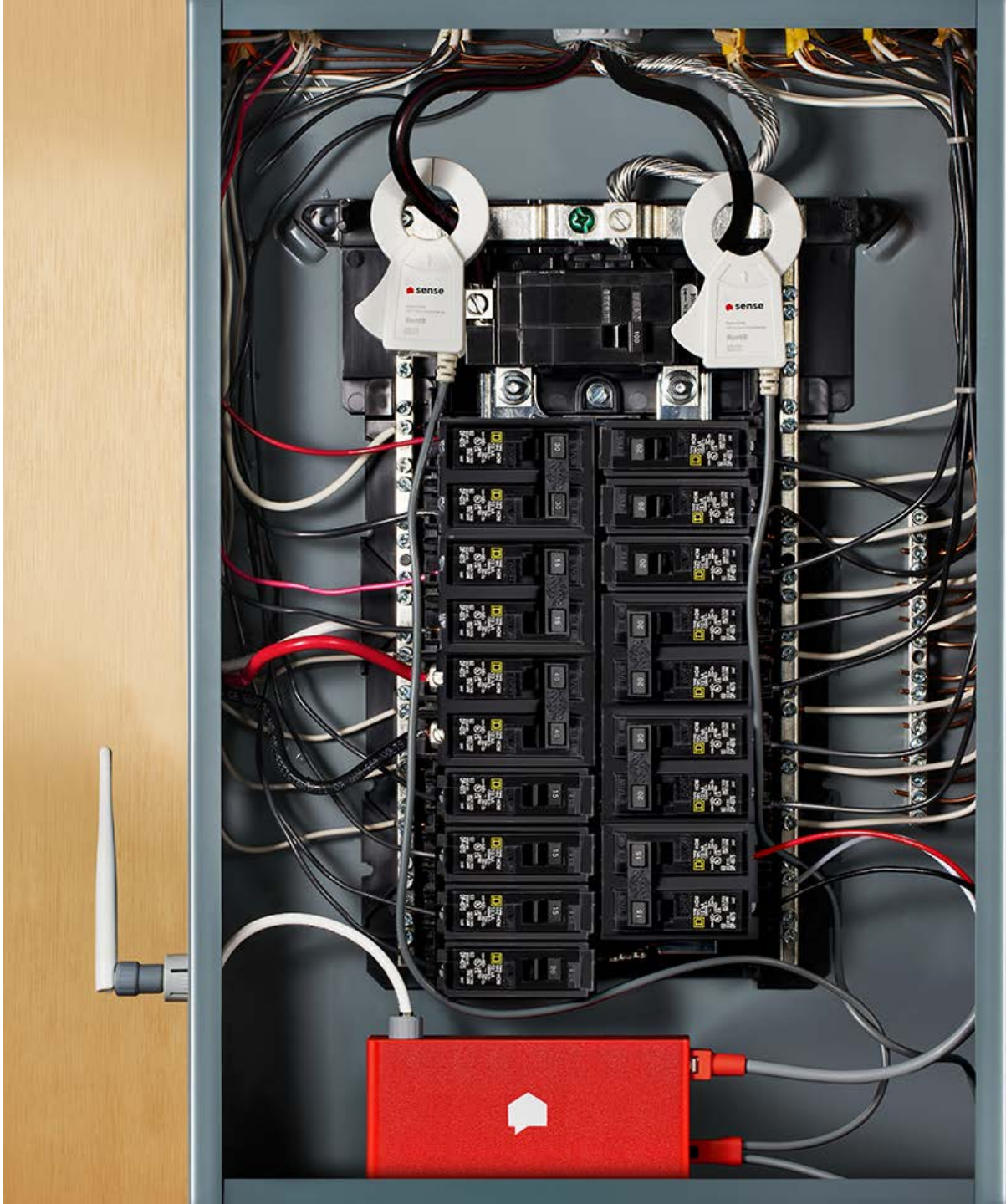




Digital transformation in Energy

Ian Gallagher, Digital Strategy and Architecture
Cisco Canada Public Sector





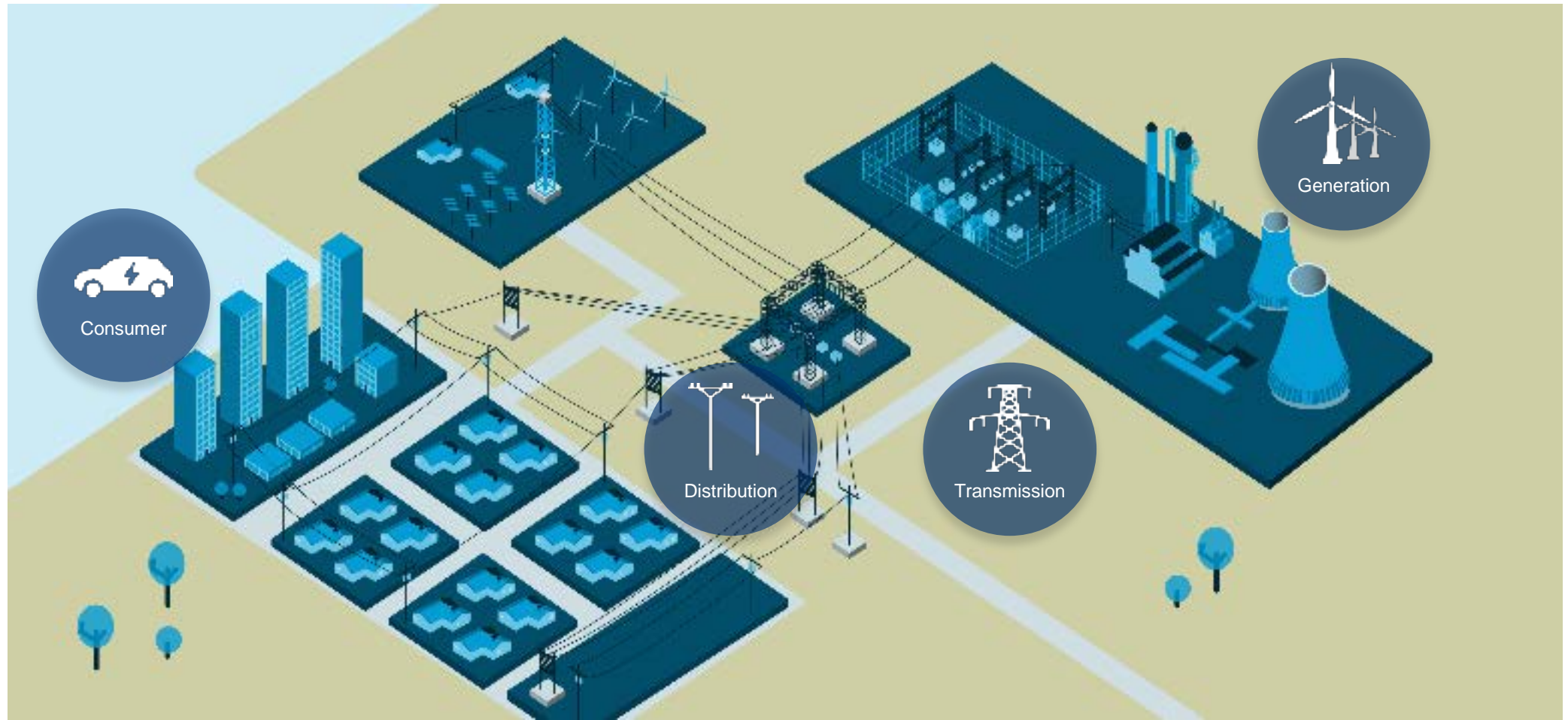
Digital business transformation addressing imperatives across the entire value chain

Retain and acquire
customers

Improve safety, security and
regulatory compliance

Develop new energy sources
and consumption models

Modernize the
utility grid



It's the Value, Not the Value Chain: Utilities

Smart Home Solutions



IoT Infrastructures and Sensors



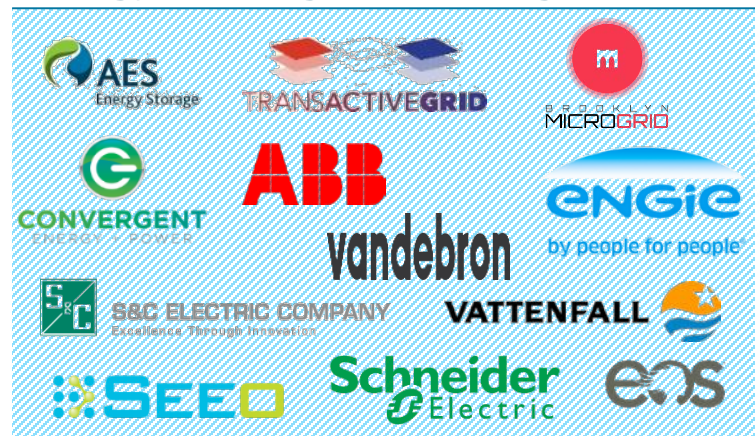
Energy Savings with Analytics



Renewables



Energy Trading and Storage



Transmission & Distribution



Sources: Angel List, CB Insights, CDO TL research, 2015-2016

It's the Value, Not the Value Chain: Oil & Gas

Sensors and Analytics



Energy Efficiency and Storage



Midstream



Extraction & Production



Autonomous Vehicles & Fleet Mgt.

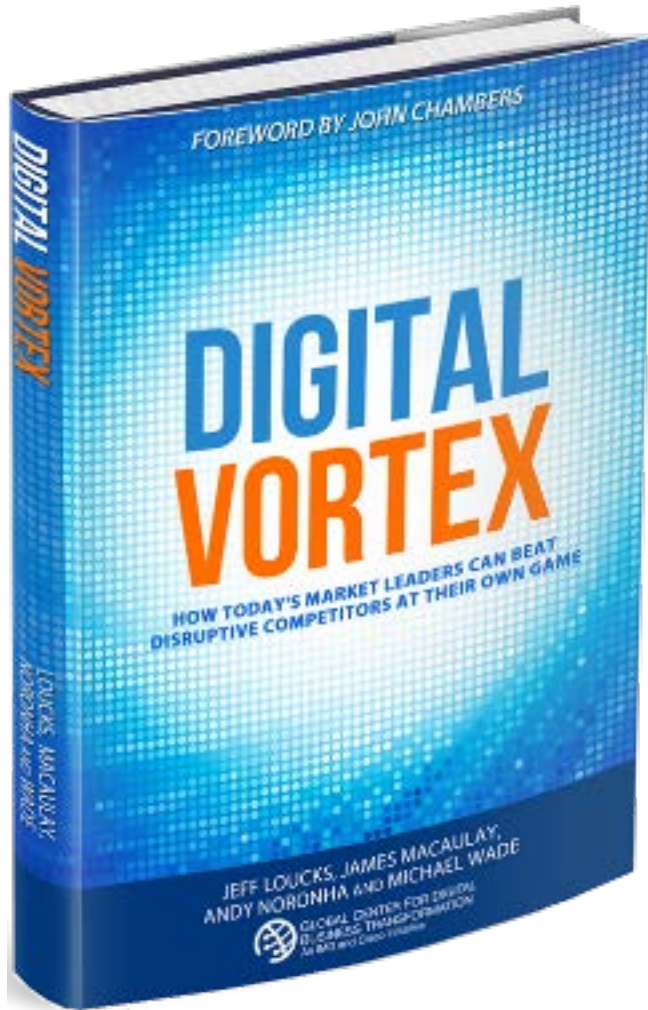


Downstream



Sources: Angel List, CB Insights, CDO TL research, 2015-2016

Understanding transformation and disruption



Cisco partnered with the Center for Digital Business Transformation to understand industries' vulnerability to digital disruption:

Interviews with 941 business leaders across 12 industries and 13 countries

Analysis of market data, looking at investment, timing, means, and impact

Ranking of industries according to their proximity to the center of the *Digital Vortex*

Combinatorial Disruption



Cost Value

- Lower fare per ride
- No tipping
- Intelligent demand-based pricing (e.g., Surge)



Experience Value

- No hailing (waiting)
- No cash, no transaction time, automatic billing
- Choice of vehicle type
- Customized experience (e.g., Spotify playlist on car radio)
- Real-time status of car arrival
- Safety / visibility / location tracking
- Rating system / incentives
- Self-driven offerings



Platform Value

- Pervasive in major cities
- Global presence with consistent process
- New employment opportunities (not just for passengers)
- Add-on services (e.g., UberEATS)
- Cross-platform integration (e.g., Amazon Echo, United Airlines app)
- SDK for developer ecosystem

What is digital transformation?



Digital transformation is organizational change using digital technologies and business models. It requires:

Challenging assumptions that delivered past successes

Stress-testing the ways you deliver value to customers

Changing the organization itself: operations, culture, revenue models, and more

Utilities need to develop a set of capabilities that enable digital business transformation

Optimize grid operation

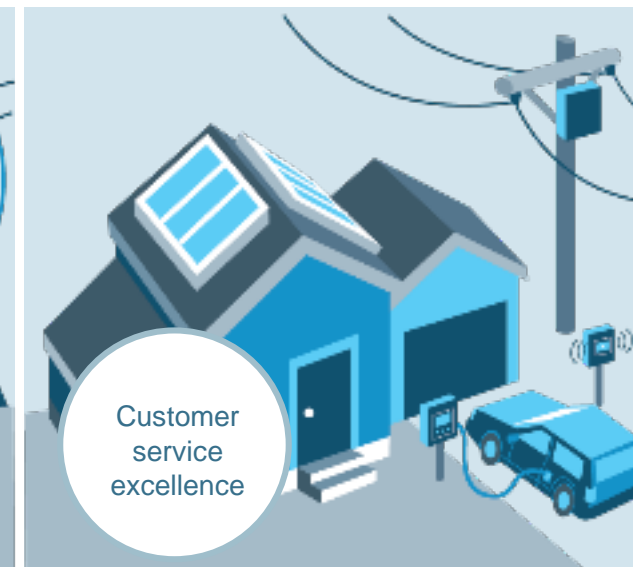
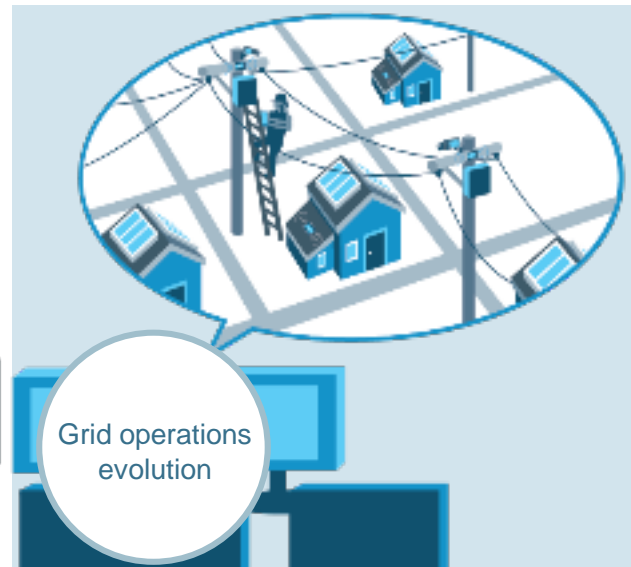
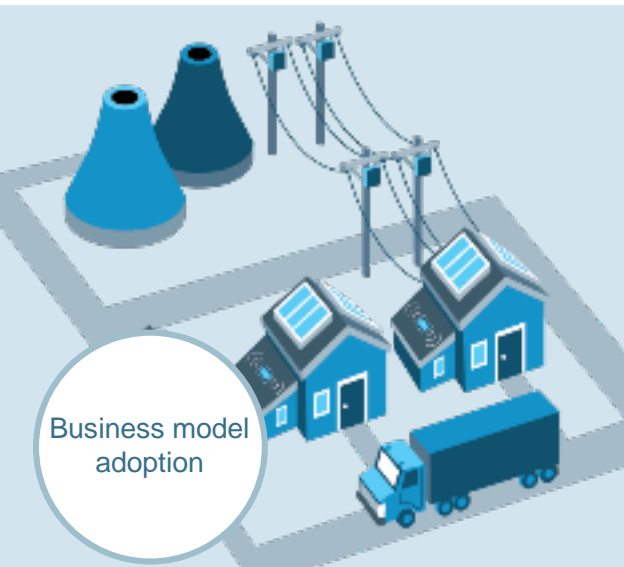
Manage risk

Integrate distributed energy resources

Increase service reliability

Improve field workforce capabilities

Enhance customer engagement



Energy supply

Grid operation

Utility workforce

Customer service

Utilities digital business imperatives



Retain and acquire
customers



Improve safety, security
and regulatory compliance



Develop new energy
sources and
consumption models



Modernize the
utility grid



Harnessing the Power of a Digital Utility

Challenge

Measure consumption, monitor service, and automate electricity distribution system

How

Deployed 1.9M smart meters connected by robust Cisco network for advanced metering, real-time outage notification, wide-area monitoring, and grid automation

Outcome

Real-time visibility improves cost management and speeds response remediation

Improved power management and predictive maintenance

Ability to analyze consumer trends and offer new IP-based services

Enables management of approximately 1B data points per day

Transacting Decentralized Energy Schemes

Challenge

Allow people to generate, buy, and sell energy to their neighbors

How

Blockchain technology used for peer-to-peer energy transactions

Energy network resources (e.g., kWh) are tokenized and offered in a multi-level open market for purchase, sale, or construction of derivatives

Outcome

Customers use platform to monetize energy they produce

Open energy platform is transparent, auditable, non-repudiable, peer-to-peer, and cryptographically secure





Fast Execution for Secure Operations

Challenge

Increasing cybersecurity risks for critical operational infrastructure across upstream, midstream, and downstream assets

No real-time visibility of cyber compliance

High cost and delayed internal efforts to build required cyber management capability

How

Cisco Services offered end-to-end capability for Asset Inventory, Patch and AV Management, Remote Media Management, Advanced Industrial Cyber Security Analysis, and Threat Prevention

Joint service offering executed with industrial automation vendors

Outcome

Effective, real-time cyber risk management and compliance

Lower operational costs: ~\$700K savings per site over 5 years

Increased site productivity

Increased business agility and reduced management complexity





Fast Execution for Improved Security

Challenge

Protect people and property at remote sites

Simplify IT management and minimize operational costs

How

Centralized management of physical security systems using Cisco Video Surveillance and Cisco Physical Access Manager

Unified network for all substation voice, video, and data applications with Cisco Connected Grid switches and routers

“Cisco Video Surveillance and Cisco Physical Access Manager have both simplified and improved physical security at our wind farms.”

Keske Toyofuku
VP and CIO
First Wind

Outcome

Accelerated incident detection through centralized monitoring

Standardized on single network platform for office and substations

Investment recovered through travel avoidance



Pipeline Control Improves Business Performance and Safety for Kenya Pipeline

Challenge

Frequent failure of earlier SCADA system due to communication outages

Provide users with real-time, relevant information

Eliminate frequent maintenance that caused costly operational downtime

How

KPC upgraded legacy control system to extensible Open Architecture System DNA 7.4 platform

New distributed system has enhanced modules for Leak Detection, Profile Maps, and Batch and Pig Tracking

Outcome

Theft prevention via **automatic leak detection** and improved safety with emergency shutdown capability

Better revenues from increased uptime

Time and money savings from controlled system access by local managers

