Massive networks are integral to GE’S heritage.

Over 100 years ago GE Founder Thomas Edison designed electrical distribution grids.

With the Industrial Internet real-time decisioning and collaboration will differentiate products and services in an N-dimensional network space.

Digital networks will coordinate decisions.
At GE Petabytes of data and thousands of analytics enable...

Knowledge Services:
• Maintenance and diagnostics
• Prognostics

Customer benefits:
• No unscheduled downtime
• Better asset management and utilization rates

We constantly strive to predict and optimize the performance and life of all our products and services.
INDUSTRIAL INTERNET: THE POWER OF 1%

Efficiency gains as small as 1% could have sizable benefits over 15 years when scaled up across the economic system.

**INDUSTRIAL INTERNET BENEFITS**

- **Oil & Gas**: $90B in savings from reduced CapEx
- **Power**: $66B in fuel cost savings
- **Healthcare**: $63B from efficiency gains
- **Aviation**: $30B in fuel cost savings
- **Rail**: $27B in rail operations savings

- Reduces operating costs and fuel consumption while boosting availability of key equipment and enhancing production rates.
- Optimizes power plant fleets with advanced monitoring, enabling deeper integration of gas and power networks.
- Improves resource use and outcomes by locating and identifying the status of mobile equipment.
- Improves flight path planning and enables aircraft to tell crew which parts need replacement and when.
- Optimizes operator response through real-time overviews of network operations.
Metcalf’s Law

The Systemic Value of Compatibly Communicating Devices Grows as the Square of Their Number:

Value $\propto N^2$

Cost $\propto N$

Critical Mass Crossover

Value of network exceeds cost of network at critical point

Network value exponentially increases.
Billions of people create extensive global networks

People-centric networks connect people to information and each other.
Next: Machine to Machine Networks Become Collaborative

Billions of Objects

More Software, More Compute, More Intelligence
As cyberphysical systems are becoming more and more complex, need a new paradigm to create complex systems.
GE’s Globalized Engineering Workforce

10,000’s of Engineers, 1000’s of Tools, Petabytes of Data, and Globally Distributed Expertise

Innovation Platform to connect the GE Engineering Community and Ecosystem
Change the Design to Manufacture Paradigm

Current State
- Isolated Expertise
- Separate Tool & Data Repositories
- Manual Workflow & Data Movement
- Task Centric

Future State
- Integrated Knowledge
- Unified & Searchable
- Automated Workflow & Data Movement
- Project/Process Centric

Enable a seamless flow of information and democratize the access to knowledge.
GE Global Research Innovation Platform (CEED) Delivered via the Cloud

Finding and Exchanging Data and Models

Unified Source of Distributed Models, Data & Services

- Transparent
- Auditable
- Automated

Expose Automated Tools to Authorized Users

Exposé tools and data in a searchable automation platform.

With initial support from the DARPA AVM program
Collaborative Federated Environment

Access Materials Data and Models at the Source
With Governance, Controllership, and Ownership
Advanced Manufacturing Will Transform the Entire Value Chain

- Integrated design
- Crowdsourcing Collaborations
- Advanced fabrication
- New technology & Materials
- Brilliant factories
- Pervasive Sensors
- Realtime Responsiveness
- Digitized supply chains
- Demand Driven and Digitally Optimized

Changing the Manufacturing Paradigm from Design to Supply Chain
A Collaborative & Distributed Environment for Changing the Manufacturing Paradigm
GE Brilliant Manufacturing

Creating the “digital thread”

- Design
- Simulation
- Prototyping
- Manufacturing

Brilliant Minds, Machines and Factories Seamlessly Connected

- Data is ubiquitous
- Knowledge is distributed
- Decisions are near realtime

10,000’s of sensors

Supply Chain Network
Connecting and Orchestrating the Flows

Devices
Data

Decisions to be Made
Industrial Internet: Pushing the Boundaries of Minds and Machines

Manufacturing Powered by Brilliant Machines.

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