Transforming GE to Digital Industrial

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GE Transforming

Divest

CONSUMER	FINANCING
Appliances	Capital
	Synchrony

Invest + Disrupt

INDUSTRIAL		ALSTOM	DIGITAL
GE Aviation	GE Power	Renewables	GE Digital
GE Transportation	GE Energy Mgmt	Thermal	Predix
GE Healthcare	GE Oil & Gas	Grid	current powered by GE
Vertical Finance	GE Lighting		

Culture + Transformation

The first Digital Industrial company

The Digital Transformation

How We Are Evolving

Software-defined everything & data as revenue generator	New Business Models	GE Digital Wind Farm Current, powered by GE	
Speed of change requires months to days, scalability	Cloud-based Platform	Predix – Industrial OS	
Building on current IT investments and assets	Convergence of IT & OT	GE Digital	GE Digital

Software is Impacting Every Industry

airbnb	**20BN** Hotel Service	Owns no real-estate
Apple	**18BN** Consumer App Economy	Creates a few apps
UBER	**50BN** Taxi Service	Owns no vehicles

Digital Industrial Revolution in Full Force

By 2020

+1B

Growth in the installed Base of Smart Meters

100M

Internet connected light bulbs

152M

Cars connect to the internet...6 fold increase

10^{6}

Terabytes a day generated by GE machines

Winners will master data and insights ... At speed & scale

Mode 1

ERP Platform

On Prem Data Centers

- Data
- Applications
- Security
- ERP Suppliers

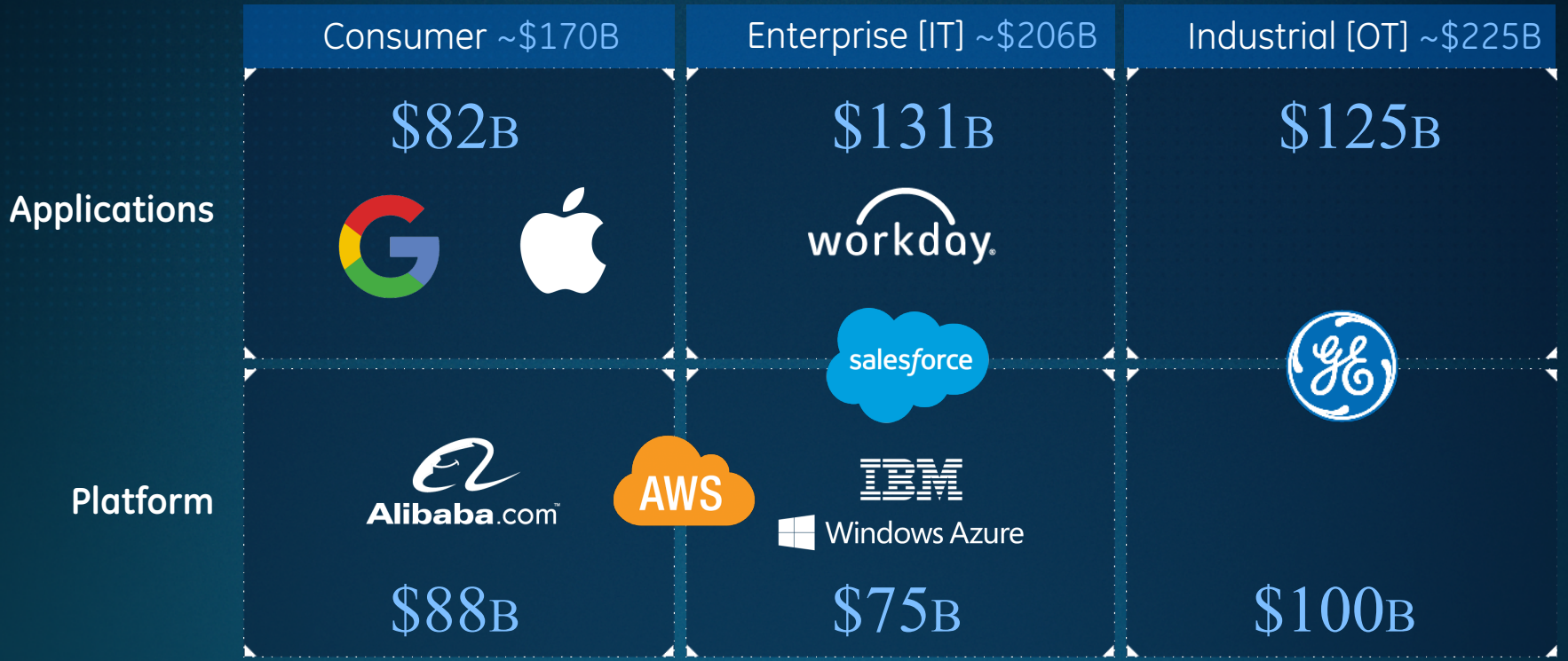
Mode 2

Insight & Analytics Platform

Hybrid Cloud

- Algorithms & Data
- Cloud Services
- Security, Risk, Safety & Quality
- Emerging Suppliers

Industrial Internet Market by 2020: ~$225B



Digital Industrial Framework

Smart machines & digital thread | Design thru installed base

GE value chain → **Customer outcomes** → **Industry ecosystem**

"Analytical apps" → customer outcomes

Power of **1%**

- Growth
- Uptime
- Efficiency
- Safety
- Capacity

Assets under management

# apps
# partners
$ outcomes

Smart machines & digital thread | Design thru installed base

Predix platform

Cloud-based platform for the Industrial Internet

- Connected assets
- Industrial data science
- Industrial data management
- Cloud & mobile

Capabilities for industrial companies

- Monitoring & diagnostics
- Predictive maintenance
- Asset lifecycle
- Operations & intelligence

Our play

System productivity

+

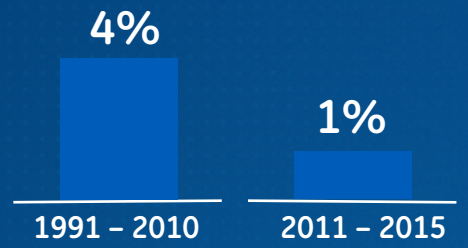
CSA value
Upgrades
HW/SW sales
Collaboration

+

Partner value
New growth

GE Opportunity

Industrial Productivity



Meets the Digital Twin

Physics + Analytics

- Value of operational insight > connectivity
- Need data to drive results
- Role of CIO changing … more operational

For Railroad

IT can improve communication

OT … one mile velocity … earnings +20%

- Value of asset + analytics > either individually
- Dramatically changes potential value of installed base companies
- Financial impact of “per asset model” is immense

For GE

~$210B of Services backlog

Improvement a win-win with customers

Predix

- Predix is not only an enabler to the business – it IS the business
- The platform is the defense against disintermediation
- The Industrial Internet is different than the Consumer Internet

Predix Platform is the Enabler

Cloud-based platform for Industrial Internet

- Connected assets
- Industrial data management
- Industrial data science
- Cloud & mobile

+

Capabilities for Industrial companies

- Monitoring & diagnostics
- Asset lifecycle
- Predictive maintenance
- Operations & intelligence

Reliability
Increase availability & longer asset life

Cost Reduction
Lower operating costs with greater efficiencies

Risk Mitigation
Lower operations and financial risk

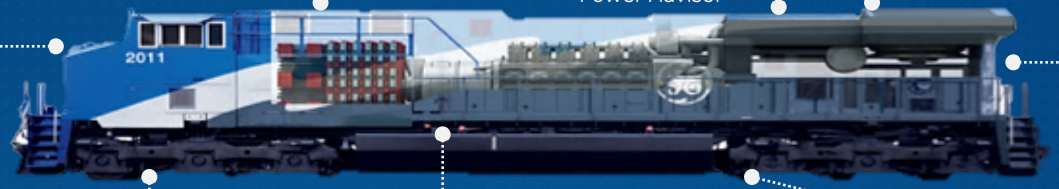
Profitable Growth
Increase production for market advancement

Value for Investors

+ $/IB
+ Margins
+ 40

+ Revenue in services backlog
+ Product feedback
+ Total service offerings

Rail: Digital Transportation



Outcome: Reliability
Solution: RM&D

Outcome: On-time Performance
Solution: Power Advisor

Outcome: Set Out
Solution: DHMSS

Outcome: Productivity
Solution: LocoVISION

Outcome: Life Cycle Costs
Solution: Analytics

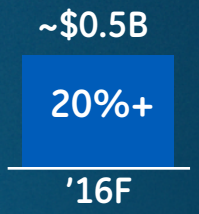
Outcome: Carloads
Solution: Locotrol DP

Outcome: Fuel cost / loco
Solution: Trip Optimizer

Outcome: Rail Health
Solution: Rail Integrity Monitor

Transportation Digital sales

- ✓ Train performance + optimization solutions
- ✓ Customer performance analytics
- ✓ Non-GE fleet penetration
- ✓ Programs with all N.A. Class I and many global railroads



Healthcare: Cloud Advanced Visualization

Knowledge + collaborative ecosystem around smart devices

Hospital

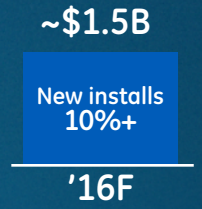
- Data sent to cloud
- Images processed
- View & manipulate image on browser devices

Remote Clinicians → **GEHC Cloud & Analytics**

- Anywhere access to analytics & images (Rads, Specialists)
- Navigate findings, combine with other data in cloud
- Collaborate with multi-disciplinary team
- Customers build their own apps

Healthcare Digital Sales

- ✓ Solid departmental system growth
- ✓ Big IB of image management
- ✓ Analytics around productivity
- ✓ Potential for disease management



Implementing the Digital Thread

Engineering design | Design for productivity/cost

Manufacture | Optimized manufacturing

Services | Condition-based services

Our Experience

H Turbine
... 2X faster, lower launch cost

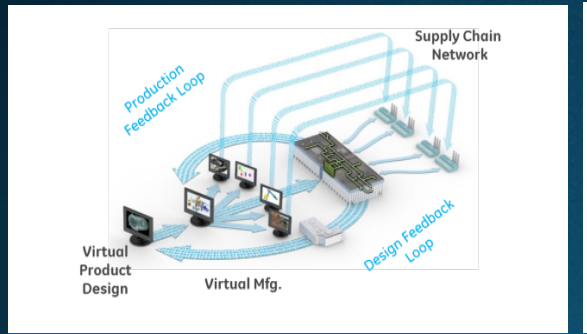
75 Brilliant Factories
...driving yield, cycle, downtime

30,000 Field Engineers ...sensor based, onboard algorithms, mobile

GE: best example of the Industrial Internet at work

GE: The Digital Industrial Company

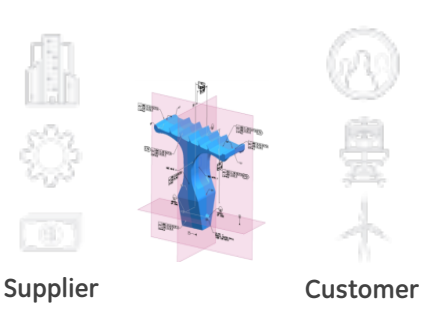
GE for GE



Productivity

- Digital thread
- Predix + data
- Digital twin

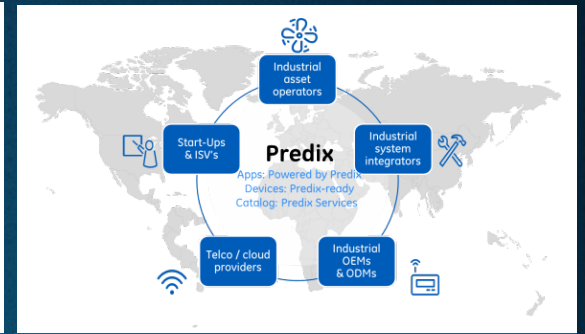
GE for Customers



Apps

- GE's software business
- "Inside-out" strategy
- Outcomes for customers

GE for World



Platform

- Predix
- Secure
- Cloud for industry

$15B software business by 2020

GE Digital