

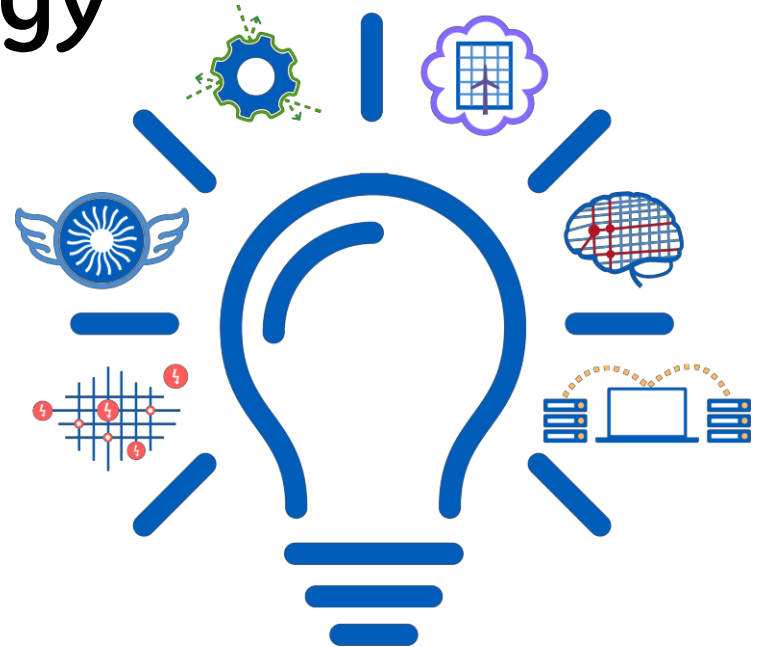


Systems Engineering, Security and the Future of Energy

Eric Gebhardt
CTO/VP Engineering
GE Oil & Gas

November 30, 2015

Imagination at work



A world that's constantly reinventing
itself is a world where GE thrives.



Digital Industrial Portfolio



POWER

~\$30B
66K
EMPLOYEES



ENERGY
MANAGEMENT

~\$11B
47K
EMPLOYEES



RENEWABLE
ENERGY

~\$9B
13K
EMPLOYEES



OIL & GAS

\$18.7B
46K
EMPLOYEES



AVIATION

\$24B
45K
EMPLOYEES



TRANSPORTATION

\$5.7B
13K
EMPLOYEES



HEALTHCARE

\$18.3B
55K
EMPLOYEES



APPLIANCES
& LIGHTING

\$8.4B
25K
EMPLOYEES

2014 REVENUES



CAPITAL VERTICALS

\$11.1B*

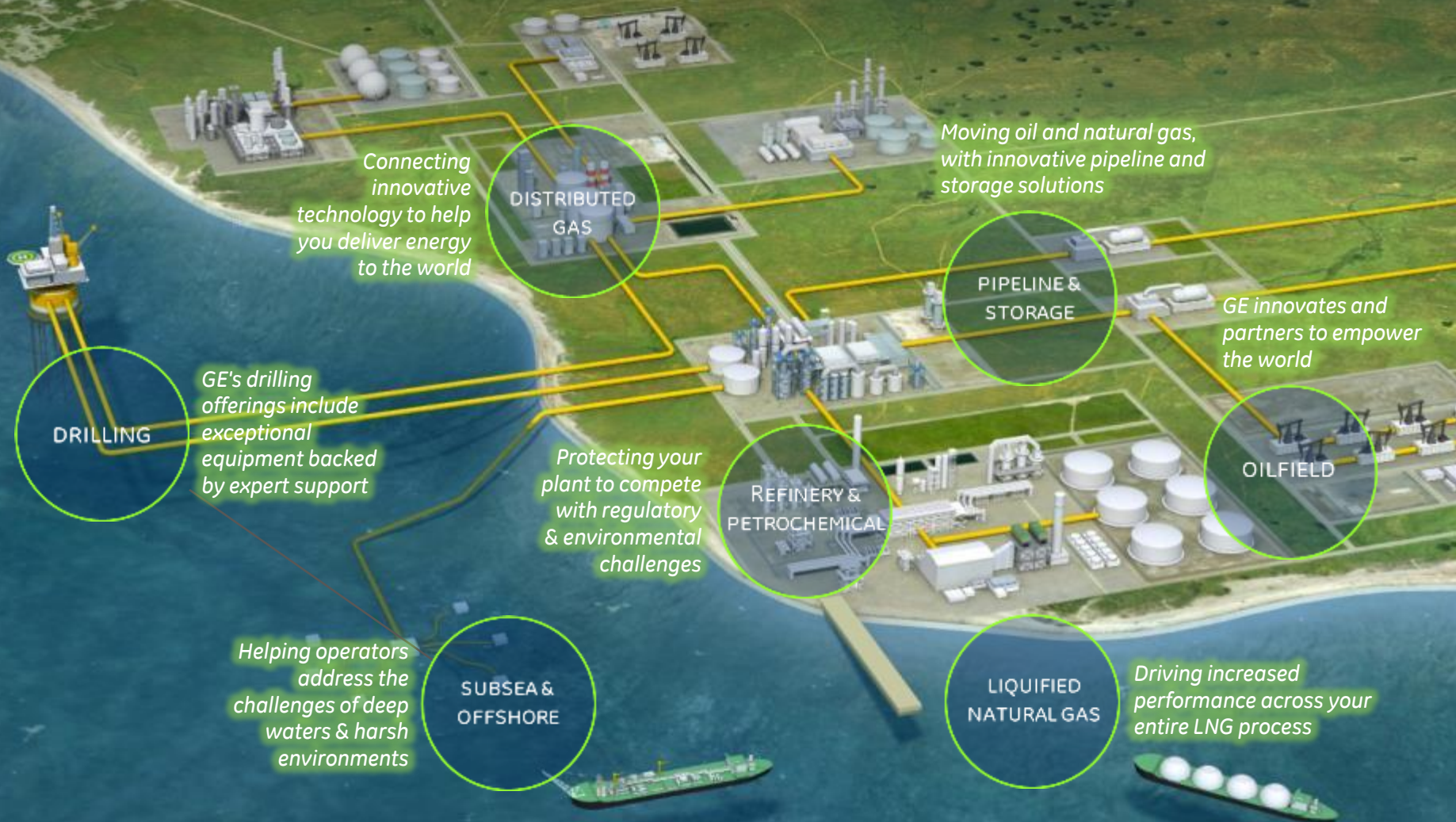


GE DIGITAL

~\$6B*

*Revenue target for 2017

We provide cutting edge technology and service solutions throughout the value chain



IMPROVING THE HEALTH & PRODUCTIVITY OF YOUR
OPERATIONS FROM EXTRACTION TO END USE

The GE Store

IN GE, EVERY BUSINESS CAN SHARE & ACCESS THE SAME TECHNOLOGY, MARKETS, STRUCTURE & INTELLECT. GOVERNED BY CULTURE & SIMPLIFICATION.

✓ GE Store principle:

- Contribute
- Crowdsource
- Collaborate

✓ O&G pull from store:

- Aero turbines and motors for LNG trains
- Steam turbine blade and sealing for Downstream
- Diagnostic imaging from Healthcare
- Metallurgy and coatings from GRC
- Additive manufacturing, software and analytics

✓ O&G contribution to the store:

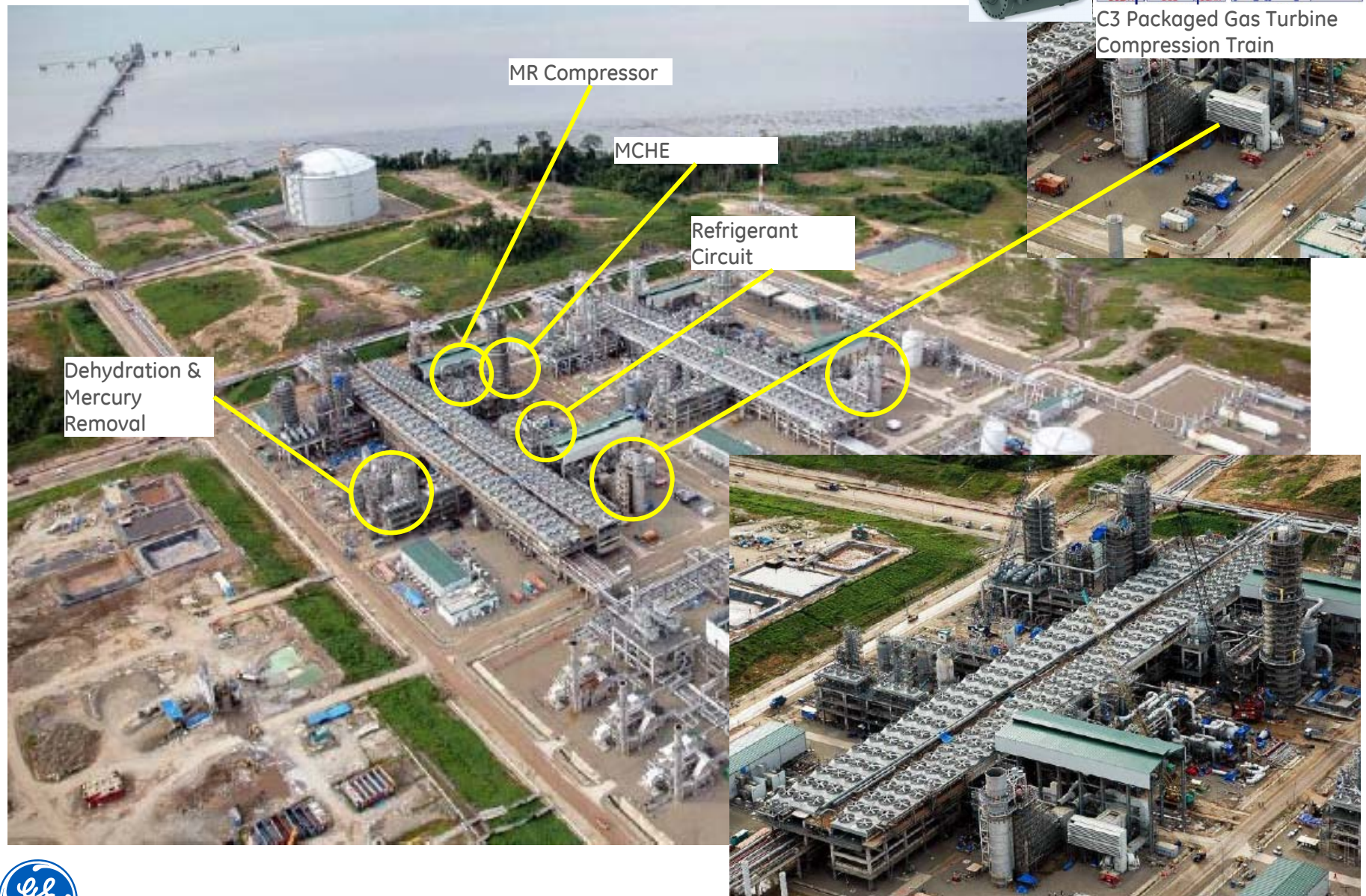
- Inspection Technologies from M&C
- Software from Unified Ops
- High corrosion, High erosion materials
- Controls solutions from M&C

Supported by GE Capital:

- Financing infrastructure investments



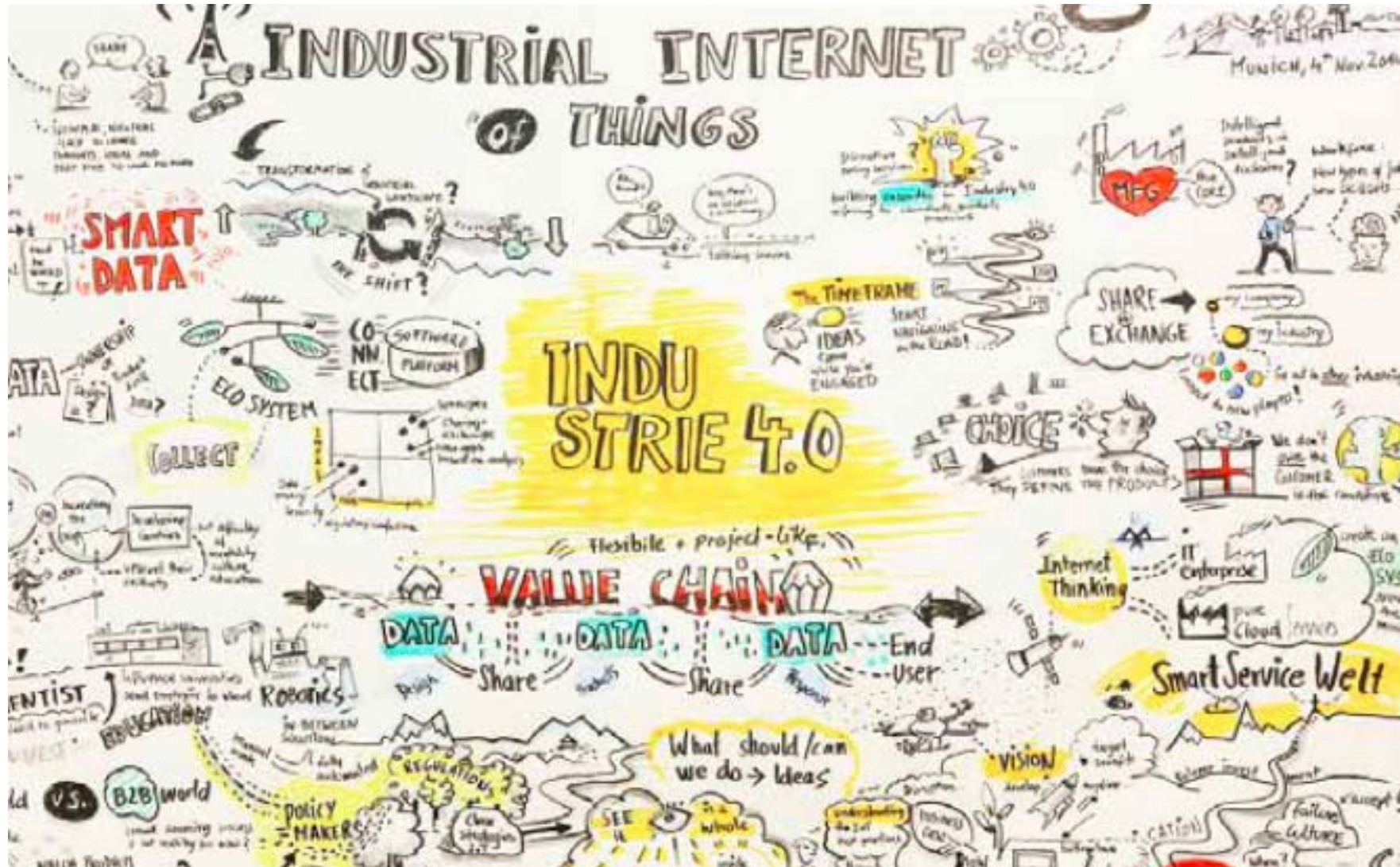
LNG Process Train



GE Oil & Gas Subsea Systems



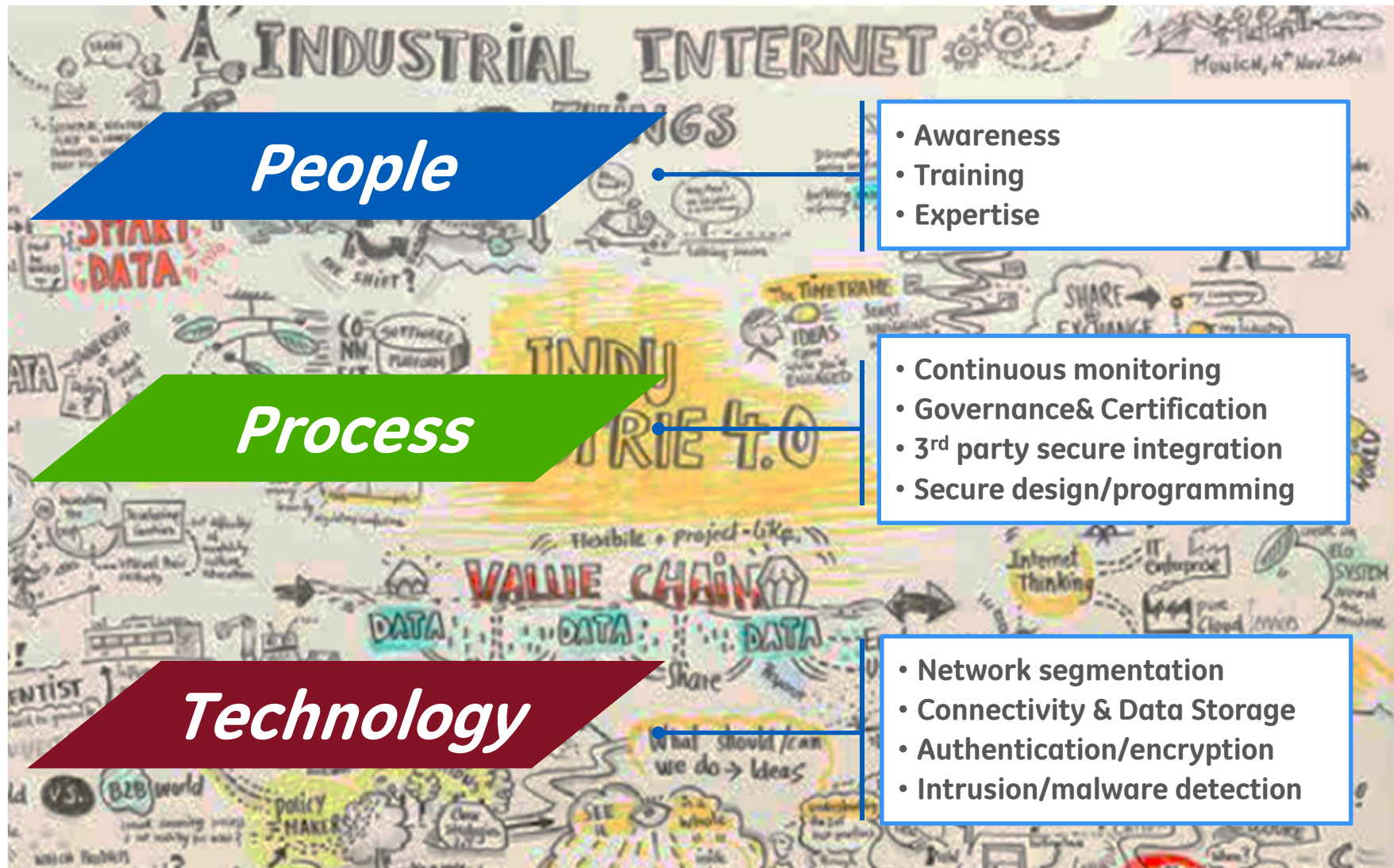
Secure Development Lifecycle



Source: World Economic Forum USA 2015



Secure Development Lifecycle



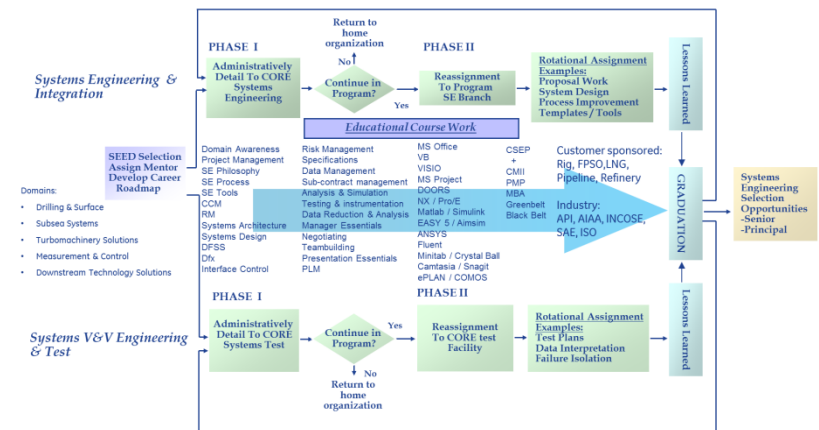
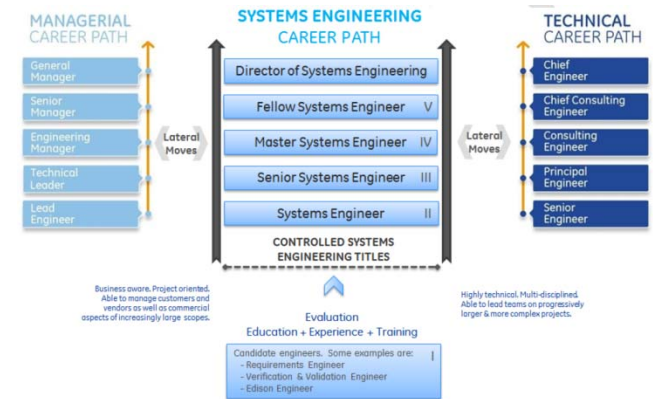
DEFENSE IN DEPTH foundational to Predix and O+G Digital Solutions

Systems Engineering



Independent career path for Systems Engineers including Controlled Systems Engineering Titles

- Specialized Systems Engineering Education & Development (SEED) program– to educate, train, and provide broad experience based learning.
- Will provide guidance and oversight to deliver on complex integrated solutions involving Condition Based Maintenance, Remote Oil Field Optimization, and tying it all together with the industrial Internet.



Role of SE is to look out, look up, look across, and ensure it all fits together seamlessly.



imagination at work

Engineer of the Future



Digital
Capability

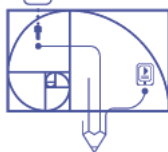


Systems
Thinking



Culture of
Learning

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= Engineer
of the Future

Harnessing **digital skills** learned from continual immersion into content-rich contemporary culture, the engineer of the future leverages **systems thinking** to identify an array of big picture solutions targeted to the customer's need.



imagination at work