Cognizant: Keeping up with the super-human speed of digital transformation

Keeping up with the Superhuman Speed of Digital Transformation

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How Cognizant works with its clients

- Helping you transition to your new PI system
- Getting more out of your existing PI landscape
- Managed Services to reduce your OpEx
- Partnering with you in your journey to the cloud
“The only constant in Life is Change.”

Heracleitus – 540 BCE - 480
THE FIRST INDUSTRIAL REVOLUTION

The Industrial Revolution
1760-1840

From Horses to Horsepower
The First Industrial Revolution
1760-1840: The original Steam Punk’s

James Watt 1788 Double Action Sun And Planet Engine

Edmund Cartwright 1785 Power Loom
The First Industrial Revolution
1760-1840: The original Steam Punk’s

Locomotive NO.1 George Stephenson 1825

Steam Hammer James Nasmyth 1839-1842

* Francois Bourdon also invented the Steam Hammer
Dr Edward Jenner created the world’s first successful vaccine. He found out that people infected with cowpox were immune to smallpox.
The Technological Revolution
1870 - 1914

Turn down for Watt !?!
The Second Industrial Revolution
1870-1914: The Technological Revolution

Bessemer-Thomas Steel Production Process
~1877
*William Kelly mention

Siemens-Martin regenerative furnace
~1865
The Second Industrial Revolution
1870-1914: The Technological Revolution

Steam Turbine, Charles Parsons. 1884

The “Otto cycle” engine. Nicolaus August Otto/1876
More commonly known as “Internal Combustion engine”.

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The Second Industrial Revolution
1870-1914: The Technological Revolution

1879 Thomas Edison invents first incandescent light bulb, which lasts 40hrs.
By 1880, bulbs would last 1200hrs.

1888 Nikola Tesla demonstrated the first polyphase alternating current (AC) electrical system.
George Westinghouse buys the patent rights.
The Second Industrial Revolution
1870-1914: The Technological Revolution

Radio-based wireless telegraphy.
1901. Guglielmo Marconi.

The First Triode, De Forest Audion Tube.
1908. Lee De Forest
The Second Industrial Revolution
1870-1914: The Technological Revolution

The Wright Flyer. 1903

Ford Assembly Line, ~1913.
250,000 Model T’s sold in 1914
The Digital Revolution
1947 -> 21st Century

Holy Silicon Batman!
The Third Industrial Revolution

1947 -> late 20th Century: The Digital Revolution

ENIAC. General Purpose digital computer

1945
The Third Industrial Revolution
1947 -> late 20th Century: The Digital Revolution

Germanium-based point-contact transistor.
1947 John Bardeen, Walter Houser Brattain, William Shockley. BELL LABS

MOSFET transistor.
1959 Mohammad Atalla, Dawon Kahng. BELL LABS
The Third Industrial Revolution

1947 -> late 20th Century: The Digital Revolution

Apollo 11.  
1969

Modicon 084, the first ‘Programmable Controller’.  
1969 Richard Morley

ARPANET. First computer->computer login.  
1969
The Third Industrial Revolution

1947 -> late 20th Century: The Digital Revolution

- Ethernet developed. 1973
- Xerox Alto. 1973
The Third Industrial Revolution
1947 -> late 20th Century: The Digital Revolution

Microsoft Founded.
1975

Apple Founded.
1975

VisiCalc. Spreadsheet software. The first “killer app”.
1979

OSISoft Founded.
1980
The Third Industrial Revolution

1947 -> late 20th Century: The Digital Revolution

“Fieldbus Wars”

- Modbus. 1979
- CANBus. 1986
- Fieldbus. 1988
- BACnet. 1987
- Profibus. 1989
- DeviceNet. Early 90’s
- ControlNet. 1997

The First Cell Phone

Motorola DynaTAC 8000X. 1983

The Internet

The World Wide Web
1991. Tim Berners Lee
The Third Industrial Revolution
1947 -> late 20th Century: The Digital Revolution

Netscape Browser. 1994

IBM Simon Personal Communicator 1994

Linux Kernel 1.0 1994

Wi-Fi 1 standard released 1997

3G Commercial Implementation 2001
The Third Industrial Revolution
1947 -> late 20th Century: The Digital Revolution

VMWare released first product
1999

Google IPO
2004

AWS S3 Storage and EC2
2006

Facebook opens membership to everyone
2006

iPhone
2007

Bitcoin launched
2009
THE FOURTH INDUSTRIAL REVOLUTION

Industry 4.0
~2016

Neural Nets to Steel Threats
The Fourth Industrial Revolution

Increasing Rate of Change

- Additive Manufacturing
- Smart Sensors
- Virtual and Augmented Reality
- Analytics and Intelligence
- Cloud Computing

5G
(Commercial Implementation 2018)
“The increases in collected data from sensors, compounds to drive more demand for sensors and data.”

Dr. J Patrick Kennedy
The Bedrock for Industry 4.0: PI system

Envision maximizing your ROI and achieving your industry 4.0 goals via advanced analytics through better decision-making, increased productivity & efficiencies

Examples of 4 clients in their journey of digital transformation, leveraging the PI system

1. Batch-based application interface to get high frequency data out of PI to AWS S3 bucket for a construction equipment major

2. PI reporting using the PI Integrator for Business Analytics, replacing an MES reporting approach for a personal care products giant

3. Moving thousands of PI ProcessBook screens (EOL in 2024) to PI Vision using automation, for an electric utility

4. Architecting a system use PI Asset Framework effectively and bringing an analytics-ready approach to mining operations
Typical Bottlenecks & Challenges

- Organizational Collaboration & Trust
- IT Complexity (e.g., Network, security, legacy hardware, source system variety)
- Manual Processes (e.g., Documentation, Testing, Validation)
- Maintenance / Legacy App Support
- Resources / Training / Knowledge Transfer
Enablers for the 4th Industrial Revolution

FDA
CSV -> CSA

Standard for DevOps
A day in the Life

Getting from Development to Production Environment in about 20mins
Get a Dev to Production

Goal:
Integrate a device, create all tags, perform testing, deploy to Production
Using a Package Manager

Tasks:

• Download/install latest version of the ‘standard’ PI Interface config from enterprise package manager
Tasks:

- Capture all relevant config, and package into a deployable zip file (nuget package)
- Deploy to next environment (QA/PROD)
  - Single-line deployment, deploys all interface, dcom, taglist, failover, security, etc.
Data Integrity Testing

Tasks:

• Test Data Accuracy between readings from Device & Historian
  • Analyze & Validate data profiles (a signal waveform, over a given time range), rather than point-by-point
  • Use MASS distance profile to align profiles
  • Get Data Integrity result by measuring variance between signals
Using Test tools & Frameworks (Selenium & SpecFlow)

Tasks:

- Define tests in simple English
- Execute
- Review HTML report
- Publish displays
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“Forecasts may tell you a great deal about the forecaster; they tell you nothing about the future.”

Warren Buffet
Please come find us at Booth #2
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Over 20,000 enterprises in over 100 countries rely on AVEVA to help them deliver life’s essentials: safe and reliable energy, food, medicines, infrastructure and more. By connecting people with trusted information and AI-enriched insights, AVEVA enables teams to engineer efficiently and optimize operations, driving growth and sustainability.

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