

# Lean Production and the Digital Economy

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# The outlook for the UK economy

*“..whoever wins the next election is projected to inherit a deficit of nearly £80bn. Even once that is cleared, the national debt is forecast to be around £1.5tn.”*

*“Because whoever wins the next election, the spending cuts in the next parliament will be more severe than those in this.”*

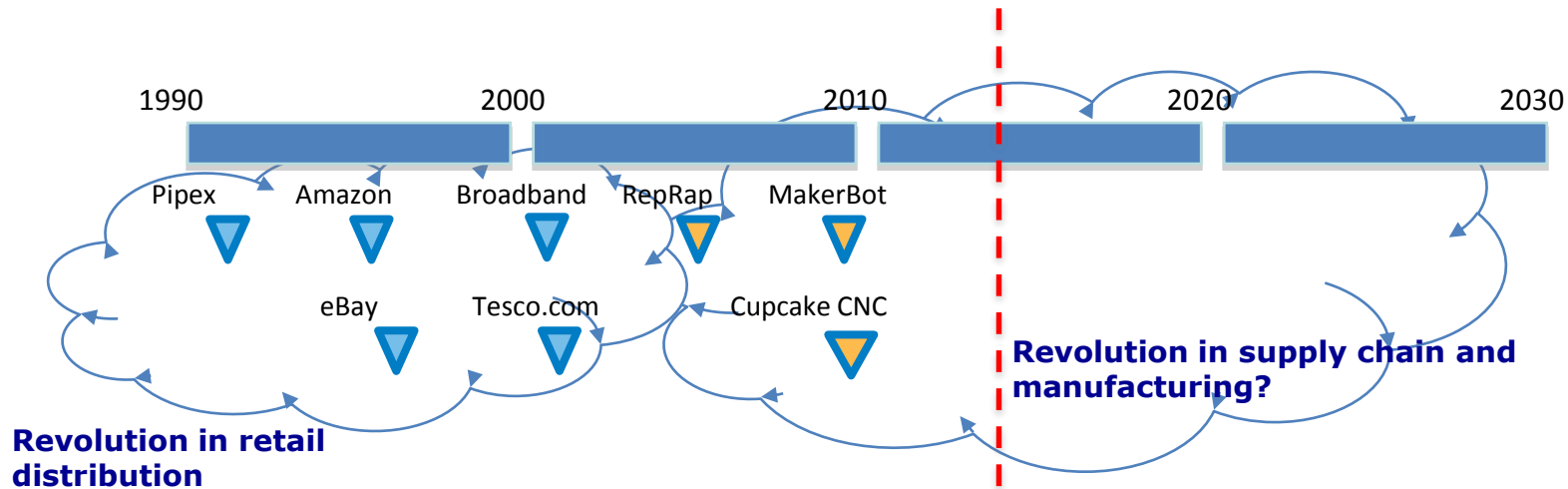


ANDREW RAWNSLEY  
THE OBSERVER  
15 JUNE 2014

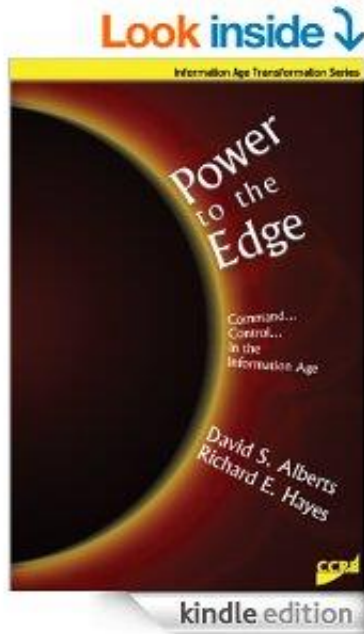
# Emerging technologies



# Emerging faster than we expect



# Emerging ideas



Developing  
Situational  
Awareness

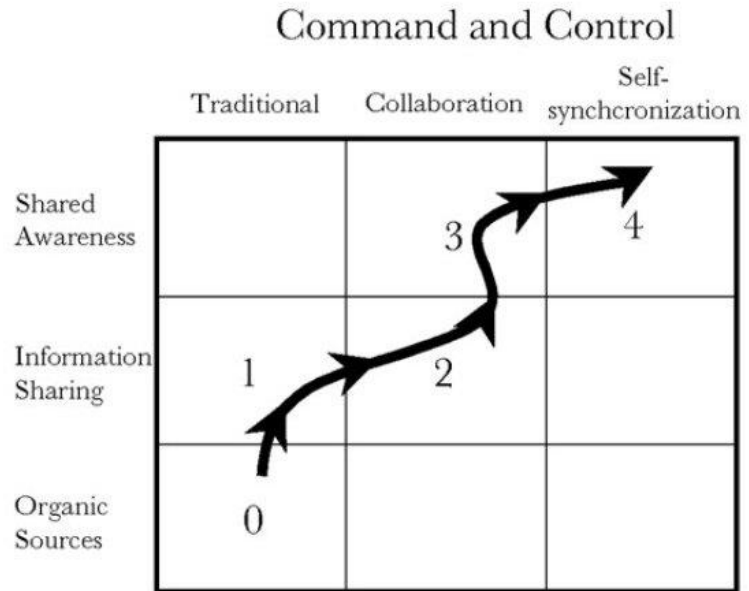


Figure 13. NCW Maturity Model<sup>5</sup>

# A brief look at the history of production...





# 1914 – Ford Highland Park plant



# Ford Model T



*Only one model produced*  
*“Any colour as long as it’s black”*  
*90% sold for cash at the factory gate*



# Mass production at Highland Park

- Largest manufacturing plant in the world and the first to use a moving assembly line
- Mass production of a single product
- Most components made in house by Ford
- Unskilled and often immigrant workforce engaged in repetitive tasks with no scope for innovation
- 1,245 men employed recording production and chasing progress to keep the assembly line moving
- Production time for the Model T Ford reduced from 728 to 93 minutes
- Price reduced from \$700 in 1910 to \$350 in 1917

# 1984 – Nissan's Sunderland plant



# Lean production at Nissan's Sunderland plant

- Most efficient car plant in the world outside Japan
- Multiple variants manufactured on the same line
- Components delivered to the assembly line by an integrated supply chain coordinated with production using IBM mainframe computers
- Highly skilled, locally employed workforce trained by Nissan and on long-term contracts
- Agile and interoperable workforce  
1 man > 3 jobs 3 men > 1 job
- Components pulled from the suppliers and onto the assembly line using simple systems like kanban

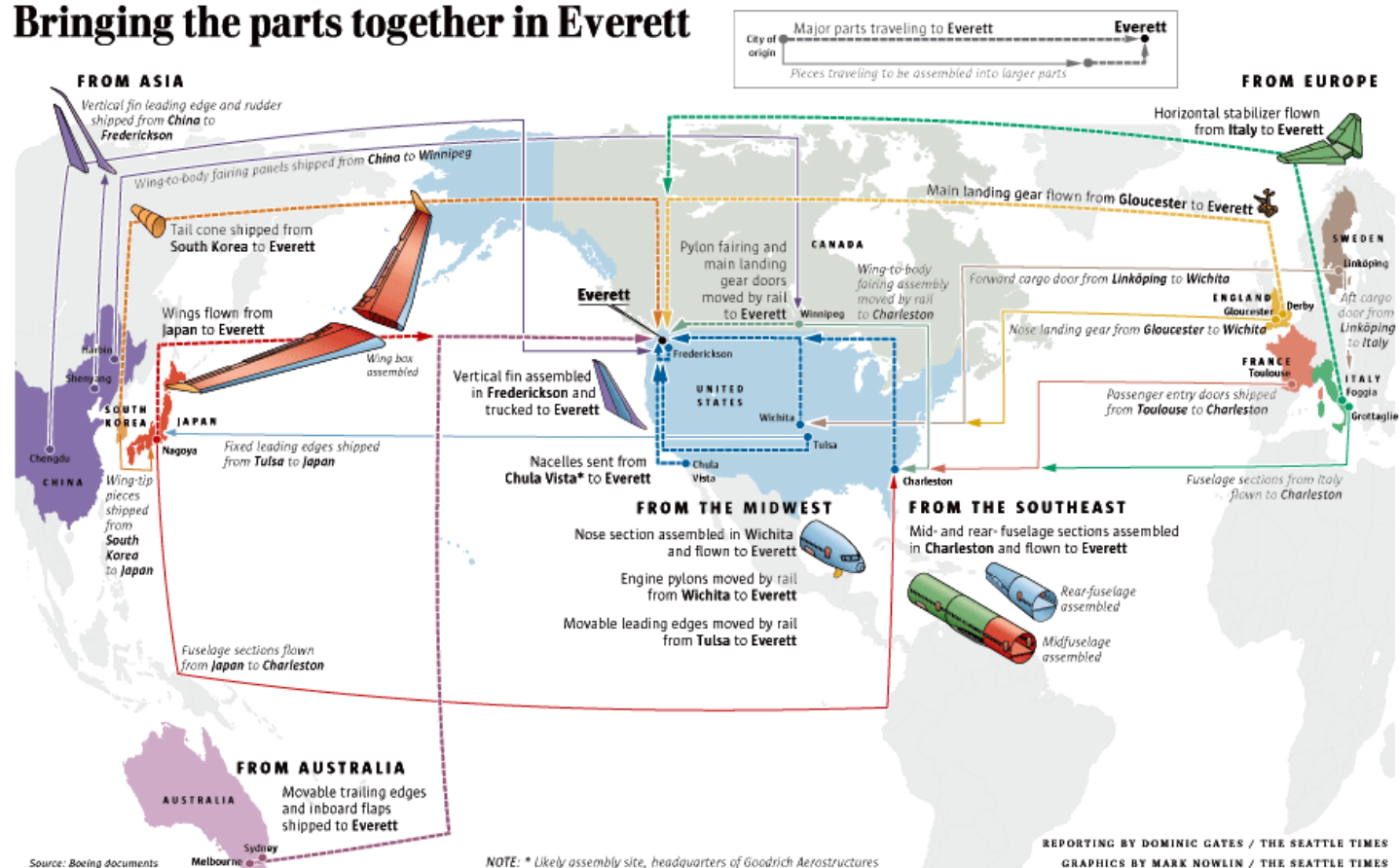


# 2014 – Production in the digital economy?



# 2014 – Production in the Boeing 787

## Bringing the parts together in Everett







*“Almost every information business that the internet touches, the first thing it does is it rips the guts out of the scarcity model.”*

*“The new companies don’t take the profits of the old companies, they make the profits of the old companies go away.”*

CLAY SHIRKY, NEW YORK UNIVERSITY



*“..today most of the world’s really smart people aren’t members of any single team but are distributed all over the place in multiple institutions.”*

*“Any new model of innovation must find ways to leverage the disparate knowledge assets of people who see the world quite differently and who use tools and methods foreign to those we’re familiar with.*

JOHN SEELY BROWN, XEROX PALO ALTO RESEARCH CENTRE

# Production in the digital economy

- Global production systems designing and delivering a range of products and related services
- Dispersed supply chain and workforce coordinated through established relationships, aligned interests and collaborative systems
- Suppliers and individuals around the world engaged in product development and process innovation
- Production coordinated in real time through self-organising groups in response to current demand
- Rapid product development, minimum inventory and transaction costs trending to zero

# Is this the journey we are on?

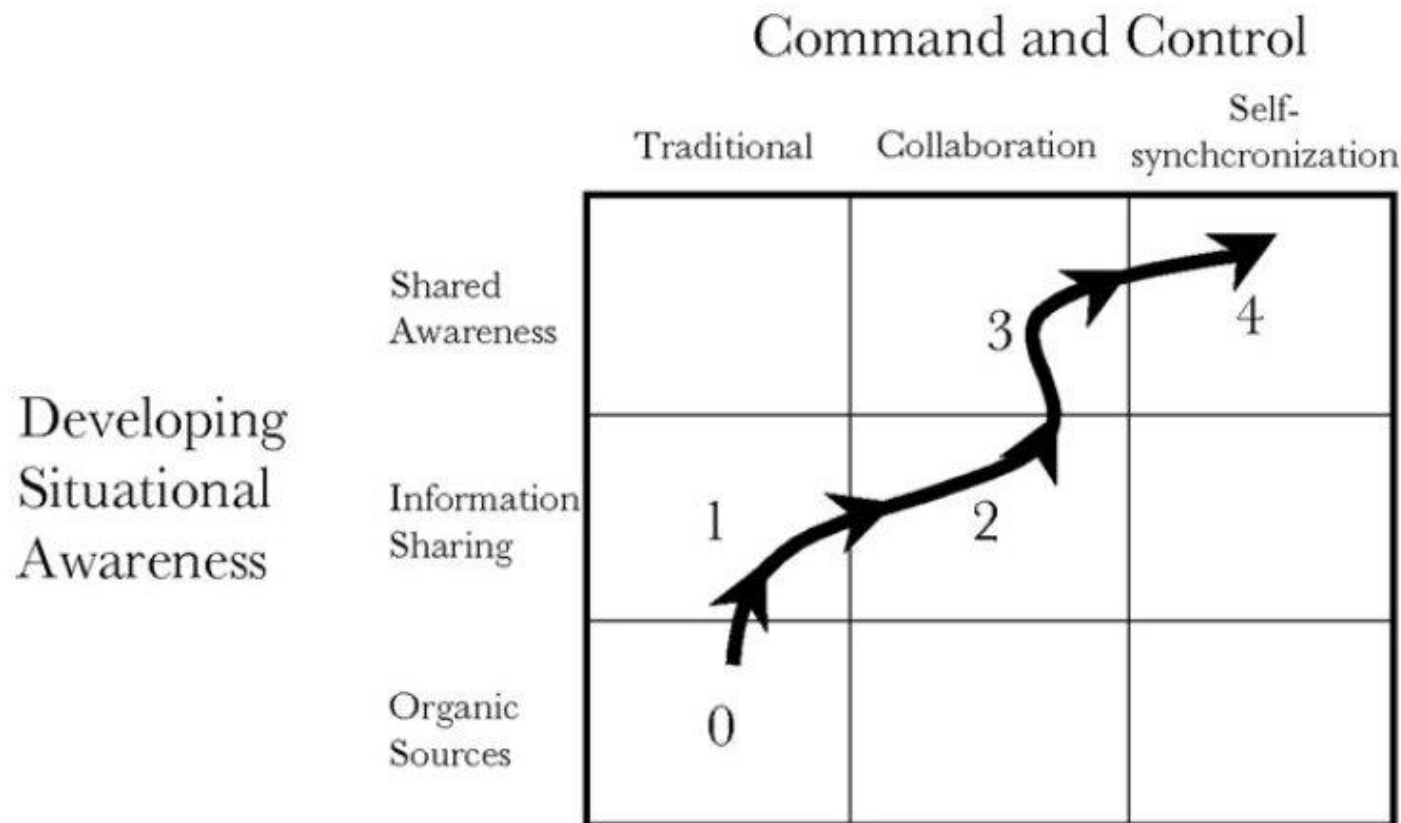
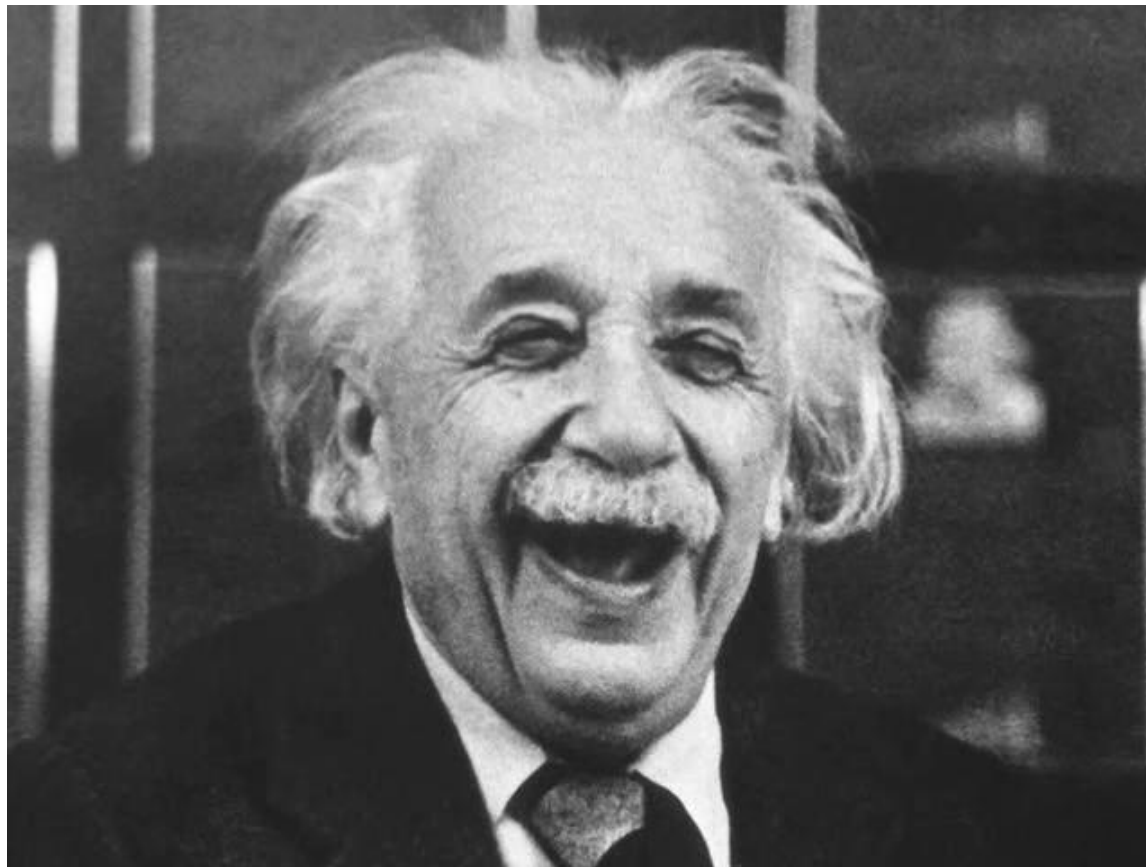


Figure 13. NCW Maturity Model<sup>5</sup>



*“We cannot solve our problems with the same thinking we used  
when we created them.”*

ALBERT EINSTEIN, 1879-1955