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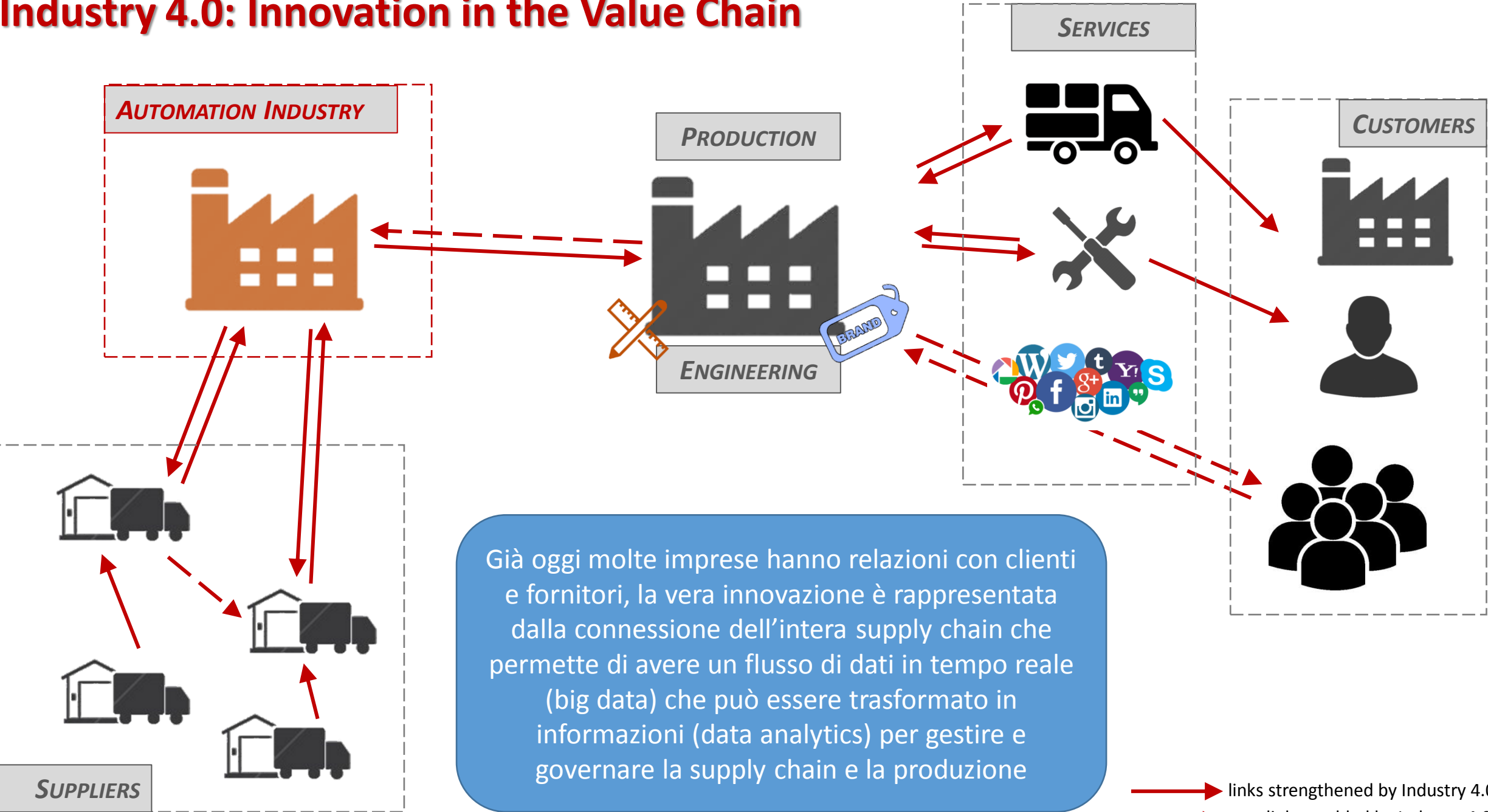
ICT and Innovation in Piemonte

Marco Ramella Votta

Le tecnologie ICT per la creazione di valore nel manifatturiero

Bologna, 25 ottobre 2016

Industry 4.0: Innovation in the Value Chain



CYBERSECURITY



CLOUD COMPUTING



INTERNET OF THINGS/SMART OBJECTS



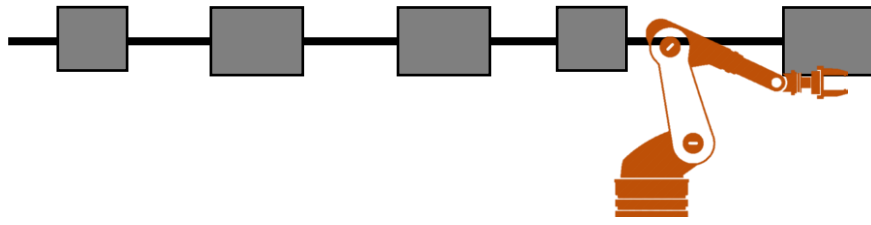
ADMINISTRATION



WAREHOUSE



SHOPFLOOR



DISTRIBUTION



CUSTOMERS

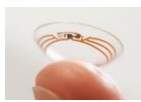


SUPPLIERS



3D PRINTING

ADVANCED HMI

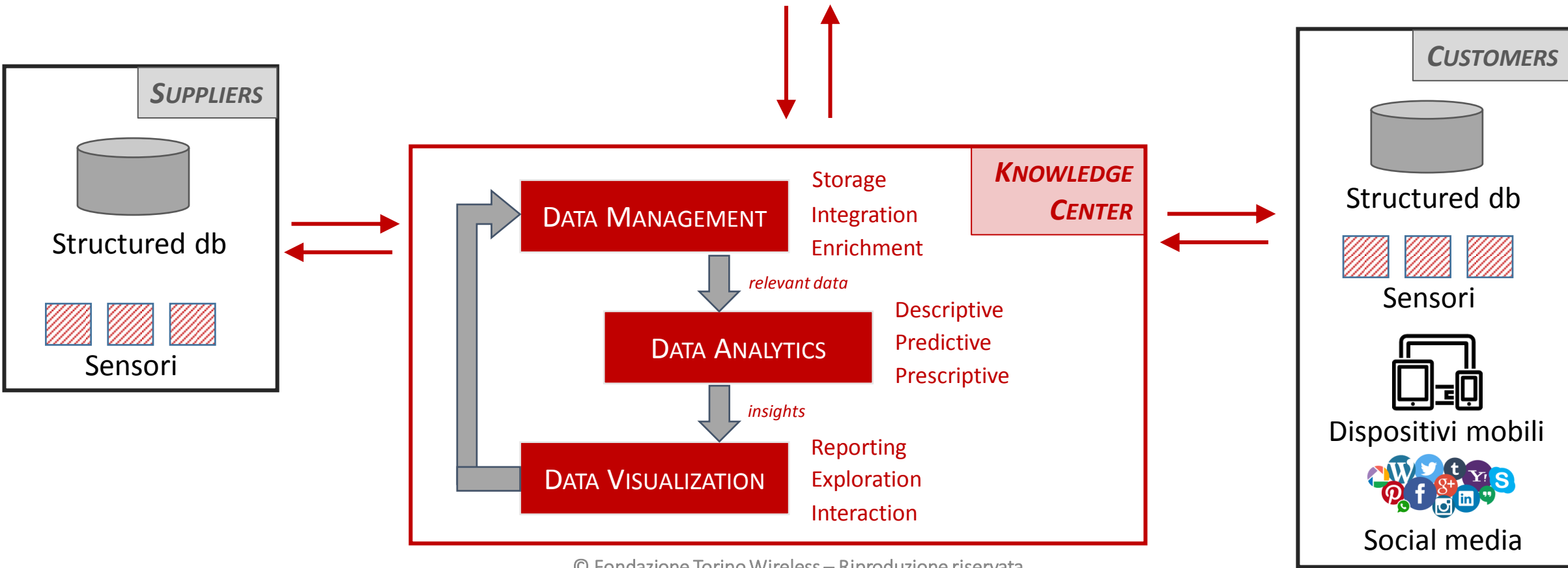
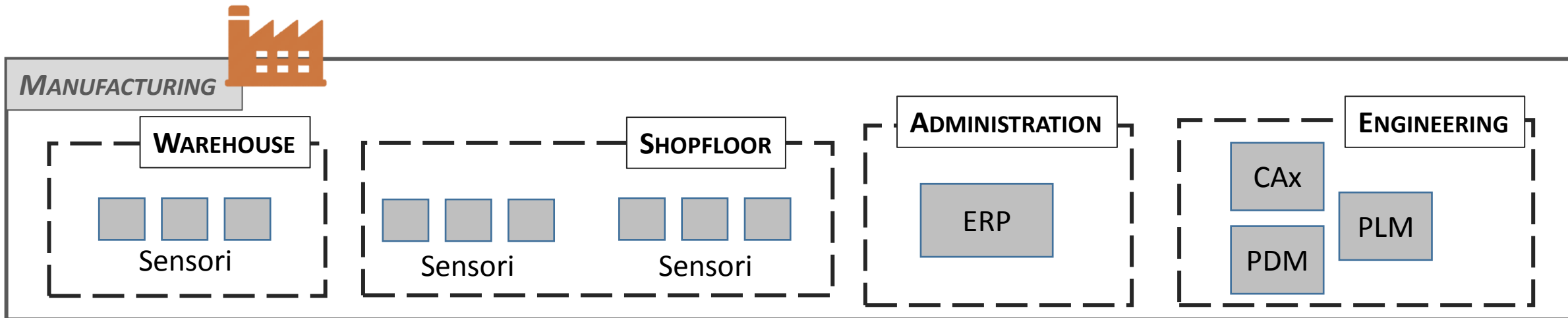


ENGINEERING



WEB E MOBILE





Competitive levers	Use Case Description	Big Data Value
Production optimisation - On time delivery - Reduced storage costs - Better use of raw materials	<p><u>Real-time Parts Flow Monitoring</u>: track and control of machines, materials and products in the supply chain to identify bottleneck in the supply chain and costs of various process options.</p> <p><u>Logistics</u>: track the movement of products to identify the costs of various transportation and process options.</p>	<p><u>Acquisition</u>: to collect data from multiple sources, to integrate data across supply-production chain</p> <p><u>Analytics</u>: to enable correlation of real-time measurements with other disparate data at high speed and in real-time to identify patterns and relationships among process steps to adjust on yield</p>
Quality Improvement - Reduce defects - Reduce costs for failure remediation	<p><u>Assembly Line Quality Assurance</u>: take measurements of work-in-progress products to find manufacturing defects as early as possible, while also identifying any potential process or design flaws.</p> <p><u>Monitoring Product Quality through Telemetry Data</u>: collect information on product performance once it is manufactured and shipped to predict potential product component failures, by combining reading from advanced sensors, data feeds from consumer devices.</p> <p><u>Crowdsourcing Quality Assurance</u>: social stream of data on product issues can augment product feedback from traditional support channels. By storing and analysing huge volumes of social media sentiment data, early signals on how a product holds up throughout its lifecycle can be mined.</p>	<p><u>Storage</u>: to store long histories of sensor data</p> <p><u>Analytics</u>: to enable correlation of real-time measurements with other disparate data at high speed and in real-time, to compare to quality models, to send early-warnings</p>
Predictive maintenance - reduce downtime - reduce costs	<p><u>Minimize Non-Productive Time (NPT)</u> by monitoring equipment or product utilization in a live environment to identify patterns that indicate imminent failure. For revenue-generating operations equipment, downtime results in significant lost revenue as well as costly repairs.</p>	<p><u>Acquisition</u>: to collect large amount of data from multiple sources</p> <p><u>Analytics</u>: to enable real-time prediction of imminent failure from sensor measurements</p>
Resource optimisation	<p><u>Energy efficiency</u>: In production environments machines and processes can be monitored and controlled, gathering data regarding operating conditions and consumptions. By attaining detailed energy visibility for shop floor operations and knowing the electricity profile of each machine, the plant can save electricity through a more systematic approach to industrial energy management. [+ maximise renewable energy use in micro-grid?]</p> <p>Resource efficiency: In production environments the use of raw materials can be optimised by gathering and analysing data. [Waste management?]</p> <p><u>HR scheduling</u>: HR schedule optimisation</p>	<p><u>Analytics</u>: to have optimisation use of resources</p>
Production flexibility	<p>To produce different products in the same production facility without significant changes in existing machines.</p> <p>Product configuration planning helps accelerate production by offering fast delivery times for the manufacture of millions of different product configurations.</p>	
Customer relationship	<p>Improve quality and effectiveness of customer relationship</p>	<p><u>Analytics</u>: to predict customer needs, provide additional services</p>
Customisation	<p>Customers determine how their products are designed and made.</p>	<p><u>Acquisition</u>: to collect data from users</p> <p><u>Analytics</u>: to identify patterns in user requirements and production processes</p> <p><u>Visualisation</u>: to manage user interface, configuration options, feedback</p>
Business model	<p>New competitive levers are activated and/or new ways are available to create values</p> <p>Businesses can leverage the optimal delivery system as a revenue-generating basis for premium/expedited delivery services to consumers.</p>	

GRAZIE

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