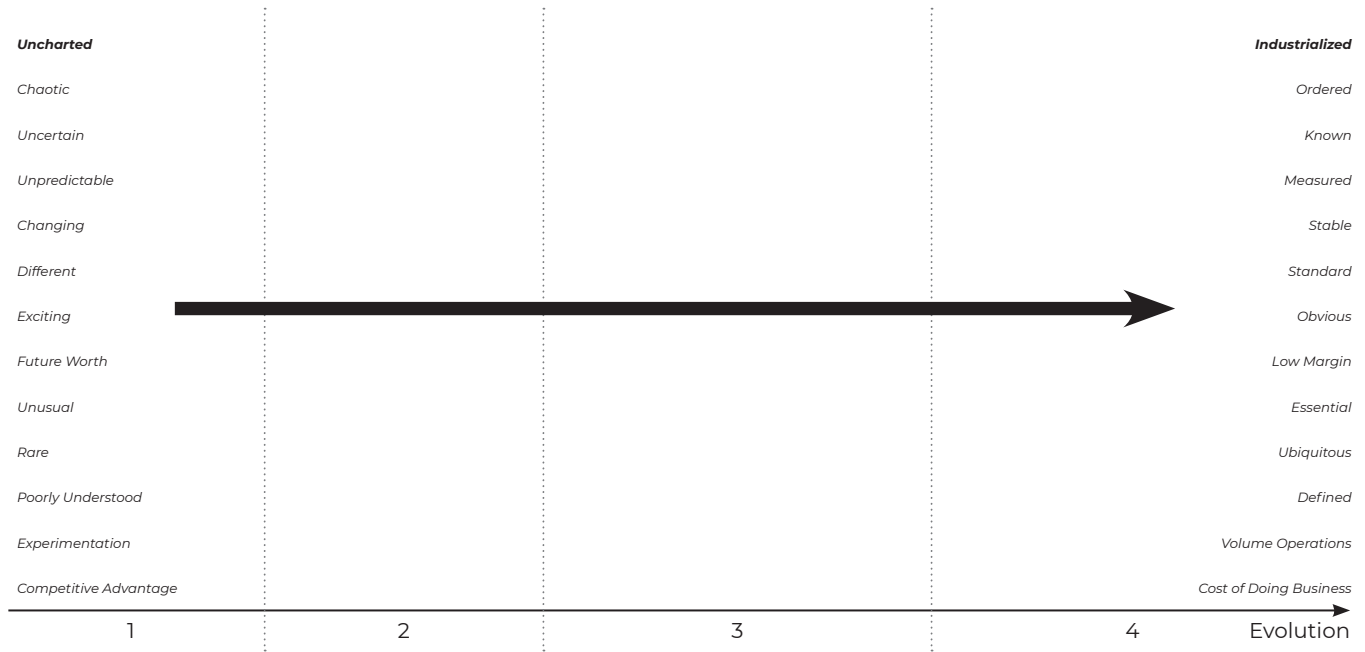


Evolution: Characteristics and Examples

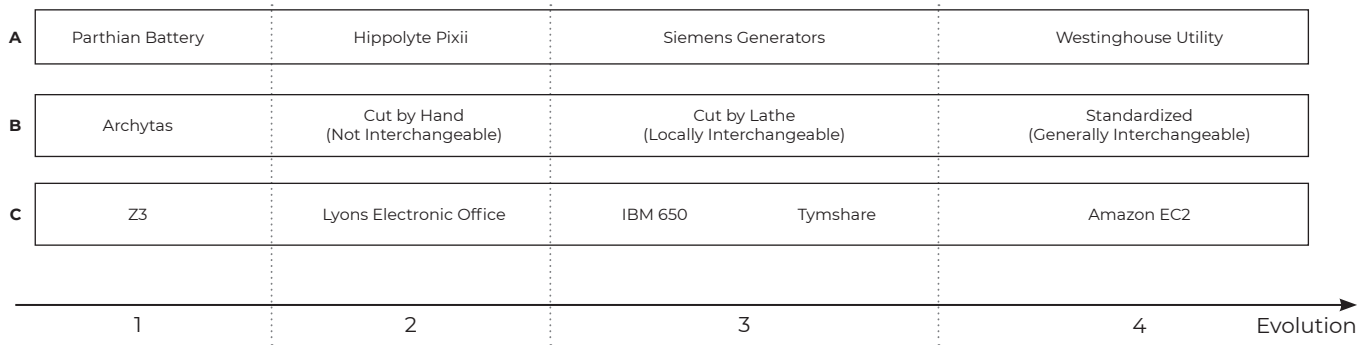
Everything evolves from left to right under the forces of supply & demand competition.



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	Stage 1	Stage 2	Stage 3	Stage 4
Activities	Genesis	Custom	Product (+rental)	Commodity (+utility)
Practices	Novel	Emerging	Good	Best
Data	Unmodelled	Divergent	Convergent	Modelled
Knowledge	Concept	Hypothesis	Theory	Accepted
Ubiquity	Rare	Slowly increasing consumption	Rapidly increasing consumption	Widespread and stabilizing
Certainty	Poorly understood	Rapid increases in learning	Rapid increases in use / fit for purpose	Commonly understood (in terms of use)
Publication Type	Normally describe the wonder of the thing	Build / construct / awareness and learning	Maintenance / operations / installation / features	Focused on use
Market	Undefined market	Forming market	Growing market	Mature market
Knowledge Management	Uncertain	Learning on use	Learning on operation	Known / accepted
Market Perception	Chaotic (non linear)	Domain of experts	Increasing expectation of use	Ordered (appearance of being linear / trivial)
User Perception	Different / confusing / exciting / surprising	Leading edge / emerging	Common / disappointed if not used or available	Standard / expected
Perception in Industry	Competitive advantage / unpredictable / unknown	Competitive advantage / ROI / case examples	Advantage through implementation / features	Cost of doing business / accepted
Focus of Value	High future worth	Seeking profit / ROI?	High profitability	High volume / reducing margin
Understanding	Poorly understood / unpredictable	Increasing understanding / development of measures	Increasing education / constant refinement of needs / measures	Believed to be well defined / stable / measurable
Comparison	Constantly changing / a differential / unstable	Learning from others / testing the water / some evidential support	Feature difference	Essential / operational advantage
Failure	High / tolerated / assumed	Moderate / unsurprising but disappointed	Not tolerated, focus on constant improvement	Operational efficiency and surprised by failure
Market Action	Gambling / driven by gut	Exploring a "found" value	Market analysis / listening to customers	Metric driven / build what is needed
Efficiency	Reducing cost of change (experimentation)	Reducing cost of waste (learning)	Reducing cost of waste (learning)	Reducing cost of deviation (volume)
Decision Drivers	Heritage / culture	Analysis & synthesis	Analysis & synthesis	Previous experience

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A) Electricity

The history of electrical power generation can be traced from its genesis with the Parthian battery (around 200AD) to custom-built examples of generators such as the Hippolyte Pixii (1832) to the first products such as Siemens Generators (1866) to Westinghouse's utility provision of AC electricity (1886) and the subsequent standardisation of electricity provision from the introduction of the first standard plugs and sockets to standards for transmission and the formation of national grids (UK National Grid, 1926).

B) Nut and Bolt

The genesis of the humble screw can be traced back to Archytas of Tarentum (400 BC). The principle was later refined by Archimedes and also used to construct devices to raise water. Over the next two thousand years most screws (and any associated bolts) were cut by hand however demand for screw threads and fasteners created increasing pressure for a more industrialised process. J and W Wyatt had patented such a concept in 1760 and Jesse Ramsden in 1770 introduced the first form of screw cutting lathe. However without a practical means of achieving industrialisation and with no standards then the industry continued primarily as was. Maudslay then introduced the first industrially practical screw-cutting lathe in 1800 that combined elements such as the slide rest, change gears and lead-screw to achieve the effect. However, whilst screws and bolts could be manufactured with inter-changeable components, the lack of any standards thwarted general inter-changeability. In 1841, James Whitworth collected a large number of samples from British manufacturers and proposed a set of standards including the angle of thread and threads per inches. The proposals became standard practice in 1860 and a highly standardised and industrialised sector developed that we recognise today.

C) Computing

The history of modern computing infrastructure can be traced from its genesis with the Z3 computer (1943) to custom built examples such as LEO or Lyons Electronic Office (1949) to the first products such as IBM 650 (1953) to rental services such as Tymshare (1964) to commodity provision of computing infrastructure and more recently utility provision with Amazon EC2 (2006).

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