

The Future of 'Incomplete' Products in the Connected Digital Economy: Implications for Design and Manufacturing

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The world before

- Products: domain of engineers, manufacturers, product designers: cars, tractors, engines, equipment



- Services: domain of process, management, IT/IS: banking, hospitality, healthcare

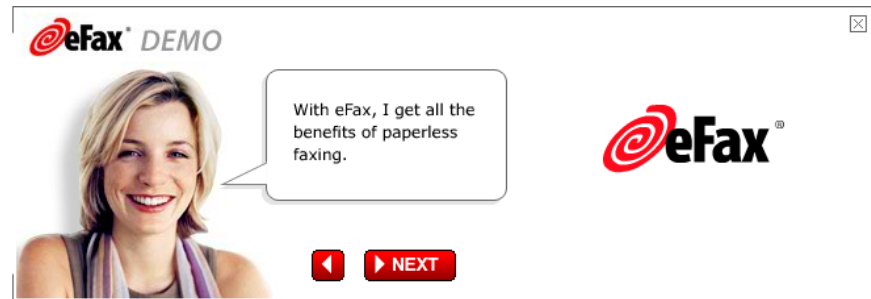


The world today

- A complex service systems of assets, people, processes, technologies, analysing one bit is reducing the problem into a small area which may not hold when the small area is reconnected to the system
- Where we draw the boundaries inhibit innovation




materialising/nonmaterialising: Service goods; goods service

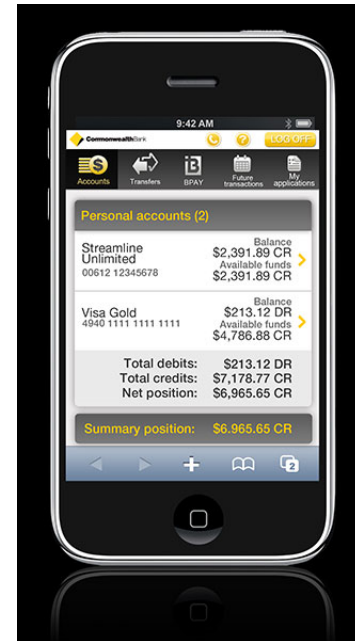


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The world tomorrow



Manufacturing companies becoming internet companies

Everything in the cloud



Connected people, sharing information
– about everything

Why? What is happening? What is fundamentally changing?

Can we understand the change so that we can be ahead of it?

yes





VALUE

WHAT IS IT?

Value was exchange (WORTH)

€€€€



££££



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But it wasn't exchange that made us happy. It was experiencing what we bought that gave us the outcomes we wanted (VALUE is in USE)

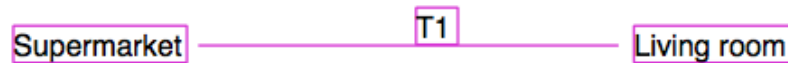


Ownership/Possession was the only way to get the 'service' of an object

- Previously, the only route to service/outcomes was through ownership e.g. music CDs
- Firms have *talked, promoted and sold on the basis of* benefit and use of things but benefit (outcomes) and use is not aligned to revenues – we still only buy ownership and not outcomes
- But outcomes/benefits come only in the *context* of use and experience
- If firms found a way to *serve* contexts, ownership may not be the dominant biz model
- Case study: Music

Market inefficiencies

- Where we buy, where we consume (beer)



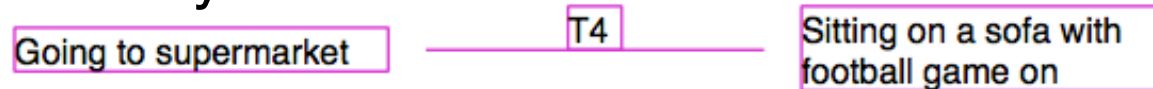
- What we buy, what we consume (tea)



- When we buy, when we consume (beer)



- How we buy and how we consume



- Innovation and Speed will prevail to reduce market inefficiencies

Where will new markets come from?



Future markets are contextual, and subject to contextual variety



Ng, Irene C. L., Scharf, Kimberley A. (Kimberly Ann), Progrebna, Ganna and Maull, Roger (2013)
Contextual variety, Internet-of-things and the choice of tailoring over platform : mass customisation strategy in supply chain management. Working Paper. Coventry, UK: WMG, University of Warwick. (WMG Service Systems Research Group Working Paper Series).

Value-in-use



- * Co-created value-in-use begins with value propositions, product offerings are potential value unrealised until the individual customer realises it through co-creation **in context**

This camera is available so it is a resource in context



This camera is not



Value is Contextual. Resources are also Contextual.

Things become of value *in context* because they enable resources for co-creation in context for outcomes



Two functionally the SAME cameras but not the same value in context.

The difference: its 'capture'-ability
The **competency** of the camera in context

COMPETENCY OF OFFERING IN
CONTEXT IS KEY TO NEW MARKETS



THE CONNECTED DIGITAL ECONOMY

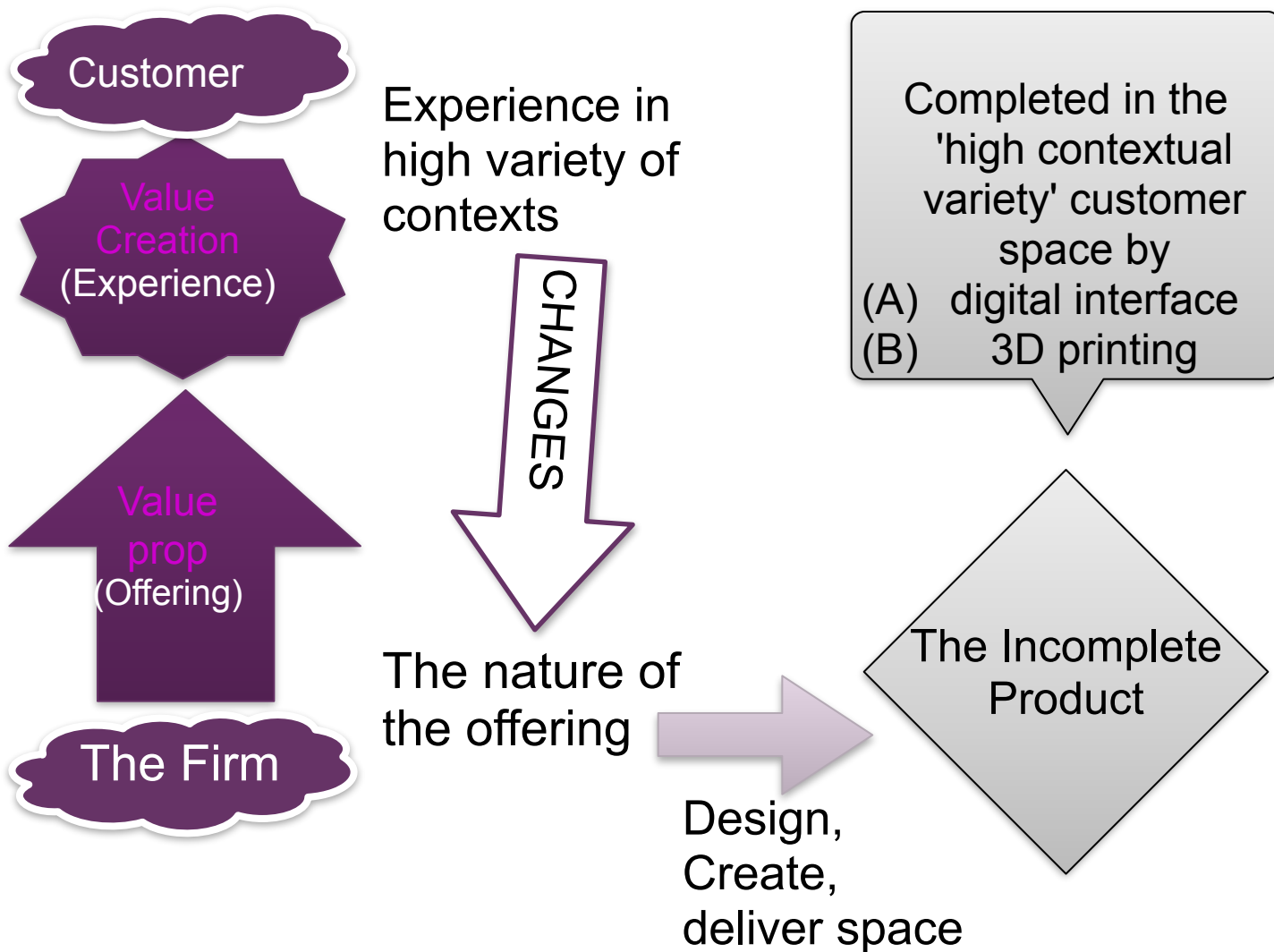
THE BIGGEST DISRUPTION TO BUSINESSES
SINCE THE CONNECTED RAILWAY

Implications to design and manufacturing

Serving contexts changes the product into a connected offering – an incomplete product

- Is more visible (can be discovered)
- Allows for actuation (can be controlled)
- Is part of a system (can be coordinated)
- Is dynamically reconfigurable (can be contextually useful)
- integrates personal data (can be personalisable)

THE BUSINESS MODEL- implications on material products



The connected and incomplete product: boundaries for Transaction

- The market for context is different
- E.g. <http://vimeo.com/39001313>
- The compensating boundary is different
 - Compensating (e.g. Transacting) boundary is the boundary in time/space where the resource integrated by the customer to create value is compensated by the customer to the firm(s) i.e. “what did you give for it”
 - E.g. Outcomes as CB (power by the hour), product/money exchange as CB (purchase), data/info exchange as CB (google)
- The form of an offering that serves compensation/transaction is not the form of an offering that serves context. We need to change the mindset and the logic. E.g. when TV came to be. *Of course we don't want an app on a toaster, just like we never wanted a camera on a phone.*
- In Internet-of-Things, when every THING is a ‘website’, a ‘web-thing’ – what does it do, how does it behave, what are the compensating boundaries

Incomplete and Connected products: Implications for design and manufacturing

- A revolution in the way we think about manufacturing for contexts - modularity and boundaries
- Modularity
 - For assembly, function, service/through life, transaction
 - Product architecture needs a completely new study
- Postponement
 - Upstream, downstream or indefinite?
- Tailoring or Platforming?
- Fragmentation of the material from the information
- boundary of customer resource, material resource, information resource in value creation.
- Material intelligence, fluid intelligence – all serve to change create new transacting boundaries



The HAT project.....

<http://hubofallthings.org>

