



Contactless Payments

Where are we, anyway?

EPRG Contactless Payments Forum

FRB Boston

May 21 2007

Dan Littman, Payments Research Consultant

Federal Reserve Bank of Cleveland

Agenda

- The path from invention to mass adoption
- The classic case
- The contactless card/payment case
- Where are we in the process?

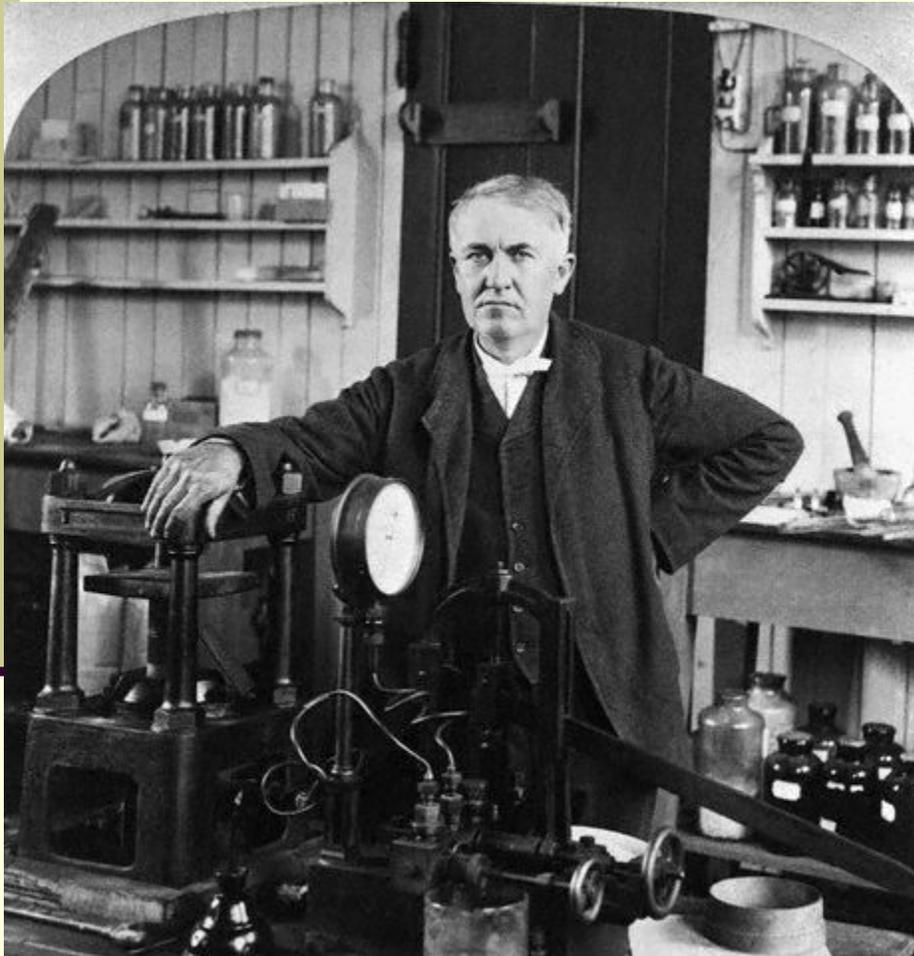


Indulge me ...

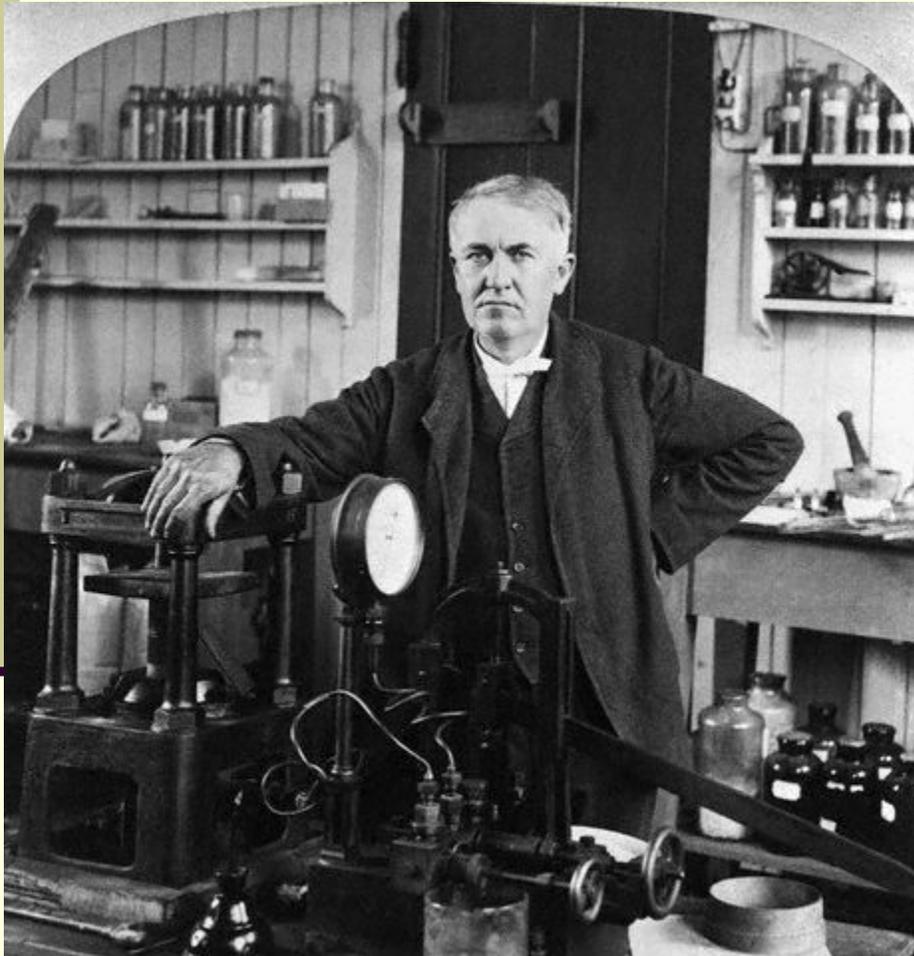
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A story of innovation & diffusion



A story of innovation & diffusion



Thomas Edison



First successful long-lasting light filament - carbonized bamboo, 1880

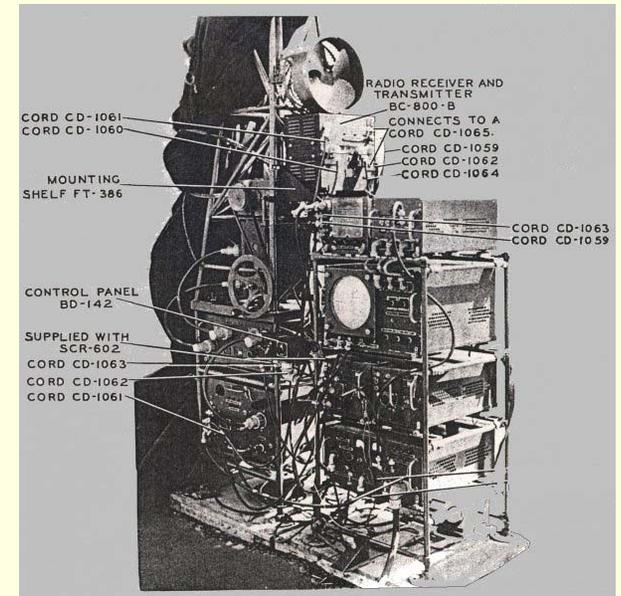
The roots of contactless



The roots of contactless



Robert Watson Watt



IFF-transponder for aircraft
circa 1943

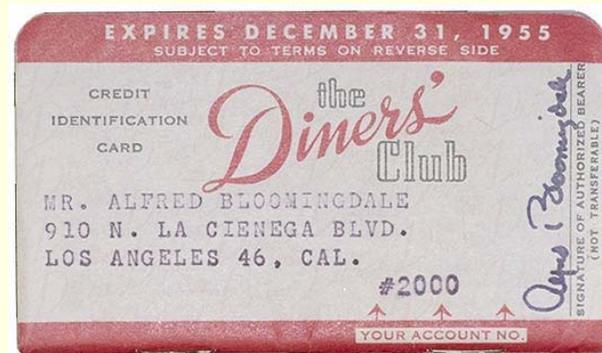
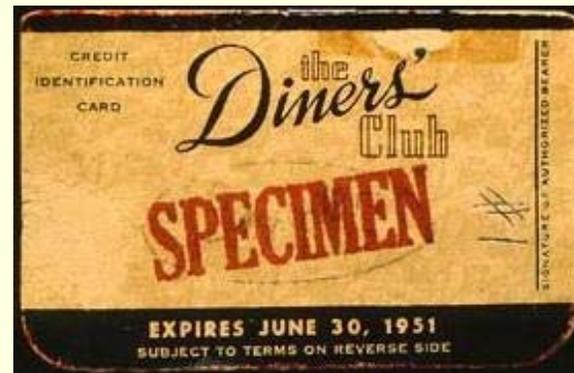
The roots of contactless



The roots of contactless



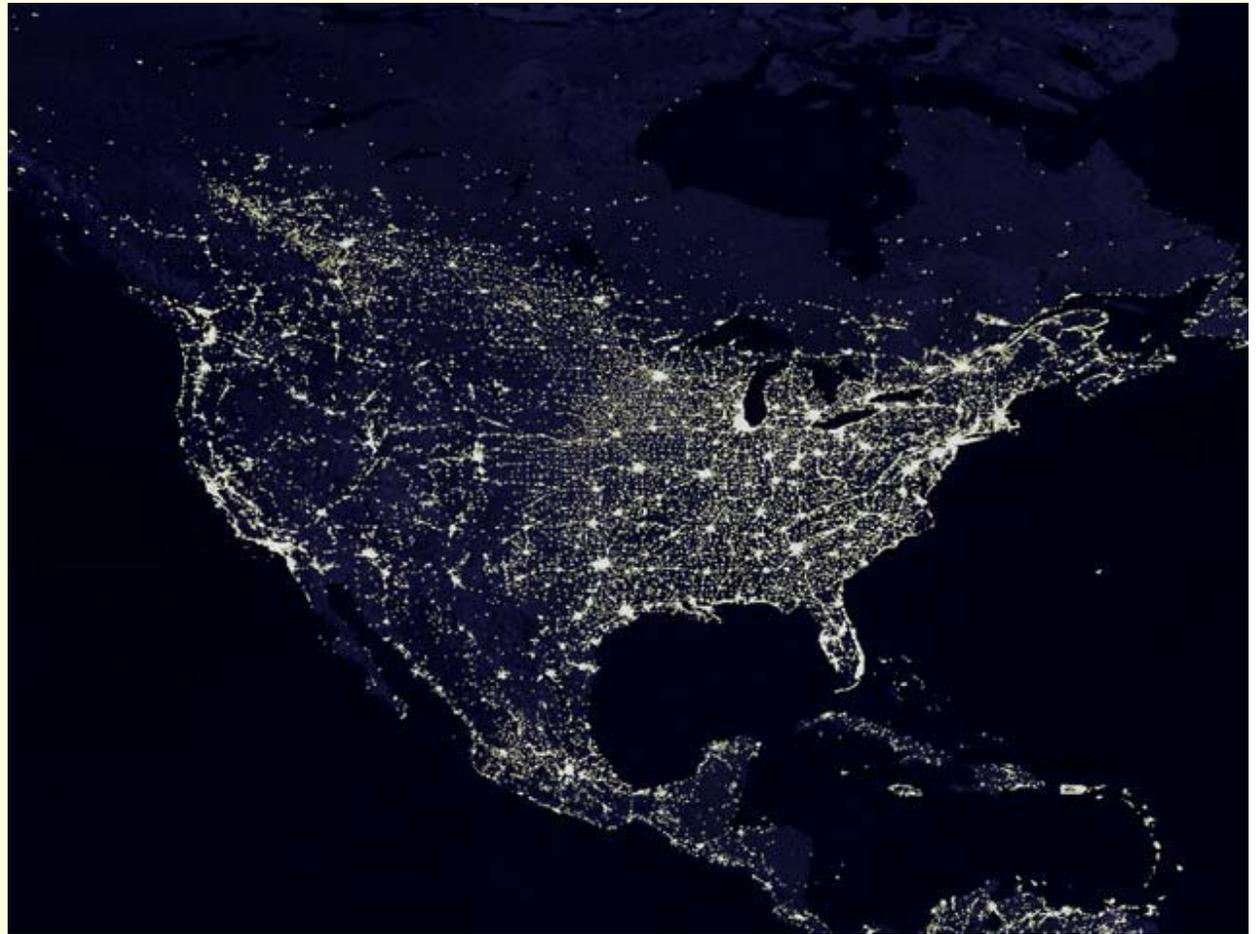
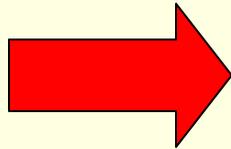
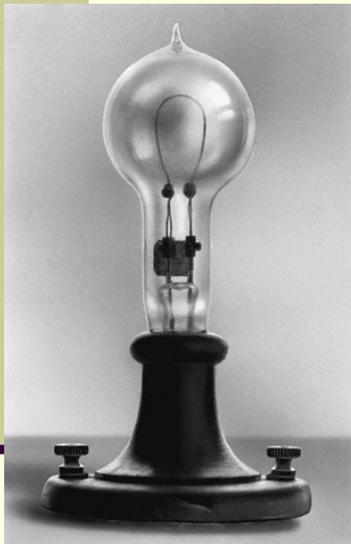
Frank X McNamara



First general-purpose credit card
circa 1951

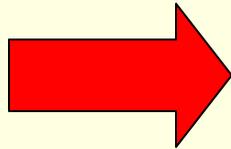
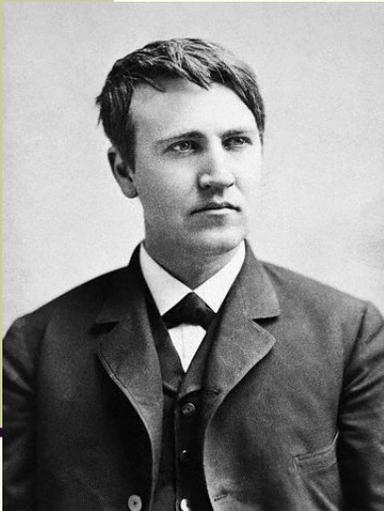
The road from invention to mass usage

... has lots of bumps



The road from invention to mass usage

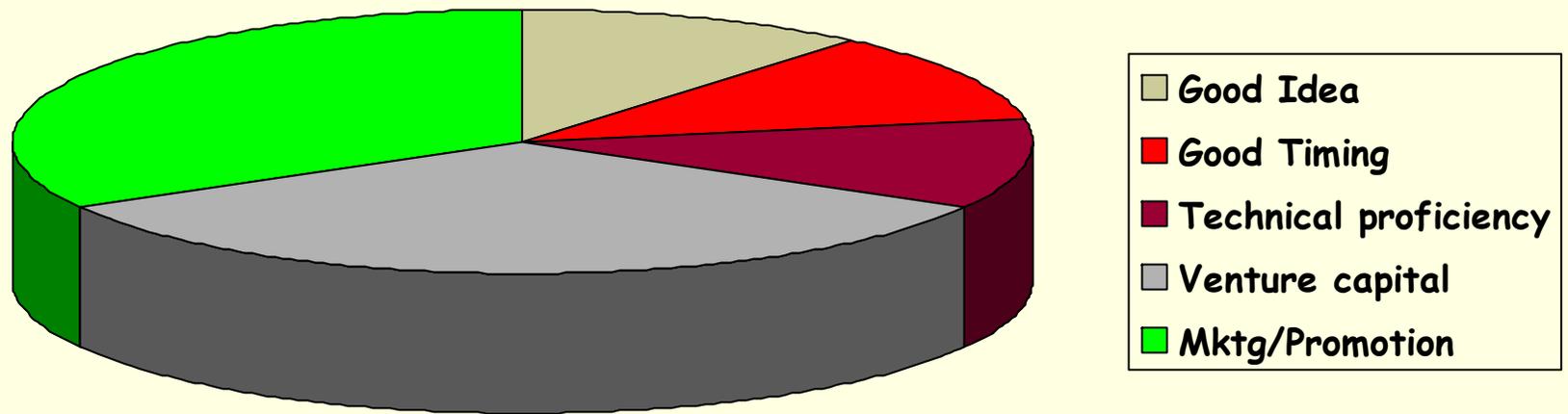
... has lots of bumps



Technological innovations are rarely seen as revolutionary to contemporaries

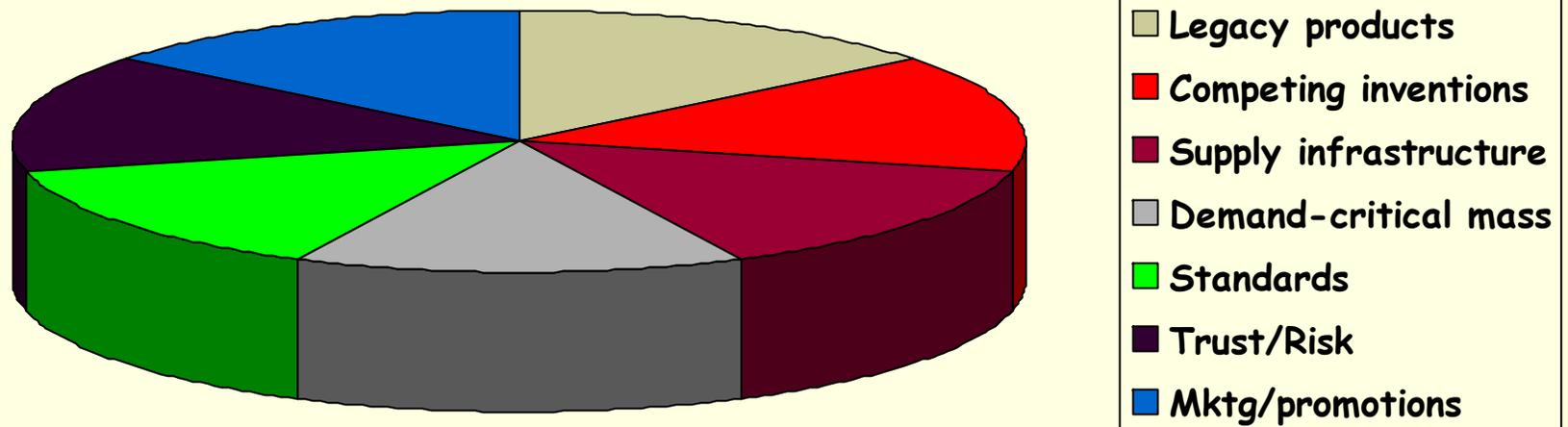


Invention/Innovation - the challenges



Contactless payment cards are well beyond the invention stage

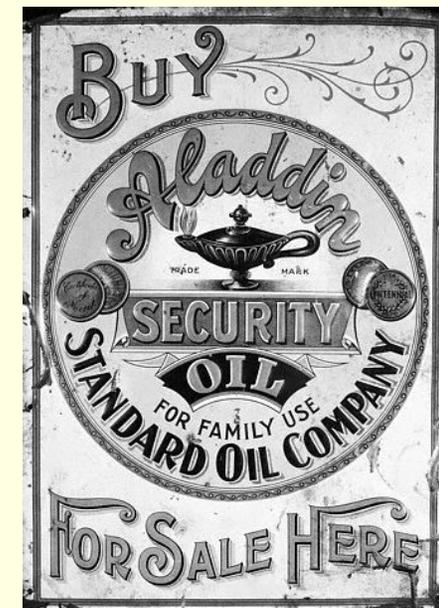
Innovation/Diffusion - the challenges



Contactless payment cards are still working these challenges in some manner

Legacy products

Electric lighting



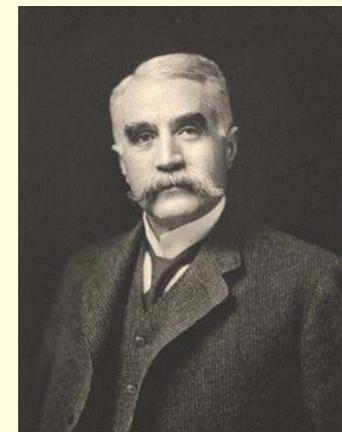
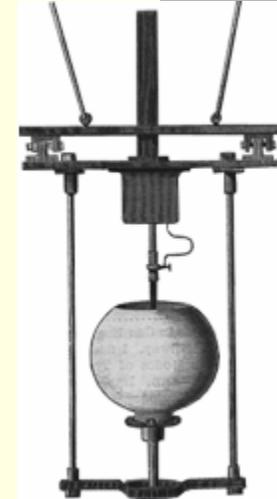
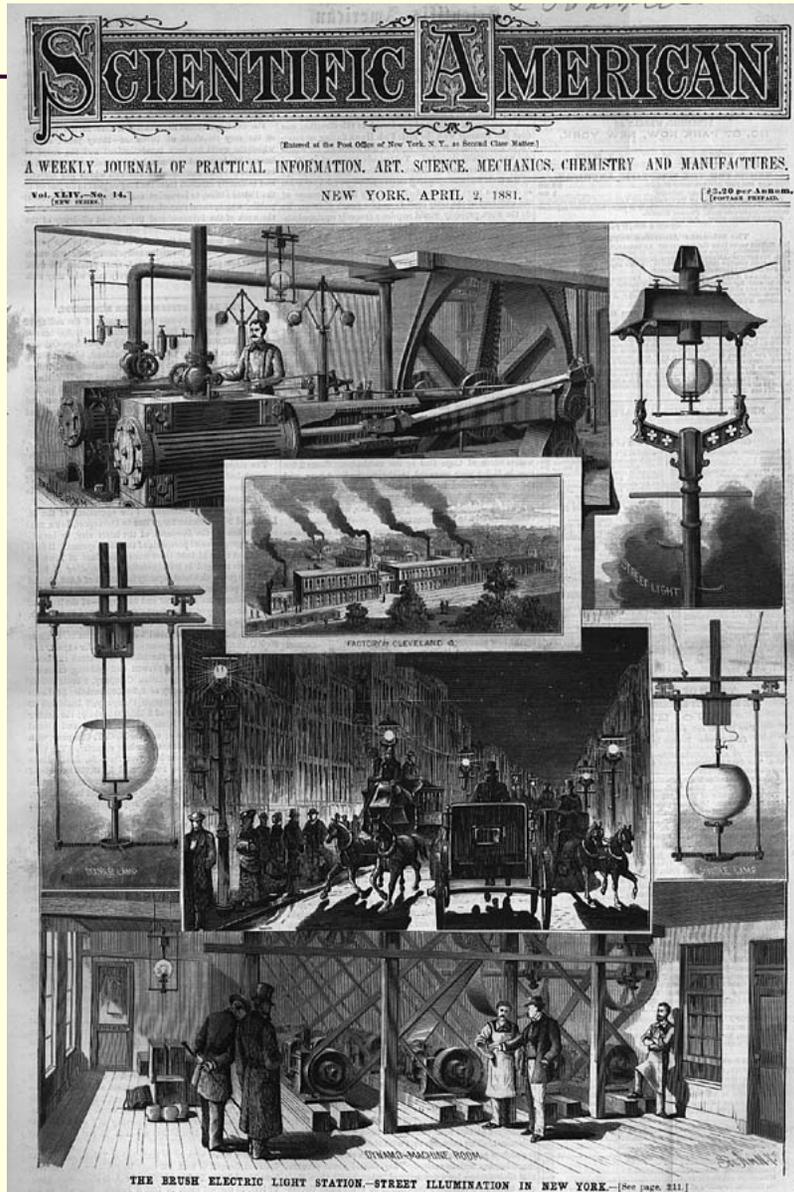
Legacy products

Contactless



Competing inventions

Electric lighting



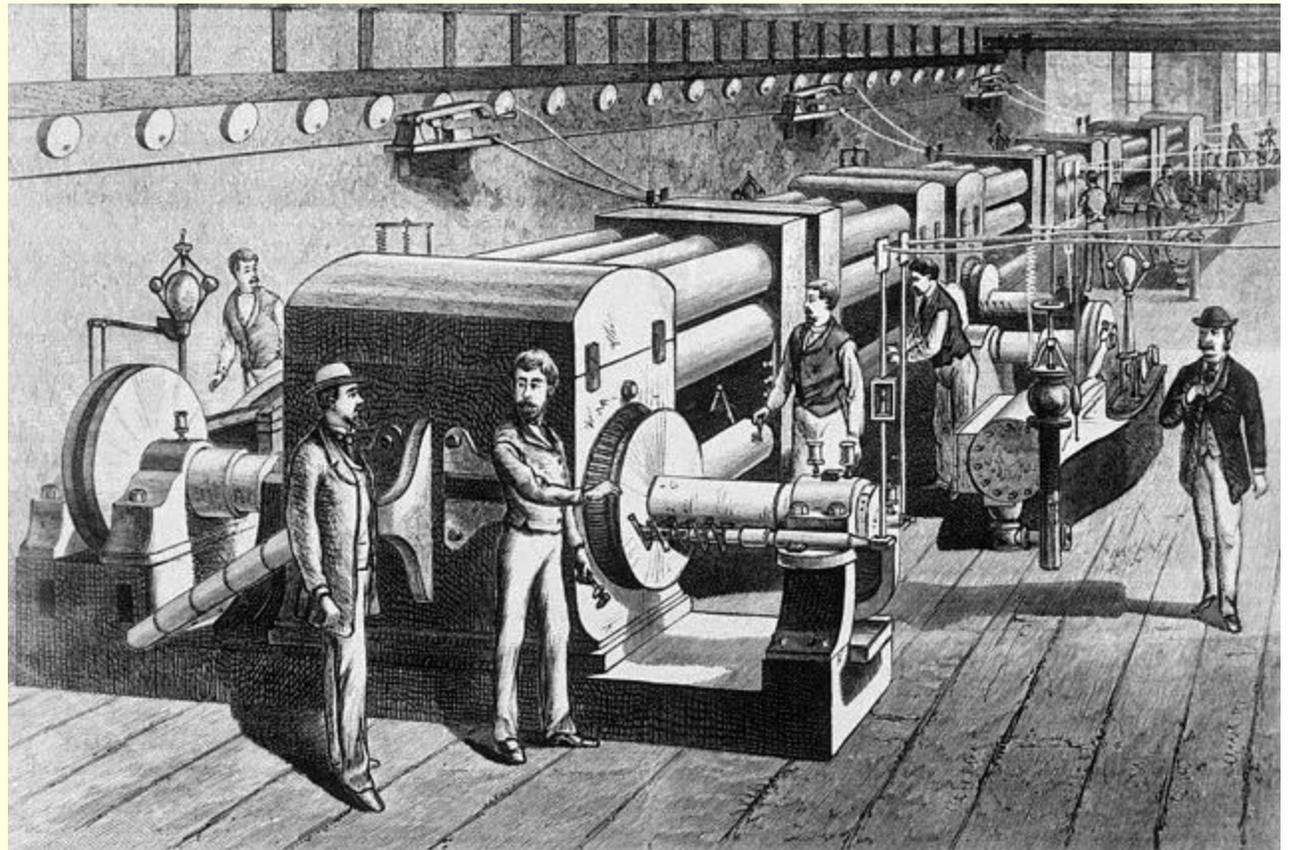
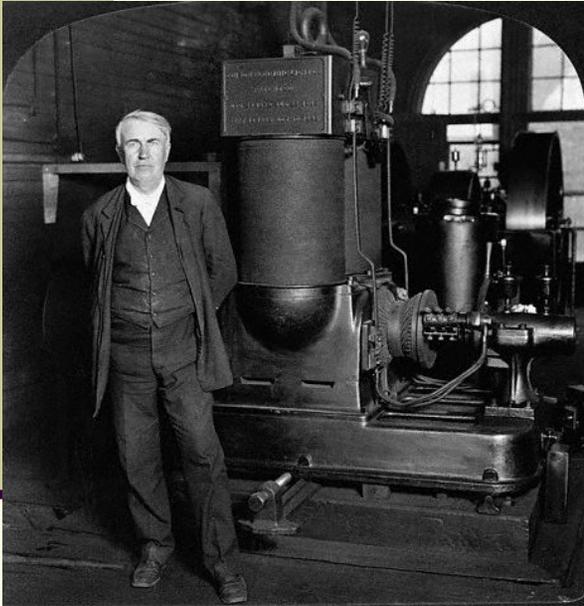
Competing inventions

Contactless



Supply infrastructure

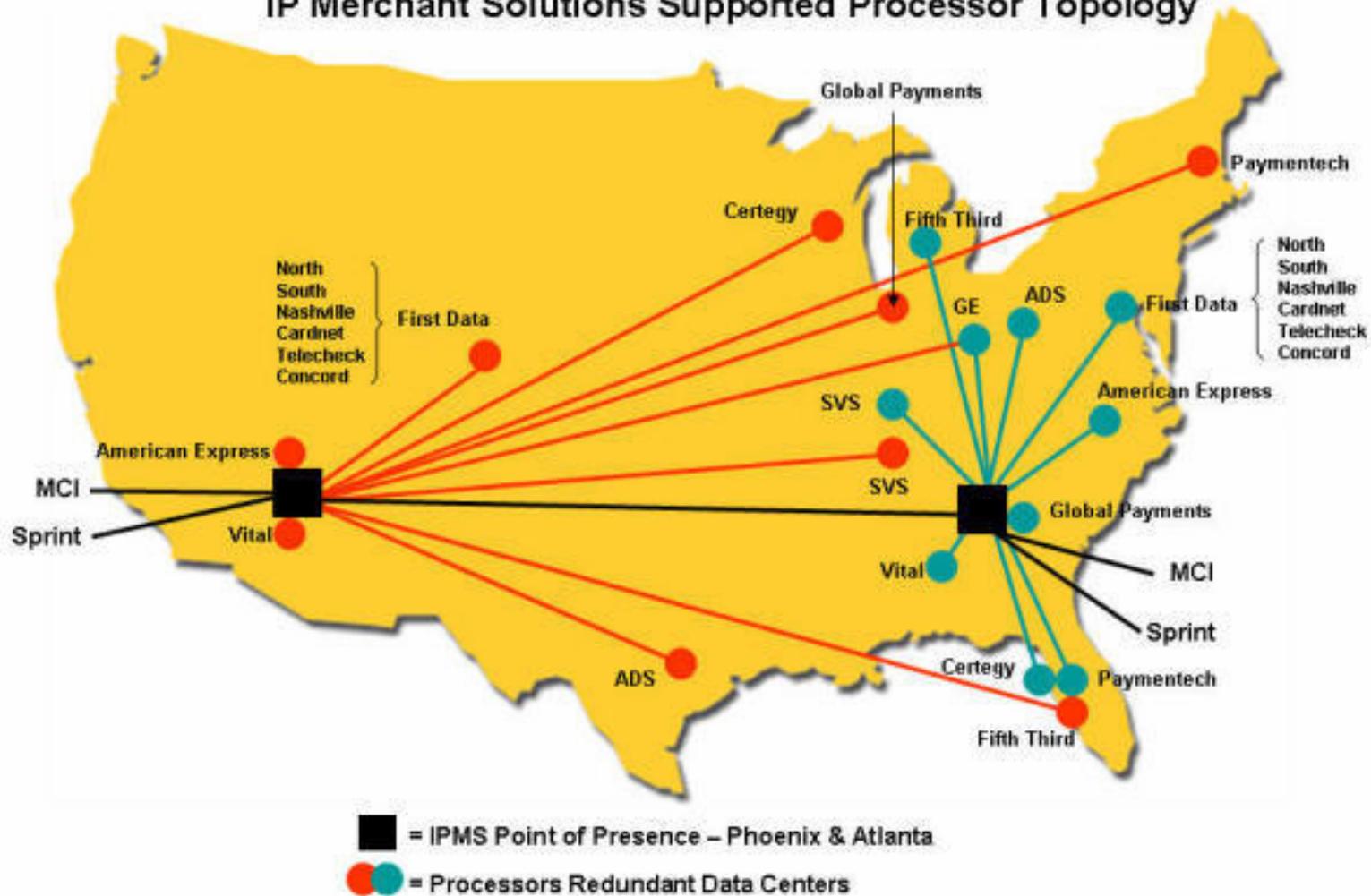
Electric lighting



Supply infrastructure

Contactless

IP Merchant Solutions Supported Processor Topology



Demand - pursuing *critical mass*



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Demand - pursuing *critical mass*

Electric lighting



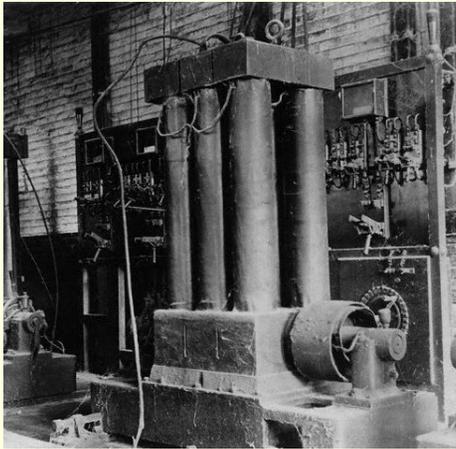
Demand - pursuing *critical mass*

Contactless

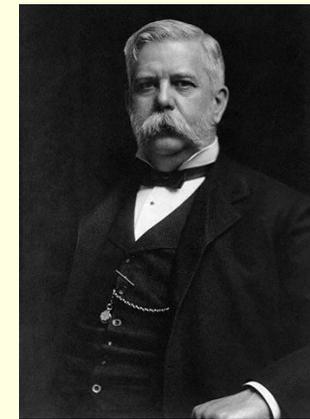
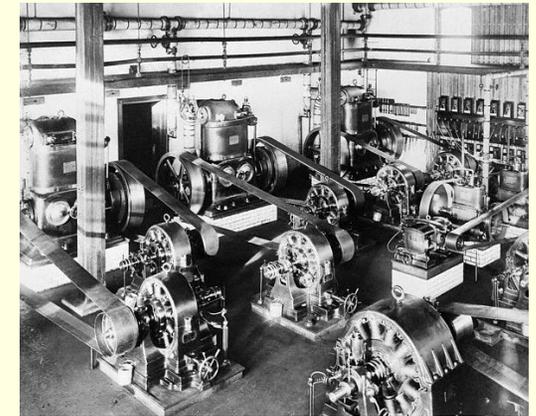


Standards

Electric lighting



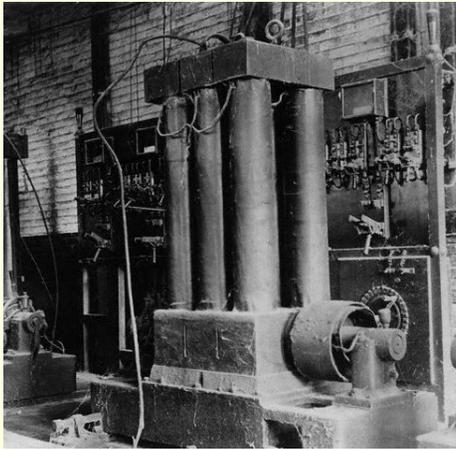
Direct Current



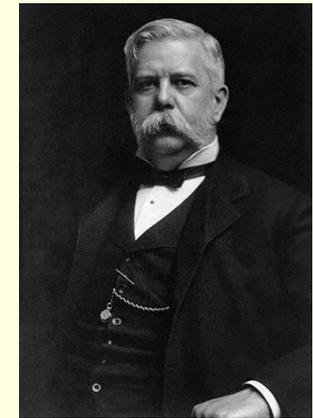
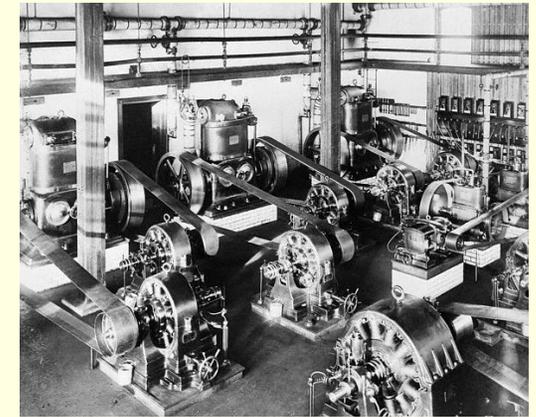
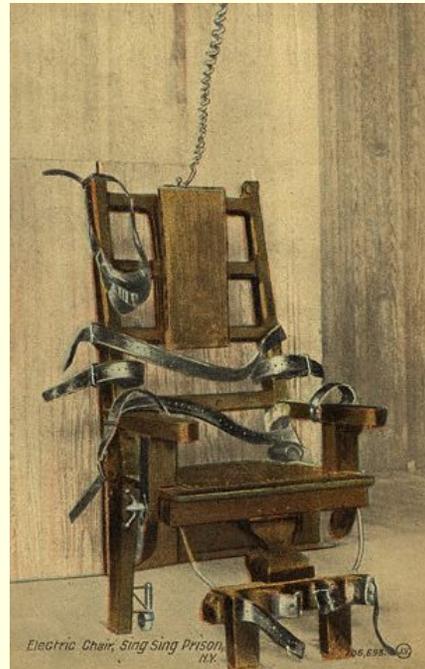
Alternating Current

Standards

Electric lighting



Direct Current

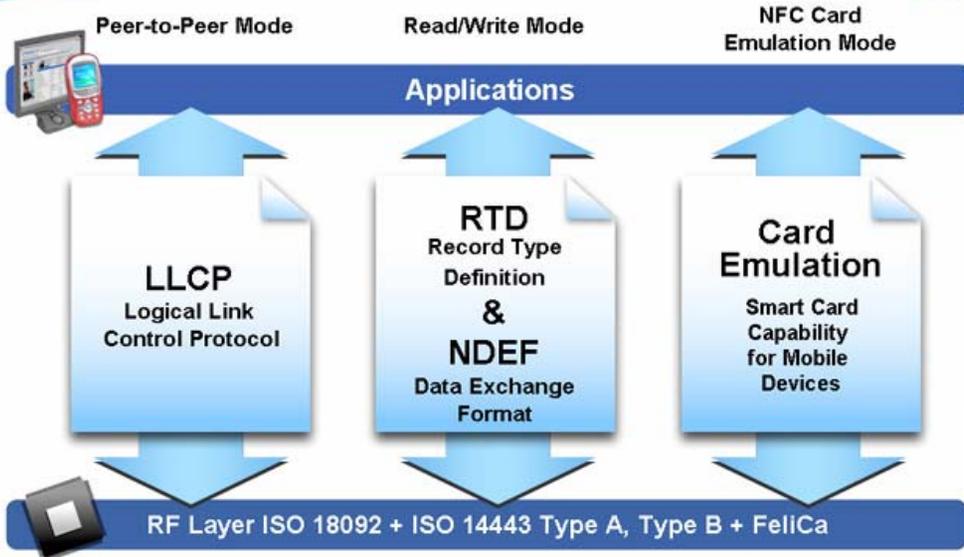


Alternating Current

Standards Contactless

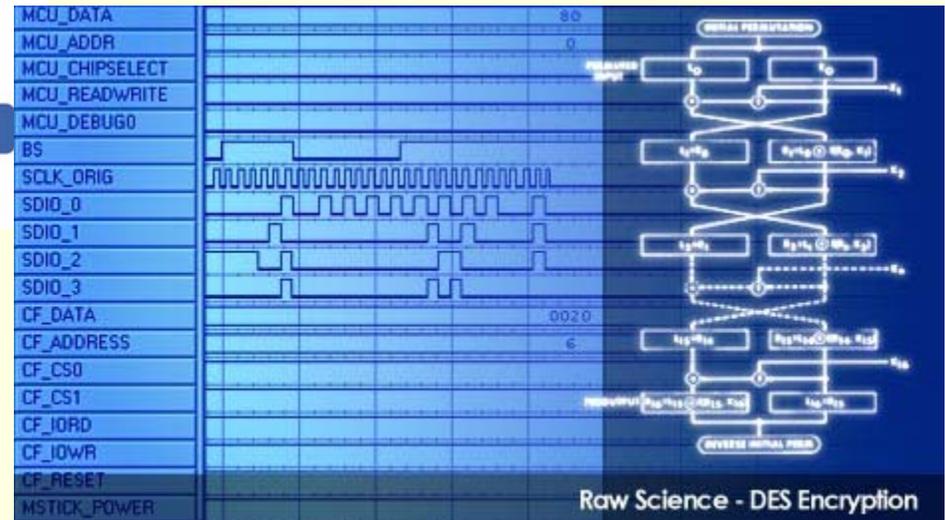


NFC Forum Technology Architecture



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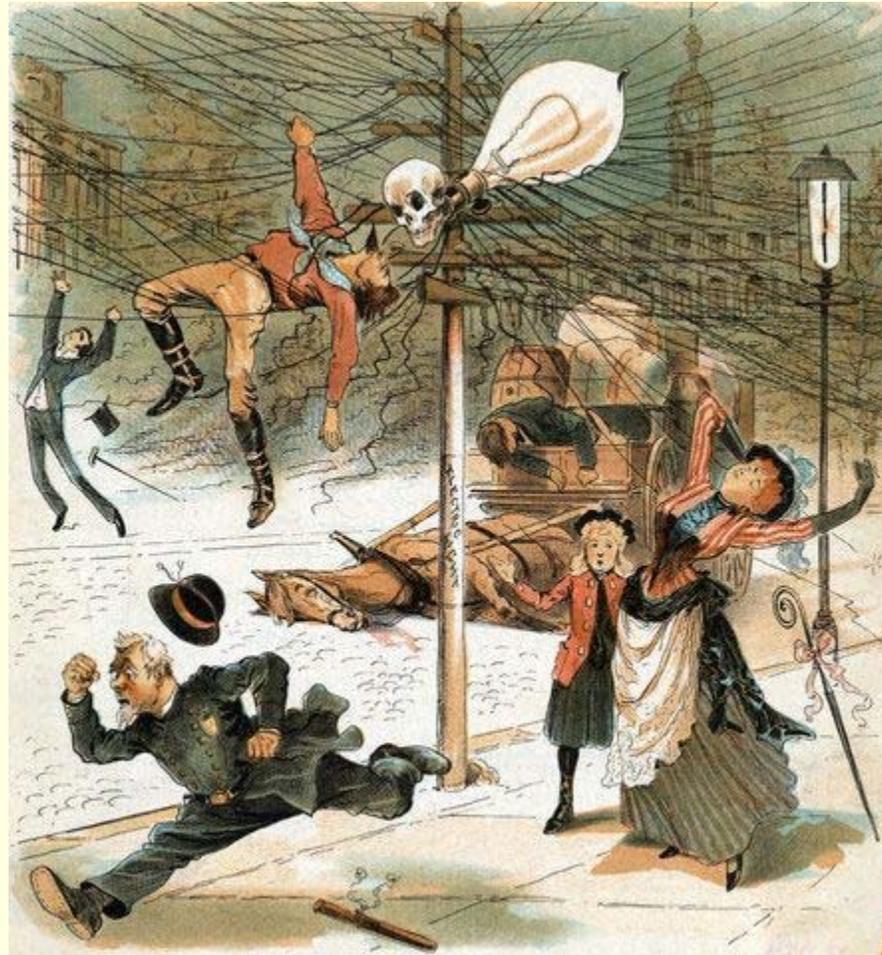
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Raw Science - DES Encryption

Trust & risk

Electric lighting



Trust & risk

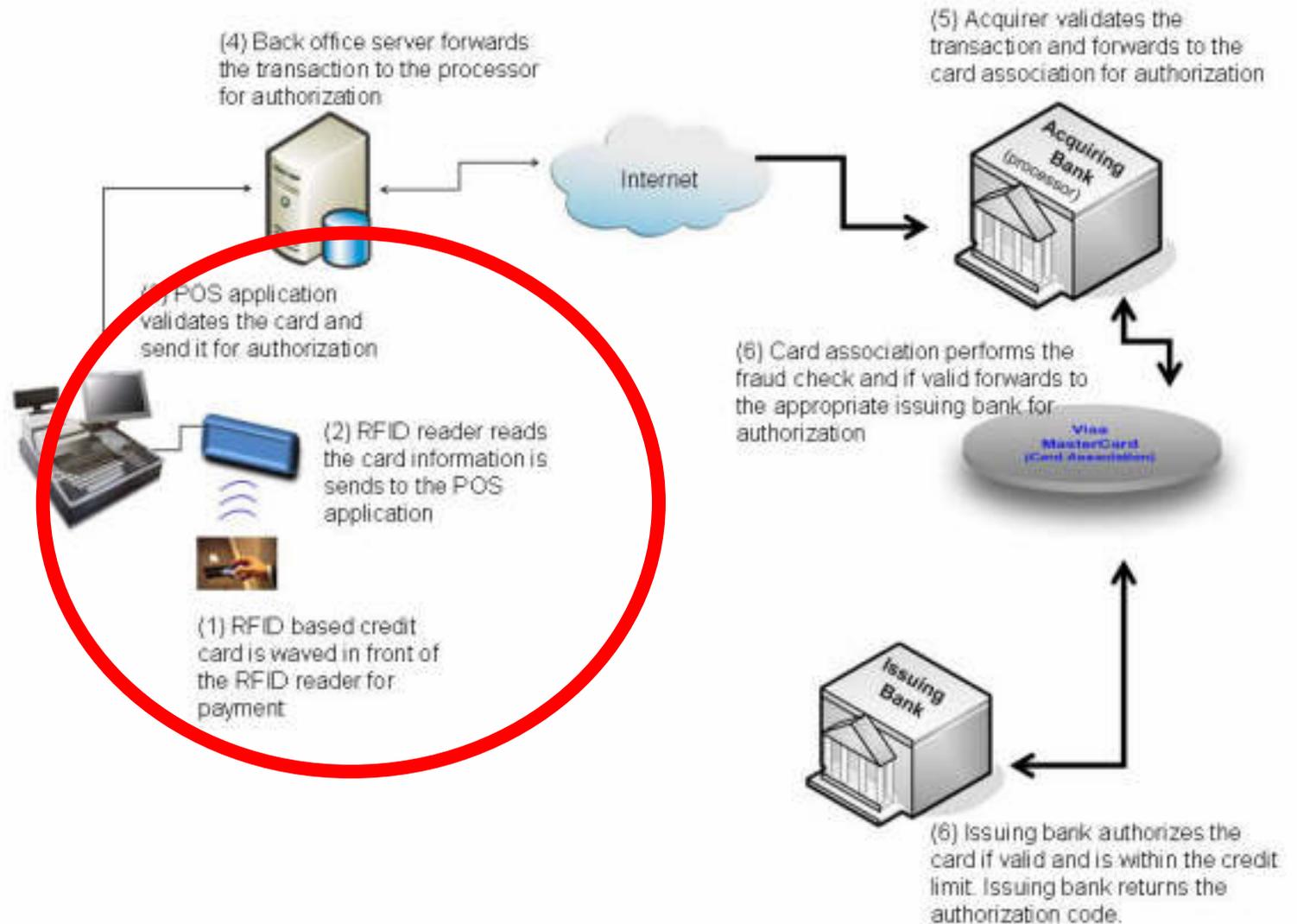
Contactless



Trust & risk

Contactless

Example of a contactless payments flow



Marketing & promotions

Electric lighting



Marketing & promotions

Electric lighting

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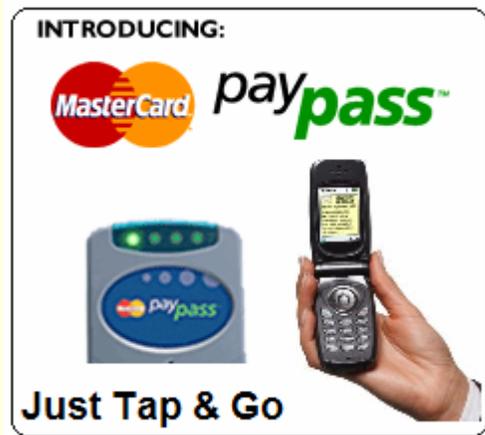


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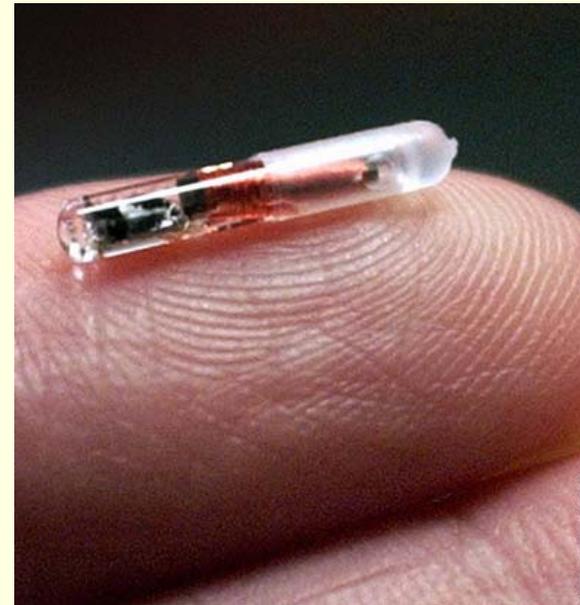
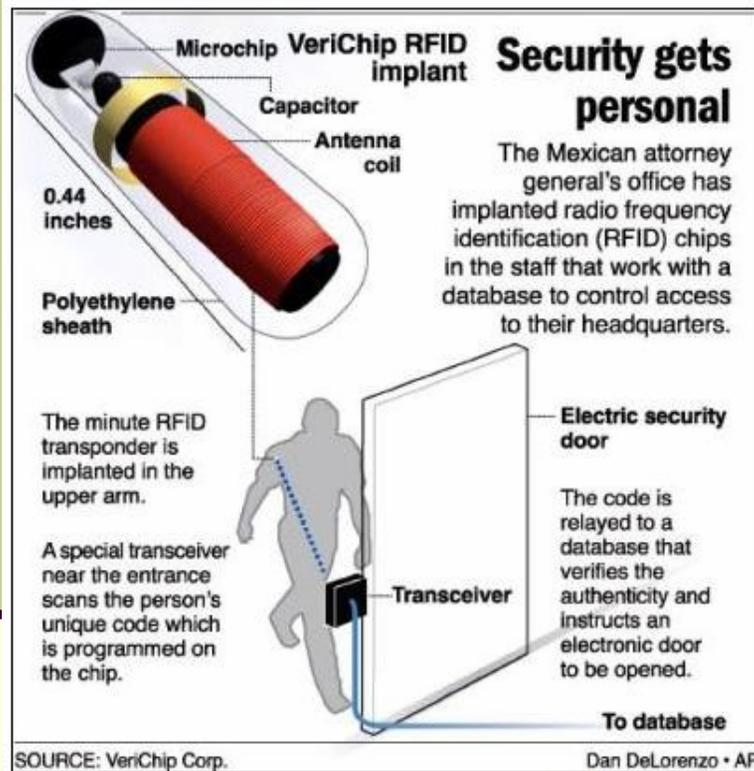
Marketing & promotions

Contactless



The shape of the future

Where contactless "cards" get revolutionary & scary



Thu Jul 15, 9:33 AM ET

AP Associated Press

Discussion

