Augmented Commerce

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September 2019

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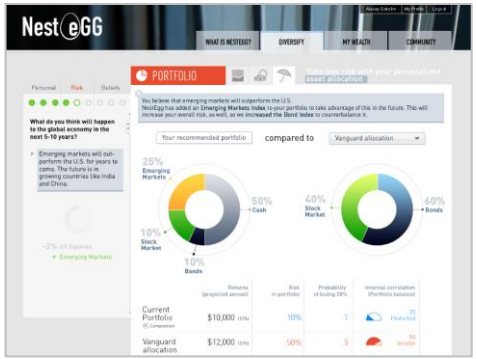
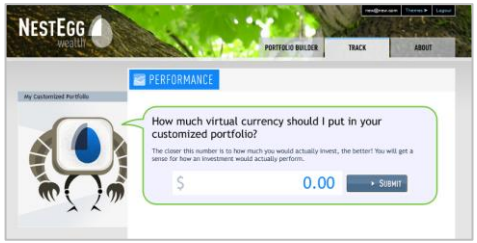
Fintech entrepreneur in roboadvice, institutional research on financial services innovation, co-leading ConsenSys Codefi

2009-2016; Roboadvisor

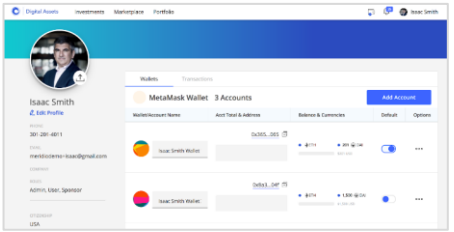


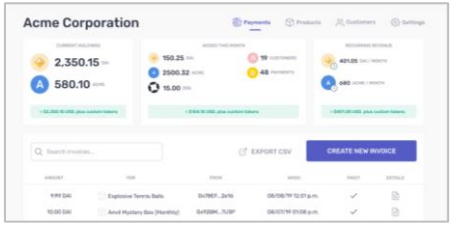


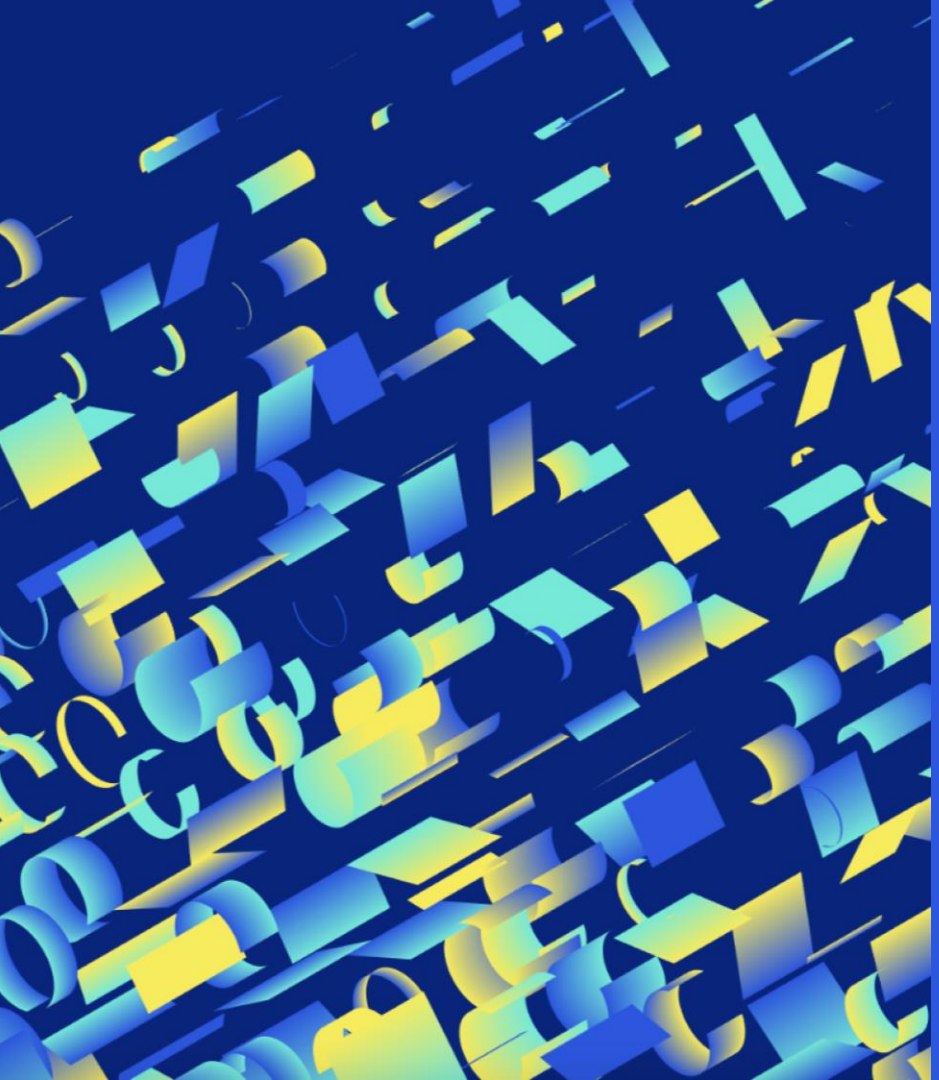
2016-2019; Crypto & AI Invest

2019+

CONSENSYS Codefi

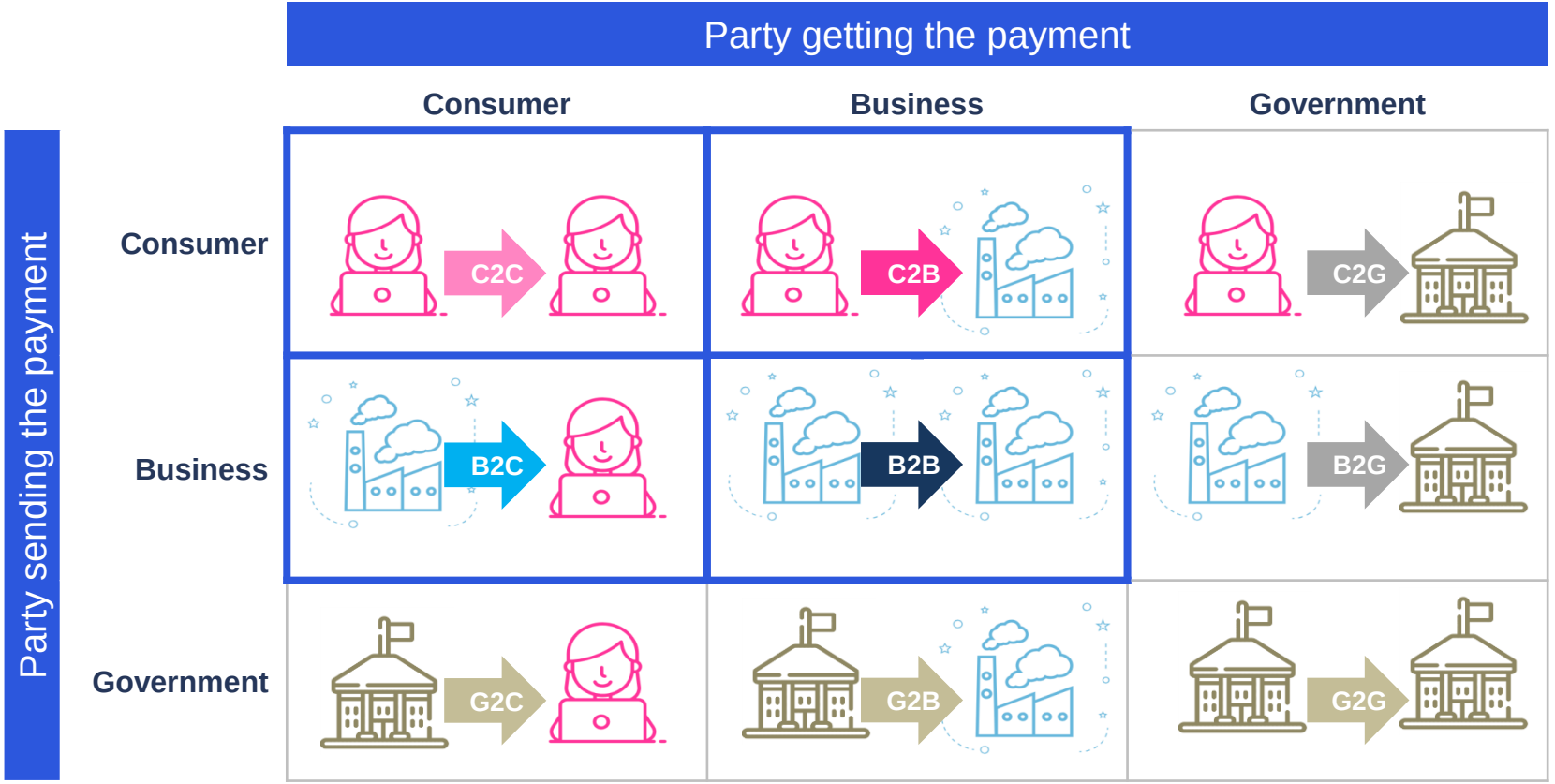




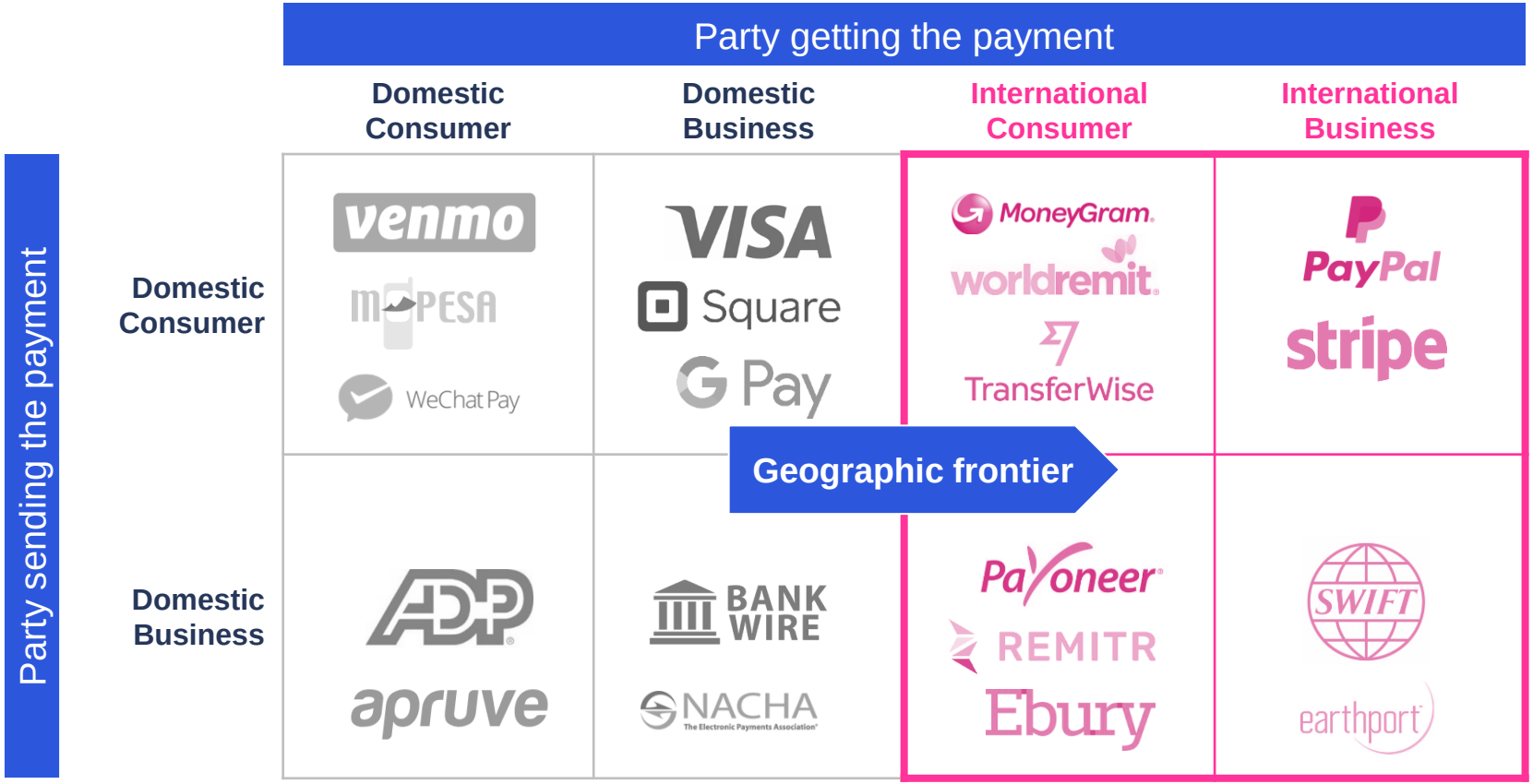


The Frontiers of Payments

One way to understand value transfer is by the type of actor that initiates and receives the payment



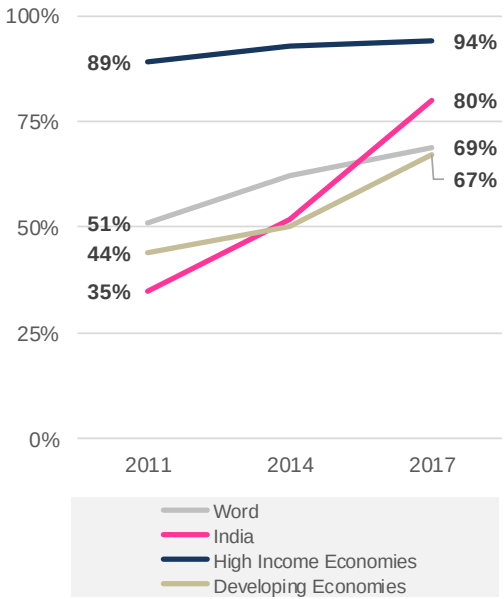
New Paytech value creation comes from emerging frontiers. One example is improving payments across borders ...



… Another frontier is the transition from cash retail to payment by cards – a digitization of the payment rails …

Cash

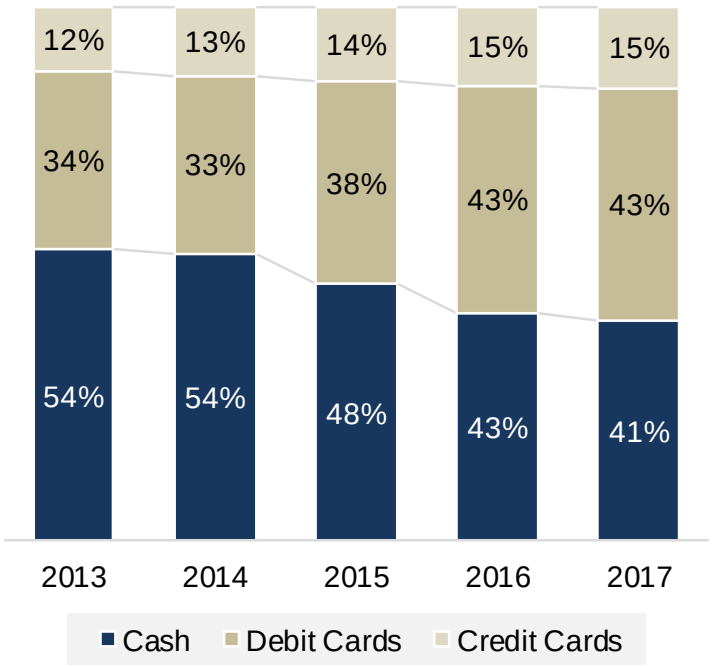
Adoption of Banking (% population with account)



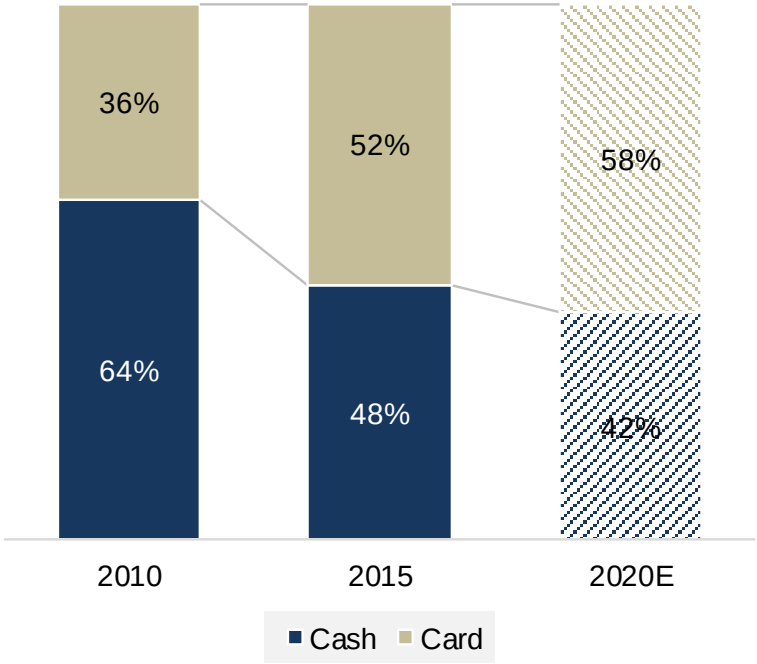
Cards + Banking

… leading to 20-30% relative reductions in the use of cash for physical retail transactions across geographies

UK — Retail Transactions ($B in Payment Method)

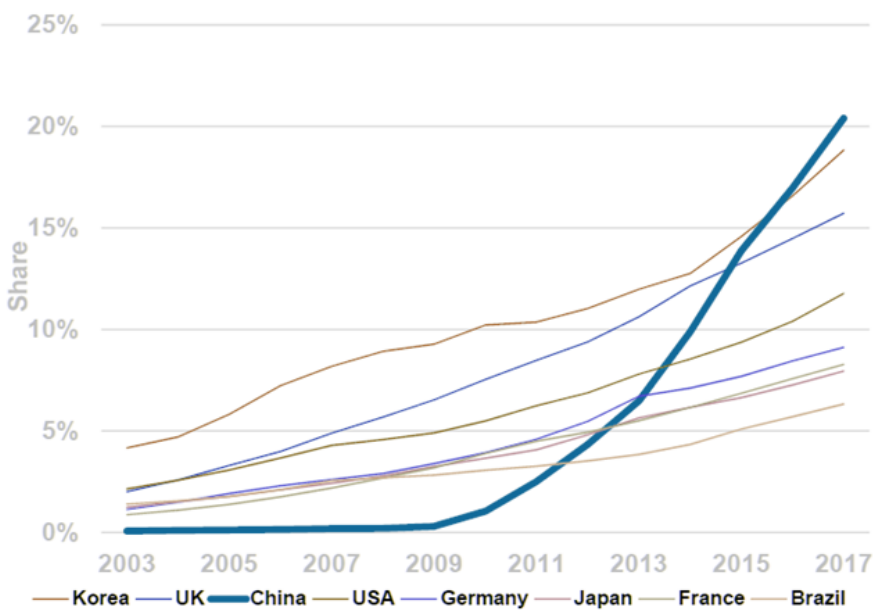


China — Retail Transactions Value, ex. e-Commerce (Payment Method)

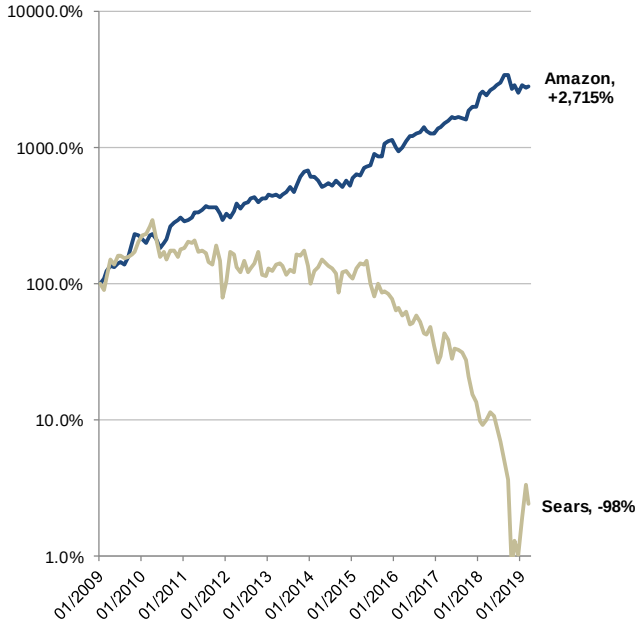


Further, physical commerce has been shifting to the web via e-Commerce, requiring new types of infrastructure and value transfer

E-Commerce as % of Retail Sales

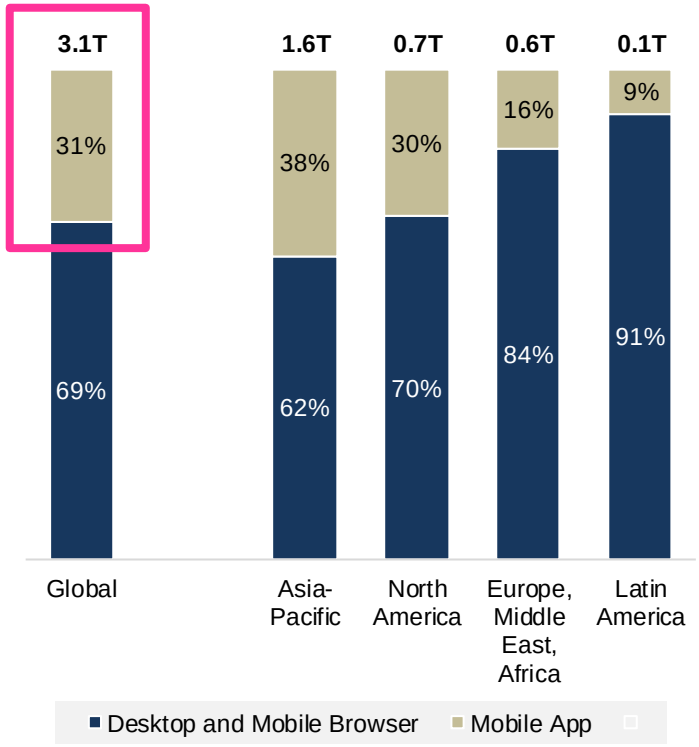


10 Year Marketcap Performance

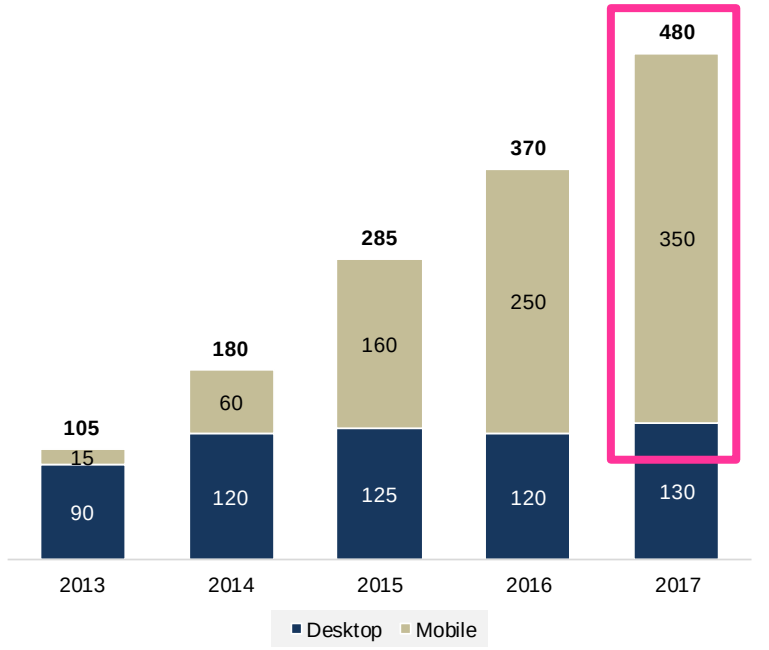


And e-Commerce is now becoming mobile commerce …

Global Digital Commerce (volume by Mobile App vs Browser)



China B2C e-Commerce Gross Merchandise Value ($B)

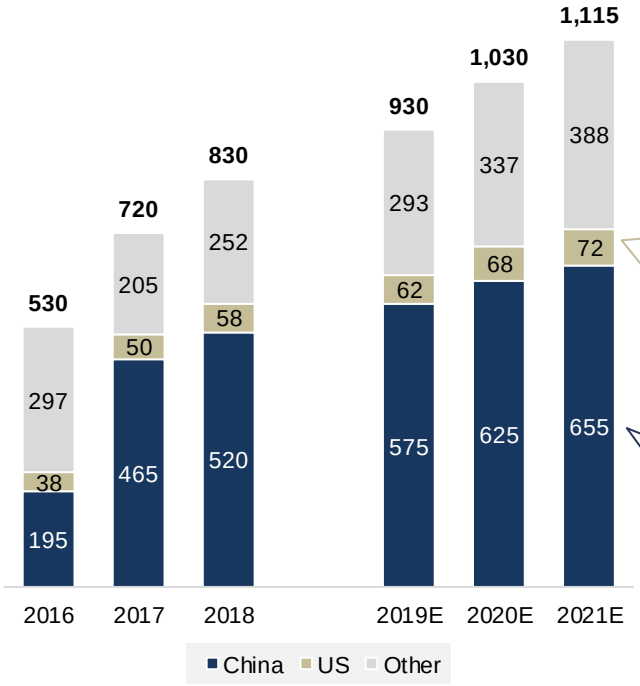


% in Mobile

14%	33%	56%	68%	73%

… and mobile proximity payments …

Mobile Proximity Payments: Estimated Users Globally (million)



… followed by developer-tooling and open banking APIs

Step 1: Set up Stripe Elements

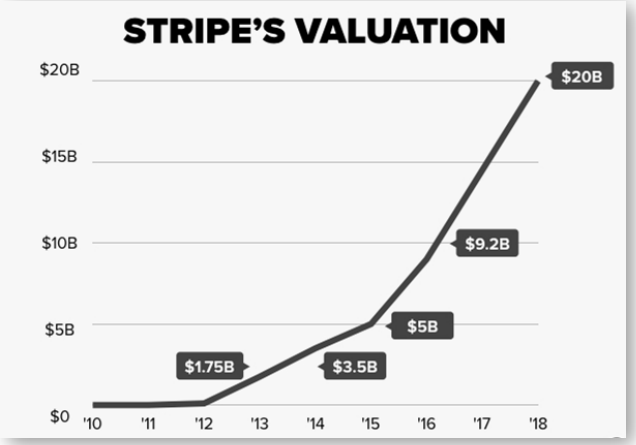
Elements is available as part of Stripe.Js. Include this in your page and create a container that will be used for the `paymentRequestButton` Element:

```
<script src="https://js.stripe.com/v3/"></script>
<div id="payment-request-button">
  <!-- A Stripe Element will be inserted here. -->
</div>
```

Your Stripe publishable API key is also required as it identifies your website to Stripe:

JavaScript JavaScript (ESNext)

```
var stripe = Stripe('pk_test_TYooMQauvdEDq54NiTphI7jx');
```



BBVA open banking, built on $117 million Simple acquisition

Consumer API

Create branded deposit accounts in seconds

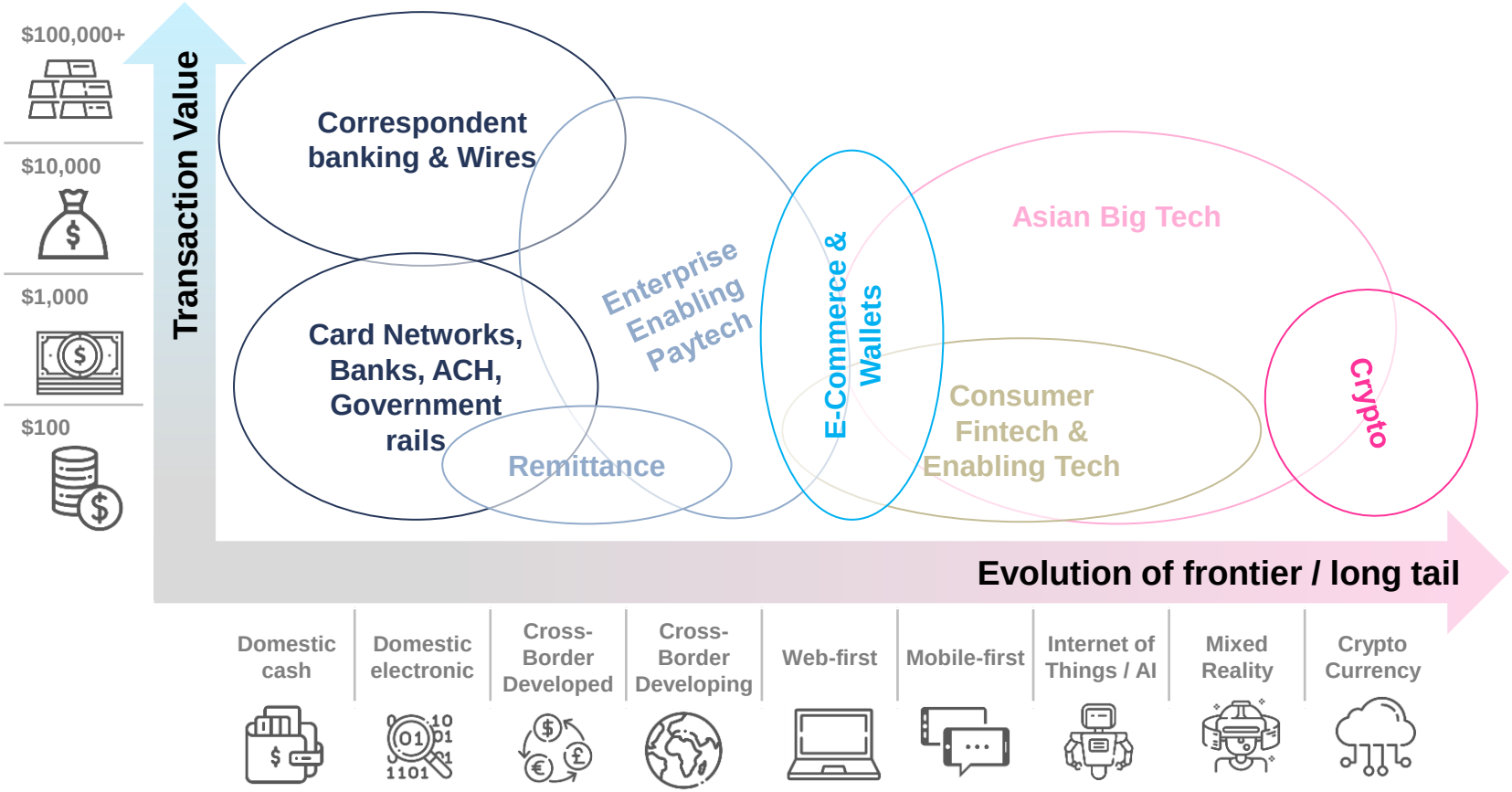
```
{
  "account_type": "checking",
  "multiple_participants": "false",
  "participants": [
    {
      "participant_user_id": "{{customer_id}}",
      "participant_role": "holder"
    }
  ]
}
```

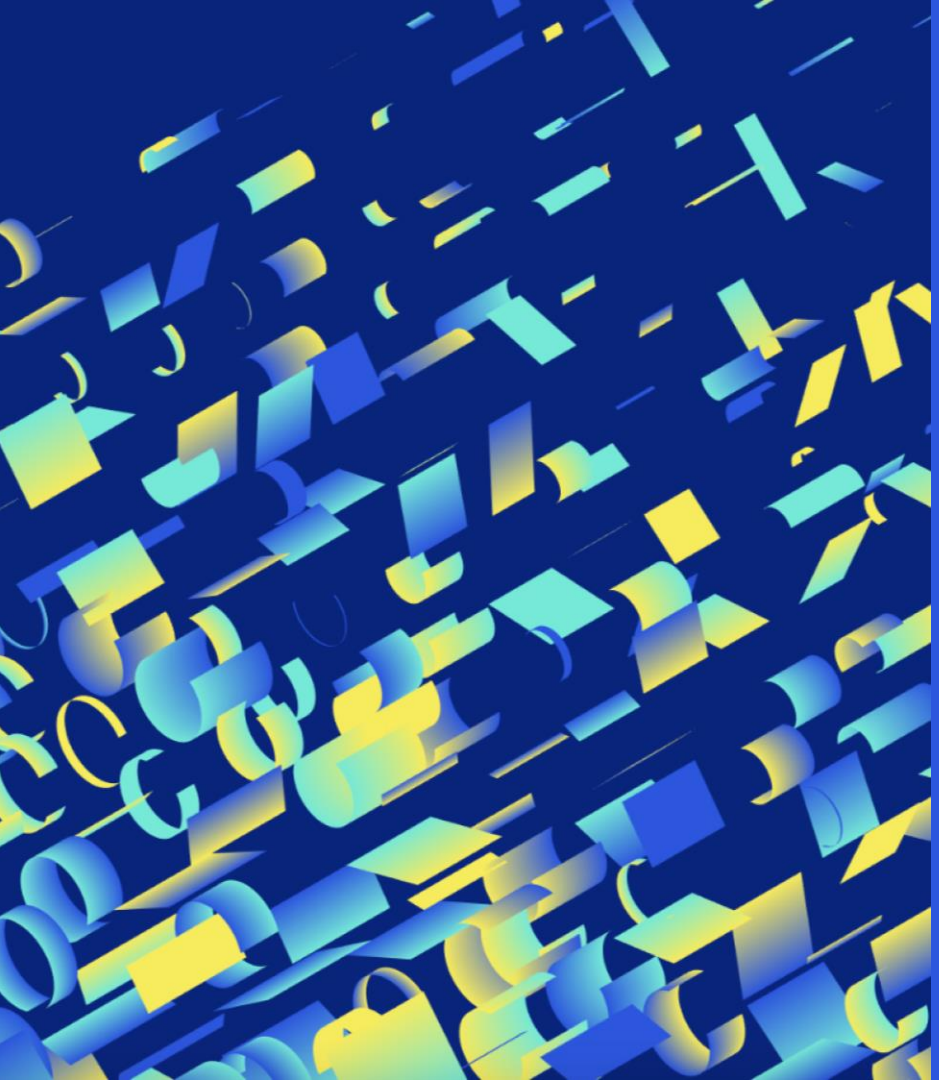
Move Money API

Route multiple payment methods through a single endpoint

```
{
  "origin_account": "RA-abc12def-g345-6h78-ij90-k111m2n456op",
  "destination_account": "RA-6de29cd4-4e02-45b7-a4b5-ad5ca9f90009",
  "amount": 60.00
}
```

The frontier is increasingly digital and esoteric



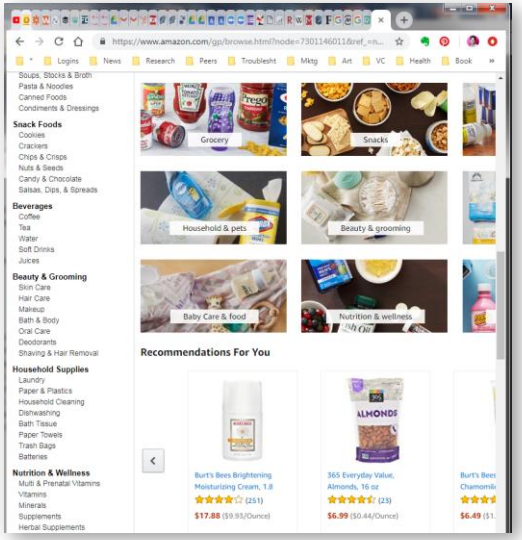


What is Augmented Commerce?

After retail channels shifted from Physical to Digital, digital objects are now bleeding back out into Physical world

Physical

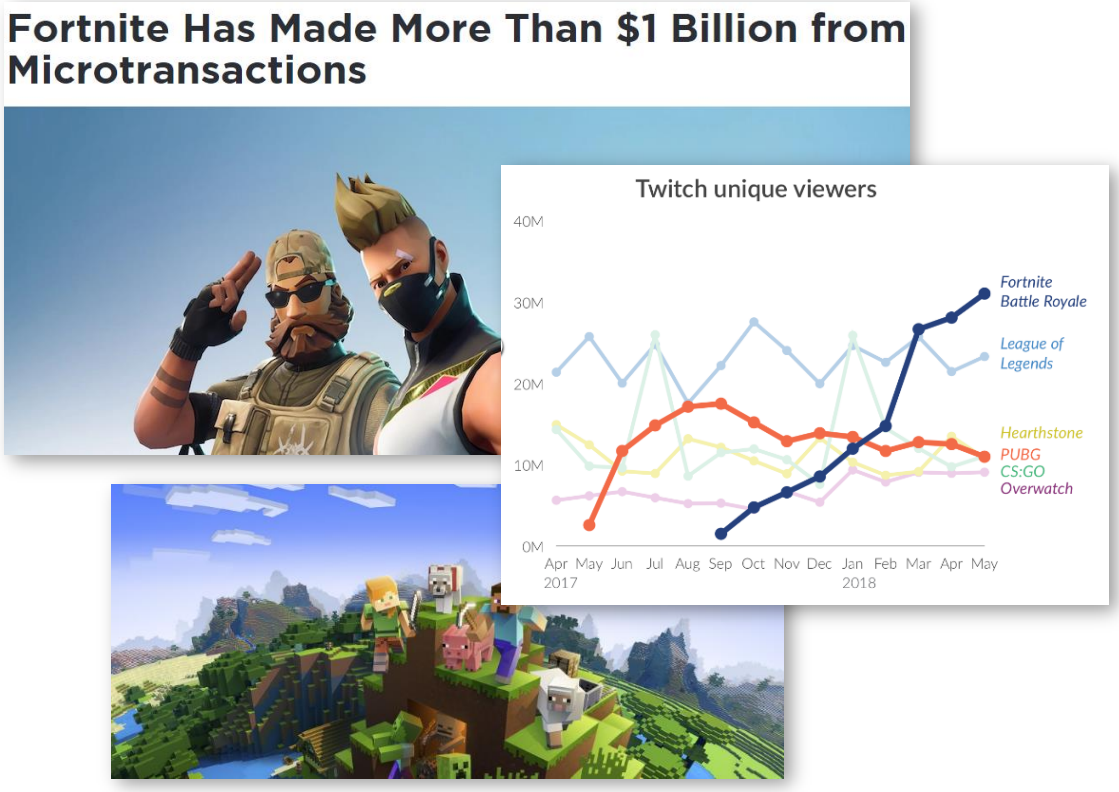
Digital



Digital Becomes Physical

Digital objects and environments create social value and identity, based on humans being social animals

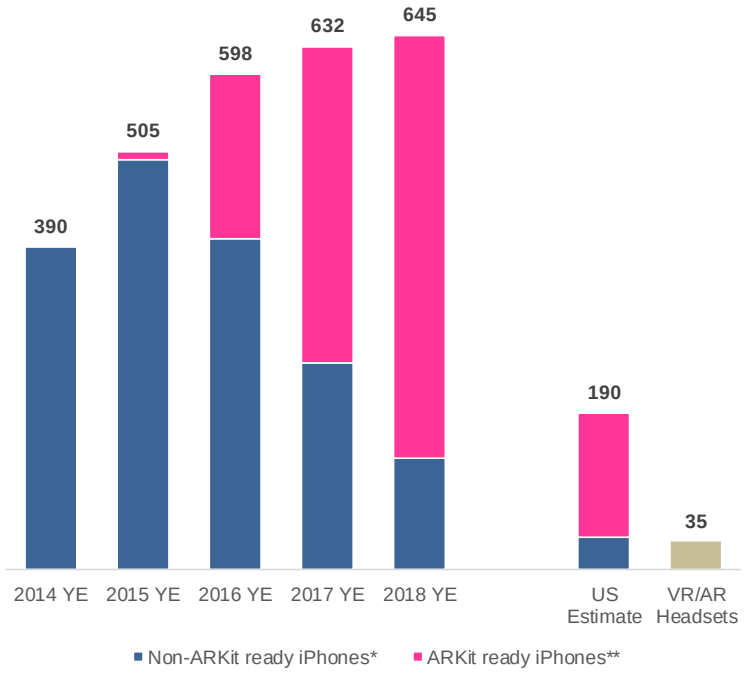
- Attention
- Community
- Self-Identity
- Social Hierarchy
- Social Value
- Purchasing Status



Video game communities are instantiating themselves in virtual reality, which can exhibit scarcity value

Software and hardware to power these worlds are bleeding into physical reality

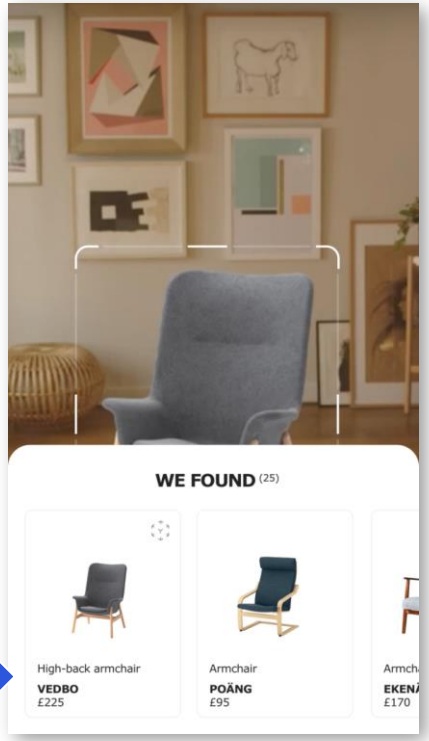
Augmented Reality (ARKit) ready iPhone
Installed Base Globally (millions) & VR/AR Headsets



Digital objects take the place of physical ones through augmented reality, with embedded payment functions

Ikea AR App

Payment system

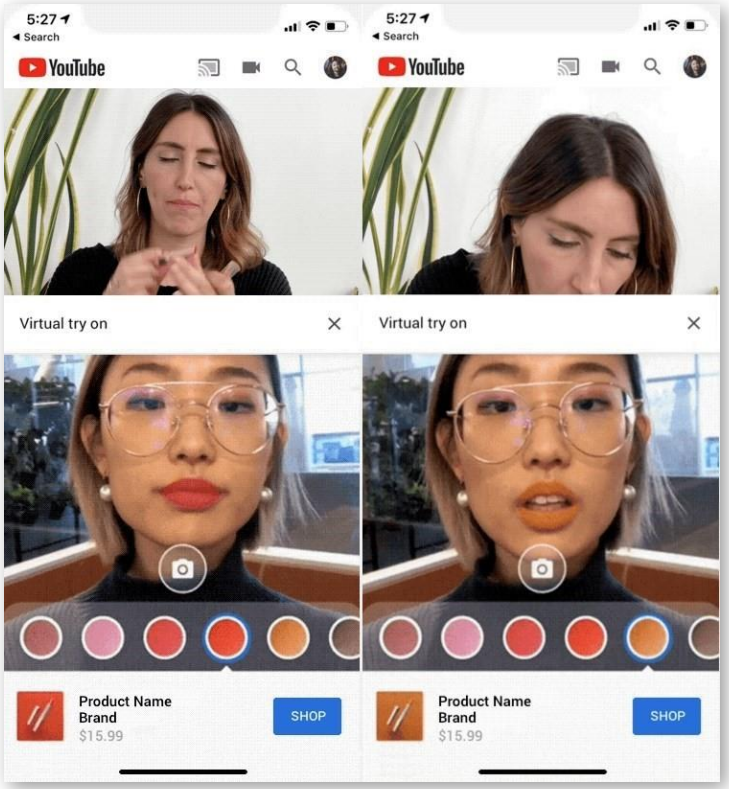


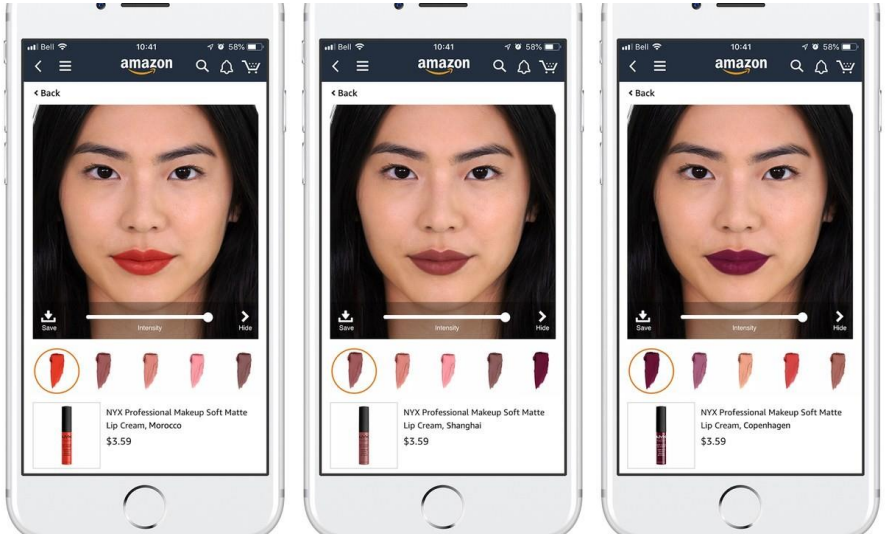
Payment experiences can also be rendered in the virtual domain, consumers trained for it via video games

Alibaba's new payment system lets virtual reality shoppers pay by nodding

Worldpay creates VR payments prototype

AR shopping experiences at the point of intent, like Amazon browsing or the interactive Youtube ad unit





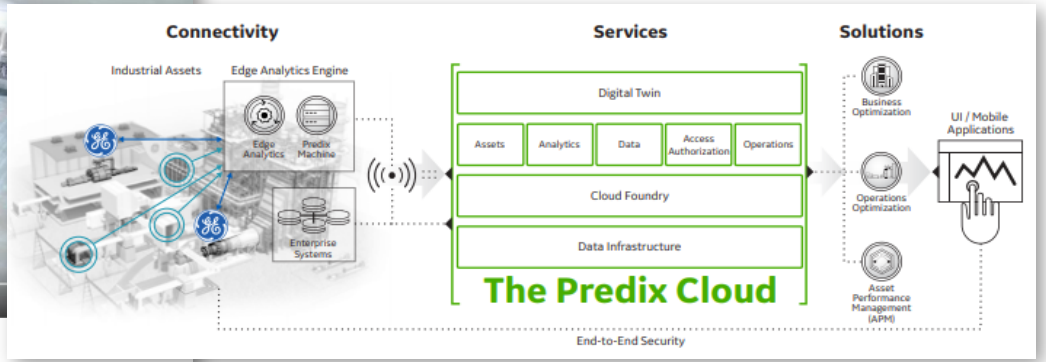
Hypothesis on evolution of Commerce

Physical

Digital

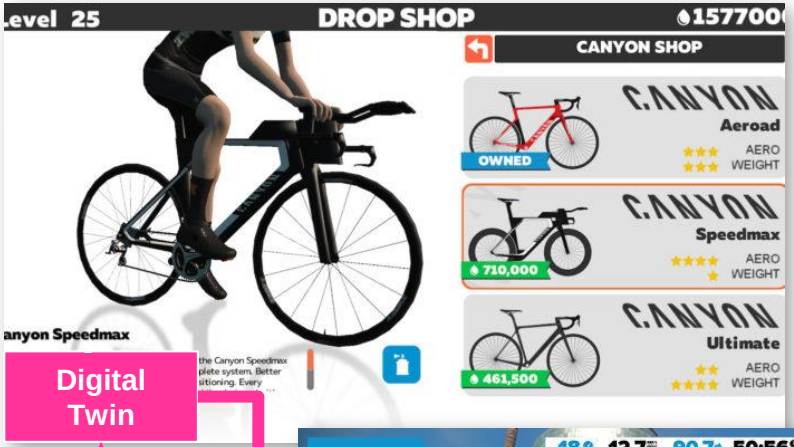
Digital Becomes Physical

Physical Becomes Digital

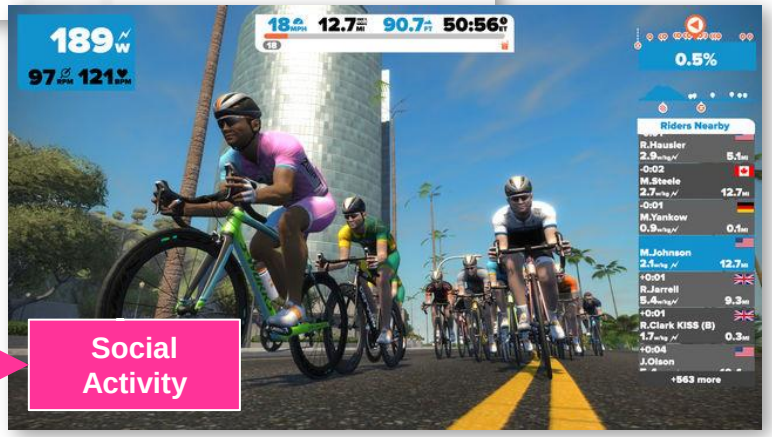


Companies like Zwift create a digital twin for physical activity, position within virtual community, and sell status

Physical Bike

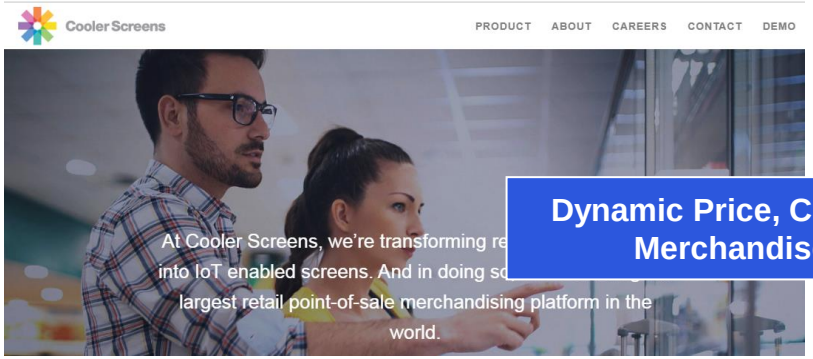


Digital Twin

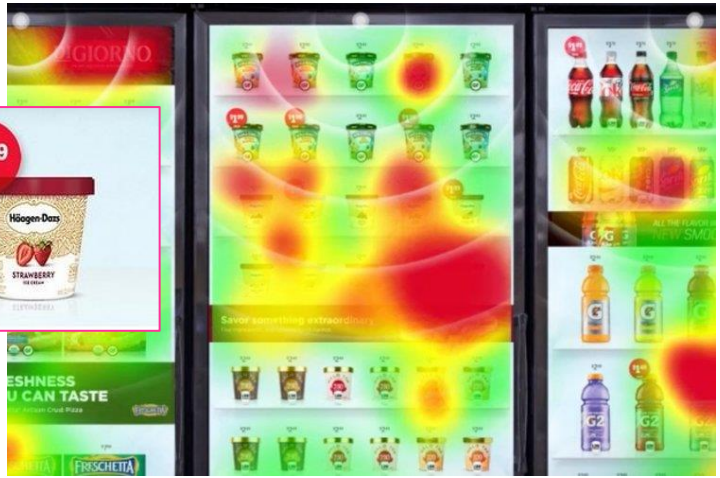


Social Activity

A digital twin for merchandise through smart interface that tracks inventory, customers, intent, and physical buying

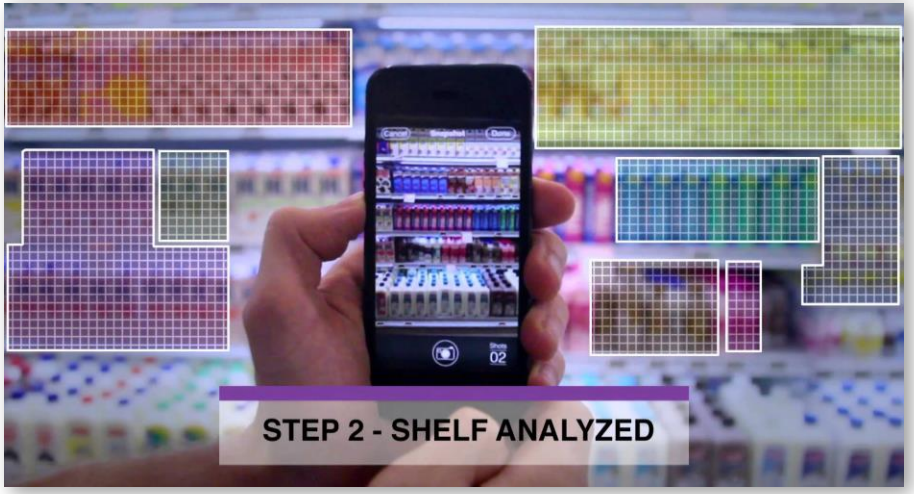


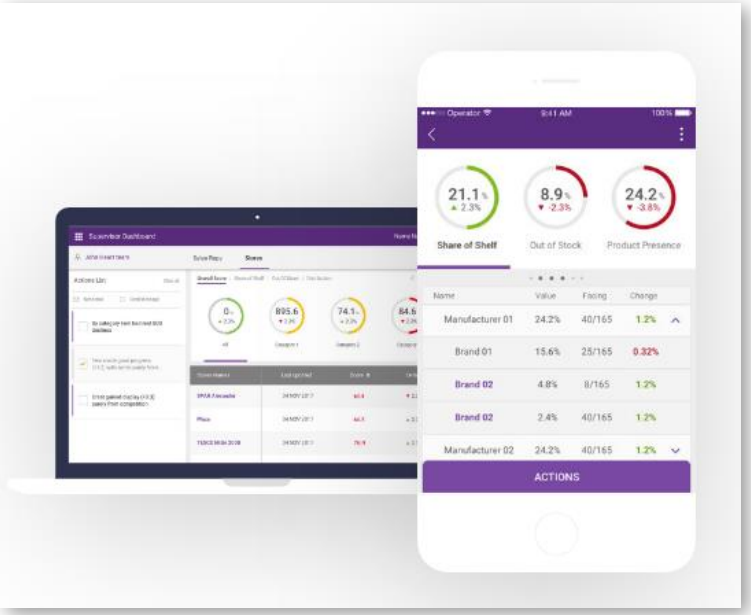
Dynamic Price, Customer & Merchandise Tracking



Machine vision at scale to digitize inventory with smart phones, analytics included

Warburg Pincus-Backed Trax Raises $125 Million Pre-IPO Funding

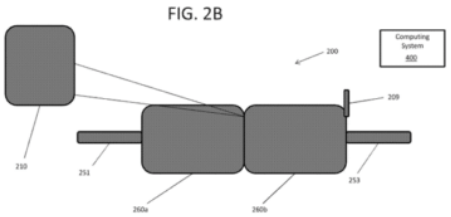




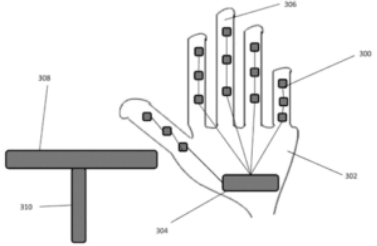
Alibaba leading in digitization of stores and value chain with New Retail initiative, using machine vision and AR for product sales and payments

Walmart conceptualizing shopping experience with users interacting in virtual reality with physical space using digital robot bodies

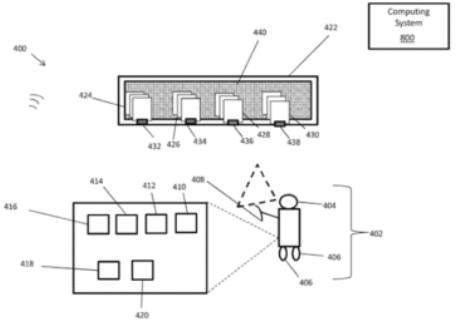
Walmart Patents for VR-Based Shopping



People would put on a pair of virtual reality glasses to shop.



Sensor-laden gloves would detect shoppers' movements and provide sensory feedback.



Autonomous robots in remote fulfillment centers would react to shoppers' virtual movements and pick and pack items.

Amazon using digital identity to place you in digital system, machine vision for navigation, interaction and payment

Identity for Digital System & Payments Mechanism

Machine Vision to Digitize your Activity

In these digital economies, how do you enable digital scarcity, payments processing, and interaction between open systems?

Technical standard [edit]

The ERC-20 token standard has the following method-related functions:[1]

The specific wording of the function is followed by a clarification of what it does, in square brackets.

1. `totalSupply() public view returns (uint256 totalSupply)` [Get the total token supply]
2. `balanceOf(address _owner) public view returns (uint256 balance)` [Get the account balance of another account with address *_owner*]
3. `transfer(address _to, uint256 _value) public returns (bool success)` [Send *_value* amount of tokens to address *_to*]
4. `transferFrom(address _from, address _to, uint256 _value) public returns (bool success)` [Send *_value* amount of tokens from address *_from* to address *_to*]
5. `approve(address _spender, uint256 _value) public returns (bool success)` [Allow *_spender* to withdraw from your account, multiple times, up to the *_value* amount. If this function is called again it overwrites the current allowance with *_value*]
6. `allowance(address _owner, address _spender) public view returns (uint256 remaining)` [Returns the amount which *_spender* is still allowed to withdraw from *_owner*]

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