A 20:20 Vision of Digital Lending in 2018

15th March 2018
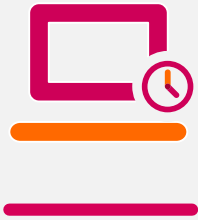
Callcredit

THE FUTURE

Let's Take a Minute to Set the Scene

Consumers Now Drive Data Generation

What Happens Online in 60 Seconds?

> **500 hours** of YouTube footage uploaded

> **3.3m** Facebook posts

> **29m** WhatsApp messages sent

> **448k** tweets posted

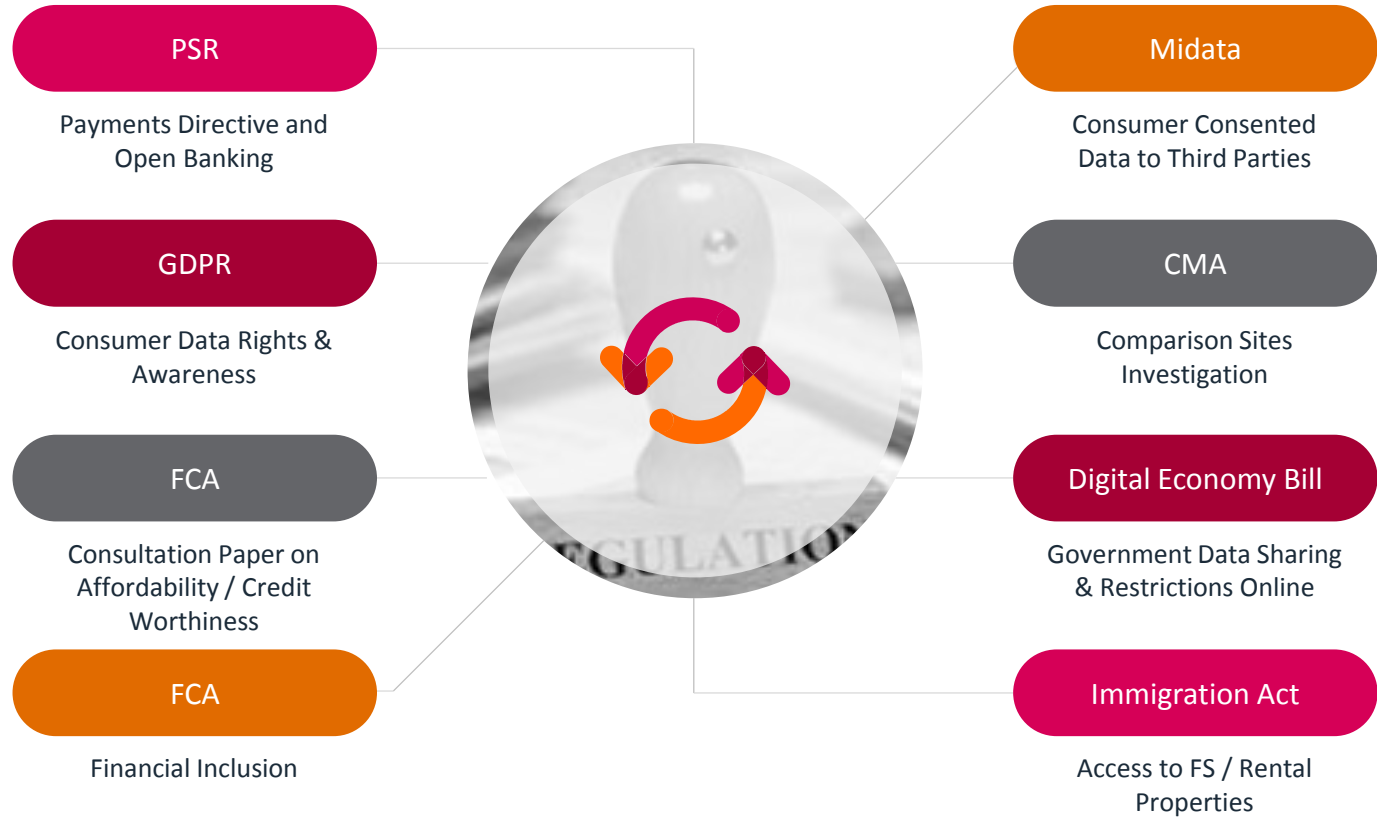> **65k** photos uploaded to Instagram

> **3.8m** Google searches

> **150k** emails sent

> **1.4k** Wordpress blog posts uploaded

90% of the data in the world today has been produced in the last 2 years!

Callcredit

Regulation

PSR

Payments Directive and Open Banking

GDPR

Consumer Data Rights & Awareness

FCA

Consultation Paper on Affordability / Credit Worthiness

FCA

Financial Inclusion

Midata

Consumer Consented Data to Third Parties

CMA

Comparison Sites Investigation

Digital Economy Bill

Government Data Sharing & Restrictions Online

Immigration Act

Access to FS / Rental Properties

Callcredit
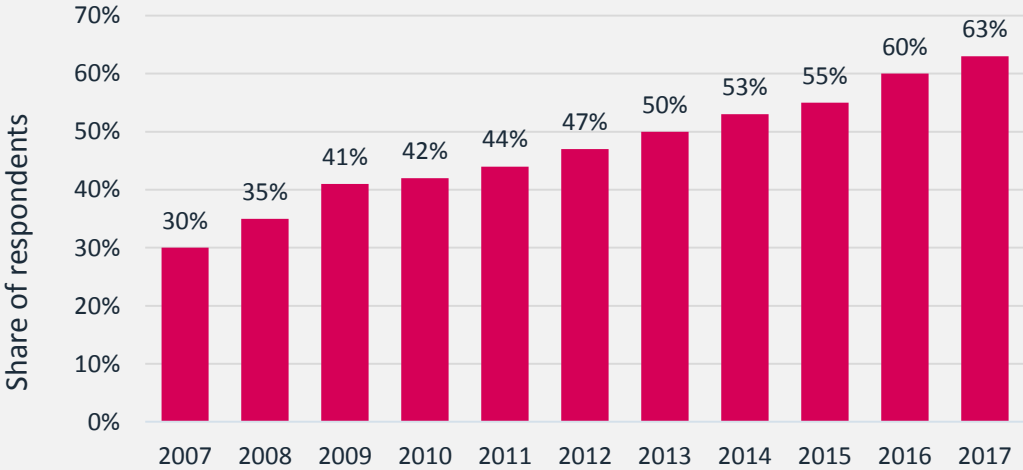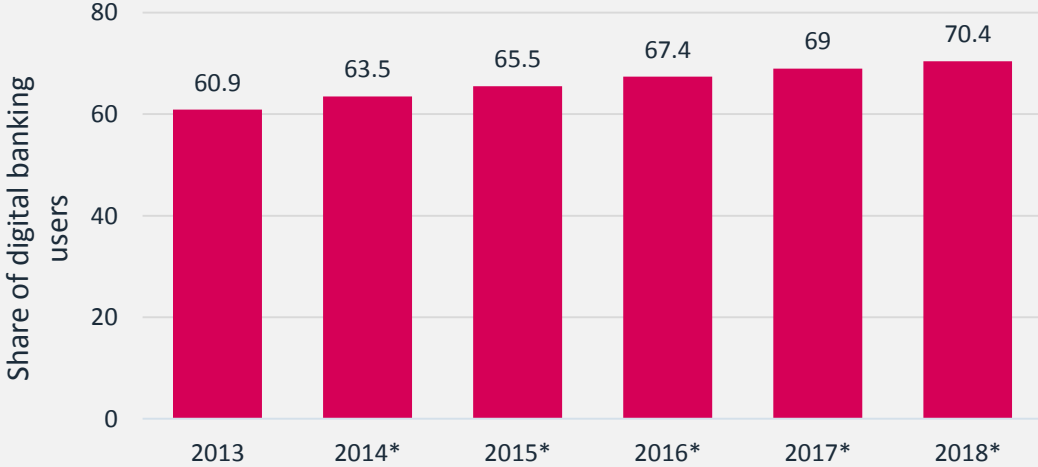
What We're Seeing in the Industry

In the UK, the penetration of online banking has more than doubled in the last 10 years, from 30% to over 60%. Couple this which recent research which showed that, for the first time, more people bank online than in branch*, it's impossible to avoid the facts – digital banking is more important than ever.

Online banking penetration in Great Britain from 2007 to 2017

Year	Share of respondents
2007	30%
2008	35%
2009	41%
2010	42%
2011	44%
2012	47%
2013	50%
2014	53%
2015	55%
2016	60%
2017	63%

Source: https://www.statista.com/statistics/286273/internet-banking-penetration-in-great-britain/

Penetration of digital banking among internet users in the United States from 2013 to 2018

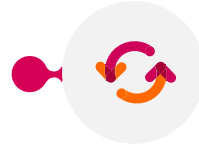| Year	Share of digital banking users
2013	60.9
2014*	63.5
2015*	65.5
2016*	67.4
2017*	69
2018*	70.4

Source: https://www.statista.com/statistics/334063/penetration-digital-banking-internet-users-usa/

Source: http://www.telegraph.co.uk/business/2018/01/10/digital-banking-overtakes-branch-use-may-fuel-closures-warns/

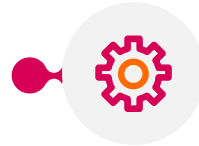Callcredit

Market Hypothesis
## That guide our innovation strategy

Regulation will evolve and continue to place obligations with organisations providing products and services to consumers

Consumer Empowerment will change the hierarchy in the current personal data eco-system forever

Methods and techniques will continually evolve to facilitate Advanced Decision Making that will utilise **Artificial Intelligence** on **Alternative** Data from connected devices alongside traditional data sources and in certain cases at the expense of traditional data sources
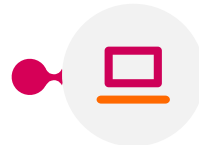
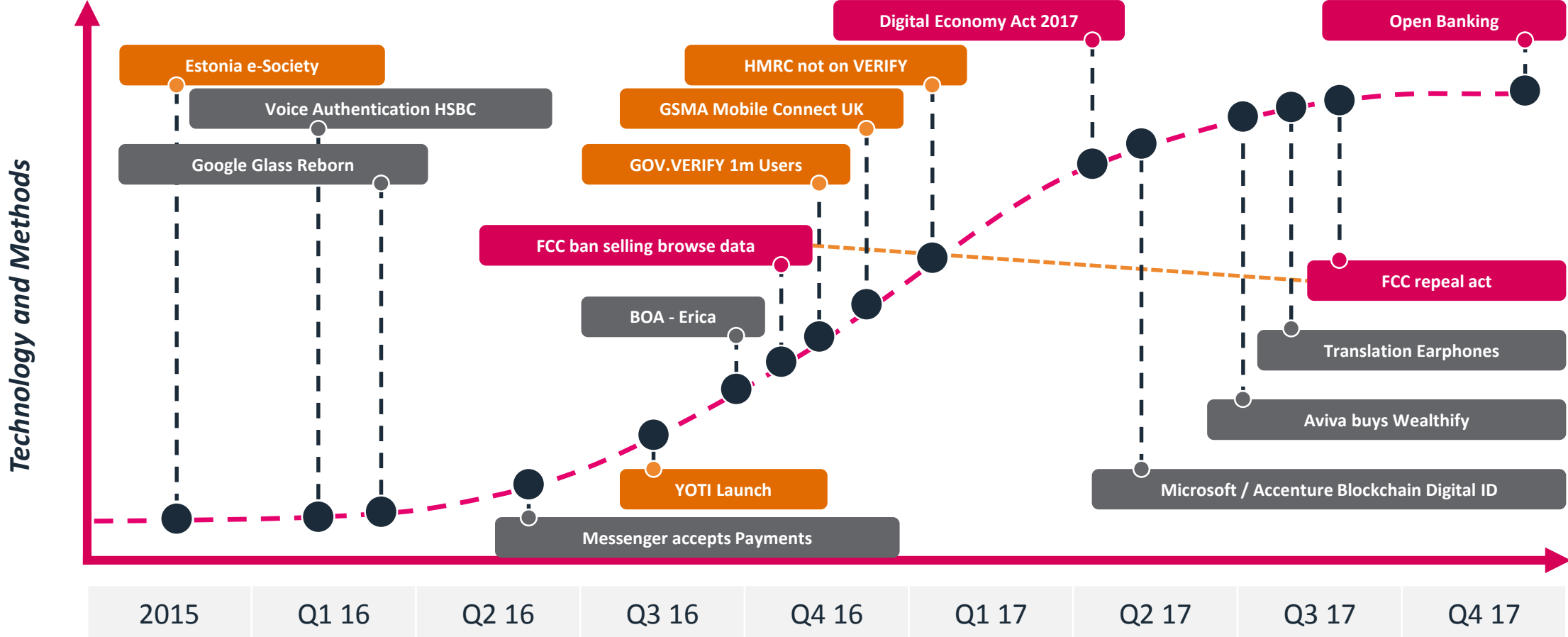Digitisation will evolve a universal **Digital Identity** that will act as our digital passport/SSO to online services where as Digital Entitlement will allow service providers to switch on services in real-time and facilitate a new PAYGo Financial Services model

Open Industry APIs will be developed to advance empowerment of the consumer and drive deeper engagement with Service Providers

Callcredit

Our Horizon
Pockets of the future in the present

Technology and Methods

Estonia e-Society
Voice Authentication HSBC
Google Glass Reborn
Digital Economy Act 2017
HMRC not on VERIFY
GSMA Mobile Connect UK
GOV.VERIFY 1m Users
FCC ban selling browse data
BOA - Erica
YOTI Launch
Messenger accepts Payments
Open Banking
FCC repeal act
Translation Earphones
Aviva buys Wealthify
Microsoft / Accenture Blockchain Digital ID

| 2015 | Q1 16 | Q2 16 | Q3 16 | Q4 16 | Q1 17 | Q2 17 | Q3 17 | Q4 17 |

Callcredit

Lending Digital Agenda

Differentiation through customer experience

› Speed
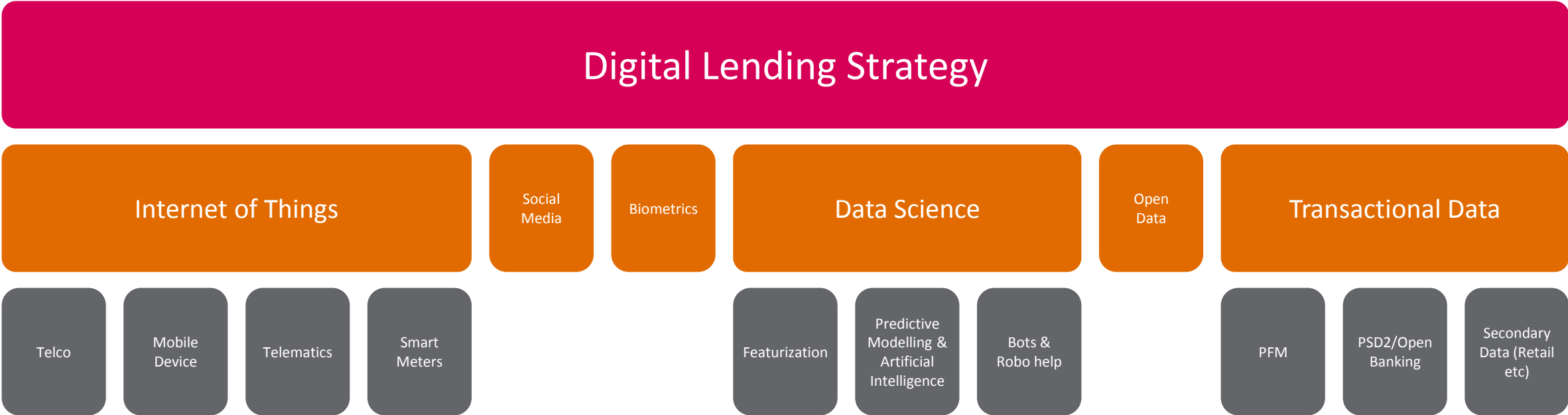› Intuitive
› Personalisation

360 degree consumer insight

› Traditional data sources
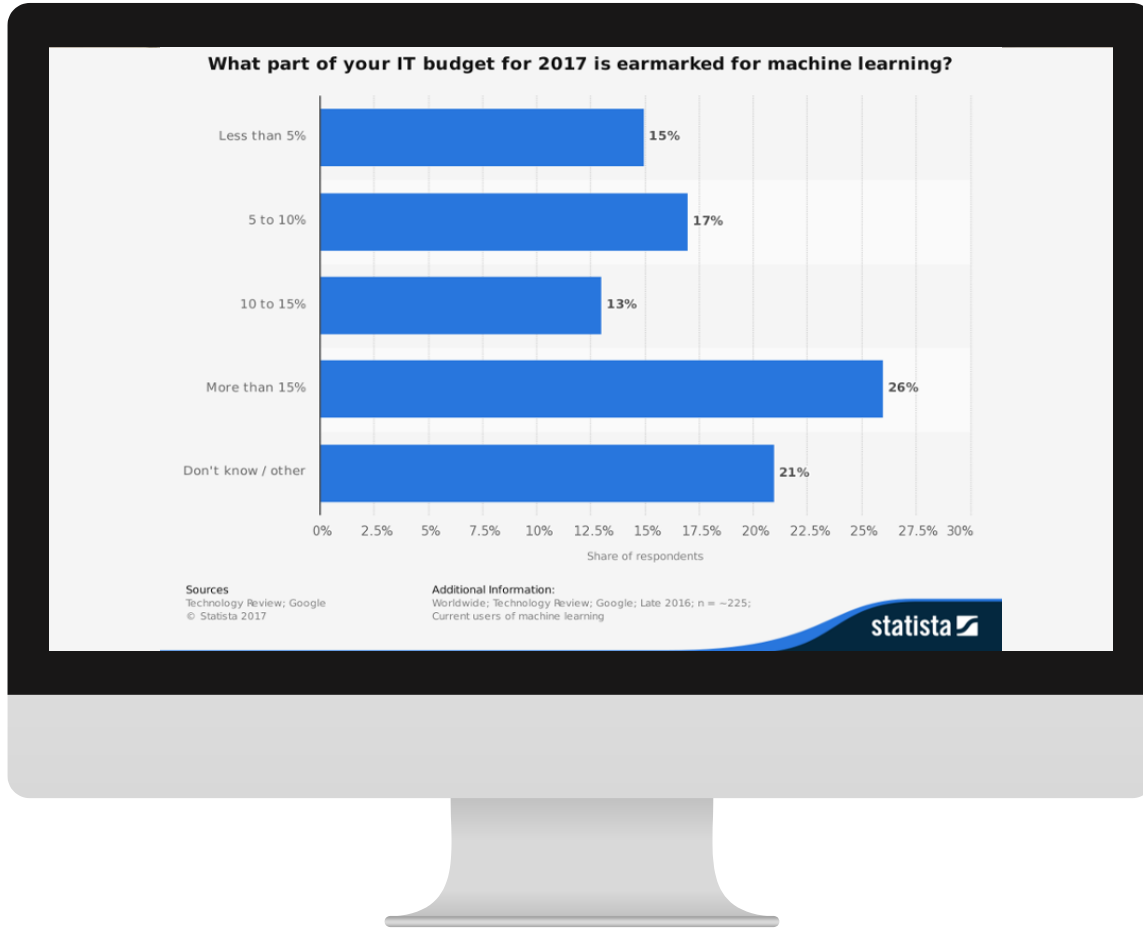› Transactional data
› Alternative data sources (Social Media)

Product Diversification

› Higher Value / Longer Term
› Credit Cards / ISAs / Revolving Line of Credit

Callcredit

How is All of this Being Harnessed?

Digital Lending Strategy

Internet of Things	Social Media	Biometrics	Data Science	Open Data	Transactional Data

| Telco | Mobile Device | Telematics | Smart Meters | | Featurization | Predictive Modelling & Artificial Intelligence | Bots & Robo help | | PFM | PSD2/Open Banking | Secondary Data (Retail etc) |

Callcredit

Machine Learning

What part of your IT budget for 2017 is earmarked for machine learning?

Category	Share
Less than 5%	15%
5 to 10%	17%
10 to 15%	13%
More than 15%	26%
Don't know / other	21%

Share of respondents

Sources
Technology Review; Google
© Statista 2017

Additional Information:
Worldwide; Technology Review; Google; Late 2016; n = ~225;
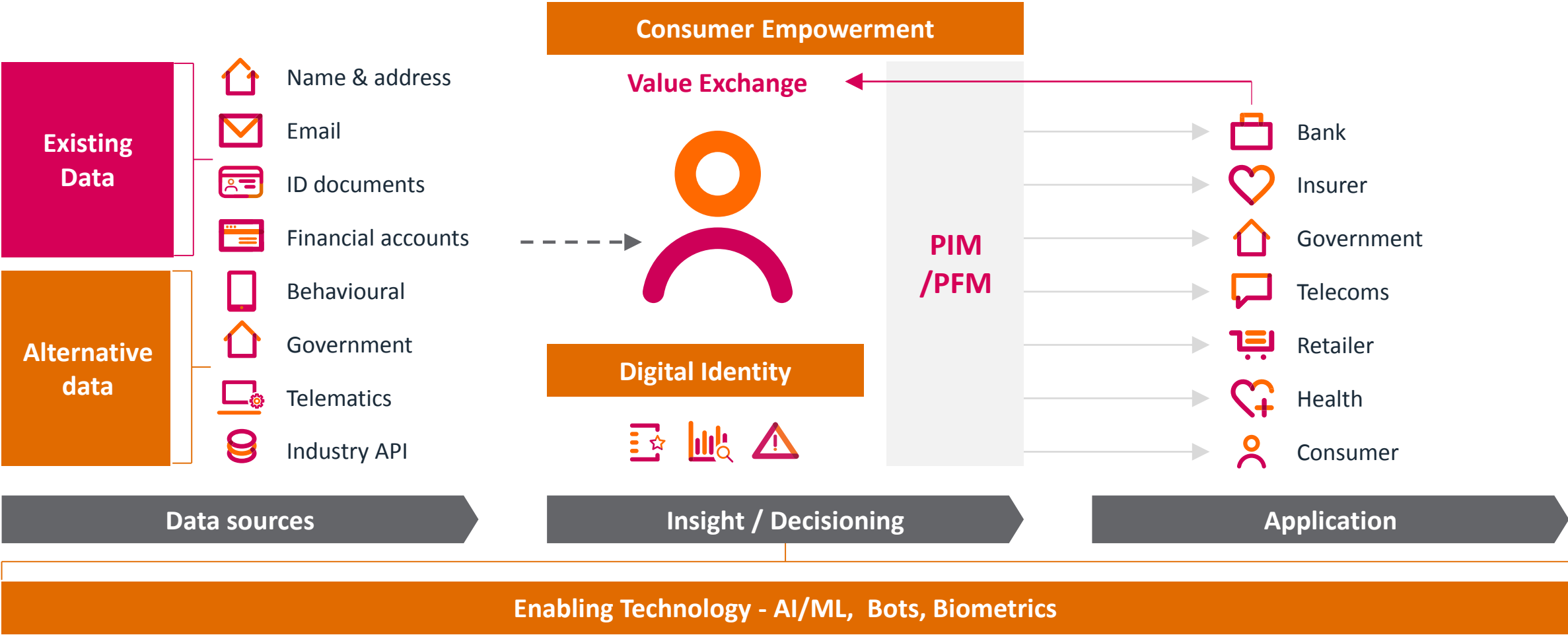Current users of machine learning

statista

- Banks are actively tracking consumers' sentiment / satisfaction levels
- Reacting to market trends, tracking trading levels and managing wealth assets
- Healthcare monitoring through Smart devices
- Amazon – highly personalised product recommendations
- SIRI & Alexa
- Credit Scores….

Source: Red Pixie 5th February 2018

Callcredit

Personal Information Economy (Me2B)

End State 2020 +

Consumer Empowerment

Value Exchange

Existing Data

- Name & address
- Email
- ID documents
- Financial accounts

Alternative data

- Behavioural
- Government
- Telematics
- Industry API

PIM /PFM

- Bank
- Insurer
- Government
- Telecoms
- Retailer
- Health
- Consumer

Digital Identity

| Data sources | Insight / Decisioning | Application |

Enabling Technology - AI/ML, Bots, Biometrics

Callcredit

Open Banking Solution

Callcredit will manage the connectivity, consent, insight and delivery of statement level information on behalf of our clients to support a wide range of existing and new user cases

Connectivity – consolidated connectivity across all relevant API interfaces, saving a considerable amount of cost and resource on behalf of clients and increasing speed to market

Authentication & Consent managed journey consolidated across all data providers to ensure smooth and easy access for consumers, increasing adoption rates

Insight – Comprehensive view of consumer data, increasing adoption rates, access to new customer segments, reducing risk as ensuring appropriate lending, new and improved user cases and value propositions

Delivery of data in a form needed by the Client, limiting integration requirements and ensuring data can be embedded in to current products for ease of use and speed to market

Consumer Experience – software solution to wrap the consumer journey, maximising consumer adoption and ease of use

Callcredit

Risk Landscape in the new world

Callcredit

Digital Channel Pressures & Challenges

> Verification window of opportunity reduces dramatically, from days to seconds
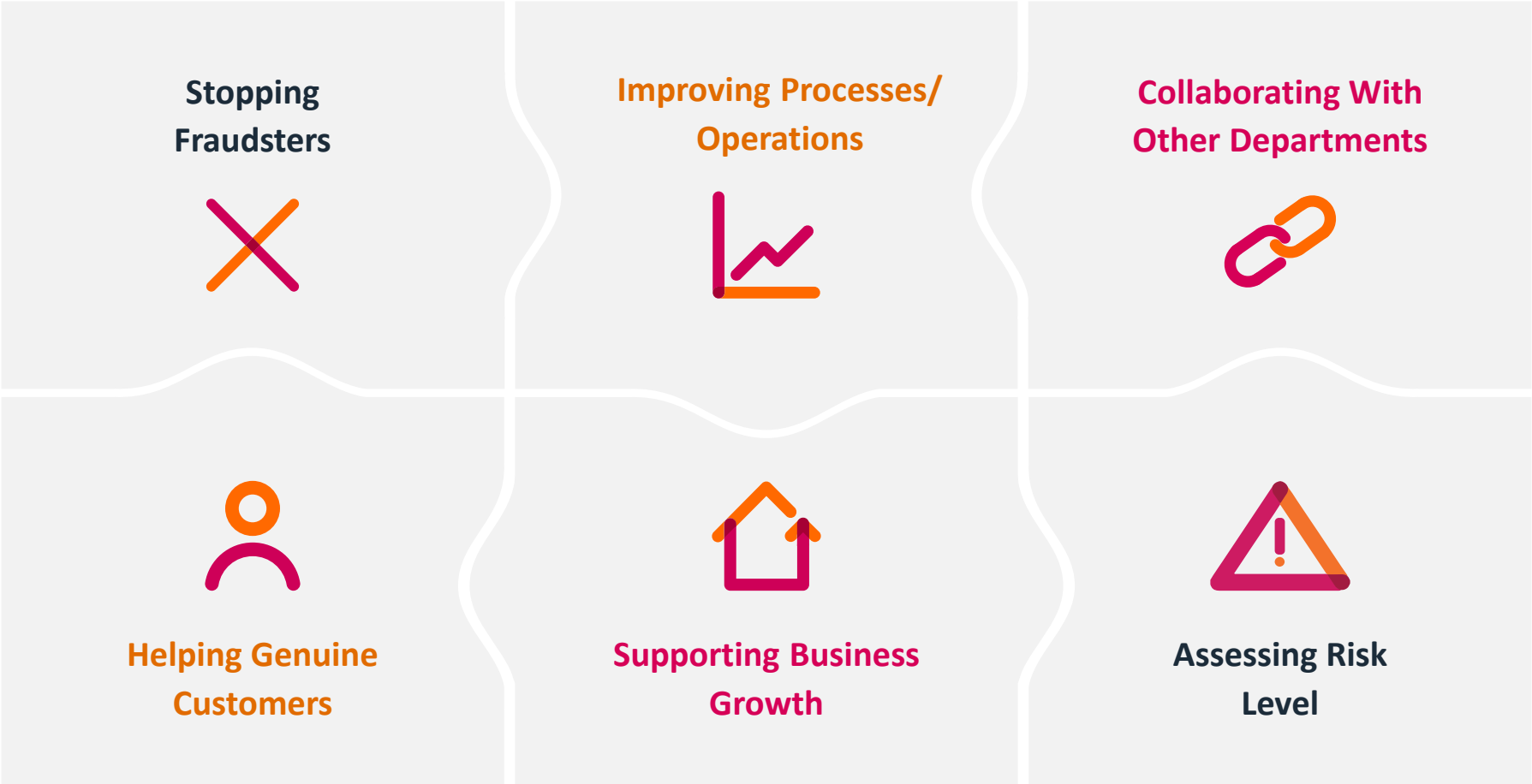
> Demand for same day payment

> Opportunities for criminals to impersonate identities

> Organisations can be attacked from anywhere

Callcredit

Counter Fraud Leaders - The Job Spec has Changed

Stopping Fraudsters

Improving Processes/ Operations

Collaborating With Other Departments

Helping Genuine Customers

Supporting Business Growth

Assessing Risk Level

Callcredit

Counter Fraud Evolution

Identify links between own customer base

< Data Matching

Predictive analytics >

Model adverse populations and link profiles

Links between a network by behaviour triggers

< Social network analytics

Forensic profiling >

Interrogating a data source

Powered by algorithms

< Behavioural analytics

Machine learning >

Require no outcome feedback

Callcredit

Device Profiling

Every device tells a story.

Am I authorized for this account?

What other devices am I linked to?

Where am I located?

Do I have a fraud history?

How many accounts have I accessed?

Am I hiding from detection?

Callcredit

Telephone Number Profiling

Phone number profiles

› PAYG
› Contract
› VOIP
› Premium Rate

Interrogate Live Network

› Is the number reachable / unreachable
› Is the number live / disconnected
› Is the number disconnected
› Roaming status – active

Callcredit

Email Address Profiling

08

Neural Network Refreshes

07

Machine Learning Algorithm

06

Dark Web Screening

05

Interrogate Social Network Footprint

01

Check the email account is live

02

Validate age of email account

03

Reference Consortium Data

04

Track Velocity

Callcredit

Forensic Profiling

Growing appetite for online document verification – reduces the risk of breakage by not pushing end user offline

› NFC technology within smartphones
› Image upload

Reduces the risk of false positives, causing less disruption to genuine individuals

Callcredit

As Fraudsters Adapt, So Must Our Technology…

Biometric technologies:

› Fingerprint ID

› Vein patterns

› Facial recognition

› Voice recognition

Biometrics was identified as the biggest priority for organisations as they look to prevent fraud within last year's Fraud and Risk Report.

Callcredit

Q&A