

Future of General Insurance

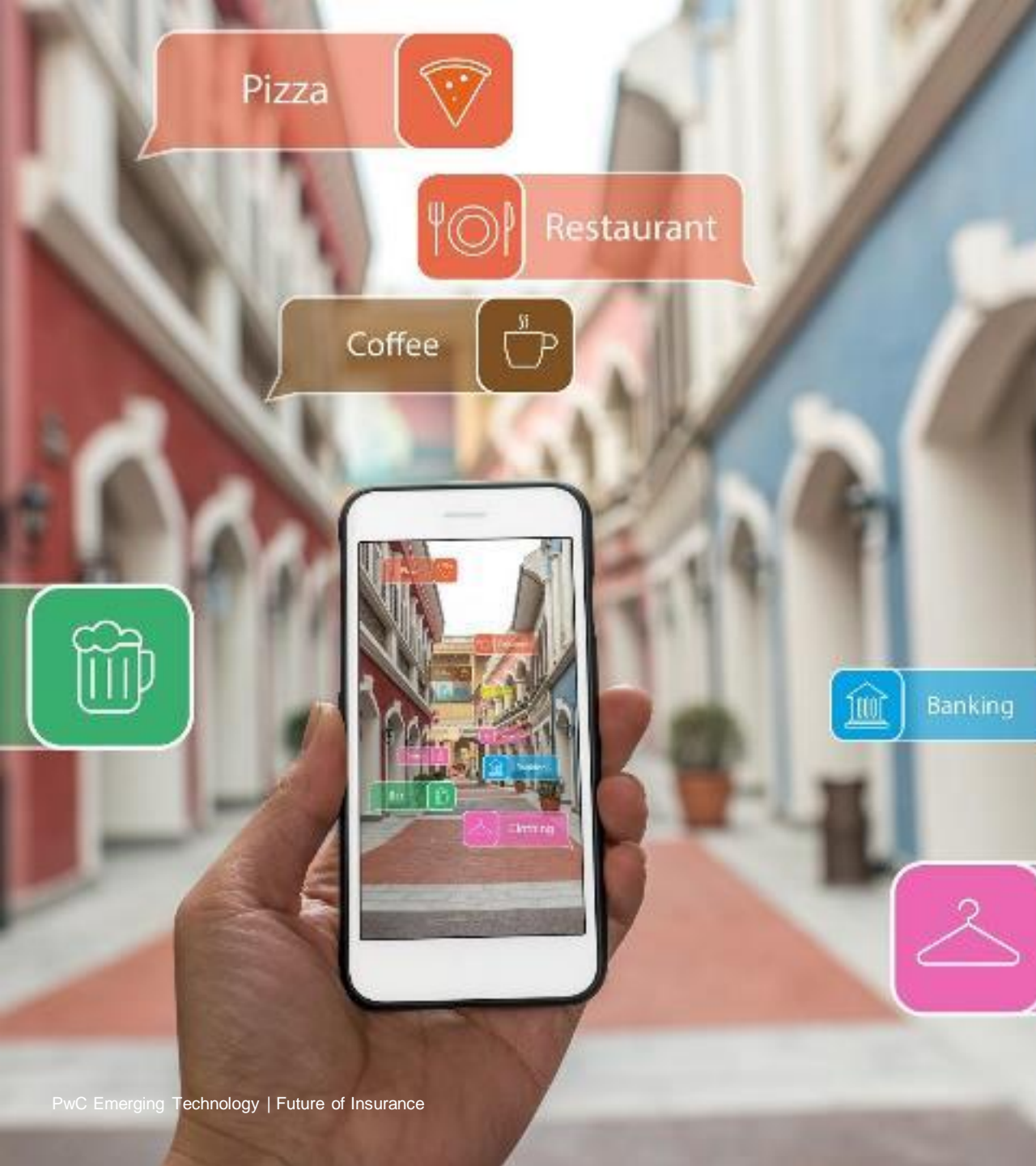
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www.pwc.com
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Our world is rapidly changing

- Customer expectations are higher than ever
- Tech giants are transforming various markets with unending digital innovation
- Leading businesses are shifting their strategy from customer acquisition to customer experience
- There is a premium on making the right strategic choices and investing to build differentiated technological capabilities




77% of CEOs rank
technological advances as
the **most disruptive**
megatrend impacting
their business



Companies
will spend
\$3.5 trillion
on Emerging
Technology in
2017

Source: Gartner

PwC Emerging Technology | Future of Insurance



45%

insurance players
engage with FinTech
companies...

...and

84%

will increase FinTech
partnerships over the
next 3-5 years

Despite companies making substantial investment in emerging technologies, there is a notable gap in the talent that they have to execute

Emerging Tech Skills Gap



In the *PwC 2017 Digital IQ Survey*, research revealed that companies are smarter about technology than they used to be, but the challenges of integrating new tech into the enterprise have gotten more difficult.

Top 8 topics decision makers within insurance companies are focused on

What (re)insurers are thinking about by region



World



Asia Pacific

1 st	Digital Innovation	Digital Innovation
2 nd	Customer Centricity	Customer Centricity
3 rd	Analytics	Analytics
4 th	Claims	Distribution
5 th	Underwriting	Claims
6 th	Product Development	Product Development
7 th	Regulation	Pricing
8 th	Distribution	Underwriting

With that in mind, trends of innovation have emerged in the insurance sector

On-Demand Insurance

New digital platform support micro-duration and atomisation of insurance by item



Smart Homes and Property Insurance

Sensors and monitoring systems give homeowners and insurers data on, and control over, major risks



Telematics, Driverless Cars and Car Insurance

- Telematics monitor customers' driving habits for more accurate risk profiles and pricing
- Driverless cars redefine the kind of motor insurance required



Wearables, Artificial Intelligence and Health-related Insurance

New biometrics sensors and smartwatches monitor heart rate, blood, pressure, glucose levels, etc., while *providing real-time data, coaching, incentives and inspiring preventive measures*

A hand is shown from the bottom, with the index finger pointing upwards towards a bright, circular light source at the top of the frame. The background is dark, and the light source creates a strong glow and lens flare effect.

Use cases of Emerging Tech in businesses

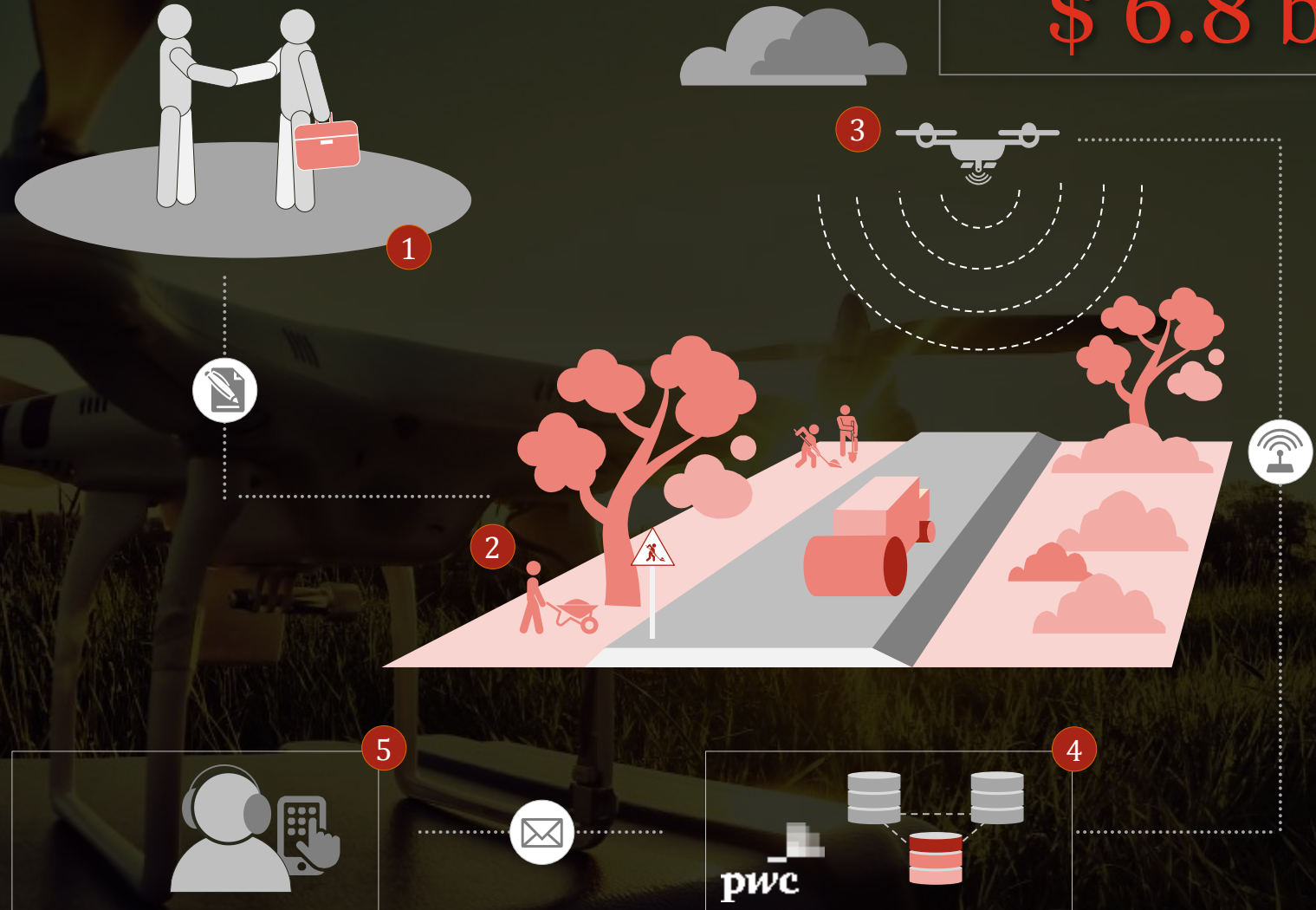
One of the potential applications is usage of drones to cyclically monitor physical assets

Market value of drones
in Insurance sector:

\$ 6.8 bn

Key Steps

- 1 Signing of the insurance contract concerning the linear investment
- 2 Construction works conducted in the insured investment
- 3 Drone inspection aimed at investment monitoring
- 4 Processing of the data collected with drones
- 5 Providing the data to the claim adjuster through the dedicated PwC Geospatial.App software



Case Study: Monitoring Assets with Drones

Replacing in-person surveillance with drones to support investment monitoring process

Situation

- Plans to build ~2000km of transmission gas pipelines throughout the country
- Over 60 separate construction sites spread all over the country

Challenges

- Financing institutions expect reliable progress reporting
- Challenging environmental legislation
- History of previous legal disputes lost due to lack of proper documentation (evidence)

Actions

Weekly investment sites HD images capture from drones



Geospatial data analysis and real time data processing



Reports delivered to client within 48hr

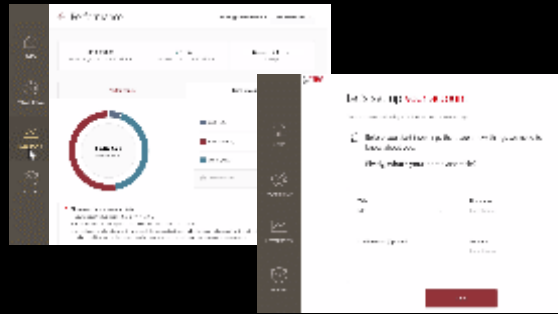


1 year

Time took to bring UBS SmartWeath from concept to reality

UBS wealth management launches robo-advisor to target new customer segments

Robo-advisors and chatbot can vastly improve the user engagement for insurance clients



On-boarding Robot

- Assess financial condition with a self-served chat interface
- Use of analytics to investigate financial behaviour, such as personality, investment goals, time horizon
- Entire on-boarding process takes 10 minutes
- Customers can also “plug-in” assets not managed by UBS

Investment Advisor

- Recommend investment products with algorithms based on customer behavior
- Check-in regularly on a portfolio's performance and compare with client's objectives, and readjust if required
- Personalised dashboards and tools for customers to view all assets in one place
- Leverages UBS' existing network of research professionals





Large Oil & Gas Provider

Pump downtime prediction

There will be lower risk of breakdowns, leading to less insurance claims with better protection offered by predictive maintenance

Issue

Client wanted to utilise sensor data on variable speed induction motors and multi-staged centrifugal pumps to predict catastrophic failure events and optimize service routines and control settings

Action

PwC leveraged sensor data, expert knowledge on pump and motor physics, and algorithms to develop analytics engine; and developed post-processing algorithm to cluster types of inefficiencies and failure modes

Benefit

The resulting model predicts ~70% of significant downtime events with a low occurrence rate of false signals, allowing for intervention prior to failure where economically sensible

How predictive maintenance is disrupting general insurance

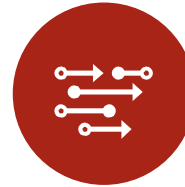
Revenue Change



Predictive maintenance could **eliminate up to 70% of breakdowns**

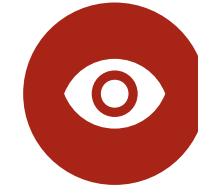
Insurers may only cover some of the losses due to various exclusion clauses, resulting in a significant amount of revenue and loss costs

Applicability on Valuable Assets



Wide applications for predictive maintenance and security in commercial, auto and L&C/General lines, particularly where **valuable assets** are in play

Opens up New Opportunities



Opportunities for insurers includes **new products** e.g. **usage-based automotive** and **heavy machine insurance**

High degree of Current Adoption:

74% (re)insurers use predictive analytics

An aerial view of a city street at dusk or dawn, overlaid with a grid of semi-transparent, multi-colored rectangles (red, blue, green, yellow) that track various objects and people. The tracked objects include a white car in the upper left, a person walking on the sidewalk, a person pushing a stroller, a person walking a dog, a person riding a bicycle, and a dark sedan in the lower right. The text is centered over the middle of the image.

Remote Asset Tracking with Artificial Intelligence & Internet of Things (IoT) @ PwC

Smart-Cooler that tracks inventory and interactions using A.I. and IoT (1 / 2)

- Pre-packaged, custom-built sensors
- Real-time stock and inventory management
- Cloud-based API with deep learning models
- Scalable as the number of coolers grows

Example of disrupted insurance: *Equipment breakdown insurance*

Remote asset tracking collects abundant real-time data of the insured object and could potentially offer lower insurance premium

Prototype of SmartCooler Cloud API

SmartCooler Dashboard

Dashboard Real-time Image Analytics

11/24/2015
12AM 4am

Object Classification

Shelf 1
Shelf 2

1. Coca-Cola - 90%

1st: 90% likely a Coca-Cola
2nd: 75% likely a Dr. Pepper
3rd: 70% likely a Diet Coke
[See Image Details](#)

Total Inventory by Object
% Inventory by Object

Total Inventory
Time

1. Identify cans

2. Detect Logos

3. Predict Brand

Predictions	
Coke	94.0%
DrPepper	11.0%
Sunset	1.0%

For more details, please visit <https://smartcooler.firebaseio.com/>

Smart-Cooler that tracks inventory and interactions using A.I. and IoT (2 / 2)

- Pre-packaged, custom-built sensors
- Real-time stock and inventory management
- Cloud-based API with deep learning models
- Scalable as the number of coolers grows

Example of disrupted insurance: *Equipment breakdown insurance*



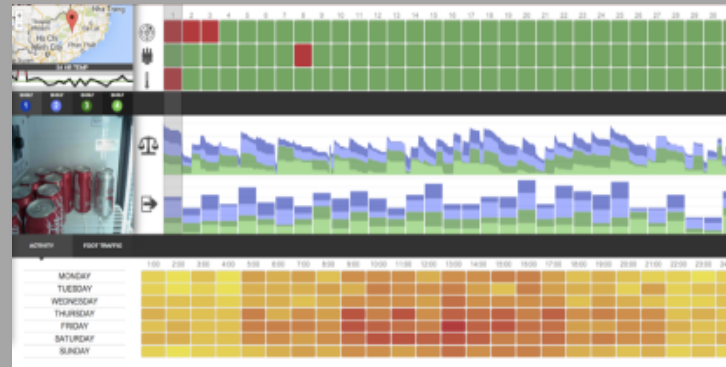
View compliance and activity data for a region

- View the density of coolers across a region and their relative health
- Compare across territories and identify aggregate level metrics of interest



Flag out-of-tolerance events

- View actionable metrics for each cooler within a territory
- Quickly identify coolers that are stolen, contain foreign objects or have maintenance issues
- Optimize restock schedules by comparing cooler activity and capacity across a territory



Drilldown to shelf-level details

- Drill down to hourly activity and capacity at shelf level, and investigate flags by viewing shelf snapshots
- Optimize marketing efforts by correlating regional cooler activity and foot traffic across weeks, days and hours

Cruise Port Visitor Count with A.I. and IoT

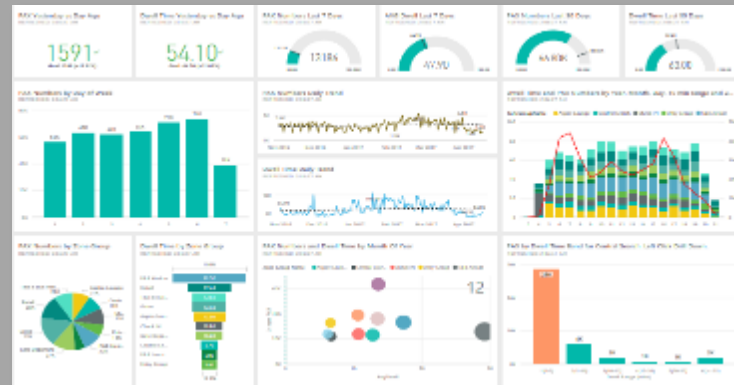
Remote asset tracking could lead to lower insurance premium with the ability to monitor real-time condition of the insured object

- Custom-built sensors
- Real-time visitor information management
- Dashboard with real-time data visualisation



Sensors and facial recognition

- Interactive video hardware with adaptive analytics installed at port terminal
- Able to identify 99 feature points on a person's face



Real-time data and analytics

- Detailed dashboard showing number of unique visitors (anonymised) across variety of metrics:
 - Gender, age and ethnicity metrics
 - Trend analytics
 - Dwell time
 - Passenger volume / Dwell time per zones

How IoT and AI are disrupting general insurance

More Precise Pricing



Improvement in operational efficiency and assess risk will make product pricing with greater precision

Real-time pricing at the point of sale

Boost profitability and sharpen competitive edge

Automating Claim Processes



Claims processes can be automated by machine learning technology in A.I.

Use images, sensor data and historical data to **assess severity** and **predict repair costs** of insured objects

Revenue and Loss Adjustment



Shrinks revenue pools because of improved risk-monitoring, accident prevention, early loss detection, and preventive maintenance

But the IoT can also **reduce insurers' loss** and **loss adjustment expenses** at the same time

Opens up New Opportunities



Enables a host of innovative risk mitigation services related to the smart home/car, and industrial IoT

New products creation ie. context-relevant small-ticket insurance

More satisfied customers by enabling **repositioning insurers as valued partners in preventing losses**

The image features a light grey background composed of a repeating pattern of interlocking puzzle pieces. In the center-right area, one puzzle piece is missing, leaving a dark grey, irregularly shaped void. The word "Blockchain" is written in a white, serif font, centered horizontally within this dark void.

Blockchain

Putting Chickens on Blockchain

ZhongAn Insurance – Part of Ant Financial

What is happening?

- ZhongAn will work on a blockchain platform to record the *5 billion chickens p.a.* in China
- *End-to-end supply chain* will be accessible on the blockchain platform
- ZhongAn to partner with Wopu, a Hangzhou Internet of Things firm, to provide devices that will be attached to each chicken

What are the benefits?

- **Food Safety** – reduce risk of supplying of rotten and expired meat to fast-food chains (ie. scandals erupted with McDonalds and KFC in 2014)
- **Tracking nutritional value** of chickens & eggs
- Supply chain efficiency

What are the key features?

Unique Identity



- Each chicken will be given a unique identity
- Identity is distributed from the **supply of eggs and breeding base**

Nutrition & Health Monitoring



- Daily feed given to chickens, **nutrition requirements** are recorded
- Farmers can also review the quantity of **daily exercises** to ensure the chickens are a healthy produce

Real-time Logistics Management



- **Processing plants and logistics firms** will have access to the blockchain platform
- Distributors can retrieve **source of chickens & eggs, delivery status, and health** of chickens

How Blockchain is disrupting general insurance

Smart Contract



Smart contract on top of a blockchain enables automation of claims handling with its **reliability** and **transparent payout mechanism**

Blockchain can be used to **enforce contract-specific rules** with **leveraged credibility** for customers due to decentralised feature, automated reconciliation and verification of transactions

Trust & Transparency



A **customer-controlled** blockchain acts as a **distributed platform** for **identity verification** or **medical history/data**

Customers' **fears about sharing personal data** after disclosing them will be **largely eliminated**

Cost Reduction



Automated verification is available to:

- Identify insurance policy holder
- Validate contracts
- Confirm auditable registration of claims and data from 3rd parties, etc.
- Arrange claims payouts in a blockchain-based payment infrastructure or smart contract

A group of men in dark suits are standing on a set of concrete steps. They are wearing colorful, multi-colored striped socks and black dress shoes. The image is overlaid with a semi-transparent dark filter. The text "Who we are" is centered in the upper half, and "PwC Emerging Technologies Group" is centered in the lower half.

Who we are

PwC Emerging Technologies Group

We listened to our clients : We are going to market through research, testing and implementation to help fill in the gaps for talent and the need to move at speed

EXPLORE



Research & Strategy

Uncover emerging technologies trends and impact across the world and in China

EXPERIMENT



The Lab

Experiment with innovative ideas, develop prototypes and built proof of concepts

ENABLE



Build & Execute

Co-create with our clients to bring the new technology to life and measure success

We narrowed down to areas that matter: PwC globally screened 250+ technologies down to 8 - that we see having the biggest business impact over the next 5-7 years



Artificial Intelligence

Simulation of human intelligence by machines



Augmented Reality

Immersive technology



Blockchain

A digital ledger



3D Printing

Additive manufacturing



IoT

Network of connected devices and sensors



Robots

Simulation of human tasks



Virtual Reality

Immersive technology



Drones

Mobility without human control

Why us?

We bring best of technology experts, disruptors, creative minds and digital capabilities together to find new ways of things



The right **people**

We have won numerous awards in IoT, analytics, AI application, digital strategy and integration, and product innovation



Worldwide **recognition**



Global delivery model

Our global model and scale allows for on-site delivery anywhere anytime, augmented by our Labs and Experience Centres



Agile mind-set

We co-create with an agile and iterative approach, ensuring flexibility to account for unknowns along the journey into the future

Thank you



Eric Young

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