

AGENDA19

STRATEGY > IDEAS > ACTION

#MyAGENDA19

— FROM IDG —





Innovating in the Digital Economy

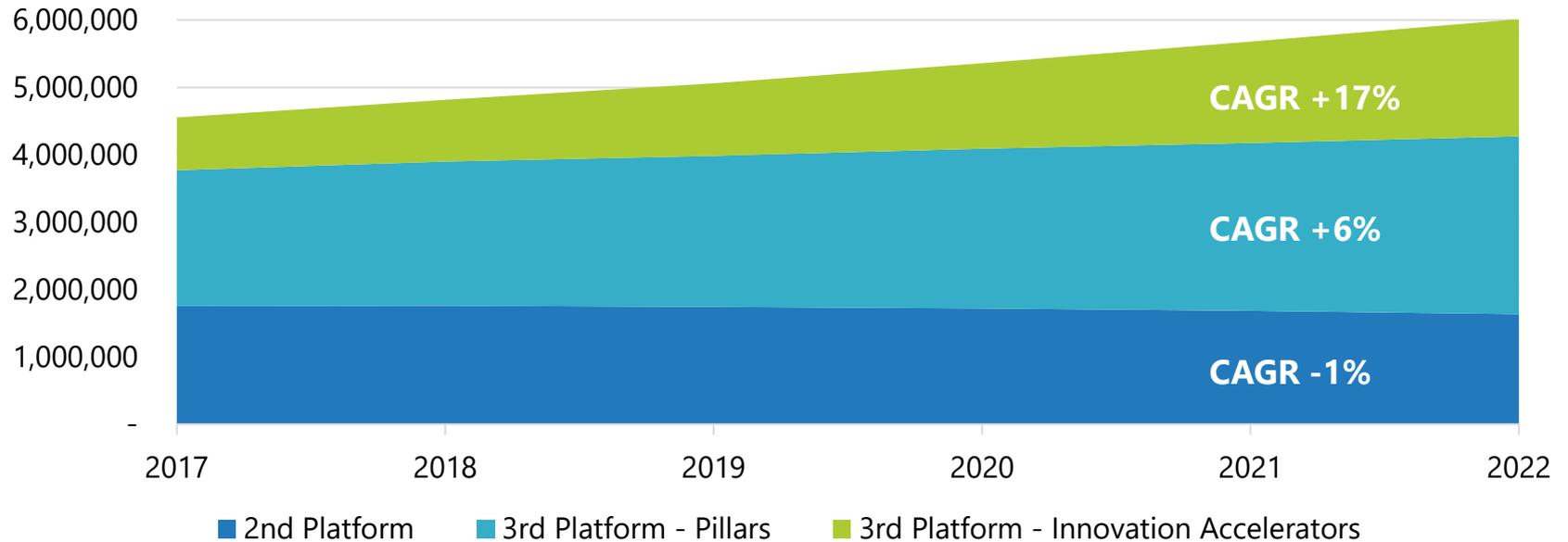
IDC's Chapters of the
3rd Platform



Growth from 3rd Platform and Innovation Accelerators

TOTAL CAGR: +6%

Worldwide ICT Spending, 2017-2022 (\$M)



The Journey from Experimentation to Multiplied Innovation



Transitioning from **experimentation** to **multiplied innovation** means:

- Innovation is accelerating.
- Ubiquitous changes will affect markets, customer expectations, and operational efficiencies.
- Technology begins addressing more complex problems.
- Eroded trust, turbulent jobs, and new inequities begin to grow.

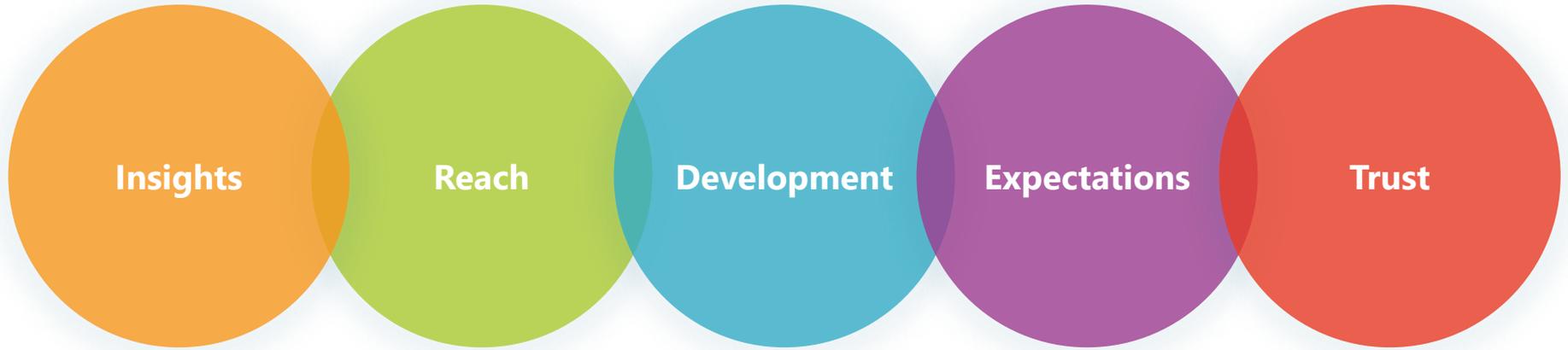
1



CHAPTER 2 2015+

Multiplied Innovation

A New Wave of Multiplied Innovation Impact



INSIGHTS EVERYWHERE

- 5 levels of AI-based automation begin to emerge
- Human assist
- Real-time decisions
- Hardware specialization

THE DYNAMIC EDGE

- Connections/endpoints standardize
- Edge intelligence multiplies
- Seamless cloud-to-edge experiences

APP EXPLOSION

- Code reuse and componentization
- New tools empower more developers
- Platforms and ecosystems turbocharge DX

SOCIETAL NORMS EVOLVE

- Renegotiating the information and experience “bargain”
- Modernized government-verified IDs
- Augmentation of reality enriches interactions

AMBIENT SECURITY

- Security gets smarter
- Emergence of trust agents
- Blockchain is invisible in plain sight — ensures trust and legitimacy

New Technology Foundation

- New Technologies & Delivery Model
- **"IT Access @ Scale"**
 - Cloud
 - Mobile
 - Social
 - Big Data

EXPERIMENTATION

2007

2015

Networked Innovation

- Platforms & Communities
- **"Innovation @ Scale"**
 - AI
 - IoT
 - Blockchain
 - Natural Interfaces

**MULTIPLIED
INNOVATION**

We Are Here

2023

...

AUTONOMY

Sustainable Scaling

- Autonomous Systems
- **"Mitigate Complexity @ Scale"**
 - "Aiⁿ"
 - Human Assist

Cloud Everywhere, For Everything

CLOUD TAKES OVER

By 2022, nearly 40% of core IT spending will be cloud related, rising to 80% or more by 2028.

WORKLOADS ARE OPTIMIZED

By 2022, 25% of public cloud computing will be non-x86, growing to over 50% (including quantum computing) by 2028.

COMPLEXITY RISES

By 2022, 50%+ of enterprises will be intensively multicloud (10+ service providers), up from 10% in 2018.

CLOUD APPS EXPLODE

By 2022, over 1M apps and services will be available in the Top 5 SPs' marketplaces, up over 50x from 2018 — driven by growth in vertical apps and microservices.

WAVES OF CONSOLIDATION

By 2022, the Top 5 cloud SPs will own 85%+ of mega-platform share. In a second wave of consolidation, 2 of the top 5 U.S.-based SPs will merge datacenter facilities.

AI's Ubiquity Changes Policy, Business, and Life



- By 2020, lack of algorithm transparency, perceived decision bias, and malicious use of AI will lead to a 50%+ increase in spending on new governance policies and procedures.
- By 2022, more than 20% of endpoint devices and systems will contain AI/machine learning algorithms, driving two-thirds of the total annually shipped compute power.
- By 2025, 20% of spending on analytics has been cannibalized by higher-level insights-as-a-service offerings.
- By 2025, AI-based assistants and bots shift toward end-user ownership, allowing us to take personalized, pluggable app interfaces from job to job and situation to situation.

Smarter, Easier Security Helps Ensure Trust

SECURING THE EDGE

By 2022, more than 60% of security spend will shift to protecting scalable edge infrastructure and applications. Managed security service providers with scalable packaged solutions will grow ~ 15% faster over legacy MSSPs.

SMARTER SECURITY

By 2023, 20% of enterprises will adopt products with cryptographic methodologies to keep pace with quickly evolving and emerging technologies.

VERIFIED IDENTITIES

By 2023, more than 90% of digital personas will be abandoned, while more than 20% of active personas will become associated with verifiable government identities.

SIMPLER SECURITY INDUSTRY

By 2023, the number of cybersecurity companies will drop by nearly 40% from 2019.

DIGITAL CONTENT

By 2025, 5% of digital content will be placed in distributed ledger-based information proofing systems, and large cloud providers will build automated and trusted information sharing services.

The Edge Distributes the Cloud

By 2020, all Tier 1 cloud service providers will have a core-to-edge offering, enabling a seamless compute and data link between the customer's own edge and the provider's cloud.



- By 2020, over 50% of modern edge IT and network services will be managed from the cloud, underpinned by secure, virtualized edge architectures.
- By 2024, 80% of existing hardware edge appliances will be hosted as software appliances on standardized x86 devices, providing a platform for innovation at the edge.
- By 2028, the hybrid quantum/classical paradigm will encompass the edge; software calls will be direct from the edge and enable quantum simulations of collected data.
- By 2028, over 50% of virtual IT/network/security functions will be executed in edge micro-datacenters, driven by increased demand for IoT apps and data stretch from edge to core to cloud.

IT Transforms Operational Technology

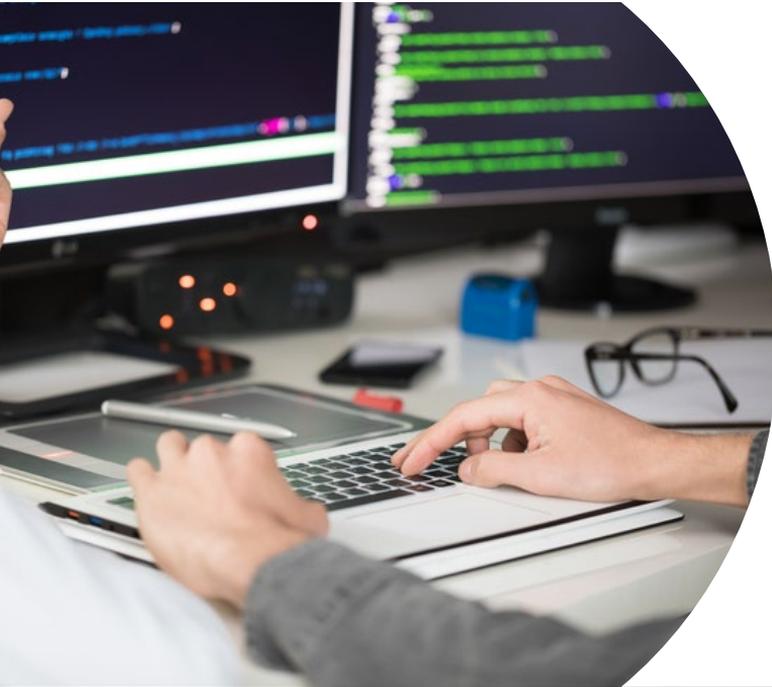
By 2022, over 20% of an operation's analytical capabilities in asset-intensive industries will be in edge devices.



- By 2021, the intersection of IoT and blockchain will enable consumption-based revenue models in at least 10% of products with selling prices over \$1,000 that can bill immediately upon use and at different rates based on service levels.
- By 2022, multiple industries will have self-provisioning assets enabled through AI that self-define their role in a production process.
- By 2023, asset utilization will have improved 20% in asset-intensive industries through the use of IoT platforms and AI-powered self-diagnosing capabilities.
- By 2028, the number of maintenance workorder transactions will decline 75% due to self-healing assets.

Developers: The Road from Automation to Autonomous

By 2023, using new tools, developers, platforms, and improved methodologies, 500M new logical apps are created, a number equal to the installed base of apps built over the past 40 years.



- By 2022, 90% of all new apps will feature microservices architectures that improve the ability to design, debug, and update.
- By 2022, 3 out of 4 new apps will feature a majority of content sourced from other developers and accessed from a code repository or external services, up from under 5% today.
- By 2022, the top 4 clouds capture 80% of the opportunity, increasing customer concern of lock in, causing them to embrace the use of multicloud-first, built on open source, containerized, cloud native technologies for 60% of apps.
- By 2027, a new class of developers that develops code without custom scripting expands the developer population by 50%, accounting for 30% of the developer population.

Consumers: Connected, Personalized, and Unrecognizable Experiences



- Foldables enter the smartphone market by 2020 and represent 25% of premium products by 2025.
- By 2021, media and network assets are completely intertwined, setting the stage for a new leadership battle.
- Worldwide eSports revenue will reach \$3B by 2022, growing at a pace that's roughly 2x the 1970s, modern-era NFL.
- The Grammy award winning Best R&B single in 2025 will be written by an AI machine.



CHAPTER 3 2022+

Autonomy

Automation Levels



Human led

**Human led
Machine supported**

**Machine led
Human supported**

**Machine led
Human governed**

Machine controlled

LEVELS OF AI-BASED AUTOMATION



- | | | | | |
|--|---|--|---|--|
| <p>Human led</p> <ul style="list-style-type: none"> • Human analyzes and produces insights using limited technology • Human decides based on experience and rules • Human acts or executes | <p>Human led
Machine supported</p> <ul style="list-style-type: none"> • Human analyzes and produces insights using a portfolio of tools • Human decides based on optimized machine prescriptions • Human acts or executes | <p>Machine led
Human supported</p> <ul style="list-style-type: none"> • Machine analyzes and produces insights with human review • Human decides based on machine prescriptions constrained by all factors • Human acts or executes with machine oversight | <p>Machine led
Human governed</p> <ul style="list-style-type: none"> • Machine analyzes and produces insights without human review • Machine decides within a framework of human governance • Machine acts or executes with human oversight | <p>Machine controlled</p> <ul style="list-style-type: none"> • Machine analyzes and produces insights • Machine decides • Machine acts or executes |
|--|---|--|---|--|

A set of connected processes

A series of related activities that produces a specific output

A related collection of tasks to be completed in achieving the objectives of a process

AUTOMATION SCOPE

Autonomy



Autonomy is a journey, not an end state.

- **Job transformation and productivity accelerate**
New jobs born in Chapter 2 become mainstream, and productivity increases far faster than role destruction.
- **New personal capabilities**
AI learns from you and helps you evolve personally and professionally.
- **New job processes**
As “sub-jobs” become automated, new components of jobs will be created and accelerated through collective learning.
- **Smarter automation addresses more sophisticated problems**
Autonomy enables multiplied innovation at scale.

Final Thoughts

1

IT's relevance is broadening as *new experiences* demand *new technology*.

2

The *multiplied innovation* of Chapter 2 continues to bring better insights, broader reach, greater trust, and reimagined experiences.

3

The 3rd Platform story is accelerating, producing exciting opportunities for *digital innovation* in the Chapters ahead.

For More Information

Crawford Del Prete

cdelprete@idc.com

@craw



IDC Blog

<https://blogs.idc.com>



IDC on Twitter

<https://twitter.com/@IDC>



IDC on LinkedIn

<https://www.linkedin.com/company/idc>



IDC GRAC

Global Research Advisory Council