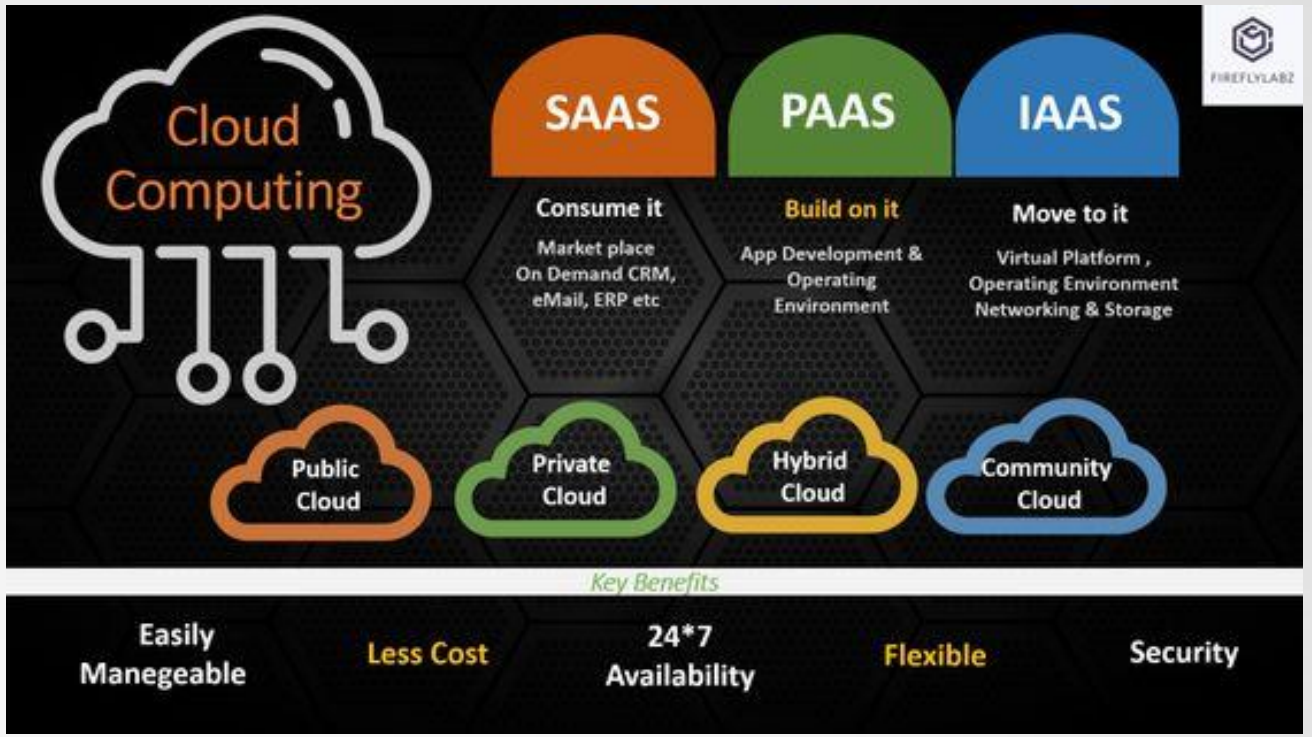
CLOUD FIRST
–
HOW CLOUD SERVICES CAN IMPROVE GOVERNMENT SERVICES

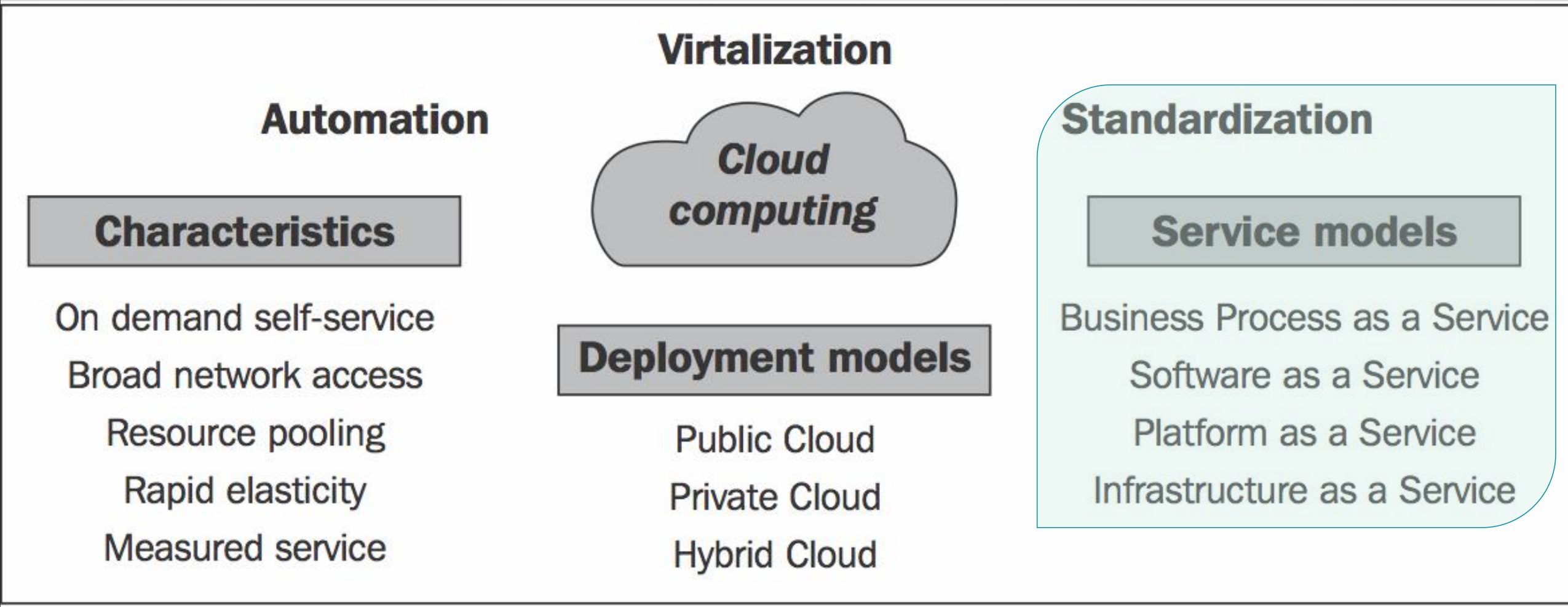
SPEAKER

ARUN BISHT

AGM (IT & e-GOVERNANCE)

Dehradun Smart City Limited




Virtalization
Automation
Cloud computing
Standardization
Characteristics
On demand self-service
Broad network access
Resource pooling
Rapid elasticity
Measured service
Deployment models
Public Cloud
Private Cloud
Hybrid Cloud
Service models
Business Process as a Service
Software as a Service
Platform as a Service
Infrastructure as a Service

? CLOUD

IT Infra	IT Resource	Disaster Management	Infra/HR aging out
Data Security	Data Protection	Disaster Recovery	IT Budget
Collobration	Remote Access	Eco Friendliness	Scalability
Business Continuity	Capacity Building	New Technology	Implementation
Dedicated IT cell	Work loads	Data Analytics	Maintenance

On-Demand

A consumer can unilaterally provision computing capabilities, such as server time and network storage, as needed automatically without requiring human interaction with each service provider.

Agile

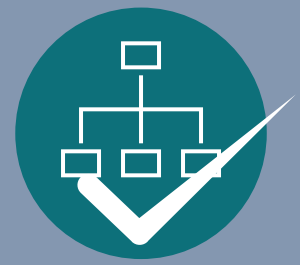
Possibilities of cloud solutions can be available to the system user in a short period of time, if it is necessary. The user is free to purchase additional resources and opportunities in any quantity and at any time.

Network Access

Implies widespread, heterogeneous network accessibility for thin, thick, mobile and other commonly used compute mediums. System capacities are available to customers through a network and can be accessed from different devices

Resource Allocation

Computer resources of providers are grouped in order to serve a large number of simultaneous users. The users themselves have no control over the physical parameters

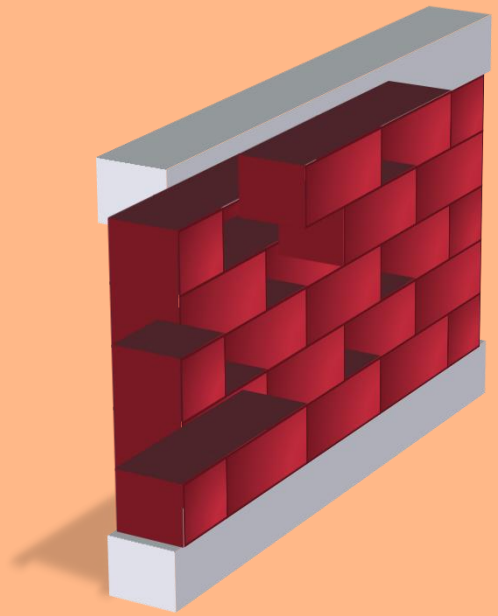


Measured Service

Cloud systems automatically control and optimize resource use by leveraging a metering capability at some level of abstraction appropriate to the type of service (e.g., storage, processing, bandwidth and active user accounts).

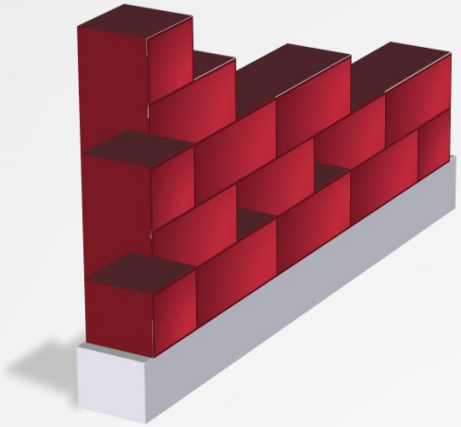
Cloud Service Models

Dedicated Hardware/ Software



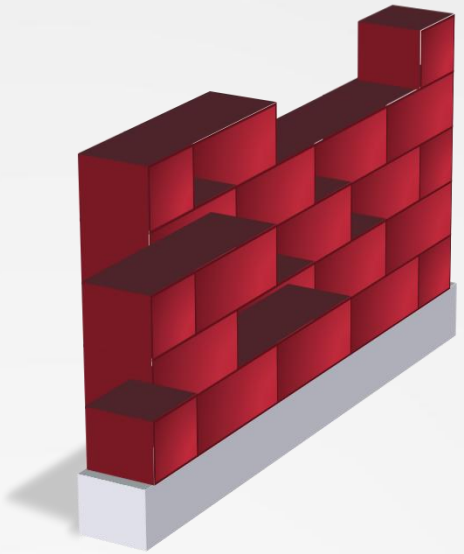
Physical Server

Infrastructure as a Service



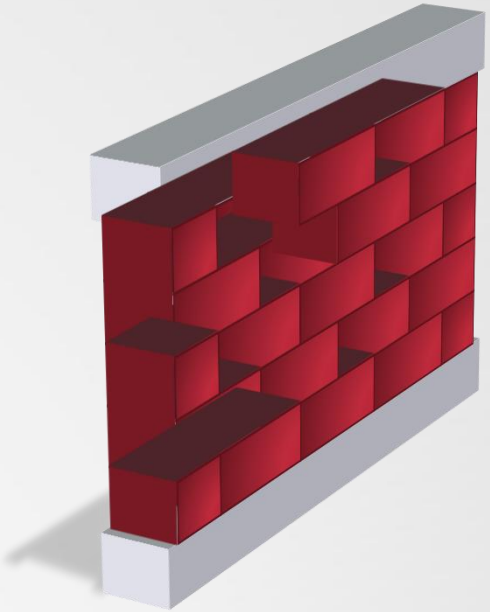
IaaS

Platform as a Service



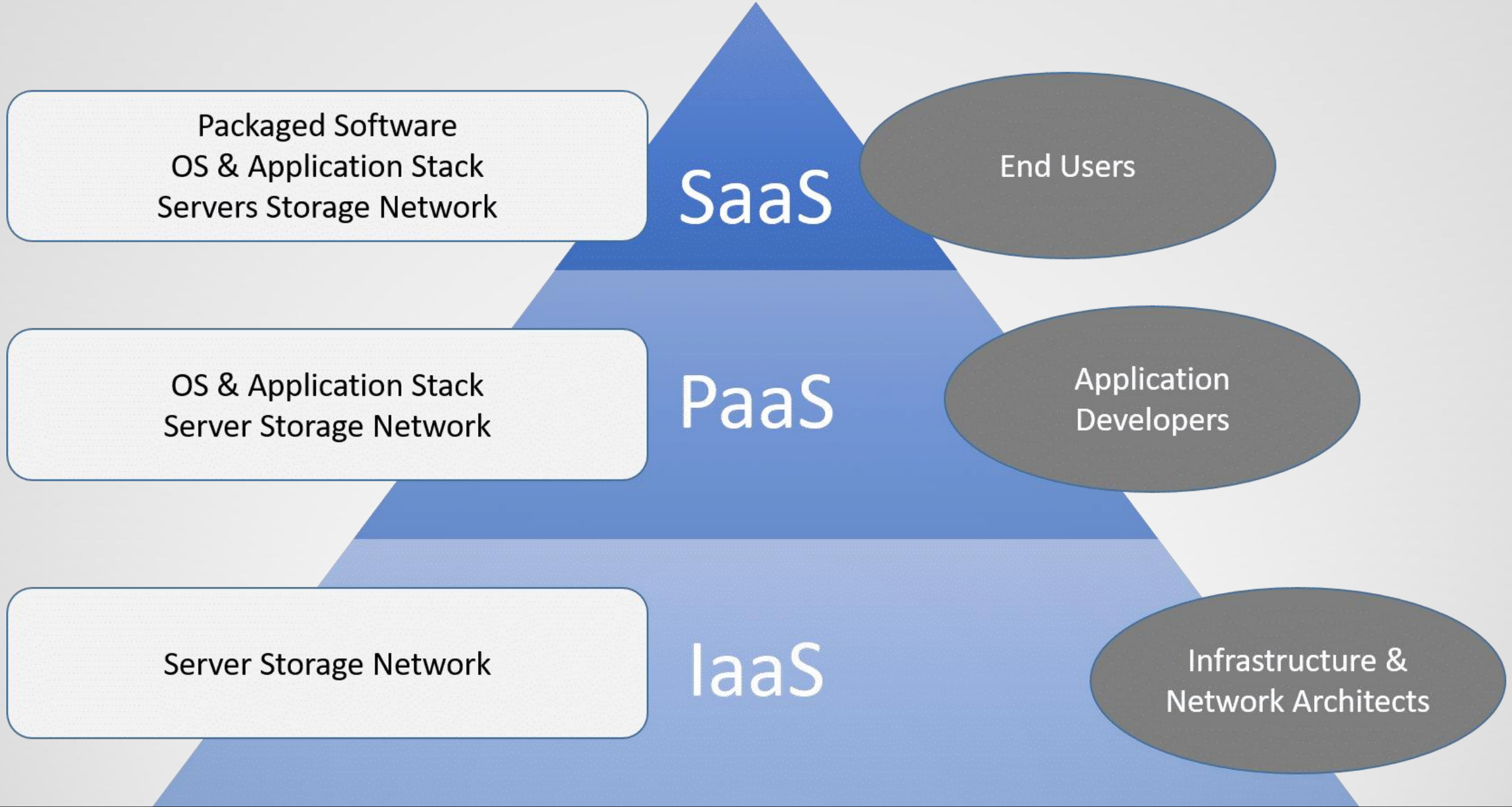
PaaS

Software as a Service

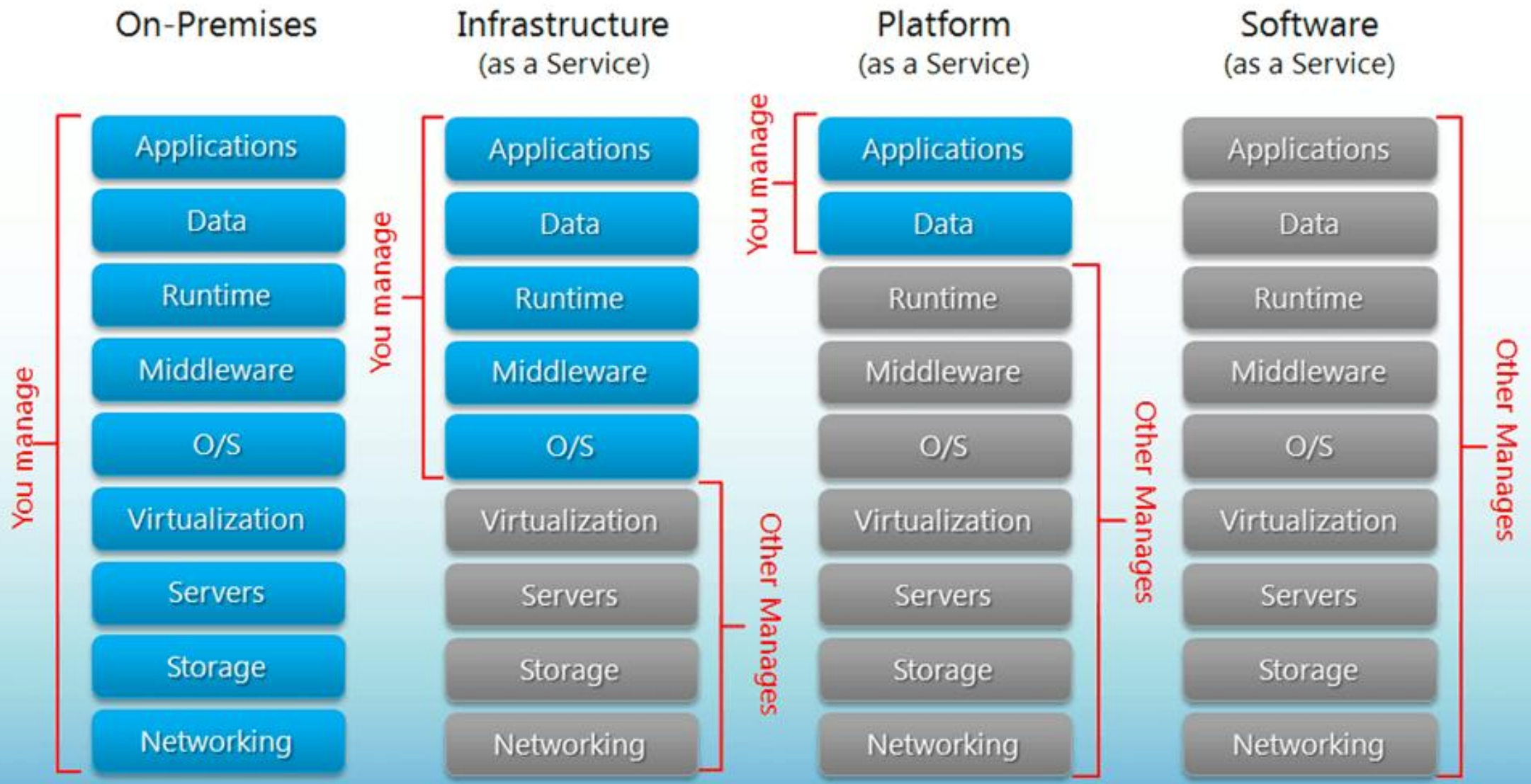


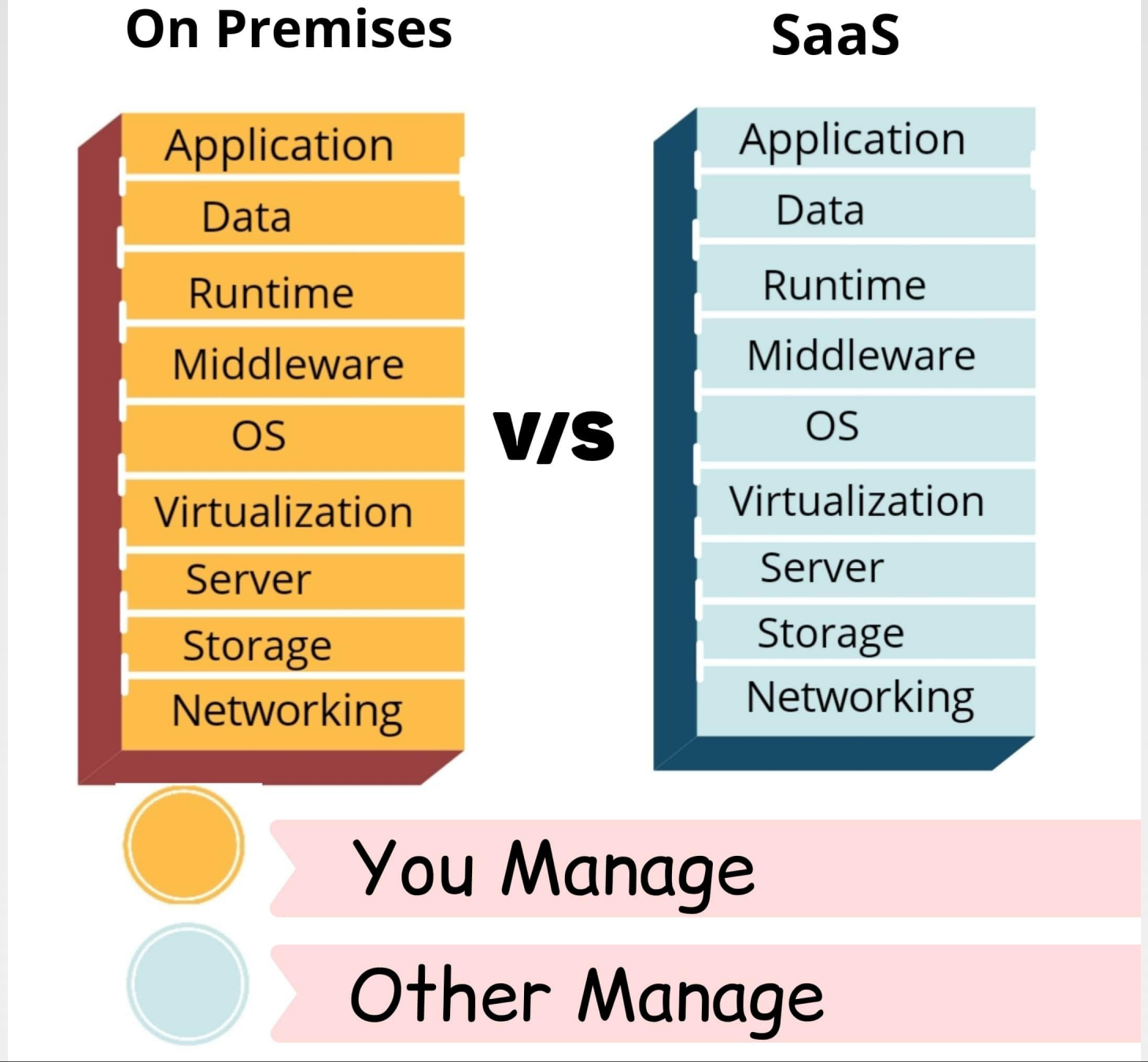
SaaS

Cloud Service Models

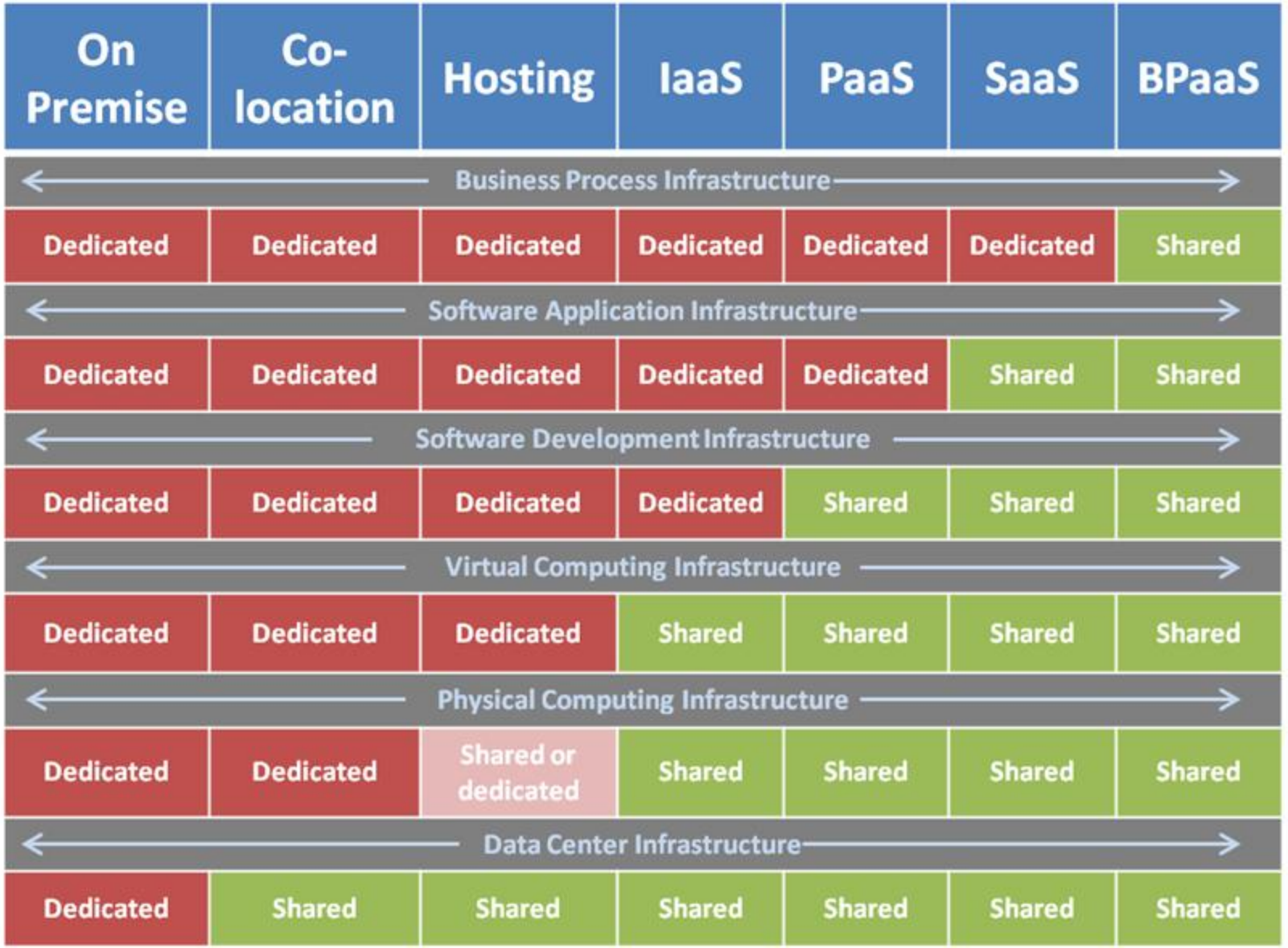


Separation of Responsibilities




On Premises
Application
Data
Runtime
Middleware
OS
Virtualization
Server
Storage
Networking
V/S
SaaS
Application
Data
Runtime
Middleware
OS
Virtualization
Server
Storage
Networking
You Manage
Other Manage

Computing Deployment Models



The METISfiles, 2011

REAL-LIFE SCENARIO

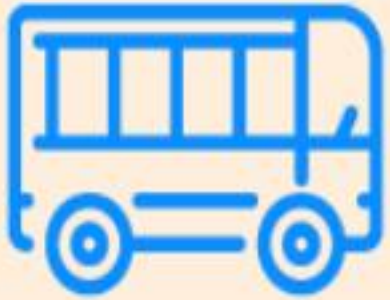
LETS UNDERSTAND THE CONCEPT BETTER

YOUR OWN CAR
On-premises solution

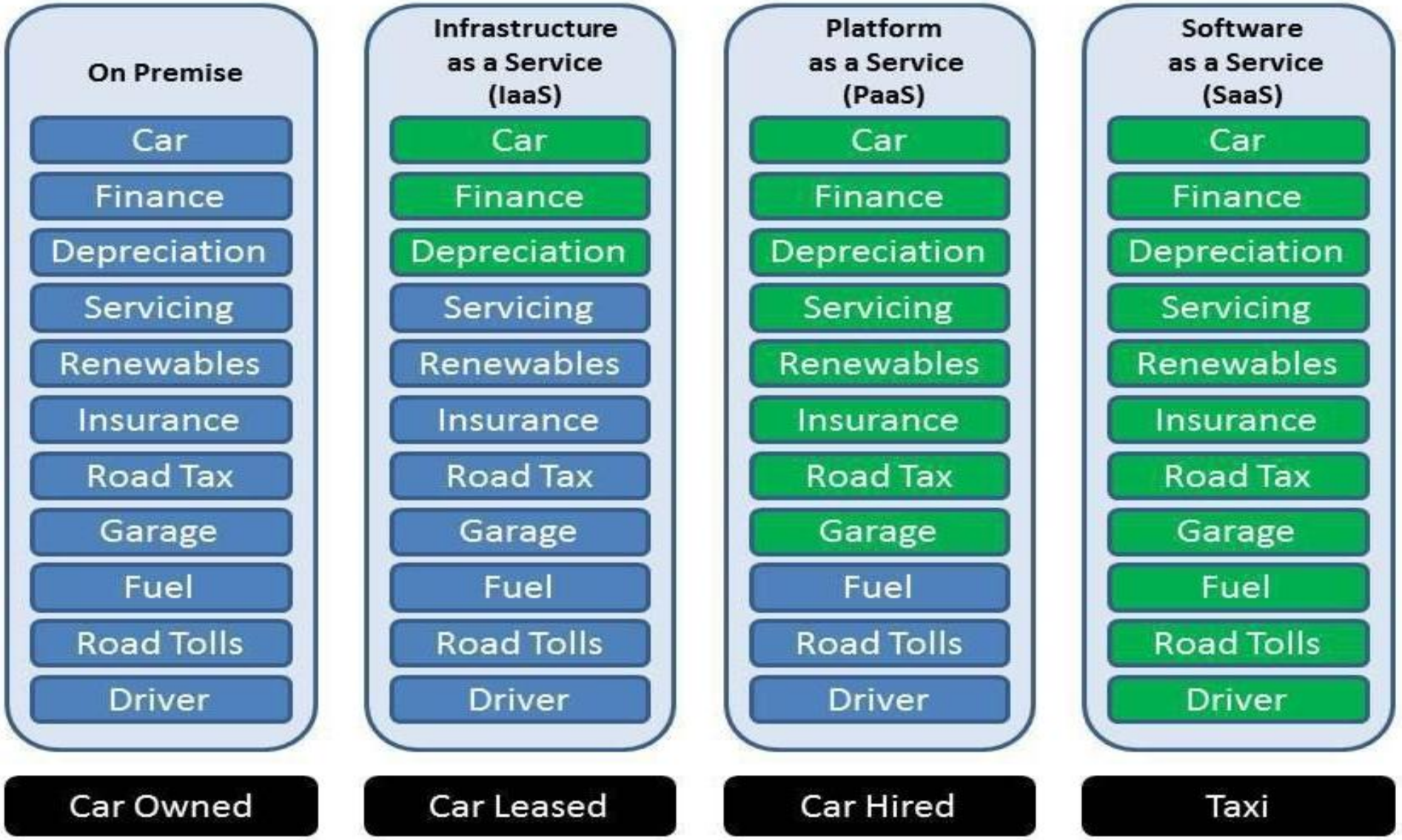
LEASED CAR
IaaS

TAXI
PaaS

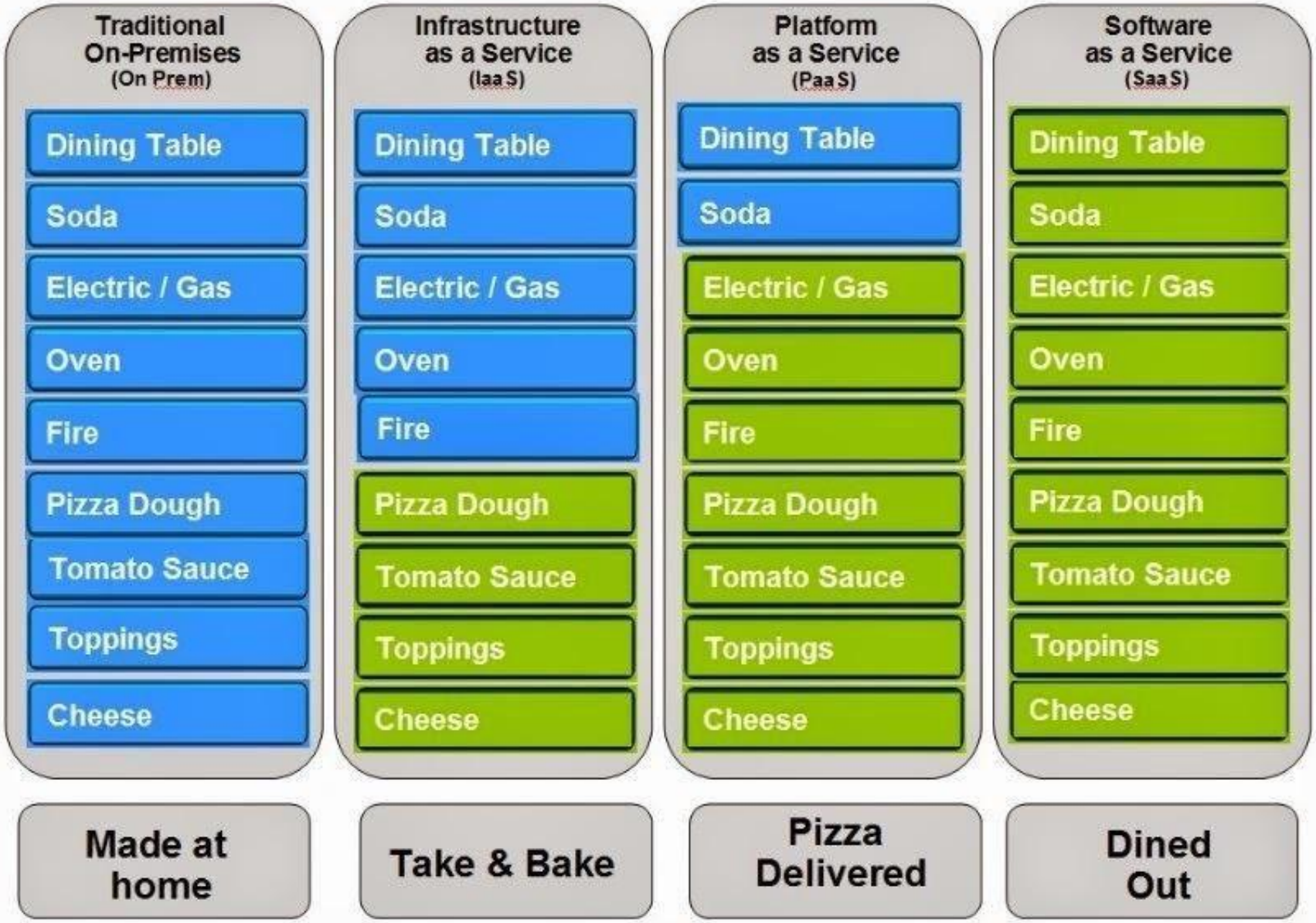
BUS
SaaS

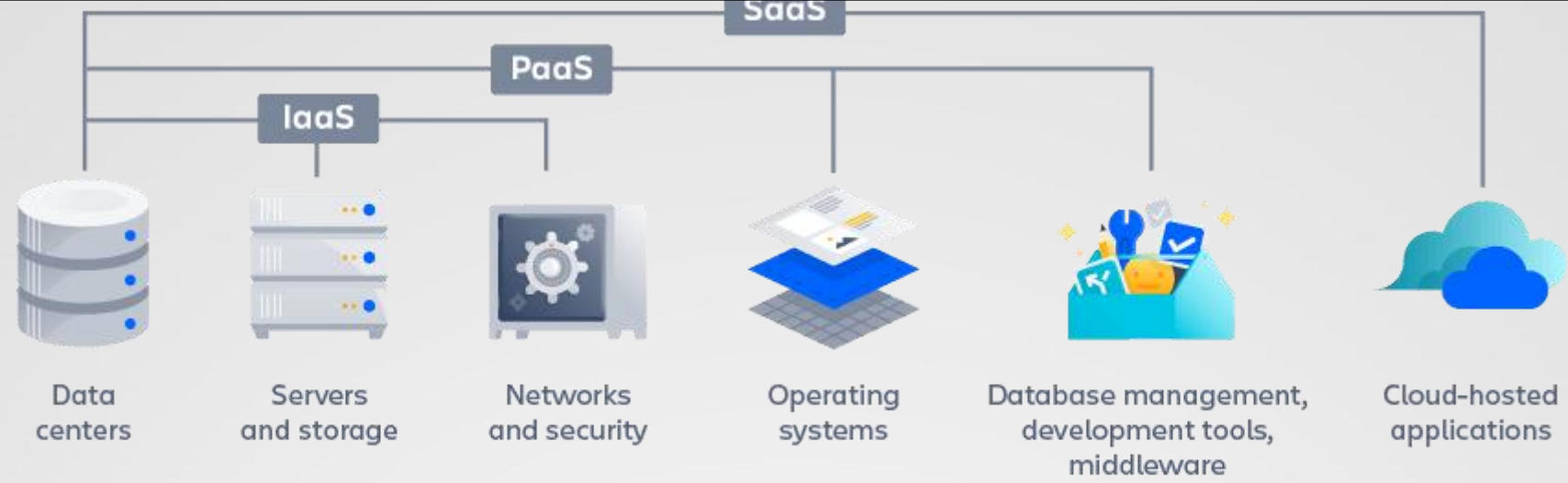


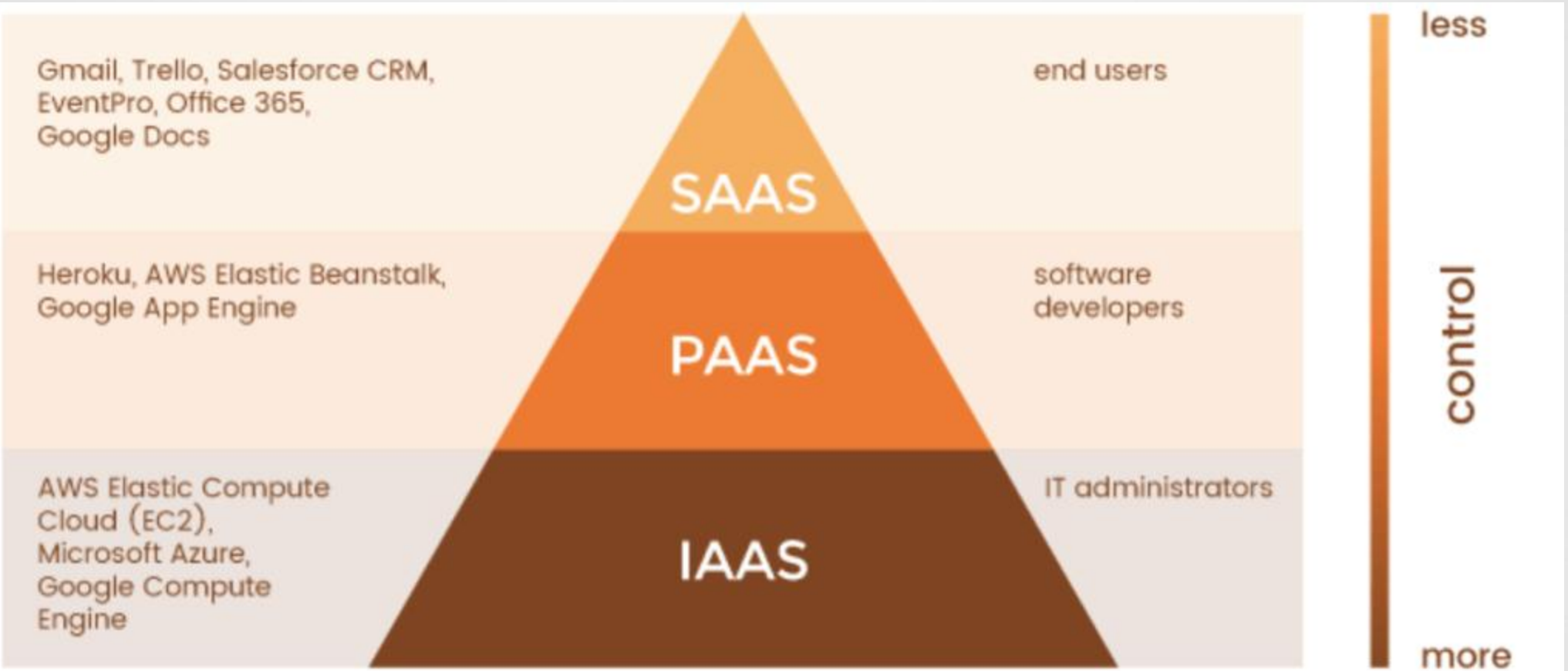
Car as a Service



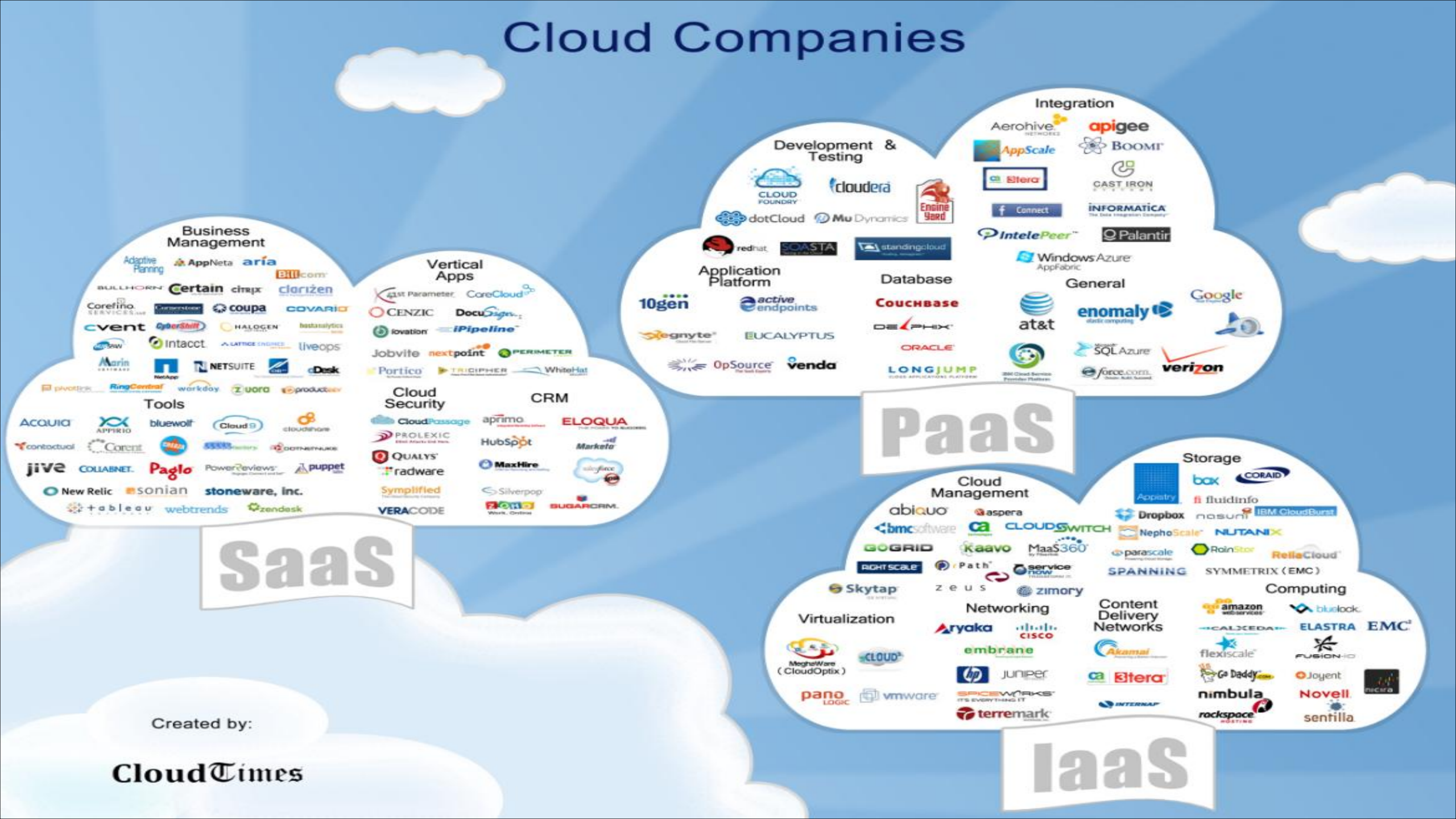
Pizza as a Service




SaaS
PaaS
IaaS
Data centers
Servers and storage
Networks and security
Operating systems
Database management, development tools, middleware
Cloud-hosted applications


Gmail, Trello, Salesforce CRM, EventPro, Office 365, Google Docs
end users
SAAS
Heroku, AWS Elastic Beanstalk, Google App Engine
software developers
PAAS
AWS Elastic Compute Cloud (EC2), Microsoft Azure, Google Compute Engine
IT administrators
IAAS
less
control
more

Cloud Companies



Created by:

CloudTimes

SaaS, PaaS, IaaS – Examples

SaaS

- HubSpot
- WHMCS
- CloudBlue
- verizon
- Cloud Scripting

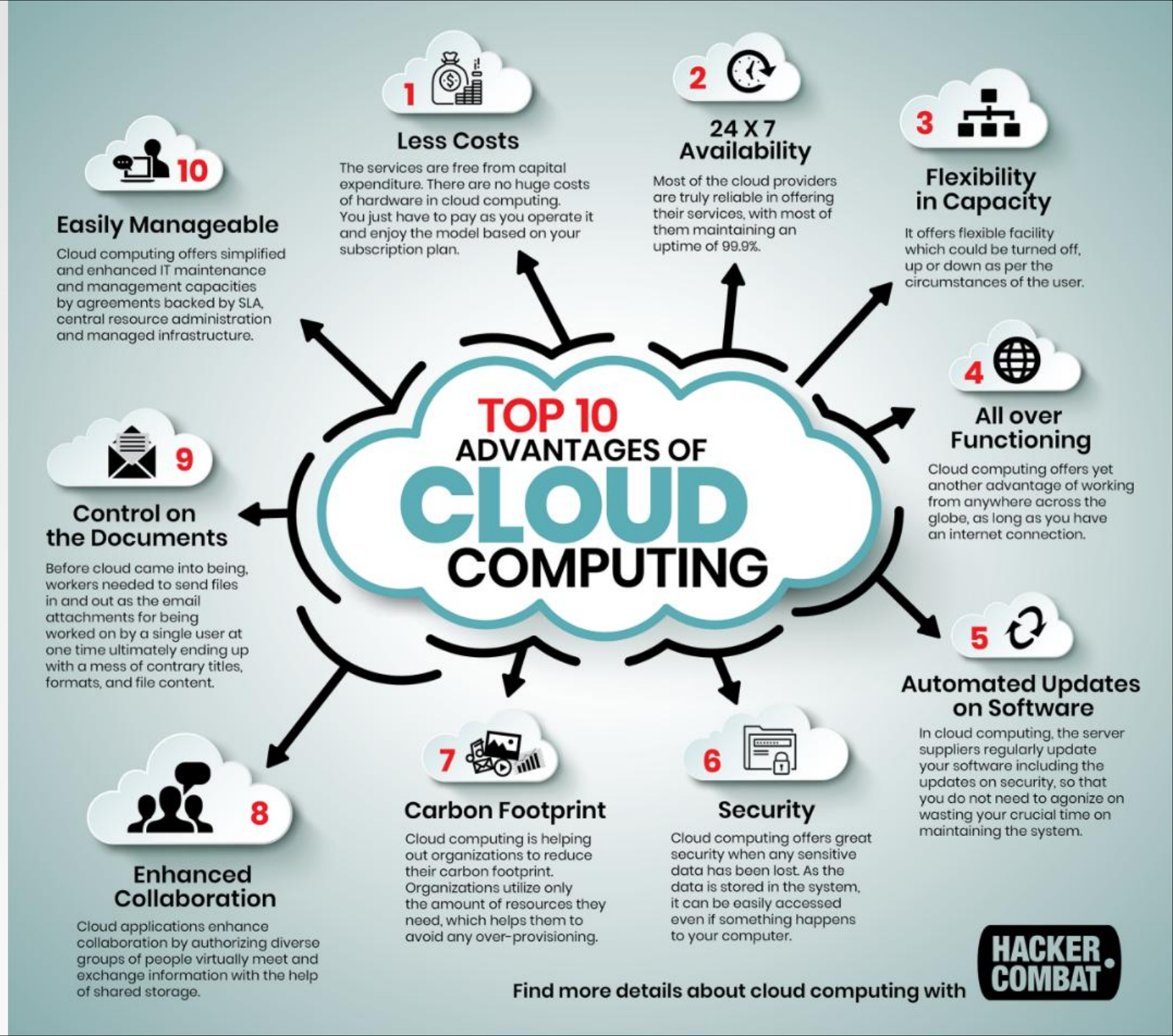
PaaS

- Red Hat OpenShift Online
- GitHub
- kubernetes
- GitLab
- docker

IaaS

- aws
- Virtuozzo
- openstack
- KVM
- ceph

CLOUD COMPUTING IMPROVES GOVERNMENT SERVICES



Cloud Computing : Reduces Costs

By reducing staffing as well as operations and maintenance expenditure for data centers, governments are also able to shift their focus toward improving citizen-facing services.

Singapore's Land Transport Authority, which decided to use cloud computing for web hosting instead of building their own data center, experienced cost savings of 60% when compared to on-premises infrastructure.[17]

In the **Philippines**, the Bureau of Customs estimated that it would need to spend about ₱200 million ($4.17 million in 2016) to rehabilitate its aging internal data center, whereas if it used cloud computing infrastructure, it would have the computing power required for less than one-tenth the cost.[18]

Cloud Computing : Streamlines Operations and Improves Efficiency

This not only gives a better overview of existing processes, which can improve workflow management and identify roadblocks, but also creates a pool of data that can be used to glean insights for future decision-making, monitoring, and evaluation of government services.

The **Philippines**' Department of Information and Communications Technology in 2017 used a cloud-based solution to automate its business permits and licensing system, enabling local government units to process business permit applications and renewals online, reducing the duration of the process from 2–3 days to a range of just 30 minutes to half a day.[19]

In the Australian state of South **Australia**, the Department for Communities and Social Inclusion was able to deploy a single platform and automated contract administration and processing of payments to nongovernment organizations using a software-as-a-service cloud platform, reducing payment processing time from 4–6 weeks to less than 3 days.[20]

Thailand's Ministry of Public Health is able to identify public health risks and disease hotspots to mitigate the risk of epidemics through a cloud-based artificial intelligence analytics using data that is recorded, tracked, and shared through a mobile application. With an accuracy rate of 80%–90%, the artificial intelligence model identifies the conditions of public restrooms through volunteer-submitted photos of restroom hygiene and notifies local restroom operations staff of specific sanitation issues that need to be resolved.[21]

Cloud Computing : Improves Agility and Allows Public Services to Scale

In 2016, **Azerbaijan** established its first ever Tier III data center in the Caucasus region, and with its development in Baku, the country hopes to scale up into a regional information transit center.[22]

The Ministry of Education in the **People's Republic of China** developed a national cloud-based education platform that allowed students to continue their studies during the COVID-19 lockdowns. Two months after its launch in February 2020, 270 million students had accessed online classes via the platform.[23]

Through the use of cloud-based collaborative tools, **Japan**'s Osaka City government was able to smoothly transition 2,000 employees to telework at the start of the COVID-19 city-wide lockdowns in March 2020.[24] This transition was part of the "Osaka City ICT Strategy 2nd Edition" action plan, which included "Telework Implementation Guidelines" to be established in 2018, but it had seen limited implementation until the COVID-19 crisis. This immediate shift to telework due to movement restrictions for these 2,000 employees (representing 10% of all government agency employees in the city) was significant not only because it represented a large number of government employees, but also because the shift was immediately implementable, thanks to an earlier cloud migration into Microsoft Office 365.

Cloud Computing : Improves Resilience with Better Business Continuity and Disaster Recovery

The Australian state of Western **Australia**'s land information authority, Landgate, was able to minimize the effect of a severe storm resulting in a power outage on its land titles system, a critical system that allows users to register and search for land titles, due to advanced cloud features that allowed for the cost-effective implementation of BCDR measures.[25] Thanks to their decision to move to the cloud, the system was only impacted by the power outage by 4–5 minutes before the BCDR system kicked in with a database fail-over system automatically being established.

Azerbaijan's Heydar Aliyev International Airport in Baku has moved to using cloud technologies for all of its databases, digital resources, and systems for displaying flight information.[26] As part of an upgrade of its database and resource management systems under Amadeus, it is also implementing the Amadeus Altéa Passenger Service System software, which gives the airport the full benefit of cloud computing, providing the airport with strong fail-over capabilities in times of emergency or crisis, as applied to its business needs, such as reservation, inventory and departure control capabilities.

Cloud Computing : Facilitates Human Resource Development

Cloud not only enables in-house developers to be more productive by shifting development teams from legacy platforms to a state-of-the-art development platform where they have industry-leading tools and services at their disposal, but also improves talent acquisition and retention within a highly competitive sector.

Developing and maintaining excellence in digital service, and keeping up with technology advancement, will attract leading computer and network engineers and architects into government careers, rather than a continuation of the situation in which governments have difficulty attracting top talent into jobs that are focused on maintaining aging technology platforms.

For example, some United States (US) government IT systems are more than 20 years old and are written in outmoded programming languages such as COBOL.[27] Not only will this legacy infrastructure be difficult to support, but it also prevents governments from transiting to a new model for career journeys, such as a possible "tour of duty" approach toward future careers, put forth by Deloitte in Figure 3.

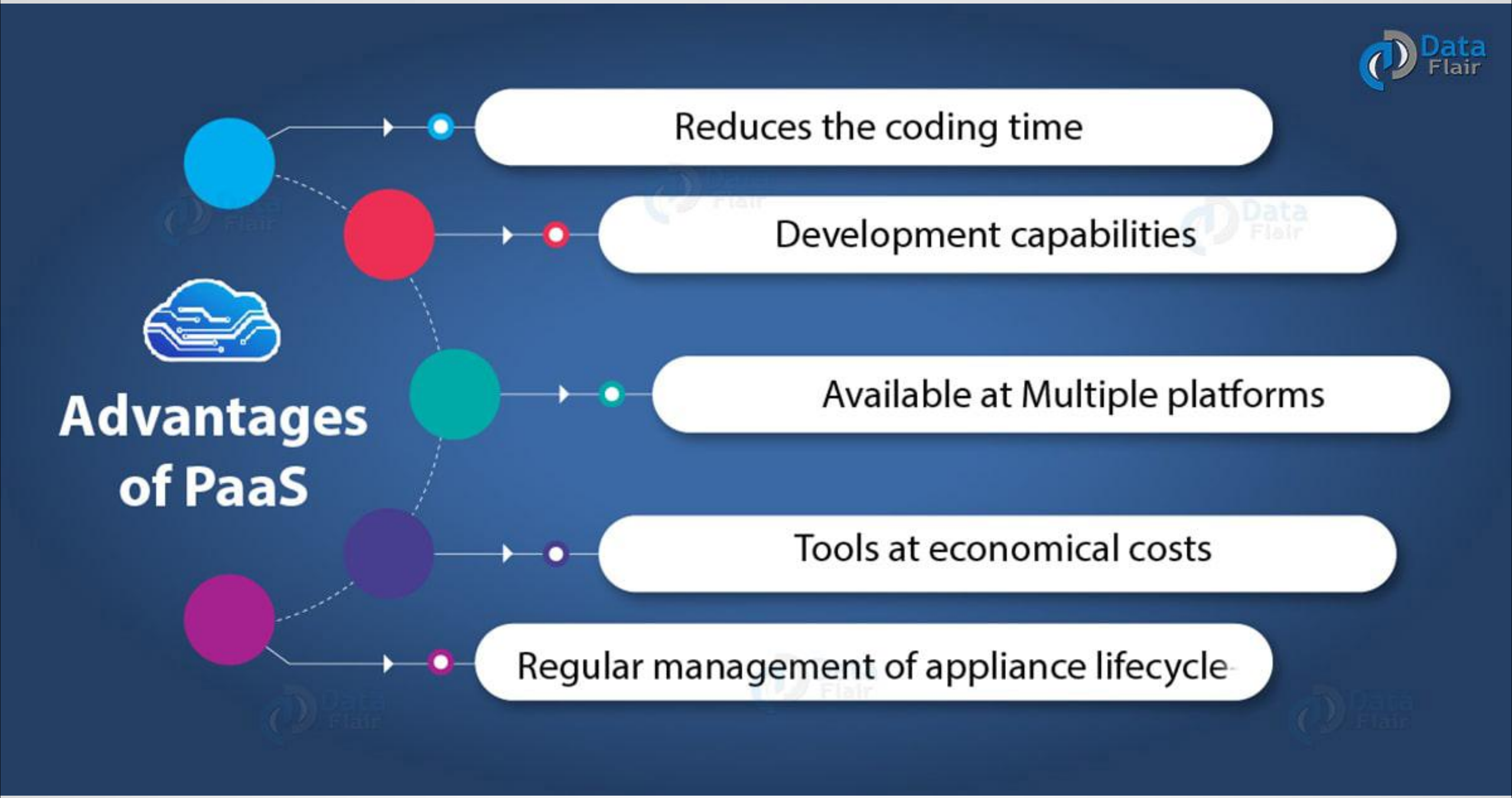
What is the difference between IaaS, PaaS and SaaS?

■ USER'S RESPONSIBILITY ■ SERVICE PROVIDER'S RESPONSIBILITY

	EXAMPLES	APPLICATIONS	MIDDLEWARE	VIRTUALIZATION	DATA	O/S	NETWORKING	RUNTIME	SERVERS	STORAGE
SaaS	Dropbox, Salesforce CRM, Zoom, Office 365, Google Apps	■	■	■	■	■	■	■	■	■
PaaS	Microsoft Azure App Service, AWS Elastic Beanstalk, Google Kubernetes Engine, Red Hat OpenShift	■	■	■	■	■	■	■	■	■
IaaS	Microsoft Azure, Amazon Web Services (AWS), Google Compute Engine (GCE)	■	■	■	■	■	■	■	■	■

SOURCE: HTTPS://WWW.BMC.COM/BLOGS/SAAS-VS-PAAS-VS-IAAS-WHATS-THE-DIFFERENCE-AND-HOW-TO-CHOOSE/


Data Flair
01
Scalability
02
Pay-as-you-go-
03
Secure
04
Save time and cost
Benefits
of IaaS


Data Flair
Advantages of PaaS
Reduces the coding time
Development capabilities
Available at Multiple platforms
Tools at economical costs
Regular management of appliance lifecycle

Benefits of Software as a Service

01 Scalable

02 Flexible

Up to Date 03

04 Ease to access

Disadvantages of Software as a Service

- Connectivity Demand
- Performance
- Management
- Security & Knowledge Considerations
- Limited Vary of Applications