

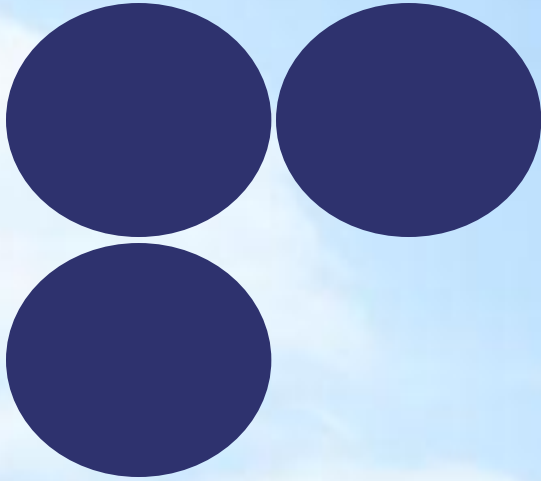


GOBIERNO
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DE INDUSTRIA, ENERGÍA
Y TURISMO

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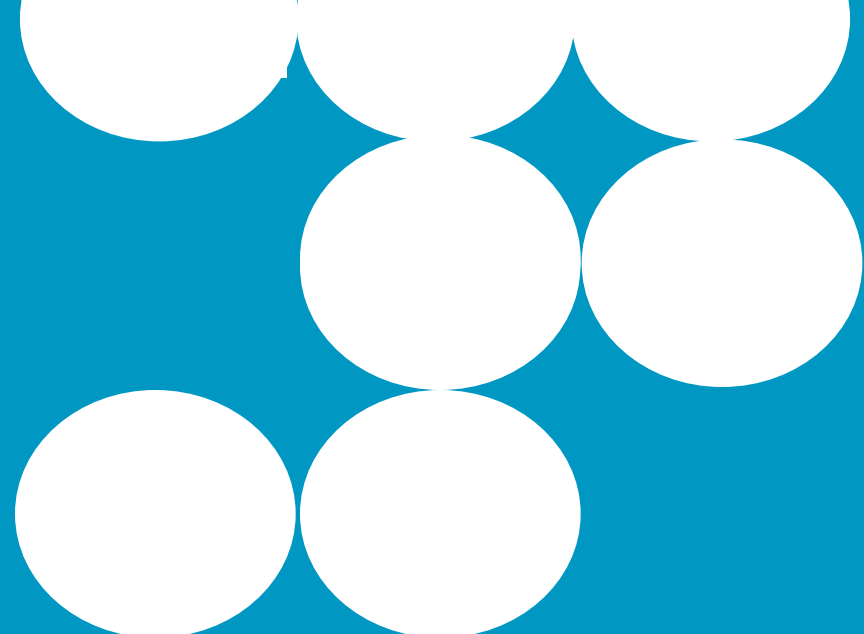
observatorio
nacional de las
telecomunicaciones
y de la SI



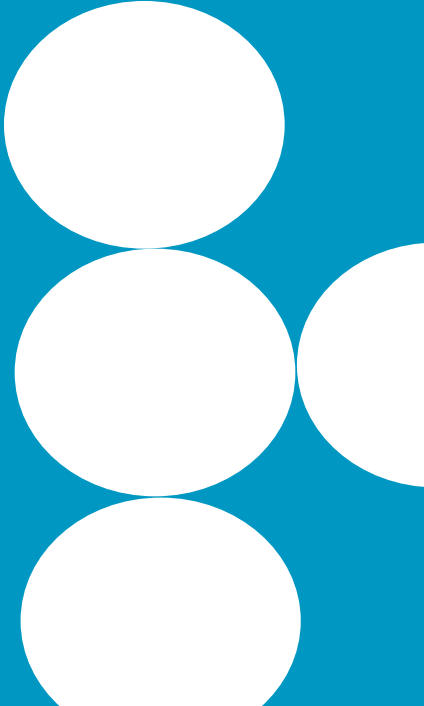
Cloud Computing

Challenges and Opportunities

May 2012 study synthesis



Objectives



The following objectives have been identified:

To analyze: The current situation and impact

To identify: opportunities for growth

use and knowledge of cloud among Spanish SME and micro-enterprises

economic perspectives

strategic perspectives

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Concept and current situation

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1.

**Concept and
current situation**



What is cloud computing?

It is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

NIST (*National Institute of Standards and Technology*) **definition**

Features associated with cloud computing

Ability to perform functional adjustment according to specific demand

Scalability

Ability to automatically assign computing resources subject to the specific needs of the user

Self-service on-demand

Invoice model based on use, which means that cost is subject to use

Pay per use

Multiple users

The provider can facilitate dynamic assignment by sharing computing resources among several users

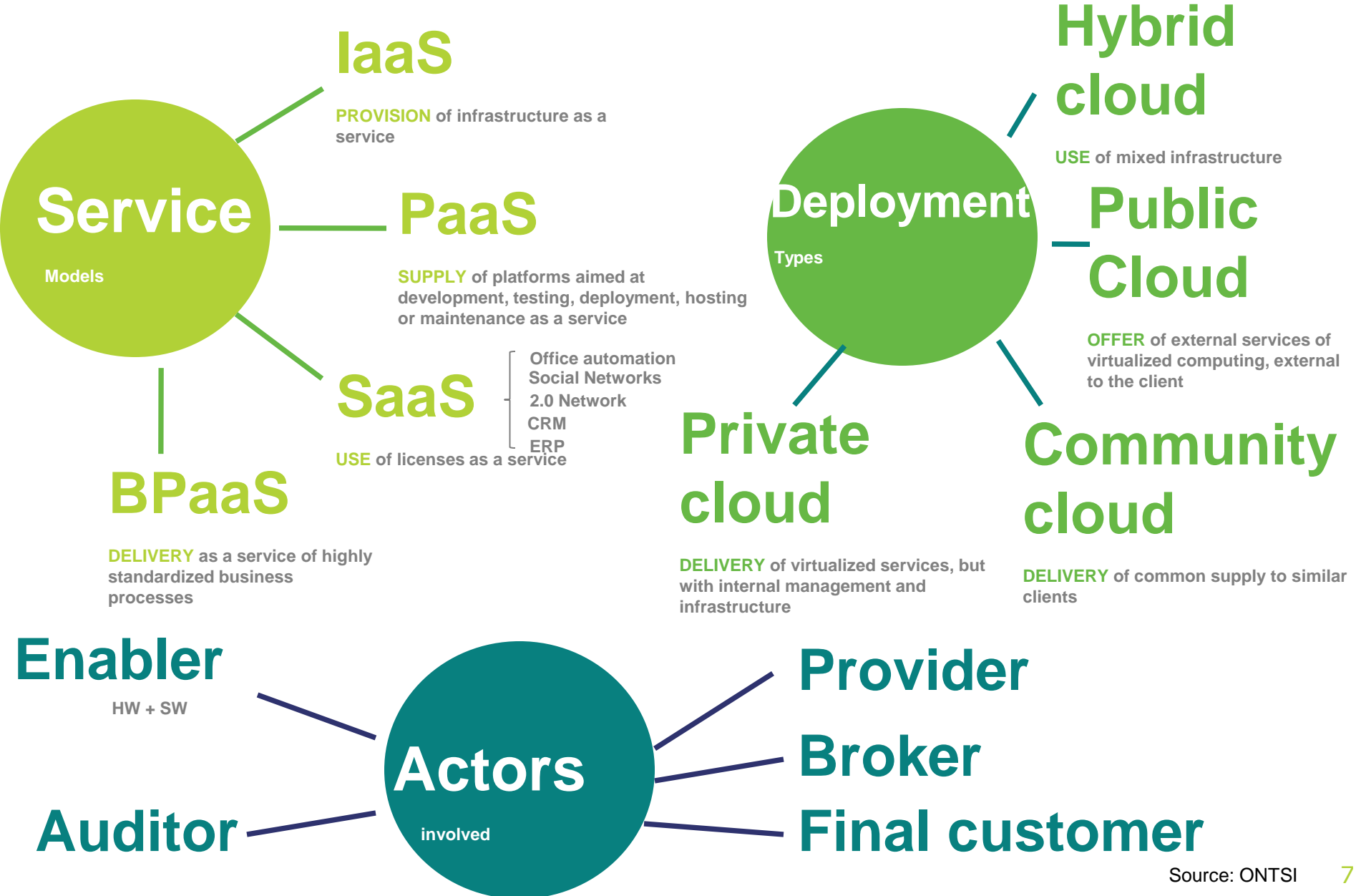
Unrestricted access

Universal, continuous and multidevice access

Abstraction

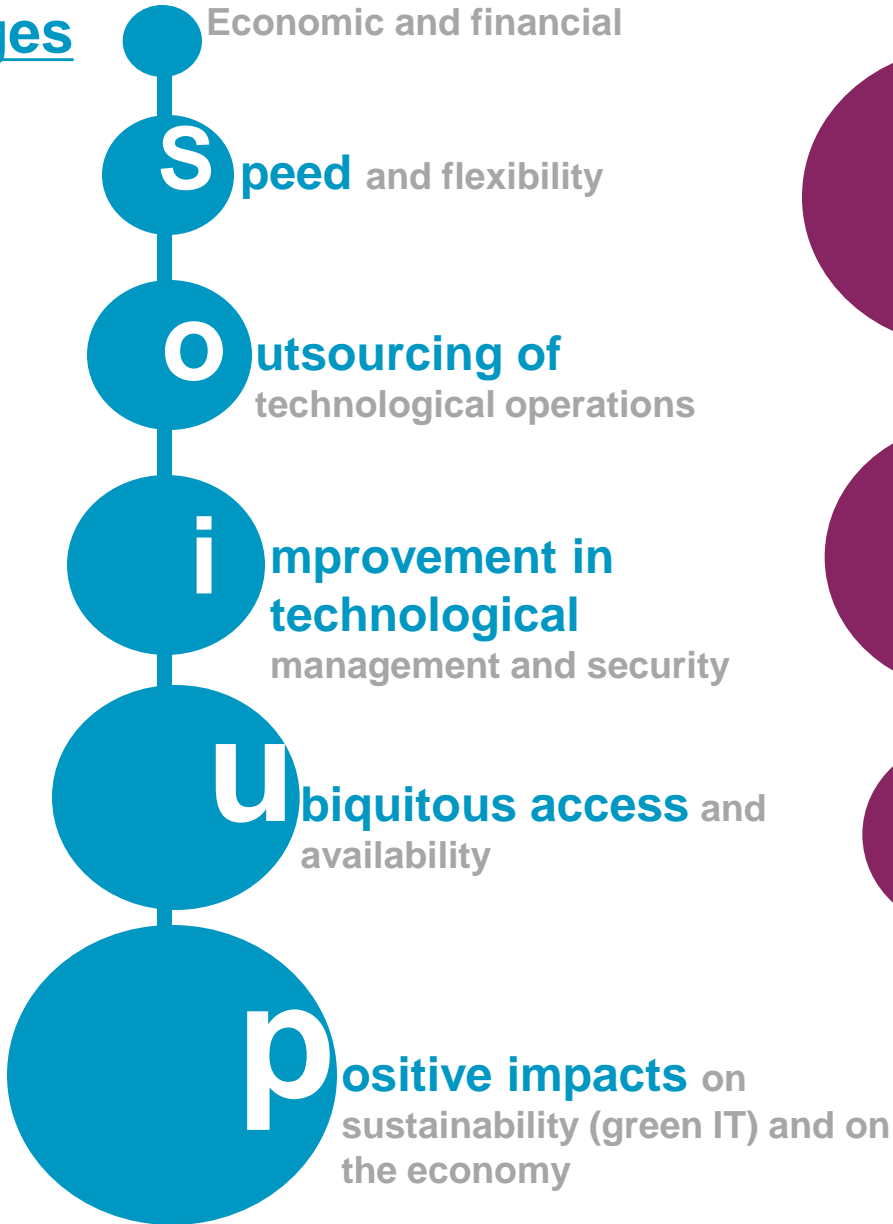
It makes it possible to isolate contracted computing resources offered by the provider from the computing infrastructure of the entity

Classification of cloud

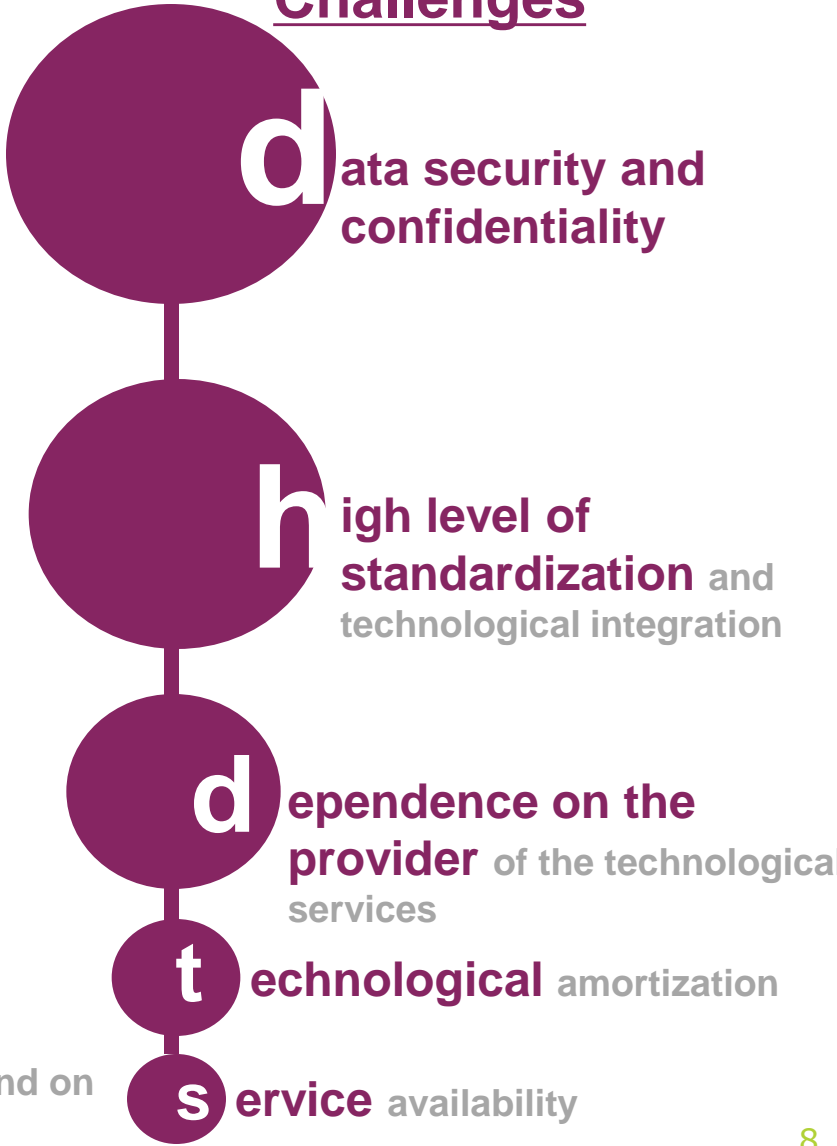


Cloud advantages and challenges

Advantages



Challenges



Interesting facts:

01.

According to IDC, global revenue from cloud services will reach 55,500 million dollars in 2014, with growth rates of nearly 30%. By 2014 the market share will have reached nearly 12%, positioning itself as the main driver in the industry

Source: "Worldwide and Regional Public IT Cloud Services 2010-2014 Forecast", IDC

03.

"Cloud computing saves costs and facilitates SMEs' access to computing, making it possible for them to compete at the same technological level as large organizations"

Source: "Cloud Computing", Bankinter Innovation Foundation

02.


"A study published by Gartner identifies Spain as being amongst the thirty leading locations to host externalized services. The main assets of Spain highlighted by Gartner are: reduced costs, knowledge of other languages than Spanish, good IT and transport infrastructure and a strong link with Latin America"

Source: "Cloud Computing", Bankinter Innovation Foundation



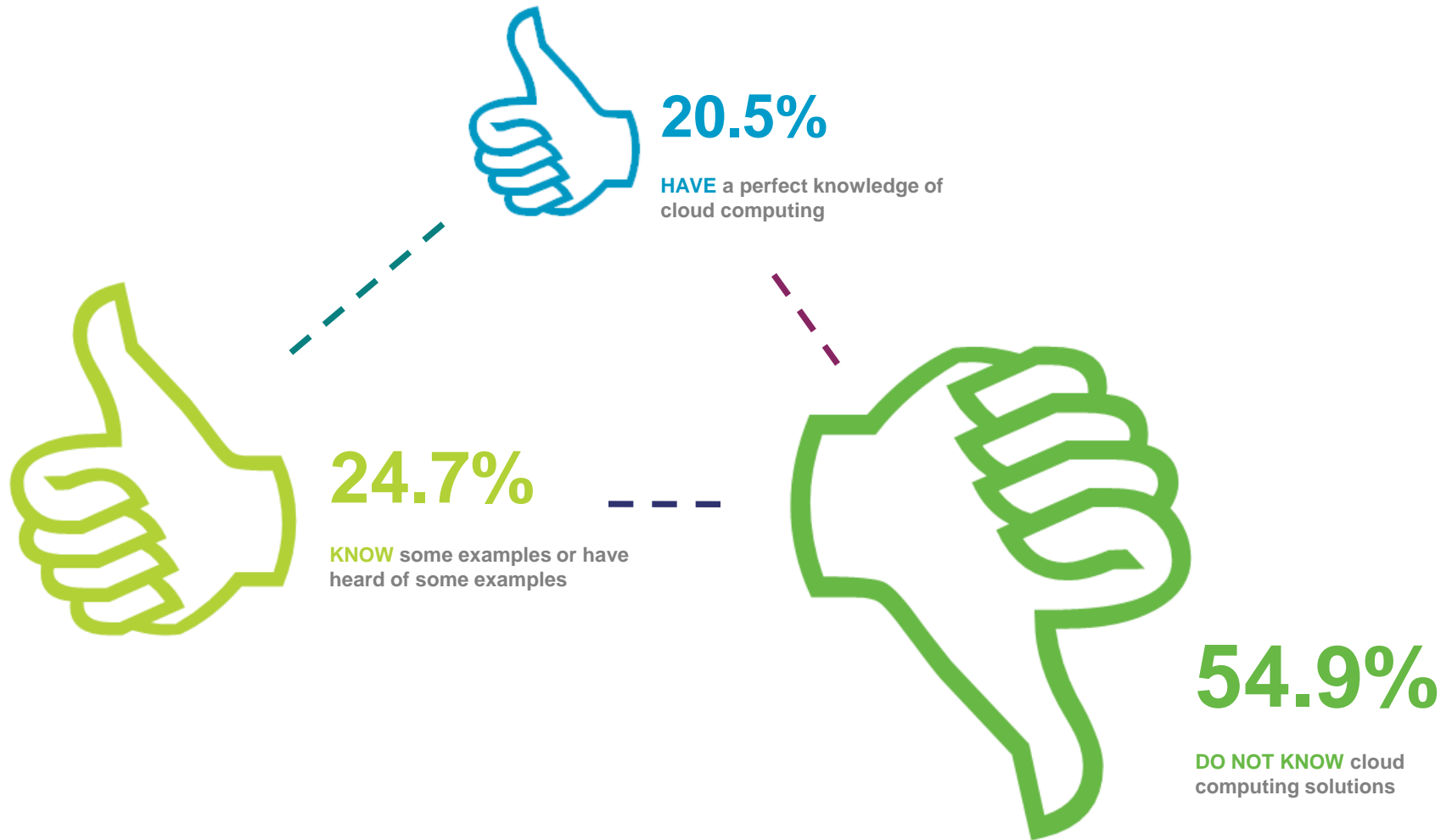
2.

Survey of SMEs in Spain



45.2% of SMEs have some knowledge of* cloud

KNOWLEDGE OF CLOUD COMPUTING SOLUTIONS



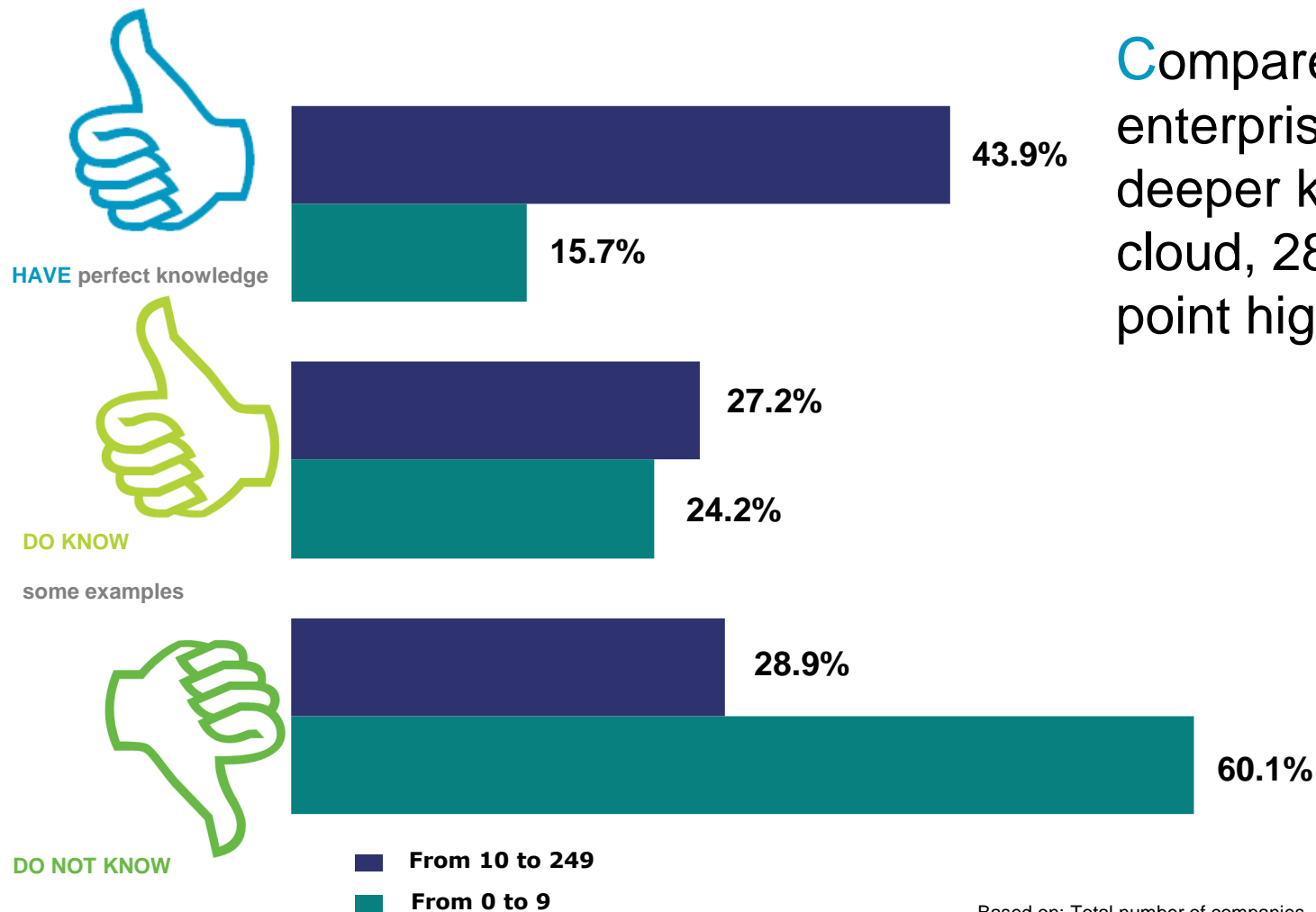
"This figure is obtained as a result of adding up the total percentage of companies that have a sound knowledge of cloud computing and those that can mention some examples.

Based on: Total number of companies (0 to 249), with websites

Source: ONTSI

60.1% of micro-enterprises do not have any knowledge of cloud solutions

KNOWLEDGE OF CLOUD COMPUTING SOLUTIONS BY COMPANY SIZE



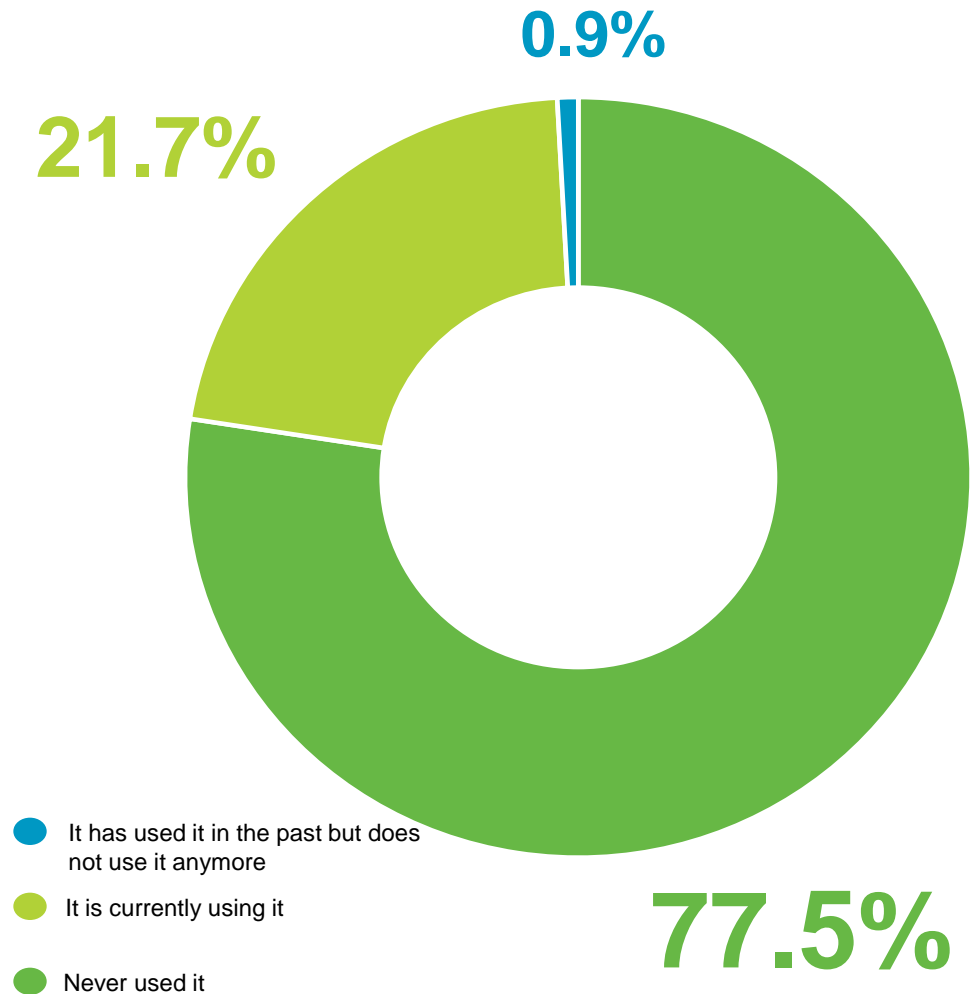
Compared to micro-enterprises, SMEs have deeper knowledge of cloud, 28.2 percentage point higher.

21.7% of enterprises that have some knowledge of cloud use cloud-based solutions

There is a high level of satisfaction with cloud technology

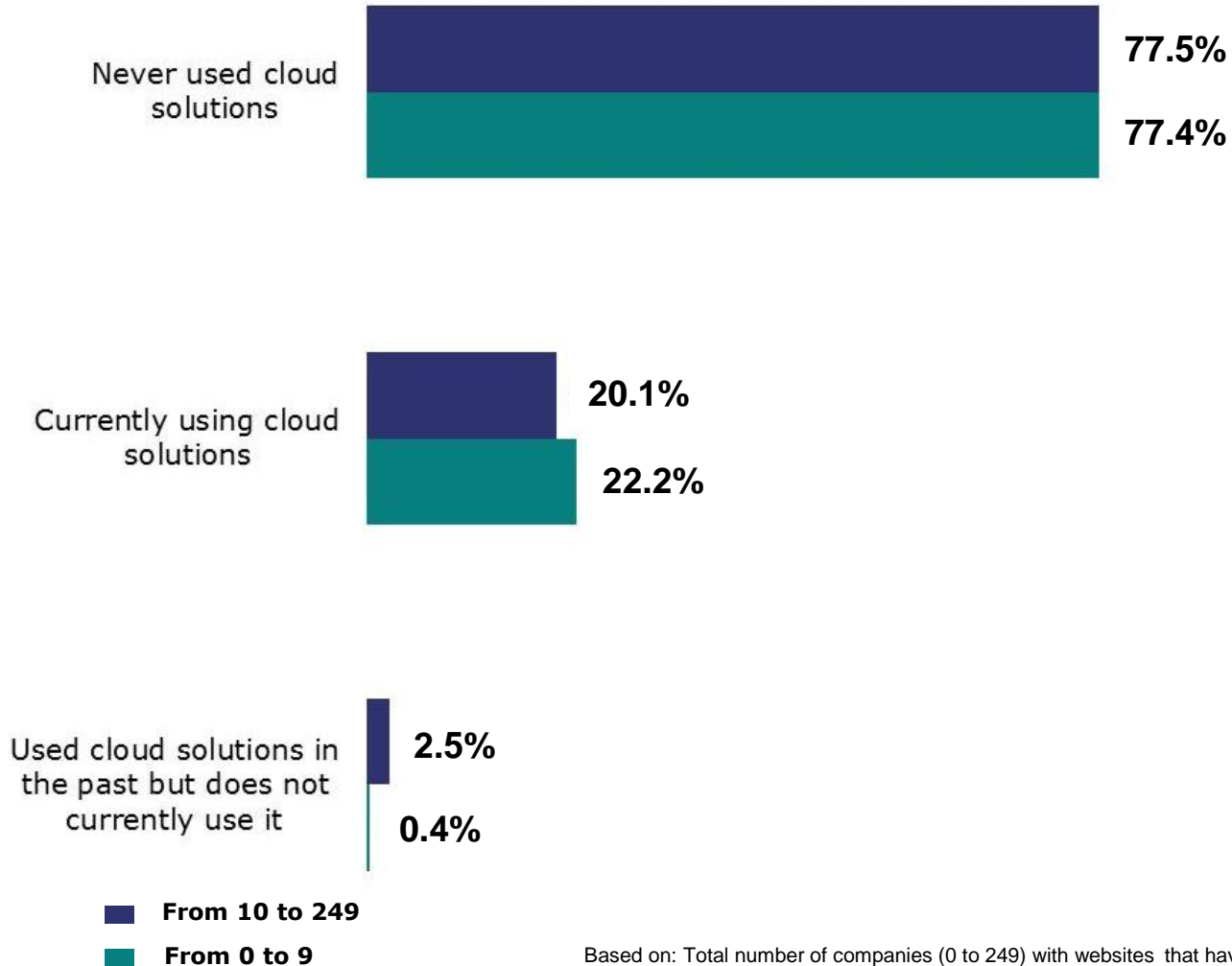
There are no significant differences in the use of cloud solutions as regards to company size

USE OF CLOUD COMPUTING SOLUTIONS



There are no significant differences as to the degree of cloud solution use by company size

USE OF CLOUD COMPUTING SOLUTIONS BY COMPANY SIZE



Based on: Total number of companies (0 to 249) with websites that have some knowledge of cloud

Source: ONTSI

IaaS is the most commonly used service model

CHARACTERISTICS OF CLOUD COMPUTING SOLUTIONS USED

76.1%

USE of some solution



Storage service is the most used IaaS solution (68.5%)

50.6%

USE of some solution



16.7% of the total number of enterprises use CRM solutions based on SaaS

18.8%

USE of some solution



DBMS solutions (Database Management Systems) stand out

Private Cloud is the deployment type most commonly used

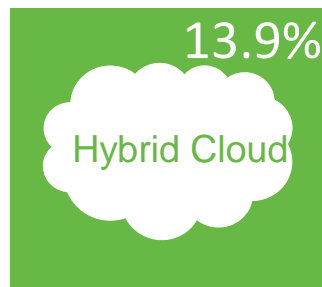
CHARACTERISTICS OF CLOUD COMPUTING SOLUTIONS USED



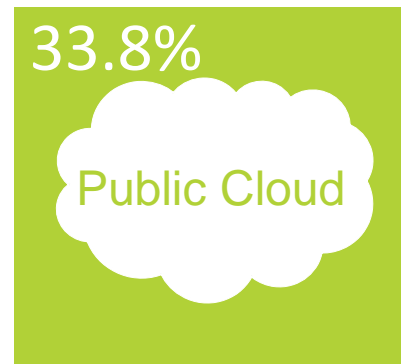
Environments controlled by the organization



Focused on niches:
education
health care ...



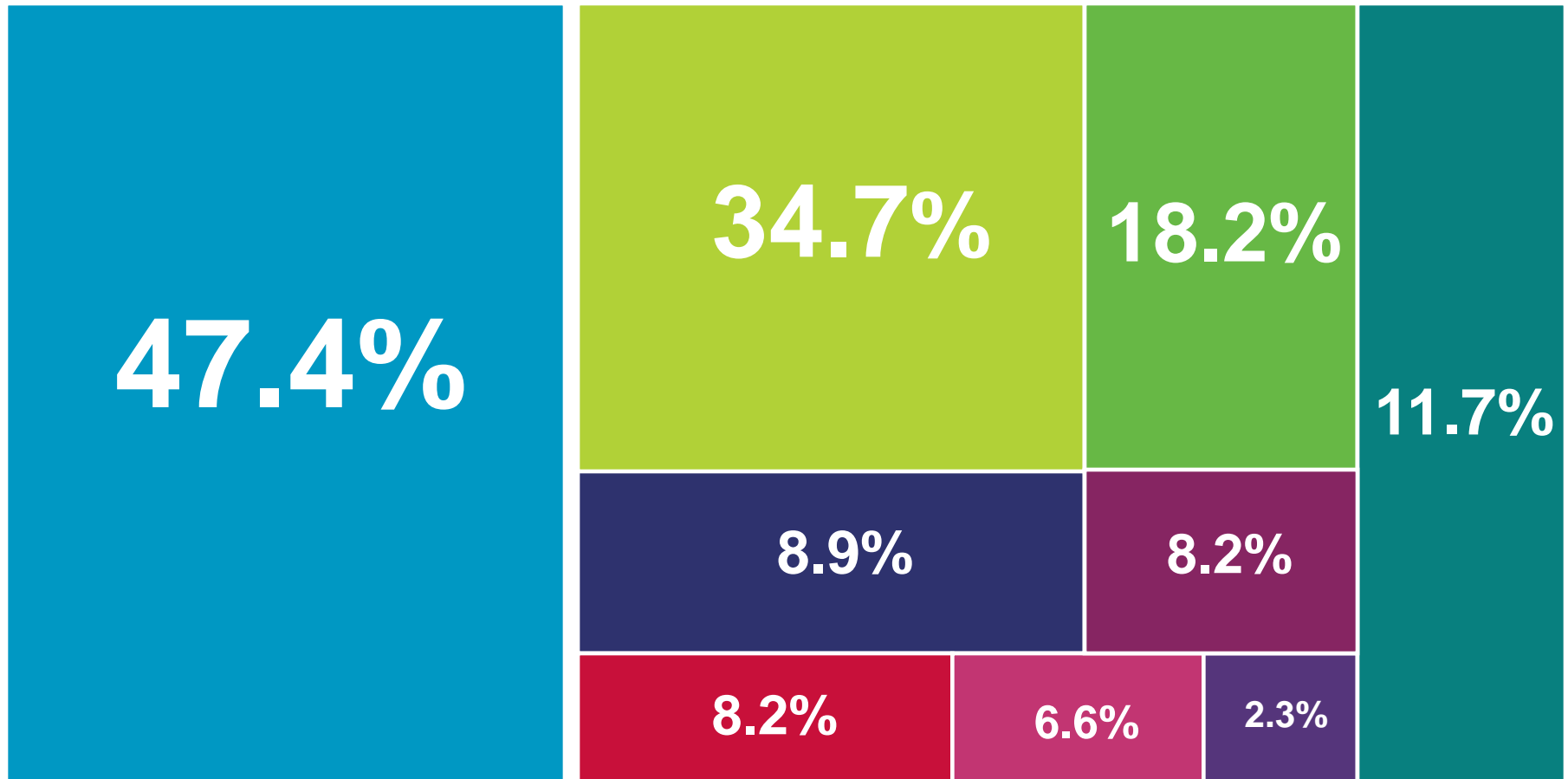
Often in larger companies



Higher levels of elasticity and scalability

47.4 % of companies using cloud use cross-cutting solutions

BUSINESS PROCESSES WITH HIGHER CLOUD SOLUTION INTEGRATION



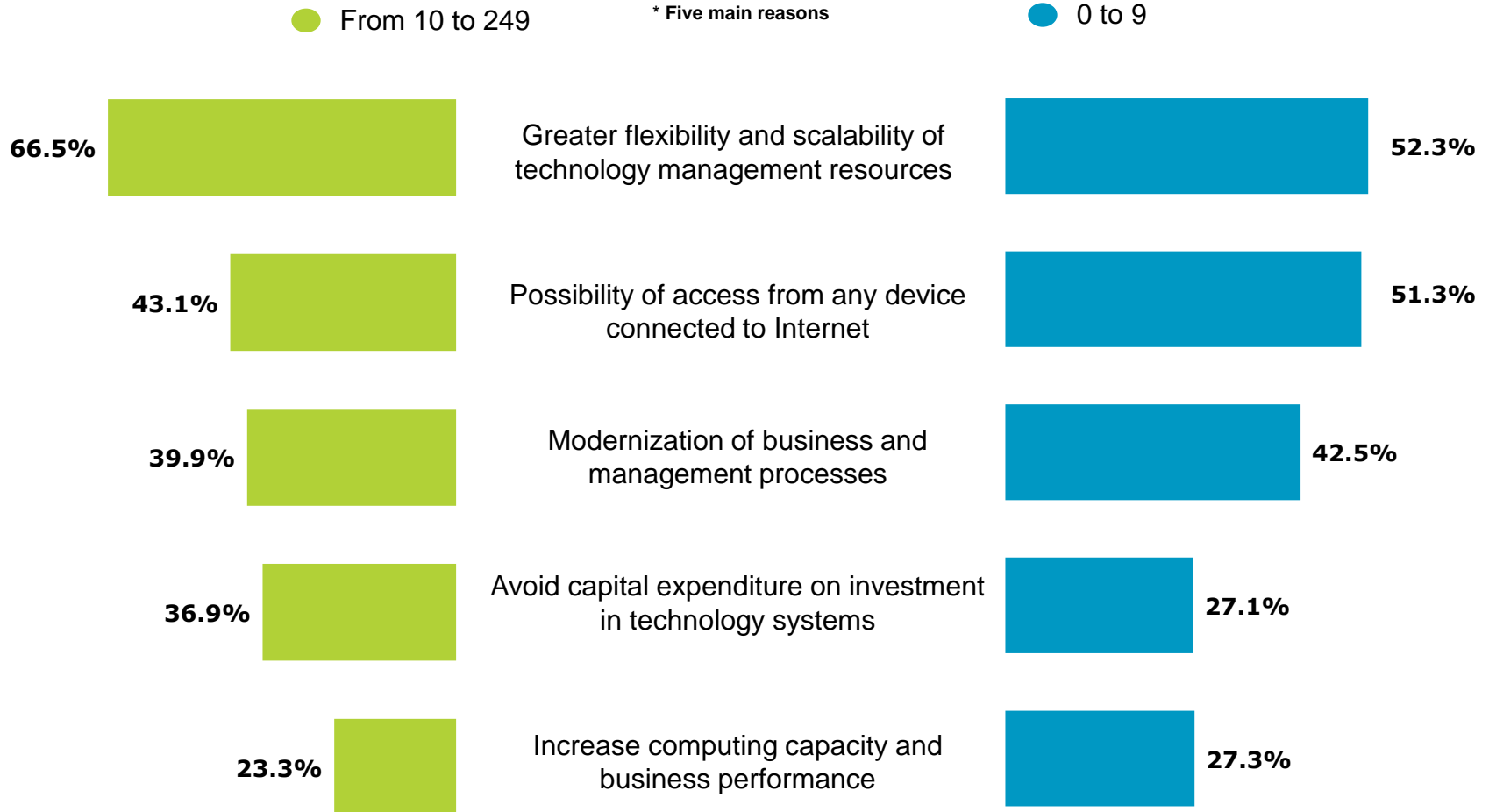
- The whole company
- Commercial and sales
- Productive aspects
- Finance management
- Quality
- Human resources
- Innovation
- Other areas
- Did not know or failed to respond

Based on: Total number of companies using cloud, with websites

Source: ONTSI

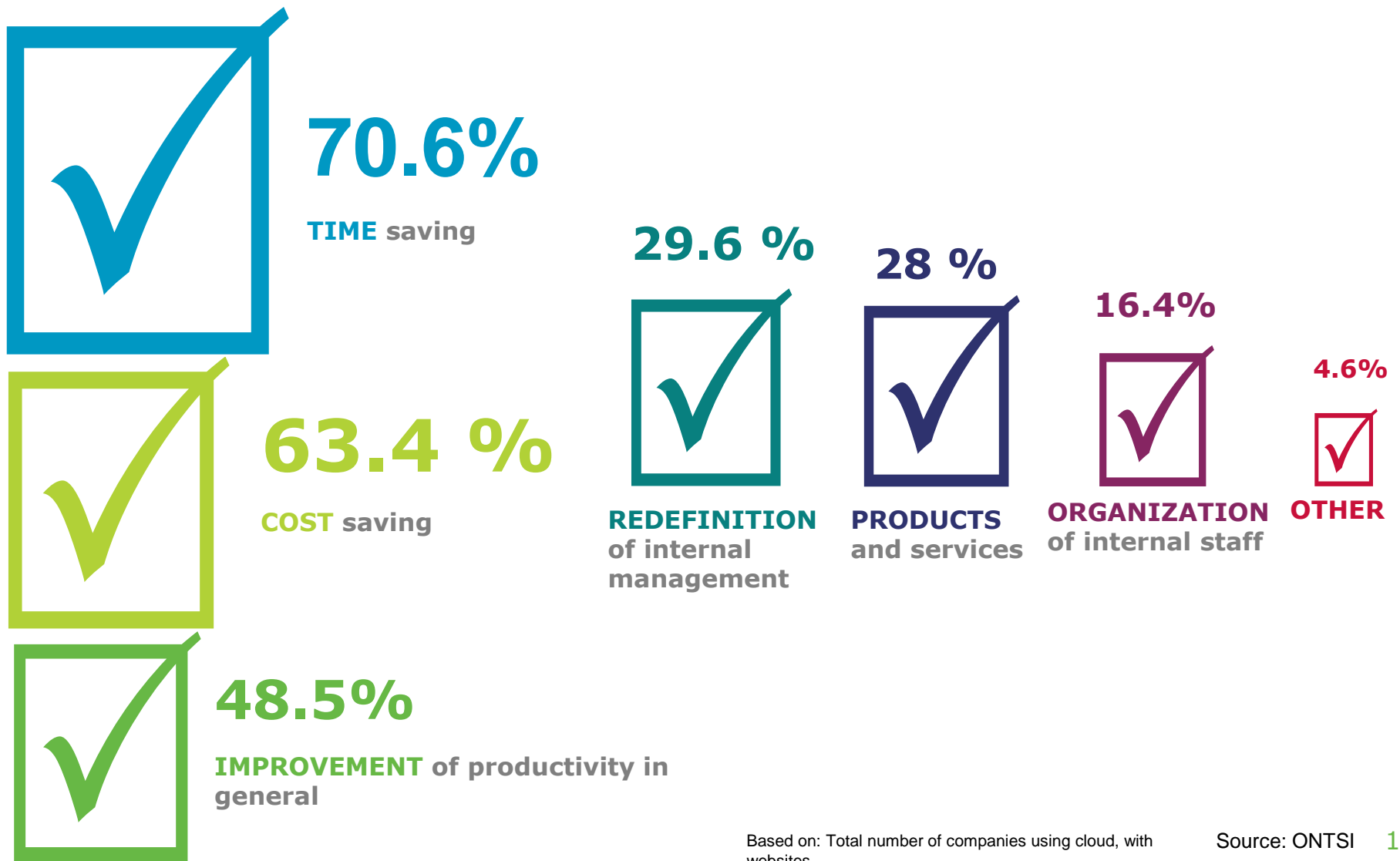
Higher flexibility and scalability of cloud are the main reasons for adopting the technology

MAIN REASONS* FOR ADOPTING THE TECHNOLOGY



The main benefits perceived have to do with time and costs

PERCEIVED BENEFITS DERIVED FROM USE OF CLOUD COMPUTING APPLICATIONS OR SYSTEMS IN THE COMPANY



Based on: Total number of companies using cloud, with websites

More than half of the micro-enterprises consider productivity improvement as a benefit

PERCEIVED* BENEFITS DERIVED FROM USE OF CLOUD COMPUTING APPLICATIONS OR SYSTEMS IN THE COMPANY, BY COMPANY SIZE



Time saving is perceived above all in small enterprises



Companies with 10 to 249 employees perceive slightly higher cost savings



*Three first benefits mentioned

IMPROVEMENT on productivity

■ From 10 to 249
■ From 0 to 9

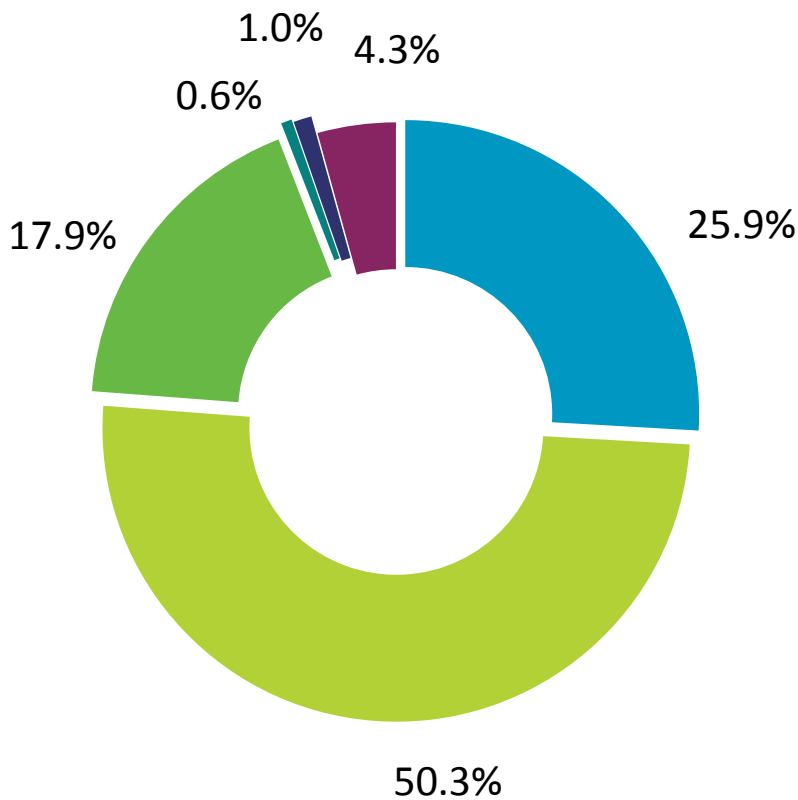
in general

Based on: Total number of companies using cloud, with websites

Source: ONTSI

76.2 %* of SMEs using cloud are generally satisfied

DEGREE OF SATISFACTION OF ENTERPRISES WITH CLOUD SERVICE PROVIDERS



25.9% are generally very satisfied with the provider and/or providers

Only 1.6% of SMEs declared not being generally satisfied or rather dissatisfied with providers

- Very satisfied
- Quite satisfied
- Somewhat satisfied
- Rather dissatisfied
- Not satisfied at all
- Did not know or failed to respond

*It includes responses from companies that have declared being very or quite satisfied

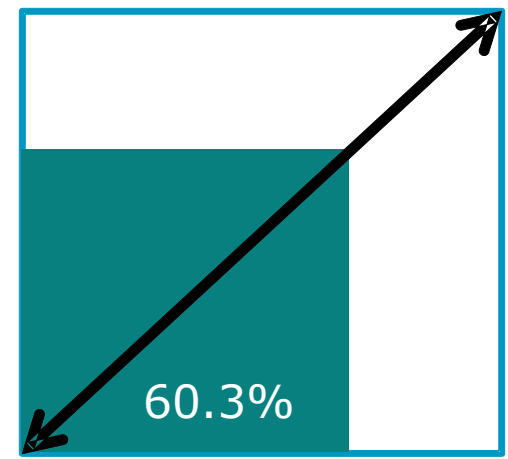
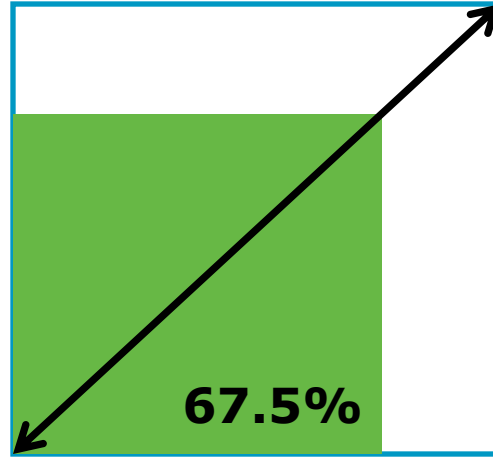
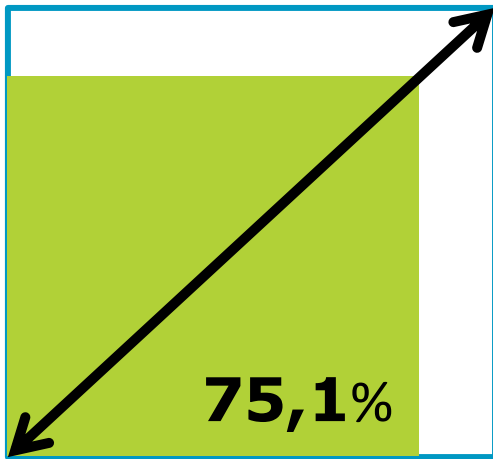
More than 75% of SMEs using cloud expressed a high level of satisfaction with quality of support and maintenance service

DEGREE OF SATISFACTION* OF ENTERPRISES WITH CLOUD SERVICE PROVIDERS QUALITY OF SERVICE

QUALITY of support and maintenance service

QUALITY of management and resource resizing services

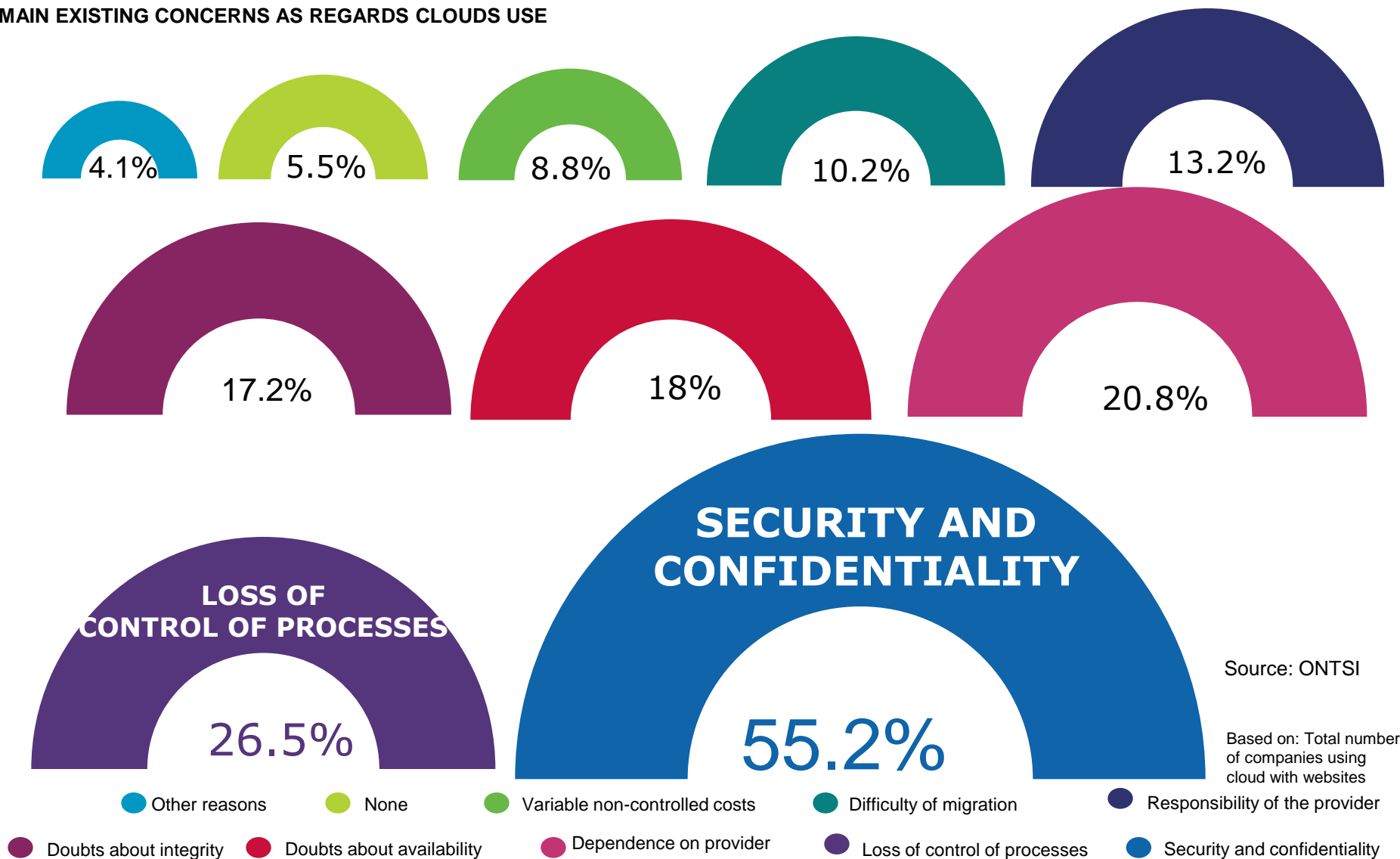
QUALITY of installation service



**It includes responses from companies that have declared being very or quite satisfied

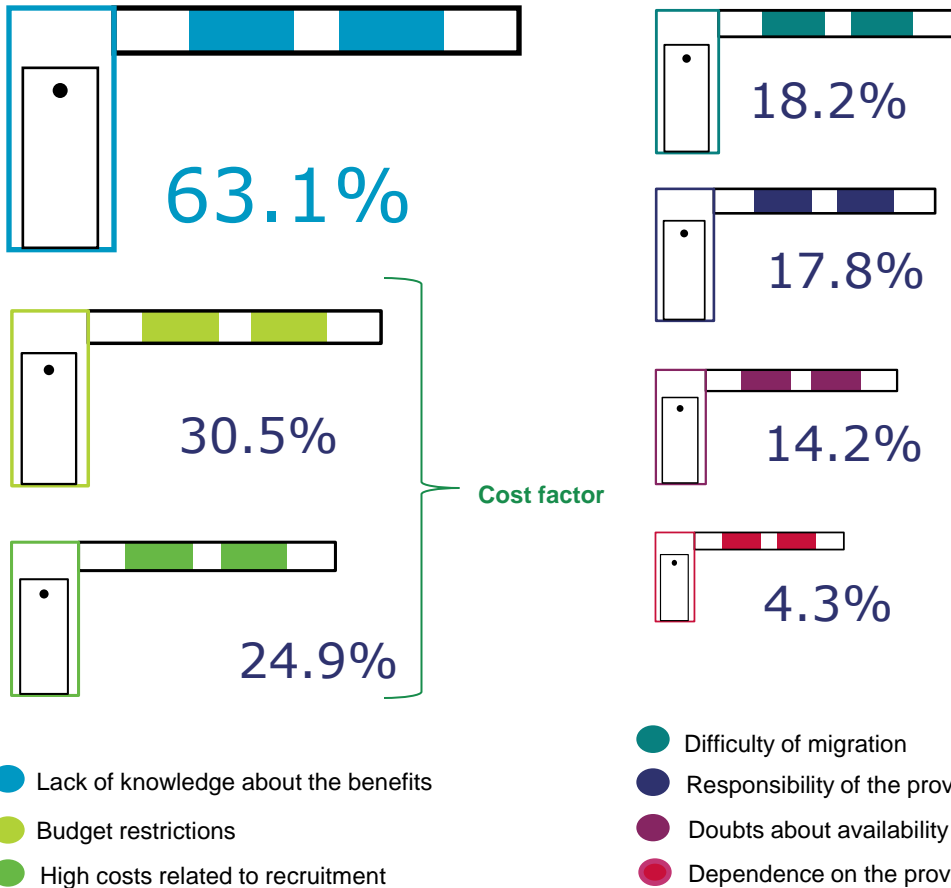
The main concern is related to security and confidentiality

MAIN EXISTING CONCERNS AS REGARDS CLOUDS USE



Lack of knowledge about the benefits of the technology is the main barrier to entry

BARRIERS TO ENTRY OF CLOUD COMPUTING IN COMPANIES



Main barriers that have to do with cost, by order of importance are the following:

Budget restrictions

High costs related to recruitment

Interesting facts:

01.

Enterprises using cloud computing declare that the performance level of providers is optimal

02.

Lack of sufficient knowledge about the technical and economical benefits of this new technological model along with the costs arising from initial recruitment largely explain the high percentage of SMEs that do not use cloud computing

03.

16.1% of SMEs that are aware of the existence of the technology but do not use it have expressed their intention of using it in the future

04.

63.4% of enterprises using cloud would recommend the use of the technology without any reservation to enterprises with similar characteristics

Data sheet: Survey of SMEs in Spain

Quantitative methodology

Scope

- The scope of the investigation includes micro-enterprises (0 to 9 employees) and SMEs (10 to 249 employees) with websites of some type located in the whole national territory.

Sample size

- Global sample size comprises 1,700 enterprises:
 - 0 to 9 employees 1,413 (83.1%)
 - 10 to 249 employees: 287 (16.9%)

Compiling information technique

- To compile the information, an online survey methodology has been applied, through a Web ad-hoc application and after previous telephone contact.

Margin of error

- Margin of error for the 1,700 surveys is $\pm 2.37\%$ under most unfavorable statistic conditions ($p=q=0.5$), with 95% degree of confidence.

Work in the field

- Information has been compiled during October and November 2011.



3.

Expert opinions



Experts from cloud providers

Perceived advantages:

- a new cost model is possible
- it allows enterprises with restricted budgets to have access to new services
- it eliminates commitments and barriers to entry making it possible to link technology costs to revenue

Perceived barriers:

- lack of common legal framework
- loss of control and dependence by clients
- deep ignorance in the market about what it is and the advantages it offers
- the development of SaaS services is very dependant on the capacity of telecommunication networks



Experts from large client businesses

Perceived advantages:

- cost model without infrastructure amortization
- it facilitates immediate launch of projects.
- it facilitates focused and business oriented ICT
- it facilitates access to new services

Perceived barriers:

- growing dependency on the provider
- privacy and legal requirement problems
- possibility of losing control over the technology, but above all, over the corporate processes



Experts from the Public Administration



Many public entities are currently carrying out a previous phase of reflection and prospect.

Perceived advantages:

- cost savings
- avoiding duplication
- development of teleworking
- shared services consolidation

Perceived barriers:

- integration and interoperability problems
- uncertainty about performance
- "locked-in" effect with providers



4.

Impact Evaluation



Estimated impact* of cloud in Spain for 2012



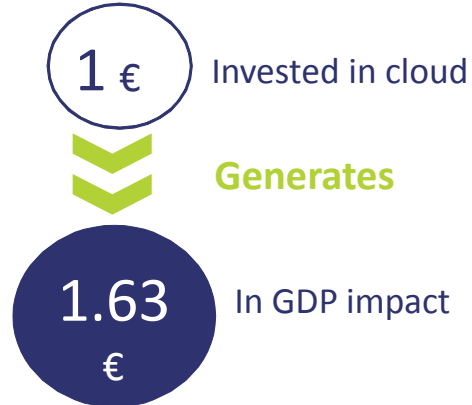
Generation of
3,049
million euro



Job creation of
65,000
jobs in 2012



Total return of
678
million euro



*Methodology based on macroeconomic input-output tables.

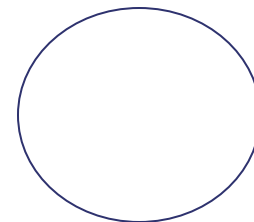
Source: Obtained from the Economic Impact Model developed by Deloitte

Environmental impact of cloud



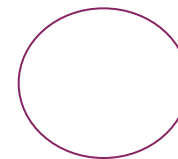
Reduction in CO₂ emissions

90%



Small deployments
≈ 100 users

60-90%

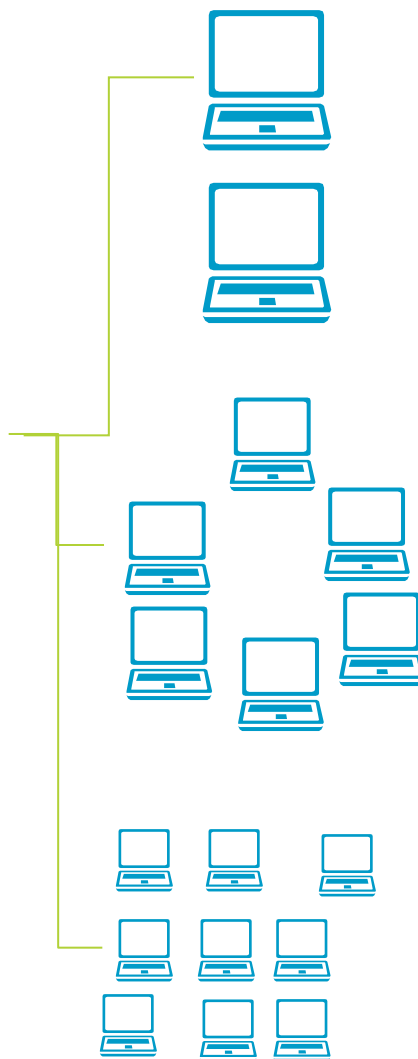
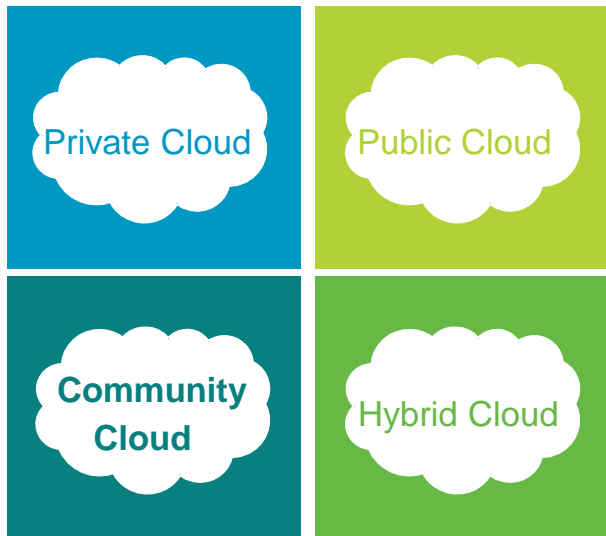


Average
deployments
≈ 1,000 users

30-60%



Large deployments
≈ 10,000 users



Social impact of cloud

Mobile service universalization

Spread of the Internet and creation of links to the web in mobile devices.

Office universalization.

Mobile access.

Virtual storage

Stored data in remote servers.

Price reduction for online storage.

Information managers allow the user to expand hard disc storage capacity.

Applications in the cloud

Improvement in competitiveness and device offer.

Online service supply.

Interconnectivity and Social Networks





5.

Best
practices



To have access to all the information concerning studies and indicators:

Observatory Website:

www.ontsi.red.es

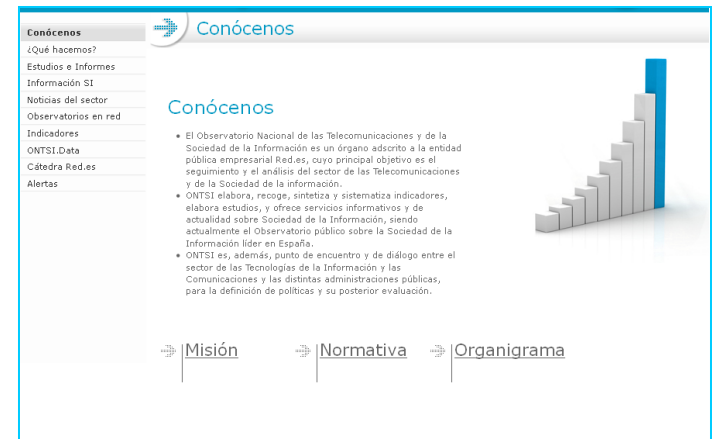
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