# Open Source: a dynamic market fueled by digital transformation and innovation

Study conducted by teknowlogy Group for the National Free Software Council (CNLL), Syntec Numérique and Systematic

Adapted and presented by Stefane Fermigier, CNLL – Bruxelles, 31 Jan. 2020

# Agenda

1. **Sizing the European Open Source market**

2. **Open Source is strategic for the future of organizations in France** (117 organizations surveyed)
   - → Background and methodology
   - → How do companies use Open Source?
   - → Which partners do companies use?
   - → What is the impact of digital transformation on the use of Open Source?

3. **Europe: What are the local specificities?**

# 1. Sizing the European Open Source market

# Segmentation & definitions

## Software & IT Services market

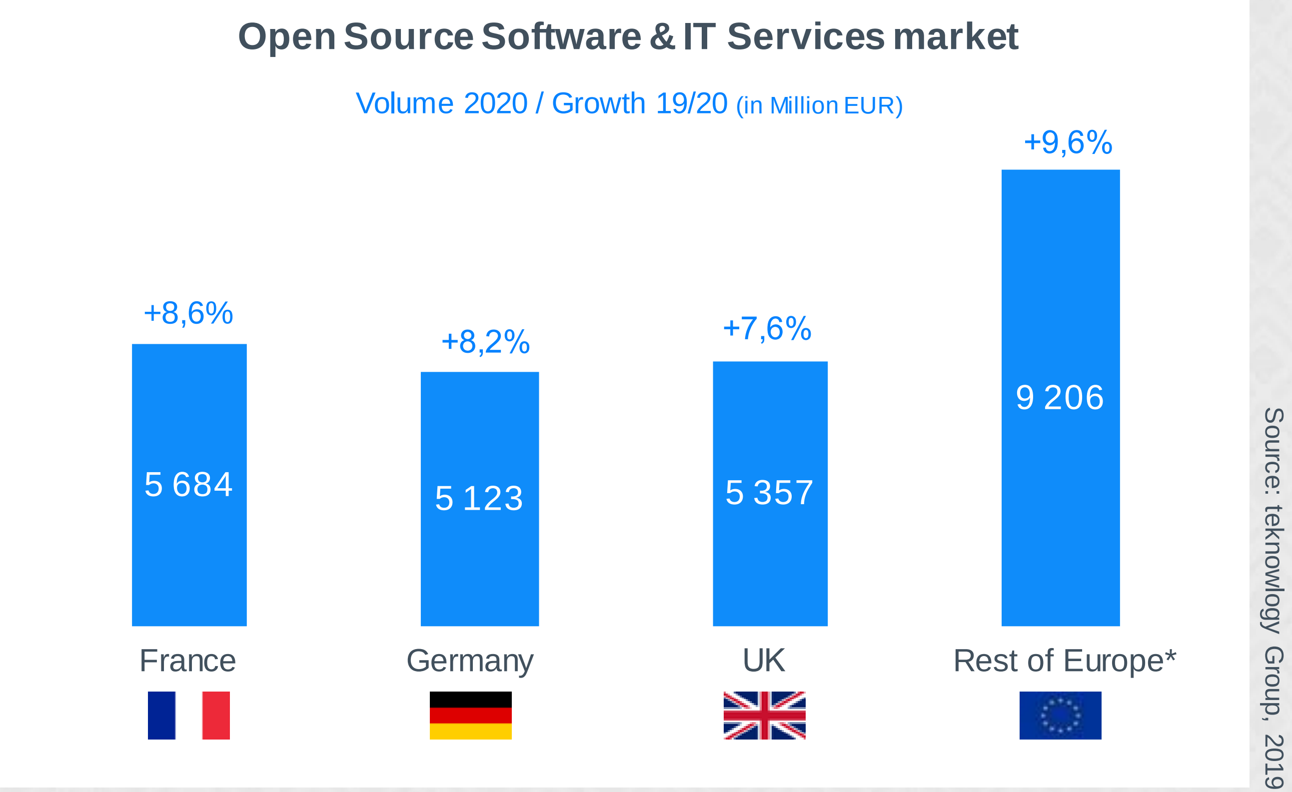
| SOFTWARE | | | IT SERVICES | | |
|---|---|---|---|---|---|
| **Infrastructure Software & Platforms** | **Application Software Products** | **SaaS** | **Infrastructure-Related Services** | **Application-Related Services** | **Business Process Outsourcing** |
| Operating Systems | Office, Content & Collaboration | N3SM & Middleware | Infrastructure Support Services[1] | Application-related Project Services[2] | |
| Network, System, Storage and Security Management (N3SM) | Horizontal Business Applications (incl. BI) | Applications (incl. BI) | Infrastructure-related Project Services[2] | Application Management | |
| Middleware | Vertical Business Applications | | Infrastructure Outsourcing Services[3] | | |
| | Technical Applications | | | | |

[1] Hardware Maintenance; Field Services and Services Desk
[2] Consulting; Systems Integration; Training
[3] End-user Devices Outsourcing; Server Outsourcing & Hosting

## Open Source Software & IT Services market

| SOFTWARE | IT SERVICES |
|---|---|
| Subscriptions, support, maintenance | Consulting, system integration, outsourcing |

# Open Source strong growth across Europe




** Rest of Europe: Austria, Belgium, Denmark, Finland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, others (Greece, Ireland, Liechtenstein, Luxembourg, Malta)*

→ The **French** Open Source market is the largest in terms of volume when compared to the other major European countries. This is due to a strong culture in specific development and integration of heterogeneous systems, as well as a historically large investment by public authorities.

→ **Germany**'s market has been limited in Open Source development due to the place that major traditional software players occupy (e.g. SAP). In terms of Open Source, the German market will become more dynamic in the coming years.

→ The **UK** Open Source market was mainly developed by the major US Open Source software vendors.

→ The **other European countries** are also increasing their use of Open Source.

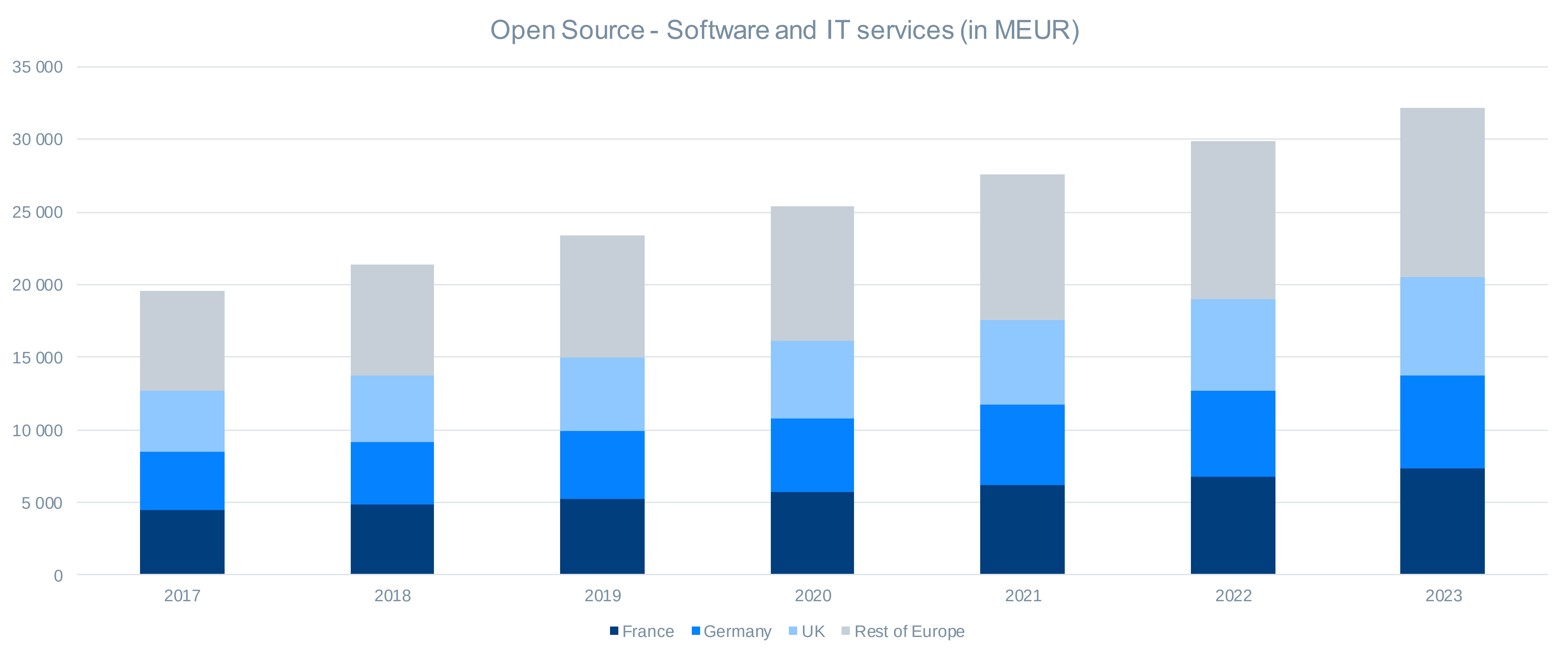
# Open Source market by country

| in million EUR | 2019 | 2020 | 2021 | 2022 | 2023 | 19/20 | 20/21 | 21/22 | 22/23 | CAGR 19/23 |
|---|---|---|---|---|---|---|---|---|---|---|
| **France** - Open Source Software and IT Services Market | 5 233 | 5 684 | 6 187 | 6 741 | 7 336 | 8,6% | 8,8% | 8,9% | 8,8% | 8,8% |
| **Germany** - Open Source Software and IT Services Market | 4 735 | 5 123 | 5 553 | 5 983 | 6 376 | 8,2% | 8,4% | 7,7% | 6,6% | 7,7% |
| **UK** - Open Source Software and IT Services Market | 4 979 | 5 357 | 5 799 | 6 280 | 6 783 | 7,6% | 8,2% | 8,3% | 8,0% | 8,0% |
| **Rest of Europe*** - Open Source Software and IT Services Market | 8 398 | 9 206 | 10 048 | 10 890 | 11 705 | 9,6% | 9,1% | 8,4% | 7,5% | 8,7% |
| **Worldwide** - Open Source Software and IT Services Market | 91 672 | 100 713 | 110 411 | 120 399 | 130 435 | 9,9% | 9,6% | 9,0% | 8,3% | 9,2% |

** Rest of Europe: Austria, Belgium, Denmark, Finland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, others (Greece, Ireland, Liechtenstein, Luxembourg, Malta)*

Source: teknowlogy Group, 2019

# Whole Europe (for some definition of « Europe »)




Source: teknowlogy Group, 2019

** Rest of Europe: Austria, Belgium, Denmark, Finland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, others (Greece, Ireland, Liechtenstein, Luxembourg, Malta)*

# Open Source related employment by country

| In Full-Time Equivalents (FTE) | 2019 | 2020 | 2021 | 2022 | 2023 | 19/20 | 20/21 | 21/22 | 22/23 | CAGR 19/23 |
|---|---|---|---|---|---|---|---|---|---|---|
| **France** - Open Source FTEs | 52 400 | **56 700** | 61 500 | 66 800 | 72 400 | 8,2% | 8,5% | 8,6% | 8,4% | 8,4% |
| **Germany** - Open Source FTEs | 47 500 | **51 200** | 55 300 | 59 300 | 63 000 | 7,8% | 8,0% | 7,2% | 6,2% | 7,3% |
| **UK** - Open Source FTEs | 49 800 | **53 400** | 57 600 | 62 200 | 67 000 | 7,2% | 7,9% | 8,0% | 7,7% | 7,7% |
| **Rest of Europe*** - Open Source FTEs | 84 100 | **91 900** | 100 000 | 108 000 | 115 600 | 9,3% | 8,8% | 8,0% | 7,0% | 8,3% |
| **Whole Europe**- Open Source FTEs | 233 800 | **253 200** | 274 400 | 296 300 | 318 000 | 8,3% | 8,4% | 8,0% | 7,3% | 8,0% |
| **Worldwide** - Open Source FTEs | 1 090 000 | **1 190 000** | 1 300 000 | 1 420 000 | 1 530 000 | 9,2% | 9,2% | 9,2% | 7,7% | 8,8% |

Source: teknowlogy Group, 2019

** Rest of Europe: Austria, Belgium, Denmark, Finland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, others (Greece, Ireland, Liechtenstein, Luxembourg, Malta)*

# Europe – Share of Open Source in Total market 1/2

| in million EUR | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 17/18 | 18/19 | 19/20 | 20/21 | 21/22 | 22/23 | CAGR 19/23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **France** – Total Software and IT Services Market | 46 020 | 48 378 | 50 799 | 53 321 | 56 006 | 58 788 | 61 555 | 5,1% | 5,0% | 5,0% | 5,0% | 5,0% | 4,7% | 4,9% |
| **France** – Open Source Software and IT Services Market | 4 462 | 4 833 | 5 233 | 5 684 | 6 187 | 6 741 | 7 336 | 8,3% | 8,3% | 8,6% | 8,8% | 8,9% | 8,8% | 8,8% |
| **Share of Open Source in Total** | **9,7%** | **10,0%** | **10,3%** | **10,7%** | **11,0%** | **11,5%** | **11,9%** | | | | | | | |

| in million EUR | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 17/18 | 18/19 | 19/20 | 20/21 | 21/22 | 22/23 | CAGR 19/23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Germany** – Total Software and IT Services Market | 62 511 | 65 541 | 68 055 | 70 638 | 74 096 | 77 901 | 81 694 | 4,8% | 3,8% | 3,8% | 4,9% | 5,1% | 4,9% | 4,7% |
| **Germany** – Open Source Software and IT Services Market | 3 990 | 4 375 | 4 735 | 5 123 | 5 553 | 5 983 | 6 376 | 9,6% | 8,2% | 8,2% | 8,4% | 7,7% | 6,6% | 7,7% |
| **Share of Open Source in Total** | **6,4%** | **6,7%** | **7,0%** | **7,3%** | **7,5%** | **7,7%** | **7,8%** | | | | | | | |

Source: teknowlogy Group, 2019

# Europe – Share of Open Source in Total market 2/2

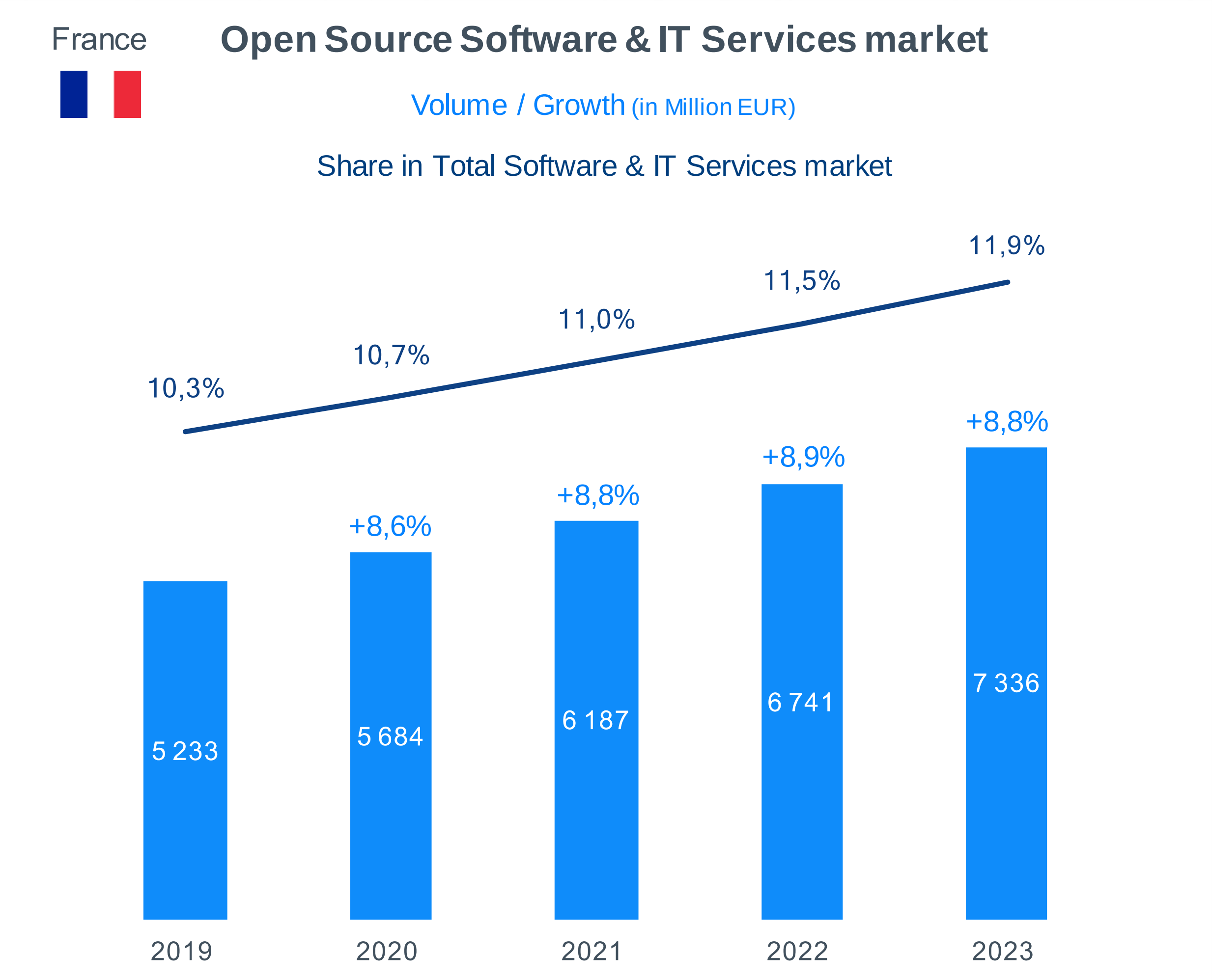
| in million EUR | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 17/18 | 18/19 | 19/20 | 20/21 | 21/22 | 22/23 | CAGR 19/23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **UK** – Total Software and IT Services Market | 62 554 | 65 149 | 67 668 | 70 512 | 73 858 | 77 322 | 80 661 | 4,1% | 3,9% | 4,2% | 4,7% | 4,7% | 4,3% | 4,5% |
| **UK** – Open Source Software and IT Services Market | 4 190 | 4 598 | 4 979 | 5 357 | 5 799 | 6 280 | 6 783 | 9,7% | 8,3% | 7,6% | 8,2% | 8,3% | 8,0% | 8,0% |
| **Share of Open Source in Total** | **6,7%** | **7,1%** | **7,4%** | **7,6%** | **7,9%** | **8,1%** | **8,4%** | | | | | | | |

| in million EUR | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 17/18 | 18/19 | 19/20 | 20/21 | 21/22 | 22/23 | CAGR 19/23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Rest of Europe** – Total Software and IT Services Market | 116 151 | 122 451 | 128 353 | 134 808 | 141 736 | 148 799 | 155 770 | 5,4% | 4,8% | 5,0% | 5,1% | 5,0% | 4,7% | 5,0% |
| **Rest of Europe** – Open Source Software and IT Services Market | 6 900 | 7 661 | 8 398 | 9 206 | 10 048 | 10 890 | 11 705 | 11,0% | 9,6% | 9,6% | 9,1% | 8,4% | 7,5% | 8,7% |
| **Share of Open Source in Total** | **5,9%** | **6,3%** | **6,5%** | **6,8%** | **7,1%** | **7,3%** | **7,5%** | | | | | | | |

Source: teknowlogy Group, 2019

** Rest of Europe: Austria, Belgium, Denmark, Finland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, others (Greece, Ireland, Liechtenstein, Luxembourg, Malta)*

# In France Open Source is growing faster than the IT market




Source: teknowlogy Group, 2019

→ By its nature, the Open Source market includes a high level of IT services. This is because Open Source solutions are often considered more tailorable than traditional software and therefore require more IT services.

→ Open Source is a frequent choice for **specific developments**, which require extra services for development and integration as opposed to the installation of packaged software.

→ Open Source is notably present in **innovative technology** (Cloud, AI, etc.), which requires more integration than more mature technology.

# France – Open Source market

| in million EUR | 2019 | 2020 | 2021 | 2022 | 2023 | 19/20 | 20/21 | 21/22 | 22/23 | CAGR 19/23 |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Software and IT Services Market France | 50,799 | **53,321** | 56,006 | 58,788 | 61,555 | 5.0% | 5.0% | 5.0% | 4.7% | 4.9% |
| **Open Source Software and IT Services Market France** | **5,233** | **5,684** | **6,187** | **6,741** | **7,336** | **8.6%** | **8.8%** | **8.9%** | **8.8%** | **8.8%** |
| Open Source Software | 355 | **403** | 456 | 513 | 573 | 13.5% | 13.1% | 12.5% | 11.8% | 12.7% |
| Open Source related IT Services | 4,878 | **5,281** | 5,731 | 6,228 | 6,762 | 8.3% | 8.5% | 8.7% | 8.6% | 8.5% |

Source: teknowlogy Group, 2019

→ In terms of volumes, the market is mainly generated by the Open Source offerings of IT service providers, and in particular the offerings for Open Source integration services.

→ In 2023, IT services will represent the largest share of the market in terms of revenue.

→ The market growth is driven by software over the 2019/2023 period, notably by SaaS revenues with an average annual growth rate (CAGR19/23) of more than 25%.

# France – Open Source Software market by segment

| in million EUR | 2019 | 2020 | 2021 | 2022 | 2023 | 19/20 | 20/21 | 21/22 | 22/23 | CAGR 19/23 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Open Source Software** | **355** | **403** | **456** | **513** | **573** | **13.5%** | **13.1%** | **12.5%** | **11.8%** | **12.7%** |
| Infrastructure Software & Platforms | 199 | **229** | 262 | 299 | 341 | 14,8% | 14,6% | 14,3% | 14,0% | 14,4% |
| Application Software Products | 129 | **138** | 147 | 156 | 166 | 7,0% | 6,6% | 6,3% | 5,9% | 6,5% |
| SaaS | 27 | **36** | 47 | 57 | 67 | 34,7% | 28,9% | 22,3% | 16,1% | 25,3% |

Source: teknowlogy Group, 2019

→ The Open Source software market is more oriented towards infrastructure software than applications.

→ As Open Source matures, more legacy Open Source solutions will need to be maintained, improved and, in some cases, even abandoned while new, more advanced solutions can be implemented.

→ Regarding licenses, the market is increasingly oriented towards permissive licenses.

# France – Open Source related IT Services market by segment

| in million EUR | 2019 | 2020 | 2021 | 2022 | 2023 | 19/20 | 20/21 | 21/22 | 22/23 | CAGR 19/23 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Open Source related IT Services** | **4,878** | **5,281** | **5,731** | **6,228** | **6,762** | **8.3%** | **8.5%** | **8.7%** | **8.6%** | **8.5%** |
| IT Consulting | 660 | **701** | 745 | 794 | 847 | 6,2% | 6,4% | 6,5% | 6,7% | 6,4% |
| *Infrastructure-related* | *280* | ***298*** | *318* | *340* | *363* | *6,4%* | *6,7%* | *6,8%* | *7,0%* | *6,7%* |
| *Application-related* | *380* | ***403*** | *428* | *455* | *484* | *6,0%* | *6,2%* | *6,3%* | *6,4%* | *6,2%* |
| System Integration | 3 156 | **3 355** | 3 573 | 3 814 | 4 077 | 6,3% | 6,5% | 6,7% | 6,9% | 6,6% |
| *Infrastructure-related* | *1 668* | ***1 784*** | *1 913* | *2 054* | *2 212* | *7,0%* | *7,2%* | *7,3%* | *7,7%* | *7,3%* |
| *Application-related* | *1 489* | ***1 570*** | *1 659* | *1 760* | *1 866* | *5,5%* | *5,7%* | *6,0%* | *6,0%* | *5,8%* |
| Outsourcing | 1 062 | **1 226** | 1 413 | 1 620 | 1 838 | 15,4% | 15,3% | 14,6% | 13,5% | 14,7% |
| *Infrastructure-related* | *845* | ***992*** | *1 161* | *1 347* | *1 541* | *17,4%* | *17,0%* | *16,0%* | *14,4%* | *16,2%* |
| *Application-related* | *217* | ***234*** | *252* | *273* | *296* | *7,7%* | *7,8%* | *8,3%* | *8,6%* | *8,1%* |

Source: teknowlogy Group, 2019

→ Due to the nature of Open Source, the share of IT services in the Open Source market remains high. In particular, because many Open Source solutions are considered "less finished" than traditional software, and therefore require services around them.

→ Open Source is a smart choice for specific developments, which mechanically requires more development services and more integration services than when implementing packaged software.

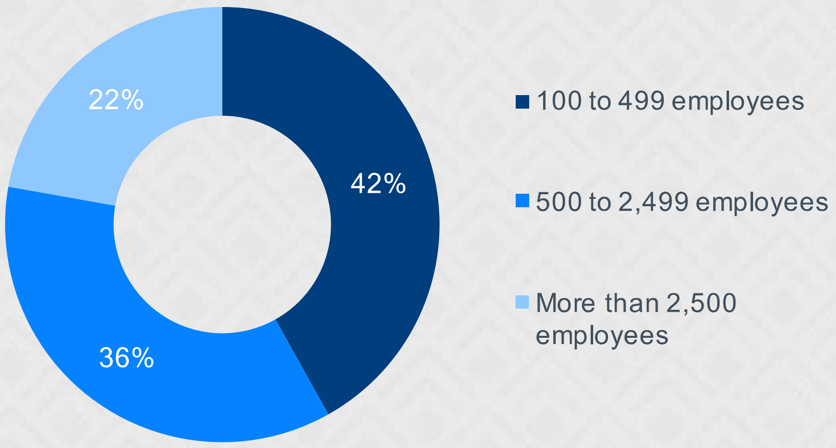
→ Open Source is particularly present in innovative technologies, which also requires more integration than mature technologies.

# 2. Open Source is strategic for the future of organizations in France (117 organizations surveyed)

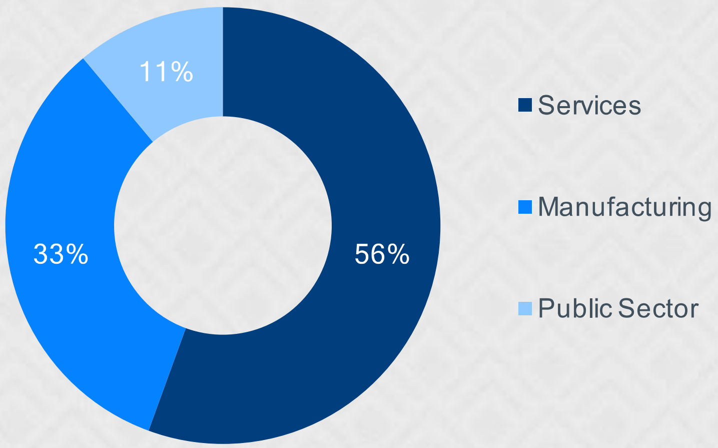
# Background and methodology

# Companies surveyed

Number of employees
n=117



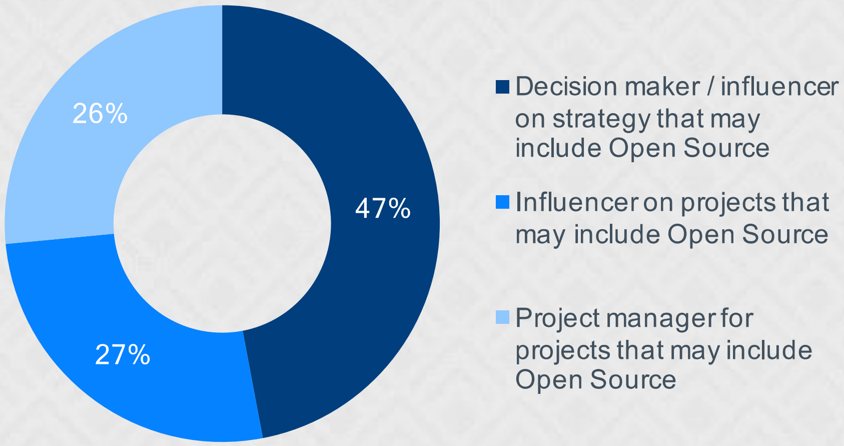

Sector
n=117



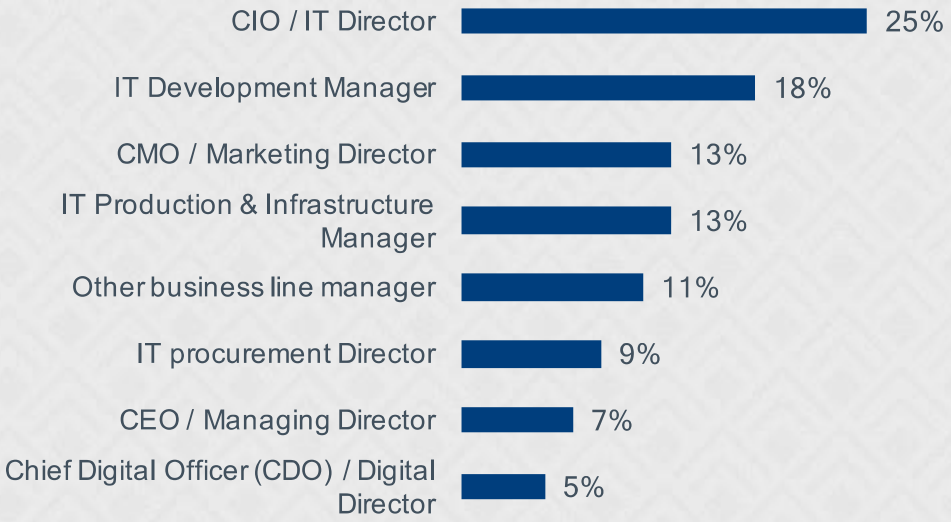

→ **117** French **companies** and **public organisations** with more than 100 employees surveyed in November 2019.

# Respondents interviewed

Role in the use of Open Source / Free Software in the company n=117




Function n=117



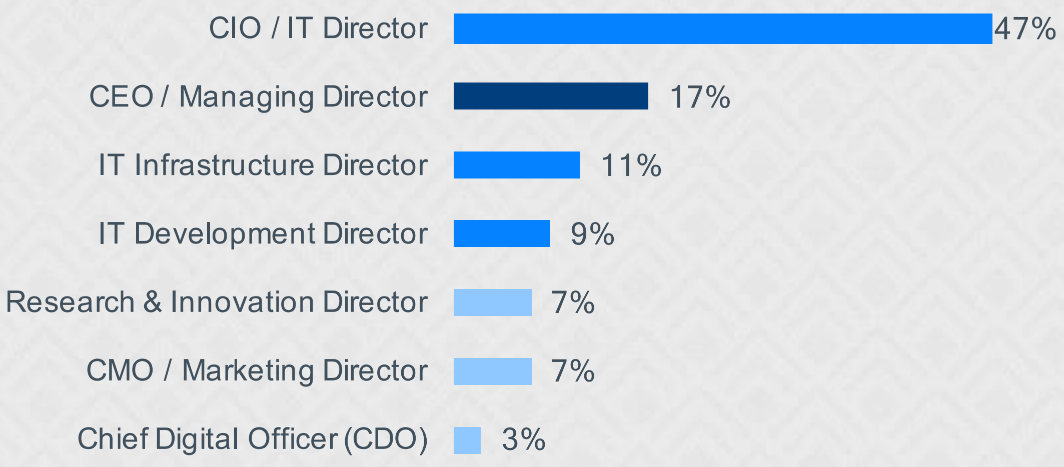

→ **1 in 2 respondents** is a decision-maker or prescriber on strategy that may include Open Source. Open Source drives transformation strategies.

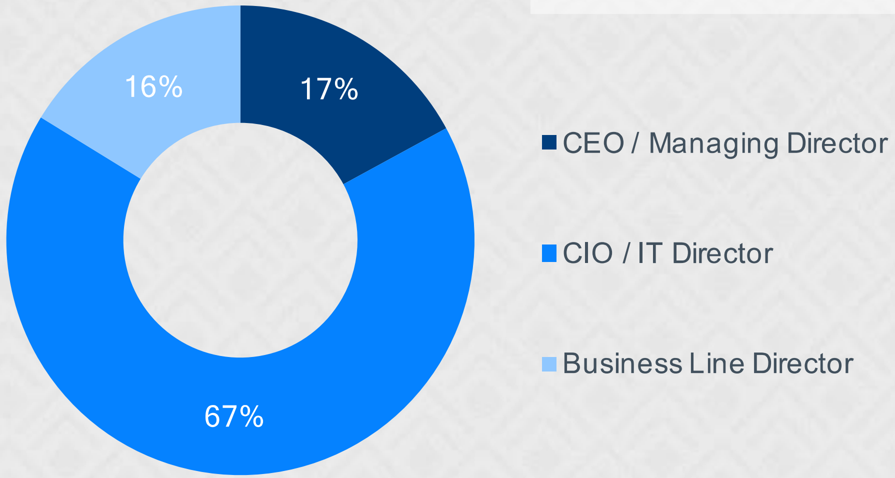
→ **1 out of 3 respondents** does not belong to the IT department (CEO, marketing, digital, etc.).

# How do companies use Open Source?

# Business management is more and more committed to Open Source

**Who is the main internal sponsor of the use of Open Source in your company? (n=117)**




***☞ 2019 vs 2018****

*One year ago, CIO/IT was the internal sponsor for 72%*

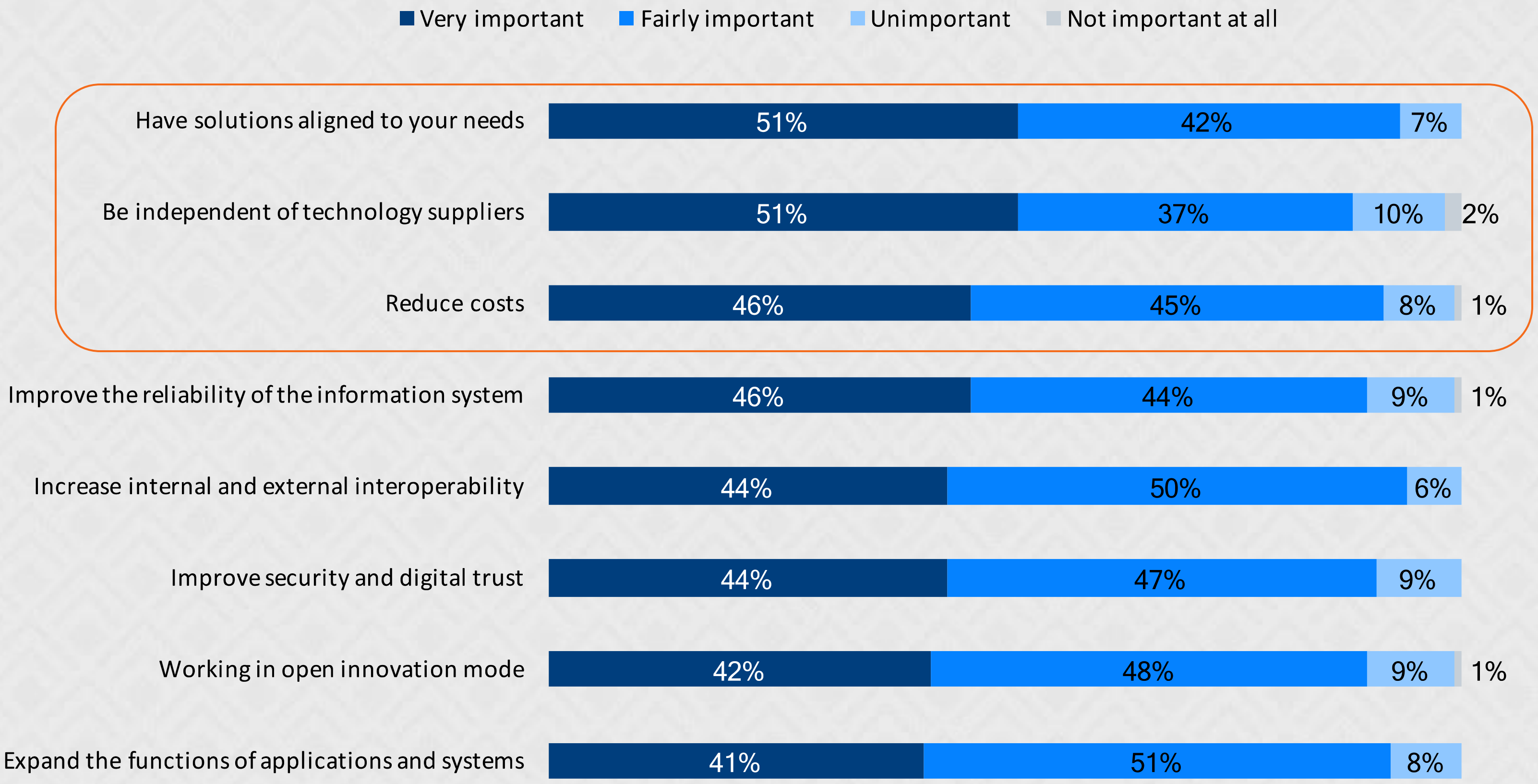
→ **For 1 in 3 companies**, the use of Open Source is sponsored by the CEO or a business department.

→ The use of Open Source is promoted by the IT department, but not only. CEOs and business lines are increasingly involved in the subject because Open Source has become strategic for transformational topics.

** Source: « Digital transformation heralds the second age of Open Source », teknowlogy & Thales 2018*

# Open Source meets the need for customization and technological independence

What are your motivations for using Open Source in your company? (n=117)




☞ ***2019 vs 2017****

*Two years ago, cost reduction was the primary motivation*

→ Open Source facilitates **customization** and **specific development** which organizations need to improve their customers' experience. **Independence** remains a key criterion.

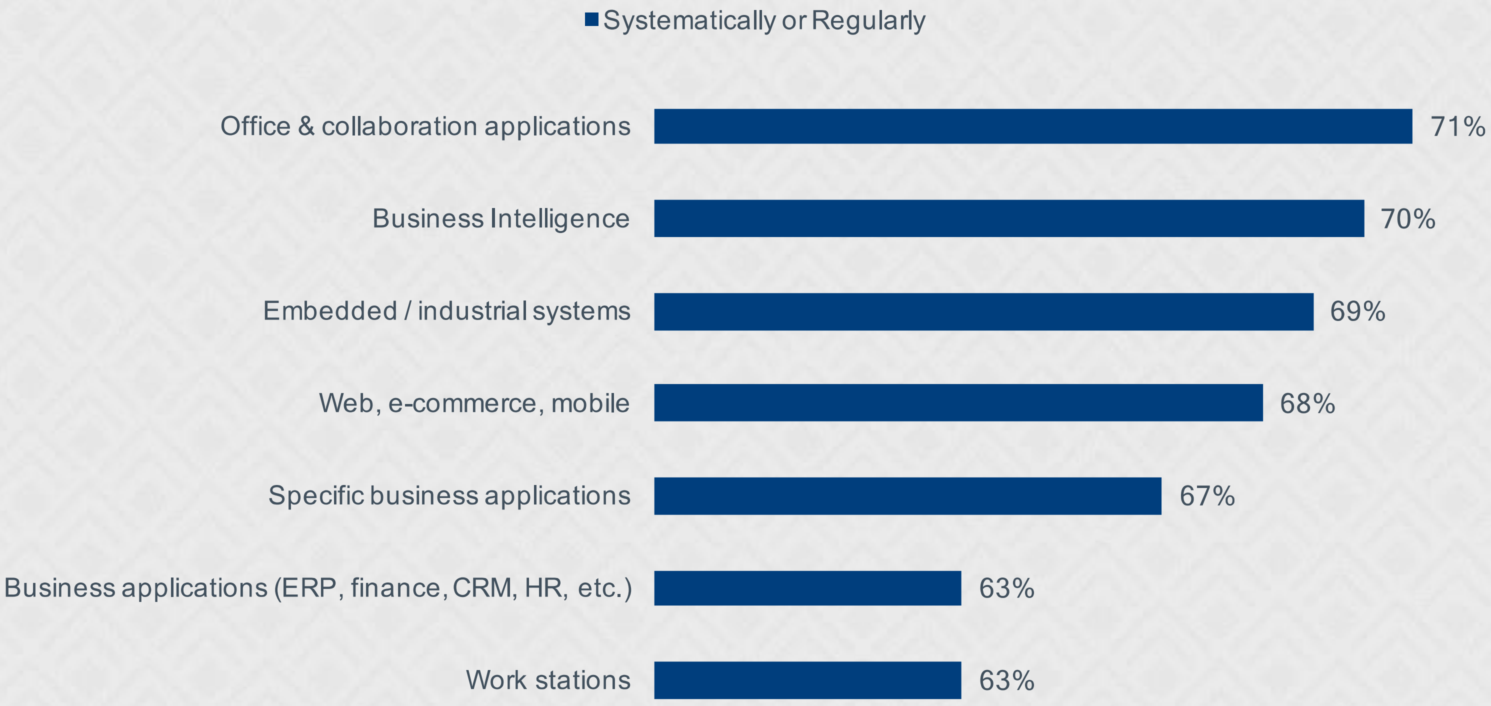
→ **In the 2017 study, cost reduction was the first driver for using Open Source**. In 2019, the main drivers are **customization** and **technological independence**.

→ We are currently seeing an increase in the **reliability** and **security** offered by Open Source.

** Source: « Impact of Open Source in France 2017-2020 », Syntec Numérique, CNLL, Systematic, teknowlogy Group, IAE Valenciennes, IAE Lyon 2017*

# Open Source is now infused in all layers of information systems

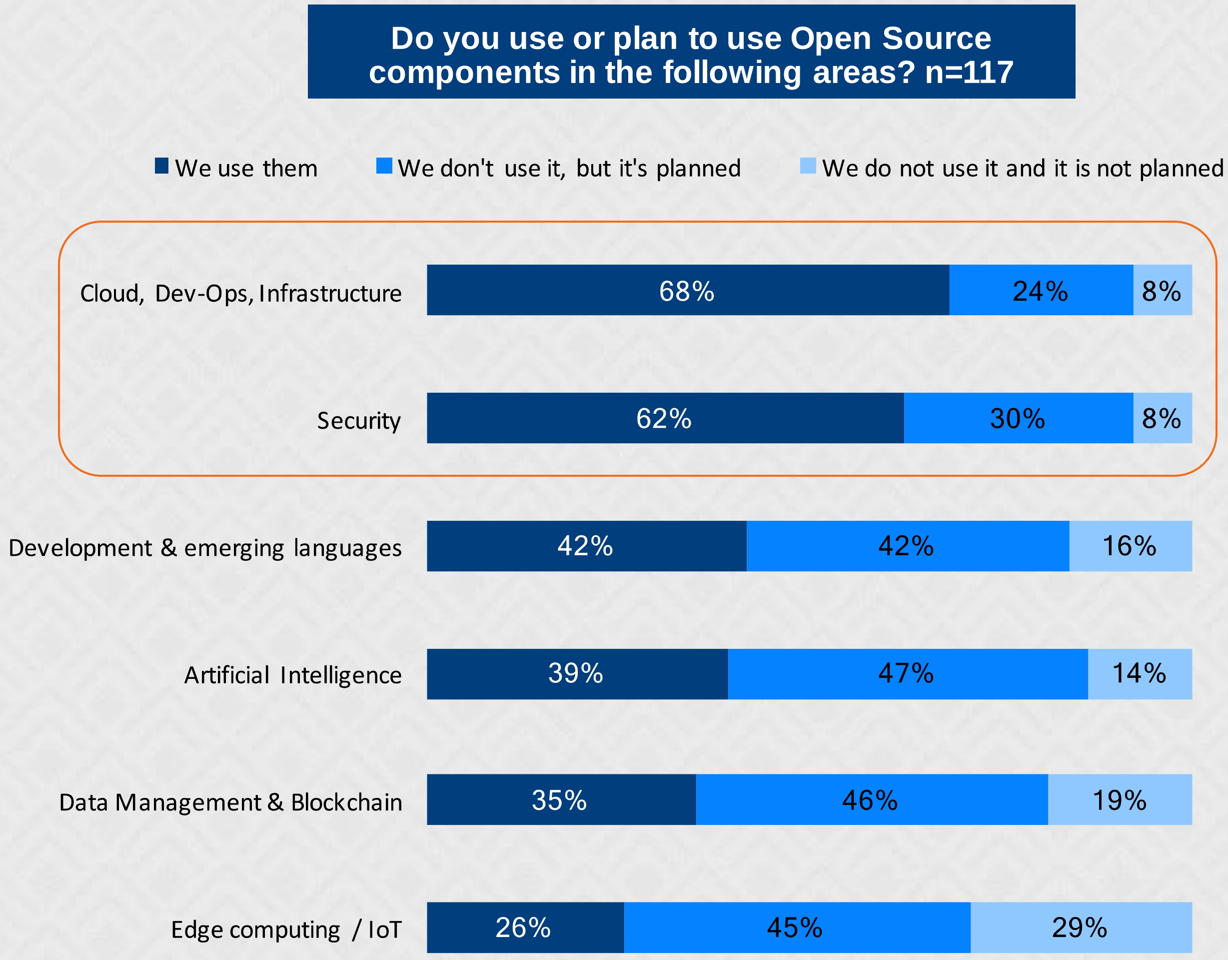
**Do you use Open Source for the following applications or systems? n=117**




→ Companies make **regular or even systematic** use of it at many levels of the IS, including in enterprise applications.

→ The majority of applications and systems have at least one Open Source component.

# It is strongly used for Cloud/DevOps and Security, catalysts of digital transformation

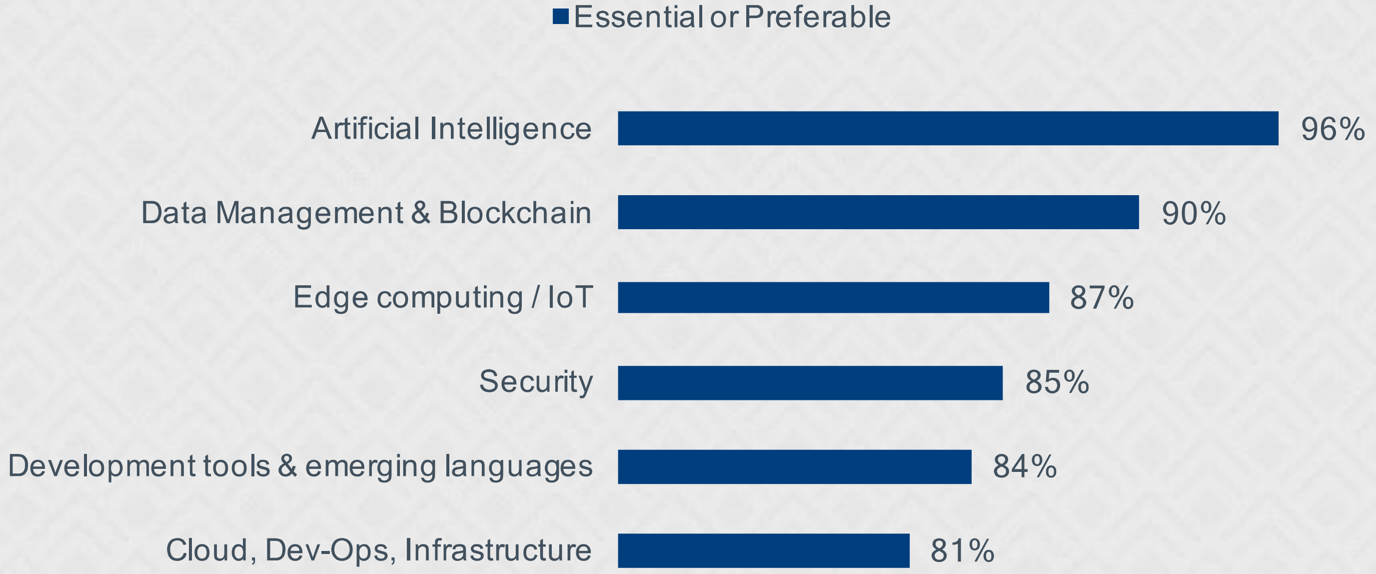



→ More than **1 in 2 companies** use Open Source components for their cloud, DevOps and infrastructure projects.

→ **Security** becomes a key to the adoption of Open Source.

# The undisputed model for innovative technology such as AI

**For those areas where you use Open Source, what do you think of the use of Open Source? (n=80)**




- For **9 out of 10 companies,** Open Source is essential or preferable when adopted for **AI** or **Data Management** & **Blockchain**.
- The Open Source model is **the new trusted norm** when thinking of innovation.
- These innovative technologies, alongside with Edge computing/IoT, are « ***born open*** ».

# Which partners do companies use in Open Source ?

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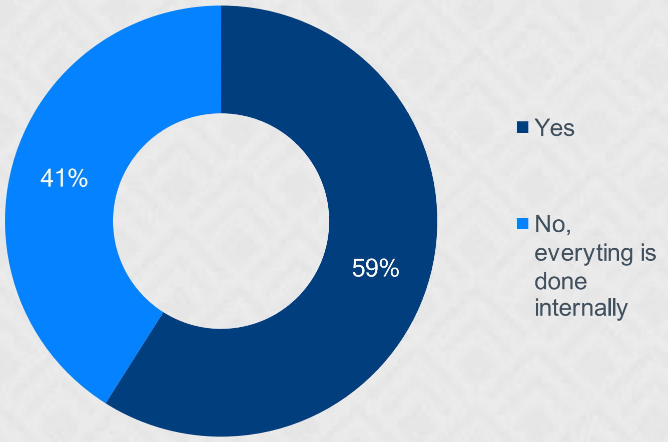
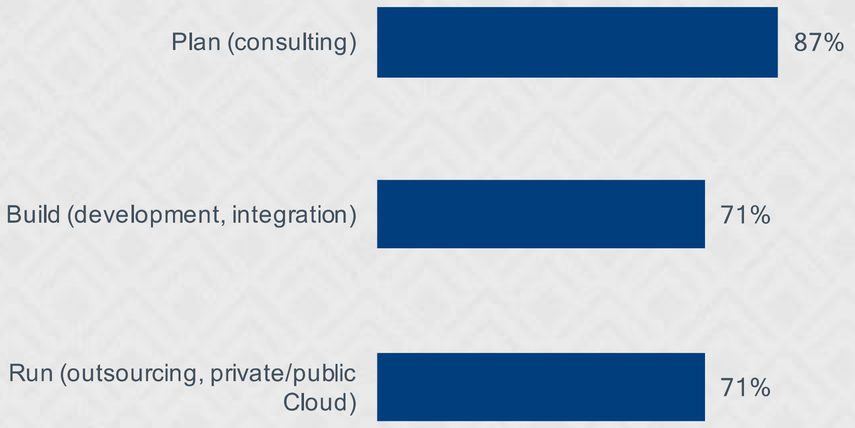
# Most companies use external service providers, particularly for consulting services

**For your projects using Open Source, do you use external service providers? n=117**




**Do you use the following types of services for your services using Open Source ? n=117**




***☞ 2019 vs 2018****

*One year ago, 64% used external providers (larger companies)*

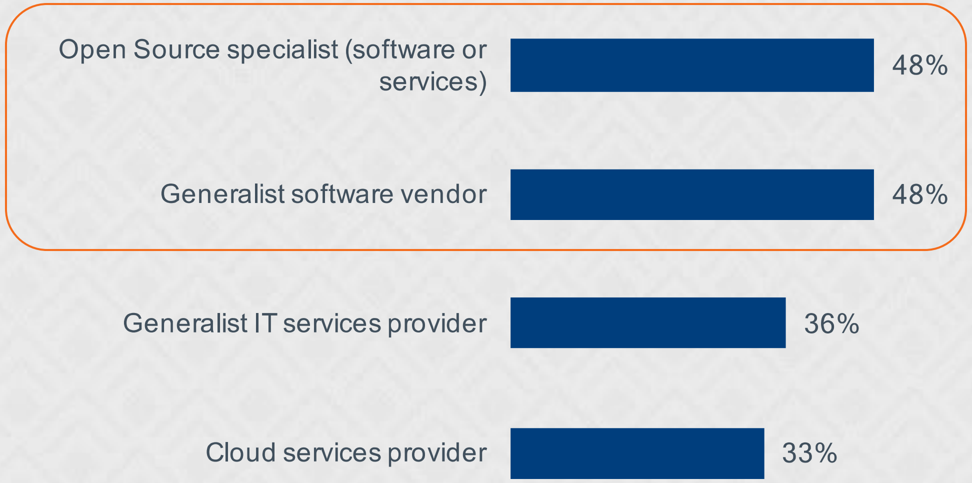
→ **6 out of 10 companies** use external service providers for their projects using Open Source.

→ Companies need to be supported throughout the project cycle. The strategic aspect of Open Source in digital transformation favors the use of **consulting** by business leaders.

** Source: « Digital transformation heralds the second age of Open Source », teknowlogy & Thales 2018*

# Companies strongly rely on Open Source specialists and software vendors

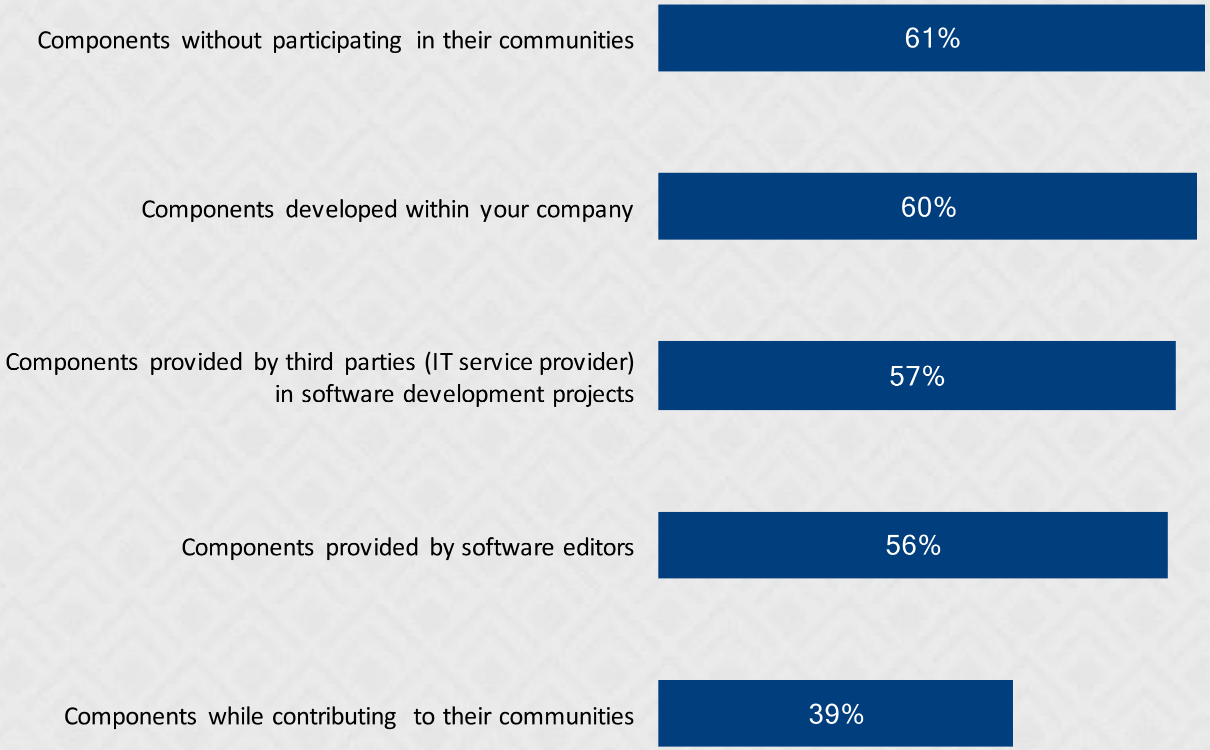
**What type of providers/partners do you or would you use first for your needs using Open Source? n=117**




- → Open Source is always perceived as a **specialization**.
- → **Generalist software vendors** have acquired a strong footprint in Open Source through acquisitions in recent years.
- → **Cloud** providers are increasingly seen as partners for services around open source.

# The principle of pooling resources has not yet been adopted

**For your projects using Open Source, you use:**
**n=117**

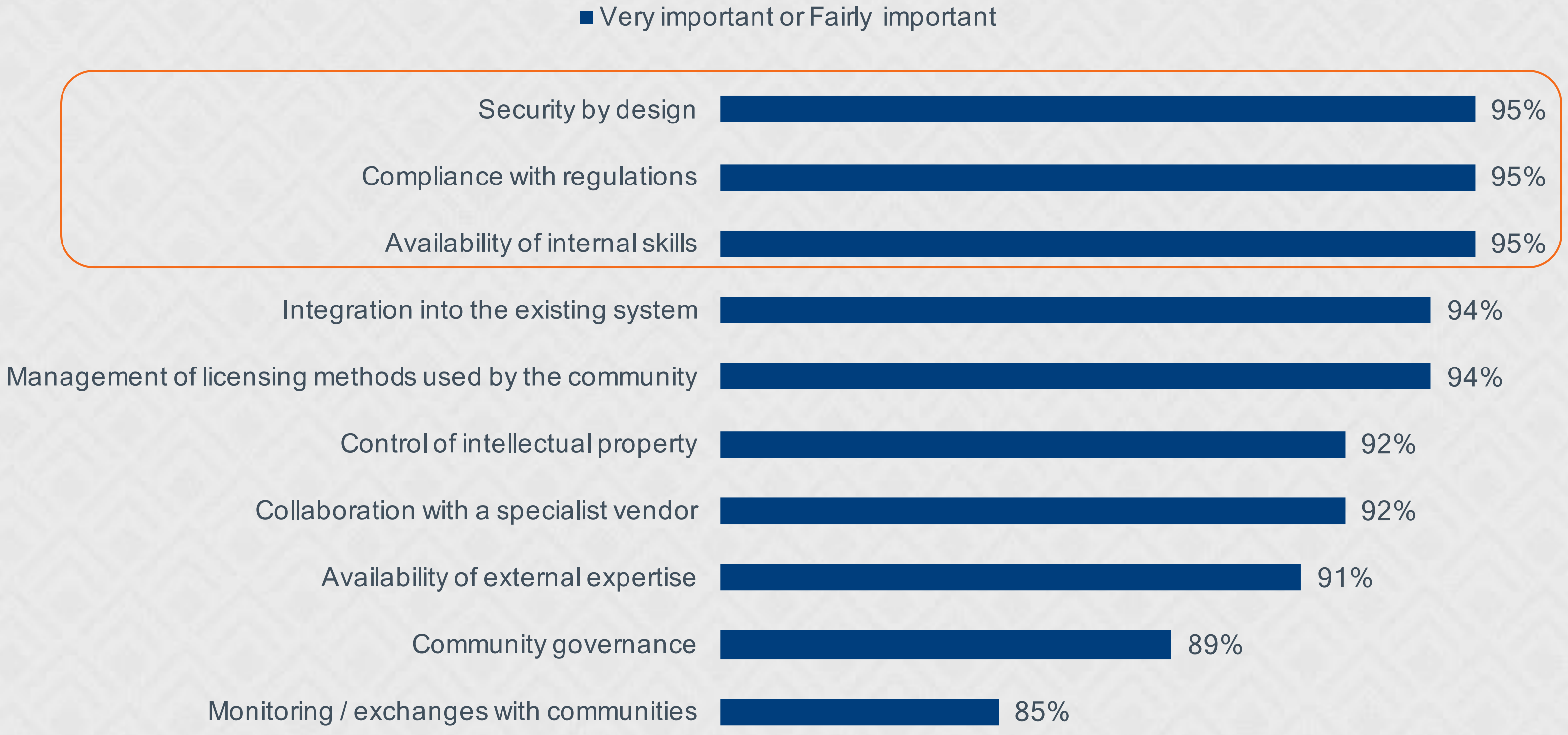



→ The contribution to communities remains low in companies despite a culture that continues to spread.

→ Open Source promotes **specific development**, which is coming back into its own with digital transformation strategies.

# Security, compliance and skills, key success factors of Open Source projects

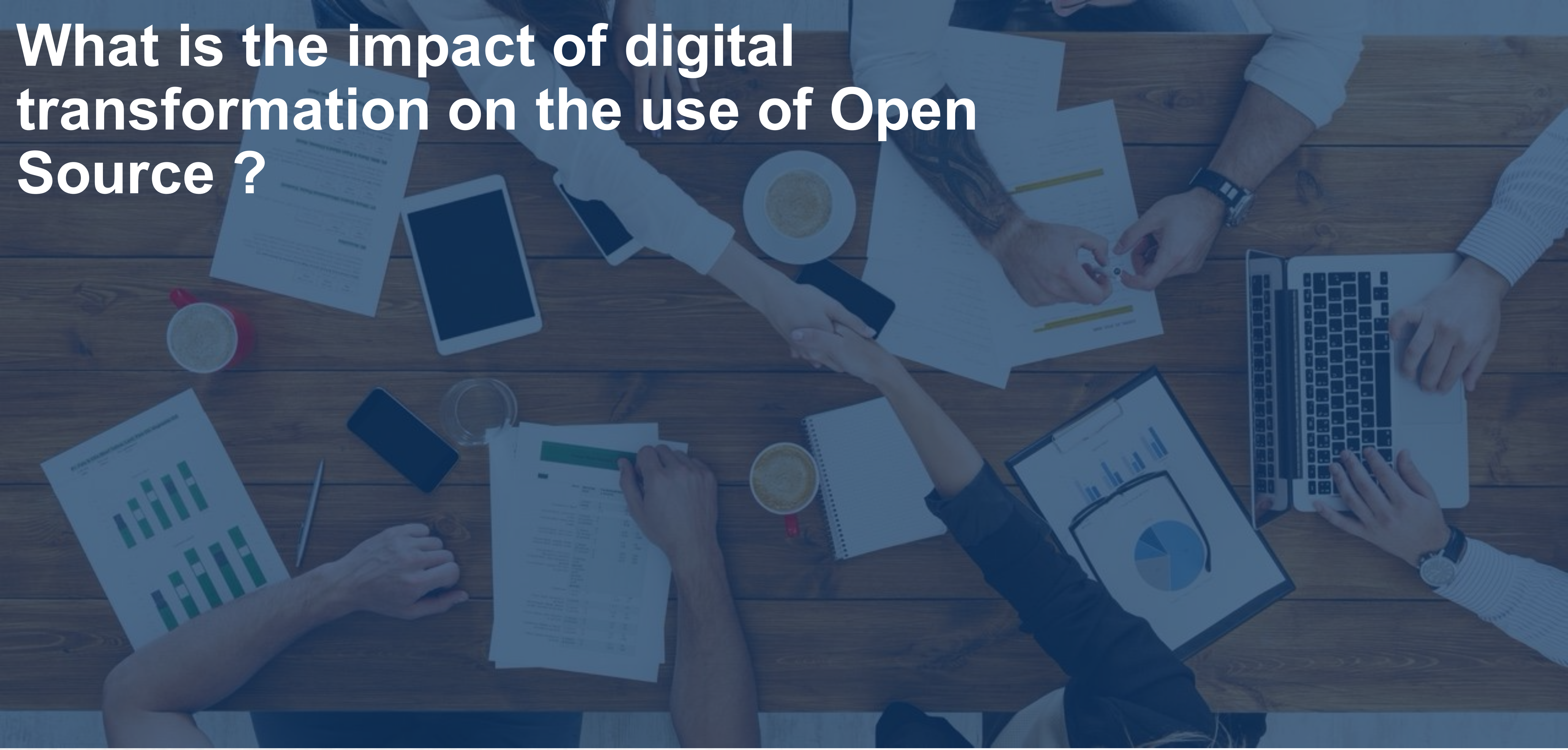
**What are the important points for the management of your open source/Open Source software projects? n=117**




→ **Security by design**, **compliance** and available **internal skills** are the key factors for the success of Open Source projects.

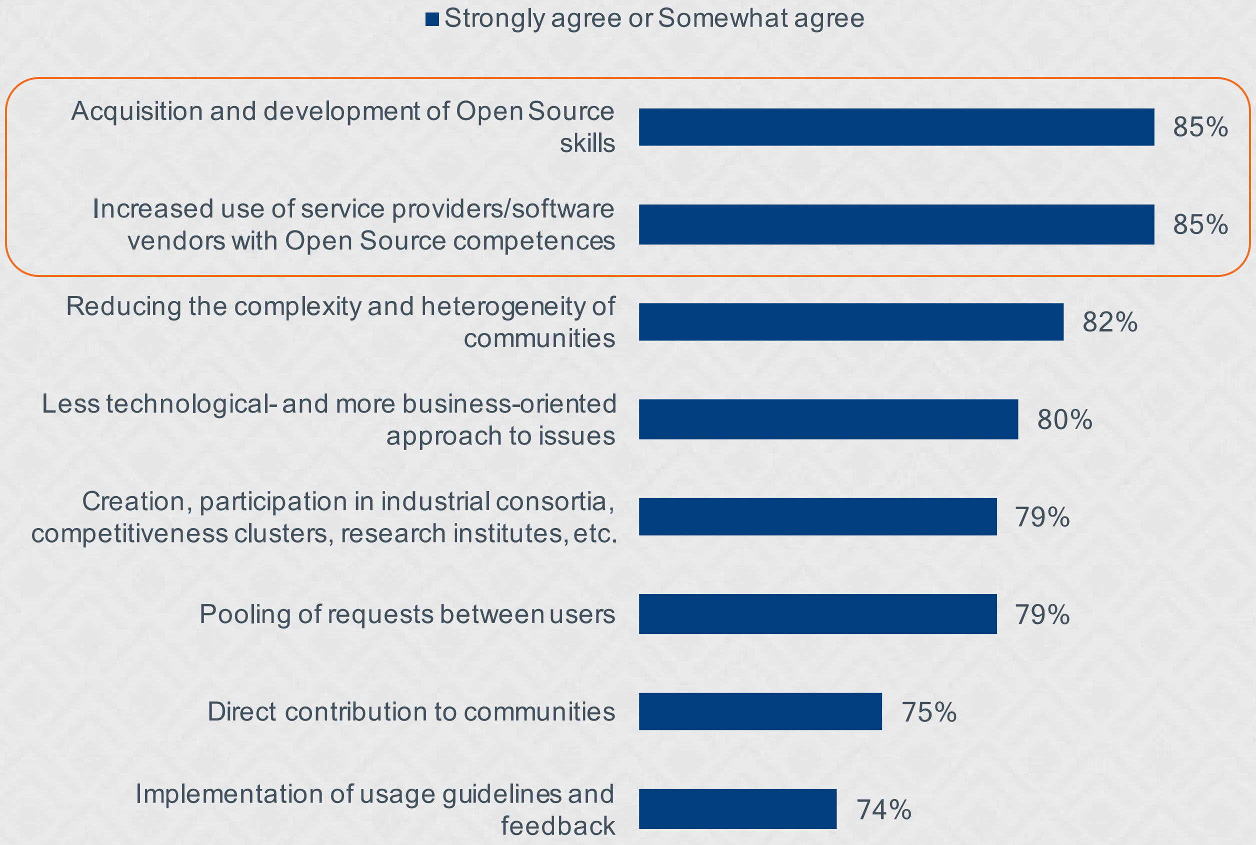
→ Collaboration with a publisher specializing in Open Source is also essential in understanding the Open Source model (licenses, communities).

# What is the impact of digital transformation on the use of Open Source ?



# Internal and external skills remain the keys to greater use

**To what extent would the following developments allow you to develop the use of Open Source in your company? n=117**



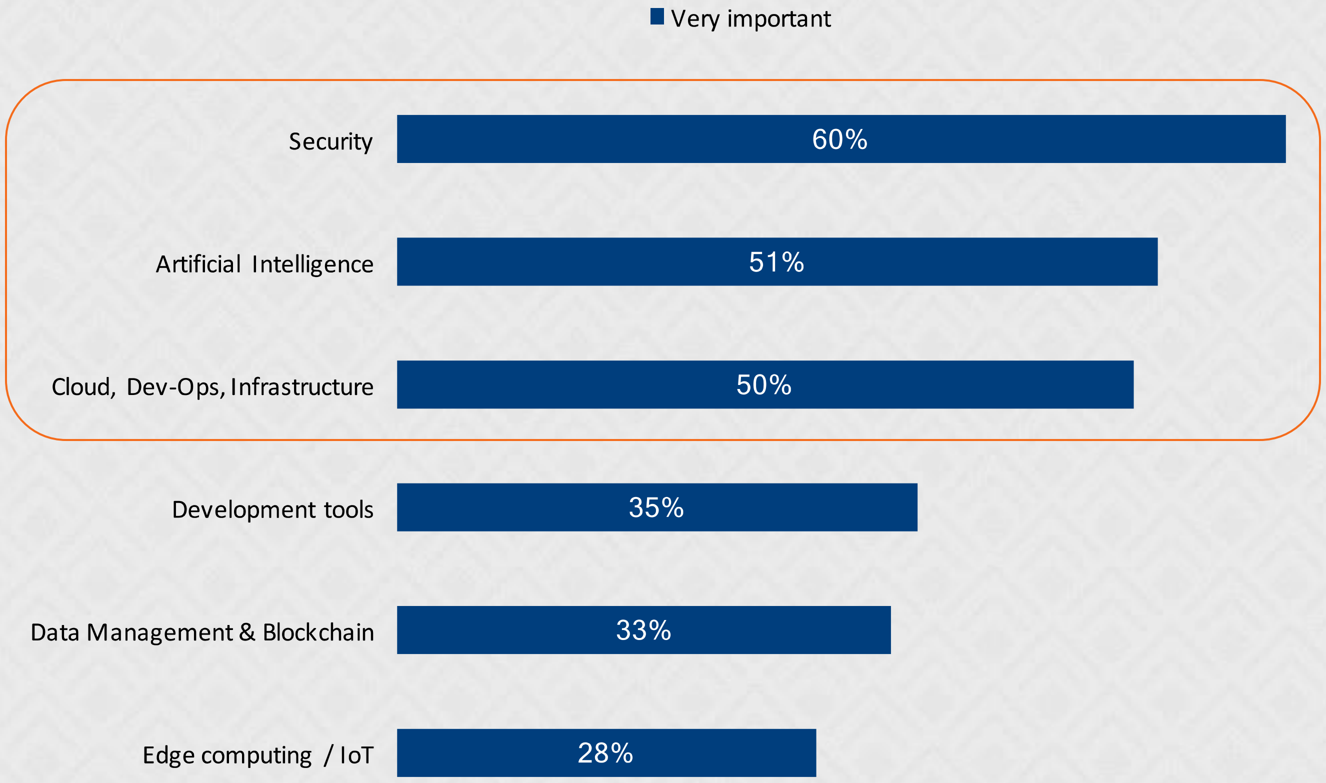

→ The **lack of** specific **skills** hinders the adoption of Open Source, whether it is internal company resources or service providers.

→ Open Source is still perceived as a **highly technological subject**.

→ **Community initiatives** (pooling requests, direct contribution to communities) make it possible to better disseminate the open source/software culture internally.

# Open Source will be key for security, AI and Cloud/DevOps

**For each of these key topics of digital transformation, do you think that Open Source will play an important role in your company? n=117**

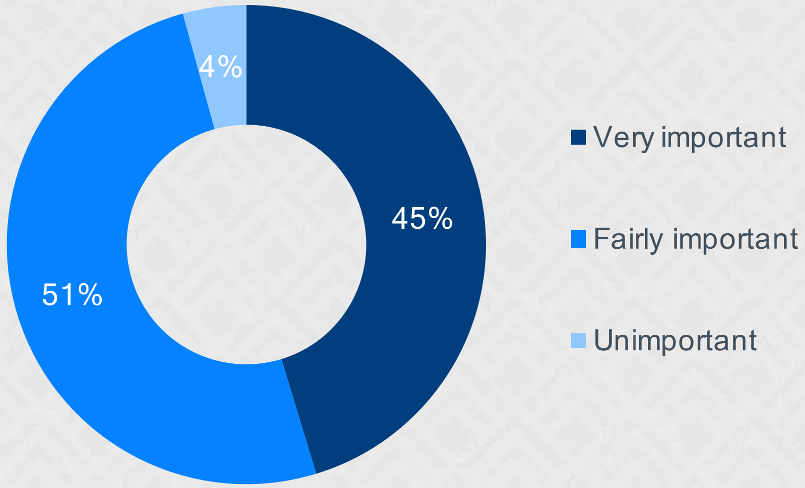



→ **Digital trust** will be the next pillar in the adoption of Open Source.

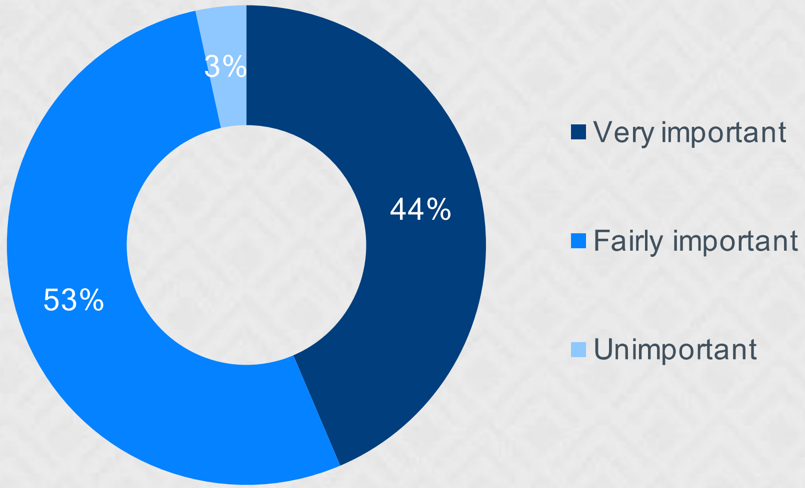
→ Open Source will play a key role for **AI** and **Cloud/DevOps** because these cutting-edge innovation topics require an **open** and **transparent** creative process (methodological framework, code).

# Open Source is now a key differentiator for digital transformation and innovation

For the **digital transformation** of your company, what role will Open Source play? (n=117)




For **digital innovation** in your company, what role will Open Source play? (n=117)

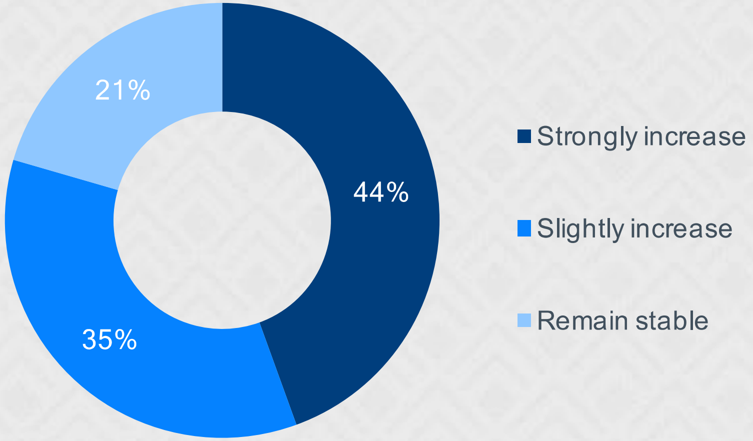



→ **More than 9 out of 10 companies** believe that Open Source will play a fairly or very important role in transformation and digital innovation.

→ Open Source is seen as a tool for the **implementation of digital transformation** and the **acceleration of digital innovation**. These are key arguments for companies in the differentiation from their competitors and improvement of the customer experience.

# The use of Open Source will therefore increase in the next 2 years

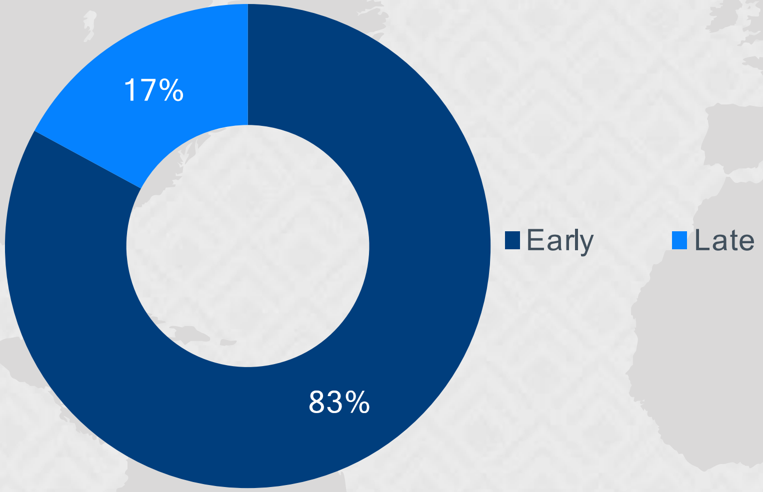
Overall, regarding the use of Open Source in your company in the next 2 years, would you say that it will... n=117



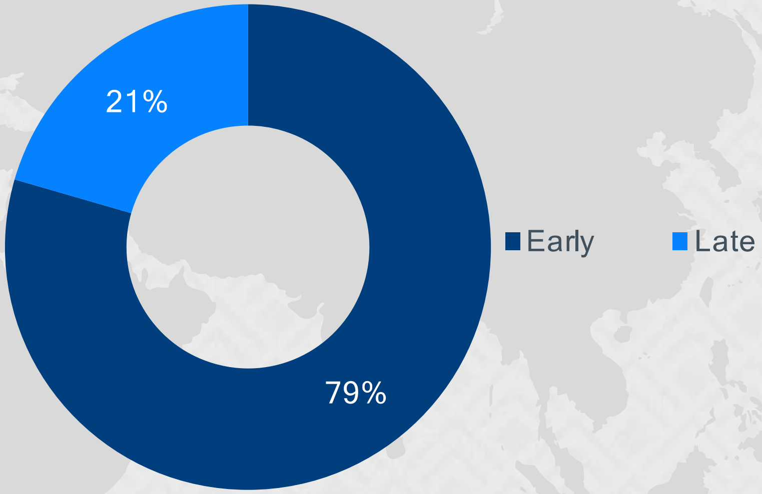

→ In nearly **80% of companies,** the use of Open Source will increase slightly or strongly in the next 2 years.

# Europe has a unique opportunity to take the lead in Open Source development

For **Open Source skills**, what do you think about Europe in relation to the rest of the world? (n=117)




For the **adoption of Open Source**, what do you think about Europe in relation to the rest of the world? (n=117)




- For approximatively **80% of companies,** Europe leads the rest of the world in terms of Open Source skills available and its early adoption.
- Europe has the opportunity to take the lead on this topic thanks to its skills and experience in adopting Open Source.

# 3. Europe: What are the local specificities?

# A look at European specificities 1/3

## Germany

→ The Open Source market is **booming** with a transfer of legacy systems to open source.

→ The Open Source community is dynamized by the strong commitment of Cloud providers, private and ICT companies and startups.

→ A **lack of regulation** and procurement policy as well as a strong **corporate lobby act** in slowing down the development of Open Source market.

## Finland

→ Open Source is a very high growth market driven by a **strong public policy** which supports open source software and contributes.

→ However, how to work with Open Source communities is still not understood by private companies.

→ The market is **strongly fragmented**, with small vertical specialized service providers and big ICT players.

## Croatia

→ Open Source is on a **positive trend** among companies.

→ However, the country lacks a strong public policy.

→ **Web companies** are driving the Open Source market.

→ **Availability** and **stability** are the key drivers for adoption.

→ Only generalist IT players promote Open Source.

# A look at European specificities 2/3

## United Kingdom

→ Structured by a **strong commercial ecosystem**, the Open Source market is growing steadily. The main driver is still **cost reduction**.

→ All sectors are engaged but contributions are marginal.

→ Public policies favor open source but practice does not yet. Improvements are expected in 2020.

→ Lack of experts who really understand the mechanics of Open Source.

## Spain

→ Innovation drives a 15%+ annual growth for Open Source according to a local expert.

→ Though the public sector is the main user and contributor of Open Source, there is **no policy** regulating the market. The financial sector uses actively Open Source, but does not contribute,

→ With no large pure players, the Open Source market **has difficulty to address all business needs**.

## Italy

→ The market is rather mature, more than 70% of businesses use Open Source, boosted by innovation.

→ **Open Source reaches the financial sector and telecoms.** Yet, contributions are still weak, apart from the public sector.

→ All new projects in the public sector are released under an Open Source license.

→.The country lacks experts, but Open Source popularity is high in universities.

# A look at European specificities 3/3

## Portugal

- The Open Source dynamism is driven by all sectors. Open Source is evaluated for new projects by big or small companies.
- **Contributions start to emerge** with companies promoting best practices.
- Some public policies favor Open Source but the proprietary software industry lobby is still strong.
- Lack of human resources and Open Source experts.

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