

A Business Capability for BizDevOps

This instrument aims to evaluate a proposal for specifying a Business Capability for BizDevOps. For this purpose, on the first page, we have provided an informative section about the context of the proposal and the details of the specified business capability. Additionally, to facilitate its reading and access, we have left the document of this section at the following [link](#).

In the subsequent pages, the survey is presented, which is divided into three categories: 'Demographic Data', 'Experience and Use', and 'Utility of the Proposal'.

The survey will take you a maximum of 60 minutes to complete, allocating 30 minutes for the informational material and another 30 minutes for filling out the survey. Your responses and comments will be handled with the highest level of confidentiality.

* Indica que la pregunta es obligatoria

Informative Section

BizDevOps is

an approach to software (SW) development that considers three continuous and integrated cycles (business, development, and operations) (see Figure 1) , to implement SW requirements that support the needs of the organization (Gruhn & Schäfer, 2015).

BizDevOps is

a natural progression that organizations using DevOps as a software development approach can make. This progression includes activities to facilitate IT/Business alignment and the involvement of business stakeholders.

Figure 1. BizDevOps Cycles.



What is its purpose?

This approach aims to bridge the gap that exists between business departments (where business needs are conceived) and the IT department (where software to support business needs is created). In Gruhn and Schäfer (2015) sets out the advantages of each cycle:

- BizDevOps allows individuals in business departments to express and review business needs in a practical way, provide rapid feedback, and support the alignment of IT with the Business (the 'Biz' in BizDevOps).
- BizDevOps enables IT departments to manage the entire application development process to ensure the high quality of software artifacts (the 'Dev' in BizDevOps).
- BizDevOps provides a set of processes and tools that allow for the automation and integration of the software delivery and deployment chain (the 'Ops' in BizDevOps)."

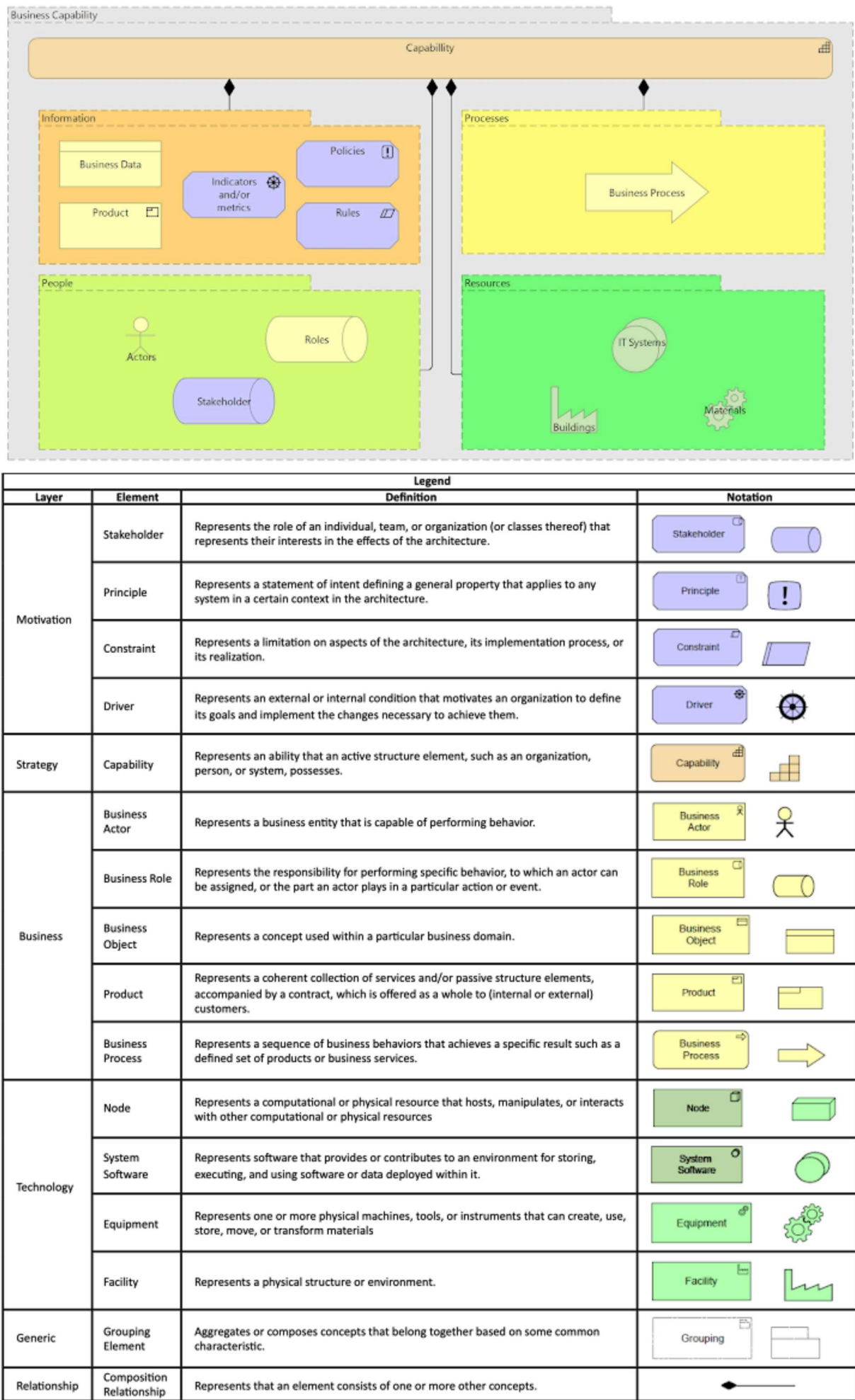
What is a Business Capability?

The Open Group, in its TOGAF standard for applying Enterprise Architecture (The Open Group, 2022a), defines capability as 'an ability to do something', therefore, a Business Capability (BC) represents an organization's ability to achieve a business objective. On the other hand, it can be something that currently exists or something that is required to enable a new direction or strategy.

With this in mind, specifying a BC requires establishing four main components (The Open Group, 2022a) (see Figure 2):

- **People**, representing actors, roles, stakeholders, or business units related to the BC.
- **Processes**, which specify the actions that must be able to be carried out.
- **Information**, representing the business data and knowledge necessary for enabling the business capability. This includes products, policies, and organizational rules, as well as performance indicators and metrics.
- **Resources**, which can represent various tools, materials, or physical assets that enable the proper execution of the defined processes. This category includes elements such as information systems, applications, real estate, machinery, and vehicles.

Figure 2. Representation of a Business Capability using ArchiMate 3.2 notation (The Open Group, 2022a).



What are the advantages of using a Business Capability?

The use of Business Capabilities offers various advantages for organizations (The Open Group, 2022b). Among these advantages are an improvement in strategic alignment, highlighting the value contributed to products and services, facilitating the management of organizational complexity, and promoting effective communication and collaboration with a shared language. These advantages enable organizations to make more informed decisions and achieve greater coherence in their strategies and business activities.

Business Capability for BizDevOps

The objective of this business capability is to enable companies that are already applying DevOps with an agile focus and wish to migrate to BizDevOps, to take the first step and identify everything necessary to achieve IT/Business alignment without losing agility when using this approach.

In Table 1, the BC for BizDevOps is detailed. It is important to note, as stated by The Open Group (2022a), that the specification of a business capability does not need to define either how or how well things are done, it only needs to establish the minimum necessary that must exist to have the ability described by the capability.

Tabla 1. General Template of the Business Capability for BizDevOps

Name		Software Development using BizDevOps
Description		The organization's ability or capacity to develop software with BizDevOps. This capability ensures an agile alignment of IT with the business and preserves the benefits and characteristics of DevOps
Components	People	BizDevOps team composed of the following roles: <ul style="list-style-type: none">• Product Owner• Agility Manager• Other DevOps roles
	Processes	<ul style="list-style-type: none">• Process Group of the DevOps Standard – IEEE 2675.• Continuous IT/Business Alignment Process
	Information	<ul style="list-style-type: none">• Principles• Values• Metrics
	Resources	<ul style="list-style-type: none">• Toolkit

People

The essential roles considered by the BizDevOps Team are the typical roles of DevOps, but some must assume new responsibilities.

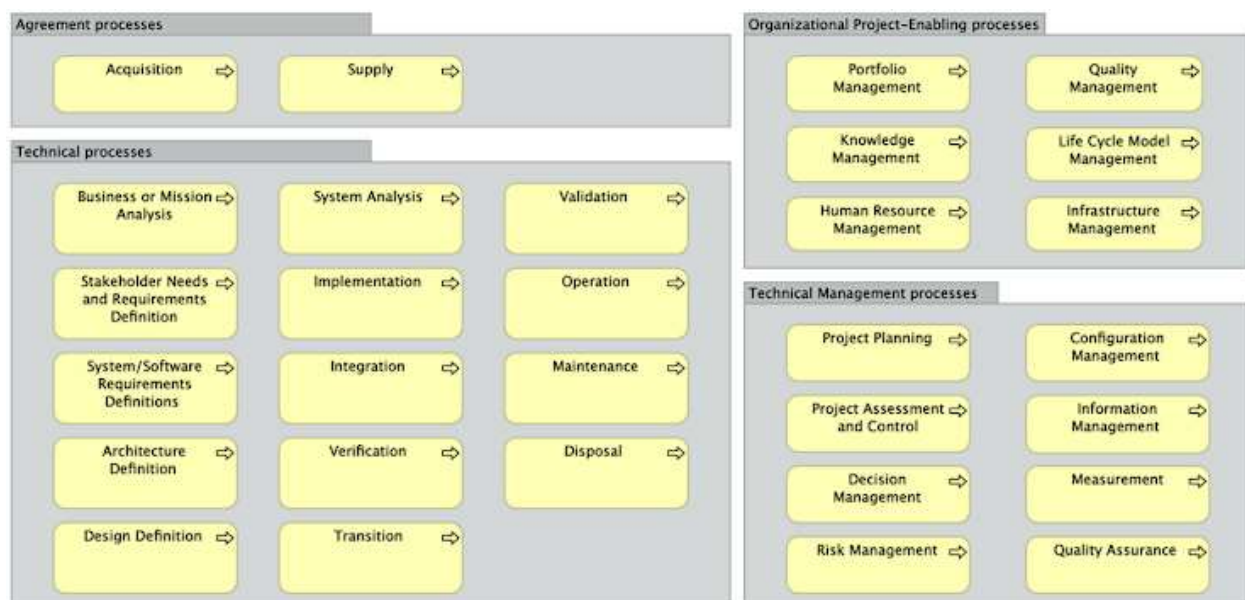
- **Product Owner:** In BizDevOps, this role is key in delivering a product that meets business needs and adds value. Their new focus is on aligning IT with business goals. This adds to their usual role of bridging the gap between business experts and the IT team and maximizing the product's value.
- **Agility Manager:** In BizDevOps, this role ensures the team remains agile across all phases of the approach. They create an environment for efficient and productive work. In Scrum and similar frameworks, this role is often filled by the Scrum Master.
- Other DevOps roles should also be considered as part of the team, for example, developers, testers, operations managers, among others (ISACA, 2020; Krishna Kaiser, 2018).

Processes

This component considers the following:

- **IEEE 2675 DevOps Process Group:** The standard for the DevOps approach specifies a series of processes that provide guidance on the use of DevOps principles and practices for the processes followed by an organization during the software lifecycle, suitable for its products and services. An organization, depending on its purpose, can select and apply an appropriate subset to fulfill that purpose (IEEE, 2021).
- **Continuous IT/Business Alignment Process:** Continuous IT/Business alignment, as per (Hinkelmann et al., 2016) involves: (a) Establishing/adjusting objectives: strategic and operational objectives for both the business and IT and their relationships. (b) (Re)designing the enterprise: modeling or adapting the business, application, and technology architectures, as well as their relationships. (c) Implementing the enterprise architecture. (d) Monitoring the organization's performance and recognizing the needs for adaptation.

Figure 3. Process Group of the IEEE 2675 DevOps Standard (IEEE, 2021)



Information

Principles: here are some principles for BizDevOps (IEEE, 2021; Lohrasbinasab, Acharya, & Colomo-Palacios, 2020):

- **Alignment:** BizDevOps favors the realization of constant alignment of IT with the business.
- **Agility:** This approach considers agility in all its cycles.
- **Integrated Team:** it's not three teams working together, but one team with roles in business, development, and operations, collaborating to meet the organization's software needs.
- **Business First:** BizDevOps focuses on the organization's objectives before technical considerations.
- **Customer Focus:** BizDevOps adopts a customer-centered view, prioritizing and designing work to deliver value to the customer, as well as identifying and managing risks.
- **Shift-Left:** this term refers to anticipating those tasks that are typically performed in the final stages of the software development life cycle. This implies the early execution of practices like software quality and security testing.
- **Continuity in Everything:** in BizDevOps, it means using practices for the automation of processes in business, development, and operations.
- **Systems Thinking:** in BizDevOps, adopting a comprehensive view motivates the team to fully understand the system from start to finish. Systems thinking can facilitate the resolution of complex and emerging problems that are not easily traced back to a single defect.

Values: BizDevOps has four fundamental values, commonly presented as the CAMS values (Culture, Automation, Measurement, and Sharing):

- **Culture:** BizDevOps requires a culture of shared responsibility and common goals. This approach aims to promote an enabling culture of communication, collaboration, trust, transparency, and working towards common objectives.
- **Automation:** BizDevOps promotes and is based on the automation of all processes that allow it to minimize times and, consequently, achieve rapid delivery and a quick response from end users.
- **Measurement:** BizDevOps seeks to continuously improve and provide visibility in all systems and practices. This is achieved by being able to measure everything (or at least as much as is useful, practical, and feasible to do so). As a result, there are metrics and indicators that can potentially be used to measure BizDevOps.
- **Sharing:** BizDevOps promotes establishing intuitive and effective communication channels for continuous communication among all team members. The aim is to share both software project concerns and knowledge exchange.

Metrics: as promoted by the "Measurement" value of BizDevOps, it's important to have information that allows knowing what is being done well and identifying what needs to be improved. Some examples of metrics for this approach are:

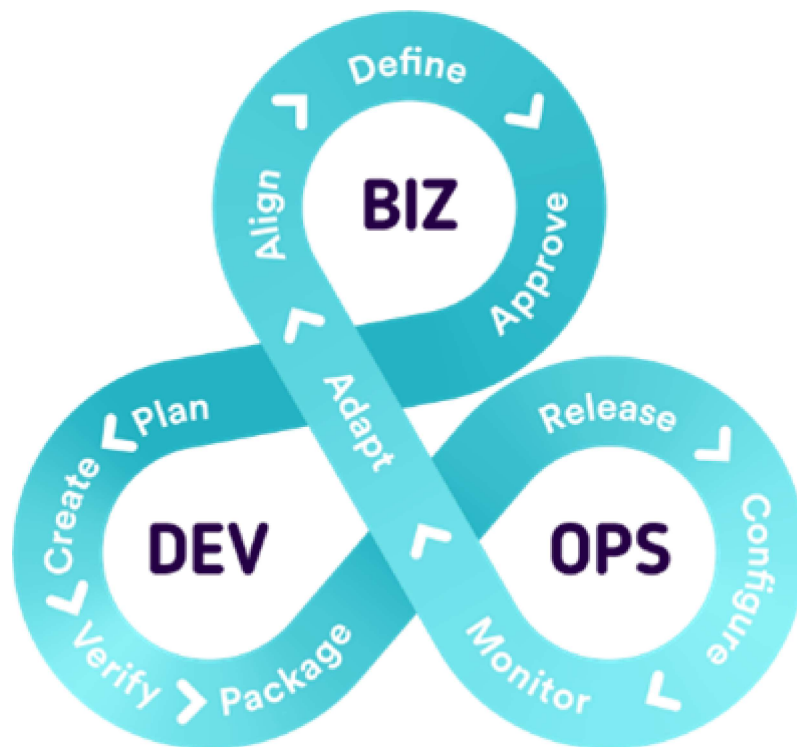
- Deployment frequency.
- Wait time for changes.
- Change failure rate.
- Time to restore/recover service.
- System availability percentage.
- In the context of agile IT/Business alignment, metrics for this purpose are (Imgharene, Doumi, & Baina, 2020): (i) Number of actors participating to achieve an organization's goal. (ii) Number of business processes per organization's objective. (iii) Number of actors building/elaborating a change. (iv) Number of applications per business process.

Resources

Next, the set of resources that make up this component is described.

- **Toolkit:** This toolkit will support the values and principles described in this approach. At each of the stages described in Figure 4, tools are needed to allow automation. For example, for the 'Verify', 'Package', and 'Release' stages, the version control system GitHub can be used, which allows having automated pipelines for the execution of automated tests and tasks of deployment and continuous integration. On the other hand, for the 'Define', 'Approve', and 'Plan' stages, there are tools like Jira, which are designed to manage projects. An advantage of these tools is that they often allow integration with other tools and the automation of certain tasks, for example, deployment. The tools are not detailed in-depth because it depends on the technological architecture and infrastructure that each organization uses or wants to use.

Figure4. BizDevOps Toolkit



References

- Gruhn, V., & Schäfer, C. (2015). BizDevOps: Because DevOps is Not the End of the Story. Paper presented at the Intelligent Software Methodologies, Tools and Techniques. SoMeT 2015. Communications in Computer and Information Science.
- Hinkelmann, K., Gerber, A., Karagiannis, D., Thoenssen, B., van der Merwe, A., & Woitsch, R. (2016). A new paradigm for the continuous alignment of business and IT: Combining enterprise architecture modelling and enterprise ontology. Computers in Industry, 79, 77-86. doi:<https://doi.org/10.1016/j.compind.2015.07.009>
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- Lohrasbinasab, I., Acharya, P. B., & Colomo-Palacios, R. (2020). BizDevOps: A Multivocal Literature Review. Paper presented at the Computational Science and Its Applications - ICCSA 2020.
- The Open Group. (2022a). Business Capabilities, Version 2. Retrieved from <https://pubs.opengroup.org/togaf-standard/business-architecture/business-capabilities.html>
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Demographic Data

Below, we have included demographic data questions with the aim of categorizing the individuals who have responded to this evaluation.

1. Please indicate the area of the organization to which you belong. *

Marca solo un óvalo.

☐ Academic

☐ Industrial

2. Please specify your main occupation. *

Marca solo un óvalo.

- ☐ Academic/Research
- ☐ Software Developer
- ☐ Product Owner
- ☐ Scrum Master
- ☐ Software Architect
- ☐ Project Manager
- ☐ Otros: _____

3. How many years of experience in DevOps do you have? (Please use numbers with a maximum of one decimal place, and write 0 (zero) if you have no experience.) *

4. How many years of experience do you have in IT/Business Alignment? (Please use numbers with a maximum of one decimal place, and write 0 (zero) if you have no experience.) *

5. How many years of experience do you have in Enterprise Architectures? (Please use numbers with a maximum of one decimal place, and write 0 (zero) if you have no experience.) *

6. Are you familiar with the TOGAF framework for enterprise architectures? *

Marca solo un óvalo.

- ☐ Yes
- ☐ No

7. If your previous answer is 'Yes', are you aware that in its latest version (10), it specifies how to enable an agile application of the use of enterprise architectures?

Marca solo un óvalo.

☐ Yes

☐ No

Experience and Use

Below, we have included questions about your experience and use of the practices and approach previously presented.

8. Have you had to address issues related to the alignment between IT and Business? *

Marca solo un óvalo.

☐ Yes

☐ No

9. If your answer to the previous question is 'Yes', could you describe the problems you have addressed?

10. Are you familiar with the BizDevOps software development approach? *

Marca solo un óvalo.

☐ Yes

☐ No

11. If your answer to the previous question is 'Yes', could you describe the potential advantages and disadvantages associated with the approach?

12. Do you have experience in modeling enterprise architectures? *

Marca solo un óvalo.

☐ Yes

☐ No

13. If your answer to the previous question is 'Yes', have you ever used the ArchiMate notation?

Marca solo un óvalo.

☐ Yes

☐ No

Evaluation of the BizDevOps Business Capability

Below are the questions for evaluating the BizDevOps business capability. If you need to consult the informational material presented in the first section, you can download it from the following [link](#). Additionally, before starting with the questions, we provide you with an image detailing the proposed business capability.

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14. The IT/Business alignment described by the BizDevOps approach is beneficial for organizations that develop software using DevOps.

Marca solo un óvalo.

12345

StroStrongly Agree

15. If you choose 1 or 2, could you please indicate the reasons for your disagreement?

16. The specification of a business capability is useful for an organization to determine whether it already possesses or needs to acquire that skill.

*

Marca solo un óvalo.

12345

StroStrongly Agree

17. If you choose 1 or 2, could you please indicate the reasons for your disagreement?

18. The specification of the business capability for BizDevOps is beneficial for organizations implementing DevOps. *

Marca solo un óvalo.

	1	2	3	4	5	
Stro	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

19. If you choose 1 or 2, could you please indicate the reasons for your disagreement?

20. The elements that describe the 'People' component are appropriate. *

Marca solo un óvalo.

	1	2	3	4	5	
Stro	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

21. If you choose 1 or 2, could you please indicate the reasons for your disagreement?

22. The elements that describe the 'Processes' component are appropriate. *

Marca solo un óvalo.

	1	2	3	4	5	
<hr/>						
Stro	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree
<hr/>						

23. If you choose 1 or 2, what elements would you remove or add to consider it appropriate?

24. The elements that describe the 'Information' component are appropriate. *

Marca solo un óvalo.

	1	2	3	4	5	
<hr/>						
Stro	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree
<hr/>						

25. If you choose 1 or 2, what elements would you remove or add to consider it appropriate?

26. The elements that describe the 'Resources' component are appropriate. *

Marca solo un óvalo.

12345

Stro☐ ☐ ☐ ☐ ☐ Strongly Agree

27. If you choose 1 or 2, what elements would you remove or add to consider it appropriate?

28. A framework is useful for guiding the implementation of business capability for BizDevOps in an organization since a business capability by itself does not specify when or how to apply and/or utilize each component. *

Marca solo un óvalo.

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Stro☐ ☐ ☐ ☐ ☐ Strongly Agree

29. If possible, could you let us know what motivated your previous response?

30. This business capability could facilitate an organization using DevOps to transition to BizDevOps. *

Marca solo un óvalo.

12345

Stro☐ ☐ ☐ ☐ ☐ Strongly Agree

31. If possible, could you let us know what motivated your previous response?

32. Enterprise architecture models could facilitate the adoption of BizDevOps by an organization that uses DevOps. *

Marca solo un óvalo.

12345

Stro☐ ☐ ☐ ☐ ☐ Strongly Agree

33. If possible, could you let us know what motivated your previous response?

34. When applied in an agile manner, enterprise architecture models can provide support for agile alignment between IT and Business in a BizDevOps environment. *

Marca solo un óvalo.

1 2 3 4 5

Stro ☐ ☐ ☐ ☐ ☐ Strongly Agree

35. If possible, could you let us know what motivated your previous response?

Thank you very much

We appreciate your cooperation with this survey. Below, we provide a space for you to leave any comments and/or suggestions (anonymously).

Warm regards,

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Francisco Ruiz-Gonzalez (UCLM-Spain)

Angélica Caro (UBB-Chile)

36. We value your contribution! Kindly provide your email for receiving the research results.

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