Continuous Learning

Productivity increase through Continuous Learning.
By Bart de Best

Context:
This blog is drawn from my experience working at a commercial company to build a Continuous Everything Academy. The DevOps engineers' knowledge and skills were at a low level and there was a need for a learning approach including a yardstick to measure progress.

Challenge:
The challenge of applying Continuous Learning lies in the fact that the commercial company had no experience in the field of knowledge development, and everyone carried out the work in his or her own way.

Solution:
The solution to this challenge has been found in the concept of Continuous Learning, which indicates how to define and build the right set of knowledge and skills based on an organization's strategy. The following steps have been completed:

1. Determine the business purpose and strategy
2. Determine the roles that realize the strategy
3. Determine the competencies for the roles
4. Determine the CE Body Of Knowledge
5. Determine the roadmap per person
6. Determine the certifications

1. Determine the business goal and strategy

The first step that has been taken concerns determining the business goal and the strategy to achieve it as shown in figure 1. This step has yielded a number of key points for Continuous Learning, namely:

1. Faster time to market
2. Significant increase in control in the field of information security
3. Better support for business value streams by IT
4. Higher velocity of the DevOps team
5. Reduction of the number of incidents and the processing time of incidents

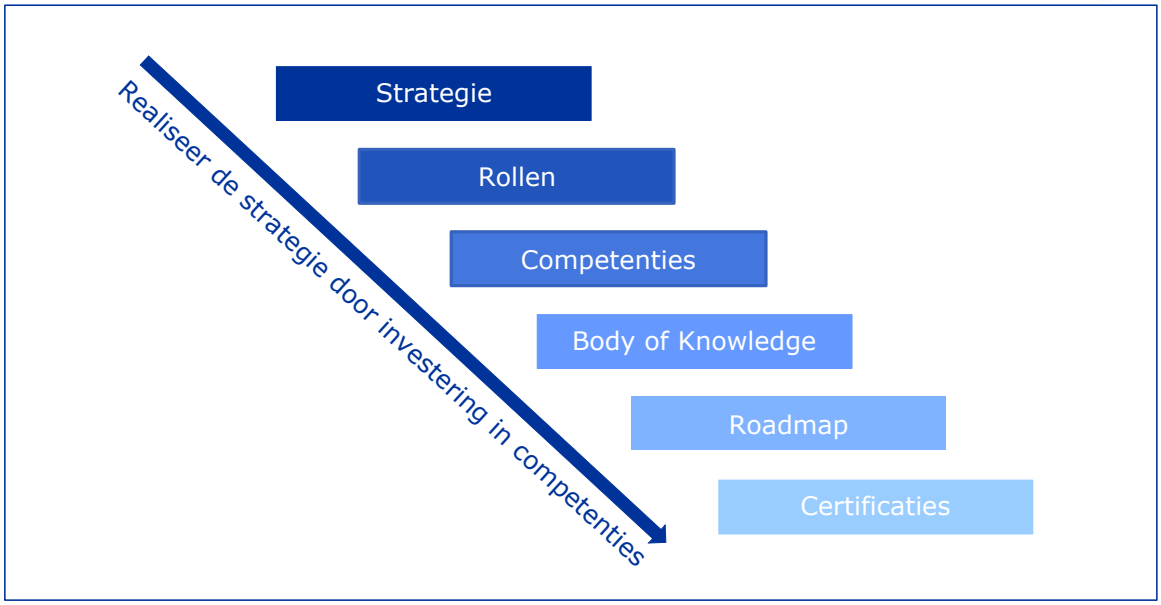
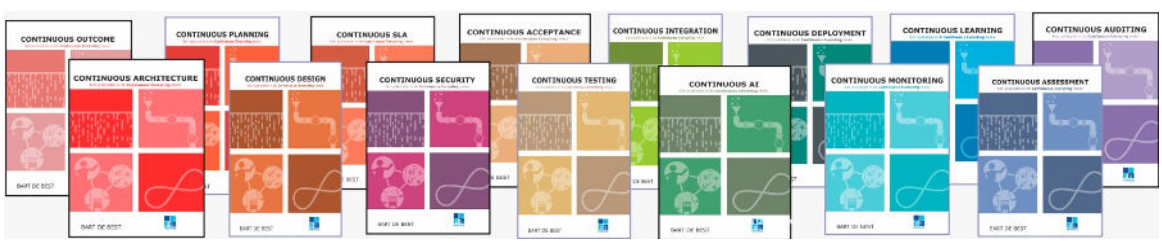


Figure 1, The steps for shaping a Continuous Everything Academy.

2. Determine the roles that realize the strategy

The roles required for the improvements are expressed in the aspects of Continuous Everything as shown in figure 2.

Figure 2, BizDevSecOps.



Within DevOps it is common to no longer recognize a whole range of functions. This does not mean that there are no longer specific activities in which employees can become proficient. In this step, the DevOps engineer function is divided into roles that are performed within this function. This means that specific competencies can also be identified in the next step. The bold words come from figure 2.

Faster time-to-market

The time-to-market has been analysed. It has been determined that a major improvement can be achieved by automating the CI/CD secure pipeline. The CE practices concern Continuous **Deployment** and Continuous **Release**. These two CE practices indicate how faster software can be produced in the O-T-A-P street (deployment) and how this functionality can be released to the business more quickly. Within the position of DevOps engineer, roles can be defined such as operator and release manager.

Significant increase in control in the field of information security

Information security can be increased through the CE best practices Continuous Security (**Secure**). By identifying the risks, countermeasures can be defined and implemented. It is important that agreements (**agree**) are made with customers and suppliers in the form of Service Level Agreements. That is why Continuous SLA is also an important value stream. Within the position of DevOps engineer, roles can be defined such as security manager and service level manager.

Better support of business value streams by IT

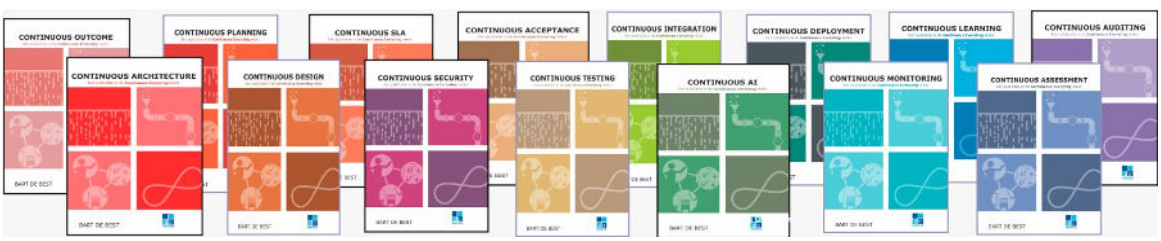
Supporting the business value streams means mapping the business value streams and the relationship with IT service provision from the architecture. This can be achieved through the application of Continuous Architecture. The roles involved are the **Architect** and the business analyst.

Higher velocity of the DevOps team

The increase in productivity is mainly due to the application of **Test** automation (Continuous Testing) and programming (Continuous Integration = **Integrate**). The use of **AI** through Continuous AI also offers acceleration. The roles here are tester, developer, and AI engineer.

Reduction of the number of incidents and the processing time of incidents

The incident reduction is mainly due to better testing (**Test**) and acceptance (**Accept**). This lies in the CE best practices Continuous Testing and Continuous Acceptance. The roles identified for this concern tester, functional manager, change manager and incident manager.



3. Determine the competencies for the roles

A competency is the set of knowledge, skills and attitude required to perform a role. The competencies for the roles identified in the previous step are classified according to Bloom's taxonomy as shown in figure 3.

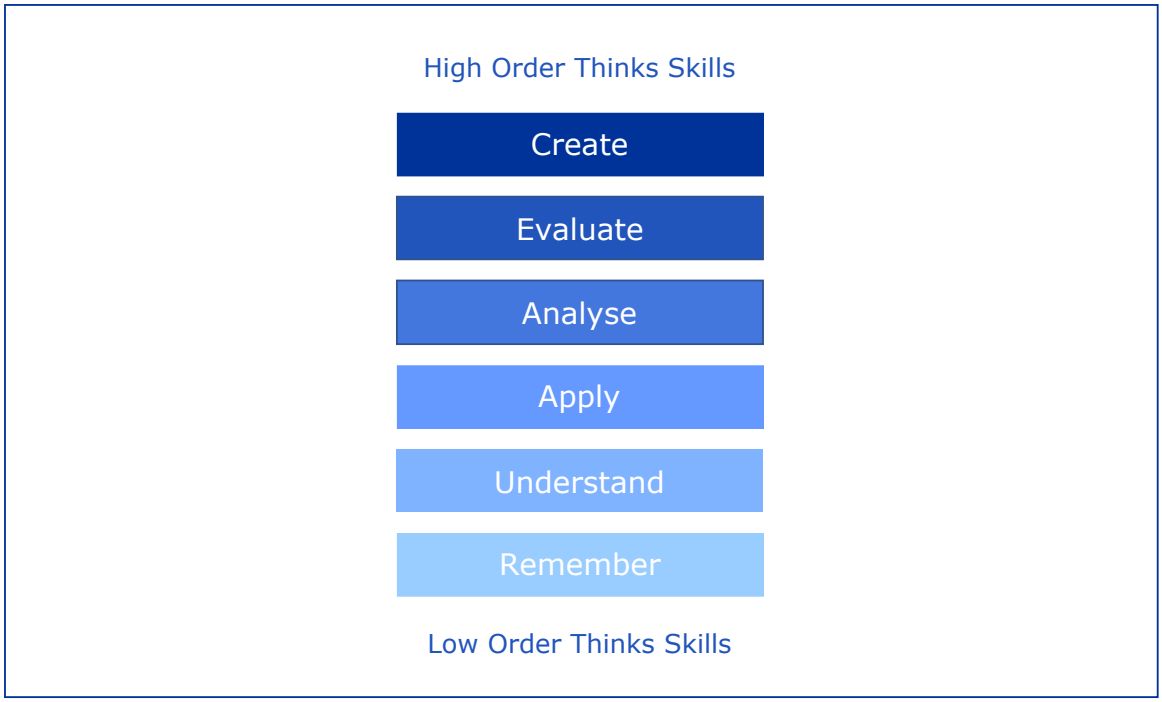
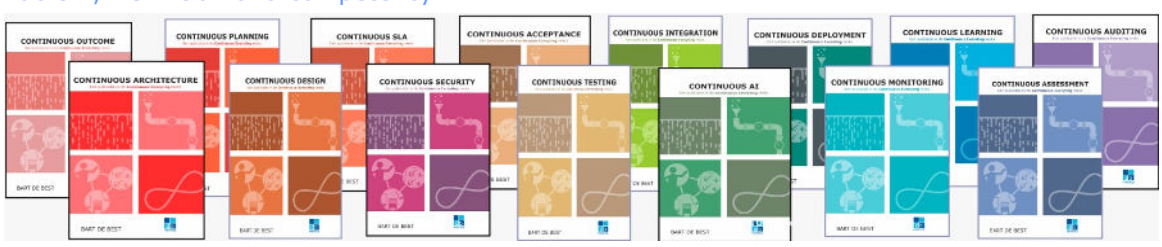


Figure 3, Bloom's taxonomy.

The definition of a competency is completed based on the metadata as included in table 1.

Competency attributes	Meaning of attribute
ID	A unique number that identifies the competency.
Name	A unique name of the competency.
Knowledge	The knowledge of a product, service or work area required to perform the work.
Know how	The experience with Way-of-Workings (WoW) required to carry out the work.
Attitude	The attitude required to carry out the work involved properly and quickly
Bloom level	The Bloom level required to carry out the work.
Product	The products that are delivered during the execution of the work.
Automation	The indication of which part of this role is performed by a tool.

Table 1, Definition of a competency.



4. Determine the CE Body Of Knowledge

The body of knowledge of Continuous Everything is shown in figure 4. This figure shows the generic interpretation in the layers of the value systems and learning building blocks within them:

- Information Security Value System (ISVS)
- Service Value System (SVS)
- Development Value System (DVS)
- Business Value System (BVS)

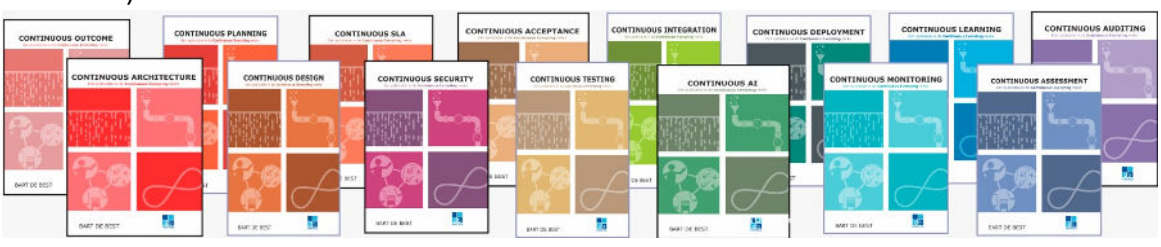
Furthermore, a WS-COM layer has been added in which all competency areas are defined at Bloom level 1 and 2. Furthermore, a WS-ARC has been recognized for architecture competencies. The mapping of the roles is as follows:

- WS-ARC: architect
- WS-BVS: business analyst, functional manager
- WS-DVS: tester, developer, AI engineer
- WS-SVS: service level manager, change manager, release manager, incident manager and operator
- WS-ISVS: security manager

Continuous Everything Academy							
WS-COM	WS-COM-01 Kick-Off	WS-COM-02 Architecture	WS-COM-03 BUS	WS-COM-04 DVS	WS-COM-05 SVS	WS-COM-06 ISVS	Certificate Foundation Level
WS-ARC Architecture	WS-ARC-01 Kick-off	WS-ARC-02 Governance	WS-ARC-03 Referentie Architecture	WS-ARC-04 Principes	WS-ARC-05 Modellen	WS-ARC-06 Building Blocks	Certificate Architecture Level
WS-BVS Value System	WS-BVS-01 Kick-off	WS-BVS-02 Business Canvas Model	WS-BVS-03 Value Stream A	WS-BVS-04 Value Stream B	WS-BVS-05 Value Stream C	WS-BVS-06 Value Stream D	Certificate BUS Level
WS-DVS Development Value System	WS-DVS-01 Kick-off	WS-DVS-02 Value Stream	WS-DVS-03 Value Stream Canvas	WS-DVS-04 Use Case Diagram	WS-DVS-05 Use Case	WS-DVS-06 Given When Then	Certificate DVS Level
WS-SVS Service Value System	WS-SVS-01 Kick-off	WS-SVS-02 SVS model	WS-SVS-03 SVS Practices	WS-SVS-04 Service Level Mngt	WS-SVS-05 Incident Management	WS-SVS-06 CI/CD Secure Pipeline	Certificate SVS Level
WS-ISVS Info Security Value System	WS-ISVS-01 Kick-off	WS-ISVS-02 Certification	WS-ISVS-03 Approach	WS-ISVS-04 Risk Identification	WS-ISVS-05 Risk Assessment	WS-ISVS-06 Risk Treatment	Certificate ISVS Level

Figure 4, Continuous Everything Academy.

Each learning building block in figure 4 is defined based on the required competencies and the Bloom levels. This means, for example, that everyone must have Bloom level 2 (WS-COM learning blocks).
This means that everyone can say, for example, what Continuous Architecture is and why it is important. Architects must of course know Continuous Architecture at a higher Bloom level depending on their seniority (junior, medior, senior or principal architect).



The following activities were carried out for each defined role:

1. Role definition based on the required competencies
2. Job definition based on roles and seniority
3. E-learning material per learning building blocks

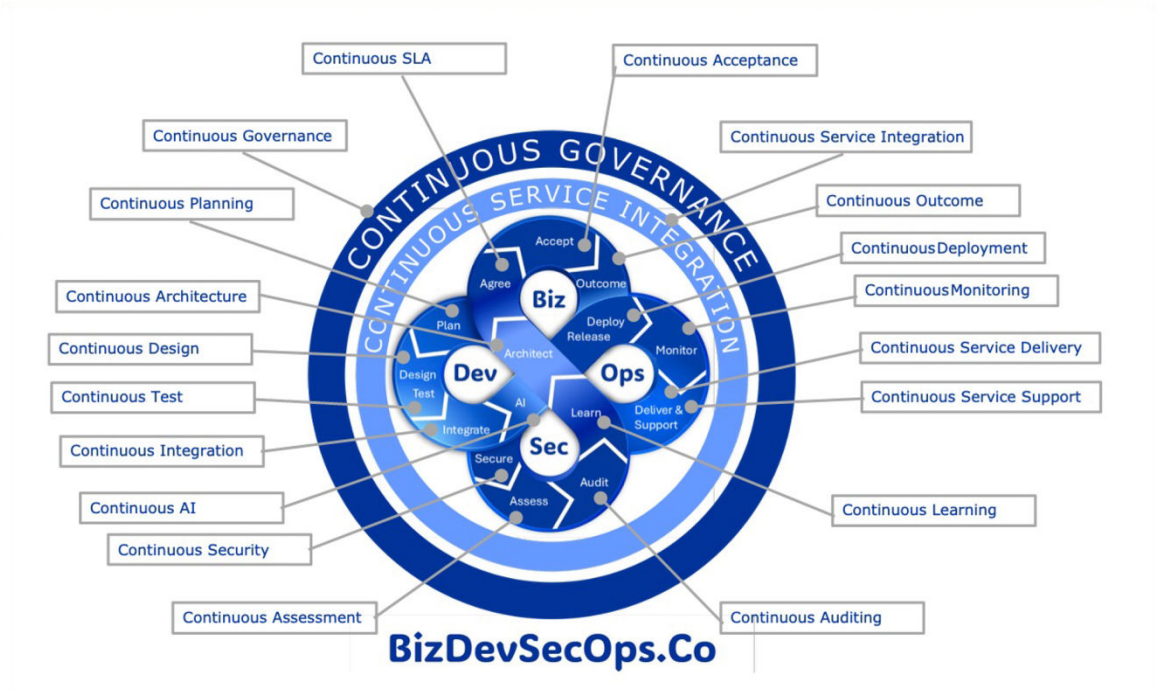
5. Determine the roadmap per person

Based on this Continuous Everything Academy, an assessment interview was held with the employees to arrive at a personal training plan.
Everyone has also been given the opportunity to go through the learning building blocks as e-learning four hours a week and to receive coaching where necessary. This has resulted in a significant reduction in our own working methods, partly by coordinating the composition of the content of the learning building blocks with the subject matter experts.

6. Determine the certifications

Learning objectives and learning requirements have been drawn up based on the functions, roles, and competencies. These learning requirements are grouped by Continuous Everything value stream and the Bloom levels. Exam questions have been defined and certificates developed on this basis.

In this way, the development of competencies has become a continuous part of ensuring the realization of the organization's strategy. This continuous development of competencies based on the chosen strategy is therefore a good example of Continuous Learning.



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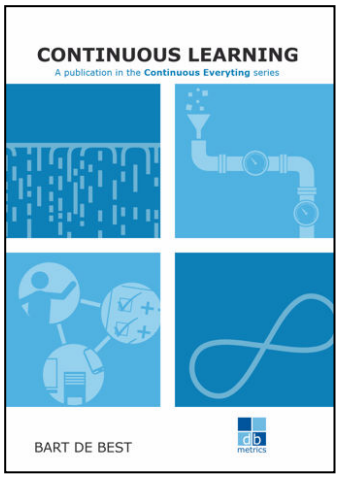

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