

THE POWER OF

*Do it right the first time
with understand-plan-do-check-act*
| by Konstantin Petkovski

PROAC

QUALITY

Just the Facts

The plan phase of the plan-do-check-act (PDCA) cycle is the most critical one, which is why the activity's context must be grasped before anything is planned. Adding the understand phase to the traditional PDCA cycle—creating UPDCA—ensures explicit attention is paid to what is going to be planned.

PDCA helps improve the things that went wrong, but UPDCA is a powerful problem-prevention tool that ensures things are done right the first time.

The **plan-do-check-act (PDCA) cycle** is a widely recognized problem-solving tool applied by many organizations. It is universally applicable and based on scientific grounds. Due to the repetition of the cycle, PDCA is arguably the most frequently used continuous improvement tool.

In its most basic form, PDCA is:

Plan: Plan activities and set objectives.

Do: Carry out planned activities.

Check: Measure the result and test it against the objectives.

Act: Adjust and repeat the cycle.

As shown in Figure 1, PDCA starts with the plan phase. However, before planning, it is necessary to properly understand the context of the activities to be planned. Otherwise—as shown in Figure 2 (p. 28)—there is a risk that the planning will be completely or partially unenforceable. You can plan to build a house in the middle of a natural park, for example, but if it's forbidden to build in such an area, the plan makes little sense. This is an extreme example, but it demonstrates that explicit attention must be paid to understanding the context in which planned activities take place.

Undoubtedly, the most critical phase of PDCA is the plan phase. If you work with the wrong plan, you're doomed to fail. Therefore, applying the understand phase before the plan phase strongly increases the possibility of doing things right the first time, enhancing the plan's feasibility. This is the essential difference between the understand and plan phases.

A good understanding of the context of planned activities is a must—not only because organizations must comply with laws and regulations, but also to operate effectively and efficiently in a businesslike way.

Of course, when organizational activities are planned, they are viewed from a broader perspective. But this isn't a regular routine, which means important elements may be overlooked. That's why explicit attention must be paid to relevant matters prior to the plan phase using a modified PDCA cycle—UPDCA, as shown in Figure 3 (p. 29)—where the starting point of the cycle is not the plan phase but the understand phase.

Just like PDCA, UPDCA can be applied to all kinds of activities at the product, process or quality system levels and at every stage of their life cycles—from concept to phasing out. Let's look at three examples:

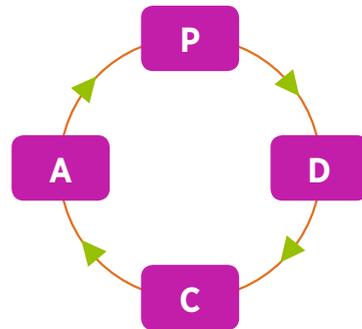
Product

Although exact data aren't available, it is generally known that the majority of new product¹ concept ideas never reach the market. The development of many new products is discontinued prematurely, and many new products disappear from the market shortly after their introduction.

Some striking examples of failed products that gained media attention are: Google Glass, Samsung 7 and the home

FIGURE 1

Plan-do-check-act cycle



beer tap system, Cheersch. Other noteworthy examples are those of failed services, such as the carpool lane on the Dutch highway A1 or the Royal Dutch Football Association's (KNVB) Sport 7 channel. The carpool lane failed because it was banned by the courts on the grounds that the traffic law did not know the concept of carpoolers, and therefore, the carpool traffic boards on the highway did not have legal ground.

In the case of Sport 7, no account was taken with other entitled and interested parties—in this case, the football clubs—which, according to the judge, were rightful owners of the broadcasting rights, not the KNVB.

Characteristic of all of these examples is that activities to introduce a product or service were set in motion, and then it was discovered that essential elements of the introduction were not well understood and therefore not taken into account. These examples show that understanding the context before introducing a product or service is the first indispensable step. Skipping this inevitably leads to problems—sometimes with big consequences.

Important elements that should be considered during the understand phase, as shown in Figure 4 (p. 29), are:

- + **The needs and expectations of customers.**
Who are the customers? What are their needs and expectations? What does the product have to offer? What are the product's characteristics? What is the added value for the customer?
- + **The needs and expectations of other stakeholders.**
Who are the other important stakeholders? What



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are their rights, needs and expectations? What influence do stakeholders have on the product?

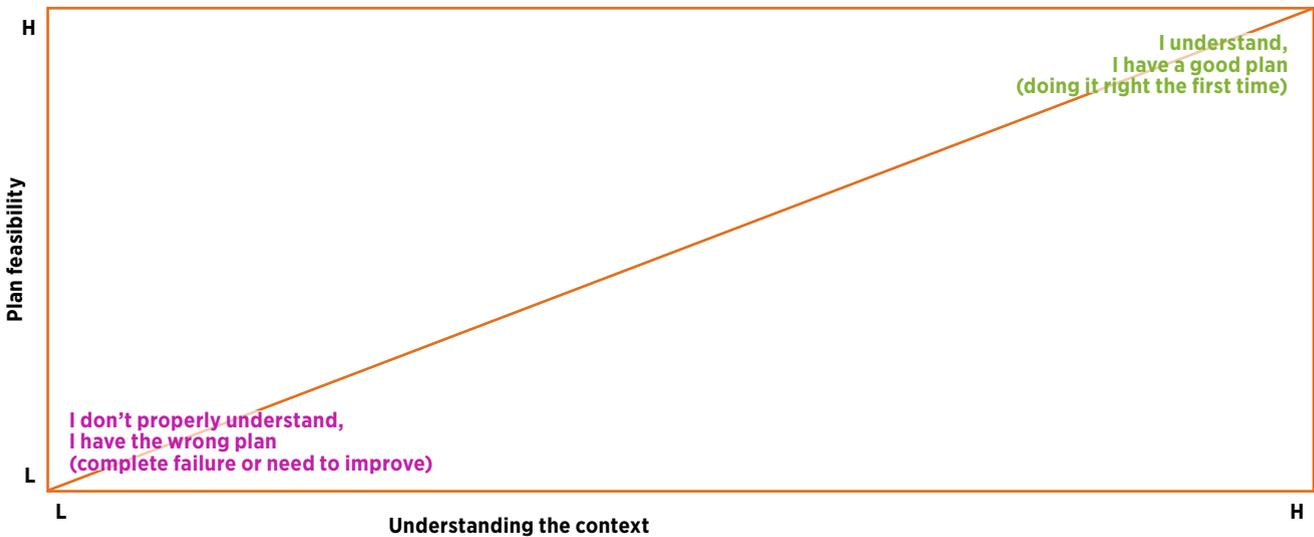
- + **Applicable laws and regulations.** Which laws and regulations apply? What influence do they have on the product? Must different laws and regulations be complied with? Which additional requirements may apply to the product? What is their effect?
- + **The market.** Is there free space in the market for the product? Are there comparable products on the market? What is the strength of the product compared to existing products? Is there market growth, or is the market saturated?
- + **The role of other players, such as competitors and suppliers.** Who are the suppliers, and how good and reliable are they? Who are the

competitors, and how strong is their position? Who are the other interested parties, and how strong is their influence?

- + **The complexity.** How complex is the product to develop? How complex is the product to make? How many new elements are in the new product (new market, new functionality or new materials, for example).
- + **The organization's abilities.** Does the organization have the capacity to successfully introduce the new product? Which competences are needed for a successful introduction? Are the resources available sufficient to introduce the new product? Does the organization have the right attitude and culture to succeed in its new product introduction?
- + **(Potential) product weaknesses.** Are there potential deficiencies? Are there any demonstrable weaknesses? If so, what are they? What could be the effect of this on the product's successful introduction?
- + **Time to market.** What is the right time to bring the product to market? Is there a rush to bring the product to market? What are the risks if the product is rushed to market? These elements can be bundled into three essentials:
 1. **Conformance.** The product meets the requirements and expectations of customers and other stakeholders.

FIGURE 2

Enforceability of planning



2. **Compliance.** The product complies with applicable laws and regulations.
3. **Performance.** The organization has the ability to successfully market its product and thereby create value for itself and its stakeholders.

Process

Properly understanding the process's context is vitally important when it comes to the proper development and functioning of the process. How well a product or service is created depends on how well underlying processes are designed and function. To consistently plan, execute, evaluate and adjust the process activities, the process's context must first be well understood.

Important process elements that must be considered during the understand phase, as shown in Figure 5 (p. 30), are:

- + **What the process must do.** What are the relevant customer requirements and expectations of the process? Customers may impose their own requirements on processes too, such as applying statistical process control. What requirements do laws and regulations impose on the process, such as requirements imposed by regulation on a complaints-handling process? Which internal requirements (such as process efficiency) must your process meet?

- + **What the process can do.** To what extent are the process inputs (such as environment, equipment, methods and competences) sufficient and suitable? What is the process's capability? Is it capable of meeting the requirements? What should the process deliver (outputs)? How can the process's performance be measured? To what extent is supplier's contribution to the process sufficient?
- + **What the process actually does.** What is the performance level of the process compared to the requirements? How consistent is this performance? Which trend shows the process?
- + **The risks associated with the process.** Which risks (such as contamination risk, risk of high process variation and risk of process noncompliance) are inherent in the process? Which external or internal changes can affect the process and how? How big is the risk these changes entail? How are these risks controlled?
- + **The control and intervention mechanisms of the process.** Which control mechanism does the process have, and how adequate is it? Which interventions are in place in case the process is disrupted? How adequate are these interventions?

Quality system

Compared to the context of the product and process, the greatest need is to understand the context of the quality system.² This is for several reasons—most importantly because little is known about the function and added value of a quality system in organizations.

Similar to the process context in the understand phase, the following elements must be considered (Figure 6, p. 31):

- 1. What your quality system must do.** What are relevant customer requirements or expectations the quality system must meet? Just as with processes, customers can set their own requirements for the quality system, such as effective supplier quality management.
Which requirements do the laws impose on the quality system? For example, European Union privacy law requirements.
Which regulatory requirements apply to the quality system, such as U.S. Food and Drug Administration (FDA) quality system requirements for medical devices? How well are these requirements understood?
Which internal requirements must the quality system meet? An internal organization naturally sets its own requirements for the quality system, such as an efficient information provision.
- 2. What the quality system can do.** When is the quality system effective? When is it efficient? What is its capability, and is its current capability sufficient?³
- 3. What the quality system actually does.** What are the quality system's actual effectiveness, efficiency, and performance?
- 4. The risks associated with quality.** What quality-related risks must be addressed systematically, such as loss of customers due to poor quality, high internal costs due to poor quality,

FIGURE 3

Understand-plan-do-check-act cycle

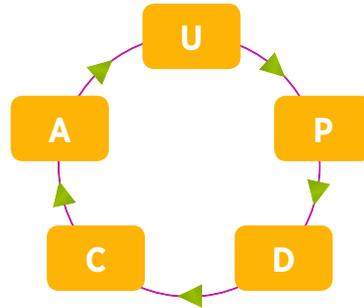


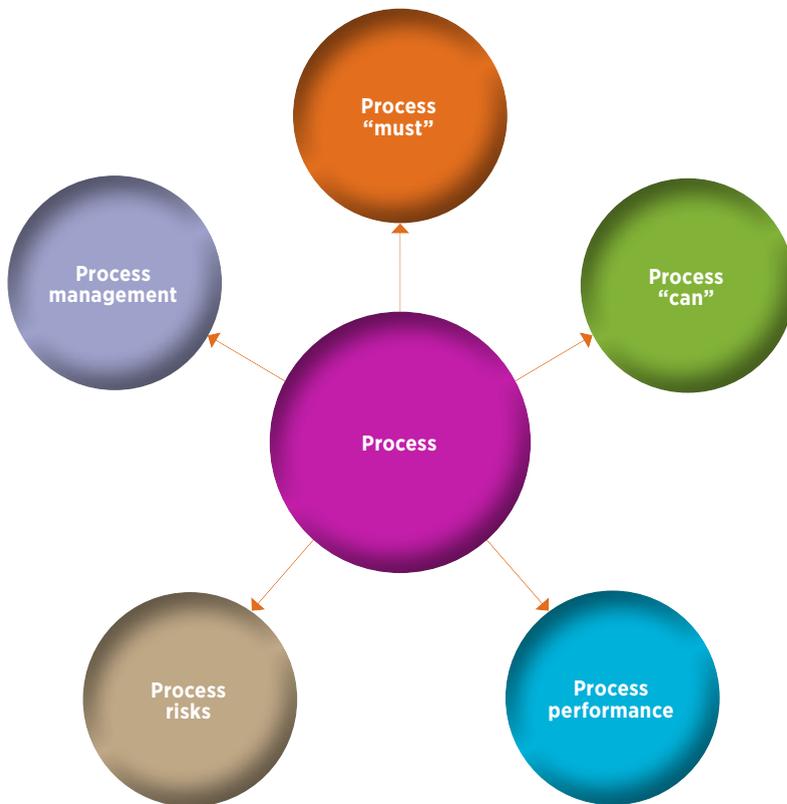
FIGURE 4

Product context



FIGURE 5

Process context



product recall risk, risk on product claims and risk on regulatory actions (such as an FDA warning letter)? How big are these risks? To what extent can they be controlled by the current quality system? What is the gap, and how should it be closed?

5. **The control or intervention mechanisms of the quality system.** Which systematics are in place to manage the quality system? To what extent are these systematics sufficient or effective? Which intervention mechanisms should be used to adjust the quality system where necessary?

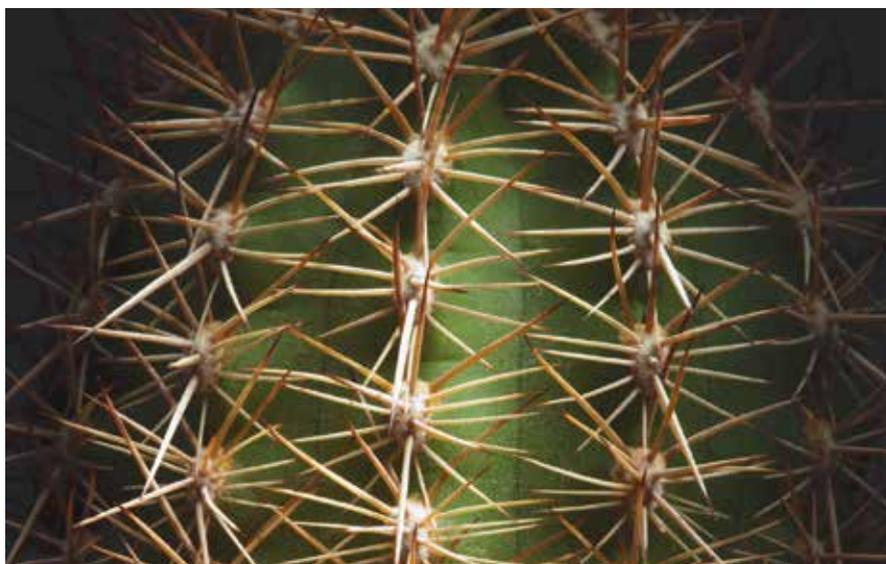
Do it right the first time

The plan phase is the starting point and also the most critical phase of the PDCA cycle. If important elements are overlooked during this phase, it will negatively affect the effectiveness of the entire PDCA cycle. That is why it's necessary to understand the relevant context before planning anything. By incorporating the understand phase into the PDCA cycle, explicit attention is paid to what is going to be planned.

The understand phase is intended to increase the effectiveness and efficiency of the activity so it can be carried out faster and more efficiently. This means the understand phase should not be seen as a mechanical addition to the existing PDCA cycle, but as an instrument that ensures products, processes and systems gain the necessary added value.

In the current dynamic business environment, no one can afford to do things over again, meaning that doing things right the first time is more important than ever. PDCA as a problem-solving tool helps you improve the things that

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Let's Hear From You!

What does your organization do to properly understand activities before starting the plan-do-check-act cycle? Tell us about it at ASQ's new online community—my.asq.org. Go to the *Quality Progress Discussions* tab and see whether a discussion has already been created—or start one of your own! Register now with your [asq.org](https://my.asq.org) account for access to relevant solutions, meaningful connections and interaction with like-minded individuals.

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went wrong, but it doesn't help you prevent failures. UPDCA, on the other hand, helps you do things right the first time, thus helping you prevent failures. Adding the understand phase to the PDCA cycle transforms PDCA from a powerful problem-solving tool to a powerful problem-preventing tool.

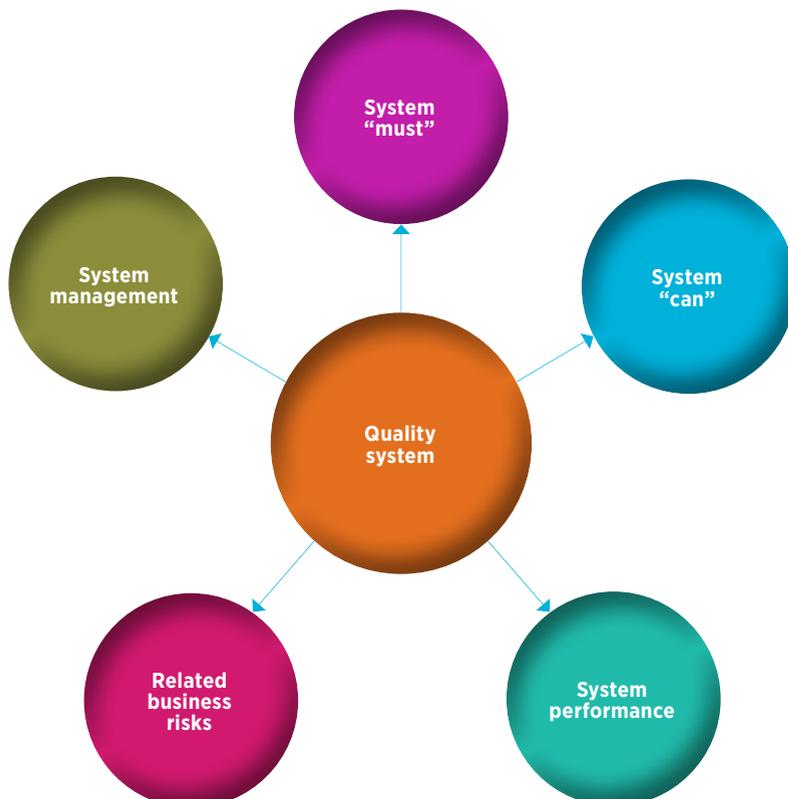
Because every organization operates in a unique context and has unique products, processes and systems, the UPDCA cycle is different for each organization. In that sense, the earlier examples of applying the understand phase on a product, process and system level are just that—examples. The way to approach the relevant context in the earlier examples, however, is universally applicable. For example, regardless of the process considered—whether it's a production process or complaint-handling process—it's about properly understanding what requirements a process must meet, how a process can perform and how a process actually performs. [QP](#)

NOTES

1. In this article, the term “product” also can refer to “services.”
2. “Quality systems” are understood to mean an entire range of activities, resources and information that an organization employs to manage quality.
3. A way to determine the quality system's capability is to see it as a product of its effectiveness and efficiency.

FIGURE 6

Quality system context



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