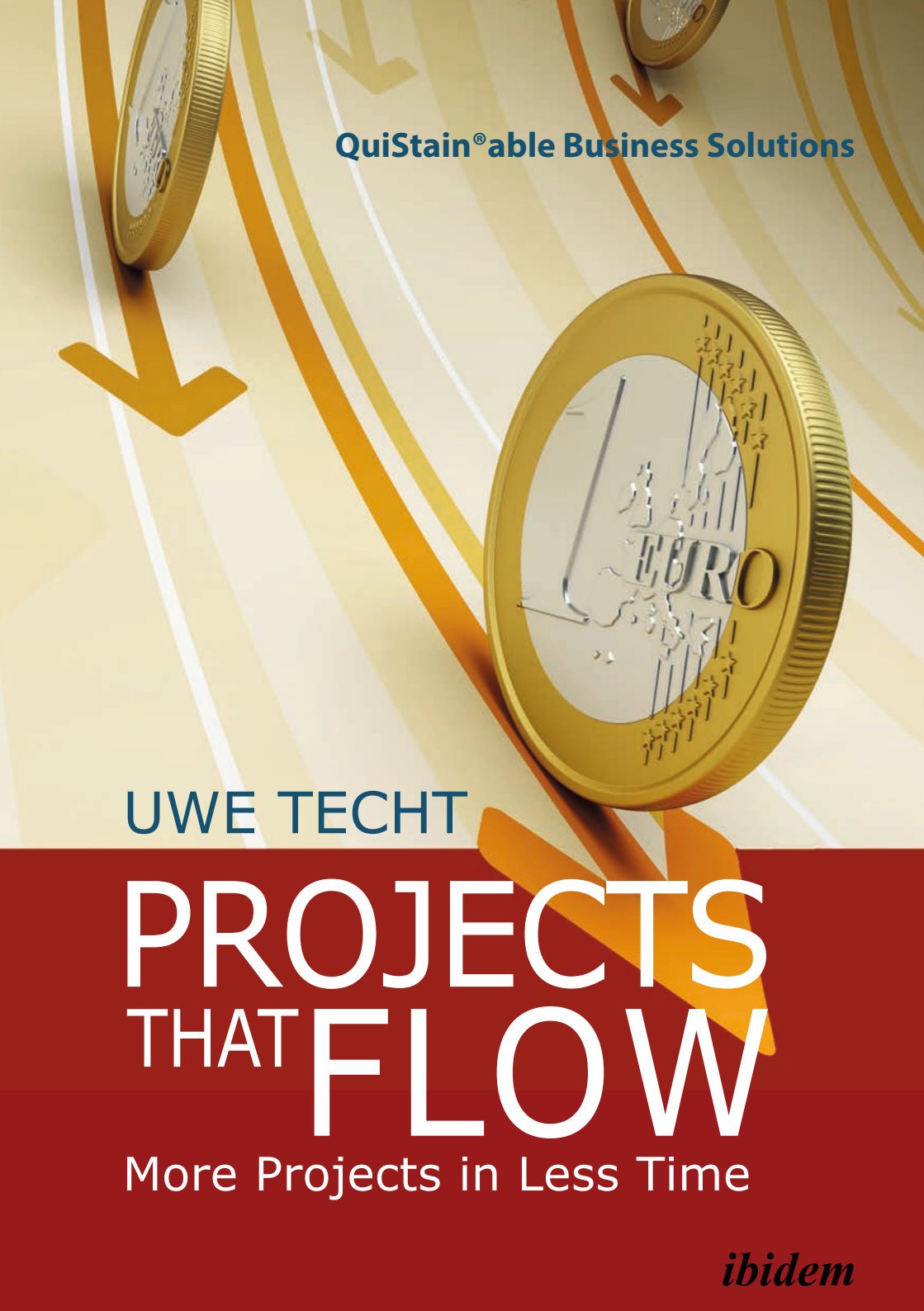

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More Projects in Less Time

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QuiStain®able Business Solutions

Editor: VISTEM

ISSN 2199-2975

Vol. 2

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PROJECTS THAT FLOW

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ibidem-Verlag
Stuttgart

Bibliografische Information der Deutschen Nationalbibliothek
Die Deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über http://dnb.d-nb.de abrufbar.

Bibliographic information published by the Deutsche Nationalbibliothek
Die Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available in the Internet at http://dnb.d-nb.de.

Coverabbildung: D 24048836 © Auris | Dreamstime.com

ISSN: 2199-2975

ISBN-13: 978-3-8382-6699-2

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Acknowledgements

With the founding and development of the Theory of Constraints and Critical Chain Project Management, Dr. Eliyahu M. has put down the basis for my reflections and explanations.

Sanjeev Gupta and his team from Realization Technologies Inc. have repeatedly distilled and passed on the extensive experiences they have collected across the globe.

Jaideep Srivastav has allowed me deep insights into the dynamics of change processes.

Dr. Georg Angermeier has offered me helpful advice with many of my articles to ensure a reader-focused structure.

Claudia Simon, Jens-Oliver Schumacher, and Gerhard Stix have assisted me with the early versions of texts found in this book.

Rudolf G. Burkhard, Franz Nowak, and Wolfram Müller have always provided thoughtful feedback on my presentations and articles.

Claudia Simon and the VISTEM office team have supported me in every phase of the creation of this book, through many ups and downs.

My heartfelt thanks to all of them.

Uwe Techt
März 2015

1 Introduction

Projects can go over budget, exceed deadlines, or deliver restricted features and quality. This can result in economic damage for companies and their clients.

The difficulties arise at source. Established metrics and management methods slow projects down by creating conflicts in operations and decision-making.

A radically new approach is needed; one that features:

- Simple, constraint-oriented management
- Clear, robust priorities
- Company-wide, rather than locally focused optimization
- A focus on speed, on ProjectsFlow®

Discover how you can:

- complete more projects with the same amount of resources;
- reliably deliver all projects to specs; and
- significantly shorten project lead times.

In **Part 1**, **"The reality of a multi-project organization,"** I describe the typical current situation of a multi-project organization, including:

- Typical problems experienced in project management, their impact, and potential benefits of improvements
- Interactions and cause-and-effect relationships

In **Part 2, "The future of multi-project management,"** you will find out under which conditions multi-project organizations can work much faster, more reliably, and more efficiently:

- Managing Work in Process, planning explicit security buffers, using operational priorities for control.
- The direction possible solutions could take, solution components, and their positive effects.
- Identifying potential negative side effects and ways to prevent them.

In **Part 3, "Transformation,"** I describe the path for change in detail:

- Obstacles and resistance during implementation
- Change process
- Project plan
- Necessary preparation: Unity in management

The integrated **study materials** (analytic questions, logic diagrams, checklists, etc.) help you tailor and apply the ideas to your organization's specific situation, and to answer the following questions:

- Does the current situation of my organization correspond to the assumptions described here? (Symptoms, causes, cause-and-effect relationships)
- Can the described solution components significantly improve the performance of our multi-project organization?
- What impact will it have on the organization as a whole?
- How can I introduce the necessary changes to my colleagues, managers, and employees?
- What sort of resistance can I expect and how should I handle it?
- What are the negative side effects that could result from the changes? How can I/we prevent them?
- What implementation obstacles could arise? How can we get around them?

The study materials are available for download at www.projectsflow.de.

If any questions should arise during your reading, please feel free to contact me at projectsflow@vistem.eu!

2 Management summary: More projects in less time

Reliability, flexibility, and high speed in the project business

2.1 Initial situation

Many project and multi-project organizations suffer from:

- their projects already taking far too long and being too costly on paper; and
- rarely being able to complete a project on time, within budget and fulfilling all specifications.

This fact has far-reaching consequences for the organization and its partners:

- Clients suffer material impact
- Suppliers find themselves under pressure
- Employees and executives are stressed
- Payments are late
- Returns and solvency decrease

Variability

One cause of delays, setbacks, and long project lead times is variability:

- It is impossible to know in advance how long a specific task is going to take and how complex and time-consuming it will be.
- Similarly, we cannot know in advance how many change requests the client will have and the consequences this will have on the project.

- Even with perfect planning it is possible to overlook something.

Processes taking longer than planned or additional tasks becoming necessary both lead to delays or higher costs. It is also common to make adjustments to the specifications to meet the promised deadline or budget.

A much bigger cause of unreliability, however, is the way organizations try to achieve reliability:

Projects compete for resources

Projects should be fast and reliable. This is why organizations employ project managers. Each project manager is solely responsible for his or her own project, not for that of colleagues or for the overall results of the organization. As a consequence, project managers compete for employees and other scarce resources.

This forces resource managers (department/team managers) to spread resources thinly and to employ bad multitasking, which multiplies project lead times. If delays are already the norm, project managers are forced to begin their projects as early as possible; only then are they allowed to take part in the fight for resources. Inevitably this increases "Work in Process." A vicious circle!

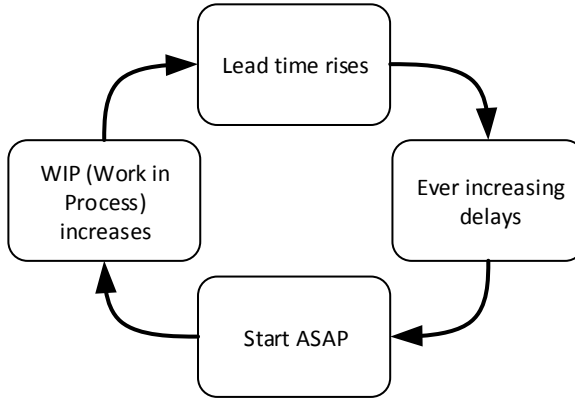

Figure 1: WIP vicious circle

Efficiency before effectiveness

Resources must be used efficiently, i.e., used to their full capacity as much as possible. At the same time, the right resources need to be available for all projects. This is why an organization employs resource managers, who end up stuck between "increasing resources" (to be able to always service all projects) and "decreasing resources" (so resources are used to full capacity as much as possible).

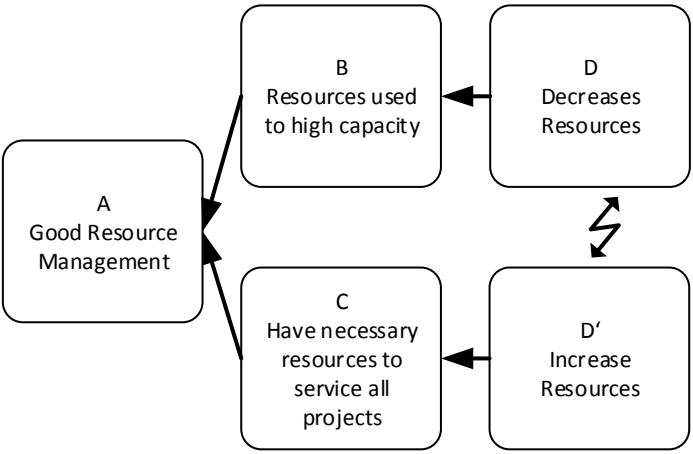

Figure 2: Resource Development (RD) Dilemma

The pressure to keep costs low usually exceeds the pressure to be reliable. Resource managers, therefore, tend to "decrease resources," which, in turn increases the workload. The consequences are shown above.

Parkinson's Law

Employees who are judged on their ability to keep deadlines will schedule personal safety buffers into their time to make sure they can deliver reliably. These safety buffers are used up during the project to ensure their time estimates are not cut in the future.

This is known as "Parkinson's Law": "Work expands to fill the time available for its completion."

Effects:

- Nothing is ever completed early;
- Once a delay occurs, it is very hard to catch up again.

Consequently projects are usually completed late, are more expensive than estimated, or cannot fully deliver the agreed results.

! **Mechanisms and rules based on the paradigm of local optimization lead to departments and functions that have contradictory or competing targets. This results in suboptimal performance and an unsatisfying company culture.**

Summary of the initial situation

Organizations have developed rules and procedures to make sure business goals are achieved despite uncertainty and Murphy's Law. Many of these procedures are based on the paradigm of local optimization: "The optimization of parts automatically leads to the optimization of the whole":

- Project managers have to compete for resources
- Resource managers must not have idle resources
- Employees must look out for themselves

Rules and procedures based on the paradigm of local optimization lead to departments and functions that have contradictory or competing targets. This results in suboptimal performances and an unsatisfying company culture.

The term "Murphy's Law" was coined by the American engineer Edward A. Murphy, Jr. It states that "Anything that can go wrong will go wrong."

2.2 New approach for multi-project organizations

Every manager knows it is possible to complete an individual project in a fraction of the normal time. To achieve this, all employees, managers, and even the top management must give the project ("Project A" hereafter) the highest priority throughout its existence and ensure it has all resources, support, and decision power it needs.

This will ensure that every task is completed in the shortest possible time, as:

- it will be supplied with all resources needed and not be interrupted by changing priorities;
- thanks to the optimal supply of resources and the uninterrupted working environment, we have circumstances that exist nowhere else in the business. Therefore, original time and effort estimates no longer apply (and may well be considerably undercut);
- the project receives any support it needs (from managers and other areas); it may also include incentives for suppliers to deliver more quickly.

In addition, there will be few, if any, waiting periods between tasks, since all necessary resources are always available (as long as they are not in use by another process within Project A).

The problem is, however, the clear preferential treatment of Project A happens at the expense of all other active projects, which will now be completed even later.

Despite this, this approach is used again and again. After a while, new A-Projects appear—putting us straight back to the initial situation.

The challenge for the management of a multi-project organization, then, is to create these "Project A working conditions" for every project if possible, without needing additional resources or otherwise increasing costs.

How is that possible?

Reducing workload

Thin distribution of resources, dangerous multitasking, desynchronization, and defocusing result when active projects get in the way of each other. This happens if the workload (Work in Process, WIP) is too high, i.e., there are more active projects than the organization can handle without the projects interfering with each other.

To achieve a significant improvement, the organization must reduce the WIP to a reasonable level and ensure that this reduced WIP level is maintained.

As a first step, part of the projects will be frozen, which accelerates the completion of the non-frozen projects. The frozen projects will then be gradually "defrosted" in a controlled manner. After this, new projects are started in a way that ensures the WIP does not start flooding the system again.

To do this, projects will be staggered according to their strategic priority at the organization's constraint; the constraint is what limits the organization's output anyway.

Experience shows that a 25% decrease in WIP increases the performance of a business by at least 20%. With increased performance, all projects—including the temporarily frozen ones—will be completed sooner.

Example:	**WIP** Number of projects active simultaneously	**Performance** Amount of projects completed per month
Initial situation	40 Projects	5 Projects / Month
Change	**- 25%**	
Effect	30 Projects	6 Projects / Month (= **+ 20%**)

Table 1: Reduced WIP leads to increased performance

Relay runner principle and explicit safety buffers

In project management, safety buffers are—due to variability and Murphy's Law—necessary; without safety buffers no project can be remotely reliable. If employees are judged on their individual ability to keep deadlines, they (and their managers) will add a safety buffer to their time estimates and will make sure to use them up (Parkinson's Law). Thus, employees appear to be working reliably, and yet projects are longer than necessary on paper and still unreliable.

To significantly improve performance, the organization implements procedures that focus on completing each task as quickly as possible once begun. To this end:

- management convinces employees that they are no longer judged on their individual ability to keep deadlines; and
- the organization plans project tasks without individual safety buffers and instead adds explicit buffers for the whole project in a bundle at the end.

Experience shows that these procedures quickly result in the following:

- Planned project durations are reduced by at least 25%.
- The new reduced project lead time is generally achieved (when previously even the longer project durations were mostly overrun).

Synchronized operational priorities

Variability and Murphy's Law ensure that things rarely happen as planned. Even with reduced WIP, projects (and project managers) will repeatedly compete for resources and management attention. Once again the threat of thinly distributed resources and multitasking arises.

To improve performance, the organization (via an appropriate system) provides resources and all management roles (resource, project, and general management) with clear, robust, and synchronized operational priorities.

These priorities result in:

- Resource managers start project tasks in the order that is right for the business, allocate all necessary resources to the project, and protect employees from interruptions that induce multitasking.
- Project managers concentrate on preparing project tasks that have not yet started and support resources with the

execution of active tasks; they no longer try to interrupt resources working on other projects (as this will now have negative repercussions for them).
- Senior managers stay out of project implementation, unless their help can significantly increase the speed of the project. If many projects require their attention, they know which one has priority and which projects have to wait.

These operational priorities are determined on an ongoing basis, based on the relation between the progress of the project and how much of its safety buffer is used up; this is an objective value that does not rely on the "gut feeling" of the project manager.

Extensive experience shows that with this approach:

- thin spread of resources and dangerous multitasking are mostly eliminated;
- friction losses are dramatically reduced, while an atmosphere of collaboration emerges;
- the need to determine which project has priority disappears, which vastly reduces time lost in meetings; and
- the same resources can finish considerably more projects.

2.3 Challenges in the change process

The necessary changes in the planning and management of the portfolio are based on "common sense." Therefore, it usually is not very difficult to obtain active collaboration from managers and employees.

A major reservation that employees and lower management tend to have is lack of trust; they do not believe that senior management will permanently stick to these changes. Managers can only refute this—often justified—preconception by practicing what they preach.

The true challenge of change, however, lies in the danger resulting from its success:

Employees and managers quickly realize that change leads to a significantly increased capacity. They then ask, justifiably, how this extra capacity is going to be used. Management has to find a convincing answer to this question and take the required actions (e.g., through sales).

Part 1

Current Reality in Multi-project Organizations

Initial situation and need for change

3 Unreliability and long delivery times

Many multi-project organizations are—by their own assessment—unreliable, inflexible, time-consuming, and very expensive.

Managers and executives come to this conclusion based on the following realizations:

- Barely any projects are completed on time, within budget, and fully meeting all specifications.
- Many projects—useful *per se*—seem too long or complex from the get go, meaning they will not ever be (suggested and therefore) implemented: they are not worthwhile.
- An—often significant—proportion of projects, once begun, is abandoned, as during implementation it becomes clear that it will take too long or be too expensive to achieve the desired results. Alternatively, the circumstances will have changed in the meantime, making the project unnecessary.

> Analyze the reliability and speed of your organization. → Chapter 8.

These circumstances have far-reaching consequences for organizations and their partners.

3.1 Damages through unreliability in project management

Organizations, employees, clients, and suppliers suffer the effects of unreliability:

- Clients are affected economically by delays (or by reduced quality or quantity in the delivery). As a consequence, cli-

ents will demand contractual penalties, their trust in the organization decreases, and they will award it fewer contracts if they have alternative procurement sources.

- Suppliers are put under pressure if they do not receive specifications on time or if they are expected to make up existing project delays. Additionally, delays will upset their own scheduling.
- Employees and managers are under stress. Constant priority changes and emergency "rescue operations" take their toll on motivation, morale, and even health.
- The organization is forced to pay contractual penalties or receives late payment from clients, while suppliers expect to be paid on time. The throughput (profit margin) per time unit decreases, income and solvency suffer.

Some simple examples serve to illustrate these consequences.

Coating plant

At a newly built plant, production is set to start on October 1st. The entire production of the first 6 months has already been sold to clients for $30 million (i.e., around $5 million/month). With 50% totally variable costs (TVCs), the new plant can expect a monthly profit margin of $2.5 million.

However, the newly developed coating equipment (purchase price $2.5 million) is delivered a month late. As a result, production does not start until November 3rd.

Consequence: While the company can pay the purchase price of the coating equipment ($2.5 million) a month late (minus a small contractual penalty), it irretrievably loses the entire October profit margin ($2.5 million). The loss is as great as the price of the entire equipment!

IT business

An IT business is planning to finish 12 projects this year. The projects vary in duration; according to the schedule, each project takes an average of 12 months. The projects vary in size too; the average sales price per project is $5 million. The TVCs amount to 20% of turnover and the annual operating costs of the business are $44 million.

If the business reliably delivers all project results, it will make a $4 million profit at the end of the year.

However, the projects are between 2 weeks and 3 months delayed; each project is delivered 4 weeks late on average.

Now the business's economic results change considerably: Only 11 of the 12 projects are delivered and invoiced.

	Plan 12 projects	**Reality** 11 projects
Turnover (∅ $5 Mio /project)	**$60 million**	**$55 million**
TVCs 20%	$12 million	$11 million
Profit margin	**$48 million**	**$44 million**
Running costs	$60 million	$60 million
Result	**$4 million**	**0**

Table 2: Loss through unreliability in IT business

The average 1-month delay destroys the business's entire planned profit, and this calculation does not even include contractual penalties and effects on solvency.

With an average delay of 2 or 3 months, the business would end up with a loss of $4 million or even $8 million.

Plant engineering

In the case of a plant engineering business with significantly higher variable costs and lower fixed costs, the economic impact would not be quite as large, but still considerable.

By comparison: All values in $ million	**IT Business** 20% TVC and $44m OE				**Plant engineering** 60% TVC and $20m OE			
Delays (months)	-	*1*	*2*	*3*	-	*1*	*2*	*3*
Turnover	**60**	***55***	***50***	***45***	**60**	***55***	***50***	***45***
TVCs	12	*11*	*10*	*9*	36	*33*	*30*	*37*
Profit margin	**48**	***44***	***40***	***36***	**24**	***22***	***20***	***18***
Operating Expenses (OE)	44	*44*			20	*20*		
Results	**4**	***0***	***−4***	***−8***	**4**	***2***	***0***	***−2***

Table 3: Loss through unreliability in IT and plant engineering business

Tool manufacturing

The CEO of a mid-size enterprise recently calculated the following: If the organization is unable to reliably deliver all projects this year and increase project performance by at least 30%, it will be unable to deliver already sold (!) projects to the value of $30 million. This will lose the organization a profit margin of $10 million and it will need to pay contractual penalties amounting to $2.5 million. A profit loss of $12.5 million is a huge amount for a company with total annual turnover of $150 million.

Conclusion

These examples show that unreliability can have a considerable financial impact on an organization's profits. The financial losses for clients can quickly exceed the total costs of the late project.

3.2 The implications of long project lead times

Delivery times in the project business are often (much) longer than clients would like. The clients' desire for shorter delivery times is generally motivated by one of two factors:

- Clients would like to set specifications for a project as late as possible. This means they would like to place an order later while still receiving the delivery at the original deadline.

Or:

- A significantly earlier delivery gives the client considerable economic advantages.

Example: Coating plant

Our client's previously mentioned plant is completed in late August—apart from the coating equipment. If the supplier were actually able to deliver the coating equipment in late August as well, the business would be making a $2.5 million profit, which corresponds to the system's purchase price. In fact, the client inquired back in June whether an early delivery might be feasible.

3.3 Losses on internal projects

Top executives want to: increase sales, lower costs, develop new products, acquire and retain new clients, and sustainably increase

profits. They use projects to implement the changes necessary for these goals.

The more projects are completed (per month), the more changes have been successfully implemented. If a project's lead time is shorter, the business will find out all the more quickly whether the project's desired positive effect is actually achieved or whether adjustments need to be made.

As projects get in each other's way and, therefore, take much longer than planned, these changes (and their effects) occur much later than expected. Consequence: The business only learns slowly, business results improve too little, managers do not meet their targets, and this impacts their reputation, which in turn increases pressure.

3.4 Are costs/specifications more "valuable" than time?

In some industries, there seems to be more focus on maintaining costs and quality than keeping deadlines. What this means in most cases is that everyone has long accepted that it is impossible to achieve the desired outcomes within the agreed time frames. As a result, it has been agreed that it is still preferable to deliver late, but stick to original specs and costs. In other words, precisely the fact that costs or quality are considered more important indicates that the business has significant problems to complete projects reliably.

> Analyze the implications of unreliability and long delivery times on your business → Chapter 8.3

3.5 Benefits and uses of improvement

What are the benefits for a business if it manages to perform much better (more reliably as well as faster)? What are the benefits to clients, employees, and suppliers?

To start with, we eliminate the losses that result from unreliability and long delivery times. But even beyond that there can be remarkable economic benefits.

Reliability and fast delivery are crucial competitive advantages in the project business:

- A business that shows itself to be extraordinarily reliable (while the competition continues to deliver unreliably), will clearly stand out and thus easily obtain more contracts.
- By being able to deliver markedly faster than the competition, a business will receive more orders and set better prices as well.

Example: Coating plant

As mentioned above, the client inquired whether it might be possible to deliver early. They even tied this to a financial incentive. Early delivery would be rewarded with $25,000/day (up to $500,000 max.).

Being able to launch production a month early would give them increased sales of $5 million, so an increase in throughput of $2.5 million. The supplier of the coating system receives a $500,000 bonus, i.e., a 20% increase of the project price—at no additional cost. The client's profits increase by $2 million, the supplier's by $500,000—a win–win situation for everyone involved.

Being faster than others means a gain in market share, more business and better results. If you use projects to develop new products, you can bring these to market earlier and thus achieve a significant competitive advantage.

> Analyze the benefits of high reliability and short project lead times for your business → Chapter 8.4

4 Variability, Murphy's Law, and harmful management mechanisms

Why do organizations find it so difficult to be reliable? What is preventing them from reducing their project lead times?

If you ask project managers why their projects are unreliable or why they take so long, you will receive a variation of the following statements:

Projects run into trouble because:

- promised deadlines for individual tasks are often not met;
- there are too many changes (more, and different, changes than expected);
- too often, planned resources are not available on time (sometimes in spite of careful planning and explicit arrangement);
- required information, specifications, materials, designs, approvals, … are missing;
- there are disagreements about priorities and assignment of resources between various projects;
- individual tasks go over budget;
- frequently completed tasks have to be reopened and revised;
- and others.

You will hear these same statements in all project industries across the world. They illustrate well how projects are affected by variability and Murphy's Law.

Variability

One main influential factor on reliability is the fact that projects are affected by variability (uncertainty):

- It is impossible to predict exactly how long a task is going to take and how much of an effort it will be to achieve a specific output; we can only give an imprecise estimation.
- Before the project launch—as the plan is being drawn up—we cannot know how many change requests there will be and what their impact will be on task duration, effort, and costs.
- Each project is "new" and unique. This means that—even when using the most sophisticated planning methods—a circumstance that has substantial effects may be missed and not taken into account during planning.
- External factors, on which project managers have no influence, can delay the progress of the project (e.g., natural phenomena, changes in law, approval authorities).

Murphy's Law

Anything that can go wrong will go wrong—especially if you could really do without it (Murphy's Law). Examples:

- A key employee is taken ill just as they are expected to work on the most important project.
- Equipment breaks down at the exact moment when it is most needed during a project.
- A specially developed and manufactured component is damaged during assembly; it has to be reordered.

Effects of variability and Murphy's Law

As projects are influenced by variability and Murphy's Law, there are inevitably disruptions: Employees cannot complete their tasks on time, parts are more expensive than budgeted, there are more change requests than expected, resources are suddenly needed for other projects. These disruptions get the projects into trouble: At least one of the three project commitments (deadline, budget, content) is now in jeopardy.

Variability and Murphy's Law can explain why it is so difficult to adhere to a previously agreed project plan, or to draw up a plan that can be adhered to (meaning plan and reality do at least roughly match).

But variability and Murphy's Law alone do not explain why it is so difficult to realize projects in much shorter time frames. This will be explained in the next chapter.

Caution

Variability and Murphy's Law are facts of life—they are not limited to the project business. So projects will not suddenly become faster and more reliable by making variability and Murphy's Law "disappear."

Rather, project and multi-project management exist to achieve success, even though variability and Murphy's Law are here to stay.

Harmful management mechanisms in the project business

To achieve their goals and limit the negative and disruptive impact of variability, organizations have developed rules and mechanisms.