

- Book Summary – Goldratt's Rules of Flow -

On January 2023 the book *Rules of Flow* written by Efrat Goldratt-Ashlag was published. This book can be considered as a sequel of *Critical Chain* written by Eliyahu Goldratt. In some aspects it goes even further and completes what was missing from Eliyahu Goldratt's rules to scheduling and executing projects the Critical Chain way.

This book comprises 27 chapters, each giving more details and examples of one of each 8 flow rules.

These 8 rules are not listed in a particular order but can help with project flow.

1. Avoid bad multitasking, control your Work in Progress (WIP)
2. If you don't want to get stuck, verify the full kit before you get going
3. Triage to ensure you are working on the right priorities
4. Ensure synchronisation between your tasks/people/resources
5. If you keep going back to the same projects and you don't get the desired results, look into the option to increase the dosage
6. Avoid unnecessary rework by finding what causes it
7. Standardisation is recommended when improvising is costly
8. Abolish local optimum, global optimum is what matters

Chapter 1 The Big Picture

Isaac Wilson is the owner of an Engineering-to-Order firm manufacturing sensors and camera solutions. He receives an email notifying them of the loss of a major client due to missed deadlines. Isaac talks with his son Marc who will be the owner once he retires.

Since the company has been going downwards Isaac is thinking about opportunities to sell his company.

Chapter 2: Can't-miss the Due Dates

Following the major news, Marc endeavours to persuade his father that it's a terrible idea. However, his father refuses to listen and Marc returns to work with more bad news. They won't meet the deadline or budget for another project, and one of his best employees has received a better job offer which he plans to take.

Chapter 3: Re-evaluating

Marc has dedicated his entire adult life to working for his father's company and building his own legacy within it. However, he is now faced with the possibility of losing it all. In response, he has made the important decision to enrol in an Executive MBA program.

Chapter 4: Undesirable Effects in Multi-Project Environments

The fall semester has begun and Rick, the professor teaching the "Rules of Flow" course in the Executive MBA program, is thrilled to share what he has learned over the past couple of years. There are about 20 students from different companies attending the course, each of them working in a multi-project environment. However, most of them do not have a clear understanding of the subject matter yet.

*A multi-project environment as Rick explained is when **a resource is involved in more than one project that shares common resources.** (page 15)*

The topic of the first class is the Undesirable Effects of the Project environment, focusing on factors that can hinder project progress.

There are several issues plaguing a particular company. Rick asks his students to share their experiences. One story suggests that the company's resources are being distributed inefficiently, leading to bad multitasking among employees. Another story highlights the company's struggle with frequent product changes requested by clients, resulting in a lot of rework. The company also seems to lose a significant amount of time on status reports, budget overruns, and unclear priorities.

Although students work for different companies with various projects, they all encounter similar issues that adversely affect their projects. One major issue is the waste of resources, which refers to situations where resources are allocated to projects that do not contribute to the company's objectives.

At the end of the lecture, Rick assigns the students the task of performing triage.

Chapter 5: What is triage

Marc is in his office at night, working on a homework assignment for the Rules of Flow course. He opens the project reports file and realizes that they have numerous projects, some of which are overdue.

Professor Silver introduced the concept of "triage" in project management, where they prioritize projects based on their urgency and value.

Marc struggles to identify how to bring value to their projects and decides to submit a report on a small project with low value but personal significance. He also addresses another project initiated by one of his engineers.

As he leaves for the night, he acknowledges that his team is under pressure and may not appreciate his decisions. Marc considers that Abbie, an engineer in charge of some projects, might handle it better, but he knows this is of his responsibility.

Chapter 6: Triage in Practice

During Rick's class, everyone discussed their homework and how they prioritized their projects based on their value and the goals of their respective companies. The conversation then shifted to the fact that even though they prioritized their projects, they may still be required to work on low-value projects. The purpose of prioritising projects is to eliminate those that are not valuable so that they do not have to multitask and can focus on completing important projects. After the discussion, Marc thinks that he does not have many low-value projects.

Chapter 7: Removing the "Nice-to-Haves"

Marc had several meetings with the managers where he emphasized the importance of meeting the deadlines. He started questioning every detail on the projects that was unnecessary, and they began to have calls with the clients to remove any "nice-to-haves". However, it still seemed insufficient, and they needed more time to meet these deadlines.

Chapter 8: Bad Multitasking

During class, Rick writes "the effect of bad multitasking" on the board and explains to his students how multitasking can be a serious problem for their projects. He emphasizes that it is the biggest time killer for any project. However, Marc disagrees and thinks that Rick is overreacting. Marc argues that multitasking is essential to improve efficiency.

In this schema, Rick highlights that despite our belief that working on multiple projects simultaneously is an efficient approach, it is far from the truth. In reality, this approach only lengthens the time required to complete a single task.

“In order to significantly reduce the lead times what we need to do is control the WIP” p.43

To reduce the lead time of each project, it is advisable to control the projects that you are currently working on. The speaker suggests his students to freeze 20% to 30% of their projects so that they can focus on fewer projects at the same time. This applies not only to projects but also to day-to-day tasks.

Chapter 9: Will it Work?

In this chapter, Marc is deeply concerned about the performance of his company and the impending sale of it by his father. He has been trying to find ways to improve project delivery but has had no success. He came across the idea of controlling Work-In-Progress (WIP) and freezing projects to shorten lead times, so he decides to pursue this unconventional approach without seeking permission from his father.

He discusses his plan with Abbie who is initially not sure about the plan. They explore the concepts of good and bad multitasking and realize that their current approach suffers from bad multitasking. Marc is determined to cut the lead time in half while maintaining project throughput by freezing half of the projects. Abbie is unsure but agrees to help.

They start planning the implementation of this new approach and agree to roll it out the next day.

Chapter 10: The Multitasking Game

Marc gathers the engineering team for an unexpected meeting. He thanks them for their efforts but acknowledges that the company is late on too many projects. Marc introduces the concept of multitasking and conducts a game to demonstrate that multitasking slows down their work.

He proposes limiting multitasking and freezing half of the projects to reduce work in process (WIP). The engineers are initially skeptical, and some believe it will not work. Marc addresses their concerns, emphasizing the importance of reducing multitasking to increase efficiency and quality. He suggests that each engineer works on only two or three projects. Marc also commits to handling customer inquiries and interruptions, allowing engineers to complete tasks without frequent context switching.

Chapter 11: The misconception of Starting Early

A few days later, Marc checks on the engineering team to ensure they are not working on the projects that were frozen. His father, Isaac, calls him urgently regarding a customer's concern about a delayed project. Marc takes the opportunity to explain his new approach, emphasizing the drawbacks of starting early on all projects and the benefits of limiting work in process (WIP). Isaac is initially impressed with Marc's ideas but acknowledges the risks involved in making such significant changes. He grants Marc the opportunity to pursue his initiative but emphasizes the need for success. Isaac also mentions an upcoming meeting with a rapidly growing competitor, Laramie, which adds pressure to the situation.

Marc reflects on the multitasking illustration from Rick's presentation and realizes that multitasking in engineering not only wastes time but also contributes to fluctuations in workload for downstream operations. He connects this insight to his new approach of controlling WIP and working on fewer projects at a time, which should help avoid workload peaks.

Later, Marc's sister, Sam, calls to express her frustration with the high volume of production orders. Marc tells her about his new approach and promises he is working on a solution to avoid workload peaks. Sam insists he delivers on this promise, and Marc commits to making it work.

Chapter 12: Dynamics of Theories and Trends

At the end of the week, Abbie visits Marc with concerns about a potential mutiny among project managers who want to return to frozen projects due to a lack of work. Marc asks her to investigate the situation, although he is eager to leave for a dinner date.

He meets Tina, a girl he met through a friend, at an upscale restaurant. Their initial impression of each other is positive, and they decide to share a bottle of Merlot. As they converse, Marc discusses his Executive MBA program and management theories. The date goes well, and they decide to continue the evening at Marc's place.

Chapter 13: Full Kit

The next day, Marc receives an email from Abbie concerning Noah, who had started a mutiny among project managers. Noah's frustration stems from the inability to work on his top-priority project due to missing requirements. This oversight was a result of poor communication with the customer amid multitasking on various projects. Since Noah cannot proceed with his second project either, he wishes to return to the previously frozen one.

In class, the discussion centres on implementing the rule of flow for controlling WIP in different departments. Concerns arise about excessive multitasking culture. Shonda, a classmate of Marc, shares a unique solution – "Saturday hours" to minimize interruptions.

Marc describes his experience with managing interruptions in his department and Rick introduces the concept of the "full kit" – ensuring that all necessary elements are available before starting a task. Rick emphasizes that experts should oversee full kit creation and explains the importance of gates to check full kits at critical points in an operation.

After a thorough class discussion, Rick assigns homework, prompting students to identify where gates should be established and assign gatekeepers responsible for full kit verification.

Later, Marc eagerly calls Abbie to share his solution to the mutiny but realizes she's busy with a date. Abbie confirms and expresses her excitement, leaving Marc with his thoughts.

Chapter 14: T Minus Preparation

Marc gathers all project managers to discuss the importance of having a "full kit" for their projects. He recalls the multitasking game where they had to rely on phones due to a lack of pens, emphasizing the need for proper preparation. A "full kit" includes customer requirements, budget, regulatory standards, deliverables, and more.

He introduces the concept of "T-Preparation," indicating that they will only start new projects when they have a complete kit. Project managers need to know well in advance what their next assignment will be to prepare adequately.

To ensure meticulousness, Marc implements a visual WIP board with columns for different project stages. The board helps them track projects, control work-in-progress, and ensure full kit compliance at the project gate. Abbie, the mechanical expert, appreciates the system and intends to use it for her tasks.

Chapter 15: Enough Weight, Enough Repetitions

In the gym, Marc and Tim stress the significance of using adequate weight and repetitions to properly exhaust muscles for strength development. They advocate focusing on specific muscle groups during each session while ensuring adequate rest for previously worked muscles. This emphasis on effective training mirrors their perspective on dating. They believe that the convenience of modern dating apps makes it easy to dismiss potential partners quickly. They discuss the need for a more thoughtful

approach to relationships and agree that dating coworkers is not a viable option, hinting at the potential pitfalls of workplace romances.

Chapter 16: Dosage

In this course, Rick discusses the concept of "dosage" as an obstacle to achieving flow in various settings. Dosage refers to the quantity of work allocated to projects or tasks. Bill Meyers, a former student that Rick invited for this course, shares a real-world example of implementing dosage in the aviation industry to enhance aircraft maintenance. By focusing on deep and efficient work on each plane, they reduced emergencies and improved overall flow.

Sandra Meyers, Bill's wife, then describes the application of dosage in the Department of Corrections, where they provided more structured activities and interactions for offenders to help them reintegrate into society. This approach, involving a significant increase in offender interaction, led to positive feedback and early signs of success.

The examples highlight the importance of applying the right dosage of work to enhance flow and quality in various contexts, such as aviation maintenance and offender rehabilitation. The class learns how adjusting the amount of work can significantly impact overall efficiency and effectiveness.

Chapter 17: Full kit before production

In this office scenario, Marc reflects on the importance of controlling the amount of WIP and preventing the expansion of parallel projects. He acknowledges the significance of a well-prepared "full kit" for each project. Despite the ongoing pressure to complete urgent tasks, the department's atmosphere is calmer and less chaotic due to less multitasking.

However, a phone call from his sister highlights an issue regarding the handover from engineering to production, emphasizing the need for comprehensive project transfer and validation. This situation led Marc to consider introducing planned handover meetings with relevant engineering and production personnel, aiming to save time and reduce interruptions.

Abbie approves of the idea but voices concerns about additional meetings. Marc suggests that regular feedback and follow-up can ensure the sustainability of these meetings. Ultimately, they decided to start implementing these reviews to improve the transfer process and maintain full kit compliance, thereby reducing disruptions.

Chapter 18: Additional gates

On a Sunday visit to his parents, Laura, Marc's mother, expresses her joy at seeing him more often and serves his favorite meal. He catches up with his father, Isaac, and discusses recent improvements in engineering, particularly the implementation of "gate two" to ensure full kit compliance before production begins. Isaac suggests adding a "gate three" for integration, focusing on the handover to customers.

Marc also proposes "gate zero" for the bidding process to prevent issues arising from incomplete bids. However, Isaac firmly rejects the idea, believing they should not dictate their customers' practices. The father-son conversation becomes strained, and Marc leaves feeling discouraged.

Laura acknowledges the merit of Marc's idea and encourages Isaac to give him a chance. Isaac is concerned about the competitive business environment and feels that there is no room for mistakes. Marc's potential conflict with his father weighs on Laura's mind as Isaac prepares for another meeting with a large company. Laura is also concerned for her husband's degrading health and the fact that he hides it from his children.

Chapter 19: Rework and standardization

In this chapter, Rick, the professor, conducts a class where the students discuss various aspects of the Theory of Constraints (TOC). The word "FOCUS" that was already written on the whiteboard catches Rick's attention, and he uses it as a starting point to delve into the subject of flow management. The students share their thoughts on recent guest speakers and the importance of high-level managers championing fundamental changes within organizations.

Rick emphasizes the shift from monitoring local efficiencies to overseeing global flow and how it can reduce the effort spent on local improvements which do not contribute to overall performance. He introduces the concept of "rework" and highlights its disruptive impact on flow, especially when it results from a lack of standardization or clear processes. Rick encourages the students to identify obstacles to flow and understand the need for standard work in specific areas where improvisation hampers efficiency.

The students engage in discussions about standardizing processes, focusing on proposals, and templates to streamline their work. Rick encourages them to analyse synchronization, a critical element in managing the flow effectively and assigns homework related to identifying prominent tasks in projects that require synchronization.

Chapter 20: Synchronization

On Thanksgiving morning, Marc arrives at his parents' house, intending to find a project that requires synchronization for his homework in the Rules of Flow course. He sees the holiday dinner preparation as an ideal project for this task, with the roasted turkey being the major task in the project. However, when he tries to write his report, he realizes how little he knows about preparing Thanksgiving dinner. His typical Thanksgiving responsibilities include bringing Aunt Miriam from her retirement home and making the guests happy with the cranberry-apple punch.

This year, Marc decides to assist his mother in the kitchen as her sous-chef. She provides him with a practical opportunity to learn about flow management. As he discusses the organization of Thanksgiving dinner with his mother, Laura, he gains insights into the importance of careful planning and synchronization in managing projects.

Laura explains the initial steps of defining the project scope and creating a comprehensive grocery list. She also emphasizes the need for detailed planning to ensure that each dish is prepared and cooked at the right time, considering resource constraints. She identifies the tasks that takes the longest e.g. the longest cooking time and determines the tasks which should be achieved in parallel. She points out that a lack of synchronization while making the whole dinner can lead to rework.

Chapter 21: One-on-one

Marc has a one-on-one meeting with Linda, one of his project managers and software expert. They discuss how Linda has been working on reducing multitasking, making her workflow more efficient, and dedicating more time to software development. Marc supports her efforts and approves of her new routine. Later, Marc decides to go to a restaurant that Linda recommended and runs into Abbie, sparking an engaging conversation over dinner.

Chapter 22: What changes should we expect?

During a lecture, Shonda, one of Rick's students, asks about the changes to expect when implementing the rules of flow in project management. Professor Rick discusses how project time estimates contain embedded safety margins due to uncertainty. He explains that safety is added at various levels in the project hierarchy, causing delays. Rick introduces the "Student Syndrome" and "Parkinson's Law," which lead to the inefficient use of safety margins.

He illustrates how controlling WIP can tighten the flow of work. Students discuss the need for timely problem-solving but express concerns about being discouraged from reporting problems. Rick emphasizes the cultural shift required for a culture of flow, focusing on trust, teamwork, and prompt problem-solving.

As the lecture ends, students contemplate the changes necessary for a culture of flow, and Marc leaves the classroom with a sense that something is missing but cannot pinpoint it.

Chapter 23: Taking Precautions

Marc is visiting his sister's family on New Year's Day. He plans to go cycling with his nephew, Dave. Before their ride, Marc recalls the importance of time buffers to ensure they return before dark. Dave suggests adding a scenic route, but Marc wisely advises keeping the buffer for unforeseen delays. Dave also emphasizes the need for an energy buffer during their ride. They successfully manage their time and energy during the ride, making Marc realize the importance of buffers in project delivery and these are missing in the engineering department.

Chapter 24: Buffer Management

Rick revisits an essential concept in project management, buffer management, which he previously covered in-depth when teaching the Theory of Constraints. He begins by explaining that projects can vary in their need to meet due dates, ranging from flexible to rigid deadlines. He highlights the importance of managing flow for projects without fixed deadlines but emphasizes that for time-sensitive projects, managing flow alone isn't enough. Additional precautions, in the form of time buffers, are necessary to ensure on-time delivery.

Rick introduces a rule of thumb for establishing buffers, suggesting that one-third of the estimated project time should be allocated as a buffer. He stresses that it's essential to divide projects into reasonably sized tasks and then monitor the consumption of these buffers closely. In case project teams request additional time, it should be granted, but a thorough investigation into the cause of the delay is necessary. This approach enhances accountability and helps identify areas for improvement.

Rick also introduces the concept of monitoring buffer consumption through progress charts, known as fever charts. He advises that buffers are used more efficiently when managing work in progress and reducing multitasking. Monitoring buffers becomes a mechanism to ensure projects remain on track.

In the context of the engineering department, Marc realizes that the detailed status reports may no longer be needed. By switching to larger, one-week tasks and daily remaining duration updates, he can significantly streamline the project monitoring process. This chapter highlights the shift toward more efficient project management and the importance of time buffers to safeguard against delays in a project-driven environment. It also foreshadows potential changes in Marc's project management approach.

Chapter 25: Lead Time is getting shorter

In this chapter, Marc observes the significant reduction in lead times for their projects. Most of the projects kept in the WIP are completed, and they are now focusing on previously frozen projects. He contemplates the right time to talk to his father about capitalizing on these shorter lead times and the growth potential they offer. However, he receives an unexpected call from Paul Becker's office, the VP of finance at Laramie. They express interest in purchasing their company, surprising Marc. His father had not informed him about these developments, and Marc realizes his father is selling the company behind his back.

Frustrated and upset, Marc rushes to his father's office, but he's not there. Sophia informs him that his father has taken a day off, adding to Marc's suspicion. He calls his father, insisting on an immediate conversation, but his father brushes him off and sets up a meeting for Saturday.

Feeling betrayed, Marc is unable to focus on work. He decides to go for a drive with Abbie, revealing to her the shocking news of the impending sale of the company. Abbie, also taken aback, tries to console him and promises to keep the information confidential. They drive together and, in the midst of their conversation, share an unexpected kiss.

Chapter 26: How to get started

On a Saturday morning, Marc is in a foul mood, passing the time at the gym before his meeting with his father. Unwilling to wait at home, he decides to go to the university. In class, Rick assigns the students a final project involving a comprehensive analysis of implementing the rules of flow in a multi-project environment. As the students react with confusion and questions, Rick emphasizes their shared desire to move from a chaotic state with frequent delays and multitasking to a smoother, faster workflow.

Rick explains the importance of defining the units used to describe their WIP and strategies for reducing it. He mentions that reducing WIP can be achieved through freezing low-priority projects, prioritizing those close to completion, triage, and full kit strategies. Rick also discusses the need for limiting the WIP and how this is related to the capacity of key resources, like experts or managers.

In the discussion, it becomes evident that controlling WIP helps clarify workflow, making it easier to identify and address other obstacles and changes necessary for improving the system's flow. Rick encourages the students to recognize constraints in their system and exploit them efficiently, enabling experts to delegate some responsibilities while getting involved in the early stages of projects. This will reduce the need for firefighting and allows for the gradual expansion of WIP.

Marc is inspired by the potential for growth and positive changes but laments that he won't be able to implement these ideas in his family's company due to the impending sale. The students are relieved to learn they have the rest of the school year to work on their final assignment. Rick concludes the class by mentioning that one student will present their initial analysis in the next session, promoting a sense of responsibility among the students.

Chapter 27: The Contingency Plan

Marc arrives at his parents' house, suspecting Sam's presence and his father's intent to discuss selling the company. His anger simmers. Upon entering, his niece greets him, explaining she came at her grandfather's request. In the study, Sam confronts Marc, revealing their father's serious illness and his prior hospitalization. Isaac explains the situation and his desire to spend his remaining time with their mother.

Isaac affirms Sam would receive her share and will no longer be involved in any managerial decisions, as per her wishes. Isaac commends Marc's changes and admits to considering Laramie's interest. He transfers the company to Marc and mentions Laramie's due diligence, awaiting their call.

Marc expresses his intention to seek investors, not buyers, indicating a new direction for the company.