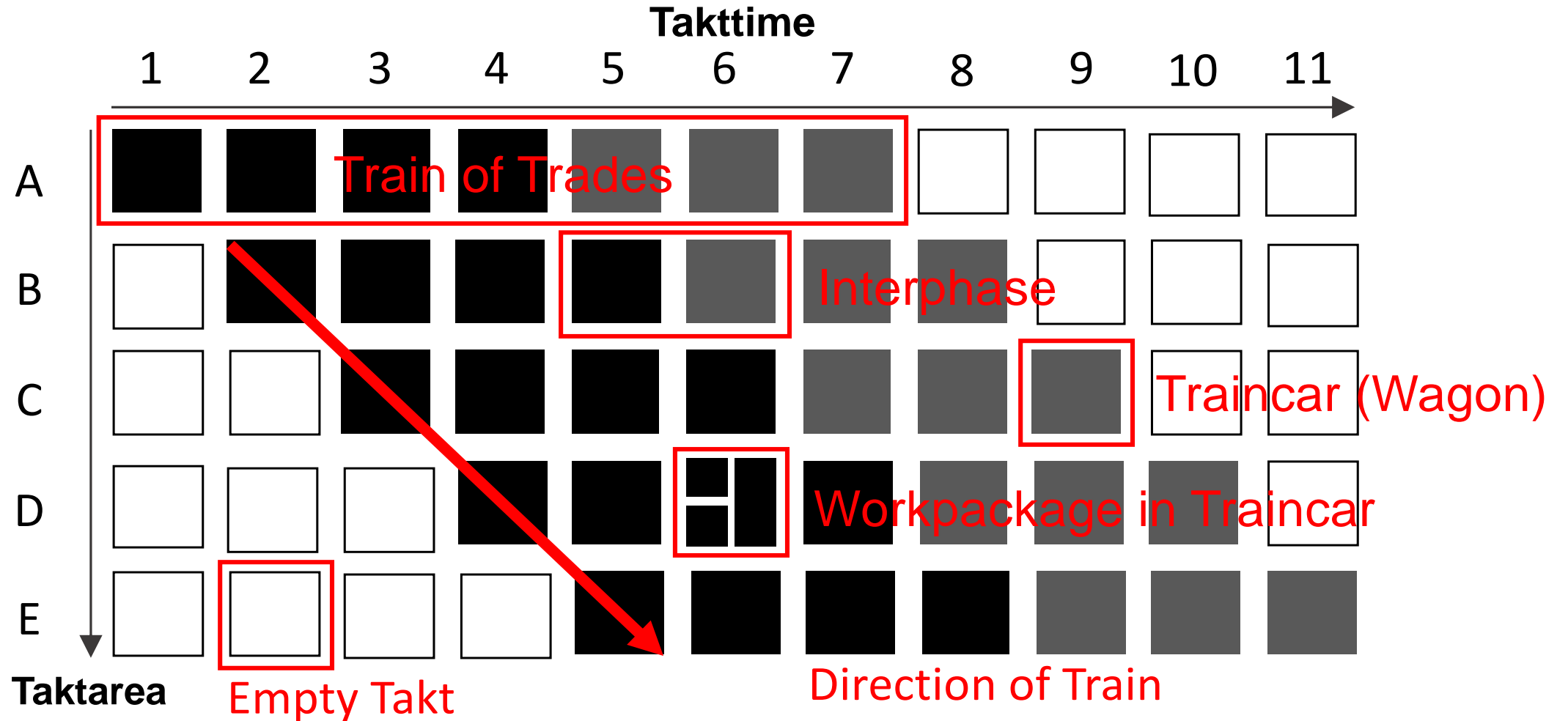


# **BUFFER MANAGEMENT IN TAKT PLANNING – AN OVERVIEW OF BUFFERS IN TAKT SYSTEMS**

Janosch Dlouhy, Marco Binnerger & Shervin Haghsheno

# Introduction into Taktplanning



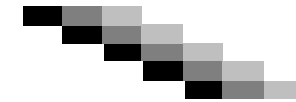

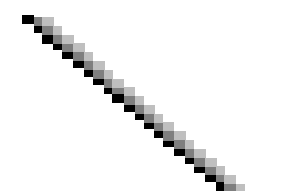


# Time Reduction in Taktplanning

Icons

Calculation

Description

	<p>① <math>(1 + 50 - 1) \times 1 \text{ week} = 50 \text{ weeks}</math></p>	<p>(nothing parallel)</p>
	<p>② normal schedule <b>25 weeks</b></p>	<p>(50% parallel)</p>
	<p>③ <math>(5 + 10 - 1) \times 1 \text{ week} = 14 \text{ weeks}</math></p>	<p>(first Taktplanning)</p>
	<p>④ <math>(10 + 10 - 1) \times 0,5 \text{ week} = 9,5 \text{ weeks}</math></p>	<p>(Lotsitzreduction 50%)</p>
	<p>⑤ <math>(20 + 10 - 1) \times 0,25 \text{ week} = 7,25 \text{ weeks}</math></p>	<p>(Lotsizereduction 50% again)</p>

# Mechanism that affect the Buffers

## **active Mechanism**

Buffer-optimization

Lot size reduction

Parallelization, Simul. Engineering

Flow-focused Repetition

Harmonization

Wagonizing

Partial Handover

## **passive Mechanism**

Synergies of Work

Short cycled Quality control

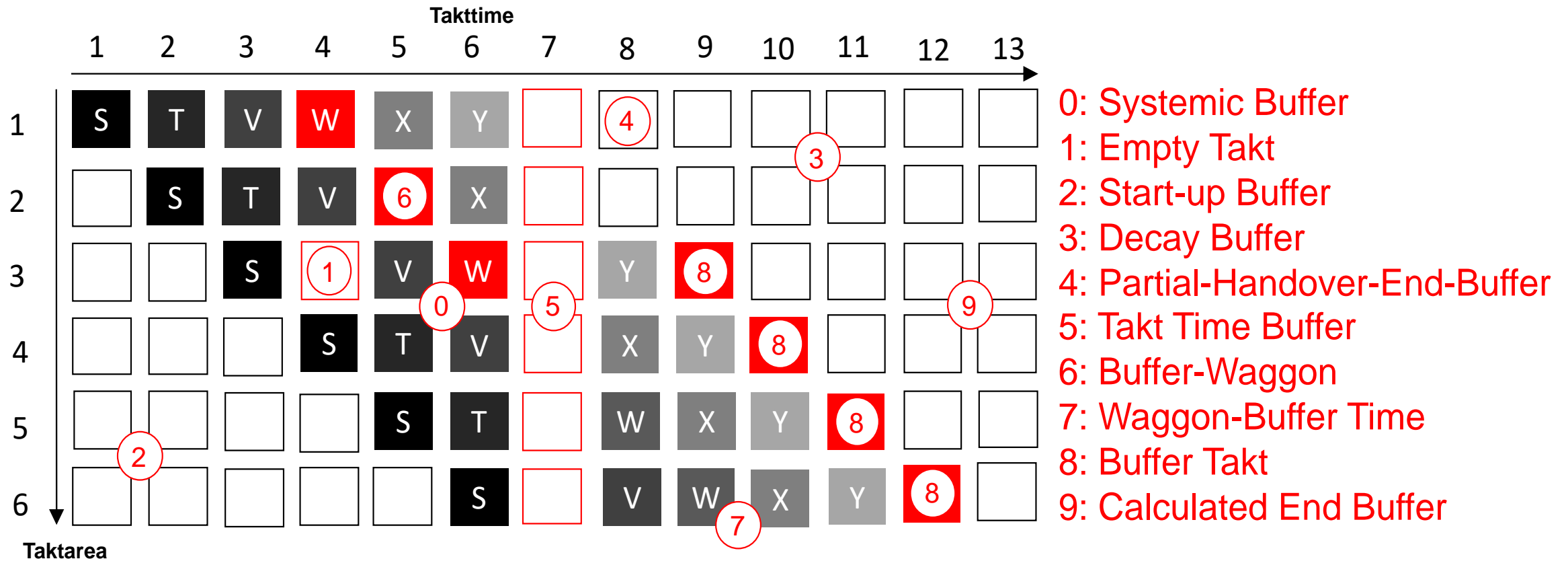
Transparency

Communication and Cultur

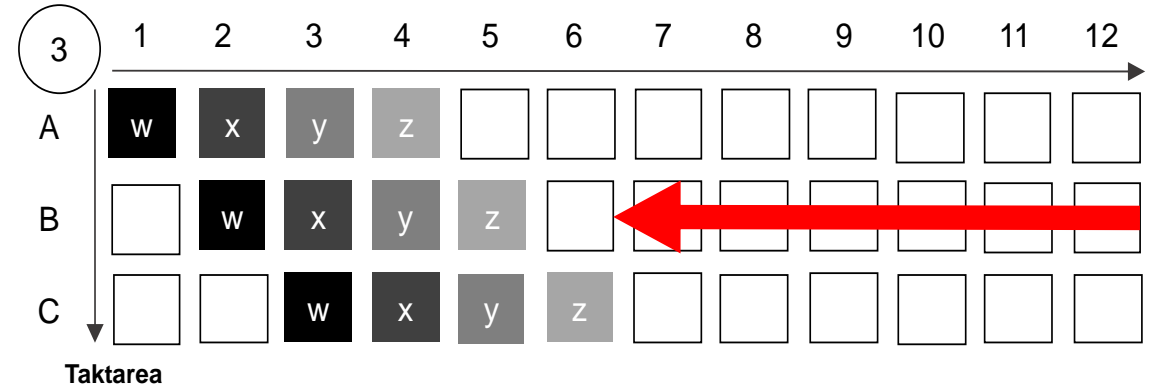
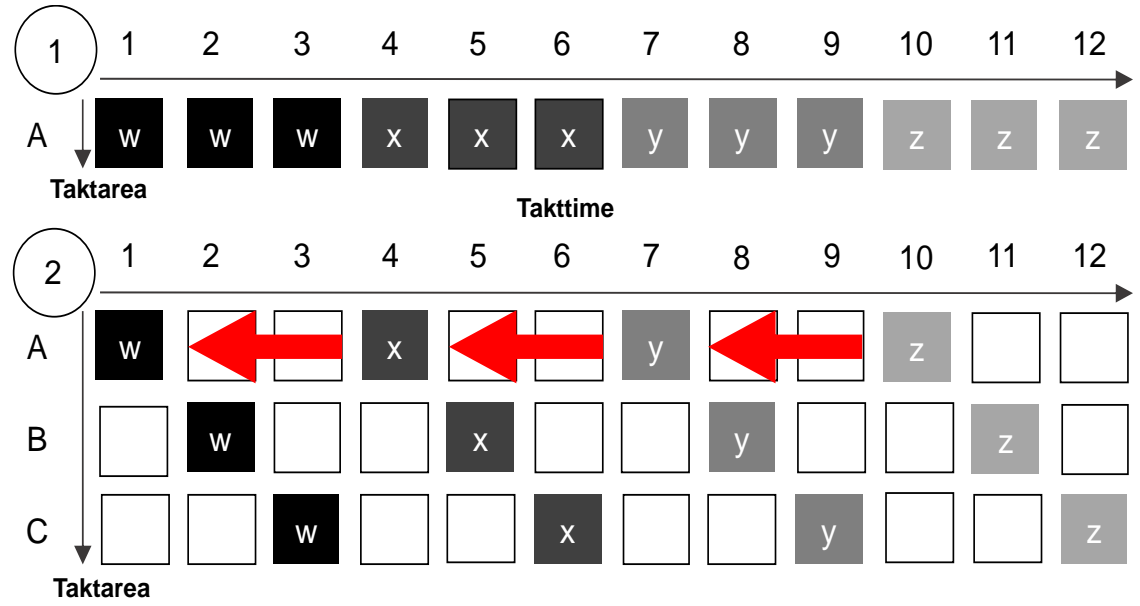
Flexibility and Client orientation

Balancing

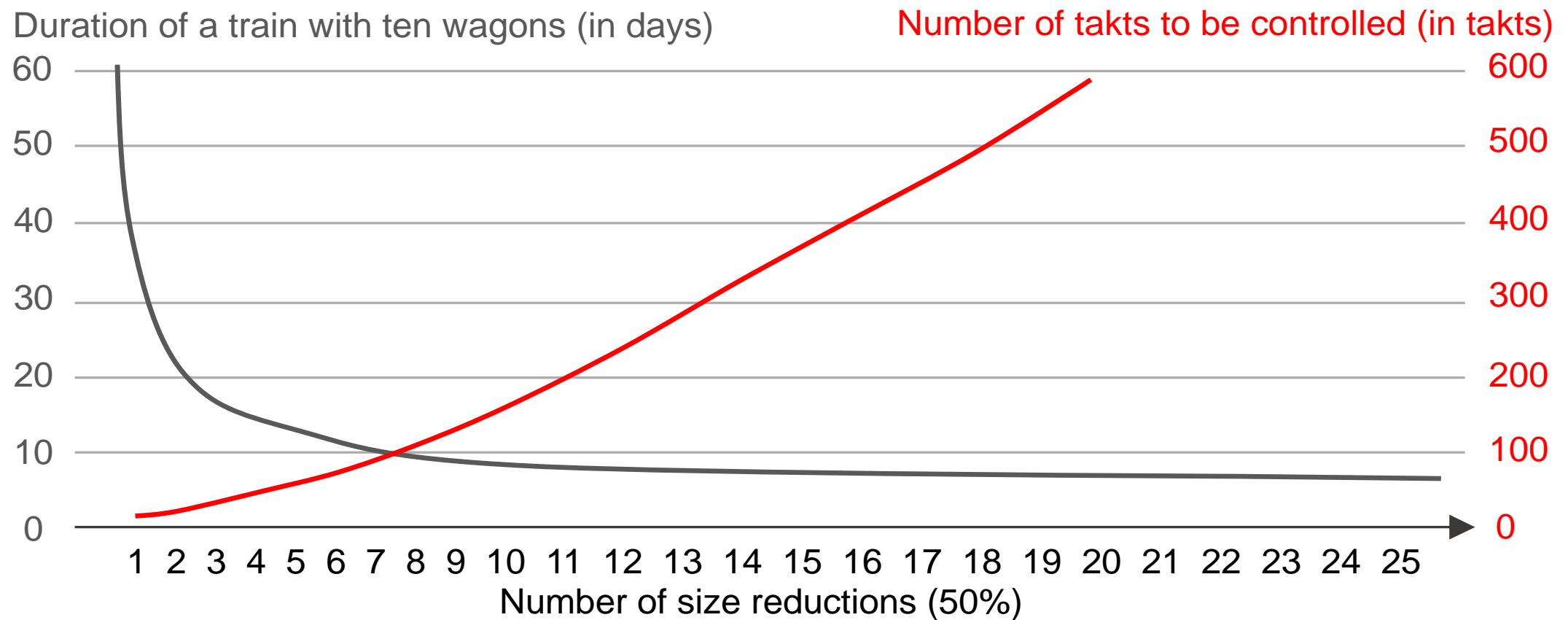
# Overview of Types of Buffers



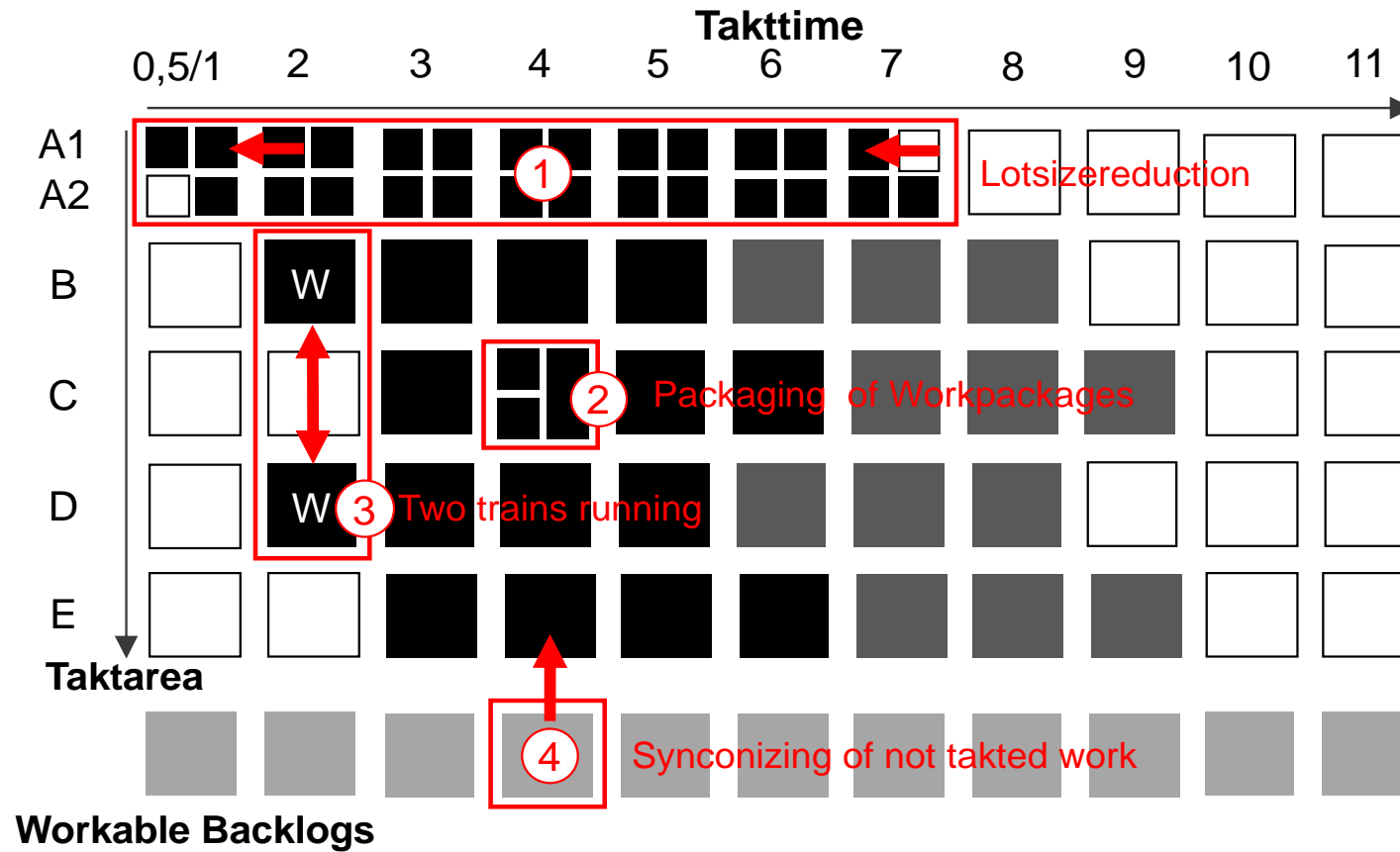
# Lot Size Reduction



# Side Effects - Lot Size Reduction



# PARALLELIZATION

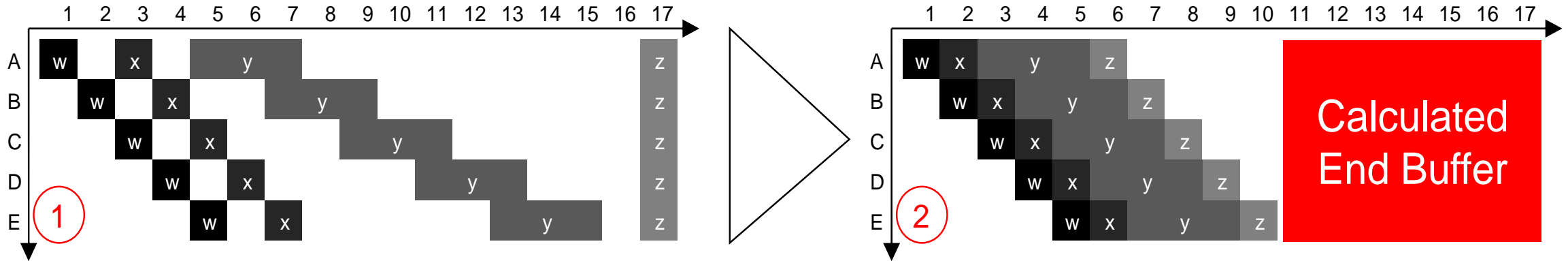




## SIDE EFFECTS - PARALLELIZATION

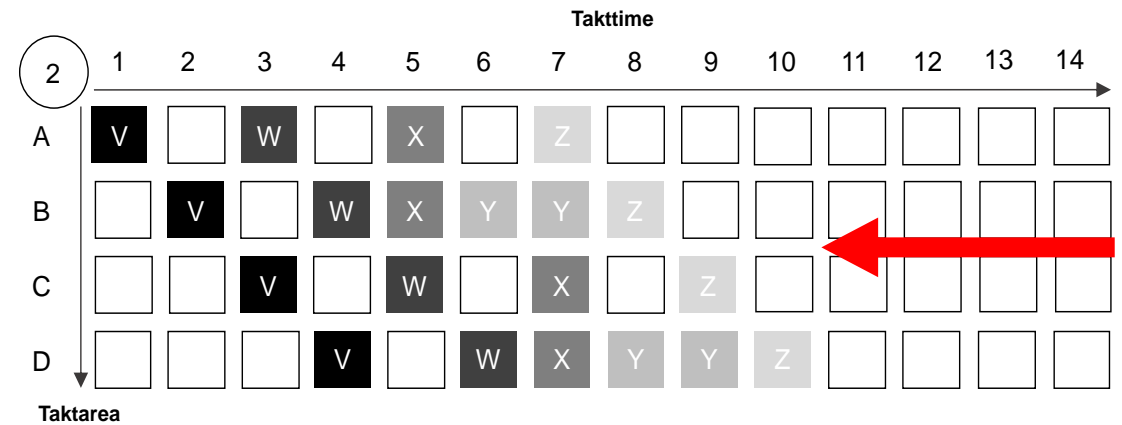
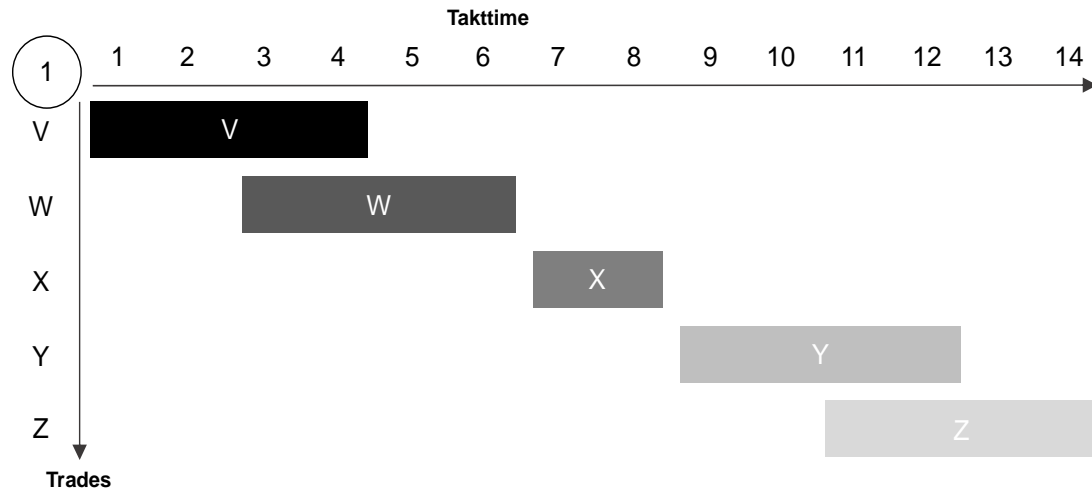
The parallelization means that more work packages are completed simultaneously either in the same Takt area or Takt period. A high concentration of work, caused by high levels of parallelization, can lead to a disruption of individual work processes.

# ALL OVER USAGE OF BUFFERS





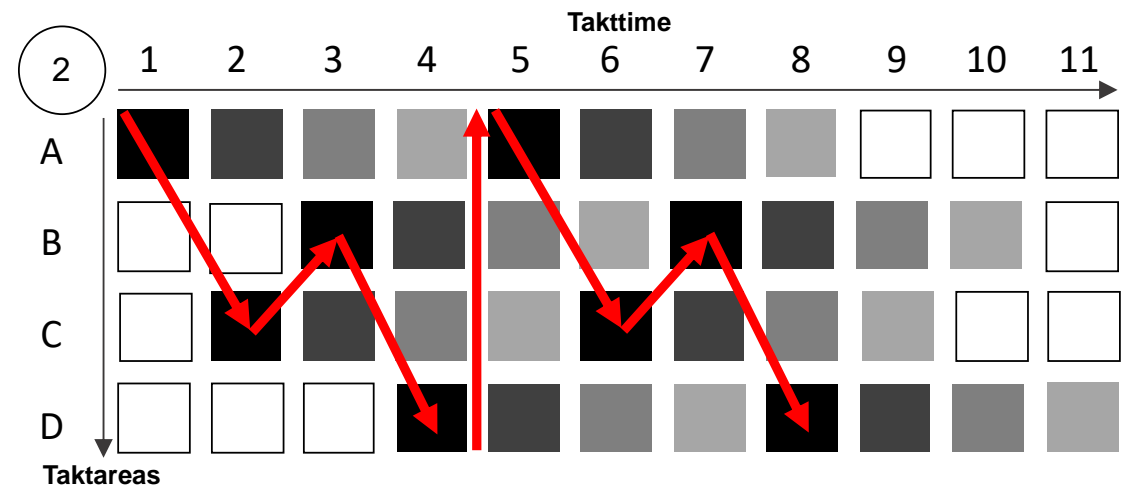
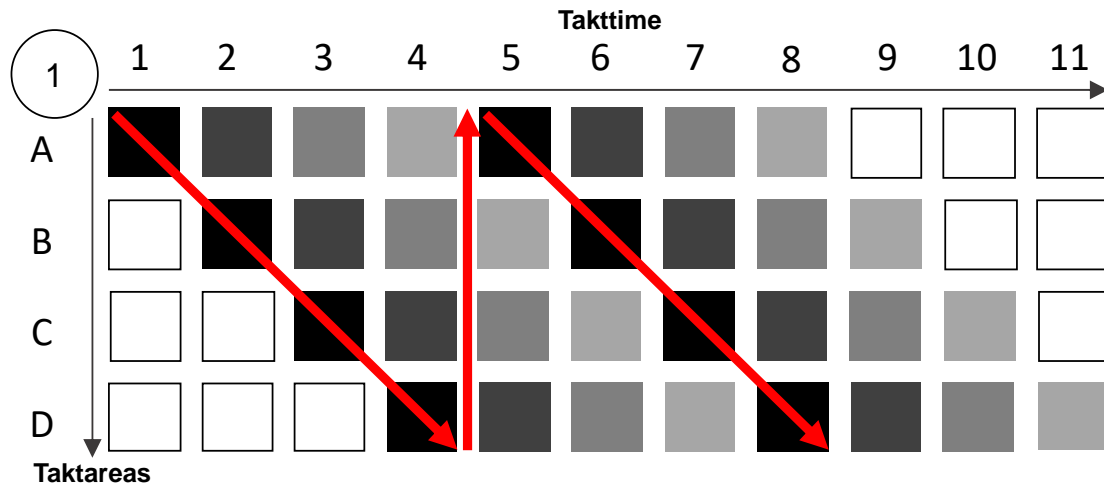
# HARMONIZATION



## SIDE EFFECTS - HARMONIZATION

Improper harmonization inevitably leads to under- or overuse of workers. Underuse creates waiting times, alternate work, as well as requires increased control effort. Waiting times lead to the consumption of buffer times and alternate work can disturb the work of other trades.

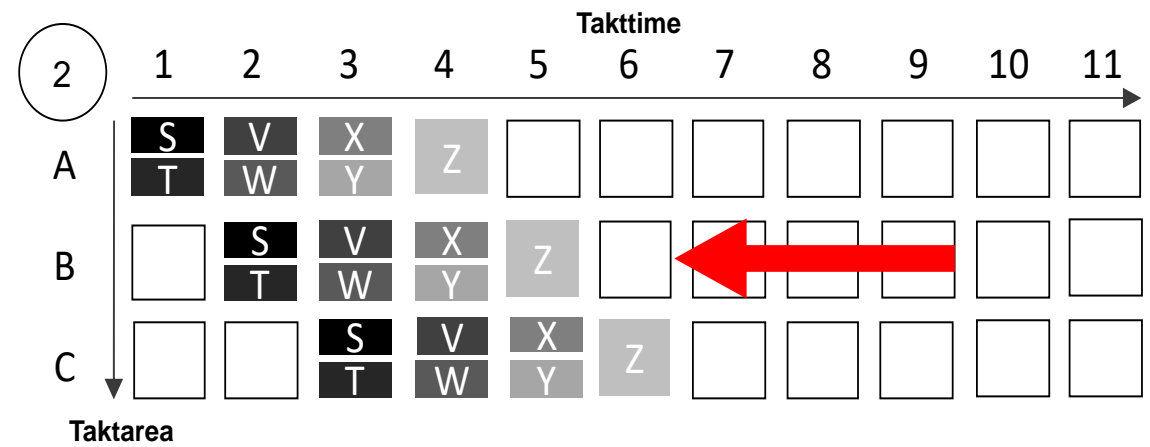
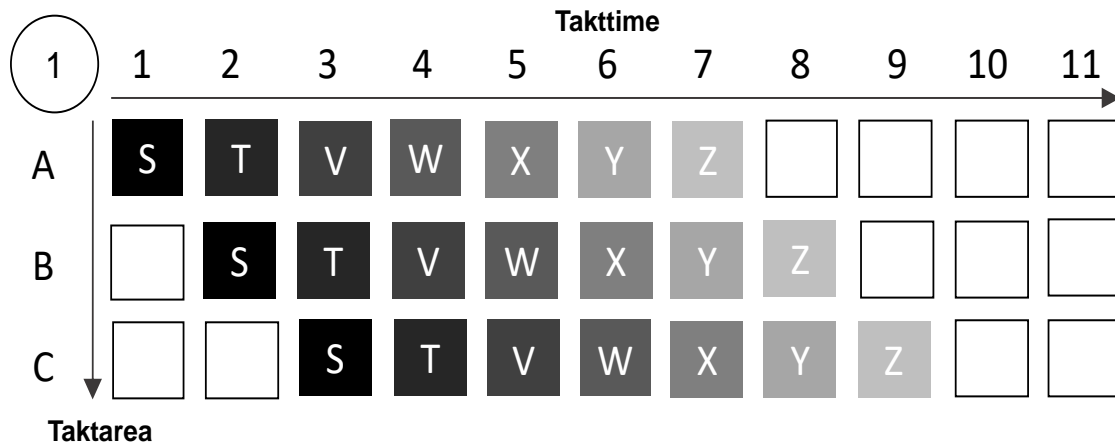
# FLOW-BASED REPETITION



## SIDE EFFECTS - FLOW-BASED REPETITION

While repetition provides the benefit of learning from- and preparing for future Takts, it can also lead to an oversimplified routine for the workers. This can result in mental fatigue, especially at short Takt cycles.

# WAGONISATION

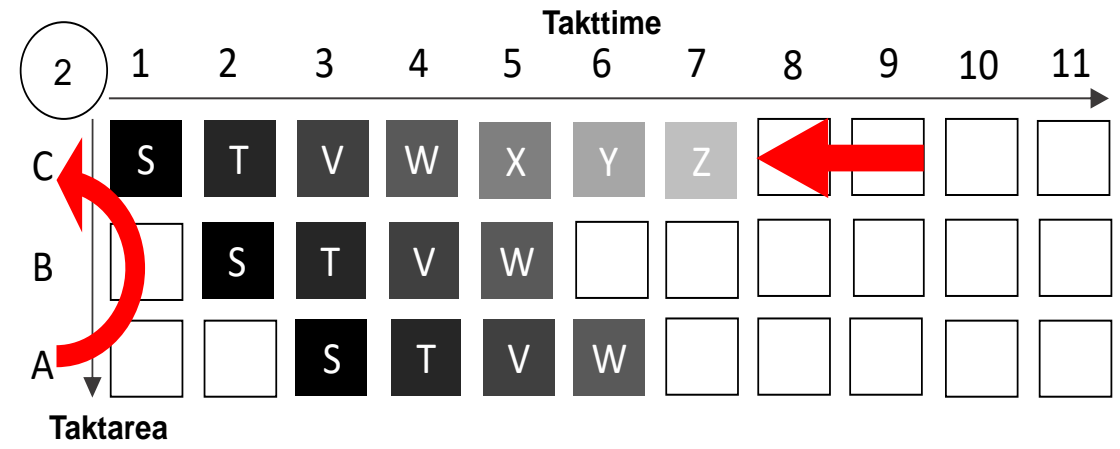
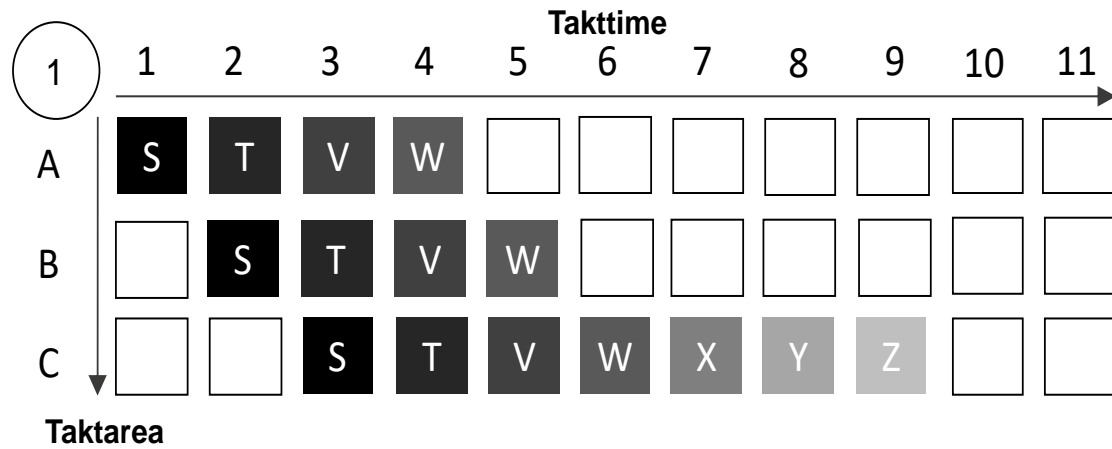




## SIDE EFFECTS - WAGONISATION

Incorrect wagonisation may cause interferences between the trades working together, which may have an effect on their performance.

# LONG LEAD MECHANISM



## SIDE EFFECTS - WAGONISATION

The prioritization of long running processes restricts the customer prioritization of areas and can lead to technical problems in the process.