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# Positions of MTM ASSOCIATION e. V. for application of process building block systems MTM-UAS

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# Foreword

*Peter Kuhlang*

Dear reader!

This 16th edition of the series "MTM-Schriften Industrial Engineerring" is a position paper which presents perspectives, views and explanations of ASSOCIATION e. V. (MTMA) about the use and application of the process building block system MTM-UAS in the context of changing work systems in industrial companies.

It is also a plea for the creation of company-specific process building block systems, and it contains appropriate notes on this.

Among the most important tasks defined in the founding document of the MTM Institute are the development of MTM for the permanent distribution of MTM application, the creation of networks and the improvement of application requirements as well as public relations work for the (industrial) scientific discourse and broad (popular) scientific impact. Based on this tradition, the publication series "MTM-Schriften Industrial Engineering" offers a platform to publish application-oriented and theoretical work in the field of industrial engineering in a citable manner.

The discontinuously appearing publications deal with MTM in the field of "Industrial Engineering" in a narrow and broader sense. They address new and continuous developments, practical applications in known and new fields as well as theoretical findings and aspects for the foundation and dissemination of MTM.

In the present publication, we present backgrounds and motivations for the application of MTM-UAS as well as for the application of the concept of MTM-UAS standard operations for the formation of company specific standard operations. Likewise, we explain the significance of the influencing factor weight of MTM-UAS basic operations with respect to the classification of force applications in Get and Place as well as the rules of simultaneity and specify them by a new decision scheme.

All in all, this position paper puts into writing the teaching opinion of MTM ASSOCIATION e. V. on the MTM-UAS process building block system.

Peter Kuhlang, May 2021

CEO MTM ASSOCIATION e. V.
Head of MTM Institute

# 1 Motivation and initial situation: The change of method level of work systems

During the last 20 years (especially in the automotive industry and its suppliers) the design of work systems and work organization has changed continuously, especially the cycle times of the lines have decreased. In the vocabular of MTM this means that the method level resp. the process type has developed; for example from process type 2 to process type 1. Human work in the modern context (of the automotive industry) is in many areas characterized by cyclically recurring activities. (In automotive engineering, cycle times are mainly around 60 seconds). It must also be taken into consideration that the influence of ergonomic evaluation and the increasing digitalization of planning human work lead to a constant refinement and specification of planning and evaluation methods. Consistently, from an MTM point of view and the application of MTM process building block systems, this means a trend and an orientation towards "more precise" MTM process building block systems such as MTM-1 and MTM-HWD[1].

> **MTM-1 defines the MTM standard performance and thus is the basis for all higher aggregated MTM process building block systems.**

Systems such as MTM-UAS, Daimler C-Values or the Standard Data of BMW Group (BMW SD) are very widespread today (in the automotive industry). However, due to the development background of MTM-UAS in the 1970s, it is (only) up to a limited extent suitable to adequately reflect the demands and challenges of the modern working world.

[1] Basically, it should be pointed out at this point that MTM-1 - as a basic system - can always be applied in all areas (process types). However, it must be checked for each individual case whether this procedure is reasonable or economical.

# 2 Introduction and objectives

This publication describes the teaching opinion of MTM ASSOCIATION e. V. (MTMA) on the future use regarding the MTM process building block system MTM-UAS and serves as an argumentation support for MTM Instructors worldwide. It provides background information and explanations and thus serves as a basis for uniform, coordinated training in MTM-UAS. This publication represents a significant contribution to the uniform dissemination of MTM in a worldwide context and provides answers to questions on the application of the MTM-UAS process building block system that have been put to MTMA in the recent past.

The fundamental positions presented here and the resulting teaching opinion are incorporated into the MTM teaching of MTMA as well as the One-MTM network; both in the face-to-face trainings and the webinars as well as in the MTM-UAS E-Learning, which is available since April 2021.

This publication is also to be seen as a plea of the MTMA for the development of company specific process building blocks. It explains the basics of how to design process building blocks and what needs to be considered.

After a short description of the initial situation for the application of MTM-UAS as well as the introduction (chapter 2), the basics (chapter 3) refresh the meaning and understanding of the method level or process type. This position paper describes the application of MTM-UAS in chapter 4 and elaborates on the influencing factor force in chapter 5 and simultaneity in chapter 6. It explains the methodological background, presents the position of the MTMA and points out developments. It thus serves as a basis for a uniform, coordinated approach in the MTM Community.

In the outlook, the central efforts of the MTM ASSOCIATION e. V. and the One-MTM network to establish MTM as a global standard and the importance of digitization in this regard are discussed.

# 3 Basics

## 3.1 Method level or process type

The terms "method level" and "process type" are used synonymously and are of fundamental importance for applying MTM. The method level has to be determined for an (existing or planned) work system in order to be able to select and apply the suitable or the "right" MTM process building block system in order to describe and evaluate work processes. The method level or process type is a measure of how high the chance to establish (form) routine in a work system can be and how high the variance of work methods (Variation of individual operators methods) is. The method level or process type is used to classify the different MTM process building block systems according to criteria and characteristics (see table 1) [2].

| **Method level** | | **high** | **medium** | **low** |
|---|---|---|---|---|
| **Process type** | | 1<br>Mass production | 2<br>Serial production | 3<br>Single/Job shop production |
| **Chance to establish routine** | | high | middle | low |
| **Variation of individual operators methods** | | low | middle | high |
| **Example** | | Automotive assembly | Aircraft assembly | Car repair shop |
| **Attribute** | **Cycles** | Continuously short-cycled repetitions | Temporarely longer-cyclic repetitions | No cyclic repetitions |
| | **Details about work process** | Motions (basic motions) | Partial part of process (Operations; general conditions) | Overall process (Operations; general conditions) |
| | **Work system** | Defined product variants | For defined product variety | For any processes and product variety |
| | **Supply principle of work system** | Delivery | Pick-up with supply | Pick-up |

Table 1 Overview about method level

[2] cf. Kuhlang, 2019, p. 6

The (exemplary) expressions of the criteria and characteristics of the method level or process type support the applicator in distinguishing the process types and help in the assessment or determination of the actually existing method level.

The degree of resolution or abstraction of an MTM process building block systems is explained in the following as an example using the "flight altitude during a flight".

The higher an aircraft flies - for example, at cruising altitude for a city or intercontinental flight - the fewer details on the ground can be seen or perceived exactly and thus cannot be assessed or evaluated. The analogy to high flight altitude is the low method level. The building blocks of the corresponding process building block systems are "constructed" in such a way that they deliberately do not "perceive" details (of the movements or some work contents); these details were already "immanently" taken into account during the development of the process building block system by means of corresponding data construction principles. The workflow/work content or the movements are thus consciously described in a "less precise" way.

However, if the flight takes place at a lower altitude, for example during a helicopter flight or during the landing approach, the details on the ground can be recognized and perceived more accurately. The analogy to low altitude is the high method level. The building blocks of the corresponding process building block system are "constructed" in such a way that they consciously "perceive" details (of movements or some work contents); these details were considered as separate building blocks in the development of the process building block system. The work process or the movements are thus consciously described in a more "precise" way.

## 3.2 Process type and MTM process building block systems

The overall structure of the application-neutral MTM process building block systems provides an overview of the relationship between the MTM process building block systems and the process type, which is visualized below (Figure 1 and Figure 2).

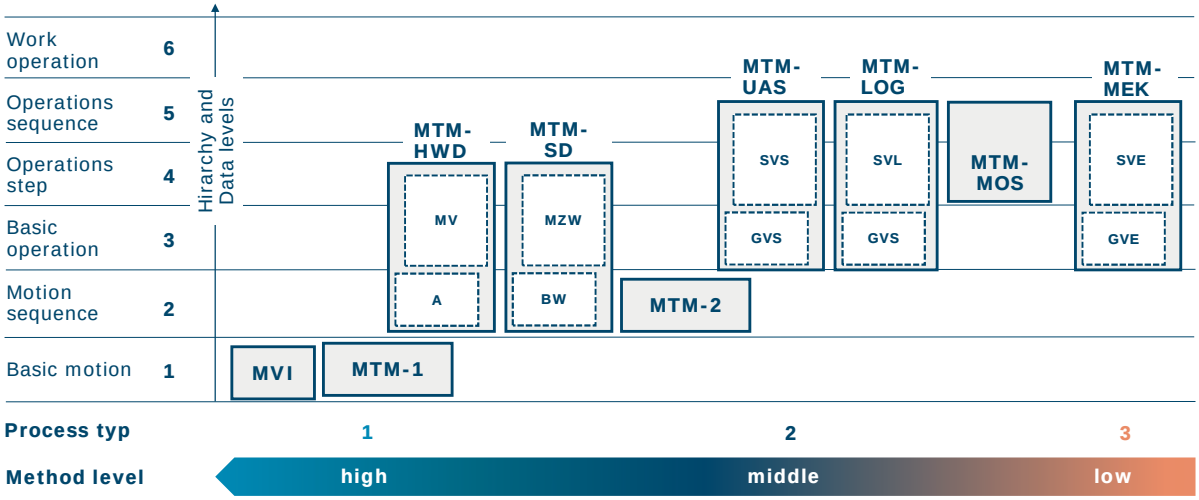


**Figure 1 Structure of the application-neutral MTM process building block systems**[3]

| MTM process building bloc systems | | | |
|---|---|---|---|
| **MVI** | MTM-Sichtprüfen / MTM Visual Inspection | | |
| **MTM-1** | MTM-1 (basic system) | | |
| **MTM-HWD** | Human Work Design (HWD) | A | HWD-Aktionen (HWD Actions) |
| | | MV | HWD-Modellierungsvorlagen (HWD Modelling Templates) |
| **MTM-SD** | Standard-Data (SD) | BW | SD-Basiswerte (SD Basic Values) |
| | | MZW | SD-Mehrzweckwerte (SD Multi Purpose Values) |
| **MTM-2** | MTM-2 | | |
| **MTM-UAS** | Universal Analysiersystem (UAS)<br>Universal Anlayzing System (UAS) | GVS | UAS-Grundvorgänge Serie<br>(UAS Basic Operations Series) |
| | | SVS | UAS-Standardvorgänge Serie<br>(UAS Standard Operations Series) |
| **MTM-LOG** | MTM-Logistik / MTM Logistics | SVL | Standardvorgänge Logistik (Standard Operations Logistics) |
| **MTM-MOS** | MTM-Office-System | | |
| **MTM-MEK** | MTM in der Einzel- und Kleinserienfertigung (MEK)<br>MTM for Single and Job Shop Production (MEK) | GVE | MEK-Grundvorgänge Einzelfertigung/Kleinserie<br>(MEK Basic Operations Single) |
| | | SVE | MEK-Standardvorgänge Einzelfertigung/Kleinserie<br>(MEK Standard Operations Single) |

**Figure 2: Legend for the Structure of the application-neutral MTM process building block systems**

The selection and application of MTM process building block systems as well as of company-specific systems (standard operations) must always be carried out depending on the process type prevailing at the users field of application. The following overview arranges the MTM process building block systems according to "their" method level and can be used as selection support (see figure 3).

[3] cf. Kuhlang, 2018, p. 13

| **Attribute**<br>to characterize different<br>**types of process** | **Process type 1**<br>Mass production | **Process type 2**<br>Serial production | **Process type 3**<br>Single/job shop production |
|---|---|---|---|
| Cycles | Continuously<br>short-cycled repetitions | Temporarely<br>longer-cyclic repetitions | No cyclic repetitions |
| Details about work process | Motions (basic motions) | Partial part of process<br>(Operations;<br>general conditions) | Overall process<br>(Operations;<br>general conditions) |
| Work system | Defined product variants | For defined product variety | For any processes and product variety |
| Supply principle of work system | Deliverly | Pick-up with supply | Pick-up |
| Variation of indvidual operators methods | low | middle | high |

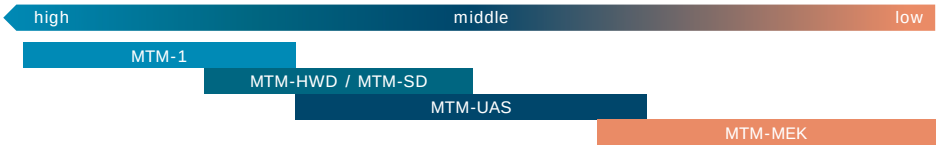


**Figure 3 Process type and MTM process building block systems at a glance**

In summary, this means: The MTM process building block system must match the existing method level (this must be determined in the concrete application case). If another MTM process building block system is used, a systematic application error occurs. This leads to unreliable results with the consequence that the reported MTM times will be too high or too low.

# 4 Application of MTM-UAS

## 4.1 Historical context

MTM-UAS is an MTM process building block system on the hierarchical level of basic operations. It was designed for modeling processes representing process type 2.

*Notice:*
*To use the MTM-UAS process building block system in compliance with the rules, it is necessary to attend the MTM-UAS training course or the MTM Practitioner Blue Card Refresher course. These training courses teach the MTM-UAS basic operations, the design (principles) and architecture, as well as the application of the MTM-UAS standard operations and provide information on the development of company-specific process building blocks.*

The starting point for the application of MTM-UAS are the characteristic features of process type 2 as typically found in series production[4]:

- Order-oriented production with a repetitive character – The type of work processes and the frequency at which they are performed are changing. However, the range of variations is limited.
- Designed work processes – The work stations are provided with standard equipment that conforms to the requirements of the range of jobs. The equipment (machines, tools, devices) being used also conform to the range of jobs.
- Comparable work contents – Despite the diversity of models and variants the work contents are often comparable.
- Defined general conditions for work processes (work organization) – Work organization is not at the high level exhibited in mass production; the worker himself often has more involvement in getting or making the material to be processed available.
- Longer cycle work processes – The work cycles are significantly longer than those found in mass production.
- Experienced workers – Compared to mass production, the degree of skill of the workers is higher. The operations are performed in an individual operator method, while the stated work method is met to a large extent.
- Work instructions – While work instructions are provided, they do not contain a de-tailed method description.

The original MTM-UAS process building block system consists of the MTM-UAS basic operations and the corresponding application rules.

[4] vgl. MTMA, 2019, S.II-4f.

Taking these characteristic features into account, the process building block system of MTM-UAS basic operations (published in 1978) and later the MTM-UAS standard operations based on it (published in 1988) were developed.

The main reasons and motivation for the development of the MTM-UAS basic operations were on the one hand the reduction of the analysis effort and on the other hand a stable application - i.e. a reduction of the application error (compared to MTM-1).

The main reasons and motivation for developing the concept of MTM-UAS standard operations were[5]:

- To further increase the analysis speed in the application of the MTM-UAS process building block system.
- To provide guidance for the development of company-specific building blocks.
- To describe with a minimum of process building blocks a multitude of typical, self-contained work operation sequences for the application area.
- To provide an inter-company applicability of the process building blocks.

Therefore, MTMA recommends the application of the design principles of the MTM-UAS standard operation as a basis for the development of company-specific process building blocks.

## 4.2 Preliminary remarks

The development of MTM-UAS and MTM-MEK process building block systems was based on two objectives, namely to achieve simplifications compared to MTM-1 in order to

1. to reduce the creation and modification effort for longer-cycle or non-cyclic processes (process types 2 and 3) compared to MTM-1 (process type 1), and
2. to achieve a reduction of the application error and thus an improvement of stability by the simplifications inherent to the system[6].

The compensation times of the process module systems are - according to the development specifications for MTM-UAS and MTM-MEK - approximately as long as the process-typical cycle duration. The compensation time is therefore the cycle length which is specified as typical for the process and from which the system deviation of MTM-UAS and MTM-MEK approximately corresponds to that of MTM-1. The compensation times are, for example, approx. 3.5 min for MTM-UAS and approx. 19 min for MTM-MEK[7].

[5] cf. MTMA, 2019, S.III-3
[6] cf. Bokranz/Landau, 2012, S.400
[7] cf. Bokranz/Landau, 2012, S.401

Typical cycle times for the MTM process building block systems are:

- MTM-1: up to approx. 1 min
- MTM-HWD: from 0.5 to 2 min
- MTM-SD: from approx. 0.6 min to approx. 2.5 min
- MTM-UAS: from approx. 2.5 min to approx. 9 min
- MTM-MEK: over 9 min.

In particular, MTMA will not make any additions or changes to application-neutral modules and rules for the MTM process building block systems (MTM-1, MTM-2, MTM-HWD, MTM-SD, MTM-UAS, MTM-MEK), so as not to change the area of application of a system[8].

*Note:*
*The application of rules and process building blocks can be specified on a company-specific basis. The MTMA will be happy to advise you on this.*

## 4.3 Application of MTM-UAS basic operations and standard operations

MTM-UAS is based on MTM-1 and was developed by statistically combining data from the MTM-1 basic motions. This means that several basic motions were combined, while at the same time influencing variables were simplified and more coarsely graded in terms of their characteristics. Supplementary motions, such as Regrasp, Apply Pressure, Disengage, Turn or short Reach and Move movements as well as gripping or joining movements, were also taken into account proportionally in the method level inherent to the system.

When the MTM-UAS process building block system is used properly, the underlying performance expectation corresponds to the MTM standard performance of MTM-1. In contrast to MTM-1, the MTM-UAS analysis is not based on the concrete movement sequence of the work execution, but rather on the general conditions of the work, which result, for example, from the workstation layout or the work object. MTM-UAS is a process building block system for the modeling of manual work processes in the process type of series production, whose system-immanent simplifications on the one hand reduce the analysis effort and on the other hand lead to a stable application - i.e. to a reduction of the application error (both in comparison to MTM-1).

[8] Kuhlang et al., 2020, S.10

Based on the MTM-UAS basic operations and the knowledge of the design principles of the MTM-UAS standard operations, company-specific process building blocks can be created for the description and evaluation of internal company workflows.

MTM-UAS basic operations rules are always decisive for the rule-compliant development and application of company-specific process building blocks, not least because they ensure MTM standard performance.

MTM-UAS standard operations are based on the architecture of core and supplementary values described in the course documentation. This results in application rules that are equally valid for all standard operations. It is essential for the application of MTM-UAS standard operations that the core values contain typical self-contained operations. The MTM-UAS standard operations are structured in such a way that it is usually necessary to combine process building blocks of the basic operations with those of the standard operations within a work operation sequence.

The work methods "mapped" and defined in the MTM-UAS standard operations represent the work processes and technologies used in the 1980s. Since the development of the MTM-UAS standard operations, the design of work systems and the organization of work in production and thus the general conditions of series production (process type II) have changed significantly.

For example, new production technologies, joining techniques, tools, but also changed working conditions, such as cycle time or product complexity, can lead to the fact that today's real work methods can deviate from the ones defined in the MTM-UAS standard operations at that time. This can even go so far that the originally defined work methods have lost their validity or no longer exist at all and therefore standard processes (regardless of whether MTM-UAS standard operations or company-specific standard operations) are not (or no longer) applicable in this case. In this case, the MTMA recommends either not using these standard operations and alternatively developing new, company-specific standard operations or analyzing the workflows directly with the MTM-UAS basic operations.

This position is based on the fact that the teaching opinion of MTMA and the application rules of the MTM-UAS standard operations state: In case of significant deviations (between the MTM-UAS standard operations and the concrete workflow), the work content is to be analyzed completely with MTM-UAS basic operations and in compliance with the set of rules.

The structure - i.e. the design principle of the core and supplementary values - and not the predefined content or the work method defined with MTM-UAS standard operations is decisive for the development or formation of company-specific MTM process building blocks.

When defining the work methods of the individual company-specific process building blocks on the basis of MTM-UAS basic operations, it is advisable to pay particular attention to the definitions (start, content, end, limitation) of MTM-UAS basic operations in addition to the set of rules. This results in a clear demarcation of basic operations from one another, and the completeness of the defined work method (e.g. handling of tools and execution at the point of use) can thus be checked.

## 4.4 Summary and key messages

- The use of the MTM-UAS standard operations published by the MTM ASSOCIATION e. V. is not mandatory.
- Work processes can be described using the MTM-UAS basic operations.
- The underlying set of rules of MTM-UAS basic operations is binding for the practical application of MTM-UAS. Particular attention must be paid to the definition and delimitation of MTM-UAS basic operations (start, includes, end, limitations).
- The design principle of core and supplementary values is decisive for the development or formation of company-specific process building blocks.
- MTM-UAS standard operations must be checked with regard to the method descriptions or the method mix (see background analyses) before they are adopted for operational use.

# 5 Influencing Factor Force

## 5.1 Preliminary remark

MTMA is responsible for maintaining the MTM-UAS process building block system. In 2009, the former International MTM Directorate (IMD) introduced an international standardization of the teaching and application of the MTM-UAS process building block system. This led, among other things, to the standardization of the influencing factors part weight (defined at that time in daN).

## 5.2 Initial situation

The following five influencing factors are assigned to MTM-UAS basic operation of Get and Place in the respective current training manual[9].

- Weight of part
- Bulkiness
- Case of Get
- Case of Place
- Distance class

The influence factor part weight is specified in kilograms (kg) and is divided into 3 classes:

| | | | | |
|---|---|---|---|---|
| | | | ≤ | 1 kg |
| > | 1 kg | to | ≤ | 8 kg |
| > | 8 kg | to | ≤ | 22 kg |

This description can also be found on the associated data card of the MTM-UAS process building block system.

The 2019 version of the training manual does not provide any explicit information on the classification of force applications (e.g. sliding resistances taking into account a coefficient of friction), as is known from the MTM-1 process building block system. This may lead to different analysis results when applying MTM-UAS basic operations Get and Place.

## 5.3 Classification of the influencing factor weight of part in the MTM-UAS basic operation of Get and Place

MTM-UAS is based on the MTM-1 process building block system. The basic operation of Get and Place essentially consists of MTM-1 basic motions of Reach, Grasp, Move, Position and Release. The rules known from MTM-1 process building block system for classifying

[9] vgl. MTMA, MTM-UAS Lehrgangsunterlage, 2019

the force required for the basic motion "Move" can also be transferred to the MTM-UAS process building block system for the basic operation "Get and Place".

**Regulations from MTM-1 course document[10]**

In order to determine the actual amount of force or weight of part when Move used, the analyst must understand the various ways in which an object can be brought. The following possibilities are used in practice:

- material handling (e.g. reposition)
- Force in one or more direction(s)
- Force on one level/surface

To standardize the coding of weight and force, the units kg (for the load weight to be handled) and daN (for the force to be applied) are generally used in the MTM-1 training manual, with 1 kg corresponding to approximately 1 daN.

For weights > 1 kg or a force > 1 daN, the time required for Move is largely determined by the "coming under control" and the "keeping under control" of the weight (or the weight force) and depends on both the method of Move and the relevant execution conditions. Move can be done with one hand or both hands, spatially or on a surface (taking into account the coefficient of friction).

The time required to "get under control" is determined by the force required to do so and is mapped with the aid of the static component, taking into account the respective weight or force required. The additional time required to keep an object under control during the Move motion is described with the aid of the dynamic component using a factor that increases proportionally as a function of the weight or the force required.

The basic operation Get and Place in MTM-UAS are represented by the influence factor "weight of part", which means that the force required can also be represented by this influence factor.

In the case of force in space, however, the guided motion means that it is not the technical load weight of the objects to be moved that is to be used for evaluation, but rather the actual force to be applied, which counteracts the effectively effective force. In the case of force applications on one level, the calculation logic known from MTM-1 must also be applied to the MTM-UAS process building block system to determine the amount of force, taking into account the coefficient of friction. The conversion between weight [kg] and force [daN] known from MTM-1 can also be transferred to the MTM-UAS process building block system for the classification of the amount of force in the influence factor weight of part.

[10] vgl. MTMA, MTM-1 Lehrgangsunterlage, 2019

## 5.4 Summary

In the MTM-UAS process building block system, the force required to Get and Place a part is classified in the weight of part parameter as a function of the way in which the movement is performed. In the case of movements in one or more planes, this is done by taking into account the effective force to be applied, converting the unit of force from daN to kg (1 kg corresponds to about 1 daN). In the case of movements on one plane, on the other hand, the influencing factor weight of part is determined in accordance with the pushing force to be applied using the coefficient of friction.

# 6 Simultaneity

## 6.1 Preliminary remark

The MTM-UAS process building block system is designed for series production. Due to the simplicity of its application, the system is frequently used outside its "traditional process type", e.g. in short-cycle production areas. As a result, especially in the case of simultaneous basic operations, an adaptation based on the rules in the MTM-1 process building block system was applied. With the last release of MTM-UAS in 2016, changes that had been implemented over the decades were rolled back; among other things, this also applies to the rules for simultaneity.

## 6.2 Initial situation

Simultaneous motions are modeled using MTM-UAS in accordance with the rules described in the valid training manual. The following supplement specifies the rules for using the process building block Place as a interaction basic operation, the constrained sequence use case and the writing method in the analysis form.

## 6.3 Rules for simultaneity during Get and Place

### 6.3.1 Get and Place as an interaction basic operation

Simultaneous motions are single or consecutive motions performed at the same time by different body members (here the hands). Whether motions can be performed simultaneously depends on the degree of control required to perform them. The performance of highly con-trolled simultaneous motions is always difficult.

A high degree of control, with respect to motions that can be performed simultaneously, occurs if;

- GET is difficult
- PLACE is loose or tight
- Weight of the part is > 1 kg
- Parts are bulky

With regard to the totality of all basic operations Get and Place, only the MTM-UAS basic operations AA and AG do not involve a high degree of control.

Simultaneous motions that require a high degree of control are analyzed with an additional basic operation (interaction) for the second hand, normally in distance class 1. The conditions, under which motions can be performed simultaneously, are listed in the chart below (cf. Rule A4).

Simultaneous motions that both require a high degree of control are analyzed with an additional (interaction) basic operation for the second hand (usually within distance class 1). The conditions, under which motions can be performed simultaneously, are listed in the chart below.

| simultaneous motions | | right hand | |
|---|---|---|---|
| | | with low/medium control | with high control |
| left hand | with low/medium control | simultaneous | simultaneous |
| | with high control | simultaneous | additional (interaction) basic operation in distance class 1 |

**Figure 4 Simultaneous movements in the MTM-UAS process building block system (Rule 4)**

*Notes:*
*The shorter basic operation is chosen for generating the additional (interaction) basic operation.*

If there is a forced/induced sequence, the motions are to be analyzed one after the other.

### 6.3.2 Place as an interaction basic operation

The reduction of the interaction basic operation Get and place to a pure placement is only permissible under defined conditions. The following decision scheme serves as a classification aid for creating the rule-compliant MTM-UAS analysis

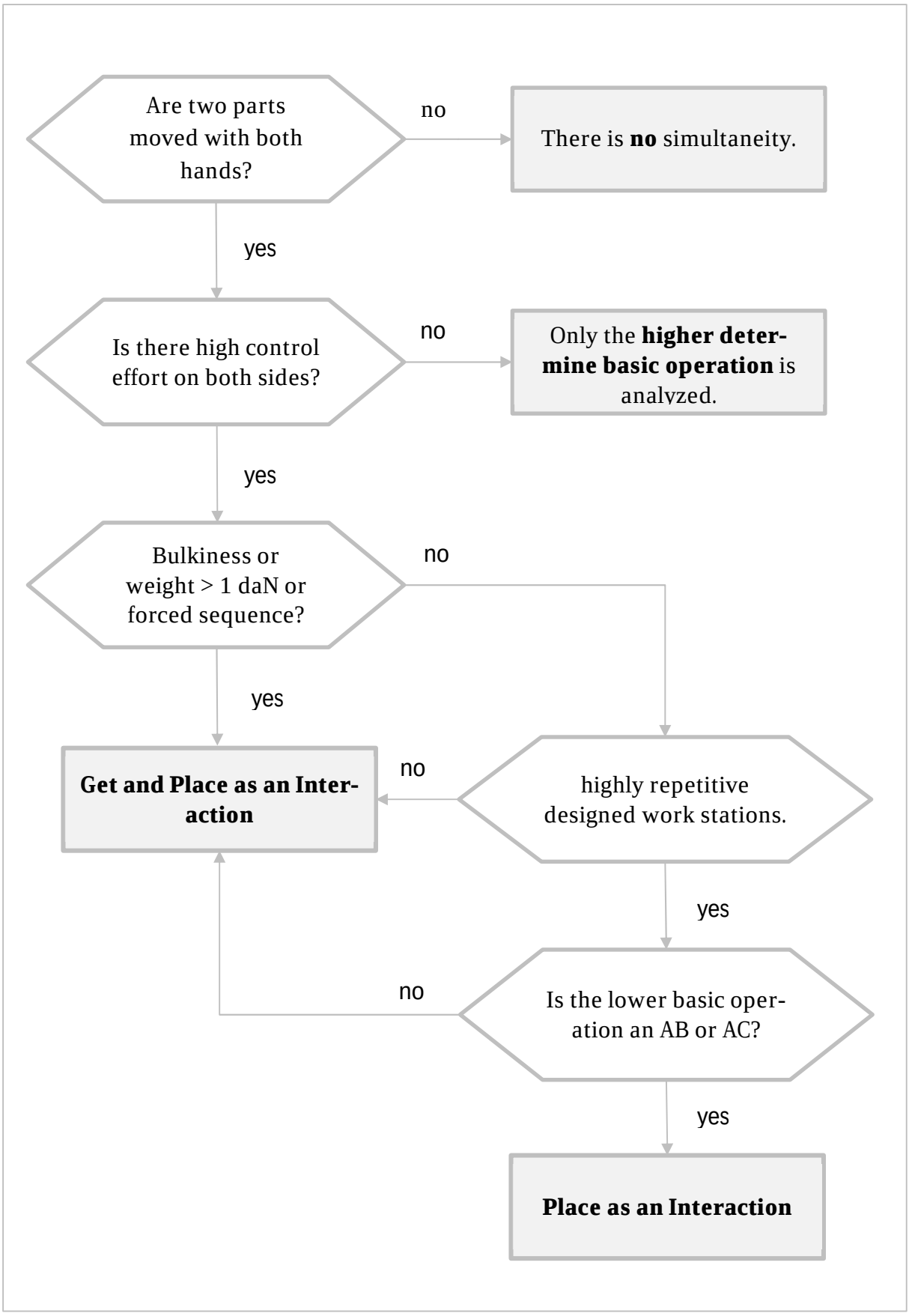


**Figure 5 Decision scheme for the interaction basic operation**

### 6.3.3 Notation in the analysis form

In contrast to the basic system MTM-1, the MTM-UAS process building block system requires detailed documentation in the description column of the analysis forms (005, 005F). For uniform application, the MTMA recommends the following notation for simultaneous motions:

- o first line: both objects must always be described
- o second line: only the wording " interaction basic operation" is written down

## 6.4 Summary

The design of simultaneous motions also leads to time and ergonomic improvements when using the MTM-UAS process building block system in series production. The rules described in the course documentation and in this document ensure that simultaneous motions are created clearly and in compliance with the rules, and that they are written in a uniform manner using the MTM-UAS process building block system.

# 7 Outlook

The MTMA teaching opinion statement published here represents a very important contribution to the establishment of MTM as a worldwide standard, as it serves as an argumentation support for MTM Instructors - also those of the One-MTM network.

The ambition of MTMA and One-MTM network is to establish MTM as a global standard, which means in particular:

- A clearly defined, uniform and mutually applied training structure.
- A high level of awareness of the "MTM brand" in the relevant communities.
- An economical and efficient organization!
- Global products and services as well as coordinated offers.

Digitization in an international context is of fundamental importance for the establishment of the global standard:

1. We use digital tools (various software tools) to disseminate MTM worldwide in a uniform and appropriate manner. For this purpose, we rely on e-learning, webinars, but also our TiCon and its connection to other tools. For us, digitization is a necessary and sufficient condition (pre-requisite) to disseminate MTM.

2. MTM is a necessary condition (prerequisite) to enable the digital design of human work in the field of IE. MTM - specifically, the process language and its inherent MTM standard performance - is the prerequisite for transforming digital motion data into reliable times for humans in our work systems.

MTM ASSOCIATION e. V. strives to leverage the trust in MTM (specifically the MTM process language and its inherent MTM standard performance) and the reliability of MTM (the organization and the method) worldwide to make MTM indispensable.

# Literature

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