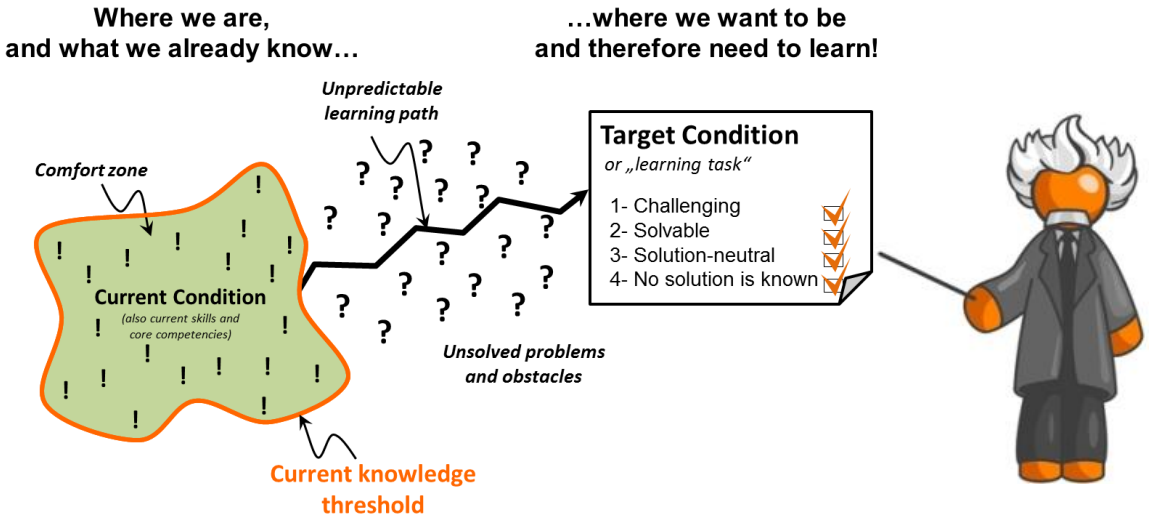

# Toyota Kata Simulation

**Practicing and understanding the Improvement and Coaching Kata**

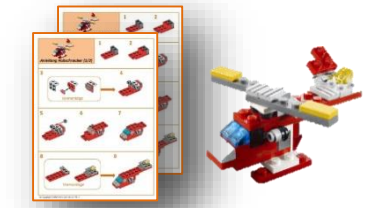
# Today we want to deepen our Toyota Kata experience…



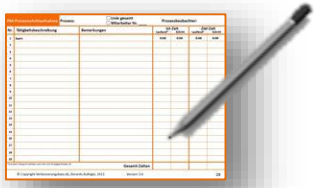

## …by playing a two steps LEGO-game:

### Game step 1

**Introduction, prozess analysis, defining a Target Condition**



Understand the current situation, aprox. 30 Min



Defining a challenging Target Condition, aprox. 20 Min

### Game step 2

**Iterate towards our Target Condition**

4 Coachings, 10 Min each

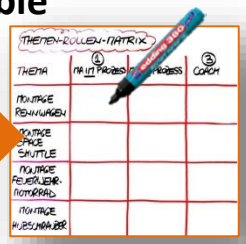
Testing Hypothesis, aprox. 20 Min

# Preparing the Kata-Coaching-Simulation

**1- Divide participants in (maximum) 4 groups, each group at one table**

**2- Complete Theme-Role-Matrix (on Flipchart):**

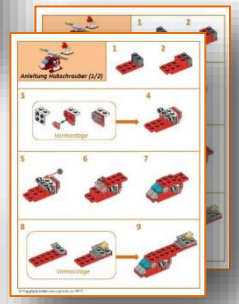
- Who is ① Employee in process?
- Who is ② the process improver?
- Who is ③ the coach of the PI?



**3- Complete name tags**

**4- Employee in process: get familiarized with the assembly of your LEGO product**



**5- Process improver: get familiarized with Excel-Process-Step-Analysis-Tool**

- Read instructions sheet
- Complete step number in step-description-column
- Complete the processes name in the white field top right
- With button Activate (delete everything) activate stopwatch
- Use ENTER to test tool and practice some time stopping


**6- Repeat assembly processes five times, time each repetition with the Excel-Tool:**

- Employee in process says after every single step „one ready!“, „two ready!“ and so on.
- Don‘t forget to save your times on your computer!

**7- Current Condition with PA4-Sheet:** Copy TC from green column to PA4, use a pencil

**8- Complete total target assy time in PA4:** write target at bottom of TC column

**9- Correct step times in Excel-Tool to add up to your target time, copy to PA4 sheet**

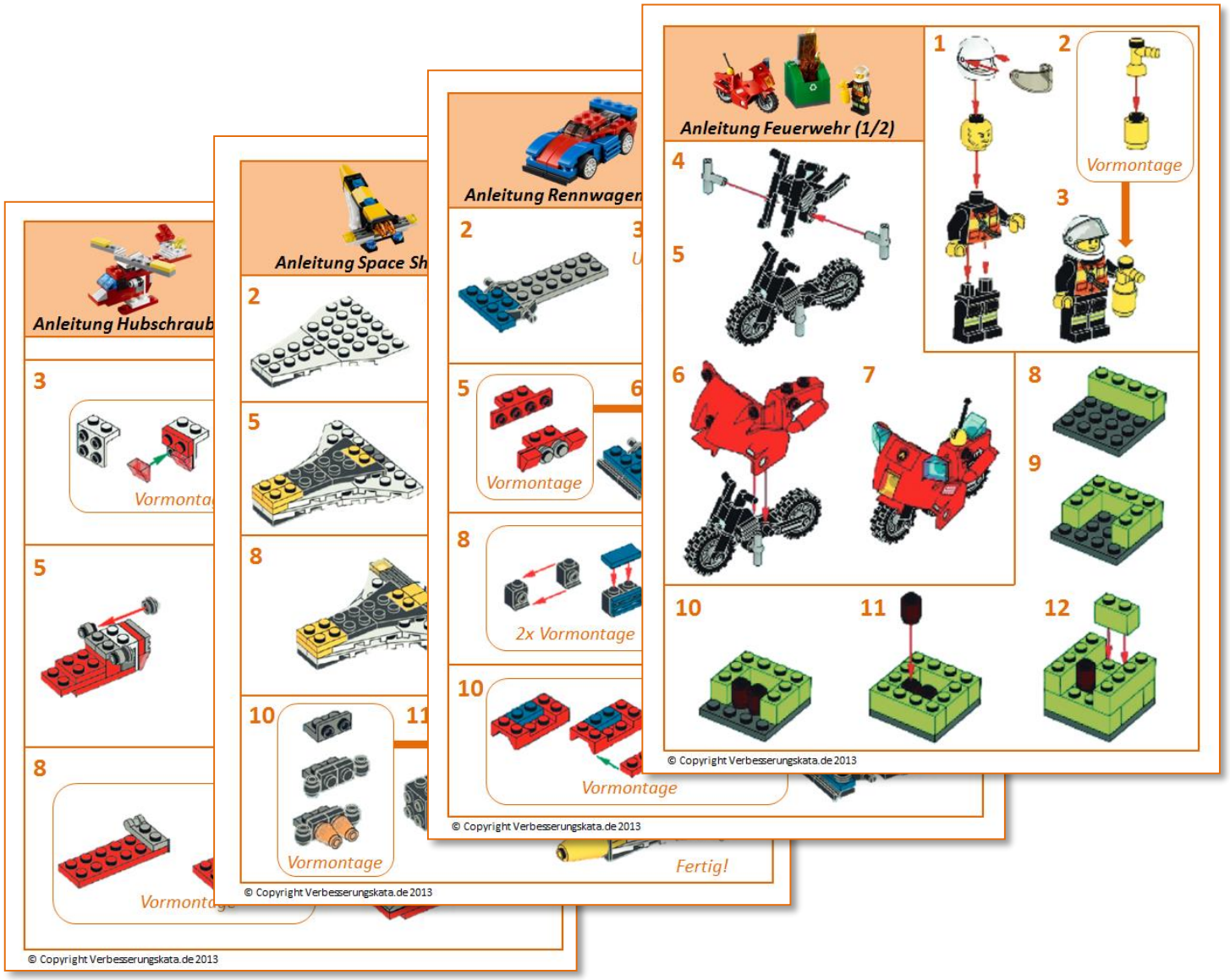
**10- Prepare coaching boards (one pinboard per group):**

- pin PA4 left, note target on Form 5 and draw 5 columns with the 5 times you stopped

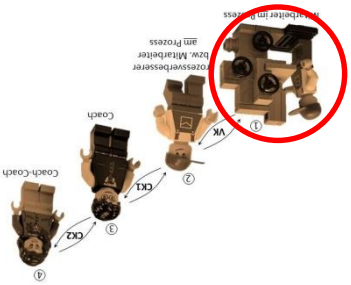
*Take the coaching-sheet with you to your coaching board...*

*...the coaching exercises can begin now!*

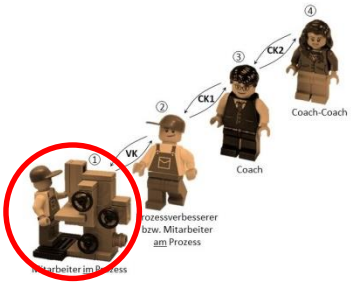
# 4 assembly instructions for 4 products



Assembly
Racecar

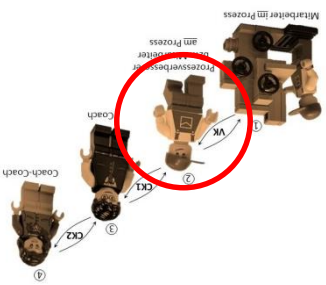



# ① Employee in process

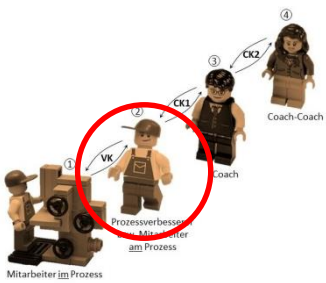



Assembly
Racecar

Assembly
Racecar



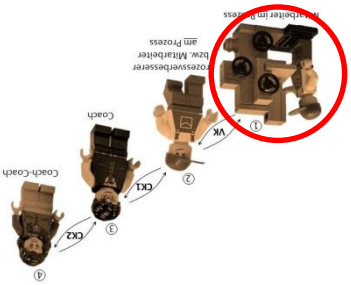

# ② Process improver



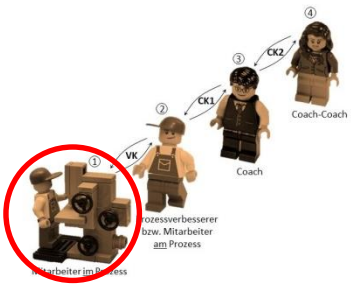

Assembly
Racecar

1. Cut out name tags
2. Complete your name using a black marker
3. Fold name tag and place it in front of you

Assembly
Space Shuttle

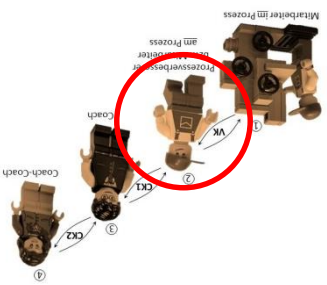



# ① Employee in process

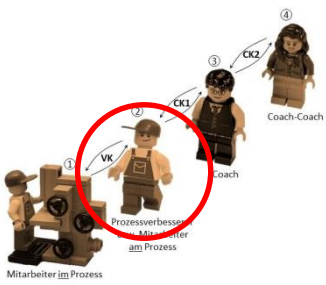



Assembly
Space Shuttle

Assembly
Space Shuttle



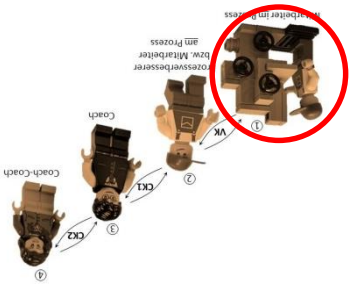

# ② Process improver



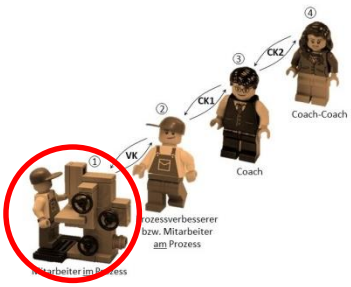

Assembly
Space Shuttle

1. Cut out name tags
2. Complete your name using a black marker
3. Fold name tag and place it in front of you

Assembly
Helicopter

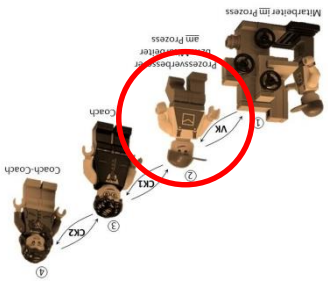



# 1 Employee in process

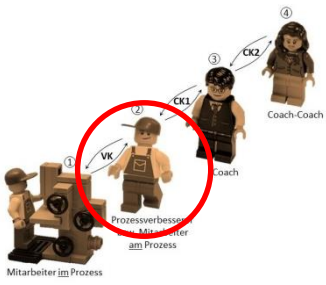



Assembly
Helicopter

Assembly
Helicopter



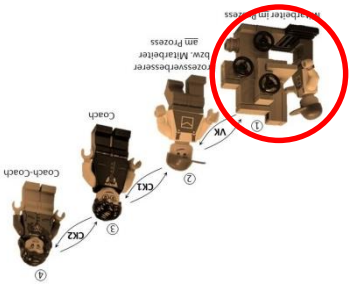

# 2 Process improver



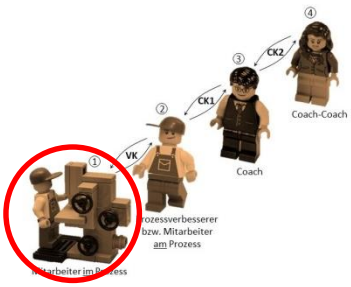

Assembly
Helicopter

1. Cut out name tags
2. Complete your name using a black marker
3. Fold name tag and place it in front of you

Assembly
Motorcycle

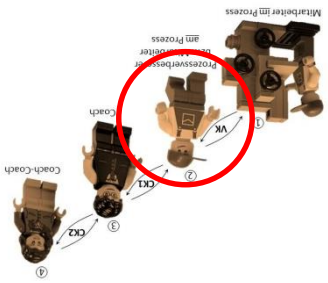



# ① Employee in process

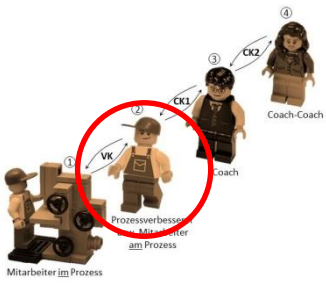



Assembly
Motorcycle

Assembly
Motorcycle




# ② Process improver




Assembly
Motorcycle

1. Cut out name tags
2. Complete your name using a black marker
3. Fold name tag and place it in front of you

# Instructions Prozess Steps Analysis Tool 4.5

With these three buttons you can optimize the size of the sheet on your computer display.

The stopwatch must be ACTIVE in order to be able to stop your step and cycle times.

The stopwatch must be INACTIVE in order to edit text areas.

Here you can complete the name of your process.

Here you can see it the watch is running and the time ellapsed.

With the AUTO function you can automatically calculate the needed step times necessary to achieve your target time.

Target-times can be corrected by hand to define the target condition to achieve.

Reduce, expand screen | Zoom +1% | Zoom -1%

**Process-Step-Analysis-Tool**

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Activate stopwatch (delete all) | Activate stopwatch (no delete) | Deactivate stopwatch (no delete)

**Process:** *Gear assembly* 00:43,9

*Status: Stopwatch is ACTIVE! Text sections CAN NOT be edited now.* *Date of time recording:* *11.7.13 13:25*

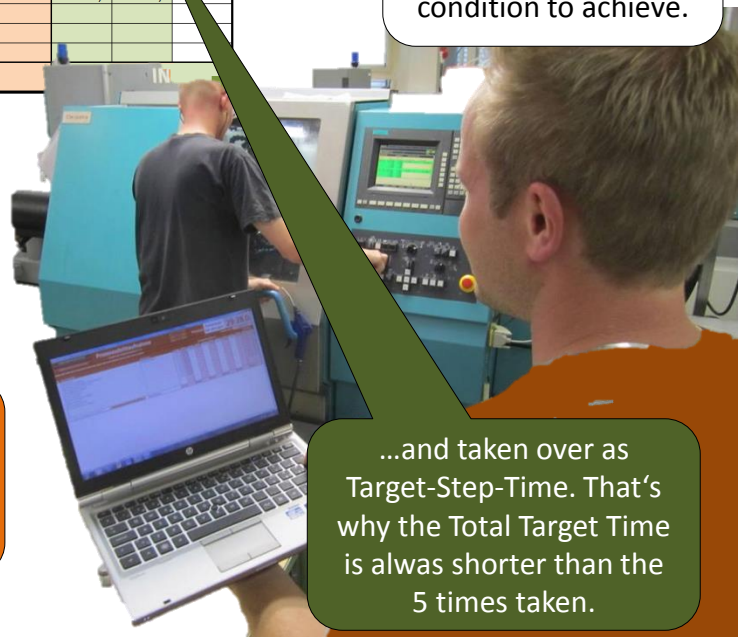
| Nr | Process step | Adjust sheet length to 3 free rows | to 150 rows | Current condition (max. 5 time-takes) | | | | | | | | | | Target cond | | AUTO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Cumulated | Step | Cumulated | Step | Cumulated | Step | Cumulated | Step | Cumulated | Step | Cumulated | Step | Correction |
| 0 | Take bolt | | | 00:00,0 | 00:00,0 | 00:00,0 | 00:00,0 | 00:00,0 | 00:00,0 | 00:00,0 | 00:00,0 | 00:00,0 | 00:00,0 | 00:00,0 | 00:00,0 | 00:00,0 |
| 1 | Place bolt in hole | | | 00:05,5 | 00:05,5 | 00:04,5 | 00:04,5 | 00:00,9 | 00:00,9 | | | | | 00:00,9 | 00:00,9 | |
| 2 | Assemble lid | | | 00:08,6 | 00:03,1 | 00:09,0 | 00:04,5 | 00:05,3 | 00:04,5 | | | | | 00:03,9 | 00:03,1 | |
| 3 | Screw tight | | | 00:13,3 | 00:04,7 | 00:13,6 | 00:04,5 | 00:12,1 | 00:06,8 | | | | | 00:08,5 | 00:04,5 | |
| 4 | Place second bolt | | | 00:16,7 | 00:03,4 | 00:18,4 | 00:04,9 | 00:15,6 | 00:03,4 | | | | | 00:11,8 | 00:03,4 | |
| 5 | Screw tight | | | 00:20,5 | 00:03,8 | 00:23,3 | 00:04,9 | 00:17,6 | 00:02,0 | | | | | 00:13,9 | 00:02,0 | |
| 6 | Fold box | | | 00:23,8 | 00:03,4 | 00:27,6 | 00:04,3 | 00:21,8 | 00:04,2 | | | | | 00:17,2 | 00:03,4 | |
| 7 | Place gear in box | | | 00:26,9 | 00:03,1 | 00:30,8 | 00:03,2 | 00:24,6 | 00:02,7 | | | | | 00:20,0 | 00:02,7 | |
| 8 | Stick ticket on box | | | 00:28,2 | 00:01,3 | 00:34,0 | 00:03,2 | 00:27,7 | 00:03,2 | | | | | 00:21,3 | 00:01,3 | |
| 9 | Place box on palette | | | 00:29,8 | 00:01,6 | 00:34,6 | 00:00,6 | 00:30,4 | 00:02,6 | | | | | 00:21,9 | 00:00,6 | |
| 10 | Return to bench | | | 00:31,5 | 00:01,7 | 00:37,7 | 00:03,2 | 00:34,0 | 00:03,6 | | | | | 00:23,6 | 00:01,7 | |
| 11 | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | | | |
| 11 | *Process steps defined (minimum 2, maximum 150)* | | **Total times:** | 00:31,5 | | 00:37,7 | | 00:34,0 | | 00:00,0 | | 00:00,0 | | | | |

Processes can be broken down to as many as 150 single steps.

The length of the sheet can be adjusted anytime just by clicking these buttons.

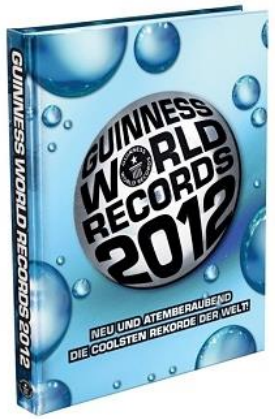
The 5 time-takings consist of cumulated, step and total times.

The shortest step time is marked in orange…



…and taken over as Target-Step-Time. That's why the Total Target Time is alwas shorter than the 5 times taken.

# Current Time-Records for LEGO-Assemblies




Assembly Racecar

1. 27.06.2013 1:57 Min
2. 24.07.2013 3:33 Min
3. 15.03.2013 4:02 Min

---

Assembly Motorcycle

1. 27.06.2013 1:14 Min
2. 23.04.2013 1:37 Min
3. 15.03.2013 2:03 Min

---

Assembly Space Shuttle

1. 27.06.2013 1:29 Min
2. 23.04.2013 1:35 Min
3. 24.07.2013 2:37 Min

---

Assembly Helicopter

1. 15.03.2013 1:23 Min
2. 27.06.2013 1:27 Min
3. 23.04.2013 1:43 Min

# Coaching-Board

**Process:** Assembly Helicopter

# Coaching-Board

**Process:** Assembly Motorcycle

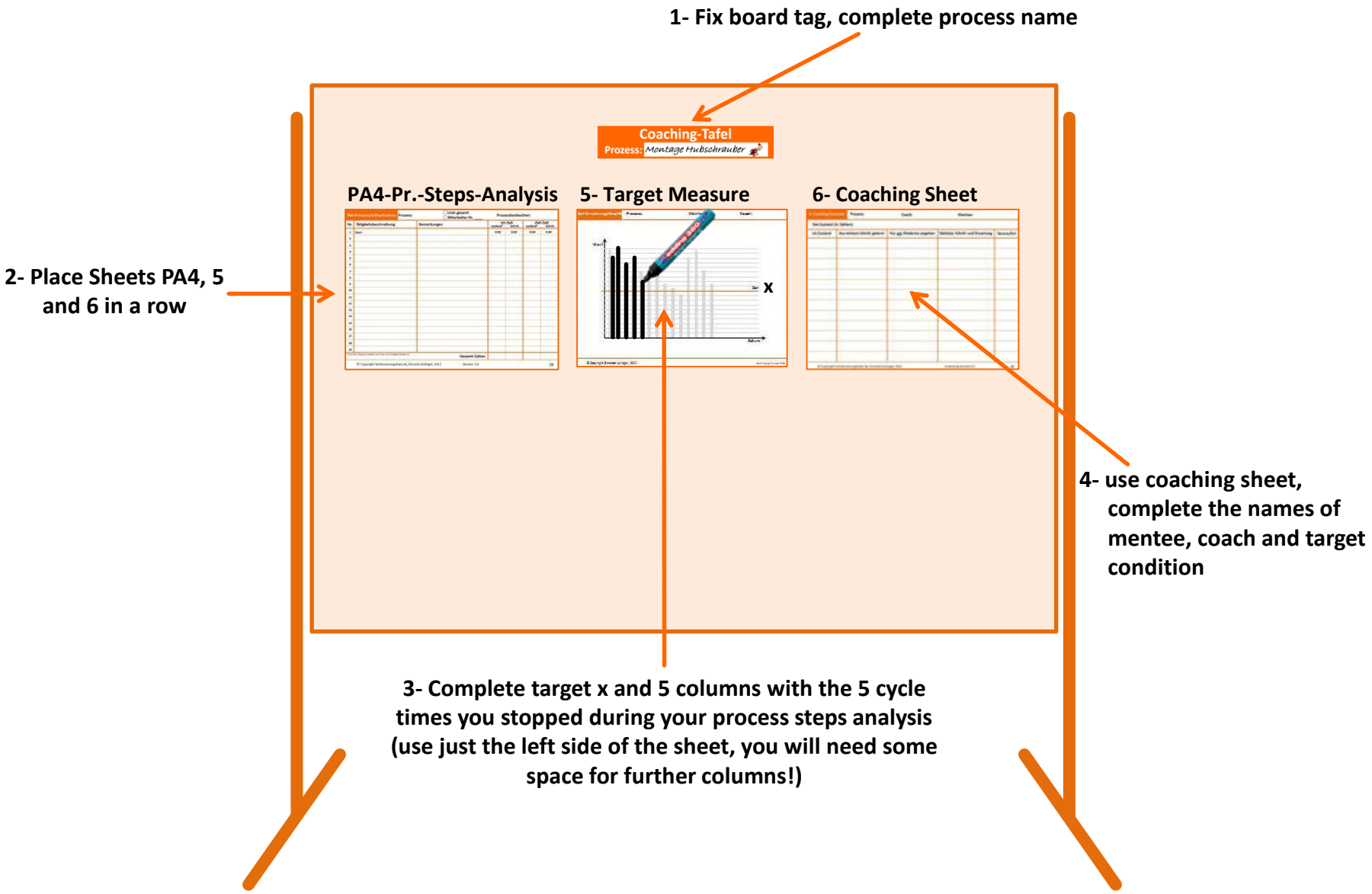
# Coaching-Board

**Process:** Assembly Space Shuttle

# Coaching-Board

**Process:** Assembly Racecar

# Layout of Coaching-Boards for coaching execises



# Checklist Kata-Coaching-Simulation (1 of 3)

- ☐ 6 big tables placed separately in a big training room (see layout)
- ☐ 4 pinboards placed close to each of the 4 group tables (see layout)
  (the 5th and 6th table are needed by the trainer)
- ☐ 1 beamer
- ☐ 4 laptops with 4 installed Excel-Proces-Steps-Analysis-Tool
  (download from [www.Verbesserungskata.de/katacourse](www.Verbesserungskata.de/katacourse))
- ☐ 4 extension cables for the computers at each of the 4 group tables
- ☐ 2 flipcharts with enough unused paper on it
- ☐ 10 black Markers with chisel tip (e.G. Edding 383 or 500)
- ☐ 10 red Markers with chisel tip (e.G. Edding 383 or 500)
- ☐ 20 pencils
- ☐ 4 rubbers
- ☐ 4 adhesive tapes
- ☐ 4 scissors
- ☐ 4 pencil sharpeners
- ☐ moderators case with different moderation cards
- ☐ forms printed in color (see next page)

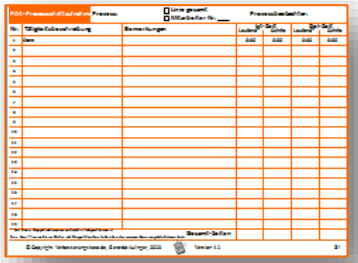



# Checklist Kata-Coaching-Simulation (2 of 3)

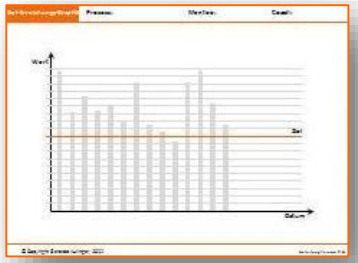
**Please print the following forms in color. They are all included in this PDF-file.**

☐ 2- Coaching instructions, 20 copies

☐ PA4-Process step analysis, 10 copies



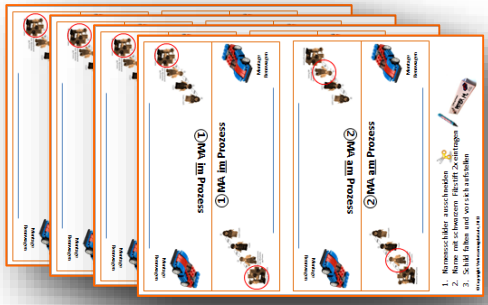
☐ 5- Ziel-Erreichungs-Graphik, 10 copies



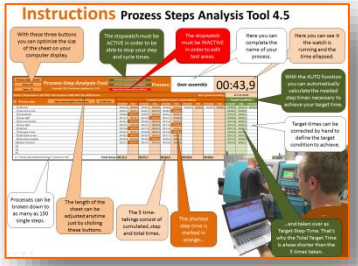
☐ 6- Coaching sheet, 10 copies

☐ Coaching board tags, 1 copy

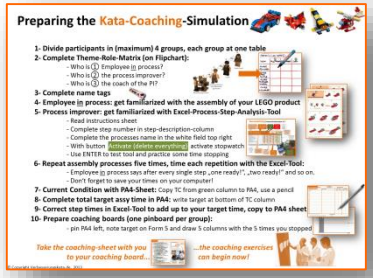

☐ 4 Namensschilder, 1 copy per „product"




☐ Excel tool instructions, 4 copies




☐ Game instructions, 8 copies




**Attention!**
The ***assembly instructions*** and the **LEGOs** will be brought by the moderator (Mr. Aulinger)! You do NOT need to print the assembly instructions nor buy any LEGOs!

# Checklist Kata-Coaching-Simulation (3 of 3)

## Room layout for LEGO simulation with 4 groups

If possible please arrange everything on the evening **before** the workshop!

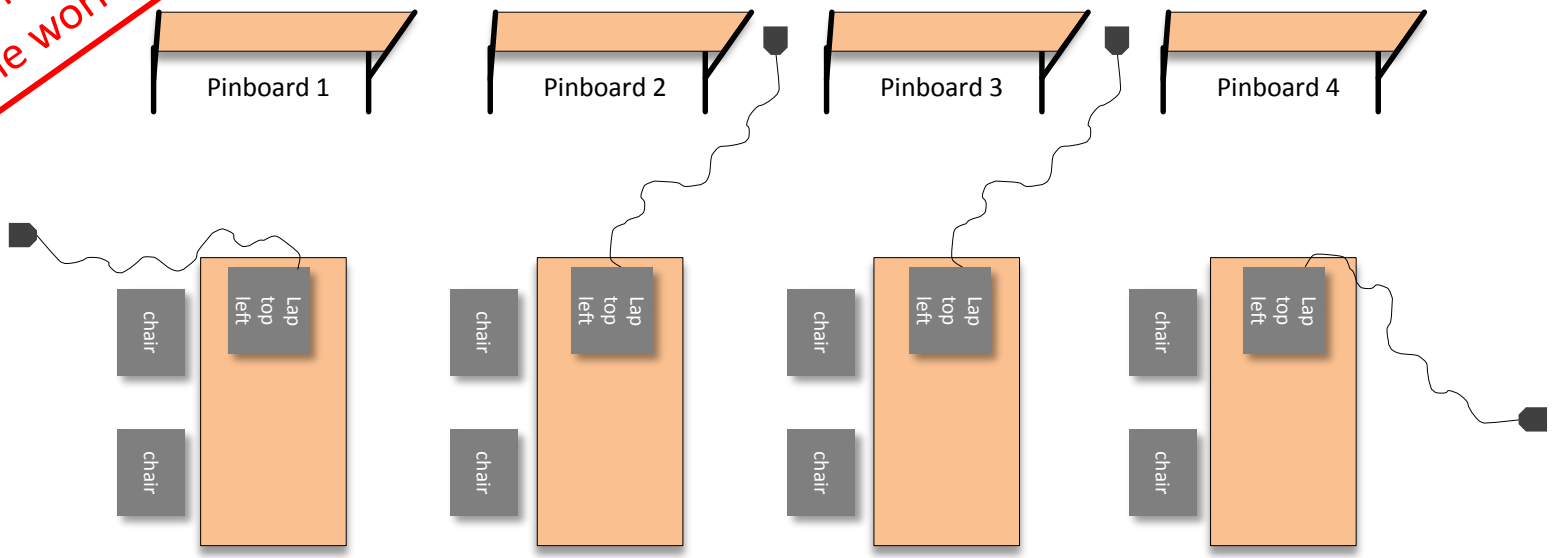



Table 5 for moderator (with power supply for laptop and beamer)

Table 6 for coffee, drinks and snacks

# Additional Checklist for 3 day Kata Course in Plant

- ☐ Every 3 days we will need a bright, well-ventilated meeting room. This meeting room should be as close as possible to the four Prcesses we will analyse and work on on the 2nd and 3rd day. Usually we will be at the processes between 10:00 to 15:00.
- ☐ Please fill out the table  on the next page with the necessary process data: if possible, the processes should be manual, with 2 to 3 operators and have a cycle time between 30 seconds and 2 minutes. Please inform your employees and the works council in advanced about these planned activities. Start time on all 3 days will be 8:30, end on all 3 days: 18:00. To finalize the necessary preparation Mr. Aulinger will come at 7:00 on the first day. Please have somebody available for support.
- ☐ All necessary documents can be downloaded from verbesserungskata.de/katacourse. Please print one set of documents per participant and have them sorted into one folder per participant.

- ☐ 60 rectangular, white moderation cards
- ☐ 1 clipboard per participant

- ☐ Catering (drinks, pretzels or similar) during morning and afternoon breaks
- ☐ 1 stopwatch or smartphone per participant
- ☐ For the coaching exercises on the shopfloor, a set of headsets (one headphone per participant) with one hand-held microphone required (necessary only on the 3rd course day)

- ☐ 1 pair of safety shoes  per participant (if necessary)
- ☐ Wi-Fi access  for Mr. Aulinger's laptop (if possible, have the username and password printed out)

# Additional Checklist for 3 day Kata Course in Plant

**A selection of processes to practice the Kata on your Shopfloor and some necessary date for the Process Analysis Excersice done on day 2**

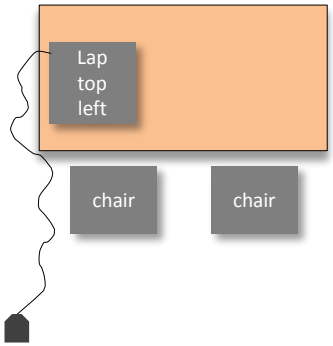
**Attention! This Table needs to be filled out *before* the Course begins!**

| | Process name | Demand per month *(Including all types)* | Working time/day *(minutes/day)* | Breaks per day *(minutes/day)* | Number of operators *(per shift and day)* |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |

Best learning results are achieved if the selected processes is manual with a cycle time between 30 secs and 2 minutes.

# One of 4 group tables incl. chairs, laptop, LEGOs, forms etc.

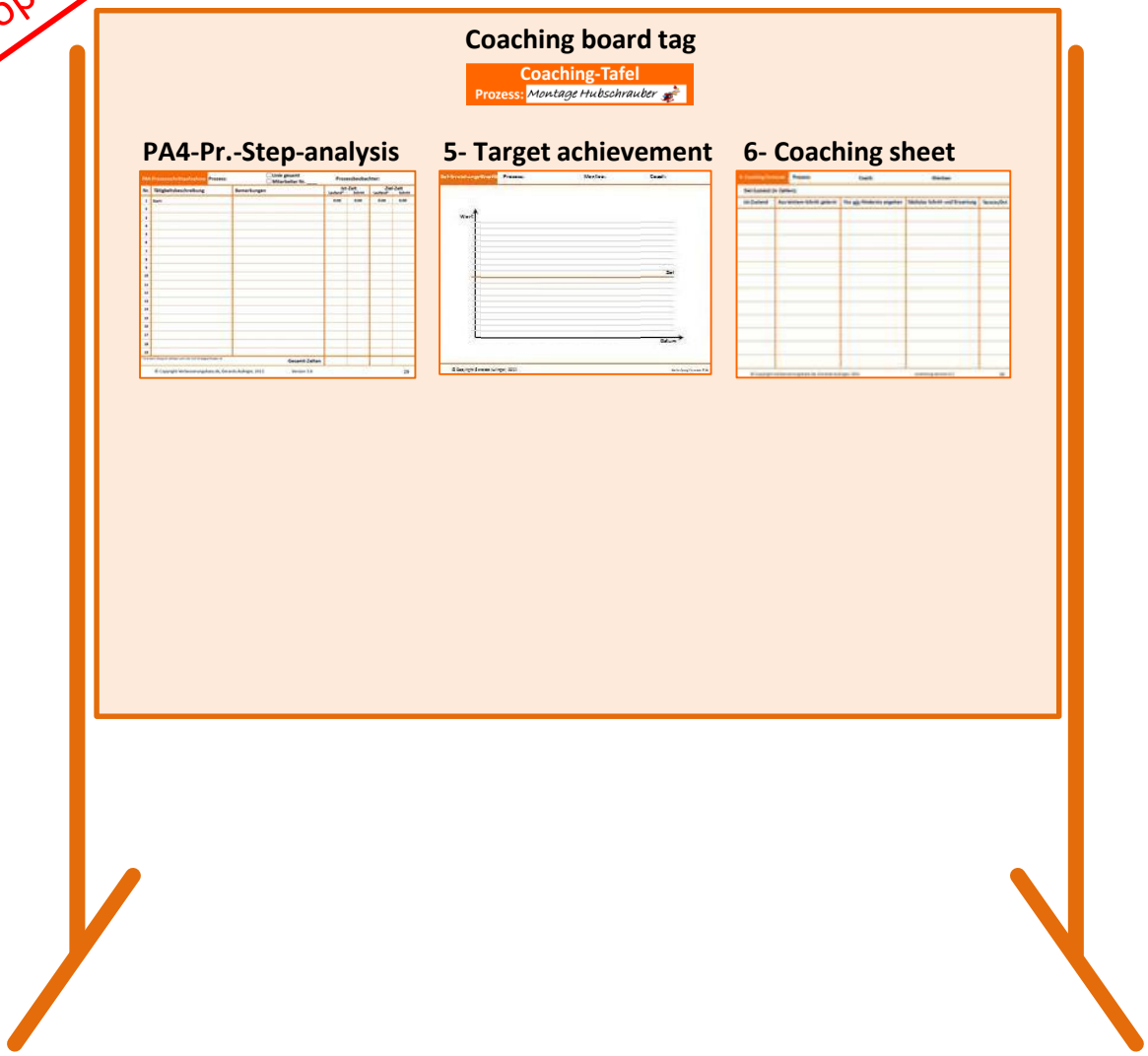
If possible please arrange everything on the evening **before** the workshop!

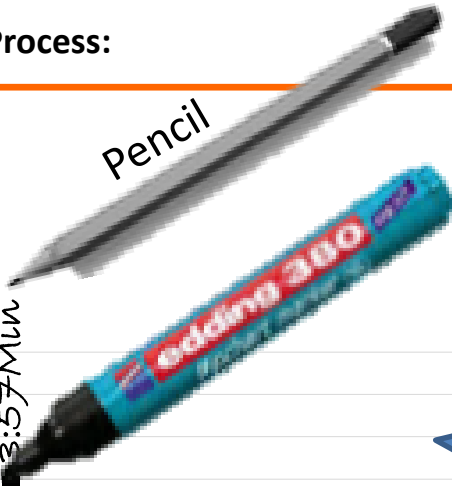

**Attention!** The ***assembly instructions*** and the **LEGOs** will be brought by the moderator (Mr. Aulinger)! You do NOT need to print the assembly instructions!

# One of 4 coaching pinboards including board tag, sheets PA4, 5, 6

If possible please arrange everything on the evening **before** the workshop!



**Process:** **Mentee:** **Coach:**




**Attention!**
*Use different scaling above and below the orange target line!*

Cycle time
*Process indicator*

4:42 Min
3:41 Min
4:17 Min
3:33Min
3:57Min

**Target =** 1:30 Min

**0**

**Date**

COACHING KATA

# The 5 Questions*

**1 - What is the Target Condition of this process?**
**2 - What is the Current Condition now?**

*Go to the process, Turn Card to Reflect on the Last Step* →

**3a - What Obstacles do you think are preventing you from reaching the Target Condition?**

**3b - Which One Obstacle are you addressing now?**

*Turn Card to Detail the One Obstacle* →

**4 - What is therefore your Next Step and what do you expect to Learn from it?**

*Turn Card to Detail the Next Step* →

**5 - When can we go and see what you have Learned from taking that step?**

* *The 5 Questions on the front side of this Card and Question 2.1 on the rear side must be asked every time and always with the same wording as written here.*

0.1- Hello [Name]! We had agreed on doing a Coaching Cycle now. Is it OK with you?

***Reflect on the Learnings of the Last Step Taken***

**2.1- What did you Plan as your Last Step and what did you learn from it?**
2.2- What did you Expect?
2.3- And what did you learn from it?/from taking that Last Step?
2.4- What actually happened?
2.5- What Value(s) have you measured?
2.6- Is there anything else you learned beyond what you already told me?

*2.9- [Don't forget to praise!] Thank you! Please, let us (return to the board and) write down what we have learned so far, so that we do not forget anything.*

***Be very specific when describing the One Obstacle to tackle next***

*A very detailed understanding of root cause and it's numerical, unwanted effects are crucial in order to describe a meaningful, targeted next step! Please do not jump to solutions in this phase!*

3.1- What exactly is the problem with/why…[mkw]? Can you show me, please?
3.2- Could we simulate the problem/…[mkw] right here?
3.3- What should rightly happen (so that…[mkw] can be avoided)?
3.4- Where can I see what should rightly happen (with…[mkw])?
3.5- What is actually happening (with… [mkw]?
3.6- Why/How can this mistake/this problem happen/be done?
3.7- Why is...[mkw] a problem?
3.8- What exactly is it that you do not know (about…[mkw])?
3.9- Which One Obstacle are you exactly addressing now?

***Be specific when describing the Hypothesis und Experiment***

*Because in our Next Step we should always be testing refutable hypothesis!*

4.1- How exactly will you…[mkw]? Can you show me, please?
4.2- How exactly will you take that Next Step?
4.3- And what do you expect to learn from it?
4.4- How exactly will you measure/test your expected result?
4.5- How exactly will you document your measurement(s)?

*4.9- Thank you! Please, let us (return to the board and) write down what you have said so far, so that we do not forget anything.*

***Always take just One Step at a time***

5.1- What of that next step do you think you could do today/until…[propose time]?

*mkw:= try to use the mentee's key words from the last answer he gave you in your next detailing question. He will appreciate that you are actively listening to him!*



Blatt hier falten!

**PA4-Process-Steps-Analysis** | **Process:** | ☐ Line ☐ Operator Nr. ____ | **Process improver:**

| Nr. | Process step description | Comments | Current-State Running* | Current-State Step | Target-Condition Running* | Target-Condition Step |
|---|---|---|---|---|---|---|
| 1 | Start: | | 0:00 | 0:00 | 0:00 | 0:00 |
| 2 | | | | | | |
| 3 | | | | | | |
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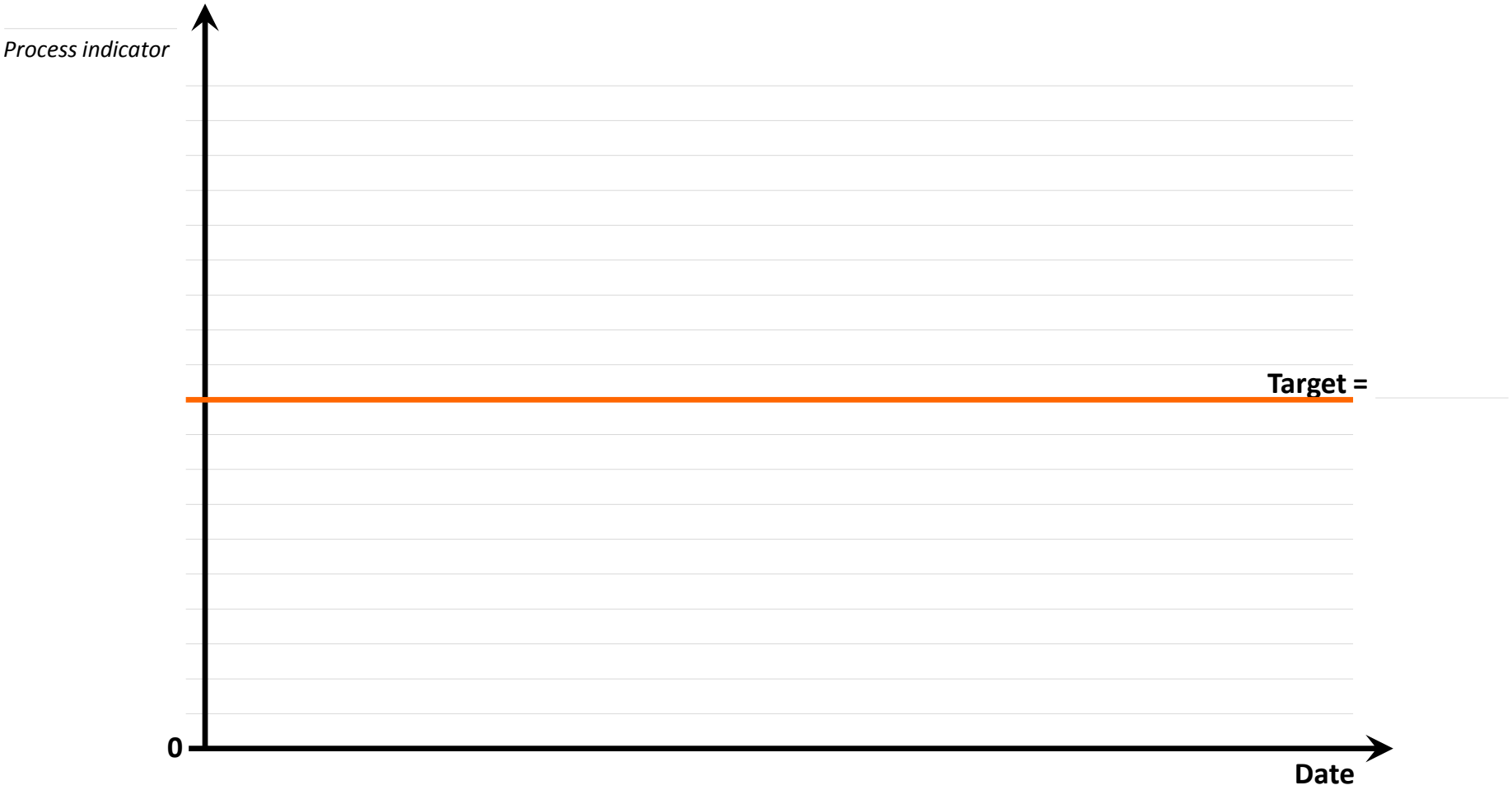
| 15 | | | | | | |
| 16 | | | | | | |
| 17 | | | | | | |
| 18 | | | | | | |
| 19 | | | | | | |
| | | **Total time:** | | | | |

**Process:** **Mentee:** **Coach:**



# 6- Coaching-Sheet

**Process:** **Coach:** **Mentee:**

**[1] Target-Condition (in numbers):**

Output and Process Indicators

| [2] Current condition<br>Output and Process indicator | | [2.3] Learned from last step?<br>Was the last hypothesis refuted or confirmed? | [3.8] Only one obstacle at a time<br>Has root cause been described and quantified? | [4.0] Next stept and what you expect<br>A refutable hypothesis with an expected, numerical effect | | [5.0] Date/Place<br>Synchronized with step? |
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