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Viktor Klein


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Viktor Klein
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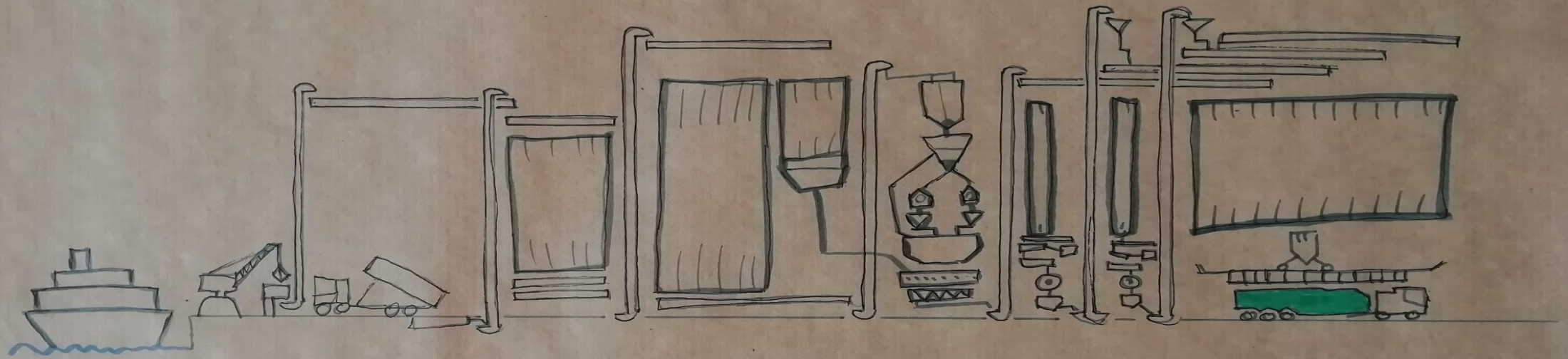
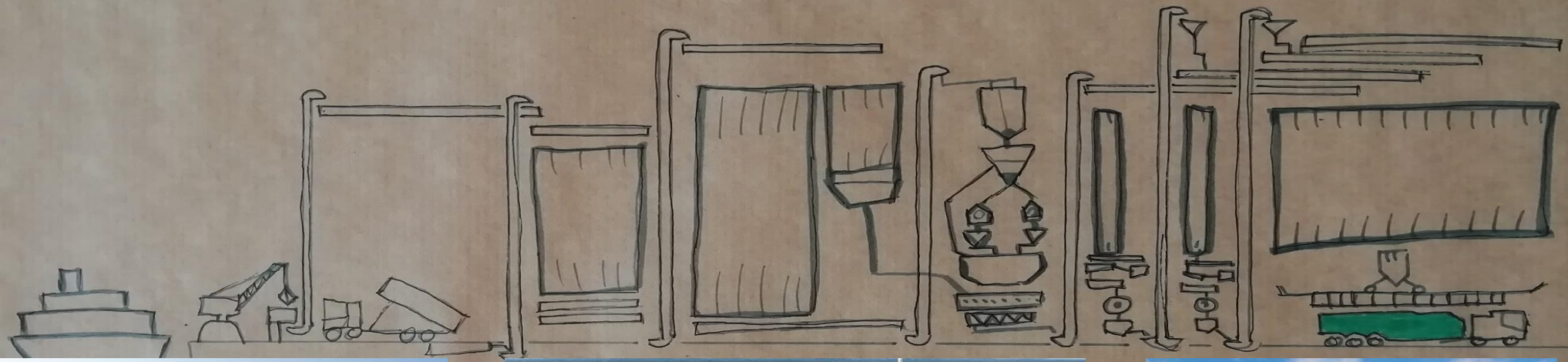
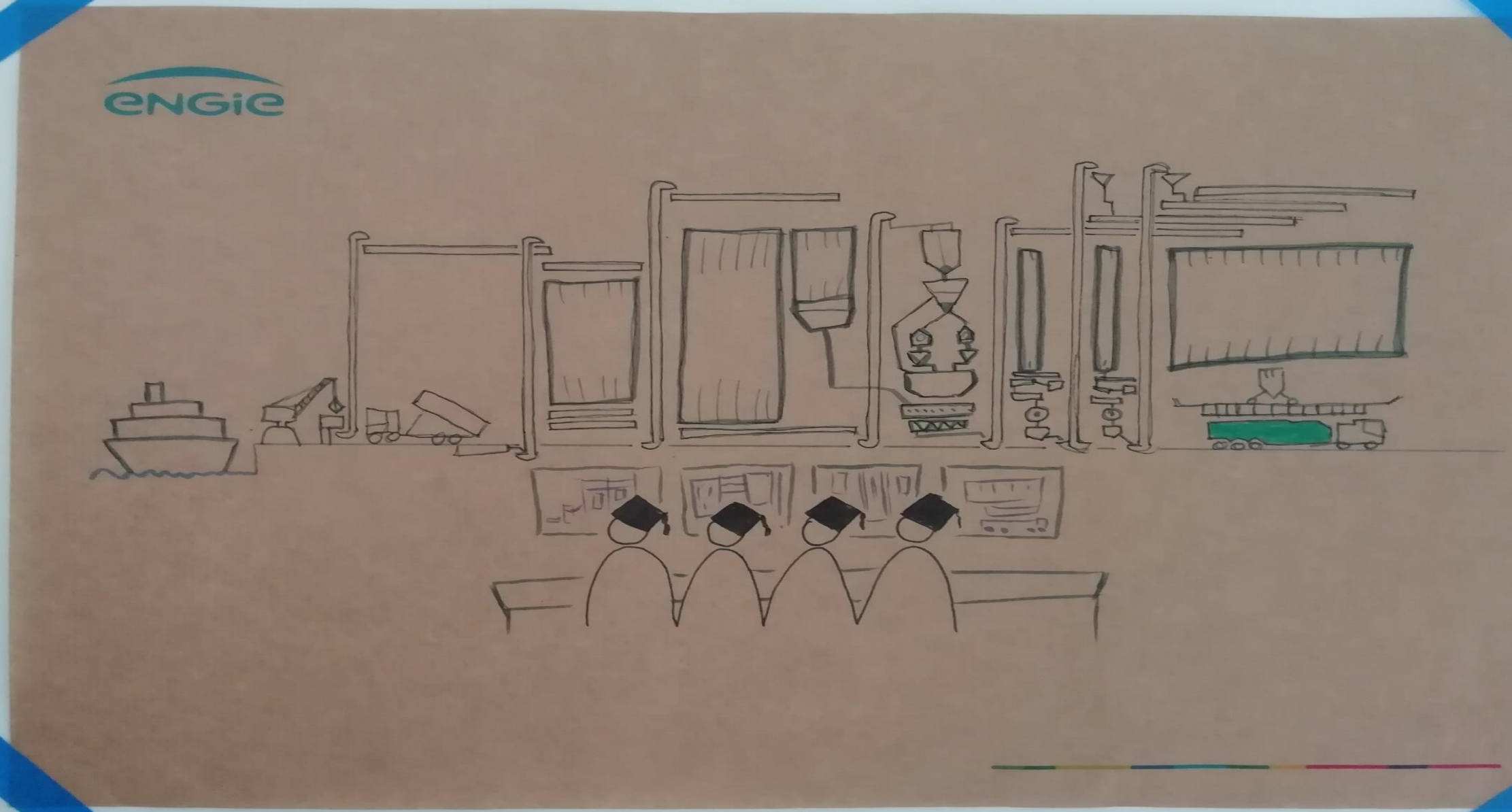





CBD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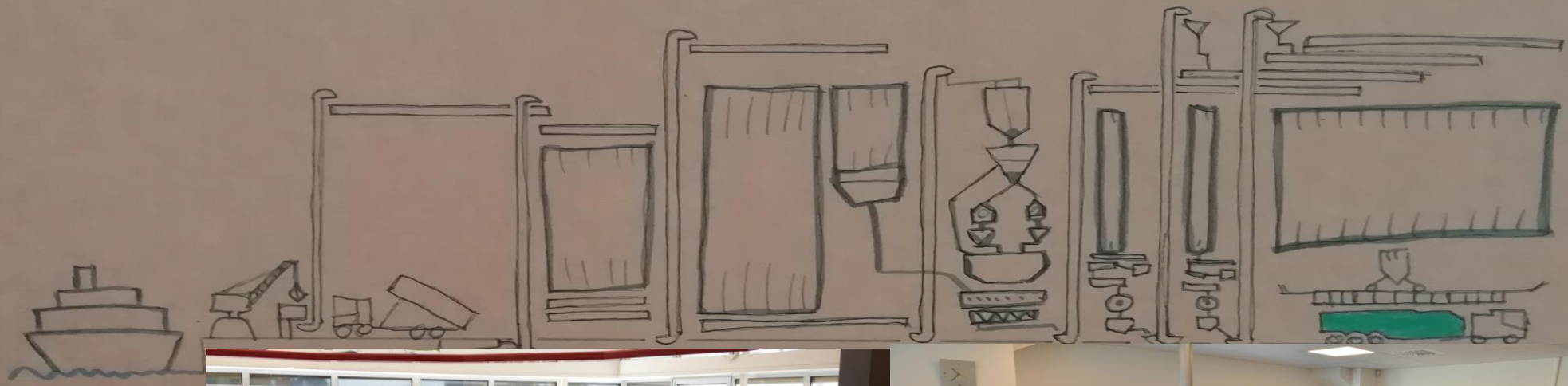

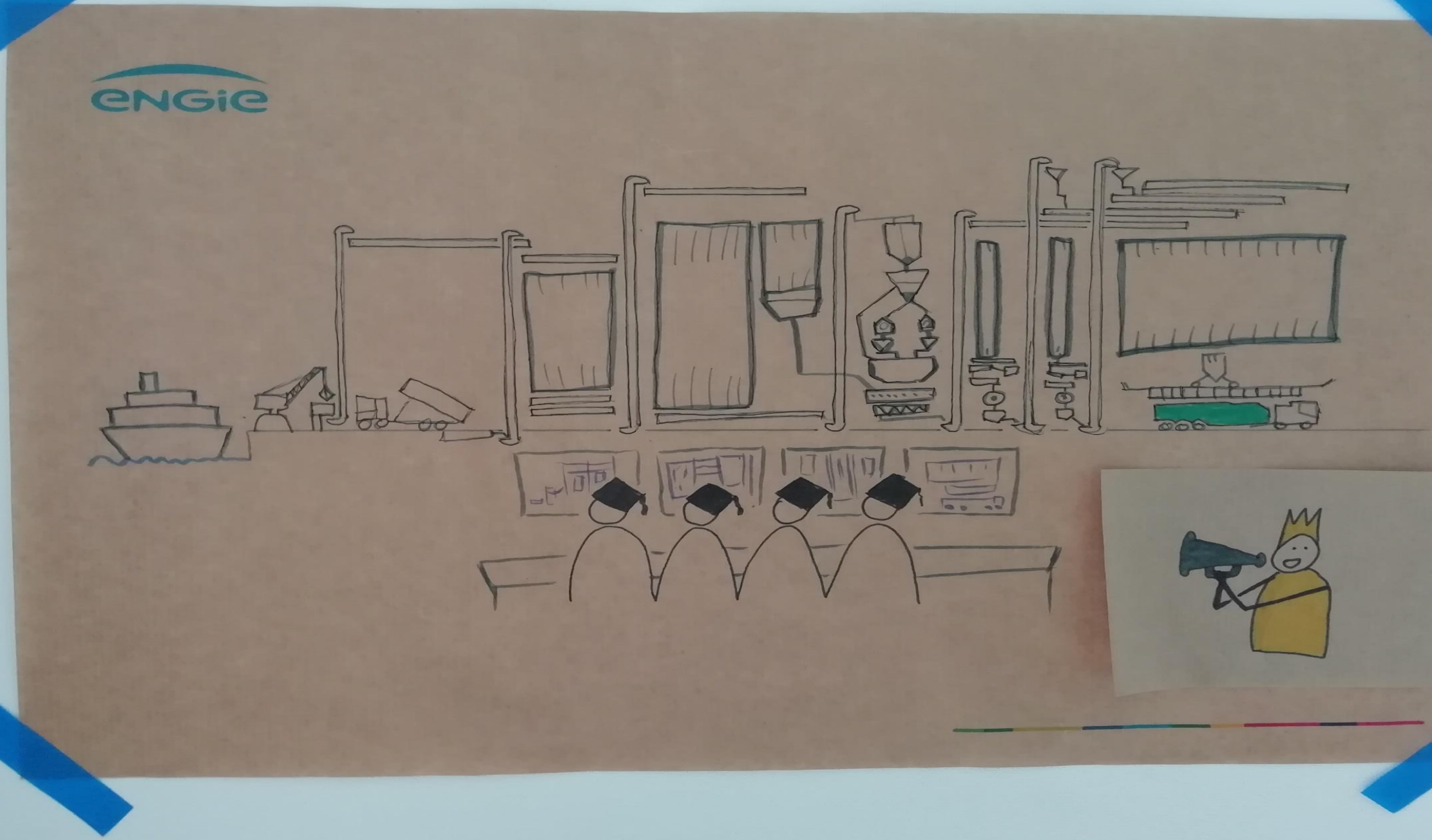
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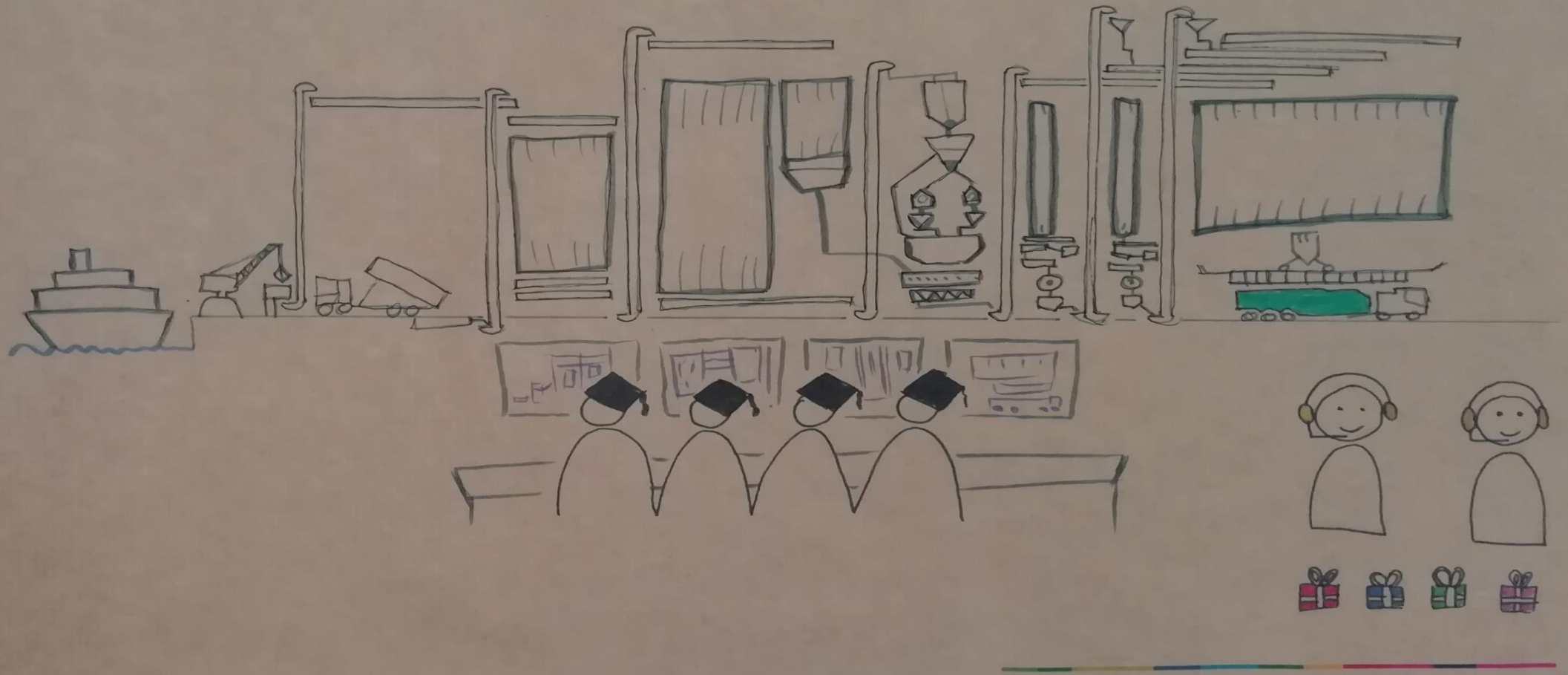
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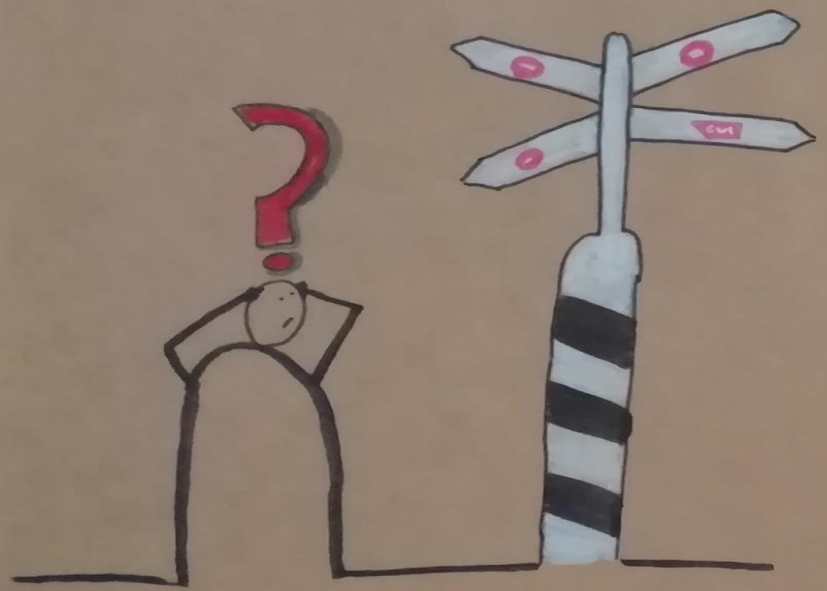

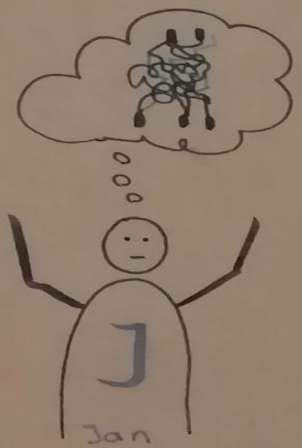

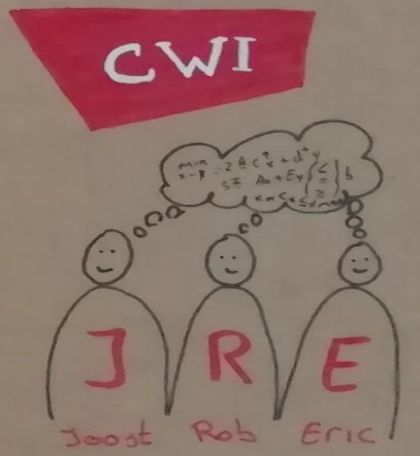


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Jan
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Joost Rob Eric

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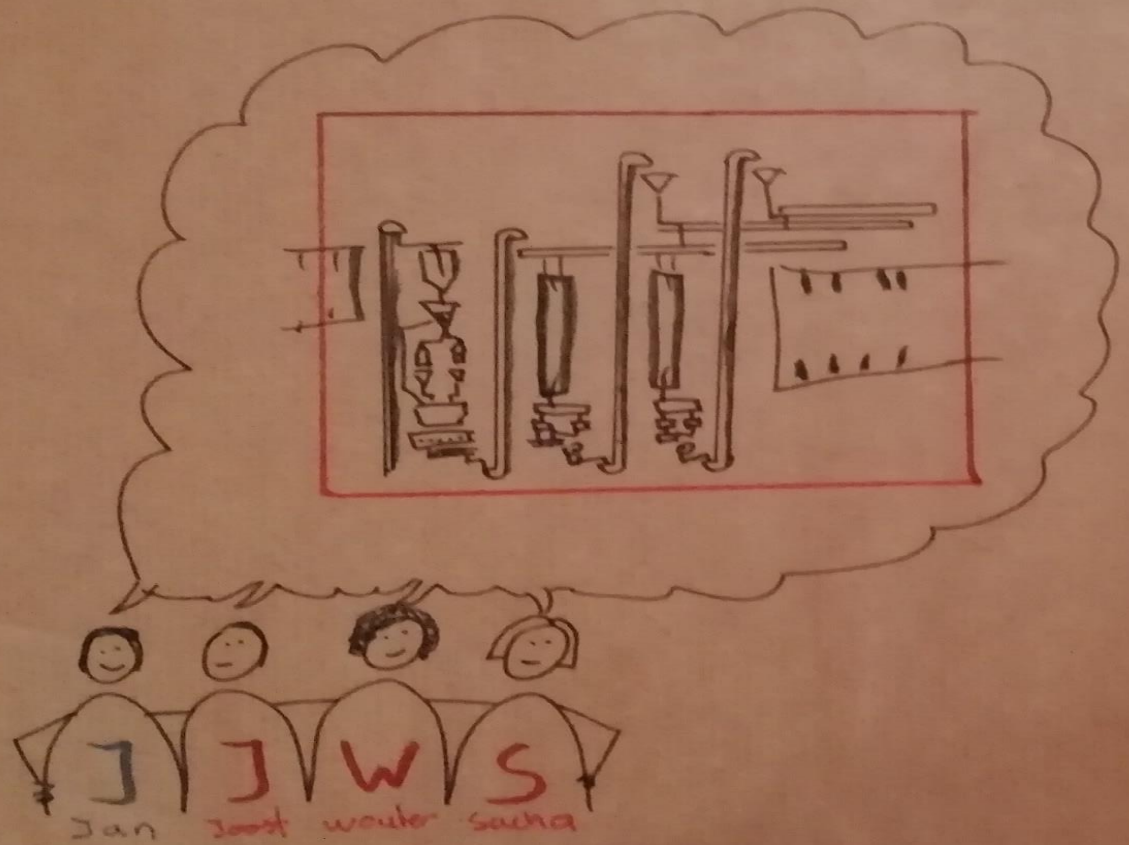

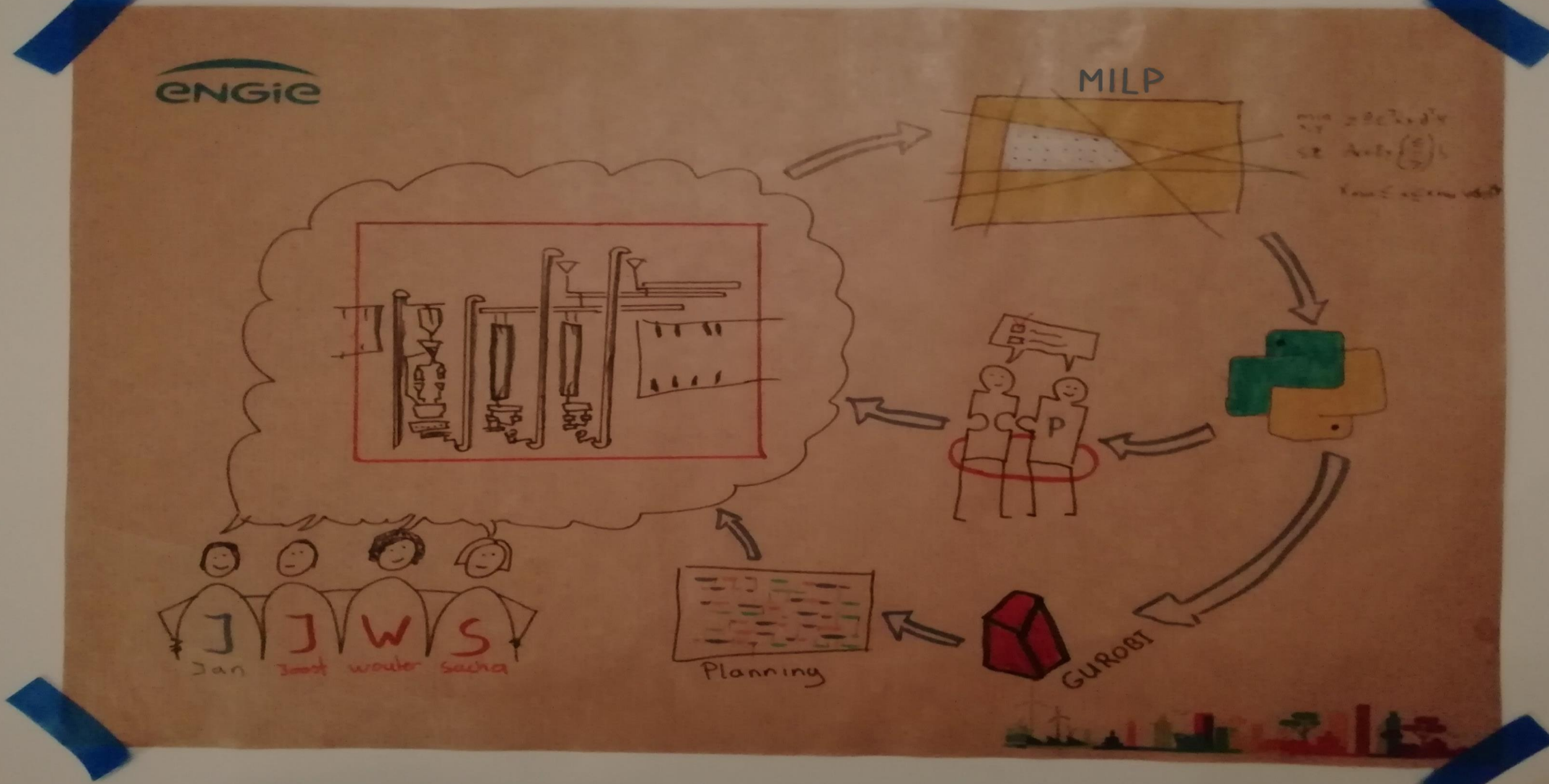
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MILP
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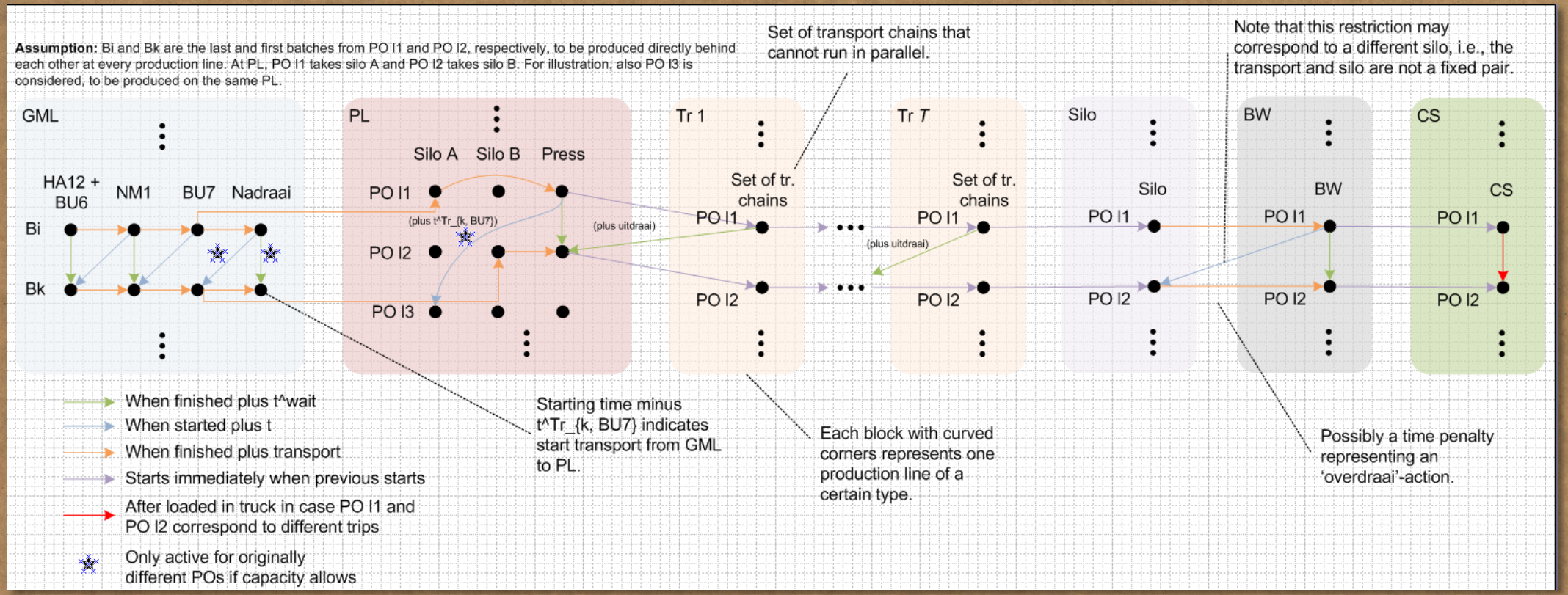
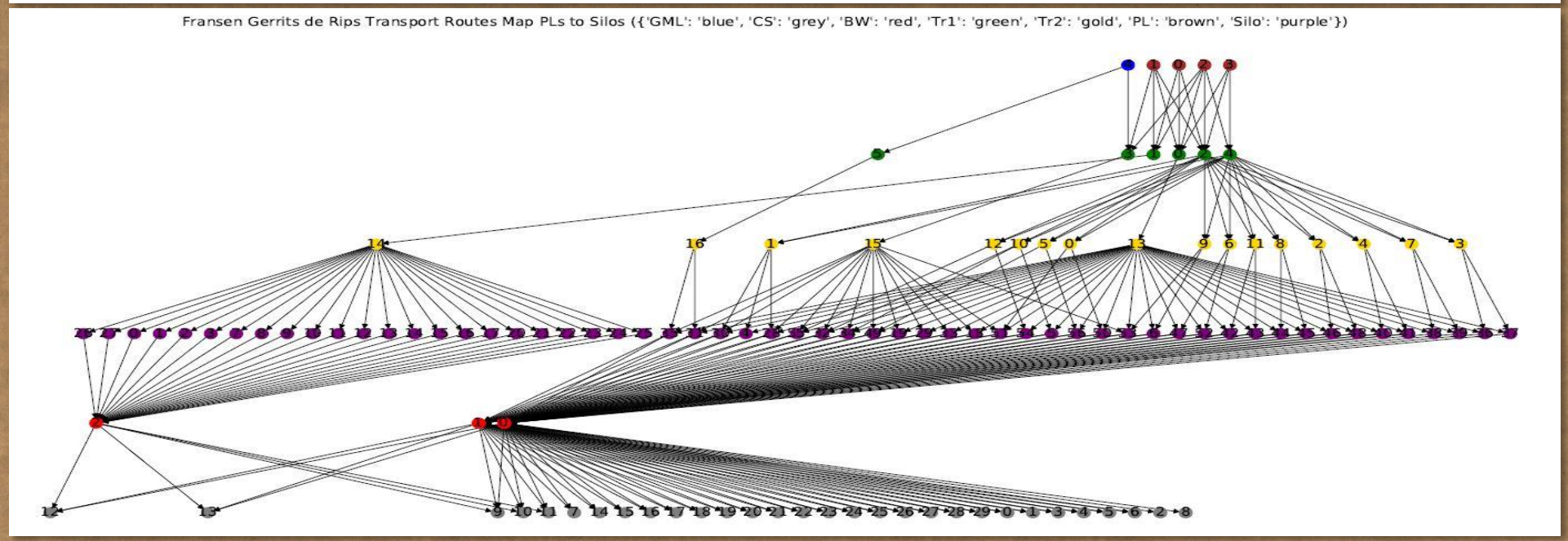
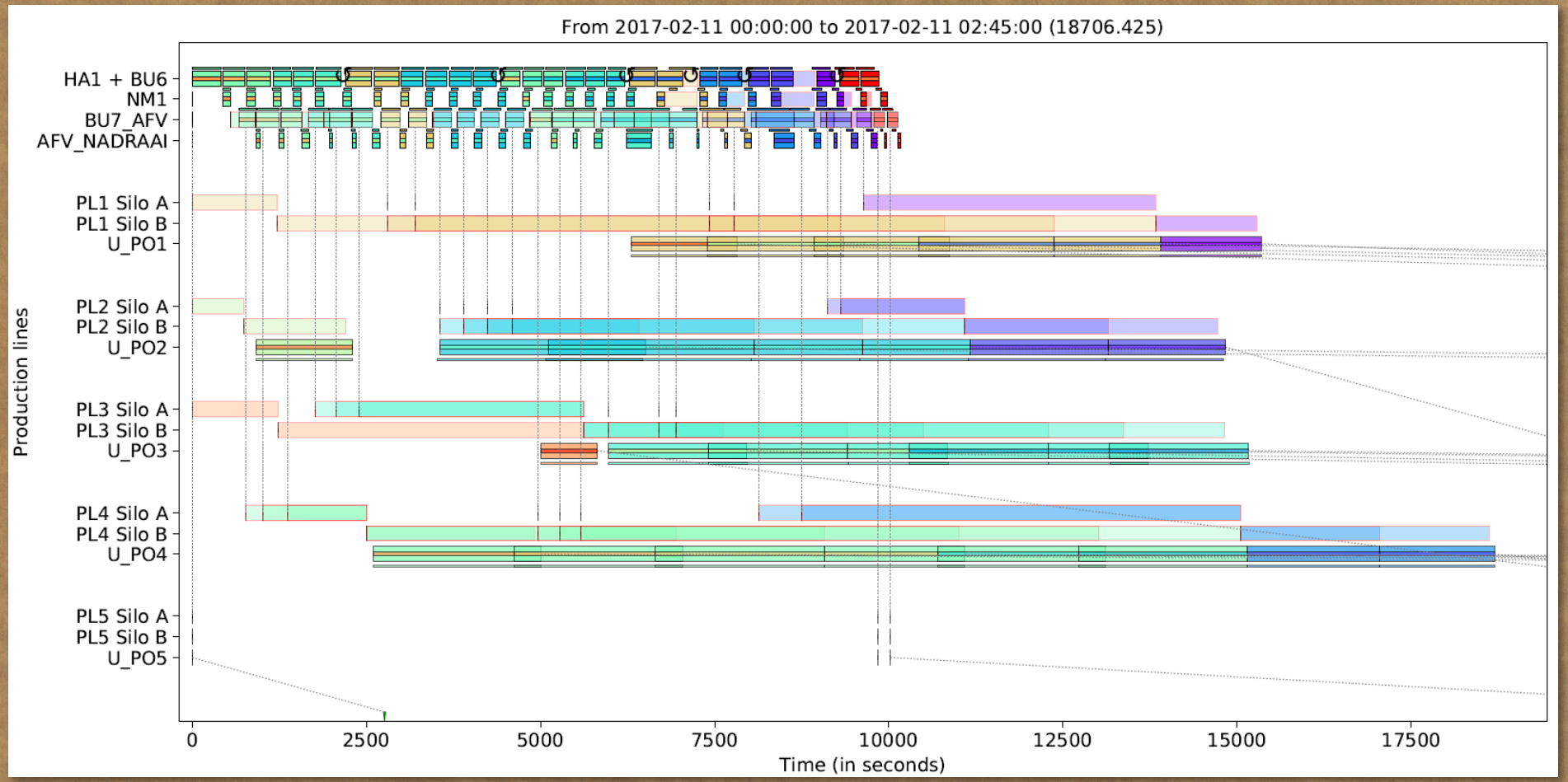
Jan
Jost
Wouter
Sacha
Planning
GUROBI


Assumption: Bi and Bk are the last and first batches from PO I1 and PO I2, respectively, to be produced directly behind each other at every production line. At PL, PO I1 takes silo A and PO I2 takes silo B. For illustration, also PO I3 is considered, to be produced on the same PL.
Set of transport chains that cannot run in parallel.
Note that this restriction may correspond to a different silo, i.e., the transport and silo are not a fixed pair.
GML
HA12 + BU6
NM1
BU7
Nadraai
Bi
Bk
PL
Silo A
Silo B
Press
PO I1
PO I2
PO I3
(plus t^Tr_{k, BU7})
(plus uitdraai)
Tr 1
Tr T
Set of tr. chains
PO I1
PO I2
(plus uitdraai)
Silo
PO I1
PO I2
BW
PO I1
PO I2
CS
PO I1
PO I2
When finished plus t^wait
When started plus t
When finished plus transport
Starts immediately when previous starts
After loaded in truck in case PO I1 and PO I2 correspond to different trips
Only active for originally different POs if capacity allows
Starting time minus t^Tr_{k, BU7} indicates start transport from GML to PL.
Each block with curved corners represents one production line of a certain type.
Possibly a time penalty representing an 'overdraai'-action.

$$\bar{t}_{l_1,l_2,u,j} = (1 - c_{\theta_{l_1},\theta_{l_2}}) \cdot (\bar{t}_{uj} + \bar{t}^{+}_{l_1,l_2,u,j}) + c_{\theta_{l_1},\theta_{l_2}} \cdot \underbrace{\min_{\substack{l=1,\ldots,\kappa: \\ c_{\theta_{l_1},\theta_l} = c_{\theta_l,\theta_{l_2}} = 0, \\ j \in \bar{M}_l}}}_{\text{search for a non-contaminating feasible PO } l \text{ with minimum completion time between POs } l_1 \text{ and } l_2} \left(\bar{t}_{l_1,l,u,j} + \sum_{z=\theta_l}^{\widehat{\theta}_l} \bar{\tau}_{zuj} + \bar{t}_{l,l_2,u,j} \right) .$$

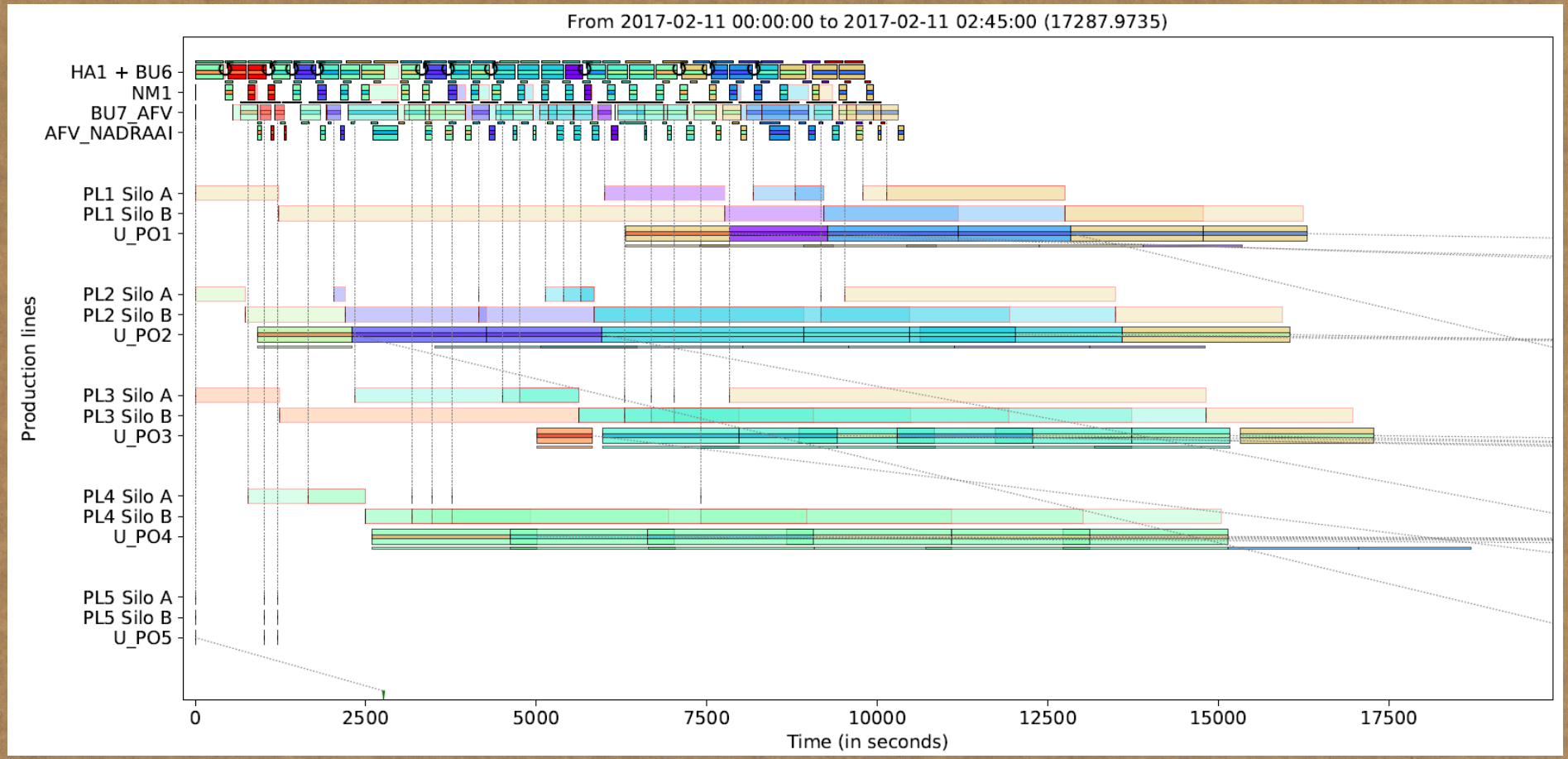


Realized Schedule:



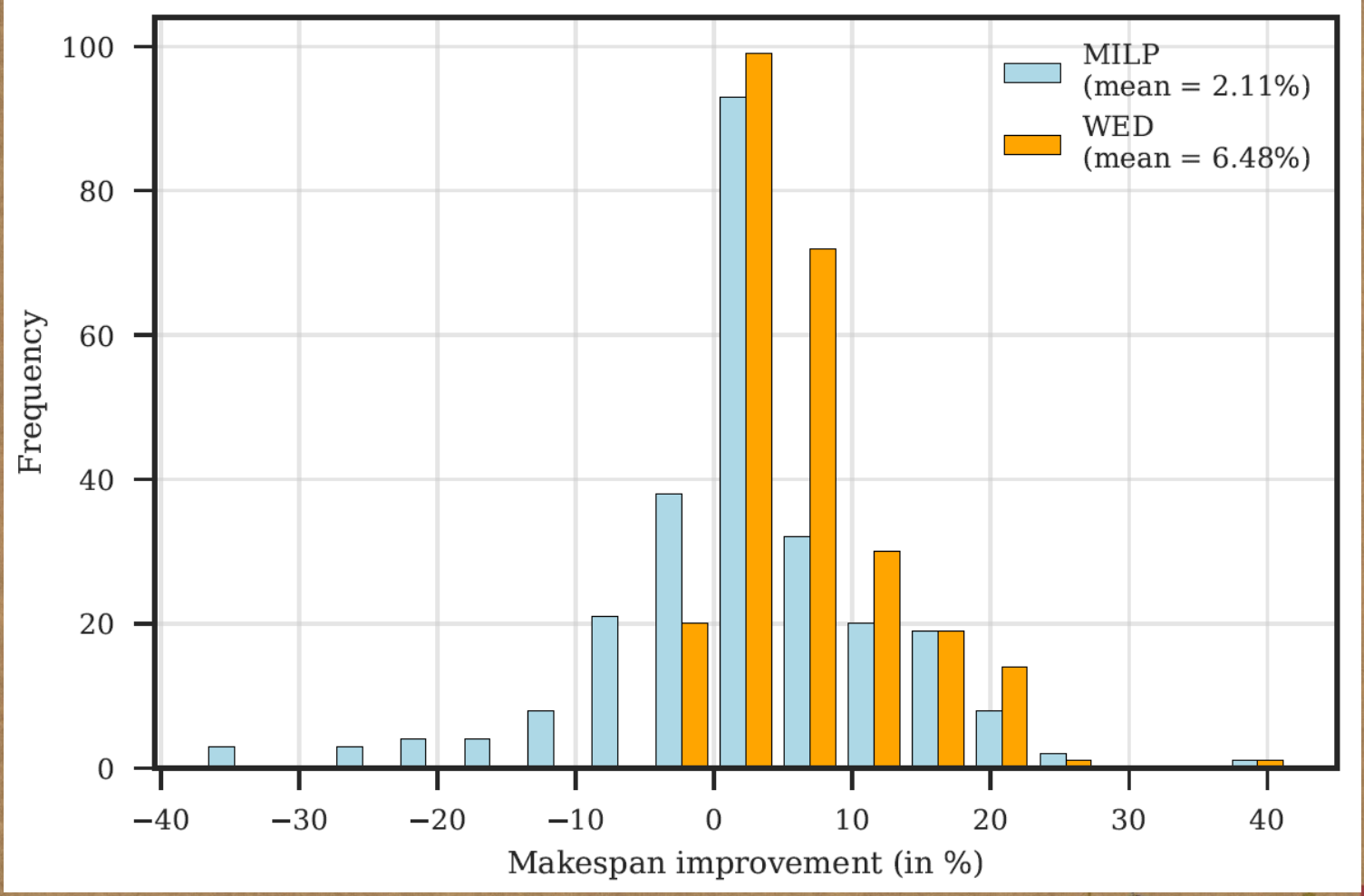
Optimized Schedule:

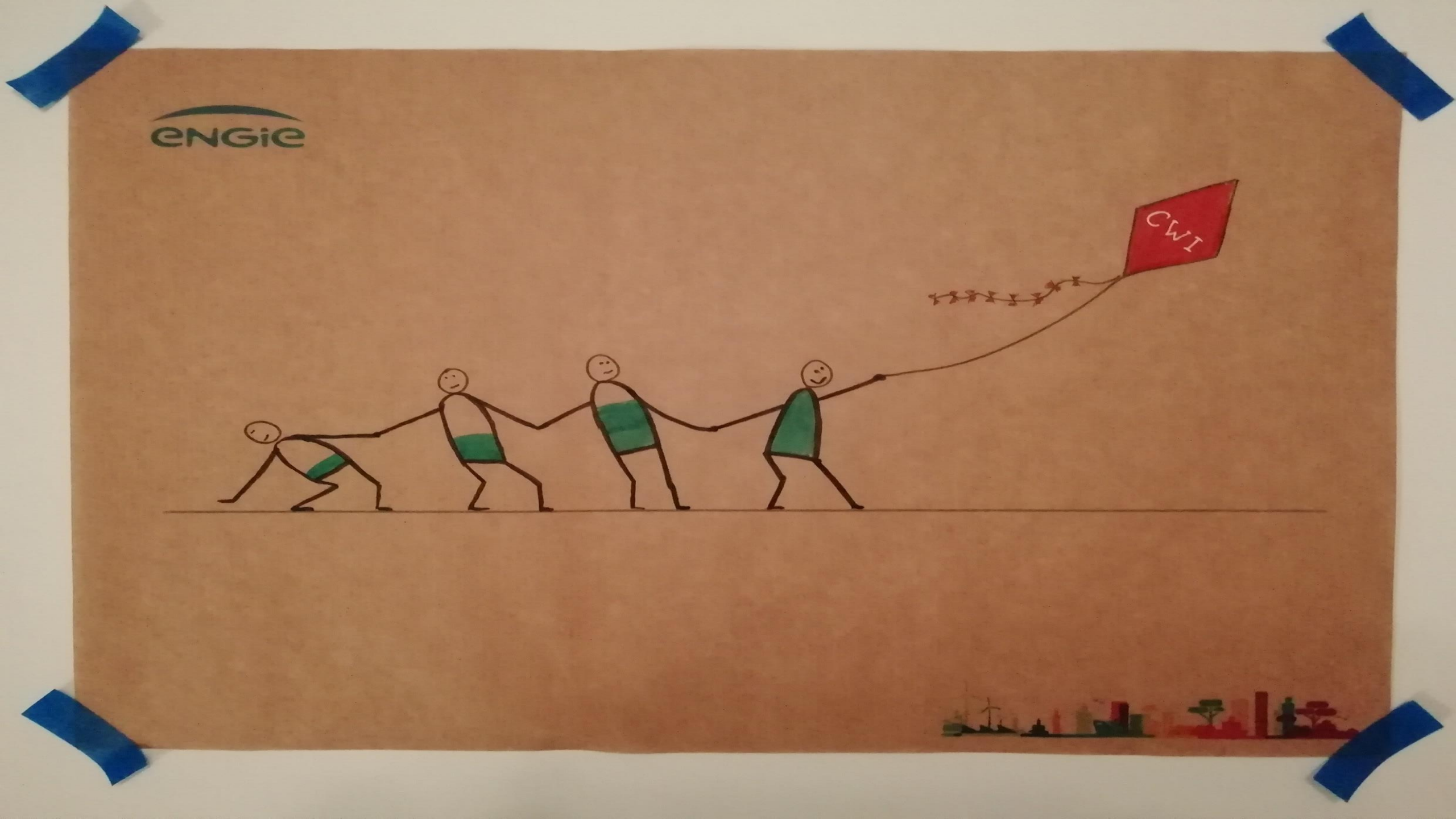
Solved for 180 seconds, 23 minutes earlier finished (7.5%)



Efficiency gain:

Comparison to realized schedules for 257 instances (5h) when solving for 180 seconds

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