SUPPLY CHAIN RHYTHM: MULTIDISCIPLINARY TEAMS THROUGH COLLABORATIVE WORK STRUCTURING

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Goal

The design of a collaborative production system
Research context

- Part of a long-term expert programme on SCM
- All housing projects with the same team of organisations
- Awareness of basic lean principles, project-specific tools and driven to explore more opportunities for improving processes
- PhD research
Production System Design

- **Production System Design**
  Strategic decisions on a project’s viability, budget and lead time

- **Phase Scheduling**
  Clear definition of phase activities and its lead times

- **Work Structuring**
  Breaking down the work to be done in work chunks, hand-offs and production units, and the creation of flow

(Biotto et al., 2017)
Work Structuring Methods

- **Activity based tools**
  - Critical Path Method and PERT

- **Location based tools – location or zones instead of units produced**
  - Line of Balance, Flowline and Takt Planning
“Takt”

- The regularity with which something gets done
- Value (product) + time + process
- A balanced work flow for trades
- Increasing productivity and shorten the overall lead time
“Supply Chain Rhythm”

- Beyond existing patterns of individual organisations or trades
- Collaboratively composed patterns
- A certain freedom within a regularity
  Freedom to adapt work content, move work within packages and change tasks, within a set time frame
- Inviting movement

“…all use the ability of rhythm to unite human individuals into a shared collective identity where group members put the interests of the group above their individual interests and safety…” (Jordania, 2011).
Elements of the approach

- Definition of speed of the production line / duration or rhythmic unit through measurements
- Definition of zones
- Template on work content
- Application of this template on a first project
- Adaptation of logistics and involvement of all remaining site members
- Daily and weekly stands
- Interviews, direct observations and collection of recommendations for improvement
Case
Results (1): General advantages

- Lead time reduction of 12 days per house
- Less stock waiting
- Efficient use of the same crane
- Increased reliability
Results (2)
Results (3): Intervention-specific advantages

<table>
<thead>
<tr>
<th>Organisation</th>
<th># Members on-site (Usually)</th>
<th># Members on-site (Case study)</th>
<th>Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisation A</td>
<td>5</td>
<td>4 4</td>
<td>I</td>
</tr>
<tr>
<td>Organisation B</td>
<td>2</td>
<td>2 1</td>
<td>I</td>
</tr>
<tr>
<td>Organisation C</td>
<td>2</td>
<td>2 2</td>
<td>II</td>
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<td></td>
<td>2</td>
<td>1 1</td>
<td>II</td>
</tr>
<tr>
<td>Organisation D</td>
<td>2</td>
<td>2 2</td>
<td>III</td>
</tr>
<tr>
<td>Organisation X</td>
<td>2</td>
<td>2 1</td>
<td>III</td>
</tr>
</tbody>
</table>

● Collaboration: ‘+’
Conclusions

● **Additional advantages**
  Multidisciplinary teams have been created within a project

● **Further optimisation of the work flow**
  The configuration of the crew performing the work chunk exceeds the boundaries of organisations or trades

● “Parade of Teams”
Thank you!