LEAN CONSTRUCTION PRINCIPLES AND RAILWAY MAINTENANCE PLANNING

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Background – Organizational model

34 basic maintenance contracts

5 contractor companies:
• Infranord
• Strukton Rail
• NRC i Sverige
• Infratek Sverige
• BDX Företagen
Background – Track works
Purpose and Method

**Purpose** - study maintenance planning processes based on Last Planner framework

**Method**

- Literature study
- Interviews
- Data analysis
Lean philosophy

1. Value for customer
2. Value stream
3. Flow
4. Pull
5. Perfection

Last Planner® System

Percentage Plan Completed
Wastes in Maintenance

(1) unproductive maintenance
(2) waiting for maintenance resources
(3) centralized maintenance
(4) poor inventory management
(5) unnecessary motion
(6) poor maintenance
(7) ineffective data management
(8) underutilization of resources
Planning levels

- STRATEGICAL PLANNING
  - ANNUAL PLANNING
    - Detailed planning
    - Operational planning
  - LAST PLANNER

- RAILWAY MAINTENANCE
Barriers in Lean implementation

• lack of knowledge about lean principles
• knowledge management
• inefficiency in source planning
• lack of trust
### Percentage Plan Completed

#### Key Points:
- **Southern Sweden**
- **4 companies A, B, C and D**
- **1 month (April 2019)**
- **Time on track planned vs used**

#### Chart Description:
- **-40%** D: 60% (used possessions)
- **-29%** B: 71% (used possessions)
- **-6%** A: 94% (used possessions)
- **+24%** C: 100% (used possessions)

#### Key Symbols:
- Red: % time not used
- Light Blue: % used possessions
- Pink: % over used
Conclusions

- Last Planner principles have a potential to improve effectiveness in maintenance processes
- Establishing changes to contractors work routine based on lean principles may face some barriers
- The data available at Trafikverket can be utilized to analyze the performance of contractors
Thank you for your attention!

Questions?

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