

Structured Reporting System

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for Quality Analysis

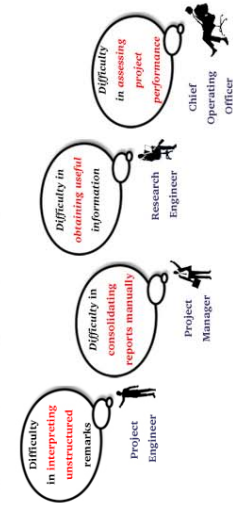
Introduction

Herrenknecht AG is the leading provider of holistic technical solutions in mechanized tunneling worldwide. Projects they are involved in includes local metro lines such as the circle line. The *Jobsite Reporting System* is essential to the company for *operational monitoring* and *problem analysis*. A set of *good quality information provided timely* is therefore crucial.

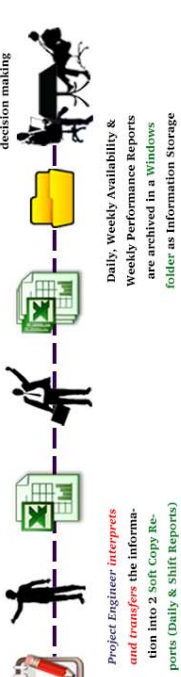
Objective

- To study and identify the critical problems of the Jobsite Reporting System using a *system perspective*.
- Determine the *root causes* and *propose solutions* to achieve an *efficient* Jobsite Reporting System that collects *quality information* for monitoring and analysis.

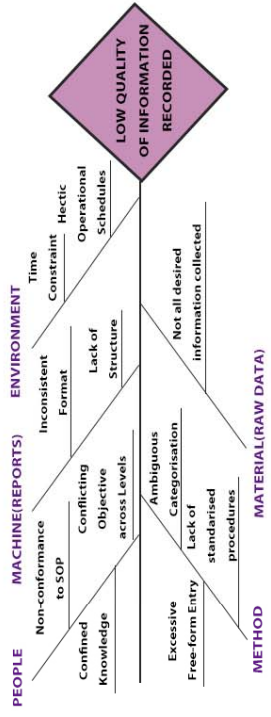
Current Situation



Ground Personnel records technical events and produces 3 separate Hard Copy Technical Reports



Problem Analysis



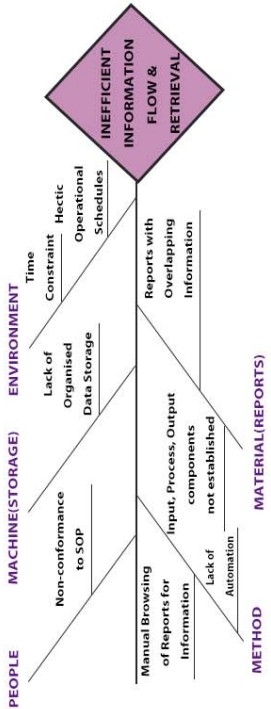
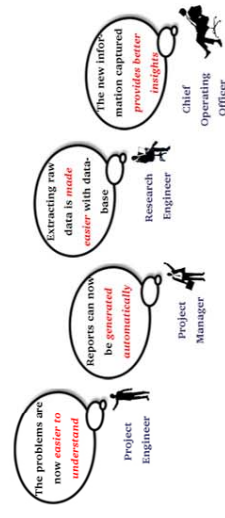
Solution

- ### Solution Categorisation
- Breakdown of remarks into structured entries
 - Standardisation of entries through a reference sheet
 - Eliminates inconsistent phrasing and spelling mistakes
 - Allow users to more accurately describe the situation
 - Allows for the flexibility to make changes to categories in the future
- ### Technical Reports
- Redesigned to incorporate new categorisation system
 - Usage of structured fields to organise entries
 - Encourages ground personnel to record more comprehensively
 - Raw data can be easily interpreted and keyed into the system

Consolidated Input Sheet Database

- Improved interface via user forms
- Added error-proofing features and automation
- Prepares data for import into the database
- Improve consistency of reports
- Shortcuts hasten logging process
- Minimize possibility of unintentional mistakes
- More desired information collected

Conclusion



Analysis

Underperformance Analysis

- Pie chart of the time spent on each activity
- Graphically represents how each activity contributes towards overall delay
- Enables the performance of Pareto Analysis to figure out the top delay factor
- Identify processes that need to be improved
- Line chart of time spent on each activity & number of rings built daily
- Shows the relationship between time spent on each activity and Jobsite performance

Progress Analysis

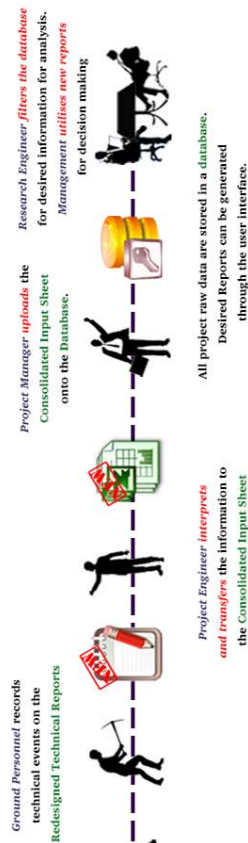
- Line chart of cumulative rings built
- Displays the progress of the entire project
- Line chart of number of rings built daily
- Enables the prediction of the learning curve of the construction team at future job site
- Estimates the time required for performance to reach steady state

Correlation bet. TBMs

- Line Chart of rings built daily by all TBMs
- Assess if the performance of one TBM is independent of another
- Compare trends of between TBMs' performance and assign causes for disturbance
- Detects probable logistic and coordination issues on the jobsite

Report status tracking

- Checklist of available reports with their history of modification
- Identify missing reports
- Suggests potential problems in the execution(hierarchy) of the reporting system



All project raw data are stored in a database. Desired Reports can be generated through the user interface.