

APPLICATION OF JI KOUTEI KANKETSU IN HIGHWAY DESIGN PROCESS IMPROVEMENT

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INTRODUCTION

- *Ji Koutei Kanketsu* (JKK) is a Japanese term which refers to a quality practice in White Collar departments at Toyota.
- JKK implementation is evaluated as a success at Toyota; however, there is a lack of academic research into JKK in general, and especially of its implementation in the construction industry.

The main aim is to present the JKK method and initially evaluate it regarding its suitability for construction contexts.

INTRODUCTION

- The paper is a part of an action research which aims to test the application of JKK in a real context of highway projects in terms of process improvement.
- The action research has been undertaken in a large engineering design company.

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The introduction of JKK is carried out through literature review, which also includes the comparison JKK to other relevant methods to define the similarities and differences.

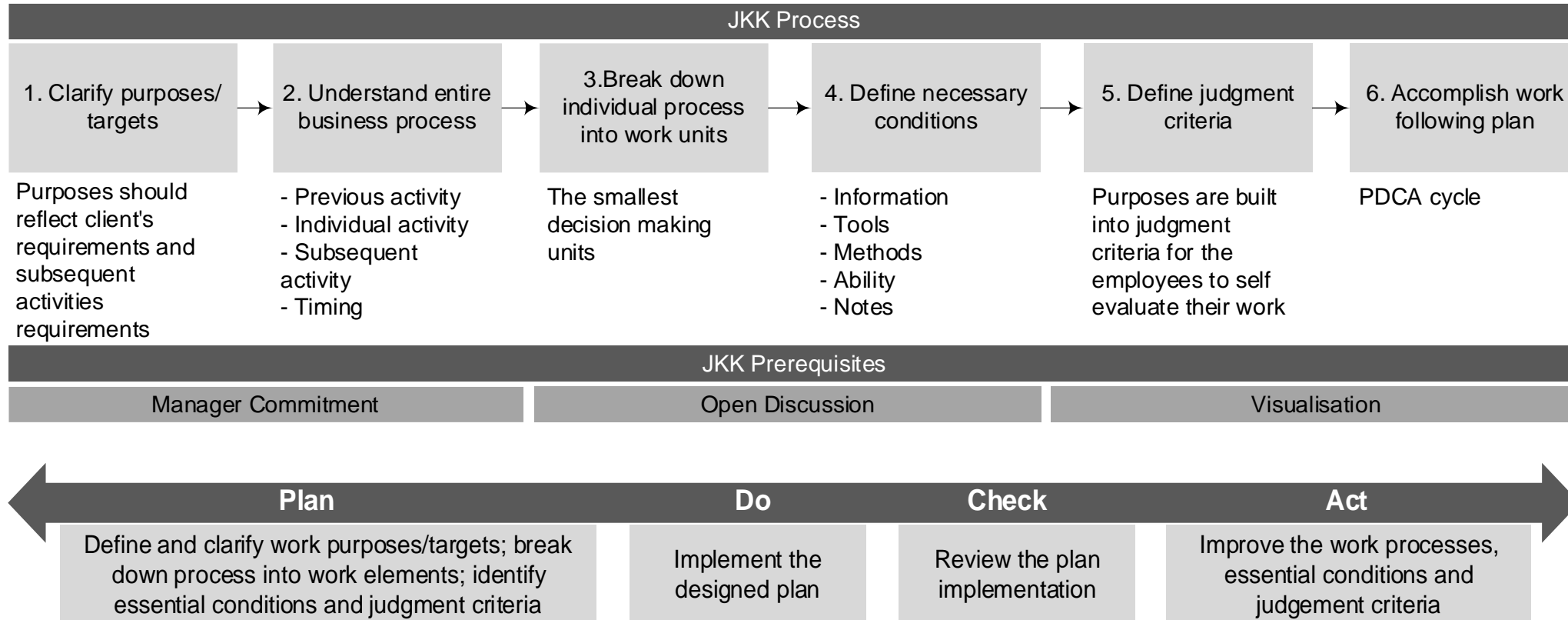
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Then, JKK as an evaluation tool is used to analyse the process performance in a particular project. The data on process performance is collected via open and semi-structured interview methods.

JI KOUTEI KANKETSU

- Ji Koutei Kanketsu (JKK) is a recently developed concept, which enhances the automation with a different approach in comparison to *jidoka*.
- JKK means **‘completing your own process’**.
- The main goal of JKK is to ensure the clarity of work inputs and outputs, and the understanding of how one’s personal work suits into the whole processes in which such work is placed.
- The JKK implementation route is a six-step procedure, which primarily focuses on improvement of individual activities to ensure that each individual activity is executed accurately.
- JKK implementation cannot be achieved without three crucial prerequisites: visualisation, open discussion, and manager commitments.

JKK IMPLEMENTATION AND PREREQUISITES



COMPARISON OF JKK TO OTHER METHODS

- JKK is compared to aligned prior methods including Process Modelling, Last Planner System, Target Value Design, and Standardisation.
- JKK somewhat overlaps other methods; however, there are some subtle differences between them.
- However, JKK can possibly be used to support other methods' accomplishment.

Process Modelling

JKK seems only to require 'as-is' model for current practice, and then proceeds to expanding understanding of the individual activities at a deeper level.

Last Planner System

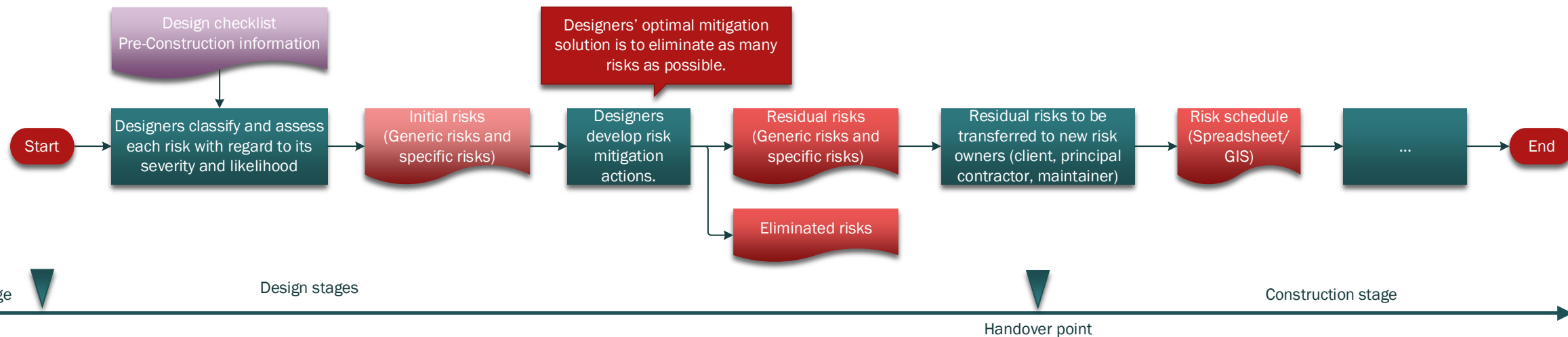
JKK focuses more on giving the employee confidence to perform zero-defect work rather than making them to promise to complete the task according to agreed schedule.

Target Value Design

The focus of TVD is cost reduction whereas the central object in JKK is how to achieve the individual work performance with zero defects.

THE PROCESS OF DESIGN RISK MANAGEMENT

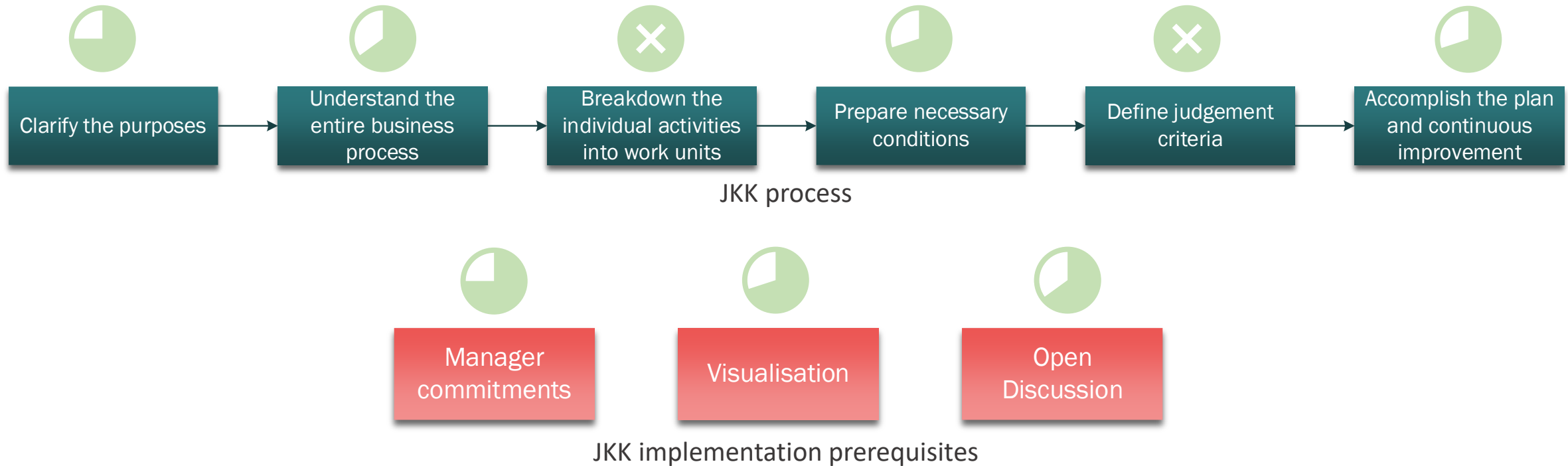
- Design Risk Management Process (DRMP)** or Hazard Elimination Schedule is a chain of activities to capture and eliminate all possible risks in design, construction, and maintenance stages by complying with the Principles of Prevention. The process requires the involvement of the client, principal designer, designers, principal contractor, and subcontractors.



Design Risk Management Process brief workflow.

ANALYSING DRMP THROUGH JKK

The analysis of the current state of DRMP through JKK exposes possible root causes for inadequate performance as it does not totally fulfil the JKK criteria.



CONCLUSIONS

When applied in the construction industry, the concept of JKK has similarities and differences with other aligned Lean construction methods in terms of process improvement.



JKK provides a unique contribution to process improvement by addressing individual intellectual work, which often remains poorly managed, at greater depth.



The result of using JKK as an evaluation tool can contribute to a feature of JKK in new projects, as it provides a comprehensive overview of process problems and a direction for improvement.



THANK YOU!

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