

PROPOSAL MODEL FOR THE MANAGEMENT OF CONSTRUCTION BASED ON FLOWS – A COMPLEX ADAPTIVE SYSTEM

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AGENDA

- Evolution of production construction systems
- Project management in construction with a complexity approach
- Flows based construction management model
- Organization Characteristics
- Conclusions and Recommendations

VFO MODEL

Koskela (2007) propose a new development of TFV theory, orienting it with the vision of Shingo (1988) in its flow network model, arguing that to manage construction. The three sub-theories of the TFV model must be considered and integrated: (T) Transformation, work-oriented (flow of subjects or operations), (F) Flow, oriented to spatial and temporal movements of materials and information exchange; and (V) Generation of Value (flow of objects or processes).

Bertelsen, and Bonke (2011), where they mentioned that value is the main objective of managing flows and executing operations (Value – Flow – Operation).

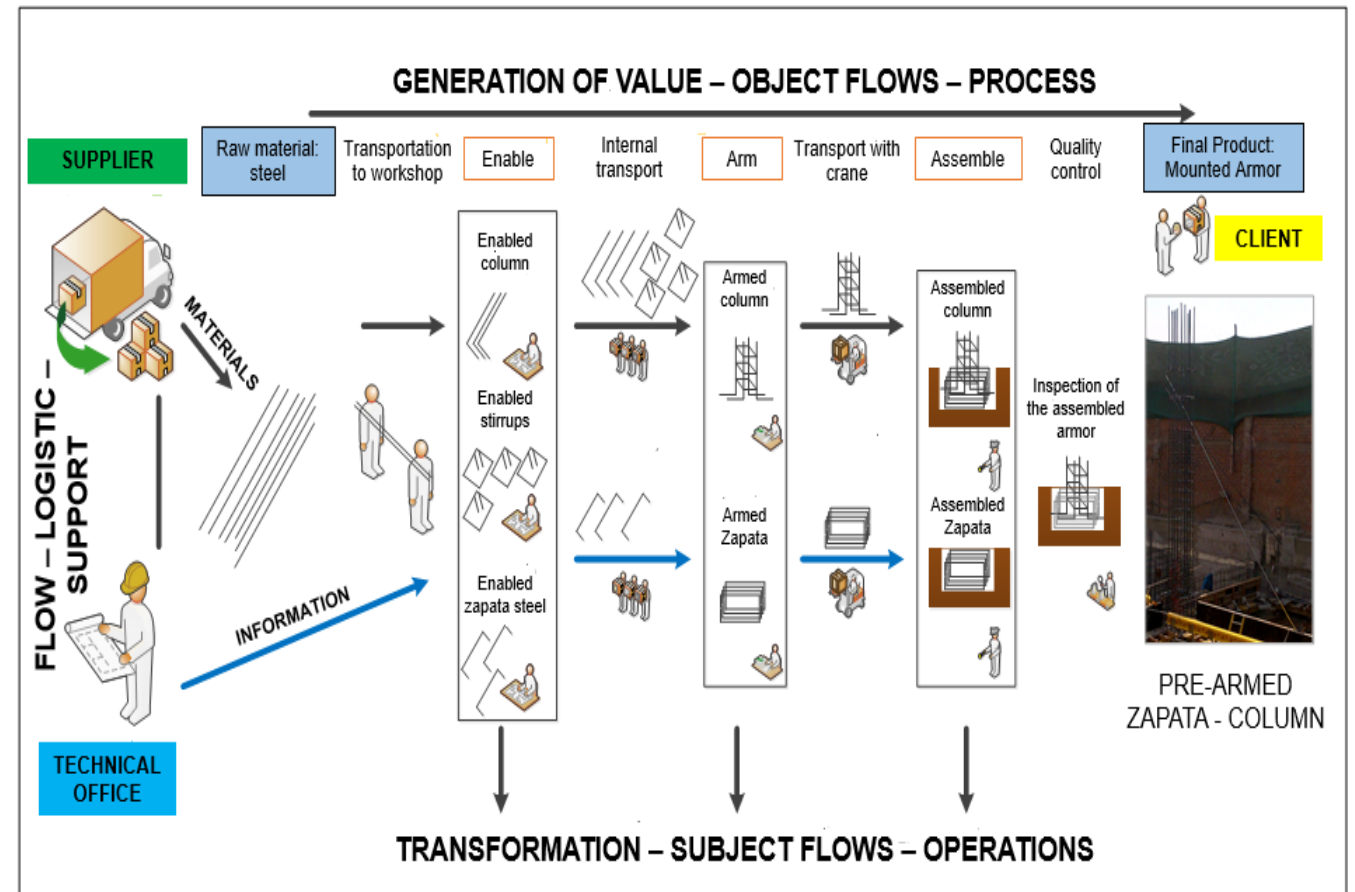


Figure 1. Vision of the Value – Flow – Operation (VFO) production model: Case Pre-armed Steel in Zapata-Column

PROJECT MANAGEMENT IN CONSTRUCTION

Production model		Conversion model (PMI)	Model TFV (Koskela and Howell (2002)).
Management	Planning	Operational planning.	Planification and organization.
	Execution	Order - execution.	Bidirectional communication.
	Control	Standard performance.	Identify errors. Proposal for improvement and learning.

Table 1. Construction Project Management Approaches

PROJECT MANAGEMENT IN CONSTRUCTION COMPLEXITY APPROACH

Bertelsen S. & Koskela L. (2005) propose to manage construction projects under the following complexity approaches.

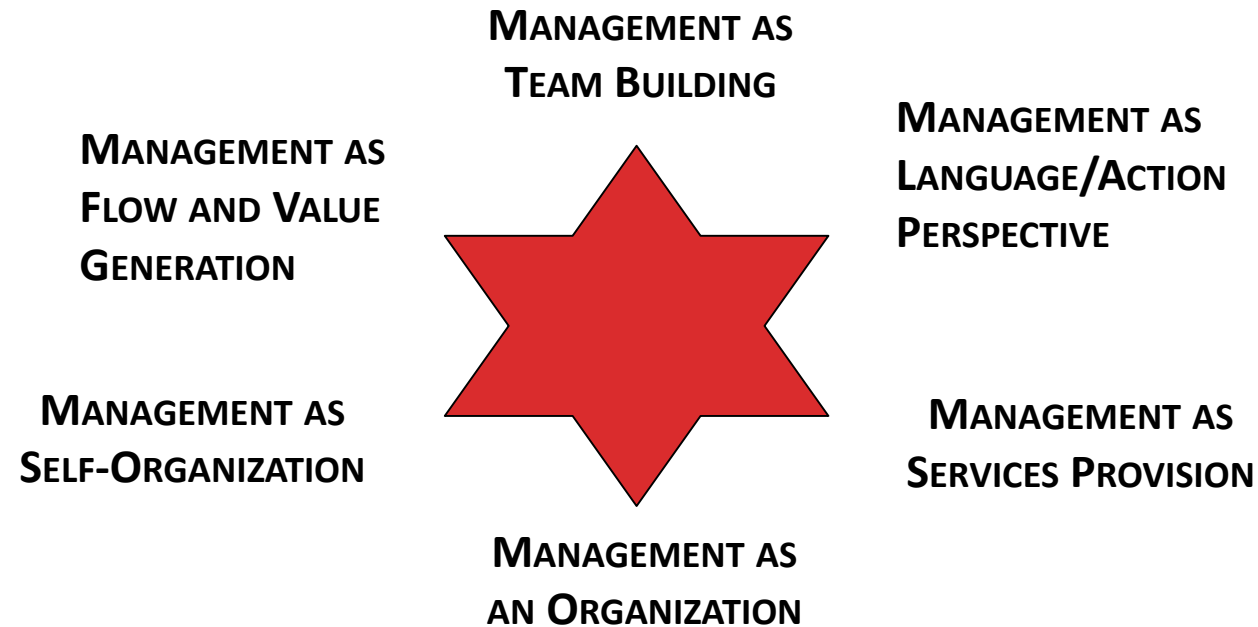
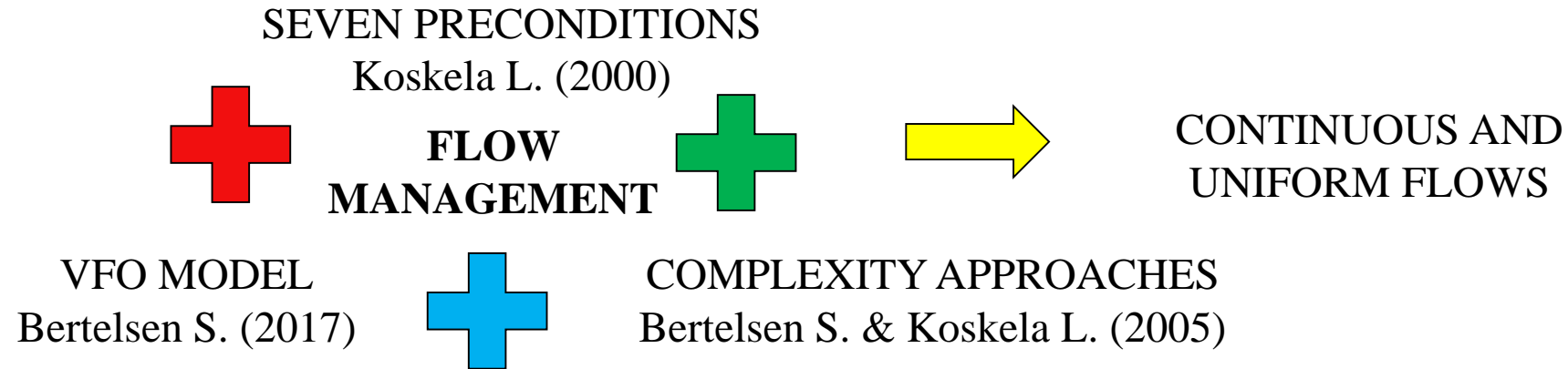


Figure 1. Caption

PROPOSAL FOR A FLOW BASED CONSTRUCTION MANAGEMENT MODEL



The components of the model:

1. FV: Value Flow or Process
2. FO: Subject Flow or Operations
3. FI: Information Flow
4. FA: Supply Flow
5. FL: Layout Flow
6. FC: Cost Flow

PROPOSAL FOR A FLOW BASED CONSTRUCTION MANAGEMENT MODEL

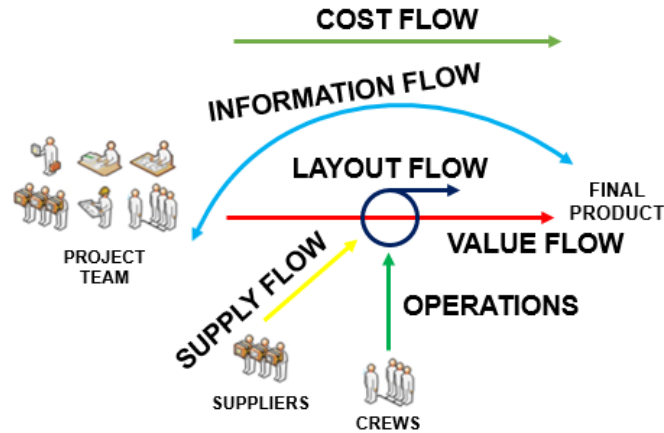


Figure 1. Flow management at a strategic level

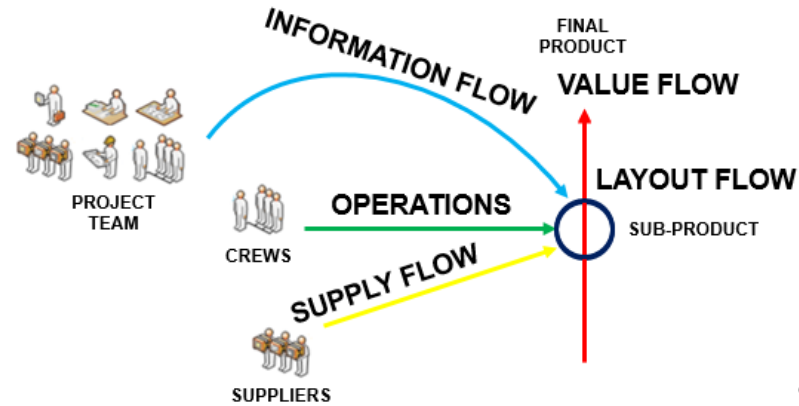


Figure 2. Flow management at the tactical level

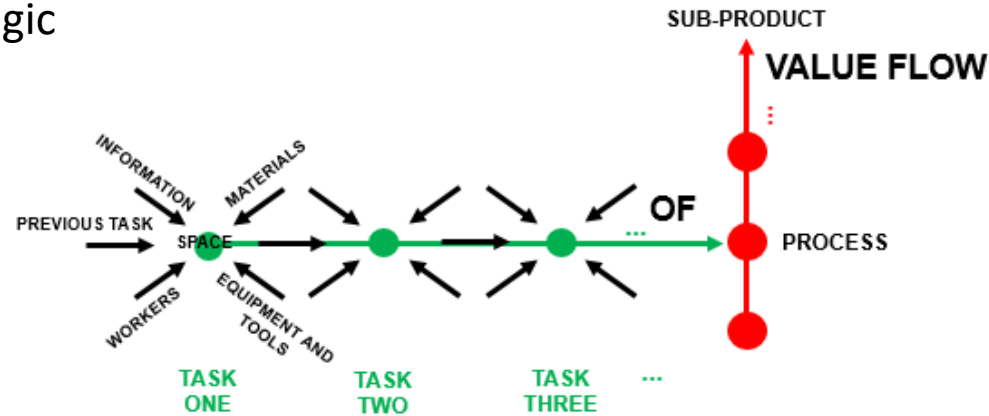


Figure 3. Flow management at the operational level

ORGANIZATION CHARACTERISTICS

COMPLEX ADAPTATIVE SYSTEM



Figure 1. CAS cycle

OPERATIONAL EXCELLENCE

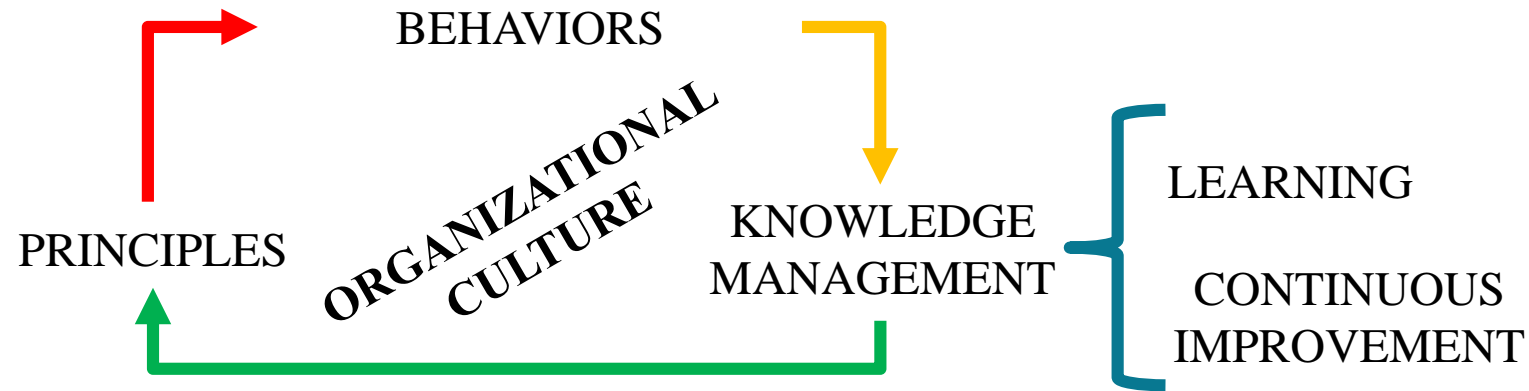
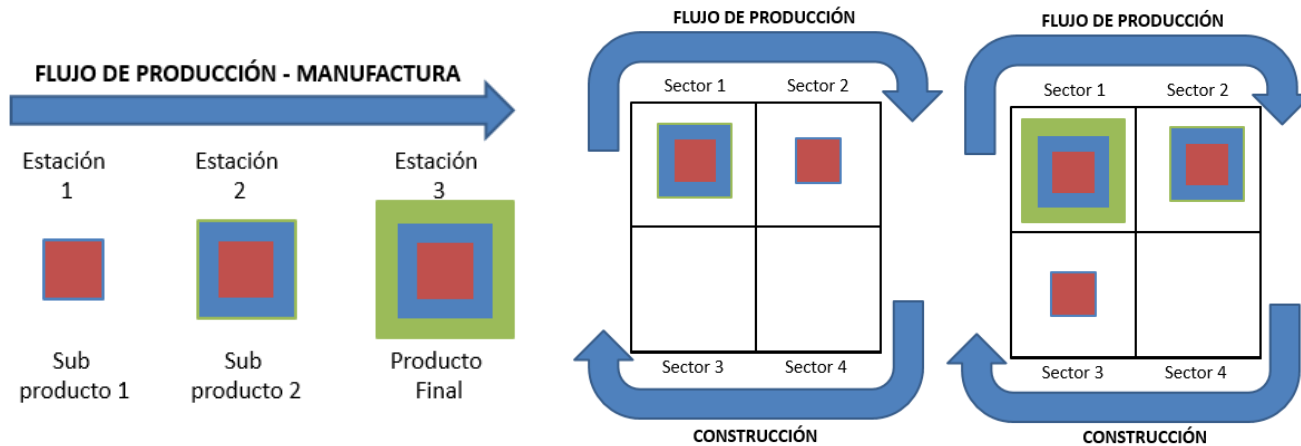


Figure 2. OPEX cycle

RECOMMENDATIONS AND FUTURE RESEARCH LINES

Location-Based Management before Activity-Based Management

The development of the product under construction is determined by the evolution of the location.



Risk Management before Constraint Management

Constraint: Something that prevents the start, progress or completion of a task.

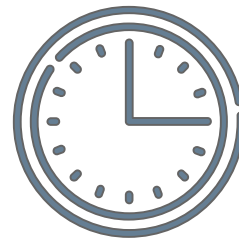
RISK: Probability that something will become a threat that could damage the flow. A first attempt to manage risk focuses on paying particular attention to the enemies of the flow: Mura, Muri, and Muda.

CONCLUSIONS

The proposed model offers the possibility of a holistic analysis of the production system under construction, considering flow management as a basis.



It is considered appropriate to change the paradigm of identifying constraints by the risk management of the flow at all levels.



The perspectives and approaches of complexity open a new panorama in construction management, showing the people's importance and influence.



We recommend carrying out future investigations of each of the flows described in the proposal of the management model. All are equally important, but concerning which flow the project team wants to optimize, the team should consider this a critical flow within the model and perform the respective study.

THANK YOU!

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