

## EDITOR'S COMMENTS – SUPPLEMENT

### Software as Surrogate for Human Information Processing

Codification of organizational processes in software in the form of software embedded “routines” expand as a result of the progressive extension of software systems capabilities. Thus, software plays a pivotal role as a repository of organizational procedural memory. As advanced software systems are introduced, organizational processes or routines are increasingly embedded in software and managed by enforcing rules and constraints. These comprise the rules on which the integrity or reliability of a product or system are based, or its consistency and compatibility with other products and systems. They even include constraints of a legislative or regulatory kind or may be due to design requirements. All changes in the parts and model data, together with their relationships in the hierarchy or product structure, are regulated by software-embedded rules; changes are imposed since these rules act as normative criteria and in this way their feasibility is guaranteed. For instance, the software may be useful to assure the validity and concurrency of all changes enforced.

When a set of rules and constraints is embedded, software behaves as a “dual enabler” (Del Giudice 2008; Dell’Anno et al. 2006); some search spaces (i.e., spaces that are technologically or organizationally unfeasible) are closed while others (i.e., feasible spaces) expand. The aim of this function is to reduce the risk of reinventing the wheel, or impeding faults or inconsistencies to be discovered downstream in development, where the risk and costs of failure would be certainly greater. In fact, there is not an inevitable incompatibility between a large quantity of stored memory and innovation because the first does not necessarily result in core rigidities (Leonard-Barton 1995). If investigation is confined to technologically or organizationally feasible areas, the software-embedded constraints generally mean that only within feasible spaces creativity or experimentation are enabled. Thus, software allows while at the same time constraining. Nevertheless, another aspect of embedding procedural memory in software may be highlighted. Considerable efforts are often made to define and optimize current procedures and these anticipate the process of embedding organizational routines in software. Two steps are often implied by this operation: (1) existing processes are compared with a number of standardized procedures considered as industry best practice; and (2) existing processes are altered in order to move toward best practice and in this way they accomplish the full potential expected by the software.

#### References

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