

Disruptive technologies

Structural coupling through semantic systems

Strategic complexity management has become extremely important in times of digitalisation. Our author explains why.

Text: Dr Jürgen Spickers, Institute of Management, University of St. Gallen



Dr Jürgen Spickers

Dr Jürgen Spickers has been Director of Management Courses at the Institute of Management at the University of St. Gallen since 1999. His work focuses on designing and implementing public and in-company further education concepts. In conjunction with the St. Gallen management model, which also includes management development issues, modern system theory plays a significant role.

Digitalisation will remain the central driver of business model innovation for the foreseeable future. The Fourth Industrial Revolution and disruptive technologies are subjects that are on everyone's lips. In a trends report written by Accenture subsidiary and innovation agency FJORD (1), for example, all ten trends are in this context, including the provision of services when the need arises, the flattening of privileges and the atomisation of services.

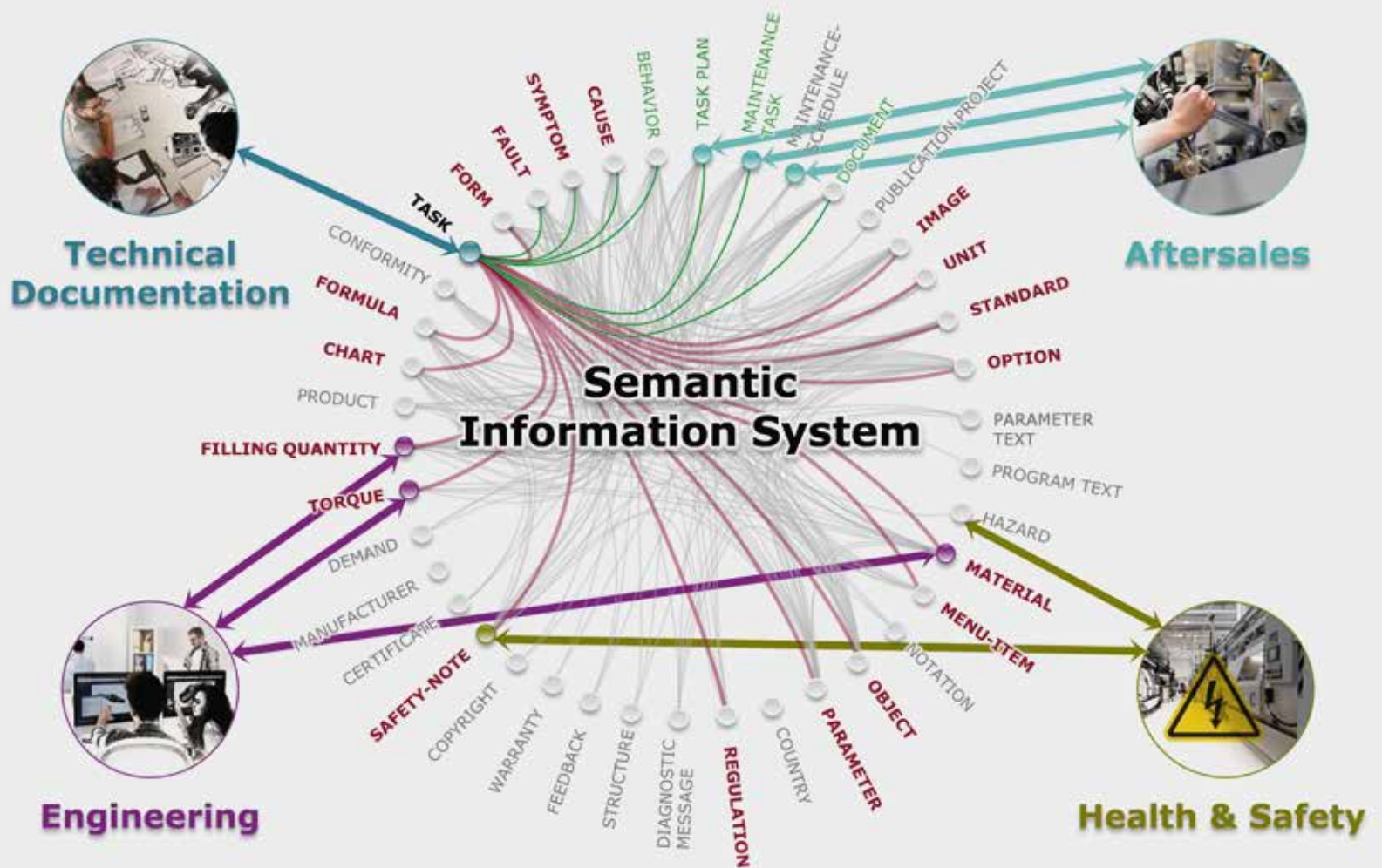
For companies who appreciate and want to exploit the return potential of this development, the complexity of their environment therefore changes. As a consequence, they have to adjust their internal complexity. This is usually carried out via segments, centrality, hierarchy and functions to a greater or lesser

extent (2). Functional differentiation is encountered particularly frequently. A study on the digital future by *MIT Sloan Management Review* and *Deloitte Digital* (3) also lists a whole series of new "digital" roles and responsibilities.

However, according to the study, it is regrettable that there is frequently a lack of alignment of activities, employees, values and structures with the aim of achieving company-wide digitalisation objectives and that there is no sufficient development of expertise in this regard. As a result, the management of digital initiatives reverts to project level, or it remains limited to activities within the functional units. The verdict is that this is not enough to reach "digital maturity" throughout the company. A study on digital transformation written at the Institute of Information Management of the University of St. Gallen reached a similar conclusion (4). A lack of understanding in senior management, rigid team structures and silo mentality are three of the six reasons for failure highlighted in the study.

How is digitalisation gaining importance in companies?

Today's "silos" are the result of past adjustments to internal complexity. If the systems that were differentiated at that time are to continue to exist, they require autonomy to address their reason for existence in order to reliably ensure that they can create value. This may be a particular market segment, technology or function, for example.



Structural coupling of organisational units with the semantic information system.

If reflection (for example by management) confronts them with a phenomenon (for example digitalisation), they almost have to process this phenomenon through the primary filter of their initial role. However, this type of distributed digitalisation, as the afore-mentioned complaint states, still does not result in a mature business from a digital point of view.

The call for integration then is made again and again. However, the more strictly the afore-mentioned autonomy of systems is understood and the more their operative coherence is considered to be a strict requirement for their highly selective informational openness, the more questionable the idea of parts and whole – and therefore of

integration – becomes. Sociologist Niklas Luhmann therefore proposed replacing integration with the concept of structural coupling (5). It applies to the autonomous structural formation of systems and describes the selective, environmental focus of said formation that is being coupled to these structures in a manner compatible with that of operational closure.

Since entrepreneurial value creation is usually organised, i.e. decisions are taken relating to value creation, employees have always been tempted to deal with overarching subjects by organising them around projects. This creates projects as independent decision systems which are then differentiated into further projects for the most part and to

which the established systems can be coupled structurally, for example by seconding project members. But firstly, this intersects all forms of value creation organised in hierarchies; secondly, it is a temporalised form of work and thirdly, it does not affect value creation itself but rather the decision relating to the latter. This might be the reason why the MIT and Deloitte report considers the project-based approach to be incompatible with achieving digital business maturity.

Semantic technologies for creating value

For value creation systems, it is attractive for them to be coupled structurally with systems which are closely oriented towards their ma-

terial or immaterial output and also have durable and strong intrinsic logic which can be used to benefit value creation – specifically in their digitalised form too.

Semantic technologies can play a significant role here. The fact that they provide clear information is attractive both from the point of view of subsystems and the entire company. Their bidirectional character, i.e. using and managing the information primarily by the subsystems coupled to the semantic technologies, is based on a concentrated, lasting and company-wide coordinated alignment of couplings.

These semantic technologies are a substantial anchor point in the strategic, future-oriented examination of the potential of digitalisation primarily as a result of the information that is tailored in real time to the individual requirements of the coupled system using these technologies with appropriate security (for example for spontaneous maintenance at an opportune moment, see the micro-moments trend mentioned in the FJORD report).



Sources

- (1): Fjordnet Limited (2016): <http://trends.fjordnet.com/>
 - (2) Luhmann, N. (1995): Social Systems. Stanford, California (Stanford University Press), p. 190
 - (3) Kane, G. C. et al. (2016): Aligning the Organization for Its Digital Future. MIT Sloan Management Review/Deloitte University Press: <http://sloanreview.mit.edu/projects/aligning-for-digital-future/>
 - (4) Berghaus, S.; Back, A. (2016): Wie packen Unternehmen die digitale Transformation an? Ratgeber und Fallstudien zur Strategiearbeit für das digitale Zeitalter. [How are companies coping with the digital transformation? Guide and case studies on strategic work for the digital age]. T-Systems Multimedia Solutions GmbH (ed.)
 - (5) Luhmann, N. (2013): Theory of Society. Stanford, California (Stanford University Press), vol. 2, p. 108ff.
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