

Event-driven process chains for better flows

by Thilo Ried

Technical documentation is dependent on product information from almost all business departments. For a rapid and goal-oriented information flow, it is important to illustrate the flow graphically. The result is a process model, which almost automatically provides possibilities for improvement.

The article "**Kreuz und quer durchs Unternehmen**" ("throughout a business") in the past issue of 'technische kommunikation' dealt with the analysis and optimization of information processes. The basis of the procedure is the so-called business-reengineering process, which aims at a complete reworking of processes.

The second part deals with the modelling and graphical description of information processes. In the end, a business-specific information model is an essential step towards a more efficient creation of technical documentation. The more detailed this model is, the better it allows potentials to be identified and cooperation between the individual departments to be improved.

Simple process model

If one moves onto a high modelling level, the graphical description can be done with a single step symbol or a process chain element symbol.



Illustration 1: Documentation process from process chain elements

The syntax used can be supplemented in order to describe flow-logical links, e.g., tasks in subsystems with OR links. Moreover, the model can assign the relationships of subprocesses as well as areas of responsibility.

This process chain description reaches its limit whenever a greater accuracy is required. This is definitely the case with the description of information processes for technical documentation. In this case, "event-driven process chains" are an alternative. The event-driven process chains graphically display process flows. Here, four elements are deployed: functions, events, organizational units, and information objects.

These elements can emulate almost any process. There is a symbol for every element. Arrows and operators establish the connection between the symbols, so that a comprehensive process is created.

Functions

Functions depict the individual operations of a process. They include the dynamic steps of a process chain, use up resources and generate costs.

Functions describe what should be done:

- Plan a project
- Carry out a research
- Create a document
- Check a document ...



Illustration 2: Graphical description of functions

For a more precise modelling, functions can be divided into partial functions and then reassembled. This allows a virtual unlimited increase in the accuracy of the process.

Events

Events represent the fixed points in a process.

- Project landed
- Copy deadline set
- Research carried out
- Document checked ...



Illustration 3: Graphical description of events

Events and functions form the process

Events trigger functions, or are the result of a processed function. They are linked to functions with arrows, depicting the direction of the process flow.

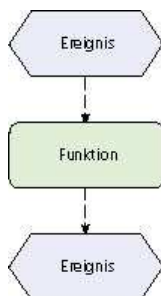


Illustration 4: Linking events and functions

This linking can be continued until an intrinsically logical and completed process can be depicted with sufficient accuracy.

Organizational units

Whoever is responsible for an activity will be depicted in the event-oriented process chain through organizational units. These units are therefore always linked to functions.

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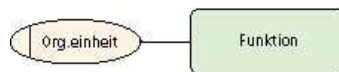


Illustration 5: Connection of function and organizational unit

The responsibility for the activity can be taken by
 - a specific employee
 - an abstract role such as technical editor, graphic designer, or instructor
 - establishment of an organizational unit, such as a technical editorial office

Processing of information objects

The last element required is the description of information, which is displayed in event-oriented process chains as information objects.

These objects can be of the most diverse type:

- assignment for documentation
- supply document
- data from the inventory control system
- created documents ...

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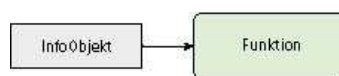


Illustration 6: Connection of function and information object

An arrow depicts the direction of the connection between the information object and function. Thus, in illustration 5, information flows from the information object to the function and is required for its execution. If information is altered during the execution of the function, the arrowhead will point in the other direction.

Operators for inspection

Not only do activities take place successively, in linear fashion, but also in connection with one or more alternatives. In event-oriented process chains, three logical operators link functions and activities to control flows.

- UND: all functions or activities must be processed.
- ODER: at least one function or activity must be processed.
- XOR (eXclusive OR): exactly one function or activity must be processed.

Divided circles represent the operators in the control flow. The circles indicate which functions apply to the operators: The upper half of the circle applies for functions in front of the operator and the lower half of the circle applies for the following functions, depicted under the operator.

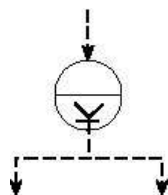


Illustration 7: Graphical description of an XOR operator – exactly one of the subordinate events or one of the functions must be appropriate or processed.

It should be noted, that the direction of the control flow is from top to bottom (vertically), while in contrast the flow- logical linking of events or functions is always modelled horizontally as parallel task.

All of them add up to the process

In the following, an example from the field of technical documentation clearly shows the right linking of the four event-oriented process chains.

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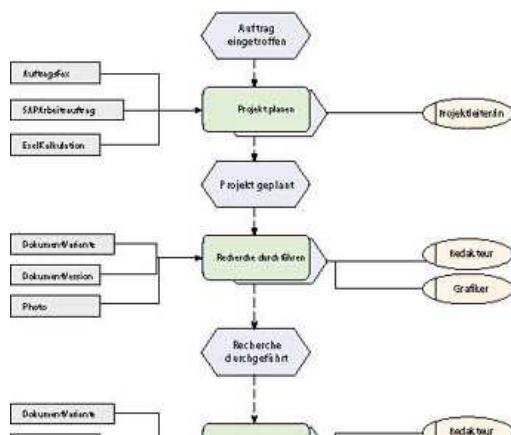


Illustration 8: Documentation process as EPC

The process in illustration 8 indicates the speed at which the complexity increases during a process analysis. Only the topmost and the most general levels of a project-oriented documentation process are given as example. Even for this, some process elements need to be analyzed and displayed. Thus, at least five functions, six events, five organizational units in the form of roles, as well as six different information objects are required. It can be seen easily, how much this quantity increases when a basic process like this is modelled all the way to the lowest level. In the concrete project, the modelling of the example resulted in 70 functions and 50 events to be put on paper.

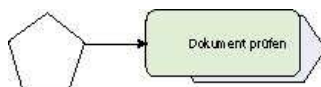
Identification of optimization potential

If the analyzed process is depicted in the form of event-oriented process chains, then the optimization potential can be assigned to the functions easily. There is a particular symbol assigned to this as addition to the EPC syntax.

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**Illustration 9: Optimization potential available in "Check document"**

It will soon be evident, where the optimization potential in the process chain lies.

Final step

For an improved process chain, the recognized potentials should be qualified and, as far as possible, quantified. This means, the ratio between cost and result must be worked out for every potential. For example, the introduction of a structured project record for expenditures will have an effect on production costs, and on quality, through possible standardization and reuse of content. In particular, assigning numbers to the individual optimization potentials calls for an effort that goes beyond adequate qualification. In most cases, a detailed modelling of the process is sufficient in order to localize and use the potential.

The qualified optimization potential can then be summarized in a catalogue of measures. Even just one concrete measure can realize several optimization potentials. Through the distribution of priorities for the individual measures, a project plan emerges, which helps in the coordination.

Software support

A project database, e.g. from an office package, helps to maintain a clear perspective in the process analysis. The database can include all the results of the performed interviews, the individually classified statements as well as the description of the defined functions, events, organizational units, and information objects. A flexible reporting system allows, at any time, an overview of the available database information.

Special applications, e.g. Visio from Microsoft or Flow-Charter from Corel, available in different versions, can help in graphically displaying the process chain models. These programs can gather and (to a limited extent) evaluate numbers in the individual process steps. In addition, they can simulate the process flow. The required graphical syntax is provided by the manufacturer as a symbol library, or can be created by the users themselves.

Special solutions for process modelling and process management, such as the Aris-Toolset from IDS Scheer, have a significantly higher functionality, but are also more expensive.

Conclusion

The connection of a process chain model with the efficient event-oriented process chains can be used as a basis for the development of optimization potentials. The use of these tools enable a problem-specific information process analysis. The gradual improvement or a radical redefinition of the creation process of technical documentation is possible at the end of the information process analysis. The created process descriptions can then form the basis for the future process chains management and thus contribute to a more effective creation of technical product information.

Literature:

[1] Staud, J. L. (2001): Geschäftsprozessanalyse: Ereignisgesteuerte Prozessketten und objektorientierte Geschäftsprozessmodellierung für Betriebswirtschaftliche Standardsoftware. Berlin.

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Development of event-oriented process chains

Event-oriented process chains are part of the overriding ARIS concept and were developed by Scheer and his collaborators as a method and graphical description technique. They depict, e.g. a central component of the business process modelling with SAP. The cross-application "SAP Business Workflow" uses event-oriented process chains for graphical and functional modelling of work processes.

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