Modular and End to End process design

All definitions of business process in SAP Solution Manager, independent of its nature, shall fulfill three main integration aspects by usage in:

- Documentation Management trough assignments of
  o Business Process Descriptions (Process level)
  o Functional specifications (Process step level)
  o Technical specifications (transactional/Development level)

- Test Management by assignment of:
  o Integration test scripts/descriptions (Process level)
  o Functional test cases (Process step level)
  o TBOM (Step original, Executable)

- Business Process and Interface Monitoring by assignment of:
  o Monitoring alerts (Process steps reference)
  o Alerting on analytics (Process steps reference)

This article will try to explain the dos and don’ts for business process design including the integration aspects between the modular processes and the big end to end process definitions.

Definitions:

A process is a set of logically related activities performed to achieve a defined business outcome

Best Practice definition:

- Modular/functional processes are describing a business case/flow within a SAP module. The functional or modular processes are constructed mostly out of process steps from one specific functional area/module and interfaces. The process sequence in such processes will be represented exclusively by BPMN process or collaboration diagrams.

- End to end processes are documenting the big integrative processes like “Order to Cash”, “Procure to Pay” or similar. These processes are mainly used for the big integrative and regression test as well as for documentation purposes. These processes are constructed out of process steps from different functional areas/modules and interfaces. They are usually defined under a scenario having the same name (for example “Order to Cash”) as a collection of different Order to Cash process variants.
**Modular Process**

The definition of a modular process shall follow 3 basic rules:

- Flow of used activities are restricted to one functional domain
- Used activities do not exceed the functional domain of an organization
- There is mostly **One** responsible for the full process or processes from a specific area

From SAP Solution Manager perspective, the modular processes are grouped under business scenarios.

Business scenario in this context is a collection of modular process variants performing the same business outcome.

**Example:**

In the functional process area for Quality Management you can have following business scenarios:

- Quality Management in Procurement
- Quality Management in Sales
- Quality Management in Production
- ...

The business scenario “Quality Management in Procurement” collects all QM process variants which can be used at goods receipt:

- Standard quality inspection at goods receipt
- Quality inspection with quality certificate
- Quality inspection with preconditioned quality check
- ...

All the process variants are using partially the same process steps but in different sequence or different process configuration. In all process variants of Quality Management, the process step “Record inspection results” will be used as main activity in QM.

Beside the process description at the modular process level, you will be able to create a BPMN diagram which describes the sequence and detailed additional information on the executed activities (for instance which end user role is executing the activity, what is the outcome...).

Out of a simple process step sequence a test plan can be easily created and presented to tester who can test the integration of business activities within one module or functional area.
Dos and don’ts for modular processes

→ Model the processes by using reusable objects like process steps and interfaces
→ Design processes for their use
  - Business
  - Monitoring
  - IT

Don’ts:

→ Create processes which are not bigger than 15-20 process steps. Business processes shall be easily understood. The simpler the definition the better the understanding of the content.
→ The total number of levels in the modular process area should not be greater than 7-9 in total. The more levels in the structure, the harder to find the right content.
→ Limit the usage od sub-processes in the process definition. The use of sub-processes leads to disadvantages in Test Management as the list of sub-process process steps will not be resolved in the particular process.
→ Restrict cascading of processes. The definition of predecessor and successor in SAP Solution Manager is possible but not in focus. You can link processes to each other, but you cannot report strictly on it (for instance the is no information what is the sequence of sub-processes). There are no consistency checks which ensure that successor process has defined the right predecessor.

End to End processes

The end to end processes:

→ Are comprehensive flows of activities needed to solve large business matters across organizations
→ Do not stop at the boundaries of an organization and involve multiple functional domains or systems.
→ Have dedicated responsibility or share process responsibility by several area owners
→ Are built from re-useable process steps and interfaces

In the End to End process context the business scenario reflects a collection of end to end process variants representing the same business outcome.

Example:

In the end to end area of business processes you will find scenarios like:

- Order to cash
- Procure to pay
- Assemble to order
- ...

The definition how far the integration of an end to end process is documented is purely depending on the customer choice. With other words the definition where an end to end process starts or ends is question of responsibility and the way how integration of the functional/modular areas shall be documented and tested.
The scenario “E2E_Order-to-cash” is listing all process variant definitions for order to cash in the company. The end to end processes are constructed out of process steps and interfaces used already in the modular business process definition.

The process step **Record inspection results** will be used here, as the quality inspection in sales is in use (modular process area). However, the end to end process definition will not repeat all quality inspection relevant activities, because they may be not directly significant for the big end to end flow.

The focus lies here on the big end to end story counting “just” the pillars (most important activities) from impacted modules and not summarizing all possible business activities in all possible variants.

The execution sequence in an end to end process will be usually represented the same way as in a modular process, by a BPMN diagram showing the sequence of business activities.

The process step sequence in an end to end process guaranties easy test plan generation and tailoring into test packages.

**Additionally**, to the BPMN diagrams, you can also create a Universal diagram at business scenario level (Order to cash, Procure to pay…) in which you can build the process map of appropriate end to end. This diagram links modular processes and chain them into one big “Order to cash” overview.
From this overview diagram you can navigate to the corresponding modular processes or their diagrams.

However, this type of end to end process documentation is **not usable in test management nor for monitoring activities or documentation**. This representation can exclusively be used for explaining how the modules can build the end to end process or as a navigation platform for process viewer/offline browser.

**Dos and don’ts for end to end processes**

- Model the processes by using reusable objects like process steps and interfaces
- Design processes for their use
  - Business
  - Monitoring
  - Testing

**Don’ts:**

- Prevent creation of end to end scenarios as chain of modular processes. Modular processes are not stored in a library, so they are not reusable. A process copy is an autarkic element which is not synchronized with its source once a change is performed.
- Limit the usage of sub-processes in the process definition. The use of sub-processes leads to disadvantages in Test Management as the list of sub-process process steps will not be resolved in the particular process.
- Restrict cascading of processes. The definition of predecessor and successor in SAP Solution Manager is possible but not in focus. You can link processes to each other, but you cannot report strictly on it (for instance the is no information what is the sequence of sub-processes). There are no consistency checks which ensure that successor process has defined the right predecessor.

**Alternatives for better or for worse**

Despite the recommendations, some customers want to model the end to end processes as process chains. This chapter should clearly show the possibilities but also the disadvantages of this method.
1) The creation of a general end to end Order to cash process allows to create a BPMN diagram.

2) Opening the diagram, you can “model” the end to end process by chaining the sub-processes. This diagram can also show gateways, data objects or other BPMN specific elements.

3) The list of linked processes for this particular general Order to cash process will extend the assignment list below the diagram. Afterwards the assignment list looks like this:
Disadvantage so far:

- the visibility of process sequence in which the modular processes are executed is just documented in the diagram.

- Test Management for the general Order to cash process gives the possibility to jump into the particular modular processes to assign the modular integration test, but these test cases will not be collected under the general order to cash but spread over the modular process structure.

- the sequence of the Order to cash relevant modular integration tests has to be organized every time when creating a new test plan for the general order to cash end to end process chain.

- every user specific sorting activity changes the order of assigned modular integration test cases.

4) To collect all test relevant data, you can link the appropriate integration test cases from the modular processes. This extends the assignment list by the test cases (here test steps).

5) Now the test information can be directly provided to test plan generation and all relevant modular integration test cases are available under the general Order to cash process.

Disadvantage so far:

- additional work to link modular integration test cases with the general Order to cash process.

- the sequence of how the modular integration test cases shall be tested is not provided.

- every user specific sorting activity changes the order of assigned modular integration test cases.

- no clear visibility how many process variants are available for the general order to cash process and which modular integration test cases are belonging to which variant.
6) To solve the last disadvantage, you can make use of process variants. For every order to cash process variant, you can create a appropriate variant.

7) The collaboration diagram 00_E2E_OTC_00 which shows all possibilities of our general order to cash can now be copied into every of such process variants.
8) In this diagram copy the unnecessary modular processes can be deleted.

9) For the process variant you can also assign all relevant modular integration test cases.

And as column browser view

Advantage compared to previous step:
- all relevant modular integration test cases for this particular order to cash variant are grouped together
Disadvantage on the end:

- additional work to created process variants, additional diagrams and link modular integration test cases
- the sequence of modular integration test cases in test plan has to be reorganized/defined
- the variation within the modular processes are not visible so finally the real number of variations within this process variant is a black box

All the disadvantages listed here are the reason why SAP is not recommending this method to document end to end processes.