



Process Governance

SEMANTIC CHECKS

Version 9.8 – Service Release 4

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This document applies to ARIS Version 9.8 and to all subsequent releases. Specifications contained herein are subject to change and these changes will be reported in subsequent release notes or new editions.

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1 Profile "Rules for automation"

ARIS Process Governance provides pre-defined semantic checks. The *Rules for Automation* check whether the relationships and the structure of models are correct (according to modeling conventions) to enable automation. They also check whether all required items and information are available. You can start the semantic check for value-added chain diagrams and EPCs.

The checks are described in this document.

2 Checks

2.1 Start model (Value chain diagram or EPC)

These checks are always executed. No check box in the dialog option needs to be ticked.

2.1.1 Trigger symbol

- **Explanation**
This check evaluates if there is exactly 1 symbol in the start model (VACD or EPC), which represents the trigger of the process automation.
- **Error message**
There is not exactly 1 process with the symbol representing the trigger of the automation.

2.1.2 Assignment to exactly 1 EPC (drill down)

- **Explanation**
This check evaluates if each function with a symbol for automation has exactly 1 EPC assigned to it.
- **Error message**
The process – to be automated – does not have exactly 1 EPC assigned.

2.1.3 Start model (VACD or EPC) and process interfaces in assigned EPCs

- **Explanation**
This check evaluates if all functions with symbols for automation occur at least once as process interfaces in the assigned EPCs. (This is necessary because in the assigned EPC, the flow is followed until a process interface is reached. If this process interface occurs as automation-relevant symbol in the superior start model (VACD or EPC), the assigned EPC is considered. If not, the process interface is ignored.)
- **Error message**
A process – defined in the start model (VACD or EPC) as being relevant for automation – does not occur as process interface in any of the relevant assigned EPCs.

2.2 Process flow checks

These checks are executed when the check box "Process Flow" is ticked in the dialog box.

2.2.1 "Trigger process" with assigned EPC having "Trigger" event

- **Explanation**
This check evaluates if the EPC – assigned to the "Trigger" process in the start model – has exactly 1 "Trigger" event.
- **Error message**
The EPC – assigned to the "Trigger" process in the start model, – does not have exactly 1 "Trigger" event.

2.2.2 Process flow – Events

2.2.2.1 Automation-relevant function after trigger event

- **Explanation**
This check evaluates if there is at least 1 function relevant for automation (indirectly) after an event triggering the automation.
- **Error message**
After the event triggering automation, there is no task defined which is relevant for automation (human task/automated task/notification task/live message).

2.2.2.2 Only one event triggering automation

- **Explanation**
This check evaluates if there is only one symbol in all relevant process models which describes the trigger of the process.
- **Error message**
Either
 - In the relevant EPCs, there is more than one event defined as trigger for automationOr
 - The event triggering automation occurs more than once in the assigned EPCs

2.2.2.3 Event triggering automation with screen - No user chooser allowed

- **Explanation**

This check evaluates if the screen linked to a trigger event offers a user chooser. This is not allowed because process automation is not yet started when starting the trigger screen. Thus, no users can be listed.
- **Error message**

The trigger screen includes user chooser(s). This is not possible because automation is not yet started in this screen. However, only automation can provide the list of users to select from.

2.2.2.4 Event triggering automation and assigned data flow diagram

- **Explanation**

This check evaluates if the event triggering automation is also assigned to a data flow diagram. (The data flow diagram generates the data either defined in the screen or in the service. Otherwise, the data is not available for mapping later on.)
- **Error message**

The event triggering automation is not assigned to a data flow diagram. However, this assignment is necessary to create the screen or service data and make it available for mapping later on.

2.2.2.5 Events after XOR/Open OR decision – Direct event required

- **Explanation**

This check evaluates that logical operators – which require a decision – are always followed directly by an event. Otherwise, the logical decision flow is not clear.
- **Error message**

There is a logical operator, which requires a decision, which is not directly followed by an event. A direct connection to an event is required for each logical operator which requires a decision, for example XOR operator.

2.2.2.6 Events after XOR/Open OR decision – Assigned to data flow diagram

- **Explanation**
This check evaluates if the each event which follows directly a decision operator has a data flow diagram assigned. Without an assigned data flow diagram, the process will not automatically follow the correct branch. (End events of detailed EPCs do not require a data flow if those events occur in the superior EPC and have the data flow assigned, there.)
- **Error message**
The event following directly an XOR decision requires an assigned data flow diagram. However, this assignment is missing.

2.2.2.7 Timer event

- **Explanation**
This check evaluates if the timer event has the date maintained in the assigned data flow diagram.
- **Error message**
Either the timer event is not assigned to a data flow diagram or the date is not mapped in the assigned model.

2.2.2.8 Event before automation-relevant process interface: Correct hand over

- **Explanation**
This check evaluates if the hand over between automation-relevant processes are correct: An event, leading to an automation-relevant process interface – must occur as start event in the assigned EPC.
- **Error message**
The event triggers an automation-relevant process interface. However, the event is not occurring as start event in the assigned EPC.

2.2.2.9 Event after automation-relevant process interface: Correct hand over

- **Explanation**
This check evaluates if the hand over between automation-relevant processes are correct: An event, following an automation-relevant process interface – must occur as end event in the assigned EPC.
- **Error message**
The event follows an automation-relevant process interface. However, the event is not occurring as end event in the assigned EPC.

2.2.2.10 Termination event – At least one

- **Explanation**
This check evaluates if there is at least one termination event in the models relevant for automation.
- **Error message**
There are (parts of the) process which are never terminated because the termination event is missing. Please ensure that all automation-relevant process paths are terminated, using a termination event.

2.2.3 Process flow – Human tasks

2.2.3.1 Human task and automation-relevant organizational element

- **Explanation**
This check evaluates if each human task is linked to exactly one automation-relevant organizational element with the connection "carries out".
- **Error message**
The human task is not linked to exactly one allowed organizational element with the connection "carries out".

2.2.3.2 Human task and screen

- **Explanation**
This check evaluates if each human task is linked to exactly one automation-relevant screen with the connection "is represented by".
- **Error message**
The human task is not linked to exactly one screen with the connection "is represented by" which is relevant for automation. Please check the connection type and/or link a screen which was defined in the dialog editor.

2.2.3.3 Human task and e-mail notification as information that task is pending

- **Explanation**
This check evaluates if there is a maximum of one e-mail linked to a human task as input, using the symbol e-mail (object type: information carrier) and the connection "provides input for".
- **Error message**
The human task has more than one e-mail (information carrier) with "provides input for" connection. However, a maximum of one e-mail is allowed per human task.

2.2.3.4 Human task assigned to data flow diagram

- **Explanation**
This check evaluates if each human task is assigned to a data flow diagram in order to make sure that the data is processed correctly during automation.
- **Error message**
The human task is not assigned to a data flow diagram for this process model.

2.2.4 Process flow – Notification task

2.2.4.1 Notification task – E-mail input

- **Explanation**
This check evaluates if there is exactly one e-mail linked to a notification task as input, using the symbol e-mail (object type: information carrier) and the connection "is input for".
- **Error message**
The notification task is not linked to exactly one e-mail (object type: information carrier) with the connection "is input for".

2.2.4.2 Notification task – Organizational element must be informed about

- **Explanation**
This check evaluates if there is at least one automation-relevant organizational element linked to a notification task with the connection "must be informed about".
- **Error message**
The notification task is not linked to at least one organizational element (interpreted in automation) with the connection "must be informed about".

2.2.4.3 Notification task assigned to data flow diagram

- **Explanation**
This check evaluates if each notification task is assigned to a data flow diagram in order to make sure that the data is processed correctly during automation.
- **Error message**
The notification task is not assigned to a data flow diagram for this process model.

2.2.5 Process flow – Live message

2.2.5.1 Live message task – E-mail input

- **Explanation**
This check evaluates if a live message has the relevant input data. (Either modeled as one information carrier in the EPC, or as input information in the assigned data flow model.
- **Error message**
The live message task is not linked to exactly 0 or 1 e-mail (object type: information carrier) with the connection "is input for".

2.2.5.2 Live message task assigned to data flow diagram

- **Explanation**
This check evaluates if each live message task is assigned to a data flow diagram in order to make sure that the data is processed correctly during automation.
- **Error message**
The live message task is not assigned to a data flow diagram for this process model.

2.2.6 Process flow – Automated task

2.2.6.1 Automated task – Software service operation type

- **Explanation**
This check evaluates if each automated task has exactly one software service operation type linked with the connection "supports".
- **Error message**
The automated task is not supported by exactly one software service operation type (object type: IT function).

2.2.6.2 Automated task assigned to data flow diagram

- **Explanation**
This check evaluates if each automated task is assigned to a data flow diagram in order to make sure that the data is processed correctly during automation.
- **Error message**
The automated task is not assigned to a data flow diagram for this process model.

2.2.7 Process flow – Detailed task

2.2.7.1 Detailed task - Assigned with one EPC

- **Explanation**
This check evaluates if each function, representing a detailed automation-relevant process (symbol: "detailed task") is assigned to exactly one EPC.
- **Error message**
The task with the symbol "detailed task" must be assigned to exactly one EPC.

2.2.7.2 Detailed task - Assigned with one EPC with automation task

- **Explanation**
This check evaluates if the EPC – assigned to a function with the symbol "detailed task" – has at least one automation-relevant function (for example human task or automated task).
- **Error message**
The EPC - assigned to the "detailed task" - does not have any task symbol which is relevant for automation (for example human task, automated task, notification task).

2.2.7.3 Detailed task - Assigned with EPC without process interfaces

- **Explanation**

This check evaluates if the EPC – assigned to a function with the symbol "detailed task" – has process interface(s). Process interfaces are not allowed in lower-level EPCs.

- **Error message**

The EPC - assigned to the "detailed task" - has process interface(s). However, process interfaces are not allowed on this detailed level.

2.2.7.4 Detailed task - Assigned with EPC: Correct hand over

- **Explanation**

This check evaluates if the event(s)

- Leading to the partly automated task is also the start event in the assigned EPC
- Following the partly automated task is also an end event in the assigned EPC.

- **Error message**

The EPC - assigned to the "detailed task" – has a start event which is not a start event for the "detailed task".

Or:

The EPC - assigned to the "detailed task" – has an end event which is not a following event for the "detailed task".

2.2.7.5 Process interface and event: Unique combination

- **Explanation**

This check evaluates if the combination

- Event (+ log operator) + interface
- Interface (+ log operator) + event

Is unique in the entire end-to-end process.

- **Error message**

The combination of

- event (+ log operator) + interface
- Interface (+ log operator) + event

is not unique in the end-to-end process. Please ensure that the combination is unique, for example, in defining a new event.

2.2.7.6 Detailed task – Assigned with EPC: Data mapping for recurring task execution

- **Explanation**

This check evaluates an EPC assigned to a detailed task. If in the detailed EPC, there is at least one data mapping done as recurring task, then, the 1st function in the detailed task

- Must be relevant for automation
- Must have a data mapping with recurring task execution.

- **Error message**

The EPC is assigned to a detailed task and has at least one data mapping done as recurring task. However, this is only possible if the 1st function in the assigned EPC is relevant for automation and has a data mapping as recurring task.

2.2.8 Process flow – Logical operator rules

These checks are executed when the check box "Process Flow" is ticked in the dialog box.

2.2.8.1 Logical operator rules - Termination rule – Only for joining paths

- **Explanation**
This check evaluates if Termination Rule is only used for joining paths, not for splitting them.
- **Error message**
The Termination Rule can only be used for joining paths. However, the Termination Rule has only 1 incoming connection and / or more than 1 outgoing connections.

2.2.8.2 Logical operator rules –Only AND/XOR/Open OR/Termination allowed

- **Explanation**
This check evaluates if only those logical operators are used which are automation-relevant.
- **Error message**
In the entire process flow, there are logical operator rules which are not allowed. Only XOR/AND/Open OR/TERMINATION operators are allowed.

2.2.9 Process flow – Standard structure rules

These checks are executed when the check box "Process Flow" is ticked in the dialog box.

2.2.9.1 All functions/events have only one incoming/outgoing connection

Same check as available in standard, but only focusing on automation-relevant functions/events.

2.2.9.2 No OR/XOR possible after event

Same check as available in standard, but only focusing on automation-relevant functions/events.

2.2.9.3 Process interface with assigned processes (checks event)

Same check as available in standard, but only focusing on automation-relevant functions/events.

2.3 Screens and related models

These checks are executed when the check box "Screen" is ticked in the dialog box.

2.3.1 Screen – assigned screen diagram

- **Explanation**
This check evaluates if each automation-relevant screen has exactly one screen diagram assigned which stores the data used in the screen.
- **Error message**
The automation relevant screen has less or more than exactly one screen diagram assigned.

2.4 Services and related models

These checks are executed when the check box "Service" is ticked in the dialog box.

2.4.1 Software service operation type – Linked to software service type

- **Explanation**
Each Software Service Operation Type (object type: IT function type) - which is relevant for automation – must be linked to exactly one Software Service Type (object type: application system type) in an Application System Type Diagram.
Connection: Software Service Type – Encompasses - Software Service Operation Type
- **Error message**
The Software Service Operation Type you use to automate, is not allocated to exactly one Software Service Type with the connection Encompasses in an Application System Type Diagram.

2.4.2 Software service operation type – Assigned to access diagram

- **Explanation**
Each Software Service Operation Type (object type: IT function type) - which is relevant for automation – must be assigned to exactly one Access Diagram.
- **Error message**
The Software Service Operation Type you use to automate, is not assigned to exactly one Access Diagram (to define the data, relevant for the service).

2.5 Organizational charts

These checks are executed when the check box "Organization" is ticked in the dialog box.

2.5.1 Only allowed object types used for organizational element

- **Explanation**

All automation-relevant organizational elements must be integrated in organizational hierarchy/hierarchies, having a hierarchy from the escalation manager down to the person (either person modeled in ARIS or organizational elements linked to LDAP).

Here, it is evaluated that the allowed object types (organizational unit, group, person type, position, person) are used in the hierarchy for the element in question, starting from the escalation manager to the real people, either modeled in ARIS or organizational elements linked to LDAP).

- **Error message**

The hierarchy is not modeled correctly for the organizational element in question, because in the top-down hierarchy, object types are used which are not allowed. (Allowed object types are organizational unit, group, person type, position, person.)

2.5.2 Only allowed connection types to link allowed organizational element

- **Explanation**

All automation-relevant organizational elements must be integrated in organizational hierarchy/hierarchies, having a hierarchy from the escalation manager down to the person (either person modeled in ARIS or organizational elements linked to LDAP).

Here, it is evaluated that the allowed object types use the correct connection types in the hierarchy for the element in question. (Starting from the escalation manager to the real people, either modeled in ARIS or organizational elements linked to LDAP).

- **Error message**

The hierarchy is not modeled correctly for the organizational element in question, because in the top-down hierarchy, connection types are used which are not allowed.

2.5.3 Correct hierarchy: Leave of superior = Root of subordinate

- **Explanation**
If the organizational hierarchy can be described in various organizational charts, the organizational charts must be modeled correctly. Thus, the leave of the superior model must be the root of the assigned model.
- **Error message**
The assignment structure is not correct: The leave of the superior organizational chart is not the root of the organizational chart of the assigned model.

2.5.4 Pure hierarchy (except escalation role and person)

- **Explanation**
The organizational structure – relevant for automation – must be a pure hierarchy. The only exceptions are: persons and / or roles representing the escalation manager.
- **Error message**
The organizational structure – relevant for automation – is not a pure hierarchy.

2.5.5 One escalation role (viewed from bottom up)

- **Explanation**
There must be exactly one escalation role for each organizational element relevant for automation. The escalation role is found bottom-up.
An escalation role must be linked to an organizational unit or to a group with the connection type "is organization manager for". If no escalation role is found for each automation-relevant organizational element, an error is detected. (However, the escalation role does not have to be defined for each automation-relevant organizational unit / group directly. If the superior organizational unit / group has an escalation role, the subordinate organizational unit / group does not need to repeat this escalation role.)
- **Error message**
The organizational structure – relevant for automation – does not have an escalation role available for all relevant organizational elements.

2.5.6 Escalation role = 1 person

There are different ways of defining the escalation role: Either in an organizational chart or in a human task. However, there must not be more than 1 person occupying the escalation role.

- **Explanation**
An escalation role is represented by exactly one person (either modeled in ARIS to object type person or linked to LDAP-person).
- **Error message**
The escalation role in question is not linked to one human being (either modeled in ARIS to object type person to linked to LDAP-person).

2.5.7 Lowest element in hierarchy = Person (no LDAP integration)

- **Explanation**
If LDAP is not integrated, the lowest elements in the hierarchical structure must be persons.
- **Error message**
Although the user management is not linked to LDAP, the lowest element in the organizational hierarchy are not persons.

2.5.8 Mandatory attributes missing for person (no LDAP integration)

- **Explanation**
If LDAP is not integrated, the persons must have all relevant attributes maintained (first name, last name, e-mail address, log in).
- **Error message**
Although the user management is not linked to LDAP, the person/s do not have the necessary attributes maintained.

2.5.9 Mandatory attributes missing for LDAP elements

- **Explanation**

If LDAP is used, the relevant organizational elements – used in processes – require all LDAP-relevant information either directly or indirectly.

 - Directly
This needs to be maintained in the organizational elements' attribute directly.
 - Indirectly
If this is not the case, the LDAP information must be stored in those organizational elements, detailing the objects used in the process.
- **Error message**

Although LDAP is used, neither the organizational elements – used in the process – nor their detailed hierarchy have the LDAP-relevant attribute/s maintained.

2.5.10 LDAP – Pure LDAP hierarchy (except person)

- **Explanation**

The leading hierarchy is taken from LDAP. Thus, all hierarchy elements must find their equivalent in LDAP as soon as LDAP is used in the organizational hierarchy on definition level.
- **Error message**

Organizational elements - which are linked to LDAP – have detailed organizational elements which do not have an LDAP equivalent. This is not possible because all detailed elements of an LDAP equivalent must be LDAP equivalents, too.

2.5.11 No loops allowed (except: escalation manager/person)

- **Explanation**

The organizational structure must be interpreted both ways, drill down or bottom up to superior models. Therefore, no loops can be allowed (except for Escalation roles and persons).
- **Error message**

There is a loop existing which is not allowed for automation. (Reason: Not only drill down, but also navigation to a superior model is required.)

2.5.12 Unique log in for all persons in database

- **Explanation**
All object types persons relevant for automation must have unique log ins. Therefore, this semantic check detects if more than one object type person has the same value in the attribute log in.
- **Error message**
There are several object types "person" in the database which share the same value in the attribute "log in". However, the log in must be unique. Please either change the log in value, or delete the objects.

2.5.13 At least 1 organizational chart with "active users"

- **Explanation**
All persons – who need to play an active in automation – need to be listed an "Active User". To do so, the persons are occurring in an organizational chart which is flagged as "Active user" organizational chart. Therefore, this semantic check detects if there is not at least one organizational chart within the entire automation database which has the model attribute maintained.
- **Error message**
There is not at least one organizational chart in the entire automation database which is flagged as "Active users" (model attribute) in order to list all persons that need to play an active role in the automated processes. Please maintain the attribute "Active user" for the organizational chart(s) which list your active automation users.

2.6 General semantic checks

2.6.1 Return "successful" value if semantic checks all ok

- **Explanation**
When all models for automation are correct, they can be deployed. This check is only positive, if all other checks are positive.
- **Error message**
Unfortunately at least one model is not correct. Therefore, deployment of your models is not possible. Please refer to the generated result file to understand which models / objects are not correct.

2.6.2 Model attribute: Automation category for start model

- **Explanation**
A model – to be automated – needs to be classified in Automation Categories, like Release Cycle Management, etc. Therefore, the model attribute Process Category needs to be maintained in the start model.
- **Error message**
The model you want to deploy does not have the Automation Category maintained. Please define the category of the automation in maintaining the corresponding model attribute.

2.6.3 Process admin: At least once in database

- **Explanation**
At least one person in the database must be flagged as Process Administrator. Please make sure that the organizational chart – where the person(s) occur – is deployed.
- **Error message**
There is no person in the entire database flagged as Process Administrator. Please flag at least one person accordingly and make sure that you deploy the organization chart where the person(s) occur.