

Solution Architecture Modelling Language

v.1.2.1

Boris Veroeveren

1. Introduction

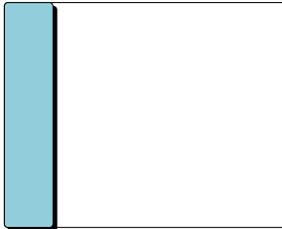
The Solution Architect is the "Man (or woman) in the middle" He or she is responsible to design functioning solutions that are in line with the dreams & boundaries defined by Enterprise Architecture, that realize the dreams and needs of the business, that are implementable by technical analysts and developers, that are sustainable and take into account a wide variety of non-functionals. The solution architect does this in dialogue with all the stakeholders above with whom he is in constant dialogue. For this he or she requires a language that allows to model the solution & allows to communicate the solution to different stakeholders.

The Solution Architecture Modelling Language contains a collection of shapes to depict business, data, application & technology architecture views organized in 9 stencils. These shapes may be freely copied & modified for own use. Drawings that contain them may be freely distributed. All other rights are reserved by Boris Veroveren from Belgium.

2. Swimlanes

Contains swimlane shapes to depict layered architecture views.

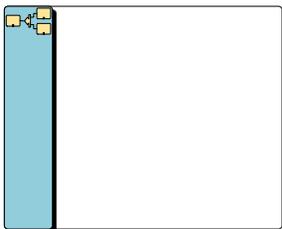
Generic Swimlane



Generic purpose swimlane. Can contain shapes from all stencils in the template.

Note: Container object: Use ungroup in case macros are disabled, to use as container. (see below)

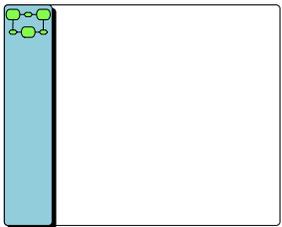
Business Process Swimlane



Swimlane to contain business process flows. The "Business process flow" shapes can be used to depict business process flows.

Note: Container object: Use ungroup in case macros are disabled, to use as container. (see below)

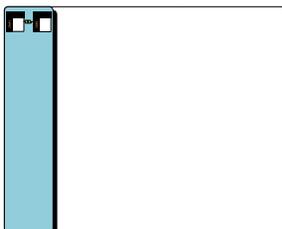
Business State Diagram



Swimlane to contain business state diagrams flows. The "State diagram" shapes can be used to depict business state diagrams.

Note: Container object: Use ungroup in case macros are disabled, to use as container. (see below)

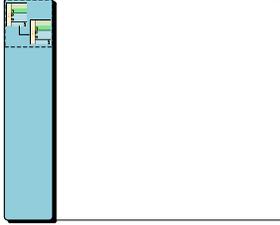
Information system Swimlane



Swimlane to contain Information System communication diagrams. The "Information system component" shapes can be used to depict IS diagrams.

Note: Container object: Use ungroup in case macros are disabled, to use as container. (see below)

Infra / Technology Swimlane



Swimlane to contain infrastructure/technology architectural diagrams. The "Infrastructure/technology architectural" shapes can be used to depict infrastructure/technology diagrams.

Note: Container object: Use ungroup in case macros are disabled, to use as container. (see below)

Connection points between shapes in different swimlanes



When several swimlanes are combined in one view: the connection point shape can be used to depict link:

- Between business process & IS diagram: which IS component(s) are used to realize/support specific steps in the Business process.
- Between state diagram & IS diagram: which IS component(s) are used to realize/support specific events in the state diagram.
- Between IS diagram & infra diagram where/how IS components are deployed within the infrastructure.

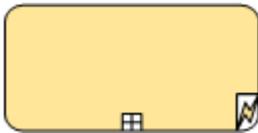
3. Business Process Flow

Stencil consists of a collection of master shapes to depict business process flow diagram & state transition diagrams.

Version:1.0

Business Process Flow Shapes

Generic Process Step



Depicts a generic step/action in a business process flow.



- Exception Handle- To be used to connect to process action which follows in case an exception occurs in the execution of the process step at hand



- Subprocess Identification. Indicates that the process step consists of several (sub-)process steps. The "Subprocess" sign can be show/hidden via the "Show Subprocess Sign" / "Remove Subprocess Sign"-action which is available in the shape menu (right-mouse click) .

Shape Data

Label	Description
Process Step	Name /label of the process step
Description	
Multi Instance	Specifics on concurrency of instances of the process step which may be executed in parallel
Exception Exit	Specifics on conditions in execution of process step that will result in exception / alternative processing.
Process Owner	Business Party being owner of the specifics & governance of a process/process step
Doc.Ref	Reference to documentation on process/process step

Time Actor Process Step

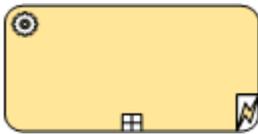


Depicts a step/action in a business process flow initiated by a time event

Shape Data

Label	Value
Process Step	Name /label of the process step
Description	
Time Condition	Time condition(s) that have to be met in order for the process step to be executed.
Multi Instance	Specifics on concurrency of instances of the process step which may be executed in parallel
Exception Exit	Specifics on conditions in execution of process step that will result in exception / alternative processing.
Process Owner	Business Party being owner of the specifics & governance of a process/process step
Doc.Ref.	Reference to documentation on process/process step

Automatic Process Step



Depicts a fully automated process step

Shape Data

Label	Description
Process Step	Name /label of the process step
Description	
Multi Instance	Specifics on concurrency of instances of the process step which may be executed in parallel
Exception Exit	Specifics on conditions in execution of process step that will result in exception / alternative processing.
Process Owner	Business Party being owner of the specifics & governance of a process/process step
Doc.Ref	Reference to documentation on process/process step

Human System Process Step



Process Step with human interaction on an information system

Shape Data

Label	Value
Process Step	Name /label of the process step
Description	
Human Actor	Actor: business or IT responsible for the triggering and / or execution of the process step in interaction with an IT-component
Multi Instance	Specifics on concurrency of instances of the process step which may be executed in parallel
Exception Exit	Specifics on conditions in execution of process step that will result in exception / alternative processing.
Process Owner	Business Party being owner of the specifics & governance of a process/process step
Doc.Ref.	Reference to documentation on process/process step

Human Process Step



Non automated human actor process step

Shape Data

Label	Value
Process Step	Name /label of the process step
Description	
Human Actor	Actor business or IT responsible for the triggering and / or execution of the process step in interaction with an IT-component
Multi Instance	Specifics on concurrency of instances of the process step which may be executed in parallel
Exception Exit	Specifics on conditions in execution of process step that will result in exception / alternative processing.
Process Owner	Business Party being owner of the specifics & governance of a process/process step
Doc.Ref.	Reference to documentation on process/process step

Generic Join/Split



Generic join / split condition.

Shape Data

Label	Value
Description	

OR - Join/Split

Join/split condition: if any of the entering sequence flows enters the join/split condition the condition is true and the process flows continues.

Shape Data

Label	Value
Description	

AND - Join/Split

Join/split condition: the condition is true if all of the entering sequence flows are complete.

Shape Data

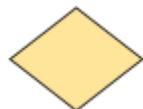
Label	Value
Description	

Complex Join/Split

Join/split condition to be used in case of complex conditions.

Shape Data

Label	Value
Description	

Decision

Shape Data

Label	Value
Description	

Process Sequence



Synchronous transition to a subsequent process step/action..

Process Sequence (Asynch)



Asynchronous transition to a subsequent process step/action.

Data Flow



Flow of data within a process flow. To be used when data flows don't (fully) follow the process sequence flow.

State Diagram Shapes

State



State within a business state diagram

Shape Data

Label	Value
Description	

Generic Event



Generic event triggering a state transition.

Shape Data

Label	Value
Description	

Exception Event

Exception event triggering a state transition.

Shape Data

Label	Value
Description	

Message Event

Message event triggering a state transition.

Shape Data

Label	Value
Description	

System Event

Event occurring within an Information System which triggers a state transition

Shape Data

Label	Value
Description	

Human Actor Event

Human initiated event triggering a state transition.

Shape Data

Label	Value
Name	Name /label of the human Actor Event
Description	
Human Actor	Human Actor: business, IT or outside company responsible for the initiation of the event"

Time Event



Time event triggering a state transition.

Shape Data

Label	Value
Name	Name /label of the time event
Description	
Human Actor	Time condition(s) that initiate the event

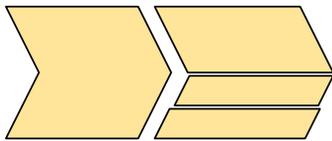
Shape Data

State Transition



Depicts the flow of state transition within a state diagram.

Sequence Flow Shapes



Stencil contains 3 different shapes to construct sequence flows of process steps sequentially following one by one. Including shapes to depict parallel actions within the flow. Can also be used to depict timelines.

Shape Data

Label	Description
Process Step	Name /label of the process step
Description	
Doc.Ref	Reference to documentation on process/process step

Link To Information System



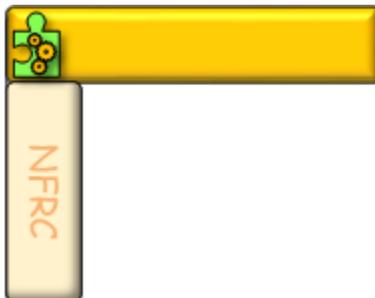
Point of interaction/relation between the business process/flow diagram & the Information System Components.

4. Information System Components

Stencil consists of a collection of master shapes to depict Information System communication diagrams.	Version:1.0
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“Information system component” Shapes

Generic Inf. system Component



Artefact to depict Information System components. Artefact consists of a NFRC area to hold key "nonfunctional requirements" which are driving for the positioning, selection/ development , deployment etc. of the component. White area is meant to hold the key functional services.

Note: Container object: Use ungroup in case macros are disabled, to use as container. (see below)

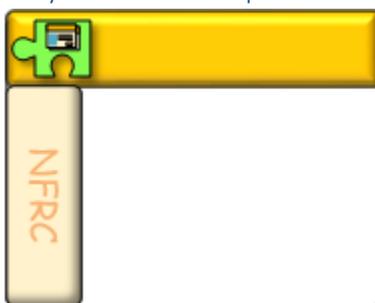
Inf. System Storage Component



Artefact to depict Information system component which holds the data model. Artefact consists of a NFRC area to hold key "nonfunctional requirements" which are driving for the positioning, selection/ development , deployment etc. of the component. White area is meant to hold the conceptual datamodel.

Note: Container object: Use ungroup in case macros are disabled, to use as container. (see below)

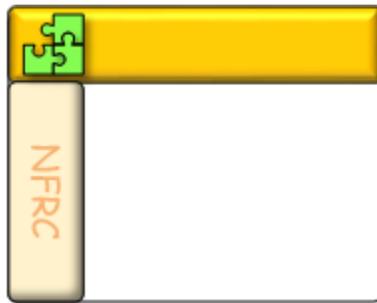
Inf. system GUI Component



Artefact to depict a GUI Inf. system component. Artefact consists of a NFRC area to hold key "nonfunctional requirements" which are driving for the positioning, selection/ development , deployment etc. of the GUI component. White area is meant to hold HL screen flow.

Note: Container object: Use ungroup in case macros are disabled, to use as container. (see below)

Information System



Artefact to depict an Information System which may consists of several other components: GUI, data or functional components. Artefact consists of a NFRC area to hold key "nonfunctional requirements" which are driving for the positioning, selection/ development , deployment etc. of the GUI component. White area is meant to hold main functional services.

Note: Container object: Use ungroup in case macros are disabled, to use as container. (see below)

Shape Data

Label	Value
Name	Name of the Information system component
Description	
Version	Version of the Information system component
Business owner	Organization /Organizational unit who is owner of the IS component
IT Custodian	Organization / Organizational unit accountable for the operations, maintenance, life cycle management of the IS component
IT Provider	Organization /Organizational unit responsible for supplying / building the IS component.
End Of Life	When does the IS component will become end of life.
Doc.Ref.	

"IS Interaction with data model" - shapes

Data Retrieve



Depicts the selection/retrieval of data. Interacts directly with the conceptual model.

The box symbol can be moved on the shape

Data Delete



Depicts the deletion of data. Interacts directly with the conceptual model.

The box symbol can be moved on the shape

Data Update



Update of data. Interacts directly with the conceptual model.

Data Store



The box symbol can be moved on the shape

Storage of data. Interacts directly with the conceptual model.
The box symbol can be moved on the shape

Other Shapes

Transient data set



Depicts collection of data which is interchanged between IS components. Transient data is not or only temporarily stored.

Shape Data

Label	Value
Name	
Description	
Single Or Bulk	"Specifies if the transient data set consist of one message or a collection (bulk) of messages"
Format Type	"Specifies the format of the message. Flat, XML, CSV, EDI,.."
Transport Integrity	"Which measures are taken the level of the message to ensure the integrity of the transient data set is preserved.? "
Confidentiality	"Measures taken at level of the transient data set to preserve the confidentiality"
Doc.Ref.	Reference to documentation on the message content, format etc.

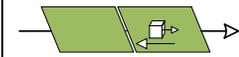
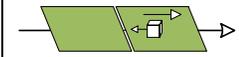
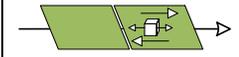
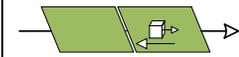
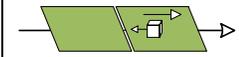
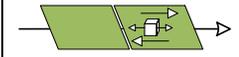
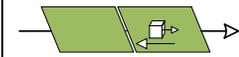
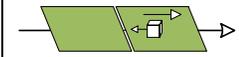
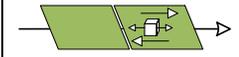
Interaction with Qualifiers



Describes the interaction between different information system component including type of trigger initiating the interaction & the communication pattern

Shape Data

Label	Value												
Name													
Trigger	<p>Type of event triggering the interaction</p> <table border="1"> <thead> <tr> <th>Value</th> <th>Appearance</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Time</td> <td></td> <td>Time event may be a specific time, time interval</td> </tr> <tr> <td>Human</td> <td></td> <td>Human action triggering</td> </tr> <tr> <td>Message</td> <td></td> <td>Message receipt in IS component triggering the interaction</td> </tr> </tbody> </table>	Value	Appearance	Description	Time		Time event may be a specific time, time interval	Human		Human action triggering	Message		Message receipt in IS component triggering the interaction
Value	Appearance	Description											
Time		Time event may be a specific time, time interval											
Human		Human action triggering											
Message		Message receipt in IS component triggering the interaction											

Label	Value																		
	<table border="1"> <tr> <td>System Event</td> <td></td> <td>Internal event in the IS component triggering the interaction</td> </tr> </table>	System Event		Internal event in the IS component triggering the interaction															
System Event		Internal event in the IS component triggering the interaction																	
Trigger Desc.	Specifics on the trigger event																		
Communication Pattern	<table border="1"> <thead> <tr> <th>Value</th> <th>Appearance</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>FireForget</td> <td></td> <td>Oneway communication.</td> </tr> <tr> <td>Request Response</td> <td></td> <td>Generic request response interaction</td> </tr> <tr> <td>Send with Ack</td> <td></td> <td>request response pattern in which the main data flow goes with the request (outbound message from the initiating IS component)</td> </tr> <tr> <td>Info Request</td> <td></td> <td>request response pattern in which the main data flow comes with the response</td> </tr> <tr> <td>Complex Pattern</td> <td></td> <td>More complex communication protocols in which multiple messages are exchanged.</td> </tr> </tbody> </table>	Value	Appearance	Description	FireForget		Oneway communication.	Request Response		Generic request response interaction	Send with Ack		request response pattern in which the main data flow goes with the request (outbound message from the initiating IS component)	Info Request		request response pattern in which the main data flow comes with the response	Complex Pattern		More complex communication protocols in which multiple messages are exchanged.
Value	Appearance	Description																	
FireForget		Oneway communication.																	
Request Response		Generic request response interaction																	
Send with Ack		request response pattern in which the main data flow goes with the request (outbound message from the initiating IS component)																	
Info Request		request response pattern in which the main data flow comes with the response																	
Complex Pattern		More complex communication protocols in which multiple messages are exchanged.																	
Comm. Pattern Details	Specifics on the communication pattern																		
Synchronous	True: synchronous communication False: Asynchronous communication																		
Comm.Protocol	Communication protocol applied e.g. TCP/IP, UDP, POP, SMTP, HTTP, FTP etc.																		
Format Type	Description of the message format type e.g. FlatText, XML, EDI, CSV. XBRL May also reference to a more specific standard like Swift ISO 20022 MX																		

Named Interaction



Describes the interaction between different information system components.

Shape Data

Same as "Interaction with Qualifiers"-shape

Named Interaction with pattern



Describes the interaction between different information system components.

Compared to the "Interaction with Qualifiers"-shape, only the "Communication Pattern" is shown but this can be moved on the shape.

Like the "named interaction" it also allows to show the name of the interaction flow.

Shape Data

Same as "Interaction with Qualifiers"-shape

Link To infra System



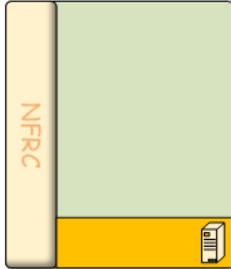
Points of interaction/relation between the IS diagram & the infra/technology architecture Components.

5. Infrastructure /technology Architecture

Stencil consists of a collection of master shapes to depict Infrastructure / technology architecture diagrams.

Version:1.0

Server



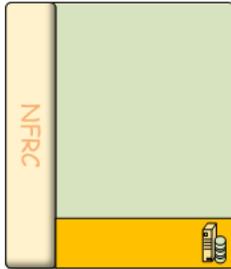
Depict a server component Infrastructure / technology architecture diagrams. Artefact consists of a NFRC area to hold key "nonfunctional requirements" which are driving for the positioning, selection/ development , deployment etc. of the component. Green area is meant to build stack of infra components supporting the IT solution. To build stack use layer artefacts.

Note: Container object: Use ungroup in case macros are disabled, to use as container. (see below)

Shape Data

Label	Value									
Name	Name of the infra server									
Description										
Type Hardware										
Business owner	Organization /Organizational unit who is owner of the infra component									
IT Custodian	Organization / Organizational unit accountable for the operations, maintenance, life cycle management of the Infra component.									
End Of Life	When does the server will become end of life.									
Physical Or Virtual	Physical Or Virtual Server									
	<table border="1"> <thead> <tr> <th>Value</th> <th>Appearance</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Physical</td> <td>Full line round shape</td> <td>Reference to a dedicated physical server</td> </tr> <tr> <td>Virtual</td> <td>Dotted line round shape</td> <td>Reference to a virtual server</td> </tr> </tbody> </table>	Value	Appearance	Description	Physical	Full line round shape	Reference to a dedicated physical server	Virtual	Dotted line round shape	Reference to a virtual server
	Value	Appearance	Description							
Physical	Full line round shape	Reference to a dedicated physical server								
Virtual	Dotted line round shape	Reference to a virtual server								
ActivePassive	"Active or Passive (stand-by) Server"									
	<table border="1"> <thead> <tr> <th>Value</th> <th>Appearance</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Active</td> <td></td> <td>Active server</td> </tr> <tr> <td>Passive</td> <td></td> <td>Passive server used in case of fail-over.</td> </tr> </tbody> </table>	Value	Appearance	Description	Active		Active server	Passive		Passive server used in case of fail-over.
Value	Appearance	Description								
Active		Active server								
Passive		Passive server used in case of fail-over.								

Storage Server



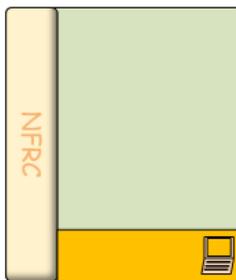
Depict a storage server component. Artefact consists of a NFRC area to hold key "nonfunctional requirements" which are driving for the positioning, selection/ development , deployment etc. of the component. Green area is meant to build stack of infra components supporting the IT solution. To build stack use layer artefacts.

Note: Container object: Use ungroup in case macros are disabled, to use as container. (see below)

Shape Data

See Infra server

Personal Computer



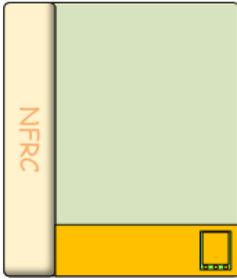
Depict a Personal Computer component. Artefact consists of a NFRC area to hold key "nonfunctional requirements" which are driving for the positioning, selection/ development , deployment etc. of the component. Green area is meant to build stack of infra components supporting the IT solution. To build stack use layer artefacts.

Note: Container object: Use ungroup in case macros are disabled, to use as container. (see below)

Shape Data

Label	Value
Name	Logical name (for a collection of) PCs
Description	
Type Hardware	
Business owner	Organization /Organizational unit who is owner of the infra component
IT Custodian	Organization / Organizational unit accountable for the operations, maintenance, life cycle management of the Infra component.
End Of Life	When does the server will become end of life.

Mobile Device



Depict a "mobile device" component. Artefact consists of a NFRC area to hold key "nonfunctional requirements" which are driving for the positioning, selection/ development , deployment etc. of the component. Green area is meant to build stack of infra components supporting the IT solution. To build stack use layer artefacts.

Note: Container object: Use ungroup in case macros are disabled, to use as container. (see below)

Shape Data

See Personal computer

Layer-shapes

O/S layer



Defines the operating system layer

Shape Data

Label	Value
O/S	Name of the Operation System
Version	Version of the Operation System

Firmware



Version of firmware on a device

Shape Data

Label	Value
Firmware	Name of the Firmware
Version	Version of the Firmware

Middleware layer



Generic stack layer artefact for middleware services

Shape Data

Label	Value
Middleware	Name of the Middleware
Version	Version of the Middleware

DB server layer



Database server layer

Shape Data

Label	Value
DB	Name of the database
Version	Version of the database

Application Server Layer



Database server layer

Shape Data

Label	Value
Application Server	Name of the Application Server Middleware
Version	Version of the Application Server Middleware

Support Service

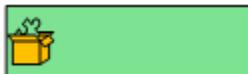


Support services e.g. monitoring agent, scheduling agent, FTP agent

Shape Data

Label	Value
Infra Service	Name of the infrastructure service
Version	Version of the infrastructure service

Deployed Application Component Instance



Deployed Application (IS) Component Instance

Shape Data

Label	Value
Application Comp.	Name of the deployed IS component
Version	Version of the IS component

Network

Network Zone

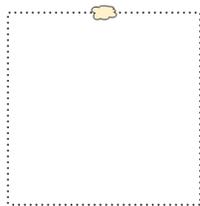


Depicts a physical or virtual network zone within the network.

Shape Data

Label	Value		
Physical Or Virtual	<i>Value</i>	<i>Appearance</i>	<i>Description</i>
	Physical	Dashed line round shape	Reference to a physical network
	Virtual	Dotted line round shape	Reference to a virtual network
Name	Name of the network zone		

Cloud



network "cloud"-zone

Firewall



Firewall component

Router



Router component

Other shapes

Interaction



Link between Infra components

Shape Data

Label	Value
Protocol	
Port	

Loadbalancer



Loadbalancer component

6. Non Functional Requirements and Concerns

Stencil contains collection of the most common NFR & concerns.	Version:1.0
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Accessibility

Acc	NFR on access to the component. From where/how does the system / component need to be accessed.
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Availability

Ava	Readiness of a system to deliver its functionality when requested/required. Considering: Availability windows: when does the system need to be available (e.g. during extended office hours) Reliability: to what level should availability of a system be assured during its availability window?
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Concurrency

Cnc	Ability to run system or parts of system in concurrency with other systems and/or to run multiple instances of system or parts of system in parallel.
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Deployment

Dep	Requirement on the deployment of the system on different platforms
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Data LCM

dLc	Data Lifecycle management. Requirements on speed of access data, offline storage, archiving & data purging.
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Encoding

Enc	Requirements on encoding to be used.
------------	--------------------------------------

Exception handling

Exh	How should business/technical errors be handled?
------------	--

Interoperability

	How easily should data or services be exchanged with other systems? API requirements, data transfer between different platform etc.
---	---

Isolation

	Requirements on loose coupling: runtime isolation (e.g. in case of failover), data model change, api change of a component.
---	---

Maintainability

	Requirements related to the maintainability of the system.
---	--

Monitoring

	Requirements on monitoring of the system
---	--

Multi context

	Requirements on running the system in multiple context: in different Timezones, in different legislations, in different languages, different environments etc.
---	--

Multi tenant

	Requirements on system needing to support multiple tenants in one instance or at least under one IT custodian. Tenant refers to multiple businesses owners/ organizations.
---	--

Operability

	Requirements on the operations of the system. E.g. remote operations, on site operations, specific regarding operating party (level of expertise)
---	---

Performance

	Performance: the speed of operation of a system in terms of response time, processing time, throughput etc. Considering E2E performance vs individual components to consider Load / concurrency to consider: average requests/time unit, peak requests/time unit Latency: the delay in time between components realizing an E2E flow.
---	---

Portability

	Ability to move / deploy system to different platforms
---	--

Product LCM

	Product Lifecycle management. Concerns related to how long a component will be supported on itself and in relation with other supporting (e.g. O/S, application server) & interacting components.
---	---

Recoverability

	Recoverability: the capability of a system to recover from a failed state/outage RPO: Recovery Point Objective: the maximum tolerable period in which data might be lost from an IT service due to a major incident. RTO: Recovery Time Objective: the duration of time within which a system must be restored to an operational state after a disaster
---	---

Reusability

	Should the system or parts of it be used in another context?
---	--

Security

	NFRC on Confidentiality Integrity Access control - Authentication / Authorization Security monitoring User access management Audit trailing Segregation of duties Data segregation / Chinese walls
---	--

Testing

	Concerns on testing and ability to test the system & staging of the application cross different environments (DTAP)
---	---

Usability

	Requirements on ease of use of the system. E.g. GUI-standards, language, size fonts etc.
---	--

NFRC- Shape Data

Label	Value
NFR	Specifics on the Non Functional Requirement
Concerns	Architectural concerns related to the ability to attain the NFR, to cost, to implementation, etc.  In case a concern is documented on an NFR an exclamation mark will be shown.
Guidelines	Architectural decisions & guidelines for design & implementation in order to attain the NFR.
Doc.Ref.	Reference to documentation related to NFR, concerns & guidelines linked to it.

7. Functionals

Stencil contains a collection of "generic" application services.
This collection is far from exhaustive..

Version:1.0

Numbered function



Allocation



Aggregation



Archiving



Cache



Calculation



Classification



Configuration



Data Cleaning



Data Manipulation



Data Quality



Decision Engine



Detection



Encryption



Filtering



GUI



Information service



Integration



Merging



Messaging



Modelling



Monitoring



Normalizing



Notification



Record



Reporting



Routing



Scanning



Scheduling



Storage



Streaming



Transformation



User Access Control



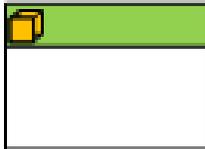
Validation



8. Conceptual Data Model

Stencil contains shape to depict a conceptual data model	Version:1.0
--	-------------

Data Object



Shape depicts a data object within a conceptual data model

Name of the data object will appear in green area.

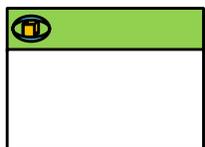
In white area key attributes of the data object may be put.

Note: Container object: Use ungroup in case macros are disabled, to use as container. (see below)

Shape Data

Label	Value
Name	Name of the data object (e.g. DB Table)
Description	
Data Owner	Organization /Organizational unit responsible owning the data & being responsible for the accuracy/quality of the data and & for the access to the data object.
MetaModel Owner	Organization /Organizational unit responsible for the definition of the data object, of the attributes it contains & its relationships with other data objects. Owner for the semantics of the data.

Data View Object



Shape depicts a data view on one or more data objects within the conceptual data model.

Note: Container object: Use ungroup in case macros are disabled, to use as container. (see below)

Shape Data

Label	Value
Name	Name of the data view object
Description	
Purpose	For which purpose is the data view created (e.g. abstraction to a certain process, reporting etc."
Data Owner	Organization /Organizational unit responsible owning the data & being responsible for the accuracy/quality of the data and & for the access to the data view object.

Label	Value
MetaModel Owner	Organization /Organizational unit responsible for the definition of the data object, of the attributes it contains & its relationships with other data objects. Owner for the semantics of the data view.

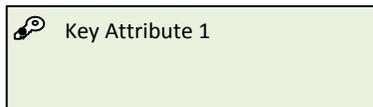
Relationship

———— Relationship between data objects.

Shape Data

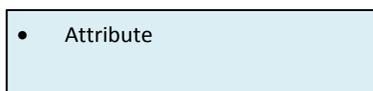
Label	Value												
Name	Functional name for the relation between data objects												
Description													
LeftSide Cardinality	Cardinality on the left side of the relation <table border="1"> <thead> <tr> <th>Value</th> <th>Appearance</th> </tr> </thead> <tbody> <tr> <td>empty</td> <td>————</td> </tr> <tr> <td>Exact One</td> <td>+ ————</td> </tr> <tr> <td>Zero to One</td> <td>+○————</td> </tr> <tr> <td>Zero to Many</td> <td>≥○————</td> </tr> <tr> <td>One to Many</td> <td>≥ ————</td> </tr> </tbody> </table>	Value	Appearance	empty	————	Exact One	+ ————	Zero to One	+○————	Zero to Many	≥○————	One to Many	≥ ————
Value	Appearance												
empty	————												
Exact One	+ ————												
Zero to One	+○————												
Zero to Many	≥○————												
One to Many	≥ ————												
RightSide Cardinality	Cardinality on the right side of the relation Same values as for LeftSide Cardinality												

Key Attributes



To be used together with data object shape to list the (primary) key attributes within a data object

Other Attributes

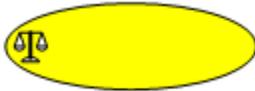


To be used together with data object shape to list the main attributes within a data object which are not part of the (primary) key.

9. Annotations

Stencil contains a collection of annotation master shapes: remarks on the architecture	Version:1.0
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Trade-Off



Architectural decision in which several functional & non-functional requirements have been balanced & choice has been made. Includes mitigation actions for functionals & NFRS which have been compromised due to the trade-off.

Shape Data

Label	Value
Reference	Reference to architectural trade-off decision
Description	Short description on architectural decision in which several functional & non-functional requirements have been balanced & choice has been made.

Risk



Identified risk. Impact; Probability & mitigation actions

Shape Data

Label	Value												
Reference	Reference to identified risk												
Description	Short description of the identified risk												
Probability	"Probability that the identified risk will materialize" <table border="1"> <thead> <tr> <th><i>Value</i></th> <th><i>Description</i></th> </tr> </thead> <tbody> <tr> <td>Very Unlikely</td> <td>Most probably the risk will not materialize (e.g. less 1% - 5% chance)</td> </tr> <tr> <td>Unlikely</td> <td>Most chance that the risk will not materialize (e.g. 10%-20% chance)</td> </tr> <tr> <td>Possibly</td> <td>The risk is real. May or may not materialize. (e.g. 30%-50% chance)</td> </tr> <tr> <td>Likely</td> <td>The risk is likely to materialize. (e.g. more than 50% chance)</td> </tr> <tr> <td>Very Likely"</td> <td>The risk will almost certain materialize. (e.g. more than 80%-90% chance)</td> </tr> </tbody> </table>	<i>Value</i>	<i>Description</i>	Very Unlikely	Most probably the risk will not materialize (e.g. less 1% - 5% chance)	Unlikely	Most chance that the risk will not materialize (e.g. 10%-20% chance)	Possibly	The risk is real. May or may not materialize. (e.g. 30%-50% chance)	Likely	The risk is likely to materialize. (e.g. more than 50% chance)	Very Likely"	The risk will almost certain materialize. (e.g. more than 80%-90% chance)
<i>Value</i>	<i>Description</i>												
Very Unlikely	Most probably the risk will not materialize (e.g. less 1% - 5% chance)												
Unlikely	Most chance that the risk will not materialize (e.g. 10%-20% chance)												
Possibly	The risk is real. May or may not materialize. (e.g. 30%-50% chance)												
Likely	The risk is likely to materialize. (e.g. more than 50% chance)												
Very Likely"	The risk will almost certain materialize. (e.g. more than 80%-90% chance)												

Label	Value												
	Note the estimation of a risk is in often a personal appreciation as also what is understood under the different terms on probability. It is a good to give indication on how these terms are understood in a certain context and how the probability has been assessed.												
Impact	<p>Impact in case the identified risk would materialize (direct & indirect cost, reputation, etc.)</p> <table border="1"> <thead> <tr> <th><i>Value</i></th> <th><i>Description</i></th> </tr> </thead> <tbody> <tr> <td>Very Low</td> <td>The impact is trivial within the context where the risk materializes</td> </tr> <tr> <td>Low</td> <td>The impact will be noticed within the context where the risk materializes. But can still be easily absorbed.</td> </tr> <tr> <td>Medium</td> <td>The impact will be considerable. Absorbing the impact will take some effort but remains feasible.</td> </tr> <tr> <td>High</td> <td>The impact of the risk is disturbing and may impact the continuation of business</td> </tr> <tr> <td>Very High</td> <td>The impact of the risk is highly disturbing and is almost certain to impact the continuation of business.</td> </tr> </tbody> </table> <p>Note: the impact of a risk is very different depending on the context where it occurs. E.g. a financial loss of €100000 may be devastating for a small company but trivial for a large internal company</p>	<i>Value</i>	<i>Description</i>	Very Low	The impact is trivial within the context where the risk materializes	Low	The impact will be noticed within the context where the risk materializes. But can still be easily absorbed.	Medium	The impact will be considerable. Absorbing the impact will take some effort but remains feasible.	High	The impact of the risk is disturbing and may impact the continuation of business	Very High	The impact of the risk is highly disturbing and is almost certain to impact the continuation of business.
<i>Value</i>	<i>Description</i>												
Very Low	The impact is trivial within the context where the risk materializes												
Low	The impact will be noticed within the context where the risk materializes. But can still be easily absorbed.												
Medium	The impact will be considerable. Absorbing the impact will take some effort but remains feasible.												
High	The impact of the risk is disturbing and may impact the continuation of business												
Very High	The impact of the risk is highly disturbing and is almost certain to impact the continuation of business.												
Mitigation	Mitigation actions to eliminate or reduce the impact of risk and/or its likelihood of occurring.												

Target

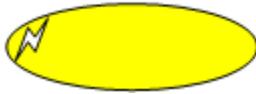


Remark on the target / evolution of the architecture

Shape Data

Label	Value
Reference	Reference to target architecture
Description	

Exception



Annotation on exception against standards; principles; guidelines which have been defined.

Shape Data

Label	Value
Reference	Reference to architectural decision regarding the exception.
Description	Description on standards; principles; guidelines on which there is an exception taken
Justification	Justification for the exception. May include corrective measures in future.

Constraint



Constraint which applies on (part of) the architecture. E.g. time, money, knowledge, availability of other components, principle, standard

Shape Data

Label	Value
Reference	Reference to documented constraint
Description	Description on constraint on the architecture

Arch. Guideline



Architectural guideline on realization of the architecture.

Shape Data

Label	Value
Reference	Reference to architectural guideline
Description	Short description on the architectural guideline

Remark



Remark Annotation. Mainly to be used during design phase of Solution Architecture.

Shape Data

Label	Value
Comment	

Assumption



Assumption Annotation. Mainly to be used during design phase of Solution Architecture.

Shape Data

Label	Value
Comment	

Question



Question Annotation. Mainly to be used during design phase of Solution Architecture.

Shape Data

Label	Value
Comment	

10. Miscellaneous

The NFRC area



Information system component and technology architecture artifacts have a “Non Functionals Requirements and Concerns area.” In this area the NFRCs which are driving for the architectural design / architectural positioning of components & interaction between components & for the further detailed design are to be mentioned.

The NFRC-shapes which are in the “Non Functional Requirements and Concerns” –stencil. e.g.  are to be used for this.

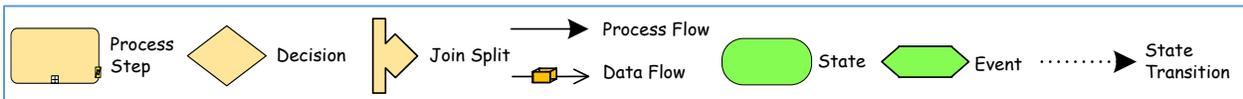
This Area can be hidden via the “Hide NFRC Area”- action which is available in the shape menu (right-mouse click) .

Legend

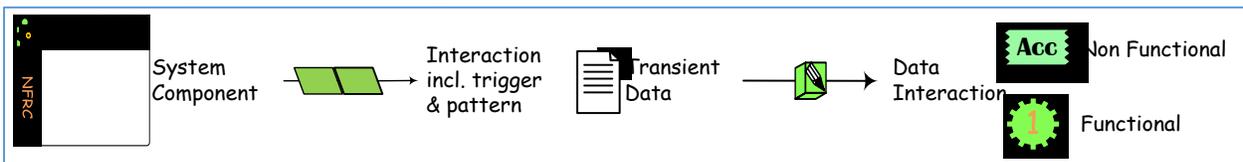
A diagram is an abstraction in which the different shapes have a meaning. In order to understand the diagram these shapes need to be understood, otherwise much of the information contained in the diagram will get lost for the stakeholders who are confronted with the diagram.

The “Legend” stencil contains a couple of “legend”-shapes which can be used for creating a legend.

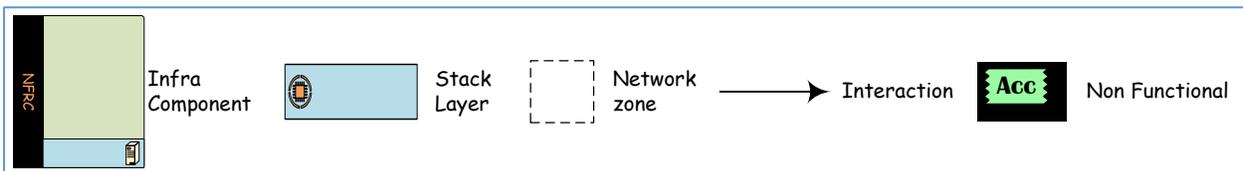
“Business process shapes” legend



“Information System Artefacts” legend



“Infra Artefacts” legend

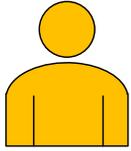


“Annotations”-legend



People Shapes

Generic Person



IT person



Business Person



Customer



Security Agent



In case macros are disabled in visio.

Several master shapes contain container-shape. In case macro's are enabled on a visio-instance, those shapes can directly be used as container. In case macro's are disabled. Do below actions in order to use those shapes as container.

- Select shape which has been dragged from stencil on to the visio page
- Right mouse click
- Select Group -> Ungroup menu item
- Ignore the warning message from Visio saying " This action will sever the object's link to its master" -> Click OK.
- The shape is now ready to be used as a container object.