# The rulebook $\beta_{AE}$

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#### 1 IR2 rules

$\beta_{IR2-M01}$	A trustworthy ecosys-	$\forall(E)$
	tem must have at least	(Eco(E)
	one rulebook	$\land \exists \ \beta \in S_\beta$
		$\rightarrow TwsEco(E))$
$\beta_{IR2-M02}$	Every rulebook must be	$\forall(E)$
	uniquely identified	(Eco(E)
		$\land (\forall \ \beta \in S_{\beta} \ (f_{id}(\beta) = c \to \exists ! c \in \mathcal{R}))$
		$\rightarrow TwsEco(E))$

Table 1: IR2 rulebook-related mandatory rules

$\beta_{IR2-M10}$	A participant is an ac-	$\forall(X)$
	tor that has a given	(Actor(X)
	name (for a natural per-	$\wedge$
	son) or an organisation	$(\exists A \in S_{attn} (\mathcal{A}ttestation_{t_{sub}}(A) = X))$
	name (for an organisa-	$\wedge$
	tion)	$(((Attestation_{tatt}(A) = givenName))$
		$\land (\mathcal{A}ttestation_{t_{val}}(A) \neq \emptyset))$
		$\vee ((Attestation_{tatt}(A) = orgName))$
		$\land (\mathcal{A}ttestation_{t_{val}}(A) \neq \emptyset)))$
		$\rightarrow Participant(X))$

Table 2: IR2 participant-related mandatory rule

$\beta_{IR2-D01A-AE}$	A trustworthy ecosys-	$\forall(E)$
	tem must contain at	(Eco(E))
	least one endorser	$\land (\exists A \in S_{attn} \exists X \in S_{PT})$
		$(\mathcal{A}ttestation_{t_{sub}}(A) = f_{id}(X)$
		$\land \mathcal{A}ttestation_{tatt}(A) = roleTypeBase$
		$\land \mathcal{A}ttestation_{tval}(A) = R_{EnDo}))$
		$\rightarrow TwsEco(E))$
$\beta_{IR2-D01B-AE}$	A trustworthy ecosys-	$\forall(E)$
	tem must contain at	(Eco(E)
	least one enforcer	$\land (\exists A \in S_{attn} \exists X \in S_{PT}$
		$(\mathcal{A}ttestation_{t_{sub}}(A) = f_{id}(X)$
		$\land \mathcal{A}ttestation_{tatt}(A) = roleTypeBase$
		$\land \mathcal{A}ttestation_{t_{val}}(A) = R_{EnFo}))$
		$\rightarrow TwsEco(X))$
$\beta_{IR2-D02-AE}$	A trustworthy ecosys-	$\forall(E)$
	tem must contain at	(Eco(E)
	least one authentic	$\land (\exists A \in S_{attn} \exists X \in S_{PT})$
	source	$(\mathcal{A}ttestation_{t_{sub}}(A) = f_{id}(X)$
		$\wedge \mathcal{A}ttestation_{tatt}(A) = roleTypeBase$
		$\land \mathcal{A}ttestation_{t_{val}}(A) = R_{AS}))$
		$\rightarrow TwsEco(E))$
$\beta_{IR2-D03-AE}$	A trustworthy ecosys-	$\forall(E)$
	tem must contain at	(Eco(E)
	least one accreditation	$\land (\exists A \in S_{attn} \exists X \in S_{PT}$
	body	$(\mathcal{A}ttestation_{t_{sub}}(A) = f_{id}(X)$
		$\land \mathcal{A}ttestation_{tatt}(A) = roleTypeBase$
		$\land \mathcal{A}ttestation_{tval}(A) = R_{AB}))$
		$\rightarrow TwsEco(E))$
$\beta_{IR2-D04-AE}$	A trustworthy ecosys-	$\forall(E)$
	tem must contain at	(Eco(E)
	least one conformity as-	$\land (\exists A \in S_{attn} \exists X \in S_{PT}$
	sessment body	$(\mathcal{A}ttestation_{t_{sub}}(A) = f_{id}(X)$
		$\land \mathcal{A}ttestation_{tatt}(A) = roleTypeBase$
		$\land \mathcal{A}ttestation_{tval}(A) = R_{CAB}))$
		$\rightarrow TwsEco(E))$

Table 3: IR2 enabler plane-related discretionary rules

$\beta_{IR2-D05-AE}$	A trustworthy ecosys-	$\forall(E)$
	tem must contain at	(Eco(E)
	least one evidence ser-	$\land (\exists A \in S_{attn} \exists X \in S_{PT})$
	vice provider	$(\mathcal{A}ttestation_{t_{sub}}(A) = f_{id}(X)$
		$\wedge \mathcal{A}ttestation_{tatt}(A) = roleTypeBase$
		$\land \mathcal{A}ttestation_{t_{val}}(A) = R_{EvSP}))$
		$\rightarrow TwsEco(E))$
$\beta_{IR2-D06-AE}$	A trustworthy ecosys-	$\forall(E)$
	tem must contain at	(Eco(E)
	least one claim status	$\land (\exists A \in S_{attn} \exists X \in S_{PT})$
	service provider	$(\mathcal{A}ttestation_{t_{sub}}(A) = f_{id}(X)$
		$\wedge \mathcal{A}ttestation_{tatt}(A) = roleTypeBase$
		$\land \mathcal{A}ttestation_{tval}(A) = R_{CsSP}))$
		$\rightarrow TwsEco(E))$
$\beta_{IR2-D07-AE}$	A trustworthy ecosys-	$\forall(E)$
	tem must contain at	(Eco(E)
	least one trustworthi-	$\land (\exists A \in S_{attn} \exists X \in S_{PT})$
	ness monitor	$(\mathcal{A}ttestation_{t_{sub}}(A) = f_{id}(X)$
		$\land \mathcal{A}ttestation_{tatt}(A) = roleTypeBase$
		$\land \mathcal{A}ttestation_{tval}(A) = R_{TwsMo}))$
		$\rightarrow TwsEco(E))$

Table 4: IR2 trustworthiness provision plane-related discretionary rules

$\beta_{IR2-D08-AE}$	A trustworthy ecosys-	$\forall(E)$
	tem must contain at	(Eco(E)
	least one functional ser-	$\land (\exists A \in S_{attn} \exists X \in S_{PT}$
	vice provider	$(\mathcal{A}ttestation_{t_{sub}}(A) = f_{id}(X)$
		$\land \mathcal{A}ttestation_{tatt}(A) = roleTypeBase$
		$\land \mathcal{A}ttestation_{tval}(A) = R_{FuSP}))$
		$\rightarrow TwsEco(E))$
$\beta_{IR2-D09-AE}$	A trustworthy ecosys-	$\forall(E)$
	tem must contain at	(Eco(E))
	least one functional ser-	$\land (\exists A \in S_{attn} \exists X \in S_{PT}$
	vice consumer	$(\mathcal{A}ttestation_{t_{sub}}(A) = f_{id}(X)$
		$\land \mathcal{A}ttestation_{tatt}(A) = roleTypeBase$
		$\land \mathcal{A}ttestation_{t_{val}}(A) = R_{FuSC}))$
		$\rightarrow TwsEco(E))$

Table 5: IR2 functional plane-related discretionary rules

#### 2 IR3 rules

$\beta_{IR3-M01}$	A participant is an ac-	$\forall(X)$
	tor that is uniquely	(Actor(X))
	identified	$\land (\forall \ A \in S_{attn})$
		$(\mathcal{A}ttestation_{t_{sub}}(A) = X$
		$\wedge \mathcal{A}ttestation_{tatt}(A) = eIdentifier$
		$\wedge \mathcal{A}ttestation_{t_{val}}(A) = c)$
		$\rightarrow \exists ! c \in \mathcal{P})$
		$\rightarrow Participant(X))$
		Alternatively
		$\forall(X)$
		(Actor(X))
		$\land (\exists A_1, A_2 \in S_{attn})$
		$((A_1 \neq A_2)$
		$\wedge (\mathcal{A}ttestation_{t_{sub}}(A_1) = X$
		$\land \mathcal{A}ttestation_{tatt}(A_1) = eIdentifier)$
		$\wedge (\mathcal{A}ttestation_{t_{sub}}(A_2) = X$
		$\land \mathcal{A}ttestation_{t_{att}}(A_2) = eIdentifier)$
		$\rightarrow (\mathcal{A}ttestation_{t_{val}}(A_1) = \mathcal{A}ttestation_{t_{val}}(A_2))$
		$\rightarrow Participant(X))$

Table 6: IR3 linked and unique identity mandatory rule

$\beta_{IR3-D11-AE}$	A participant's identity	$\forall X \in S_{PT} \exists A \in S_{attn}$
	must be self-attested	$(\mathcal{A}ttestation_{t_{sub}}(A) = f_{id}(X)$
		$\wedge \mathcal{A}ttestation_{tatt}(A) = eIdentifier$
		$\land \mathcal{A}ttestation_{t_{val}}(A) = f_{id}(X)$
		$\land \mathcal{A}ttestation_{a_{id}}(A) = \mathcal{A}ttestation_{t_{sub}}(A))$

Table 7: IR3 linked and unique identity discretionary rule/self

$\beta_{IR3-D21-AE}$	For all participants	$\forall X \in S_{PT} \exists A \in S_{attn}$
	there must at least	$(\mathcal{A}ttestation_{t_{sub}}(A) = f_{id}(X)$
	one identity attestation	$\wedge \mathcal{A}ttestation_{tatt}(A) = eIdentifier$
	that is not self-attested	$\rightarrow \mathcal{A}ttestation_{a:t}(A) \neq \mathcal{A}ttestation_{t:-t}(A))$
$\beta_{IR3-D22-AE}$	The identity of every	$\forall X \in S_{PT} \exists A_1, A_2 \in S_{attn}$
1 1100 2 22 112	participant must be	$(\mathcal{A}ttestation_{t_{int}}(A_1) = f_{id}(X)$
	attested to by at least	$\wedge \mathcal{A}ttestation_{t_{ett}}(A_1) = eIdentifier$
	one evidence service	$\wedge \mathcal{A}ttestation_{t-1}(A_1) = f_{id}(X)$
	provider	$\wedge \mathcal{A}ttestation_{t-1}(A_2) = \mathcal{A}ttestation_{a-1}(A_1)$
		$\wedge \mathcal{A}ttestation_{t_{a+1}}(A_2) = roleTypeBase$
		$\wedge \mathcal{A}ttestation_{t-1}(A_2) = R_{E_2SP}$
$\beta_{IR3-D23-AE}$	The identity of every	$\forall X \in S_{PT} \exists A_1, A_2, A_3, \in S_{attn}$
,	participant must be	$(\mathcal{A}ttestation_{t_{out}}(A_1) = f_{id}(X)$
	attested to by at least	$\wedge \mathcal{A}$ ttestation <sub>tatt</sub> (A <sub>1</sub> ) = eIdentifier
	one evidence service	$\wedge \mathcal{A}ttestation_{tual}(A_1) = f_{id}(X)$
	provider whose role	$\wedge \mathcal{A}ttestation_{tsub}(A_2) = \mathcal{A}ttestation_{a_{id}}(A_1)$
	has been attested to	$\wedge \mathcal{A}ttestation_{tatt}(A_2) = roleTypeBase$
	by a trustworthiness	$\wedge \mathcal{A}ttestation_{tual}(A_2) = R_{EvSP}$
	monitor	$\land \mathcal{A}ttestation_{t_{sub}}(A_3) = \mathcal{A}ttestation_{a_{id}}(A_2)$
		$\land \mathcal{A}ttestation_{tatt}(A_3) = roleTypeBase$
		$\land \mathcal{A} ttestation_{tval}(A_3) = R_{TwsMo}$

Table 8: IR3 linked and unique identity discretionary rules

BIR3-DOL-AF	The identity of every partic-	$\forall X \in S_{PT} \exists A_1, A_2, A_3, A_4 \in S_{attra}$
, 1100 D 84-11D	ipant must be attested to by	$(\mathcal{A}ttestation_{t_{sub}}(A_1) = f_{id}(X)$
	at least one evidence service	$\land \mathcal{A}ttestation_{t_{att}}(A_1) = eIdentifier$
	provider	$\wedge \mathcal{A}ttestation_{t_{val}}(A_1) = f_{id}(X)$
	• whose role has been at-	$\land \qquad \mathcal{A}ttestation_{t_{sub}}(A_2) \qquad = \qquad$
	tested to by a trustwor-	$\mathcal{A}ttestation_{a_{id}}(A_1)$
	thiness monitor	$\land \mathcal{A}ttestation_{t_{att}}(A_2) = roleTypeBase$
	• who confirms that the identifying attributes exist in corrobora- tive evidence and the binding between an ap- plicant and an identity was checked using one factor prior enrolment (ISO/UEC 20002:2018	$ \begin{array}{l} \wedge \ \mathcal{A}ttestation_{t_{val}}(A_2) = R_{EvSP} \\ \wedge \qquad \mathcal{A}ttestation_{t_{sub}}(A_3) = \\ \mathcal{A}ttestation_{a_{id}}(A_2) \\ \wedge \ \mathcal{A}ttestation_{t_{att}}(A_3) = roleTypeBase \\ \wedge \ \mathcal{A}ttestation_{t_{val}}(A_3) = R_{TwsMo} \\ \wedge \qquad \mathcal{A}ttestation_{t_{sub}}(A_4) = \\ \mathcal{A}ttestation_{a_{id}}(A_2) \\ \wedge \ \mathcal{A}ttestation_{t_{att}}(A_5) = doesConformTo \\ \wedge \ \mathcal{A}ttestation_{t_{val}}(A_5) = \\ \end{array} $
	(ISO/IEC 29003:2018 Level 2)	ISO-IEC-TS-29003:2018:Level2)
$\beta_{IR3-D25-AE}$	The identity of every partic-	$\forall X \in S_{PT} \exists A_1, A_2, A_3, A_4 \in S_{attn}$
	ipant must be attested to by	$(\mathcal{A}ttestation_{t_{sub}}(A_1) = f_{id}(X)$
	at least one evidence service	$\wedge \mathcal{A}ttestation_{t_{att}}(A_1) = eIdentifier$
	provider	$\wedge \mathcal{A}ttestation_{tval}(A_1) = f_{id}(X)$
	• whose role has been at-	$\wedge \qquad \mathcal{A}ttestation_{t_{sub}}(A_2) \qquad = \qquad$
	tested to by a trustwor-	$\mathcal{A}ttestation_{a_{id}}(A_1)$
	thiness monitor	$\wedge \mathcal{A}ttestation_{t_{att}}(A_2) = roleTypeBase$
		$\wedge \mathcal{A}ttestation_{tval}(A_2) = R_{EvSP}$
	• who confirms that the	$\wedge \qquad \mathcal{A}ttestation_{t_{sub}}(A_3) \qquad = \qquad$
	identifying attributes	$\mathcal{A}ttestation_{aid}(A_2)$
	exist in corrobora-	$\wedge Attestation_{tatt}(A_3) = Fole Type Dase$
	tive evidence and the	$\wedge  \text{Attestation}  (A_1) = -$
	binding between an ap-	$\begin{array}{ccc} & & & \\ & & & \\$
	plicant and an identity	$\wedge Attestation_{*}  (A_{\epsilon}) = doesConformTo$
	was checked using one	$\wedge \mathcal{A}ttestation_t  (A_5) =$
	factor prior enrolment (ISO/IEC 29003:2018 Level 3)	ISO-IEC-TS-29003:2018:Level3)
1		

$\beta_{IR3-D31-AE}$	The identity of every partic- ipant must be attested to by at least one evidence service provider who is legally at- tested in that role	$ \begin{array}{l} \forall \ X \in S_{PT} \ \exists \ A_1, \ A_2, \ A_3 \in S_{attn} \\ (\mathcal{A}ttestation_{t_{sub}}(A_1) = f_{id}(X) \\ \land \ \mathcal{A}ttestation_{t_{att}}(A_1) = eIdentifier \\ \land \ \mathcal{A}ttestation_{t_{val}}(A_1) = f_{id}(X) \\ \land \qquad \mathcal{A}ttestation_{t_{sub}}(A_2) = \\ \mathcal{A}ttestation_{a_{id}}(A_1) \\ \land \ \mathcal{A}ttestation_{t_{att}}(A_2) = roleTypeBase \\ \land \ \mathcal{A}ttestation_{t_{val}}(A_2) = R_{EvSP} \\ \land \qquad \mathcal{A}ttestation_{t_{sub}}  (A_3) = \\ \mathcal{A}ttestation_{a_{id}}(A_1) \\ \land \ \mathcal{A}ttestation_{t_{att}}(A_3) = legalQual \\ \land \ \mathcal{A}ttestation_{t_{val}} (A_3) = uri) \end{array} $
β <sub>IR3-D32-AE</sub>	<ul> <li>The identity of every participant</li> <li>must be attested to by at least one evidence service provider whose role has been attested to by a trustworthiness monitor, and</li> <li>the evidence service provider and the trust-worthiness monitor are legally attested in their respective roles</li> </ul>	$ \forall X \in S_{PT} \exists A_1, A_2, A_3, A_4, A_5 \in S_{attn} $ $ (Attestation_{t_{sub}}(A_1) = f_{id}(X) $ $ \land Attestation_{t_{att}}(A_1) = eIdentifier $ $ \land Attestation_{t_{val}}(A_1) = f_{id}(X) $ $ \land Attestation_{t_{sub}}(A_2) = g_{id}(X) $ $ \land Attestation_{t_{aid}}(A_1) $ $ \land Attestation_{t_{aid}}(A_2) = roleTypeBase $ $ \land Attestation_{t_{val}}(A_2) = R_{EvSP} $ $ \land Attestation_{t_{sub}}(A_3) = g_{id}(X) $ $ \land Attestation_{t_{aid}}(A_2) $ $ \land Attestation_{t_{aid}}(A_3) = roleTypeBase $ $ \land Attestation_{t_{aid}}(A_3) = roleTypeBase $ $ \land Attestation_{t_{aid}}(A_3) = R_{TwsMo} $ $ \land Attestation_{t_{val}}(A_3) = R_{TwsMo} $ $ \land Attestation_{t_{aid}}(A_1) $ $ \land Attestation_{t_{aid}}(A_1) $ $ \land Attestation_{t_{aid}}(A_4) = legalQual $ $ \land Attestation_{t_{val}}(A_4) = uri $ $ \land Attestation_{t_{sub}}(A_5) = legalQual $ $ \land Attestation_{t_{aid}}(A_2) $ $ \land Attestation_{t_{aid}}(A_5) = uri $

Table 10: IR3 linked and unique identity discretionary rules

$\beta_{IR3\text{-}D33\text{-}AE}$	The identity of every partic-	$\forall X \in S_{PT} \exists A_1, A_2, A_3, A_4, A_5, A_6 \in$
	ipant must be attested to by	$S_{attn}$
	at least one evidence service	$(\mathcal{A}ttestation_{t_{sub}}(A_1) = f_{id}(X)$
	provider	$\wedge \mathcal{A}ttestation_{tatt}(A_1) = eIdentifier$
	• whose role has been at-	$\land \mathcal{A}ttestation_{tval}(A_1) = f_{id}(X)$
	tested to by a trustwor-	$\wedge \qquad \qquad \mathcal{A}ttestation_{t_{sub}}(A_2) \qquad = \qquad \qquad$
	thiness monitor	$\mathcal{A}ttestation_{a_{id}}(A_1)$
	<ul> <li>thiness monitor</li> <li>who confirms that the identifying attributes exist in corroborative evidence and the binding between an applicant and an identity was checked using one factor prior enrolment (ISO/IEC 29003:2018 Level 2),</li> <li>and there must be legal attestation for the evidence service provider and trustworthiness monitor in their respective roles.</li> </ul>	$ \begin{array}{l} \mathcal{A}ttestation_{a_{id}}(A_1) \\ \wedge \ \mathcal{A}ttestation_{t_{att}}(A_2) = role TypeBase \\ \wedge \ \mathcal{A}ttestation_{t_{val}}(A_2) = R_{EvSP} \\ \wedge \qquad \mathcal{A}ttestation_{t_{sub}}(A_3) = \\ \mathcal{A}ttestation_{a_{id}}(A_2) \\ \wedge \ \mathcal{A}ttestation_{t_{att}}(A_3) = role TypeBase \\ \wedge \ \mathcal{A}ttestation_{t_{val}}(A_3) = R_{TwsMo} \\ \wedge \qquad \mathcal{A}ttestation_{t_{sub}}(A_4) = \\ \mathcal{A}ttestation_{a_{id}}(A_2) \\ \wedge \ \mathcal{A}ttestation_{t_{att}}(A_4) = doesConformTo \\ \wedge \ \mathcal{A}ttestation_{t_{val}}(A_4) = \\ ISO-IEC-TS-29003:2018:Level2 \\ \wedge \qquad \mathcal{A}ttestation_{t_{sub}} \qquad (A_5) = \\ \mathcal{A}ttestation_{a_{id}}(A_1) \\ \wedge \ \mathcal{A}ttestation_{t_{att}}(A_5) = legalQual \\ \wedge \ \mathcal{A}ttestation_{t_{sub}} \qquad (A_6) = \\ \mathcal{A}ttestation_{a_{id}}(A_2) \\ \wedge \ \mathcal{A}ttestation_{t_{att}}(A_6) = legalQual \\ \wedge \ \mathcal{A}ttestation_{t_{att}}(A_6) = uri \\ \end{array} $
		$\wedge \mathcal{A}ttestation_{t_{val}} (A_6) = uri)$

Table 11: IR3 linked and unique identity discretionary rules

$\beta_{IR3\text{-}D34\text{-}AE}$	The identity of every partic-	$\forall X \in S_{PT} \exists A_1, A_2, A_3, A_4, A_5, A_6 \in$
	ipant must be attested to by	$S_{attn}$
	at least one evidence service	$(\mathcal{A}ttestation_{t_{sub}}(A_1) = f_{id}(X)$
	provider	$\wedge \mathcal{A}ttestation_{tatt}(A_1) = eIdentifier$
	• whose role has been at-	$\land \mathcal{A}ttestation_{tval}(A_1) = f_{id}(X)$
	tested to by a trustwor-	$\wedge \qquad \qquad \mathcal{A}ttestation_{t_{sub}}(A_2) \qquad = \qquad \qquad$
	thiness monitor	$\mathcal{A}ttestation_{a_{id}}(A_1)$
	<ul> <li>thiness monitor</li> <li>who confirms that the identifying attributes exist in corroborative evidence and the binding between an applicant and an identity was checked using one factor prior enrolment (ISO/IEC 29003:2018 Level 3), and there must be legal attestation for the evidence service provider and trustworthiness monitor in their respective roles.</li> </ul>	$\begin{array}{l} \mathcal{A}ttestation_{a_{id}}(A_1) \\ \land \mathcal{A}ttestation_{t_{att}}(A_2) = roleTypeBase \\ \land \mathcal{A}ttestation_{t_{val}}(A_2) = R_{EvSP} \\ \land \qquad \mathcal{A}ttestation_{t_{sub}}(A_3) = \\ \mathcal{A}ttestation_{a_{id}}(A_2) \\ \land \mathcal{A}ttestation_{t_{att}}(A_3) = roleTypeBase \\ \land \mathcal{A}ttestation_{t_{val}}(A_3) = R_{TwsMo} \\ \land \qquad \mathcal{A}ttestation_{t_{sub}}(A_4) = \\ \mathcal{A}ttestation_{a_{id}}(A_2) \\ \land \mathcal{A}ttestation_{t_{att}}(A_4) = doesConformTo \\ \land \mathcal{A}ttestation_{t_{val}}(A_4) = \\ ISO-IEC-TS-29003:2018:Level3 \\ \land \qquad \mathcal{A}ttestation_{t_{sub}} \qquad (A_5) = \\ \mathcal{A}ttestation_{a_{id}}(A_1) \\ \land \mathcal{A}ttestation_{t_{att}}(A_5) = legalQual \\ \land \mathcal{A}ttestation_{t_{sub}} \qquad (A_6) = \\ \mathcal{A}ttestation_{a_{id}}(A_2) \\ \land \mathcal{A}ttestation_{a_{id}}(A_2) \\ \land \mathcal{A}ttestation_{t_{att}}(A_6) = legalQual \\ \land \mathcal{A}tte$
		$(A_{6}) - u(i)$

Table 12: IR3 linked and unique identity discretionary rules

### 3 IR4 rules

$\beta_{IR4-M01}$	A participant's base	$\forall X \in S_{PT} \exists A_1, A_2 \in S_{abr}$
	roles must be self-	$(\mathcal{A}ttestation_{t_{sub}}(A_1) = f_{id}(X)$
	attested	$\land \mathcal{A}ttestation_{tatt}(A_1) = roleTypeBase$
		$\land \mathcal{A}ttestation_{t_{sub}}(A_2) = \mathcal{A}ttestation_{a_{id}}(A_1)$
		$\land \mathcal{A}ttestation_{t_{att}}(A_2) = roleTypeBase$
		$\land \mathcal{A}ttestation_{tval}(A_2) = \mathcal{A}ttestation_{tval}(A_1))$

Table 13: IR4 Mandatory rule

$\beta_{IR4-D021-AE}$	For each role that par-	$\forall X \in S_{PT} \exists A_1, A_2 \in S_{attn}$
	ticipants have attesta-	$(\mathcal{A}ttestation_{t_{sub}}(A_1) = f_{id}(X)$
	tions for, there must be	$\land \mathcal{A}ttestation_{tatt}(A_1) = roleTypeBase$
	at least one role attes-	$\land \mathcal{A}ttestation_{t_{sub}}(A_2) = \mathcal{A}ttestation_{t_{sub}}(A_1)$
	tation that is not self-	$\land \mathcal{A}ttestation_{t_{att}}(A_2) = roleTypeBase$
	attested	$\land \mathcal{A}ttestation_{t_{val}}(A_2) = \mathcal{A}ttestation_{t_{val}}(A_1)$
		$\land \mathcal{A}ttestation_{a_{id}}(A_2) \neq \mathcal{A}ttestation_{a_{id}}(A_1))$

Table 14: IR4 Discretionary rules/others

$\beta_{IR4-D022-AE}$	Should one want to rely	$\exists X \in S_{PT} \exists A_1, A_2 \in S_{attn}$
	on the services of an	$(\mathcal{A}ttestation_{t_{sub}}(A_1) = f_{id}(X)$
	accreditation body that	$\land \mathcal{A}ttestation_{tatt}(A_1) = roleTypeBase$
	has an ISO/IEC 17011	$\wedge \mathcal{A}ttestation_{t_{val}} (A_1) = R_{AB}$
	[2] attestation	$\land \mathcal{A}ttestation_{t_{sub}}(A_2) = \mathcal{A}ttestation_{t_{sub}}(A_1)$
	then there must be	$\land \mathcal{A}ttestation_{t_{att}}(A_2) = doesConformTo$
	such an accreditation	$\wedge \mathcal{A}ttestation_{t_{val}}(A_2) = ISO\text{-}IEC\text{-}17011:2017$
	body and its attestation	$\land \mathcal{A}ttestation_{a_{id}}(A_2) \in \{IAF\text{-}Memberlist\})$
	must be provided by a	
	member of the Inter-	
	national Attestation Fo-	
	rum (IAF)	

rable io. net bibereetonary rates/nb	Table	15:	IR4	Discretionary	rules	/AB
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$ \begin{split} \beta_{IR4\text{-}D023\text{-}AE} & \text{Should one want to} & \exists X \in S_{PT} \exists A_1, A_2 \in S_{attn} \\ \text{rely on a conformity} & (Attestation_{t_{sub}}(A_1) = f_{id}(X) \\ \text{assessment body that} & \land Attestation_{t_{sub}}(A_1) = R_{CAB} \\ [1] & \text{attestation for the} \\ \text{assessment of evidence} \\ \text{or claim status service} \\ \text{providers} \\ \text{then there must be a} \\ \text{conformity assessment} \\ \text{body that has such attestation} \\ \text{testation issued by a} \\ \text{member of the EA} \\ \end{split} & \exists X \in S_{PT} \exists A_1, A_2 \in S_{attn} \\ \land Attestation_{t_{sub}}(A_2) = Attestation_{t_{sub}}(A_1) \\ \land Attestation_{t_{att}}(A_2) = ISO\text{-}IEC\text{-}17065\text{-}2012 \\ \land Attestation_{t_{ait}}(A_2) \in \{EA\text{-}Memberlist\}) \\ \end{split} & \land Attestation_{t_{aid}}(A_2) \in \{EA\text{-}Memberlist\}) \\ \end{cases} \\ \beta_{IR4\text{-}D024\text{-}AE} \\ \text{Should one want to rely} \\ \text{on a conformity assessment} \\ \text{body that has such attestation} \\ \text{an ETSI EN 319 403} \\ \land Attestation_{t_{sub}}(A_1) = r_{ld}(X) \\ \land Attestation_{t_{aib}}(A_1) = r_{CAB} \\ [4] & \text{attestation for the} \\ \text{assessment of evidence} \\ \text{or claim status service} \\ \text{providers} \\ \text{then there must be a} \\ \text{conformity assessment} \\ \text{body that has such attestation_{t_{aib}}(A_2) = Attestation_{t_{sub}}(A_1) \\ \land Attestation_{t_{aib}}(A_2) = EN319403 \\ \land Attestation_{t_{aib}}(A_2) \in \{EA\text{-}Memberlist\}) \\ \text{then there must be a} \\ \text{conformity assessment} \\ \text{body that has such attestation} \\ \text{testation issued by a} \\ \text{member of the EA} \\ \text{then there must be a} \\ \text{conformity assessment} \\ \text{body that has such attestation} \\ \text{testation issued by a} \\ \text{member of the EA} \\ \text{testation issued by a} \\ \text{member of the EA} \\ \text{testation issued by a} \\ \text{member of the EA} \\ \text{testation issued by a} \\ \text{member of the EA} \\ \text{testation issued by a} \\ \text{member of the EA} \\ \text{testation issued by a} \\ \text{member of the EA} \\ \text{testation issued by a} \\ \text{member of the EA} \\ \text{testation issued by a} \\ \text{member of the EA} \\ \text{testation issued by a} \\ \text{testation}$			-
$\beta_{IR4-D024-AE} \begin{tabular}{ c c c c } \mbox{rel} rely on a conformity assessment body that has an ISO/IEC 17065 (assessment of evidence or claim status service providers then there must be a conformity assessment body that has such attestation issued by a member of the EA \end{tabular} \begin{tabular}{ll c c c c c } \hline \beta_{IR4-D024-AE} \\ \beta_{IR4-D024-AE} \\ \end{tabular} \begin{tabular}{ll c c c c c } \end{tabular} body that has an ISO/IEC 17065 (assessment of evidence or claim status service providers then there must be a conformity assessment body that has such attestation issued by a member of the EA \end{tabular} \begin{tabular}{ll c c c c c c c c c c c c c c c c c c $	$\beta_{IR4-D023-AE}$	Should one want to	$\exists X \in S_{PT} \exists A_1, A_2 \in S_{attn}$
$\beta_{IR4-D024-AE} \begin{tabular}{ c c c c } \mbox{assessment body that has an ISO/IEC 17065} \\ \begin{tabular}{l c c c c c c c c c c c c c c c c c c c$		rely on a conformity	$(\mathcal{A}ttestation_{t_{sub}} (A_1) = f_{id}(X)$
$\beta_{IR4-D024-AE} \begin{bmatrix} has an ISO/IEC 17065 \\ [1] attestation for the assessment of evidence or claim status service providers then there must be a conformity assessment body that has such attestation issued by a member of the EA \\ \beta_{IR4-D024-AE} \begin{bmatrix} Should one want to rely on a conformity assessment of evidence or claim status service providers then there must be a conformity assessment body that has an ETSI EN 319 403 [4] attestation for the assessment of evidence or claim status service providers then there must be a conformity assessment of evidence or claim status service providers then there must be a conformity assessment of evidence or claim status service providers then there must be a conformity assessment of evidence or claim status service providers then there must be a conformity assessment body that has such attestation issued by a member of the EA \\ \beta_{IR4-D024-AE} \begin{bmatrix} Should one want to rely on a conformity assessment of evidence and extended to the the there must be a conformity assessment of evidence or claim status service providers then there must be a conformity assessment body that has such attestation issued by a member of the EA \\ \end{tabular}$		assessment body that	$\land \mathcal{A}ttestation_{tatt}(A_1) = roleTypeBase$
$ \beta_{IR4-D024-AE} \begin{bmatrix} 1 \end{bmatrix} \text{ attestation for the assessment of evidence or claim status service providers then there must be a conformity assessment body that has such attestation issued by a member of the EA \\  \beta_{IR4-D024-AE} \begin{bmatrix} \text{Should one want to rely on a conformity assessment of evidence or claim status service an ETSI EN 319 403 an ETSI EN 319 403 [4] attestation for the assessment of evidence or claim status service providers then there must be a conformity assessment of evidence or claim status service providers an ETSI EN 319 403 has seessment of evidence or claim status service providers then there must be a conformity assessment of evidence or claim status service providers then there must be a conformity assessment body that has such attestation issued by a member of the EA \\  \beta_{IR4-D024-AE} \begin{bmatrix} \text{Should one want to rely on a conformity assessment of evidence or claim status service providers then there must be a conformity assessment of evidence or claim status service providers then there must be a conformity assessment body that has such attestation issued by a member of the EA \\  \beta_{IR4-D024-AE} \begin{bmatrix} 1 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\$		has an ISO/IEC 17065	$\wedge \mathcal{A}ttestation_{t_{val}} (A_1) = R_{CAB}$
$\beta_{IR4-D024-AE} \begin{bmatrix} \text{seessment of evidence} \\ \text{or claim status service} \\ \text{providers} \\ \text{then there must be a conformity assessment body that has such attestation issued by a member of the EA \\  \end{cases} \begin{bmatrix} \beta_{IR4-D024-AE} \\ \text{seessment of evidence} \\ \text{or claim status service} \\ \text{or a conformity assessment body that has an ETSI EN 319 403} \\ \text{[4] attestation for the assessment of evidence} \\ \text{or claim status service} \\ \text{or claim status service} \\ \text{providers} \\ \text{then there must be a conformity assessment of evidence} \\ \text{or a conformity assessment body that has an ETSI EN 319 403} \\ \text{[4] attestation for the assessment of evidence} \\ \text{or claim status service} \\ \text{providers} \\ \text{then there must be a a conformity assessment of evidence} \\ \text{or claim status service} \\ \text{providers} \\ \text{then there must be a conformity assessment} \\ \text{body that has such attestation} \\ \text{testation issued by a member of the EA} \\ \end{bmatrix} \begin{bmatrix} A \ Attestation_{taut}(A_2) \in \{EA-Memberlist\} \} \\ \land Attestation_{taut}(A_2) = doesConformTo \\ \land Attestation_{taut}(A_2) = EN319403 \\ \land Attestation_{taut}(A_2) \in \{EA-Memberlist\} \} \\ \end{cases}$		[1] attestation for the	$\land \mathcal{A}ttestation_{t_{sub}}(A_2) = \mathcal{A}ttestation_{t_{sub}}(A_1)$
$\beta_{IR4-D024-AE}  \begin{array}{l} \text{or claim status service} \\ \text{providers} \\ \text{then there must be a conformity assessment body that has such attestation issued by a member of the EA \\ \end{array}  \begin{array}{l} \begin{array}{l} \begin{array}{l} \begin{array}{l} Attestation_{a_{id}}(A_2) \in \{EA-Memberlist\}) \\ \\ Attestation_{a_{id}}(A_2) \in \{EA-Memberlist\}) \\ \end{array} \\ \end{array} \\ \end{array}  \begin{array}{l} \begin{array}{l} \begin{array}{l} \begin{array}{l} \begin{array}{l} \begin{array}{l} \\ \\ \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{l} \begin{array}{l} \begin{array}{l} \begin{array}{l} \end{array} \\ \begin{array}{l} \begin{array}{l} \begin{array}{l} \begin{array}{l} \\ \\ \\ \end{array} \\ $		assessment of evidence	$\wedge \mathcal{A}ttestation_{t_{att}}(A_2) = doesConformTo$
$\beta_{IR4-D024-AE} \begin{bmatrix} \text{providers} \\ then there must be a conformity assessment body that has such attestation issued by a member of the EA & \\ & & & & & & & & & & & & & & & & & $		or claim status service	$\wedge \mathcal{A}ttestation_{t_{val}}(A_2) = ISO\text{-}IEC\text{-}17065:2012$
$ \beta_{IR4-D024-AE} $ Should one want to rely on a conformity assessment body that has such at- testation issued by a member of the EA $ \beta_{IR4-D024-AE} $ Should one want to rely on a conformity assess- ment body that has an ETSI EN 319 403 [4] attestation for the assessment of evidence or claim status service providers then there must be a conformity assessment body that has such at- testation issued by a member of the EA		providers	$\land \mathcal{A}ttestation_{a_{id}}(A_2) \in \{EA\text{-}Memberlist\})$
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		then there must be a	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		conformity assessment	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		body that has such at-	
$ \begin{array}{ c c c c c c } \hline \mbox{member of the EA} \\ \hline \end{tabular} \\ \hline \beta_{IR4-D024-AE} \\ \hline \beta_{IR4-D024-AE} \\ \hline \end{tabular} \\ \hline \end{tabular} \\ \begin{array}{l} \mbox{Should one want to rely} \\ \mbox{on a conformity assess-} \\ \mbox{ment body that has} \\ \mbox{a conformity assess-} \\ \hline \end{tabular} \\ \hline tabu$		testation issued by a	
$ \begin{array}{ c c c c c c } \hline \beta_{IR4-D024-AE} & \mbox{Should one want to rely} & \exists X \in S_{PT} \exists A_1, A_2 \in S_{attn} \\ & \mbox{on a conformity assess-} & (\mathcal{A}ttestation_{t_{sub}} (A_1) = f_{id}(X) \\ & \mbox{ment body that has} & \land \mathcal{A}ttestation_{t_{att}} (A_1) = roleTypeBase \\ & \mbox{an ETSI EN 319 403} & \land \mathcal{A}ttestation_{t_{val}} (A_1) = R_{CAB} \\ & \box{[4] attestation for the} & \land \mathcal{A}ttestation_{t_{sub}} (A_2) = \mathcal{A}ttestation_{t_{sub}} (A_1) \\ & \mbox{assessment of evidence} & \land \mathcal{A}ttestation_{t_{att}} (A_2) = doesConformTo \\ & \mbox{or claim status service} & \land \mathcal{A}ttestation_{t_{val}} (A_2) = EN319403 \\ & \mbox{Attestation}_{id} (A_2) \in \{EA-Memberlist\}) \\ & \mbox{then there must be a} \\ & \mbox{conformity assessment} \\ & \mbox{body that has such attestation issued by a} \\ & \mbox{member of the EA} \\ & \end{tabular}$		member of the EA	
$ \begin{split} \beta_{IR4-D024-AE} & \text{Should one want to rely} & \exists X \in S_{PT} \exists A_1, A_2 \in S_{attn} \\ & \text{on a conformity assess-} & (\mathcal{A}ttestation_{t_{sub}} (A_1) = f_{id}(X) \\ & \text{ment body that has} & \land \mathcal{A}ttestation_{t_{att}} (A_1) = roleTypeBase \\ & \text{an ETSI EN 319 403} & \land \mathcal{A}ttestation_{t_{val}} (A_1) = R_{CAB} \\ & [4] \text{ attestation for the} & \land \mathcal{A}ttestation_{t_{sub}} (A_2) = \mathcal{A}ttestation_{t_{sub}} (A_1) \\ & \text{assessment of evidence} & \land \mathcal{A}ttestation_{t_{att}} (A_2) = doesConformTo \\ & \text{or claim status service} & \land \mathcal{A}ttestation_{t_{val}} (A_2) = EN319403 \\ & \text{providers} & \land \mathcal{A}ttestation_{a_{id}} (A_2) \in \{EA-Memberlist\}) \\ & \text{then there must be a} \\ & \text{conformity assessment} \\ & \text{body that has such attestation issued by a} \\ & \text{member of the EA} \\ & \end{array} $			
on a conformity assess- ment body that has $(\mathcal{A}ttestation_{t_{sub}} (A_1) = f_{id}(X)$ $\wedge$ Attestation_{t_{att}} (A_1) = roleTypeBasean ETSI EN 319 403 $[4]$ attestation for the assessment of evidence $\wedge$ Attestation_{t_{sub}} (A_2) = \mathcal{A}ttestation_{t_{sub}} (A_1) $\wedge$ Attestation_{t_{att}} (A_2) = doesConformTo $\wedge$ Attestation_{t_{val}} (A_2) = EN319403 $\wedge$ Attestation_{a_{id}} (A_2) $\in \{EA-Memberlist\}$ )then there must be a conformity assessment body that has such at- testation issued by a member of the EA	$\beta_{IR4-D024-AE}$	Should one want to rely	$\exists X \in S_{PT} \exists A_1, A_2 \in S_{attn}$
ment body that has an ETSI EN 319 403 $\wedge \mathcal{A}ttestation_{t_{att}}(A_1) = roleTypeBase$ $\wedge \mathcal{A}ttestation_{t_{val}}(A_1) = R_{CAB}$ [4] attestation for the assessment of evidence or claim status service providers $\wedge \mathcal{A}ttestation_{t_{att}}(A_2) = \mathcal{A}ttestation_{t_{sub}}(A_1)$ $\wedge \mathcal{A}ttestation_{t_{att}}(A_2) = doesConformTo$ $\wedge \mathcal{A}ttestation_{t_{val}}(A_2) = EN319403$ $\wedge \mathcal{A}ttestation_{a_{id}}(A_2) \in \{EA-Memberlist\})$ then there must be a conformity assessment body that has such at- testation issued by a member of the EA		on a conformity assess-	$(\mathcal{A}ttestation_{t_{sub}}(A_1) = f_{id}(X)$
an ETSI EN 319 403 $\wedge \mathcal{A}ttestation_{t_{val}}(A_1) = R_{CAB}$ [4] attestation for the assessment of evidence or claim status service providers then there must be a conformity assessment body that has such at- testation issued by a member of the EA $\wedge \mathcal{A}ttestation_{t_{val}}(A_2) = \mathcal{A}ttestation_{t_{sub}}(A_1)$ $\wedge \mathcal{A}ttestation_{t_{att}}(A_2) = doesConformTo$ $\wedge \mathcal{A}ttestation_{t_{val}}(A_2) = EN319403$ $\wedge \mathcal{A}ttestation_{a_{id}}(A_2) \in \{EA-Memberlist\})$		ment body that has	$\wedge \mathcal{A}ttestation_{t_{att}}(A_1) = roleTypeBase$
[4] attestation for the assessment of evidence or claim status service providers $\wedge \mathcal{A}ttestation_{t_{sub}}(A_2) = \mathcal{A}ttestation_{t_{sub}}(A_1)$ $\wedge \mathcal{A}ttestation_{t_{att}}(A_2) = doesConformTo$ $\wedge \mathcal{A}ttestation_{t_{val}}(A_2) = EN319403$ $\wedge \mathcal{A}ttestation_{a_{id}}(A_2) \in \{EA-Memberlist\})$ then there must be a conformity assessment body that has such at- testation issued by a member of the EA		an ETSI EN 319 403	$\wedge \mathcal{A}ttestation_{t_{val}} (A_1) = R_{CAB}$
assessment of evidence or claim status service providers $\wedge \mathcal{A}ttestation_{t_{att}}(A_2) = doesConformTo$ $\wedge \mathcal{A}ttestation_{t_{val}}(A_2) = EN319403$ $\wedge \mathcal{A}ttestation_{a_{id}}(A_2) \in \{EA-Memberlist\})$ then there must be a conformity assessment body that has such at- testation issued by a member of the EA		[4] attestation for the	$\land \mathcal{A}ttestation_{t_{sub}}(A_2) = \mathcal{A}ttestation_{t_{sub}}(A_1)$
or claim status service $\wedge \mathcal{A}ttestation_{t_{val}}(A_2) = EN319403$ providers $\wedge \mathcal{A}ttestation_{a_{id}}(A_2) \in \{EA-Memberlist\})$ then there must be a conformity assessment body that has such at- testation issued by a member of the EA		assessment of evidence	$\wedge \mathcal{A}ttestation_{tatt}(A_2) = doesConformTo$
providers $\wedge Attestation_{a_{id}}(A_2) \in \{EA-Memberlist\})$ then there must be a conformity assessment $\wedge$ body that has such at- testation issued by a member of the EA $\wedge$		or claim status service	$\wedge \mathcal{A}ttestation_{tval}(A_2) = EN319403$
then there must be a conformity assessment body that has such at- testation issued by a member of the EA		providers	$\land \mathcal{A}ttestation_{a_{id}}(A_2) \in \{ EA\text{-}Memberlist \})$
conformity assessment body that has such at- testation issued by a member of the EA		then there must be a	
body that has such at- testation issued by a member of the EA		conformity assessment	
testation issued by a member of the EA		body that has such at-	
member of the EA		testation issued by a	
		member of the EA	

Table 16: IR4 Discretionary rules/others/CAB

 $\mathbf{x}\mathbf{x}\mathbf{x}$  first  $\mathbf{x}\mathbf{x}\mathbf{x}$ 

$\beta_{IR4-D025-AE}$	Should one want to rely	$\exists X \in S_{PT} \exists A_1, A_2 \in S_{attn}$
	on the services of an ev-	$(\mathcal{A}ttestation_{t_{sub}} (A_1) = f_{id}(X)$
	idence service provider	$\land \mathcal{A}ttestation_{t_{att}}(A_1) = roleTypeBase$
	that has an ISO/IEC	$\land \mathcal{A}ttestation_{tval} \ (A_1) = R_{EvSP}$
	27001 [3] attestation	$\land \mathcal{A}ttestation_{t_{sub}}(A_2) = \mathcal{A}ttestation_{t_{sub}}(A_1)$
	then there must be	$\land \mathcal{A}ttestation_{tatt}(A_2) = doesConformTo$
	such an evidence service	$\wedge \mathcal{A}ttestation_{tval}(A_2) = ISO-IEC-27001:2013$
	provider and its attes-	$\land \mathcal{A}ttestation_{a_{id}}(A_2) \in \{EA\text{-}Memberlist\})$
	tation must be provided	
	by a member of the EA	
$\beta_{IR4-D026-AE}$	Should one want to rely	$\exists X \in S_{PT} \exists A_1 \in S_{attn}$
	on the services of an ev-	$(\mathcal{A}ttestation_{t_{sub}}(A_1) = f_{id}(X)$
	idence service provider	$\land \mathcal{A}ttestation_{t_{att}}(A_1) = roleTypeBase$
	then there must be	$\land \mathcal{A}ttestation_{t_{val}}(A_1) = R_{EvSP}$
	such an evidence service	$\rightarrow \exists A_2 \in S_{attn}$
	provider and it must be	$(\mathcal{A}ttestation_{a_{id}}(A_1) = \mathcal{A}ttestation_{t_{sub}}(A_2)$
	whose role has been at-	$\land \mathcal{A}ttestation_{tatt}(A_2) = roleTypeBase$
	tested to by a trustwor-	$\land \mathcal{A}ttestation_{t_{val}}(A_2) = R_{TwsMo}))$
	thiness monitor	

Table 17: IR4 Discretionary rules/others/CAB

$\beta_{IR4-D027A-AE}$	Should one want to rely	$\exists X \in S_{PT} \exists A_1, A_2, A_3 \in S_{attn}$
	on the services of an ev-	$(\mathcal{A}ttestation_{t_{sub}}(A_1) = f_{id}(X)$
	idence service provider	$\land \mathcal{A}ttestation_{t_{att}}(A_1) = roleTypeBase$
	that has an eIDAS TSP	$\wedge \mathcal{A}ttestation_{t_{val}} (A_1) = R_{EvSP}$
	attestation	$\land \mathcal{A}ttestation_{t_{sub}}(A_2) = \mathcal{A}ttestation_{t_{sub}}(A_1)$
	then there must be	$\land \mathcal{A}ttestation_{tatt}(A_2) = isRegisteredIn$
	such an evidence service	$\wedge \mathcal{A}ttestation_{tval}(A_2) = eIDASTrustList$
	provider and it must	$\land \mathcal{A}ttestation_{t_{sub}}(A_3) = \mathcal{A}ttestation_{a_{id}}(A_2)$
	be listed in a European	$\land \mathcal{A}ttestation_{t_{att}}(A_3) = roleTypeBase$
	Trusted List by a trust-	$\wedge \mathcal{A}ttestation_{t_{val}} (A_3) = R_{TwsMo})$
	worthiness monitor	
$\beta_{IR4-D027B-AE}$	Should one want to rely	$\exists X \in S_{PT} \exists A_1, A_2, A_3 \in S_{attn}$
	on the services of an ev-	$(\mathcal{A}ttestation_{t_{sub}}(A_1) = f_{id}(X)$
	idence service provider	$\land \mathcal{A}ttestation_{t_{att}}(A_1) = roleTypeBase$
	that has an eIDAS TSP	$\wedge \mathcal{A}ttestation_{t_{val}} (A_1) = R_{EvSP}$
	attestation	$\land \mathcal{A}ttestation_{t_{sub}}(A_2) = \mathcal{A}ttestation_{t_{sub}}(A_1)$
	then there must be	$\wedge \mathcal{A}ttestation_{tatt}(A_2) = doesConformTo$
	such an evidence ser-	$\wedge \mathcal{A}ttestation_{tval}(A_2) = ETSI-EN-319-403$
	vice provider and it	
	must demonstrate con-	
	formance to ETSI EN	
	319 403 [5]	

Table 18: IR4 Discretionary rules/others/EvSP  $\,$ 

$\beta_{IR4-D028-AE}$	Should one want to	$\exists X \in S_{PT} \exists A_1, A_2 \in S_{attn}$
	rely on the services of	$(Attestation_{t_{sub}} (A_1) = f_{id}(X)$
	a claim status service	$\wedge \mathcal{A}ttestation_{tatt}(A_1) = roleTypeBase$
	provider that has an	$\wedge \mathcal{A}ttestation_{t_{val}} (A_1) = R_{CsSP}$
	ISO/IEC 27001 [3] at-	$\land \mathcal{A}ttestation_{t_{sub}}(A_2) = \mathcal{A}ttestation_{t_{sub}}(A_1)$
	testation	$\land \mathcal{A}ttestation_{tatt}(A_2) = doesConformTo$
	then there must be such	$\land \mathcal{A}ttestation_{t_{val}}(A_2) = ISO\text{-}IEC\text{-}27001\text{:}2013$
	a claim status service	$\land \mathcal{A}ttestation_{a_{id}}(A_2) in \{ EA-Memberlist \} )$
	provider and its attes-	
	tation must be provided	
	by a member of the EA	
$\beta_{IR4-D029-AE}$	Should one want to	$\exists X \in S_{PT} \exists A_1 \in S_{attn}$
	rely on the services	$(Attestation_{t_{sub}}(A_1) = f_{id}(X)$
	of a claim status ser-	$\land \mathcal{A}ttestation_{t_{att}}(A_1) = roleTypeBase$
	vice provider then there	$\land \mathcal{A}ttestation_{tval}(A_1) = R_{CsSP}$
	must be such a claim	$\rightarrow \exists \ A_2 \in S_{attn}$
	status service provider	$(\mathcal{A}ttestation_{a_{id}}(A_1) = \mathcal{A}ttestation_{t_{sub}}(A_2)$
	and it must be whose	$\land \mathcal{A}ttestation_{t_{att}}(A_2) = roleTypeBase$
	role has been attested	$\land \mathcal{A}ttestation_{t_{val}}(A_2) = R_{TwsMo}))$
	to by a trustworthiness	
	monitor	
$\beta_{IR4}$ -D030-AE	Should one want to	$\exists X \in S_{PT} \exists A_1, A_2, A_3 \in S_{attn}$
	rely on the services of	$(Attestation_{t_{sub}} (A_1) = f_{id}(X)$
	an claim status service	$\land \mathcal{A}ttestation_{tatt}(A_1) = roleTypeBase$
	provider that has an eI-	$\wedge \mathcal{A}ttestation_{t_{val}} (A_1) = R_{CsSP}$
	DAS TSP attestation	$\wedge \mathcal{A}ttestation_{t_{sub}}(A_2) = \mathcal{A}ttestation_{t_{sub}}(A_1)$
	then there must be such	$\land \mathcal{A}ttestation_{t_{att}}(A_2) = is RegisteredIn$
	an claim status service	$\land \mathcal{A}ttestation_{t_{val}}(A_2) = eIDASTrustList$
	provider and it must	$\wedge \mathcal{A}ttestation_{t_{sub}}(A_3) = \mathcal{A}ttestation_{a_{id}}(A_2)$
	be listed in a European	$\land \mathcal{A}ttestation_{tatt}(A_3) = roleTypeBase$
	Trusted List by a trust-	$\wedge \mathcal{A}ttestation_{t_{val}} (A_3) = R_{TwsMo})$
	worthiness monitor	

Table 19: IR4 Discretionary rules/others/CsSP  $\,$ 

$\beta_{IR4-D301A-AE}$	Participants in the role	$\forall X \in S_{PT} \exists A_1, A_2 \in S_{attn}$
	of endorser must have a	$(\mathcal{A}ttestation_{t_{sub}} (A_1) = f_{id}(X)$
	legally qualified attesta-	$\wedge \mathcal{A}ttestation_{tatt}(A_1) = roleTypeBase$
	tion	$\land \mathcal{A}ttestation_{t_{nal}} (A_1) = R_{EnDo}$
		$\wedge \mathcal{A}ttestation_{t_{sub}} (A_2) = f_{id}(PT)$
		$\land \mathcal{A}ttestation_{tatt}(A_2) = legalQual$
		$\land \mathcal{A}ttestation_{t_{val}} (A_2) = uri)$
$\beta_{IR4}$ -D301B-AE	Participants in the role	$\forall X \in S_{PT} \exists A_1, A_2 \in S_{attn}$
	of enforcer must have a	$(\mathcal{A}ttestation_{t_{sub}}(A_1) = f_{id}(X)$
	legally qualified attesta-	$\land \mathcal{A}ttestation_{tatt}(A_1) = \textit{roleTypeBase}$
	tion	$\wedge \mathcal{A}ttestation_{tval} (A_1) = R_{EnFo}$
		$\wedge \mathcal{A}ttestation_{t_{sub}} (A_2) = f_{id}(X)$
		$\land \mathcal{A}ttestation_{t_{att}}(A_2) = legalQual$
		$\land \mathcal{A}ttestation_{t_{val}} (A_2) = uri)$
$\beta_{IR4\text{-}D302\text{-}AE}$	Participants in the role	$\forall X \in S_{PT} \exists A_1, A_2 \in S_{attn}$
	of authentic source	$(\mathcal{A}ttestation_{t_{sub}} (A_1) = f_{id}(X)$
	must have a legally	$\land \mathcal{A}ttestation_{t_{att}}(A_1) = roleTypeBase$
	qualified attestation	$\wedge \mathcal{A}ttestation_{t_{val}} (A_1) = R_{AS}$
		$\wedge \mathcal{A}ttestation_{t_{sub}} (A_2) = f_{id}(X)$
		$\land \mathcal{A}ttestation_{tatt}(A_2) = legalQual$
		$\land \mathcal{A}ttestation_{t_{val}} (A_2) = uri)$
$\beta_{IR4\text{-}D303\text{-}AE}$	Participants in the role	$\forall X \in S_{PT} \exists A_1, A_2 \in S_{attn}$
	of accreditation body	$(\mathcal{A}ttestation_{t_{sub}}(A_1) = f_{id}(X)$
	must have a legally	$\land \mathcal{A}ttestation_{t_{att}}(A_1) = roleTypeBase$
	qualified attestation	$\land \mathcal{A}ttestation_{t_{val}} (A_1) = R_{AB}$
		$\wedge \mathcal{A}ttestation_{t_{sub}} (A_2) = f_{id}(X)$
		$\wedge \mathcal{A}ttestation_{t_{att}}(A_2) = legalQual$
		$\land \mathcal{A}ttestation_{t_{val}} (A_2) = uri)$

Table 20: IR4 Discretionary rules/legal qualifications

	-	
$\beta_{IR4-D304A-AE}$	Participants in the role	$\forall X \in S_{PT} \exists A_1, A_2 \in S_{attn}$
	of trustworthiness mon-	$(\mathcal{A}ttestation_{t_{sub}}(A_1) = f_{id}(X)$
	itor must have a legally	$\land \mathcal{A}ttestation_{t_{att}}(A_1) = roleTypeBase$
	qualified attestation	$\land \mathcal{A}ttestation_{t_{val}} (A_1) = R_{TwsMo}$
		$\wedge \mathcal{A}ttestation_{t_{sub}} (A_2) = f_{id}(X)$
		$\land \mathcal{A}ttestation_{tatt}(A_2) = legalQual$
		$\land \mathcal{A}ttestation_{t_{val}} (A_2) = uri)$
$\beta_{IR4-D304B-AE}$	Participants in the	$\forall X \in S_{PT} \exists A_1, A_2 \in S_{attn}$
	role of evidence ser-	$(\mathcal{A}ttestation_{t_{sub}}(A_1) = f_{id}(X)$
	vice provider must	$\land \mathcal{A}ttestation_{tatt}(A_1) = roleTypeBase$
	have a legally qualified	$\wedge \mathcal{A}ttestation_{t_{val}} (A_1) = R_{EvSP}$
	attestation	$\wedge \mathcal{A}ttestation_{t_{sub}} (A_2) = f_{id}(X)$
		$\land \mathcal{A}ttestation_{tatt}(A_2) = legalQual$
		$\land \mathcal{A}ttestation_{t_{val}} (A_2) = uri)$
$\beta_{IR4\text{-}D305\text{-}AE}$	Participants in the role	$\forall X \in S_{PT} \exists A_1, A_2 \in S_{attn}$
	of an eIDAS trustwor-	$(\mathcal{A}ttestation_{t_{sub}}(A_1) = f_{id}(X)$
	thiness monitor (Super-	$\land \mathcal{A}ttestation_{t_{att}}(A_1) = roleTypeBase$
	visory Body) must be	$\wedge \mathcal{A}ttestation_{t_{val}} (A_1) = R_{TwsMo}$
	registered in a Euro-	$\wedge \mathcal{A}ttestation_{t_{sub}} (A_2) = f_{id}(X)$
	pean trusted list	$\wedge \qquad \mathcal{A}ttestation_{t_{att}}(A_2) \qquad = \qquad eI-$
		$DAS\_Supervisory\_Body$
		$\land \mathcal{A}ttestation_{t_{val}} (A_2) = uri)$

Table 21: IR4 Discretionary rules/legal qualifications  $\$ 

## 4 IR5 rules

$\beta_{IR5-D01-AE}$	There exists an endorser	$\exists X \in S_{PT} \exists A_1, A_2 \in S_{attn}$
	who discloses informa-	$(Attestation_{t_{sub}} (A_1) = f_{id}(X)$
	tion of who takes on	$\land \mathcal{A}ttestation_{tatt}(A_1) = roleTypeBase$
	responsibility, account-	$\wedge \mathcal{A}ttestation_{t_{val}} (A_1) = R_{EnDo}$
	ability, and authority	$\land \mathcal{A}ttestation_{t_{sub}}(A_1) = \mathcal{A}ttestation_{t_{sub}}(A_2)$
	for implementing infor-	$\land \mathcal{A}ttestation_{a_{id}}(A_2) = \mathcal{A}ttestation_{t_{sub}}(A_2))$
	mation security gover-	$\wedge \mathcal{A}ttestation_{t_{att}}(A_2) = doesDisclose$
	nance in a self-attested	$\land \mathcal{A}ttestation_{tval}(A_2) = uri)$
	attestation	
$\beta_{IR5-D02-AE}$	There exists a legally	$\exists X \in S_{PT} \exists A_1, A_2, A_3 \in S_{attn}$
	qualified endorser who	$(\mathcal{A}ttestation_{t_{sub}}(A_1) = f_{id}(X)$
	discloses information of	$\land \mathcal{A}ttestation_{t_{att}}(A_1) = roleTypeBase$
	who takes on respon-	$\wedge \mathcal{A}ttestation_{t_{val}} (A_1) = R_{EnDo}$
	sibility, accountability,	$\land \mathcal{A}ttestation_{t_{sub}}(A_1) = \mathcal{A}ttestation_{t_{sub}}(A_2)$
	and authority for imple-	$\land \mathcal{A}ttestation_{tatt}(A_2) = doesDisclose$
	menting information se-	$\land \mathcal{A}ttestation_{t_{val}}(A_2) = uri$
	curity governance	$\wedge \mathcal{A}ttestation_{t_{sub}} (A_3) = f_{id}(X)$
		$\land \mathcal{A}ttestation_{t_{att}}(A_3) = legalQual$
		$\wedge \mathcal{A}ttestation_{t_{val}} (A_3) = uri)$

Table 22: IR5 governance disclosure discretionary rules

$\beta_{IR5-D11-AE}$	An endorser cannot be	$\forall A_1 \in S_{attn} \ \forall \ X \in S_{PT}$
	an enforcer	$(\mathcal{A}ttestation_{t_{sub}}(A_1) = f_{id}(X)$
		$\land \mathcal{A}ttestation_{t_{att}}(A_1) = roleTypeBase$
		$\land \mathcal{A}ttestation_{t_{val}}(A_1) = R_{EnDo}$
		$\rightarrow \nexists A_2 \in S_{attn}$
		$(\mathcal{A}ttestation_{t_{sub}}(A_2) = f_{id}(X)$
		$\land \mathcal{A}ttestation_{t_{att}}(A_2) = roleTypeBase$
		$\land \mathcal{A}ttestation_{t_{val}}(A_2) = R_{EnFo}))$
$\beta_{IR5-D12-AE}$	An enforcer cannot be	$\forall A_1 \in S_{attn} \ \forall \ X \in S_{PT}$
	an endorser	$(\mathcal{A}ttestation_{t_{sub}}(A_1) = f_{id}(X)$
		$\land \mathcal{A}ttestation_{tatt}(A_1) = roleTypeBase$
		$\land \mathcal{A}ttestation_{tval}(A_1) = R_{EnFo}$
		$\rightarrow \nexists A_2 \in S_{attn}$
		$(\mathcal{A}ttestation_{t_{sub}}(A_2) = f_{id}(X)$
		$\land \mathcal{A}ttestation_{t_{att}}(A_2) = roleTypeBase$
		$\land \mathcal{A}ttestation_{t_{val}}(A_2) = R_{EnDo}))$

Table 23: IR5 discretionary rules regarding mutual exclusion of endorser and enforcer

$\beta_{IR5-D21-AE}$	Helper rule that defines	$S_{SOD_1} = \{R_{EnDo}, R_{EnFo}, R_{AB}, R_{CAB}\}$
	the separation of duties	
	in the enabler plane	
$\beta_{IR5-D22-AE}$	If participant is in	$\forall A_1 \in S_{attn} \exists X \in S_{PT}$
	$S_{SOD_1}$ then only one	$(\mathcal{A}ttestation_{t_{sub}}(A_1) = f_{id}(X)$
	role is allowed	$\land \mathcal{A}ttestation_{t_{att}}(A_1) = roleTypeBase$
		$\land \mathcal{A}ttestation_{t_{val}}(A_1) \in S_{SOD_1}$
		$\rightarrow \neg \exists A_2 \in S_{attn}$
		$(\mathcal{A}ttestation_{t_{sub}}(A_2) = f_{id}(X)$
		$\land \mathcal{A}ttestation_{tatt}(A_2) = roleTypeBase$
		$\land \mathcal{A}ttestation_{t_{val}}(A_2) \in S_{SOD_1} ))$

Table 24: IR5 discretionary rules regarding separation of duty for the enabler plane

$\beta_{IR5-D23-AE}$	Separation of duties	$\forall A_1 \in S_{attn} \ \forall \ X \in S_{PT}$
	for the trustworthiness	$(\mathcal{A}ttestation_{t_{sub}}(A_1) = f_{id}(X)$
	monitor role	$\wedge \mathcal{A}ttestation_{tatt}(A_1) = roleTypeBase$
		$\land \mathcal{A}ttestation_{t_{val}}(A_1) = R_{TwsMo}$
		$\rightarrow \nexists A_2 \in S_{attn}$
		$(\mathcal{A}ttestation_{t_{sub}}(A_2) = f_{id}(X)$
		$\land \mathcal{A}ttestation_{t_{att}}(A_2) = roleTypeBase$
		$\wedge (\mathcal{A}ttestation_{tval}(A_2) = R_{EvSP}$
		$\lor \mathcal{A}ttestation_{tval}(A_2) = R_{CsSP})))$

Table 25: IR5 discretionary rule regarding separation of duty for the trustworthiness monitor role

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