

FrSexEst – An Extension for Sex Estimation

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Personal Background



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Starting Point

- Alexander-Ecker-Collection data entry form for sex estimation
- Based on the scoring-system developed in Acsádi & Nemeskéri 1970
- Traits and weights in general according to Ferembach *et al.* 1979

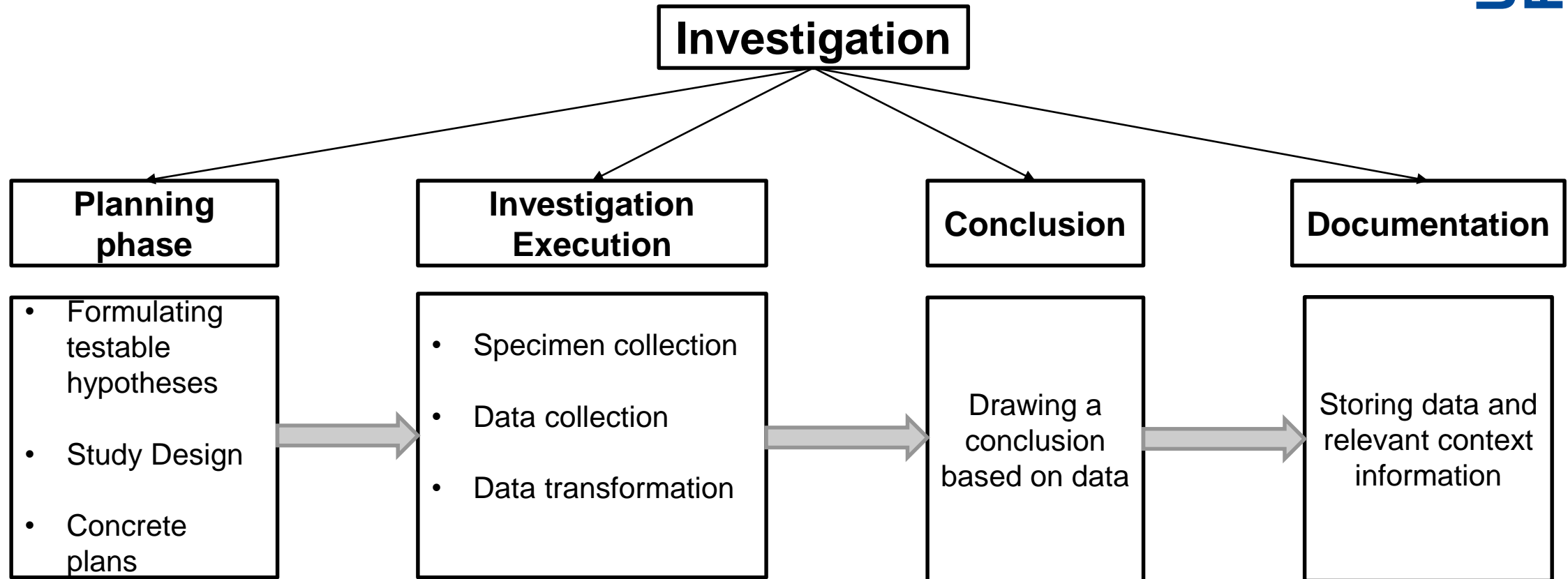
Erhebungsbogen Geschlechtsbestimmung

Indiv.: 11001 / 1193

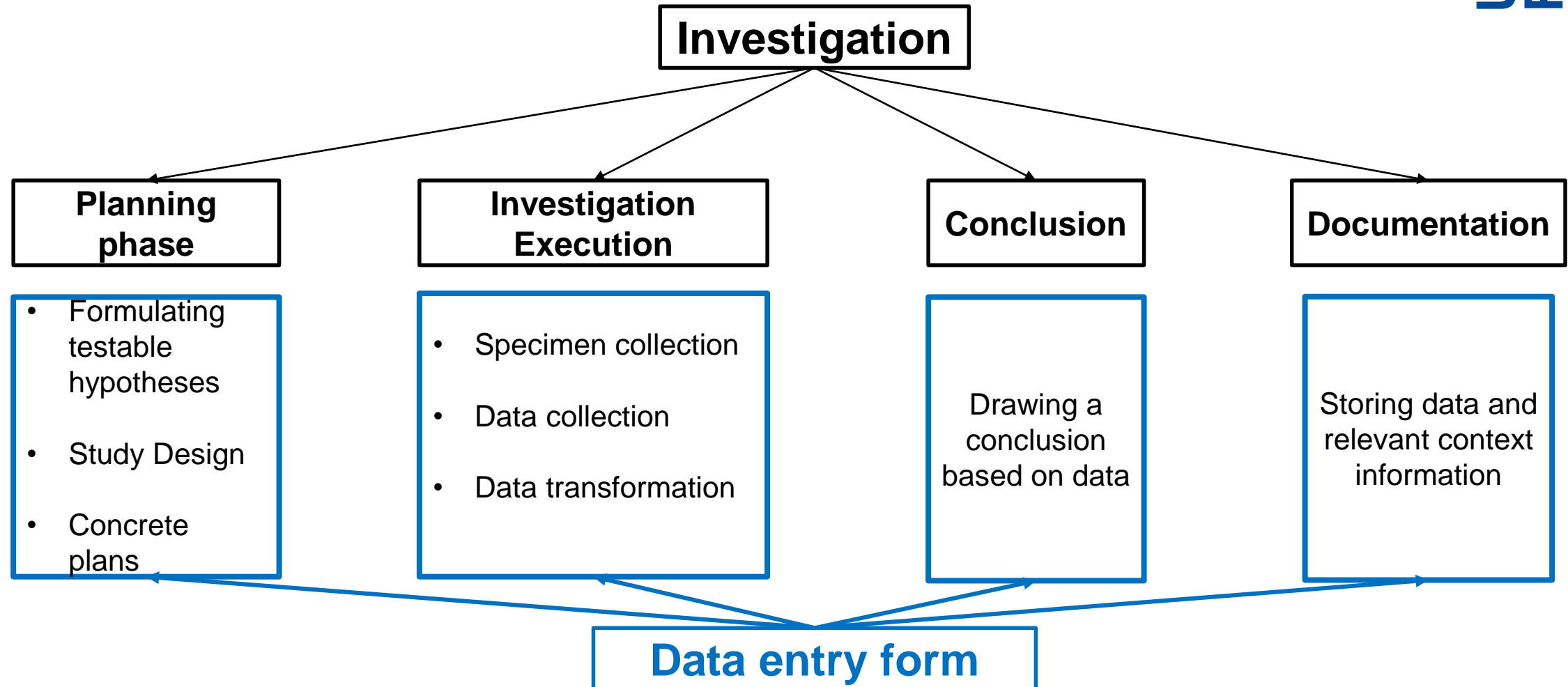
away *data*

		W	X	W x X
Becken	Sulcus praeauricularis	3		
	Incisura ischiadica major	3		
	Angulus pubis	2		
	Foramen obturatum	2		
	Arc compose	2		
	Tuber ischiadicum	2		
	Os coxae	2		
	Crista iliaca	1		
	Fossa iliaca	1		
	Pelvis major	1		
Pelvis minor	1			
Schädel	Glabella	3	+1	+3
	Processus mastoideus	3	-1	-3
	Planum nuchale	3	0	0
	Processus zygomaticus	3	/	/
	Arcus superciliaris	2	0	0
	Tuber frontale und parietale	2	+1	+2
	Os zygomaticum	2	-1	-2
	Crista supramastoidea	2	0	0
	Protuberantia occipitale ext.	2	-1	-2
	Processus zygomaticus Os temporale	1	/	/

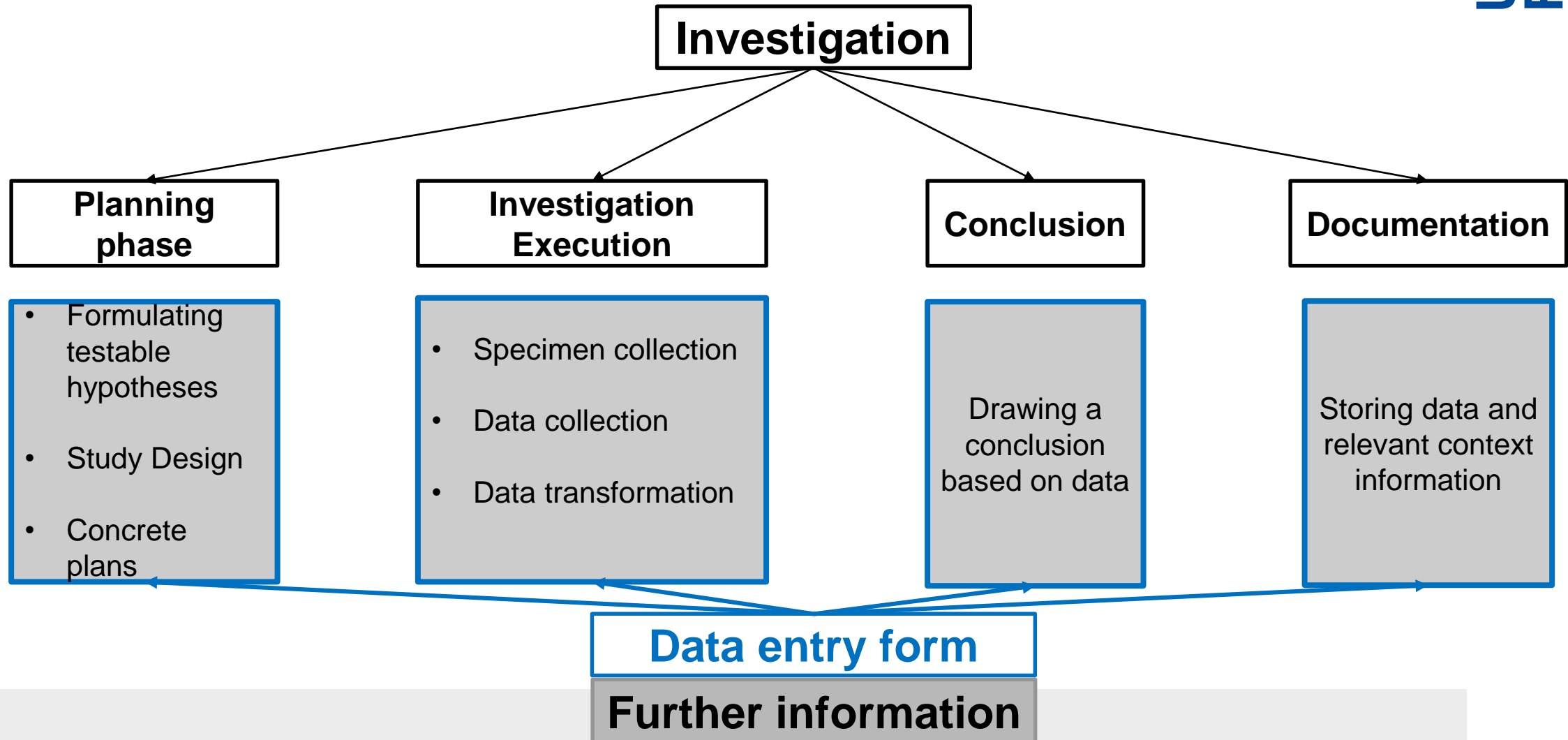
General Structure of Investigations



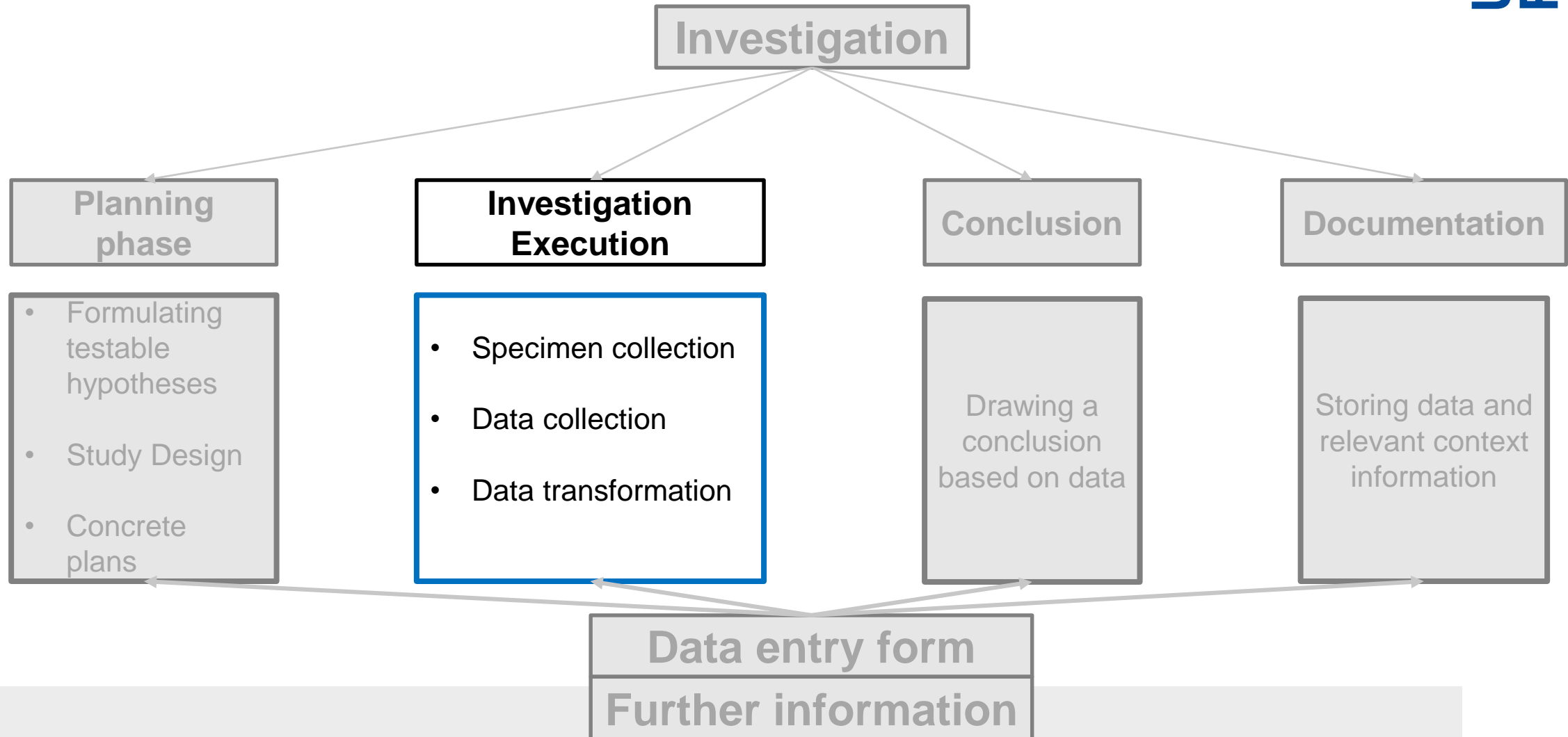
General Structure of Investigations



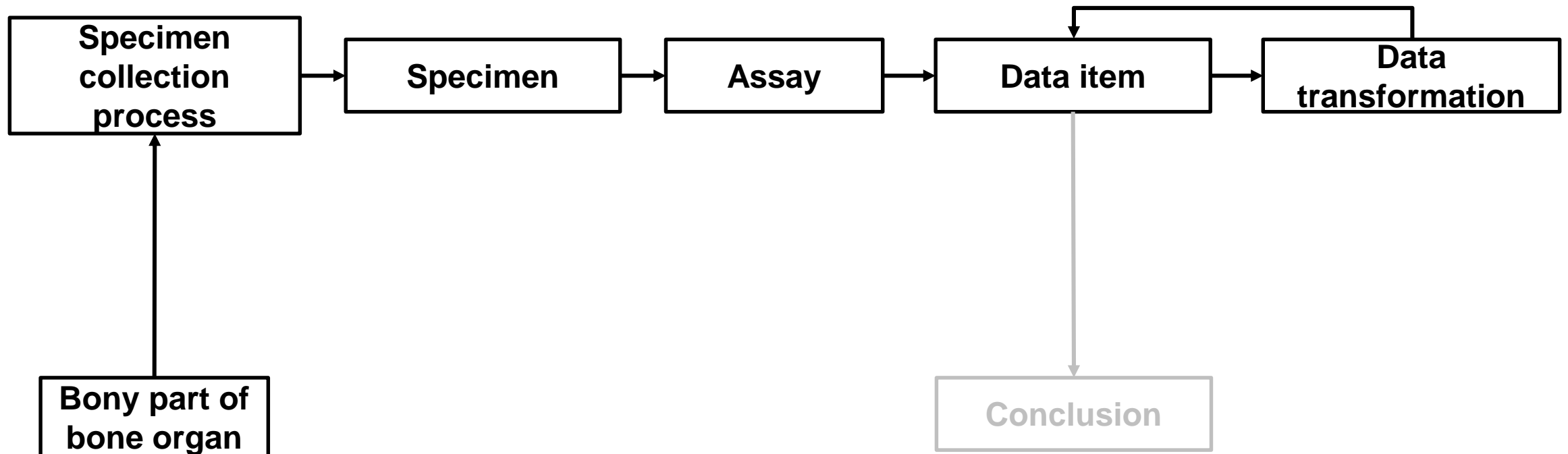
General Structure of Investigations



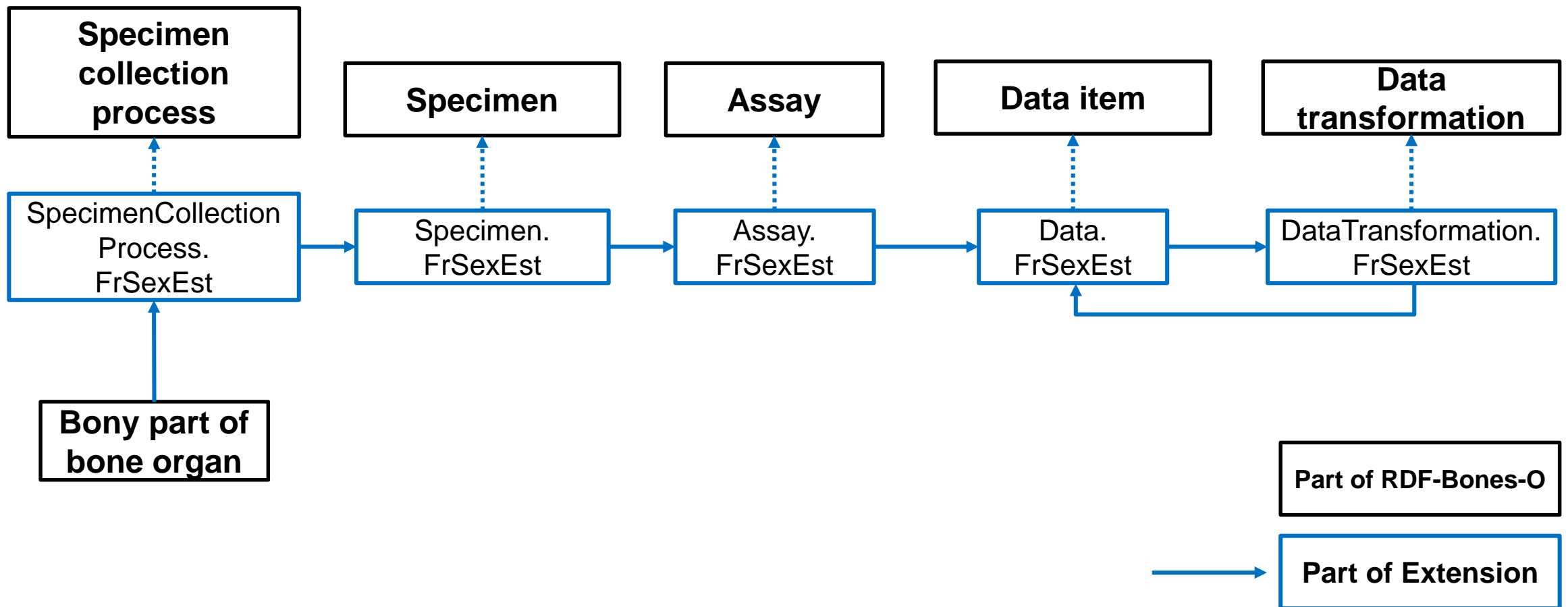
General Structure of Investigations



Investigation Execution: RDFBones-O



Investigation Execution: Extension



Writing Extensions: Preparations

- Presorting information contained in data entry form
- Imagining the structure of the data entry form as RDF-triples

Data item

Assays

		W	X	W x X
Schädel				
Manibula	Mandibula Gesamtaspekt	3		
	Mandibula Mentum	2		
	Mandibula Angulus	2		
	Margo	1		
Summe		19		-2

Summe W x X	=	-2
Summe W x X : Summe W	=	$-\frac{2}{19} = -0,1$

Data transformation

Zusatzmerkmale am Postcranium:
 Metrische Merkmale: Schwach () Mittel () Stark ()
 Diskriminanzfunktion: _____

Ergebnisse

Geschlecht: *indifferent*

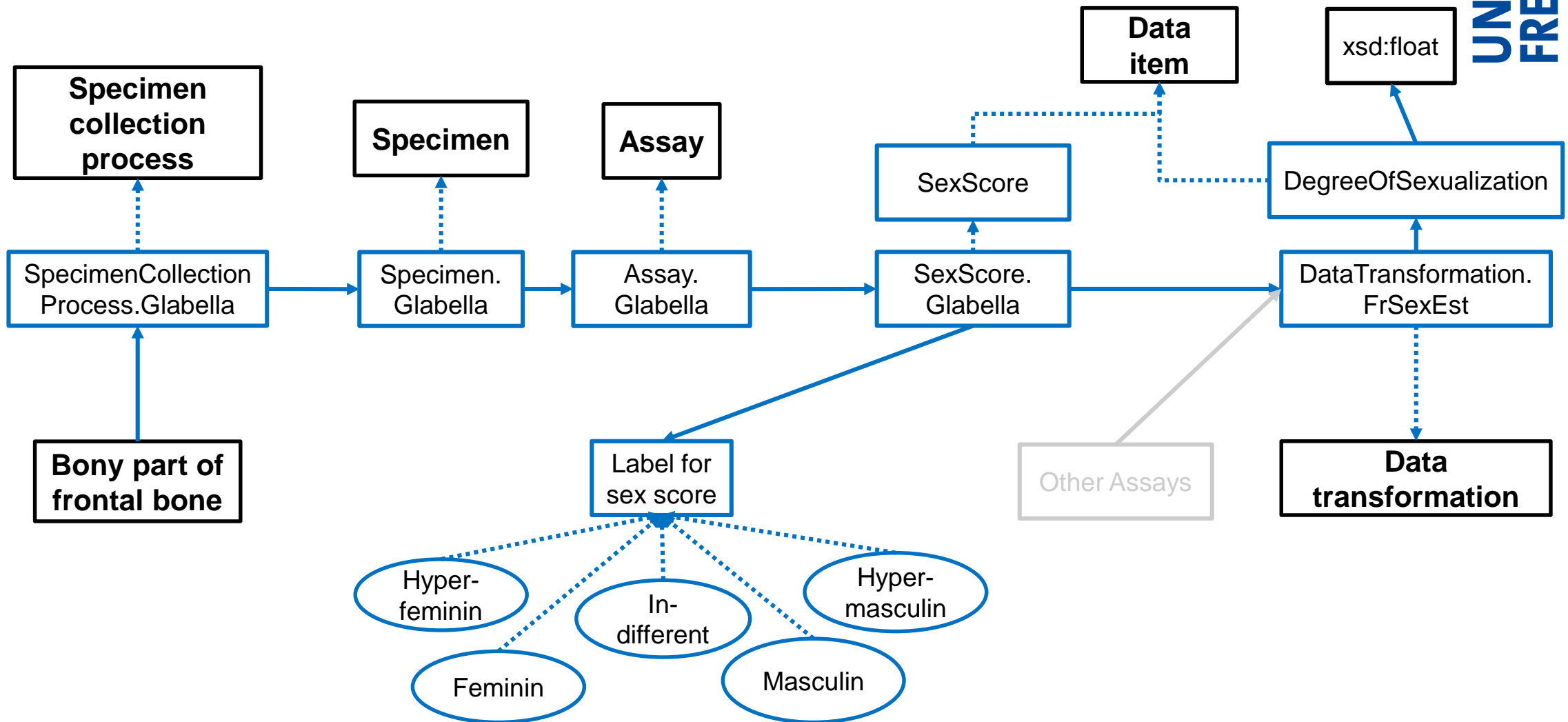
Nicht bestimmbar: Keine beurteilbaren Merkmale (7)
 Indifferente Ausprägung (3)

Bestimmbar: maskulin +1 () hypermaskulin +2 ()
 indifferent 0
 feminin -1 () hyperfeminin -2 ()

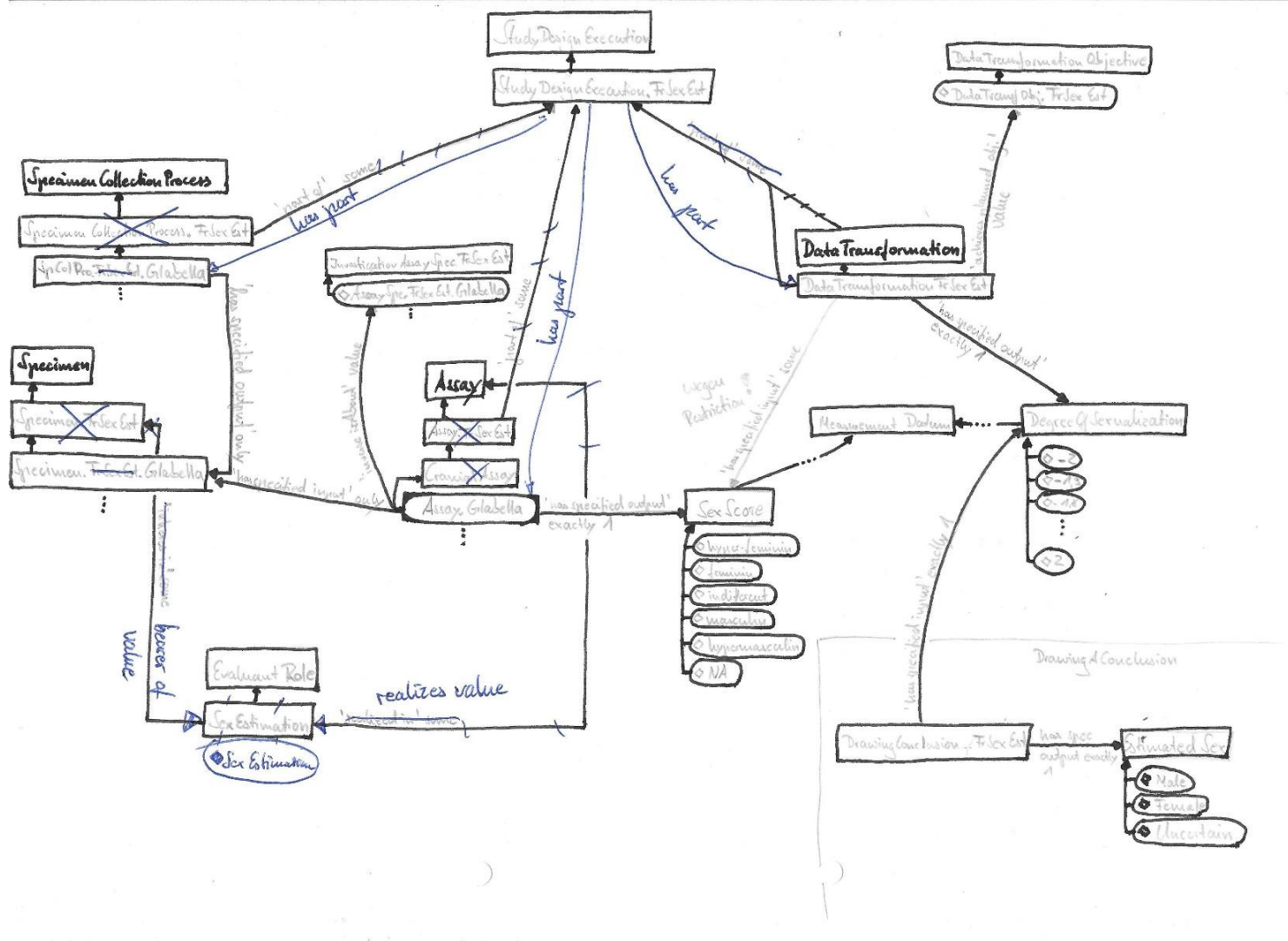
Bemerkungen: _____

23

Writing Extensions: FrSexEst



Writing Extensions: Bitter Reality



Writing Extensions: Protégé RDF-Editor



The screenshot displays the Protégé RDF-Editor interface for an ontology named 'untitled-ontology-26'. The main window is divided into several panes:

- Class hierarchy:** A tree view on the left showing the hierarchy of classes. The 'Assay' class is expanded, showing subclasses like 'Assay.ExternalOccipitalProtuberance', 'Assay.FrontalAndParietalEminences', and 'Assay.Glabella'.
- Annotations:** A pane on the right showing the annotations for the selected class, 'Assay.Glabella'. It displays a 'description' annotation with the text: "Superciliary arches (brow ridges) are the bony tori over the orbits. They are most prominent in men and are sometimes joined by a prominent glabellar region" (White & Folkens 2005: 88).
- Description:** A pane below the annotations showing the description for 'Assay.Glabella'. It lists several axioms:
 - Equivalent To: (empty)
 - SubClass Of:
 - 'has specified input' only Specimen.Glabella
 - 'has specified output' exactly 1 SexScore.Glabella
 - assay
 - realizes value SexEstimation
 - General class axioms: (empty)
 - SubClass Of (Anonymous Ancestor):
 - realizes some 'evaluant role'
 - 'achieves planned objective' some 'assay objective'
 - 'has specified output' some ('Information Content Entity' and ('is about' some ('Material Entity' and ('bearer of some 'evaluant role'))))
 - 'has specified input' some ('Material Entity' and ('bearer of some 'evaluant role'))
 - Instances: (empty)
 - Target for Key: (empty)
 - Disjoint With: (empty)
- Object property hierarchy:** A tree view at the bottom left showing the hierarchy of object properties. The 'has part' property is expanded, showing sub-properties like 'has participant', 'has input', 'has output', and 'has specified output'.

Writing extensions: Problems



- Subclass or instance?
- Thinking in triples
- Keeping track of changes

- Protégé Pizza Tutorial (University of Manchester)
- Allemang, D., & Hendler, J. (2011). *Semantic web for the working ontologist: effective modeling in RDFS and OWL*. Elsevier.

References



Acsádi, G., & Nemeskéri, J. (1970). *History of human life span and mortality*. Akadémiai Kiadó.

Ferembach, D., Schwidetzky, I., & Stloukal, M. (1979). Empfehlungen für die Alters- und Geschlechtsdiagnose am Skelett.(Recommandations pour le diagnostic de l'âge et du sexe sur les squelettes). *Homo Gottingen*, 30(2), 1-32.