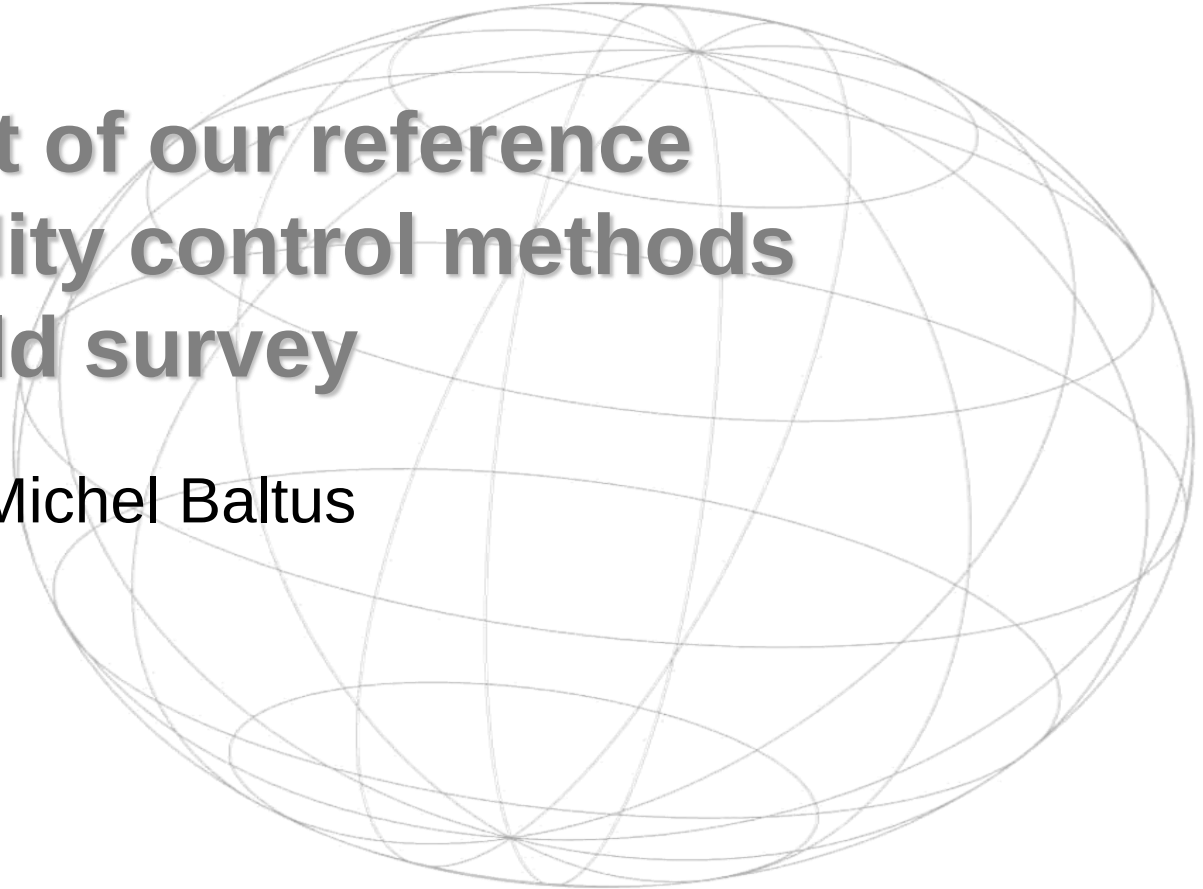




Quality Assessment of our reference database and our quality control methods through field survey

Karin Mertens, Michel Baltus



Reference database (ITGI)

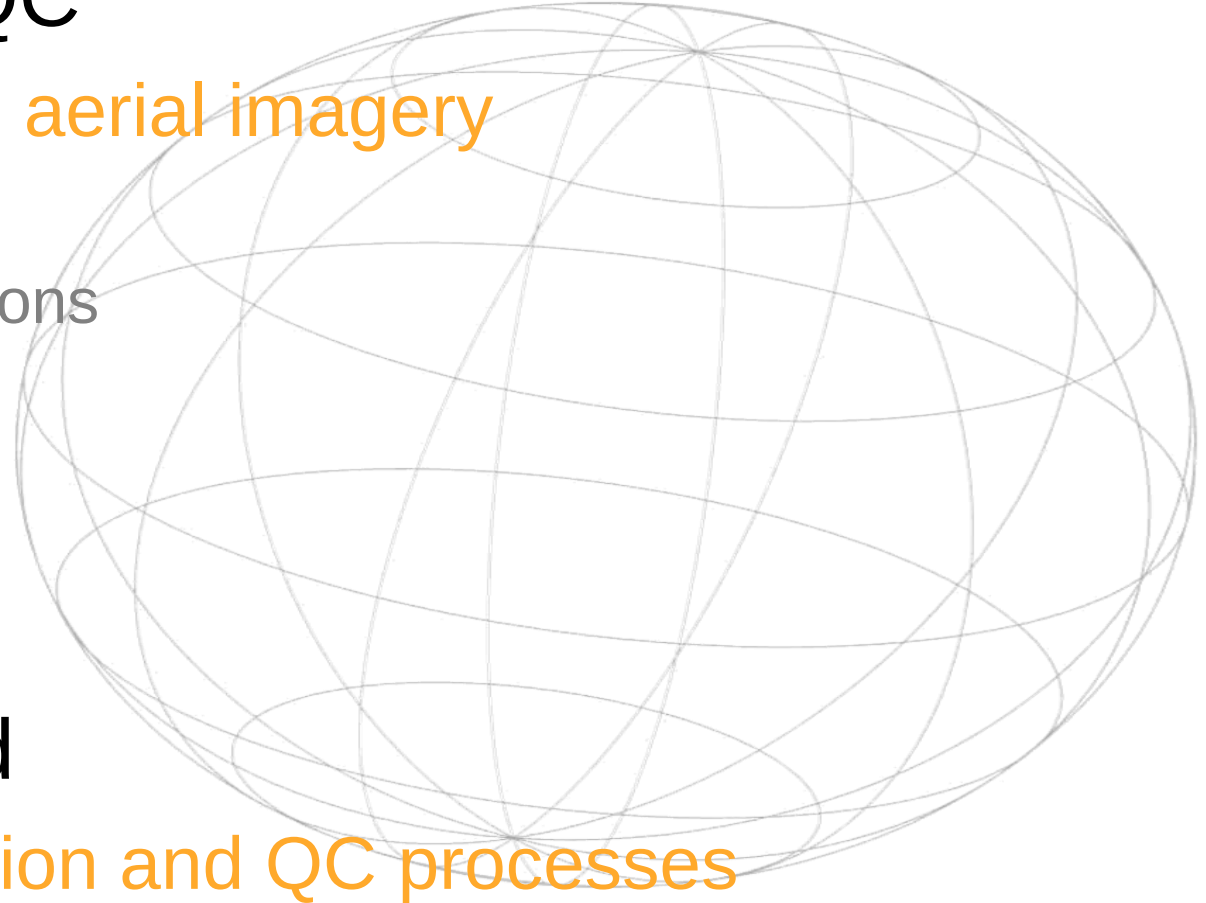
■ Updating cycle 1:10k (2014-2017)

- Constructions and roads
- Quality checks during process:
 - Automatic controls (Complete datasheet)
 - Domain, Logical and Thematic consistency
 - Visual controls (Sampling method (ISO))
 - Completeness, Positional and Thematic accuracy
 - Quality reports

Règle topologique	Pourcentage d'erreur toléré	Résultat z21	Remarques
AddPtGeom_is contained in Building_or PPC	0,10%	0,00%	
AddPolyGeometry_type3_overlap_Building_TGID	0,10%	0,00%	
AddPolyGeometry_type5_is contained in Building_TGID	0,10%	0,00%	
AddPolyGeometry_type6_is contained in PPC_TGID	0,10%	0,00%	
Brunnel_wider_or_as_wide_than WCSurface	0,10%	2,34%	9 erreurs
Building_Beyond PPC_and Building	0,10%	0,00%	
Building_must_not_be_completely_within_PPC	0,10%	0,00%	
Building_must_not_overlap_Building	0,10%	0,00%	
Building_must_not_overlap_PPC	0,10%	0,00%	
Building_must_not_tot_surimpose_Building	0,10%	0,00%	
Building_must_not_tot_surimpose_PPC	0,10%	0,00%	
Crossing_at_intersection_dirtroad	0,10%	0,00%	
Crossing_at_intersection_dirtroad_path	0,10%	0,03%	
Crossing_at_intersection_dirtroad_road	0,10%	0,00%	
Dirtroad_Path_connectivity	0,10%	0,00%	
Dirtroad_Road_connectivity	0,10%	0,00%	
Dirtroad_must_not_tot_surimpose_Dirtroad	0,10%	0,00%	
Dirtroadsegment_connectivity	0,10%	0,00%	
No_DirtroadSegment_in_Building	0,10%	0,00%	
No_DirtroadSegment_in_PPC	0,10%	0,00%	
No_DirtroadSegment_in_WCSurface	0,10%	0,00%	
No_DirtroadSegment_in_WaterSurface	0,10%	0,00%	
No_gap_in_Dirtroadnetwork	0,10%	0,00%	
Netkmmarker_in_neighbourhood_netwerkelement	0,10%	0,00%	
No_netkmmarker_on_Building	0,10%	0,00%	
No_netkmmarker_on_Dirtroad	0,10%	0,00%	
No_netkmmarker_on_PLC	0,10%	0,00%	
No_netkmmarker_on_PPC	0,10%	0,00%	
No_netkmmarker_on_Path	0,10%	0,00%	
No_netkmmarker_on_Road	0,10%	0,00%	
No_netkmmarker_on_WCsegment	0,10%	0,00%	
No_netkmmarker_on_WCSurface	0,10%	0,00%	
No_netkmmarker_on_WaterSurface	0,10%	0,00%	
LC_must_not_overlap_LC	0,10%	0,00%	
LC_must_not_overlap_spec_PPC	0,10%	0,00%	
LC_must_not_overlap_WCSurface	0,10%	0,03%	ObjectID 1795, 1810. Overlap bien visible
LC_must_not_overlap_WaterSurface	0,10%	0,00%	
LC_must_not_within_LC	0,10%	0,00%	
Barrier_on_road_and_dirtroad	0,10%	0,63%	17 erreurs!
Narrowpassage_on_road	0,10%	0,26%	7 erreurs
No Obstruction_on_Netkmmarker	0,10%	0,00%	
No Obstruction_on_path	0,10%	0,00%	

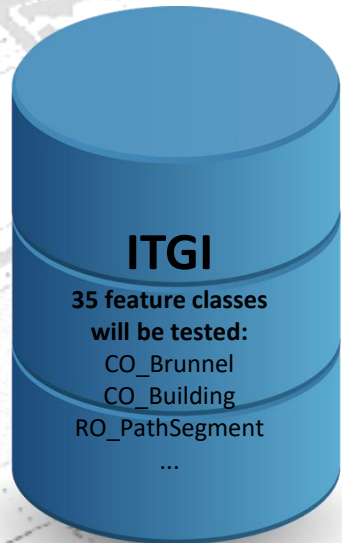
Quality of the database?

- Inaccuracies induced by our QC
 - Visual controls mainly based on aerial imagery
 - Not the latest information
 - Photo interpretation has its limitations
 - Sampling method
- Not all data were updated
 - Land cover, Hydrography, ...
- Quality Assessment is needed
 - Metadata, evaluation of production and QC processes



Quality Assessment Process

- Preparing test data internally
 - 35 themes will be checked in the field
 - Selection criteria of our 1:10k
 - Test zone: 100ha



Add some extra attributes

Shape Area	Checked	QC State	But
15,273152	Unchecked feature	Exist from origin	
15,515379	Unchecked feature	Exist from origin	
15,901854	Unchecked feature	Exist from origin	
15,936834	Unchecked feature	Exist from origin	
16,37614	Unchecked feature	Exist from origin	
16,44222	Unchecked feature	Exist from origin	
16,584054	Unchecked feature	Exist from origin	
16,736846	Unchecked feature	Exist from origin	
16,742648	Unchecked feature	Exist from origin	
16,856315	Unchecked feature	Exist from origin	
16,959497	Unchecked feature	Exist from origin	
17,305617	Unchecked feature	Exist from origin	
17,506474	Unchecked feature	Exist from origin	
17,616282	Unchecked feature	Exist from origin	
18,000065	Unchecked feature	Exist from origin	
18,005812	Unchecked feature	Exist from origin	
18,222058	Unchecked feature	Exist from origin	
18,69877	Unchecked feature	Exist from origin	
18,709804	Unchecked feature	Exist from origin	
18,87735	Unchecked feature	Exist from origin	
18,893766	Unchecked feature	Exist from origin	
19,327594	Unchecked feature	Exist from origin	
19,376775	Unchecked feature	Exist from origin	
19,953117	Unchecked feature	Exist from origin	
20,072379	Unchecked feature	Exist from origin	

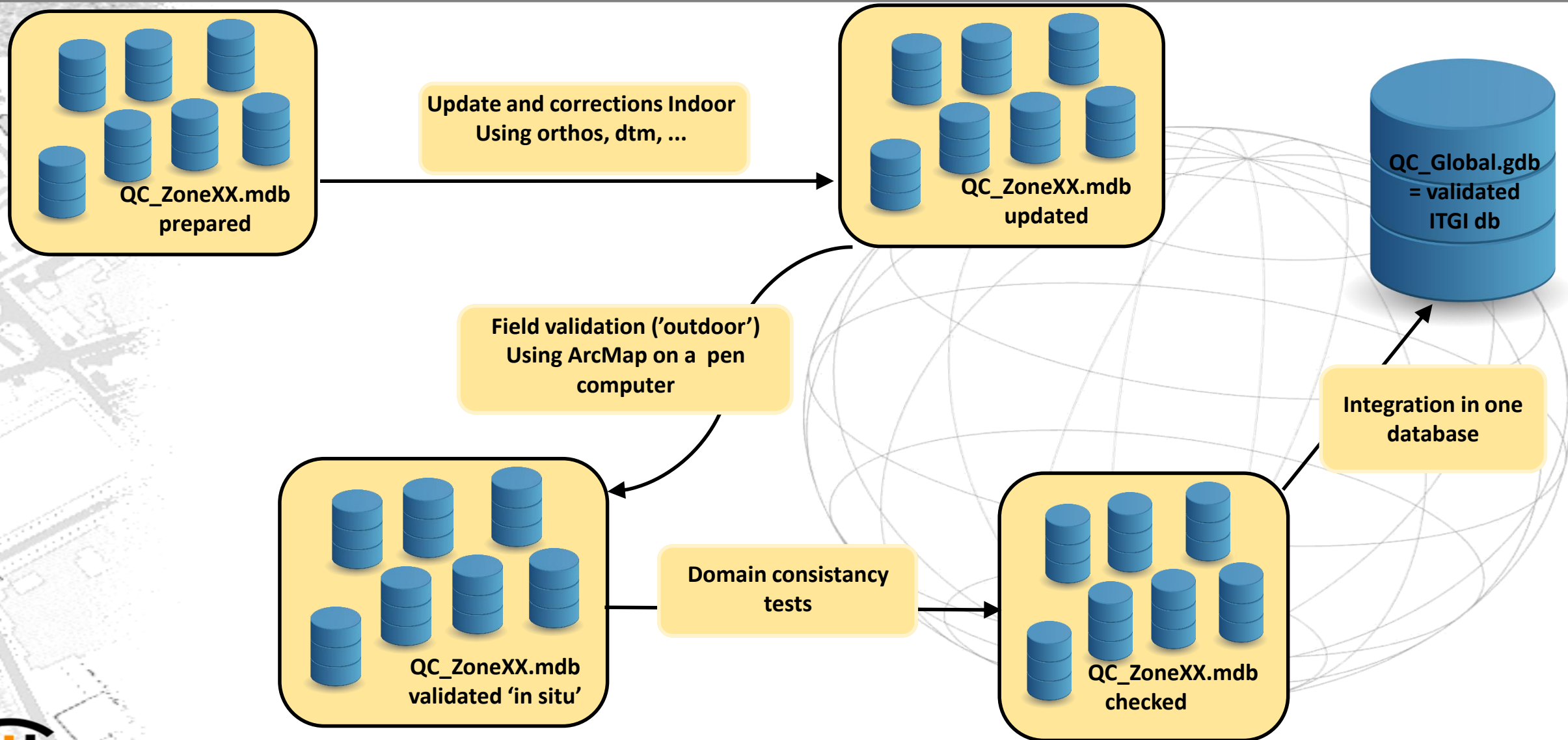
QC_ZoneXX.I

QC State

- Exist from orioin
- <Null>
- Exist from origin
- New
- Deleted
- Transferred from *
- Transferred to *
- Geometry modified
- Attribute modified
- Geometry and Attribute
- Other...
- Reverse geometry (flip)
- Exist from origin

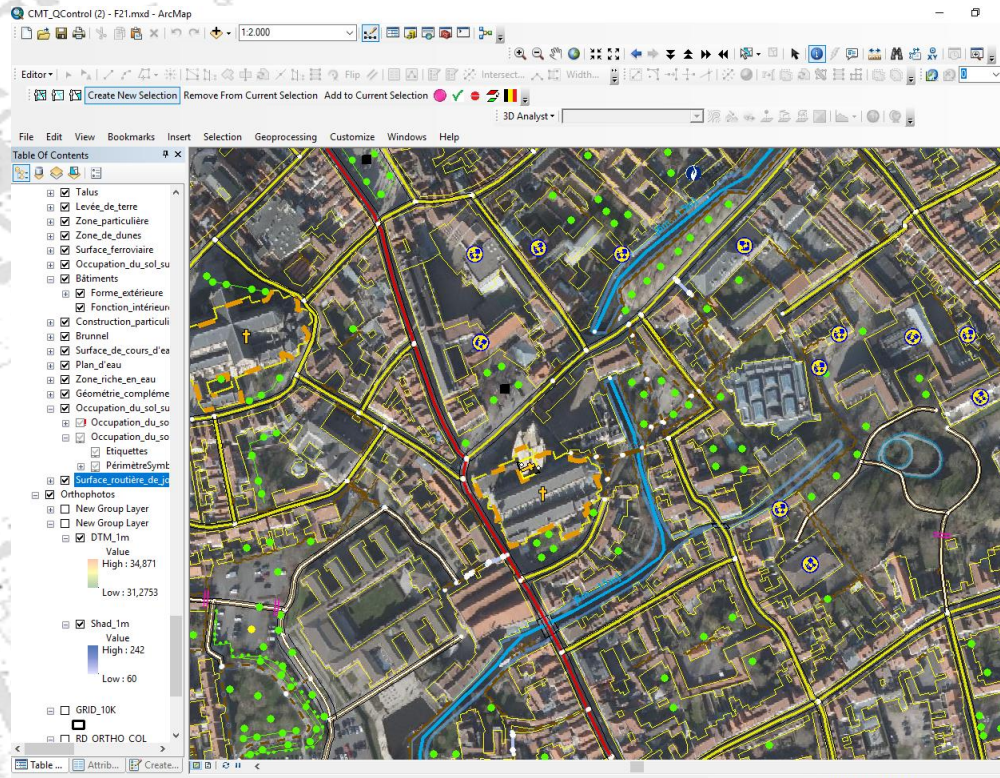
(0 out of 298 Selected)

Quality Assessment Workflow

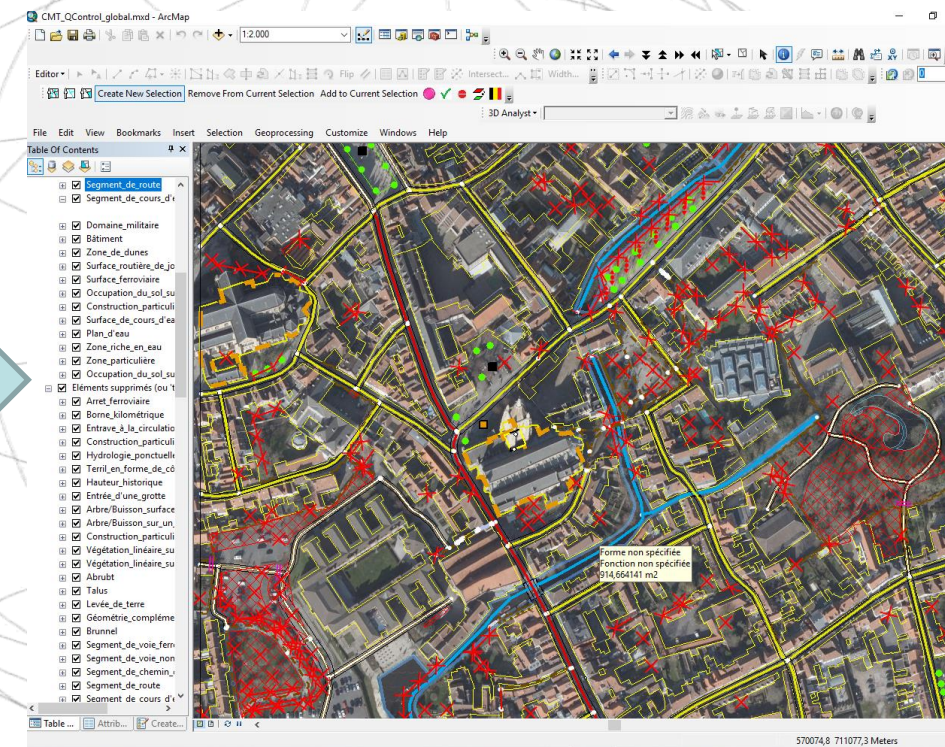


Quality Assessment Results

After field validation



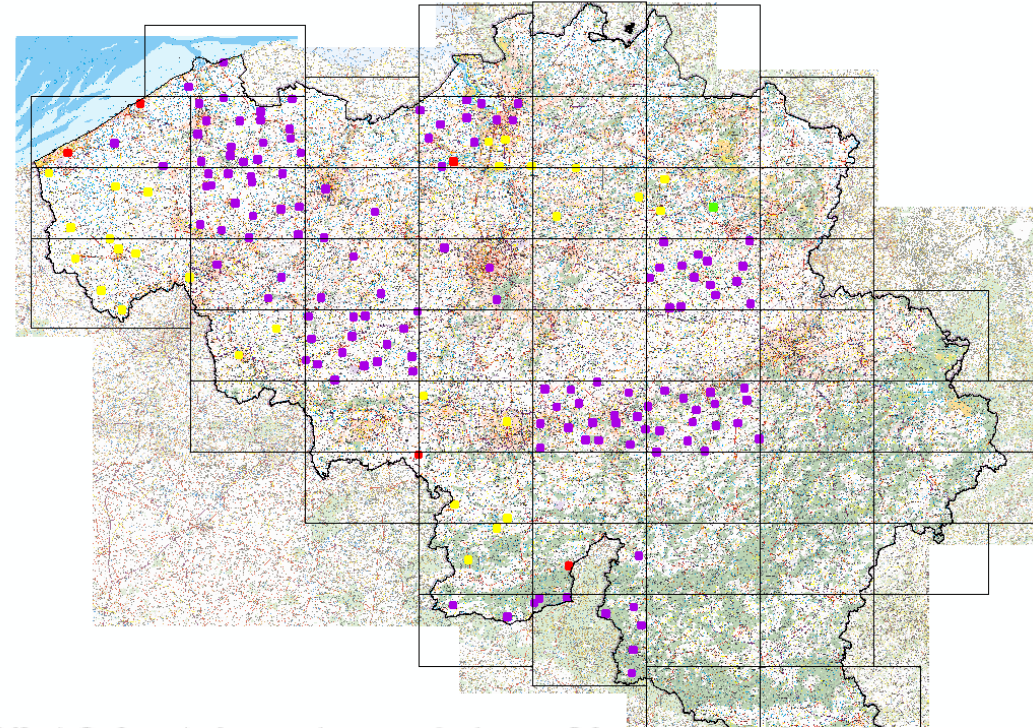
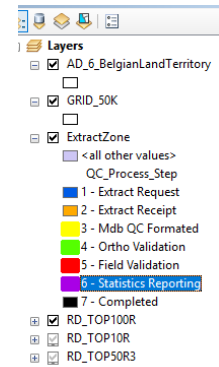
After indoor
and outdoor
corrections



Quality Assessment Progress

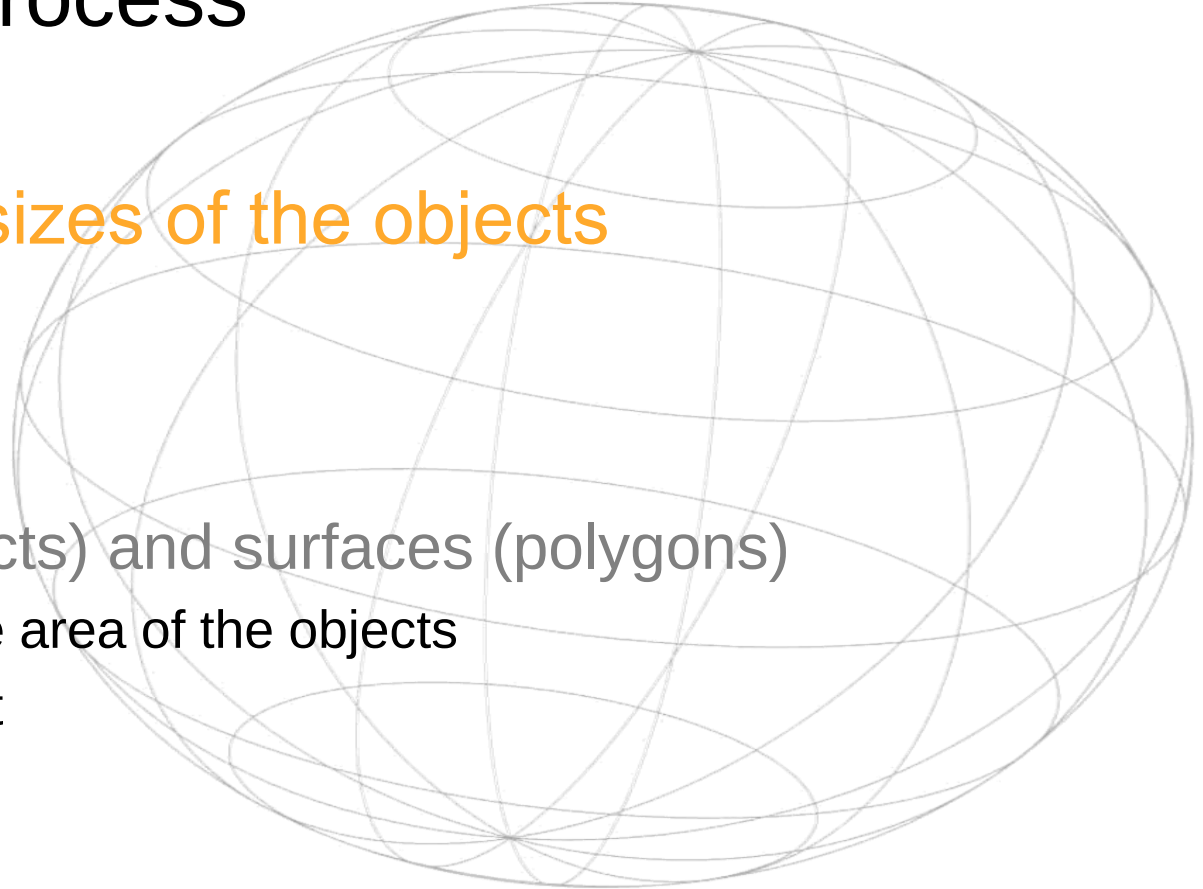
■ Current status

- 168 zones of 100ha
 - 128 zones OK for statistics
 - + 160 000 records
- Capturing real field situation
- Beginning: random selection
- Afterwards: well chosen selection to have maximum representation



Quality Assessment Progress

- Quality control of production process
 - Units, Total number of objects
 - We don't take into account the sizes of the objects
- Quality assessment
 - New method:
 - Units (points), lengths (linear objects) and surfaces (polygons)
 - Taken into account the lengths or the area of the objects
 - Results can be considerably different
 - We will work with weights of objects



Quality Assessment Progress

■ New sampling method

■ Weighted method

- For each theme

Number of fictive objects =

$$\frac{\text{Total size of the test objects in area}}{\text{Average size of the object in area}}$$

- Area used: Belgium or sheet
- Determine the sample size with total number of real objects (ISO)
- Test zones are created
- Number of fictive objects = sample size

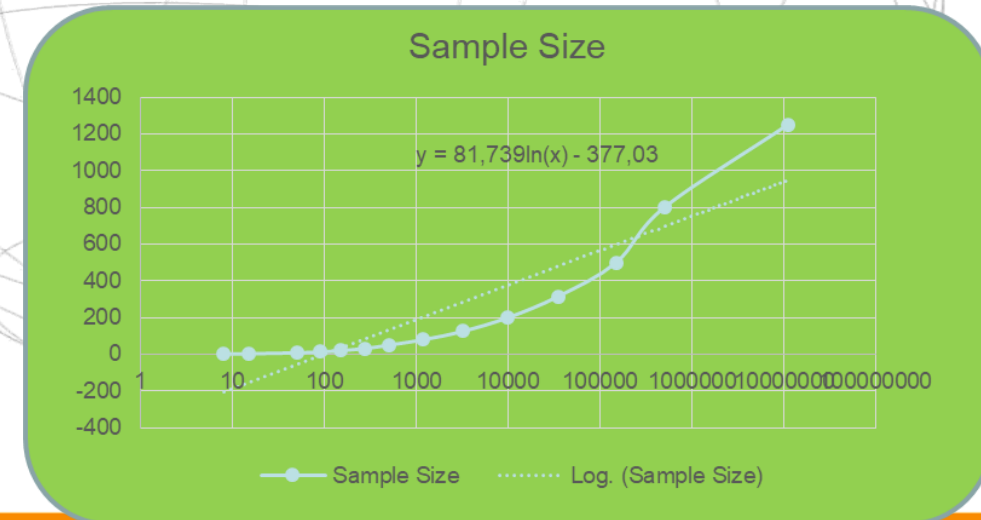
Quality Assessment Progress

■ Well chosen selection

■ In order to make every theme quickly representative

- Focus on least frequent themes
 - Objects that are exceptional are more difficult to select in random method
 - Objects that are frequent are quickly overrepresented
- Sample size based on graphic
 - Total sample size can be in between classes
- Taking into account spatial representation

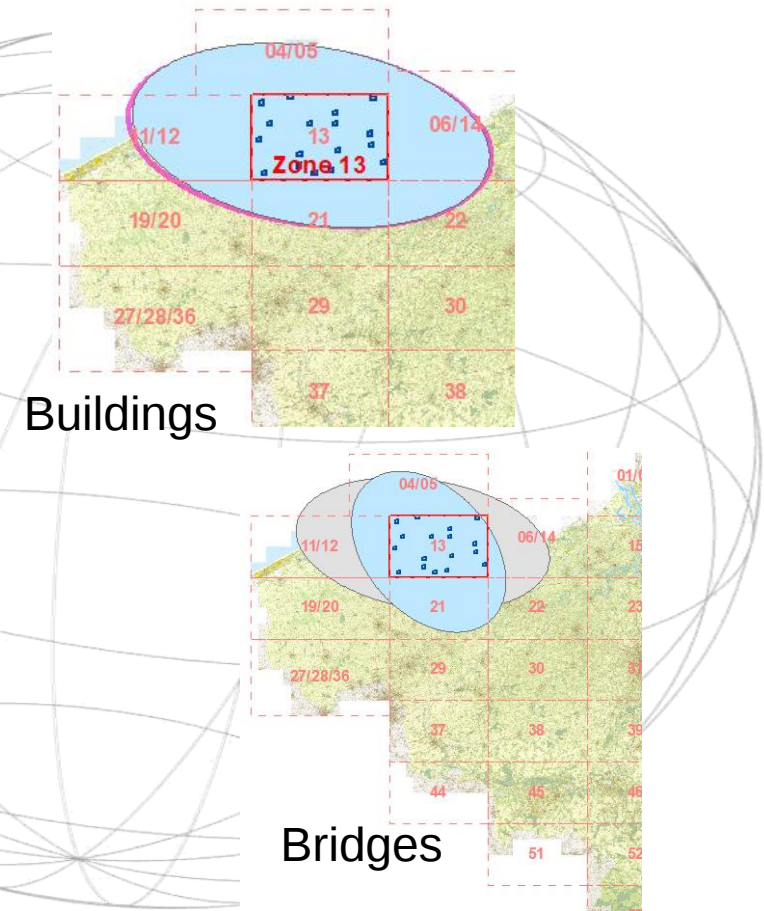
Norme ISO	
Max Lot Size	Sample Size
8	2
15	3
50	8
90	13
150	20
280	32
500	50
1200	80
3200	125
10000	200
35000	315
150000	500
500000	800
11000000	1250



Quality Assessment Progress

■ Spatial representativeness

- Objective : representative dispersion of the test data compared to the dispersion of the ITGI data
- Method : compare the locations of the objects in the ITGI with the ones in the test zones by creating and visualizing standard deviation ellipses of the test data and ITGI data



Quality Assessment Progress

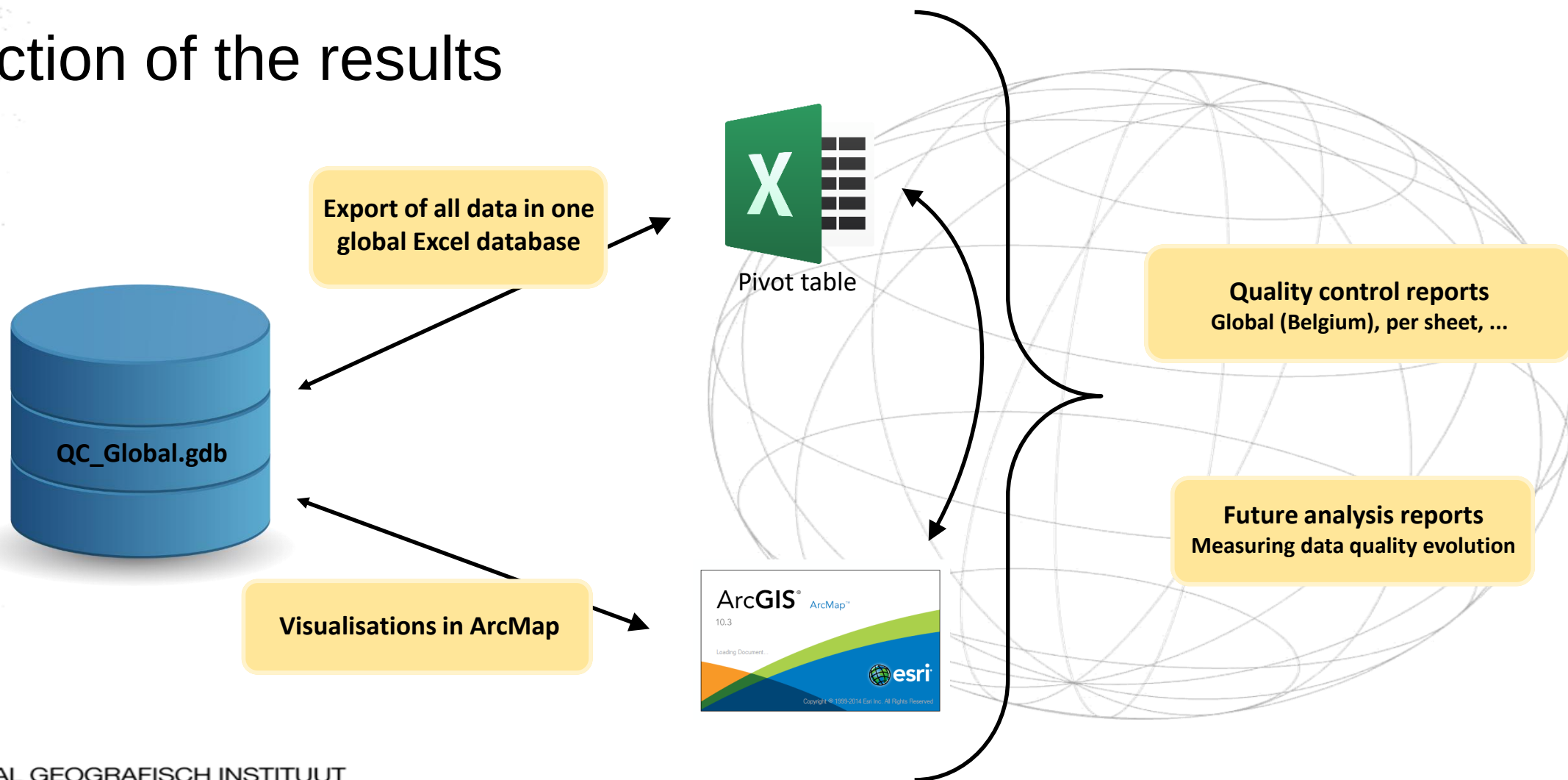
■ Current Representativeness

- 15 themes are ok
- Other themes are not representative yet
 - Only indicative information

Validation échantillonnage minimum (de géométrie) d'éléments		Global			
géom type	Thèmes	itgi	QC	Seuil	%
Points	CO_ParticularPointConstruction	257149	1051	800	131%
	HY_WaterPoint	12609	25	315	8%
	LC_GroundLevelIsolatedVeg	1625450	7189	1250	575%
	LC_TopLevelIsolatedVeg	37	0	8	0%
	LR_CaveEntrance	171	0	32	0%
	LR_ConeshapedSlagheap	84	0	13	0%
	LR_HistoricMound	72	1	13	8%
	NET_KilometreMarker	23088	182	315	58%
	RA_RailwayStop	1501	31	125	25%
	RO_Obstruction	84904	617	500	123%
Polylines	CO_ParticularLineConstruction	109896	1204	500	241%
	HY_WatercourseSegment	396845	1673	800	209%
	LC_GroundLevelLinearVeg	1028572	5224	1250	418%
	LC_TopLevelLinearVeg	478	3	50	5%
	LR_EarthBank	3737	17	200	9%
	LR_Embankment	99267	409	500	82%
	LR_Steep	772	14	80	17%
	RA_RailwayTrackSegment	23196	168	315	53%
	RO_DirtRoadSegment	196802	796	800	99%
	RO_PathSegment	192676	1102	800	138%
Polygons	RO_RoadSegment	1202318	7121	1250	570%
	CO_Brunnel	21596	289	315	92%
	CO_Building	4506530	40456	1250	3236%
	CO_ParticularPolyConstruction	19211	272	315	86%
	HY_WatercourseSurface	8519	80	200	40%
	HY_WaterSurface	77377	166	500	33%
	HY_Wetland	18174	75	315	24%
	LC_GroundLevelLandcoverZone	557292	2014	1250	161%
	LC_TopLevelLandcoverZone	38888	308	500	62%
	LR_AdditionalSlopeSurface	28252	140	315	44%
	LR_DuneZone	35	0	8	0%
	RA_RailwaySurface	5360	37	200	18%
	RO_ConnectingRoadSurface	422618	3760	800	470%
	ZO_ParticularZone	17982	149	315	47%

Quality Assessment Results

■ Extraction of the results



Quality Assessment Results

Comparing attributes

[illegible]

Extracting theme quality information

	Exist from o	Elément sur	Nouvel élém	Géométrie i	Géométrie modif	Geometry and Att	Column Labels	Transféré de	Total Count	
Count	Count	Count	Count	Count	Count	Count	Attribut(s) n	Count		
Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9	Column10	Column11
LR_HistoricMound	100,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	100,00%
CO_Building	90,29%	1,64%	2,85%	0,00%	1,78%	0,00%	2,90%	0,46%	0,10%	100,00%
RA_RailwaySurface	82,45%	8,06%	6,99%	0,00%	2,51%	0,00%	0,00%	0,00%	0,00%	100,00%
RO_ConnectingRoadSurface	82,39%	4,60%	2,71%	0,00%	10,29%	0,00%	0,00%	0,00%	0,02%	100,00%
RO_RoadSegment	79,38%	1,93%	2,42%	0,00%	2,21%	0,65%	12,02%	0,87%	0,52%	100,00%
CO_Brunnel	78,88%	8,46%	8,04%	0,00%	3,63%	0,00%	0,64%	0,36%	0,00%	100,00%
HY_WatercourseSurface	76,12%	2,29%	2,90%	0,00%	15,28%	0,00%	2,77%	0,00%	0,63%	100,00%
RA_RailwayTrackSegment	69,22%	3,08%	18,41%	0,00%	0,00%	0,03%	9,27%	0,00%	0,00%	100,00%
LC_GroundLevelLandcoverZone	61,69%	18,41%	7,59%	0,00%	2,71%	0,01%	9,50%	0,02%	0,08%	100,00%
NET_KilometreMarker	58,29%	13,37%	3,74%	0,00%	23,53%	0,00%	1,07%	0,00%	0,00%	100,00%
LR_EarthBank	56,68%	14,45%	22,40%	0,00%	0,00%	0,00%	0,00%	0,00%	6,46%	100,00%
LR_AdditionalSlopeSurface	53,55%	14,50%	29,49%	0,00%	2,46%	0,00%	0,00%	0,00%	0,00%	100,00%
RO_DirtRoadSegment	53,46%	13,97%	8,34%	0,00%	13,31%	0,00%	0,27%	3,15%	7,50%	100,00%
HY_Wetland	53,20%	32,20%	13,57%	0,00%	0,21%	0,00%	0,00%	0,73%	0,10%	100,00%
BO_PathSegment	53,17%	7,55%	16,00%	0,00%	9,21%	0,00%	3,00%	6,31%	4,76%	100,00%
HY_WaterSurface	52,70%	3,56%	12,00%	0,00%	14,24%	0,00%	14,01%	2,56%	0,93%	100,00%
RA_RailwayStop	50,00%	1,67%	46,67%	0,00%	1,67%	0,00%	0,00%	0,00%	0,00%	100,00%
ZO_ParticularZone	48,63%	6,02%	30,89%	0,00%	13,39%	0,00%	1,08%	0,00%	0,00%	100,00%
RO_Obstruction	47,71%	21,37%	21,50%	0,00%	6,23%	0,00%	3,18%	0,00%	0,00%	100,00%
LR_Embankment	44,97%	28,63%	15,63%	1,00%	8,29%	0,00%	0,00%	0,46%	1,02%	100,00%
CO_ParticularPointConstruction	36,19%	30,13%	18,02%	0,00%	14,24%	0,08%	0,08%	1,02%	0,24%	100,00%
HY_WatercourseSegment	34,56%	17,14%	17,94%	0,00%	19,19%	0,74%	10,34%	0,00%	0,09%	100,00%
CO_ParticularPolyConstruction	33,53%	3,99%	32,86%	0,00%	0,01%	0,00%	0,10%	6,65%	22,86%	100,00%
CO_ParticularLineConstruction	31,33%	37,66%	11,75%	8,08%	7,59%	0,21%	1,85%	0,60%	0,93%	100,00%
LC_GroundLevelLinearVeg	26,97%	35,09%	23,09%	0,00%	8,04%	0,52%	4,38%	1,57%	0,33%	100,00%
HY_WaterPoint	19,23%	23,08%	7,69%	0,00%	19,23%	0,00%	0,00%	0,00%	30,77%	100,00%
LC_GroundLevelIsolatedVeg	15,43%	36,85%	41,34%	0,02%	0,99%	0,00%	0,27%	1,14%	3,96%	100,00%
LR_Steep	13,48%	12,56%	8,36%	0,00%	50,29%	0,00%	0,00%	15,31%	0,00%	100,00%
LC_TopLevelLandcoverZone	0,32%	92,27%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	7,41%	100,00%
LC_TopLevelLinearVeg	0,00%	100,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	100,00%
ZO_MilitaryDomain	0,00%	0,00%	100,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	100,00%
Qualité globale	51,33%	17,83%	15,34%	0,61%	7,18%	0,15%	3,23%	1,51%	2,83%	100,00%

Row Labels	Exist from o	Elément sup	Nouvel élé	Géométrie	Géométrie modif	Geometry and Att	Attribut(s)	Transféré de	Transféré ver	Total Count
Count	Count	Count	Count	Count	Count	Count	Count	Count	Count	Count
Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9	Column10	Column11
LR_HistoricMound	100,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	100,00%
CO_Building	90,29%	1,64%	2,85%	0,00%	1,78%	0,00%	2,90%	0,46%	0,10%	100,00%
RA_RailwaySurface	82,45%	8,06%	6,99%	0,00%	2,51%	0,00%	0,00%	0,00%	0,00%	100,00%
RO_ConnectingRoadSurface	82,33%	4,60%	2,71%	0,00%	10,29%	0,00%	0,00%	0,00%	0,02%	100,00%
RO_RoadSegment	79,38%	1,93%	2,42%	0,00%	2,21%	0,65%	12,02%	0,87%	0,52%	100,00%
CO_Brunnel	78,68%	8,46%	8,04%	0,00%	3,63%	0,00%	0,64%	0,36%	0,00%	100,00%
HY_WatercourseSurface	76,12%	2,29%	2,90%	0,00%	15,28%	0,00%	2,77%	0,00%	0,63%	100,00%
RA_RailwayTrackSegment	69,22%	3,08%	18,41%	0,00%	0,00%	0,03%	9,27%	0,00%	0,00%	100,00%
LC_GroundLevelLandcoverZone	61,69%	18,41%	7,59%	0,00%	2,71%	0,01%	9,50%	0,02%	0,08%	100,00%
NET_KilometreMarker	58,29%	13,37%	3,74%	0,00%	23,53%	0,00%	1,07%	0,00%	0,00%	100,00%
LR_EarthBank	56,68%	14,45%	22,40%	0,00%	0,00%	0,00%	0,00%	0,00%	6,46%	100,00%
LR_AdditionalSlopeSurface	53,55%	14,50%	29,49%	0,00%	2,46%	0,00%	0,00%	0,00%	0,00%	100,00%
RO_DirtRoadSegment	53,46%	13,97%	8,34%	0,00%	13,31%	0,00%	0,27%	3,15%	7,30%	100,00%
HY_Wetland	53,20%	32,20%	13,57%	0,00%	0,21%	0,00%	0,00%	0,73%	0,10%	100,00%
RO_PathSegment	53,17%	7,55%	16,00%	0,00%	9,21%	0,00%	3,00%	6,31%	4,76%	100,00%
HY_WaterSurface	52,70%	3,56%	12,00%	0,00%	14,24%	0,00%	14,01%	2,56%	0,93%	100,00%
RA_RailwayStop	50,00%	1,67%	46,67%	0,00%	1,67%	0,00%	0,00%	0,00%	0,00%	100,00%
ZO_ParticularZone	48,63%	6,02%	30,89%	0,00%	13,39%	0,00%	1,08%	0,00%	0,00%	100,00%
RO_Obstruction	47,71%	21,37%	21,50%	0,00%	6,23%	0,00%	3,18%	0,00%	0,00%	100,00%
LR_Embankment	44,97%	28,63%	15,63%	1,00%	8,29%	0,00%	0,00%	0,46%	1,02%	100,00%
CO_ParticularPointConstruction	36,19%	30,13%	18,02%	0,00%	14,24%	0,08%	0,08%	1,02%	0,24%	100,00%
HY_WatercourseSegment	34,56%	17,14%	17,94%	0,00%	19,19%	0,74%	10,34%	0,00%	0,09%	100,00%
CO_ParticularPolyConstruction	33,53%	3,99%	32,86%	0,00%	0,01%	0,00%	0,10%	6,65%	22,86%	100,00%
CO_ParticularLineConstruction	31,33%	37,66%	11,75%	8,08%	7,59%	0,21%	1,85%	0,60%	0,93%	100,00%
LC_GroundLevelLinearVeg	26,97%	35,09%	23,09%	0,00%	8,04%	0,52%	4,38%	1,57%	0,33%	100,00%
HY_WaterPoint	19,23%	23,08%	7,69%	0,00%	19,23%	0,00%	0,00%	0,00%	30,77%	100,00%
LC_GroundLevelIsolatedVeg	15,43%	36,85%	41,34%	0,02%	0,99%	0,00%	0,27%	1,14%	3,96%	100,00%
LR_Steep	13,48%	12,56%	8,36%	0,00%	50,29%	0,00%	0,00%	15,31%	0,00%	100,00%
LC_TopLevelLandcoverZone	0,32%	92,27%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	7,41%	100,00%
LC_TopLevelLinearVeg	0,00%	100,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	100,00%
ZO_MilitaryDomain	0,00%	0,00%	100,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	100,00%
Qualité globale	51,33%	17,83%	15,34%	0,61%	7,18%	0,15%	3,23%	1,51%	2,83%	100,00%

Quality Assessment Results

■ Completeness

- Updated themes have a higher quality
- Changes in selection criteria over time
 - Very large impact on the quality results (ex.: Embankment)
- Production methods have an impact
 - (ex.: PathSegment, Brunnel, DirtRoadSegment)
- Analyses per theme are necessary (specifications, process, history)

Figures are important, but the WHY is even more important!

Column1	Column2	Column3	Column4	Column5
LR_HistoricMound	100,00%	0,00%	0,00%	100,00%
CO_Building	95,36%	1,69%	2,95%	100,00%
RO_RoadSegment	95,01%	2,22%	2,78%	100,00%
HY_WatercourseSurface	94,66%	2,36%	2,98%	100,00%
RO_ConnectingRoadSurface	92,69%	4,60%	2,71%	100,00%
RA_RailwaySurface	84,95%	8,06%	6,99%	100,00%
CO_Brunnel	83,34%	8,54%	8,12%	100,00%
NET_KilometreMarker	82,70%	13,51%	3,78%	100,00%
HY_WaterSurface	81,36%	4,27%	14,38%	100,00%
RO_DirtRoadSegment	76,90%	14,46%	8,63%	100,00%
RA_RailwayTrackSegment	76,32%	3,39%	20,29%	100,00%
RO_PathSegment	75,62%	7,52%	16,86%	100,00%
LR_Steep	75,29%	14,83%	9,87%	100,00%
LC_GroundLevelLandcoverZone	71,27%	20,35%	8,38%	100,00%
HY_WaterPoint	69,23%	23,08%	7,69%	100,00%
LR_EarthBank	63,14%	14,45%	22,40%	100,00%
ZO_ParticularZone	62,69%	6,08%	31,23%	100,00%
HY_WatercourseSegment	60,87%	19,12%	20,01%	100,00%
CO_ParticularPolyConstruction	60,49%	4,27%	35,23%	100,00%
LR_AdditionalSlopeSurface	56,01%	14,50%	29,49%	100,00%
RO_Obstruction	55,72%	22,08%	22,21%	100,00%
LR_Embankment	55,54%	28,76%	15,70%	100,00%
HY_Wetland	53,90%	32,43%	13,67%	100,00%
RA_RailwayStop	51,67%	1,67%	46,67%	100,00%
CO_ParticularPointConstruction	51,31%	30,47%	18,22%	100,00%
CO_ParticularLineConstruction	49,35%	38,60%	12,04%	100,00%
LC_GroundLevelLinearVeg	38,14%	37,31%	24,56%	100,00%
LC_GroundLevelIsolatedVeg	20,69%	37,38%	41,93%	100,00%
LC_TopLevelLandcoverZone	0,00%	100,00%	0,00%	100,00%
LC_TopLevelLinearVeg	0,00%	100,00%	0,00%	100,00%
ZO_MilitaryDomain	0,00%	0,00%	100,00%	100,00%
Qualité globale	69,90%	13,26%	16,84%	100,00%

Quality Assessment Results

Positional inaccuracy

- Precision xy 2m
- Recent use of DTM (lidar)
- Influence of non updated themes
- Average 7,20 %

Misclassifications

- Not significant
- Interpretation error

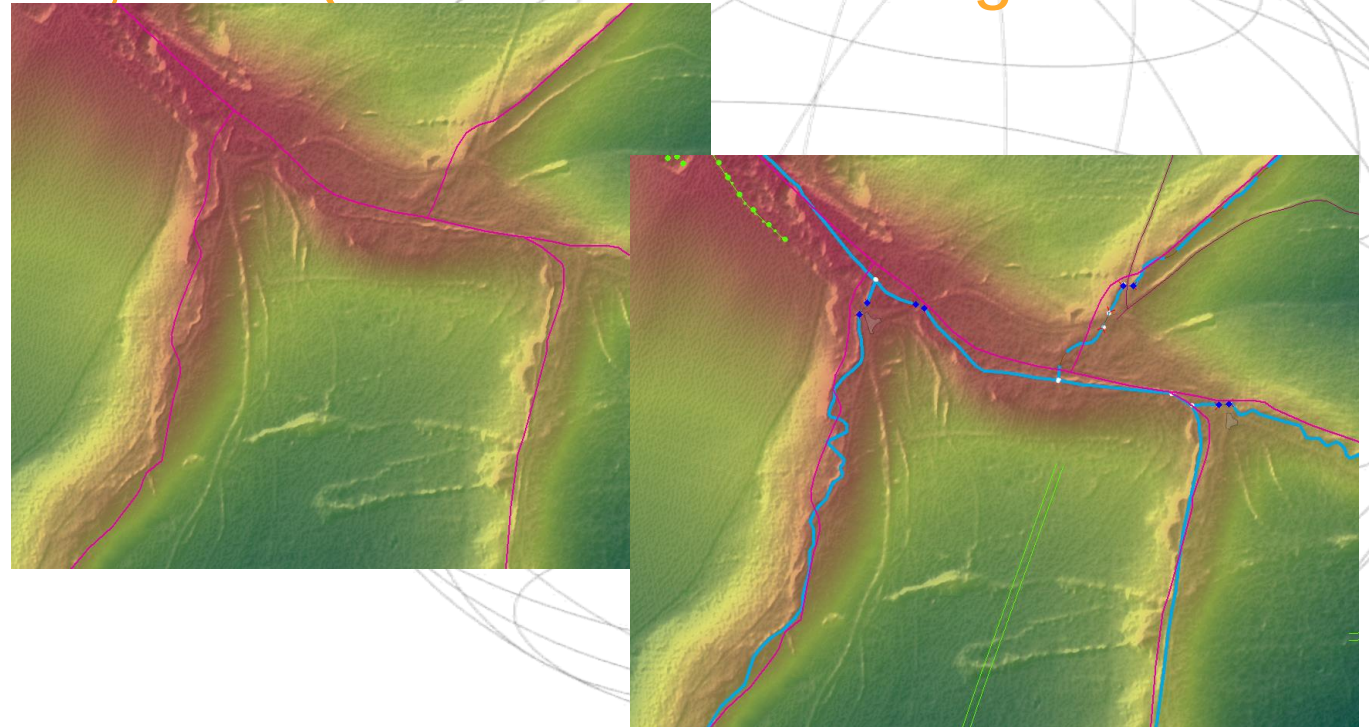
Attribute errors

- Tolerance=1m or Boolean values
- Max 10-12%
- Average 3,23%

	Exist from o	Elément sup	Nouvel élém	Géométrie i	Géométrie modifi	Geometry and Attr	Column Labels			
Row Labels	Count	Count	Count	Count	Count	Count	Attribut(s) n	Transféré de	Transféré ver	Total Count
Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9	Column10	Column11
LR_HistoricMound	100,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	100,00%
CO_Building	90,29%	1,64%	2,85%	0,00%	1,78%	0,00%	2,90%	0,46%	0,10%	100,00%
RA_RailwaySurface	82,45%	8,06%	6,99%	0,00%	2,51%	0,00%	0,00%	0,00%	0,00%	100,00%
RO_ConnectingRoadSurface	82,39%	4,60%	2,71%	0,00%	10,29%	0,00%	0,00%	0,00%	0,02%	100,00%
RO_RoadSegment	79,38%	1,93%	2,42%	0,00%	2,21%	0,65%	12,02%	0,87%	0,52%	100,00%
CO_Brunnel	78,88%	8,46%	8,04%	0,00%	3,63%	0,00%	0,64%	0,36%	0,00%	100,00%
HY_WatercourseSurface	76,12%	2,29%	2,90%	0,00%	15,28%	0,00%	2,77%	0,00%	0,63%	100,00%
RA_RailwayTrackSegment	69,22%	3,08%	18,41%	0,00%	0,00%	0,03%	9,27%	0,00%	0,00%	100,00%
LC_GroundLevelLandcoverZone	61,69%	18,41%	7,59%	0,00%	2,71%	0,01%	9,50%	0,02%	0,08%	100,00%
NET_KilometreMarker	58,29%	13,37%	3,74%	0,00%	23,53%	0,00%	1,07%	0,00%	0,00%	100,00%
LR_EarthBank	56,68%	14,45%	22,40%	0,00%	0,00%	0,00%	0,00%	0,00%	6,46%	100,00%
LR_AdditionalSlopeSurface	53,55%	14,50%	29,49%	0,00%	2,46%	0,00%	0,00%	0,00%	0,00%	100,00%
RO_DirtRoadSegment	53,46%	13,97%	8,34%	0,00%	13,31%	0,00%	0,27%	3,15%	7,50%	100,00%
HY_Wetland	53,20%	32,20%	13,57%	0,00%	0,21%	0,00%	0,00%	0,73%	0,10%	100,00%
RO_PathSegment	53,17%	7,55%	16,00%	0,00%	9,21%	0,00%	3,00%	6,31%	4,76%	100,00%
HY_WaterSurface	52,70%	3,56%	12,00%	0,00%	14,24%	0,00%	14,01%	2,56%	0,93%	100,00%
RA_RailwayStop	50,00%	1,67%	46,67%	0,00%	1,67%	0,00%	0,00%	0,00%	0,00%	100,00%
ZO_ParticularZone	48,63%	6,02%	30,89%	0,00%	13,39%	0,00%	1,08%	0,00%	0,00%	100,00%
RO_Obstruction	47,71%	21,37%	21,50%	0,00%	6,23%	0,00%	3,18%	0,00%	0,00%	100,00%
LR_Embankment	44,97%	28,63%	15,63%	1,00%	8,29%	0,00%	0,00%	0,46%	1,02%	100,00%
CO_ParticularPointConstruction	36,19%	30,13%	18,02%	0,00%	14,24%	0,08%	0,08%	1,02%	0,24%	100,00%
HY_WatercourseSegment	34,56%	17,14%	17,94%	0,00%	19,19%	0,74%	10,34%	0,00%	0,09%	100,00%
CO_ParticularPolyConstruction	33,53%	3,99%	32,86%	0,00%	0,01%	0,00%	0,10%	6,65%	22,86%	100,00%
CO_ParticularLineConstruction	31,33%	37,66%	11,75%	8,08%	7,59%	0,21%	1,85%	0,60%	0,93%	100,00%
LC_GroundLevelLinearVeg	26,97%	35,09%	23,09%	0,00%	8,04%	0,52%	4,38%	1,57%	0,33%	100,00%
HY_WaterPoint	19,23%	23,08%	7,69%	0,00%	19,23%	0,00%	0,00%	0,00%	30,77%	100,00%
LC_GroundLevelIsolatedVeg	15,43%	36,85%	41,34%	0,02%	0,99%	0,00%	0,27%	1,14%	3,96%	100,00%
LR_Steep	13,48%	12,56%	8,36%	0,00%	50,29%	0,00%	0,00%	15,31%	0,00%	100,00%
LC_TopLevelLandcoverZone	0,32%	92,27%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	7,41%	100,00%
LC_TopLevelLinearVeg	0,00%	100,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	100,00%
ZO_MilitaryDomain	0,00%	0,00%	100,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	100,00%
Qualité globale	51,33%	17,83%	15,34%	0,61%	7,18%	0,15%	3,23%	1,51%	2,83%	100,00%

Quality Assessment Results

- Example of positional accuracy of a watercourse segment
 - Positional inaccuracy = 19,19 % (will be solved during this update cycle)



Quality Assessment Results

- Analysis per sheet (Ex. : buildings)
 - Local systematic errors

CO_Building	90,29%	1,64%	2,85%	0,00%	1,78%	0,00%	2,90%	0,46%	0,10%	100,00%
04_05	98,70%	0,08%	0,52%	0,00%	0,62%	0,00%	0,02%	0,00%	0,06%	100,00%
13	87,99%	2,36%	2,87%	0,00%	2,19%	0,00%	4,06%	0,52%	0,01%	100,00%
15	92,66%	1,25%	2,53%	0,00%	0,03%	0,00%	3,03%	0,00%	0,50%	100,00%
21	83,48%	3,57%	5,46%	0,00%	3,81%	0,00%	2,00%	0,66%	0,01%	100,00%
22	84,81%	0,62%	5,22%	0,00%	0,15%	0,00%	9,21%	0,00%	0,00%	100,00%
29	90,68%	1,72%	1,36%	0,00%	3,22%	0,00%	2,88%	0,00%	0,15%	100,00%
30	89,56%	0,83%	3,80%	0,00%	3,01%	0,00%	2,80%	0,00%	0,00%	100,00%
31	97,85%	0,53%	0,95%	0,00%	0,00%	0,00%	0,67%	0,00%	0,00%	100,00%
33	94,76%	1,12%	1,66%	0,00%	0,03%	0,00%	1,42%	1,00%	0,01%	100,00%
38	87,04%	0,81%	2,19%	0,00%	6,58%	0,00%	3,38%	0,00%	0,00%	100,00%
47	93,18%	0,70%	2,59%	0,00%	0,64%	0,00%	1,89%	0,98%	0,02%	100,00%
48	92,90%	2,10%	2,39%	0,00%	0,15%	0,00%	0,82%	1,43%	0,21%	100,00%
58	94,27%	1,26%	1,52%	0,00%	1,18%	0,00%	1,76%	0,00%	0,00%	100,00%

Quality Assessment Results

■ Example local error

- Attribute “School” is extended to complete block
 - Only in sheet 22

Information to take into account for optimization of current production process



Perspectives

■ Short term

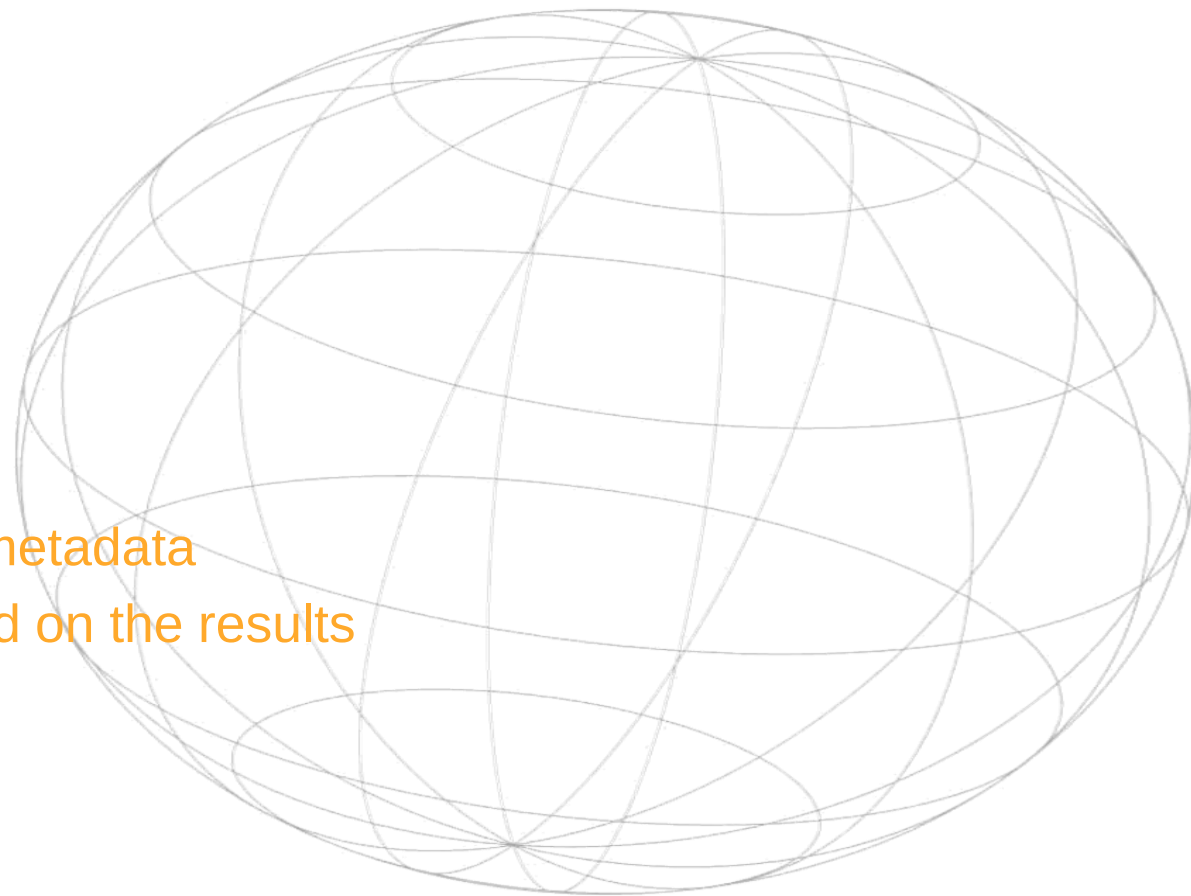
- Increase the number of sample results
 - Increase the number of representative themes
 - Detailed statistical analyses

■ Mid term

- Presentation of the representative results
- Data analyses on demand
- Integration of quality information in product metadata
- Optimization of the production process based on the results

■ Long term

- Genealogy of quality
 - Replacement of old statistics



Thank you for your attention

Questions?

