

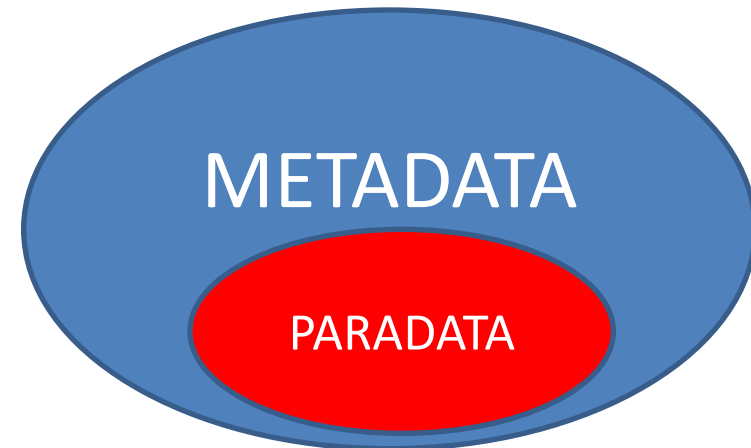


QUALITY CONTROL: PARADATA WITHIN THE 3D-ICONS PROJECT

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- ❑ Paradata is normally associated to the survey operations [Couper, 1998] and human intervention
- ❑ Paradata of a survey are information describing (storing) the process by which the survey data were collected (location, instrument(s), resolution, etc.)
- ❑ Paradata can also be considered as administrative data about the survey
- ❑ Paradata are a subset of Metadata
- ❑ Metadata are more general and complete
- ❑ Metadata consider also the post-processing





Pipeline within 3D-ICONS

- ❑ Planning
- ❑ Data acquisition / Surveying (photogrammetry, scanning)
- ❑ 3D model generation
 - ❑ *geometry reconstruction*: meshing, primitive-based, profiles, maps, hypothesis, etc.
 - ❑ *model structuring*: point cloud, meshes, primitives, etc.
 - ❑ *visual enrichment*: texturing with real / generic images
- ❑ Metadata (and paradata) assembling / creation / formatting
- ❑ Ingestion / Online publication

- ❑ How do we **control** each step of the pipeline?
- ❑ Which **measure** do we have to take into consideration to evaluate the work and check the fulfillment of the requirements?
- ❑ Which **parameters** are important to be stored?
- ❑ What is of **interest** during the surveying operation?
- ❑ Which info would be useful for the **re-use** of the acquired data?
- ❑ Which info are interesting for people surfing in **Europeana**?



- ❑ Quality control check-list to:
 - ❑ supervise and validate the surveying operations
 - ❑ keep good / useful records
 - ❑ allow people to re-use the acquired data
 - ❑ prepare paradata and metadata for the support of the digital contents in Europeana

- ❑ Check list include and tries to evaluate all the steps of the pipeline
 - ❑ Data acquisition methodology
 - ❑ Sensor characteristics
 - ❑ Data registration
 - ❑ Geometric processing
 - ❑ Appearance modeling



The image displays four vertical panels, each showing a different view or section of a quality control checklist table. The tables are organized into columns and rows, with specific cells highlighted in red and yellow to indicate areas of focus or concern. The first panel has a title: "Task 2.2: design quality control methods to be carried out by partners on digital contents".

- Quality control check-list for data acquisition

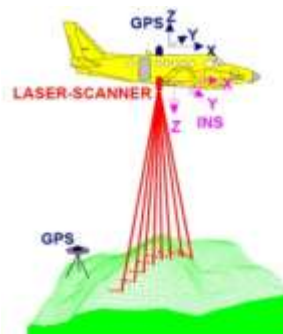
Type of survey / Data acquisition

Image-based (passive sensors)

Range-based (active sensors)

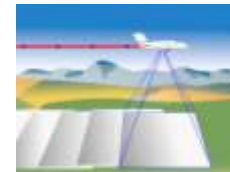
Topographic / Geodetic

CAD / maps / sections / Sketch-up



- Quality control check-list for **employed sensors**

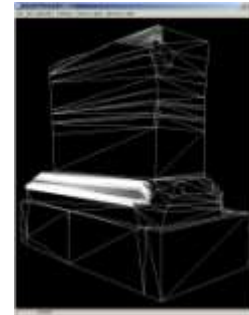
Employed sensor(s)/instrument(s)	
	Digital camera
	TOF-CW terrestrial laser scanner
	TOF-PW terrestrial laser scanner
	Airborne laser scanner
	Triangulation-based laser scanner
	Stripe projection / Structured light system
	Total station
	GNSS receiver



- Quality control check-list for employed sensors

Employed sensor(s)/instrument(s)	
	Digital camera
	TOF-CW terrestrial laser scanner
	TOF-PW terrestrial laser scanner
	Digital camera
Airborne laser scanner	Amateur/Compact camera
Triangulation	SLR/Reflex digital camera
Stripe projection	Panoramic digital camera
Total station	TOF-CW terrestrial laser scanner
GNSS receiver	Brand / Model / Type
	Ranging noise (datasheet)
	Digital camera
	calibrated? [yes/no]





- ❑ Quality control check-list for **data processing**:
 - ❑ Data registration
 - ❑ SfM or interactive procedure
 - ❑ Target/sphere or feature points or manual registration
 - ❑ standard deviation of the registration procedure
 - ❑ Geometric processing
 - ❑ Meshing approach
 - ❑ Smoothing / filtering / simplification
 - ❑ Final number of polygons (points)
 - ❑ Appearance modeling
 - ❑ Real / synthetic texturing
 - ❑ Bump mapping
 - ❑ Color vertex

Example

Type of survey / Data acquisition		
	Range-based (active sensors)	
Employed sensor(s)/instrument(s)		
	TOF-CW terrestrial laser scanner	
	Brand / Model / Type	Leica SS2
	Ranging noise (datasheet)	2 mm
	Digital camera	NO
	calibrated? [yes/no]	
Scene / Object info		
	Location (city, museum, site, etc)	Cerveteri
	dimensions (W x L x H)	30x30x4
	Units	m
	Indoor	Yes, underground
	Outdoor	No
	Material (marble, glass, stone, wood, iron, etc.)	stone
	Surface characteristics (translucent, opaque, porous, etc.)	Porous / frescos
	Date of survey - beginning	20/07/2012
	Date of survey - end	20/07/2012
	Operator	F.Remondino



Example

Data acquisition

		CAMERAS / IMAGES	
	Geometrically calibrated? [yes/no]		Yes
	Radiometrically calibrated / color profiled? [yes/no]		Yes
	Color checkboard? [yes/no]		Yes
	Focus [auto/manual]		Manual/infinite
	Quality / format		RAW / TIF
	Flash [on/off]		Off
	Extra artificial light (lamps)		Yes
	Controlled environmental light? [yes/no]		yes
	Images only for texturing? [yes/no]		yes
	Average baseline [value]		
	Average distance camera / object		
	Optical image stabilization [on/off]		
	Digital image stabilization [on/off]		
	Number of images [value]		
	HDR images? [yes/no]		yes
	Avg number of overlapping images [value]		
	Use of coded targets? [yes/no]		
	Ground Control Points (GCPs)? [yes/no]		
		number	
	Reference / known distances? [yes/no]		
		numbers [value]	
		avg length [value]	



Example

ACTIVE / SCANNER		
Calibrated sensor? [yes/no]		Yes
	Date of calibration	20/06/2011
Embedded digital camera? [yes/no]		Yes
	Calibrated? [yes/no]	No
	Geometric resolution	No
Number of scans [value]		6
cloud [value]		
cloud + intensity [value]		Yes
cloud + intensity + RGB [value]		yes
	Calibrated camera? [yes/no]	
	Image resolution? [value]	
	HDR images? [yes/no]	
Leveled?		
Dual axis compensator [on/off]		
Targets? [yes/no]		
Min sampling step [value]		
Max sampling step [value]		
Avg sampling step [value]		
Min acquisition distance [value]		
Max acquisition distance [value]		
Avg acquisition distance [value]		



3D ICONS



- ❑ Definition of a check / quality control list within the 3D-ICONS project
- ❑ Check list useful to prepare / create paradata / metadata for the project
- ❑ Accommodate many information and it's user-dependent
- ❑ Can be customized / adjusted to the individual working pipelines and objects
- ❑ Useful also to keep an eye on the accuracy of the produced 3D models
- ❑ Useful to keep a trace of the surveying operations

