



Presented at the FIG Working Week 2023,  
28 May - 1 June 2023 in Orlando, Florida, USA

# FIG WORKING WEEK 2023

28 May - 1 June 2023 Orlando Florida USA

Protecting  
Our World,  
Conquering  
New Frontiers

## Integration of Open Source Software in the Topographic Production Chain

M. Balão and C. Catita



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## Schedule:

Proposal

Why this  
changing

Methodology

Results



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Photogrammetry Department

- ArcGis
- Summit (DATEM)
- INFO (TRIMBLE)

Topography Department

- Photogrammetric Survey ArcGis
- Digital Recompletion ArcGis
- Quality control ArcGis
- Validation Process QGIS

Edition Department

- Pré-Validation QGIS
- CAD - Microstation

- Photogrammetric Survey
- Digital Recompletion
- Quality control





Proposal

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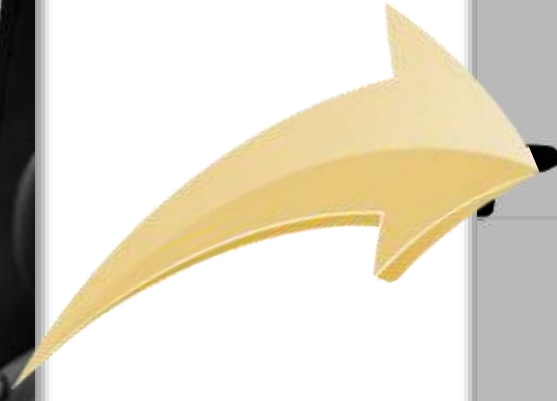
	
Fast processing in laptop	Some times the gdb make the process slowly
Internal plugins to optimize the field work	Robust tools but don't appropriate to laptop
Implemented in validation process	Is necessary migrate to ArcGis Pro

Why this changing

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Controlo Qualidade <span style="float: right;">149</span>			
Nome	Descrição	Altura	Foto (ori)
xxx 301	Juiza	2,69	35
xxx 302	capela	2,72	36
xxx 303	cañi	2,28	37
xxx 304	cañi	2,14	38
xxx 305	capela	2,10	39
xxx 306	esq. Cap.	2,89	63
xxx 307	esq. Cap.	3,62	64
xxx 308	esq. capela	2,05	66
xxx 309	esq. Casa	2,33	67
xxx 310	esq. Casa	1,52	68

PONTES <span style="float: right;">Folha: 149</span>				
Ponte	Nº Foto	Comp	Lg Mini	Lg Total
xxx001	2	7,30	7,10	7,10
xxx002	6	7,50	5	6
xxx003	9	7,3	6	7,1
xxx004	10	7,3	6	7,1
xxx005	14	7,1	6,6	6,6
xxx006	22	6,6	6,6	6,6
xxx007	27	12	6,6	6,6
xxx008	40	10,2	5,5	5,5
xxx009	41	8,7	6,1	6,1
xxx010	48	20	5	6
xxx011	49	5,3	6,8	8
xxx012	50	3,2	6,4	8,8
xxx013	55	6,2	7,8	9
xxx014	60	10	6,7	6,7
xxx015	61	8,2	5,6	7,56
xxx016	72	14	5	7
xxx017	75	12	5,8	7,5
xxx018	78	6,5	5,6	7,6
xxx019	80	7,2	5,9	5,9
xxx020	81	6	5,8	8,3
xxx021				
xxx022				
xxx023				
xxx024				
xxx025				
xxx026				
xxx027				
xxx028				
xxx029				
xxx030				

PÚBLICOS (1) <span style="float: right;">Folha: 149</span>	
Nº Foto	Observações
0003	P. F. Beellen ✓
0012	P. F. Tenreiro ✓
0017	P. F. Chocudo ✓
0018/0025/0026	P. F. Azeas ✓
0031	P. V. Paredão ✓
0032	Costa de Saúde ✓
0033	C. D. Paredão ✓
0034	G.R. Paredão ✓
0045	P. F. da FAIA ✓
0046	Ramagem da Dama ✓
0054	P. F. Paredão ✓
0062	P. F. Paredão ✓
0064	P. F. FORTA ARIANA ✓
0073	Paredão de Vilas ✓
0074	P. F. de Vilas ✓

Planeamento do Apoio - VISEU


Nº DO PONTO  FOLHA

DESCRIÇÃO  Extrato M888


ALTURA DO OBJETO

Nº DA FOTO


OBSERVAÇÕES



EXTRATO ORTO

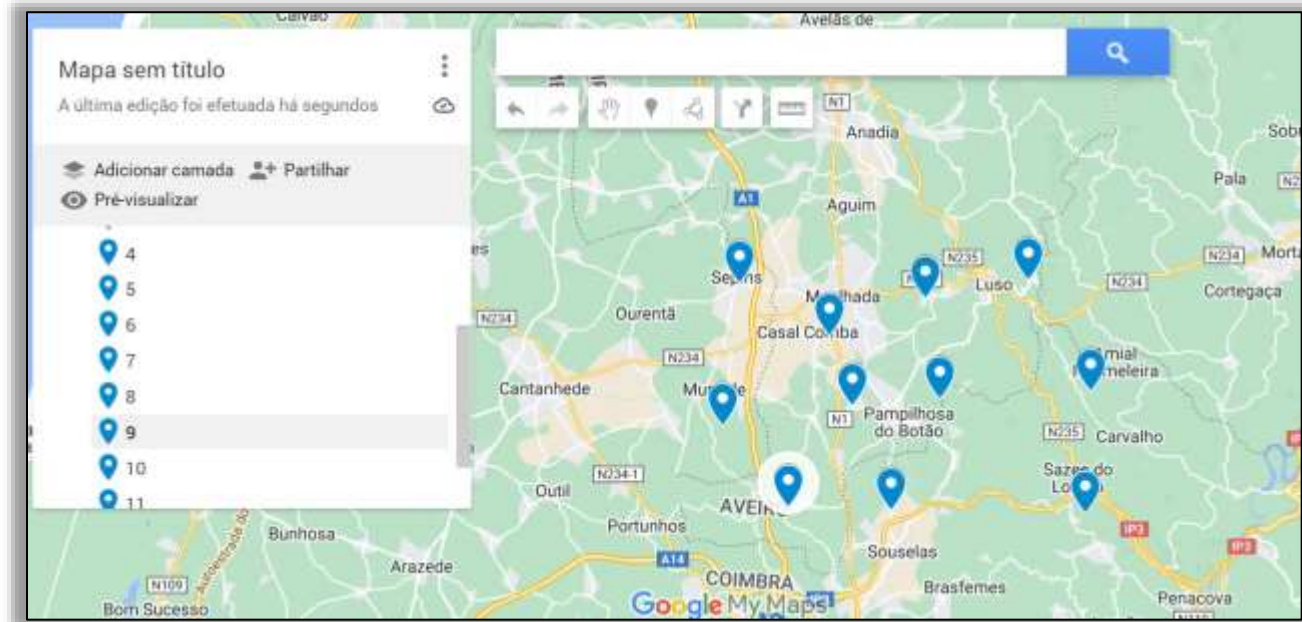
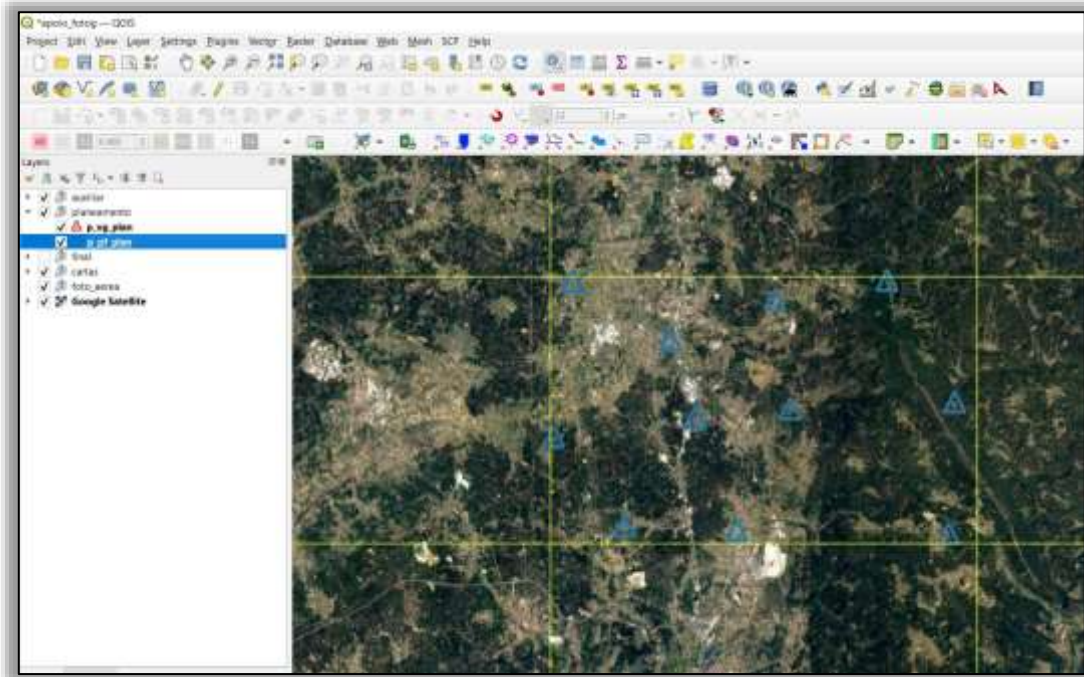


CROQUI



Why this changing

## Photogrammetric Survey (Planing):



## Metodology

## Photogrammetric Survey (Execution):



## Metodology



## Photogrammetric Survey (Final Relate):

# QGIS

# ATLAS FUNCTION

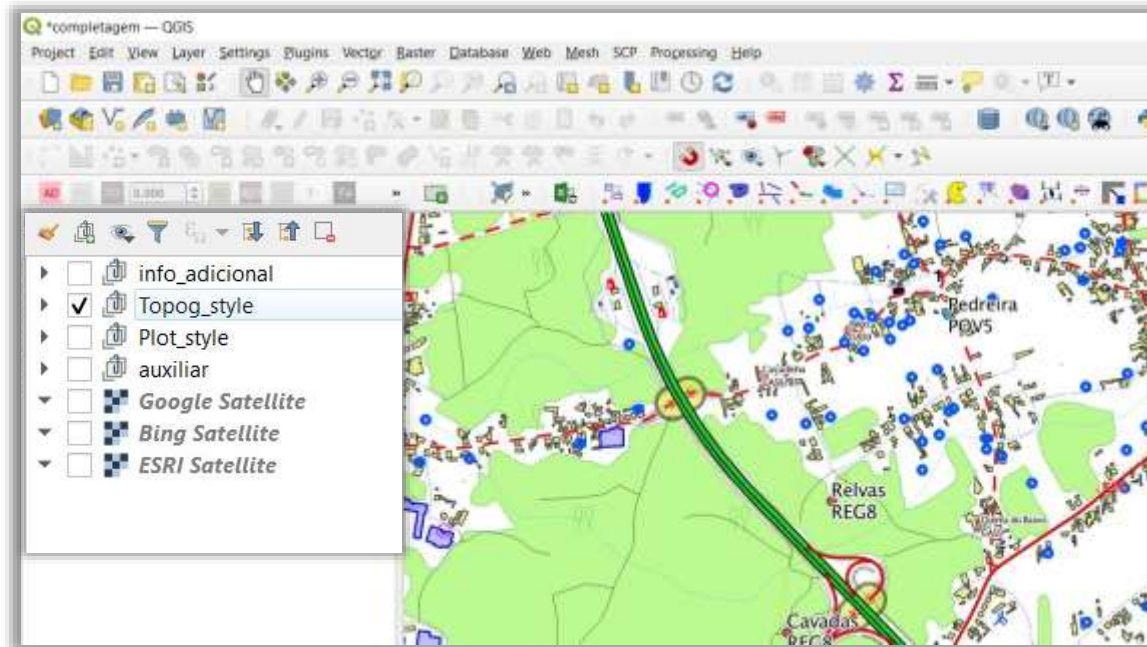


Metodology

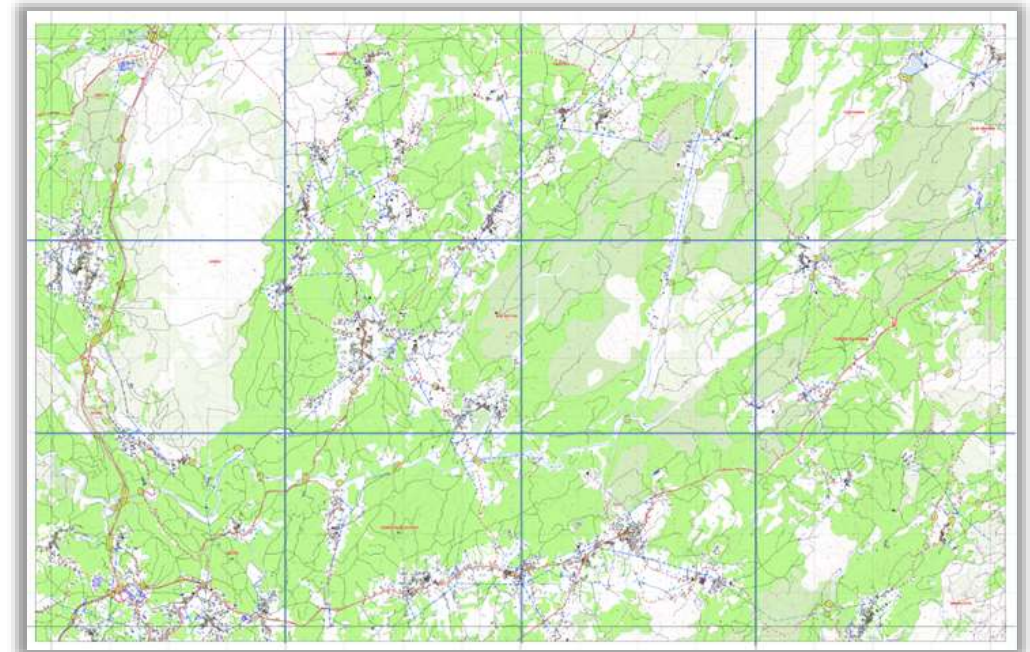
## Metodology

### Digital Recompletion (Preparation for the Field):

#### QGIS/QFIELD Preparation



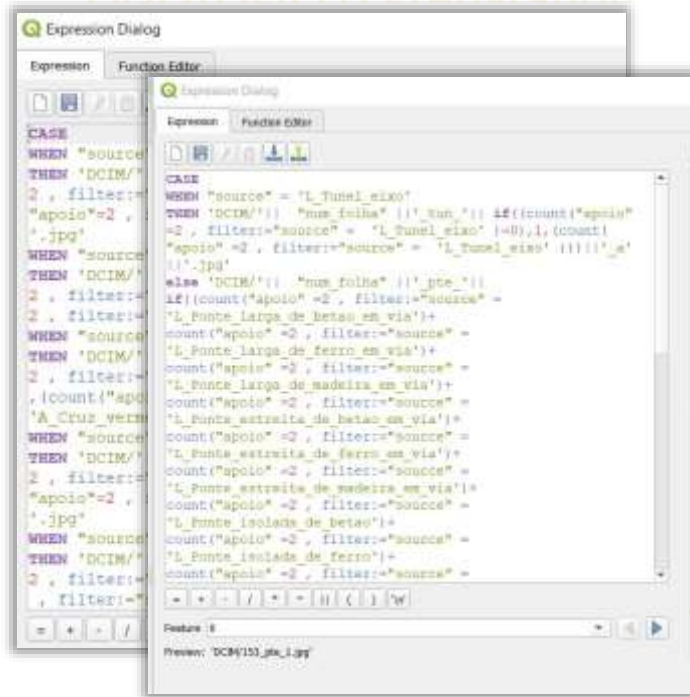
#### Map in 1:12500



## Methodology

### Digital Recompletion (Preparation for the Field):

#### QGIS/QFIELD Preparation





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Methodology

## Digital Recompletion (Field Work):



QFIELD  
CADASTER



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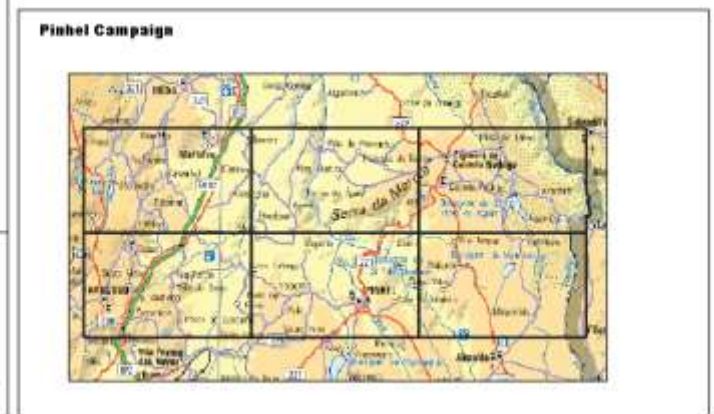
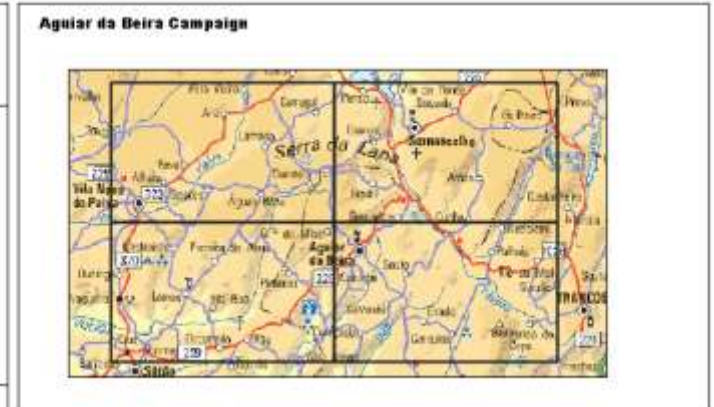
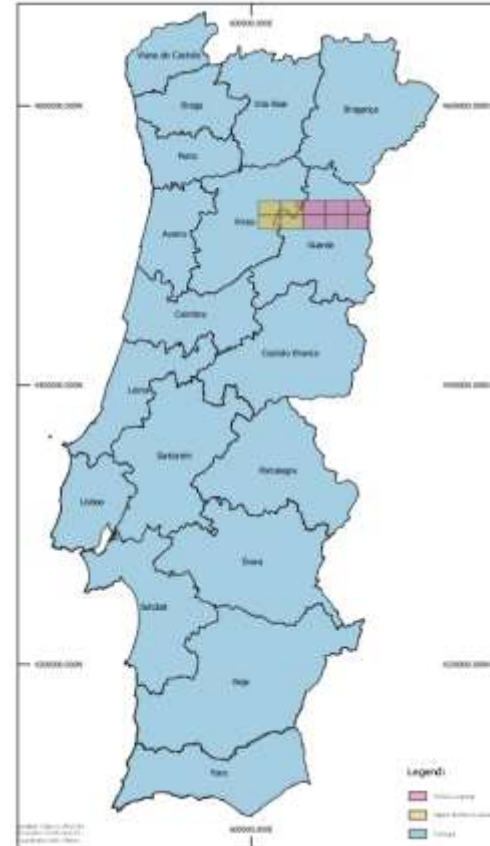


Results/Conclusion

Observation Points

Acceptance Level	$\leq 1.5m$	$\leq 1.8m$
	Horizontal	Vertical
RMS_smartphone	0.003	0.034
RMS_TSC3	0.002	0.004

Campaigns



Results/Conclusion

## Fundamental Problems

Problem	Resolution
Synchronization - elements cadaster in QFIELD appear associated with other elements	Checking IDs of the various stations (laptop/Smartphone)
Format some fields	New expressions have been Created



## Best Solution



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