

The use of Hybrid Surveying Techniques for Documenting the Largest Ancient Theatre in Greece



Shaping the Change
XXIII FIG Congress
Munich, Germany, October 8-13, 2006

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Outline

- Introduction
- Tasks / Goals
- Workflow
- Results
- Conclusions



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Introduction

- Theatre was built in the 3rd century bc
- Largest ancient theatre in Greece
 - ✓ Approx. 140m x 100m x 30m
 - ✓ Audience capacity: over 17.000 people
- Bad condition of the material of the theatre
 - ✓ → Restauration necessary
 - ✓ → Full photogrammetric documentation of the whole interior and exterior of the Theatre

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Tasks / Goals

- Full Photogrammetric Documentation
 - ✓ Whole interior and exterior
 - ✓ Various scales: 1:100, 1:50, 1:20
 - ✓ Orthophoto faces for each tier
- Mathematic/Analytic Description of the theatre's shape



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Workflow (1)

- Combination of
 - ✓ Geodetical Measurements
 - ✓ Photogrammetry
 - Terrestrial
 - Aerial
 - ✓ Lascerscanning
 - As intermediate product for the Ortho production
 - As input data for section derivation

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Workflow (4)

Altogether:

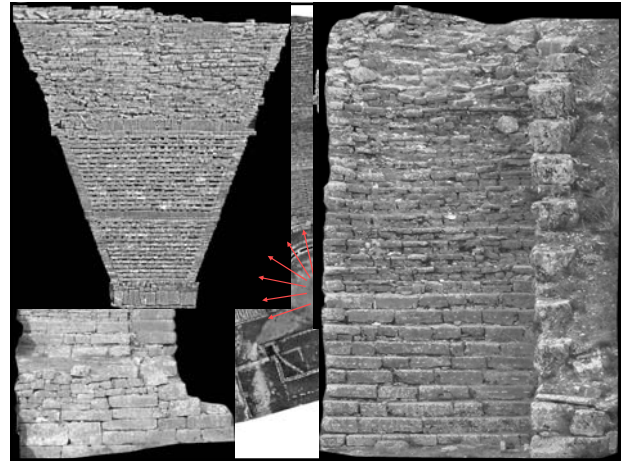
- Over 500 images:
 - ✓ Triangulation,
 - ✓ Breakline Extraction,
 - ✓ True Ortho Creation,
 - ✓ Mosaicking,
 - ✓ Post Editing
- Over 600 geodeatically measured points
- Over 35 million laserscanner points:
 - ✓ Manual Editing,
 - ✓ Filtering,
 - ✓ Rotating

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Results (1)

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Conclusions

- Laserscanning is not THE solution to every problem.
- Use point cloud not only as a DOM for ortho creation.
- Although very dense point cloud → the use of breaklines is inevitable.
- Off-the-shelf products have limited capabilities.
- Aerial Triangulation cannot be applied 'by the book'.
- Rule: Good planning is the key to a good project!

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THE END

