RecorDIM Task Group 1

Metric survey skills in conservation

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- Heather Papworth
- Jon Bedford
Teaching Applied Metric Survey at English Heritage

Summer School Curriculum 2006

R L I C C, W M F, P N T

Measured & Drawn 2nd edition

RecorDIM
Teaching Applied Metric Survey at Heritage English

Summer School Curriculum 2006

• Drawing
• REDM
• Rectified photography
• Photogrammetry
• Laser scan
• Photo/point cloud digitising
• Brief preparation
Teaching Applied Metric Survey at English Heritage

Measured & Drawn 2\textsuperscript{nd} edition

• New definition of heritage documentation
• Improved clarity + diagrams
• Selection table
• Conservation oriented
Heritage Documentation

Documentation is both the product and action of meeting the information needs of heritage management. It makes available a range of tangible and in-tangible resources, such as metric, narrative, thematic and societal records of cultural heritage.

Heritage documentation enables the understanding needed for conservation by the supply of appropriate and timely information.
<table>
<thead>
<tr>
<th>Product</th>
<th>Can be used for</th>
<th>Typical output scale</th>
<th>Typical range</th>
<th>Requires the use of</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indirect:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Photogrammetry</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3D Stereo pairs</td>
<td>Condition recording and anti-disaster records.</td>
<td></td>
<td>1:200</td>
<td>Calibrated camera, precise control data</td>
</tr>
<tr>
<td>Wireframe CAD drawings</td>
<td>‘Stone by stone’ drawings, landscape survey, condition recording, works scheduling</td>
<td></td>
<td>5-50 m</td>
<td></td>
</tr>
<tr>
<td>2D Orthophotographs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3D Digital Elevation Models (DEM)</td>
<td>Condition monitoring, modelling and reverse engineering, visualisations</td>
<td></td>
<td>1:3 - 1:30</td>
<td></td>
</tr>
<tr>
<td><strong>Laser scanning</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Terrestrial scanner</td>
<td>3D Point clouds</td>
<td>1:500</td>
<td>5-50 m</td>
<td>Scanner, post-processing and 3D modelling software, reverse engineering software, specialist 3D CAD skills</td>
</tr>
<tr>
<td>Artefact scanner</td>
<td></td>
<td></td>
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<tr>
<td><strong>Rectified photography</strong></td>
<td>2D Scaled images</td>
<td>1:200</td>
<td>5-50 m</td>
<td>Metric or non-metric camera, precise control data or scaling information, rectification software</td>
</tr>
<tr>
<td><strong>Direct:</strong></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Drawing</td>
<td></td>
<td></td>
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<tr>
<td>3D Sketches</td>
<td>Diagnostics, support to 3D modelling</td>
<td>0-30 m</td>
<td></td>
<td>Trained draughts-person + CAD skills</td>
</tr>
<tr>
<td>Measured Drawings</td>
<td>Plans, sections etc</td>
<td>1:200</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>EDM</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3D Point data</td>
<td>Terrain models</td>
<td>1:50</td>
<td>5-100 m</td>
<td>EDM set + field CAD unit + CAD skills</td>
</tr>
<tr>
<td>Wireframe CAD drawings</td>
<td>Plans, sections etc</td>
<td>1:50</td>
<td></td>
<td>EDM set + specialist survey skills</td>
</tr>
<tr>
<td>Control data</td>
<td>Monitoring and metric data integration</td>
<td>1:200</td>
<td></td>
<td></td>
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<tr>
<td><strong>GPS</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>3D Point data</td>
<td>Terrain models</td>
<td>1:200</td>
<td>20-500 m</td>
<td>GPS set + specialist survey skills</td>
</tr>
<tr>
<td>Wireframe CAD drawings</td>
<td>Control data, Site plans, landscape survey</td>
<td>1:200</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Summary of metric survey techniques for recording built heritage.

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1. Santana Quintero, Mario: The Use of 3D documentation and dissemination in surveying Built Heritage, Katholieke Universiteit Leuven, 2003

Recording Documentation and Information Management
An International Initiative for Historic Monuments and Sites
Teaching Applied Metric Survey at English Heritage

RecorDIM
RecorDIM Task Group 3

Metric survey skills in conservation

1. Gaps & needs being addressed
2. Users & providers co-operation
3. Expected deliverables/products.
4. How the anticipated output will increase the level of conservation standards
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Metric survey skills in conservation

1. Gaps & needs being addressed

There is a common lack of properly applied survey skill in those charged with documentation either as operators or managers; particularly in built heritage

The goal is to help basic survey skills awareness by using the teaching material from English Heritages Summer school

The EH publication ‘Measured & Drawn’ sold 2,500 copies in 1 year showing a real need for advice of this kind!
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Metric survey skills in conservation

Teaching material

1. Curriculum
2. Lesson plans
3. Examples
4. Textbooks handbooks ......
1. Gaps & needs being addressed

**Gap=**
missing detail in architectural surveys supplied by metric survey providers

**Need=**
advice on measured drawing to infill survey by EDM/photogrammetry
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1. Gaps & needs being addressed

Gap=
Specification failure in the procurement of architectural survey

Need=
education in the use of specification and brief on heritage projects
1. Gaps & needs being addressed

Gap=
Inappropriate use of EDM

Need=
Guidance and access to low cost and simple tools

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2. Provider & User co-operation

Providers: Photarc Ltd.

English Heritage Metric Survey Team

User: English Heritage regional & conservation teams

Training partners: University of York, RLICC Leuven, WMF/GCI SBAH Initiative, Icomos Macedonia, INTACH, RCHMW, i3Mainz
RecorDIM Task Group 3

EH Hosted task group meeting York Sept 2004 and…

Agreed to work with task group partners to prepare teaching guidance on

- Drawing
- EDM
- Rectified photography
- Photogrammetry
ReCorDiM Task Group 3

4. How the anticipated output will increase the level of conservation standards:

• Provide an accessible teaching resource
• Inform selection of technique
• Enable users to anticipate the difficulty of survey processes by method
• Improve quality control through informed briefs
• Improve application of user driven tools
RecorDIM Task group 3 is seeking participation in the preparation of advice and delivery of training in the use of metric survey in conservation!

Contact via RecorDIM TG 3

bill.blake@theolt.com
Thanks to the Assistance of:

• University of York,
• RLICC Leuven,
• WMF/GCI SBAH Initiative,
• Dr Mario Santana WHC UNESCO
• Icomos Macedonia,
• INTACH,
• RCHMW,
• i3Mainz, Dr Wolfgang Bohler
• Parks Canada,
• Lieca Geosystems uk,
• University of Bath, School of Architecture & Engineering
• Plymouth University, School of Architecture
• kubit, Latimer CAD, Veraxis Mundi
• University of Newcastle, faculty of Geomatics

• IHBC Phillip Grover
• Photarc Ltd
• Donald Insall & ptnr
• Pat Collins M Gallie & ptnrs