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Work done / results accomplished (during the report period)

WP3- T3.1: Features enhancement.

- Noise reduction algorithm which enhances gray scale images and provides more detail information of the extracted watermark.

WP3- T3.2: Sieve feature measurements in grayscale images

- Software that detects watermarks in grayscale images (Second version available). Besides the features already exploited in the previous version this new detection method leverages the fact that watermark lines always have similar line width.
- Developing a method to detect chain lines in gray scale images by applying a filter to detect edges in the direction of chain lines. (Work is going on to improve the method).

WP3- T3.2: Sieve feature measurements in binary images

- Improved version of the software that finds identical watermarks in the printed Piccard collection and Piccard online database. (Waiting for the isolation of the watermark to be done by OEAW and LABW).
- Preliminary version of a graphical user interface to retrieve watermarks. The user selects the watermark database and the query watermark, thereafter the software provides the seven most similar watermarks to the query.

WP3- T3.2: Watermark imaging by backlight subtraction

- Graphical user interface to subtract automatically the paper structure from paper databases. These databases have to store a reflected and transmitted image for each piece of paper.
- Currently working on some improvements using images from the backside of the paper and RGB images.

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Person months for each Work Package:

<b>WP1:</b>	<b>WP2:</b>	<b>WP3:</b>	<b>WP4:</b>	<b>WP5:</b>	<b>WP6:</b>	<b>WP7:</b>
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Dissemination activities (papers, talks, collaborations, advertisements...)

- Two chapters have been written for the Bernstein catalogue:
  - Digitale Erkennung und Abfrage von Wasserzeichen (Moreu-Otal, Van der Lubbe)
  - Papierherstellung in die Neiderlanden (Van der Lubbe)
- Lecture Museum Kempenland, Eindhoven, April 17, 2008: Real and Fake in the Arts (Van der Lubbe)
- Presentation Delft University of Technology during General Bernstein Meeting, Stuttgart, July 1-2, 2008 (Van der Lubbe)
- Published Proceedings Fifth IASTED Int. Conference on Signal Processing, Pattern Recognition, and Applications, Innsbruck, February 13-15, 2008: Watermark Detection in X-Ray Images from Paper for Dating of Artworks (Otal, Van Staalduinen, Paclik, Van der Lubbe)
- Submitted to EVA (Int. Conference on Electronic Imaging Visual Arts), Berlin, November 12-14, 2008: Isolation and Identification of Identical Watermarks within Large Databases (Moreu-Otal, Van der Lubbe) (accepted)

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Materials bought / subcontracting (only in relation to this project)

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Global evaluation in relation to the project's objectives

- In this period emphasis was on WP 3. During the Stuttgart general meeting (July 1-2, 2008) in cooperation with the users a preference list has been made with respect to desired software for paper and watermark analysis

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Improvements / Proposals / Comments

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