SCANROBOT®

turn the Page

TREVENTUS

ISO
ISO19264-1
OPTIONALLY AVAILABLE

SCANROBOT 2.0 MDS
MASS DIGITIZATION SYSTEM

AUTOMATIC BOOK SCANNER
FOR MAXIMUM PRODUCTIVITY

TREVENTUS
MECHATRONICS

SYSTEM OVERVIEW

ScanRobot® 2.0 MDS

ISO
ISO19264-1
OPTIONALLY AVAILABLE

High quality - Automatic Book Scanner

- Fast - up to 2,500 pages per hour
- Distortion free & gentle scanning (prism technology)
- Unique 60° V-shape book cradle
- Single scan technology (for covers, folded maps, loose pages, ...)
- Self standing unit on wheels for easy relocating
- Ergonomic design
- ISO compliant image quality (optionally available)

Unique hardware features

Wooden 60° V-shape book cradle
 * Adjustable between 60° and 100°
 * Minimum load/unload time
 * Suitable for valuable old & new books
 * Applicable for hard & soft covers

Patented capturing technology
 * Unique 60° prism
 * One central capturing unit
 * Equal and constant focus
 * No mechanical shutter

Only one mechanical moving part
 * Robust and simple design
 * Built for 24h shift operation
 * Low maintenace
 * Very long life cycle

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ADVANTAGES

ScanRobot® 2.0 MDS

YES WE SCAN www.treventus.com

Page turning technology

- Most gentle & touch free page turning by air flow
- Automatic (up to 2,500 pph)
- Process monitoring & double sheet control
- Semi-automatic / weightless mode
- No clamps
- No fingers
- No glass plates

Patented capturing system

Closed capturing unit (optical 400 dpi)
- * Indepenent from ambient light
- * Minimum calibration (static white balance)
- * Constant distance between object and focal plane

Inside LED illumination
- * Perfect homogenous page illumination
- * High color reproduction index value (CRI)
- * No radiation of heat, infrared or UV light
- * Long life cycle LED technology
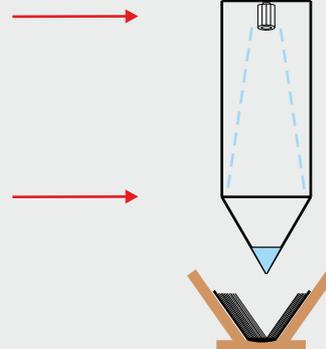
High quality 60° prism technology
- * Distortion free scanning
- * Smallest book opening angle - unique 60° V-shape

The ScanRobot® can scan every page with the exact, constant and maximum resolution independent of the book size, thickness and the paper quality.

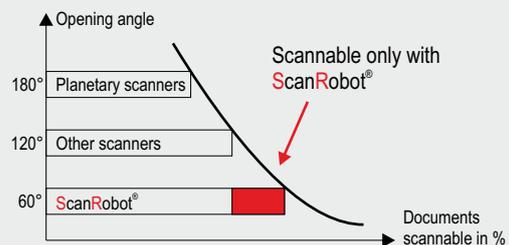**TREVENTUS** MECHATRONICS

UNIVERSAL, GENTLE & ROBUST

ScanRobot® 2.0 MDS

Universal - suitable for any bound material

Gentle - suitable for historic books (from the 14th century on)

- Book opening angle 60°
- No overstretching of the book binding
- Pressure free scanning
- Touch free page turning by air flow
- LED illumination without any radiation of heat, infrared or UV

Opening angle

180° Planetary scanners

120° Other scanners

60° ScanRobot®

Scannable only with ScanRobot®

Documents scannable in %

Developed for Mass-Digitization

- Robust - Designed for 24/7 shift operation
- Reliable - Only one active moving part
- High quality industrial components (low downtime)
- Very long system life cycle
- Worldwide customer proven

AUSTRIA INDUSTRY AT ITS BEST

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SCAN QUALITY - 1/3

ScanRobot® 2.0 MDS

ScanRobot® - unique 60° scanning

- **No distortions**
- **No curvature**
- **No waves**
- **Exact page margin scan**
- **Perfect illumination**

Compared to
Planetary scanners (with 180° opening angle)

- Distortions
- Curves
- No exact page margin
- Inhomogeneous illumination

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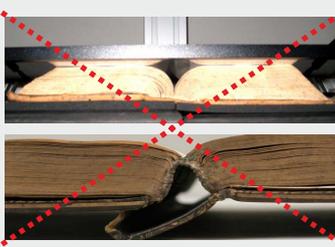
SCAN QUALITY - 2/3

ScanRobot® 2.0 MDS

ScanRobot® - prism technology

1 capturing unit = 1 scan result
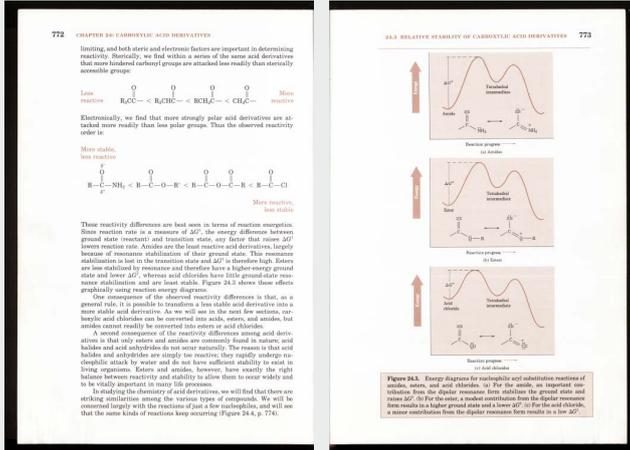
- **Exact size & resolution**
- **Exact colour**
- **Exact focus & sharpness**
- **Exact white point**

Advantage
No corrections needed!

Compared to
Systems with camera devices

2 cameras* = 2 different scan results
 * Effects are amplified for demonstration reasons
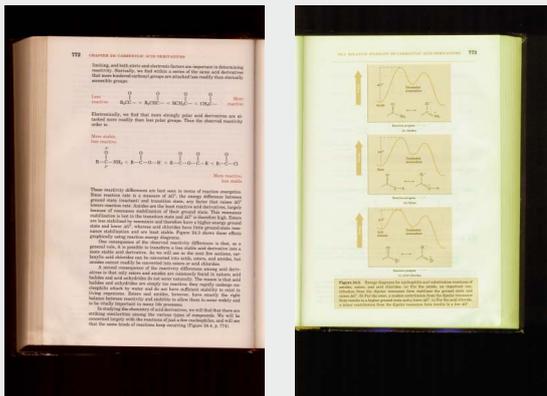
- Varying sizes
- Varying resolutions
- Varying colours
- Varying white point

Upcoming challenges

- Resolution correction
- Colour correction
- Focus & sharpness correction

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SCAN QUALITY - 3/3

ScanRobot® 2.0 MDS

ScanRobot® - prism technology

- • Single page image
- • Easy page edge detection
- • Easy cropping

- • Artefact free
- • No clamps / fingers
- • Perfect scan of the page

Compared to
Other scanners

Disturbing book block

Image artefacts

- • Page edge detecting challenge
- • Cropping & deskewing challenge

- • Artefacts like clamps or fingers
- • Clamp/finger removing challenge

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ScanGate® RT - CAPTURING SOFTWARE

Real-Time image processing for ScanRobot® 2.0 MDS

Advantages

AUTOMATION IN REAL-TIME

- Capturing & image processing in real-time
- Automated creation of best practice outputs for
- Archiving, Presentation and Reprint
- Live view of processed images
- Efficient job management

Specifications

Professional real-time image capturing & processing
The ScanGate® RT software enables real-time image processing during the scanning process.
Ready-to-use output is created in one single and automated step without loss of speed.

Pre-defined output options
Best practice outputs for Archiving, Presentation and Reprint are included (details see next page).

Live view of scanned & processed images
The fast live view of the scanned & processed images with the pre-defined output options allows real-time quality control.

Efficient job management
The profile administration allows to store settings as basis for new jobs. This ensures e.g. fast book changeovers and to process repetitive jobs (similar books) highly efficiently.

Powerful recognition & evaluation functions
Automatic border & page color recognition, text base line detection, border evaluation (e.g. page size, margins etc.)

Real-time image processing tools
Deskewing, cropping, rotation, extrapolation, ICC profile rendering, background homogenization / normalization, achromatism reducing, binarization (dynamic threshold), brightness / contrast adaption, unsharp masking, image scaling

High quality color management - According to ICC profile standards.

Dublin Core metadata interface - For the creation of fixed metadata xml-files based on the Dublin Core standard.

Multi language user interface - Software available in over 15 languages.

External interface - Intuitive interface for the included flatbed scanner (e.g. for scanning of folded maps, covers, etc.).

Flexible storage in multiple file formats - JPEG, JPG2000*, TIFF, TIFF G4, PNG, GIF, BMP, PDF*, PDF/a*
* Formats may be generated within a separate process.

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REAL-TIME OUTPUT OPTIONS

ScanRobot® 2.0 MDS (with ScanGate® RT)

Original			
Option	**ARCHIVING**	**PRESENTATION**	**REPRINT**
Output			
Goal	As close to the original as possible (facsimile)	Good looking images for presentation	Optimal quality for printer
Use cases	• Digital heritage • Digital master files	• Digital library • Web (downloadable content)	• Print on demand • Reprint of books
Guidelines (applied real-time functions)	• No image processing allowed (except rotation by multiples of 90° and cropping) • Uncompressed file storage (except lossless compression)	• Good contrast & readability • Background homogenization • Deskewed & cropped (only page should be visible but no outside margins) • Rather small file size for easy access and handling (e.g. via internet)	• White background with black text • Binarized • Despeckled • Deskewed & cropped (no borders visible)
Specifications **Resolution** **Color depth** **Output format** **Compression** **File size (one page)**	300 / 400 DPI 24 bit (color with ICC profile) TIFF None Large 300 DPI, A4: ca. 26 MB 400 DPI, A4: ca. 46 MB	300 / 400 DPI 24 bit or 8 bit (color or grayscale) JPEG (optional: PDF) JPEG (lossy) Small 300 DPI, A4: ca. 1,5 MB 400 DPI, A4: ca. 2,5 MB	300 / 400 DPI 1 bit (black and white) TIFF (optional: PDF) CCITT4 (lossless) Very small 300 DPI, A4: ca. 0,2 MB 400 DPI, A4: ca. 0,5 MB
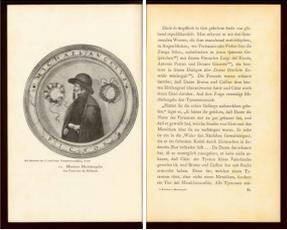
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ScanGate® RT - CAPTURING SOFTWARE

User interface & Software add-ons

Graphical user interface (GUI available in over 15 languages)

Scan interfaces · Control panel · Scan status

Processing panels · Thumbnails · Main window / Live view
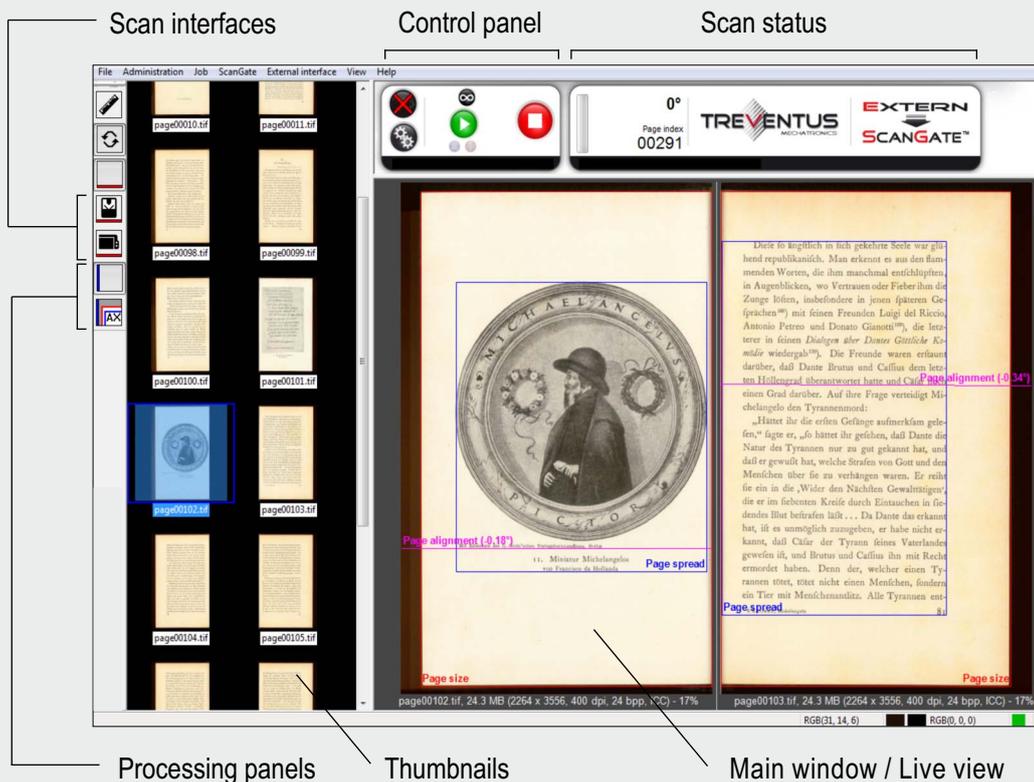
Software add-ons* for ScanGate® RT (optionally available)

OCR Enterprise solution™ - UNLIMITED
Text recognition software for automated processing of OCR-jobs for over 130 languages.

RT-Batch workflows for Automated Batch Processing™
Individual solutions for automated (overnight) batch processing of a customized set of functions.

Advanced image processing tools package
E.g. color replacing, blurring, tiff tag changing, etc.

* For details see next pages.

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ScanGate® RT - SOFTWARE ADD-ONS

OCR Enterprise solution™ - UNLIMITED
(optionally available)

Automated text recognition

Ocr Solutions™

Functions / Features	OCR Enterprise solution™ - UNLIMITED
OCR page contingent	
Unlimited (no page limitation)	●
Customization options / Flexibility	
Pre-configured OCR workflows (workflows are fixed / hard-coded; OCR languages can be set)	●
Performance	
Batch processing of multiple OCR-jobs	●
Output formats (by default / standard)	
PDF (PDF/a, multi- and single pages)	●
TXT (multi- and single page)	●
XML (hOCR, single pages only)	●
OCR languages	
Over 130 available languages (excerpt: Afrikaans, Azerbaijani, Bengali, Bulgarian, Catalan, Czech, Cyrillic, Danish, German, Greek, English, Esperanto, Estonian, Persian, Finnish, French, Hebrew, Croatian, Hungarian, Italian, Georgian, Latin, Latvian, Lithuanian, Nepali, Norwegian, Polish, Portuguese, Romanian, Russian, Slovak, Slovenian, Spanish, Swedish, Thai, Tibetan, Turkish, Ukrainian, etc.)	●
Gothic font (Fraktur) / Korean / Chinese / Arabic / Vietnamese	●

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ScanGate® RT - SOFTWARE ADD-ONS

RT-Batch workflows for Automated Batch Processing™
(optionally available)

Advantages & Benefits

The customized RT-Batch workflows enable underlined automated batch processing* in scan-free periods (e.g. overnight, weekends, longer scanning breaks etc.). Within this a customized set of system functions like creating another output format, copying files to e.g. another storage place, executing of additional image processing functions etc. will be processed fully automated (e.g. overnight).

Automatic execution of several tasks in the batch-processing

Tasks can be combined (according to the individual customer request) to a batch, which is executed sequentially and automatically until the last task.

#	Task
01	SCANNING - RT Output: Archiving (master tiffs, color, 400 dpi)
02	PAGE ORDER - Rename pages
03	IMAGE TREATMENT - Crop pages (smaller than page size)
04	IMAGE TREATMENT - Unsharp masking
05	FORMATS - Create Jpegs (greyscale. 300 dpi)
06	FORMATS - Create multipage PDF (bitonal, 600 dpi)
07	OUTPUT - Copy Jpegs to destination
08	OUTPUT - Upload PDF via FTP
09	ARCHIVE - Clean job and compress master tiffs (LZW)
10	ARCHIVE - Create backup copy of the job
11	CLEANUP - Delete job after 10 days

➡ Scanning of the images in the format "RT Output: Archiving"
➡ Rename all pages systematically
➡ Execute time consuming image treatment functions
➡ Create different output formats
➡ Copy the created output safely to its destination
➡ Reduce data size to a minimum for a backup copy
➡ Empty the disk space after a certain period

Queuing of several jobs for the batch-processing

During the day the jobs* are pushed to the batch-processing queue, which is executed e.g. overnight.

#	Job name	Pages	Task	Workflow name	Priority	Progress
1	Job_05	250	PAGE ORDER - Rename pages	BatchProcessingWorkflow_01	very high	
2	Job_01	100	FORMATS - Create Jpegs (greyscale. 300 dpi)	BatchProcessingWorkflow_01		
3	Job_03	150	ARCHIVE - Clean job and compress master tiffs (LZW)	BatchProcessingWorkflow_03		
4	Job_04	400	OUTPUT - Copy Jpegs to destination	BatchProcessingWorkflow_01		
5	Job_02	200	CLEANUP - Delete job after 10 days	BatchProcessingWorkflow_02	-1	

* Jobs can have different tasks, processing stages, priorities, batch-processing-workflows etc.

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ScanGate® RT - SOFTWARE ADD-ONS

Advanced image processing tools
(optionally available)

Included advanced features

- Color depth conversion, color replacing, background removing

- Moiré effect removing, blurring, black margin coloring

- Image file resolution setting, Tiff tag changing, watermark / ruler / trim mark adding

- Split line detection, page splitting / combination / zip merge & unzip merge

- Grouping of pages (group naming), page renaming

Example: Color replacing

This function enables you to replace a color by another one.
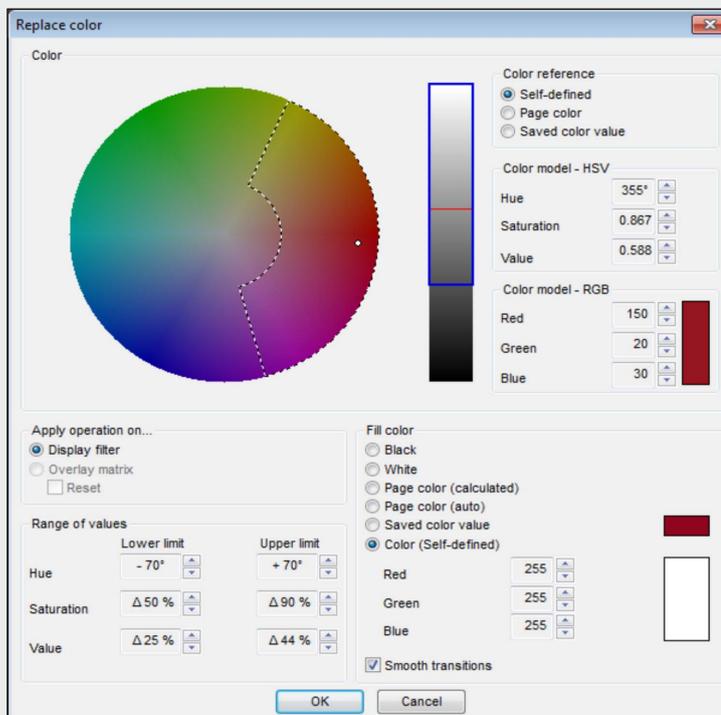
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SPECIFICATIONS & SCOPE OF DELIVERY

ScanRobot® 2.0 MDS

Technical specifications

- **Speed** — up to 2,500 pages/hour* (automatic mode)
- **Page turning** — automatic with process monitoring (incl. double sheet control), semi-automatic / weightless mode and single scan technology
- **Opening angle** (book cradle) — 60 degrees (steplessly adjustable between 60 and 100 degrees)
- **Illumination** — user- and book-friendly LED illumination (without any exposure to heat, IR or UV)
- **Resolution** — 400 dpi (optical) with constant resolution independent of the page format
- **Colour depth** — 36-bit
- **Image types** — colour, greyscale, b&w
- **Image quality** — compliant to ISO19264-1 Level-C (optionally available**)
- **Page format** (scanning area) — minimum (2 times - automatic mode): 5 x 5 cm (1.97 x 1.97 in)
  maximum (2 times - automatic mode): 32 x 32 cm (12.6 x 12.6 in)
  single scan area: 30 x 43.2 cm (11.8 x 17 in)
- **Book size** (maximum) — 35.5 x 34.0 cm (13.98 x 13.39 in)
- **Book thickness** — up to 15 cm (5.91 in)
- **Paper thickness** — no restrictions (recommended spectrum: 40 g/m² to 260 g/m²)
- **Paper quality** — all pages, also acid damaged and wavy pages
- **Covers** — all covers (soft and rigid)
- **Book age** — 14th century up to now
- **Storage formats** — jpg, jpg2000, tiff, tiff G4, png, gif, bmp, pdf
- **Dimensions** — l/w/h (without monitor): 0,78 x 0,78 x 1,90 m (30.7 x 30.7 x 74.8 in)
- **Weight** — 260 kg (573 lbs)

* The speed can vary depending on paper quality, book size and the general book condition.
** The upgrade package for the ISO-C compliant image quality is optionally available.

Scope of delivery

- 1 pc   Automatic book scanner ScanRobot® 2.0 (400 dpi optical)
- 1 pc   Single-scan book scanner (flatbed A3)
- 1 pc   Control Computer System (high-end PC-workstation)
- 1 pc   EIZO 24" widescreen monitor (colour calibrated)
- 1 pc   Integrated holder for monitor, keyboard and mouse
- 1 pc   Capturing software with real-time processing - ScanGate® RT
- 1 pc   ISO Target book (only included within the optional ISO-C upgrade package)

Add-ons (optionally available): OCR Enterprise solution™ - UNLIMITED (text recognition)
RT-Batch workflows for Automated Batch Processing™
Advanced image processing tools package

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SCANROBOT® 2.0 MDS
MASS DIGITIZATION SYSTEM

World Wide References

National University, AUSTRALIA

University of Queensland, AUSTRALIA

Federal Office of Metrology and Surveying, AUSTRIA

National Library, AUSTRIA

University of Graz Library, AUSTRIA

University Library of Liege, BELGIUM

Brazilian Institute of Agronomic Research, BRAZIL

University of Prince Edward Island, CANADA

National Archive, COLOMBIA

National Library, CZECH REPUBLIC

University of Jyväskylä, FINLAND

Bavarian State Library, GERMANY

State Library of Berlin, GERMANY

University Library Regensburg, GERMANY

NUEPA National University, INDIA

Trinity College Library, IRELAND

Meteo Operation Center, JAPAN

Nazarbaev University, KAZAKHSTAN

National Library, KUWAIT

National Library, LATVIA

University, LUXEMBOURG

Universidad Autonoma Metropilitana, MEXICO

National Library, MONGOLIA

GMS Service Provider, NETHERLANDS

National Library, NORWAY

National Library, POLAND

Siberian Federal University, RUSSIA

Moscow State University, RUSSIA

National Library, RUSSIA

King Fahd Private Library, SAUDIA ARABIA

National Library, SLOVAKIA

Universidad Complutense de Madrid, SPAIN

National Library, SWEDEN

Stockholm University Library, SWEDEN

Umeå University Library, SWEDEN

ETH Library of Zürich, SWITZERLAND

Ankara Social University, TURKEY

National Library, TURKEY

Ukrainian Institute of Industrial Property, UKRAINE

The Getty Research Institute, UNITED STATES

Utah State University, UNITED STATES

Vietnam National University, VIETNAM

... and many more ...

"The ScanRobot® can scan almost any types of book, binding or paper (e.g. Leather-covered wooden bindings, flexible bindings, cardboard bindings, thick, thin or rigid paper)."

The Bavarian State Library, GERMANY

"Treventus Mechatronics GmbH submitted a tender that offers some very clear advantages. [...] The evaluation group's assessment is that no other supplier can match the tender from Treventus Mechatronics GmbH."

Specialists evaluation committee, SWEDEN

"The unique image-taking and page-turning technique of the ScanRobot® shows its benefits in particular with thick books. [...] the pages can be scanned [...] absolutely distortion-free and without any shadows [...] up to just a few mm into the fold."

Digitization Center Regensburg, GERMANY

Excerpt (*alphabetical order by countries*)

TREVENTUS MECHATRONICS

REFERENCES (excerpt)

BSIB Bayerische StaatsBibliothek
Information in erster Linie

國 家 圖 書 館
National Central Library

BEV Bundesamt für Eich- und Vermessungswesen

uni.lu
UNIVERSITÉ DU LUXEMBOURG

Australian National University

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

UMEÅ UNIVERSITY

REPUBLIC OF TURKEY
MINISTRY OF DEVELOPMENT

LMU LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN

THE UNIVERSITY OF SYDNEY

UNSW SYDNEY

UR Universität Regensburg

مكتبة الكويت الوطنية
National Library of Kuwait

uclan

Canon

Deutsche Zentralbibliothek für Medizin
ZB MED

Trinity College Dublin
The University of Dublin

UNIVERSITET STOCKHOLMS

İSTANBUL BÜYÜKŞEHİR BELEDİYESİ

KUNGL. BIBLIOTEKET
National Library of Sweden

UTS UNIVERSITY OF TECHNOLOGY, SYDNEY

THE EUROPEAN ICT PRIZE GRAND PRIZE WINNER

Awards of Treventus

Winner of the European ICT Grand Prize

Innovation prize of the Theodor Kery foundation

1st place in Genius Innovation Award