

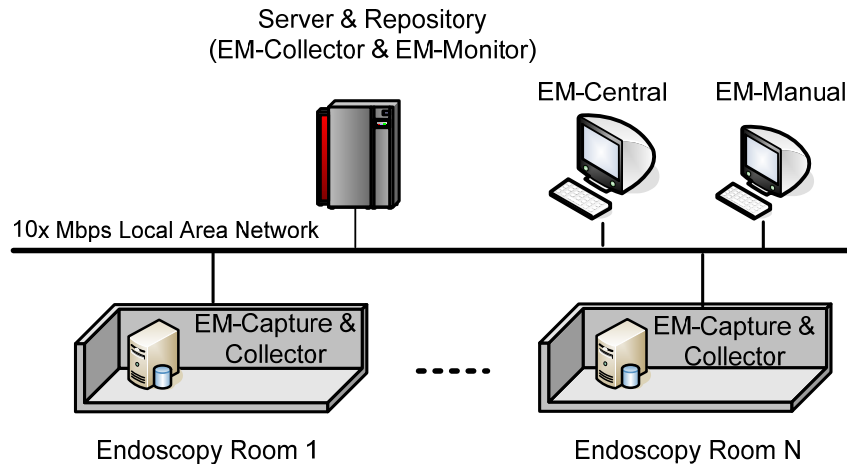
Current Solutions and Services

Work Flow Suite for automated documentation for endoscopic work flow and manual documentation of quality of colonoscopy

Five EndoMetric products are included.

- EM-Capture--- Automated capturing of endoscopic procedures without any human intervention; frames outside patient are discarded
- EM-Collector---Automated, secure uploading of captured procedure videos
- EM-Central---Web-based application for querying endoscopic room utilization and quality report
- EM-Manual---Software for fast browsing and annotating procedure videos with Minimum Standard Terminology¹ and quality metrics
- EM-Monitor---Monitoring automated capturing and uploading; send alert email when problems are suspected

System Architecture



II. Partner Solution

EndoMetric is interested in working with a third-party software/hardware vendor interested in some EndoMetric functionality or software to be included in their product.

Future Products (Coming soon)

III. Quality Suite for automated documentation of quality of colonoscopy

EndoMetric quality suite adds EM-Automated on top of the five products in the work flow suite. EM-Automated automates documentation of objective intraprocedure quality of colonoscopy.

¹ Minimum Standard Terminology by the Committee for Terminology of the European Society for Gastrointestinal Endoscopy (ESGE), the Informatics Committee of the American Society for Gastrointestinal Endoscopy (ASGE) and the Terminology and Data processing Committee of the World Organisation of Digestive Endoscopy (OMED).

EM-Manual

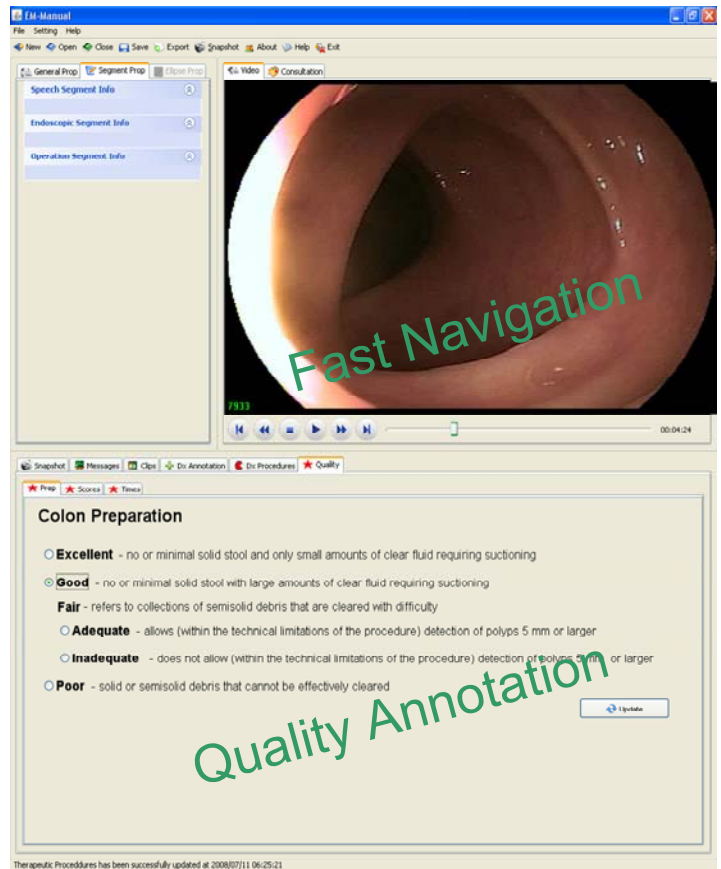
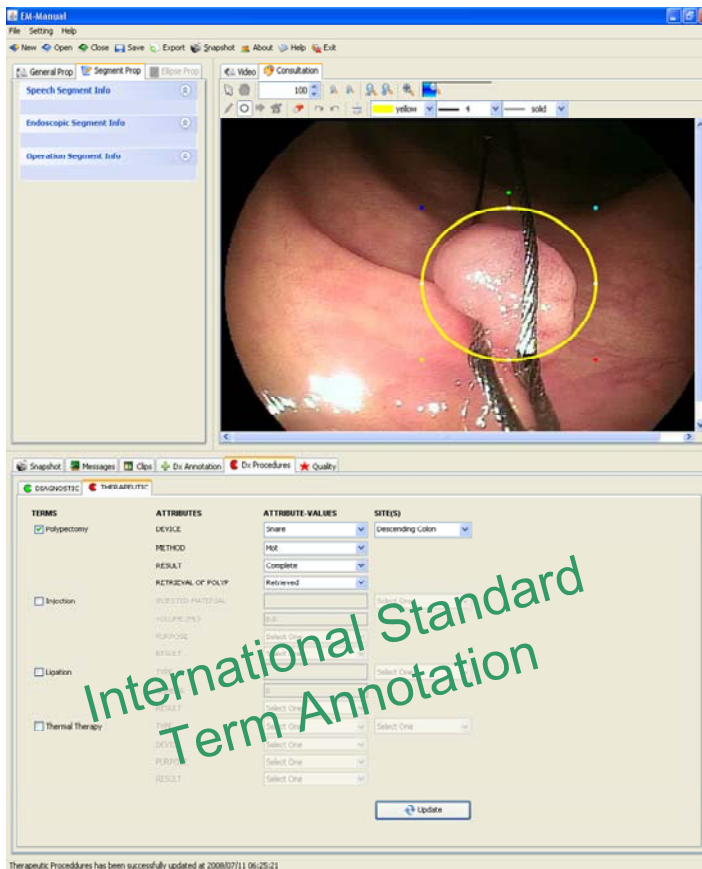
Scenario of use: Clinical studies of quality in GI practice through annotation of preparation quality and visualization techniques; for teaching and studying visualization and intervention techniques

Features

- Support a number of playback options: normal play, fast-forward 2x-16x, and 2x reverse
- Support MPEG2 video format (no audio support)
- Annotation using ellipses and international Minimum Standard Terminology for digestive endoscopy
- Clip generation of a complete biopsy or polyp removal, or a desired section of the colon

Minimum requirements

- Hardware: Pentium IV, 1GB RAM, disk space depending on the amount of data to be kept, vertical screen resolution of 768 or higher (XGA or WXGA)
- Software: Windows XP SP2/Windows Vista Business/Windows 2003; Java Runtime Environment version 5 update 11





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EM-Central

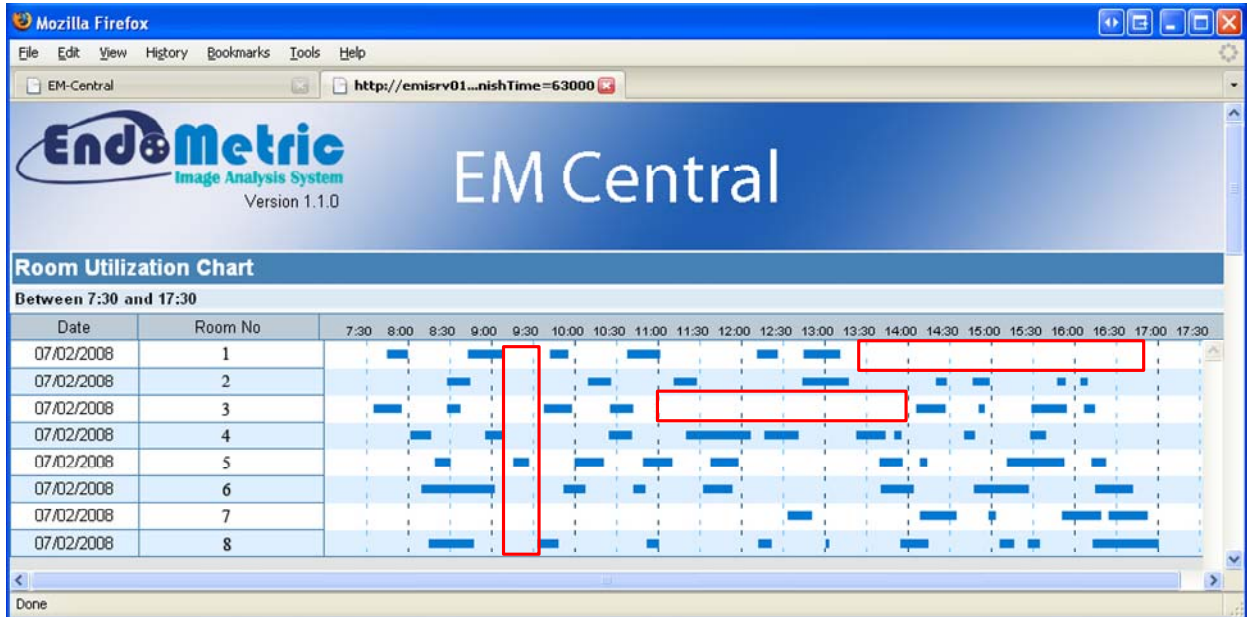
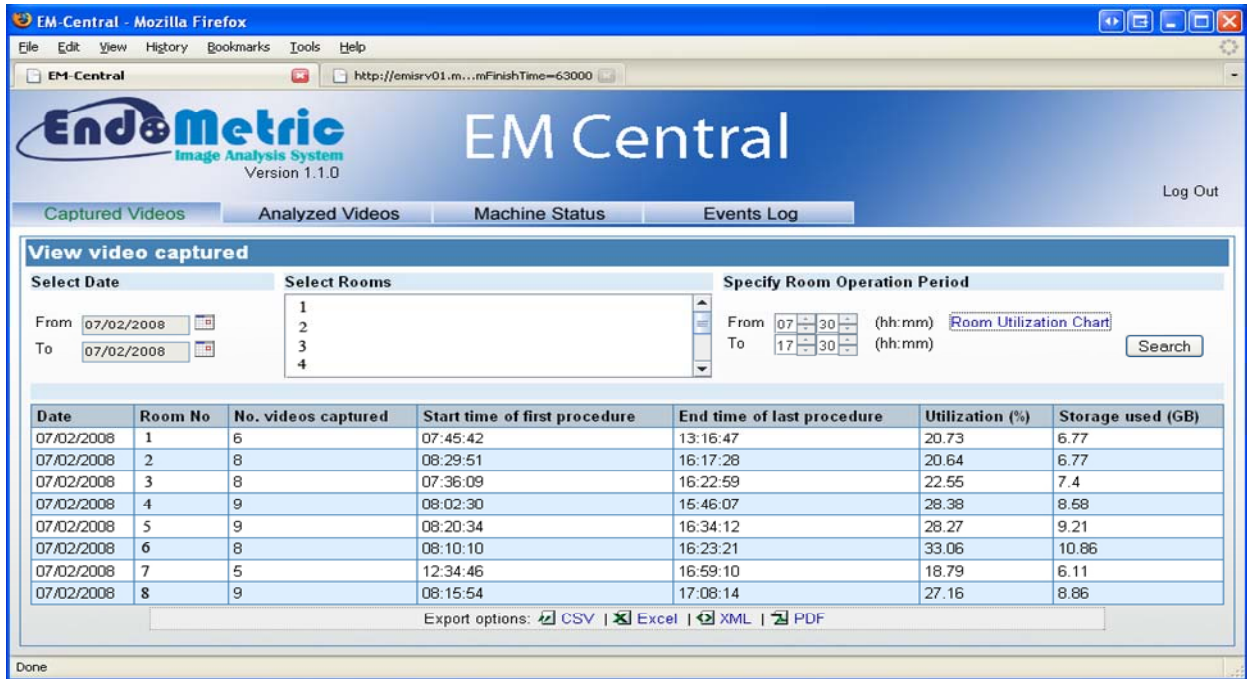
Scenario of use: Report of endoscopic procedures captured, allowing one to spot problems with a particular procedure or room as well as timely turnover and efficient room usage of all endoscopy suites; report of quality scores per procedure and average quality scores


Features

- Web-based application using Internet Explorer 7 and Mozilla Firefox 2.5 or higher
- View summary of number of procedures performed, procedure start and end times, storage used, and room utilization by selected date(s) and room(s) in tabular and chart formats
- Export information to popular file formats such as pdf, Excel, CVS
- View quality measurements and summary of overall average quality if quality analysis results are available
- Login with different user privileges
- View status of capturing machines and EndoMetric software from one location

Minimum requirements

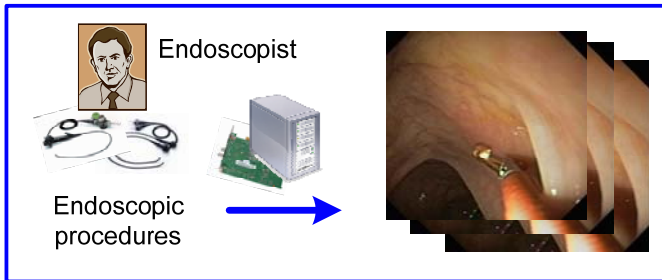
- Backend Hardware: Pentium IV (Intel Core Duo equivalent or higher are preferable), 1GB RAM, 100 GB disk space
- Backend Software: Relational databases; Apache Tomcat version 5 Web server; Java Runtime Environment version 5 update 11



 Time period indicating low endoscopy room utilization

EM-Capture

Scenario of use: Procedures archival for second look second opinion, for generating teaching materials, for procedure quality manual or automated evaluation, and for overall endoscopy room utilization monitoring



Features

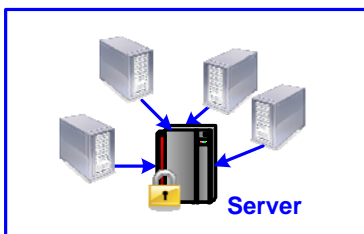
- Automated recording of an analog signal from the endoscope into one video file per endoscopic procedure; frames outside patient are discarded
- Capturing is completely transparent to the endoscopist; no foot pedals or chest switches required
- Automated recovery from an inadvertent system re-boot

Minimum requirements

- Hardware: Pentium IV (Intel Core Duo equivalent or higher are preferable), 1GB RAM, 720x640 video capturing card (no hardware encoding), disk space of 100 GB or more depending on the number of procedures to capture
- Software: Windows XP SP2/Windows Vista Business/Windows 2003
- Supported video format: MPEG2; no audio capture

EM-Collector

Scenario of use: Secure transferring of recorded procedures to a central repository



Features

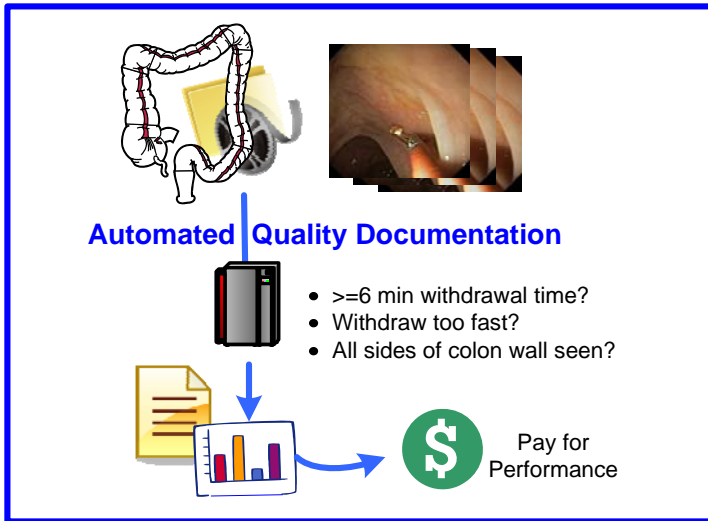
- Automated and secure upload of video files from the EM-Capture client(s) to a server
- Notification of upload problems via email
- Automated recovery from an inadvertent system reboot

Minimum requirements

- Hardware: Pentium IV (Intel Core Duo equivalent or higher are preferable), 1GB RAM, disk space of 100 GB disk or higher (depending on number of procedures to keep); we recommend large disk space.
- Software: Windows XP SP2/ Windows Vista Business/Windows 2003, Java Runtime Environment 5 update 11

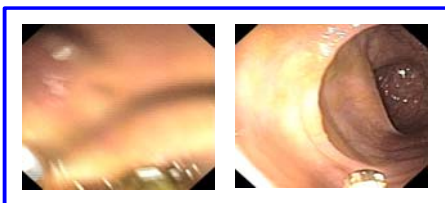
Products coming soon

EM-Automated



- Automated analyses of recorded endoscopic procedures for objective intraprocedure quality metrics:
 - Withdrawal time
 - Clear withdrawal time (withdrawal time without blurry images)
 - Clear withdrawal viewing time (Clear withdrawal time without time of biopsy or therapeutic operations)
 - Number of forward/backward movement changes per time unit during withdrawal
 - Numbers, durations, and frame locations of diagnostic or therapeutic operations
 - Images of the maximum extent of intubation
 - Images of a clearly inspected appendiceal orifice
 - Colon mucosa coverage score (average number of sides of colon wall inspected during withdrawal)
- Important images and analysis results stored in a relational database
- Content-based video compression maintaining only important informative frames
- Integrated seamlessly with EM-Manual and EM-Central that retrieves quality data
- Developed in modules; interested partners can select certain modules to incorporate into their products

EM-Clear-Module



- Module for automated extraction of in-focus (clear) frames for efficient archiving and effective quality analysis
- Keep clear images, resulting in less data storage requirement