

EDRS Remote Attestation Case Study

California's Electronic Death Registration System (EDRS) uses computer generated faxes to efficiently collect medical data. The Remote Attestation system tracks where faxes were sent from, determines whether a form has been signed, provides data on faxes received, and sustains a safe long-term records archive.

I. WHY REMOTE ATTESTATION?

Medical professionals must attest to the cause of a person's death by signing a document. New technology enables medical professionals to sign an attestation document by fax from wherever they happen to be during the course of day. A "Remote Attestation" system that automatically facilitates valid attestations of such documents saves time and money for medical professionals, funeral directors, and government.

Medical professionals attesting to persons' deaths are busy. They frequently move among various clinical venues. Their movement is complicated by the fact that there are 81,000 licensed physicians in California, approximately 30,000 of whom attest to persons' deaths regularly. Getting the correct document in front of the correct person is an arduous task for everyone involved. A typical California funeral director, for example, spends \$100 per death to obtain the signature of a medical certifier. Physicians and vital statistics agencies waste time chasing paper. While processing delays ensue, government welfare agencies frequently pay benefits to a person months after his death. California recognized that enormous potential savings could be realized if a Remote Attestation system were implemented.

II. CHARACTERISTICS OF A SOLUTION

The State of California decided to solve the Remote Attestation problem by enlisting the services of the University of California at Davis. UC Davis concluded that an EDRS Remote Attestation system required the following characteristics:

- Timeliness of death registration;
- No "sign-up" requirement and no added cost or complexity to the medical professional;
- Flexibility as to evolving technology, information needs and legal mandates;
- Usefulness such that all customers are provided with necessary information;
- Operational friendliness and ease of use;
- Quality as to standard methods and data;
- EDRS Remote Attestation cannot be any more prone to fraud than paper systems.

After identifying these characteristics, UC Davis then established a Remote Attestation pilot system that includes electronic signature by fax.

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III. IMPLEMENTATION

UC Davis set a pilot target capacity of 25,000 certificates per year in 2006, followed by a ramp up to handle 250,000 certificates per year by the end of 2007. As of May 2008, over one million pages had been faxed, and 97% of all EDRS death attestations were being handled electronically.

The Remote Attestation system, provided by Acordex Imaging Systems (<http://acordex.com>), handles this volume and easily accomplishes the following tasks:

- Send faxes to physicians' offices under the control of the California Electronic Death Registration System (CA-EDRS) application
- Receive faxes from physicians' offices and records which fax station the fax came from.
- Read the EDRS document ID number from a specific location on the Attestation form.
- Determine whether the form has been signed.
- Provide data on the received faxes back to the EDRS application.
- Provide a safe long-term archive, including on-line, local off-line (for equipment failures) and off-site storage (for disaster recovery)

The Remote Attestation system automates functions under computer control that previously required a person. The most innovative algorithm determines whether the Attestation form is signed. This involves a sequence of image processing that starts with reading the EDRS id number on the form, confirming its check-digit (for OCR accuracy) and automatically rotating the image as needed if the form was not faxed right side up. Once it is right side up, a thirty-parameter tunable algorithm finds the background lines of the form, tolerates slight clipping off the bottom of the form, and corrects

for skew, offset, and stretch/scaling. Lastly, the system analyzes the location where the signature should be, and determines whether it is signed, ignoring stray marks and slight positioning errors.

Every few minutes, the Remote Attestation system sends the following data points to the CA-EDRS for each fax: originating fax station ID, the date and time of the fax, the EDRS ID number, and the signed/not signed decision. Straightforward integration with the EDRS database application is supported because the Remote Attestation system is based entirely on the Internet standards.

If there is any question on the automatic processing of a fax, it is sent to a manual import queue for review. Any person with appropriate security permissions reads the fax, correcting or confirming its data prior to transmission of the information to the CA-EDRS application.

Whether reviewing new faxes, retrieving old faxes or just checking the Remote Attestation system status, user functions are done at any desktop computer using a web browser, like Internet Explorer or Firefox. No special software needs to be installed and any operating system (Windows, Macintosh, Linux) will work well.

VI. CONCLUSION

The Acordex Remote Attestation implementation meets the characteristics of a solution defined by California and UC Davis. It provides a substantial advancement in the EDRS program in California by saving time and money for medical professionals, funeral directors, government, and others involved in EDRS. It is implemented at a reasonable cost and does not require any special computer knowledge on the part of employees who operate the system on a day-to-day basis.

Further information on the system is available at <http://acordex.com> and on the California project at <http://edrs.ucdavis.edu/edrs>.