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Air Force Digital Dental Radiology Solution



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AF DDRS Consultant
1 May 2007

Integrity - Service - Excellence



- History of Digital Dental Radiology Solution (DDRS)
- AF Dental Technology Board
- Solution Overview and Process
- Current Status
- Hardware Overview
- Future Considerations
- Points of Contact
- Questions



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History of Digital Dental Radiology Solution (DDRS)

- **Feb 1997:** Hickam AFB Dental Clinic deploys digital radiology
- **Late 1997:** HQ SGD halts deployment of digital dental radiology until standardized AF plan is created
- **1998 - 2004:** Various teams and committees are formed to determine optimum plan. Plan is created but no funding is available. Plan submitted to AF/SGR (Modernization Directorate) for initial funding
- **Sep 2004:** Lackland trainee processing center deploys digital panoramics
- **Aug 2005:** \$5.8M obtained from AF/SGR to begin 5+ year deployment.
- **Oct 2005:** \$3.6M obtained from AF/SGR. No promise for future year funding
- **May 2006:** \$15.5M in UFR funding obtained through efforts of AF/SGOD; AETC/SGD contributes additional \$4M

Total funding available (FY05-FY06): ~\$29M



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History of Digital Dental Radiology Solution (DDRS)

Goal

Convert Air Force DTFs to Digital Dental Imaging as quickly as possible to avoid a global incompatibility between DTFs with digital and DTFs with conventional film-based radiology

Overall Objectives

- Complete elimination of “wet-film” dental radiology
- Standardized software and hardware
- Worldwide/anywhere access to all digital images
- Leverage existing AFMS capabilities
- Integrate system with existing software applications: CDA and AHLTA



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Air Force Dental Technology Board (AFDenT)

- **Team established in early 2004**
- **Charter was to finalize AF DDRS**
- **Membership**
 - Air Staff Dental
 - MAJCOM Dental Representatives
 - DECS Representative
 - AF/SGR Dental Representative
 - AF/SG Logistics Representatives
 - Others (AF PACS personnel, AF/SG finance rep, etc.)
- **Missing membership?**
 - Medical Physicist
 - Medical Radiologist



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Air Force Dental Technology Board (AFDenT)

Multiple options explored, narrowed to two

- Off-the-shelf COTS solution (MiPACS)
- Army Digital Radiology Solution (DIVVA)

Army product enticing but...

- Decision occurred at time of maximum CDA unreliability
- Would incur costs to Army for central archive storage, maintenance and bandwidth (over \$400k/yr)
- Limited flexibility for AF-unique requirements

AF Solution has multiple advantages

- Utilized some existing AFMS medical PACS storage sites
- No cost for ongoing maintenance and bandwidth for central archive
- Possible integration into existing and future AFMS initiatives
- Complete flexibility to adapt to AF-unique requirements

Decision made to develop/deploy AF DDRS

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AF Digital Dental Radiology Solution (DDRS) Overview

Medicor's MiPACS COTS Software

- Integrated image viewer and acquisition application
- Compatible with majority of digital dental imaging hardware
 - Both radiology and visible light (photos)
 - Other dental software such as Dolphin orthodontic application
 - DICOM compatible
- In use at multiple dental schools
- Also chosen as the VA's software solution

Standardized Hardware

- Schick and Kodak digital sensors (wired)
- Planmeca panoramic units or convert existing newer units to Digital or PSP
- Air Techniques Storage Phosphor readers

Key: Standardized software and hardware helps to reduce training/support



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AF Digital Dental Radiology Solution (DDRS) Overview

MiPACS Software Key Points

- Image exposed in DTR or central radiology department
- Image immediately available on MTF LAN via MiPACS server
- When implemented, image will migrate to central archive within hours
 - Images then available worldwide at any AF DTF or deployed location with Internet access

MiPACS Issues

- Largest deployment of MiPACS to date –requires “tweaking”
- Network approval currently only for local AFB use – not between bases
 - Process underway to acquire approval – expect 6-8 months
 - Until approved, will have to transport images from base to base with CDROMs



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AF Digital Dental Radiology Solution (DDRS) Overview

Dental Hardware Issues

- Schick sensors proven reliable
- Kodak sensors are slightly bulkier but provide better image
- Wired digital sensors can't always be utilized due to bulk
 - AF DDRS provides storage phosphor sensors to use

Storage Phosphor Sensors

- Nearly identical to film in size and use
- Require developing in Air Techniques reader
 - Process takes less than 20 seconds per sensor, longer for extra oral
- Same sizes available as with conventional film
 - Periapical, occlusal, pano and ceph, etc.

Key: Dual system guarantees that we can eliminate wet-film radiology



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AF Digital Dental Radiology Solution (DDRS) Overview

Other Hardware

- Some ability to fund additional hardware
 - X-ray tube heads, workstations, digital intraoral cameras
- Standardized IT hardware: Dell, HP etc.
- Adequate image storage space for 3-5 years at each DTF

Other issues

- Integrated deployment with other MTF sections
 - MEMO / BMET
 - Facilities
 - IT/Systems (Comm. Sq also involved)
 - Logistics

Key: Standardized “back-end” hardware and MTF key to ensure local support



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AF Digital Dental Radiology Solution (DDRS) Overview

■ Use of an “Integrator”

- Civilian “integrator” functions are available
- Help to design, provide costing, order, install/configure, train and support a technology system
 - Basically provide a “turn-key” system based upon customer input

■ Force3 chosen as initial integrator for AF DDRS

- Have some experience with dental digital imaging
- Performed system deployment at Lackland in 2004/5
- Have a history of good IT design and support



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DDRS Phase I

- **19 DTFs**
- **FY05 Funds Used (except for Sheppard)**
- **17 Sites Completed:** Maxwell, Malmstrom, USAFA, Elmendorf, Sheppard, Eielson, Robins, FE Warren, Hill, Hickam; Wright-Patterson, Kadena, Hanscom, Eglin, Edwards, Kirtland, Tinker
- **2 Sites Scheduled:** Misawa, Yokota
- **Completion of Phase I:** Planned for June 2007



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DDRS Phase II

- **59 DTFs Included**
- **FY06 Funds Used**
 - Funds Obligated
 - Purchase Orders must be completed by 30 Sep 07
- **Contracting Process Will Change vs. Phase I**

Will have significant Government Purchased Equipment

 - Possible multiple integrators/installers
 - May speed process and cost less
- **Required Complete Site Proposal Review**
 - Proposal Review Complete – nearly all had significant disconnects
- **Expect first deployment late FY07**

- **Includes**
 - Enterprise software license
 - Central storage/archive server at Wright Patterson

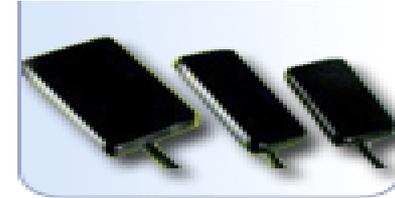


DDRS Digital Hardware

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- **Digital (wired) Sensors**

- Schick vs. Kodak
- Current Dilemma: Which to choose?



- **Digital Panoramic Devices**

- Planmeca ProMax
- Kodak 8000 Panoramic
- Schick CDR PanX

- **New 3D Tomographic Imaging**





DDRS PSP Devices

- **Phosphor Storage Plate Sensors**
 - Same sizes and techniques as film
 - Still need to process the image
 - Overall cost much less than digital sensors
 - DDRS uses both digital and PSP sensors
 - PSP was intended for backup



■ **Unintended Consequences of dual technology**

- Most technicians prefer PSP
- At least one clinic is nearly 100% PSP
- Resolution is lower than with digital sensors





Central Archive Capability

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- **DDRS includes a single Global Image Repository**
 - Will be located at Wright Patterson AFB
 - Design being coordinated at AFMLO
- **DDRS will provide funding to purchase**
 - No current charge to AFDS to maintain
 - PACS administrator being provided by HQ AFMC/SGD
- **Current CoN and SSAA doesn't apply to Central Archive**
 - AF/SGR is working to modify current CoN
- **Unsure of deployment date but should be CY07**



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Future Considerations

To Print Or Not To Print?

- DDRS philosophy is not to print
- Most DTFs don't get printers as part of DDRS
- AF entry-point DTFs get diagnostic quality printers
 - Lackland, Maxwell, USAFA
- But...anticipate on-going need to have printed Panos
- Can dental clinics utilize Medical Radiology printers?





Future Considerations

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3D Dental Imaging

- New on the market
- AF already has several/more planned
- Big push from manufacturers
- Images areas new to dentists
 - Who reads these images?





Primary AF DDRS POCs

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- Technology Integration Consultant
Commander, 19th Medical Group
Little Rock AFB, Arkansas
Phone: (501) 987-7411 (DSN 731-7411)
Fax: (501) 987-7251 (DSN 731-7251)

- Consultant AF Digital Dental Radiology
Cell: (210) 378-8814/ Office: (210) 496-6314

- USAF Dental Evaluation and Consultation Service
310C B Street, Building 1H Great Lakes, IL 60088-5259
DSN 792-7677 Commercial (847) 688-7677
FAX (847) 688-7667



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