Executive Summary of Findings

After extensive review, it was discovered that the diagnostic imaging care continuum that presently supports the healthcare requirements for the California Department of Corrections and Rehabilitation (Corrections) currently "functions" in a state of disrepair throughout each operational, technical and professional level of service.

In its current environment, diagnostic imaging services will impede any forward momentum that is conceptualized by the Receiver's work plan and ultimate goal for the California prison healthcare mission. If urgent action is not taken to remediate numerous problematical areas, the current mixture of deficient work processes, lack of leadership, poor technology decisions, violations of regulatory mandates, nonsensical goods and services contracts, and a profound absence of industry standards may actively cause harm to inmate-patients and staff.

MSI is confident that Corrections is unable to perform the following key functions at a level which is compensatory to its future needs and in-line with the Receiver's strategic work plan:

1. Ensure Timely Access to Healthcare Services
2. Effectively Engage as an Integral Component of the Healthcare Continuum
3. Recruit, Retain or Select a Professional Quality Medical Workforce
4. Implement a Quality Assurance or Process Improvement Plan
5. Provide Adequate Services as an Ancillary Medical Support Department
6. Sustain or Expand Services in the Current Medical Housing Environment

With Corrections unable to provide the necessary expertise to perform these services at a satisfactory level, it has relied on contracted vendors to assist with these goals. Unfortunately, these contracted vendors are not providing the necessary oversight for compliance or even the simplest efforts for compliance, or subject matter expertise. These services are inefficient and create multiple mechanisms for delaying access to care

Our assessment has revealed a system where the State of California is spending tens and possibly hundreds of millions of dollars to vendors in support of a failed service. MSI experienced extreme difficulty reconciling the fiscal impact to Corrections because of a complete lack of accountability and valid data to support a trustworthy analysis of the enormous cost of supporting a dilapidated medical imaging service line. After triangulating on the fiscal impact to Corrections, MSI has provided the Receiver our conservative estimation of the annually recurring fiscal impact to the state while focusing only on contracted imaging services (see Financial Impact section).

If urgent action is not taken to remediate numerous problematical areas, the current mixture of deficient work processes, lack of leadership, poor technology decisions, violations of regulatory mandates, nonsensical goods and services contracts, and a profound absence of industry standards may actively cause harm to inmate-patients and staff.

Findings Summary Dashboard Indicators

For ease of readership and to provide the ability to quickly scan the multitude of issues in our assessment, MSI provides two (2) visual dashboard indicators. First is the dashboard rating scale (example below). This indicator is used to demonstrate the potential opportunity for positive change that can be realized within each of the major headings. These opportunities are accounted for in the report section "Strategic Roadmap."

In addition, MSI provides the reader various color coded indicators related to each of the sub-sections and their calls to action. The dashboard indicators follow the exact schema and format used in the body of the assessment report. The bullets summarizing the issues are also color coded. If the Receiver seeks a more detailed version of any particular issue defined in this summary, he can find the expanded narrative in the body of this report.

Color Indicator Scale

SEVERE IMPACT	DECISIVE IMPACT	IMPACT
Immediate Attention Required Indicates potential harm or liability.	Attention Required Indicates potential harm or liability.	Stable But Requires Monitoring

The following sections provide a summary of key issues identified by section within the body of the Assessment Report:

Operations

Scope of Services

- Services that are not provided in-house are contracted with mobile services or sent off-site at considerable expense and security risk.
- Radiology results "turn around times" are not acceptable. They range from 4-5 days to 3-4 weeks.
- In house services represent a basic and minimum offering throughout Corrections by providing basic radiology only.
- Fluoroscopic equipment is widely deployed with little to no radiologists available necessary to do fluoroscopy.

Staffing

- Some facilities do not provide any coverage when the technologist position is vacant due to illness or vacations.
- Technology staff is overburdened with antiquated manual clerical responsibilities because of a lack of any information systems.
- The diagnostic imaging service sector for Corrections is completely devoid of knowledgeable, effective leadership.
- Staff culture is myopic and dysfunctional which hinders any collaborative efforts for establishing standards, creating change or seeking operational improvement.
- Staffing ratios are inconsistent and do not correlate to workload, hours of coverage or operational efficiencies.
- Annual safety training was found to be well established.

Equipment

- The recently purchased and deployed radiologic/fluoroscopic equipment presents multiple regulatory, safety, operational issues and is hazardous to inmate-patients and staff.
- Initial progress toward a digital evolution has begun with the purchase of Computed Radiology equipment, however this equipment has been deployed with suboptimal software.
- Purchasing decision being made for imaging services is rudderless and requires expertise in the imaging sciences.

Executive Summary of Findings

Policies and Procedures

- The Division's imaging operations are devoid of any updated or useable policies and procedures.
- Film file management is highly regulated. The film file archive, loan and tracking system is abysmal and reflects a high risk factor.
- Job descriptions are "canned" and not reflective of the roles and responsibilities of the technology staff.
- Corrections does not have any standardized exam protocols for use internally or with contracted providers.
- There is no evidence of budget accountablity at the operational level.

Leadership

- Imaging specific leadership does not exist. This factor creates multiple issues related to strategy, standards, oversight, staff culture and general operations.
- Imaging staff do not receive specific performance feedback. The leadership overseeing imaging operations do not have the knowledge to effectively evaluate staff or operations.
- Contracted radiologists or radiology groups provide little quality assurance or professional leadership to the Division.
- Lack of leadership with regard to standard purchasing of supplies is creating a high degree of expense to the operations.
- Leadership will be critical to the changes requisite of a digital transition.

Regulatory Requirements

- A radiation safety program does not exist within the Division. Radiation safety meetings are not being held as required.
- Contracted radiologists are not performing the duties of the Radiation Safety Office (RSO) as per their contracts.
- Film file management is largely in violation of regulations and presents a high risk factor to Corrections .
- There is no evidence of quality assurance (QA) or quality control (QC) programs other than at two (2) of the women's facilities Mammography programs.
- All technologist are licensed and CPR certified.

Technology

Network Infrastructure

- No existing network infrastructure is available that can support diagnostic imaging services.
- Newly installed CR units were installed hard-wired and do not make use of a switch Ethernet configuration.
- Older building architecture poses multiple challenges pertaining to the implementation of CAT 5E cabling (essential for imaging).

Information Systems

- "Home- Grown" systems using Microsoft Access™ or Microsoft Excel™ used for patient and procedure tracking are not HIPAA compliant or supported by a backup system for business continuity.
- None of the existing systems used for tracking inmate-patients at Corrections are Health Level 7 (HL7) compliant.
- IMSATS contributes no functional benefit to the imaging operations.

Contracted Mobile Technology

- On-site mobile coaches did not have communication phone lines to the Central Health Services in case of an emergency event
- All contracted mobile CT units were found to be suboptimal in helical and reformatting capabilities (Contract issue)
- Mobile MRI units were found to be lacking some of the hardware necessary for routine MRI studies.
- Mobile Ultrasound vendors did not utilize film, CD or DVD for recording examinations, rather, they used paper based media which degrades the image used in reporting.

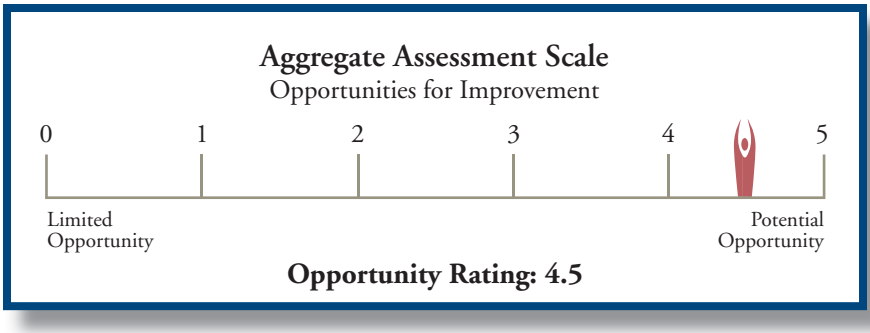
DICOM Readiness

- DICOM readiness requires attention in order to move to a digital department.
- The DICOM software on new equipment is not standard.

Dental Imaging Technology

- The digital systems used in dental are stand-alone and hinder the efficiencies of an integrated system.
- The systems in use today do not make use of any redundant archive solution. Archiving is being accomplished by printing a paper copy of the digital exam.
- The dental program does not have an HL7 compliant information system required for patient indexing on the image database.
- The dental department will require a significant data migration effort when the system is re-deployed as a central server configuration.
- The digital CR equipment purchased and being deployed is of good quality.

Professional Contracts



Contract Language

- Procedural data, scan volumes and a useful provider matrix is completely absent making it impossible to reconcile invoices to actual work performed.
- Sub-contracting activities by primary contractors to the state are making it difficult to audit for financial accuracy.
- Communications issues are prevelant for all contracted services.
- Scope of work service descriptions are generic and ambiguos leaving room for vendors to "technically" get around performance expectations.

Mobile Services

- Mobile coaches to not have any means of direct communication back to the CHS in case medical emergency during procudures.
- None of the mobile coaches, or the sites had "Code- Blue" procedures in place in case of critical medical emergencies.
- Mobile CT scanners are sub-optimal and do not adhere to bid standards resulting in duplicate examinations off-site due to poor quality.
- Very few sites have useful mobile pads with shore power and telecom. This creates many issues mostly pertaining to scan quality.

Interpretation Services

- Complete lack of good film management practices keep relevant prior films from being presented to the interpreting physician for comparisons.
- Report turn around times (TAT) vary greatly, some exceeding 3-4 weeks before a final report is provided to the institution.
- Communication with interpretive service providers is non-existent. Technologists often require dialogue with the interpreting radiologist to ensure the protocol for the requested examination will yield the best diagnostic outcome.
- Corrections have contracted with non-radiology physicians for interpretation of examinations. This is a very poor practice and can lead to liability.
- There is no evidence of radiology group QA processes.

Aggregate Recommendations

This section provides a *high level snapshot* of the recommendations MSI provides throughout the body of the report. A complete listing along with the rational for each recommendation can be found at the end of each sub-section located in the "Assessment Report". These recommendations are also detailed in the strategic roadmap including timelines associated with each phase.

Phase I – Planning and Stabilization

1. Begin an immediate project to stabilize current analog operations (*all operational elements*).
2. Begin recruitment for our proposed Corrections state-wide imaging organizational chart to include imaging specific leadership.
3. Engage in the network infrastructure build-out plan representing the imaging specific needs state-wide.
4. Complete an imaging device inventory matrix for the remaining fifteen (15) sites.
5. Begin all planning activities including issuance of multiple RFP's for a fully digital transition (Dental PMS- RIS/PACS- DICOM upgrades).
6. Initiate a project to transition the ongoing digital dental activities to a centralized database and archive configuration for state-wide interoperability.
7. Begin planning and issuance of RFP's for expanding in-house services to include: Distributed Radiology - CT – Ultrasound and Corrections owned and operated Mobile MRI.
8. Review and update all contracts for goods and services to accurately reflect expected scope of work, professional service expectations and cost savings through standardized group purchasing.
9. Determine analog to digital transition and final digital strategy for radiology group professional services interpretation.

Phase II – Build & Integration

1. Continue to refine and develop imaging operations and policies and procedures as Corrections begins transition from analog to digital operations.
2. Select, deploy and begin operating in new imaging services paradigm which includes distributed radiology, on-site CT and Ultrasound and Corrections owned and operated mobile MRI services.
3. Engage new imaging leadership in strategic initiatives and operational change management.
4. Complete the information technology build of the information systems and PACS databases to incorporate standardized AET, device naming conventions and modality integration state-wide.
5. Issue bids for services not provide in-house.
6. Shrink radiology professional services pool of contractors in preparation for digital transition and operational go-live of RIS/PACS.

Phase III – Operational Deployment and Adoption

1. Begin operations utilizing all newly deployed services.
2. Proceed with operational deployment and training of staff on RIS/PACS in a phased rollout.
3. Alter policies and procedures to reflect a digital work environment and to coincide with IT policies and procedures.
4. Move all film to centralized storage facility parallel to the phased RIS/PACS rollout.
5. Migrate radiology interpretation to the Correction's core group using a centralized reading environment.
6. Monitor and measure performance outcome.

Phase IV – Monitor and Measure

Financial Impact

The California Department of Corrections cannot produce any valid data pertaining to their aggregate costs for contracted healthcare services. Requesting data with any granularity to represent the cost structure for just the vendors providing imaging services is nearly a lesson in futility.

The recommendations outlined in our "Strategic Roadmap" require an initial capital investment and on-going operational cost shift to be successful. It is our intent to present these changes and recommendations with as close to a 1 year cost neutral Return on Investment (ROI) as possible. It is also our intent to prove that the State of California will generate yearly annuity savings once the operational vision and strategic roadmap is realized.

In order to ascertain the cost of providing medical imaging services through the use of contracted resources, MSI had to cross-pollinate multiple sources of data. Because there exists no single information system or method for collecting relevant data, MSI correlated data from: Corrections contract analysts, HICUP financial database reports, Corrections custodial medical transportation logs and reports from many of the contracted providers' financial systems.

Unfortunately, after multiple documented requests, many of the contracted vendors either refused or delayed submission of their data. Nonetheless, the financial Proforma (below) represents a contracted services cost structure we believe to be conservative, while providing a relatively high strategic capital expenditure figure. Provided below are tables representing:

1. The 2007 annual cost structure for contracted services.
2. The proposed "one time" capital costs in support of our strategic vision.
3. The annual operational cost increase for ongoing support of our strategic vision.
4. A five (5) year Proforma supporting a very positive ROI of the proposed changes in our strategic vision.

Approximate State-wide Cost Of Contracted Imaging Services (2007)

Approximate # of inmates transferred off-site for CT-MRI- U/S-RAD services ONLY	Approximate number of procedures completed off-site	Approximated cost of imaging procedures (non-mobile)	Approximated cost of basic custody transport	Approximated cost of Mobile CT & MRI services	Approximated cost of Mobile Mammo and Ultrasound	**Annual Total**
48,000	**80,000**	**$40,000,000**	**$22,000,000**	**$7,000,000**	**$5,300,000**	**$74,428,000**

Assumption

We calculated the cost of basic custody transportation for each inmate seen off-site by using the following formula:[1]

Cost of BLS, ALS or high level inmate not considered	= $000.00
We deducted 30% from the total for group transport	
Two (2) custody officers at $55.00 dollars per hour for a 5 hour roundtrip	= $550.00
Cost of transportation vehicle	= $100.00
Total cost for each Basic Custody transport to off-site imaging services	= $650.00

Proposed Capital Costs for Corrections Build-out of CT, MRI, U/S Radiology Services

Approx cost of CT at 33 sites with building and infrastructure	Approx cost of 7 fully equipped Mobile MRI units	Approximate cost of Ultrasound unit for each site	Cost of X-ray to housing units with building and infrastructure	Cost of RIS/PACS statewide central server configuration		**Total**
$21,450,000	**$16,100,000**	**$5,280,000**	**$21,648,000**	**$8,000,000**		**$72,478,000**

Estimate of Proposed Additional Operating Costs (Beginning Year 2)

Administrative team (Director, 3 Managers, 3 Supervisors)	RIS/PACS Administration Team	Mobile MRI techs X 6 and drivers X 3	IV Contrast	MRI Coaches fuel and maintenance including unit	Service Agreements Other	**Total**
$561,000	**$210,000**	**$1,047,000**	**$2,000,000**	**$915,000**	**$4,500,000**	**$9,233,000**

[1] The formula for Basic Custody Transport was provided and supported by custody officers interviewed during the Discovery Phase of our Assessment

CDCR Strategic Imaging Proforma

All costs associated with this proposed capital and operational cost sheet are estimates based on the market available pricing (item specific) as of June 2008. MSI has contacted multiple vendors to form a non-binding cost quotation in generality and without mentioning the CDCR in any way.
MSI did not include project costs for implementing the multiple changes outlined in our proposed strategic roadmap in which much of these cost assumptions originate. MSI did not include a contingency percentage to this financial proforma. It is recommended to include a 10% contingency

D R A F T

	2009	2010	2011	2012	2013	5 Year Total
Est. Annual Cost for proposed changes	73,518,000	10,175,950	10,230,639	10,293,148	10,356,532	$114,574,268
Estimate recurring cost for contracted imaging services	78,000,000	78,000,000	78,000,000	78,000,000	78,000,000	$390,000,000
Proposed Additional Operating Costs						
Proposed Admin Director (Sal & Ben)	$100,000.00	$170,000.00	$175,100.00	$180,353.00	$185,763.59	$811,216.59
Proposed Imaging Regional Managers (Sal & Ben)	$165,000.00	$169,950.00	$175,048.50	$180,299.95	$185,708.95	$876,007.41
Proposed PACS Administration Team (Sal & Ben)	$0.00	$210,000.00	$216,300.00	$222,789.00	$229,472.67	$878,561.67
Proposed Logistics Manager (Sal & Ben)	$0.00	$126,000.00	$129,780.00	$133,673.40	$137,683.60	$527,137.00
Proposed Regional Supervisors (Sal & Ben)	$0.00	$300,000.00	$309,000.00	$318,270.00	$327,818.10	$1,255,088.10
Drivers for MRI (Sal & Ben)	$0.00	$255,000.00	$262,650.00	$270,529.50	$278,645.39	$1,066,824.89
Mobile MRI Techs (Sal & Ben)	$0.00	$792,000.00	$815,760.00	$840,232.80	$865,439.78	$3,313,432.58
Film/CD's	$0.00	$8,000.00	$2,000.00	$2,000.00	$1,000.00	$13,000.00
Contrast	$0.00	$2,000,000.00	$2,000,000.00	$2,000,000.00	$2,000,000.00	$8,000,000.00
MRI Coaches and units	$0.00	$910,000.00	$910,000.00	$910,000.00	$910,000.00	$3,640,000.00
All Service Agreements	$0.00	$4,500,000.00	$4,500,000.00	$4,500,000.00	$4,500,000.00	$18,000,000.00
Total Annual Expense of Proposed Ops	**$265,000.00**	**$9,440,950.00**	**$9,495,638.50**	**$9,558,147.66**	**$9,621,532.08**	**$38,381,268.24**
Proposed Initial Capital Costs						
Mobile MRI Coaches and Units X 7	$16,100,000	$500,000	$500,000	$500,000	$500,000	$18,100,000
Mobile MRI Pad construction with Power and Telecom	$775,000	$0	$0	$0	$0	$775,000
CT including Modular and Infrastructure	$21,450,000	$100,000	$100,000	$100,000	$100,000	$21,850,000
Ultrasound	$5,280,000	$35,000	$35,000	$35,000	$35,000	$5,420,000
Housing Unit X-ray with CR (Modular and Infrastructure)	$21,648,000	$25,000	$25,000	$25,000	$25,000	$21,748,000
RIS/PACS	$8,000,000	$75,000	$75,000	$75,000	$75,000	$8,300,000
Total Annual Expense of Proposed Capital	**$73,253,000**	**$735,000**	**$735,000**	**$735,000**	**$735,000**	**$76,193,000**
Annual Annuity Savings for Proposed Changes	**$4,482,000**	**$67,824,050**	**$67,769,362**	**$67,706,852**	**$67,643,468**	**$275,425,732**