Vantage Fortian

Altivity

Trusted Partner Upgrade Program Increased Productivity and Enhanced Image Quality

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Summary

King's Daughters Medical Center partnered with Canon Medical Systems USA to modernize its MRI capabilities through Canon's Trusted Partner Upgrade program, upgrading from the Vantage Titan 1.5T to the Vantage Fortian 1.5T. The project preserved existing infrastructure while introducing Canon's newest MR technologies, such as AI-enabled imaging, zero boil-off magnet technology, and intelligent workflow automation. Within weeks of the upgrade, the site achieved up to 48% faster scan times,* measurable gains in image quality, and expanded clinical capabilities for new patients, such as in prostate exams. The Fortian zero boil-off magnet eliminated helium refills and reduced power consumption by 30%,** positively impacting operating expenses helping the hospital advance its clinical and sustainability goals.

Introduction

King's Daughters Medical Center in Brookhaven, Mississippi, has been providing quality healthcare services since 1922. The center offers range of advanced diagnostic imaging services, including Canon MR, CT, UL, and XR, along with other imaging modalities from other vendors, such as nuclear medicine. In 2011, the site installed the Titan 1.5T MR scanner. After 14 years of reliable service and scanning over 35,000 MR studies,[1] the system was due for a technology refresh. Rather than upgrading only software or electronics, King's Daughters Medical Center took the step of upgrading the MR system to Canon's newest high-performance AI-enhanced scanner—the Vantage Fortian 1.5T—through the Canon's Trusted Partner Upgrade program. This decision reflects the site's strong commitment to offering state-of-the-art diagnostic imaging quality and efficiency, and the long-term collaboration commitment between Canon and King's Daughters.

Upgrade

The upgrade from Titan to Fortian was completed at King's Daughters Medical Center in June 2025. The transition was executed efficiently by Canon's award-winning MR service team, with minimal disruption to operations. Key legacy components, including the quench pipe, RF coils, and software licenses, could be carried over, enabling an efficient upgrade while optimizing value.

> The Vantage Fortian 1.5T upgrade has noticeably improved our image quality and exam efficiency. The enhanced coil technology and AiCE reconstruction deliver sharper, cleaner images with excellent consistency. We're now able to complete more studies each day while maintaining high diagnostic confidence.
>
> — **Dr. William D. Sones, MD**
> Radiologist
> King's Daughters Medical Center

* Scan time savings vary per body region.
** Power savings from reduced scan times and eco-mode.

Technology

The Fortian upgrade introduced the latest innovative MR technologies, enhancing image quality, productivity, patient comfort, diagnostic confidence, and reducing scan time. The upgrade included the newest Canon MR software version, which significantly improves workflow, scan time, image quality, and cybersecurity.

These are some of the technologies that were included with the upgrade:

Advanced intelligent Clear-IQ Engine (AiCE): An image reconstruction technique that utilizes deep learning reconstruction (DLR) to reduce image noise and improve the image's signal-to-noise ratio (SNR).[2] The algorithm is trained to effectively remove noise while maintaining anatomical and pathological integrity. AiCE is applicable to all body regions where it may enable the acquisition of high-quality MR images with higher SNR and/or shortened scan time.

Intelligent Gantry Monitor: A completely re-designed intelligent gantry interface displays important patient-related and coil information, enhances workflow, and saves set-up time.

Ceiling Camera: An AI technology that helps detect body region and patient orientation enabling consistently optimal coil landmarking.

Fast 3D Technology: An advanced imaging technique that uses specific partial k-space filling schemes for 3D acquisitions, which allows acceleration of up to 50%.

Compressed SPEEDER (CS): An imaging technique utilizing compressed sensing technology in both 2D and 3D acquisitions for accelerating the scan time or increasing the SNR and resolution.

Non-invasive Fat Fraction Quantification: A single breath-held exam captures Fat Fraction Quantification (FFQ) simultaneously providing quantitative maps of the liver to measure proton density fat fraction (PDFF) and R2*.

Auto Scan Assist: An automatic slice alignment tool for neuro, spine, and knees, reducing variability and improving workflow. Auto Scan Assist is also available for other MR exams such as liver, prostate, and cardiac, reducing variability and improving workflow.

Docking Table: Designed for transporting patients to the MRI scan room and performing scanning without the need for repositioning, improving workflow by holding multiple dockable tables—especially useful for emergency examinations of patients who are unable to move by themselves.

Pianissimo Σ: A multi-layer insulation technology that optimizes sound absorption to significantly reduce acoustic noise in and around the MRI environment for every sequence, improving the scanning experience for both patient and technologist.

Coils: The upgrade delivers Canon's newest Shape coils, offering wide coverage, high SNR, and improved patient comfort. These advanced coils support greater workflow efficiency while maintaining exceptional image quality. As an upgrade, multiple coils are carried over from Titan to the new Fortian, such as shoulder and spine coils, ensuring both clinical and financial continuity.

These enhancements not only improve diagnostic confidence but also streamline daily workflows helping technologists work more efficiently while enhancing the overall patient experience.

"Since upgrading to the Fortian, our workflow has become faster and smoother. Scan times are down by nearly half on several key exams, and patients comment on how quiet and comfortable the system feels. The new coils and Auto Scan Assist Elite have made setup easier and more consistent, which really helps our daily schedule."

— **James R. Pannell RT(R)(CT)(MR)**
Lead MRI Technologist
King's Daughters Medical Center

Productivity

A comparative study was performed at King's Daughters Medical Center to evaluate the scan time differences before and after the upgrade to Fortian. Steady-state scanning was conducted across multiple anatomical regions using equivalent protocol. The results demonstrated consistent scan time reductions for all body regions, with improvements ranging from 14% to 48%, depending on anatomy and exam type (Figure 1). Signal to Noise Ratio (SNR)[3] and Contrast to Noise Ratio (CNR)[3] measurements were used to quantify consistent image quality improvements, in addition to the notable scan time reductions (Figures 2-5).

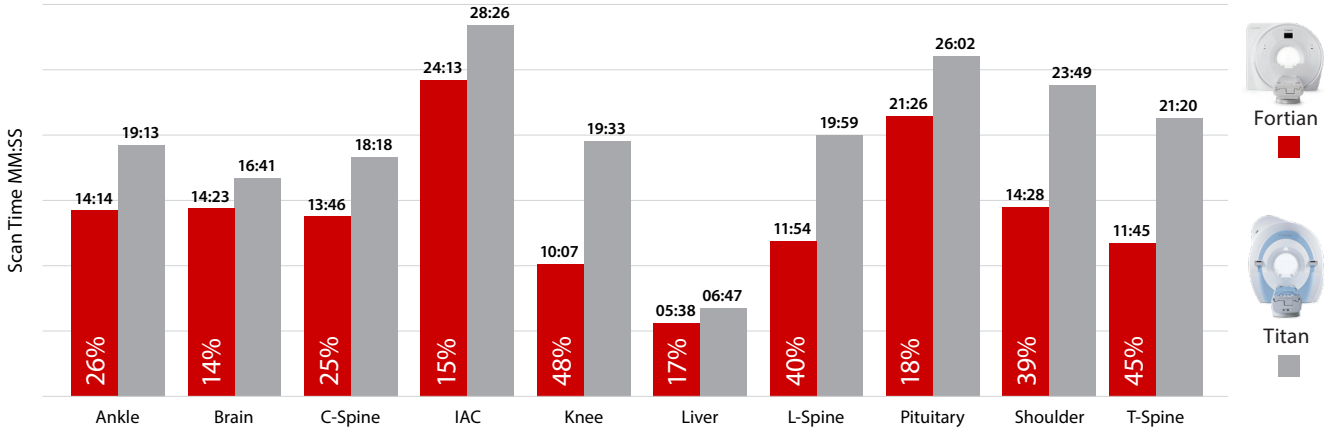


Figure 1

Comparison of steady-state exam times between the Titan and Fortian at King's Daughters Medical Center.

Anatomy	Scan Time		% Improvement		
	FORTIAN	TITAN	Scan Time	SNR	CNR
Knee	10:07	19:33	48%	7%	8%

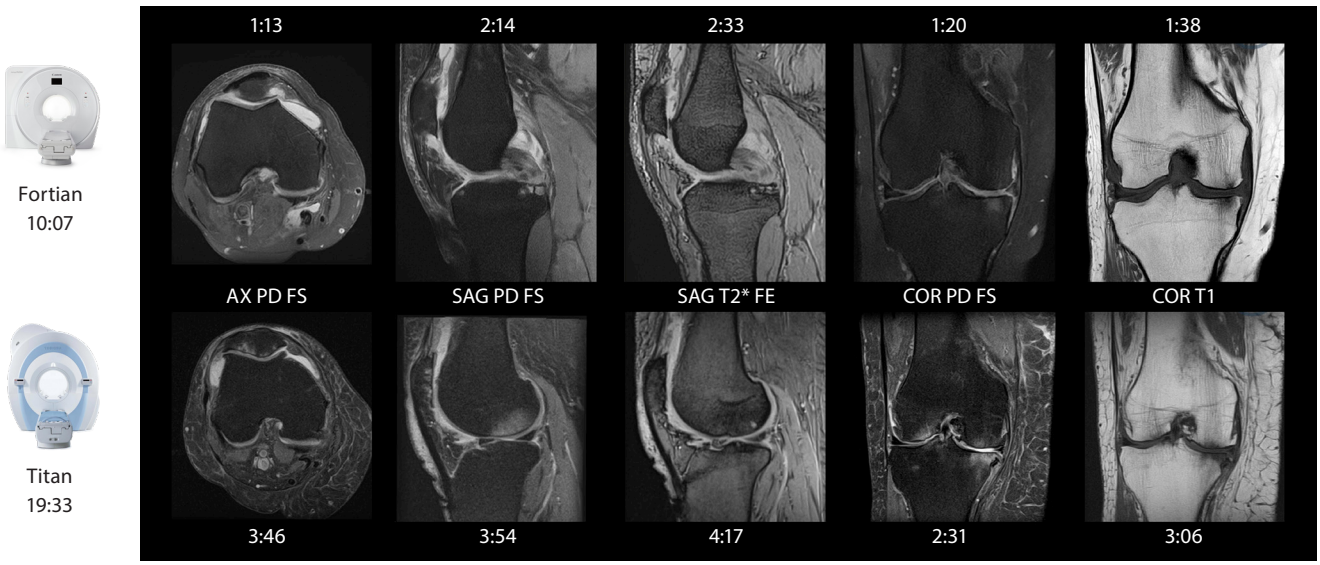


Figure 2

Comparison of steady-state Knee delta between the Titan and Fortian at King's Daughters Medical Center.

Anatomy	Scan Time		% Improvement		
	FORTIAN	TITAN	Scan Time	SNR	CNR
Brain	14:23	16:41	14%	14%	30%

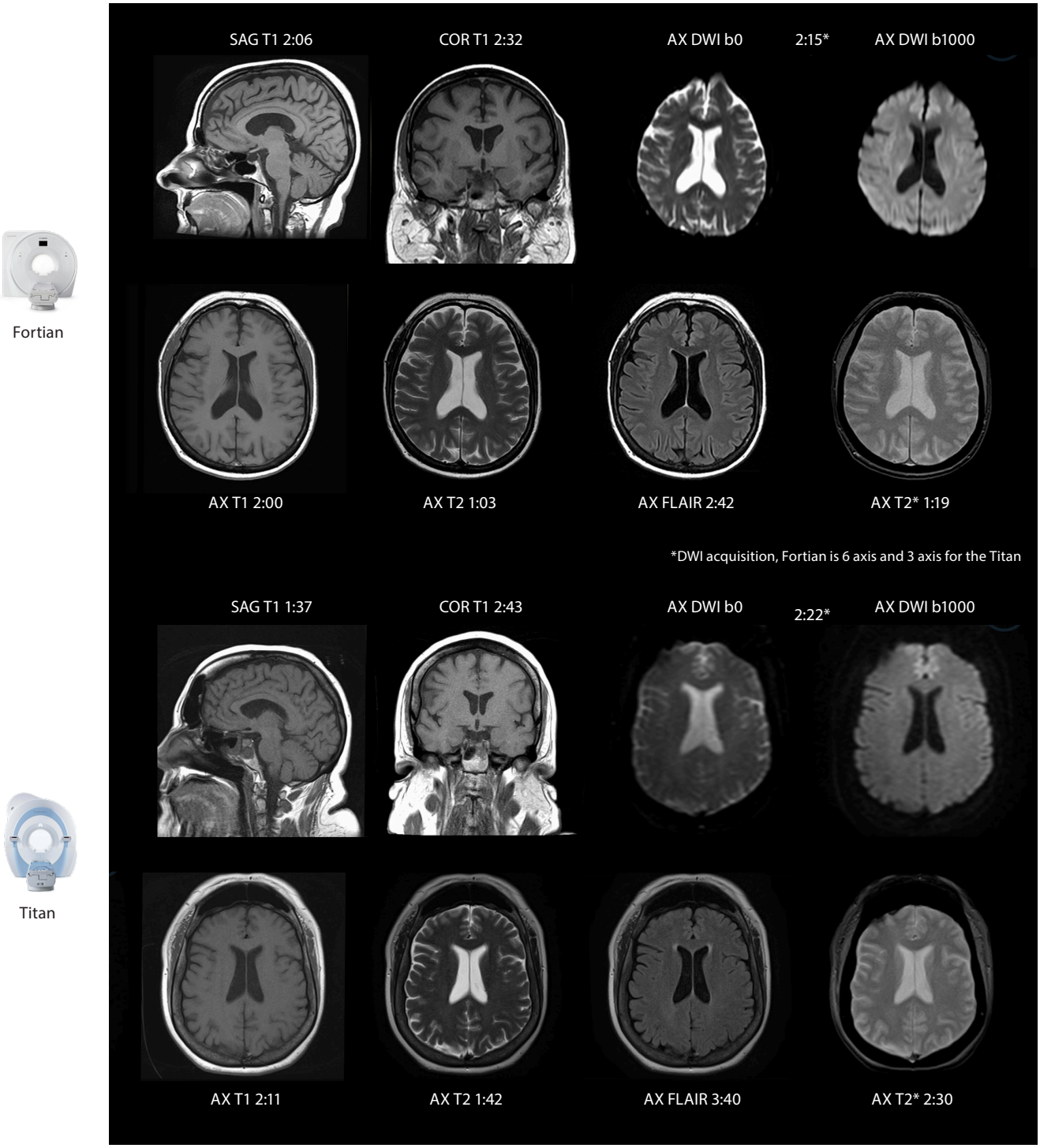
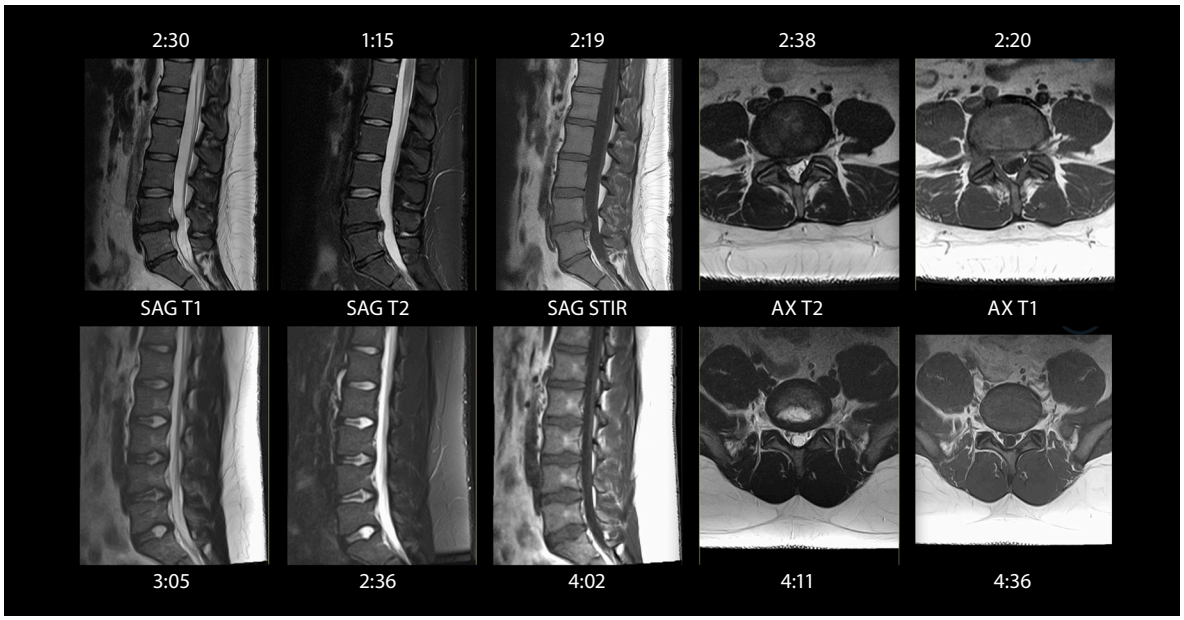


Figure 3

Comparison of steady-state Brain delta between the Titan and Fortian at King's Daughters Medical Center.

Anatomy	Scan Time		% Improvement		
	FORTIAN	TITAN	Scan Time	SNR	CNR
L-Spine	11:54	19:59	40%	36%	61%



Sequence	Time	AiCE	TR	TE	FOV	AcqMatrix	NAQ	# of Slices	Slice Thickness
SAG/COR LOC	0:06	No	41	2.3	40 x 40	128 x 192	1	6	15
3 AXIS LOC (M)	0:15	No	34	4	35 x 35	128 x 256	1	9	10
iMAP_TLSpine	0:31	No	235	4	45.5 x 50.0	64 x 64	1	29	6
SAG T2	1:15	Yes	5000	120	24.0 x 20.0	224 x 320	1	15	4
SAG T1	2:30	Yes	501	10	24.0 x 20.0	288 x 256	2	16	3.5
SAG STIR	2:19	Yes	4200	70	26.0 x 22.0	192 x 256	2	15	4
AX T2	2:38	Yes	6286	108	20 x 20	224 x 256	1	25	4
AX T1	2:20	Yes	705	8	20 x 20	192 x 256	1	26	4

Sequence	Time	AiCE	TR	TE	FOV	AcqMatrix	NAQ	# of Slices	Slice Thickness
SG locator	0:10	No	72	9	50 x 50	128 x 256	1	3	8
3 PLANE LOC (M)	0:48	No	119	9	45 x 45	128 x 256	1	15	8
MAP	0:31	No	235	4	58.8 x 58.5	64 x 64	1	29	6
SAG T2	2:17	No	2684	120	26.0 x 20.0	256 x 256	2	11	5
SAG T1	3:05	No	406	10	26.0 x 19.0	224 x 192	2	12	4.5
SAG STIR	3:48	No	3505	60	26.0 x 19.0	192 x 192	2	12	4.5
AX T2	3:46	No	6100	120	18 x 18	192 x 240	2	25	4
AX T1	4:12	No	700	10	18 x 18	192 x 256	2	25	4

Figure 4

Comparison of steady-state L-Spine delta between the Titan and Fortian at King's Daughters Medical Center.

Anatomy	Scan Time		% Improvement		
	FORTIAN	TITAN	Scan Time	SNR	CNR
Shoulder	14:54	23:49	37%	28%	39%

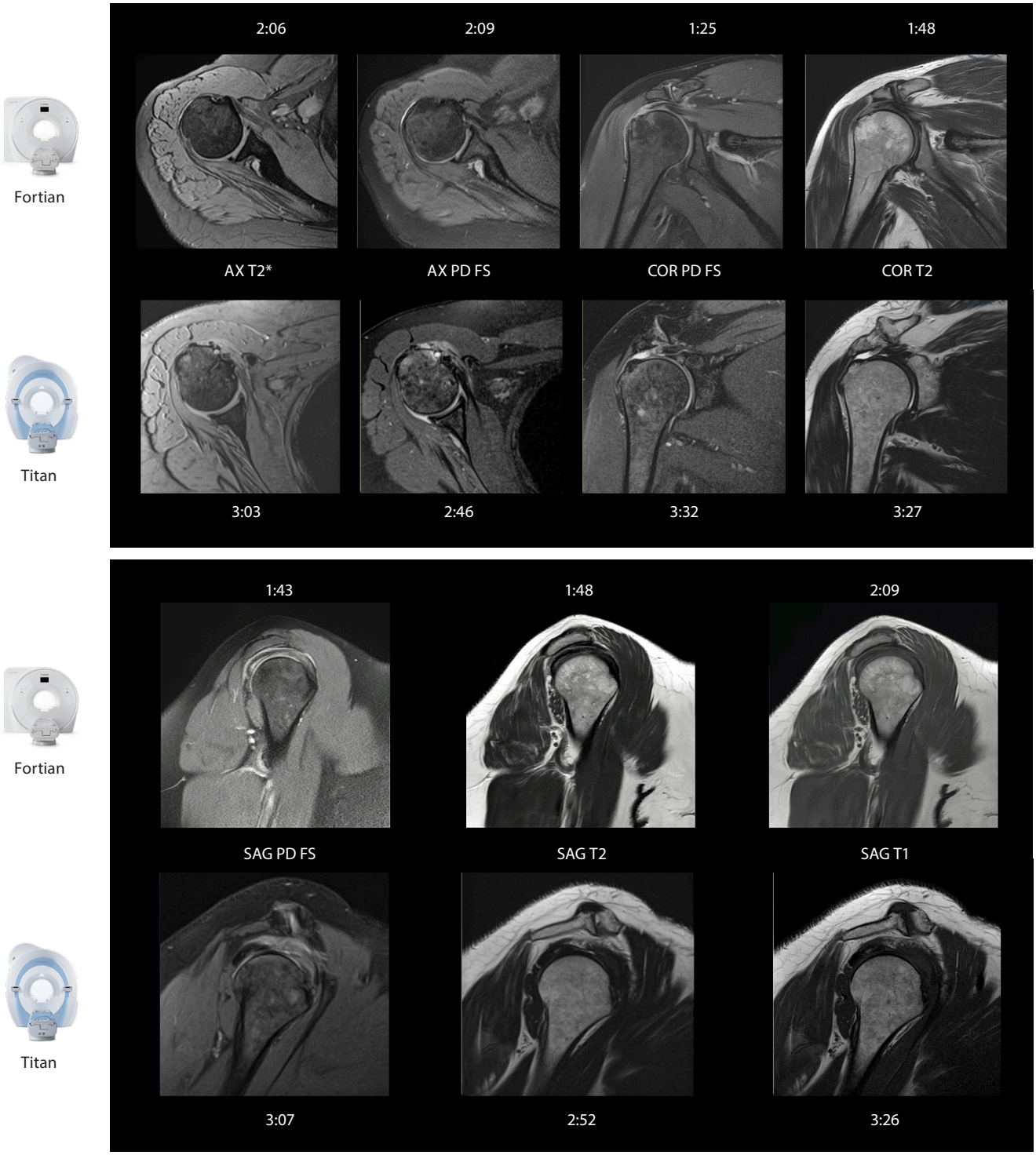


Figure 5

Comparison of steady-state Shoulder delta between the Titan and Fortian at King's Daughters Medical Center.

Prostate

Before the Fortian upgrade, King's Daughters Medical Center didn't perform many prostate MRI exams on the Titan platform due to limitations in signal-to-noise ratio (SNR), diffusion performance, and overall scan times. After the Fortian upgrade, prostate MRI is now a fully supported, high-quality clinical offering. Fortian provides substantial improvements in SNR, diffusion imaging consistency, motion-robust multi-b-value DWI, and accelerated workflows through AiCE, Exsper, and Fast 3D technologies. Together, advancements enable a comprehensive prostate MR exam of high resolution T2, water/fat-suppressed imaging, multi-b-value diffusion, and dynamic post-contrast studies with high diagnostic confidence (Figure 6).

From a business perspective, the impact is significant. Prostate MRI (CPT 72198)[4] carries the highest reimbursement rate of all major body regions, surpassing breast, abdomen, cardiac, brain, pelvis, spine, and knee exams. In Mississippi, prostate MRI reimbursement ranks highest among all compared anatomy categories.[4] With Fortian, the prostate exam can become both clinically strong and financially impactful, helping to strengthen the hospital's MRI program in quality, capability, and return on investment.

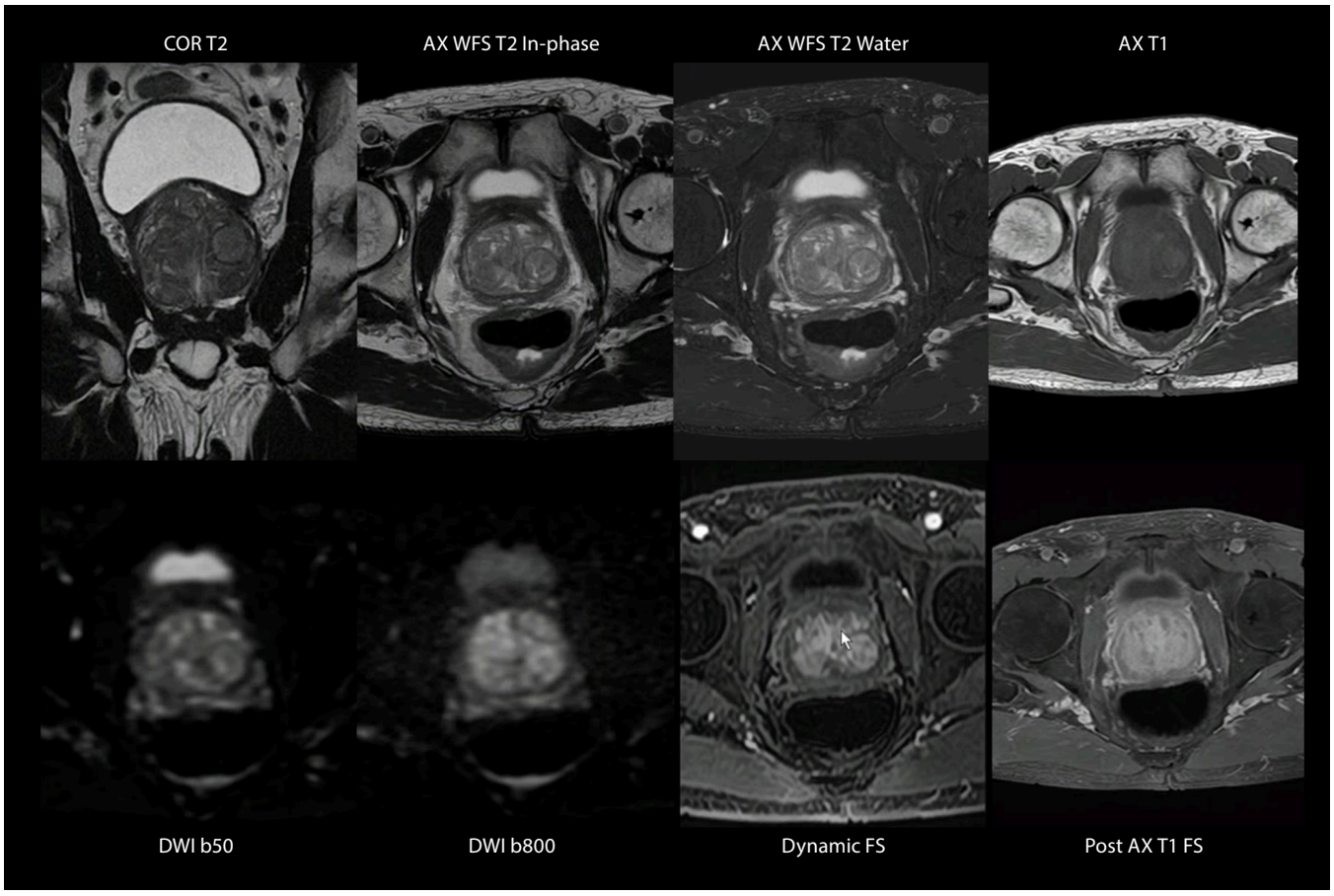


Figure 6

Typical Fortian Prostate Study at King's Daughters Medical Center.

"The Fortian upgrade has delivered outstanding operational and financial benefits for our department. The reduction in scan times and improved workflow efficiency have driven significant OPEX savings allowing us to increase throughput without adding staff or expanding hours. Just as important, patient satisfaction has risen noticeably. Patients consistently comment on the quieter system, shorter exams, and overall comfort of the experience. The combination of measurable cost savings and higher patient satisfaction makes this upgrade an exceptional value for our organization."

— **Lee Barry R.T.(R)(N) CNMT,**
Director of Radiology Administration & Operations
King's Daughters Medical Center

Efficiency and Sustainability

The reduction in average scan time translates not only into higher patient throughput but also into meaningful operational and environmental benefits. With shorter exam durations, the system operates at full gradient and RF power for less total time each day, allowing the Fortian to spend a greater portion of its duty cycle in low-power Eco Mode. Fortian's Eco Mode automatically reduces system power draw during idle periods lowering energy consumption and reducing strain on critical components. In practical terms, the scan-time reduction observed at King's Daughters enables approximately 1-2 additional idle hours per 8-hour clinical day, which can result in up to 30%[5] reduction in total power usage compared to the legacy Titan system. This combination of AI-driven productivity (from features like AiCE and Auto Scan Assist) and energy-efficient operation supports both clinical and environmental goals to deliver faster patient service while reducing the department's carbon footprint and operating cost.

Scanner Power Consumption	Titan	Fortian	Fortian Advantage
Daily Energy Use	561.6 kWh	392.5 kWh	**30% lower**
Weekly (5 scan days)	3,624 kWh	2,577 kWh	**30% lower**
Annual	188,448 kWh	133,988 kWh	**30% total reduction**
Average Scan Time	30 min.	21 min.	**30% faster (Coils + SW + AiCE)**
Throughput *(12 vs. equivalent cases)*	12 studies/day	~17 studies/day *(equivalent time)*	**≈ 40% more throughput potential** *(with equivalent Titan consumption)*

Service and Applications Support

From installation through ongoing operation, Canon Medical's award-winning MR service organization played a vital role in the success of the Fortian upgrade at King's Daughters Medical Center. Canon's MR service team is recognized nationwide for exceptional responsiveness and reliability, earning multiple IMV ServiceTrak™ awards for Best Service and Highest Customer Satisfaction in MR. These honors reflect Canon's long-standing commitment to technical excellence, proactive support, and customer partnership. At King's Daughters, that reputation was fully realized. The upgrade project benefited from seamless coordination between local field engineers, project management, and remote support specialists, ensuring a smooth transition from the Titan platform to Fortian with minimal downtime. The site reported excellent communication, rapid responsiveness, and thorough follow-up, hallmarks of Canon's service philosophy. Post-installation, the hospital continues to receive proactive system monitoring through Canon's InnerVision™ remote service platform, enabling early detection and rapid resolution of potential issues before they impact patient scheduling. Local field engineers remain closely engaged, providing preventive maintenance, on-site optimization, and ongoing application support to help technologists get the most out of Fortian's advanced imaging capabilities.

Conclusion

The Vantage Fortian 1.5T upgrade at King's Daughters Medical Center has delivered a smooth and successful transition from the legacy Vantage Titan 1.5T platform. The upgrade process was completed efficiently with full collaboration between King's Daughters Medical Center and Canon Medical Systems USA, ensuring minimal disruption to clinical operations and immediate adoption of the new technology.

Overall, the Vantage Fortian 1.5T upgrade program provides a strategic path for imaging facilities to extend the life of existing MRI assets while gaining access to Canon's latest innovations in AI-driven imaging, workflow automation and environmental efficiency. This partnership exemplifies Canon Medical's *Made-for-Life* commitment to advancing technology that benefits patients and clinicians.

References

1. Scanner utilization data sourced from real-world service logs captured by InnerVision
2. AiCE provides higher SNR compared to typical low-pass filters.
3. SNR=Mean Signal/Noise Standard Deviation CNR= (SA–SB)/Noise Standard Deviation per NEMA MS 1 / MS 9
4. American Academy of Family Physicians (AAFP) & MRI CPT Codes guide
5. CMSC Titan & Fortian Site Planning Manuals

* The clinical results, performance and views described in this paper are the experience of the authors. Actual results and performance of Canon Medical's product may be materially different due to clinical setting, patient presentation, and other factors. Many factors could cause the actual results and performance of Canon Medical's products to be materially different from any of the aforementioned. Some products shown might not be available in all regulatory jurisdictions, please consult with your local Canon sales office for availability in your region.

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