

# POLESTAR™ iMRI NAVIGATION SUITE

Seamless Integration of Surgical Navigation and Intra-operative Imaging Technologies



The PoleStar™ iMRI Navigation Suite will position your hospital head-

What if technology enabled you to...

verify extent of resection

preserve healthy tissue during surgery

maximize OR utilization

eliminate complications arising from brain shift throughout the surgery

reduce the likelihood that the patient will require repeat surgery

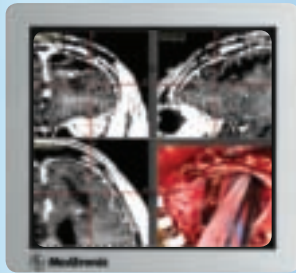
view and navigate a 3D orientation of the surgical region

integrate a variety of physiological and functional imaging methods

close with confidence

Comprehensive. Convenient. Cost-effective.

and-shoulders above the rest as a center of neurosurgical excellence.



PoleStar™ iMRI Navigation Suite



IMAGING

NAVIGATION

X-Ray

CT

MRI



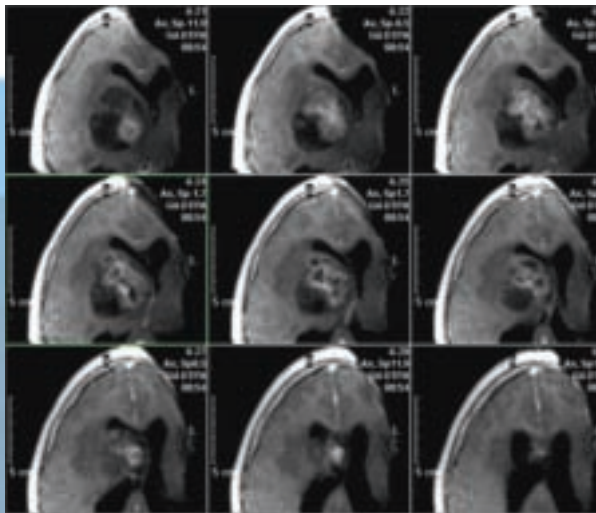
StealthStation® TREON®



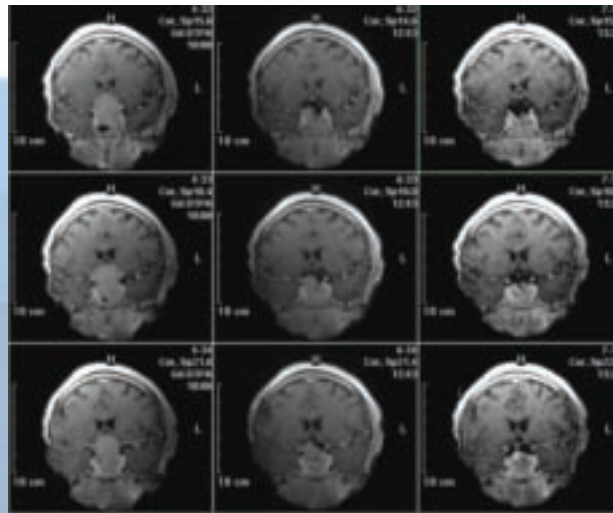
StealthStation® AXIEM™



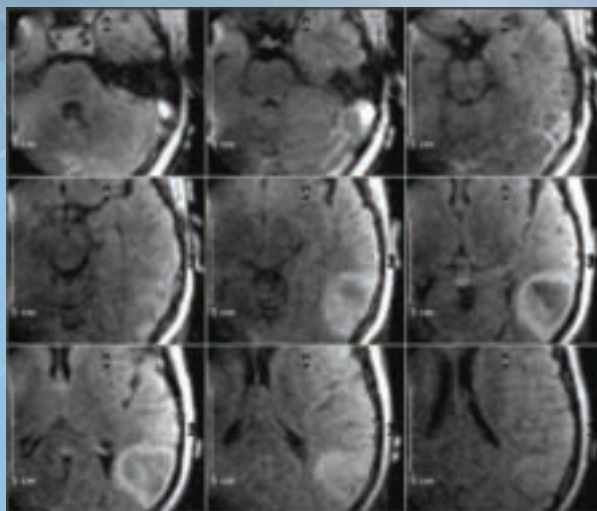
# Proven Imaging and Navigation in ONE Comprehensive Suite



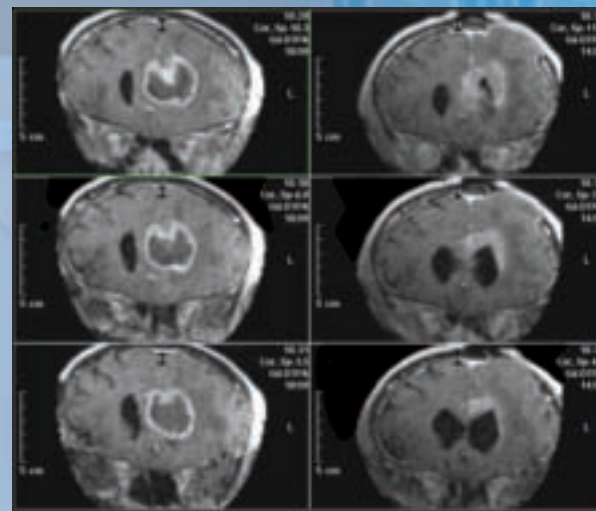
Pilocytic Astrocytoma



Pituitary Macroadenoma



Low-grade Glioma

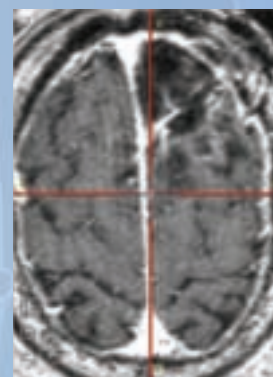


Glioblastoma

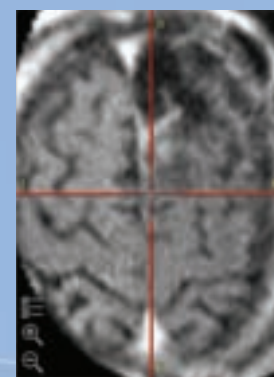
# PoleStar™

## Intra-operative Imaging

- Image fusion of pre-operative diagnostic scans (CT, MR, PET, & fMRI) with intra-operative images
- Available scanning sequences — T1, T2, Flair, and e-steady (combination of T1 & T2)
- Intra-operative scanning times from 8 seconds to 13 minutes

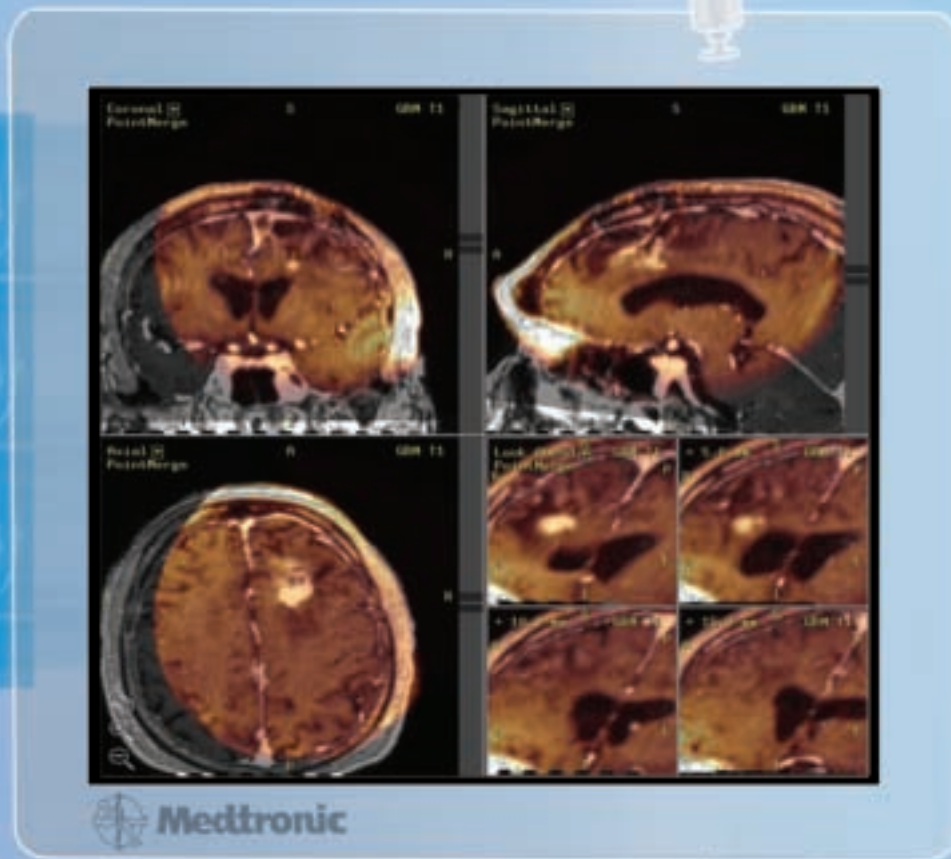


MRI



iMRI

StealthMerge™



## Computer-Assisted Navigation

- Allows navigation without registration
- Compare feature — allows simultaneous viewing and navigation on multiple series
- Provides active and passive instrument tracking
- Allows for co-navigation on diagnostic and intra-operative images with compare feature



"PoleStar™ has clearly changed my surgical management of certain brain tumors."

DR. JOHN RUGE  
Lutheran General Hospital,  
Chicago, IL

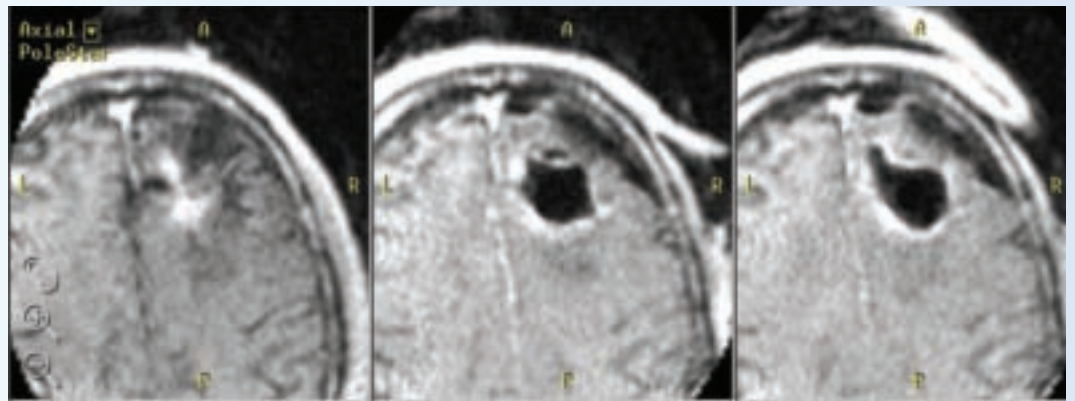
"There is no real neuronavigation without intra-operative imaging."

DR. RENE L. BERNAYS  
University Hospital, Zurich,  
Switzerland

## It's All About The Image.

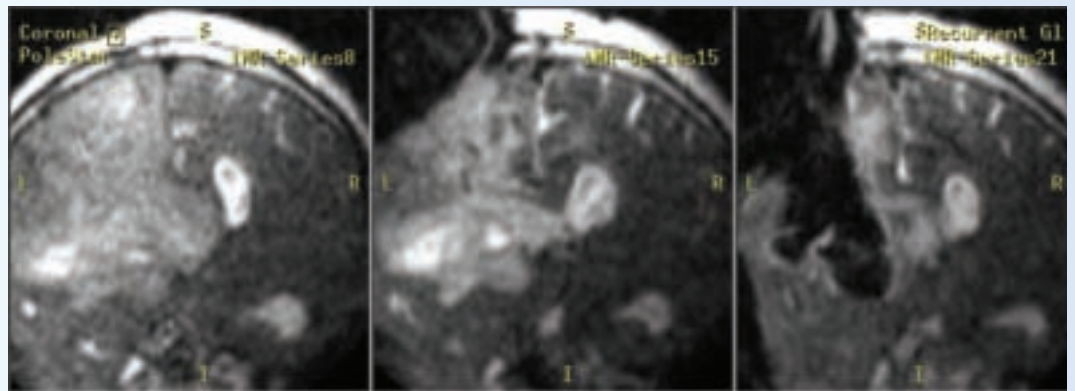
### CASE 1

GLIOBLASTOMA MULTIFORME



### CASE 2

LOW GRADE GLIOMA



PRE-OP

INTRA-OP 1

INTRA-OP 2

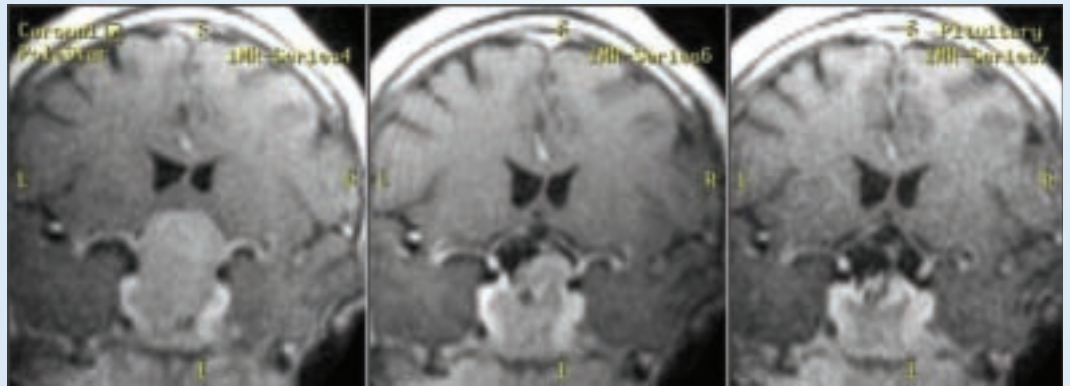
Procedure begins



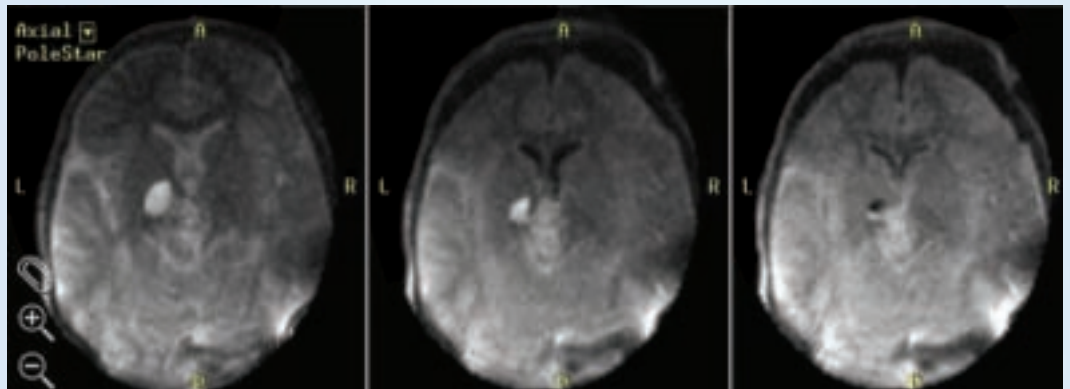
"The new software advances allow highly detailed, 'side-by-side' comparisons of the pre-op, intra-op and post-op images, allowing us the best possible resection for our patients."

DR. GEORGE K. BOVIS  
Lutheran General Hospital,  
Chicago, IL

CASE 3  
PITUITARY



CASE 4  
CAVERNOUS ANGIOMA



PRE-OP

INTRA-OP 1

INTRA-OP 2



Procedure completed.  
OR ready for next procedure.

PoleStar™  
iMRI NAVIGATION SUITE

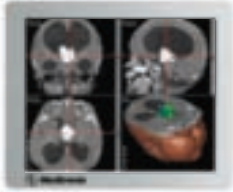
Suite In



# Expanded Functionality

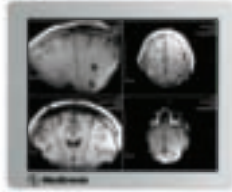
The PoleStar™ iMRI Navigation Suite does not require a dedicated OR.

When iMRI is not in use, the full Medtronic suite is available, including spine, orthopaedic, ENT, and cranial procedures with standard instruments.



## CRANIAL

- Biopsy Pediatric Surgery
- Shunt Placement
- Tumor Resection



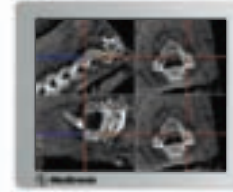
## FUNCTIONAL NEUROSURGERY

- DBS™ Lead Placement with Planned Trajectory using FrameLink™ and Stealth-Merge™ Application Suite\*



## ORTHOPAEDIC

- Knee Joint Replacement
- Hip Joint Replacement
- Trauma Hip Resurfacing\*



## SPINE

- Spinal degenerative disease
- Open procedures
- Percutaneous procedures
- Deformity
- Trauma
- Cervical



## ENT

- Functional Endoscopic Sinus Surgery
- Lateral Skull Base

Medtronic enables microscope navigation with the PoleStar™ iMRI Navigation Suite for Zeiss®, Leica®, Möller® and Olympus® platforms.



Comprehensive. Convenient. Cost-effective.

\* Future application

AXIEM™ Compatible







PoleStar

Medtronic



Medtronic



# StarShield™ — Local RF Shielding

## Local Radio Frequency (RF) Shielding for the PoleStar™ iMRI Navigation Suite

- Maximizes OR utilization
- Reduces overall project costs and complexity
- Significantly reduces OR downtime due to construction

Technology when you need it, standard surgical utility when you don't.

- Enables an intra-operative MRI program for any institution
- Does not require dedicated OR
- Maintains surgical throughput by allowing for additional surgical procedures



StarShield™ allows for easy patient access, providing an illuminated interior and available ports for anesthesia lines.

# Imaging

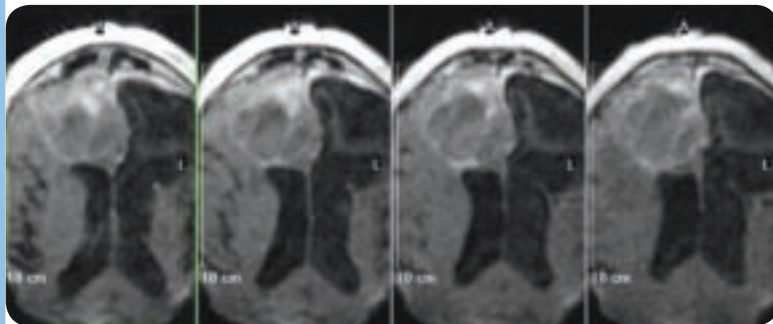


**Medtronic**

Delivering advanced technology to transform your hospital into a

# PoleStar™

Setting the Standard in Intra-operative Imaging



## Cranial Imaging

"The PoleStar™ has been a major asset to our practice."

DR. GEORGE K. BOVIS  
Lutheran General Hospital, Chicago, IL



Comprehensive. Convenient. Cost-effective.

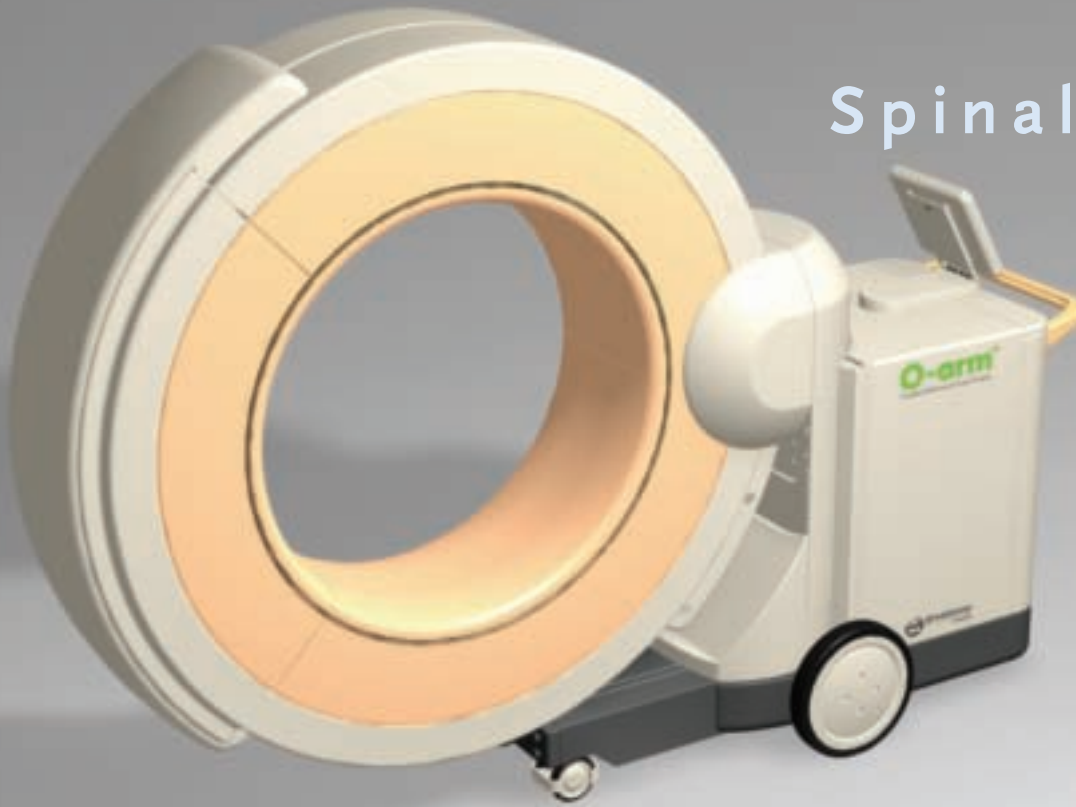


center of neurosurgical excellence

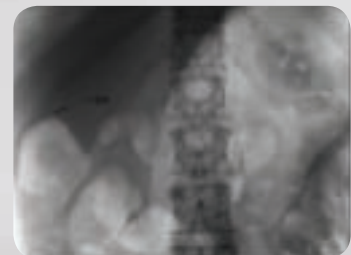
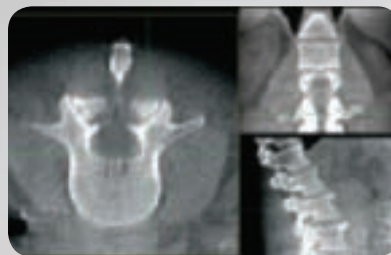
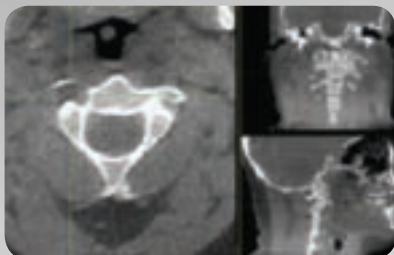
# O-arm™

Complete Multidimensional Surgical Imaging

- A mobile imaging platform optimized for spine and orthopaedic surgery
- Patented telescoping gantry
- "O" shaped gantry allows for 2-D fluoroscopy and 3-D imaging
- Robotic positioning for ease of use
- Digital flat panel detector provides improved image quality and larger field of view



## Spinal Imaging



# Medtronic—World Leader in Surgical Navigation and Intra-operative

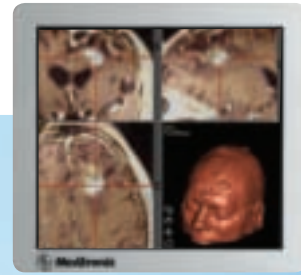
The PoleStar™ iMRI Navigation Suite is the first system to offer a comprehensive solution for hospitals looking to provide surgical navigation, intra-operative imaging, or both.



Worldwide PoleStar™ Install Base

Worldwide PoleStar™ Install B

Comprehensive. Convenient. Cost-effective.



Worldwide PoleStar

## Medtronic Navigation

Leading innovator in image-guided surgery (IGS) and computer-assisted surgery (CAS), commanding more than 60% of the global IGS/CAS market

More than 2,100 systems installed worldwide

Flexible, empowering education and training

Continued investment in R&D programs for optimized products

Extensive network providing comprehensive customer support

85 computer-assisted surgery patents and more than 40 patents pending



## By choosing Medtronic, you're gaining a business partner.

You're backed by our market presence, financial stability, investment in research and development, diversity of product portfolio, and innovation leadership.

We understand the reality of today's healthcare environment where clinical value must translate into profitability.

Hospitals and surgeons are feeling the competitive and financial pressures to:

- Increase referrals and grow patient base
- Enhance image and be a community resource
- Maximize patient throughput
- Expand effective communications campaigns

In addition to providing clinically relevant navigation and iMRI solutions, Medtronic Navigation offers marketing expertise and communications tools designed to help surgeons and institutions promote their practice to their target markets. We offer a PoleStar™ Communications Kit that contains a variety of professionally developed tools to help institutions realize their business goals.

Medtronic rounds out its post-sale support by offering reimbursement coding references and documentation for iMRI and navigation procedures.

For further details regarding return-on-investment, please contact your local Medtronic account representative.



**Comprehensive. Convenient. Cost-effective.**

# PoleStar™ iMRI Navigation Suite Service Solution

Medtronic Navigation delivers the highest level of support in the industry.

A Medtronic Navigation Service Solution for the PoleStar™ iMRI Navigation Suite incorporates software upgrades, 24/7 system support, and comprehensive training into one complete package to maintain your hospital's position at the leading edge of navigation technology.

Medtronic ensures a successful installation by adhering to hospital guidelines, working within the hospital structure, assigning appropriate resources, and providing ongoing training. From a clinical standpoint, Medtronic is committed to support of initial surgeries and will provide ongoing training, education and biannual system check ups.

Hospital

Field Service Engineers

C.A.S.S.

Customer Service

Education and Training

International and Regional Sales

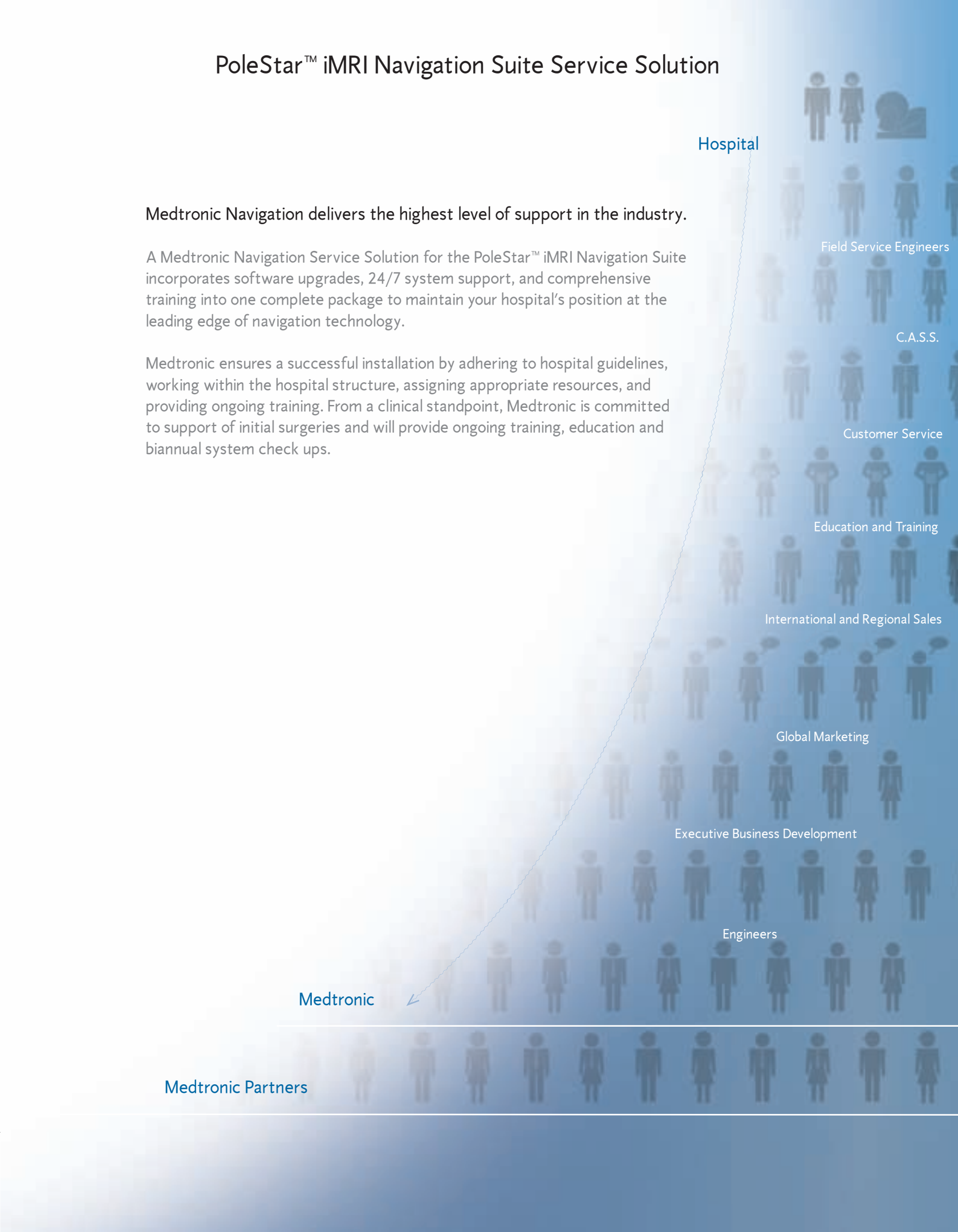
Global Marketing

Executive Business Development

Engineers

Medtronic

Medtronic Partners



# World Leader in surgical navigation technology and intra-operative imaging

Medtronic Navigation is the world's leading supplier of integrated surgical navigation products. With more than 2,100 StealthStation® Systems installed worldwide, Medtronic Navigation surpasses the installed base of all other manufacturers of navigation systems.

With a focus on customer-centered design, comprehensive customer support, and a well-funded research program, Medtronic Navigation is committed to providing new and current customers with leading-edge technology that will assist in improving surgical outcomes today and in years to come.



Medtronic Navigation  
826 Coal Creek Circle  
Louisville, CO 80027 USA  
www.medtronicnavigation.com  
www.polestarN20.com  
Toll-free: (888) 580-8860  
Telephone: +(720) 890-3200  
Fax: +(720) 890-3500

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iMRI Navigation Suite  
Rx only  
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O-arm™ is a trademark of Breakaway Imaging, LLC. O-arm™ is manufactured by Breakaway Imaging, LLC.

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AXiEM™, DBS™, FrameLink™, Medtronic®, StealthMerge™, StealthStation®, & TREON®

The PoleStar™ iMRI Navigation Suite is covered by United States and International patents and pending patent applications.

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## Technical Scanner Specifications

### Magnet Specifications

Design: Open Magnet  
Type: Permanent Magnet  
Field Strength: 0.15T  
Aperture: 10.6" (27 cm)  
Field of View: 6.3" x 7.9" x 7.9"  
(16 cm x 20 cm x 20 cm)  
Fringe Field: 5 Gauss @ 5.5' to 7.2' (approx. 1.7 to 2.2 m from magnets' isocenter)

### Gradient Specifications

Gradient Strength: 25 mT/m

### RF System Specifications

RF Transmission Power: 5KW

### Imaging Modes

T1 Contrast  
T2 Contrast  
FLAIR Contrast

### Scanner Dimensions

Height: 40.4" (1.03m)  
Depth: 50.0" (1.3m)  
Width: 31.5" (.8m)  
Weight: 1490 lbs. (678 kg)