

# TSOLUTION<sup>®</sup>

ONE

Personalized Surgical Plans for Every Patient

## Core Technology

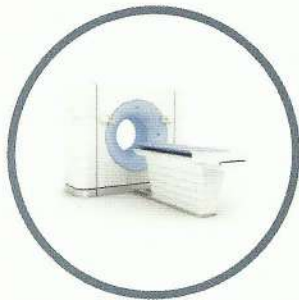
The TSolution One Surgical System utilizes the tandem technologies of the TPLAN<sup>®</sup> 3D Planning Workstation and the TCAT<sup>®</sup> Computer-Assisted Tool.

The TPLAN 3D Planning Workstation brings exceptional accuracy to personalized pre-surgical planning. The TCAT Computer-Assisted Tool executes the pre-surgical plan with unparalleled precision.

These two revolutionary technologies are the future of total joint replacement surgery.

The TSolution One Surgical System is the only active robotic system cleared by the United States FDA for total hip arthroplasty for both stem and cup placement. The TSolution One core technology has been used in tens of thousands of successful total joint replacements for both hip and knee\* worldwide.

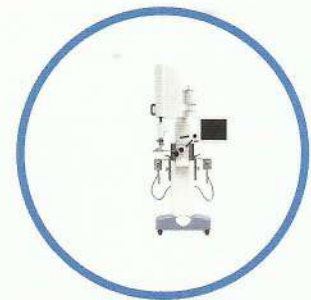
\*TKA is not available for sale in the U.S.



CT Scan



TPLAN  
3D Planning Workstation



TCAT  
Computer-Assisted Tool

"I have gained a newfound confidence when using the TSolution One Surgical System. No more anxiety waiting for the PACS post-operative films- the results are just as planned every time."

- Danton Dungy, MD  
Chandler, AZ

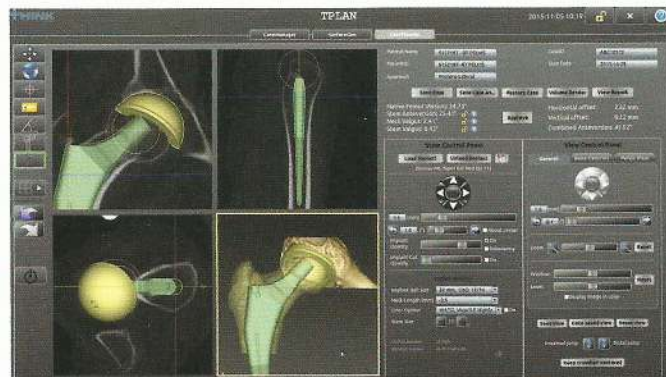


Revolutionary Pre-Operative Planning for Optimal Post-Operative Results

## Personalized Pre-Surgical Plans with 3D Visualization

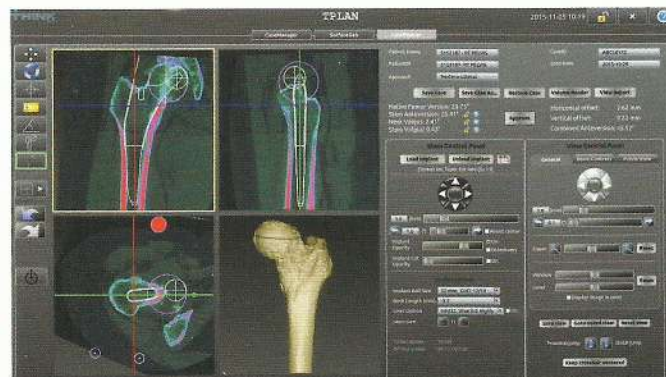
Make preoperative decisions with TPLAN.

TPLAN facilitates the design of customized procedures based on patients' unique anatomy. Optimize the plan - and the results - before stepping into the OR.



## How it Works

- Plan the procedure using 3D models generated from CT scan data
- Examine the entire joint anatomy in AP, lateral and transverse views
- Choose the ideal implant from the TPLAN library of legally marketed implants
- Optimize the implant size, fit, and position based on individual patient anatomy



"TPLAN enables the surgeon to explore several surgical plan options without risk to the patient or expending valuable surgical time. The surgeon can move and rotate implant options and change implant size until he finds the best fit in three dimensions."

- Martin Boerner, MD  
Germany

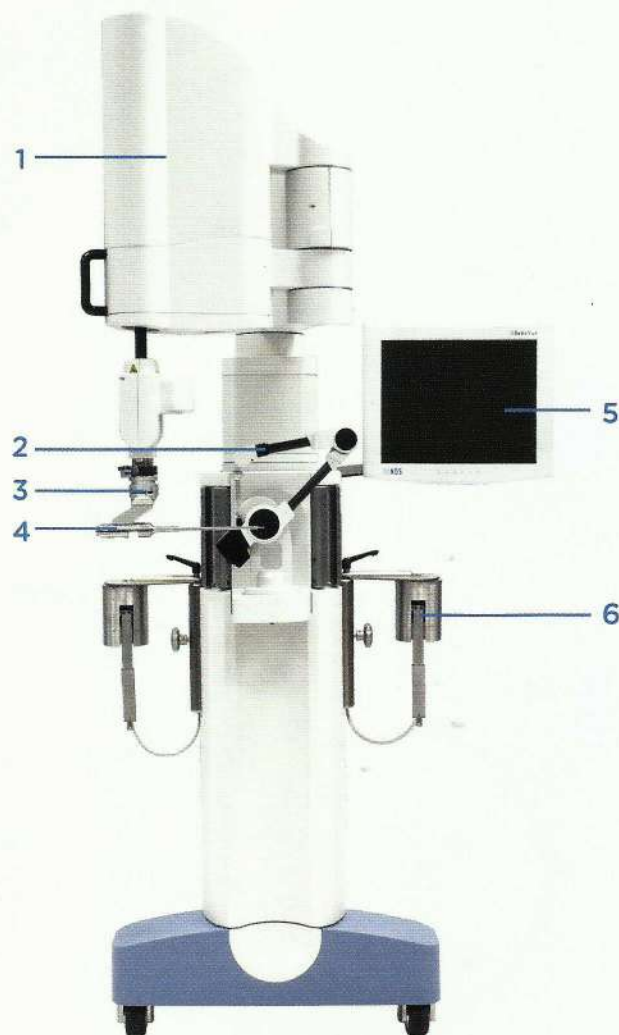


Bone Preparation with Sub-Millimeter Accuracy

## Precise Computer-Assisted Preparation of the Bone Cavity and Joint Surfaces

The TCAT Computer-Assisted Tool aids the surgeon in executing the pre-surgical plan through automated bone milling with sub-millimeter accuracy. The surgeon has complete control of the system through the use of a handheld pendant. Therefore, the surgeon applies less physical exertion while achieving precise milling at the touch of a button.

- |              |                        |
|--------------|------------------------|
| 1. TCAT Arm  | 4. Cutting Tool        |
| 2. Digitizer | 5. Monitor             |
| 3. Coupler   | 6. Bone Motion Monitor |

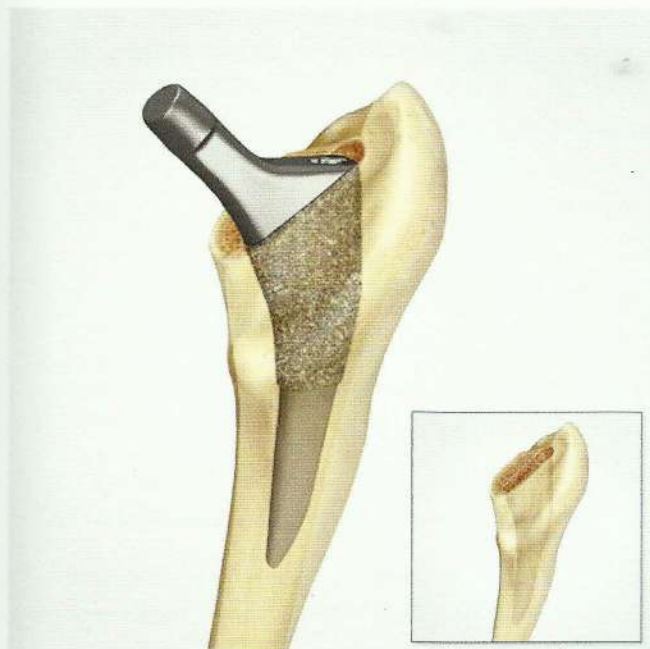


"This technology brings the precision and accuracy found in the engineering world into the operating room. It allows the surgeon to more accurately plan and perform joint replacement surgery."

- William L. Bargar, MD  
Sacramento, CA

## How it Works for Stem

- Bone registration is simplified by the digitizer; there is no need to find anatomical landmarks intra-operatively
- The bone motion monitoring system halts the cutting tool if bone motion occurs
- Precise intramedullary milling facilitates optimized placement of implants with improved cavity fit, fill, and alignment



## How it Works for Cup

- The TCAT® arm is positioned according to the pre-operatively planned inclination and anteversion orientation of the cup
- Unique coupler facilitates rapid tool changes with secure locking mechanism while maintaining angular position during reaming and impacting



"The emergence and convergence of a number of technologies has resulted in the TSolution One® Surgical System. In the very near future, performing a joint replacement without a 3D plan and active robotics will be like leaving home without your smart phone."

- Douglas B. Unis, MD  
New York, NY

# Active Robotics

Not all robotic surgical systems are the same. The TSolution One® Surgical System is the only active robotic system for orthopaedic surgery. Our active robotic system aids surgeons in executing their preoperative plans with essentially effortless control, performing autonomous milling for bone preparation with sub-millimeter accuracy. Other surgical systems merely guide the surgeon to be within range.

## Unique Advantages

As a proven clinical system, studies demonstrate improved fit, fill, and alignment when comparing the TSolution One to conventional joint replacement surgery. The TSolution One features:

- Surgeon's choice of implants\*
- Open platform surgical system
- Precise pre-surgical planning executed every time
- Sub-millimeter dimensional accuracy
- Precise milling for optimal alignment
- High precision smart-tool technology
- Elimination of less accurate templates and jig-based technology
- Non-optical technology

\* Legally marketed implants

"One of the things that I've always liked about the THINK Surgical system is that it's an active robotic system. Other systems are passive in that they guide the surgeon in performing the surgery. The THINK Surgical system will perform your preoperative plan on its own, under your guidance."

- Robert Jamieson, DO  
Sacramento, CA

# T SOLUTION<sup>®</sup> ONE

## Open Platform Active Robotics

The Future of Total Joint Replacement



Learn more about THINK Surgical, Inc.  
[www.thinksurgical.com](http://www.thinksurgical.com)

Redefining Surgery...Precisely



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큐렉소(주)

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# Clinical Results

## Active Robotics\*



95%



95% Implant-Bone Interface Contact<sup>1</sup>

0%



0/75 Intraoperative Femoral Fractures<sup>2</sup>



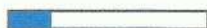
0-12 mm Leg Length Variance<sup>2</sup>

Research on long-term outcomes of hip replacement procedures shows that a more precise implant fit leads to better ingrowth of bone<sup>3</sup> and decline in loss of bone density due to better transfer of body weight<sup>4</sup>.

## Conventional

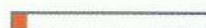


21%



21% Implant-Bone Interface Contact<sup>1</sup>

7%



5/71 Intraoperative Femoral Fractures<sup>2</sup>



0-29 mm Leg Length Variance<sup>2</sup>

\* TSolution One® Core Technology

<sup>1</sup>Paul, H., Bargar, W., Mittlestadt, B., Musits, B., Taylor, R., Kazanzides, P., ... Hanson, W. (1992) Development of a Surgical Robot for Cementless Total Hip Arthroplasty. *Clinical Orthopaedics and Related Research*, 25, 57-66.

<sup>2</sup>Nakamura, N., Sugano, N., Nishii, T., Kakimoto, A., & Miki, H. (2010) A comparison between robotic-assisted and manual implantation of cementless total hip arthroplasty. *Clinical Orthopaedics and Related Research*, 486, 1072-1081.

<sup>3</sup>Engh, C.A., Bobyn, J.D., & Glassman, A.H. (1987) Porous-coated hip replacement. The factors governing bone ingrowth, stress shielding, and clinical results. *Journal of Bone & Joint Surgery*, 69(1), 45-55.

<sup>4</sup>Hanaouchi, T., Sugano, N., Nishi, T., Nakamura, N., Miki, H., Kakimoto, A., Koshikawa, H. (2007) Effect of robotic milling on periprosthetic bone remodeling. *Journal of Orthopaedic Research*, 25(8), 1062-1069.