

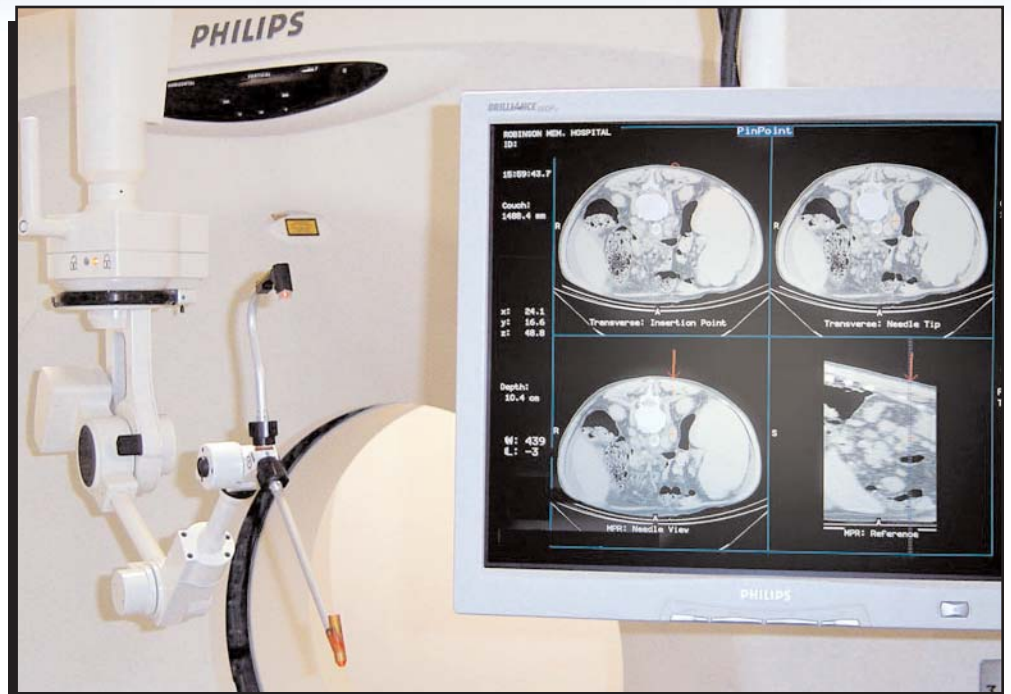


CASE STUDY

Philips Medical Systems Customizes Immersion's MicroScribe® Technology to Reduce Patient Risk and Costs

Today's hospitals walk a fine line: they must invest in technologies that reduce patient risk and minimize invasive surgery while reducing costs. Radiology equipment is expensive, computed tomography (CT) scanners alone cost upwards of one million dollars. Radiology treatments such as deep needle biopsies, cancer treatments, chest tube placement and catheter drainage, can be long and painful for the patient. Radiologists who perform deep-needle biopsies, for instance, rely on a trial and error method of inserting a needle and then taking repeated scans to get their bearings. If the needle is in the wrong place, they need to remove it and re-stick the patient. Without realistic 3D imaging tools to accurately plan and measure the most effective needle path, they can't know in advance where to insert the needle, how deep the needle should go or at what angle.

To solve this problem, Philips conceived of an idea to integrate a stereotactic arm as an effective planning and measurement component to a CT scanner for minimally invasive CT-based radiology and oncology procedures. To bring this solution to life, Philips needed a measurement system that



was inexpensive, easy to integrate into its system, and easy to customize. Immersion's MicroScribe digitizer, a system traditionally used to capture the physical properties of three-dimensional objects and translate them into complete 3D digital models, fit the bill. With its low cost, ease of integration, accuracy, and Immersion's eagerness to assist with any special needs or specifications, the MicroScribe system provided Philips with the vital planning and measurement component for its CT scanner solution.

How It's Customized:

Known as the Philips PinPoint CT Interventional System, Immersion worked with Philips to invert and mount the MicroScribe arm to the CT scanner by a bridge. They developed a braking system for the MicroScribe assembly to control the articulated arm. The braking system was critical for locking in the ideal surgical path determined by the system. The MicroScribe arm can be locked in place where it served as a stationary instrument guide. It can also be fitted with various other instruments such as a laser guide.

The Final Solution:

Attached to the end of the MicroScribe arm, the PinPoint virtual needle moves along a patient's body while the PinPoint computer generates corresponding images. These updated images are displayed on a monitor in near real time, and used to visualize the virtual needle's path in relation to the patient's skin and surrounding critical structures to reach the target area. The PinPoint software provides a correct measurement of the skin-to-target distance by extending the virtual needle to the desired area. This distance is then marked off on the instrument being used by the radiologist before the procedure begins, making for a more accurate, quicker and less painful procedure. A laser tip is also incorporated into the arm to be used as a needle guide throughout the procedure. The needle guide shows the needle's point of insertion and angle of entry, helping to reduce the number of times a patient needs to be scanned and the number of needle sticks to the patient.

Return on Investment:

With the Philips PinPoint CT Interventional System, doctors can now perform more accurate procedures that improve patient comfort while reducing the number of complications and exam times by up to 50%.

* The average time required for pre-planning is up to 42% less with the assistance of the stereotactic arm.

* The average accuracy is improved by up to 31% with the assistance of the PinPoint guidance system.

* For needle paths with a double angle, i.e. not in the transverse axial plane, the arm resulted in a 56% increase in accuracy.

If you are interested in more information on the Philips PinPoint CT Interventional System, please visit Philips Medical System's website at <http://www.medical.philips.com>.

To learn more about Immersion's digitizing products or how our engineering team can meet your custom design needs, contact sales@immersion.com.



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Immersion's customized MicroScribe arm for Philip's PinPoint system.