Adaptive Digital Technologies, Inc. Provides Intuitive Surgical with Voice Quality Enhancement Software for the *da Vinci®* Surgical System

Plymouth Meeting, PA, May 28, 2009 - As part of a forward thinking initiative to maximize the overall performance of the *da Vinci*® Surgical System, Intuitive Surgical took measures to prevent the occurrence of acoustic echo and feedback in the *da Vinci* operating theatre. Intuitive Surgical chose Adaptive Digital Technologies' (Adaptive Digital) acoustic echo canceller to handle echo, noise reduction to remove ambient noise, automatic level control to maintain comfortable listening levels, and adaptive feedback control to combat feedback.

Intuitive Surgical is the global leader in the rapidly emerging field of robotic-assisted minimally invasive surgery. Intuitive Surgical's *da Vinci*® Surgical System combines superior 3D visualization along with greatly enhanced dexterity, precision and control in an intuitive, ergonomic interface with breakthrough surgical capabilities. The FDA-approved da Vinci Surgical System consists of a surgeon console, a patient-side cart with four interactive robotic arms, a high performance 3-D vision system and EndoWrist® articulating instruments. It is an extension of the surgeon's arms and eyes.

The surgeon sits at the *da Vinci* console in the operating room (OR), viewing a 3-D image of the surgical field while controlling the real-time movements of surgical instruments adjacent to the patient and the surgical robot. The surgeon speaks into a microphone built into the console to communicate with the surgical team standing at the operating table. The surgeon by means of a speaker located on the patient-side cart directs the surgical assistants. They in turn communicate back to the surgeon via a microphone also located on the cart.

Acoustic echo occurs when a microphone, picks up audio signals from a speaker, and sends the signal back to an originating participant. Additional sources of echo include reflection from walls and objects in the room. Acoustic echo can be intensified when using a very sensitive microphone and when speaker volume is turned up to a high level. When both endpoints are located in the same room, feedback from one end's speaker to the other end's microphone can cause loud feedback. Adaptive Digital's voice quality enhancement algorithms combat echo and howling, enabling the *da Vinci* Surgical System to provide a clear voice communication path between the surgeon and the surgical team in an acoustically challenged environment.

Adaptive Digital's voice quality enhancement algorithms are well suited to address all of the environmental issues required. In this instance, the acoustic noise reduction algorithm is particularly valuable with the high

level of background noise present in an operation theatre such as heart and blood pressure monitors, suction vacuum machines, and air filtration systems.

Adaptive Digital has been developing echo canceller and voice quality enhancement technology for over ten years and has developed several echo cancellation solutions, including G.168 line and network echo cancellers (LEC and NEC), acoustic echo cancellers (AEC, AEC G4) and G.168™Plus, a packet echo canceller capable of handling tail lengths of up to 512 msec. Adaptive Digital's echo cancellation solutions are based upon its patented, industry standard, carrier class echo canceller, which has been qualified as toll-quality by AT&T's Voice Quality Assessment Labs in Middleton, NJ. By continually evolving their echo cancellation algorithms, Adaptive Digital strives to increase the differentiation between their EC and those of its competitors.

da Vinci® and EndoWrist® are trademarks of Intuitive Surgical. All product or service names mentioned herein are the trademarks of their respective owners.

About Adaptive Digital Technologies

Adaptive Digital continues to meet and exceed the current and future requirements of service providers, equipment manufacturers, system integrators and developers by bringing superior voice quality to speech-based applications. Adaptive Digital's highly optimized DSP Algorithms/Solutions include network, line, and acoustic echo cancellation, high-density conferencing, speech compression, telephony, and voice quality algorithms. Recognized internationally for its quality software, Adaptive Digital's customers include British Telecom, Cisco Systems Inc., Cantata Technology, Digium®, General Dynamics, Motorola, Northrop Grumman, Sonus, and Texas Instruments.

Adaptive Digital is a member of the Texas Instruments' Third Party Developer Network and is located in suburban Philadelphia, Pennsylvania (USA).

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