Until now, motion-compensated 4D CT solutions have required the use of an external respiratory monitoring device, which may complicate and slow the exam process through device set-up, introduce device-related errors and create workflow challenges in today’s busy radiation oncology practices. These devices monitor external metrics that estimate rather than actually measure internal breathing-induced motion.

Deviceless 4D—a breakthrough innovation only from GE Healthcare—introduces a whole new era in 4D imaging of the chest with a pioneering new design that delivers an alternative solution to an external device. Deviceless 4D offers superb CT image quality and workflow efficiency in 4D motion assessment of the chest.

Based on the latest in GE Healthcare Smart Technology, Deviceless 4D improves productivity and delivers superb efficiency coupled with outstanding 4D CT image quality. Deviceless 4D offers:

- **Deviceless workflow.** It is an alternative and efficient solution for 4D imaging and virtual simulation—without an external device. It eliminates the need for the sometimes complex and time-consuming exam specific set-up when using an external respiratory monitoring device.
- **Fewer parts—no maintenance.** No connection, maintenance or parts issues, no time-consuming set-up and no added hassles; built-in functionality offers inherently high reliability.
- **Precise measurement.** It uses internal anatomical metrics directly from the image data to determine the breathing signal in real time for precise visualization of tumor and organ motion. It combines amplitude and phase binning for optimal 4D CT image quality results.
- **Protocol-driven workflow.** Using the same simple, efficient, protocol-driven 4D workflow for all patients, Deviceless 4D enhances productivity and enables shorter 4D CT examination times. It enables clinicians to set up and scan with just a few clicks of the mouse.
Next-generation, device-free technology enables improved workflow productivity while delivering superb image quality.

The best of phase-based and amplitude-based binning. Traditional 4D imaging solutions have utilized one of several sorting methods—with phase-based and amplitude-based binning being the most prevalent. Deviceless 4D combines the benefits of both phase and amplitude binning, sorting by time of image acquisition and by amplitude of the motion trace. This unique method helps achieve excellent 4D CT image quality results required for radiation therapy planning.

Measures internal anatomical metrics. Rather than tracking external changes on the body due to breathing, Deviceless 4D uses internal anatomical metrics directly from the image data to determine the breathing signal. This gives clinicians a clear picture of how internal anatomy is moving in time, to precisely target tumors while sparing healthy tissue.

Seamless—from start to finish. Deviceless 4D calculates the patient’s breathing cycle length prior to the CT simulation, automates the sorting of 4D CT images into the desired respiratory bins, creates intensity projection datasets (e.g. MIP) and makes them available for virtual simulation. This makes the entire 4D process easier than ever before.

Deviceless 4D offers many benefits for radiotherapy treatment planning. Only GE provides this novel breakthrough technology that enables exceptional 4D CT image quality and improved workflow productivity, without the connection and maintenance of an external device.