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1. Introduction

SMART Voice is a voice control function for the Trinias series with SCORE Opera angiography system, launched in December 2024 with the aim of reducing the operational burden on medical professionals and improving workflow.

After its release, it received favorable feedback from users and requests for additional functions; in June 2025, the first functional expansion was released, followed by a second in January 2026.

In this article, we introduce the development background to date and the latest information on the evolved SMART Voice.

2. Background and Concept of the Improvements

Integrating a voice control function into the system was a first attempt among our product, so we proceeded with development and launch while feeling both anticipation and concern about whether it would be accepted in the cathlab. After release, users told us that it allowed the operator to control the system without taking hands off the catheter, even when other staff were busy, and that it could help reduce communication errors between the examination room and the control room. We also received requests to extend SMART Voice to other functions used during procedures. In response, the first expansion made it possible to select C-arm positions and added flexibility to voice commands, and we have continued to develop the second expansion. For this second update, we set two goals: to enhance the system by making use of the strengths of voice control, and to achieve smooth operability that would not disrupt the rhythm of the procedure. As a result, we implemented C-arm angle selection, monitor layout changes, and acceptance of voice commands during fluoroscopy. In particular,

requests for C-arm angle operation, which is used frequently during procedures, were very strong, and we consider the implementation of this function an important step in the evolution of SMART Voice.

3. Introduction of New Functions

A major feature of SMART Voice is that the operator can speak commands directly to the system and launch the required function without delay. The bedside touch-panel module, SMART Touch, also offers a simple one-button, one-action operation, but when other tabs are open during C-arm operation or monitor layout switching, tab switching is required. As a result, two actions were sometimes needed depending on the situation, but this functional expansion now makes it possible to select the required angle or layout directly. After the wake word “Trinias,” when the desired angle direction is spoken, the angle registered on the first page of Direct Memory is selected automatically, and pressing the SET key by hand completes the C-arm angulation (**Fig. 1**).

In addition, for monitor layout switching, up to nine preset layouts can be recalled with SMART Voice (**Fig. 2**).

With these new commands, not only tab switching but also pressing the Direct Memory and layout preset buttons is no longer necessary. After angle selection, C-arm movement can be controlled not only with the SET key next to SMART Touch, but also with the SET key on the C-arm control module (**Fig. 3**). By using this SET key together with the SMART Voice C-arm angle selection command, there is no need to operate SMART Touch, which may reduce the need for the operator to move from their position.

We also considered that the timing for calling up functions varies by operator, and improved the system so that some commands can be accepted even during fluoroscopy. Specifically, it is now

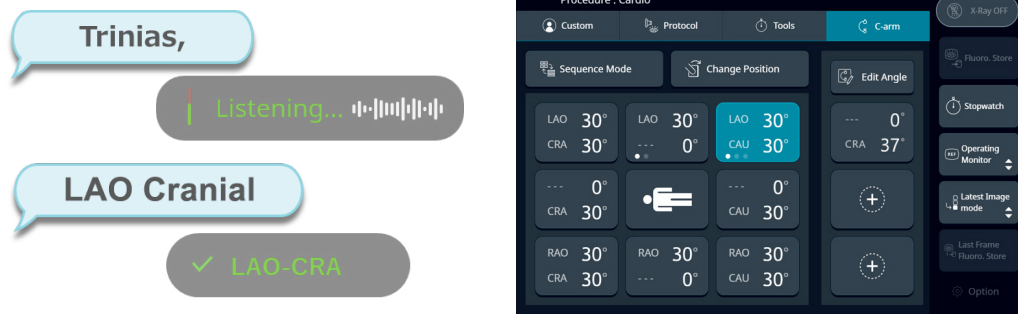


Fig. 1 The first-page LAO-CRA angle is selected automatically.
*Voice control alone cannot move the C-arm.

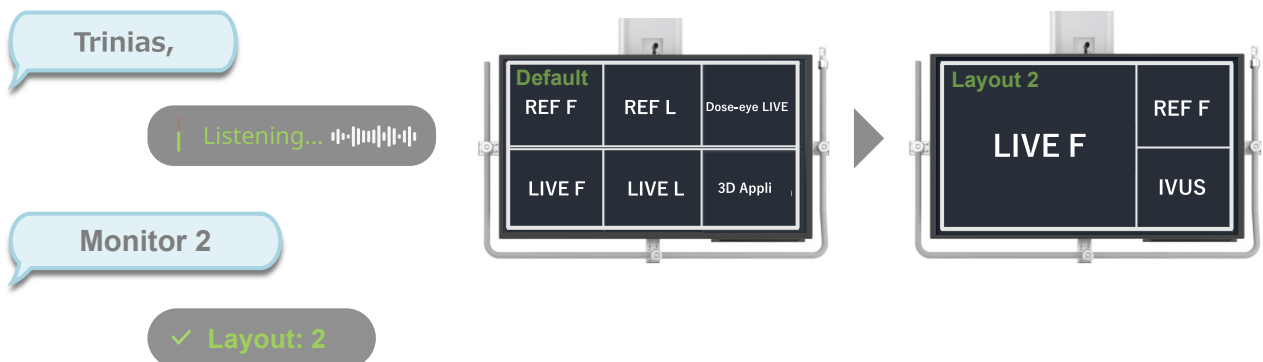


Fig. 2 A preset monitor layout (up to nine types) can be recalled.



Fig. 3 SET key on the C-arm control module

possible to launch applications and select C-arm angles during fluoroscopy. This allows the second operator, who is holding the catheter and therefore cannot free their hands, to prepare the next system operation while the first operator is performing fluoroscopy. Although these are small functional improvements, we consider them important features that help support smooth procedures.

4. Conclusion

SMART Voice has evolved through feedback and requests from many users.

Including SMART Voice, we hope that Trinias, an angiography system that will continue to grow, can support you in the future.

Finally, we would like to express our sincere gratitude to all the physicians who cooperated in the development.

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SMART stands for Shimadzu Makes Advanced Remarkable Technology.