



**Surgical navigator
for endoscopic
surgery based on 3D
measurements using
a white light scanner**

Prof. Seiji Yamamoto (MD, PhD)
Medical Photonics Research Center

Hamamatsu University School of Medicine

Conventional navigators for endoscopic surgery has many limitations

They require:

- 1) the complicated registration;
- 2) the references with spheres on the face to follow patient motion;
- 3) the spherical markers on the surgical instruments.

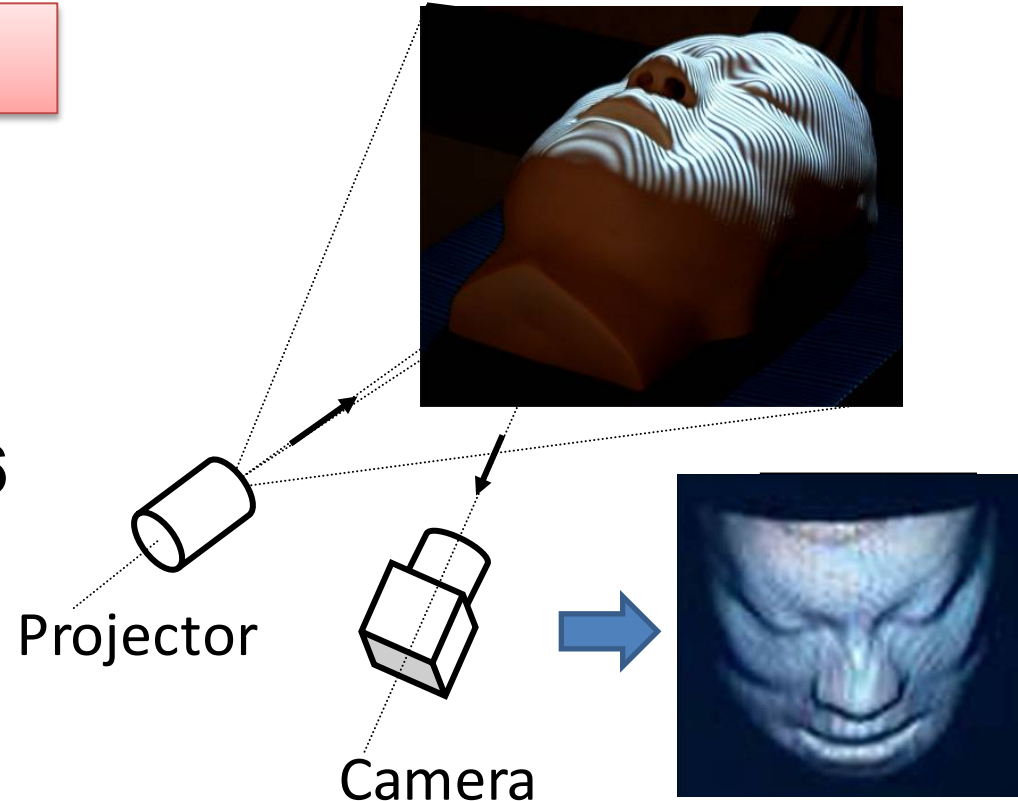


We have developed a new surgical navigator to overcome these limitations

Key Technology 1

The White Light Scanner

Our scanner can capture the surface 3D data, projecting a modulated striped pattern using a xenon lamp within 0.6 seconds.



Resolution: 0.1 mm in Z-axis
0.6 mm in X- and Y-axes
Accuracy: < 0.3 mm

Key Technology 2

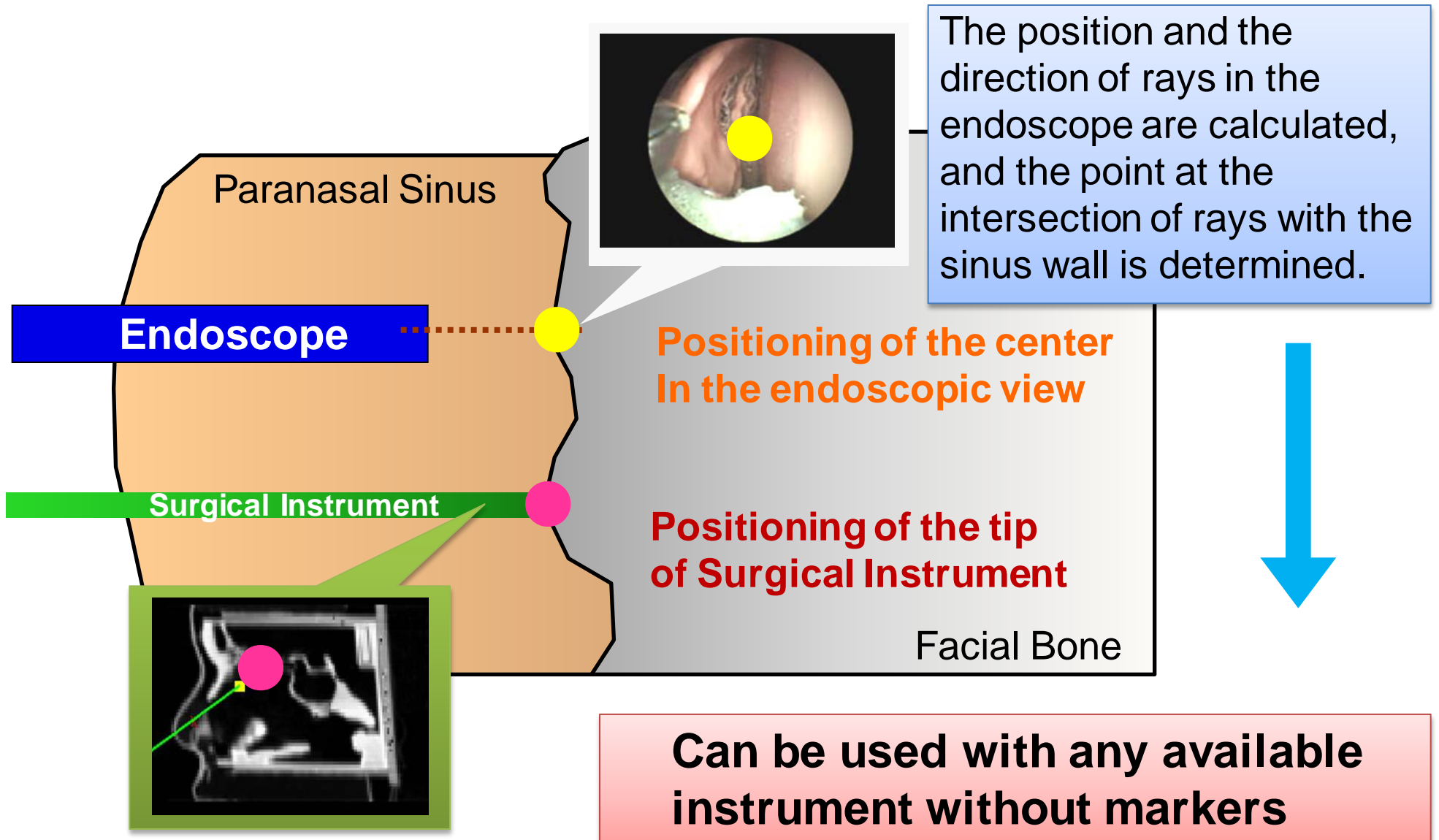
Registration

We can register scanned 3D surface data of a patient's face onto the corresponding surface extracted from CT within 1 second.

Average error: < 0.5 mm



Key Technology 3



- ✓ The scanner captures the position and the direction of rays in the endoscope, and the data of the patient's face simultaneously.



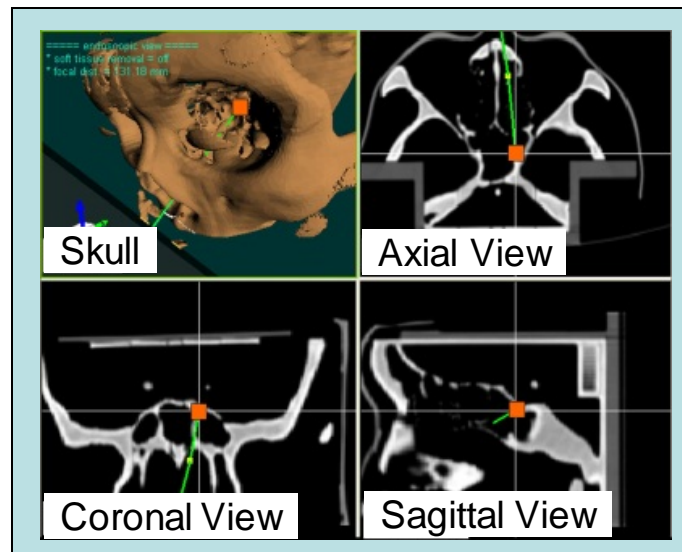
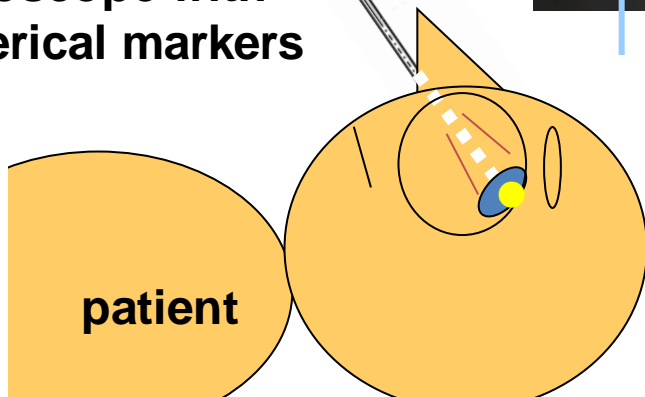
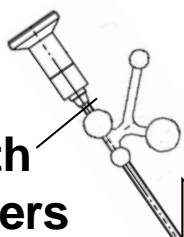
< Registration >

Put the patient position on the coordinates of preoperative CT scan



- ✓ The point at the intersection of rays with the sinus wall is determined.
- ✓ The position of the patient is compared with that at the previous measurement, and the registration is updated.

Endoscope with spherical markers



Summary

Four advantages of our new surgical navigator

- 1) it is completely frameless and markerless**
- 2) it features easy and automatic registration without direct contact with patients**
- 3) it updates registration and tracking information when patients move**
- 4) it indicates the location of the center in an endoscopic view, which allows surgeons to use any available instrument without markers.**

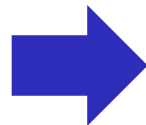
We need business partners

In May 2012, Nagashima Medical Instruments Co., Ltd will release our surgical navigator for an endoscopic sinus surgery in Japan. For the global sales, we are looking for the companies that:

manufacture and/or sale of surgical navigator for endoscopic sinus surgery outside Japan,

be licensed our technologies of the surgical navigator except for Japan,

collaborate on research for developing another surgical navigator.



Please contact to

chizai@hama-med.ac.jp

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Contact us

Manufacture and/or sale of the surgical navigator for ESS

Nagashima Medical Instruments Co., Ltd.

TEL: +81-3-3812-1271, +81-3-3812-6555 (direct), FAX: +81-3-3816-2824

e-mail: info@nagashima-medical.co.jp

Address: 5-24-1 Hongo, Bunkyo-ku, Tokyo, 113-0033, JAPAN

Technology license and collaborate research of surgical navigator

Hamamatsu University School of Medicine

Intellectual Property Management Division

TEL: +81-53-435-2677 / 2230,

FAX: +81-53-435-2179

e-mail: chizai@hama-med.ac.jp

Address: 1-20-1 Handayama, Higashi-ku,
Hamamatsu, Shizuoka, 431-3192
JAPAN

