

Intra-operative nuclear imaging

Using navigated gamma-probes for tumor localization

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Background

- For years Nuclear Medicine has been used for surgical planning in cancer resection.
- However, given the high-energy nature of most cancer tracers, intra-operative assistance devices have been limited to high-energy γ -probes and β -probes¹.
- The combination of β -probes with navigation has shown to offer novel intuitive approaches to radio-guided surgery².

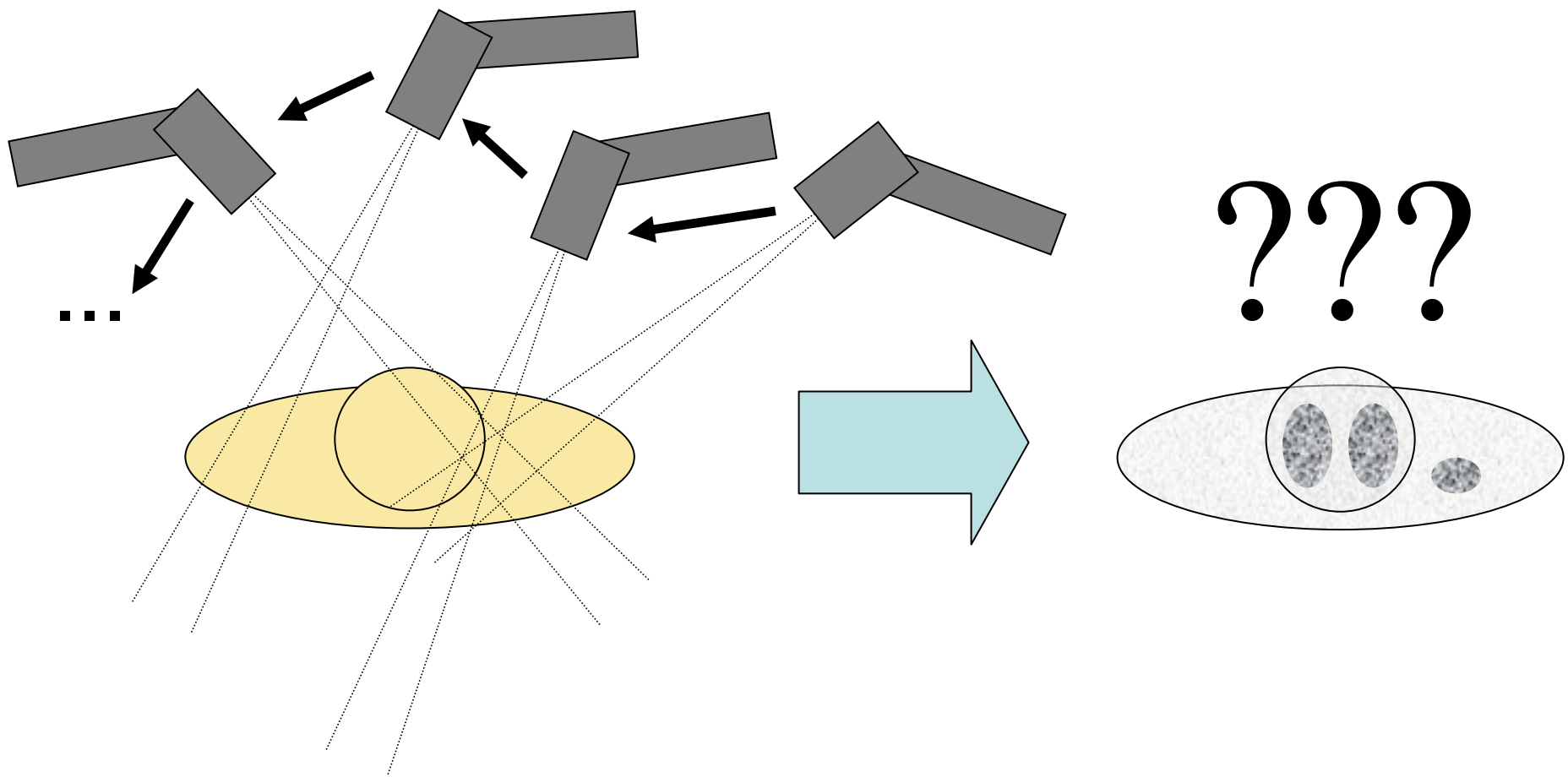
1 E.g. Essner et al. 2002, Meller et al. 2005, Piert et al. 2007...

2 Wendler et al. 2006, Kishenkov et al. 2007

Objectives

- Evaluate the possibilities of using γ -probes combined with navigation.
- Development of a system capable of intra-operative tomographic reconstruction.

Objectives

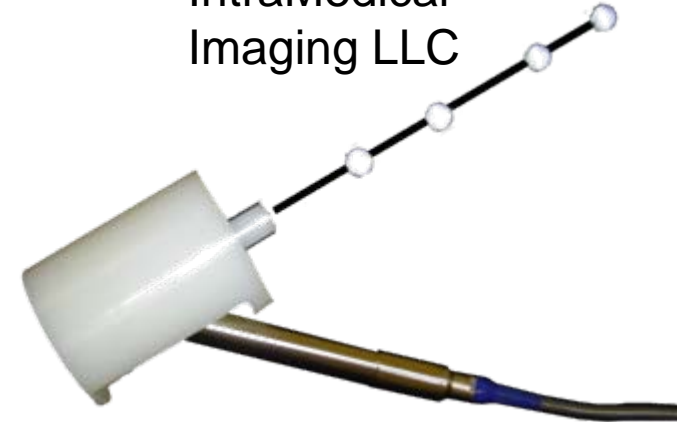


Materials

ART2 Cameras
& DTrack,
ART GmbH



γ -probe &
NodeSeeker,
IntraMedical
Imaging LLC

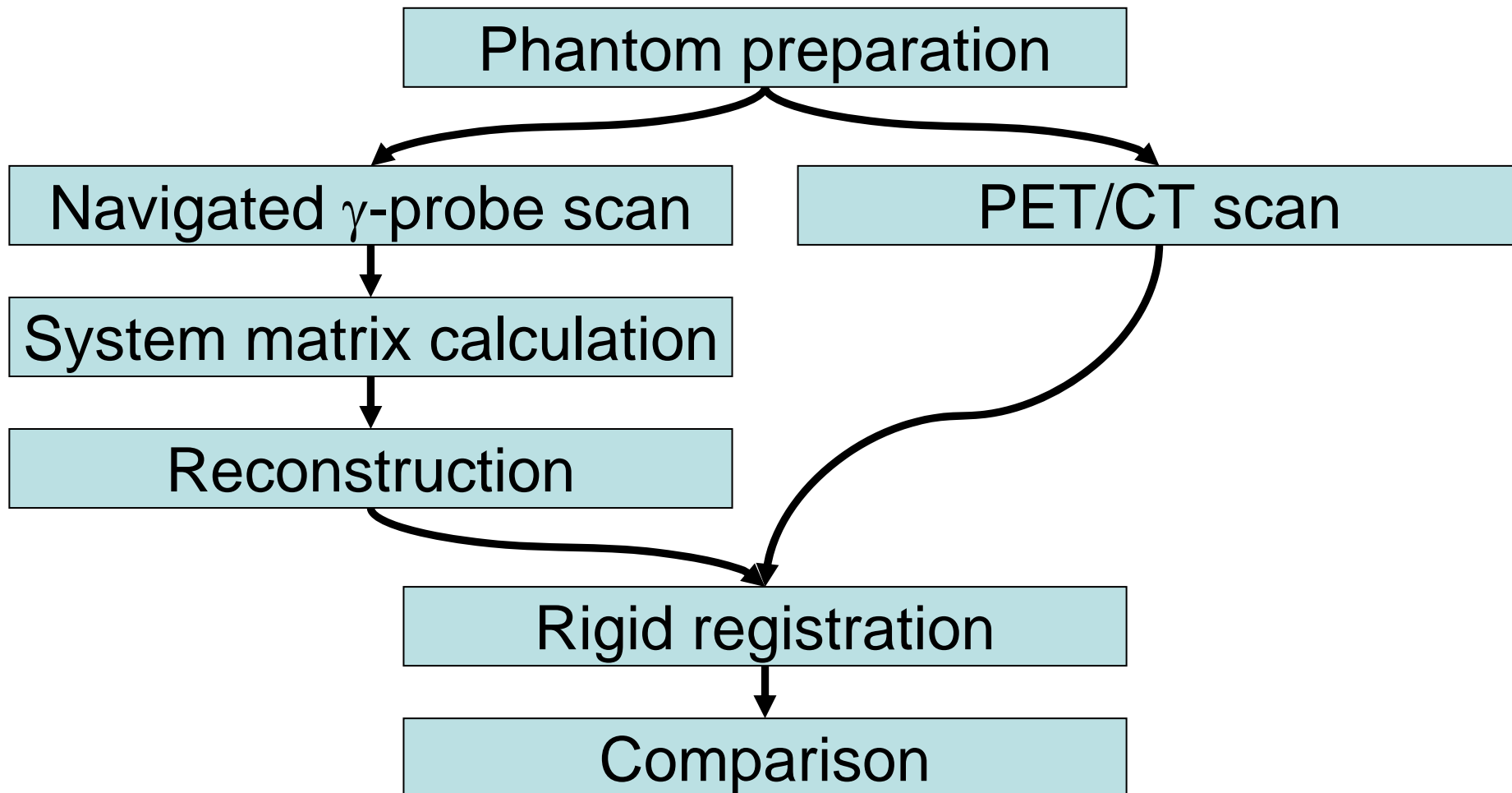


Biograph Sensation 16
PET/CT, Siemens

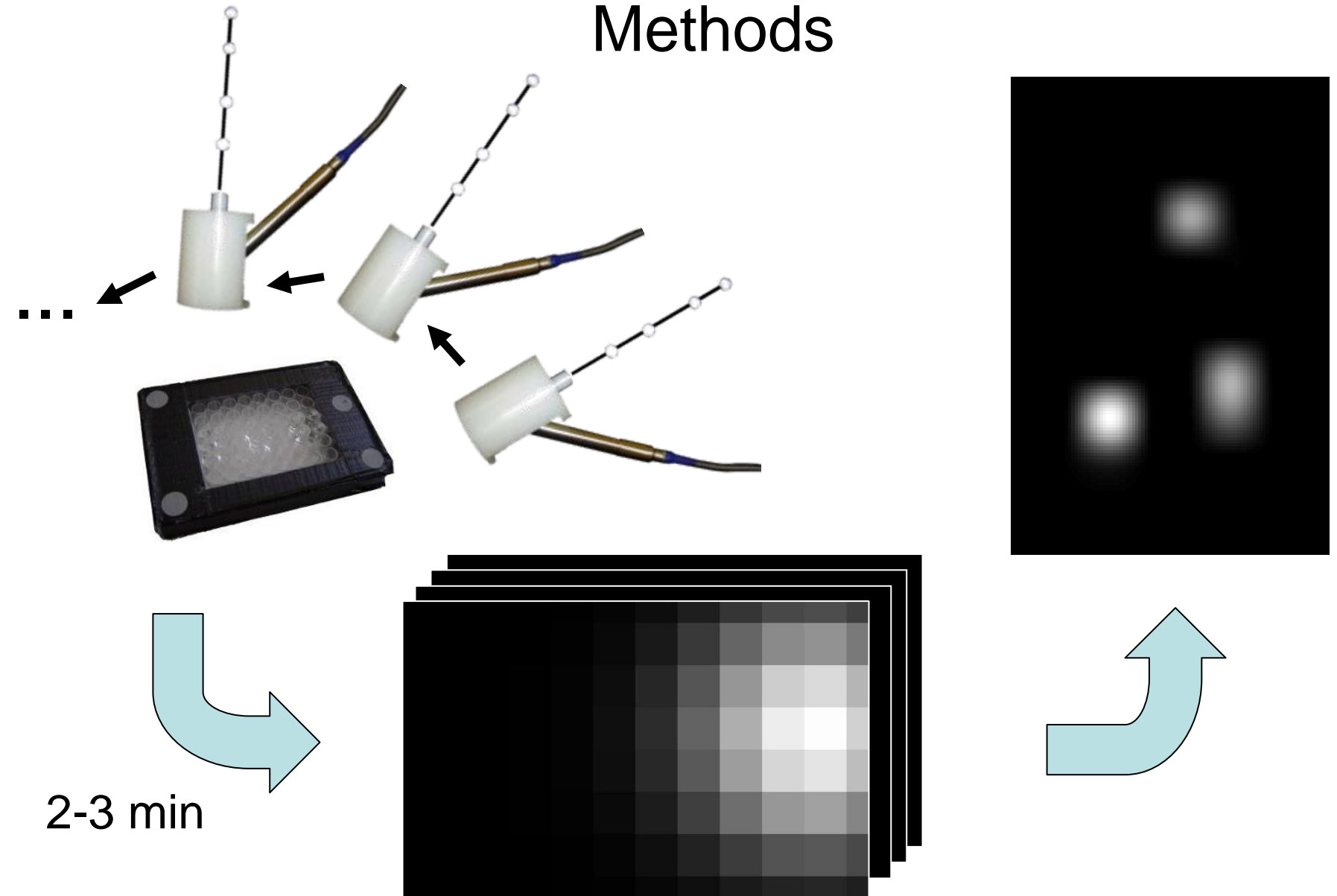


Multi-well phantom
0.1, 0.2 and 0.5 MBq F-18

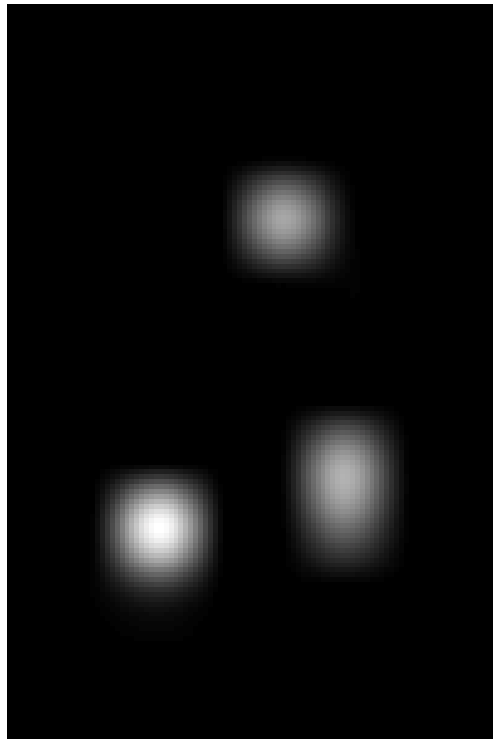
Methods



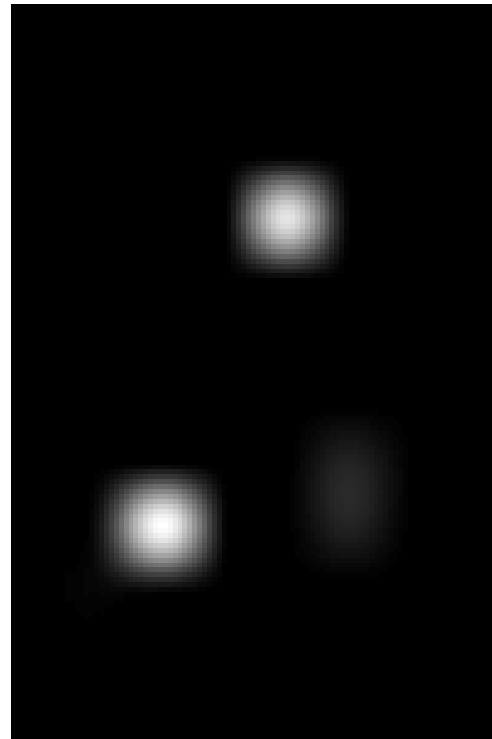
Methods



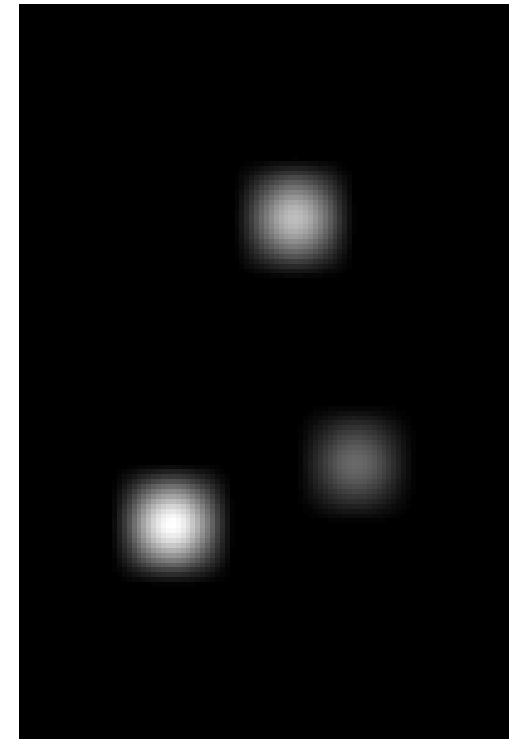
Results



Reconstructed
image



Corresponding
PET slice



8 cm

12 cm

Ground truth
(real activity)

Conclusion

- 2D reconstruction using γ -probes is possible.
- These preliminary results introduce a promising new alternative toward intra-operative 3D functional imaging.