

# Artificial Intelligent Medical Imaging (AI-MI)

**Safer, Faster, Cheaper** Medical Imaging  
Enabled by **AI and Deep Learning**

# Clinical Problems

- Large Radiation Dose
  - Up to 5 persons out of 1000 to develop cancer due to a single imaging scan
- Long Imaging time
  - 5-30 min
- Expensive hybrid imaging equipment
  - More than \$1-2 million
- Expensive room shielding
  - About \$1-1.5 million for lead shielding

**SPECT:** Single Photon Emission Computed Tomography

**PET:** Positron Emission Tomography

# What AI can do for Imaging

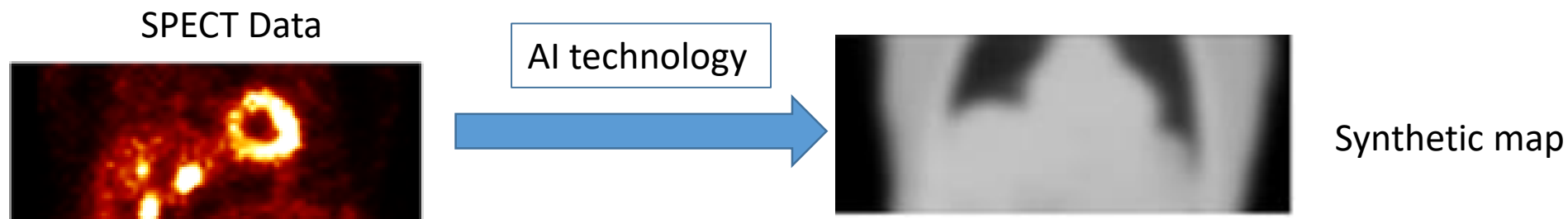
Equivalent diagnostic accuracy

- Without CT
- Lower dose
- Lower cost
- Faster time
- Higher throughput

# SPECT Attenuation Map generation without CT

## Clinical Problems

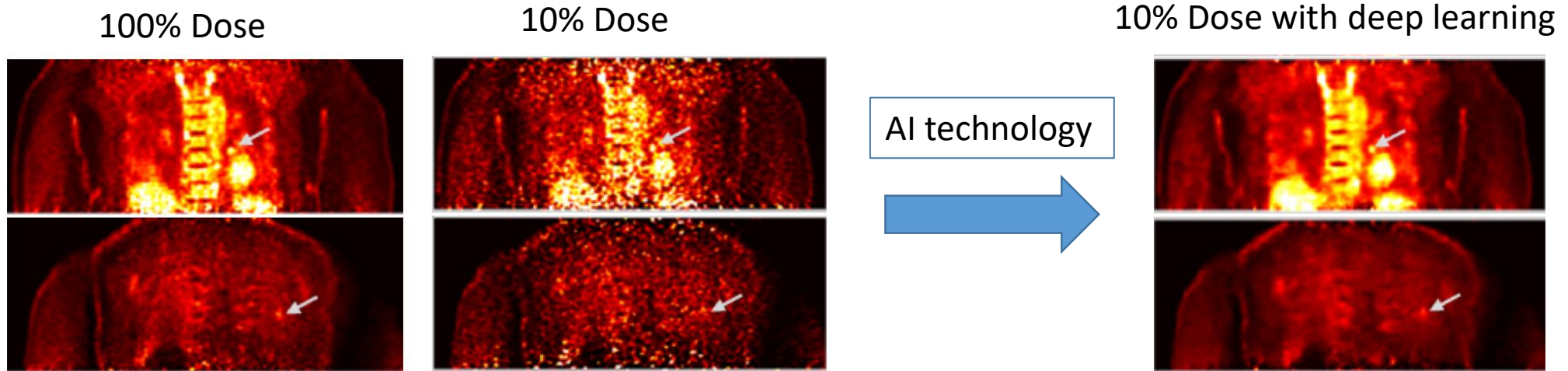
- No Correction: double false positive diagnosis



	SPECT-only	SPECT/CT	SPECT-only with AI
Diagnostic Accuracy	X	✓	✓
Low scanner cost (save ~ \$1M)	✓	X	✓
Low shielding cost (save ~ \$1M)	✓	X	✓
Low radiation dose (reduce 1/2-1/3)	✓	X	✓
Large market (75% )	✓	X	✓

IP: Provisional patent filed

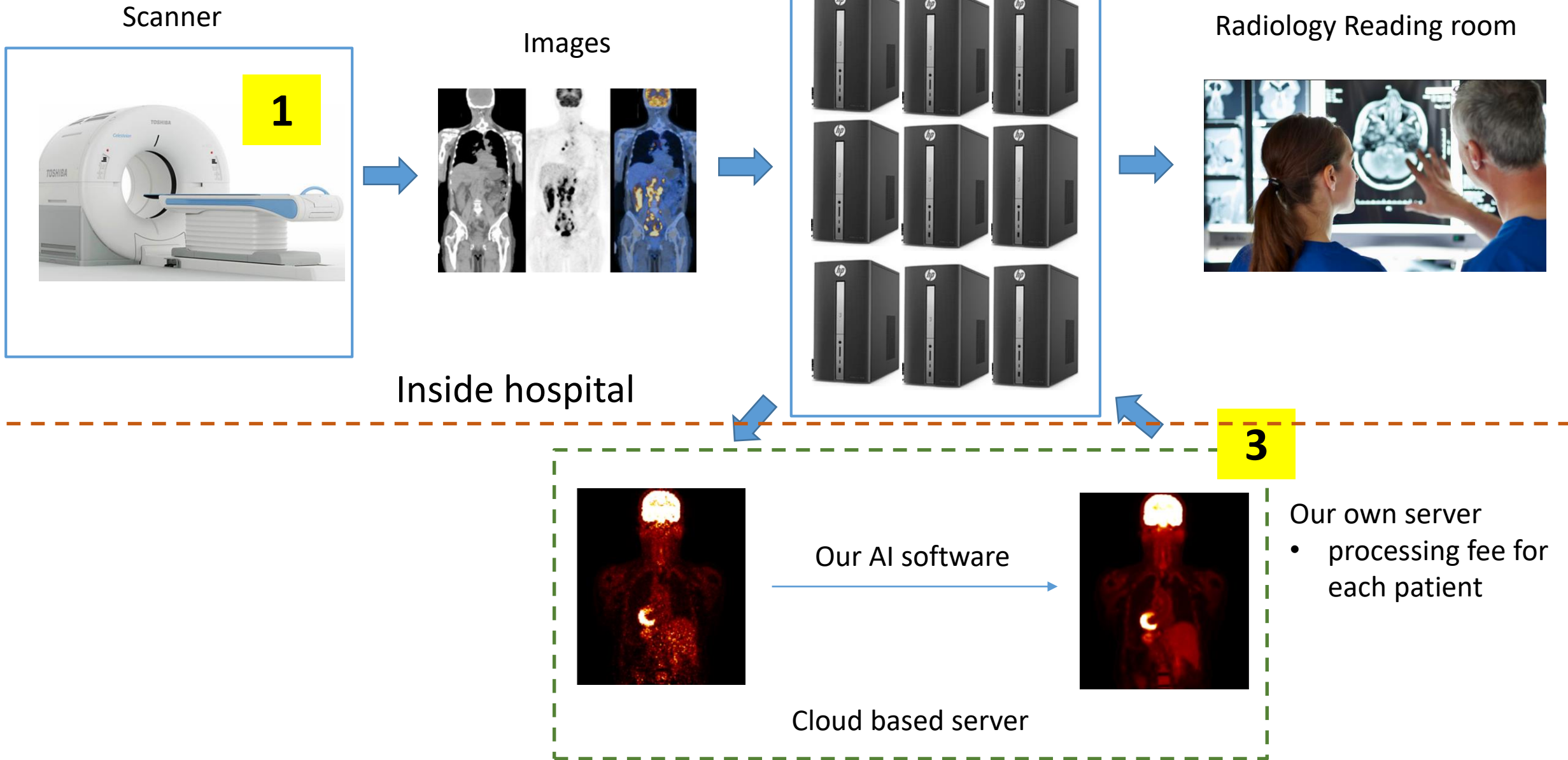
# PET Dose Reduction



	High Dose (low noise)	Low Dose (high noise)	Low Dose with AI
Diagnostic Accuracy	✓	X	✓
Low radiation dose (reduce 90%)	X	✓	✓
Lower cost	X	✓	✓
Higher throughput (Faster scan time)	X	✓	✓

IP: Software license, proprietary datasets

# Three Business Models



# Partnership In Progress

- **Scanner Company**

- GE
- Siemens

- **PACS Company**

- Visage

- **Clinical Testing**

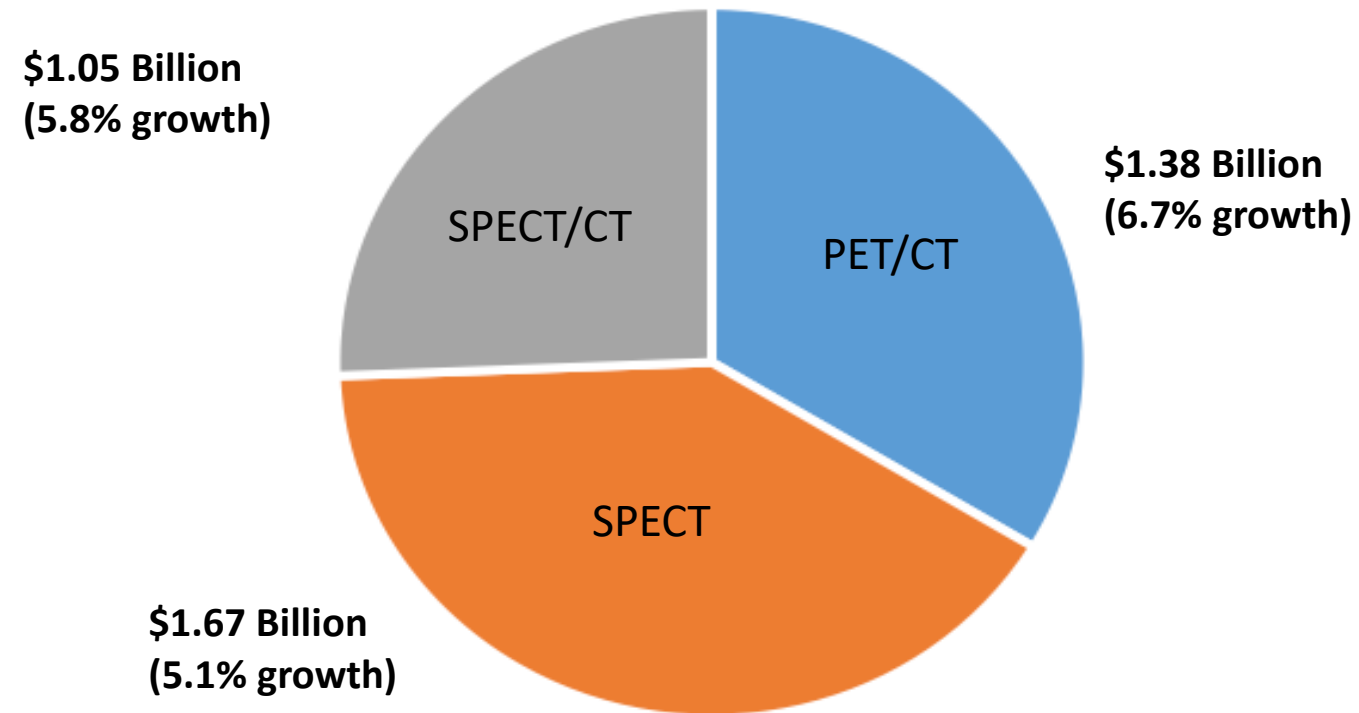
- Yale New Haven Hospital

## **Track record of translating non-AI technologies**

- GE: Already implemented for all GE PET scanners
- Siemens: Ongoing

# \$4 Billion Market

**\$4 Billion Market in 2023  
(growth from 2018)**





# Competitor

	Subtle Medical (Stanford)	AI-MI (Yale)
SPECT Applications	X	✓
PET Applications	✓	✓
Cloud-based	✓	✓
Partner with Scanner and PACS companies	X	✓

## **Next step**

- Ready to implement in a software package

## **NIH funding to support this AI/Deep Learning related work**

- 3 NIH grants until 2023
- Total ~\$5 Million

## **Milestone with VC funding**

- |                |                                    |
|----------------|------------------------------------|
| ➤ Fall 2019:   | Establish the company and hiring   |
| ➤ Summer 2020: | Develop prototype software package |
| ➤ End of 2020: | Obtain FDA 510(k) clearance        |

# Summary

AI-MI offers equivalent diagnostic accuracy

- **Cheaper**
  - Without CT
  - Without shielding
- **Safer**
  - Lower dose
- **Faster**
  - Higher throughput

Contact: [chi.liu@yale.edu](mailto:chi.liu@yale.edu)

## **Team**

- CEO
- Software Engineers (2-3)
  - Software package development
  - Artificial Intelligent
  - Cloud-based

## **Advisory Board**

- Chi Liu
- Clinician (Oncology)
- Clinician (Cardiology)
- Regulatory