

Benefits of Vendors Collaborating with Academic for Medical Imaging - A Researcher Perspective

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So What? Who Cares?

- Space: *Medical imaging/radiology.*
- Problem: Radiology: *Improve detection and diagnosis of diseases; Vendors: increased revenue/profit/market share/help sick people*
- Solution: Collaborations between academia and industry
- Results: *3 examples*
- TRL: *9 (collaboration led to clinical implementation of computer-aided detection (ATR) for mammography*

How is collaboration different than just contracting with a performer to perform a task

- Collaboration (my definition)
 - Collaboration is a partnership with a shared endpoint
 - Work is done cooperatively and at some point interdependently
 - Leverages the strengths of both partners
- A contract may not be a collaboration
 - The endpoint for the contractor is fulfilling the contract
 - The contractee uses the contractor to get to their endpoint

Roles and Strengths

Academia	Industry
Patients and real clinical data	Specialized medical equipment
Ideas for new clinical application	Technologies outside the medical domain
Ideas for improving existing technology	Specialized data

Example 1: Univ. of Chicago and R2 Technology, Inc

Computer-aided detection (CADe; =ATR) for mammography

- UChicago developed a suite of patent around CADe for mammography
- R2 was a start up company from CA who licensed UChicago patents
- UChicago helped R2 implement the code and R2 created a product
- Outcome
 - First FDA approved CADe device; used on millions of mammograms
 - R2 was purchased by Hologic, Inc for \$220M

Example 2: Univ. of Pittsburgh Medical Center (UPMC) and Hologic, Inc.

Contrast-enhanced mammography (CEM)

- Hologic developed a system to perform CEM
- Radiologists at UPMC wanted to use CEM to reduce unnecessary biopsies
 - Hologic provided \$\$ and equipment
 - UPMC devised and conducted initial clinical trial
- Outcome
 - UPMC with support from Hologic obtained NIH funding for a full clinical trial
 - Hologic received data to use to promote application for CEM
 - UPMC devised a new application for CEM

Example 3: Univ. of Pittsburgh (Pitt) and iCAD Inc

- iCAD has software to detect breast cancer in digital breast tomosynthesis (3D) images
- Along with Jeremy Wolfe (Harvard) and iCAD, Pitt submitted a grant to study how radiologists use computer-aided detection (CADe) tools when reading 3D images
- Outcome: knowledge of how radiologist actually use CADe technology
 - Wolfe: increase knowledge of human vision when computer assisted technology is used
 - Nishikawa: increase knowledge of how radiologist use CADe; how to improve the computer-radiologist interface
 - iCAD: knowledge of how radiologists use their software; how to improve the software