

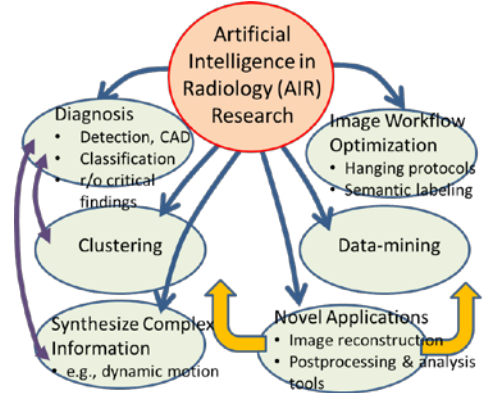
## ABSTRACT: 2017 ELAM Institutional Action Project Symposium

**Project Title:** OPERATION DEEP IMAGING: Artificial Intelligence Radiology (AIR) Research Core

**Name and Institution:** Yvonne W Lui, MD; NYU School of Medicine, NYU Langone Medical Ctr

**Collaborators and Mentors:** Michael P Recht, MD (Chair, Department of Radiology); Daniel K Sodickson, MD PhD (Vice-Chair Research, Department of Radiology); Yindalon Aphinyanaphongs, MD PhD (Director of Predictive Analytics)

**Background, Significance of project:** Artificial intelligence is a disruptive force on our society, including our medical community. As a specialty rich in complex data, Diagnostic Imaging will face unique challenges and opportunities in this area that go beyond computer-aided diagnosis. **Fig 1** illustrates some of the myriad novel applications for artificial intelligence in Radiology (e.g., optimizing imaging workflow, clustering, assessing complex dynamic motion, image reconstruction). As academic radiologists and imaging scientists at NYU, we are positioned to take a leadership role in shaping the future of the field.



**Figure 1. Applications of AI in Radiology**

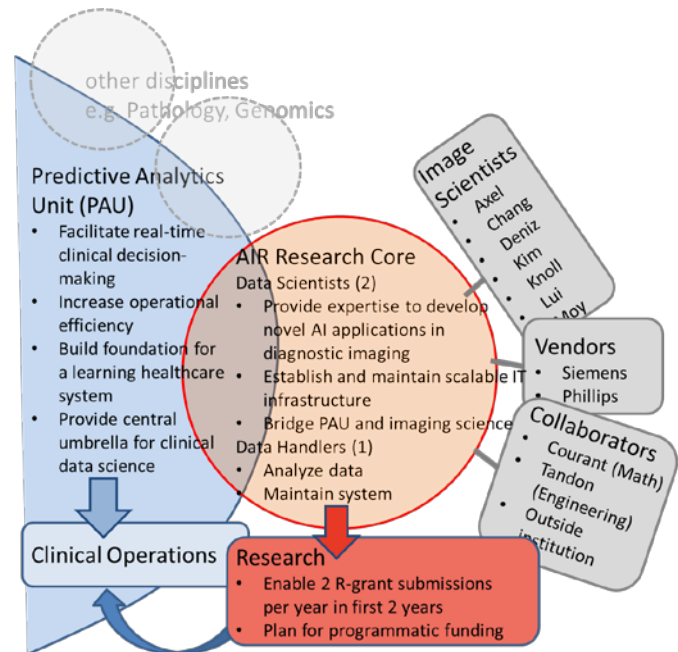
**Purpose/Objectives:** To design a scalable core program facilitating innovative research with clinical translation in the area of artificial intelligence for diagnostic imaging applications, taking advantage of centralized institutional infrastructure and connecting stakeholders (PIs, RadIT, MCIT, vendor partners, research collaborators across the university) **Fig 2.**

**Methods/Approach:** 1. Identify current status; interview stakeholders (current researchers engaged in AI and Radiology projects, Departmental leadership, RadIT, MCIT)  
2. Perform needs and baseline assessment survey  
3. Work with institutional task force on Predictive Analytics to match resources and goals  
4. Draft budget for initial 2-year plan  
5. Recruit personnel and launch

**Outcomes and Evaluation Strategy:**

**Overarching aim:** Contribute to shaping the evolution of AI in the field of Radiology and establish NYU as a leader in this area. **Medium-term goals:** Enable 2 R-grant submissions per year in the first two years, with long-term plan for programmatic funding. **Long-term deliverables:** # of projects served, # abstracts, # papers, # grants enabled, total grant funding enabled, total grant support. Perform reassessment survey of clinical and research faculty.

**Conclusion/Statement of impact:** A successful program in Diagnostic Imaging Artificial Intelligence will place us at the vanguard of this burgeoning area. This program will act synergistically within the existing institutional framework, working with the Predictive Analytics Unit (PAU) to promote collaboration and to connect imaging research, clinical translation, and operational action.



**Figure 2. Artificial Intelligence Radiology Research Core composition and relationship to key stakeholders**



# OPERATION DEEP IMAGING: Artificial Intelligence Radiology (AIR) Research Core

**Yvonne W Lui, MD; NYU School of Medicine, NYU Langone Medical Center**

Michael P Recht, MD (Chair, Department of Radiology), Daniel K Sodickson (Vice-Chair Research, Department of Radiology), Yindalon Aphinyanaphongs, MD PHD (Director of Predictive Analytics)

## Purpose

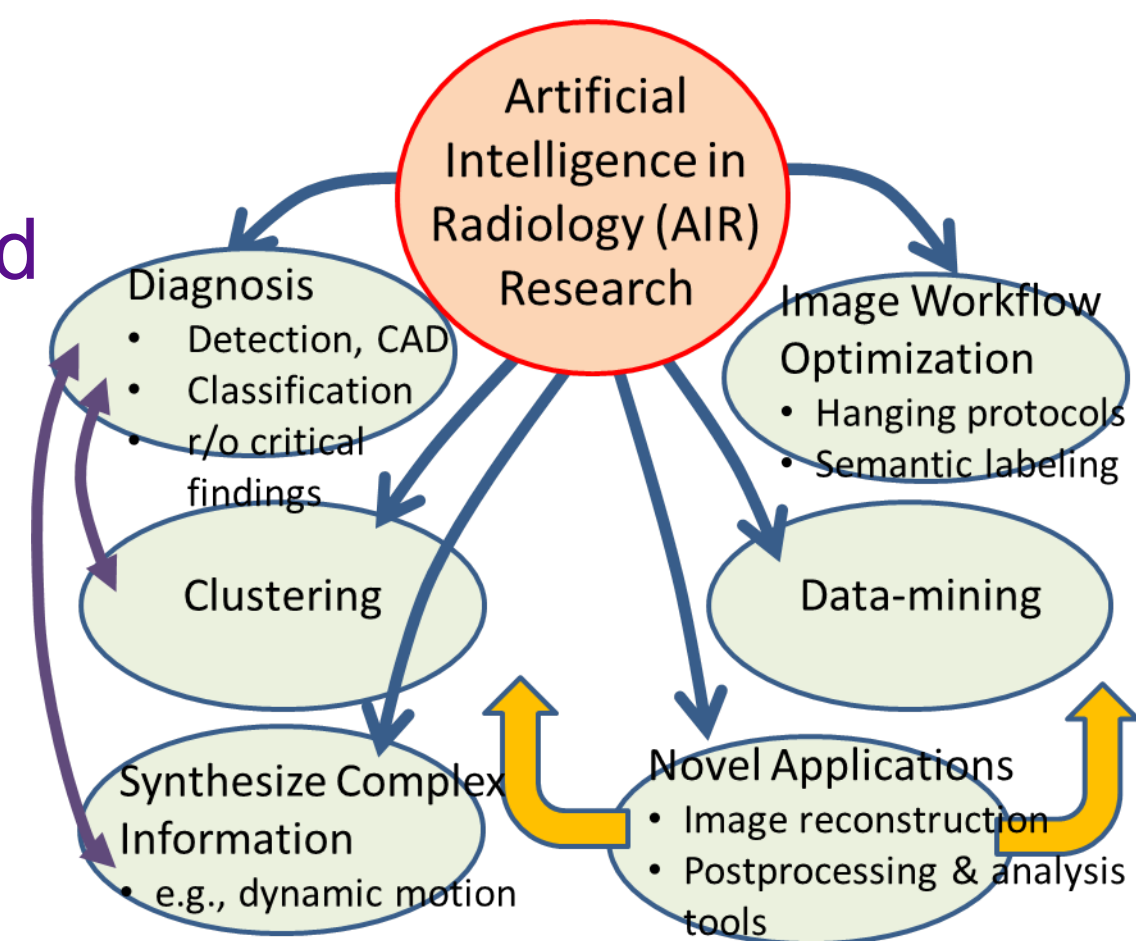
To design a scalable core program facilitating innovative research and clinical translation in the area of artificial intelligence for diagnostic imaging applications, taking advantage of centralized institutional infrastructure and connecting stakeholders.

**Overarching Aims:** Contribute to shaping the evolution of AI in the field of Radiology and establish NYU as a leader in this area.

## Significance

Artificial intelligence is a disruptive force affecting our society today including the medical community. As a specialty rich in complex data, there are unique challenges and opportunities in Diagnostic Imaging going beyond computer-aided diagnosis. Figure 1 illustrates some of the novel, myriad AI applications in Radiology.

As academic radiologists and imaging scientists, we are positioned to take a leadership role in shaping the future of the field.

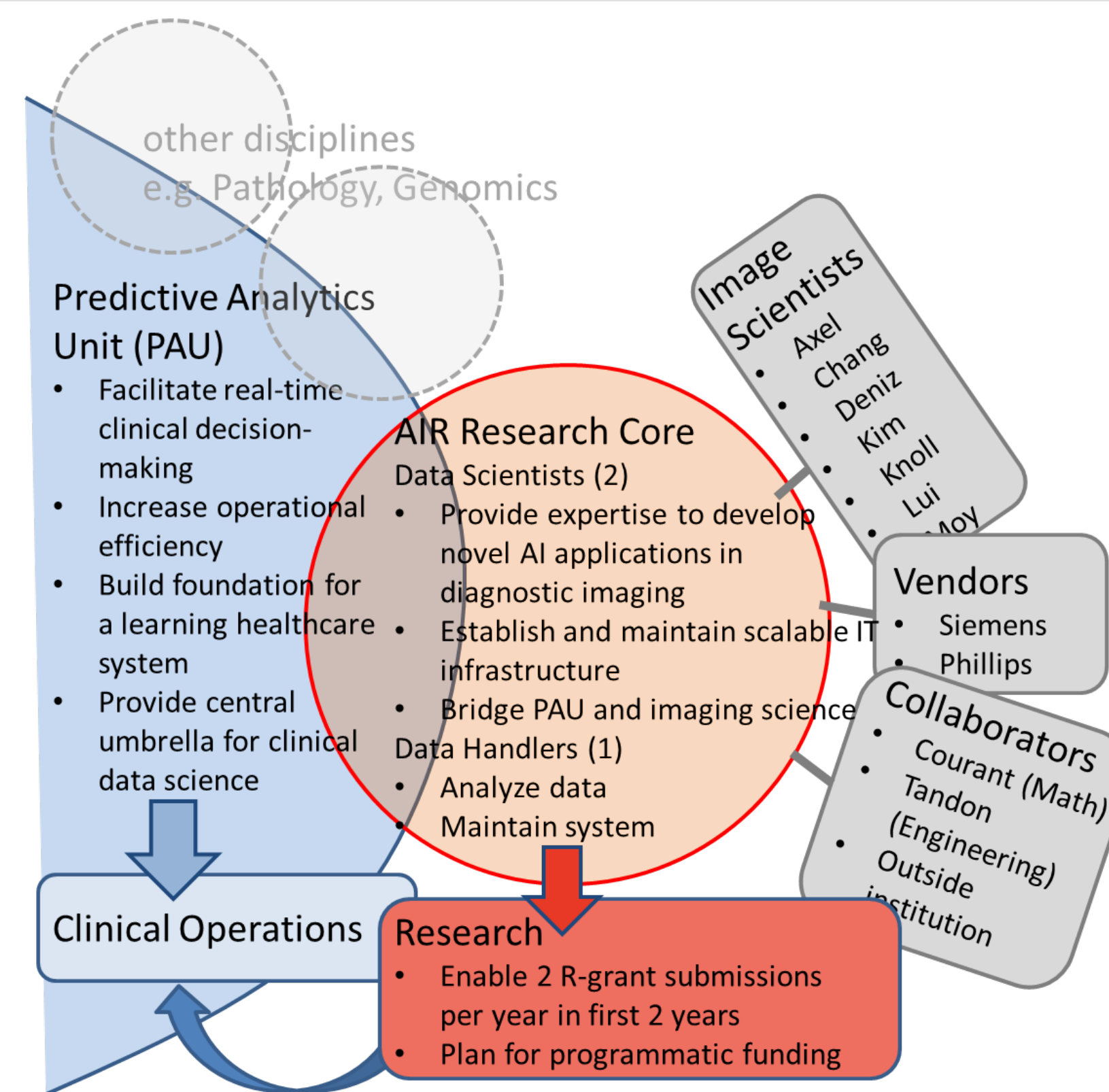


**Figure 1. Applications of artificial intelligence in Radiology**

## Approach

1. Identify current status by interviewing stakeholders (researchers, departmental leadership, MCIT, Radiology IT)
2. Perform needs and baseline attitudes assessment survey
3. Work with institutional task force for Predictive Analytics to match institutional resources and goals
3. Draft budget for initial 2-year plan

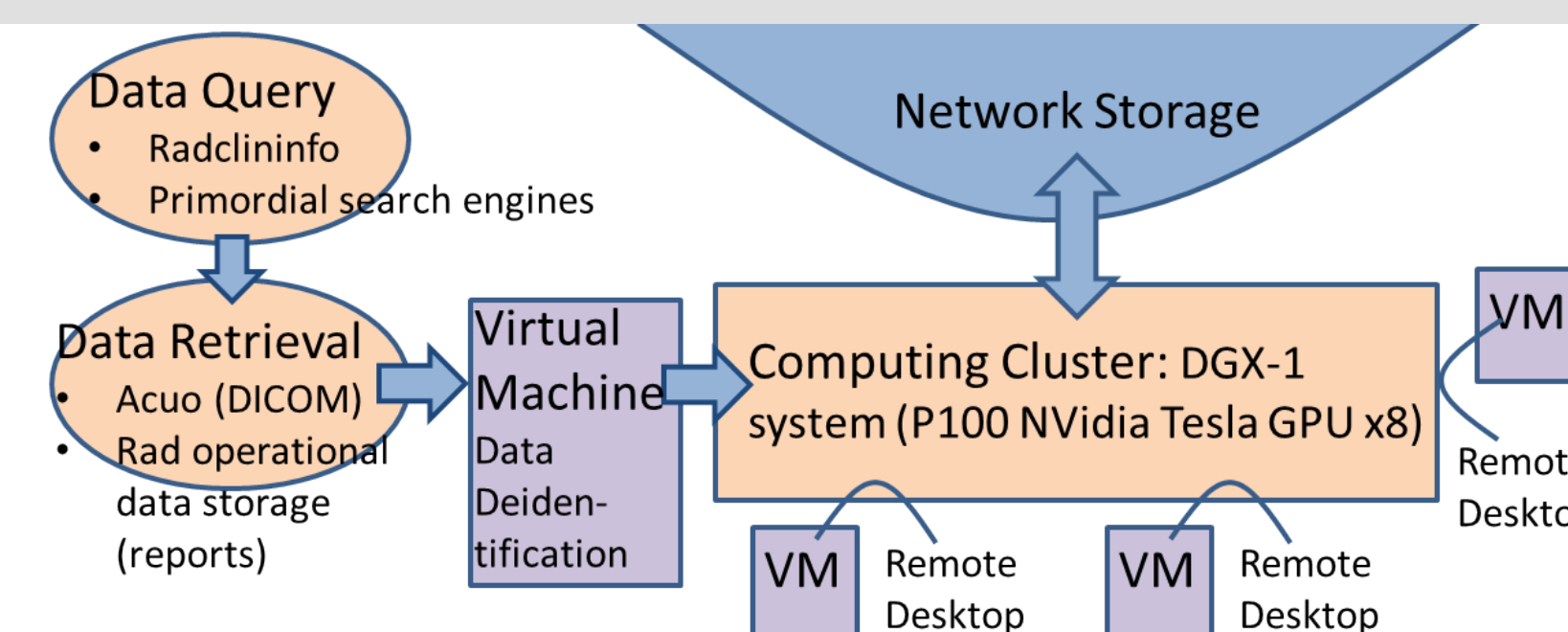
## Results/Discussion



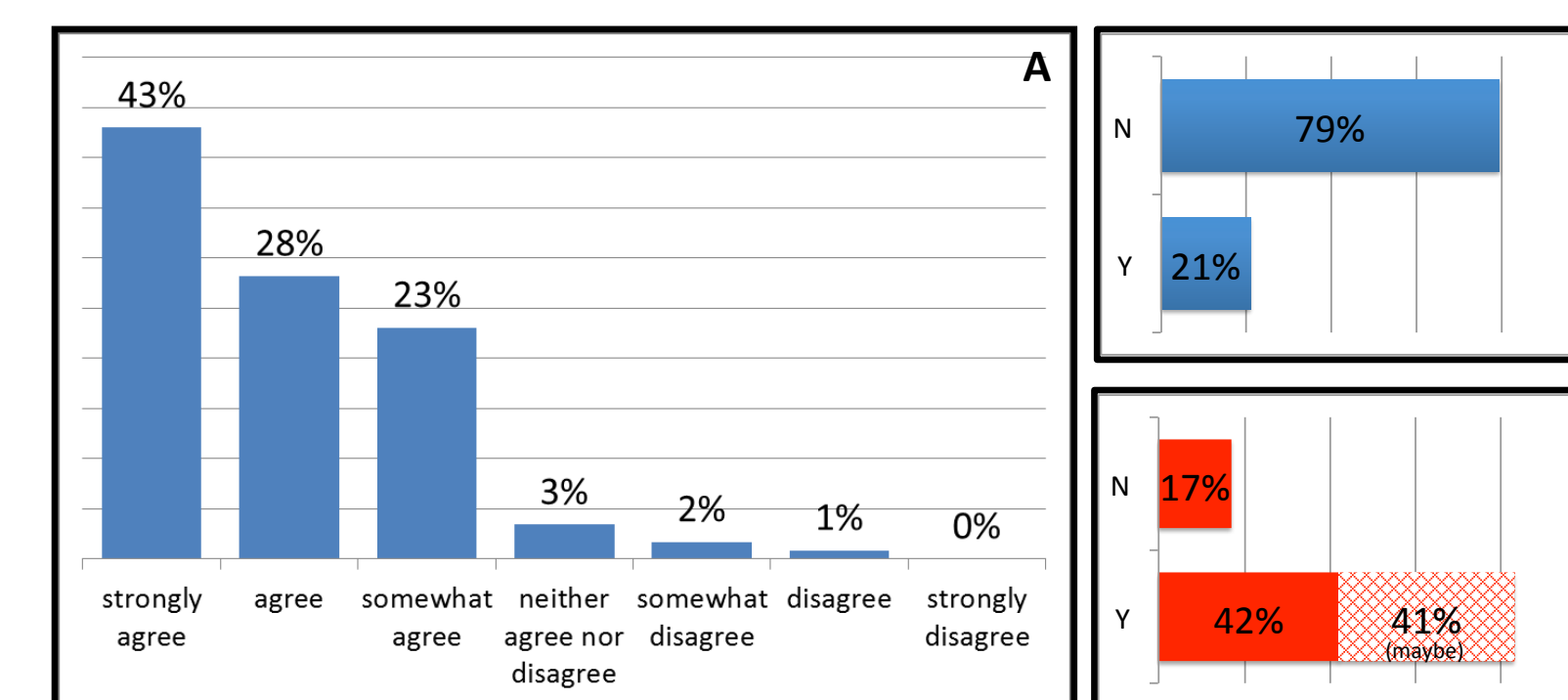
**Figure 2. Artificial Intelligence Radiology (AIR) Research Core composition and relationship to key stakeholders**

## Impact

A successful program in Diagnostic Imaging Artificial Intelligence will place us at the vanguard of this burgeoning area. This program will act synergistically within existing institutional framework, working with the Predictive Analytics Unit (PAU) to promote collaboration and to connect imaging research, clinical translation, and operational action.



**Figure 3. Scalable IT infrastructure**



**Figure 4. 121 responses on (A) perception of whether AI will change the practice of Radiology in the next decade (B) and current involvement in AI project, and (C) potential use for using AIR research core.**

## Evaluation Strategy

- Medium-term goals:**
- Enable 2 R-grant submissions/yr in the first two years with long-term plan for programmatic funding
  - Perform reassessment survey of clinical and research faculty.
- Long-term deliverables:**
- # of projects served
  - # abstracts
  - # papers
  - # grants enabled
  - total amount of grant funding enabled
  - total amount of grant support for core