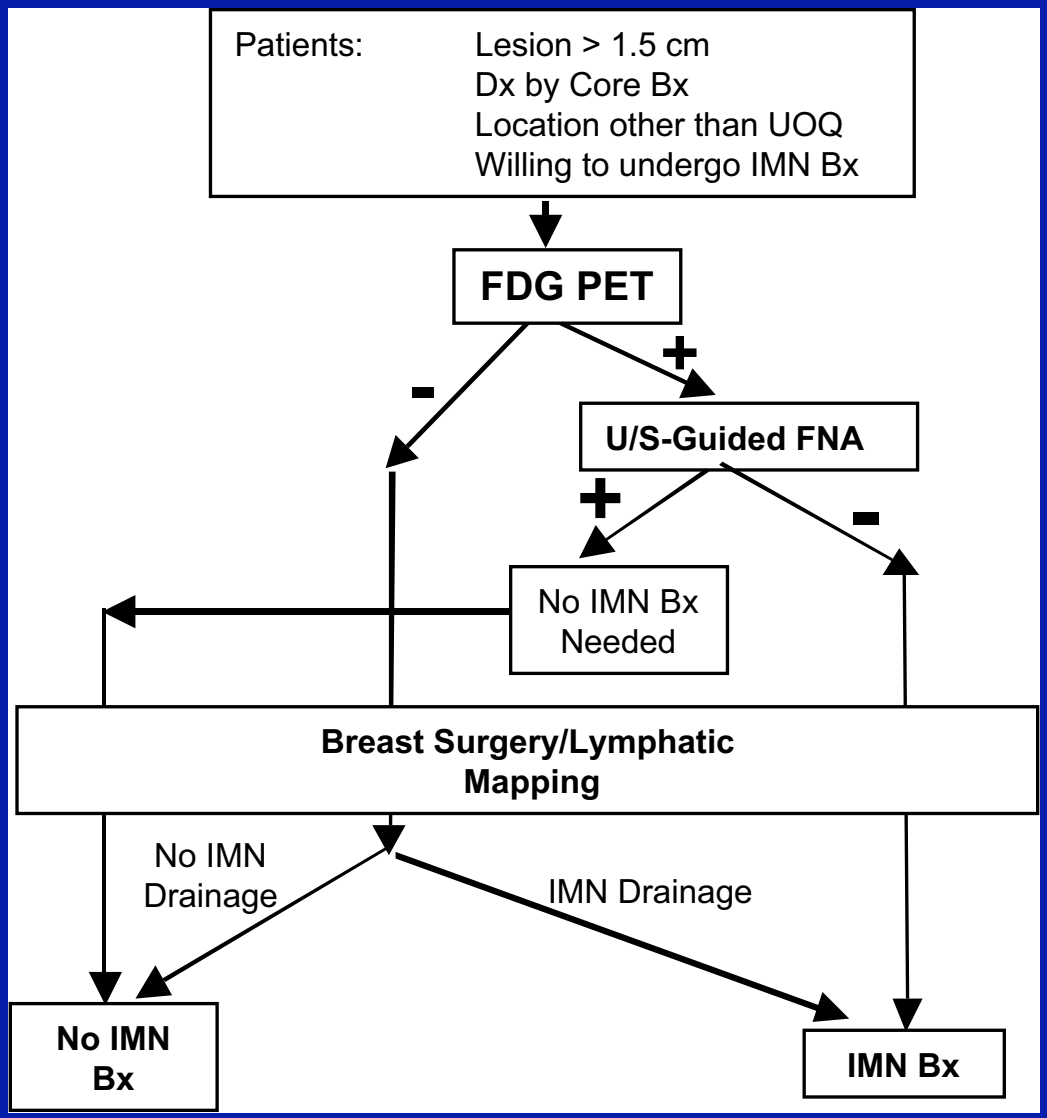
Radiology Grant Writing Class
April 15, 2010

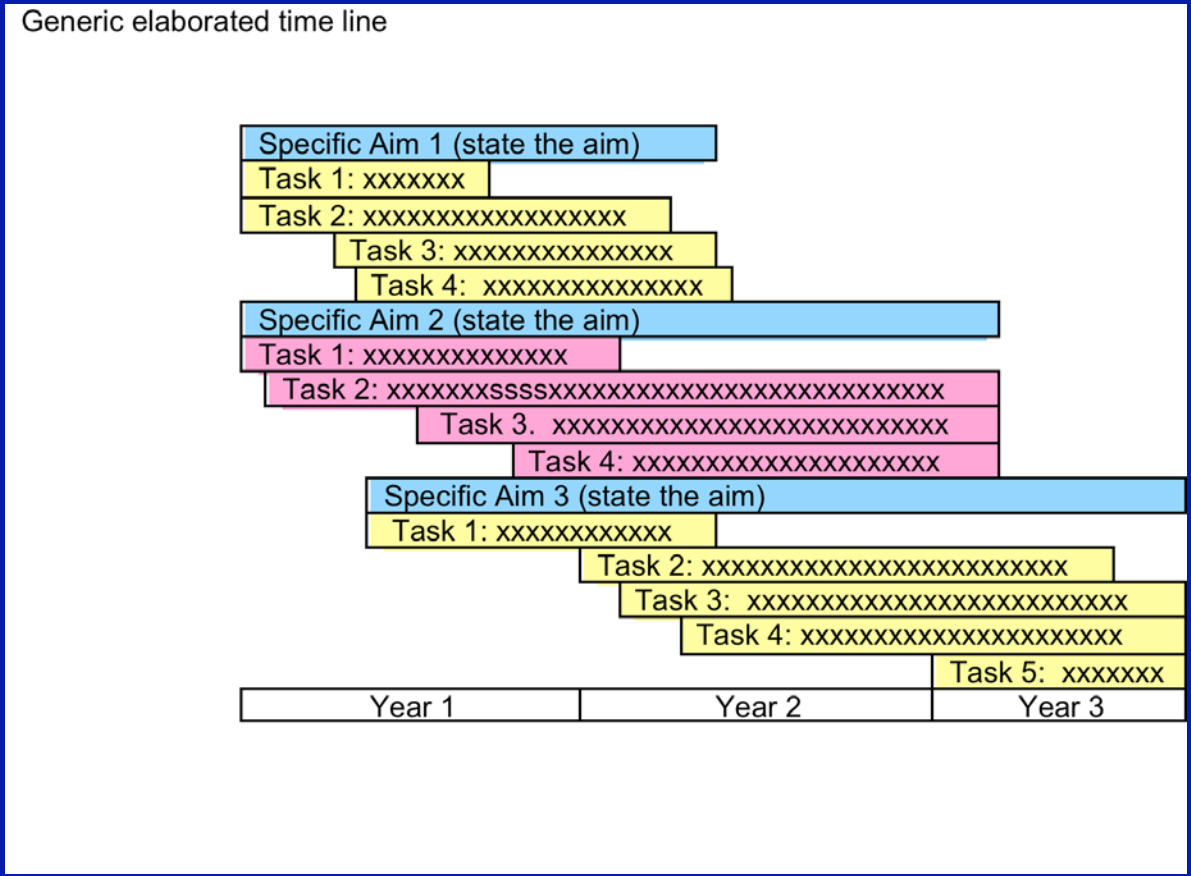
Types of Research Design

- Flow chart
- Elaborated time line
- Outline (I A,B; II A, B, C, etc.)
- Text (brief restatement of each Sp. Aim, rationale for aim, expected results, pitfalls)
- Cartoon-type diagram (flow chart with pictures and words)

Flow Chart


Patients:
Lesion > 1.5 cm
Dx by Core Bx
Location other than UOQ
Willing to undergo IMN Bx
FDG PET
-
+
U/S-Guided FNA
+
-
No IMN Bx Needed
Breast Surgery/Lymphatic Mapping
No IMN Drainage
IMN Drainage
No IMN Bx
IMN Bx

Elaborated Time Line



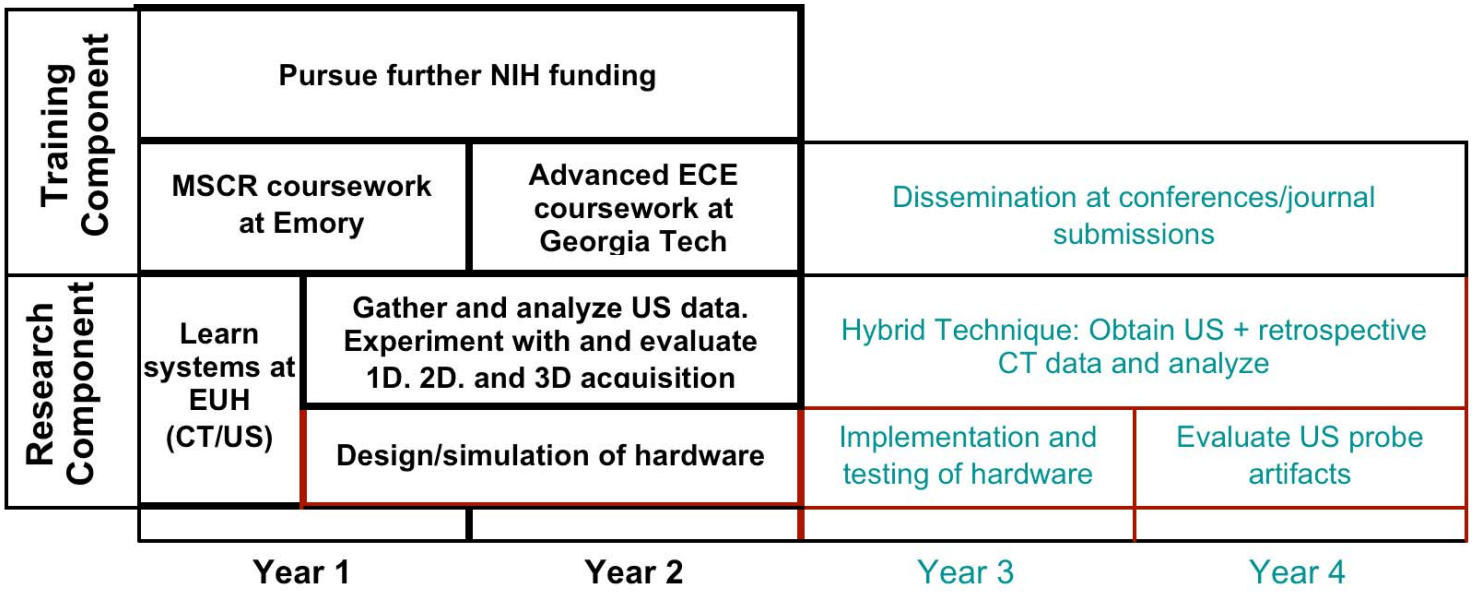


Figure 3: Proposed research time line for the 2-year project and beyond

SA 1. Develop FEM Model

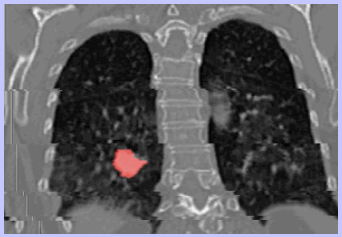
1) Construct a customized biomechanical model of the torso
2) Derive conditions from the motion of the surface
3) Optimize biomechanical properties

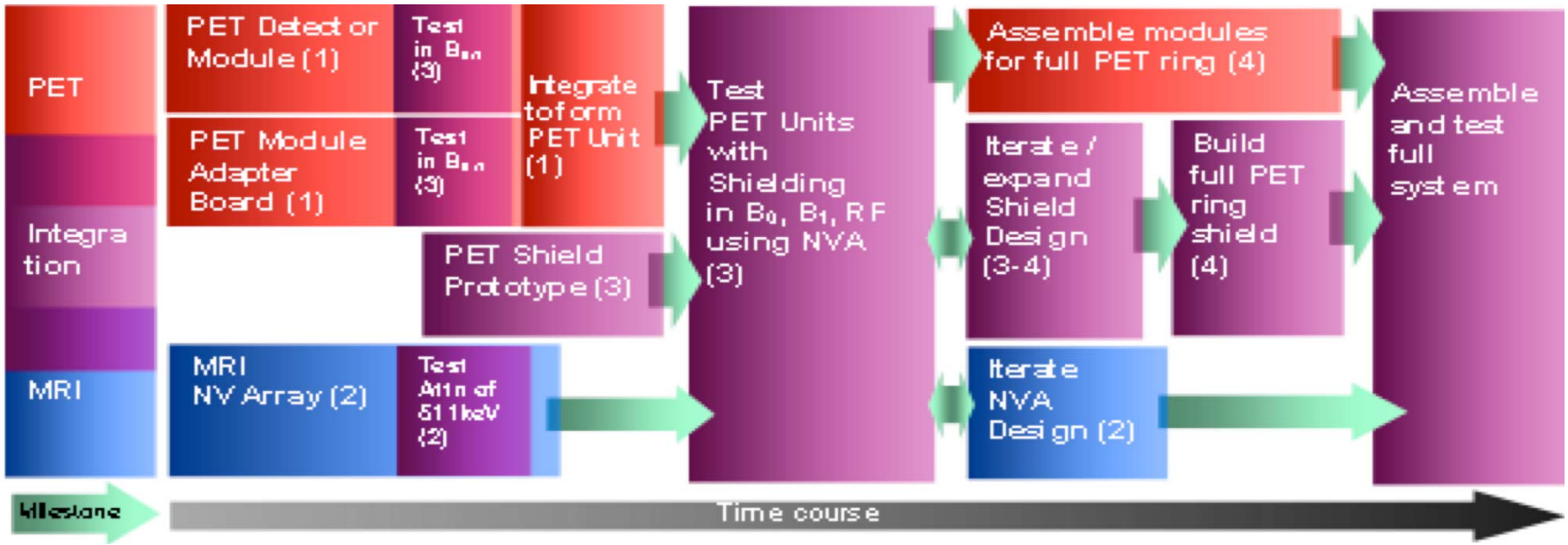
SA 2. Implement on GPU

1) Organize FEM for GPU implementation
2) Implement the model in CUDA
3) Evaluate computational efficiency

SA 3. Validate with 4DCT

1) Conduct a clinical evaluation
2) Perform a virtual clinical trial for 30 patients





Overview of the work plan. We begin development of PET (red) and MRI (blue) components independently, with tests of mutual interference along the way (e.g. "Test in $B_{0,1}$"). Arrows represent progression milestones. Purple tasks are those that integrate MRI and PET components. (Specific Aim in parentheses). B_0 and B_1 are main and gradient MRI fields; RF is MRI radio-frequency pulses; Attn of 511keV is attenuation of annihilation photons.