OVERVIEW

Planning and Campus Development (PCD) has been asked to provide a preliminary feasibility assessment for the possible addition of a Trio A TIM System 3T MRI to Building 260, Domenici Hall, for use by the Mind Research Network. Options for the selection of a site for the new MRI were discussed and are listed below, though only one option was chosen to pursue for this assessment. The current feasibility assessment constitutes a preliminary appraisal of the MRI addition to MIND, wherein requirements, costs, and timelines are broadly estimated in the interest of timely responsiveness. A fine-grained analysis with formalized vendor proposals may occur at a stage ensuing this preliminary work. The advantages and disadvantages of the addition are presented as a general guide to arbitrate the feasibility of alternatives.

EVALUATION TEAM

The following personnel were involved in feasibility discussions and condition evaluations for the options discussed in this assessment:

Vince Calhoun  Chief Technology Officer, Mind Research Network
Greg Hallstrom  Security and Privacy Officer, Mind Research Network
Dan Fitchett  Facilities Manager, Mind Research Network
Brook Finch  Planner, UNM Planning & Campus Development
Bob Meyer  Senior Project/Constr Manager, UNM Office of Capital Projects
David Penasa  Electrical Engineer, UNM Physical Plant Department
Fred Best  Manager of Maint/Constr, UNM HSC Physical Plant Department
Elmo Riggs  Supervisor of Maint/Constr, UNM HSC Physical Plant Department
John Couch  Supervisor of Maint/Constr, UNM HSC Physical Plant Department
Robert Lucero  Master Electrician, UNM HSC Physical Plant Department

Donald Roppolo  Project Manager, Siemens (provided technical support)
Mark Cunningham  Territory Manager, M Space Holdings (provided technical support)
SITE SELECTION

The following sites were articulated as possible options for the location of the new 3T MRI module. Option 2 is the only option developed in this assessment, as it surfaced within the evaluation team as a priority for immediate follow-through.

**Option 1:** Locate the new 3T MRI in Room 1072 of Domenici Hall, removing the 1.5T MRI currently in this location. This option is not developed in this assessment.

**Option 2:** Locate the new 3T MRI within a modular structure on the SW side of Domenici Hall, in the area of the other existing MRIs, and link it to Domenici Hall via an additional enclosed corridor. This option is developed in this assessment.

**Option 3:** Locate the new 3T MRI within a modular structure, or alternatively within a new custom structure, on the existing mobile MRI pad south of the new Neuroscience addition of Domenici Hall, and link it to Domenici Hall via an additional enclosed corridor. This option is not developed in this assessment.

**Option 4:** Locate the new 3T MRI within a modular structure, or alternatively within a new custom structure, on an unspecified site within the Science & Technology Park on South Campus. This option is not developed in this assessment.
**SPACE REQUIREMENTS**

<table>
<thead>
<tr>
<th>Room Description</th>
<th>Required Area (NSF)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  Exam Room</td>
<td>~395</td>
<td></td>
</tr>
<tr>
<td>2  Control Room</td>
<td>~105</td>
<td></td>
</tr>
<tr>
<td>3  Equipment Room</td>
<td>~120</td>
<td></td>
</tr>
<tr>
<td>4  Changing Room</td>
<td>~30</td>
<td></td>
</tr>
<tr>
<td>5  Corridor</td>
<td>~275 Area may increase due to fire code issues.</td>
<td></td>
</tr>
</tbody>
</table>

925 NSF (1,050 GSF)

**SYNERGISTIC RELATIONSHIPS & OPERATIONAL ADJACENCIES**

The effects of the proposed project on related programs, functions, and personnel have not yet been evaluated.

**Research Group I:** (Vince Calhoun’s input here)

**Research Group II:** (Vince Calhoun’s input here)

**GENERAL ASSUMPTIONS**

In each of the options mentioned above, the following general assumptions apply:

- Costs for construction and equipment will be incurred by the Mind Research Network pursuant to UNM HSC research funding opportunities.
- It is desirable for the new MRI and associated equipment to be housed in a modular building so as to significantly shorten the construction schedule. Further advantages and disadvantages to this approach are indicated below.
- The new MRI, associated equipment, and maintenance service will be provided by Siemens.
OPTION 2

Locate new modular MRI building to SW area of Domenici Hall (building 260) and link it to Domenici Hall via an additional enclosed corridor. Option 2 is developed below.

FUNCTIONAL REQUIREMENTS

- This option will require the addition of approximately 1050 GSF of total building area to Domenici Hall: 775 SF within the modular building (for Exam Room, Control Room & Equipment Room) and 275 SF (for Changing Room & Corridor), depending on the setback requirements from Domenici Hall. See space requirements table above. See diagram below for anticipated configuration.
- This option will require a separate enclosed corridor link between the modular building and the existing building. This is to be provided by an on-call vendor under separate contract from the modular building. Final costs will depend on the length of this corridor, which is dependent upon fire code issues.
- This option will require verification from Siemens that removal of adjacent magnets is not hampered by the assumed configuration.
- This option will require the services of a modular building vendor experienced with MRI requirements. Inclusions to the modular package will need to be clearly defined since the modular vendor can provide as little as the building only, or as much as the foundations, HVAC, and additional rooms.
- This option will require increased delivery costs and compromised sustainability goals if an experienced local vendor cannot be contracted for this work.
- This option will require stem wall footings for the modular building. Footings can either be included in the modular package or provided separately.
- This option will require a separate power feed from the north end of Domenici Hall. (UNM PPD input here)
- This option will require verification that no backup emergency power is needed, given that Domenici Hall does not have the capacity for this. The helium pump within the MRI unit is the only element that must maintain continuous performance. This may be served by the existing Siemens module?? (UNM PPD input here)
- This option will require a water feed. (UNM PPD input here)
- This option will require a chiller. The chiller can either be part of the Siemens equipment list or provided separately. (UNM PPD input here)
- This option will require an HVAC unit for conditioning of the new space. This can either be included in the modular package or provided separately. (UNM PPD input here)
- This option will require a small area of demolition/penetration (approx. 40 SF) for access to Domenici Hall, causing minimal disruption to adjacent areas.
- This option will require special attention to site grading and drainage design because of its location within a current drainage area which is fed by six roof drains.
- This option will require the verification of a sewer line in the immediate vicinity and its impact on the location of footings.
- This option will require early discussions with the Fire Marshall to determine setback distances from Domenici Hall, strategies for egress, and requirements for sprinklers.
Anticipated configuration of Option 2 addition.
ADVANTAGES

1. The new addition will be located in an area of Domenici Hall considered to be the most convenient for the purpose it will serve.
2. The new addition will cause minimal disruption to adjacent areas during demolition/construction.
3. Using a modular building will shorten the construction schedule significantly due to the concurrence of site work with modular construction. This will result in an earlier occupancy.
4. Using a modular building will lend advantage to a temporary use of the MRI, since the modular building can be removed after the MRI goes off-line. There is potential for a vendor buy-back of the modular building under this circumstance.
5. The new MRI and associated equipment (provided by Siemens) will dovetail smoothly with the current maintenance contract with Siemens for other MRIs in Domenici Hall.

DISADVANTAGES

1. The modular building will have significant limitations in its ability to integrate with the design of Domenici Hall, which currently has a high degree of design continuity/integrity. The modular building, because of its limited capacity for design integration, will likely be perceived as conflicting to some degree with the design of Domenici Hall, though this will occur on a less public front.
2. There will be increased site grading and drainage costs associated with this project because of its location within a current drainage area which is fed by six roof drains.
3. There will be a greater need for management coordination of the various components in the design and construction phases of the project over that of a sole-source operation.
4. Current indications are that the experienced and competent vendors for modular MRI facilities are located out of state (to be verified). This will result in higher transportation/delivery costs as well as undesirable impacts to the sustainability goals of UNM facilities and practices.

SUMMARY – Option 2

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locate new modular MRI to SW of Domenici Hall with enclosed corridor.</td>
<td>~$385,000*</td>
<td>4 months; 1/09 –5/10</td>
</tr>
</tbody>
</table>

* Based upon a generalized OCP-100 cost estimate, involving discussions with modular vendor.