Institute-wide Planning Task Force
Research Working Group

Final Report

December 16, 2009
EXECUTIVE SUMMARY

The Research Working Group organized into subgroups covering Labs and Centers, Research Administration, Research Infrastructure and Research Personnel that generated collectively 24 single-page ideas that would introduce cost savings and efficiencies into MIT’s research enterprise. Because research represents a core mission of MIT and ideally should grow such that it is often a revenue generator, emphasis was placed on streamlining and standardizing processes, consolidating functions and sharing facilities rather than by recommending cuts in services that would increase administrative burden on faculty and research staff. While there are several items that could improve the function of execution of research in the near term, a number of the ideas will take some time and institutional investment to realize. The ideas proposed in this report have not been fully reviewed for potential legal or other regulatory issues. Should the ideas be pursued further, such a careful analysis would be required.

ORGANIZATION AND OPERATION OF THE WORKING GROUP

The Research Working Group met weekly during spring semester 2009 and periodically during the summer, with increasing reliance on e-mail communication during summer travel months when this report was finalized. Initial meetings of the working group were in plenary session to provide all members with a common background. The working group was subsequently divided into four subgroups with the following membership:

• Laboratories and Centers
  – Anantha Chandrakasan (coordinator)
  – John Joannopoulos
  – Jacqueline Lees
  – Anthony Pensa
  – David Rodriguera
  – Scott Carlson

• Research Administration
  – Cynthia Quense (coordinator)
  – Frank Moss
  – Bernhardt Trout
  – Michelle Christy
  – John Donahue
  – Karen Shirer
• Research Infrastructure
  – Stephen Steadman (coordinator)
  – Anantha Chandrakasan
  – Emery Brown
  – Douglas Hart
  – Deborah Leitch
  – Richard Wilk
  – Paul Youchak

• Research Personnel
  – Barbara Liskov (coordinator)
  – Richard Holton
  – Simon Johnson
  – Charlene Placido
  – Sarah Brady
  – Alison Salie
  – Stephen Steadman

Subgroups performed detailed analyses of available data and, at the request of the Task Force leadership, produced single-page ideas (listed in Appendix), which were then discussed among the entire group and modified or refined as appropriate. A considerable amount of effort was invested into trying to understand the diversity of ways in which research is done at MIT, and how research is administered. A general observation was that there is little uniformity of process, with mixed effect. Current practices are typically customized to a particular group and work well to adequately in isolation, but make it difficult to prepare cross-disciplinary proposals and in some cases administer grants across the Institute. Our working group sought to identify best practices that could be generalized and applied more broadly, with recognition of the importance of retaining MIT’s entrepreneurial character in the creation of new knowledge.

The Labs and Centers subgroup had a challenging task, as there was a need for collection and synthesis of new data on the operation of how these entities facilitate research and what the Institute invests in support. Our working group is indebted to Lydia Snover of the Provost’s Office, who assisted the subgroup in preparing a survey to collect the needed information, and in addition assisted with preliminary analysis. We believe the data collected will have value well beyond the task force in clarifying the diversity of ways in which research is accomplished at MIT.

For the Research Administration subgroup, the logical path forward was to expand upon the recommendations of the recent RAI (Research Administration Improvement Initiative). This subgroup was sensitive to the fact that cost savings should, if at all possible, derive from streamlining processes and introducing efficiencies in the implementation of research administration. There was investigation
as to how to optimally staff and train support personnel given the desire to grow research while minimizing hiring of new staff. An overt goal was to avoid cuts that would place additional administrative burden on faculty and research staff that would reduce the amount of time that could be spent on research. The introduction of more uniform, streamlined processes will enable more effective support of proposal preparation and post-selection tracking. There was also recognition that as the Institute continues to diversify in research sponsorship, one size will not fit all. Ultimately, MIT’s Office for Sponsored Programs needs to evolve to be well positioned to handle proposals and grants not only to government agencies (the current focus), but also to foundations and industry, which follow different models.

Drawing on in-depth analysis by the Space, Information Technology and Procurement Working Groups, the Research Infrastructure subgroup focused on identifying opportunities to optimize MIT’s investments in equipment and instrumentation capabilities, as well as possible ways to more efficiently store and access library information. There is great merit in investing in shared facilities, which have the multiple benefits of optimizing space usage, leveraging technician support (a particularly important matter for junior faculty moving off start-up support), and creating a pool of interested users that facilitates equipment upgrades.

A variety of issues identified by the Research Personnel subgroup have been longstanding issues brought to the forefront by current conditions but important to the conduct of research at the Institute. Issues include the time scale of support for post doctoral researchers, support of senior research engineers and scientists, and the importance of faculty renewal. Several of these matters are addressed in additional detail by the Human Resources Working Group.

In several cases, the ideas generated will not obviously achieve the stated task force goal of saving money, but will fix a part of the system that is “broken” or could benefit from improved operation. We include such items because of their relevance to improving the climate for research at the Institute. As an example we note that need for faculty and staff need to be better educated as to seemingly ever-increasing requirements for reporting and compliance.

The current extraordinary economic situation provides a short window in which the MIT community should be more open to change than it may be when the situation stabilizes, after which it will be more difficult to change the status quo. We should take advantage of the current opportunity to institute positive change that facilitates and encourages growth of research at MIT.

**RESEARCH WORKING GROUP: SUMMARY OF FINDINGS**

*A. Labs and Centers*

The primary objective of the lab and center sub-group was to explore ideas for cost reduction and/or efficiency improvement associated with labs and centers. We
explored a number of issues including the appropriate number of labs and centers (LCs), function of LCs, threshold to startup a lab and center, review and shut down process of LCs, metrics (research volume, publications, etc.), reporting structure, classification of LCs, and cost reduction strategies (lab directors account, patent revenue, resource sharing, mergers/shut down of labs and centers).

A key output of this group is a classification of labs and centers. Units are classified as physical (with space) vs. virtual, core funding (major multi-year/multi-PI research program) vs. no core funding, with or without shared user facility, self-administered vs. attached administration, focused mission vs. diversified mission. Table 1 provides a summary of the classification system and Figure 1 provides a summary chart.

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<th>Table 1. Classification of Labs and Centers</th>
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<tr>
<td><strong>Physical</strong>: The lab or center has actual physical space in which at least some of its research is conducted.</td>
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<tr>
<td><strong>Virtual</strong>: The unit consists solely of an administrative headquarters, with the research conducted in the space of other MIT DLCs.</td>
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<td><strong>Core Funding</strong>: The lab has at least one major (typically &gt; $1 million/yr), multi-year (3-5 yrs) award of external funding that accounts for a significant fraction of the lab’s total annual funding. These awards are typically from a single sponsor and are sometimes called “block funding”.</td>
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<td><strong>No Core Funding</strong>: The lab does not have core support as defined above. The lab’s external funding is provided by multiple grants and contracts, possibly from different sponsors.</td>
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<td><strong>Focused Mission</strong>: The research of the lab or center is concentrated on one particular overarching objective. The lab may still involve faculty from multiple MIT Departments and perform research drawing on expertise from diverse disciplines.</td>
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<td><strong>Diversified Mission</strong>: The lab or center conducts research on multiple topical themes, not necessarily directly contributing to one specific strategic goal.</td>
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<td><strong>Facility</strong>: The laboratory provides research equipment accessible to the MIT community, generally on a for-fee basis.</td>
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<tr>
<td><strong>No Facility</strong>: The laboratory does not provide a facility as defined above.</td>
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<td><strong>Self Administered</strong>: The lab’s administrative services, e.g., management of grants and contracts are provided by personnel within the lab.</td>
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<tr>
<td><strong>Attached Administered</strong>: The lab’s administrative services are provided by personnel from a separate MIT DLC.</td>
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Figure 1. Graphical summary of Lab & Center classification with a few examples.

This classification is critical to understanding the function and needs of various labs and centers. The labs and centers survey (compiled by the data analysis team) contains information about how current LCs map to the above categories. This information will be critical in optimally allocating resources to LCs. It can also expose opportunities for lab/center consolidation, one of the key suggestions from our working sub-group. Some of the major opportunities identified for cost reduction include:

Consolidation of Smaller Labs and Centers

The most significant cost savings idea from our group is to consolidate smaller labs and centers. Some labs and centers (LCs) have research volume and administrative complexity that does not justify committing MIT resources to their administration. Smaller LCs should be evaluated to determine whether their goals could be achieved more efficiently by merging them with other LCs. This could be either joining small LCs to larger LCs, or combining small LCs. In many cases this may involve switching to an “attached administration” model under another LC (see (2)). 22% of labs and centers that responded to the labs and centers survey draw funding from a single source (i.e., Core funding). 44% of them concentrate on one overarching goal (i.e., Focused Mission). 17% of labs are entirely virtual and a substantial number conduct research at least partially in space allocated to other units. Cost reduction to the GIB would come primarily through having fewer directors, assistant or associate directors, and administrative staff. Special attention should be given to labs that provide service to the entire campus (shared facilities or ones that cover strategic research areas). Long-term cost savings are possible by actively identifying LCs that are not performing distinct functions or providing specific services. After an initial review to establish which labs and centers to merge, a general oversight procedure should be established to evaluate each LC according to the specific goals and functions set out in the initial review. There will be a cost associated with reviewing LCs, primarily time of LC directors preparing for review and time from relevant
authorities at the Schools and the Office of the Vice-Provost for Research. Merging or closing LCs would also impose a one-time administrative cost

**Sharing of Lab/Center Infrastructure**

A major opportunity exists for labs and centers to share infrastructure. Examples are administrative support, information technology (IT) systems, financial management systems, and lab facilities. Sharing of administrative support could include sharing Administrative Officers, or merging the administrative functions of a small LC with a larger LC or department. Our group strongly recommends more “attached administration” – this will allow labs and centers to have independent existence, just running administration processes through the larger entity (currently 19% of labs use this model). We suggest that this should be the preferred mode for administering small LCs and those with simple administrative requirements. Most savings would come from reducing the number of administrative staff. Improved sharing of lab facilities and capital equipment could be leveraged to reduce the need for large start-up packages for new faculty. We believe that new faculty could be encouraged to use existing specialized facilities (fabrication facilities, for example), or such facilities could be upgraded to meet specific needs of new faculty. Currently, 21 labs provide infrastructure to the entire campus, presenting a major opportunity for optimization. Of these, only 5 support external users. The charging of external vs. internal users should be reviewed carefully and benchmarked against other local user facilities (e.g., Harvard).

**Revaluation of Criteria for MIT Support to Labs and Centers**

The guidelines used by MIT to set support to director salaries, discretionary funds, assistant or associate directors, and administrative officers is based entirely on research volume. It does not appear to have been revisited since 1995. MIT should re-evaluate support provided to LCs to maximize the value of any direct financial support. New criteria must be set for evaluation of the support deserved and needed by LCs. The Institute should provide support to LCs on a case-by-case basis. In some cases LCs can cover more of their administrative costs through allocation accounts, covering it from grants, support from major sponsors, or income from other activities (industry collaboration, intellectual property, etc.). At the same time, some LCs derive much of their sponsored funding from agencies that will not cover administrative costs in grants. These differences should be considered in determining the need for direct support from the Institute. LCs should also be encouraged to cover part of their directors’ salaries from grants wherever possible. This would require providing an incentive to the LC (e.g. some fraction of the covered salary returned as discretionary funds). Several departments currently already participate in DSCP (Direct Salary Charge Plan).
Revaluation of Intellectual Property & Royalty Distribution

MIT should reconsider the current formula for distributing income from intellectual property (IP) (currently very roughly, 1/3 each to the Institute; to the department, lab, or center; and to the group of inventors). It is recommended that the apportionment to the DLC’s could be reduced while increasing the contribution to Institute. The amount of support from the DLC varies greatly across the Institute and 1/3 of revenue may not be justified in every case. The apportionment to the inventors could remain at 1/3. It may be that distributing less IP income to the DLC would better reflect the inputs of money and effort associated with creating the IP. We do not have data to determine how much revenue could be provided to the GIB. This suggestion is overall revenue-neutral for the entire Institute because it would only reallocate existing income.

B. Research Administration

The subgroup met and discussed key areas for synergies, efficiencies and savings in the area of research and contract administration at the Institute. In addition, since a substantial review of research administration took place through the Research Administration Improvement Initiative (RAII), the reports and recommendations from that project were reviewed thoroughly so duplication of efforts did not occur.

The subgroup has come up with 5 specific areas for recommendations. Regarding the recommendations, keep in mind that research funding from private and governmental entities provides critical opportunities for MIT, and, that cutting of services centrally will clearly impact the ability for DLCs to meet funder demands. This process has revealed that creativity and efficiencies are needed to be able to handle both additional compliance demands and to provide the ability to expand funding without adding staff. However, it is hard to quantify the resulting ideas proposed by this subgroup in immediate/concrete ways. What the ideas presented here represent are needed efficiencies in the Research Administration arena. When implemented, these would result in systems that are both scalable and responsive to growing compliance demands. In addition, we should be able to maintain staffing levels, rather than grow them, based on expanded funding. In many cases, the largest savings would be linked to “cost avoidance” associated with high turnover and inefficiency.

Recommendations include:

**Enact efficient procedure for Industrial Research Contracts**

Industrial research at MIT represented $82 million in FY08 and needs to be recognized as an area of contractual negotiation separate from the governmental processes that dominate research administration at the Institution. Proposals and proposal processes at MIT are based on governmental platforms that do not respond well to the needs of contractual negotiations with industrial collaborators. Specific, streamlined and timely, yet still flexible, procedures and processes are needed for
responding to, negotiating, and developing industrial contracts.

It is recommended that a separate process for negotiating of industrial research contracts be developed that allows for flexible responses to individual industry requirements as well as fast turn around during the contractual process.

**Standardize Sponsored Research Proposal Processes**

In FY08, MIT submitted over 2,200 new proposals to over 200 sponsors for research funding. Multiple tools have been developed by DLCs across the Institute to respond to sponsor-specific submission needs (including system-to-system transmission, emailing pdf documents, sponsor website uploads, and paper submissions sent via overnight mail) and specific-school review criteria and processes. In turn, OSP must deal with each of these DLC-created submittal tools. In addition, OSP subjects each proposal to at least 2 reviews (contract administrator and Agency Liaison) to ensure compliance with MIT policy and sponsor requirements, prior to submission of the proposal and has developed its own tools to manage these requirements. An estimate of the number of hours spent in FY08 on these processes is 6,600 hours in OSP and an additional 7,700 hours in the DLCs.

It is recommended that a single proposal preparation process be developed and implemented across the Institute that will standardize the submission and review processes. This would incorporate and build on best practices that already exist, including improvement of the Coeus system, and would entail development of standard templates, tools and trainings that would be hosted by OSP.

**Post Award Administration – Financial Reporting and Forecasting**

MIT has no standardized means to forecast expenditures on sponsored research awards. Currently, this is accomplished using DLC-specific systems, through calculations and spreadsheets, or not at all. Forecasting research resources is a complex function involving gaining a comprehensive view of a faculty member’s entire research portfolio including various award start and end dates and staffing needs over time. This recommendation endorses an already-existing project to develop an institute-wide forecasting tool to stream-line the numerous and inefficient processes that currently plague virtually every faculty and staff member involved in research administration at MIT.

It is recommended that MIT develop a standard on-line forecasting and modeling tool that will allow research administrators and PI’s to track actual research expenditures as well as to model the impact of new projects and resources, projected changes to spending patterns and the reallocation of staff and expenses between projects. This tool should provide for the capability to project point-in-time balances and project-end balances, based on current spending patterns and modeled spending forecasts. The tool should also track resources at the individual project level, summary by PI
level and summary by organizational unit and include a “report writer” function flexible enough to respond to donor/sponsor needs/requirements.

**Review Staffing of Units**

There are over 100 DLCs managing sponsored research funds at MIT. Federal regulations and compliance requirements as well as development of specialized tools such as Grants.gov have made research administration increasingly complex. To ensure compliance, efficiency, and the highest level of service, research administration should be centralized allowing for specialized research administration staff that would be trained and certified as recommended below.

We recommend that centralized research administration be pursued as the standard model at MIT. It is further recommended that MIT set size thresholds for smaller DLCs and where ASO type models, and strengthened the ties to the Dean’s Offices regarding oversight, would be pursued.

**Research Administration Training for Faculty and Staff**

Training classes related to research administration are currently offered by multiple central units (OSP, VPF, IS&T). There is no ‘recommended curriculum’ based on roles and a significant amount of the learning takes place ‘on the job’. The learning curve is steep, and the decentralized nature of the training perpetuates local processes that differ across the Institute. There is little formal training for faculty; most of the training is conducted on an “as needed” basis fashion by local administrators and faculty peers. To date, there is one required training program for MIT research administrators – the Star Web training program, which is a very basic training program. OSP and VPF also collaborate on a voluntary training program for administrators on pre and post awards topics. These programs need to be reviewed and refreshed.

We recommend improving operational efficiencies and compliance by developing targeted training and required curriculum for research administrators and, by developing a separate training curriculum for principal investigators (PIs). It is further recommended that a required training/certificate program be developed for research administrators.

**C. Research Infrastructure**

Research infrastructure consists of laboratory space and libraries, computing infrastructure and equipment and instrumentation that enable experimentation. MIT has made significant investments in its research infrastructure to enhance the competitiveness of its investigators.

The Space Working Group investigated how to optimize MIT’s investment in the physical infrastructure, the IT Working Group investigated opportunities to optimize
computing hardware and software and the Procurement Working Group investigated opportunities to get better prices and contractual terms with equipment suppliers. Accordingly, we primarily investigated opportunities to leverage MIT’s investments in equipment and instrumentation capabilities across the research community and also how to more efficiently store and access library information.

**Equipment**

Equipment is paid for through a combination of sponsored research grants and by the Institute through start-up packages or through special allocations to DLCs or the Deans of the various schools. When projects are discontinued, the equipment is set aside and remains idle and uses up valuable space. It is estimated that as much as 10% of the present capital equipment inventory may be unused and would likely be useful to other groups; this represents ~$33 million worth of equipment.

At present the property office has been very effective at recycling surplus property, particularly furniture and computer peripherals. However, there is very valuable unused equipment that groups could loan with suitable incentives. A web tool could be developed to list this equipment pool to facilitate this process. Groups offering equipment would receive points that could be used towards the “cost” to borrow equipment from the pool. The Institute would provide some self-insurance to cover possible damage to loaned equipment. Proposals that request cost matching and start-up projects should consider using this equipment pool. Staff in the VP for Research Office would be needed to help maintain the equipment database and to check the pool for available equipment for new projects.

**Service Centers**

There are 78 service centers in the FY 09 Summary Report. These service centers include equipment and the technical staff to operate it. They have been created over time as shared resources to the research community and as a way to sell excess capacity to external users. We believe that savings could accrue to the Institute by evaluating both the economics of the centers as well as the fit of the capabilities in the portfolio to current research needs.

Service centers have been managed only on the direct expenses to run the facility ($17.2M in FY 09) without considering the space they occupy or the utilities required to run their operations. Some of these operations can be very energy intensive. From the facilities data base, these operations require 93,358 square feet of space. If we assumed the cost per square foot of space on average was $50, the market value of this space is $4.7 million, or 27% of the direct expenses. Further work is required to obtain an inventory of the equipment used in the facilities and to understand the cost of the utilities consumed.

A cost evaluation should be performed on all centers, with the cost to include space and utility costs so that comparative pricing of services to outside entities that could
perform these functions is compared to MIT’s real costs. This will allow the managers to understand the true economics of the services they provide so that the full costs are recovered by users. Further work is required to evaluate potential savings if some centers that have low activity should be phased out or consolidated with other centers. A web site should be developed to promote the capabilities of the various service centers.

At present, service centers may only acquire new (major) capital equipment through sponsored research grants or through Department research start-up packages or discretionary funds. Equipment can be replaced through the VP for Research Equipment Pool. Some Service Centers would greatly profit by being able to buy new capital equipment and charge the cost to users, which presently is not allowed by the Institute. Allowing the service centers to amortize the purchase cost of such equipment would shift costs from the Institute funds to sponsored research grants. As the capital equipment cost would be amortized, the Institute would take some risk if the full cost of the equipment were not recovered through service center charges. Therefore, it would be mandatory that such purchases to be approved by the service center users as well as by the Office of the VP for Research, in order to ensure that the equipment was necessary and that the base of users would be available from which to recover the costs.

Research Libraries

Part of the F&A cost recovery supports the use of the libraries by the research community. This use is fourfold: (1) archival storage of research theses and papers by MIT researchers, (2) development and maintenance of reference data bases as well as help in using those data bases, (3) research journal subscriptions and conference proceedings, and (4) maintaining a library of reference books. The rapidly evolving use of on-line journals and archival data bases of research papers has greatly changed the needs for items (2) and (3). Significant cost reductions may be possible by eliminating hard-cover subscriptions to many research journals and conference proceedings. These could be replaced by on-line versions. A hard-copy printed version could be made available to a user for a printing fee, if there was a need. This would save both the subscription cost and the storage and handling costs. An evaluation would need to be made to determine which subscriptions could be made available only in an on-line version.

Development of a New Research Facility in the Physical Sciences

The Institute has a history of hosting major research facilities in the physical sciences, such as the National Magnet Lab and the Bates Linear Accelerator Center. With the renewed national emphasis on scientific research, the Institute should be planning to develop such a major new facility to provide state-of-the-art infrastructure for new research opportunities as well as generating increased overhead. Such a facility should be managed by a steering committee with representation on the advisory councils of each of the participating schools, which may overcome the difficulty
establishing research facilities that involve researchers from several schools across the Institute.

D. Research Personnel

Faculty Salaries

In at least the School of Engineering, some faculty elect to charge part of their academic year salary to grants. In practice, the extra money would be split between the faculty member and some unit such as the department or the Institute. The faculty member could use the money for discretionary spending, e.g., on travel.

Making this change could lead to substantial short-term savings. We estimate that for every 1% of total academic year salary shifted from the General Institute Budget to research, the GIB would save of order $1.6M, including employee benefits. It should be emphasized that this plan would be optional rather than required; the working group does not propose an across-the-board softening of faculty salaries. Furthermore, there are serious concerns that a change in faculty salary charging could raise unwanted issues with the Federal Government and our cognizant agency, the Office of Naval Research. These issues should be considered carefully prior to instituting any changes.

Support of Senior and Principal Research Scientists

Right now principal and senior are guaranteed either 1 or 3 full years of salary support in the event that their funding runs out, and this guarantee poses a substantial financial liability for the unit that employs them. The proposal is to instead provide a termination period be based on the number of years of service, as is the case for other employees. The change would affect only new hires (existing employees would be grandfathered).

Faculty Renewal

An intensification of effort to encourage retirements of very senior faculty is very important for faculty renewal. It can be done in a revenue-neutral way by not filling the vacant slots for a period long enough to cover the benefit being paid. In fact, it could reduce the draw on the GIB if the slot stays vacant longer than this.

The current incentive has only been mildly effective, but a somewhat more generous program might work. For example, in the School of Science the Dean added additional incentive by providing an additional one semester off of teaching or a one-semester lump sum salary payment and that this was effective.
Post Doc Term Limits

The Institute has a serious problem with post docs who have been employed longer than 4 years, even though the stated policy is that 4 years should be the limit. A possible approach, already under consideration in some parts of the Institute as we understand, is to set up a system for providing post docs with career counseling. This could be done within the school in which they are appointed. However, it needs to be done both by faculty mentors and in addition an external entity, as post docs provide valuable research contributions and are often not actively encouraged to seek follow-on positions. We note that NSF is now requiring mentoring of post docs, so the Institute will probably have to move in this direction anyway. Another possibility is to pay post docs through a payroll category that automatically expires after the allowed length of time.

Raise Pool

There appears to be merit to making decisions regarding salary increases in large units. In this way there is a larger pool of money to work with which makes it easier to adjust raises in a way that rewards good performance. We also note that having a pool to consider allows comparisons to be made so that good performers (and bad performers) can be identified.

An additional point is that this kind of decision-making needs to be done for more than just administrative staff. Similar issues come up for research staff and technicians as well.

There also seems to be value to reporting the raise pool differently. At present the total amount is reported and this can lead to an expectation that that is the amount of the raise. It would arguably be preferable to announce a base amount and an additional amount to be used for adjustments.

Tuition Subsidy for Research Assistants

There has been discussion of the possibility of reducing the subsidy for tuition for research assistants. We wish to go on record as opposing this course of action. While reducing the subsidy could produce modest savings, we believe that this action would be damaging and short sighted. Without the subsidies our proposals will either be less competitive from a financial standpoint or are likely to support fewer research assistants, which is in conflict with our core mission of education of graduate students.

Labs and Centers
1. Consolidation of Smaller Labs and Centers (1)
2. Sharing of Lab/Center Infrastructure (1)
3. Re-evaluation of Criteria for MIT support to Labs and Centers (1)
4. Re-evaluation of Intellectual Property and Royalty Distribution (2)

Research Administration
1. Post Award Administration – Financial Reporting and Forecasting Sharing of Lab/Center Infrastructure (1)
2. Standardize Sponsored Research Proposal Processes (1)
3. Research Administration Training for Faculty and Staff (2)
4. Review Staffing of Units (2)
5. Enact Efficient Procedure for Industrial Research Contracts (1)
6. Project Managers for PIs (3)

Research Infrastructure
1. Reduce/eliminate Commodities (Consumables) Supplied by Internal Providers Some of Which May be Energy Intensive (3)
2. Consolidation or Termination of Some Service Facilities (2)
3. Implement Shared Equipment Pool (2)
5. Web Inventory of Service Centers (2)
6. Amortization of Service Center Equipment (2)
7. Lab Equipment “Time share” system (1)

Research Personnel
1. Charge Academic Year Salary To Grants (2)
2. Incentives for Retirement (2)
3. Termination Policy for Senior and Principal Research Associates (1)
4. Mentoring for Post docs (3)
5. Consolidation of Salary Decisions (3)
6. Support of Research Assistants (recommendation is to retain current arrangement)

Footnote: Numbers in parentheses note ranking by working group where (1)-(3) represent the relative priority rating (1= highest priority) indicating significance of cost saving/efficiency improvement if implemented.
WORKING GROUP: Research – Labs and Centers

NAME: Consolidation of Smaller Labs and Centers

SUMMARY DESCRIPTION:

Some labs and centers (LCs) have research volume and administrative complexity that does not justify committing MIT resources to their administration. Smaller LCs should be evaluated to determine whether their goals could be achieved more efficiently by merging them with other LCs. This could be either joining small LCs to larger LCs, or combining small LCs. Cost reduction to the GIB would come primarily through having fewer directors, assistant or associate directors, and administrative staff.

As part of the same process LCs should be evaluated to determine whether they provide a distinct service to the Institute. LCs that do not provide an important service in terms of collaborative research, facilities, or administration could be eliminated with affiliated faculty moving the research to departments or to other LCs.

An initial review of existing LCs could be conducted within the next year. The same criteria could be applied as part of a period review of LCs (a proposal for regular review of LCs and evaluation criteria will be part of the final report from our Working Group). After the initial review the general oversight of LCs is will be an ongoing process. Long-term cost savings are possible by actively identifying LCs that are not performing distinct functions or providing specific services. There will be a cost associated with reviewing LCs, primarily time of LC directors preparing for review and time from relevant authorities at the Schools and the Office of the Vice-Provost for Research. Merging or closing LCs would also impose a one-time administrative cost.

QUANTIFY THE IDEA:

We are still awaiting the collection of all data requested to help determine how much would be saved by merging or closing particular LCs. Estimates will be provided once all data is accumulated.

IMPLEMENTATION CONSIDERATIONS

Decisions to close or merge LCs would likely be made as part of a periodic review of LCs. A proposal for periodic review and evaluation criteria will be part of the final report from our working group.
WORKING GROUP: Research – Labs and Centers

NAME: Sharing of Lab/Center Infrastructure

SUMMARY DESCRIPTION:

LCs could be encouraged or required to share various types of infrastructure. Examples are administrative support, information technology (IT) systems, financial management systems, and lab facilities. Sharing of administrative support could include sharing Administrative Officers, or merging the administrative functions of a small LC with a larger LC or department (many such “attached administration” LCs already exist within MIT). Creating more “attached administration” LCs could be done separately from the review process discussed in our previous idea. In this case the LC retains its independent existence, just running administration processes through the larger entity. We suggest that this should be the preferred mode for administering small LCs and those with simple administrative requirements. Most savings would come from reducing the number of administrative staff. An approach for IT could be to leverage IS&T by evaluating why some LCs feel the need to maintain separate systems. The Working Group for IT is probably evaluating these possibilities in more detail.

Improved sharing of lab facilities and capital equipment could be leveraged to reduce the need for large start-up packages for new faculty. We believe that new faculty could be encouraged to use existing specialized facilities (fabrication facilities, for example), or such facilities could be upgraded to meet specific needs of new faculty. This approach may reduce the cost to departments and LCs associated with hiring new faculty.

Sharing of administrative functions could probably be accomplished in a matter of months. Improving availability and capability of shared lab facilities is a process as opposed to a well-defined task. Initial implementation would require internal work by each LC to identify existing shared facilities or potential to create shared facilities.

QUANTIFY THE IDEA:

We are still awaiting the collection of all data requested to help determine how much could be saved by sharing administrative support, IT systems, financial management systems and lab facilities among particular LCs.

IMPLEMENTATION CONSIDERATIONS

Decisions for implementation would likely be made as part of a periodic review process of the LCs.
WORKING GROUP: Research – Labs and Centers

NAME: Revaluation of Criteria for MIT Support to Labs and Centers

SUMMARY DESCRIPTION:

The guidelines used by MIT to set support to director salaries, discretionary funds, assistant or associate directors, and administrative officers is based entirely on research volume. It does not appear to have been revisited since 1995. MIT should re-evaluate support provided to LCs to maximize the value of any direct financial support. New criteria must be set for evaluation of the support deserved and needed by LCs.

The Institute should provide support to LCs on a case-by-case basis. In some cases LCs can cover more of their administrative costs through allocation accounts, covering it from grants, support from major sponsors, or income from other activities (industry collaboration, intellectual property, etc.). At the same time, some LCs derive much of their sponsored funding from agencies that will not cover administrative costs in grants. These differences should be considered in determining the need for direct support from the Institute. Where other resources are available, MIT should expect LCs to use those before drawing from the GIB.

LCs should also be encouraged to cover part of their director salaries from grants wherever possible. This would require providing an incentive to the LC (e.g. some fraction of the covered salary returned as discretionary funds).

QUANTIFY THE IDEA:

We are still awaiting the collection of all data requested to help determine how much could be saved by setting new criteria for MIT support among the LCs.

IMPLEMENTATION CONSIDERATIONS

Initial re-evaluation could take place in months to a year. Implementing any changes might take longer to avoid disrupting LCs by suddenly changing their level of support. Decisions for regular implementation would likely be made as part of a periodic review and oversight process of the LCs.
MIT should reconsider the current formula for distributing income from intellectual property (IP) (very roughly, currently 1/3 each to the Institute; to the department, lab, or center; and to the individual inventor). It is recommended that the apportionment to the DLC’s could be reduced while increasing the contribution to Institute. The apportionment to the inventors could remain at 1/3. It may be that distributing less IP income to the DLC would better reflect the inputs of money and effort associated with creating the IP. We do not have data to determine how much revenue could be provided to the GIB. This suggestion is overall revenue-neutral for the entire Institute because it would only reallocate existing income.

We are still awaiting the collection of all data requested to help determine approximately how much revenue could be provided to the GIB by setting a new method for apportionment.

Implementation will of course involve review of the importance of the DLC’s (relative to the inventors and Institute) in enabling this IP.
WORKING GROUP: Research – Administration

NAME: Post Award Administration – Financial Reporting and Forecasting

SUMMARY DESCRIPTION:

MIT has no standardized means to forecast expenditures on sponsored research awards. Currently, this is accomplished using DLC-specific systems, through calculations and spreadsheets, or not at all. Forecasting research resources is a complex function involving gaining a comprehensive view of a faculty member’s entire research portfolio including various award start and end dates and staffing needs over time. This proposal endorses an already-existing project to develop an institute-wide forecasting tool to stream-line the numerous and inefficient processes that currently plague virtually every faculty and staff member involved in research administration at MIT.

- Develop a standard on-line forecasting and modeling tool that will allow research administrators and PI’s to model the impact of new projects and resources, projected changes to spending patterns and the reallocation of staff and expenses between projects. This tool should provide for the capability to project point-in-time balances and project-end balances, based on current spending patterns and modeled spending forecasts.

- Develop a standard on-line reporting and tracking tool to monitor actual research expenditures vs. approved project budgets. This tool should include information regarding specific personnel resources allocated to the project as well as a summary of the various types of expenditures. The tool should also track resources at the individual project level, summary by PI level and summary by organizational unit and include a “report writer” function flexible enough to respond to donor/sponsor needs/requirements.

- Formulate a joint team of central and DLC administrators to review the process for financial reporting and forecasting. This group would formulate best practices and recommendations for missing functions in the forecasting tool already underway.

- Develop policy for reporting and forecasting in DLCs and require regular reporting.

QUANTIFY THE IDEA:

Cost savings vary greatly between DLC’s. This function is currently being done monthly, quarterly or not at all, and is being accomplished through a series of spreadsheets. We estimate that departments invest between 1 and 4 hours per research award on reconciliation and forecasting. MIT has over 2900 sponsored research awards (most of which have multiple accounts to monitor) being managed
by over 100 DLCs. Standardization of tools and processes in this area could result in significant efficiencies across the Institute.

IMPLEMENTATION CONSIDERATIONS:

By providing standard tools, processes and expectations, the Institute should also gain increased compliance with agency terms and regulations.

An on-line reporting and tracking tool is currently under development through sponsorship of the Office of the VP for Research.

Pre-cursor work mapping MIT organizational structure and staff and supervisor relationship needed for development of these systems has been proposed by ASPCC and exploratory work is underway.

This effort should be fast-tracked to meet the immediate need to economize across campus. Even if savings in research administration are not immediate, having a tool like this will help MIT save by not growing the staff in the future.
WORKING GROUP: Research -- Administration

NAME: Standardize Sponsored Research Proposal Processes

SUMMARY DESCRIPTION:

In FY08, MIT submitted over 2,200 new proposals to over 200 sponsors for research funding. Some sponsors require highly prescriptive formats while others are more flexible (e.g., industry proposals). Submission processes include system-to-system transmission, emailing PDF documents, sponsor website uploads, and paper submissions sent via overnight mail. DLCs have developed tools to manage these varying requirements. Deans of the schools and the VPR have their own review criteria and processes. In addition, OSP subjects each proposal to at least 2 reviews (contract administrator and Agency Liaison) to ensure compliance with MIT policy and sponsor requirements, prior to submission of the proposal. OSP has developed its own tools to manage these requirements.

- Given the range of activities and standards, this process should be reviewed for opportunities to share tools, streamline approvals, and assure that roles and responsibilities are clearly understood and implemented.

- The process for obtaining industrial/foreign sponsorship of MIT research is entirely different from that associated with Federal research sponsorship. While Federal sponsors place a great emphasis on the proposal process and strict adherence to Federal regulations, industrial/foreign sponsorship is focused on the negotiation of a contract and may not even require a proposal. As MIT seeks to expand its industrial/foreign research sponsorship, a close examination and streamlining of this contracting process should be undertaken with a focus on simplification.

QUANTIFY THE IDEA:

OSP estimates that proposals prepared in Coeus by administrators with experience in agency policies and MIT policies take approximately a third less time to process as compared to proposals developed under other conditions. There are a wide range of proposals to consider, but the average proposal takes approximately 3 hours to process within OSP (both reviews, including reviewing corrections), or about 6,600 hours in FY08. Comprehensive figures are not readily available on the number of errors on all proposals, so it is hard to sort the “good from the bad”. However, virtually all proposals are returned to DLCs at least once for corrections. The last check on NSF proposals showed the range of errors from 1 to 13 per proposal, with an average of 4.5 errors per proposal. Of the 25 DLC’s included in the sample, 9 were under the average error rate, and 16 exceeded it.
Similarly, although DLC time spent preparing proposals varies widely, an average of 3-4 hours per proposal is not an unreasonable estimate. This amounts to an additional ~7,700 hours in FY08. There is no doubt that on-line tools for efficiently preparing proposals would yield significant efficiencies over time.

If the average estimated proposal preparation and review time could be reduced, through efficiencies in the process, by even 1 hour in the DLC and 1 hour in OSP, 4,400 hours of valuable time could be repurposed.

IMPLEMENTATION CONSIDERATIONS:

• Develop a single proposal preparation process for the Institute that incorporates best practices for consistently preparing and presenting budget information. Formulate a team of stakeholders to review, map and refine, as necessary, MIT’s process for preparing and submitting proposals to sponsors (in cases where the sponsor solicits through a call for proposals, for example).

• Formulate a team of OSP, TLO and faculty representatives to review, map and refine the non-federal (e.g. industry) proposal process. This process is significantly different from the solicited review process and a growing segment of MIT’s sponsorship.

• Develop templates, tools and best practices for MIT-wide use. Tools to be hosted by OSP.

• Develop and deliver training to all individuals involved in the process.
WORKING GROUP: Research -- Administration

NAME: Research Administration Training for Faculty and Staff

SUMMARY DESCRIPTION:

Training classes related to research administration are currently offered by multiple central units (OSP, VPF, IS&T). There is no ‘recommended curriculum’ based on roles and a significant amount of the learning takes place ‘on the job’. The learning curve is steep, and the decentralized nature of the training perpetuates local processes that differ across the Institute. There is little formal training for Faculty; most of the training is conducted on an ‘as needed’ basis fashion by local administrators and faculty peers. To date, there is one required training program for MIT research administrators – the Star Web training program. This is a very basic training programming. OSP and VPF also collaborate on a voluntary training program for administrators on pre and post awards topics. These programs need to be refreshed. We propose improving operational efficiencies and compliance by developing targeted training for research administrators.

In addition, MIT does not have a formal training program (mandatory or voluntary) for Principal Investigators. We propose improving operational efficiencies and compliance by developing a separate training curriculum for principal investigators (PIs). Based on recommendations made by RAII:

• Develop a comprehensive research administration training program that focuses on the unique requirements related to research administration including financial management, research compliance and payroll processes and transactions, integrating MIT policy, sponsor requirements and electronic tools and systems.

• Develop and implement a comprehensive research administration certification program using the research administration training curriculum as the foundation upon which to build; certification should be required for specific roles within the Institute.

• Develop a PI training program that highlights PI responsibilities related to research administration. Require all new faculty, and encourage existing faculty and PIs to attend.

QUANTIFY THE IDEA

It is difficult to quantify savings in this area. Largest savings could be “cost avoidance” associated with high turnover and inefficiency. The cost of non-compliance is also difficult to assess. This cost includes the risk submission of unallowable costs to sponsors, as well as the cost to MIT’s reputation (e.g. the Yale investigation).
IMPLEMENTATION CONSIDERATIONS:

- RAII recommendations related to training had broad support in 2007; these needs remain today. OSP and the VPF have collaborated through the Training Alignment Team (TAT) to develop a curriculum outline for an Integrated Research Administration Training program.

- Develop a research administration certification program that builds upon the Integrated Research Administration Curriculum. Implementation of a certification program has significant HR-related implications that must be explored in more depth.

- Creation of course materials and implementation of the program itself requires an initial investment and a commitment on the part of the Institute to maintain the training program at the appropriate level. In addition, resources are needed on an on-going basis to keep the training up to date.
WORKING GROUP: Research -- Administration
NAME: Review Staffing of Units

SUMMARY DESCRIPTION:

• Federal regulations and compliance requirements as well as development of specialized tools such as Grants.gov have made research administration increasingly complex. To ensure compliance, efficiency, and the highest level of service, research administration should be centralized and research administration staff professionalized wherever possible.

• Develop standard practices and expectations for all of MIT’s research administration staff and implement a required training/certificate program which research administrators are required to complete within a given period of time after their hire.

• Pursue ASO type models for small DLC’s and strengthen the ties to the Dean’s Offices regarding oversight. Establish size thresholds for local research administration support.

• Explore development of appropriate metrics for research unit administrative staffing levels

QUANTIFY THE IDEA:

Centralizing small operations’ research staff may allow for the some savings to the GIB but further exploration would be needed, since these functions can be widely disbursed within units. Establishing roles, expectations and improved training should improve service and processing time. Largest savings could be “cost avoidance” associated with high turnover and inefficiency.

Note: There are over 100 DLCs managing sponsored research funds.

IMPLEMENTATION CONSIDERATIONS:

• Mandating requirements will be necessary for recommendations to be effective. Allowing DLC’s to opt in or out of participation dilutes the effectiveness and perpetuates existing inequalities and efficiency of service.

• Continue on the work done by RAII on Roles and Responsibilities. Link to HR systems.

• Standardization of processes and professionalization of staff will facilitate staff movement between DLC’s
WORKING GROUP: Research -- Administration

NAME: Enact Efficient Procedure for Industrial Research Contracts

SUMMARY DESCRIPTION:

In FY08, MIT’s research volume for Industrial Research was $200 million, an amount which has increased steadily over the past several years and by all measures will continue to increase.

- Almost all administrators at MIT have the mind set of “Proposals,” based on MIT’s history of focusing on government sponsored research and the current fact that most of MIT’s research volume comes from government grants. However, Industrial Research Contracts are completely different in terms of the contract process, implementation, and administration of grants.

- MIT needs to enact a radical change of mind-set in addition to developing specific procedures to address Industrial Research Contracts.

QUANTIFY THE IDEA:

Industrial Research Contracts vary widely in terms of negotiation approach and interests and concerns of the Industrial partner. One property that they all have in common is that responsiveness from MIT is paramount to success. MIT likely loses several million dollars per year simply due to delays. In addition, due to lack of proper mind-set and procedures, MIT probably loses 3 hours per Industrial Research contract on the administrative side and an equal number on the faculty side. If we have 400 industrial grants, that is 2400 hours per year. Perhaps even more time can be saved with efficient procedures.

IMPLEMENTATION CONSIDERATIONS:

- Industrial Research Contracts vary widely in the approach needed. In addition, unlike Government Grants, there is almost always a technical counterpart on the industry side. In general, the development of an Industrial Research Contract goes through several phases, starting from initial discussions between MIT faculty and potential Industrial Collaborators to allocation of funds at the Collaborator’s entity to contract negotiations. MIT needs to work out a process that is flexible enough to encompass the variety of Industrial Research Contracts while being streamlined and efficient.

- Develop a separate process for negotiating Industrial Research Contracts with strict timelines, perhaps 1 week for an MIT response to potential industrial partners.
• Instill a new mind-set among MIT administrators and faculty for Industrial Research Contracts. For example, their rules are generally much more flexible than those of Government Grants.
WORKING GROUP: Research – Administration

NAME: Project Managers for PIs

SUMMARY DESCRIPTION:

- Hire dedicated staff to assist faculty with the administrative and compliance aspects of monitoring sponsored research activities.
- Share project managers among several PIs
- Individuals would have a technical knowledge of the field to help run the business aspects of the research program. PIs would delegate approval authority to these individuals, acting on behalf of the PI. Duties could include certifying salary and effort costs (direct knowledge of who is working on what); certifying and approving subaward invoices (know that the subawardee is working and delivering at the appropriate level); initiation and approval of many other types of transactions

QUANTIFY THE IDEA: Principal Investigators are increasing required to do more administration as required by the sponsoring agencies. A recent Federal Demonstration Project survey of federally-funded PIs across the country determined that faculty funded by federal projects devote only 58% of their time to active research. The remaining 42% of the time was taken up by pre- and post-award research administration. No single overriding burden emerged, but the top tasks identified were writing and submitting grant progress reports, hiring personnel, managing project revenue, equipment and supply purchases, IRB protocol approvals and training, training personnel and students, and personnel evaluations. Time spent writing and submitting grant applications, service on study sections, service on institutional compliance committees, and attendance of mandatory training was excluded from the survey. 1

At the same time, PIs are the primary and sometimes only person with direct knowledge of the various projects, and therefore are the only appropriate person to approve costs and perform other administrative duties, as required by MIT and the sponsor. We estimate that one project manager could assist up to five (realistic?) PIs, at a cost of about $85K per year, including benefits (realistic?). The investment would be a share cost, and a large proportion of it would be recoverable through the F&A rate given the departmental duties that the person would perform. This individual would reduce the audit risk to the institution significantly.

IMPLEMENTATION CONSIDERATIONS:

- Pilot it in a school and DLC with good administrative structure to determine the viability across campus.
- Costs models to be verified by the Cost Analysis Team in OSP
• Measure better compliance in terms of better turn around on compliance transactions (e.g. salary certifications done on time), and increases in faculty productivity

• Pros – reduce compliance risk; reduce stress on the AO, PI and Central administration; less time wasted “nagging” PIs to submit and approve administrative documents; more productive PIs.

• Cons – who pays?
WORKING GROUP: Research – Infrastructure

NAME: Reduce and/or Eliminate Commodities (Consumables) Supplied by Internal Providers Some of Which May be Energy Intensive.

SUMMARY DESCRIPTION:

The MIT Cryogenics Laboratory sells liquid nitrogen and helium to users on campus and also recycles liquid helium. There exist external vendors who also can provide equivalent products. Is the true cost for this service competitive when the "hidden" costs of space and utility usage were included in the price?

QUANTIFY THE IDEA:

A cost analysis of the MIT Cryogenics Laboratory is required. Data on volume, operating expenses (energy, personnel, other) and space are needed to evaluate the true cost to the Institute for this service. Airgas and other vendors provide liquid nitrogen (bulk and dewars) to customers on campus.

IMPLEMENTATION CONSIDERATIONS:

The MIT Cryogenics Facility is able to recycle the helium. This reduces the cost and also produces a sustainable supply. There would be an intrinsic benefit for this activity that would be reflected in lower future costs for liquid helium service, as the world's supply of helium is limited.
WORKING GROUP: Research - Infrastructure

NAME: Consolidation or Termination of Some Service Facilities

SUMMARY DESCRIPTION:

Service Centers have been created over time and historically have been justified just based on the direct expenses to run the facility, without considering the space they occupy or the utilities required to run their operations. Some of these facilities can be very energy intensive. If comparison pricing with outside vendors does not consider this real cost to MIT, the economics of the activity may not be properly understood by the manager and/or the costs not properly recovered from the users. In some cases, if the true costs are determined, some outside vendors may be able to provide services more economically than internal service centers. We believe it makes sense to look at the portfolio of these operations and evaluate the economics and determine which facilities properly fit to current Institute needs. For facilities that are energy intensive, the rate charged to the users should also include the extra costs beyond the baseline costs. This revenue to support the extra costs should be returned to the Institute. Some facilities may no longer be viable if the true costs are identified. There may be other facilities in which consolidation could result in substantial savings of space and utility costs.

QUANTIFY THE IDEA:

There are 78 Service Centers in the FY 09 Summary Report – with $17.2 million in expenses. From the facilities data base, these operations require 93,358 square feet of space. If we assume the cost per square foot of space on average is about $50, the market value of this space is $4.7 million, or 27% of the direct expenses of the facilities. Further work is required to understand the cost of the utilities consumed and potential savings if some facilities are consolidated/phased out. Facilities with a low value of revenue to space use should be considered for phase out unless their mission is critical to the research program.

IMPLEMENTATION CONSIDERATIONS:

The Institute may benefit from expanding the concept of “service centers” in support of the development of a major “service facility” that could be built in space that is appropriate to the work being performed and could be constructed and operated more efficiently than in separate labs located throughout many departments/centers.
WORKING GROUP: Research - Infrastructure

NAME: Implement Shared Equipment Pool

SUMMARY DESCRIPTION:

Large amounts of equipment are purchased each year to start up programs. If an inventory of surplus equipment would be made available to MIT groups via the web, some of this surplus equipment could be recycled for these new projects. To encourage groups to make equipment available, groups that offer equipment would receive points that could be used towards the “cost” to borrow equipment from the pool. The Institute would provide some self-insurance to cover possible damage of loaned equipment. Proposals that request cost matching would also benefit from the use of the available surplus equipment.

Several projects are started, especially by new faculty, and then the equipment is set aside because the projects are discontinued. The equipment remains idle and uses up valuable space. This equipment could be profitably loaned/recycled saving both purchase cost and storage space.

QUANTIFY THE IDEA:

An estimate is that about 10% of the present equipment inventory is surplus equipment that would likely be useful to other groups. Present equipment purchase levels indicate that about $5 million in equipment per year might be reusable.

IMPLEMENTATION CONSIDERATIONS:

A staff person would be needed in the VP for Research Office to help maintain the surplus equipment database. Proposals for start-up funds and cost sharing would need to be checked to see if equipment was available from this inventory.
WORKING GROUP: Research - Infrastructure

NAME: Evaluation of Research Library Journal Subscriptions and Conference Proceedings

SUMMARY DESCRIPTION:

Part of the F&A cost recovery supports the use of the libraries by the research community. This use is fourfold: (1) archival storage of research theses and papers by MIT researchers, (2) development and maintenance of reference data bases as well as help in using those data bases, and (3) research journal subscriptions and conference proceedings, and (4) maintaining a library of reference books. The rapidly evolving use of on-line journals and archival data bases of research papers has greatly changed the needs for items (2) and (3).

QUANTIFY THE IDEA:

Significant cost reductions may be possible by eliminating hard-cover subscriptions to many research journals and conference proceedings. These could be replaced by on-line versions. A hard-copy printed version could be made available to a user for a printing fee, if there was a need. This would save both the subscription cost and the storage and handling costs.

IMPLEMENTATION CONSIDERATIONS:

An evaluation would need to be made to determine which subscriptions could be made available only in an on-line version.
WORKING GROUP: Research - Infrastructure

NAME: Web Inventory of Service Centers

SUMMARY DESCRIPTION:

An inventory of the service centers within MIT would be maintained on the web so that MIT researchers would be familiar with their capabilities.

QUANTIFY THE IDEA:

There are now 78 service centers within MIT. Many of these facilities are used by a limited number of researchers within a specific lab or center, although such facilities are in fact available to the whole MIT community. In some cases there may be duplication of facilities serving similar needs. A web inventory of the service centers would inform the entire MIT research community of their capabilities.

IMPLEMENTATION CONSIDERATIONS:

A part-time webmaster within the Office of the VP for Research would be needed to maintain the web site.
WORKING GROUP: Research - Infrastructure

NAME: Amortization of Service Center Equipment

SUMMARY DESCRIPTION:

MIT policy only allows service centers to replace equipment with funds from a pool administered by the VP for Research. An option should be possible for service centers to obtain equipment whose cost could be amortized over the useful life of the equipment. This would reduce demands on the equipment pool fund which could reduce the cost to the Institute.

QUANTIFY THE IDEA:

At present, service centers may only acquire equipment through sponsor grants or through Institute research start-up packages. Equipment can be replaced through the VP for Research Equipment Pool. Allowing the service centers to amortize the purchase cost of equipment would shift costs from the Institute funds to sponsored research grants.

IMPLEMENTATION CONSIDERATIONS:

As the equipment cost would be amortized, the Institute would take some risk if the full cost of the equipment were not recovered through service center charges. Therefore, the Office of the VP for Research would need to approve such equipment purchases in order to ensure that the equipment was necessary and that the base of users would likely be available from which to recover the costs.
WORKING GROUP: Research -- Personnel

NAME: Lab Equipment “Time share” system

SUMMARY DESCRIPTION:
This idea arose as a possible way to reduce start-up costs for new faculty in science and engineering, but may have wider application. There is a lot of specialized lab equipment that ends up either unused or under-utilized because it is housed in a lab where it is no longer, or only intermittently, needed while others who need such equipment don’t know about it.

REQUIREMENTS:
   a) A web-based inventory of equipment available for temporary transfer or shared use.
   b) A uniform system for tracking and billing use. (At least one lab – MTL – already has such a system.)
   c) Appropriate incentives for equipment ‘owners’ to participate.

POTENTIAL SAVINGS:
Equipment purchases by the DLCs in Architecture, Engineering, Science, SSM, Whitaker, Provost and VP Research totaled over $300 million between 2004 and 2008. Nearly 40% of those purchases were made using non-sponsored revenue (GIB (10%), designated funds (26%) and service facility accounts (3%)). If equipment purchases from non-sponsored accounts can be reduced by 10% through this type of program, cash outlays would be reduced by about $2.5 million per year. The reduction in duplicated equipment would also save space, energy and maintenance costs.
WORKING GROUP: Research -- Personnel

NAME: Charging Academic Year Salary to Grants

SUMMARY DESCRIPTION:

Faculty would be able to charge more than 3 months of salary to grants. Of the amount charged up to xx months could be spent in the summer (where xx is 2 or 2.5 or 3). The remainder would be into an unrestricted account. Some portion of the money would be made available to the faculty member for discretionary use. The remainder would be available to some unit in the Institute for discretionary use.

The faculty member could not use the money to buy out of teaching but yy could be used as additional compensation subject to the constraint that xx+yy <= 3 months of salary.

QUANTIFY THE IDEA:

In 2008, faculty AY salaries totaled $128 million. 73% were paid from GIB – a total of $94 million. For every 1% of total AY salary sifted from GIB to research, the GIB would save about $1.6 million, including employee benefits.

IMPLEMENTATION CONSIDERATIONS:

The details of this scheme need to be worked out carefully to make sure that the proposal is legal. This proposal is based on one from Yale, but that one gives all the money to the faculty member, which would have no impact on budget. Another point is that we need to consider the impact on what is required of MIT for effort reporting. A rationale would be needed, but this seems doable since faculty spend substantial time working on research during the semesters even though MIT pays their entire salary.
WORKING GROUP: Research -- Personnel

NAME: Incentives for Retirement.

SUMMARY DESCRIPTION:

MIT has a problem with faculty who do not want to retire, even when they are no longer contributing to research, education and community service at the levels expected of a tenured MIT faculty member. The problem also exists, though is less severe, for some staff members. The goal here is to identify incentives that will encourage people to retire. Both positive and negative incentives are possible. The current retirement program is a positive incentive that has been moderately but not extremely effective; it's possible that a bit more generous program might work better. Ideas of negative incentives are: stopping MIT contributions to the 401K when an employee reaches a certain age; replacing lifetime tenure with a long-term contract, given at the time of getting tenure, e.g., 30 years.

QUANTIFY THE IDEA:

Getting faculty to retire isn't likely to produce any money in the short run but can be useful downstream. Positive incentives can be revenue neutral or even cost saving depending on how long the slot is kept empty.

Eliminating 401K contributions can save money. For example, about 10% of MIT’s faculty is 70 or older. Suppose these 100 people earn an average $150 AY pay; that’s ($15 million * 5%) = $750,000 annual savings in employee benefits.

IMPLEMENTATION CONSIDERATIONS:

It needs a lot of thought. For example, if MIT unilaterally switched from normal tenure to long-term contracts, how would this affect our ability to compete?
WORKING GROUP: Research -- Personnel

NAME: Termination Policy for Senior and Principal Research Associates

SUMMARY DESCRIPTION:

The proposal is to change the terms for people in these categories so that should they lose funding they are treated like other MIT employees, and provided with a termination period based on number of years of service.

QUANTIFY THE IDEA:

This can avoid a very large potential liability.

IMPLEMENTATION CONSIDERATIONS:

MIT has a problem because people in these categories are promised a fixed term of employment (1 year or 3 years) should their funding run out. This problem isn't too onerous in big labs that are able to predict when funding will cease, but can be a serious financial liability in other cases. Changing the rules can only affect new hires so it will be a long time before all people in these categories would fall under the new rules. As a short-term measure it might be a good idea to stop hiring people into these positions until a decision about whether to adopt this proposal is made.
NAME: Mentoring for Post docs

SUMMARY DESCRIPTION:

We have a large population of post docs at the institute who have been here much longer than the allowed 4 years. The proposal is to provide a mechanism for mentoring post docs as a way to encourage them to think about the postdoc as a temporary position that should be followed by employment in a different category either at MIT or elsewhere. The mentoring would be provided in large units, e.g., in a school, or in a large lab.

QUANTIFY THE IDEA:

This idea is not going to produce savings, but it does address an important problem.

IMPLEMENTATION CONSIDERATIONS:

NSF is now requiring mentoring plans for post docs and it is likely that other funding agencies will follow suit. In addition, anecdotal evidence indicates that taking this step can lead to a much more satisfactory postdoc experience. For example, if a postdoc is hired into a position that isn't a good fit, the mentor could help the postdoc find another position.
WORKING GROUP: Research -- Personnel

NAME: Consolidation of Salary Decisions

SUMMARY DESCRIPTION:

Decisions about the amount for a raise for both administrative and technical staff seem to be made in a better way if done centrally within a large unit. That way there is more of an ability to use the raises to award merit, both because there is a larger pool of money available, and also a larger pool of people to rank.

QUANTIFY THE IDEA:

This is unlikely to produce savings but it will correct an inequity.

IMPLEMENTATION CONSIDERATIONS:

There may be a need to change faculty expectations about raises, e.g., that these decisions will be made centrally (based on their input). Also we wondered whether it would help for HR to describe the raise percentage as a base amount plus an additional amount to be used for adjustments.

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1 Report on the FDP survey can be found at http://thefdp.org/Faculty%20burden%20survey%20report.pdf