Leonidas – URO Internal Scenarios

PURPOSE

Under this envisioned internal University Research Organization (URO) scenario, the MSU Board of Trustees would either:

- create an internal division of the University, similar to NSCL / FRIB, or
- create a wholly-owned subsidiary of the University, e.g. as a limited liability company (LLC) or “C Corporation”.

For brevity, the word “Leonidas” is used when the choice between a division or subsidiary is believed irrelevant. “Division” and “LLC” are used when the difference is believed to be significant.

Leonidas would act as the URO for the University, and would house new extramurally funded projects (“URO Projects”) not normally undertaken within the balance of the University proper, including particularly those extramurally supported research projects with publication restrictions. Such restrictions might arise in disclosure prohibitions or requirements for external publication approval contained in funding awards or associated non-disclosure agreements, or through limitations on project participation based on citizenship or legal residency. In principle, classified projects could also be undertaken in Leonidas, but the initial Board of Trustees approval sought for Leonidas would not include classified projects.

STRUCTURE AND FACILITATING CONTRACTS

Contractually, MSU would enter into award agreements for URO Projects with Federal or other funders just as it enters into usual award agreements, utilizing the Federally negotiated MSU Facilities and Administrative (“F&A”; alternatively,

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1 Section 8 of the "Major Guidelines" for Research and Creative Endeavor, as passed by the Graduate Council on May 15, 1967 and the MSU Board of Trustees on March 20, 1970, reads in part:

"The University should retain for its scholars the right of first publication. The imposition of restriction on publication of research results is incompatible with the basic concept of an educational institution. Exigencies of national defense may at times make exceptions to this policy on publication necessary."

2 There are at least two major rationales for the avoidance of classified work at Leonidas, at least initially and possibly forever. The Leonidas concept is a significant departure from past practice at MSU, and a deliberate, stepwise approach to significant change is prudent. Moreover, such an approach permits the expansion of the projects that may be undertaken by U.S. citizens and some permanent residents affiliated with MSU, without necessitating that they obtain personal security clearances.
"overhead" or "indirect cost" or "IDC") rate. The aims here would be (i) avoiding a separate negotiation of an F&A rate for Leonidas, as well as (ii) avoiding an apparent F&A rate "discount" or "premium" driving faculty or college preferences as to whether a project should be proposed normally by MSU or via Leonidas. The funder would see the normal MSU F&A rate, regardless of Leonidas involvement.

In the case of an internal division, no contractual agreement regarding the URO would be necessary within MSU. Advice of counsel would be sought regarding the degree of contractual documentation appropriate between MSU and the LLC form of the URO, as a subsidiary wholly owned by the Board of Trustees.

It is a goal of this scenario that MSU personnel whose time is assigned to the URO will be unaffected by the choice of the division or LLC structure. In particular:

- If the URO is created as a division, all of its personnel would be MSU personnel, and hence with respect to their URO duties they would be governed normally by all MSU policies, with the exception of those aspects where URO-specific policies are specially adopted by MSU for its purposes. Assignment to the URO would be equivalent to assignment to a college or other Major Administrative Unit (MAU). Tenured faculty could have their time assigned in whole or part to the URO, but the URO would not be a tenure home itself.

- In the LLC form of the URO, all of its personnel would be MSU personnel provided to it by secondment. Although the LLC would adopt those internal policies required by law or government regulation, as well as those necessary to permit it to perform the duties for which it was created, in general it is expected that the LLC would formally adopt all other MSU policies, wholesale.
  - With regard to tenure system faculty, assent of the University Committee on Faculty Tenure and the University Committee on Faculty Affairs would be sought for the proposition that secondment to the LLC was equivalent to a full or partial assignment of time to an internal division, preserving all faculty rights and obligations unchanged.
  - It is expected that Human Resources and Academic Human Resources would work with benefit providers to ensure that no changes in benefits would arise from secondment to the LLC.

For the record, it is the established policy of Michigan State University that tenure resides in the University, not in its substituent units. As a fundamental design criterion, participation in Leonidas should not affect tenure status.

Beyond the staff assigned to Leonidas from other parts of the University, Leonidas would initially hire a small cadre of personnel, primarily composed of U.S. citizens but possibly including permanent residents, to assist in the launch of URO Projects. (In the case of the LLC, the hires might be handled by MSU on an agency basis.)
immediate availability of such staff is essential to support URO Projects in some disciplines (particularly in parts of Engineering) where MSU encounters difficulty attracting U.S. citizens or permanent residents as graduate students or post-docs. The cadre of Leonidas non-tenure system personnel could be expanded or contracted at later dates in light of its operating performance and needs.

Leonidas would operate in purpose-specific (and potentially dispersed, non-compact) space, which might be on campus and/or separately leased by MSU. For purposes of financial analysis, it is assumed herein that the space would be leased off-campus. Such an approach offers significant advantages:

- Leonidas space can be secured against access by non-U.S. persons without detracting from the general openness of the MSU campus proper;
- Leonidas will not compete with new on-campus initiatives and traditional academic programs for scarce laboratory space; and
- Leonidas can provide a rental income stream to the MSU Foundation for space at the MBI Building or elsewhere in the University Research Park.

In the LLC form of the URO, all financial and operational support services would be provided by MSU on an agency account basis. In both divisional and forms, Leonidas would obtain all scholarly support services from MSU units normally providing them, in the same manner as any MSU academic unit, using MSU accounts where payment is necessary.

DETAILS OF INITIAL LEONIDAS STAFFING

At its inception, Leonidas would be staffed as follows:

- **Executive Director (1.0 FTE – not directly project billable; $150 K base)**
  - This individual would likely possess a PhD degree or DoD-related government, military, or industry experience; preferably both.
  - The first duties of the Executive Director would be (i) hiring the Project Specialists, and (ii) negotiating the involvement of faculty to be seconded by MSU to Leonidas pro tem as Project Leaders with Leonidas-appropriate funding that they have themselves attracted. The latter duty would persist through time, and the Executive Director would begin to shoulder funder-relations duties as well.
  - This individual should be a U.S. citizen, due to the likelihood of oversight of Department of Justice data system-related projects for which permanent residents are ineligible.

- **Financial Manager (1.0 FTE – not directly project billable; $65 K base)**
Initially, this individual would handle Leonidas books on a part-time basis.

This individual should be a U.S. citizen or permanent resident.

- Six (6) Project Specialists (6.0 FTE – billable to projects: $65 K base)
  
  From the standpoint of participating MSU faculty, Leonidas provides two key services: (i) an MSU-affiliated venue in which research is permissible despite external publication restrictions, and (ii) the ready availability of project staff who will meet funder, ITAR\(^3\), and EAR\(^4\) requirements for their access to proprietary or legally controlled technology and data. Providing a pool of PhD-prepared Project Specialists in anticipation of their eventual project billability poses several challenges. They include:
  
  - cost,
  - uncertain job security, and
  - the diversity and unpredictability of the expertise demands arising from faculty problem selection and proposal success, both of which are beyond the organizational control of the URO.

  A balance must be struck between the issues of cost control and diversity of expertise. For purposes of analysis, it is assumed that six Project Specialists will be retained by Leonidas at start-up, with a distribution of skills such as the following:

  - A chemist, chemical engineer, or biochemist with synthetic experience
  - An analytical chemist or criminal forensic scientist
  - A mechanical engineer
  - An electrical engineer
  - A software analyst or engineer
  - A microbiologist or related biology or food science expert, with molecular genetics experience.

  The salaries for the six anticipated positions will reflect the variation in individual qualifications, field-related wage differences, and the uncertain duration of individual employment pending eventual billability outcomes. An average salary of $65,000 is assumed for modeling purposes.

  The possibility of projects involving Department of Justice data systems, from which permanent residents are contractually excluded, suggests that the software analyst/engineer and the

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\(^3\) International Traffic in Arms Regulations
\(^4\) Export Administration Regulations
analytical chemist / forensic scientist should be U.S. citizens. Ideally, the other positions should be filled with U.S. citizens as well, but permanent residents could be considered.

The estimated base salaries, an approximate 40% fringe benefit loading rate, and the projected headcounts result in $546K per year in potentially billable personnel costs, plus $301,000 in non-directly billable personnel costs.

FINANCIAL MODEL

Appendix A provides a concise, single-page summary of a six-year financial model for Leonidas.

The model begins by assuming the amount of total dollars (including F&A, a.k.a. "indirect costs" or "overhead") that will be accepted by the MSU Board of Trustees in each twelve-month period. The model next assumes that half of the awarded dollars will be spent in the year of acceptance, one-third in the second year, and one-sixth in the third. This decay rate reflects the fact that some awards will be only one or two years in duration. The fifth line of the model totals estimated annual expenditures for old and new awards.

From the annual expenditure totals, a certain dollar value (20%) is attributed to external subcontracts and another (10%) to equipment purchases. (Obviously, those figures are rough approximations of fluctuating amounts.) They are subtracted from the annual expenditure totals to find the amount of F&A-bearing direct costs plus the corresponding F&A for each year5. The next line of the model identifies the F&A alone, assuming a constant 52% on-campus research rate6.

What fraction of the on-campus research rate should be used to support Leonidas, given that Leonidas is paying rent for off-campus space? This debatable question is handled in the model by assuming that the operations and maintenance, building depreciation, equipment depreciation, and interest components of F&A are returned to Leonidas, equaling 24.7% of F&A-eligible direct costs. The model next indicates the F&A dollar values (i) retained by MSU central administration, and (ii) provided to the colleges and departments. Significantly, the latter amount is precisely what they would receive from equivalent non-URO research grants at full F&A. That outcome has been identified as essential by some MSU deans.

The next lines of the model are (a) the personnel costs of the Leonidas specialists, (b) the lesser of "a" and an amount (50%) hypothetically available from the total

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5 This should be a systematic underestimate, because a small amount of F&A can be recovered from the first $25,000 of each subcontract. The question of the number of subcontracts issued then becomes relevant; many small subcontracts will yield more F&A than one big one.

6 Significantly, the financial performance of the model depends on recovering research rather than testing F&A, and treating rented space as "on-campus", consistent with current MSU practice at MBI. This in turn depends on paying the rent out of overhead, rather than direct-billing it to the grants.
annual direct expenditures for the billability of those specialists, (c) an amount (85%) of the specialists’ potentially billable time that is an effective upper maximum on their Federal billability, and (d) the resulting annual subvention needed from F&A for unbillable specialists’ time. The amount in “d” is the greater subvention cost resulting from (i) “a” + “b” and (ii) “a” + “c”.

How much will Leonidas receive each year in returned F&A? At MSU, F&A returns lag their being earned, and this lag is reflected in the next line of the model. The 24.7% of F&A-eligible expenditure earned each year is shown as received by Leonidas in the following year. This creates an F&A receivable, beginning in the first year.

Next the model estimates Leonidas square footage needs and costs. In the 2011 year, $700,000 in total (direct plus F&A) expenditures are estimated to require 2,000 square feet of rental space at $28/sqft. (The rate is increased $1/sqft every second year. This is a blended approximation that likely understates rent inflation but overstates the evolving ratio of expensive lab space to relatively less expensive office space needed for the eventual URO Projects. To assist the reader, projected square footage needs in square feet are shown at the bottom of Appendix A.)

The next line of the model reflects the F&A subvention needed for non-billable Leonidas administrative personnel with a small supplies, services, and equipment (SSE) budget.

Thereafter, the model nets the annual subventions for space rent, unbillable billable personnel, and non-billable personnel (with SSE) against the returned F&A. Note that URO Projects’ budgets (and actual staff billability) are maintained in separate accounts and are not commingled. As a not-for-profit approximation of profit and loss, the next line sums the that net with the new receivable earned, less the prior receivable actually received.

The next line of the model shows a “ramp-down” capitalization plan for Leonidas consisting of investments of $1.5 M in 2011, $1.0 M in 2012, and $0.5 M in 2013.

The final lines of the model are a simplified balance sheet, from which balancing grant F&A amounts contracted but not yet earned are excluded, under both assets and liabilities. Similarly, balancing lines for subcontracted obligations not yet earned and billed by subcontractors are also omitted. The first line of the asset list is the annual cash position. The equipment expenditures estimated earlier, net of a five-year straight-line depreciation, are shown second. The earned but not received F&A is shown as the F&A receivable in the third line of the assets, all of which are then summed. Cumulative shareholder investment is derived from the ramp-down capitalization plan above, and change to shareholder value is calculated to balance the simplified assets and liabilities.

COMMENTARY ON FINANCIAL PROJECTIONS
It will be noted that after beginning in 2011, Leonidas shows a not-for-profit "profit" in 2015, simultaneously showing a net positive change in shareholder value that year. The projected onset of profitability is slow for an IT start-up but normal or early for a biotechnology start-up. This is consistent with the uncertain topical focus of Leonidas, and the consequent uncertainty in space demand costs. For illustration, if faculty research topic decisions and proposal successes cause Leonidas to focus on Internet security, its costs will be lower and it will likely become "profitable" faster than if it focuses on bioweapon vaccines.

The 2015 F&A return in 2016 exceeds the 2016 subventions, reversing the negative annual cash flow, because the model projects a plateau in BoT grant approvals in 2015-2016. This highlights a significant characteristic of the model. On one hand, it includes no borrowing (at least assuming the ramp-down capitalization is considered an institutional investment rather than a loan). On the other hand, it includes no interest payments to Leonidas for the use of money during the earned F&A payment lag. Put quite simply, because of the F&A payment lag, if Leonidas' extramural support growth either occurs too quickly or continues too long, the enterprise will run out of cash, principally due to the growth in corresponding and immediate space rental costs. Other than controlling the growth rate of Leonidas' grant activity, the two obvious solutions are to eliminate the F&A payment lag or to permit zero interest internal borrowing. The typical MSU unit experience (i.e., of having to pay interest on internal loan overdrafts while not receiving it on deferred internal receivables or positive cash balances) will not facilitate Leonidas growth.

THE SPECIAL ISSUES OF GRADUATE STUDENTS, POST-DOCS, TENURE, ETC.

The ability to accept projects with publication restrictions rests at the heart of the rationale for Leonidas. Those restrictions pose special problems for graduate students seeking to complete degree requirements, for post-docs seeking to establish themselves as known investigators, and for junior faculty seeking tenure.

Graduate students in thesis or dissertation programs must be able to publish because -- by virtually universal academic convention -- the thesis or dissertation is itself a publication. Additionally, some Ph.D. programs require journal submission or acceptance of at least one research manuscript prior to degree completion. If a graduate student who is a U.S. citizen (or usually, a permanent resident) conducted her or his research within Leonidas, the student would at a minimum be accepting third party censorship of that research, and hence could be left without anything publishable despite the investigative success of the project. Thus, there exist several policy options for the University, including the choices to:

- Permit the student to propose Leonidas-based research to a graduate committee in anticipation that a fraction of that research would reliably be

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7 The traditional requirement for a "public defense" of the candidate's research is also relevant.
publishable without active third party changes and that fraction would be sufficient to meet otherwise unmet thesis or degree requirements;

- Permit the student to conduct Leonidas-based research as a research assistant, on the basis that non-Leonidas research would be conducted in parallel and the latter would be sufficient to meet thesis or degree requirements without necessitating use of the Leonidas portion;
- Permit the student to participate in Leonidas projects only on the labor payroll with the expectation of being treated as a technician, rather than as a junior investigator, and hence holding no expectation of research inclusion in a thesis or dissertation.
- Forbid graduate student participation in Leonidas projects altogether.\(^8\)

In principle, the Graduate School could seek a university-wide MSU doctrine regarding those choices, or alternatively accept disciplinary or committee-by-committee variations.

Post-docs typically hold short duration positions that must serve as stepping-stones to more permanent appointments elsewhere. Increasing national attention is being paid to the need for positive post-doc mentoring and the avoidance of post-doc exploitation. A post-doc who exhausts the period of her or his appointment without significant publications will likely be far from competitive for academic and other coveted positions where prior publication is an expectation.

Unlike graduate students (for whom publication is a degree completion requirement), some post-docs can complete successful appointments without publications and gain remunerative permanent posts with employers for whom researcher expertise and customer satisfaction take priority over open publication. (Defense and homeland security contractors frequently fit that description, with the Federal government serving as the customer to be satisfied.) Moreover, the effective use of post-doc appointments to prepare some researchers for national security-related positions is arguably in the national interest, as well as that of the researchers themselves. Thus, the policy issue to be addressed is what sort of initial "informed consent" should be required from a post-doc when s/he is appointed into a Leonidas position in which publication foreseeably will be difficult or impossible? As a corollary, one might inquire whether a certain level of professional experience - e.g., a prior post-doc appointment without publication restrictions - should be considered a prerequisite to giving such consent. (Varying disciplinary use of post-doctoral appointments complicates these questions. Post-docs remain rare to unknown in certain fields.)

Finally, a significant question arises concerning the impact of Leonidas participation on career trajectories for young faculty. Stanford has addressed this head-on with Section 3-c of its May 31, 2007 policy\(^9\) entitled "Openness in Research". The policy

\(^8\) An advantage of this option is its minimization of Leonidas’ differential impact on graduate students based on citizenship.

\(^9\) [http://rph.stanford.edu/2-6.html](http://rph.stanford.edu/2-6.html)
preserves the ability of that institution to enlist international scholars in judging research intended to be world-class:

"Scholarly activities not accessible for scrutiny by the entire Advisory Board should not be considered in connection with appointments, reappointments or promotions."

Beyond the question of international tenure reviewers' judgment of papers *per se*, unpublished work is also necessarily un-cited as well. This may further complicate the fair assessment of a junior scholar's impact.

A less obvious issue is that an MSU investigator whose most work centers in Leonidas may find her or his chances for recruitment into academic positions elsewhere – whether due to denial of tenure at MSU or due to prestigious senior recruitment “raids” -- to be significantly diminished at institutions that share Stanford’s philosophy.

**THE LIMITING CASE TEST**

Adopting the physical sciences' penchant for limiting cases, it is useful to consider the cogency of the case for creating Leonidas under consistently conservative operational policy parameters – specifically:

- Graduate student participation in Leonidas is impermissible;
- Post-doc participation is permissible only if in an appointment following at least one post-doc appointment not involving publication restrictions; and
- Assistant professor participation is permissible only after mid-probation re-appointment and with prior written commentary on the decision to participate from the Reappointment and Promotion Committee in the assistant professor’s tenure home.

The over-arching question then becomes, “Can MSU attract and execute extramural support for projects consistent with the Financial Model under those policy constraints?” Ultimately, the researchers concerned, their line administrators, and the University academic governance system should best answer that question. Relaxation of one or more of the limiting case constraints predictably would strengthen the feasibility case for Leonidas.

URO experiences at peer institutions, the extensive current availability of Leonidas-style extramural funding, and the frequency with which publication restriction difficulties now arise under the long-standing Board of Trustees policy requiring open publication all deserve collegial attention. Together, they combine to create a *prima facie* case in favor of Leonidas, justifying its broad review and discussion on the MSU campus.
### Appendix A -- MSU-Owned LLC or Internal Unit as URO

Assumes Std CGA Account Practices

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<td>(583,333)</td>
<td>(1,066,667)</td>
<td>(1,566,667)</td>
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<td>Fraction Equipment</td>
<td>(100,000)</td>
<td>(291,667)</td>
<td>(533,333)</td>
<td>(783,333)</td>
<td>(1,033,333)</td>
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<td>239,474</td>
<td>698,465</td>
<td>1,277,193</td>
<td>1,875,877</td>
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<td>113,750</td>
<td>331,771</td>
<td>606,667</td>
<td>891,042</td>
<td>1,175,417</td>
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<td>227,001</td>
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<td>804,232</td>
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<td>596,629</td>
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<td>(89,494)</td>
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<td>606,667</td>
<td>891,042</td>
<td>1,175,417</td>
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<td>858,707</td>
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<td>826,667</td>
<td>1,425,000</td>
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<td>606,667</td>
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<td>Total Assets Ignoring Grants</td>
<td>442,026</td>
<td>1,467,143</td>
<td>2,292,040</td>
<td>2,886,822</td>
<td>3,680,438</td>
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<td>Total Liabilities Ignoring Grants</td>
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