Information Technology Projects Evaluation Process

I - Objective

The purpose of this document is to describe a process for surfacing and evaluating ideas that might lead to informatics projects or information technology capital expenditures.

Such projects raise critical questions for the organization:
- Is there a manual process to buy time and clarify workflow issues?
- Can existing IT infrastructure be re-used to meet the need?
- What is the Return on Investment?
- Are competing ideas of higher priority?
- Should we buy or build?
- Will a proposed solution degrade collective information resources?
- What are the risks to a non-successful implementation?
- Who is the executive sponsor?
- What is the funding source?

These questions are challenging. The organization is complex. Few people understand the work of all of its various components. Decisions about priority are clearest close to the action. However, the technology is equally complex. Inter and intra-project dependencies, implications for collective information resources, vendor financial and legal risks must be assessed by experts in those aspects of the technology.

The objective of the process is to be open at the front end to take advantage of a free flow of ideas, while focusing in rapidly on ideas that we are likely to implement. This focus is the key to speeding high priority ideas through the pipeline and to minimizing energy spent on evaluation of good ideas in situations where we do not have the organizational energy or dollars to follow through.

The evaluation process for this document outlines an iterative discovery and approval process. The executive sponsor and the committee or group that has its hands around the related set of work makes decisions about functional requirements and priorities. Decisions about the technical feasibility and infrastructure requirements are made by the Informatics Center. This process is one path for working out the answers to the questions and obtains the necessary sign offs. If all the answers are available then it is permissible to take a proposal directly to the final stage.

When requests involve adaptation of existing infrastructure, the process is simplified by charging a group close to the action to work out the priorities within pre-established budget limits. The Resource Utilization Committee, the Financial User Forum and the EPIC Advisory Committee are examples.

II - People/Groups Involved in the Evaluation Process

A. Information Services Consultant

The Information Services Consultant can act as an advocate for the business unit in preparing an information technology proposal for organizational funding. Their job is to understand the user's problem, their proposed solution, together with the enterprise information architecture. They then provide advice about how to handle the problem leveraging that architecture.

They assist in project specification and provide information technology expertise to facilitate matching options (both process and technology) to the problem or business need. The Information Services consulting engagement may include identification of alternatives, estimation

of resources required for feasibility analysis, and taking the point in obtaining the informatics analysis of alternatives.
Contact: Nancy Proctor (Nancy.Proctor@mcmail.vanderbilt.edu)

B. Informatics Architecture Group

The Informatics Architecture Group is a cross sectional Informatics Center team that assesses fit of proposed solution with collective information resources.
Contact: Ed Shultz (Ed.Shultz@mcmail.vanderbilt.edu)

C. Prioritization Groups
In order to most effectively prioritize information system/informatics projects a three-tiered prioritization system will be used. Prioritizations of will occur at the most **appropriate level** for the project. A project will only be submitted to a higher level, if the project spans across the various missions of the medical center or is controversial regarding the use of resources.

The following groups are charged to assist with priorities of different requests:

① The Information Strategy and Priority Committee (ISPC) for projects that cut across the various missions of the medical center.
Contact: Bill Stead (Bill.Stead@mcmail.vanderbilt.edu)

② Informatics Center Executive Council (ICEC) to determine projects that provide re-useable information technology infrastructure.
Contact: Bill Stead (Bill.Stead@mcmail.vanderbilt.edu)

③ The Research Informatics Advisory Committee for projects that provide infrastructure to support research.
Contact: Nancy Lorenzi (Nancy.Lorenzi@mcmail.vanderbilt.edu)

④ The Green Team for projects that provide operational efficiency and quality within the clinical enterprise.
Contact: Norm Urmy (Norman.Urmy@mcmail.vanderbilt.edu)

⑤ The Resource Utilization Committee for projects focused upon clinical, efficiency and quality. If the projects need a broader review they will be referred to the Green Team.
Contact: Eric Neilson (Eric.Neilson@ mcmail.vanderbilt.edu)

⑥ The Financial Users Forum for projects for hospital billing. If the projects need a broader review they will be referred to the Green Team.
Contact: Gary Perrizo (Gary.Perrizo@mcmail.vanderbilt.edu)

⑦ The EPIC Advisory Committee for professional billing. If the projects need a broader review they will be referred to the Green Team.
Contact: Jerry Batte (Jerry.Batte@mcmail.vanderbilt.edu)

Prioritization Groups Relationships:
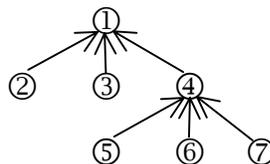
The prioritization groups will be asked to prioritize projects that move us forward towards enterprise goals. If two projects are otherwise equal the project that provides a reusable infrastructure for subsequent projects will be selected over the project that does not. Likewise, if projects compete for the same resources the prioritization committee will give a higher priority to those that return a higher percentage of investment.

D. Informatics Contract Review Group

The Informatics Contract Review Group compares the preferred vendor's contract to Vanderbilt "best practices" for software, hardware or consulting services.
Contact: Donna Forsythe (Donna.Forsythe@mcmail.vanderbilt.edu)

III. – EVALUATION PROCESS OVERVIEW

	A. PROJECT IDENTIFICATION	B. FEASIBILITY ANALYSIS	C. DETAIL ANALYSIS — 1. BUSINESS UNIT	2. INFORMATICS	3. LEGAL AND FINANCIAL	4. RECOMMENDATION	D. DECISION TO IMPLEMENT	IMPLEMENTATION
Deliverables	• Idea Definition • Fit with Enterprise Strategies • Organizational Benefit • Alternatives	• Scan of Potential Vendor Systems • Informatics Architecture • Potential ROI	• Detail Functional Specifications • Reuse Components • Vendor Search	• Reuse & Vendor Comparative Analysis • Technical Assessment • Integration & Deployment • Architectural Fit • Implementation Risk • Detail Costs, Phasing Options & Timeline Implications	• Vendor Contract for Selected Solution • Financial Stability of Selected Vendor • Calculation of ROI by Phase	• Executive Summary • Detail Documentation • Phase One Cost & ROI		IMPLEMENTATION
Reviews & Approvals	**Executive Sponsor**	**Executive Sponsor**	**Executive Sponsor**			**Executive Sponsor**		
	Informatics			**Informatics**		**Informatics**		
	Prioritization Group	**Prioritization Group**					**Prioritization Group**	

IV – PROJECT EVALUATION PROCESS DISCUSSION

A. PROJECT IDENTIFICATION

Deliverables	• Idea Definition • Fit with Enterprise Strategies • Organizational Benefit • Alternatives
Reviews & Approvals	**Executive Sponsor**
	Informatics
	Prioritization Group

The project identification phase is an "open up" phase. Its intent is to give all ideas a hearing, and yet to focus the energy required for feasibility analysis and detail analysis on projects likely to be approved. At this phase, the proposal should be a short 1-2 page statement targeted to deciding whether the idea should be subjected to such analysis in the current climate.

Typically, ideas originate with the staff closest to the process often in consultation with an internal or external consultant or other change agent.

Business units may have an internal or external resource that can perform the analysis and prepare a project identification proposal or an Information Services Consultant may be involved.

The proposal should document:
- the idea,
- how that benefit aligns with enterprise strategies, and
- how implementing the idea produces an organizational benefit.

The benefit does not necessarily need to be entirely financial. Benefits could also be in a reduction of risk or innovations in service, knowledge, increase in the quality of patient care, and other sustainable competitive advantage.

The business unit should also consider alternatives, including revamping processes without computer support, modifying current internal systems, or a search for a packaged computer system. Revamping processes without computer technology can be studied with one of many methodologies for process improvement by the department staff alone or with the assistance of any of the Vanderbilt internal consultant groups concerned with process improvement: Information Services, Quality, Systems Support, or Education.

The review helps establish both scope and boundaries of the impacted process. If the change involves more than one business unit communication should be coordinated between business units. The benefits achieved through this process examination and innovation may be equal to or greater than those achieved with computer technology.

The effort on development of the *Project Identification* proposal should be less than 12 hours in aggregate by all parties.

√ **Executive Sponsor Approval**

An Executive Sponsor from the business unit (i.e., line management such as a CEO, CFO, COO, CNO, or CIA) must be identified who supports the pursuance of this project based on the information gathered in the *Project Identification* phase. If the Executive Sponsor decides that a *Feasibility Analysis* should be undertaken, they identify the likely funding source and pencil in the potential commitment.
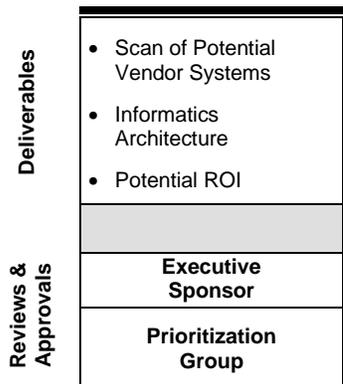
√ **Informatics Approval**

Once the Executive Sponsor has approved the idea, the appropriate Informatics Center Director reviews it. This is a high-level review to ensure that the functionality is not obviously available with existing or currently planned systems; to estimate the resources required for the *Feasibility Analysis*; and to identify the appropriate prioritization group.

√ **Prioritization**

Before committing further resources for evaluation and recommendation the project identification proposal is reviewed by the appropriate prioritization group. The committee will give input as to priority relative to other ideas competing for *Feasibility Analysis*, adjust the queue appropriately, or suggest that the idea be deferred.

B. FEASIBILITY ANALYSIS

Deliverables	• Scan of Potential Vendor Systems
	• Informatics Architecture
	• Potential ROI
Reviews & Approvals	**Executive Sponsor**
	Prioritization Group

At this point the business unit, working with an Information Services Consultant, more fully develops the idea to determine if *Detailed Analysis* is justified. The goal is to provide an estimate (+/- 50%) of projected benefits, as well as an understanding of potential "buy" or "build" solutions, and an estimate of Return on Investment based upon the likely best choice.

There must be rationale for deciding which vendors to include in the evaluation. A common strategy for selecting vendors for consideration is to follow a third party recommendation. For example, a list of top vendors might come from an external consulting firm with expertise in the business unit area.

There are also consulting or market research firms that specialize in tracking information system applications such as Gartner Group, which could supply a list of recommended vendors. A scan of these potential vendors will indicate the availability of existing systems which can meet satisfy the idea / problem defined in the *Project Identification* phase, how the market is addressing the systems solutions, functionality provided, and providing an "order of magnitude" cost estimate.

The idea, together with potential "buy" solutions is presented to the Informatics Architecture Group to identify opportunities for reuse of existing infrastructure, potential architectural issues or questions that would need to be answered during detailed analysis, and risks.

The Department of Finance, working with the business unit and the Information Services Consultant, documents the Return on Investment of the likely preferred course.

The effort on the *Feasibility Analysis* should be less than 40 hours in aggregate by all parties.
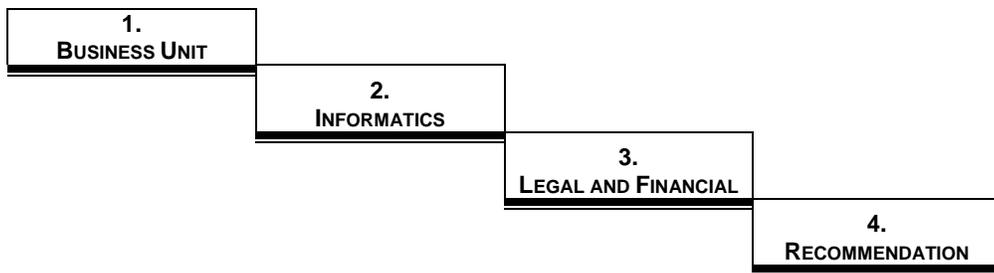
√ **Executive Sponsor Approval**

The Executive Sponsor reviews the *Feasibility Analysis* and decided whether to request a *Detailed Analysis* or to stop further evaluation.

√ **Prioritization**

Approval to proceed to the *Detail Analysis* phase means a commitment of significant resources to complete the required analysis. Depending upon the size of the project, a steering committee and project team may be required. We should not due detailed analysis unless the business unit, informatics and finance agree that we have or can create the resources to complete the project if *Detail Analysis* confirms the impressions of the *Feasibility Analysis*.

Before committing these resources, the proposed project is considered by the appropriate prioritization group. The committee will give input as to priority relative to other ideas competing for *Detail Analysis*, adjust the queue appropriately, or suggest that the idea be deferred.

C. DETAIL ANALYSIS

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│        1.            │
│   BUSINESS UNIT      │
└─────────────────────┘
        ┌─────────────────────┐
        │        2.            │
        │   INFORMATICS        │
        └─────────────────────┘
                ┌─────────────────────┐
                │        3.            │
                │  LEGAL AND FINANCIAL │
                └─────────────────────┘
                        ┌─────────────────────┐
                        │        4.            │
                        │   RECOMMENDATION     │
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C. 1. DETAIL ANALYSIS - BUSINESS UNIT REQUIREMENTS / SPECIFICATIONS

Deliverables

- Detail Functional Specifications

- Reuse Components

- Vendor Search

Reviews & Approvals

Executive Sponsor

▶ **Detail Functional Specifications**
To create functional specifications the business unit should develop a requirements document by listing the features or functional requirements for the desired computerized information system. Each feature should be tagged as required (necessary to achieve an ROI) or optional (desirable if it can be added without increasing scope, but not mandatory). If multiple groups of users are affected, each should be tagged separately to permit comparison among groups.

Development of functional specifications requires creative energy on the part of the business unit and Informatics. Rather than simply automating existing procedures that were developed for a "paper world", the analysis team works to transform and improve processes that get work done in ways that were not possible without the technology.

The following steps of *Reuse Components and Vendor Search* may be performed concurrently. If the reuse analysis suggests a viable internal option, the *Vendor Search*, *Contract and Financial Stability* may be skipped.

▶ Reuse Components

Where possible a project should re-use institutional infrastructure, or put in place infrastructure that can be reused by other high priority projects. For example, if a project can be completed through use of StarChart, the resulting information is made available across the institution as a by-product. Or, if the proposed solution is a staff scheduling system, is it a staff scheduling that could be used in other business units in the future.

Reuse analysis must answer the question: what part of the ROI can be obtained by the reuse of existing infrastructure? This may include necessary modifications to current systems to achieve the full benefits.

The Information Services Consultant will tag each requirement identified in the functional specification with:
- system - if available now;
- system/required modification if changes are needed;
- requires new system;
- not feasible.

▶ Vendor Search

In a market search for computer technology, the search and selection process must have a defensible strategy for evaluating and selecting systems.
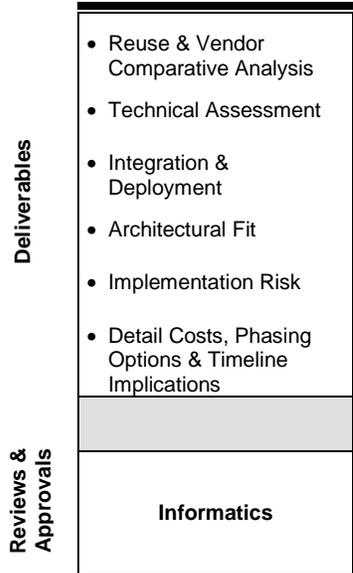1. First, the rationale for selecting vendors that was used during the Feasibility Analysis should be reviewed to make sure the inclusion and exclusion criteria were optimal.
2. The second piece of the evaluation process is development of a "Request for Information" or other quantitative system survey tool. This document contains the *Detail Functional Specifications* identified above, the Informatics Center Application Technology Requirements, and the questions that must be answered regarding the technical aspects resulting from the *Informatics Architecture Review*.
3. A comparative analysis and scoring of vendor responses is the third step on the system evaluation process. This generates a comparative table of vendors including relative scores across categories of functionality, technology, pricing, and any other items of importance in the system selection.   A finalist list of 2-3 vendors results from this analysis. Further comparisons are limited to this finalist list.

Comparative system demonstrations, financial and technical analysis are completed on the finalists. Depending on the cost of the system, demonstrations on site or external site visits are scheduled. Staff attending the demonstration(s) ordinarily provides comparative ratings on the demonstrations via a survey or other feedback. Comparative analysis including functional and financial parameters of those systems that meet or technical requirements leads to a preferred vendor and a backup choice.

√   Executive Sponsor Approval

The Executive Sponsor reviews and approves the *Business Unit Specifications*, together with the recommendation for "build" or the finalists for "buy".

C. 2. DETAIL ANALYSIS - INFORMATICS ANALYSIS

Deliverables	• Reuse & Vendor Comparative Analysis
	• Technical Assessment
	• Integration & Deployment
	• Architectural Fit
	• Implementation Risk
	• Detail Costs, Phasing Options & Timeline Implications
Reviews & Approvals	**Informatics**

▶ **Reuse & Vendor Comparative Analysis**

At this point Informatics will review the reuse and vendor analysis, weighing the relative merits of each option, to include the potential for infrastructure development. Where a preferred option emerges, further due diligence will be limited to that option unless "show stoppers" come up during the Informatics, financial, or legal review.

▶ **Technical Assessment**

The Informatics then completes a detailed technical assessment to review the vendor's hardware, operating system, database recommendations, interface requirements and other architectural features. Problems related to information security, data integrity, performance etc are identified so that necessary modifications can be negotiated.

▶ **Integration & Deployment Requirements**

Analysis begins with identification of affected work processes, data captured or used, and business rules to be applied during various processes. This analysis requires a strong commitment from the business unit and Informatics. Once the impact on workflow is understood, requirements for staffing, work stations, etc are identified.

▶ **Architectural Fit Analysis**

Fit of the proposed solution as an efficient long-term component of the enterprise information architecture is evaluated. This architecture requires that we mange our key information assets as enterprise information resources independent of the various systems that automate process. Adherence to principles such as maintainability, scalability, and reusability are examined. Infrastructure and system integration requirements are documented together with staff and cost estimates.

▶ **Implementation Risk Analysis**

In this analysis it must be determined what potential benefits may not be achieved because of workflow challenges, or other factors resulting from the implementation of the first phase of the proposed solution. Some questions that can help to understand the implementation risks include:
- How long until the project is completed?
- Number of departments involved with the system?
- How much of the project is a straight replacement of an existing system?
- How much change will there be in the workflow of the involved departments?
- How committed is user/management to the project?

▶ Detailed costs, Phasing Options & Timeline Implications

The above analysis details costs, both labor and other (such as hardware), as well as deployment and implementation timelines. Alternatives for phased implementation should be developed to let execution risk by taking a step and reassessing the plan based upon that experience before the next step. A phased strategy permits rapid beneficial occupancy of first steps while later ones are still in process.

√   Informatics Review

The completed Informatics Analysis is reviewed by the Informatics Architecture Group to confirm that all appropriate questions have been answered and that it is feasible to implement the system into the VUMC computing enterprise. This applies more so to "buy" recommendations, as it is expected that "build" components will fit within our current environment.

C. 3. DETAIL ANALYSIS - LEGAL AND FINANCIAL ANALYSIS

Deliverables

- Vendor Contract for Selected Solution

- Financial Stability of Selected Vendor

- Calculation of ROI by Phase

▶ Vendor Contract for Selected Solution

The preferred vendor provides a draft contract. The Informatics Contract Group reviews this contract. Issues are identified for resolution during negotiation.
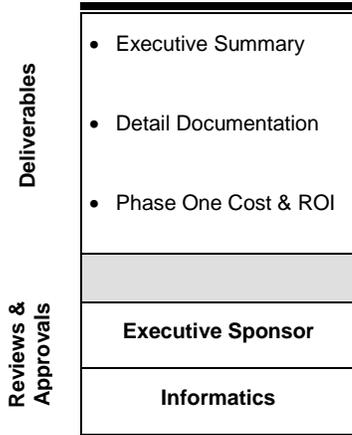
▶ Financial Stability of Selected Vendor

The Department of Finance should assess the financial strength of the corporation.

▶ Calculation of return on investment by phase:

The Department of Finance calculates a ROI for each phase.

C. 4. DETAIL ANALYSIS - RECOMMENDATION

Deliverables	Reviews & Approvals

(diagram)

Deliverables
- Executive Summary
- Detail Documentation
- Phase One Cost & ROI

Reviews & Approvals
- **Executive Sponsor**
- **Informatics**

The information assembled through the above process will be presented in a final recommendation.

▶ An executive summary will provide an overview of the general problem (or potential strategic advantage) including:
- the inadequacy of the current process or system,
- a statement of what types of solutions were examined,
- the cost of the proposed solution,
- the level of implementation support and training needed,
- the time needed for implementation,
- significant risks,
- and the expected return on investment in dollars/market share/quality improvement/etc.

▶ Detail documentation provides greater information on:
- the background of the problem or potential strategic advantage,
- current systems addressing the need,
- description of alternatives examined with pricing and costs, and advantages and drawbacks of alternatives,
- fit within VUMC systems architecture, including the systems potential use in other business units,
- cost of alternatives,
- failure risks (like user acceptance, required interaction from external business units, etc.),
- overall recommendation, including proposed timeline.

▶ **Phase One Cost & ROI**

Because of the rapid change in technology, Go / No Go decisions will be made phase-by-phase. A final cost/benefit analysis detailing both one time and recurring costs, as well as benefits for the *first* phase on the proposed solution implementation will be developed. The different areas requiring a detailed cost and ROI analysis include:

- **Capital** - Categories of cost include hardware purchase and maintenance, software license (or development labor) and maintenance, recurring purchases (such as for storage). An example would be physical plant, such as floor space needed to store paper media records.

- **Operating** –Costs can include labor, such as may be required to key enter charges. Benefits can include those received from the support of external requirements (i.e., HCFA, JCAHO, etc), quality of care improvements, provider or administrative related operations improvements, cash flow impacts, and research or educational support.

- **Informatics FTEs** – Resources required for the development, implementation, and support of the system must be defined.

- **Operational FTEs** – Customer resources may be required for system design, training and ongoing support, depending on the selected solution.

To the extent possible costs and benefits should be shown in fiscal budgeting cycles. Business units are expected to commit to achieving benefits ascribed to system purchase or development. For example, if more accurate results are a benefit of a proposed system, then the business unit must define the measurement and evaluation process for the improvement in results projected for the system.
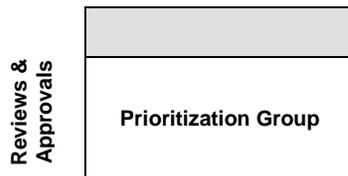
√   **Executive Sponsor Approval**
The final signoff of the Executive Sponsor and Business Unit is required.

√   **Informatics Approval**
The final signoff of the Director of the Informatics Center is required.

D. DECISION TO IMPLEMENT

√ **Prioritization and Identification of Funds**

The executive sponsor will provide the necessary funds.

▶ **Contract Negotiation**

Ultimately a single vendor is selected for contract negotiation. Contract negotiations include the agreement on implementation milestones. An acceptable vendor contract is required to proceed with the project.

Every effort will be made to avoid going down "blind alleys". Therefore, alternative vendor selections, while not negotiated with, are left open. If the prime vendor will not agree on key points, we may have to switch to an alternate.