Designing Metrics for Assessing Benefit of IT Projects

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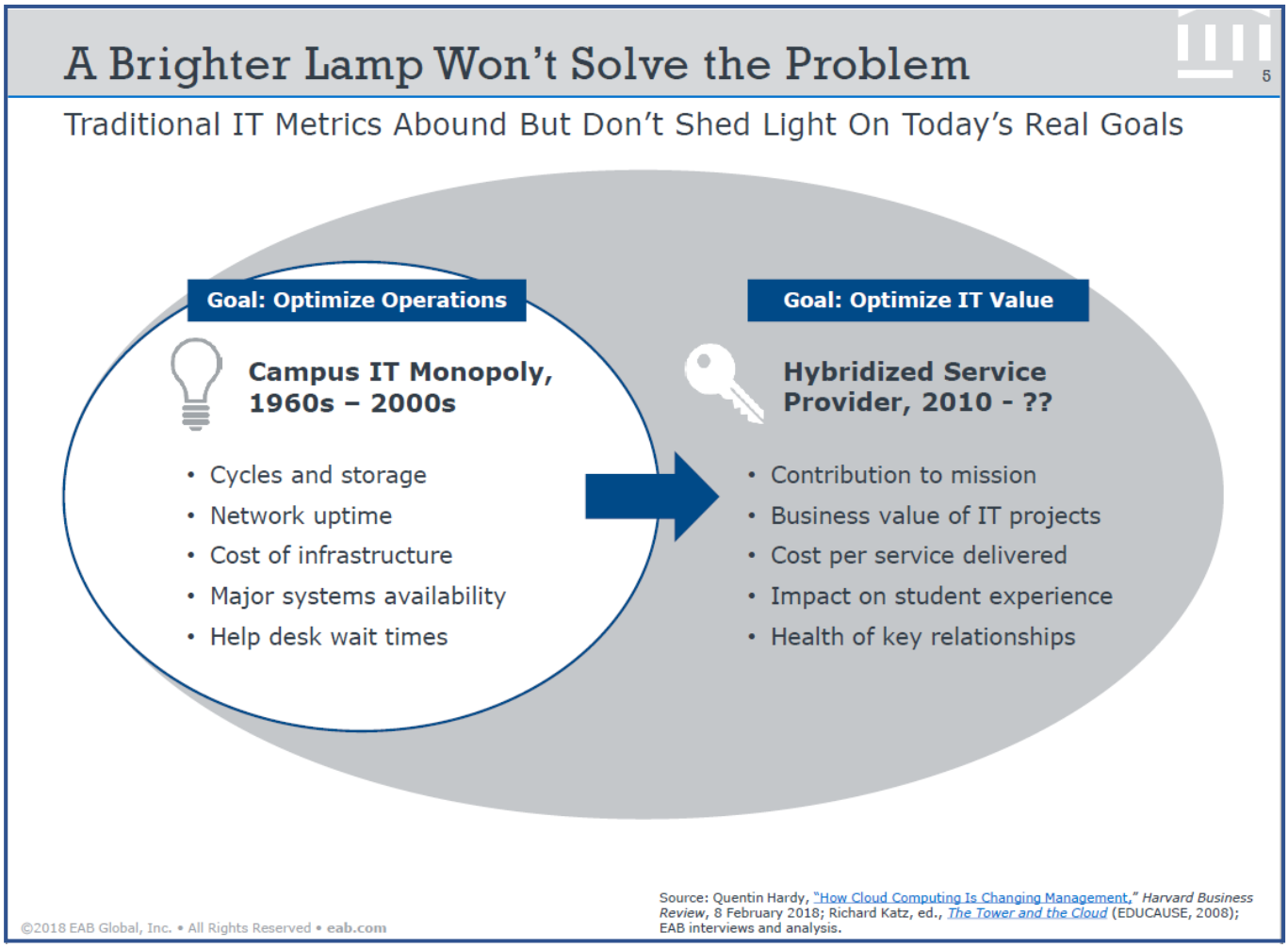
Purpose of this document

Just as the university works to become more data-informed, the Division of IT is also working to develop improved measures and assessments of the products and services we deliver in support of the mission, vision, and goals of the University. The objectives of this document are to provide guidelines for selecting and defining metrics, and measuring benefits to assess the value delivered by completed IT projects and initiatives.

This guideline has been written in support of initiatives and projects in the 2019- 2021 IT Operational Plan; we encourage those managing other projects and initiatives to consider including value-based measures in their projects as part of identifying and measuring the value IT delivers to the University.

In this document, the terms "project" and "initiative" are used interchangeably, as are the terms "value" and "benefit".

The graphic below, from "Getting the Measure of IT" session in EAB's 2018-2019 IT Forum depicts our perspective on the relevance in defining metrics to assess the value created by IT projects.



We use two recent projects as examples to illustrate some of the terms described in this document:

1. The 2019 PageUp Applicant Tracking Software Implementation Project; and
2. The 2019 Unified Endpoint Management (UEM) Project. The appendix shows the metrics and assessment framework with the subset of metrics for the UEM project.

Goals, Objectives, and Benefits Identification, Planning and Realization for Projects and Initiatives

Goals and objectives are statements that describe what the project will accomplish – the value it is intended to create.

Identifying goals and objectives for an initiative requires an understanding of the strategic needs of the organization and how a particular initiative will help meet the needs. This includes knowledge of the internal and external environmental factors, stakeholders needs, available resources, capabilities, constraints, and awareness of other priorities that may impact delivery and timing of the project being planned.

Goals are high-level, broad statements about the desired results to be produced by a particular project – the changes that will be achieved. Goals provide the overall context for what the project is trying to accomplish, are generally non-measurable, and describe how the project aligns with a strategic priority.

2019 PageUp Applicant Tracking Software Implementation project goals:

- Provide a requisition to hire solution representing best practices with a streamlined integration of the applicant process, hiring procedures, and onboarding for new hires.
- Gain broader and more agile access to a highly-skilled global applicant pool with the use of mobile applications, higher system functionality, and user-friendly features.
- Replace the PeopleAdmin ATS with the PageUp ATS, achieving a smooth system integration across the university with the transfer of historical data.
- Provide instant resolution to hiring procedural questions by having system access to all parts of the hiring workflow status.

2019 Unified Endpoint Management (UEM) project goals:

- Increase the number of enrolled devices in the UEM service to enable device management capabilities (e.g., inventorying, remote management, monitoring for compliance) and improve the security posture for the university.
- For faculty and staff, the UEM service's capabilities should decrease productivity loss for common device management activities. For IT personnel, it should improve operational efficiency for device management and security.
- The service should be operationally reliable since it will be used daily for device management and security.
- UEM service should be perceived as useful and easy to use for IT personnel.

Objectives are concrete statements describing what the project is trying to achieve. An objective is written at a level lower than a goal and can be evaluated at the conclusion of a project, or after a period of operations, to determine whether it was achieved or not: in other words, to assess whether the anticipated benefits have been realized.

Well-worded objectives are Specific, Measurable, Attainable, Relevant, and Time-bound (SMART).

2019 PageUp Applicant Tracking Software Implementation project objectives

Upon completion, the project will encompass:

- PageUp application, a SaaS solution, configured to support the university recruitment and onboarding for T&E Faculty, AP Faculty, staff, wage, and any identified additional position types
- Integration with current job boards, True Screen Background Check, Equifax I9 verification
- Legacy Data Migration:
    - Position description data will be moved from People Admin to PageUp;
    - Legacy candidate data from People Admin will be loaded in the university data warehouse and will not be migrated in PageUp;
    - Management of 3 prior years of candidate data and attachments, not in the data warehouse, will be extracted (possibly manually) by HR and stored in a university owned repository.
- Banner data integration will be 2 way and managed via a data transfer file using PageUp secure file transfer service.
- Single Sign On will be implemented allowing personnel will use their university credentials to access PageUp.
- University stakeholder training and communications
- Reporting

2019 Unified Endpoint Management (UEM) project objectives

- At least 30% of Senior Management areas (excluding Division of IT) are using the UEM service by … [implementation completion date of Intune & Jamf + 18 months]
- At least 20% of the estimated total university-owned/funded devices are enrolled in the UEM service and using a security office created minimum security/policy by … [implementation completion date of Intune & Jamf + 18 months]
- Faculty and staff should report reduced productivity loss half a year and one year through the pilot in comparison to the pilot's start due to operating system upgrades, software installations, printer setup, and receiving in-person assistance.
- IT personnel should report reduced time spent provisioning, managing, inventorying, monitoring, securing devices, and providing in-person assistance half a year and one year through the pilot in comparison to the pilot's start.
- IT personnel should perceive the UEM service as easy to use (the degree to which a person believes that using a particular system would be free of effort).

The Project Management Institute (PMI) defines benefits as “value that is created for the project sponsor or beneficiary as a result of the successful completion of a project”.

Projects are often considered finished when the deliverables are complete. In many cases, however, the benefits of a project are realized over time. We use the project objectives from the two example projects as examples of benefits to be created by the projects.

In general benefits may include both tangible (measurable in monetary terms) as well as intangible (significant and not measurable in monetary terms): cost savings, cost avoidance, risk mitigation or avoidance, compliance or regulatory requirements, market share, competitive differentiation, innovation, organizational agility, strategic alignment, employee satisfaction, organizational reputation, etc.

Benefits are identified during planning or business case development, and are analyzed and metrics developed as part of normal project management activities during the planning and execution of a project.

Measures and Metrics

The metrics discussed here are designed to measure progress towards the goals and objectives of a completed project or initiative – to measure the value created by the project. Measurement begins with the implementation of a project or deliverable. When considering metrics for a project or initiative, it is important to include only the most important and impactful – those that demonstrate the highest value to the organization – the "vital few".

There are many definitions for the term "metric". We use the definition from the metric white paper written by the VT strategic planning metrics sub-committee in June, 2018:

"A quantifiable measure used to track or assess an individual's, organization's, or process's progress towards a specific objective."

The diagram below illustrates the project process, defines the major segments, and describes the measures that can be associated with each segment.

	Input	Initiative or project	Output	Outcome	Impact
Definition	Personnel/ time/ finances/ tools used to deliver the project/ program/ initiative/ service	Activities/ tasks/ actions associated with delivering the project/ program/ initiative/ service. The work done in converting an input to an output.	What was produced or created by the project, in order to enable an outcome. e.g., number of training classes offered, % reduction in cycle time, new software application.	Consequence or specific objective that will occur from carrying out the process (the project goal). e.g., customer perception of quality or improved service. **The difference made by the outputs.**	Sustained, longer-term effects (consequences) of the project outputs and outcomes. Hoped for accomplishments. Used in long term medical and health studies.
Measures	Quantification of the personnel, time, finances, tools used to produce the output	Number of steps, milestones, lag time, processing time, number of handoffs, phases, external systems and data, etc.	Measures do not address the value or impact of the project. May include counts of what was created or produced.	Measures meaningful results or value created, quantify performance and assess the success of the process. Achievement to be obtained. e.g., on-time arrivals at a destination, improved access to services.	Longitudinal study, comparison (control groups).

Outputs versus Outcomes

Outputs represent what an initiative or project produces or creates: the amount of work performed, the volume of activity completed, etc. Measures for outputs do not address the value or impact of a project, and often include counts of what was created or produced.

Outcomes are the impacts or changes (events, occurrences, changes in conditions, behavior or attitudes, etc.) that indicate progress toward or achievement of an initiative's goal. Outcomes are the difference made by the outputs, and are often a combination of technology plus organizational performance: the support and services required to deliver the technology, plus the change in business practices as the outputs are adopted and integrated into the organization's way of working.

Transition to a fully operational state in which the solution has been fully adopted across the organization and the benefits fully realized may take a year or more after completion of an initiative. Within the context of the IT operational plans, we define the period of *Benefits Realization* as the time starting when a deliverable is complete and ending 12 – 18 months after all deliverables have been completed. We are aware that some benefits may require a longer period of time to be fully realized, or a solution to be fully implemented and integrated into an organization, but choose this period as relevant for assessing the value delivered by operational plan initiatives.

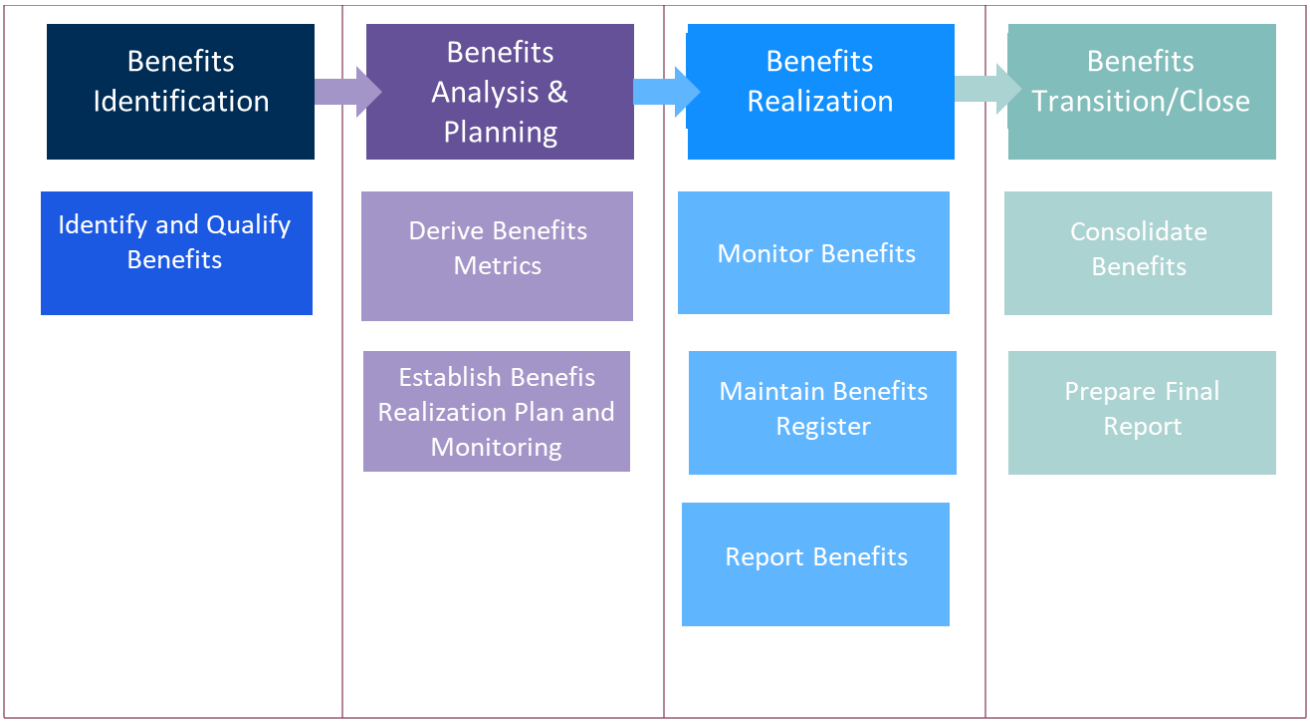
Benefits Framework

A benefits framework is a consistent and effective way of identifying, capturing, and reporting on the benefits realized by a project, and can easily be incorporated into project management activities.

Ginger Levin's Conference Paper at the PMI® 2015 Global Conference provides nine guidelines for developing a benefits management framework: benefits identification, realization and management, and closeout/transition to normal operations. https://www.pmi.org/learning/library/guidelines-successful-benefits-realization-9909

Some of the aspects to consider as part of preparing a benefits framework include who will be responsible for qualifying, defining and quantifying benefits; how the benefits will be captured and documented; the beneficiaries of the benefits; etc.

The following illustrates a simple benefits framework that can be included in project planning, execution, and post-implementation solution adoption.



Metric Categories

Output metrics refer to the direct products of initiatives, and not to the value or impact of the initiative.

Outputs are often measured in counts, or in terms of the amount of work that is performed – productivity, efficiency, technical service quality. For example

- Elimination of duplicate data entry in multiple systems.
- 50% reduction in number of paper forms.
- Number of steps reduced in a process.
- Number of system outages.
- Percentage of Senior Management areas (excluding Division of IT) using UEM.
- Percentage of university-owned/funded devices enrolled in UEM service (and using security office created minimum security policy/configuration).

Outcome metrics refer to the specific data collected to assess the extent to which the expected outcomes have been achieved. For example

- Shorter elapsed time for successful recruitment.
- Larger pool of highly skilled candidates.
- Increased success (acceptance of job offers by applicants) in recruiting.
- Percentage of faculty and staff reporting productivity loss due to software installations.
- Percentage of faculty and staff reporting decreased need for or time spent receiving in-person assistance.
- Percentage of IT personnel reporting reduced time spent on managing and securing devices (average hours per device - macOS, iOS, Windows 10, Android).
- Percentage of IT personnel reporting reduced time spent on inventorying devices (percentage of time spent over last 6 months).

Customer satisfaction metrics are used to measure how well an initiative's outputs and outcomes meet expectations. They may measure outputs as well as outcomes. For example

- Speed of service in dealing with applicant questions, system and procedural issues.
- Applicant effort score: how much effort was required by the applicant during the recruiting process (generally referred to as Customer Effort Score – CES).
- IT personnel perceived usefulness rating.
- IT personnel ease of use rating.

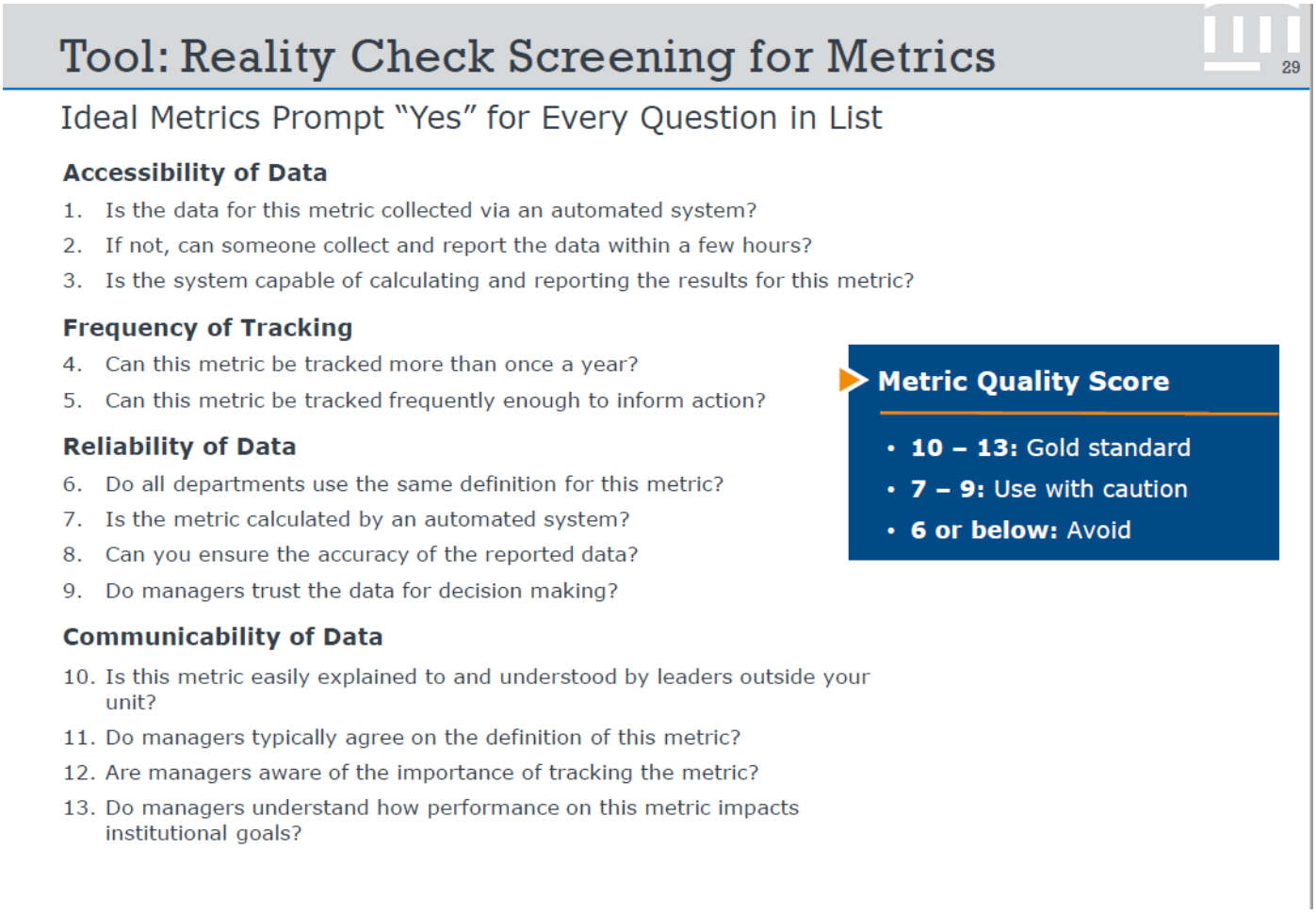
Surveys, interviews, and focus groups are excellent ways to measure customer satisfaction and obtain insights about value delivered and stakeholder needs.

Metrics and Data Quality

Characteristics of a good metrics

High quality data is critical for having good metrics. Good metrics have the following characteristics: they are: directly correlated to the goals of the initiative, relatively simple to measure, isolated to factors controlled by the group it is measuring, understandable, comparable across time periods and groups of users, referenceable, accurate, and timely.

The graphic below, also from "Getting the Measure of IT" session in EAB's 2018-2019 IT Forum provides a tool to help determine metrics.



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Appendix

UEM Project Metric and Assessment Framework

Metric	Metric target / threshold	Data Source	Measurement Timeframe	Metric Owner
Percentage of university-owned/funded devices enrolled in UEM service (and using security office created minimum security policy/configuration).	20% of estimated total university-owned/funded devices are enrolled in the UEM service by...	Jamf to identify departments Intune to identify departments Number of SM areas	Monthly	UEM service administrator
Percentage of faculty and staff reporting productivity loss due to operating system installs/upgrades.	Decrease percentage of productivity loss reports to operating system installs/upgrades by 10%.	Faculty survey and interview data	the week Jamf pilot starts and every six month after the pilot starts	UEM project UX designer
Percentage of faculty and staff reporting productivity loss due to software installations.	Decrease percentage of productivity loss reports to software installations by 15%.	Faculty survey and interview data	the week Jamf pilot starts and every six month after the pilot starts	UEM project UX designer
Percentage of faculty and staff reporting decreased need for or time spent receiving in-person assistance.	Decrease percentage of productivity loss reports to in-person assistance by 15%.	Faculty survey and interview data	the week Jamf pilot starts and every six month after the pilot starts	UEM project UX designer
Percentage of IT personnel reporting reduced active (hands-on) time spent on provisioning devices (average hours per device - macOS, iOS, Windows 10, Android).	Decrease average hours of active time spent provisioning per device by following percentages per device type: * macOS: 15% * iOS: 15% * Windows: 15% * Android: 10%	IT personnel survey and interview data	the week Jamf pilot starts and every six month after the pilot starts	UEM project UX designer
Percentage of IT personnel reporting reduced time spent on managing and securing devices (average hours per device - macOS, iOS, Windows 10, Android).	Decrease average hours of active time spent managing and securing devices per device by following percentages per device type: * macOS: 15% * iOS: 15% * Windows: 15% * Android: 10%	IT personnel survey and interview data	the week Jamf pilot starts and every six month after the pilot starts	UEM project UX designer
Percentage of IT personnel reporting reduced time spent on inventorying devices (percentage of time spent over last 6 months).	Decrease percentage of time spent inventorying devices (over last 6 months) by 25%.	IT personnel survey and interview data	the week Jamf pilot starts and every six month after the pilot starts	UEM project UX designer
IT personnel perceived usefulness rating	85% of IT personnel should rate the UEM service on the 'most useful' end of the scale (not including neutral/unsure rating).	IT personnel survey data	6 months	UEM project UX designer
IT personnel perceived ease of use rating	85% of IT personnel should rate the UEM service on the 'very easy to use' end of the scale (not including neutral/unsure rating).	IT personnel survey data	6 months	UEM project UX designer