

The 2013 Core Facility Benchmarking Study

Conducted by iLab Solutions

September 2, 2013

This document contains references to “iLab Solutions.” Please note that substantially all of the assets of “iLab Solutions” were acquired by Agilent Technologies in August 2016. For more information, go to www.agilent.com/chem/ilab.



Agilent Technologies

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Introduction

iLab Solutions conducted its 3rd annual Core Facility Benchmarking study¹ in the first half of 2013 surveying individuals who directly manage cores, service centers, shared facilities, and recharge centers at hospitals, universities, and research institutions. Those surveyed represent more than 41 different core types from 60 institutions in North America, Europe and the Asia Pacific region. iLab conducts this study annually in an effort to provide a better understanding of how core facilities operate, focusing on core growth and utilization, as well as the common challenges core managers face today. The collective responses to the on-going surveys demonstrate the year-to-year changes within the core facility community.

- 67% of cores experienced growth in the number of customers in 2012; of particular note, more than a quarter of cores saw their customer base expand more than 50%, a much faster pace of growth than in 2011
- In 2012, 51% of core income came from customer revenue, this is up from 48% in 2011; revenue from institutional support dropped in 2012 to 29% from 33% in 2011
- Core managers reported that time spent on customers in 2012 is up from 2011 by 12%; time spent on Independent research is down 15%
- On average, 48% of time reported is spent on managing the core business rather than performing services for customers or conducting independent research
- The use of excel spreadsheets/manual processes for tracking workflow and equipment, billing/invoicing, and reporting is down in 2012; whereas, the use of systems provided by the institution or built specifically for the core is up
- Overall satisfaction with tools and processes is up by 8% in 2012 as compared to 2011
- 84% of cores charge different pricing for varying customer types (e.g., internal, external, corporate); this is an increase from last year's study where 78% reported price variations based on customer type
- Most services performed are for internal customers (83%); 9.5% of work is for external academic customers, 5% for those with special academic relationship, and 2.5% for external corporate customers
- Of cores surveyed, 66% said they adjust their rates annually, 26% adjust their rates at other time increments, and 8% said they have never adjusted their rates

¹ iLab Solutions conducts an annual Core Facility Benchmarking Study with the first study released in 2011, the second in 2012, and this study in 2013. Throughout this report, references will be made to previous studies to show trends in core growth and utilization.

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- In 2012, 51% of cores said there was no tenure for core personnel at their institution, 32% said core directors have tenure, 14% said core managers have tenure, and 11% of cores surveyed said technicians have tenure
 - The average number of customer labs served in 2012 is 10 per core FTE; this is significantly lower than the 24 per core FTE reported in 2011

When asked, “What are your biggest challenges as a core manager?” The most common challenges reported for 2012 were:

- Having access to the appropriate tools and resources, and
- Generating revenue and meeting budget

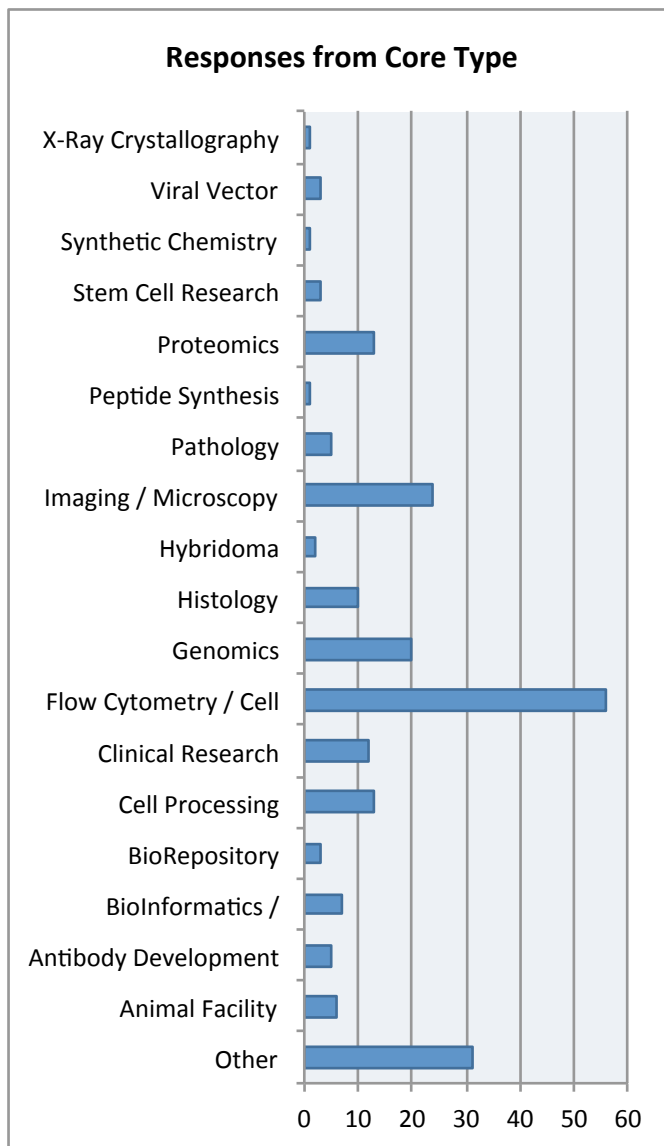
Additional challenges mentioned involve customer needs, communication and recruiting, equipment maintenance and upgrades, time and workload, institutional support, staffing, maintaining overall quality, and managing the core.

The following pages provide an analysis of the data collected.

Distribution

iLab distributed the survey in early February, 2013 to core managers and directors at hospitals, universities and research institutes. During this time, iLab also distributed the survey through press release listing sites, social media sites, and its corporate website. Furthermore, institution administrators who became aware of the survey sent the survey to their institution core managers, and core facility directors also shared the link on the Purdue Cytometry Message Board². The survey was open for 12 weeks. All data was compiled and the averages are presented in the following pages. The conclusions presented here may not represent any single core.

In total, 120 core managers and directors responded to the survey. These individuals come from 60 institutions throughout the North America, Europe and in the South Pacific Region and represent more than 40 core types³. **28% of respondents said they manage cores with multiple scientific foci or manage multiple cores.** In these cases, the responses were only counted once for the overall survey analysis.

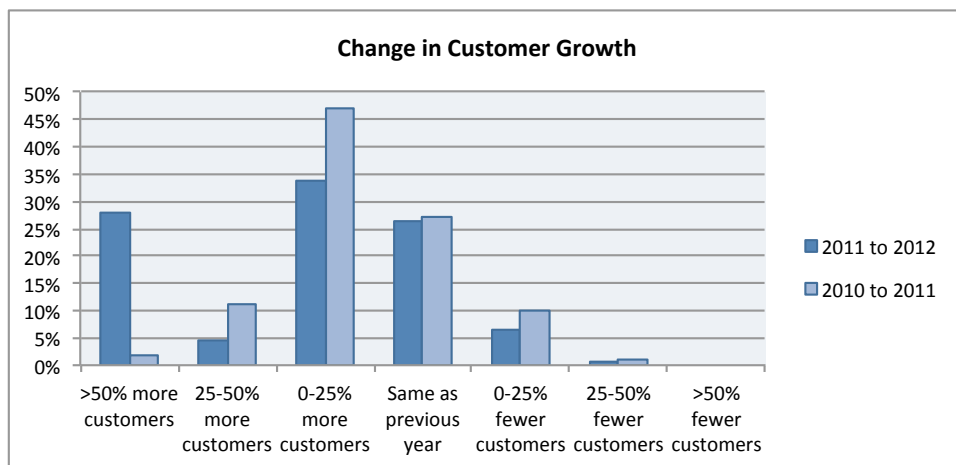


² Comparison charts of overall data vs. Flow Cytometry core specific data can be found in Appendix B.

³ "Other" includes cores, such as Angiogenesis Assay Cell, Endothelial Progenitor Cell, Cardiometabolic, Phenotyping, Cell and Molecular Biology, Chemistry, Hematology, Necropsy, Design & Fabrication, Scientific Apparatus, Electron Microscopy and Optical Microscopy, Environmental Analysis, Glassware, High Content Screening, High Performance Computing, Immune Monitoring, Immunohistochemistry, Mass Spectrometry, MiSeq NanoString Digital Gene Expression and Sanger, Sequencing, Mouse Microsurgery, Pharmacology, Pharmacy, Quantitative PCR, Digital PCR, Reagent, Purchase Program, Sleep, Spectroscopy, Transgenic, Molecular Medicine, Cardiac Physiology, Transcranial Magnetic Stimulation, Clinical Research, Preclinical MRI, Small Animal Imaging

Results of Multiple Choice and Quantitative Questions

CUSTOMER GROWTH



Customers: 67% of cores reported growth in their customer base from 2011 to 2012. Only 8% reported a decrease in customer growth. Relative to last year's survey, the percentage of cores enjoying an increase in customers was

similar (60% growth from 2010 to 2011), however, 28% said they had significant growth from 2011 to 2012 (>50% more customers), whereas, only 2% cited the same significant growth from 2010 to 2011.

On average, 10.5 labs are served per core facility FTE. This is a significant decrease from 24 labs reported on last year's survey.

CALCULATING RATES

Service Rates: We asked core directors and managers what kinds of costs they consider when calculating rates. **84% of cores surveyed reported they charge different pricing for varying customer types.**

- Over 90% of cores consider salaries, center or program subsidy (e.g., Cancer Center, CTSI), fringe benefits, maintenance, and depreciation when calculating internal rates⁴.
- 100% of cores that consider carry-over deficit or surplus from the prior year said they include that number when calculating rates for internal customers.
- Over 40% of cores surveyed said they offer a subsidized rate for cancer center, program or department membership⁵
- 75% of cores consider Facilities and Administrative costs when setting external rates
- 90% of cores with corporate customers reported that they add a private industry surcharge when considering corporate customer rates.

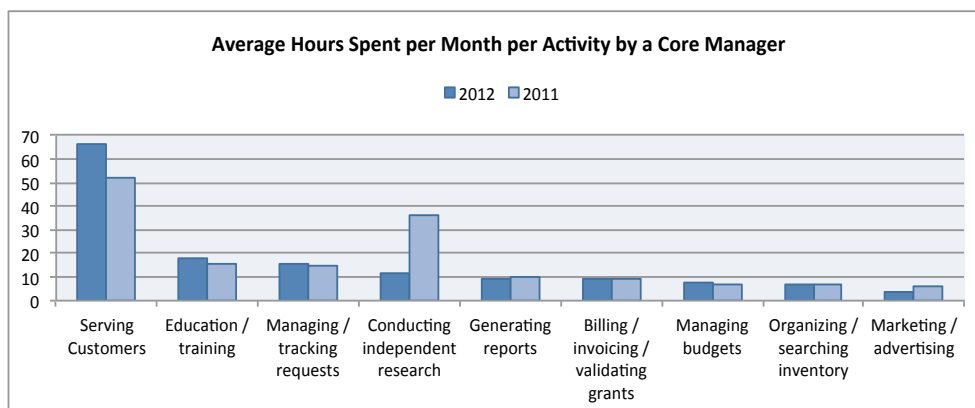
⁴ In the US, depreciation excluded from calculations for equipment purchased with federal funding.

⁵ In the previous year's survey, 80% of cores surveyed said they offer a subsidized rate for cancer center, program or department membership.

Rate Change Frequency: 66% of cores said they modify their service rates annually, 26% adjust their rates at other time increments, and 8% said they have never adjusted their rates.

CHARGING & CORE ACTIVITIES

Customer Type: Cores most commonly serve customers internal to their institution. **On average, internal customers represented 83% of the work performed in 2012.** Services for external academic customers or those with special academic relationships, e.g., cancer centers, accounted for 14.5%, and 2.5% of core work was for corporate customers.



Time Spent: Core managers reported that in 2012 the majority of their time was spent on conducting services for customers (66 hrs per month). This is an increase from 52 hours per

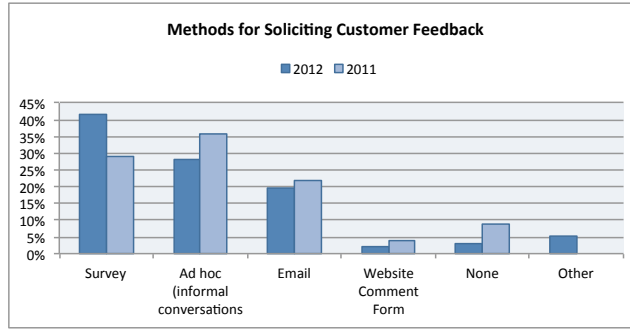
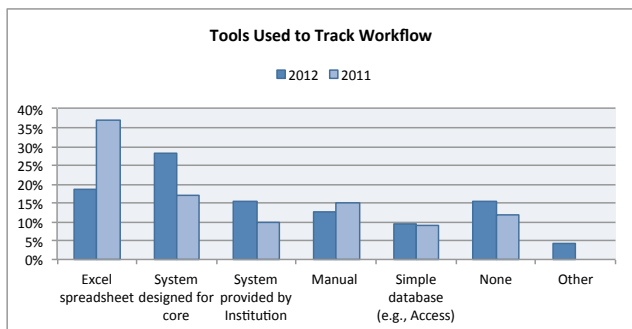
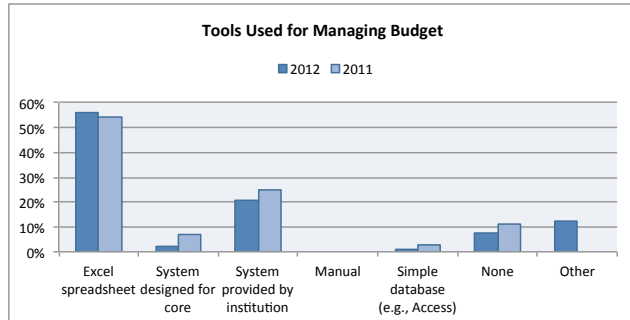
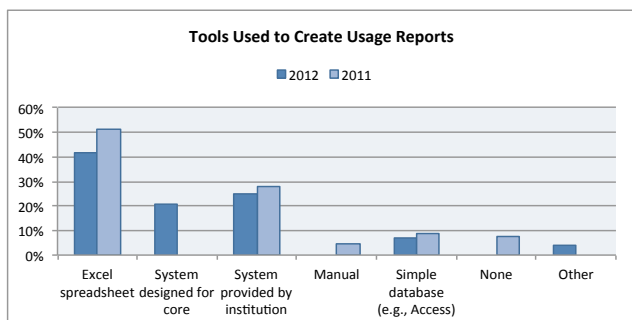
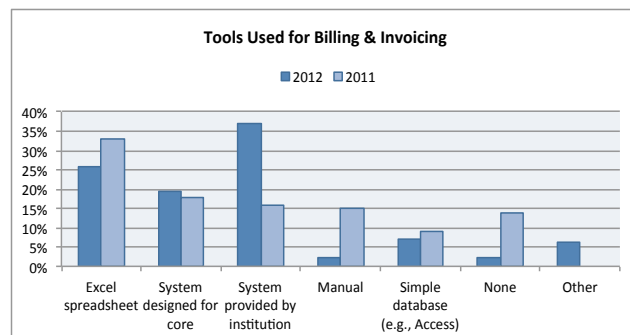
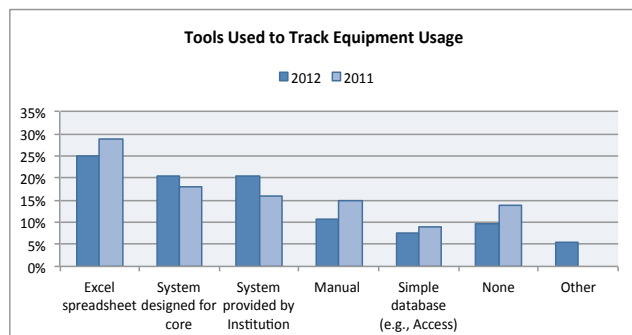
month in 2011. There is a significant decrease in conducting independent research by core facilities from 36 hours in 2011 to 12 hours in 2012.

Although, the majority of time continues to be on research related activities, **cores indicated that nearly half of their time (48%) is spent on managing the core business**, including managing budgets, tracking and managing requests, conducting billing, and reporting.

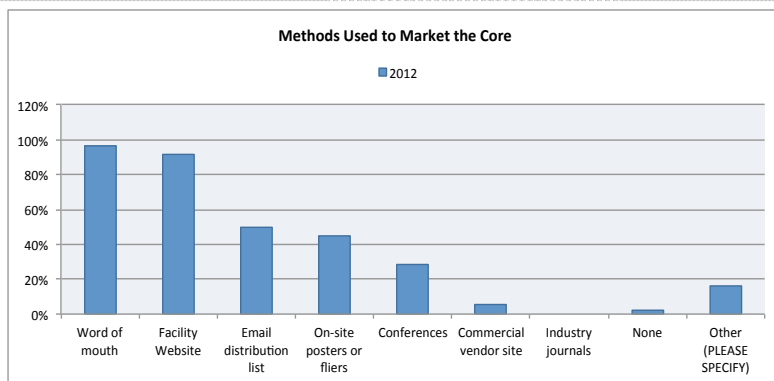
OPERATIONAL TOOLS & UTILIZATION

Business Tools: As compared to last year's survey, the use of the spreadsheet is decreasing as the primary tool to manage operations, such as tracking equipment usage, billing and invoicing, tracking workflow, and creating usage reports⁶; whereas, the use of systems designed for the core is rising.

As for soliciting feedback, surveys have risen to 42% as the primary method with ad hoc at 28%.

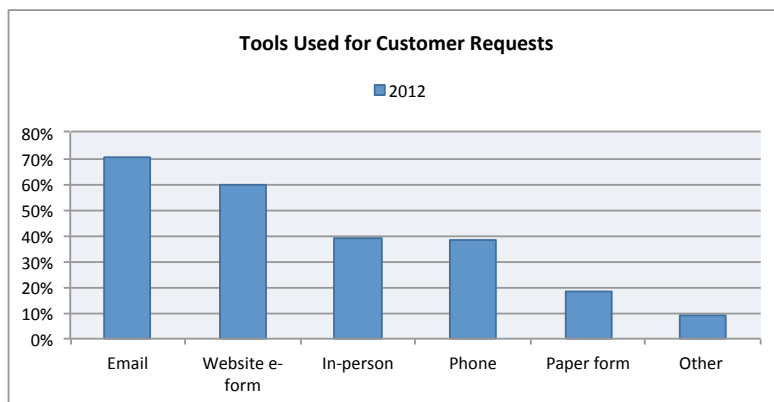


⁶ There was a calculation error in the data from the 2012 Core Facility Benchmarking Study for Tools to Create Usage Reports. The above graph reflects the corrected data.

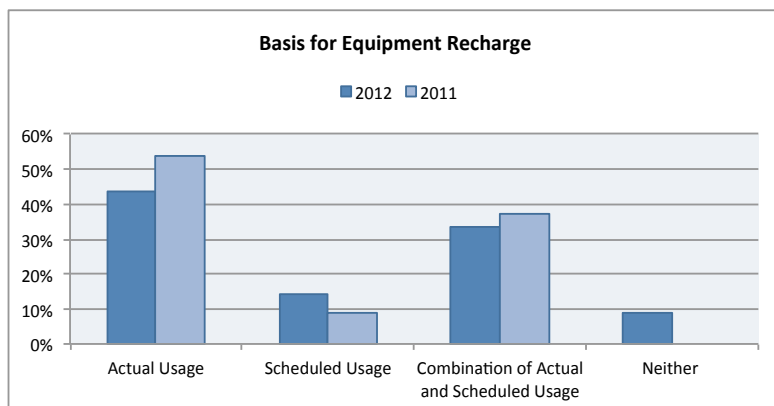


media sites, blogs, newsletters, internal presentations, and annual symposiums.

Marketing the Core: Cores tend to market their core in numerous ways, the most common methods are word of mouth (97%) and core website (92%). Other ways cores market their services include email distribution (50%), on-site posters (45%), conferences (20%), commercial vendor sites (5%), and other (16%), which includes social



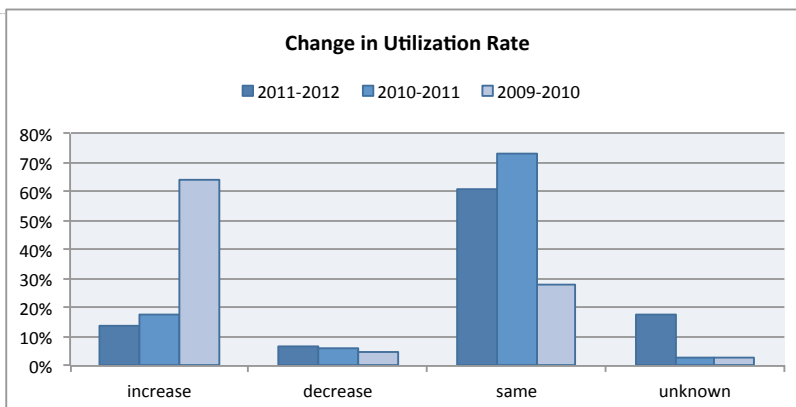
Receiving Customer Requests: On average, cores received 70% of their service requests or reservations by email. Other important methods include website e-form (60%), in-person conversations (39%), phone (38%), and in paper form (19%).



Equipment Recharge: For equipment-based cores, 44% said they base recharge on actual equipment usage. 14% said they charge for only scheduled time, and 33% said recharge is based on a combination of actual and scheduled usage.

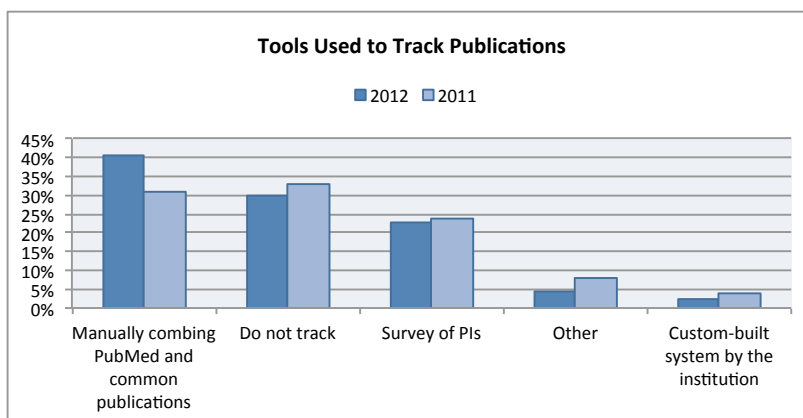
Utilization Rate:

A majority of respondents (61%) reported no change in utilization rate from 2011 to 2012, and a much lower (14%) reported an increase of change in utilization rate. This trend is consistent with change in utilization rate from 2010 to 2011; however, in iLab Solution's first annual Benchmarking Study, cores reported a much more significant increase in utilization rate (64%) from 2009 to 2010.

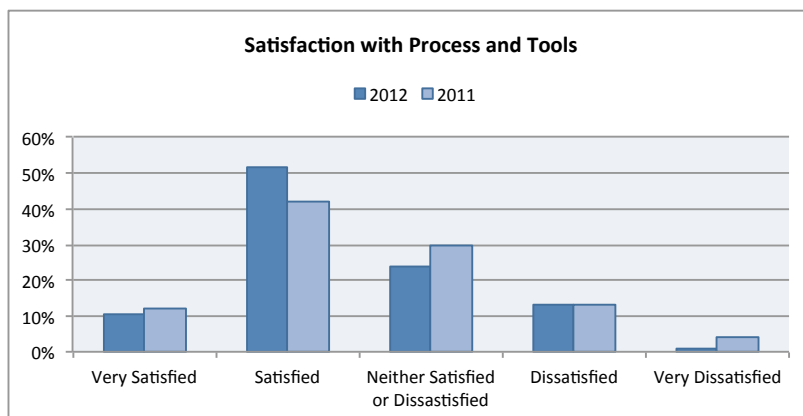


Equipment Repairs: 48% of cores surveyed use external vendors for maintenance and repairs. 24% have dedicated internal technical staff, and 28% said they use "other" means for maintenance, which mainly included a combination of both external vendors and internal technical staff, dependent upon the equipment type.

Tracking Published Research: The most commonly reported method of tracking publications is manually combing PubMed and other publications at 41%. 23% said their most common method is by surveying PI's, 2% said they use a custom built system to track publications, and 30% of respondents said they do not track research publications at this time.

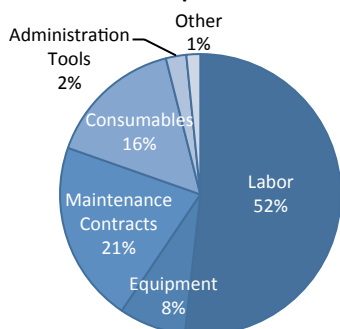


Process Satisfaction: 62% of respondents reported being satisfied with their cores processes and tools. This is about an 8% growth from last year's survey. 14% of cores reported they were dissatisfied with the tools they used in 2012 to manage the core business.



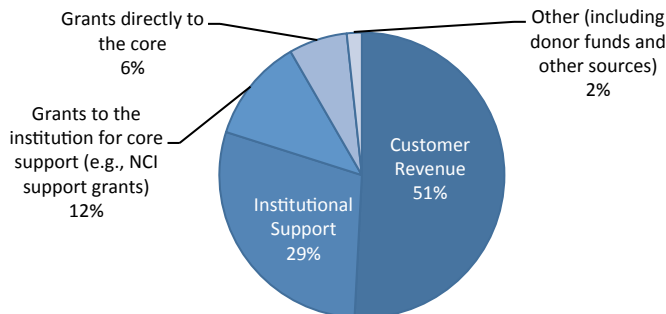
FUNDING & EXPENSES

Breakdown of Core Operational Costs for 2012



Costs: When considering total expenses⁷ in 2012, labor was reported as the highest cost to cores averaging 52%. The average cost of equipment was reported as 8%, 21% for maintenance, 16% for consumables, and 2% for administration tools.

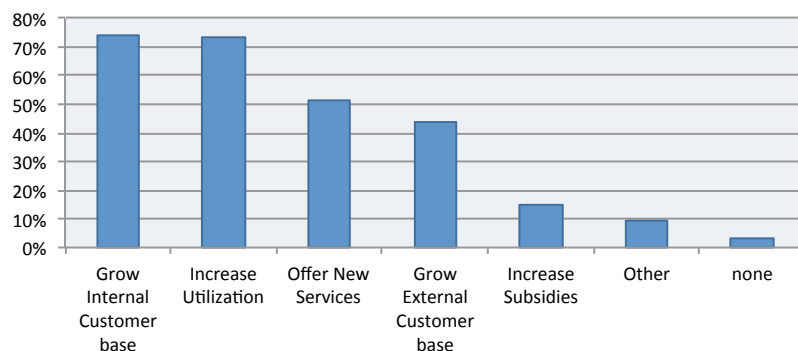
Sources of Income for 2012



Income: In 2012 the bulk of core income came from customer revenue averaging at 51%; this is a 3% increase from last year's survey. The secondary prominent revenue source is institutional support (such as subsidies) averaging at 29%; this is about a 4% decrease from last year's survey. The

remaining 20% of income came from grants and other funding sources.

Facility Goals for 2013



Goals: Cores top goals for their facility in 2013 are growing their internal customer base (74%) and increasing core utilization (73%). Other goals reported are offering new services (52%), growing external customer base (44%), and increasing center subsidies (15%).

⁷ Capital expenses are not included in this data.

Summary of Results

Trends in growth and operations in the core facility community are significantly changing when comparing the 2013 Core Facility Benchmarking Study⁸ with the 2012 year's survey. Cores are bringing in more business and are becoming more efficient. As the number of customers is rising so is customer revenue, time spent on serving customers, and the adoption of advanced tools to meet customer needs.

As cited in this year's study, there was a 67% customer growth from 2011 to 2012 with the most prominent source of revenue coming from core customers at 51%. This is a 3% increase from the 2012 survey. Whereas, the secondary prominent income source for core facilities, institutional support (such as subsidies), is down by about 4%.

Supporting this trend are cores' goals⁹. Only 15% of cores surveyed said they are interested in increasing center subsidies for 2013; whereas, over 73% of cores said they would like to grow the internal customer base and increase facility utilization.

An increase in customers means an increase in time spent serving the customer¹⁰. With this increase there are some trade-offs. For example, time spent on independent research appears to be decreasing significantly¹¹ as compared to the previous year's study.

As cores are dealing with more customers and struggling with time¹², they are also upgrading the tools they use to handle this influx. According to the study, the use of spreadsheets and other manual processes have decreased when tracking equipment usage, billing and invoicing, tracking workflow, and creating usage reports. In its place are systems provided to the core by the institution or built specifically for the core. Overall satisfaction with the tools used to manage core operations is up¹³ as compared with the previous year's study.

⁸ The 2013 Core Facility Benchmarking Study is based on 2012 activity of cores, service centers, shared resources, and recharge centers at hospitals, universities and research institutions. The 2012 survey was based on 2011 activity from similar facilities.

⁹ Core facility goals data for 2013 can be found on page 11 of this report.

¹⁰ Data of Average Hours Spent per Month per Activity by a Core Manager can be found on page 7 of this report.

¹¹ Independent research by core facilities has decreased in 2012 with 12 hours spent per month compared with 36 hours per month spent on independent research in 2011.

¹² Time and workload is mentioned as one of the major challenges of core managers today as cited in Appendix A of this document.

¹³ Sixty-two percent of respondents reported being satisfied with their cores processes and tools. This is an 8% growth from the 2012 Benchmarking Study.

About iLab

iLab Solutions is a leader in providing web-based management services to academic research institutions, with customers that include leading NIH-funded universities, research hospitals, and independent institutes. iLab leverages a scientific advisory team comprised of active PIs with research backgrounds from Brigham & Women's Hospital, Dana-Farber Cancer Institute, EMBL, Harvard University, Huntsman Cancer Institute, Mt. Sinai School of Medicine, Stanford University, University of Melbourne, Vanderbilt University, and Yale University. The iLab leadership team includes executives with experience from Dana-Farber Cancer Institute, Deloitte, Facebook, Genentech, Intel, McKinsey, Microsoft, SAIC, and Vanderbilt University.

In March 2013 iLab signed a partnership with Vanderbilt University, which has developed and maintained the CORES software platform since 2001. This partnership brings together the two most sophisticated and broadly-used solutions for core facility management. Over the course of 2013 and into 2014, the joint team will incorporate the best features of the CORES software into the iLab platform, while also leveraging Vanderbilt's academic perspective to help guide future development.

The combined iLab/CORES solution serves almost 1,000 core facilities across more than 80 research institutions in eight countries, including 30 of the top 50 recipients of NIH funding. iLab has extensive experience providing enterprise-level solutions at major research institutions. These solutions include integrations with institutional financial systems (e.g., SAP, Oracle, PeopleSoft, Lawson, Banner, IFAS, etc.) and identity management systems (e.g., Active Directory, Shibboleth, etc.). iLab's dedicated implementation team and established implementation processes result in high adoption and fully trained personnel for effective use of the system.

iLab offers a suite of web-based tools for academic research management. The functionality includes core facility service request management, enhanced sample management functionality, equipment reservation and usage tracking, billing and invoicing, reporting, and lab requisitioning and spend tracking tools. The system also allows each user a consolidated view of their recent activity in the system as well as the ability to search across all equipment, services, and cores in the system.

Appendix A (Details of Open-Ended Survey Responses)¹⁴

Q1. What are your biggest challenges?

Revenue and Budget :

- Being paid from external customers
- Keeping prices affordable for our researchers
- Meeting budget
- Maintaining constant volume to appease administration
- Budget constraints
- Concerned about growing/maintaining business in an economy where funding is being reduced
- Obtaining grants to buy new machines
- Obtaining capital equipment
- Decreasing available research funding = researchers can perform fewer assays. Decreasing volume = increasing budget pressures
- Finding funding for new equipment
- Keeping everything running with a shrinking budget/use
- Maintaining rates that comply with recharge policies with usage fluctuations due to PI funding
- Budget decreases
- 100% cost recovery
- Keeping income up without raising rates
- Being cost neutral--managing labor costs vs revenue generated
- Recovering the cost of the operation

Tools and Resources:

- Integrating different tools that will allow for report generation that will in turn allow for better analysis of services provided
- Projecting future workflow for staffing and rate development purposes

¹⁴ A majority of open-ended responses are included in Appendix A. Some responses were combined to eliminate repetition.

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- Project management
 - Better comprehensive and customizable project tracking
 - Managing complex projects
 - Managing last-minute requests
 - Finding a good and free scheduling system
 - Preventing backlog of requests and fitting in as many requests per day by keeping users on schedule for appointments
 - Billing, usage tracking
 - Measuring Impact (IE Publications)
 - Tracking publications
 - Tracking project progress and managing interface between lab work and billing system
 - Keeping track of each users project notes/info in organized way
 - To have a good informatics system
 - I need to replace our working outdated database and finding one to do all we need has proven difficult and expensive. I love managing a core
 - Tracking success
 - Tracking publications and how to charge for supplies vs. labor
 - Billing and tracking equipment usage
 - Billing system and budget tracking
 - Getting used to [system]
 - Ensuring the signup times are in line with actual use

Recruiting Customers:

- Marketing so as to get more users
- Getting more researchers to use the facility
- Getting more people to use the core
- Finding enough funded investigators - becoming increasingly challenging!

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- Expanding the user base
 - Keeping utilization steady
 - Let people know we are here to offer services
 - Bringing in new business
 - Increasing resource utilization

Customer Needs and Communication:

- Diversity of core users/needs
- Explaining why rates are higher than PI expects
- Making colleagues aware of the services and capabilities the core can provide
- Communication
- Knowing when to add a service
- Convince PIs and users from using proper controls (instrument setup and experimental); staining panels and care about quality of cell prep (which can cut down instrument usage time).
- Communication with the users regarding changes in the core, new reagents, upgrades to software...our users don't tend to check their email or the cores website very often so a lot of times its me walking around the building which is inefficient
- Meeting growing demand for access to instruments
- Satisfying my most demanding customers

Equipment Maintenance & Upgrades:

- Expensive service contracts
- Upgrading equipment - purchasing new equipment
- We may be able to function for a few more years but without a mechanism to upgrade/buy new equipment then eventually we will have a defunct core
- Maintaining instruments

Time and Workload:

- Time
- Keeping up with the paperwork

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- Getting enough hours in the day
 - Managing time for R&D projects
 - Working in a core that provides services to 4 major partners, as well as external users
 - Time to manage everything / help all users as sole person in core
 - Time management

Institutional Support

- Too much part of decision making is on the side of administration, which zero merit knowledge and is based on spreadsheets. Core facility in academia is not sale of peanut butter jars.
- Fighting with the administration
- Lack of institutional support
- No institutional support, no long-term stability
- Knowing what the institutional needs are
- Getting recognition
- Administration

Staffing:

- Maintaining high-qualified staff
- Finding qualified and motivated employees
- Having enough staff to get work done
- Providing opportunities to staff for projects to keep them engaged in their job
- Facility expanded to 2 sites, without increasing staff due to budget decreases. Insufficient staff availability to operate instruments across two sites is an issue
- Balancing staffing with fluctuating volume - use of trained student labor has allowed more flexibility here
- Keeping everyone happy and productive
- Getting everyone to function as a unit

Maintaining Quality:

- Ensuring the quality of service from instrument service contract personnel

-
- To assure a good service for customers with low budget and old equipment
 - Balancing the demands on and in the facility with regards to quality and quantity of support, cost recovery, staff development, developing routes to obtain new equipment, ensuring high quality and providing a responsive and comprehensive customer service with limited resources

Managing Core:

- Balancing manager/player model
- Planning for future needs
- To balance administrative duties with customer services
- Managing UP

Other:

- Doing surveys

Appendix B *(Comparison charts of overall data vs. Flow Cytometry Core specific data)*

