Shared Research Resources (Cores) provide specialized instrumentation and scientific expertise and serve as a nexus for research and innovation at many institutions. To optimize the operation and sustainability these key resources, it is imperative that good strategic plans and operational models are in place to position them for greater impact and return on investment. This presentation addresses the business side of operating a core. Beginning with an overview of the pieces that make up a core, the presentation will also discuss the manner in which science and business can work together to operate efficiently, including demonstrations of budget development processes and creation of business plans. Participants will also walk away with a practical framework and toolkit (the Business Model Canvas©) to help build their own business plans.

BUSINESS SKILLS FOR CORE FACILITIES

Business Planning & Strategic Management

Julie Auger & Justine Kigenyi

jauger@salk.edu *jkarungi@kumc.edu*

Western Association of Core Directors

November 13, 2024

Research Lab or Business?

Reality = Both

Many core facility scientists are charged with managing their labs as small businesses but have never had any formal training in finance or accounting. The same can be said for managing other resources including space and personnel.

Therefore, they are at a disadvantage when it comes to strategic decisions that involve resources. This includes determining how much money is needed to run and evolve the core, how to appropriately set recharge rates and how to best manage expenses.

What is a Business Model?

"A business model is a conceptual structure that supports the viability of the business and explains how it operates, makes money, and how it intends to achieve its goals and acts as a blueprint for the business and a roadmap to succeed." – Feedough.com

"A business model is supposed to answer who your customer is, what value you can create/add for the customer and how you can do that at reasonable costs." - Peter Drucker

Therefore, a business model is a description of how a company creates, delivers, and captures value for itself as well as the customer.

Components of a Business Model: 4 Key Aspects

THE PRODUCT: What the business provides

THE CUSTOMER: Whom the business serves

THE OPERATING MODEL: How it provides its services

FINANCIALS: What are the costs involved & how the business generates income/revenue

Components for Sustainability:

BUSINESS EVOLUTION: Where will the market needs take you

CHANGING ECONOMY: How will funding sources change (risk of change)

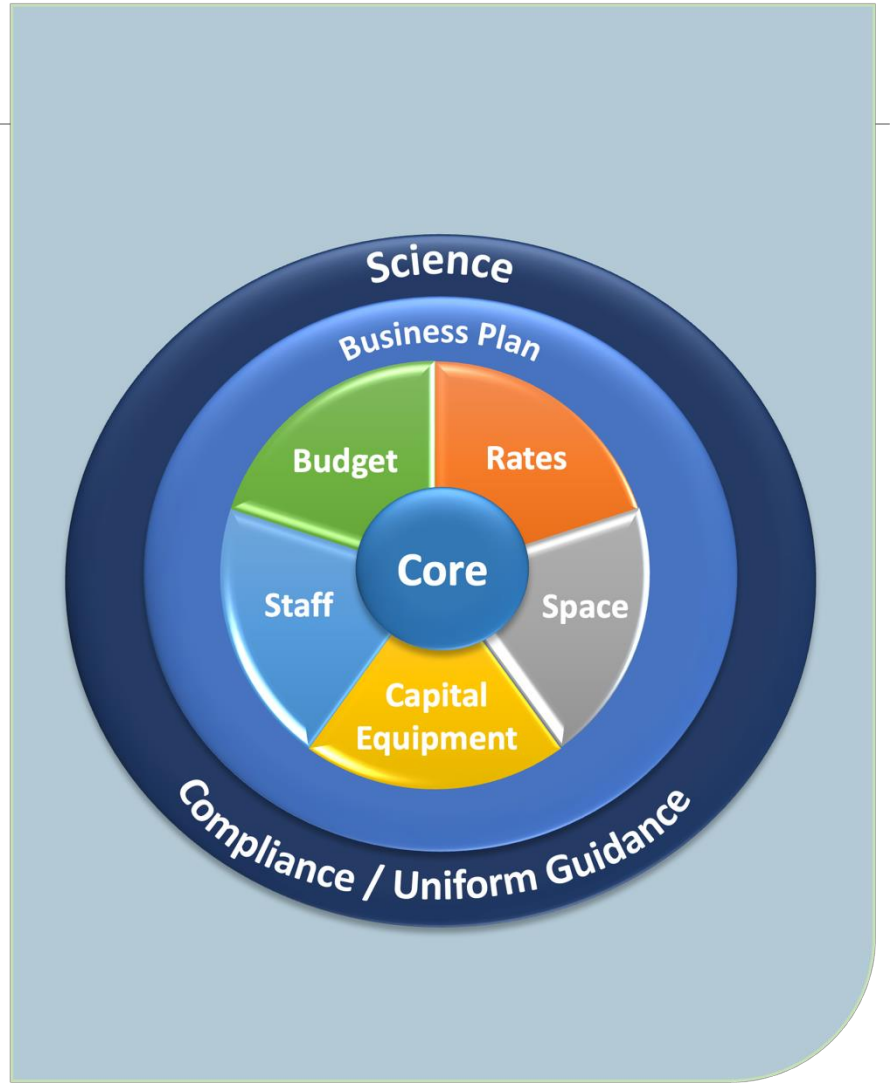
SUCCESSION PLANNING: The changing functions within the team

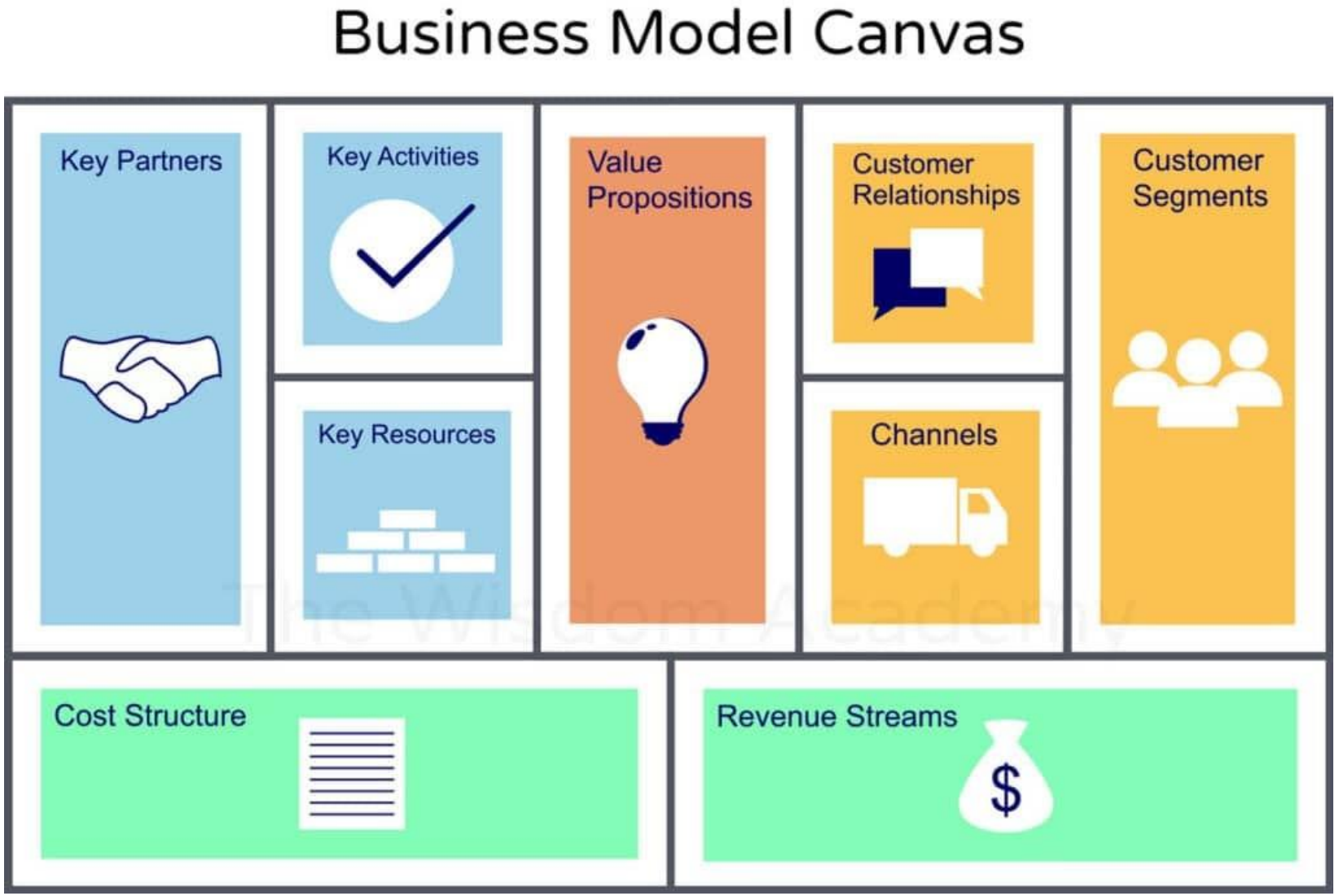
What is a Core Facility

"Core facilities are centralized shared research resources that provide access to instruments, technologies, services, as well as expert consultation and other services to scientific and clinical investigators……"

The typical core facility is a discrete unit within an institution with:

- Dedicated personnel
- Discrete expenses
- Equipment
- Defined space
- User fees to recover costs (Rates)
- Federal funding support – either direct or via recharge





The Business Model Canvas

The Association of Biomolecular Resource Facilities

Core Components: Business Planning

“To be heard you must speak the language of the one you want to listen.”

- Robin Wall Kimmerer in Braiding Sweetgrass

Operation Components & Key Partners

- Survey to determine services needed
- Equipment
- Space (wet & dry)
- Utilities needed (electrical, HVAC, lab gases)

Budget Components & Key Partners

Expenses

- Equipment
- Equipment maintenance
- Consumables
- Personnel

Projected Revenue

- Services volume
- Equipment use volume

Business Considerations:

Why, What, Who, How much, How measured, Who else?

Purpose of the core

(Value Proposition)

Specific services or products offered?

(Key Activities)

How will services/products be measured – labor/machine hours, per test, CPU unit, etc.?

(Cost Structure)

Will be primary users (internal, external) and what is their source of funding?

(Customer Segments)

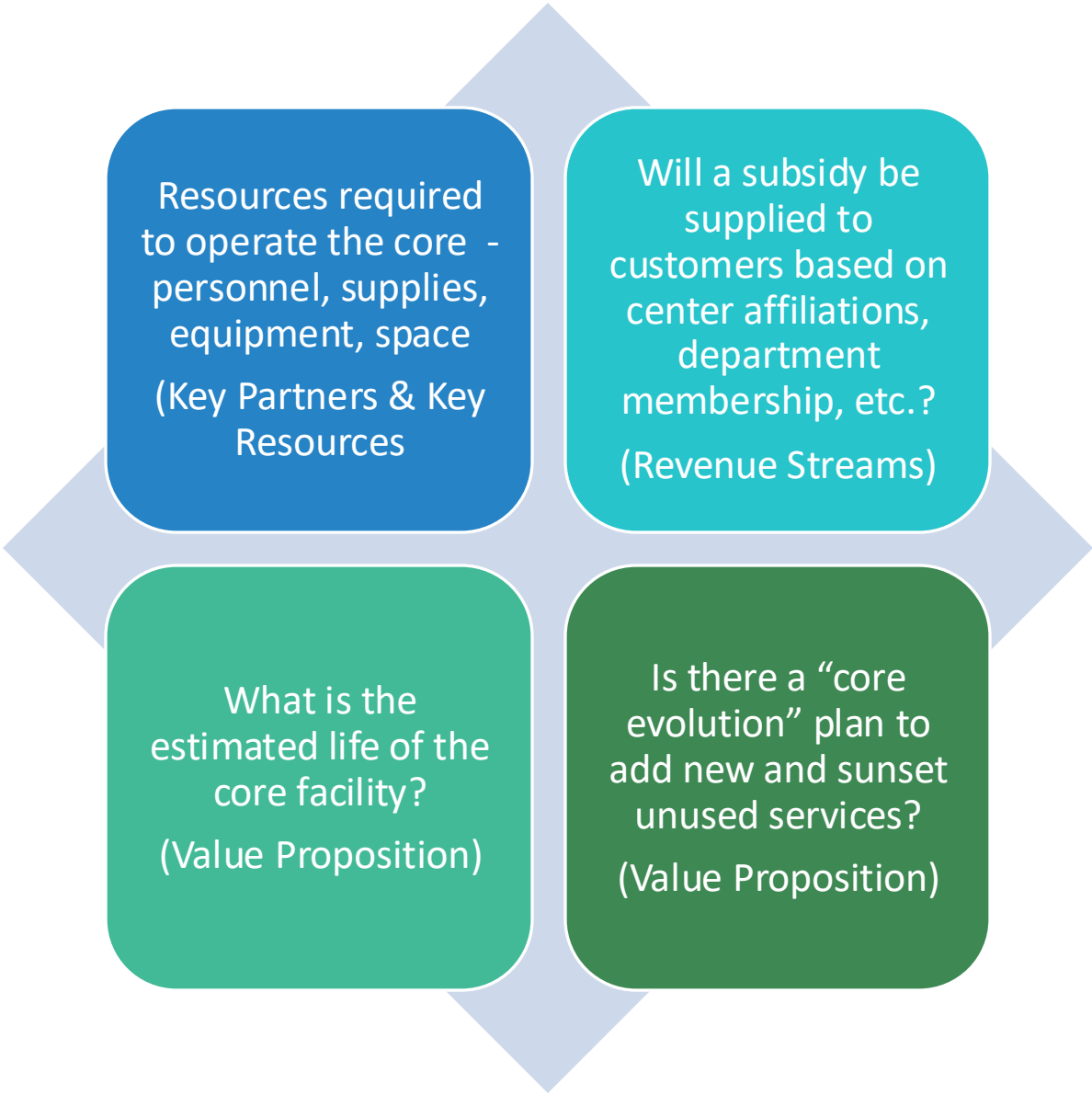
Demand for the service/product?

(Value Proposition)

Do other core facilities offer similar services/products?

(Value Proposition & Revenue Streams)

Core Facility Considerations - continued



Core Operations Review

- With a focus on scientific expertise, provide a justification for the personnel.
- Is there an advisory/oversight committee?
- What additional funding exists to support the service center/core?
- Will the service center/core be supported through user fees, grants, other sources?
- Is there a specific request for subsity/other resources to be provided by the institution (e.g. space)?
- Where will the services provided take place?

Cost Analysis Review

FAQs for Costing of NIH-Funded Core Facilities

Notice Number: NOT-OD-13-053

Key Dates

Release Date: April 8, 2013

Usually, to become an approved service center and collect revenue, your facility must:

- Operate in accordance with Office of Management & Budget (OMB) Uniform Guidance (UG) 2 CRF part 200
- Federal regulations require that the cost of goods and services, when material, be charged directly to the applicable awards based on the actual usage of goods and services.
- The usage benchmark is the volume of work expected to be performed expressed in units such as labor hours, machine hours, CPU time or any other reasonable measurement.
- A separate rate should be calculated for each discrete product or service offered to users
- Facilities SHOULD NOT use a billing structure where users are charged a membership fee or any other metric that is not based on actual usage.
- REASONABLE INTERPRETATION OF OMB GUIDELINES: The federal government should be charged the lowest possible rate, and all federally funded investigators should be charged equitably.

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Depreciation
Services
Rate Setting
Breakeven
Usage
Capital Equipment
Cost Allocation
Direct Expenses
Deficit
Expenses
Capacity
Lease Agreements
Indirect Expenses
Surplus
Service Agreements
Subsidy
Uniform Guidance
Consumables
Annual expenses ÷ annual usage level = breakeven rate
Discounts
External Customers

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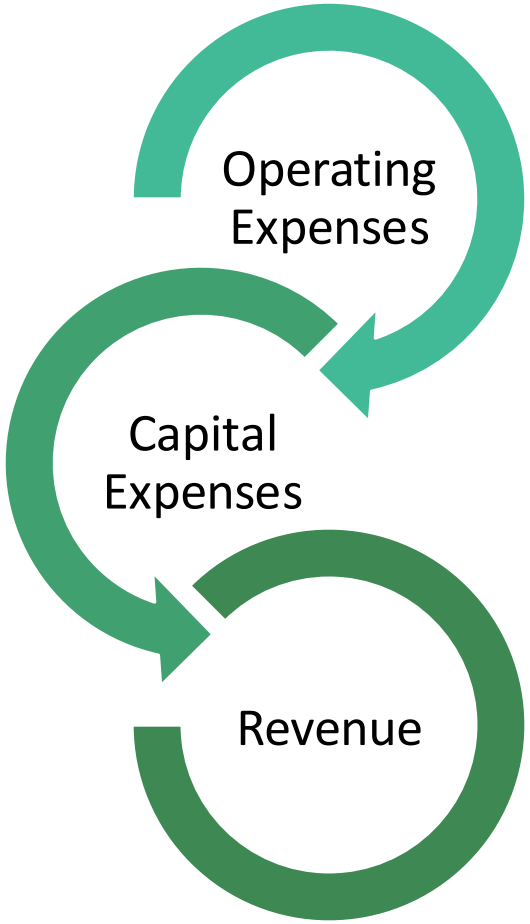
Core Components: Budget

Budget Components



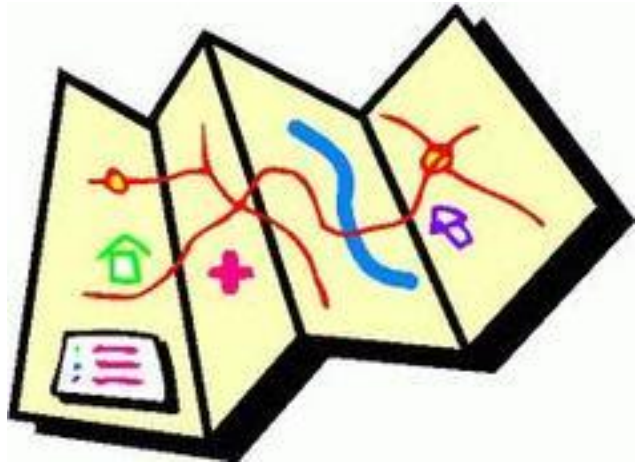
- Salary & Fringe
- Consumables
- Instrument Service Contracts

- Equipment
- Space
- Facilities/Utilities

- Fee for service Revenue
- Grant Support
- Subsidy from Institution (Passive or Active)

Benefits of Knowing Your Budget

- It creates transparency between all stakeholders in decision making processes associated with core facilities
  - Administration
  - Division/Department
  - Financial Administrators
  - Core Directors
  - Core Staff
- You become the navigator of the facility
- Creates a sense of authorization and better front line management of your facility



Key Components: Step 1 – Identify Expenses

People

- Core Personnel
- Administrators that help the core
- Know their effort in the facility

Equipment and Supplies

- Consumables
- PPE
- Instruments
- Supply Gases, LN2

Contracts

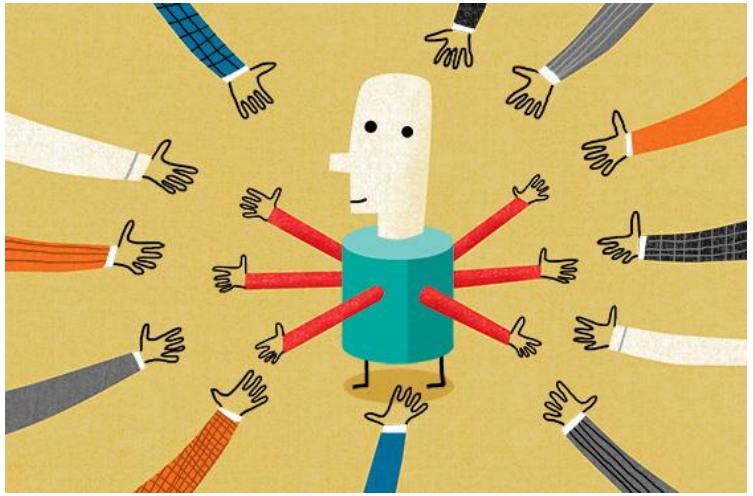
- Service Agreements
- Standing orders
- Know the start and end dates

Conferences and Training

- Membership Fees
- Travel Costs
- Conferences
- Training Costs

Key Components: Step 2 – Identify Funding Resources (Revenue)

External Grants



Philanthropy

Fee for Service Revenue

Institutional Subsidy

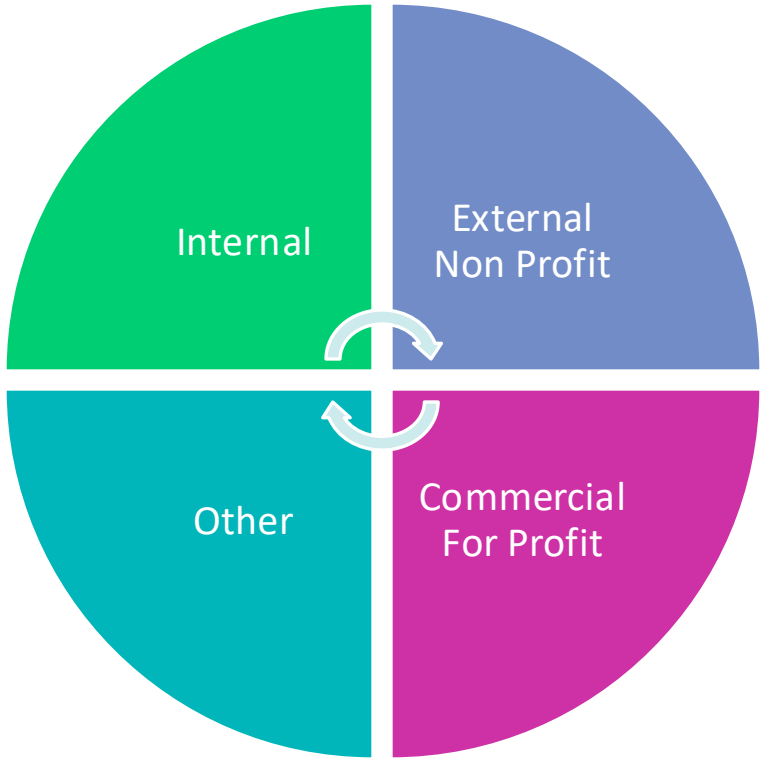
Other areas?

Key Components: Step 3 – Understand your Capacity & Utilization

- Time on Instruments
- Time for Repairs and Maintenance
- Training Time for Customers
- Custom Assays
- Consulting Time

Key Components: Step 4 – Understand your Market

Every Market is Different – do your research.



Budgets are…


Budget
100%
70%
15%
30%
70%
25%
50%
70%
10%
20%
12
06
04
02
45
30%
25%
45%

Core Facility Annual Operating Budget		
		FY2017-2018
		Budget
FUNDING:		-
	Recharge	262,500
TOTAL FUNDING		262,500
		-
EXPENSES:		-
Personnel		
	Personnel	155,000
	Fringes (30%)	46,500
	Service Contracts	45,000
	Laboratory Supplies	15,000
TOTAL OPERATING EXPENSES:		261,500
NET SURPLUS (DEFICIT):		**1,000**

Core Facility Annual Operating Budget		
		FY2017-2018
		Budget
FUNDING:		-
	Recharge	262,500
TOTAL FUNDING		262,500
		-
EXPENSES:		-
Personnel		
	Personnel	155,000
	Fringes (30%)	46,500
	Service Contracts	60,000
	Laboratory Supplies	15,000
TOTAL OPERATING EXPENSES:		276,500
NET SURPLUS (DEFICIT):		**(14,000)**

ANNUAL OPERATING BUDGET FACILITY XXXX		FY2017-2018 Budget	Source 1	Source 2	Source 3	Recharge	*Check Total*
FUNDING:							
Recharge		200,000				200,000	*200,000*
Source 1 (Institution)		100,000	100,000				*100,000*
Source 2 (grant)		25,000		25,000			*25,000*
Source 3 (grant)		25,000			25,000		*25,000*
TOTAL FUNDING		350,000	100,000	25,000	25,000	200,000	*350,000*
EXPENSES:							
Personnel	% effort						
PI	5%	5,000				5,000	*5,000*
Fringes		1,500				1,500	*1,500*
Technical Director	100%	75,000	10,000		8,000	57,000	*75,000*
Fringes		22,500	3,000		2,400	17,100	*22,500*
Personnel #1	100%	50,000	2,500	2,500	5,000	40,000	*50,000*
Fringes		15,000	750	750	1,500	12,000	*15,000*
Total Personnel Expense		169,000	16,250	3,250	16,900	132,600	*169,000*
Other Expenses							
Animal Care		30,600	20,000	4,500	6,100		*30,600*
Service Contracts/Maintenance		74,400	50,000	6,750		17,650	*74,400*
Professional Development		7,500		7,500			*7,500*
Animal Purchases/Facilities Chrgs		25,000			2,000	23,000	*25,000*
Laboratory Supplies		35,000	10,000			25,000	*35,000*
Office/Educational Supplies							*0*
Computers		7,000	3,750	3,000		250	*7,000*
All Other Supplies							*0*
Equipment							*0*
Travel		1,500				1,500	*1,500*
Total Other Expenses		181,000	83,750	21,750	8,100	67,400	*181,000*
TOTAL OPERATING EXPENSES:		350,000	100,000	25,000	25,000	200,000	*350,000*
NET SURPLUS (DEFICIT):		0	0	0	0	0	*0*

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Monitor through the Year:

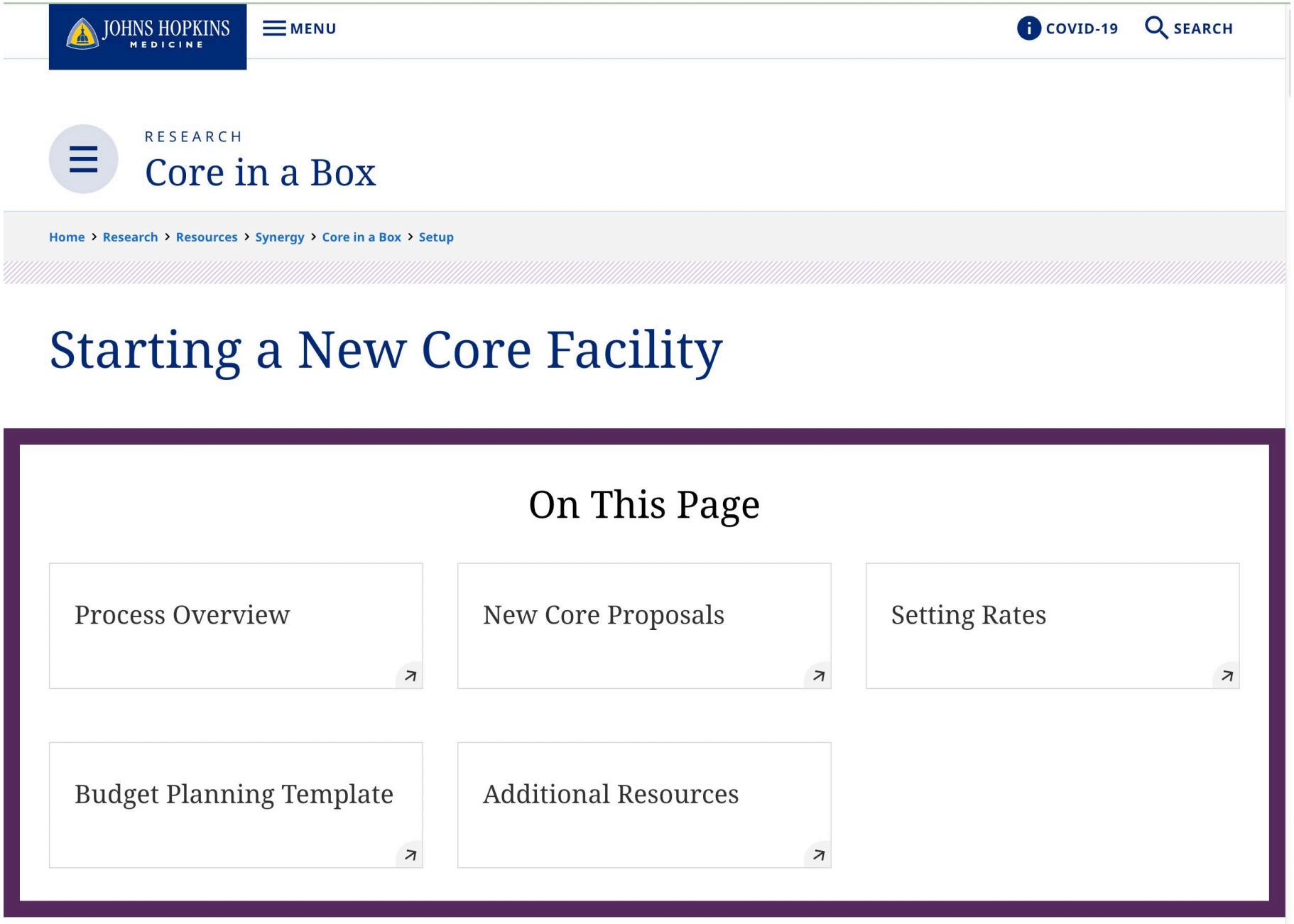
Operating Budget, 3rd Quarter Actuals, Year End Projection and Variance 2

Unit	FY20XX-20XX Core Facility #1				
Report Period:	July 1, 20XX -	Mar 31, 20XX			
Account Number: XXXXXX	20XX/20XX	Actual	Estimate	20XX/20XX	Projected Variance
Description	Budget	Jul-Mar	Apr-June	Actual + Estimate	6/30/20XX
REVENUE					
Recharges	457,526	272,005	96,300	368,305	-89,221
Miscellaneous/Others	0	2,379	825	3,204	3,204
Total Revenue	457,526	274,383	97,125	371,508	-86,018
EXPENDITURES					
Salaries					
FTE	*1.90*	*0.60*	*1.90*	*1.90*	*0.00*
Permanent	154,486	101,255	26,400	127,655	26,831
Benefits	38,971	42,401	15,000	57,401	-18,430
Subtotal Salaries & Benefits	193,457	143,656	41,400	185,056	8,401
Non-Salary Expenditures					
Communication	2,452	290	96	386	2,066
Computing/Data Process	5,798	565	210	775	5,023
Other Services	0	78,988	22,958	101,946	-101,946
Equipment Mtnce	210,000	0	0	0	210,000
Other Supplies	40,000	41,145	6,010	47,155	-7,155
Travel	5,000	0	2,000	2,000	3,000
Other Expenses	819	587	225	812	7
Subtotal Non-Salary	264,069	121,576	31,499	153,075	110,994
Total Expenses	**457,526**	**265,232**	**72,899**	**338,131**	**119,395**
Net Operating Income/(Loss)	**-0**	**9,152**	**24,226**	**33,377**	**33,378**

Johns Hopkins “Core in a Box”

- Google search terms: Johns Hopkins core in a box
- Select “**Core Set Up**” then, “**Starting a New Core Facility**” then **“Budget Planning Template”**

https://www.hopkinsmedicine.org/research/resources/synergy/core-in-a-box/



The Association of Biomolecular Resource Facilities

Core Components: Staffing

Staffing: Job Families

Core Specific Job Families – many institutions have developed core career tracks.

Generally, differ from PI-based lab staff regarding:

Require advanced training & expertise

- Expert knowledge of sophisticated instrumentation/equipment
- Application knowledge of a wide variety of instrumentation
- Scientific knowledge to span application across a broad variety of research programs

Interpersonal skills

- Ability to communicate effectively to scientists and administrators

Customer service focus

Business acumen and training

Staffing Structures:

Faculty Director aka Faculty Supervisor aka _____

- Dedicated or Advisory Role
- Limited % effort
- Grant/funding responsibility
- Runs interference with clients

Core Director aka Technical Director aka _____

- Overall Responsibility
- Experimental design
- Operations - works closely with manager
- Budget Development
- Grants/Funding

Core Manager aka Asst. Director aka _____

- Supervisory
- Defines Work Flow
- Budget Development assistance
- Experimental Design
- Works at the bench
- Grants/Funding

Core Research Assistant aka Technician aka _____

- Works at the bench
- Varying Levels of Expertise
- Experimental Design

Supporting Roles:

Advisory Committee

- Reviews operations and utilization at least annually
- Annual user survey
- Vets/prioritizes equipment requests
- Vets/prioritizes new service requests
- Grants/Funding

Financial Manager

- Works with Directors & Managers to ensure financial health
- Develops Budgets
- Grants/Funding

The Association of Biomolecular Resource Facilities

Core Components: Space ("the Final Frontier")

Space

Space planning and acquisition processes vary with each institution. New buildings/renovations for research should set aside ~15% of space for shared facilities in the plans.

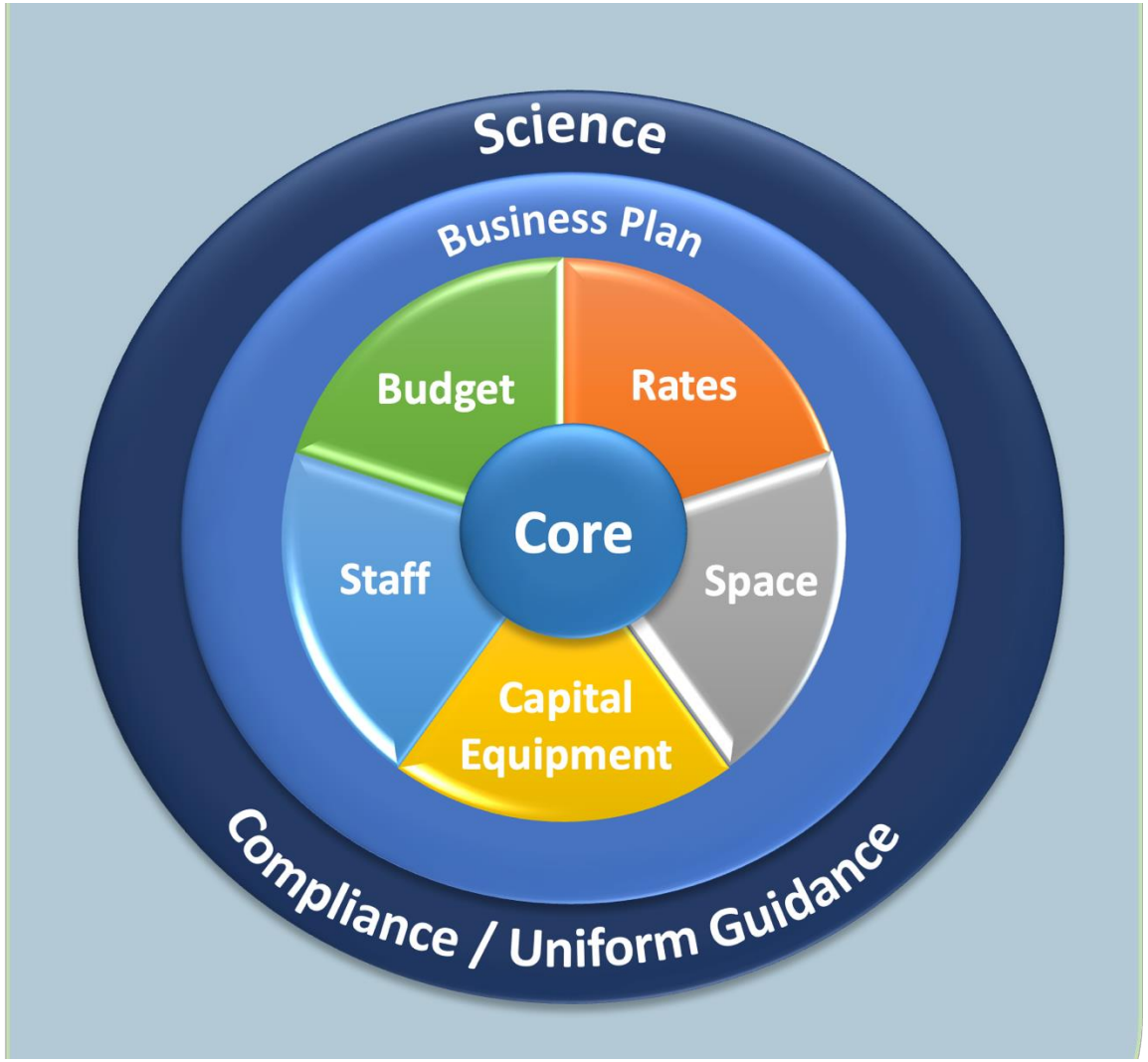
Must work collaboratively with administration and leadership to address space issues recognizing this is **shared** space and must be flexible enough to accommodate core evolution.

New instrumentation acquisition requires careful planning:

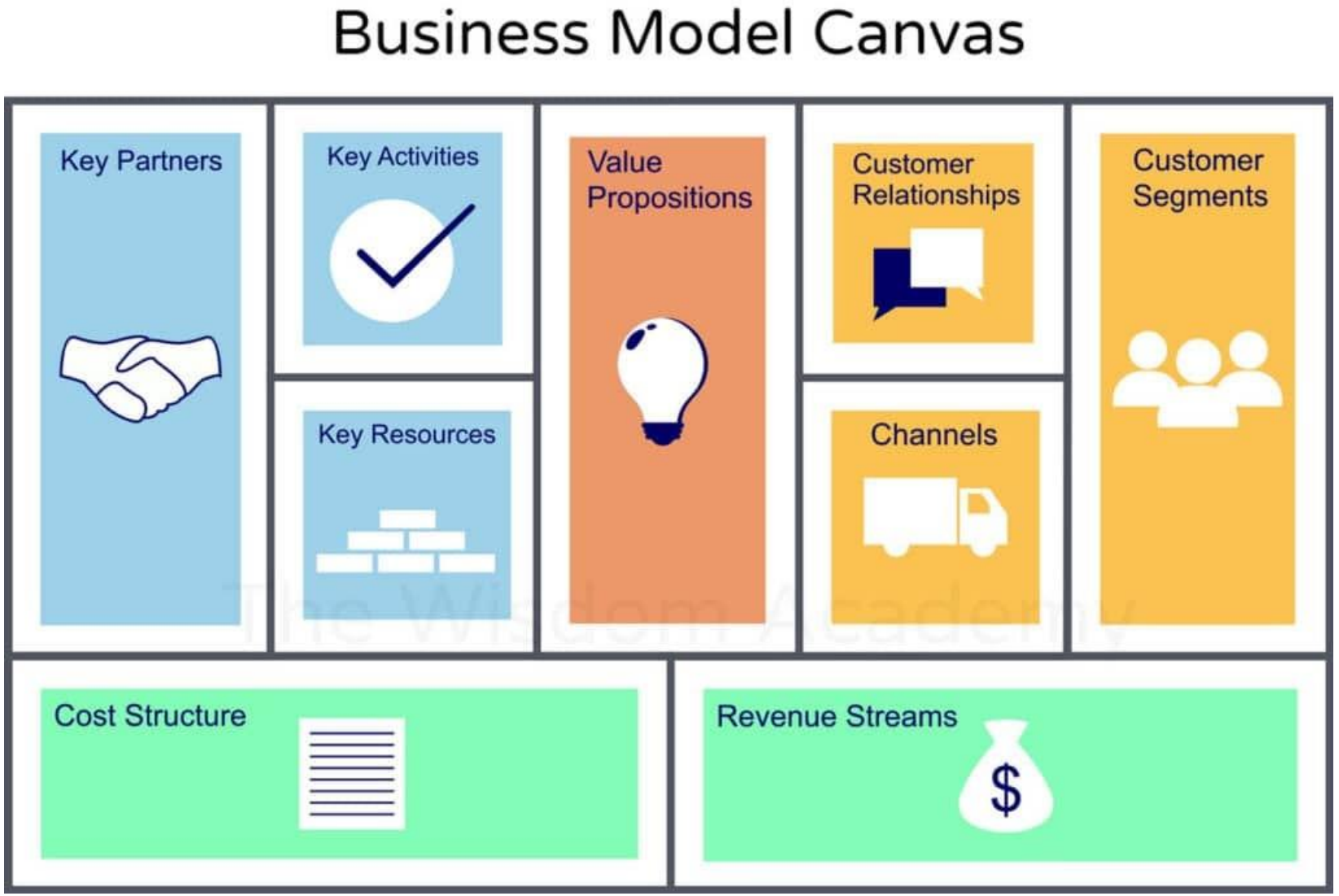
- Equipment manufacturers site prep guides
- Heat generation & HVAC needs
- Electrical and lab gas needs
- Measure multiple times
- Include space for access to maintain/repair instruments

Office space is needed for managerial tasks, personnel conversations and client consultations

Safety – adequate space is needed for core clients to work comfortably, effectively and safely..


Science
Business Plan
Budget
Rates
Staff
Core
Space
Capital
Equipment
Compliance / Uniform Guidance

In Summary



The Business Model Canvas

The Business Model Canvas (BMC)

Key Partners

- What/who are your key users, partners/ stakeholders in meeting your Shared Research Resource (SRR) Program or Core goals?

Key Activities

- What key activities does your SRR/Core perform in support of users and stakeholders?

Key Resources

- What resources will you need to meet your SRR/Core goals?

Cost Structure

- How much will you spend on operations and capital infrastructure? What costing models will you use? How will you calculate rates?

The Business Model Canvas (BMC)

Customer Relationships

How and how often will you interact w/ your stakeholders? How will you grow your user base? What key relationships, collaborations and partnerships have you established?

Customer Segments

- Which user segments will you target? How do you differentiate between your users?

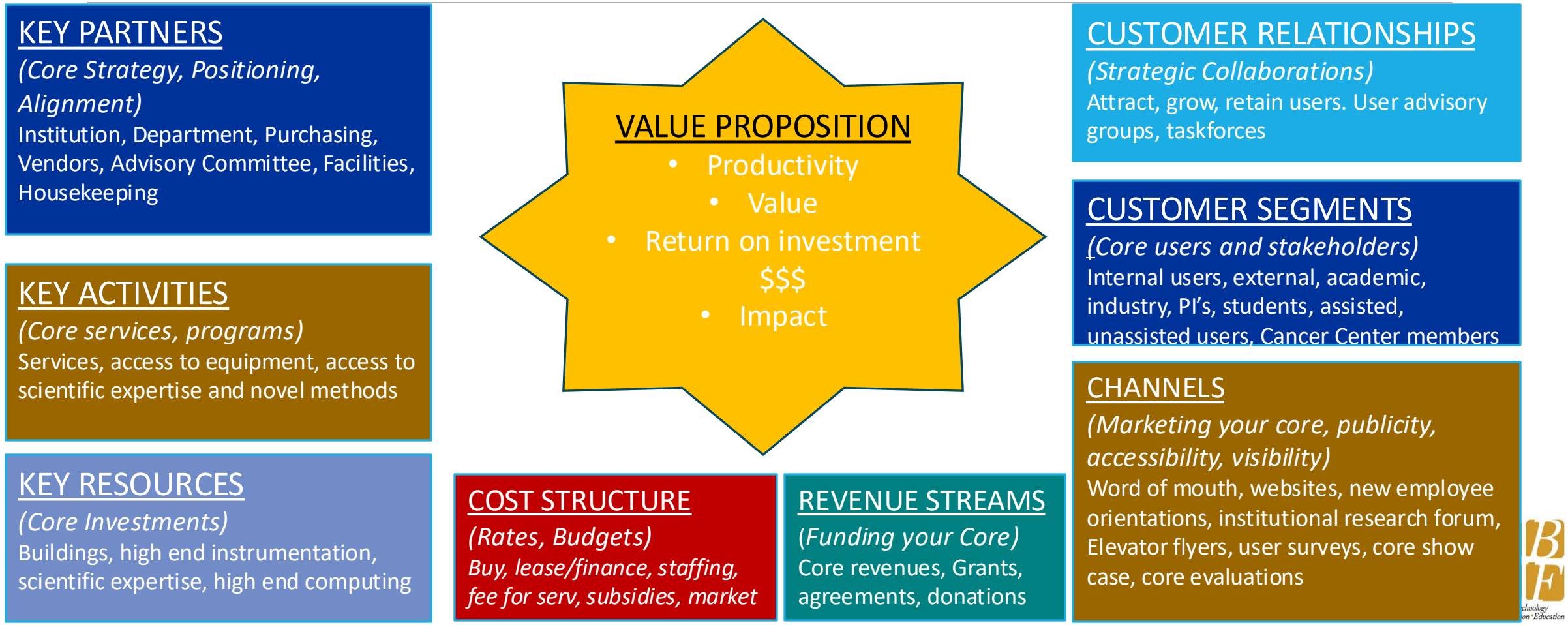
Channels

- How are you going to reach your users and stakeholders? Which communication approaches work best for each set of stakeholders?

Revenue Streams

- How will you source funding for your SRR/core investments - operational and capital? How will you sustain your operation?

The Business Model Canvas (BMC)



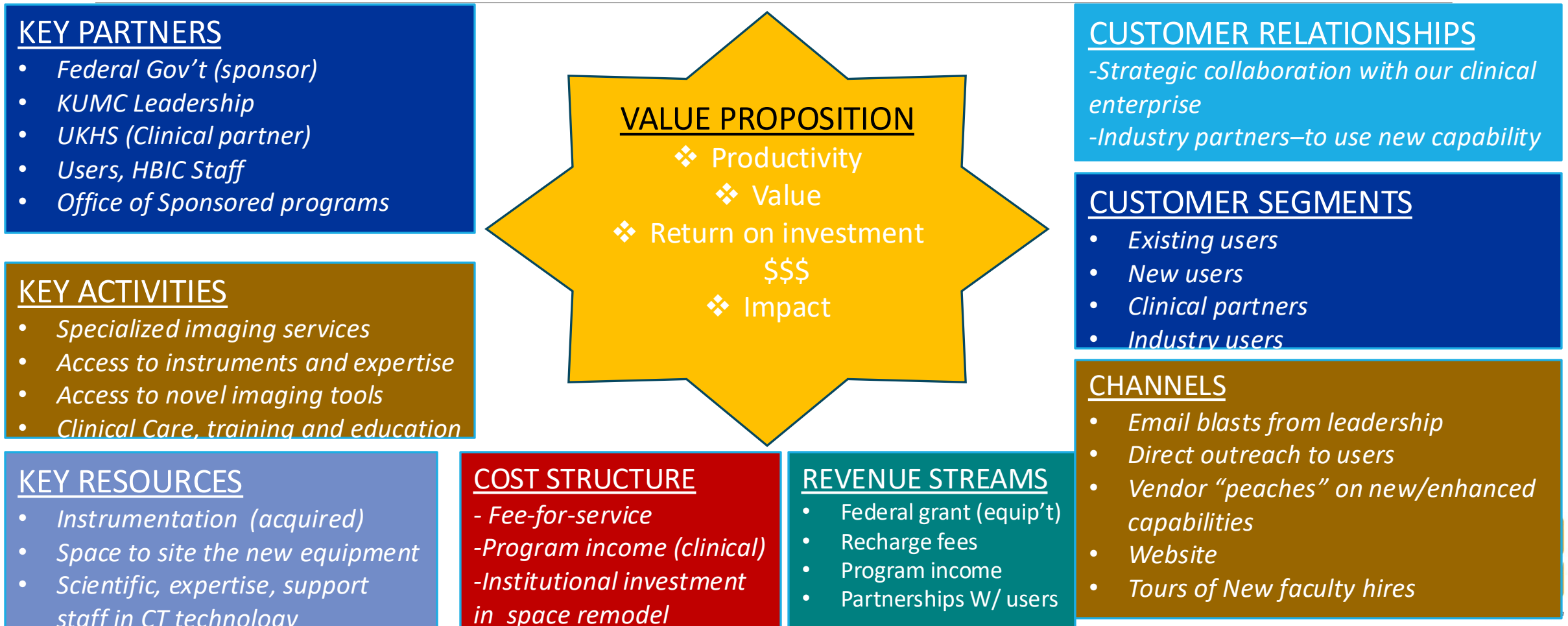
Business Planning for HBIC's New Imaging Capabilities – *a BMC Illustration*

THE HOGLUND BIOMEDICAL IMAGING CENTER (HBIC)

- A research-dedicated imaging Center of Excellence at the University of Kansas Medical Center
- Has imaging capabilities for pre-clinical clinical imaging – animal and human models
- Provides access to imaging resources and expertise to KUMC users and the region.
- Team of faculty and staff imaging scientists. Supports 5 NIH-funded programs and >150 users and over 200 individual studies
- Recently got 2 awards from the CDF – to purchase a new MRI scanner and CT scanner. CT scanner is new capability to the Center
- The imaging program is moving to a new location and seeks more alignment with our clinical enterprise

Things we are thinking about….

Business Planning for HBIC's New Imaging Capabilities – *a BMC Illustration*



Thank you!