



Life Science Market Overview 2022

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What is Life Science

Life science

- Any of several branches of science, such as biology, biochemistry, or medicine that deals with living organism, their organization, life processes, and relationships to each other and their environment

Critical environment

- Areas within a facility that are regulated by government agencies or guided by various local, federal, international, and/or industry standards organizations beyond ambient human comfort controls

Applications range from ...

- Life-saving drugs to cleaner bioengineered fuels
- Mapping the human genome to healthier foods
- Medical devices to safeguarding against bioterrorism

Life Science Market Segmentation

Types of Life Science Customers

Industrial (Pharma/Biotech/Chemical)	Research Labs and Critical Environments Facilities		
From small enterprise to corporate facilities Organizations with regulatory compliance needs. Research & Development supports and is integral to their business	Academia (Research Universities & Institutions) Big emphasis on research quality, funding, energy efficiency, sustainability, and compliance	Health Care Hospitals with emphasis on integrated research and patients experience and safety	Government Government funded and/or operated research facilities
			

2021-2022 cluster rankings

We’ve reinvented our approach to our annual life sciences cluster ranking, employing a new methodology that scores the [key components](#) that define the industry and predict its growth.

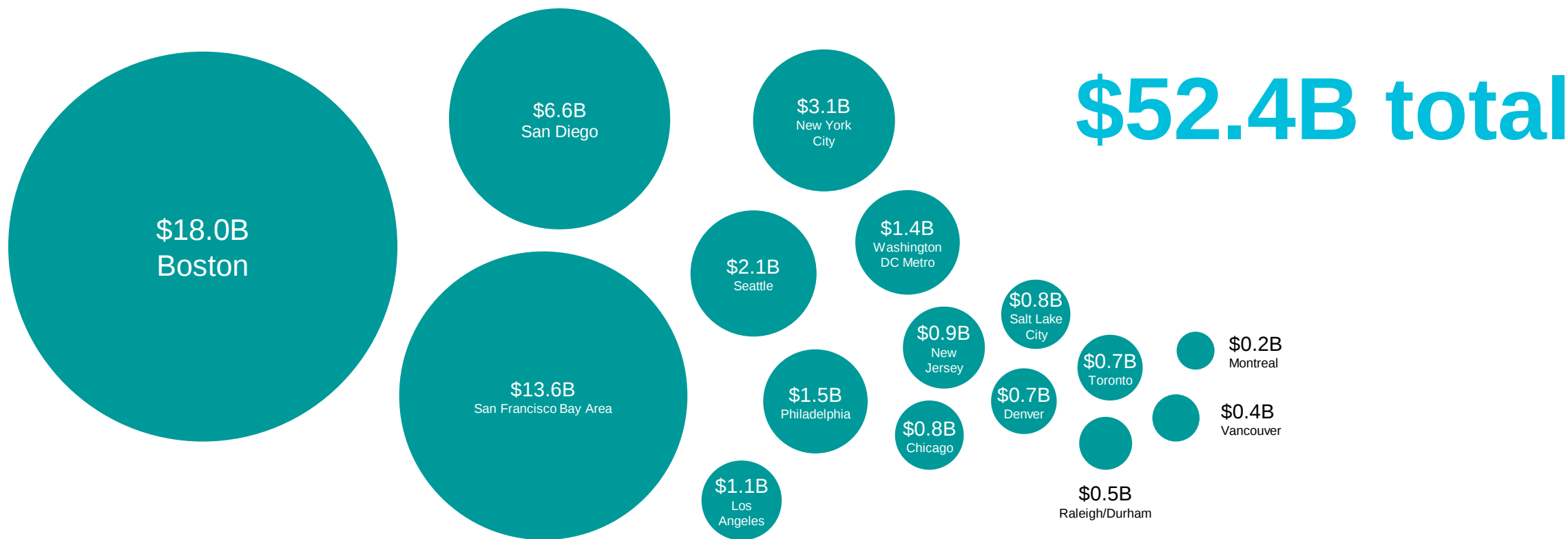
Not all markets can reach the bar set high by Boston, but this year we’ve benchmarked market opportunity relative to talent, industry depth, innovation and lab real estate dynamics to provide a more robust market comparison. Indexed to 100, market scores indicate how far above or below “average” each market ranks.

Rank	Cluster	Cluster score
1	Greater Boston	149.81
2	San Francisco Bay Area	132.54
3	San Diego	119.81
4	Raleigh-Durham	119.71
5	New York-New Jersey	109.61
6	Greater DC Mid-Atlantic	107.58
7	Los Angeles	104.41
8	Denver-Boulder	104.36
9	Philadelphia	104.29
10	Seattle-Bellevue	102.14

Sources: JLL

Investments in Biotech are on the rise & funding remains strong

Life Sciences VC & Public Capital Invested by Region, 2021

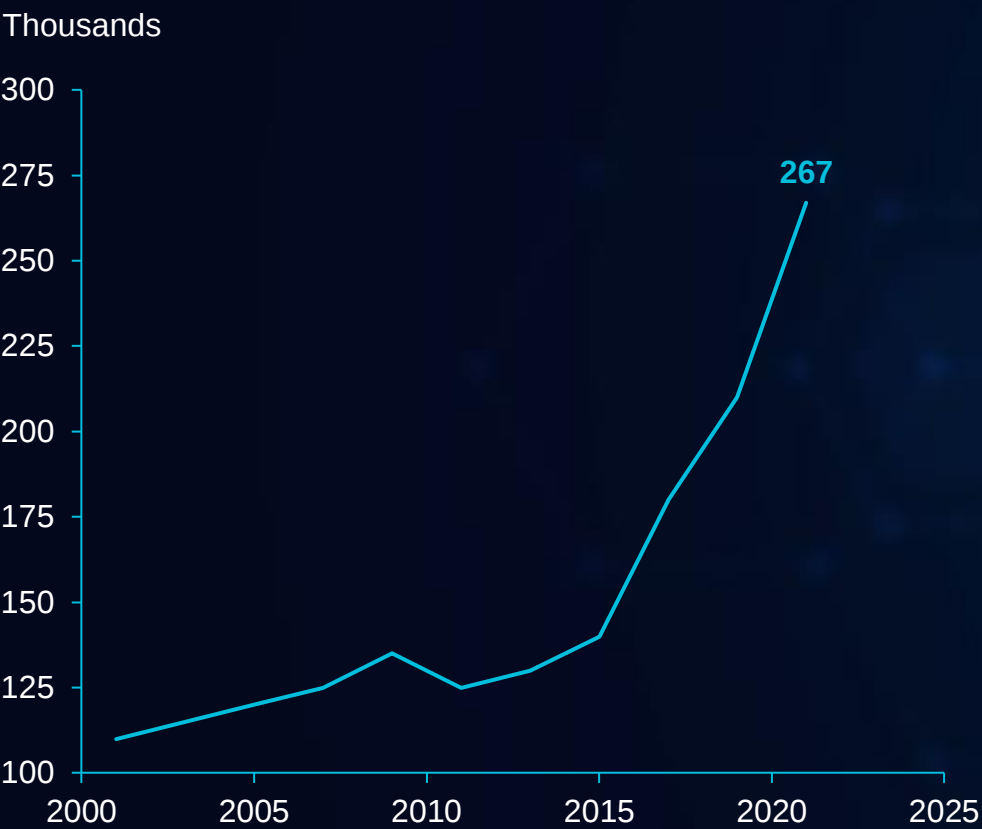


Source: 2022 North American Life Sciences Pitch Book

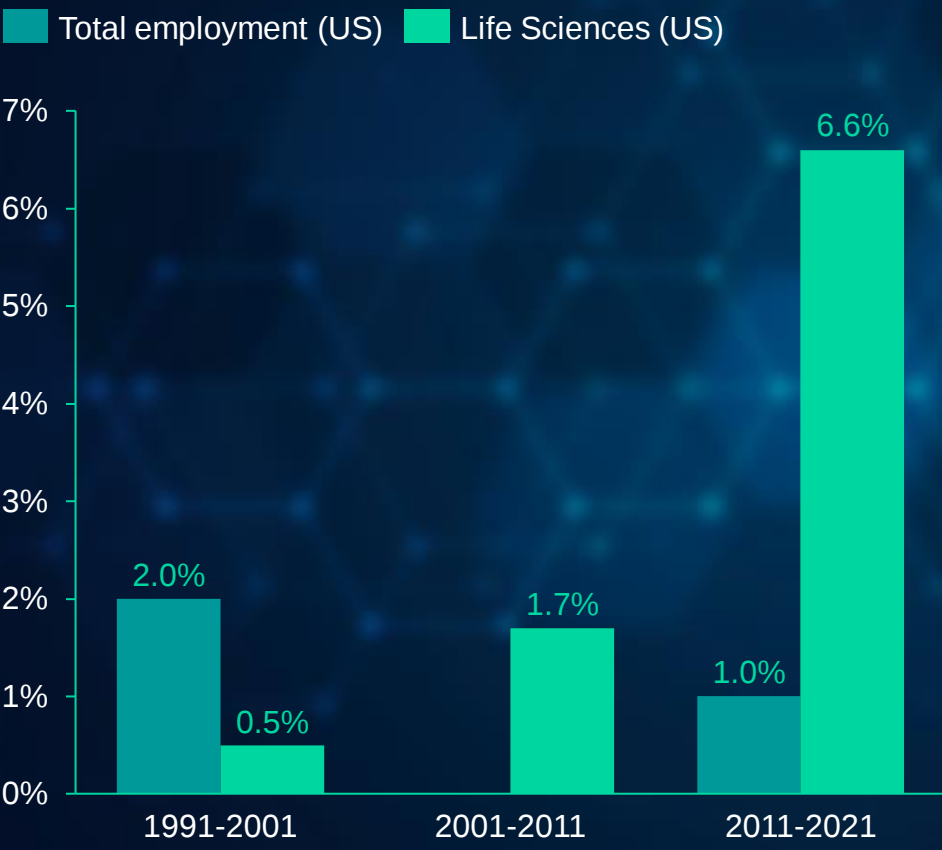
Life science talent is on the rise

Life Science Job growth accelerated in 2021

Employment: R&D in Biotechnology Industry ¹⁾



Employment Growth by Decade (Average Annual) ²⁾



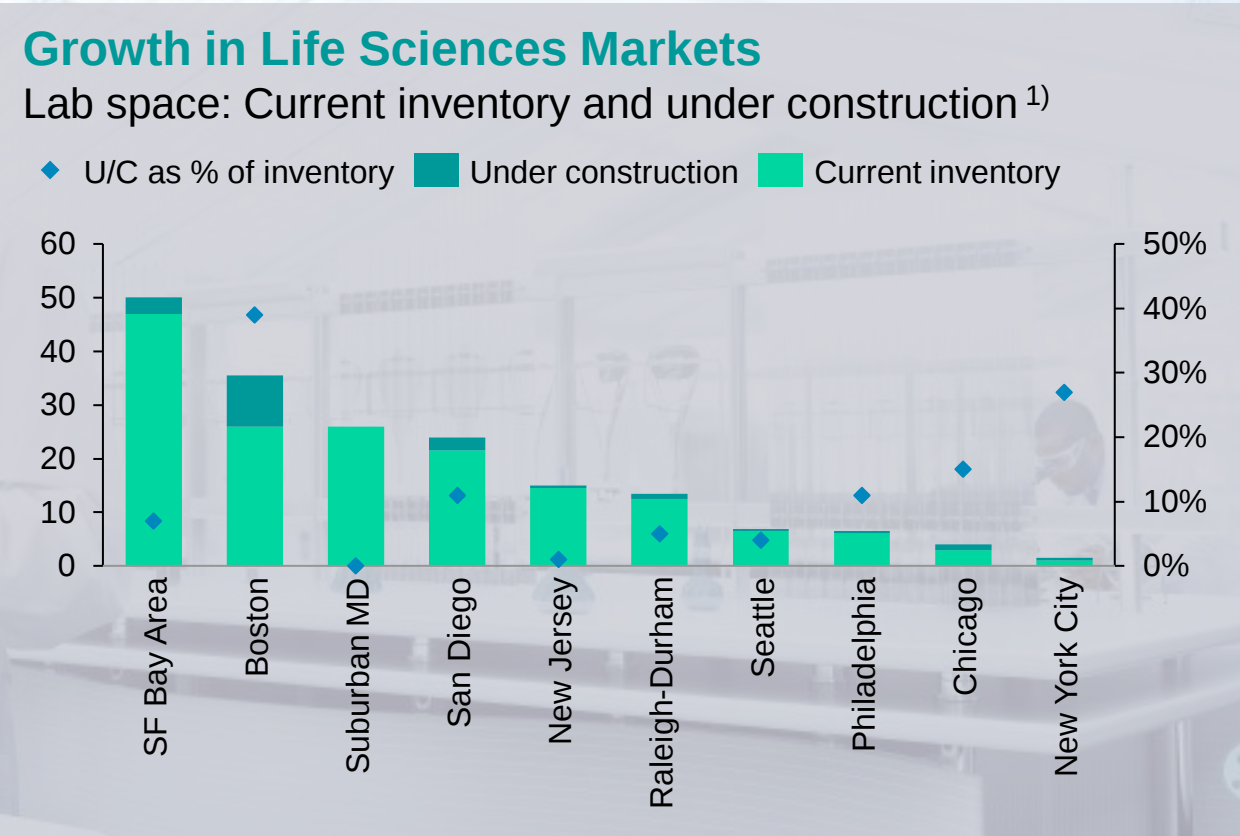
1) U.S. Bureau of Labor Statistics 2) U.S. Bureau of Labor Statistics, Cushman & Wakefield Research
Source: 2022 North American Life Sciences Pitch Book

Increased demand for lab space

Sector Growth = Increased Demand for Lab Space

Growth in the life sciences sector has directly translated into increased demand for lab space across major markets. Coupled with strong capital flows, life sciences companies have increased their footprint in most markets, driving up rents and increasing occupancies.

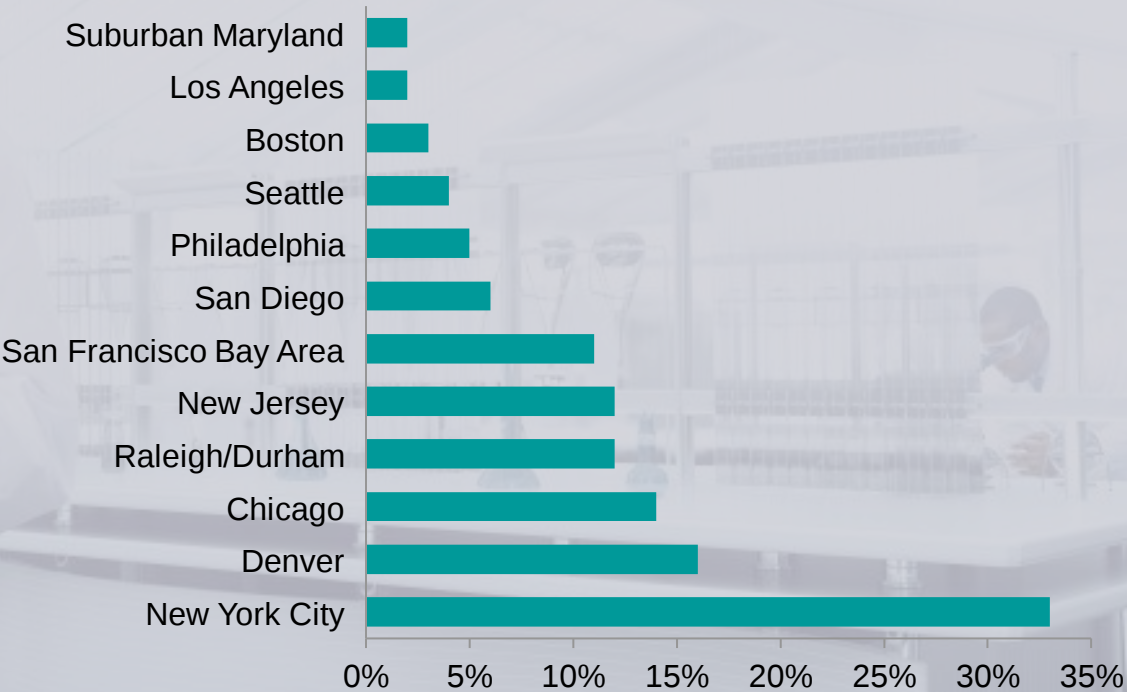
Additional lab space is needed



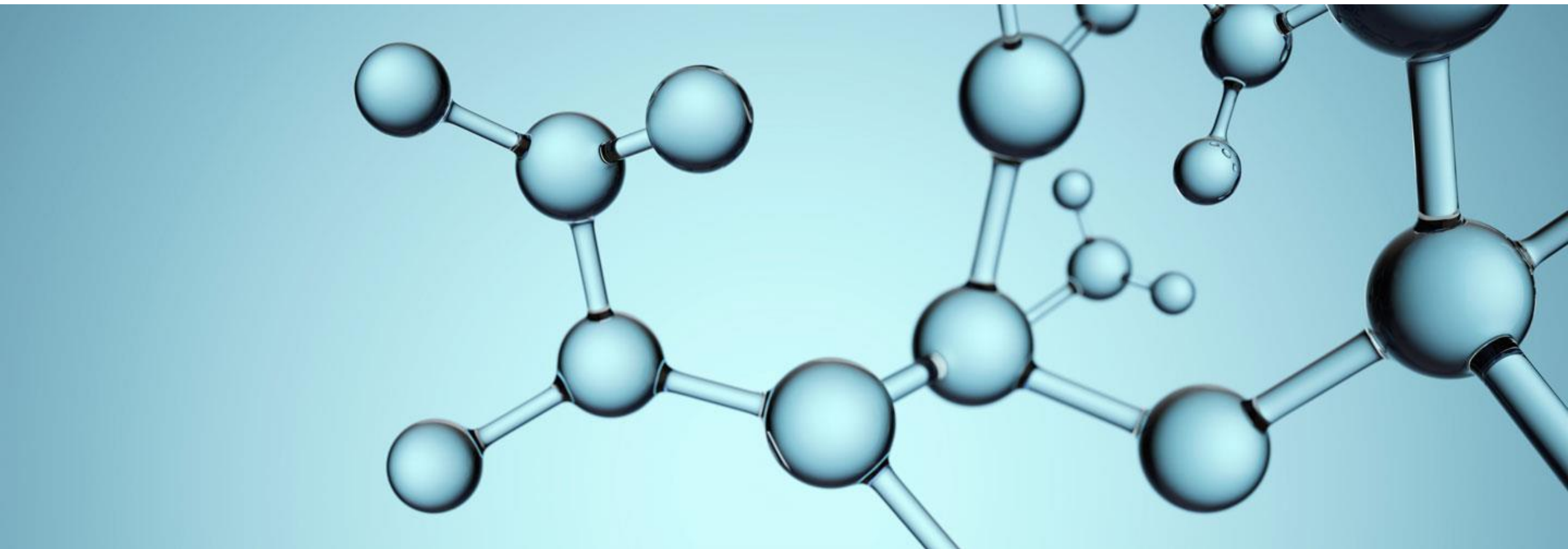
1) Cushman & Wakefield Research
Source: 2022 North American Life Sciences Pitch Book

Life sciences vacancy rate

Life sciences vacancy rate, Q4



Current Situation



Key trends affecting the market

Digitalization

Customers demand real-time information and advanced analytics, with data aggregated from a range of sources, to improve operations and efficiencies

Critical uptime requirements emphasize importance of systems integration

Flexibility + renovation

Modular facilities with more flexibility

Retrofit/renovation of campuses to accommodate innovation

Big Data enables new entrants to create offerings with strong value add/disruptive character

Increasing competition and time to market

Digitalization reduces time from research to market introduction

Innovation speed increases, environments need to adapt quickly according needs

Outsourcing

Engineering and construction work packages are outsourced

Inhouse engineering is reduced

Raising trend to shift from on-site data storage to cloud

Resiliency

Increasing energy costs, new technologies, and updated regulations drive focus on energy efficiency, green labs, and sustainability

Large companies increasingly seek standardization to maximize efficiencies

A day in a Smart Life Science Environment

Building Occupant



Way to work
Fastest way to work is calculated and suggested.



Parking Reservation
Reserve parking spaces in advance on the app. Access granted via license plate recognition.



Way home
Departure time suggested based on personal schedule.



Wayfinding
Orient yourself in the building and find your way through the spaces.



Find and book desks
Book the suggested desk based on your preferences or check availabilities.



Find and book rooms
Find rooms close to you and book instantly – integrated to the calendar system.



Find working colleagues
Find them and get directions to their location.



Notifications
Receive notifications on your smartphone about events, incidents and more.



Report issues
Something doesn't work? Report issues to the facility manager via the app.



Seamless access
Seamless access via smartphone, also for visitors.



Personalized settings
Machine learning enables personalized settings such as temperature and lighting.



Integrated services
3rd party integration such as restaurants, public transportation, gym classes and more.

Smart Life Science Environment Facilities / Lab Manager



Fume Hood Usage

Monitor room conditions and occupancy to control and optimize fume hood usage and performance.

Ventilation Best Practices

Optimize ventilation (e.g., room airflow, exhaust fan output, air change rates) to match occupancy, hazard assessments, air quality, and safety requirements for a given space.



Environmental controls

Precisely control environmental, air quality, temperature, humidity, etc. to protect researchers and prevent cross-contamination.

Production Quality + Continuity

Analyze use/non-use time, traffic density, and congestion; monitor for safety equipment in place.

Vivarium Research

Precisely control environmental and lighting conditions to protect integrity of vivarium research.

Danger Zone Detection

Set alerts for critical boundaries.

Secure Access

Control who can access lab space / research facility to protect occupant safety and research integrity.

Asset Tracking

Easily locate priority equipment and prevent loss.

Sustainable spaces

Optimizing energy costs becomes more and more important in order to increase competitiveness. With a local energy solution, it's also possible to reduce grid fees and to create additional revenue by selling your surplus energy to the energy market.

**Q: How has your energy consumption been affecting your financial performance?
How can your energy strategy improve your competitiveness?**

Minimized environmental impact

Optimized resource and energy efficiency

Improved financial performance with a sustainable design

Building asset performance

¹ CommScope/IDC Energy Insights; ² Bloomberg

Up to

40%

of all energy is consumed by buildings.¹

Up to

57%

increase in electricity demand globally by 2050²

Sustainable spaces

Our operating budgets are constantly under pressure because of underestimating the long-term costs of equipment maintenance and energy consumption. We'll be making better investment decisions moving forward.

Q: Do you know the true cost of your assets?

Minimized environmental impact

Optimized resource and energy efficiency

Improved financial performance with a sustainable design

Building asset performance

Up to
30%

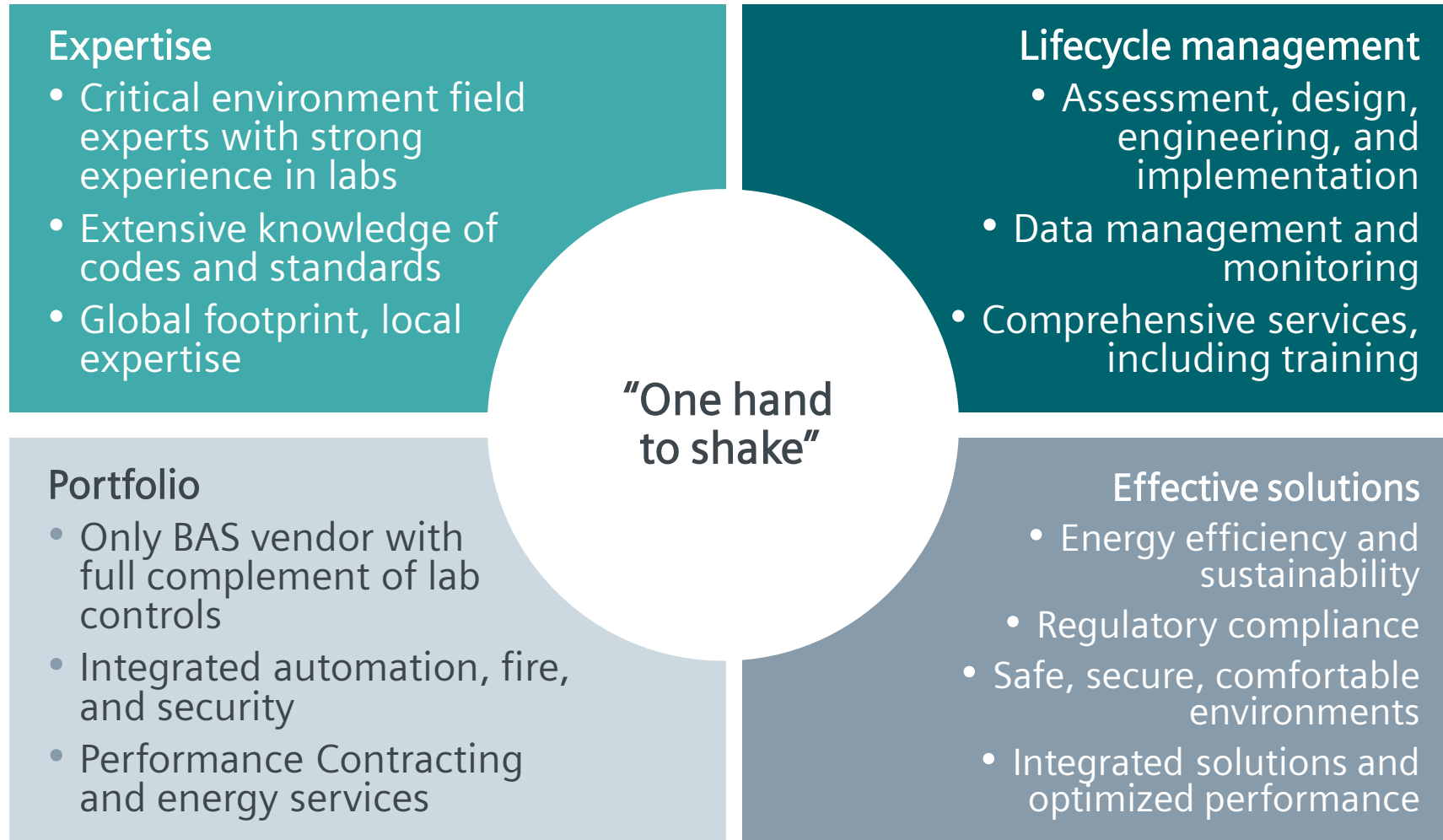
reduction in maintenance costs

10x
return on investment

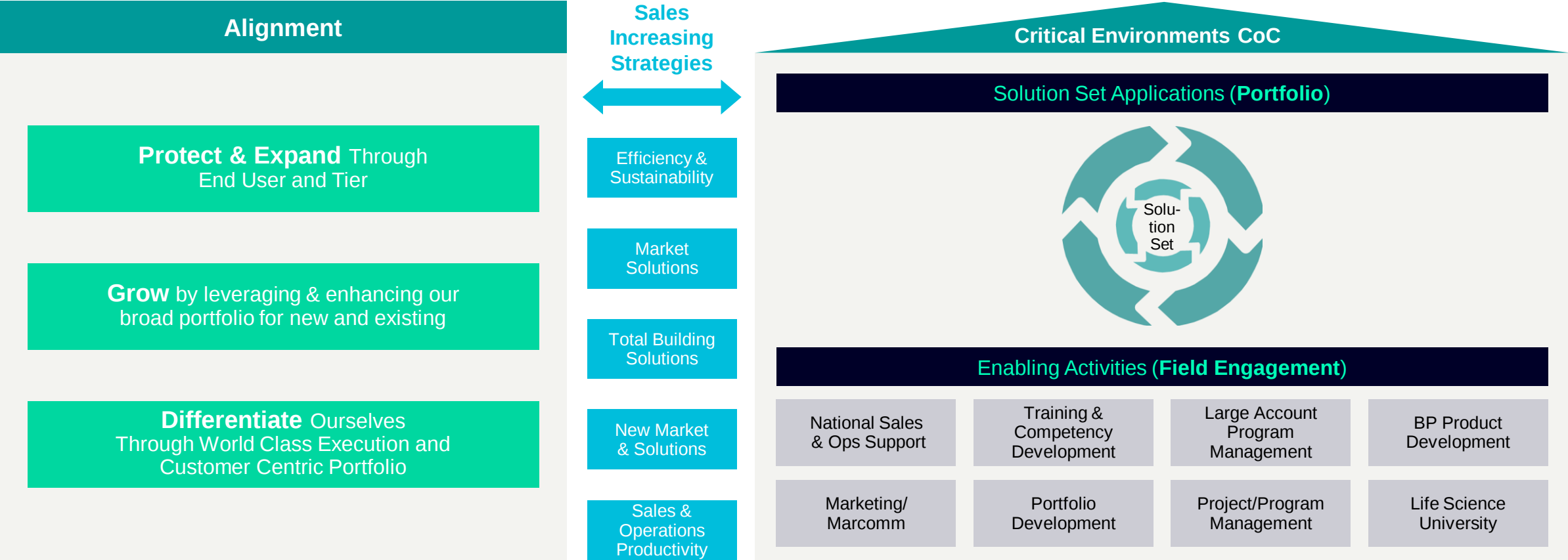
Up to
75%
fewer equipment breakdowns

Source: U.S. Department of Energy, August 2010

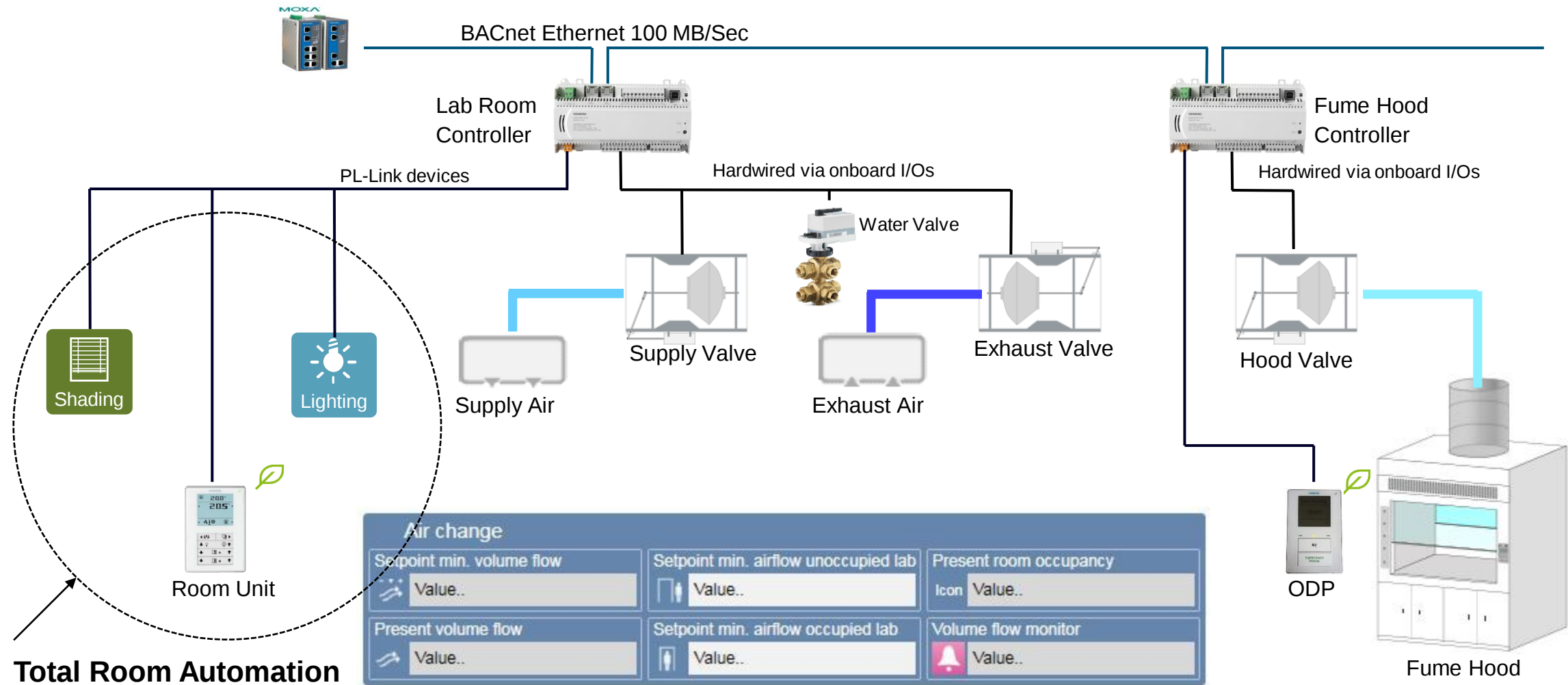
Value Proposition



Mission

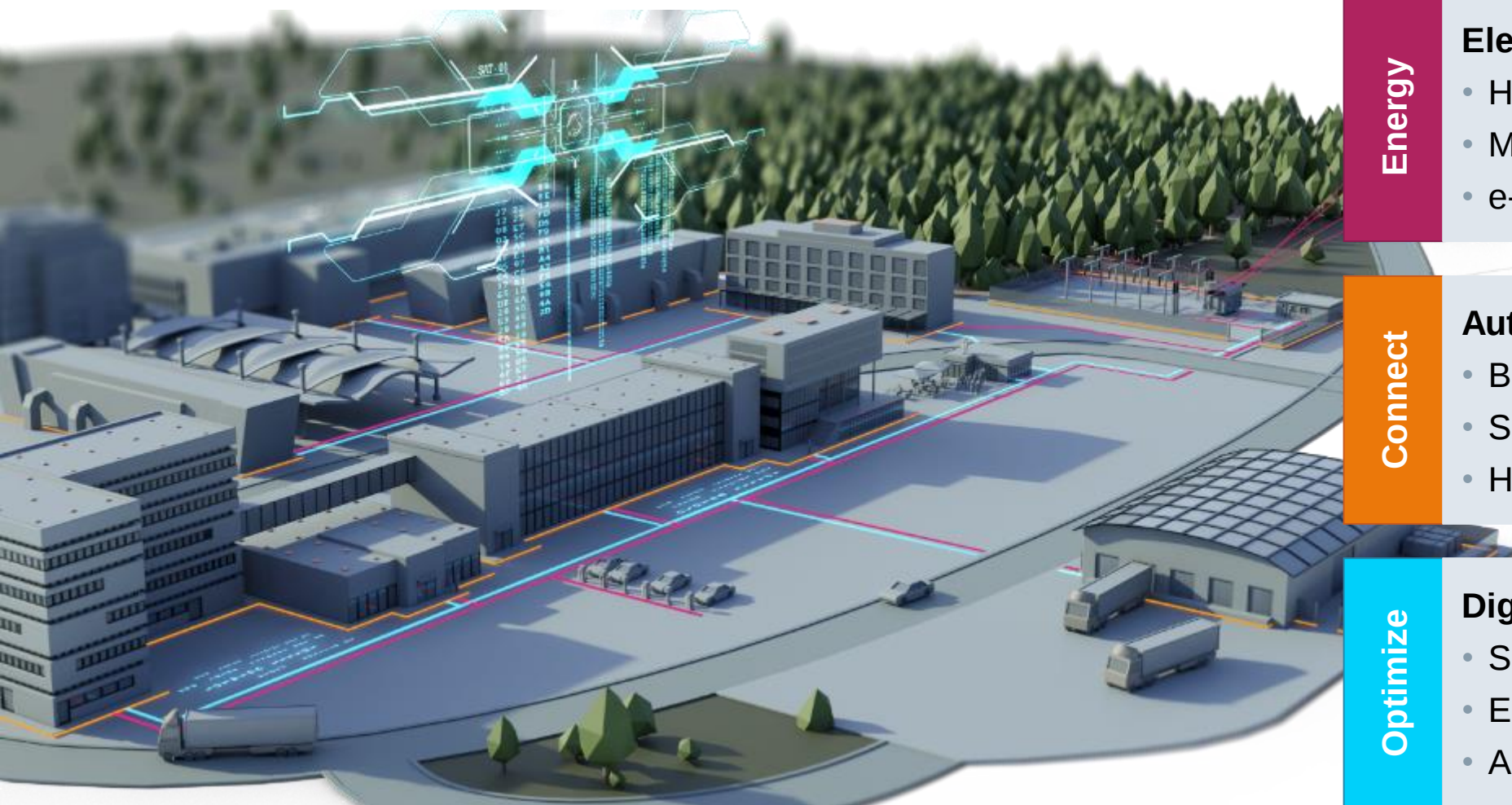


Lab and Pressurized Room Control Elements





Holistic solutions from campus electrification up to digitalization of workplaces in critical environments



Energy

Electrification

- HV infeed
- ML/LV distribution
- e-charging

Connect

Automation

- Building & campus
- Security & fire safety
- HVAC

Optimize

Digitalization

- Space utilization
- Energy consumption
- Asset utilization

Competitive landscape

Company Name (Brand)	BMS	Lab Controls	Fire / Security	Energy Svcs	Power Dist.	Pharm. Validation	PLC
Siemens	+	+	+	+	+	+	+
Phoenix Controls		+					
Accutrol		+					
TSI		+					
Schneider Electric (Andover)	+		+	+	+	+	+
Delta Controls	+			+			
Johnson Controls	+	+	+	+		+	+
Honeywell	+		+	+		+	+
CRC		+					
Antec		+					



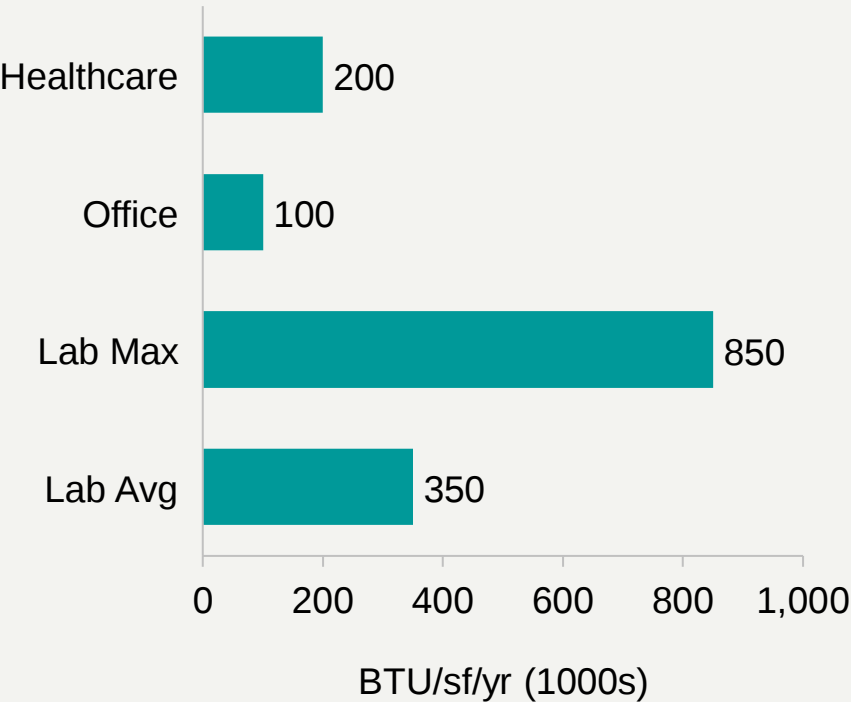
| Green Lab Solution

Energy Efficiency in Critical Environments

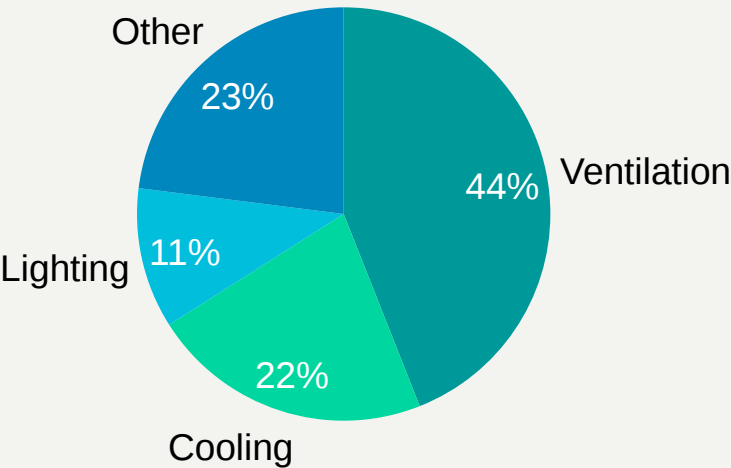
Elements of the Siemens Smart Lab Solution

Benefit: Reduction of energy consumption and improved safety in Laboratories

Energy usage is typically 3 to 8 times greater in labs than other buildings

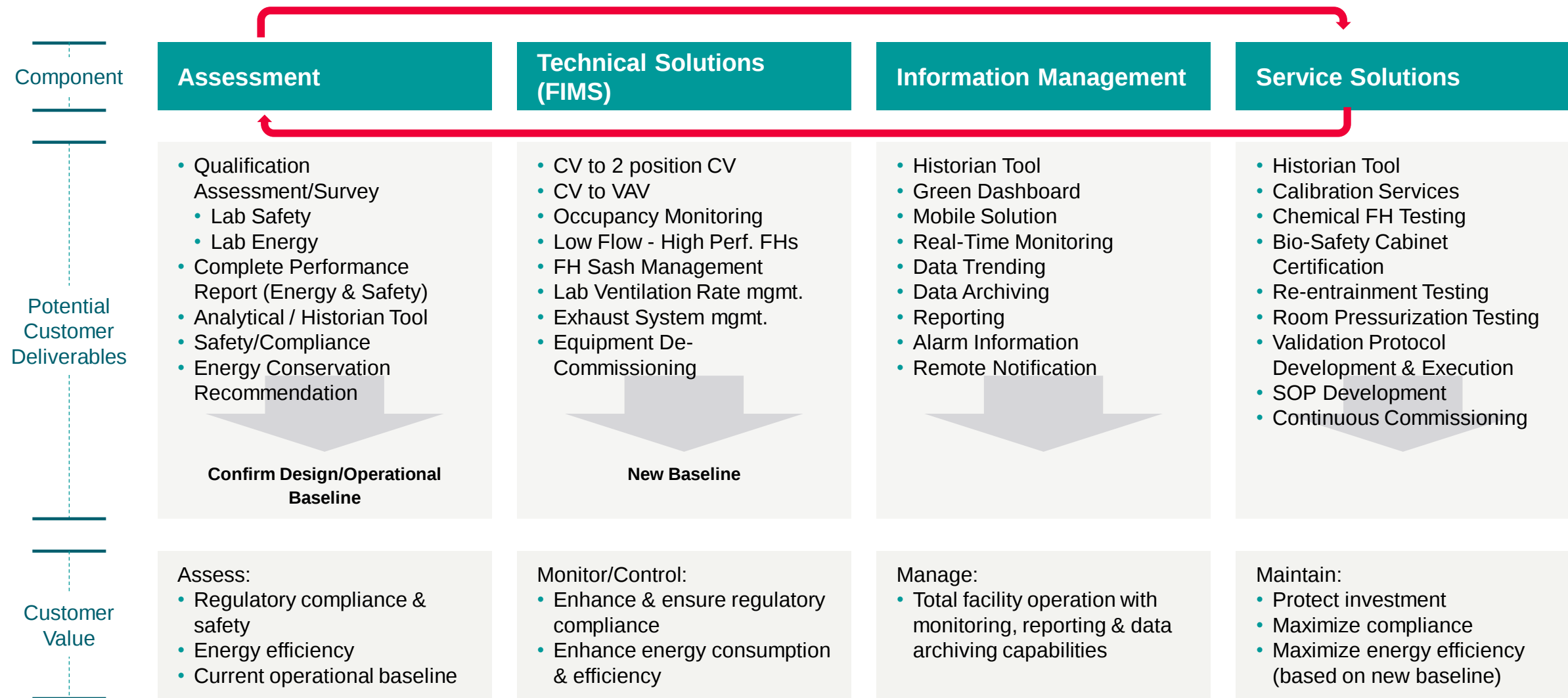


Roughly 2/3 of energy use in labs is associated with ventilation



Data shown is the annual electricity use in the Louis Stokes Laboratory, National Institute of Health, Bethesda, MD

Green Lab Solution Approach



Life Science Center of Competence

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