

# SYMBIOTE

Knowledge Paper

## HOW LAB SPACE IS CHANGING

The Importance of Integrated Workspaces and Work Styles



### KEY POINTS

- Technology's impact on diagnostic equipment drives the need for flexible furniture.
- The lab has gone from something that is singularly disciplined and unrelated to multi-disciplinary and interrelated.
- Space planning has evolved because of the way people work into highly functioning, double-duty office/lab workstations.

In the last forty years and more, workspace design for laboratory workers – scientists, researchers, engineers, etc. – has changed much like that for office workers. Indeed, those who work in either wet or dry labs would probably call that space “the office.” A generation ago, labs were usually prescribed rooms filled with static furniture, benches, storage cabinets and various types and sizes of scientific tools and research equipment. Formal meeting spaces were down the hall. The break room was two floors up.

Additionally, the planning of the space paid little attention to user preferences, daylight and views, choices between privacy and collaboration or even the ability to move things around to accommodate work flow. The concept of “work life balance” was virtually unheard of and not considered part of a company's culture. This paper addresses advances in technology, changes in work styles, integration within organizational culture and the affects they have on how we plan a lab workspace today.

## TECHNOLOGICAL ADVANCES

Several technological revolutions (in science, industry, transport, etc.) have evolved economy and society. Hundreds of processes are now automated; and, with the advent of the computer age information input, analysis and reporting has changed drastically as well. Technological developments can influence how an end user performs a task. End users include technicians, engineers, students, researchers or any person occupying that space.

More automated diagnostics have changed both lab-worker roles and work styles. Scientific tools are more sophisticated, smaller and require less space. Additionally, while in the past a lab manager “re-tasked” the space once in 30 years, this time frame has accelerated to once every five years.



More automated diagnostics have changed both lab worker roles and work styles. Dartmouth College, Organic Chemistry Lab.

## MULTI-DISCIPLINARY, INTERRELATED LAB

Even more recently, furniture and equipment manufacturers are noting some labs change their missions every year—or even biannually. The drivers behind this phenomenon are changing work flows, the need for workspace flexibility, and, ultimately, the ever-changing nature of lab science itself. Advances in technology, instrumentation and knowledge have sped up the scientific process. What used to take decades now takes a few days. As the lab workspaces evolve, it is the people working in them who have to adapt.

All of this, as well as changing life styles and work styles, has driven changes in thinking about the modern lab from something that is singularly disciplined and unrelated to multi-disciplinary and interrelated. To those who manage, supply, design and work in labs it has become increasingly more apparent that the physical workspaces themselves need to be much less static and much more flexible to support the way lab work is performed. It is not just about the space; the furniture, equipment, and utilities need to become more adaptable too.

## DESIGN TRENDS

One of the most significant trends is that designers have moved away from fixed casegoods to modular tables, workstations and benches that roll easily to different areas of the lab and other parts of the building. Advanced technology leads to innovation; innovation requires collaboration; and collaboration fosters communication. All together, they drive the trend toward an integrated workspace that freely accommodates both technological advances and the way people work.

## WORKERS AND WORK STYLES

Lab design has become less about what lab workers do and more about how they do it. Do all workers in the lab work as individuals only, do they work in teams, or do they work in a combination of both? Along with technological advances, how can a space help workers, students, educators, etc. do their jobs better? Almost all lab workers require both lab and office support space. So, can



A Facebook hardware lab has different work culture, deliverables and technology needs than a university's biology lab.

a space resolve a worker's desire to be aware of procedures, have a constant presence in the lab, and yet have an office space close by? The answers must take into account the overall organizational culture of each lab as it relates to its particular area of research and deliverables. Obviously, a microbiological wet lab has a much different culture and technology need than one involved in social media metrics, for example. While equipment needs vary, a commonality is the basic need for flexibility and integration to promote idea sharing and open communication.

### A NEW MODEL

Traditionally, labs were set up for individual research groups made up of anywhere from two to ten individuals. This type of lab was completely self-contained with its own equipment and facilities. Now, with lab managers, engineers and end users recognizing a need for change, a new model has surfaced. The paradigm, in which everyone collaborates in a cross-disciplinary way, means everyone works toward a common goal. It drives space planners to create open and multiple component labs to accommodate a broader spectrum of configurations and disciplines. For example, at Arizona State University, old classrooms are being re-purposed to a dual lab and classroom by using height adjustable tables.

At LabCorp, a pioneer in advanced genomic testing, thousands of unique blood specimens are processed daily and shifts rotate 24/7. The critical manufacturing cycle time necessitates modular and adjustable furniture such as sit-to-stand workstations—and it must be extremely durable to support the company's investment of sensitive equipment. What's more, modular furniture just makes sense for ergonomic, body type and individual preferences.

Some labs have moved to larger, more open spaces in the belief that teamwork raises overall productivity and promotes the sharing of ideas and breakthroughs. Team sizes in modern labs generally include from 12 to 20 individuals. Symbiote outfitted such a lab as early as 1993 at Boeing. They needed a way to manufacture 150-foot wire harnesses for the massive



LabCorp's critical manufacturing cycle time necessitates fully adjustable, heavy duty workstations—to support the company's investment in equipment.

wingspans of jet aircraft. After consultation, Symbiote's solution was to build eight height adjustable tables, each 16-feet long, with electrical outlets and pneumatic hook-ups for easy access and modular assembly capabilities.

While this type of design thought process takes into consideration the needs of the individual, it also finds solutions for the entire group to work together. It transforms a floor plan into a high functioning, multi-purpose area that is simply more flexible. Within a lab, modular walls now house a meeting space, a break room and private, touchdown areas—and this makes sense from both a facilities management and cost perspective. Lower and/or transparent partitions between



A confidential clinical lab maximizes teamwork with touch-down workstations within the lab.

workstations lend separation yet accommodate collaboration and communication between workers. Access floors provide support for flexible equipment while utilities can be moved as teams and/or work transition and goals change. Height adjustable and mobile benches, tables and carts allow workers to move easily around the lab as teamwork and group efforts warrant.



At Phoenix Children's Hospital color helps to unite the culture while overhead utilities and convenient power/data access at the worksurface make it easy to reconfigure.

Further, utilities connections have become much more adaptable. No longer relegated to a wall receptacle, utilities now run overhead through ceiling tiles and access floors for easy "plug and play" capabilities. And innovative cable management keeps everything hidden yet accessible.

## INTEGRATED WORKSPACE

As the modern lab itself becomes an integrated workspace or a classroom, it makes sense to extend this design philosophy to different areas within the organization around the concepts of space planning, third places and emerging technologies.

### Synergistic Space Planning

In the older lab model, you likely spent the entire day in the lab. Integrated space planning takes into consideration an organization's culture as a whole. The lab becomes more a part of the organizational culture as opposed to apart from the organizational culture. Space planning makes use of adjoining rooms and social hubs, glass partitions, common areas, even welcoming entryways into the lab as well as other parts of the

building. Even something as simple as communal white boards for messaging and games can help an organization promote an overall atmosphere of synergy and working toward a common goal.

### Third Places

Dave Coplin, Chief Envisioning Officer at Microsoft, talks about flexibility in the workspace and the newer model of working from home, the coffee shop or "one of those third spaces that are opening up" – a new concept of space that is neither home nor workplace. Citing a recent study that found 71% of Americans are not happy at work, Coplin explains how productivity and the way we work have changed because of the ways in which our lives have changed. The boundaries are different, technology is different, the economy, family life and communication are all different than they were just a few years ago. Even the definition of work has evolved from a destination to an activity. "While it's a scary place to be for most organizations...if you put the right kind of infrastructure in place, the right kind of culture, the right kind of process . . . you can make things happen."



At CHUM (Central Hospital University of Montreal) in Canada, the interior supports the psychology of chance encounters with large atriums, open stairways and shared equipment zones in labs.

### Emerging Technologies

This environment attracts and retains the best and brightest talent. An integrated, collaborative infrastructure provides increased choices for personal preferences. The Millennial Generation experiences this kind of work environment everywhere – in magazines, on television, in the movies – even at school. Then comes the

population born after 1995, who is arguably going to be the most diverse generation ever. Their whole world is 3-D and wearable technology. In the educational landscape, mobile technology, game-based learning and cloud computing have transformed how and where students learn.

At Grand Canyon University's (GCU) College of Science, Engineering and Technology the electrical, mechanical and biomedical labs feature a new hands-on curriculum designed by faculty and staff. After an in-class lecture, students apply the lesson and materials to activities, laboratories and experiments to solidify concepts.



Classrooms in the Engineering Building at Grand Canyon University's (GCU) College of Science, Engineering and Technology have height adjustable tables with data/service carriers above.

From university labs to third places, technology has expedited a new culture of autonomy and flexibility. Futurists, such as William Higham of trends consultancy Next Big Thing, correlates emerging technologies such as augmented reality, to a workspace revolution. There is going to be massive shift in how we work, doing away with the need to be sitting down all day, gleaning and processing information via monitors. "It's up to smart businesses to reinvent the workplace as it suits their needs, their outputs and their strategies," he says. "A new, fluid approach is imperative."

Yet, technology has its limits; for it's the people—not the machines—who innovate. Flexible furniture allows a forward-thinking company to focus more on efficiency and small incremental improvements without missing new opportunities. This is how an integrated workspace affects the bottom line with respect to facilities management.

## COST OF OWNERSHIP

Reducing costs, whether constructing a new lab or renovating a building, is a significant issue. Some companies, bound by legacy furniture and older programming, still think of a facility as an expense to be reduced. While the original investment for modular furniture is higher than traditional, the payback is 3-4 times depending on how often the area is re-purposed. In addition, the cost of ownership calculation should include a variable for knowledge and technology-driven disruptions to avoid obsolescence. This strategy, aided by multi-use spaces, newer materials and utility integration, gives companies a competitive edge.

### Multi-Use Spaces

There is no question the trend toward multi-use workspaces positively impacts the bottom line for facility purchases and management. This is important for two reasons: 1. Large, well-established labs have the opportunity to change the way they work to gain cost savings; and, 2. As new entrepreneurial companies launch, their start up costs can be much lower.



A height adjustable table is moved to a new area for an impromptu meeting.

### Collaboration

Case4Space is a research project led by Rex Miller that pulls together industry experts to determine what propels productivity in the workplace. This study pointed out that, in the 1960s, companies tended to stay on the S&P 500 list an average of almost 60 years. Now, however, that tenure has dropped to around 15 years with the past 10 years seeing almost half of those companies dropping off the list while new ones emerge. What that says

about many larger, established companies is that they paid the price of “not recognizing change and capturing new ideas.”

This correlates to the way they have thought or not thought about workspace in general. What it says about new companies is that, though they may come and go quickly, their opportunities to design workspaces “to stimulate ideas and innovation” help them go from “concept to product or service very quickly, all at a competitive cost.” This can be attributed to the way they already think about a workspace in terms of collaboration, free-flowing communication and “the ability to reach out and connect to others who can contribute to their thinking.”

They can also think harder about what they actually need and how an integrated, adaptable workspace can keep their initial costs down and help them grow in the future. In both cases, bottom-line thinking about design and space planning of the organization and the lab has a compelling economic driver—the cost of ownership.

### **Material Selection**

Integration and modularity are not the only considerations when it comes to budget. Lab designers are specifying furniture made with phenolic materials rather than epoxy, as it tends to save about a third of the cost. Not only that, furniture made with phenolic materials is lighter and more environmentally friendly; it retains 80% of the stability of furniture manufactured from epoxy when exposed to air, heat, light, pressure, or other conditions.

Further, lab equipment is coming under increased scrutiny for scalability, performance and operational expenses. Many organizations are monitoring equipment usage, and as a result, establishing guidelines for sharing equipment. This not only reduces the footprint, but saves on electricity, downtime, insurance, auditing and decommissioning, just to name a few.

### **Modularity and Utilities Integration**

Modular lab furniture, equipment, and utilities all work together to support the testing of ideas, the

measuring of outcomes, and making improvements along the way. In biology, the term symbiosis is described as two organisms working together for mutual benefit. Likewise, the combination of modular furniture and utilities integration improves the efficiency of a lab’s processes and its people. It’s a mindset and approach to creating lab designs that are clever, scalable and engaging. When you stop to think about it, that is what lab work is all about. No one working in a lab is on an island. Everyone collaborates to find a better way, come up with a solution or discover a cure. It is a low volume work process of research and development that results in something highly valuable.

## **PARTNERSHIPS WITH FURNITURE MANUFACTURERS**

Technology, changes in work styles and shifts in organizational culture have driven changes in thinking about workspace in general. All of it has had a huge impact on a lab manager’s timetable to procure furniture and equipment.

### **Customization**

The ability of furniture manufacturers to produce, customize and ship orders quickly is strategically important to lab managers and space planners. Modern labs need adaptable, scalable furniture and most require customization. Today’s specifiers rely on companies with solid engineering expertise to deliver innovative solutions. The resulting workplace will accommodate multiple generations and work styles with flexible furniture to engage and retain the best talent.



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