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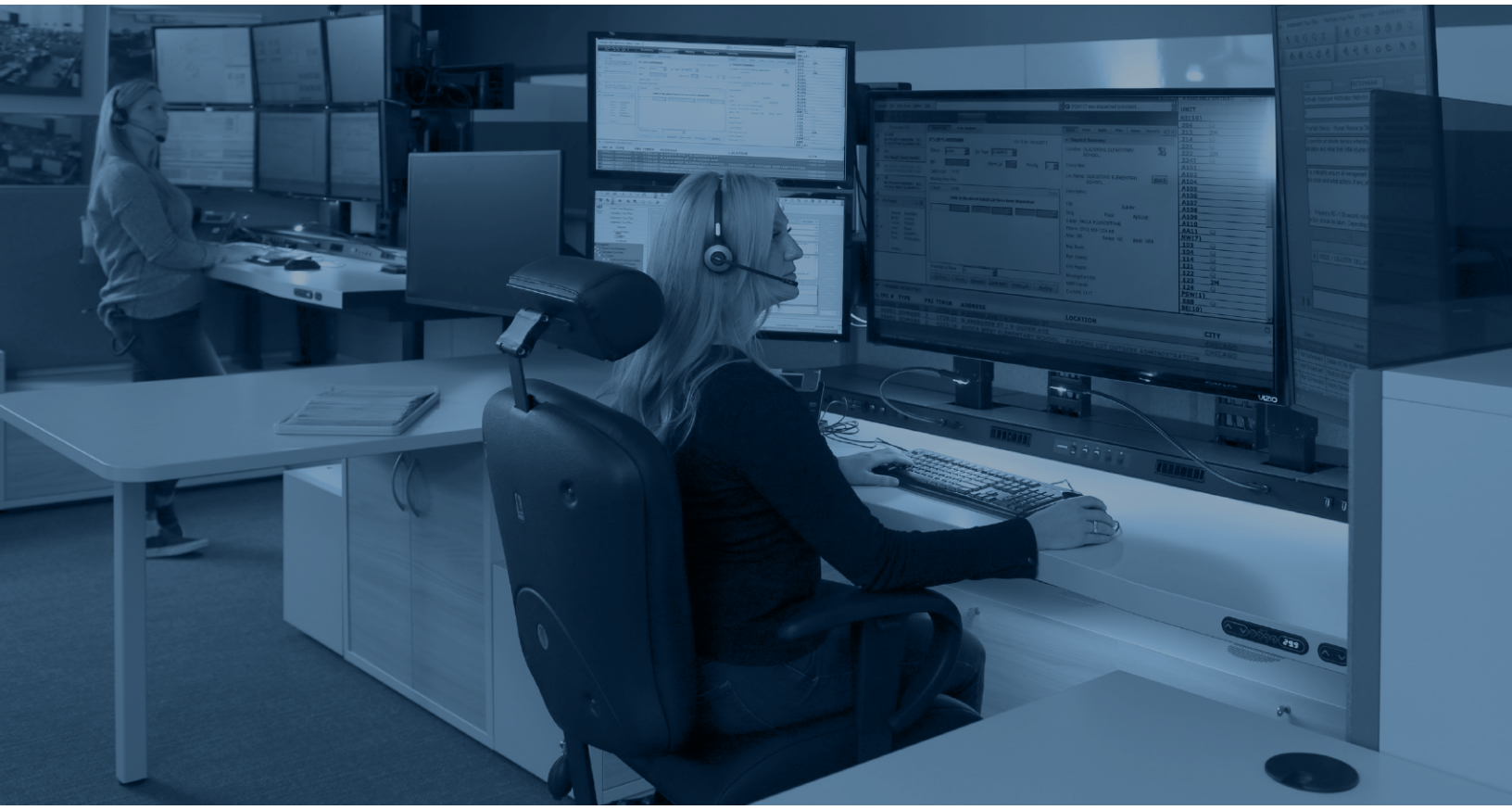

# CONSOLE TECHNOLOGY TRENDS AND THE 21ST CENTURY DISPATCH CENTER

# CONSOLE TECHNOLOGY TRENDS AND THE 21ST CENTURY DISPATCH CENTER

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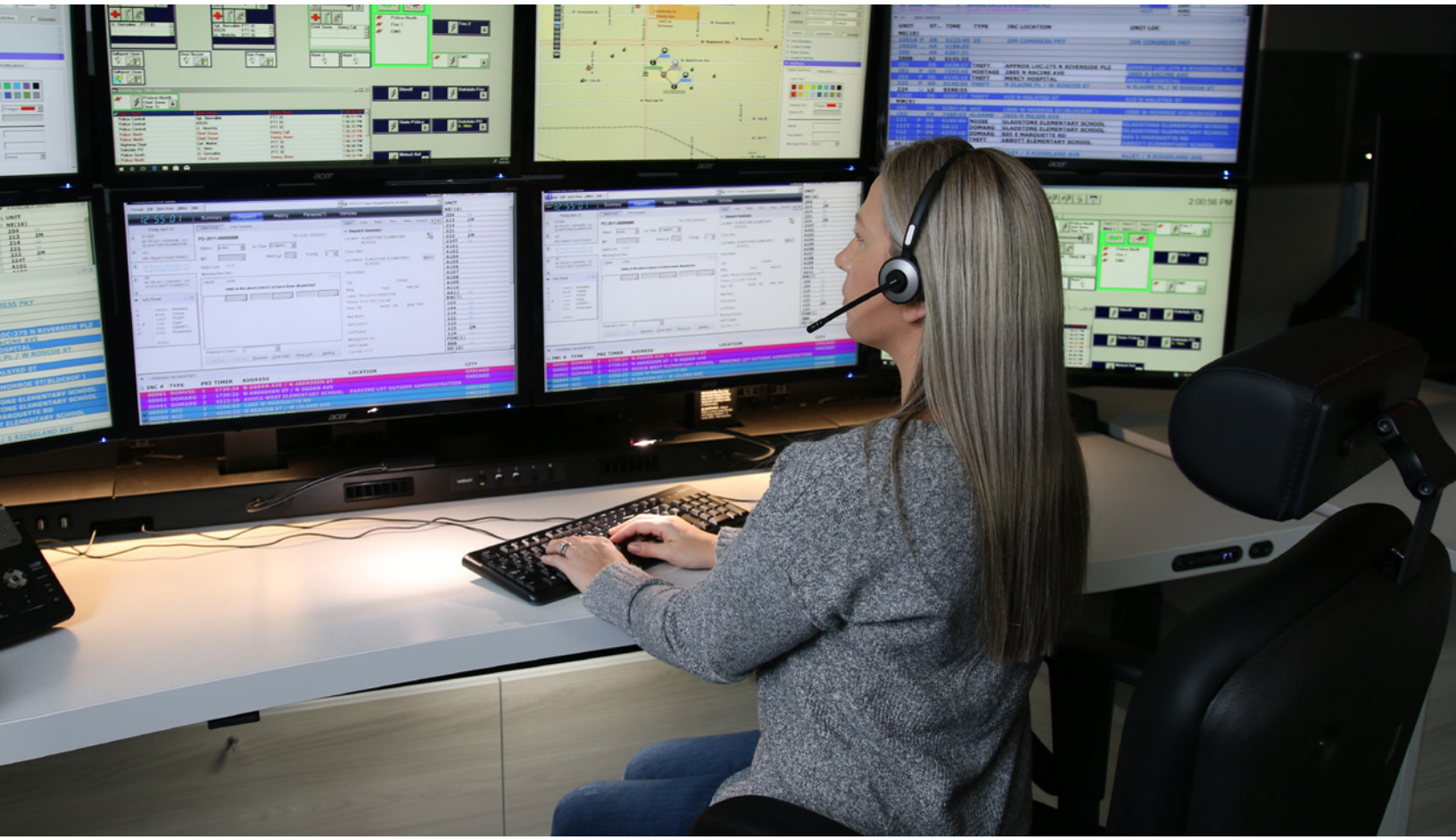
# 01

## NEW CONSOLE TRENDS PUT THE USER FIRST, BOOST EMPLOYEE SATISFACTION

Before we jump into technology integration features that support the modern PSAP, we acknowledge the conventional driver of design for the contemporary dispatcher console - the personal adjustment controls.

These controls are integrated into a dispatch console and evolve just like the technology the console is designed to hold. The catalyst for change at the manufacturing level is typically related to updates in safety and ergo standards, and feedback from users related to comfort preferences. For the PSAP, seeking out new consoles may be inspired by dispatcher complaints about current features, a renovation, a move, fluctuation in staffing, or team consolidation.

Regardless why you are considering new console options, you should know that well-designed consoles help improve user satisfaction and PSAP team performance. And technology integration features are a crucial part of the package.



## IMPROVE PSAP PERFORMANCE

It was recently reported that PSAPs spend an average of $50,000 on-boarding a new dispatcher and $200K to permanently fill a single position. With that level of investment, it is crucial to invest in retention strategies. The right tools for the job, beginning with a well quipped console, is part of a successful strategy to build strong telecommunicator teams.

User-centered console workstations promote efficiency and engagement among dispatchers. Increased engagement mitigates the high-level churn many PSAPs experience.

### Console Basics

You should expect your console to be height-adjust-able and may opt for monitors with focal depth flexibility. But a well-designed console must do more than thatit must be designed for the one thing every console has: A human.

Today's manufacturers keep the user in mind when designing consoles. The best manufacturers also consider the IT technician and facility manager and how the console design impacts them.

One of the ways Watson has put user-groups first, for instance, is to:

- Enable one button adjustment of the desk and monitor array height so the workstation can be
- Used from a sitting or standing position, provide multiple access points for IT maintenance,
- And offer modular consoles that can easily be reconfigured as needs change.

No surprise to the dispatcher, however, it's the small things that can make the biggest difference.

## Lighting

High performance PSAPs should not underestimate the importance of lighting and the affect it has on dispatcher focus. The dispatcher console can provide user-controlled lighting options that ease the tension associated with general room lighting levels.

It is important to understand your lighting options, beginning with the basics - the bulb. LEDs are obviously taking over in both the home and commercial market. Compared to halogen and incandescent, they last longer, operate at a far lower temperature, and are readily available. The type of bulb impacts energy efficiency. The position and function of the light impacts user productivity.

All Watson consoles have adjustable task light. Mercury also has ambient light to help reduce eye strain.  Both task and ambient light strength are customizable to ensure that each user has all the light he or she needs: no more and no less.

## Environment Controls

If you put four people in a room, they'll disagree on two things.

- Lighting (which we've covered)
- Temperature

It's too hot! It's too cold! This is the common cry in many commercial spaces and something we talked in depth about in Best Heating & Cooling Options for Dispatch Consoles. This pain point is why furniture manufacturers are placing a heavy emphasis on getting their environment controls just right.

# Dispatchers who are physically comfortable have stronger focus for longer stretches of time.

This is important especially when approximately 8 of 10 dispatchers experience some effects of compassion fatigue during their tenure. Easing tension over physical comfort helps dispatchers deliver effective assistance to those in need. And promotes focus on emotional  self-care after tough calls.

### Heating

Conventional solutions that use radiant heat provide too little heat, and forced air solutions typically create way too much, require too many watts, and can be a safety hazard. Properly placed, an energy efficient unit will keep users comfortable when ambient room temperature is less than ideal.

The most efficient heating system on the market, found on Watson's Mercury, is a forced air model that draws only 400 watts. The UL 962 certified console is rated for both fire safety and user personal safety, which is good for the user and the Center's pocketbook.

### Cooling

Placement of fans is another common complaint of console users. Many designs position air vents in places that do not effectively cool the user - too low, too far to the side. Watson's Mercury uses adjustable, low voltage cooling fans that are integrated into the surface dash. The user receives air that can be adjusted across the upper torso and as high as the face - effectively cooling the body.

To further ensure a comfortable temperature, Mercury has an active, low-noise cooling system in all technology cabinets to keep equipment at optimal temperatures, and prevent that heat from affecting the user.

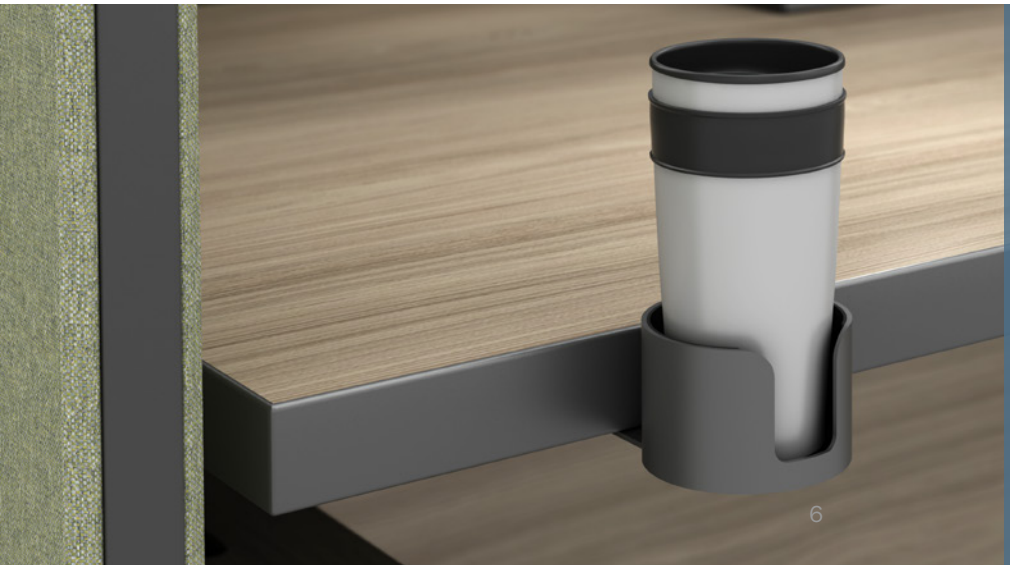
## Convenience features

Additional arms-reach features help keep the dispatcher comfortable over long shifts. And you may be surprised at some of the dispatcher favorites.

## Cup holders

Yes, cup holders! Not only do a lot of dispatchers ask for them, they are useful. For instance, coffee in a cup holder can't short out a keyboard.

When evaluating this sought-after-accessory, check out how they're made and how they're attached. Several console manufacturers only offer plastic cup holders. These will likely break in short order thanks to interference from chair arms. Some manufacturers, including Watson, fabricate their own steel cup holders - they are designed and manufactured to stand the test of time.



**It's just a small thing, but it's important to dispatchers who spend long hours at their station and want to stay hydrated (or caffeinated).**

## IMPROVE PSAP PERFORMANCE (Continued)

### Plug and go functionality

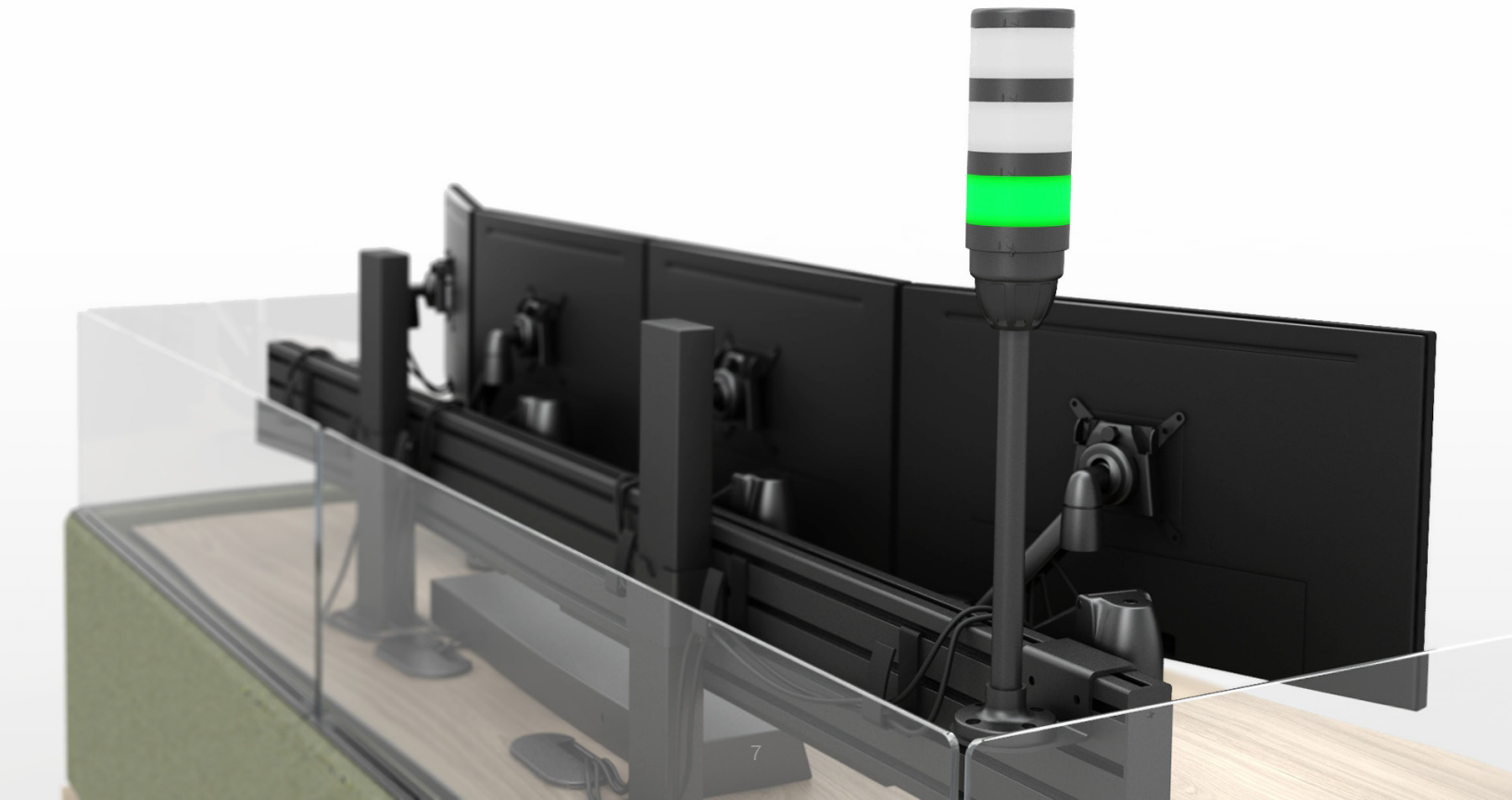
As we all know, wireless headphones, keyboards and mice are something other people use: not PSAPs. Battery life, interference, unreliability … pick your reason, but wireless equipment won't be on the dispatch console any day soon. So, furniture manufacturers are choosing to work with this "problem," using it as a guide for design and to improve performance

Watson, and other manufacturers, include a tech bay that can houses top-of-surface ports for connecting work tools. Because the connections do not need to be made at the PC or monitor, cords can also be shorter. Consoles with this plug and go functionality enable an operator to have his or her own keyboard, mouse and headphones, which appeals to those concerned about ergonomics and/or germ sharing in shift-work environments.

As an added benefit, keyboards can be hot swapped without having to snake a cable through the entire console. This is especially useful for Centers that maintain a stock of user-specific keyboards and mice in order to reduce the spread of illness.

### Status lights

Console status lights are a useful addition to any PSAP. Wired into the phones, radios, and other applications, the status light shows everyone when a dispatcher is on a call and whether they're talking or not, ensuring no interruptions during tense situations. The status light can also be triggered manually to call a supervisor, or alert a supervisor when a dispatcher has walked away from the desk. In large centers and when supervisor stations are set apart, the visual communication the status light provides helps keep the team operating smoothly.



## IMPROVE PSAP PERFORMANCE (Continued)

### Speakers

The number of speakers on a typical console has spiked in the past ten years. The additional pieces of hardware are overwhelming desktops with speakers and cords. Watson's contribution is to integrate speakers into the furniture by moving customers toward sound bars instead of freestanding computer speakers. We developed an adapter plate that allows speakers on sound bars to be mounted underneath any monitor. This frees up the work surface for mission critical work tools. This also benefits the IT team by controlling and/or eliminating extra cable length, reducing supply and maintenance cost.

### Privacy + function

In your PSAP, privacy screens provide sound dampening which is an important feature especially when call volume is high. Dispatchers have shared a preference for shoulder-height upholstered panels and transparent toppers. The configuration offers both sound dampening and keeps sight-lines open. This is important when hand-signaling is used to solicit additional support during an active call.

When comparing panel options among manufacturers, look for panels that provide added function like tackability, white boards or magnetic surfaces.

### Small things provide big value

As we've shared, dispatchers in the field have told us that added accessories are just as critical to the performance of the furniture (and their personal performance) as cable management systems, data management, monitors, PCs, and software.

When you choose a console, give equal attention to user-comfort and facility efficiency. On average, PSAPs replace consoles furniture every 12-15 years. Technology changes faster.

This is why it is important to consider all feature sets including ergo, data, storage, configuration, modularity.

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# 02

## SMALL FORMAT PCs CAN MEAN BIG SAVINGS FOR PSAPs: SPACE, TIME, MONEY

Technology drives efficiency within the PSAP. In addition to making sure your center has the most current systems capability, it's important to consider how the hardware impacts your space.

By now it's a familiar refrain: as technology gets better, technology gets smaller. For PSAP centers, this is a good news/bad news scenario.

### The good news

Smaller can be better, especially when it comes to hardware. There is no downside to micro PCs. Absolutely none. They have all the power you need packed into a smaller footprint. They generate less heat and are quieter than full-size PC towers. Plus, their reduced footprint can free up space in the console for other equipment and even … the holy grail … personal space.

Personal storage can sometimes be a contentious subject in centers trying to maximize space for core call-taking. If you have the right console furniture, the space you reclaim from large format PC's can be converted to personal storage without impacting the overall position footprint.

If personal storage is not a need for your team, reducing your PC size and/or relocating them to alternate positions within the consoles may allow you to remove modular tech cabinetry. You can then reconfigure the floorplan to add a position, or insert a work tools area or meeting space.

### The bad news… or as we see it, more good news

To realize the greatest gain of usable work zones by converting from full sized to micro PCs, you should be equipped with modular consoles. The appropriation of space does not work if your furniture is a uni-body construction, with technology cabinets built in to the undercarriage or frame of the console.

We know, however, it is unusual to have funding for both technology and furniture at the same time. When making the most of your funding, consider how one impacts the other. If you purchase with a forward-looking perspective, in a few short years you can transform the space and utility of your center:

- More expansive workspaces
- Ample traffic and pass-throughs
- Expanded sight lines
- Personal and shared storage
- Reduced IT installation and maintenance materials and labor costs

Before we jump into the best-case technology and furniture combination, let's better understand why micro PCs are becoming the preferred data device for PSAP technology.

## SMALL FORMAT PCs

## (Continued)

### Smaller is better; but why?

Emerging technology and individualized workflow impact the use of space at each console workstation. This echoes one of the workflow struggles dispatchers share with us. They are challenges to maintain an open work area when equipment and tools (and personal items) demand so much space.

A better use of cabinet storage and worksurface real estate is achievable. even if impact of software systems evolution drives the need for more tech storage.

Two software trends worth considering: 1) PSAPs are acquiring more independent systems, or conversely, 2) PSAPs are converting to multi-system software packages. Both trends impact the number of PCs and monitors you will likely see in the future - the monitors number is trending up an sizes are getting bigger. As a result, your need for hardware to drive these applications may increase. Additionally, as new ancillary support equipment comes on-line and/or evolves you'll be looking for extra space at each console to accommodate it.

### What are micro PCs?

Micro PCs, sometimes called small-format, small from factor, or atom PCs, are enterprise-level solutions fully capable of running the software found in today's PSAPs. The only thing that's different is their size . The dimensions of a typical micro PC are around 6 in. x 8 in. x 2 in. They still include the LAN, USB, and monitor connections found in a tower. They are simply compressed into a smaller container.

### Space savings mounting option for small-format units

You may be surprised to learn that your micro PCs can find a home alongside your monitors. A monitor mount solution that can also handle PC stowage reduces workspace footprint and simplifies power and video cabling by keeping it local to the array zone.

As you build your plan to reduce PC size and get them out of cabinets and off the surface, consider how your monitor mount system may impact your flexibility. There are multiple ways to mount monitors on your dispatch console. In addition to the mounting position, you should consider the mount type.

A flexible standard is the VESA mount. This is standard for most flat-panel monitors.

If you choose a freestanding array, you can do something revolutionary! Using custom hardware, you can take the micro PCs out of the technology cabinet and mount them directly to the back of the monitor.  This is a space-savings win! The VESA mount, shown below, is  a proven standard option for this application.

## SMALL FORMAT PCs (Continued)

### How does the furniture factor in?

Consoles are conventionally designed to house PCs in a technology cabinet. The technology may be built into the base console or might be in an adjoining cabinet.

If you max out your technology storage with full-sized towers, you miss an opportunity to dedicate that space for ancillary equipment that might otherwise sit on the worksurface.

As far as your data-drivers go, your consoles should be flexible enough to house towers, rack-mounts, or a combination of both. In many cases, the size of your surface determines the capacity of your technology storage. Conventional designs with built-in technology compartments may contribute to wasted space.

A better choice is a modular design where your technology need determines the size of your tech cabinets. This is a gain for centers who aim to invest in a console asset and need flexibility for changing tech and space later.

Less tech? Simply downsize or eliminate the cabinet while retaining the main console body.

## SMALL FORMAT PCs (Continued)

### Plan with the future in mind

Furniture makers have responded to changing technology in many ways. At Watson, we have created a modular design that allows customers to customize their consoles and to add or subtract components as their needs change. This modular approach, combined with our focus on using space efficiently, pairs perfectly with the new trend toward increased technological support tools powered by micro PCs.

If you are looking to purchase new consoles, choose a furniture solution that can integrate small PCs, even if you do not have any micros today. Furniture lasts a long time, and you don't want to end up with consoles that can't take full advantage of the benefits these powerful space savers can provide. And trends tell us that you will see more software systems driven by small-format hardware in years to come. Whether it is a rack-mounted or a VESA-mounted solution, micro PCs give PSAPs the ability to reduce the size of their technology footprint and, in some cases, even reduce the size of their console footprint altogether.

**Be your own advocate**

**Trends indicate that micro PCs provide an advantage for PSAPs. As more PSAPs integrate the technology, IT and facility teams will realize the cost and labor efficiencies. Today, many software system vendors specify the type of PCs you will need. Instead of accepting an out-of-the-box solution, ask for options. Think holistically about your technology and furniture integration. You can challenge your vendors to help you attain a high-performance center. Converting to small-format might just save you more space and dollars than you thought possible.**

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# 03

## SIMPLIFY YOUR DATA MANAGEMENT SOLUTION AND GET BETTER PERFORMANCE

Technology has done wonders for the PSAP industry, allowing safety centers to respond quicker, more proactively, and more accurately. It's improved everything from phone calls to radio communication, and made emergency vehicles trackable via GPS. Without exception, these new technologies require a data cable and a connection to the Internet.

As the number of technologies helping to facilitate exceptional public safety has grown, the number of data cables and connection points have grown with it. Unless PSAP centers give serious thought to the problems associated with increased cabling volume, this complexity will only get worse in the years to come.

### Simplicity equals productivity

Many product designers find that simple, functional elements lend to increased productivity and satisfaction. At Watson, we have found that to be true in many areas. With regard to technology integration and data management, we see a number of advantages to reducing the number of cables and improving cable management.

#### 1. Fewer cables reduces downtime

Fewer cables being run to the console means fewer cables that can fail. So when problems do occur, PSAP centers will spend less time and money troubleshooting, and more time serving the public. This is made possible with single point power-to-building connections, patch panels and network switches - all housed within the workstation console.

**Before you buy**

In addition to choosing consoles with patch panel and network switch options, look for consoles that have outboard access to technology. Outboard access keeps the Dispatcher dispatching while the IT team checks glitches.

#### 2. Less clutter improves focus

Reducing the number of cables with smart cable management is simply better for team wellness. People who work at a cleaner workspace, according to a Harvard study and research done at the Princeton Neuroscience Institute, have better focus and experience less stress - two must have traits for high-functioning PSAP personnel.

Before You Buy: Look for consoles that provide options for cable reduction within the workstation. Fewer cables and connections mean fewer nooks and crannies in which dust and debris might hide. Regular cleaning and maintenance will remove allergens and illness-causing germs which helps keep team members healthy, comfortable and on duty.

#### 3. Good cable management

When you're dealing with as many data cables as there are in today's PSAP centers (twelve to sixteen data cables is not uncommon) electrical interference must be taken into consideration. Running power cables near data, audio, or video cables can cause static in monitors and buzzing in headphones. In contrast, when proper cable management is built-in to the console, hardware can work optimally. There are many ways to manage cables and data storage solutions, so PSAP IT teams need to be aware of their center's requirements and the many options available.

## SIMPLIFY YOUR DATA MANAGEMENT SOLUTION

(Continued)

### Key trends in data management: rack-mounted

Rack-mounted components once were found only in server rooms. Today there are rack-mounted PCs, power centers, battery backups, and more and they are stored within the console. The compact footprint and universal size of rack-mounts make them a great choice for consoles designed to hold them. An example of forward-thinking, compact data management is a design built to house rack-mounts. More conventional lines might also be retrofitted. Ask your console workstation provider to review their rack-mount options. You might find if you don't need rack-mounts now, you'll need them later.

### Rack-mounted switches

Rack-mounted switches allow a PSAP to run the minimum number of data cables (one, in the best-case scenario) from the server closet to the console. The switch can then run data cables directly to the monitors and components that require data.

### Rack-mounted patch panels

A patch panel, which is standard on some consoles, is a convenient junction where data, sound, and video cables can be easily connected and accessed. This again reduces or eliminates the need to run cabling throughout the console.

### KVM (Keyboard Video Mice)

A KVM board is a technology that is gaining popularity and is installed on many consoles. The KVM reduces the number of mice and keyboards required by the dispatch operator. Instead of dedicating one mouse and keyboard to each.

### CPU/monitor, an operator uses a single mouse

and keyboard to jump from monitor to monitor. You will find options for KVM hardware and KVM software. If choosing a software option, you may need a network switch to channel the signal from the primary CPU to secondary units. Ask your console providers for a recommended KVM integration plan.

## SIMPLIFY YOUR DATA MANAGEMENT SOLUTION

(Continued)

### Future proofing data management

How do you future-proof data management? That's a question we have thought a lot about. We have learned that few PSAPs are exactly alike and seek solutions that suit existing systems and future plans. This is essential when the console workstations are in use for a decade or more, and technology changes every 2-5 years. Our approach has led to three primary solutions:

1. a fully integrated solution
2. a retrofit-capable solution
3. completely custom.

### The in-line console–a fully integrated solution

These are three examples of several options you'll find in the dispatcher/ operations console marketplace. The most comprehensive solution is in-line technology furniture with fully integrated data management solutions. Watson designed the original solution and it remains the superior market choice.

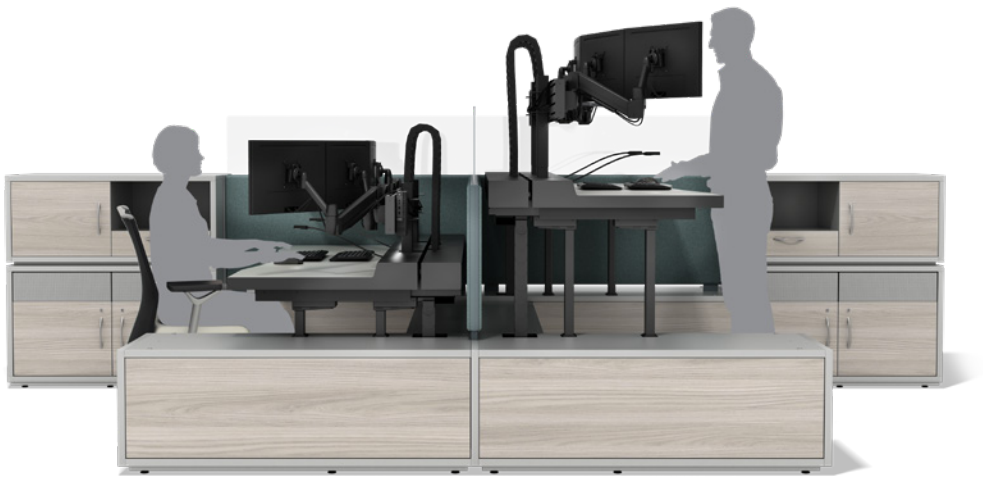
### Cable channels

The Mercury console has separate channels to run power and data cables. Separating them ensures optimal hardware performance by minimizing electromagnetic interference. These channels run both horizontally and vertically for easy access by IT. The cable bridge has capacity for nine 1" flexible conduit, or 40+ Cat-6 cables.

### CPUs - Rack-mounted, conventional towers, or both

The technology cabinets on Mercury are designed to accept either rack-mounted CPUs or, small- or large-format CPUs. In fact, a single technology cabinet can accommodate both a rack-mounted system and two large-format towers.

The obvious advantage to this is that a PSAP can update technology in stages by first moving some components into a rack system and continuing to use conventional PCs for other applications.



## SIMPLIFY YOUR DATA MANAGEMENT SOLUTION

(Continued)

### Stackable, expandable hubs

When new technology is added and more data processing space or storage is needed, a second technology center can be stacked on the first. A small technology cabinet can also be easily swapped for an upgrade with more capacity. The ability to change only what you need while retaining the core console is a benefit for centers who expect to expand support tools and technology.

### Designed for easy IT access

Both the Hub, where the rack-mounted power and patch panels are located, and the Technology Cabinet have outboard placement. That means the panels can be accessed by IT from the outside of the console rather than from the middle. This design allows someone working at the console to continue taking calls while trouble-shooting operations are performed.

### Compact footprint, clear sight lines

All this technology still fits in the same footprint because Watson's engineers have found ways to fit racks in previously unused voids. Other console manufacturers are also offering rack -mounted data management systems, but many of them are tacking them onto the top of their consoles or in tall towers to the side of the user. This solution disrupts sight lines.

The ability to flag down a colleague for assistance without leaving the workstation is something you might not miss, or even think about, until it's gone. With the Mercury console, sight lines can be left uninterrupted.

### The 90 degree console—an integrated or retrofit solution

Some telecommunicators prefer the conventional 90 degree workstation design. Because Watson has always designed with the future in mind, the Synergy console, like Mercury, can house both rack-mounted and standard PCs. A rack-mounted solution can be specified at time of purchase or retrofitted to an existing console.

These retrofitted systems have the same advantages of the Mercury console, with rack-mounted power and a rack-mounted patch panel to simplify data management.

Cable clips and vertical wire managers are included throughout the Synergy console to reduce clutter and isolate data from power.

### The custom approach

Some PSAPs know that they want, or need, a specialized solution for data management. In these cases, Watson will work with center teams to customize workstation consoles, or modify existing workstation consoles to accommodate technology or staffing changes.

## SIMPLIFY YOUR DATA MANAGEMENT SOLUTION

(Continued)

### Build for today, plan for the future

Obviously, cable management and data management are two of the key considerations when purchasing or retrofitting a dispatch console. By planning ahead, you can create a system that allows for easy troubleshooting of problems, reduced downtime, and better performance.

Our advice? Understand your technology needs today, and purchase a system that gives you the flexibility to add capacity tomorrow.

Planning for future technological innovations simply makes sense. The future will undoubtedly bring a need for more cables, more storage, more processing power, more monitors, more radios, more everything. Prepare for it now, and you'll be able to respond to the next technology revolution.

### Your data management console checklist

Before reaching out to console providers, have your team consider these questions:

- How many data connections does each user require?
- Will you be utilizing KVM software or hardware
- Do you have, or plan to have, rack-mounted components at each position?
- Do you have small- or large-format CPUs?
- How many monitor connections does each position require?
- Does your Center expect to upgrade technology as part of this active project?
- Do you expect to install new technology in 3 years? 5?
- Is consolidation in your future?

Once you know what you need, your console manufacturer should work closely with you to develop lasting solutions for your technology and data management needs.

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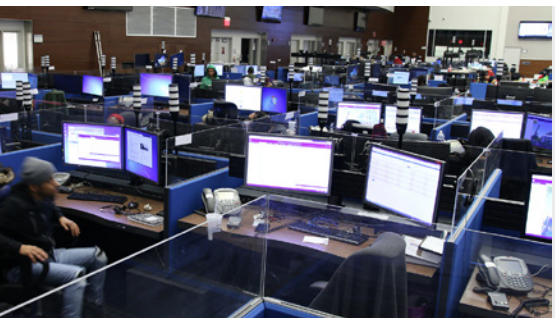
# 04

## GROUNDING SYSTEMS - PROTECTING YOUR PSAP AGAINST LIGHTNING AND POWER SURGES

Your emergency response center is a critical hub for community health and safety deployment. To do your job, you rely on a complex network of software, supported by hardware that connects to the building power. The electronic equipment you rely on faces three major power-interruption dangers: lightning, static electricity discharge, and electrical surges. Improperly grounded equipment can be damaged, data can be lost, and the vital services that you provide can be disrupted.

According to experts at Electrical Construction & Maintenance, it only takes 25 electrostatic volts to irreparably damage an integrated circuit.



**In a major metropolitan area like NYC, 30 minutes of disruptive service could mean 100+ opportunities lost to help someone with a medical or safety emergency. While the need for a ground is not a tech trend per se, it does protect your critical technology, no matter how systems designs are trending.**

### Recent headlines attest to power-surge and static disruption danger:

"Multnomah County emergency dispatchers couldn't accept 911 calls for about a half-hour Wednesday after a power outage took out their phone and radio systems, marking what authori-ties believe is the longest ever service disruption for the state's largest emergency dispatcher. The out-age was caused by a faulty component in one of the bureau's two un-interruptible power supply units, according to Paulsen. The malfunction caused an electrical surge that shut down the second unit and took out the power. (2017 - Multnomah, OR)"

### And Markel Specialty Insurance shares:

"Claims involving lightning damage can be significant and impact your ability to operate effectively. Accord-ing to the National Lightning Safety Institute, damages caused by lightning may exceed $5 to $6 billion per year...These damages typically involve various electronics critical to daily operations like computers, phones, phone lines, and printers. Without these tools, valuable time and stored data can be lost."

This type of disruption can lead to a waterfall of damage - CPUs, VoiP, radio equipment, mapping. In the 911 world, that can mean graver consequence.

## GROUNDING SYSTEMS
(Continued)

### Grounding your PSAP workstation

While most critical grounding work is performed by site electricians, PSAP teams should look to their product providers for education and reasonable support. With regard to console workstations, manufacturers should consider the challenges faced by centers during remodels, installations and maintenance periods. These challenges can be addressed through design, materials selections, and third party testing and certification.

Before we dive into console workstation features that can mitigate ground-compromising damage, let's uncover how and why the ground plays a critical role in maintaining your mission critical work.

### A brief history of ground

Before the widespread use of grounding electrodes, any electrical equipment connected to the circuit would be fried beyond repair, and in the worst case scenario the tremendous heat generated by the lightning strike could cause fires. Some of those fires caused grave injury and decimated structures.

Discovery of the electricity "ground" is linked to telegraph systems. Long distance telegraph systems, first developed in the 1820s, originally were built with two wires—a sending and a return. It was later discovered, that a second wire connected to the earth channeled energy out of the device; it was "grounded." The new discovery made the return wire unnecessary. Not only did this solve the electric overload problem, as you might expect, it saved a lot of wire and a lot of money.

As electrical technology progressed and the danger of lightning and unexpected electrical surges were better understood, grounding electrodes (or earthing electrodes) were developed to channel the electrical overload into the earth where it could harmlessly dissipate.

In the 911 Dispatch and Operations sectors, there are specific protocols, standards and certifications designed to assure (1) prevention of power disruption and (2) system backup in the event that primary measures fail. Are you familiar with your industry's grounding protocol standard - Motorola R-52?

## GROUNDING SYSTEMS
(Continued)

### The Motorola R56 standard

Large radio towers and antennas are natural targets for lightning and electrical storms. Moreover, proper grounding is essential to mitigate crosstalk and power supply noise when using radio communications.

To address this major issue and ensure their emergency services communication equipment is operated under the best possible conditions, Motorola developed extensive standards and guidelines for safety issues related to both shock hazards and lightning strikes.

These standards were released in Motorola Publication R56 “Standards and Guidelines for Communication Sites.” This standard has come to be known simply as Motorola R56, and its thoroughness has led to it becoming the defacto standard for electrical grounding.

When specifying console workstations, your buying team should ask how to best incorporate grounding measures that meet the R56 standard of power disruption and (2) system backup in the event that primary measures fail. Are you familiar with your industry’s grounding protocol standard - Motorola R-52?

### Furniture materials and impact on conduction: steel vs. wood

While communication centers prepare their furniture with grounding bars, in the case of a ground disruption, conductivity of surrounding materials may knock out critical technology. A major advantage that Watson Consoles provides to customers is non-conductivity: the primary building material is wood.

Twenty-five years ago, the gold standard in emergency dispatch furniture was steel (and the primary technological tool was the typewriter). Steel furniture held up well. It was heavy. It was perfect for the everyday wear and tear of unrelenting, 24-hour per day use. It’s also an amazing conductor of electricity.

That’s not something that matters when your primary tool is an IBM Selectric. But when you’ve got eight monitors, ten CPUs and a couple of servers at every workstation, a highly conductive surround can cause a lot of problems.

To ground metal-based furniture, you must first connect the building ground into a copper grounding bar housed within the undercarriage. For metal-based furniture, everything that’s metal within the furniture has to be ground to that same grounding bar. All of the end-user equipment must also be ground, but they must be ground independently from the metal furniture. This can be complicated and expensive.

Wood construction is not as demanding. The only thing that needs to be grounded within the system are power distribution units and end-user equipment.

## GROUNDING SYSTEMS

(Continued)

When console workstation providers simplify the grounding requirements for the end user, centers save money that would otherwise be spent on additional grounding systems and hourly electrician charges.

### ETL 962

Ask your console supplier if their units are UL962 certified. UL 962 certified consoles, like Watson Console's Mercury, have been tested by a third party for electrical safety. In the case of Mercury, a single point power connection grounds directly to the main building power, which means no additional grounding is required for the furniture or components therein.

### Understanding your center's grounding needs - light vs. heavy

Why is it important to simplify grounding requirements? Because grounding bars are not cheap. Their conducting material is top-grade copper, and the price of copper remains high. If an emergency response agency can avoid paying more than necessary for each workstation, they should. Those critical dollars can be put toward additional equipment that enhances 911 communications efficiency .

That said, with a single emergency response agency likely housing a half million dollars worth of electronic equipment (or more!), under-protecting is simply not an option.

Every center design is unique, and most of them can be divided into workstations that require either light or heavy grounding. Before deciding on the console workstations you will put in your center, consider the level of ready-to-work grounding capability that is provided.

Your center's needs may be different now than they were ten years ago and will likely be different than the center in the adjacent jurisdiction. The type of calls you field and operations you oversee will also impact the level of grounding required for safety. For example, a small police station will typically need a light grounding system since their workstations only need eight connections. By contrast, at a major airport a workstation might need 16 to 24 connections to accommodate their equipment.

## GROUNDING SYSTEMS
(Continued)

### Planning the future

Technology gets more affordable every year . And the kinds of systems used by the largest airports may make their way into small police departments in five to seven years or less. That means those small departments may need to ground 16 to 24 connections in only a few years from now. Choosing console workstation and furniture assets that are designed to support increased technology needs is a smart choice for 911 and Operations Centers.

If the number of equipment connections you used in the future increases the system grounding need from light  to medium or heavy, simply swap out the grounding bar in your Mercury console. There will be no need to re-run a grounding system for separate metal housing which is required of other manufacturer's designs. Choosing a Watson console means your grounding requirements will be met today and easily maintained for years to come.

When auditing or planning your center console and technology layouts, challenge your vendors to help you defend against static electricity and power-surge damage. Remember, furniture and flooring providers are a first-line defense.

Once your research is complete, enlist a qualified consultant and electrician to create a grounded system that meets R56 standards and will support near-term technology and power expansion.

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# 05

## FUTURE PROOFING THE 21ST CENTURY PSAP WITH MULTI-MONITOR ARRAYS

Technology evolution continues to be a large part of planning and maintaining effcient PSAPs and Operations Centers. Over the past few years we have seen an increased need to provide immediate monitor array solutions that will also work for imminent upgrades.

**Here are a few of the top questions our customers ask:**

- **What new monitors are other PSAPs using?**
- **If my monitor technology changes, how do I incorporate it into my existing console array?**
- **How should I position my touch-screens for best user interface and focal depth?**

Here's what we've discovered about monitor trends and some of the learning other dispatch teams have shared with us.

### The ever-expanding demand for pixels at communications center workstations

The number of monitors used in today's security, network, and dispatch operation centers is mind boggling. In the past five to ten years, the size of a typical workstation's multi-monitor array has doubled and sometimes tripled. Not only that, the configuration of monitors varies widely from center to center.

Ten years ago, three to four monitors was near the maximum, while today six to eight monitors is typical, and some applications call for as many as twelve screens at a single workstation. In recent years, we have had several customers request vertical screens alongside horizontals, and to stack large screens over smaller units.

There is a definite need for consoles to support the weight and sprawl of multiple monitors, in varying shapes and sizes. In the changing landscape of today's operations centers every application is unique. Creating a monitor array that works ergonomically for operators of different heights and ages requires specific planning - and some new thinking.

## FUTURE PROOFING WITH MULTI-MONITOR ARRAYS

(Continued)

### Upgrading monitors

The first issue to consider is monitor size. Monitor depth is really no longer a problem since flat screens dominate the industry. Smaller screens, however, have proven impractical as functional and technological needs continue to expand.

The amount of information being transmitted to each of the screens from the individual applications requires higher resolution. And more applications require more real estate. Not only are there two to three times more monitors than there were in the past, they need to be bigger. Additional real-estate accommodates expanded mapping, Smart911 applications and other deployment software.

**If the monitor is too small, the operator simply cannot read the screen and properly utilize the data.**

One solution is the partitioning of screens: instead of one application requiring three 24-inch screens, an operation may have one 42- or 46-inch screen partitioned to accommodate multiple applications. As you might imagine, however, it doesn't take many 46-inch screens before the available monitor space is filled.

### Consider the challenge of touch screens

Touch screens are one of the new monitor technologies that many PSAPs and Operations Centers are integrating into their displays. In some cases, a touchscreen is required to fully utilize software features. Many centers are stocking 24-32" touchscreen monitors to fill this need.

Adjustable workstation manufacturers should now consider the utility and ergonomics of touch screens. And your team should think about if you need them and how you can integrate them into a conventional monitor array.

Some centers opt to securely place touch-screens on an adjacent work surface - where they will be within arms reach as needed and will not compromise the focal depth adjustment of the main array.

### 4K is here (and it's curved)

Though not yet widespread, curved 4K displays have been a growing consideration among PSAPs and Operations Centers.

To know if this upgrade is right for you, consider how you will blend the curved screen with existing flat panel displays. 4K monitors tend to be larger than conventional units and are concave in shape. The combination of size and shape differences can be difficult to plan. As a result, workstation designers and space-planners must always consider how the operator will be using the workstation so that curved surfaces won't obscure flat screens, or vice versa.

This is a challenge that manufacturers like Watson Consoles consider with every new space plan. Be sure that your console provider raises attention to these details.

## FUTURE PROOFING WITH MULTI-MONITOR ARRAYS

(Continued)

### Solving the complex issue of "monitor build-up"

The siloed nature of security applications coupled with an increasing number of technological solutions means the demand for additional monitors per workstation is likely to continue to grow. What's typical today (6 to 8 monitors) may seem modest in five to 10 years.

All manufacturers should address monitor build-up because it's part of providing the best value with your console purchase. Watson has chosen to respond to the ever-changing needs of multi-monitor arrays in a (perhaps) counterintuitive manner: by making them less complex.

### Reducing complexity improves hardware performance

For years, especially in the public safety sector, adjustable workstations have been built with an independently height-adjustable monitor surface and an independently adjustable input surface. The input surface typically houses the mic, keyboards, mouses, and any other devices necessary to the job. While making every surface adjustable may seem like a good idea, in practice it doesn't add value.

The additional moving parts add mechanical complication that are prone to breakage. Workplace interviews with dispatch console users reveal that an adjustable input surface is cumbersome and interferes with ancillary equipment placement.

Speakers, desk-top environmental controls and headsets have to be repositioned to allow free movement of the platform — the constant shuffle becomes a barrier to maintaining as efficient workflow.

### Focal depth & eye strain

Other manufacturers mount monitors to a wall attached to the backside of the work surface. This allows the monitors to move up and down with the surface. However, in order to adjust your focal depth, you have to individually move each monitor. This makes shift changes ineffcient for users who share consoles and have different ergonomic needs. And, for centers that value wellness practices, wall solutions may discourage users from otherwise engaging in eye-strain prevention exercise that recommend frequent array adjustment.

That's why the newest Watson Consoles adjustable workstations feature only two adjustable zones. It makes array adjustment a breeze. The entire work surface (the "desk" can be power-adjusted vertically allowing personnel to use it when sitting or standing. The work surface, with monitor array intact, also moves horizontally allowing the user to adjust focal depth. The second zone adjusts the monitor pole mounts up and down. The monitors attach to the array with individual articulating mounts so they can be tilted to achieve maximum visual acuity.

Two adjustable zones means users have maximum adjustment for posture and focal depth without the headache and disruption of a moving input platform.

## FUTURE PROOFING WITH MULTI-MONITOR ARRAYS

(Continued)

### Future-proofing multi-monitor arrays

As multi-monitor arrays grow in size and scope, adjustable workstations must adapt by creating systems that can support the size and resolution of today's frequently used monitors and the monitor trends of the future. Future-proof console solutions take into consideration many factors:

- Easy access for repositioning and exchanging technology
- Flexibility for accommodating vertical creep when additional or larger monitors are added to an array
- Maintaining an unencumbered work surface to promote smooth daily operations
- Monitor array and mount solutions that offer optimal focal depth
- Mount solutions that provide tilt adjustment for user comfort and focus

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# 06

## FUTURE PROOF YOUR DISPATCH CENTER CONSOLES

### What does 'Future-Proof' mean?

At the highest level, the concept of future-proofing is to design a product in such a way that it is unlikely to become obsolete. In reality, very few, if any products are truly future-proof; however, a manufacturer's commitment to the principles of future-proofing can drastically extend the life of a given product. The factors for determining the usable life vary from product to product and depend in large part to external factors.

**For over 35 years, Watson has been designing and building dispatch center products specifically for 24/7 environments. Working side by side with our forward thinking customers has deeply influenced our manufacturing and product development philosophy. Most importantly, it has imbued our entire organization with a crystal clear understanding of how and why our products must be engineered for decades of performance. As a result, our definition of future proof extends beyond conventional measures of quality to encompass the entire product life-cycle from specification to replacement.**

There are 4 main variables that determine the longevity of dispatch center console furniture:

**Material Performance** – How well does each material perform its specific function? For a given component, this requires clearly defining the optimal strength and performance characteristics for infinite use.

**Quality of Engineering & Construction** – How are the materials assembled and to what level of specification? In many cases, the way materials are constructed can have a greater impact on the product lifetime than the materials themselves.

**Human Factor Consideration** – How well does the product support foreseeable human factor changes? These changes include evolving ergonomic standards, work styles, or preferences for different users over time. Comprehensive console systems address ergonomics and comfort controls.

**Technology Management** – How technology cooling for your dispatch center console does the platform support changes in technology over time? Technology evolves at a much faster rate than any other factor and usually determines a console's relevance long before materials begin to degrade.

## FUTURE PROOF YOUR DISPATCH CENTER CONSOLES

(Continued)

### Dispatch console furniture you can trust

We know you have several console manufacturers to choose from. And most consoles look similar from afar. When making as asset purchase, be sure to tune in to the details. We do, and we think our consoles show it.

Understanding user-specific needs is what drives our design. Every one of our products has been designed for a minimum of 20 years of performance. By designing and building our products from raw materials, we avoid making trade-offs dependent on third-party capabilities and we maintain strict control over quality at every step of the manufacturing process.

### The right materials for the job

Our factory is organized into two specialized work centers; a steel shop and a wood shop. Mastering the art of steel fabrication and wood core panel assembly enables us to objectively evaluate which material suits a given application. Many manufacturers are limited to one core competency and are forced to substitute materials in inappropriate places.

Experience has taught us that using a steel frame with wood core surfaces affords the optimal balance of strength with user comfort. Wood panel doors and cases eliminate the clang of metal components and add a familiar aesthetic to high stress work environments. In over 3500 installations we haven't had a single structural failure due to our wood core components.

### Design and built to last (forever)

Co-locating our product development and production facilities allows us to rigorously test new product concepts and alternative construction methods. As a result, we have developed an expertise in combining the aforementioned materials using metal-to-metal connections with cutting-edge manufacturing techniques.

All our products include a standard Lifetime Warranty. Manufacturing every detail affords us the complete confidence that our dispatch console furniture will outlast the most demanding environments and that if there ever is an issue, we will be able to fix it years down the road.

## FUTURE PROOF YOUR DISPATCH CENTER CONSOLES

(Continued)

### Technologically advanced

As part of our latest product development cycle, our design team took stock of the past, current and future state of technology in PSAP environments. This included developing a deep understanding of the types, quantities and uses for every potential user interface.

Since that launch we have future-proofed our dispatch center console furniture. Several changes in cutting edge technology and our products have kept pace at every turn.

Technology access and future flexibility are paramount to our design considerations and for that reason we include modular technology storage that can be updated when needed without purchasing entirely new dispatch consoles.

Before making a major investment in a new console purchase, it pays to develop a clear understanding of what future-proofing looks like to your organization.  While material considerations are important, they are only one part of determining the product longevity.

Our experience has taught us the importance of holistic console design and we look forward to sharing our competency with you.

**We are builders. We intend to live forever in this community. We create skilled jobs by designing and manufacturing distinctive products for discerning customers. We do this with care for each other and our earth in a way that would make our parents and our children proud.**

**— Clif McKenzie, Watson CEO**