



AutomationWorld[®] TACTICAL BRIEF

Industrial Mobility: How Modern Factories Will Deliver Relevant Content to Every Device

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ThinManager Platform Moves Factories into the Mobile Future

The days of running a manufacturing facility that stands alone on an island or operates within a vacuum are over.

Technology is a constantly evolving ecosystem within which everything it encounters is presented with the option to adapt or risk becoming antiquated. This holds true for the Manufacturing sector, as well as the people who drive it. History has shown time and time again that industries only remain competitive if they are willing to adopt and make real use of new technologies that drive efficiency, productivity, and profitability. Those who choose to ignore or fight against the inevitable evolution of innovation often become mere footnotes in the history of pioneers and juggernauts that continue to thrive today.

For over a century, the basic premise of the moving assembly line pioneered by Ford Motor Company has essentially remained the same.

Over time, automated processes have been added and improved upon to increase speed and output, but the true improvement to the basic model has been the platforms created to monitor and manage the systems that drive those processes. Because of this, and the proliferation of the global economy, the very basics of manufacturing must now be re-examined and challenged to move forward from the Industrial Age into the Modern Computing Age.

The days of running a manufacturing facility that stands alone on an island or operates within a vacuum are over. The modern factory will have to be more connected and nimble, able to adapt quickly to changes in manufacturing techniques and the demand for customized products. These facilities will need to be able to

Be Nimble: Mobility will have the edge in the future



The days of running a facility that stands alone on an island or operates within a vacuum are over. The modern factory will have to be more connected and nimble—able to adapt quickly to changes in manufacturing techniques and the demand for customized products.



ThinManager

RELEVANCE

What you need,
when and where you need it.



The mobile platform for the factory
of the future has arrived.

Continued ThinManager Platform Moves Factories into the Mobile Future

expand quickly or even be replicated within short time constraints, to stay one step ahead of the competition. And even more importantly, they must do so in conjunction with other facilities and operations that are equally adaptive.

Mobile computing is the evolving technology that will meet the demands of the modern plant floor and offer the agility required to drive it. What modern manufacturers need is a system platform that will allow them to move toward this mobile future with as little disruption to their current process as possible. ACP's ThinManager is an Adaptive Platform Technology (APT) that is designed to allow facilities to move into this new mobile industrial evolution at a pace that is reasonable for their particular facilities.

This is essential because far too often a technology is introduced that forces a "leap" forward from the industry standard...and more often than not, that technology is nothing more than a bridge that spans what was and what is to come. This is why ThinManager has positioned itself as a platform that can drive the processes of today, as well as offering the mobile agility that will be required tomorrow.

ThinManager will now offer a brand new location-based technology called Relevance. This Adaptive Mobile Platform (AMP) will allow plant managers and operators to have customized computing experiences that are completely relevant for the work they perform, regardless of the specific environmental demands of their facilities or the computer hardware they currently



Continued ThinManager Platform Moves Factories into the Mobile Future

Delivery: Sending applications to mobile devices requires knowing who is using that device and where they are

ThinManager Relevance will offer a new way to organize applications, data, and users. More importantly, it will allow for that delivery to be based on a user's ID, location, a specific time or an event—or any combination of these criteria. ThinManager delivers this relevant information to virtually any device including PCs, thin clients and mobile tablets or smart phones.



deploy. ThinManager Relevance will offer a new way to organize applications, data, and users. More importantly, it will allow for that delivery to be based on a user's ID, location, a specific time or an event—or any combination of these criteria. ThinManager delivers this relevant information to virtually any device including PCs, thin clients and mobile tablets or smart phones. Now, operators have the ability to perform their duties, react to changes in production and solve problems from any location.

No matter where your facility is today in this new industrial evolution, ThinManager's Adap-

tive Platform Technology will allow you to become the nimble company of tomorrow by letting you choose when and how you move your process into the future. Regardless of the current hardware or software solutions you currently deploy, ThinManager will extend your ability to control how you deliver information and how you interact with your manufacturing environment. No other platform can offer a path that allows you to go from where you are today, to where you want to be tomorrow, like ThinManager.



What a transition to mobile computing on the factory floor will look like

The mixed use environment of traditional and modern computing devices

It's reasonable to assume that, given the ever increasing popularity of tablet-based computing, we will be seeing a number of manufacturing facilities begin to make use of tablets on the factory floor in the very near future. So how do we go from PCs, thin clients and operator panels to iPads and Android tablets? First off, it's not going to happen overnight. As with any new technology there's bound to be a transition period during which there will be a heterogeneous mix of old and new. In fact, it could be argued that PCs, thin clients and OP panels may never really disappear entirely. So how do we navigate this transition without compromising the integrity of the whole system?

Here are a few thoughts on making the transition...

First – Don't immediately think that using

a tablet on the factory floor for visualization requires a native iOS or Android HMI application on the device and a lot of integration effort to redevelop screens. If you're not already doing it, save yourself a lot of time and money and move your visualization applications to a Windows Remote Desktop environment. In almost every case this transition can be completed in one day. Once that's complete, you can connect to your terminal servers, start sessions and view the same applications you run today from your mobile devices.

Second – Consider using a mobile device management (MDM) tool like ThinManager 7.0 XLI. Unmanaged mobile devices are limited to running a single Windows RDP session with terminal server and session settings that must be pre-configured and manually modified from the

New and Old: Mixed Use Environments



Choose a Mobile Device Management tool that lets you migrate from existing PCs and thin clients to a combined solution that includes mobile devices. ThinManager is the only product on the market that can give you a single interface for management of PCs, thin clients and mobile devices running RDP sessions.

ThinManager



industrial freedom.



manage all of your devices.

Continued Transition to mobile computing on the factory floor

device when application needs change. ThinManager MDM features include MultiSession support and adaptive application delivery. Quickly choose from multiple applications using screen gestures or let ThinManager Relevance deliver applications to your device based on your current location, user skill set or process state.

Third – You’re going to need a solid wireless network. There’s really no getting around this one. Do your homework and consider a site survey by a reputable company with experience in manufacturing environments. There are a number of hardware providers that specialize in wireless products for industrial automation environments.

Fourth – Where PCs, thin clients and OP panels are almost always tethered to one spot, tablets can be taken just

about anywhere, including outside of your factory. If you want to use your mobile device outside of your network boundaries, you’re going to need a secure cloud infrastructure. ThinManager Anywhere Access provides exactly that and it works seamlessly with ThinManager 7.0 XLi and ThinManager enabled mobile devices.

Finally – Choose a Mobile Device Management tool that lets you migrate from existing PCs and thin clients to a combined solution that includes mobile devices. ThinManager is the only product on the market that can give you a single interface for management of PCs, thin clients and mobile devices running RDP sessions.



Needs-based Computing; A Methodology Discussion

Now that we have entered the mobile generation, this adaptive “needs-based” computing can be extended to incorporate location specific application context in addition to user specific application context.

Manufacturing made a dramatic move towards Windows computing in the late 1980's driven by HMI software that could produce what was, at that time, an almost unbelievable level of graphic visualization. Early on, rendering such complex graphics required localized processing which resulted in a transition away from existing server based processing and towards workstation computing. Because data still needed to be stored centrally and shared between users, we actually ended up with a mixed computing platform called peer-to-peer client server. Microsoft actually created two OS platforms in Windows Workstation and Windows Server designed to meet this need.

Somewhere shortly after the year 2000 the CPU inside of even an average PC reached a level that allowed us to move processing back to server PCs even when the applications were graphically intensive. Combined with a recently developed OS extension from Citrix called MetaFrame (and Remote Desktop from Microsoft), many chose to move back to centralized computing. Workstations on the

factory floor were either modified to include a fat client application or replaced altogether with thin client devices. Applications were moved to servers where a single install could support twenty or more sessions for an equal number of connected clients, with each client providing a single operator interface for one end user.

Fast forward to today...

Almost every Windows application is terminal server compliant. Converting a workstation based system to a thin client based system can be completed in about a day with little or no changes to existing applications. If you are a fan of virtualization, then by all means virtualize your terminal servers. And if you want to make everything work better together, manage your system with ThinManager.

So where do we go from here...

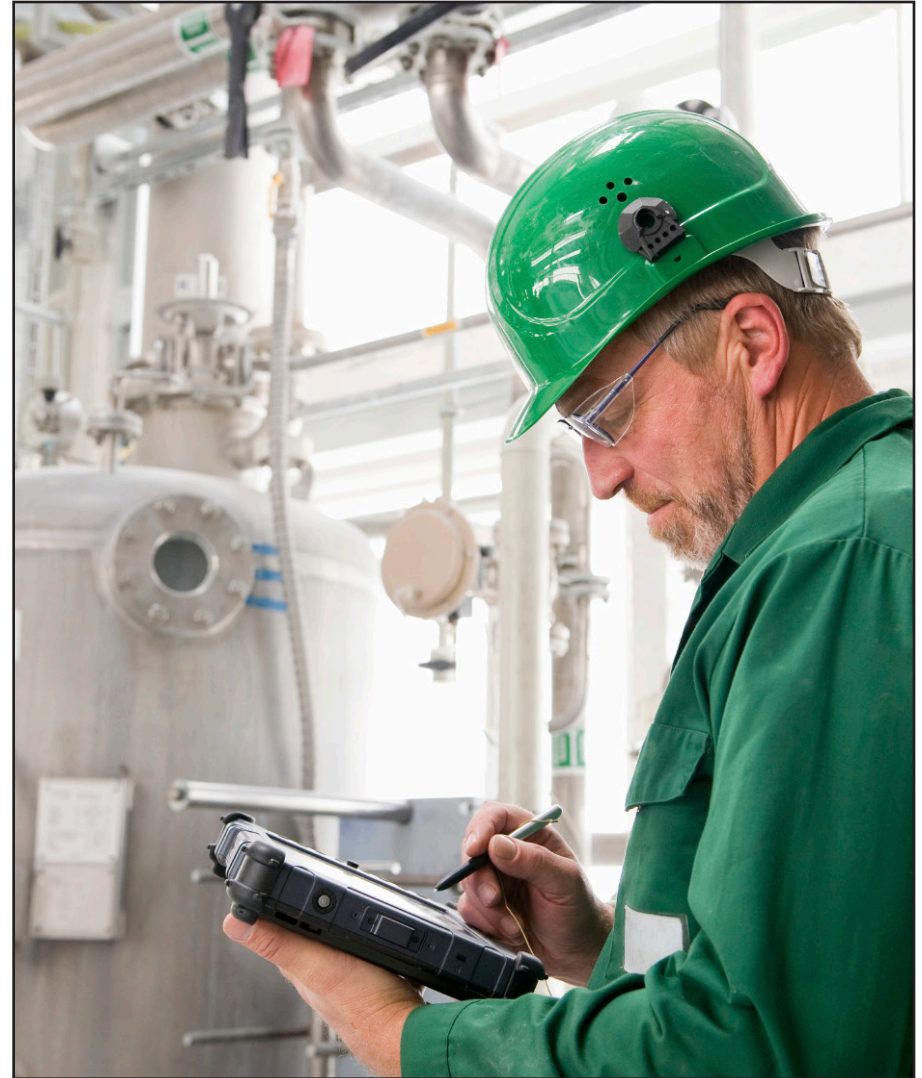
With many of our factory floor applications now residing in server environments, the next hurdle becomes application delivery. From its inception ThinManager was designed to help administrators “de-

Continued Needs-based Computing; A Methodology Discussion

liver” Windows applications to the appropriate computing devices, whether they are thin client operator stations, fat client supervisory PCs or even mobile clients (i.e. iPad or iPhone). Considering thin and fat client hardware is normally tethered by power and networking connections, delivery of an application was almost always to a known location and the applications were most often location specific.

For cases in which a single client device was being used by multiple users with differing job functions ACP incorporated an application context management feature into ThinManager whereby applications could change at a terminal client when a user accessed the terminal by authentication. This feature, called TermSecure, gave each thin or fat client device the ability to adapt to the current user’s needs. While an unauthenticated terminal may by default present the operator HMI, any maintenance or supply user could be given permission to override the default configuration to add or replace the HMI with maintenance or supply applications. Thus, as a user moves from place to place on the factory floor, his or her applications can be accessed from any ThinManager managed client device.

Now that we have entered the mobile generation, this adaptive “needs-based” computing can be extended to incorporate location specific application context in addition to user specific application context. Thus users can actively, via QR code scans, or passively, us-



Continued Needs-based Computing; A Methodology Discussion

ing internal positioning technologies, designate their current location and their applications can be delivered to mobile clients based upon computing needs within range of a location or process component. For example, a QR code anywhere on the process can be configured to deliver a localized HMI application or relevant piece of documentation when scanned. Thus, every motor can be assigned a QR code that delivers a terminal server session of its related user's manual in PDF form. This same location-dependent contextual information can be united with user-based contextual information to deliver different applications to different users based on job skills and operational needs within a specific geography.

Eventually this needs-based computing technology will evolve to include event triggers that signal a user application context to change. Consider an alarm event that triggers based on a component failure and in turn delivers a maintenance application to the maintenance person with the proper skill set to repair the failure who is actually closest to the event.

In a needs-based computing world, users get what they need, where and when they need it. That's what Relevance delivers.



Primacy of Information

A confluence of trends around mobility, always-on networks and information is having a tremendous effect upon automation and manufacturing.

By Gary Mintchell, Co-Founder and Editor in Chief

Things always seem to come in bunches when you're studying something.

I had just finished writing my article for the July issue of Automation World about where the worlds of automation and Lean manufacturing come together—mostly around information. Then, because I'm on the technical committee of MESA International (the Manufacturing Enterprise Solutions Association, which is focused on improving operations management), I proofed a couple of white papers. Julie Fraser, an analyst working with MESA, has done some outstanding research looking at manufacturing companies over the past few years. One of the white papers reflects her latest research.

Although you must become a premium MESA member to see entire reports, I'll give you a summation: Companies that have a regular discipline about collecting and using information tend to perform better than those who don't.

My research into Lean practices often revealed companies who have constructed creative ways to automatically compile and display information. They have had more success—and more successful Lean events—than those who try a Lean approach but fail to use data.

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and columns on all things historians.

Some data collection can just come from the automation system into a Microsoft Excel spreadsheet or a standard data historian. Others use a more sophisticated MES/MOM application. Either works, depending upon your particular needs. Check out this month's article by Renee Robbins Bassett on historians for more on the topic.

You might also just check out all the benefits of becoming a MESA member and learn how to improve your processes with information (www.mesa.org).

Network is the computer

The primacy of information is inextricably linked to the ability to get at relevant data points. Google's developer conference in late June yielded some interesting automation-related news. That's because much of what Google is doing is sort of a fulfillment of a statement (or wish) from Sun's Scott McNealy that the network is the computer. Google has based its vision on the connected world and online applications. Not surprisingly, at about the same time I saw a Gartner report that said Microsoft Windows will slowly drift off to oblivion as a desktop product.

Let me throw a couple of other ideas at this. Tony Perkins, who had skyrocketed and then crashed with the technology business maga-

Continued - Primacy of Information

zine Red Herring started a Website several years ago called Always On (www.aonetwork.com) based on the premise that we are “always on” the network. Always On morphed (or “pivoted,” to use a contemporary Silicon Valley term) to a live conference company. See, it was a desktop site, but we aren’t “always on” with desktop technology. We’re always on with a smart phone, and less so but close with an iPad or other tablet.

So what does this have to do with industrial automation? Some time ago, I attended the ACP Thin Client user conference. Part of its “value add” is the value of the network over the value of a heavy-weight PC as a work tool. I see several automation companies playing with these light-weight, always-on mobile tools for operations, technicians and engineers—even, or especially, for manufacturing executives. Certainly, there is a confluence of trends around mobility, always-on networks and information that is having a tremendous effect upon automation and manufacturing.

And that effect is positive. At Achema, the large chemical industry trade show in Germany held in June, organizers issued a report saying, “Automation technology is a major factor which drives industry forward.”



Process Safety Futures

Process safety systems have arrived at a juncture of transformation.

By Jim Pinto, Technology Futurist, Automation Commentator

Most process safety systems in use today were installed during the first wave of distributed control systems (DCSs) and programmable logic controllers (PLCs) in the '70s. ARC Advisory Group estimates that the value of the installed base reaching the end of useful life could be in the neighborhood of \$8 billion worldwide.

Conventional control systems are inherently limited in their ability to make cognitively complex decisions. Most operations are based on central operator consoles that require training and need close attention. They display too much data and too little relevant information. In crisis situations, with many hundreds and even thousands of simultaneous alarms, physical cooperation and communications become overwhelming and human intervention is ineffective.

International safety standards, such as IEC 61511, require end users to conduct analysis of hazards and risks, in addition to allocating safety functions to protection layers. However, becoming just standards-compliant falls far short of proactive safety management.

“Up to now, safety professionals have focused primarily on personnel and occupational safety. More focus is needed on process safety,” says Eddie Habibi, CEO of PAS, a company focused on industrial process alarms and operator effectiveness. “In the future, human operators will gradually be designed out of directly managing highly critical

abnormal situations. Safety instrumented systems (SIS) embedded in designs will account for human factors.”

Alarms must be able to direct the operators’ attention to the most important problems that need to be acted upon, using priorities to indicate the degrees of importance, plus the corresponding corrective actions that must be taken. Improved effectiveness comes not from training the operator to use increasingly complex systems, but from developing systems that adapt effectively to maximize throughput with a minimum of operator involvement.

What’s needed are full process monitoring programs with diagnostics to provide not only early warning of accidents, but predictive maintenance that effectively prevents accidents before they occur; operating controls that effectively ensure safety with use of automated systems to change cognitive demands on operators.

Current DCSs and PLC-based systems have received mostly incremental improvements since being built on 1970s technology. Decades-old deterministic architectures will likely give way to the non-hierarchical distributed networks of the industrial Internet—what the Germans term Industry 4.0. This is where the paradigm shift will occur. The next wave of safety system designs will be tied closely to these changes.

The steep decline of tethered (powered) PCs in industrial environments is caused by a major shift in the landscape: the use of mobile

Continued - Process Safety Features

devices. Today, every engineer and technician has a tablet and smart-phone. Many companies allow BYOD (bring your own device) and others simply provide work-area tablets.

The use of mobile devices improves operating efficiency, boosts productivity, drastically reduces cost and increases throughput with existing people and resources. Key benefit: It allows applications to be easily distributed to the right person, at the right location, at the right time.

Software recently introduced by Automation Control Products (ACP, www.thinmanager.com) in Alpharetta, Ga., provides significant new mobile functionality. “Relevance software delivers itemized information content to selected individuals who have the right skillsets, are at a proximate location in the factory, and are available to perform the needed services,” says Matt Crandell, ACP’s president.

Mobile-device software has many wide-ranging applications in general factory and process environments. With safety systems, scheduling and priorities are handled by the system, not human supervisors who may be stressed by the real-time emergency. It’s a substantial shift in productivity and effectiveness.

Beyond the impact of mobile functionality in the factory, the impact on safety systems is enormous. This is not just another safety improvement; it represents a completely new paradigm in factory and process safety implementation. This is the future of process safety systems.



Mobile Devices on the Factory Floor – The Bottom Line

Industrial acceptance of mobile-based computing

By Matt Crandell, CEO, ACP

Mobile devices will take hold on the factory floor, just as they have taken hold in households all over the world. The fact is, tablet devices based on iOS and Android operating systems will outsell notebook and desktop PCs combined by the first quarter of 2015. Commercial accep-



tance of these devices will eventually drive them into the manufacturing space.

That being said, there is one significant requirement that “must be met” before tablets can be widely accepted on the factory floor. They must be managed to control access to applications based upon user skill set and current location. The mere implication that a user could override one or more interlocks from a mobile device at a remote location with no visibility to the process should disqualify any mobile computing solution.

Acceptable mobile computing requires that the mobile device management system resolve the users whereabouts and deliver content specific to the users skill set and current location interactively while moving from place to place within the plant environment. The user

Video: See a demonstration of ThinManager Relevance



Watch the video to learn how location-based software can deliver applications and content to the right person, where and when they need them.

Watch video



ACP ThinManager introduces

RELEVANCE



It's all about your location.
The mobile platform for the factory of the future.

thinmanager.com



Continued Mobile Devices on the Factory Floor – The Bottom Line



gets only what they need, where and when they need it.

The Relevance(TM) mobile computing platform is the first to offer application independent, user and location specific content delivery for the Windows remote desktop environment. In addition, with so much currently invested in plant floor computing, it goes without saying that initial implementations of

mobile computing on the factory floor must work in conjunction with existing tethered solutions built using workstations, terminal servers and thin clients. Relevance(TM) is designed to work with your existing computing infrastructure allowing you to transition or duplicate content to mobile device users without affecting critical operations.

