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Supporting Enterprise Networks and Operating Environments

SUPPORT

APRIL 2011

VOLUME 3, NUMBER 2

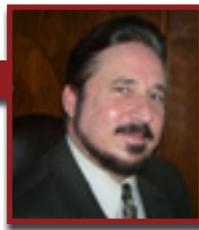
WHAT IF IT HAPPENS HERE?

The March 2011 Japan Earthquake



**Enterprise Architecture:
Not Just another
Management Fad**

Itsuchi, Japan



Message from the President

Is Having Fewer Wireless Options Really Better?

AT&T's CEO recently told the Wall Street Journal that the wireless industry is "intensely competitive" and would remain so after his company's proposed \$39 billion acquisition of T-Mobile. Do you think it is? NaSPA believes AT&T should justify this assertion before federal regulators approve their deal. Experts like the [Technology Law Group](#) (TLG) in Washington DC, (longtime AT&T watchdogs and past *Technical Support Magazine* contributors) agree. In fact, it's common for U.S. regulators to impose significant conditions on dominant corporations who propose multibillion-dollar mergers. In this case such conditions must center on consumer protection, as well as other axioms such as Net Neutrality in order to assure consumers do not lose a free and open Internet, or pay more for wireless voice and data services. Anyone who has ever taken a basic economics course knows that fewer players in an industry leads to higher prices and more limited choice, without government oversight. A union of AT&T and T-Mobile would shrink the number of national mobile operators (AT&T, Verizon, Sprint and T-Mobile) from four to three.

"If history is any indication, this merger will likely be approved with significant conditions involving spectrum, Net Neutrality and wireless broadband expansion commitments" says Craig Dingwall, of TLG. NaSPA agrees. In fact, we hope regulators have the backbone to walk away from any deal that does not protect the interests of the majority of Americans. It's happened before. The last time was more than a decade ago when the U.S. Department of Justice blocked the \$129 billion merger of WorldCom and Sprint.

If this merger is such a great idea for American consumers and businesses, AT&T should be prepared to explain what it can do for America in exchange for serving the clear majority of all wireless users nationwide. To this observer, the trend points toward the negative for the consumer. Rather than trying to justify the merger with real benefits for the country, AT&T instead appears to be using its powerful lobby in an attempt to garner a legislated monopoly. At the time of this writing the House of Representatives is voting on a resolution that would repeal Federal Communications Commission's Internet rules designed to prevent broadband providers from discriminating on their networks by blocking lawful applications and content. There's a good chance it will pass in the House where the resolution enjoys near unanimous support from Republican lawmakers who control that chamber. The Senate has introduced a similar measure. But even if both chambers of Congress (the 100 seat US Senate is led by 51 Democrats) pass the resolution, the White House has threatened to veto the measure.

In a Statement of Administration Policy released at the time of this writing, the Executive Office of the President said the House's passage of H.J. Res. 37 "would undermine a fundamental part of the Nation's Internet and innovative strategy – an enforceable and effective policy for keeping the Internet free and open." It went on to say "If the President is presented with a Resolution of Disapproval that would not safeguard the free and open Internet, his senior advisors would recommend that he veto the Resolution."

NaSPA hopes that regulators follow the President's lead. If AT&T wants to bring back its monopoly, it should justify to the American people why that is such a great idea. Read more on this topic in this edition of *Technical Support* and watch for further developments in future editions.

Leo A. Wrobel

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technical
Supporting Enterprise Networks and Operating Environments
SUPPORT

NaSPA

April 2011
Volume 3, Number 2

Published exclusively for NaSPA, Inc.
Network and Systems Professionals Association

www.NaSPA.com

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Enterprise Architecture: Not Just another Management Fad

By Leon A. Kappelman

Despite awareness of the concept and its importance, there's no standard definition of enterprise architecture (EA) and considerable ambiguity in the use of the term. The difficulty is in part a function of the subject matter, what's probably one of humankind's most complicated creations: the enterprise itself. Our professional biases and historically stovepiped world exacerbate the situation.

Alignment, rapid introduction, complexity reduction, speed, and agility are design objectives that answer the question, "What do we want it to look like?" So EA is perhaps at least part of the answer to the question, "How do we accomplish it?" Federal Reserve Chairman Ben Bernanke called it "intangible capital" in a speech at MIT, where he said:

In the case of information and communication technologies, new economic research suggests that the investments in associated intangible capital—figuring out what to do with the computer once it's out of the box—are quite important indeed. In my view, important investments in intangible capital remain to be made, as much still remains to be learned about how to harness these technologies most effectively.

The fact is, "EA" is not the best name for the subject matter, but it is the best name we have today. Most current use of the term EA is focused primarily on what might be called IT architecture, which is concerned with the logical and physical descriptions of data, applications, and hardware assets. Expanding on that, consider John Zachman's contention that "the business strategy and its linkage to information systems strategy ... ultimately manifest themselves in architectural expression."

You can add the definition used by the U.S. General Accountability Office (GAO) that an EA provides "a clear and comprehensive picture of an entity, whether an organization or a functional or mission area that cuts across more than one organization." The GAO adds that it "is a blueprint for organizational change defined in models that describe (in both business and technology terms) how the entity operates today and how it intends to operate in the future; it also includes a plan for transitioning to this future state."

Before you concatenate all that into your EA definition, reflect on the notion that EA is all about creating and using a shared "language" (of words, graphics, and other depictions) to discuss and document every important aspect of the enterprise. Without such a communication capability, optimal alignment,

agility, speed, and simplicity aren't possible, nor can we hope to realize the potentialities of strategic planning, performance measurement, or process reengineering, or ensure success with security, privacy, governance, project management, innovation, and managing transformation and change.

If the people in the enterprise can't adequately communicate to align their thinking, there's limited likelihood that the more tangible "things" managed by those people (such as software, data, products, people, channels, monies, and so on) will be aligned with the more intangible things such as objectives, motivations, or government regulations.

Carpe Diem (Seize the Day)

EA is a new way of thinking about the enterprise, and a new way of managing it. There's a parallel to the way scientific management, as described by Frederick Winslow Taylor, was a key part of the intellectual or intangible capital that led to enormous productivity gains in the Industrial Age. EA has the potential to contribute similarly to the Information Age. The

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"productivity paradox" remains alive and well, and we still have much to learn about "what to do with the computer once it's out of the box." Who can afford not to seize the opportunity to better use all the knowledge about the enterprise?

EA is more a process than a project; more a journey than a task. EA is an ongoing innovation and transformation initiative. It's about change in processes, procedures, and language. But perhaps more important, it's about a change in the culture, as well as the hearts and minds in the enterprise. EA is about big-picture thinking, but it's also about the little picture (in the context of the whole). It's about achieving balance in optimizing the whole and the parts, and therefore about the alignment of the whole and the parts.

Too often, we optimize our subsystems to the detriment of the whole. Consider the U.S. health care system in which highly optimized and highly profitable subsystems of insurance, doctors, hospitals, pharmaceuticals, laboratories, and others, provide the most expensive, often the best, but by some measures the lowest quality patient care in the industrialized world. Support for this notion is abundantly available. Our enterprises are often just as dysfunctional.

Getting Started and Staying the Course

So how might you go about implementing an EA program in your enterprise? Start small and show early success. Try to identify EA initiatives of most value to the organization, and be opportunistic such as using EA to improve critical aspects of a new project or the outcome of a project currently in the pipeline. Find one that's already in the kind of trouble EA can help with. Before getting started, develop some understanding and agreement among key players about language, frameworks, models, and methods to be used. Remember, communication is key.

Engaged, clear, decisive, and continuing leadership from the highest executive levels of the enterprise is critical for fostering EA progress and paybacks. Determine the goals, focus, scope, and priorities, and aim for completeness and comprehensiveness, but accept that there will be trade-offs with the practicality and pragmatism of achieving daily business objectives.

And eat your own cooking. To the IT folks, that means use EA to continuously improve systems development, security, operations, and user support to better serve enterprise needs and to communicate with your customers and stakeholders. IT has already been doing EA to some extent under names such as analysis, design, and documentation. Don't just talk the talk; walk the walk. Whatever your job in the enterprise, do this and set an example.

Embrace change and learning. Remember that it's a journey and a process. Monitor, evaluate, and continuously improve. Quantify the benefits, and be able to show how EA helped make things better, and communicate that, too. Regularly take a hard

look at cost and value, and keep making EA processes and products better, thereby improving the enterprise.

EA isn't easy or simple. It can't be outsourced any more than strategy can be outsourced. Although consultants and vendors can help, EA is about improving the ability of the people in your enterprise to communicate more quickly and effectively so they can manage and change the enterprise. EA is complicated and difficult work requiring courage, vision, and perseverance.

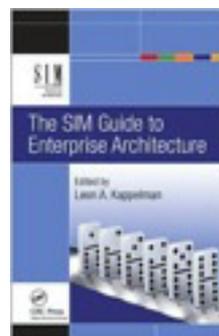
Just like everything else, it's about properly planning and managing an enterprise.

EA is a new way of life. There's no quick fix; no silver bullet. It will take time and determination, as well as vision, courage, and commitment. Don't underestimate the difficulty and complexity of architecting the enterprise. Don't get discouraged; EA is a revolution in thinking, a discipline, and a process.

Change of this magnitude takes time and perseverance. Set realistic expectations. Don't assume

anything. Make education and training a continuous process. Communicate and ensure you're communicating! Don't hesitate to ask, "What do you mean by that?" Use and reinforce new definitions, be they words or graphics, until they become part of the language and culture of the enterprise. Accept that all this is subject to change, too, so keep learning. There's much that remains to be discovered and invented, and many opportunities to create advantage and value. Celebrate your progress and successes, and learn from your mistakes. Enjoy the journey; you're transforming the world, one enterprise at a time.

NaSPA thanks Mr. Kappelman for his fine contribution.



This article was adopted from Leon Kappelman's Auerbach Book entitled "The SIM Guide to Enterprise Architecture" © 2010 Auerbach Publishers. Learn more about Leon's book by clicking on the image or [order now](#) using your NaSPA discount.

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The March 2011 Japan Earthquake: What if It Happens Here?

By Sharon M. Wrobel

If you live in California, earthquakes, wildfires, mudslides and even the possibility of a tsunami have resided from time to time somewhere in your thoughts. The recent events in Japan, however, have underscored these issues into visions from our worst nightmares.

We all know that on Friday, March 11, 2011, Japan was struck by the most powerful earthquake in its history generating a 30-foot tsunami that swept away entire villages. Modern technology being what it is today, the world was able to see and hear the event as it happened. Videos depicting the unfolding drama can be found on numerous news feeds as well as YouTube.

The USGS reported the earthquake to be 9.0 near the east coast of Honshu, Japan 231 miles northeast of Tokyo, Japan. *Japanese authorities, as reported by Reuters on Wednesday (March 23, 2011) mentioned that the current death toll has reached 9300 people. Meanwhile, Japanese police officials said that the overall death toll is expected to reach 18,000 people. Police spokesman of Miyagi, one of the areas most severely damaged by the tsunami, said the death toll in this region is expected to reach 15 thousand people.*

Can It Happen to Me?

One of the most difficult tasks that face the recovery planner is calculating the odds that a disaster will strike. If you had this information you could make many critical decisions, such as where to locate a home or business, what type of materials to build it out of, whether escape or evacuation plans are needed, and how often on average you would need them. What a lot of people do not realize is that just as an insurance company scrutinizes actuarial tables before underwriting a policy, the same kinds of tools are available to the contingency planner if one knows where to look. Even then accidents can happen... quite literally. Some disasters such as earthquakes and tsunamis happen so infrequently that not a lot of data is available. Yet just such an event could happen in Seattle, for example. Or consider the possibility of an earthquake in California. It is a virtual certainty that one of these will happen in a lifetime. Its been so long in fact

since one occurred that it is often only guess work that is used to determine how today's modern infrastructure would stand up to it. Sure, buildings are built a lot better today, but there are also a lot more people. Factors like these can change the whole equation for today's contingency planner studying yesterday's events. So where can you get much needed real time information? For starters, you can consider sources like the following:

- ▼ The National Oceanic and Atmospheric Administration (NOAA) <http://www.noaa.gov/> for one, forwards valuable information regarding climate changes on to the general public.
- ▼ On a global scale there are the Emergency Disasters Data Base (EM-DAT) <http://em-dat.net/> and
- ▼ Last but not least one of my favorites: The Pacific Disaster Center (PDC). <http://www.pdc.org/> in Kihei, on the Hawaiian island of Maui.

It's been a couple of years but you may remember the PDC from our January 2008 NaSPA article entitled "Improving National Development and Economic Welfare through Disaster Management, Surveillance and Early Warning Systems."

The PDC offers a hard-core scientific approach that allows contingency planners to strengthen their case for presentation to policy makers, thereby enabling those who set policy to proactively manage and sometimes even prevent catastrophic disasters. In this regard, the PDC watches, learns, analyzes and then models various disaster scenarios bringing awareness into diverse communities. As a quasi-federal agency, they have a LOT of free information... in fact, TERRABYTES of it, all in a format that allows one to manipulate risk data and draw some fast and accurate conclusions. In the words of the PDC:

"The ability of the Pacific Disaster Center (PDC) to quickly respond to emergency management requests for strategic maps, mitigation tools, online data and information is a prime example of how our effective knowledge sharing, applied information research

With the right information and tools a recovery planner can make critical decisions to mitigate a potential disaster.

and analysis capabilities help support today's diverse global community."

Data on natural disasters from tsunamis, to earthquakes, to hurricanes to demographic data all under one room and a lot of it is free.

Ever wonder what the effect would be of an earthquake, tsunami, volcano or other event on the assets of your organization? Do you know what an earthquake can do to an undersea telephone cable? (Remember where your call centers are located these days – India!) Where do the PEOPLE live? Where are the airports, railroads and harbors? How often do natural disasters strike all of these modes of transportation? The PDC can give you the best possible picture, *before* you move a business, build a factory or invest in a specific locale which could be disaster prone. First the PDC has access to literally hundreds of years worth of historical data. More importantly, they provide an intuitive user-driven interface to that data that allows the user to input problems and draw conclusions based on hard data. That part is largely free. If consulting support is required however, the modeling team of the PDC can actually recreate disaster scenarios so that one can actually "see" the disaster as it unfolds demonstrating the full magnitude of the ultimate damage.

The Pacific Disaster Center also supports communities and First Responders through:

- ▼ Support of humanitarian organizations at every level
- ▼ Response Teams that go out into the field
- ▼ Mock tabletop disaster exercises
- ▼ Tsunami Awareness
- ▼ First Alert Procedures
- ▼ Advanced Computer modeling and Probability Analysis

Although the focus of the PDC rests firmly on preserving human life and economic livelihood through preparation, education and revitalization, the PDC also reaches out to many nations worldwide. PDC works along side public officials in public and private sectors as well as with other experts worldwide in determining infrastructure vulnerabilities, conducting planning workshops, and in providing support. Mock tabletop exercises, for example, and annual disaster drills help communities to work together by being freshly prepared to spring into action when disaster does strike.

Summary

How about something right now for NaSPA members for FREE.

Download the PDC iPhone / Ipad Application

Download your copy here: http://www.pdc.org/PDCNews-WebArticles/2010/iTunes/disaster_alert.htm.

This application allows you to have disaster alerts delivered directly to your iPhone or iPad (Android version coming soon) This application was featured recently in USA Today, <http://www.usatoday.com/tech/news/2011-03-17-disaster-apps.htm> complete with a quote from a Hawaiian resident. It seems that he received notice of the Tsunami coming (as a result of the Japan quake) 30 minutes before the mainstream media and responders. This allowed him to fill his gas tank before the rush

and panic was on! In addition to this little morsel, check out the PDC's Vulnerabilities Atlas – also for free:

Visit <http://www.pdc.org/DRJ>. We set up this link sometime back for a major trade publication, but the PDC allowed us to keep it up for NaSPA members and others. The level of detail and information here is astounding and best of all, it's free.

Disaster. Can it happen to you? Sure. When? We don't know. What we do know is that there is a lot of information out there to keep you apprised of current situations. It is up to you to prepare. In the words of President Dwight David Eisenhower, "*In preparing for battle I have always found that plans are useless, but planning is indispensable.*"



Sharon M. (Ford) Wrobel conducted extensive publishing and regulatory research for her former employer (a nationwide telephone company), a function she continues today as vice president of business development for [b4Ci, Inc.](#) Sharon was a major content contributor to Leo's book *Business Resumption Planning, Second Edition* (Auerback Publications, 2008), and coauthored his latest book, *Disaster Recovery for Communications and Critical Infrastructure* (Artech House Books, publishing in 2009). She has also published numerous trade articles for various magazines. She is an active member of the Community Emergency Response Team. She can be reached at sharon@b4ci.com.

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Lessons Learned with Client Virtualization: Plan, Plan, Plan

By Nathan Coutinho

IT professionals are the ultimate multitaskers – balancing data center priorities, equipment issues and end user needs while making sure that everything and everyone is perfectly synced and functioning smoothly. Let’s not forget to mention that every day we find new, “must have” tools and applications for IT to support.

To help ease potential to-do list overload, organizations are turning to client virtualization – and its subsets presentation, application and desktop virtualization – which offers IT control over the client infrastructure while providing end users with the quality computing experience they need and want in the office or on the road. Client virtualization can eliminate IT staffs’ pain points by reducing costs, improving security and improving the ability to quickly deploy new applications to users.

In September 2010, CDW surveyed 200 IT managers at medium and large businesses to understand what is driving client virtualization, how it is being used in data centers, and to identify the key roadblocks to success. In addition, we asked how businesses are monitoring their return on investment (ROI)

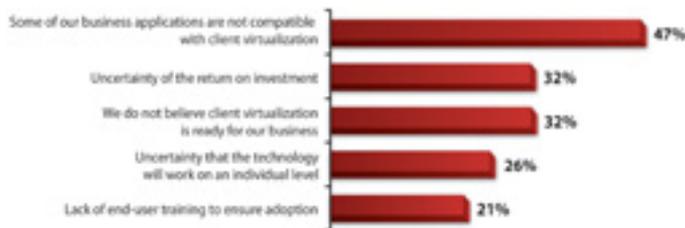


Diagram 1. Barriers to Client Virtualization Implementation

from client virtualization.

The Client Virtualization Straw Poll report found that 90 percent of businesses are considering or implementing at least one form of client virtualization, but many organizations are underestimating the deployment complexity of client virtualization. Of those considering or implementing it, 97 percent noted that they experienced challenges with implementation, citing difficulties with ensuring the technology will work on an individual level; estimating ROI; and training end users to adopt the technology.

With 59 percent of businesses reporting that their client virtualization goals are equally or more important than their server virtualization goals, the CDW Client Virtualization Straw Poll results point to a need for increased up-front analysis, education

and testing to enable businesses to take full advantage of client virtualization.

Driving Virtualization: Saving Budget

Most IT managers in medium and large businesses (90 percent) say they are considering or implementing at least one form of client virtualization. More than half (61 percent) say their top driver is cost reduction. Implemented and supported well, client virtualization can lower hardware investments and reduce software management costs significantly.

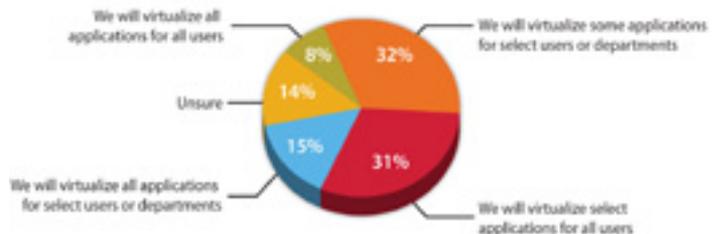


Diagram 2. Plans for Client Virtualization

Beyond cost reduction, IT managers say they are moving to client virtualization for the following reasons: easier software distribution management process (40 percent); increasing IT productivity (38 percent); and improving IT support, (37 percent).

If implemented properly, client virtualization can deliver the desired savings, especially when businesses factor in power and cooling savings that can result from the technology. In fact, businesses that have implemented and track ROI report significant savings. Respondents who have implemented client virtualization and track ROI report that they are saving slightly more than 20 percent of their total IT budget.

Eliminate IT staff’s pain by reducing costs, improving security and the ability to quickly deploy new applications to users by using Client Virtualization.

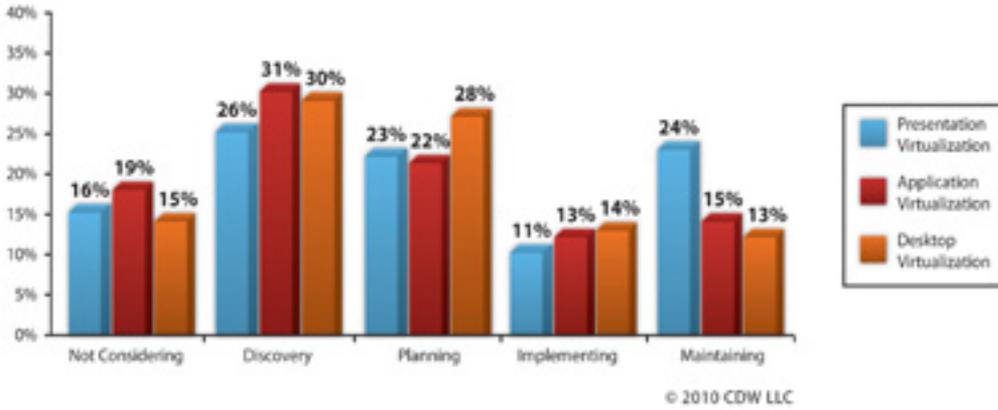


Diagram 3. Status of Virtualization within Organizations

Businesses Underestimate Complexity

Most businesses surveyed (82 percent) plan to deploy at least one form of client virtualization (presentation, application or desktop) within the next two years. Businesses are customizing client virtualization for their unique environment. As one size does not fit all, up-front analysis is key.

But, knowledge and staffing gaps pose significant concerns. Just 58 percent say that IT management actually understands how to implement client virtualization. Further, only 35 percent say their business is appropriately staffed and trained to implement it.

assign the right teams and resources to the project to manage the complexity of the implementation and ensure success. Find references from similar successful implementations, review the options and ensure each step is tested fully before deployment. Make sure to carefully plan implementation to sidestep any potential roadblocks.

Nathan Coutinho, is an Enterprise Server/Storage/Virtualization Solutions Manager, for CDW. Our sincere thanks to Nathan for his thoughtful contribution.

Because of these concerns, businesses report many implementation barriers with client virtualization: 46 percent had problems ensuring that the technology will work on an individual level; 41 percent had trouble estimating ROI; and 33 percent had challenges training end users, to ensure adoption.

As client virtualization touches every part of the data center, businesses may be underestimating the knowledge required for successful implementations. It is crucial to

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AT&T / T-Mobile: Putting Humpty Dumpty Back Together?

By Craig D. Dingwall

Will AT&T's proposed merger with T-Mobile improve service and solve a looming spectrum crunch or will it stifle competition by reducing the number of nationwide wireless providers and consolidating spectrum of two large carriers? That's the \$39 billion merger question now before federal and state regulators.

If approved, the proposed merger would create the nation's largest mobile carrier, with over 129 million subscribers using a GSM-based network with a likely transition to a Long Term Evolution (LTE) network. AT&T claims that this deal extends its LTE coverage plans to an additional 46.5 million Americans, covering 95 percent of the nation. Critics point out that this merger will stifle competition and further concentrate an already highly concentrated industry, which the FCC noted in its May 2010 Mobile Wireless Competition Report (Wireless Report) is not "effectively competitive." The FCC also found that the Herfindahl-Hirschman Index (HHI), which is used to determine mobile wireless service provider concentration, has increased by 697 (from 2151 to 2848) since from 2003 to 2008. Fewer competitors and more subscriber shares result in higher HHI index values, and DOJ antitrust merger scrutiny is typically applied to an increase in the HHI of 50 or greater when the post-merger HHI is above 1800.

The FCC's recent Wireless Report listed AT&T, Sprint Nextel, T-Mobile, and Verizon Wireless as the only four major nationwide facilities-based providers that all have mobile wireless networks that cover over 86 percent of the U.S. population. The next tier of facilities-based providers serve regional, multi-metro, or local wireless markets, and there are over one hundred small facilities-based providers throughout the country serving a single geographical area. Non-nationwide service providers typically rely on roaming agreements with nationwide facilities-based providers to extend their facilities-based network coverage.

It is too early to tell if regulators will approve this deal and, and if so, what conditions will be placed on it. But based on lessons learned from the failed Sprint-WorldCom merger, federal regulators do not look favorably on moving from three to two major facilities-based interexchange carriers. This merger

would reduce the number of large nationwide facilities-based carriers covering most of the country from four to three, but more importantly it would concentrate an overwhelming majority of the U.S. wireless market in just two large, nationwide facilities-based carriers.

If regulators approve this merger, it will likely involve several concessions. Giving up spectrum, promoting net neutrality, and expanding wireless broadband in rural and underserved areas consistent with the FCC's National Broadband Plan are all possible conditions.

Will this merger continue the long string of wireless industry consolidation? Will it expand the availability of more advanced wireless services and features, or will it stifle competition? Time will tell whether Humpty Dumpty will soon be together again and, if so, with what restraints to keep Humpty from falling off the wall.

We welcome your thoughts. Please feel free to comment at our interactive

blog at blog.tlgdc.com.

If you have further questions about this issue, or if we may be of assistance to you, please feel free to contact us.

NaSPA thanks TLG and Mr. Dingwall for this thoughtful contribution.

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How will this merger, if approved, affect the industry? Will it expand the availability of more advanced wireless services and features or, will it stifle competition?



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DS3 or Business Ethernet? Choices for Dedicated Bandwidth

By Michael Lemm

There are a variety of dedicated bandwidth solutions to choose from in a world inundated with business network systems. In fact, choosing a dedicated bandwidth solution is somewhat similar to a kid's first visit into a candy store, making a decision could be very complicated. For example, there are bonded T1 lines, DS3 bandwidth circuits, Metro-Ethernet, MPLS, SONET and a host of systems to choose from when it comes to dedicated bandwidth solutions.

There are many reasons why making a decision with dedicated bandwidth solutions can be a bit difficult and confusing for some people.

Foremost, if you truly do not understand the language in which a dedicated bandwidth is written, it could be like searching for a needle in haystack. There are a variety of bandwidth items to select from and the range in prices and performance doesn't make things any better. You must make a decision on the best system for your particular needs or situation; therefore, it's important to know what interests you the most (fits your network requirements based on the applications to be employed) as well as what you are willing to pay to satisfy your taste buds.

Making dedicated bandwidth decisions can be narrowed down to answering two very important questions.

1. One – exactly what network obligation does the dedicated bandwidth solution you have selected need to meet, and
2. Two – is the cost associated with that particular dedicated bandwidth solution financially pleasing.

After all is said and done, you must have a dedicated bandwidth solution that is capable of meeting all your needs.

Here is one thing you should take into consideration when it comes to choosing a dedicated bandwidth solution that meets your specific needs. An overwhelming percentage of today's rising businesses are narrowing down the items they are interested in to one or two of the things listed in the first paragraph – DS3 bandwidth circuits and Business Ethernet. There may be others that are capable of fitting the bill; but hands down, these are the two best fits for the majority of companies that are looking for a dedicated bandwidth solution to meet the everyday demands of their business.

The fact is that DS3 circuits and Business Ethernet bandwidths compare favorably. Which you choose for your particular application will most often be determined by which service offers the best pricing for your particular business location. Either tech-

nology is a good choice as long as you understand what each can do for you. Do your homework, compare pros and cons as they relate to your network requirements, and choose wisely.

Outside of the cost difference between DS3 bandwidth and Business Ethernet (Ethernet tends to be cheaper or at least very competitive), the speed varies a wide range from 45 mbps to 100 mbps to 1000 mbps (FastE to GigE). If you shop around you'll likely discover that DS3 line costs have dropped dramatically in today's market. Still, Ethernet pricing is attractive where it is available. Where it is not, build out costs may be prohibitive. In terms of reliability, they're similar because they're both dedicated bandwidth circuits.

The traditional high bandwidth network connection is a DS3 line, delivering up to 45 Mbps of connectivity. Today, most DS3 services are provisioned over fiber optic cables with a copper handoff at the demarcation point. In some cases, you can get DS3 brought in over coaxial copper or even wireless transport. There's plenty of flexibility available currently to deliver DS3 capacity with little restriction from the transport mechanism.

For application, a DS3 circuit works as a reliable backbone for large networks with substantial voice/data/video traffic needs. For example, organizations that need high bandwidth such as headquarters phone lines (PBX and/or VoIP), company Supply Chain Management (SCM) systems, high traffic web-sites, Hospital medical imaging and diagnostic systems, data/disaster recovery and backup networks, video conferencing facilities, multi-media or virtual design centers, high security networks, and ISP backbones. Where DS3 is not quite enough capacity, opting for the "next up" OC3 circuit (fiber optic bandwidth transmission) is an option.

An alternative to DS3 is Carrier Ethernet, especially Metro Ethernet in larger cities. Ethernet services offer standardized speeds of 10, 100 and 1000 Mbps to match the common LAN (Local Area Network) speeds. But most Ethernet providers also offer other increments in 1, 5 or 10 Mbps steps. A 50 Mbps Ethernet service provides similar bandwidth to DS3.

So how do you choose one service over another?

If you need the channelization of traditional TDM services for telephony or other applications, DS3 already meets this standard. It is easily multiplexed and de-multiplexed to interface with T1 lines on the low end to SONET fiber optic services (e.g. OCx) on the high end. On the other hand, if your network

interests are extending your LAN or an already converged voice and data network, Metro or Carrier Ethernet is the logical connection. Make sure to understand your existing network configuration to enable a smart decision here. Otherwise, you risk potential frustration and an "apples and oranges" scenario.

If you have any concern for interface issues don't worry. You can opt for a Managed Router Service which will take care of any such issues. Most networking applications are now packet based and more easily interfaced to Ethernet WAN services than legacy Telecom standards. But since the interface circuitry is generally an off the shelf router module, it may not matter all that much. If you go with a managed router, the service provider will take care of providing the proper customer premises equipment and monitoring the line and interfaces for proper operation. No matter whether you choose DS3 or Ethernet. In some cases, you may also get the vendor to provide the router at no cost... whether on site or remote (managed). Be sure to ask if this accommodation may be extended to you. It won't in every case, but it's worth asking.

Don't overlook availability of Fractional DS3 and Burstable DS3 either. Fractional DS3 services are available that offer less than 45 Mbps for a lower monthly lease cost. You can get fractional DS3 bandwidth at the speeds where T1 bonding becomes impractical (around 10 or 12 Mbps bandwidth depending on your intended application usage). You can also go the other direction with Burstable DS3. Which allows you to start at usually 45 mbps and increase your bandwidth as your needs grow. A Burstable DS3 is the ideal solution for businesses who seek ultra-fast connectivity for their Internet needs....and don't require full OC3 load capacity just yet but may in the future.

On the Ethernet side, with scalable Ethernet you can specify nearly any bandwidth from 1 Mbps up to 10 Gbps and often upgrade to higher levels with just a phone call to your service provider. The flexibility of bandwidth scaling offered with Ethernet is a major advantage to this transport option.

Be advised that an Ethernet connection is not available in every location. Normally this limitation is restricted to where the network providers have fiber already laid out in the neighborhood. You'll most often find major cities or urban areas to be "lit" while more rural locales are not. Where Business Ethernet isn't available, a DS3 or OC3 circuit is the best option for a company that needs more bandwidth to grow.

I hope this article was helpful and invite you to visit the resources below for more detailed information if you wish to learn more.

NaSPA thanks Michael for his thoughtful contribution.

Michael is an independent telecommunications consultant and owner of FreedomFire Communications, including DS3-Bandwidth.com and Business-VoIP-Solution.com. Michael also authors Broadband Nation where you're always welcome to drop in and catch up on the latest BroadBand news, tips, insights, and ramblings for the masses. Michael Lemm is an and Owner of FreedomFire Communications. His web site can be found at <http://ds3-bandwidth.com>. His public LinkedIn page also contains a wealth of information and contacts and can be found [HERE](http://www.linkedin.com/profile/view?id=507443&authType=name&authToken=Ps1Y&trk=mp_view_prf_t).



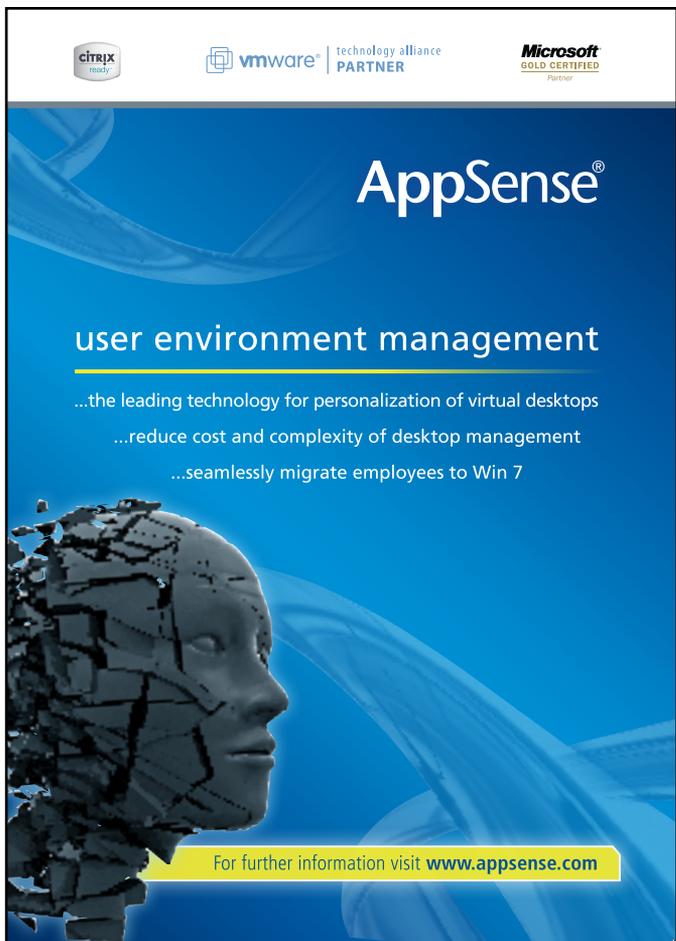
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Information Technology Applications in Lean Systems

By James William Martin

As a pioneer in Lean improvement methods, Jim Martin was among the first to suggest that truly successful Lean initiatives are those applied across every facet of an organization, not just on the shop floor. Building on this concept, Martin demonstrates that one of the most effective ways to implement operational improvements across an organization is to approach it through the resource that permeates every facet of a modern organization's information technology

Key Goals of a Lean System

The primary goal of a Lean System is an understanding of customer requirements, in effect, gathering the "voice of the customer" (VOC) relative to their needs and value expectations. Such an understanding of the VOC is essential to any improvement methodology including APM with scrum as well as Lean. In my book (more info at the end of this article) I discuss how value elements can be broken down into subcomponents of price and convenience, and how that convenience can be broken down further into the subcomponents of time, utility, or usefulness and relative importance. This article covers some of the highlights of my book.

A second goal of a Lean system is to translate customer needs and value expectations when designing new products or services or modifying current ones. To help in this work, there are sev-

eral common Lean tools and methods which can be employed by a design team to facilitate translation activities. First, product designs should be analyzed for their value content. Value content is evaluated relative to the VOC as well as the "voice of the business" (VOB). VOB includes internal organizational stakeholder needs and values. However, we want to ensure that the VOC has the higher priority and that the VOB does not contradict the VOC. Once the VOC and VOB have been analyzed to understand their required value content, this information is used to directly build value into a new product or service. If a product or service currently exists, then its design should be analyzed to determine the percentage of value-adding (VA) content. For example, in an existing service process, value can be identified and analyzed using the VOC to create a value stream map (VSM) of the process workflows. In contrast, in an evaluation of VA content of a product, a value analysis is used to determine the relationships between customer requirements and the features and functions of the product. Features and functions not valued by customers or required by internal stakeholders should be eliminated from a product's design if technically possible.

Performance measurements are used to measure system key attributes once product or service designs have been created or modified. Measurements include the percentage value content, specifications describing required product or service performance characteristics, unit cost, and overall cycle time. Design metrics help to measure and quantify how well customer requirements are being met in practice by a Lean IT team. It should also be noted that additional metrics help to measure how well a Lean IT team manages its project activities. In summary metrics are used to measure the effectiveness and efficiency of designing products and services as well as the management of a project's work activities. Once products and services have been created and their performance measured, the goal of an organization should be one of continuous improvement to squeeze out any remaining non-value-adding (NVA) work tasks for service processes, or NVA features and functions for products. This continuous improvement strategy will help to ensure that customer requirements are met using the simplest product and work process designs to reduce a Lean IT project's cost and cycle time.

A third major goal of a Lean system is to develop integrated networks of key stakeholders, which include customers, suppliers, and other groups. Integration facilitates the translation of customer and business requirements throughout an organization's supply chain. There are many ways to achieve supply-

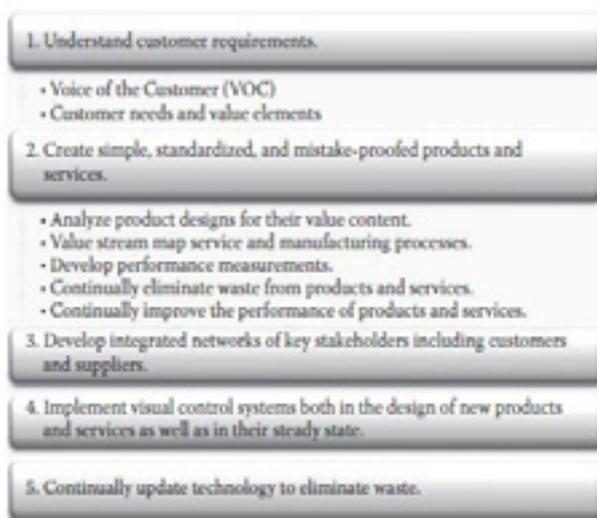
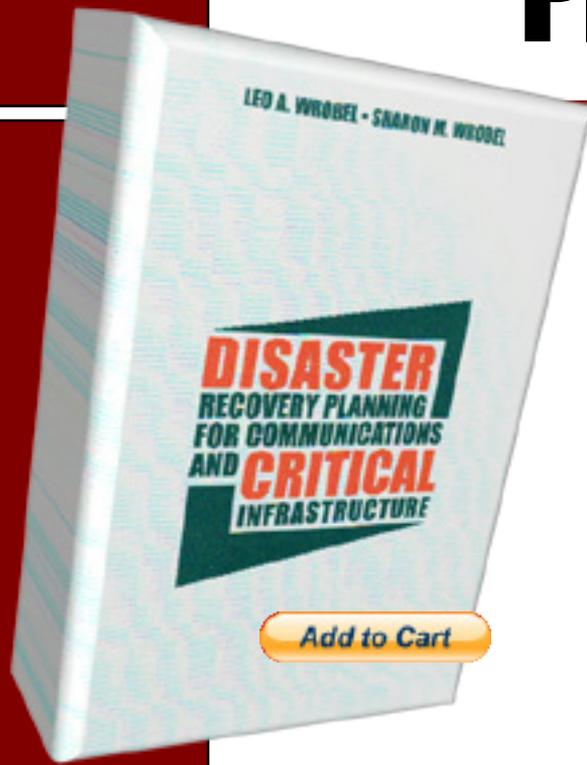


Diagram 1. Key goals of a Lean system.

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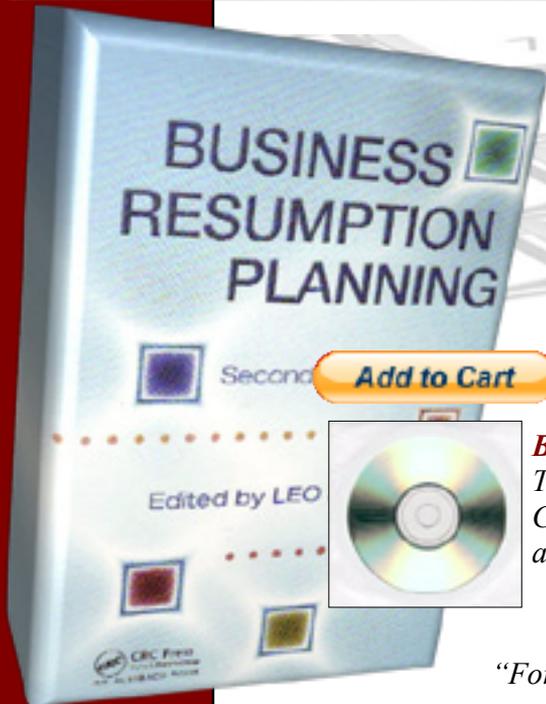


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chain integration. First, all supply-chain participants should embrace Lean principles and create systems to eliminate NVA work activities from these systems. Set in this context, but at a basic level, Lean supply chains should use common metrics to identify process waste, make continuous improvements across organizational boundaries, provide visibility of demand for products and services, optimally allocate or position supply-chain assets, and increase their utilization efficiencies (measure of leanness). This must be done while simultaneously meeting all customer and stakeholder requirements.

Ideally, the IT systems of the supply-chain participants will also be integrated to provide visibility to supply-chain demand and capacity at all levels and in real-time. In addition, the collocation of supply-chain participants is important to minimize travel distance and to facilitate communication. Finally, contractual relationships should reflect participant cooperation. These are several integrative characteristics of a Lean supply chain.

The deployment of visual control systems is a fourth major goal of Lean systems. Visual systems can be used to monitor and manage the day-to-day work activities within a process workflow. In a manufacturing system, in which materials and information move from one work operation to another, visual means that metrics related to the past, current, and projected status of materials and information can be seen at a glance. A common situation is that performance measurements are displayed for everyone to see on a daily or even minute-to-minute basis. Visual displays have different formats. First, some are manual, whereas others are highly automated. Manual systems include using poster boards located within production areas to show production status or marking off floor space to identify where materials should be placed to be near their points of usage. Other common visual controls include using lights and warning buzzers to signal abnormal production conditions.

The goal of a visual control system is to quickly alert people to changes of process status. In highly automated systems, visualization is displayed using IT systems. An advantage of using this approach is that the IT system displays up-to-date information regarding the status of a product system. This information may also be gathered from geographically dispersed and disparate IT sources. In other words, all supply-chain participants will be able to easily see the demand on their portion of the system, available capacity, and the status of relevant work activities. Common examples include call centers that display operational metrics for facilities across the world, and airline and other transportation companies that identify asset status using radio frequency tagging or other IT platforms.

The fifth goal of a Lean system is to continually reduce waste. Continuous improvement depends on many supporting elements. At a basic level, improvement implies that effective process measurements exist and that an organizational infrastructure also exists to support and reward people for improving their products, services, and work processes. It should be noted that the activities associated with the management of IT projects within Lean systems also comprise a work process. To support waste reduction, people must be trained in the use of process improvement tools and methods such as Lean, Six Sigma, and APM with scrum, as well as key IT tools, methods, and concepts.

Seven Forms of Waste

Lean systems are deployed to increase the percentage of VA work activities within a process by reducing the seven common types or forms of process waste shown in Figure 2 below. These seven forms of process waste have analogues to the creation of products and services. The first type of process waste is the overproduction of work. If customer requirements should change, then producing work in advance of actual customer demand may result in wasted materials and labor. The impact of this type of waste can be seen as longer process cycle times and higher costs. In a Lean IT team, an example of overproduction would include producing software code in anticipation of customer needs or known requirements. A complicating impact of overproduction would be to over-utilize available resources for the creation of products or services in which demand does not occur. Overproduction has a significant impact on production operations because systems have limited capacity.

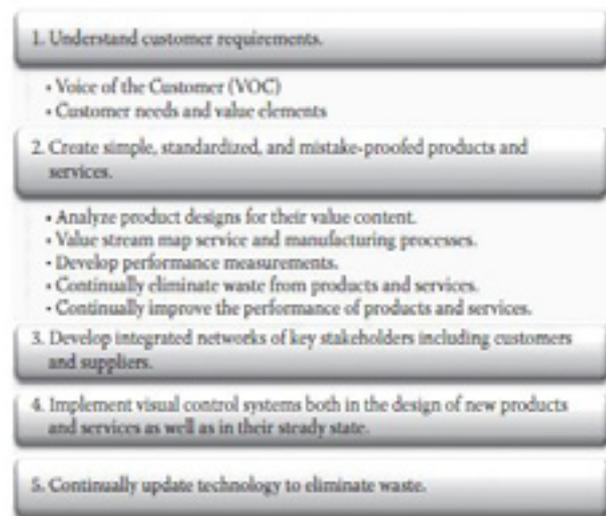


Diagram 2. Seven major forms of waste.

It should however be noted that a relevant factor contributing to overproduction is the ability to quickly set up and move from one type of work activity or job to another. In other words, organizations are often forced by economic factors, related to limited capacity or high setup costs, to overproduce. This situation is more severe in some industries. Lean practitioners attempt to minimize or eliminate overproduction by matching available capacity to actual demand. The goal is to do work only when it is required and without overproducing. We will discuss this operational strategy later in this chapter relative to APM with scrum.

Waiting is a second form of process waste. When people wait for materials or information to do work, or if equipment is idle, process time is lost, and cycle time and production costs increase. There are many causes of waiting for materials, information, tools, equipment, or other resources. One major negative impact caused by waiting includes delays in moving production to downstream work operations. Relative to a project team, waiting waste occurs when team members are idle because they do not have the resources they need to start or finish their work.

Transportation waste occurs when information or materials are moved through several unnecessary intermediaries. Unnecessarily moving materials through a service system directly increases its cycle time and cost. Also, in highly automated systems, the impact may be exacerbated if unnecessary work operations are performed. Examples include doing a work task more than once due to rework or scrap, obtaining data extracts and analysis that are not needed, creating nonessential reports, or other situations where busy professionals are required to unnecessarily transfer materials or information between one or more work operations.

In contrast, information should be moved directly to where it is needed and not routed through several intermediate locations. An example would be eliminating several unnecessary management reviews of a project's work objects. In a project management sense, transportation waste occurs when team members must travel to see one another, or people and information are unnecessarily moved from one location to another. In summary, whenever unnecessary work, inspection, or storage locations are added to a process, transportation waste is created.

Inventory waste occurs when a work object not immediately needed by a customer has been produced. In this sense, it is also related to overproduction when materials or information are excess and cannot be used until the future. An example would be software code or other system functionality built in advance of customer or business needs. The risk in creating inventory is that customer requirements may change or the work may become damaged or lost. Inventory waste varies by industry with one of the most extreme situations being perishable items, such as food, that must be carefully stored otherwise they will rapidly deteriorate. However, information within a service system also has a limited shelf life. For example, if management reports are created but not used, then their value rapidly decreases from its initial level.

The best way to prevent inventory buildup is to carefully match demand to supply. However, this is not an easy task. It also becomes more difficult in systems that rely on forecasting models to estimate customer demand. As an example, it is common for a forecasting model to have an inherent percentage error between 5 percent to 25 percent or more of average unit demand. In a project management application, demand is directly related to various customer and stakeholder requirements and project schedule. Supply is represented by available resources, such as team members, support people, and equipment. A good strategy to match demand and supply is by assigning and balancing team resources using scrum sprints.

Unnecessary processing occurs as a result of several scenarios. First, unnecessary features and functions may be added to a product. This situation results in NVA work activities. The existence of unnecessary processing indicates that customer requirements have become disconnected from customer and key stakeholder needs and value expectations. Unnecessary process-

ing increases the cycle time and cost of design and production processes when it occurs. Also, process complexity is increased. This may compound the problem by increasing the number of mistakes made during the production of products or services.

In a project management sense, any work activities not related to a project's activity backlog will result in unnecessary processing. Also, any requirements added to an activity backlog that have not been specifically requested by customers or key stakeholders as being necessary to satisfy the VOC or VOB will result in unnecessary processing. Unnecessary motion occurs when a specific work activity is not done efficiently. This situation will cause higher process cycle times and cost. Processing defects may also be created, which further decreases operational efficiency. There are several possible causes for this type of waste and several operational impacts. The best way to avoid

unnecessary motion is to study work activities and their associated work tasks to determine the best way to do them day after day. This implies that each work task can be broken down into smaller and optimally sequenced work elements.

As part of this analysis, all the necessary work materials, information, tools, and training are provided to employees. This enables them to do their work in a way that minimizes physical effort and the variation of time caused by not using an optimum work method. In other words, unnecessary work will

exist at an individual work task level if an inordinate amount of time is spent looking for tools and information. It also is created when employees do not follow standard work procedures.

The seventh process waste is process defects. Defects are caused if work products do not meet customer requirements. When defects occur work must be redone (i.e., reworked) or thrown away (i.e., scrapped). The result is higher cycle time and production cost, as well as lower customer satisfaction. Defects occur for many reasons. These include poor communication of customer requirements as well as their translation into specifications. Additional reasons include measurement errors, poor workmanship, and problems with incoming materials. In fact, there is a long list of causes of process defects.

Lean Tenets

The development of a Lean system is based on three major tenets: the existence of relatively stable external customer demand; the application of simplification, standardization, and mistake-proofing activities to stabilize operational systems; and continuous process improvement (Figure 3). These tenets are also called the pillars of a Lean enterprise. Stable external demand implies that the flow of work, through a production system, is smooth and its variation is predictable. Smooth implies that material or information flowing through a system is sequenced as a fairly regular pattern. Predictable implies that an organization can estimate external demand and match its avail-

Lean practitioners attempt to minimize or eliminate overproduction by matching available capacity to actual demand.

Stable Demand	Operational Stability	Continuous Improvement
<ul style="list-style-type: none"> • Maintain flow of work • Work on what customers need • Produce only what is needed 	<ul style="list-style-type: none"> • Design to optimize customer value • Simplify product and service designs • Standardize work • Mistake-proof work operations • Integrate key stakeholders including customers and suppliers • Use visual controls • Measure performance 	<ul style="list-style-type: none"> • Develop high performance work teams • Train team members • Reward and recognize team members • Identify performance gaps and deploy projects to improve performance

Diagram 3. Lean tenets

able capacity to demand regardless of its growth or decline, its seasonality, and its natural random variation.

For example, in a stable production system such as automobile manufacturing, the magnitude of stable variation may be less than 10 percent of the average unit demand between each equivalent time period. Ideally, if the operational components of a system are properly matched to expected external demand patterns, then the work will be produced when, where, and in the quantity needed.

A direct analogue to this concept is a scrum sprint. A sprint is designed to produce discrete levels of a system's features and functions, based directly on customer requirements. This strategy helps to prevent the overproduction of work. For example, recall that at the end of a scrum sprint, customers and key stakeholders review recently created product features and functions. This feedback mechanism matches supply (team resources) to demand (VOC and VOB requirements).

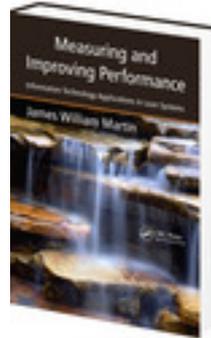
Operational stability is developed through the many programs and improvement activities designed to ensure day-to-day work activities are efficiently performed. An important basis of operational stability is the effective design of products and services. This implies an alignment of customer and stakeholder requirements and their accurate translation into the specifications and design of products and services. This will tend to ensure higher value content using simple, standardized, and mistake-proofed designs. The efficient design of products and their associated production processes is a central reason for higher operational stability since simple and standardized designs will be easier to produce.

Also, the application of mistake-proofing strategies will tend to increase operational stability since defects will be eliminated. For example, software algorithms should also be designed simply, using standardized coding, and have mistake-proofing strategies applied.

The third Lean tenet is that processes should be continually improved over time to increase the percentage of their value content. Continuous improvement activities depend on several factors. These include the development of high performance work teams; training team members to use appropriate tools and methods; and the creation of reward and recognition systems, which help align team members and their work activities with

organizational goals and objectives. In summary, continuous improvement facilitates the identification of performance gaps and the deployment of project teams to improve product and service performance.

NaSPA thanks Mr. Martin for his insightful contribution.



This article was adopted from James William Martin's Auerbach Book entitled "Measuring and Improving Performance: Information Technology Applications in Lean Systems" © Auerbach Publishers. Created to provide Lean and Six Sigma practitioners with a clear understanding of the important concepts related to the creation and modification of software to support process improvement activities across Lean systems, this reference book details how to apply Lean principles to IT systems on a global scale, explains how to design IT systems capable of meeting evolving customer needs and expectations, covers several project management methods including agile project management (APM), agile unified process (AUP), SCRUM, extreme programming (EP), and identifies the operational

issues that can help project execution and those that can hinder it. Learn more about Mr. Martin's book by clicking on the image or [order now](#) using your NaSPA discount.

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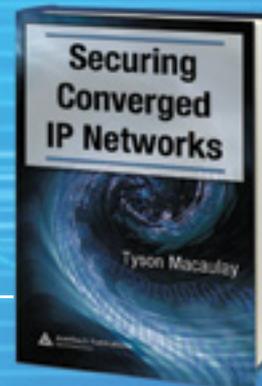
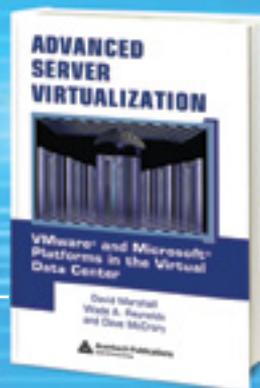
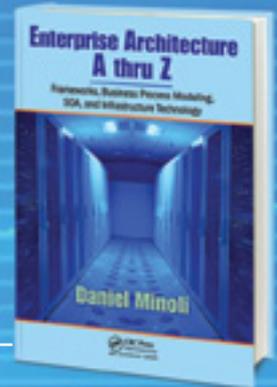
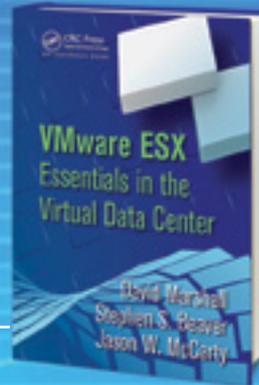
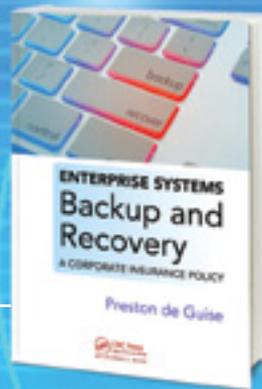
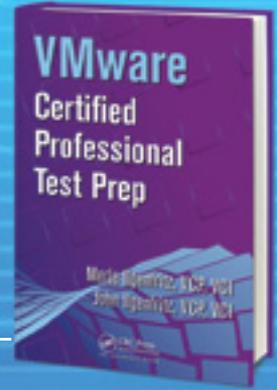
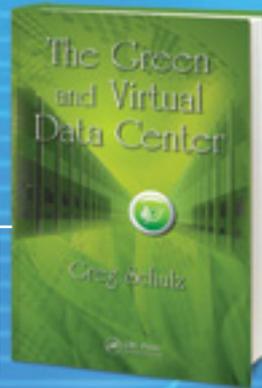
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