EXPANDING

YOUR ENTERPRISE

INTO THE

VIRTUAL WORLD

FOR REAL RESULTS

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Collaboration in the virtual world has been a major topic of discussion in the business world for the past few years. The Telework Research Network found that the number of virtual workers has increased 61% since 2005. The United States alone has at least 2.9 million full time virtual workers.

The proliferation of commercially viable digital communications and administration technology allows companies to prioritize a worker's skill over his location. Though opinions are mixed about the utility of the virtual team, its viability is not in question. Executives are making decisions seriously considering the virtual team as a practical solution, whether opting away from it as in the case of Yahoo CEO Marissa Meyer or fully embracing it as in the case of Clevertech and Basecamp.

Yahoo CEO
Marissa Meyer

Top graduate schools now offer courses in managing virtual teams, as in the case of INSEAD and its five day course Managing Global Virtual Teams. Here many of the interesting questions about virtual collaboration are tackled, from handling different time zones to overcoming issues of trust due to proximity and the variation between cultures. What seems to be common ground between all businesspeople, however, is the fact that the virtual world has the potential for real results, and any business looking to expand in the modern landscape must understand it. Even if a business decides not to use the virtual labor force, it must deal with the competitors who are and analyze how it is working for them.

The viability of the virtual team has ushered in many new technologies that before may have served purely experimental purposes in the world of business. For instance, the need for Group Support Systems (GSS) has increased and grown into a mature industry of its own. Combining the study of human psychology and the interaction between individuals and technology, GSS is now an inroads to quantify the results of technology/task relationships between and between workers and the systems that allow for collaboration.

Organizations now have the benefit of conceptual models, case studies and personal testimonials when choosing a virtual structure. With increased capabilities, virtual structures have taken on more sophisticated layouts and development cycles. Expansion into the virtual world means learning vetted theory and learning how to properly apply it to a unique situation.

Progression in the virtual workspace has occurred alongside progression in the traditional workspace as well. In order to determine the proper application of the virtual, a business must assess the productivity of "competing" structures in real time. They can work in tandem and are not mutually exclusive to each other. In fact, many situations call for a hybrid structure with face to face and virtual components that build on each other to create a more efficient and productive overall system.

Getting real results out of a virtual system involves asking some very important questions. What is a virtual workforce? What systems serve as the infrastructure behind a successful virtual environment? What are its moving parts? Is it appropriate for the business situation at hand? Successful enterprises of the future will have a firm grasp on what these questions mean to the business itself as well as the wider business community.

YOUR ENTERPRISE ARCHITECTURE

Modern enterprise architecture is built on the marriage of technology (infrastructure) and task (labor). Human error, waste and defective processes must be consistently reduced in order for an organization to remain competitive. Project management and technology management overlap now more than ever, as the majority of bloat in time, labor and other resources is contained in the interaction between technology and task, assuming that each enterprise has optimized itself in these core disciplines as much as possible.

At the same time, companies must understand the need for a higher sophistication in tech and task. Business operations are becoming more complex as both ends of the enterprise architecture spectrum are opening into a global space. The technology that a company uses must be compatible with a myriad of industry standard programs and procedures. The tasks that an enterprise takes on must be streamlined for high efficiency and directed for a competitive level of performance.

The workers who are responsible for the processes and technology that an enterprise uses must be more sophisticated as well. For instance, enterprise workers must learn to work with people crossing language and cultural barriers. Interdepartmental communications are often required. Workers must not only understand traditional language structures, but industry lingo and language connotations as well.

Having a modern enterprise architecture means the holistic operation of a technology based business infrastructure manned with capable, agile workers who understand the needs of the architecture from the perspective of best serving the end user. This can be quite a difficult web to spin considering the elevated learning curve between infrastructure labor touchpoints. New perspectives are necessary, but so is a robust internal culture of sharing and collaborative learning that is cultivated across the virtual space.

Creating the appropriate philosophy before extending the enterprise into this relatively new territory greatly enhances the propensity of a successful enterprise infrastructure that is ongoing, continuously improving and agile enough to pivot with disruptive technologies. Contrary to popular belief, labor touchpoints with a wider global perspective and a shared view on progressive technology may actually infuse the synergy of the infrastructure with a tighter bond than the traditional face to face office structure.

This growth in enterprise philosophy towards a global revision usually requires a commitment to retraining workers and changes in process. It is also important to have the ability to properly analyze the enterprise from the inside out, continuously improving behaviors and the influences that are used to cultivate a stronger bond between technology and task.

In fulfilling these requirements, the savvy company will look to a virtual workforce for many reasons.

Technical expertise.
A workforce that is required to use the latest technologies in order to perform simple functions is much more likely to have mastered or have the capacity to master technologies on the leading edge of efficiency and performance.

Consistent monitoring.
A global workforce working through different time zones will have more consistent monitoring of its processes.

More widespread cultural immersion.
Companies that are expanding into the global marketplace are best served by a workforce wi th a global perspective.
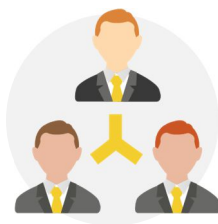
Proximity.
Real time changes in culture and technology that begin with a regional or local reach will be more quickly proliferated throughout the organization.

Understanding the capabilities and the abilities of your enterprise is essential to readjusting the architecture of your enterprise in an efficient and holistic way. These two terms are defined differently from each other for reasons that will become apparent as we move on.

The capabilities of your enterprise are the aspirational behaviors. These are processes and synergies that you expect to work towards; things that you need in order to compete and grow; and requirements that you have concerning the enterprise for the future.

The abilities of your enterprise are its current position and may serve as the baseline to accurately calculate the future capabilities of the enterprise. These are fully actionable pieces of knowledge and the proven strengths of your tech and labor forces. They can be quantified and repeated to a high level of efficiency. Increasing the efficiency of a certain enterprise ability may define a capability within an enterprise.

Within your enterprise, you may have labor touchpoints and technical hubs with abilities that are not immediately exploitable. The expanding nature of business requires a wider variety of abilities within your enterprise architecture, but it can be difficult to reorganize that architecture in a timely manner if the business is not used to being called upon from a certain perspective.

DEFINING THE CAPABILITY

One of the major problems slowing down many enterprises is the inability to quickly assess its abilities to reorganize processes and behaviors towards the new needs of the enterprise and its customers. The new perspectives that are required to more accurately assess and manipulate behaviors come from the virtual world.

Defining the capability is the first step in the process to assessment and reorganization. As a prime capability of the competitive enterprise, the virtual workforce must be considered a vitally important enterprise function and should be managed accordingly like any other enterprise capability. Despite the difficulties in organizing and managing a virtual workforce, it has the capacity to move the enterprise architecture forward more quickly than perhaps any other capability.

The enterprise capability is the beginning of the enterprise ability. Capabilities represent the requirements for a set of abilities that an organization aspires to have. Companies plan for their future abilities through the capabilities they cultivate in the present.

The four characteristics of - connectivity, purpose, technology and boundary - allow an organization to break barriers that normally limit a business to its immediate temporal, cultural and geographical surroundings.

Connectivity
The virtual team automatically breaks barriers of distance and culture using technology. There is a certain unity that can be created among variant groups, even with different aims, if the connectivity of a team is strong.

Purpose
The benefits of the virtual workforce may include factors such as space saving and faster development cycles.

Technology
Aside from the barriers broken through the digital space, technology also gives organizations a digital memory.

Boundary
Physical limitations are much less important because of technological advancements.

MODELING THE TECHNOLOGY - TASK INTERCHANGE

Traditional Perspectives Used to View Capabilities and Abilities

- **The Outside-Inward View** - This view is best if you are trying to figure out how to best arrive at a new capability and you have multiple points of view that could achieve that capability. These viewpoints come from the perspective of different abilities that share a common point of interest (the capability). For instance, your IT department head will see driving revenue through the increased efficiency of a virtual system much differently than your marketing or finance department heads. Usually, this model works best when you think a collaborative effort to come to the best decision.

- **The Inside-Outward View** - This view is utilized to consolidate more than one ability into a single capability. This model is the tactical version of the Outside – Inward View. It is very important to understand how different capabilities will view common abilities before attempting to use this model as a way to restructure any aspect of the enterprise architecture. The view is best used in order to incorporate socio-cultural forces alongside sociotechnical processes – an incredibly important issue to tackle when expanding your workforce globally through virtual touchpoints.

- **Multi – View of Capabilities and Abilities** – this model incorporates both models above into a single perspective that also combines strategic and tactical timelines. With this balanced view, and enterprise can navigate more complex structures of reorganizing abilities into capabilities as needed, ensuring a more holistic move forward through a company timeline. In many cases, this view is used at a theoretical level to virtually test new departmental configurations and labor forces before putting money into their actual applications.

UNDERSTANDING THE LABOR FORCE

Within enterprise departments, each group of people ideally has a shared mastery over a specific knowledge set relative to the function of that department. The enterprise also benefits from cultivating training towards and investing in a high level of shared experience within that specific knowledge set.

The annular form of the timeline, the lifecycle, also requires a function of continuous improvement to remain relevant to a productive enterprise architecture. Competition is always moving ahead the frequency of the lifecycle, which effectively shortens the timeline between productivity benchmarks in a company timeline.

The lifecycle is most commonly applied to product and service production. However, it may also be applied to any other process in the enterprise, whether administrative, operational, financial or otherwise. In most cases, holistic improvement over an entire enterprise involves increasing the efficiency of overlapping interdepartmental lifecycles with timing that is appropriately fast for the competitive marketplace.

Overlapping lifecycles are made more complex with the network process components that are subsets of each individual lifecycle. Each of these process components may have working interdependencies between team members of the same department or different departments. It is necessary to manage and navigate these relationships in a way that respects the time and skill sets of all members involved. The proper timing of the use of relevant information and the production of that information is an essential component of the adaptability and cost-effectiveness of the overall system.

A working enterprise team must have clarity between fundamentally different specific disciplines. Each discipline must be associated with a clearly defined responsibility that coincides with the abilities, skills, experience, objectives and knowledge of individuals and teams within the department. Going back to the original philosophy that should empower all of this, wider, more if used perspectives may actually bring the inefficiencies in a complex enterprise architecture to asynchronous position more efficiently than a single line perspective can accomplish. In short -

Contrary to popular belief, a virtual workforce that is undergirded by a strong virtual infrastructure may actually improve the ability of an enterprise to analyze and improve upon its current lifecycles across geographic, cultural and temporal boundaries.

This synchronous environment may also be achieved between organizations, even those with different hierarchical structures and enterprise titling systems. As such, it is extremely important to invoke the proper philosophy along with any technology, virtual or otherwise, that a company intends to invest in for the purposes of improving productivity and efficiency.

THE ENTERPRISE IS
THE SUM OF ITS CAPABILITIES

From the outside in, the average person may only perceive what he believes to be the proceedings and lifecycles of an organization. Using the Outside – Inward view is the perspective that outside stakeholders have in a business. The enterprise can be clearly seen from this vantage point, but details may be glory based upon the level of separation between internal operations and investment knowledge.

The concept of an enterprise as an operational entity forms a depiction of that enterprise as a constantly moving system that answers a need. The big picture view of outside investors must eventually be broken down into a single structure organized by its capabilities. Because capabilities represent the total potential of an enterprise as per our definition, this perspective gives up a holistic view that fully integrates all technologies, people, data and processes that eventually must coincide to create a successful business that delivers consistently to its customers and investors.

Consider the enterprise as a perspective of a system that identifies the capabilities and the results of the system. This helps the executive class understand how to govern the enterprise and control its operations. From a top-down viewpoint, separating an enterprise out by its capabilities gives each department the ability to focus on its own interests on a tactical basis. This is the Inside – Outward view discussed before. Looking towards the future, the more strategic Outside – Inward view of the overlap between capabilities and results is needed.

Differentiating capabilities by the separate functions that each capability is created for helps to align labor and technology with the work required to actualize those capabilities into abilities, considering the resources that are available to be allocated to each function. Separating capabilities by the expertise and proven track record allows a better understanding of the roles that individuals should play in relation to each other and within the space of the enterprise architecture.

The final vision is an operational view of an organization that is fully independent with a complete team of managers, executives and architects who are all working to benefit the same enterprise architecture.

Overall, the enterprise should be considered as a system that is a collection of capabilities, ideally functioning in tandem with each other to eventually realize the abilities that are expected of the system within a certain timeframe.

FULLY DEFINING THE ENTERPRISE

The enterprise can be defined as a collection of technology, processes, information and people that work towards the same goal of adding value to an end user.

The enterprise is made up of systems, which consist of concepts that drive forward the specific functions within the enterprise that help to develop and deliver the final products and services to the end user.

It is important to define an enterprise system from an external perspective, whether that perspective is the customer or the investor. Viewing an enterprise from this perspective delivers a much more results-oriented approach to enterprise capabilities, as the only thing the customer and investor knows is what those capabilities and the systems that are surrounding them are actually able to deliver on. The external view provides a limited view of work methodologies within an enterprise, but any observer can see from the outside the general perspective of what an enterprise does.

It is often helpful for executives to take this external view when deciding how to best allocate resources and methods of delivery. The straightforward questions that an external customer or investor would ask can help to direct the efforts of the executives in charge of process methodologies and system lifecycles. A few of the most important questions to ask often contain the following general concepts –

- What does the organization need in order to deliver on its promises?
- How does the organization provide the end user with added value?
- Why does the organization choose to provide the service or product that it does in the manner that it does?

From the outside, the answers to these questions can give a fairly accurate depiction of the enterprise, depending on the perspective of the observer. A customer will have a different viewpoint of what resources a company needs to add value from an investor.

Completing the Perspective

Viewing an enterprise from a holistic perspective also includes looking at that organization from the outside to the outside. From an outside place looking into the oncoming market, an observer would have a more complete view of the threats and opportunities that are affecting the enterprise.

The enterprise system is symbiotic with the systems of regulators, competitors, vendors, auditors, customers and suppliers all adding to (or taking away) from the reach and the opportunities afforded to the enterprise. Understanding the landscape here helps an enterprise reduce unwanted encounters with the aforementioned systems. In the working environment, the enterprise system is constantly exposed to fluctuating technologies and cultures. It is thus constantly in a dynamic state.

In order to continue consistent operations within such a state of being, the successful enterprise will need to constantly adjust its capabilities as well as its cadre of current abilities to the world around it. This helps to mitigate risk and system damage. Agility also helps attract new opportunities and new reach to the system.

The virtual workforce is one of the systems that creates agility within an enterprise, allowing it to reap the benefits mentioned immediately above while avoiding injury from its surrounding interfaces.

THE ENTERPRISE SYSTEM CAPABILITY

The virtual workforce is among the assets of the enterprise system that are known as "enterprise system resources." These resources produce benefits that add quantifiable value to the enterprise. The virtual workforce contains within it a number of other resources that have been individually proven to add value to the enterprise architecture, including business information, tech, workers and procedures.

Resources work with offerings and capabilities to serve the end user and sustain the enterprise. Alongside enterprise system resources, offerings and capabilities work together with collections of technology, information, people and processes to realize an ability with an added value for the end user and/or the enterprise.

Offerings are usually considered a subset of capabilities that are specifically geared towards adding value for the end user. Capabilities otherwise are realized for the enterprise's internal environment.

The enterprise system is a lifecycle. This lifecycle begins with a concept that is eventually developed into capabilities. These capabilities will eventually progress into offerings, which will finally realize the idea to add value. Each progression can be broken down into multiple, concurrent processes that must be sustained, improved and transformed in real time as it is prepared to either position itself for progression or retired as a mispositioned idea.

The enterprise system that is operating in the external working environment is the reason for new capabilities. The system has external needs, and in order to accomplish them, internal capabilities must be developed. Once a capability has been developed to the point that it positively affects the ability to do business, the elements that helped that capability form usually increase their association with the enterprise and the frequency with which they associate with it. In turn this drives a need for the organization to better understand its association with new technologies, information, people and activities. The relationship between resources and the enterprise should become more efficient, with those resources being more available in quantity and quality moving forward.

As a better relationship forms between, the enterprise should also develop further insights as to its own state and ability to create new capabilities and transform them into business processes. Keep in mind that an influx of new resources is only a positive occurrence if the enterprise builds upon its ability to intake and analyze these new resources. The need for insight is just as important as the need for new resources in determining the future value and efficiency of the enterprise. However, everything starts from the enterprise capability, which can be broken down into the following processes that often work together.

Governance – this process controls the resources of the enterprise

Organization – to direct the resources being governed into their best use

Integration – ensuring that enterprise resources work together in an optimal fashion

Compliance – verification that all enterprise resources are working within legal guidelines and internal guidelines created to optimize performance

Assurance – validating enterprise resources independent of each other with respect to compliance and control

Enterprise management – ensuring that all capabilities of the enterprise work together to accomplish the internal goals of the enterprise and sustain its existence as a system and as a part of its surrounding business ecosystem

As we move more specifically into our discussion of the virtual workforce as an enterprise capability, we must consistently keep in mind these processes to determine the validity of our underlying assumption. There are many other processes which have aged out of their utility within the landscape of competitive enterprises when compared to disruptive technologies, e.g. traditional phone lines versus business VoIP services.

There may come a time in which one or more of the processes above is better utilized through a different kind of capability, rendering the virtual workforce obsolete. As this text is written, however, all trends point to the virtual workforce as a resource that can be used to increase the value of an enterprise to its surrounding environment and to itself.

DEFINING THE VIRTUAL WORKFORCE

The virtual workforce can be considered a group of people who utilize virtual technology systems in varying degrees, working irregardless of relational, locational and temporal boundaries in order to accomplish an interdependent task. The decentralization of the workforce was made a necessity through the globalization of the work process and accelerated through the high speed of development in information and communication technologies.

The rate of people working from home has increased in the corporate world by 140 percent since 2005. Remote Year and AND CO found that 55 percent of workers worked fully remotely during business hours. An additional 43 percent stated that they worked remotely during some part of the workday while spending the rest of that time on site.

Corporations are leaning towards the virtual workforce as a means of cost savings as well. Businesses report expense reductions in overhead (insurance, rent) and inefficiency (time spent driving to work, late lunches) when using remote workers domestically and even less when contracting out to a virtual workforce across the world. For instance, Enola Labs reported that it would save 77 hours per day if it could eliminate commuting from day to day activities.

Dell reported that moving into a more virtual workforce saved the company $12 million per year in office space costs alone. Municipalities are also using virtual workforces, with 60 percent of tech jobs in Austin, Texas, going to workers outside of the state. San Francisco has 30 percent of its jobs going to people who work remotely outside of the city.

Many surveys have also reported that working off-site actually improves the efficiency of laborers in many industries. Surveys of the marketing industry, for example, show that 80% of creative marketing professionals would rather work virtually than on site. This high number of would be digital nomads also crosses over into the engineering space, with 76% of surveyed engineers saying that they would rather work remotely.

The trend towards the virtual workforce extends beyond the enterprise landscape into the world of startups as well. 56% of startups across the world report having outsourced to virtual workers, which greatly increases the need for these workers in many countries.

A New Type of Resource

The virtual workforce is being studied as a new type of resource with different boundaries from a traditional workforce. However, many terms have yet to be fully defined, such as the amount of distance between members of the virtual workforce for it to actually be defined as virtual. In most cases, it is the technology rather than the labor that defines the "virtualness" of a labor force, although that does not seem to be individually able to define a virtual workforce either. The stereotypical office has workers in cubicles right next to each other working towards an ideally similar goal through the computers in front of them rather than through direct connection. If an office space extends a few yards, the two cubicles at the farthest ends of that space are not normally defined as virtual.

The Structure of the Virtual Workforce

For the most part, if the majority of communications between a workforce are made outside of a centralized enterprise location, the workforce is considered virtual. However, there are many structural factors. The way that these factors are configured plays a huge part in how

Invoking artificial intelligence technologies, which tend to automatically virtualize a system, has the ability to help an enterprise more effectively reorganize its unexploited capabilities into the abilities that will allow a higher degree of capability in future tasks.

THE CHALLENGES OF VIRTUAL TEAMWORKING

The virtues of the virtual workforce have been proven over time. There are pitfalls that must be worked around in order to profit from the advantages of the setup.

A Pawar and Sharifi report of virtual vs collocated workforce success studied six distinct categories:
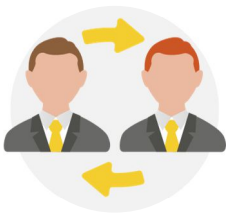
1. Nature of interaction

The virtual workforce shared information in a much more formal way. Informal business culture may be more prevalent in professional environments catering to Millennial workers, but it has not been proven that water cooler culture is a more efficient way to share information.

2. Utilization of resources

Each subgroup that is collaborating on tasks within a project need access to a similar infrastructure, both technical and non-technical, between locations. Physical teams automatically share these resources, and investing in a virtual team may require a resource balancing before full efficiency may be achieved.

3. Control and accountability

Workers who collaborate are held accountable to task leaders, then to a project coordinator. The coordinator has a limited ability to penalize workers, which an on site project manager has much more control over. On site managers have an enhanced ability to respond in real time to underwhelming performance, which may add to the efficiency of a collocated team.

4. Working environment

Virtual workforces have a more difficult time than collocated teams in sharing ideas. Researchers also found that workers on a collocated team outside of the central workspace are constrained with interacting with others and accessing information.

5. Cultural and educational background

It is more difficult to create a virtual workforce with people of similar language, culture, expertise, education and time orientation. Traditional teams are more likely to share a complementary culture, education and professional expertise.
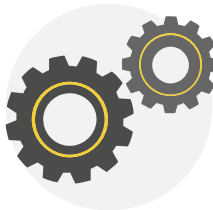
6. Activity

The nature of the virtual workforce is considered more informal than traditional teams; however, this may be attributed to the lack of a baseline when studying the virtual environment.

The Challenges of Managing a Virtual Workforce

The modern company requires expertise from a wider variety of domains than ever, thus the proliferation of the socialized knowledge base like the open source software project. The same narrative works in a more holistic perspective across the wider virtual space. The virtual workforce represents perhaps the highest potential for an enterprise to connect variant knowledge bases across the world.

Enterprise managers of a virtual workforce must establish a strong connection between departments that is based on information technology. As the virtual environment has expanded, operations management platforms have connected end users and enterprises in a widespread information network. If this cannot be accomplished, the effects found in a study by Branson, Clausen and Sung may reduce the efficiency of the virtual workforce when compared to the results of an otherwise similar face to face team.

In a sample of 30 traditional teams vs. 32 virtual workforces, Branson, Clausen and Sung found that face to face teams have fundamentally different functions from workforces that are administered over a computer medium. Their results showed face to face teams as more creative, innovative and encouraging. The virtual workforces tended towards negative reinforcement techniques, passive aggressive communication styles and power orientations that eventually led to poorer decisions than the face to face teams. Virtual teams are generally desribed as less satisfied. It is worthy to note that this experiment took place before many of the breakthroughs that occurred recently in virtual workforce administration. However, these results may still proliferate in a virtual workforce that is improperly managed.

The proliferation of big data creates a continuous growth in the volume of project information. This growth makes finding, accessing, organizing and holding onto the right information a harder task as projects move forward and as technology becomes more precise. One of the most difficult aspects of management across virtual boundaries is directing and controlling cross functional teams across overlapping projects. Managing these teams includes overcoming the potential cultural, functional and lingual conflicts. Variance in these aspects of business may provide a wider perspective, but it may also engender mistrust between members of the workforce.

Problems within a single team may also bleed over into other teams because of the complex nature of virtual project management. It is the job of management to define the path of escalation. There may be other management issues depending on the infrastructure of a particular enterprise and the ability of executives within the enterprise to contexualize the virtual space as an enterprise capacity.

THE ADVANTAGES OF VIRTUAL TEAMWORKING

The advantages of working with a virtual workforce far outweigh these potential problems, especially since there are vetted avenues for reducing the instance of these issues in the infrastructure.

Reducing/Eliminating Human Error in the Connectivity Process

The wider variance in the culture, language, education and process of a virtual workforce is not an inefficiency with the appropriate management and infrastructure. The differences in perspective and proximity to technology has the potential to reduce and completely eliminate human error in the connectivity process.

There is a necessary formality in the communications process of the virtual workforce. All associations are noted and individual conversations are recorded at least to the level of metadata. From the management perspective, this is an advantage over the traditional team structure, which Pawar and Sharifi studied as full of more informal associations. In the virtual world, the role of management shifts from one of operative oversight into one of administration and cultural grounding. Assuming that management can create a bonded culture and properly facilitate freestanding lines of communication that can be used as necessary, the more formal associations of the virtual workforce will usually lead to a higher efficiency in communications. Mulitple studies have found that it is possible to almost completely eliminate human error in connectivity in the virtual space because of the precision with which technology records metadata and data of conversation.

This does not mean that all human error is eliminated from the administration of the data that is collected. It is still very possible for a member of the virtual workforce to improperly identify or misappropriate the use of a piece of data. However, these issues can usually be more easily solved because of the precision of the metadata in communications technology.

Geographical Variance

The same difference in ideas and ideals that some researchers find to be disadvantageous have actually been a boon in many virtual workforces, including those connected to the corporate structures of some of the largest tech companies in the world (Facebook, Amazon, Apple, Uber, Viacom). Companies with a global reach can create an efficient proximity to important markets, cultures and processes through a centrally connected virtual workforce.

Although a virtual workforce is thought to be "free of location," certain workers in the force may actually be chosen for their geographical proximity to certain aspects of business that bolster an enterprise architecture. For example, an employee that is working within a virtual infrastruture who is physically located within the European Union may be able to get around many of the new regulations imposed by the GDPR.

Virtual workers in certain locations may also benefit a company through scouting efforts. An appropriately placed employee may be able to capture ground level footage of a land tract for a new headquarters. Yet another employee with geographical proximity to a targeted market might be charged to bring back a survey for marketing anaysis by the rest of the virtual group.

Ideological Variance

An enterprise architecture with variance in its process ideology has the potential to more closely maintain compliance with local regulations and remove cultural barriers from its marketing and communications efforts. The Internet ideally provides unlimited access to the global marketplace. A more practical perspective reveals that simple access is only the first step in creating a profitable enterprise in an expanded marketplace.

Government regulation and commercial marketing are processes of nuanced interpretation. Literal translations of phrasings across large cultures, whether on official documents or in the sphere of public consideration, overwhelmingly fall short in the realm of profitable enterprise and usually end up costing the organization more money to alleviate than to initiate. In both formal and informal communications with non-domestic cultures, even among those of the same linguistic patterns, understanding the ideology behind a culture is essential to building a business within it. The more variance in a workforce, the easier this becomes for the enterprise architecture to incorporate.

Technology   An

The very infrastructure of the virtual workforce demands a level of technological literacy among all parties involved. In order to achieve basic functionality, the virtual workforce will communicate and administrate its processes through digital avenues that require a certain level of sophistication. More importantly, this expertise will be compatible throughout the workforce regardless of location, language or culture.

A programming workforce that is similarly fluent in Perl or Python does not need any further language to communicate within its own ranks. A commercial workforce that all uses the same word processing, spreadsheet and presentation standards can be trusted to coordinate across geographical and cultural borders with the platform as the standard for communication between parties.

Profitability

All else being equal, access to a greater marketplace leads to greater profitability. The enterprise architecture with the ability to expand to the borders of its potential without losing its efficiency has more opportunity to duplicate its successful efforts into a wider narrative. All organizations regardless of scale do this most efficiently in the virtual space.

Expanding with a virtual workforce saves an enterprise the numerous expenses that are normally associated with an expanding workforce. Virtual expansion is the more cost effective option for overhead to various insurance packages to onboarding and training costs.

NAVIGATING THE TECHNOLOGY/TASK FIT - THE FIVE DIMENSIONS OF THE VIRTUAL WORKFORCE

The task to technology fit is the extent to which the function of enterprise technology matches the requirements of its tasks and the individual abilities of its employees. Technologies are used more often if they have features that fit the requirements of the task at hand.

The virtual workforce has five dimensions that are used to create fit models. These fit models are used to describe the different ways in which the technology and task aspects of the virtual workforce can be associated. The five dimensions of the virtual workforce are defined here as they are in industrial and organizational (I/O) psychology.

Technological

The virtual workforce depends on a working technological infrastructure to coordinate communications between members of the workforce. Just as importantly, the technological aspect of the workforce as defined in industrial and organizational psychology helps to define itself the relationship between members of the workforce.

Because the virtual world is defined by use of technology, this is known to be the linchpin of the overlapping dimensions of the virtual workforce. Regardless of the fit model that is cultivated from the perspective of the researcher, the technology used within the structure is usually considered the most important component of the overall fit.

Six categories of technology must be in place for a mature virtual workforce.

1. Communication Technologies

2. Collaboration Technologies

3. Information Management Technologies

4. Management Technologies (Projects, Tasks, and Activities)

5. Computational Resource Technologies (Computers and Computing Resources)

6. Infrastructure and Networking Technologies

With a proper balance among these six different forms of technology, an enterprise can rely on its technological infrastructure to facilitate and uphold the values that are set in the rest of its dimensions.

Procedural

The procedures that make up a virtual workforce will define the efficiency of that workforce. The procedural aspects of the virtual workforce are defined much more by the agenda set forth by the group and less by a physical management class. Hierarchy certainly still exists in the virtual infrastructure. However, as mentioned above, management does not have nearly the same kind of ability to punish transgressions within the workplace as a physical manager would.

Virtual procedures are also much more focused on efficiency rather than bureaucracy and the traditional definition of "procedure." The virtual world is one of consistent technological acceleration in the direction of ruthless efficiency. The procedures that occur between members of the virtual workforce tend to follow suit, as the underlying technology serves as the catalyst for the ways in which individuals in the workforce connect and communicate with each other.

Procedure also tends to define the level of relationships that individuals have within a virtual workspace. Because there is much less opportunity for an informal relationship of trust to develop across technological boundaries, the procedures that are set up must provide a fuller range of opportunities for personal and professional connectivity. Training the workforce in the standards that are used is also essential to ensure that procedural matters are passed between group members and firmly plants itself in the culture of the virtual workforce (a topic that will be discussed forthwith).

Cultural   The

The variance cultures that tend to populate a virtual workforce are much more widespread than those in a traditional workforce. Culture can be a bottleneck or a linchpin to greater efficiency depending on how the workforce views and deals with culture.

Six levels of culture are relevant to optimize the opportunities for virtual workforce success:

1. Supranational	2. National	3. Organizational
4. Professional	5. Group	6. Individual

Blending these cultures at the appropriate level without losing any of the nuances on lower levels of culture is a vital part of showing respect to individuals and empowering their best performance and properly distributing power to the core functions of workforce subgroups and strategic associations

The globalization of commerce led to the proliferation of multicultural workforces. Culture may also be defined as the methodologies through which procedures are completed within the virtual workspace. However, most cultures are referred to within the auspices of a virtual workforce have to do with geography. Having a workforce with multiple cultures lends proximity to an increasing number of markets, creating more opportunities for a company to expand its sales into the global marketplace.

Personal   The
virtual workforce is being driven by an individual need for inclusion into global culture.
Many Millennials are leveraging technology to take advantage of remote work
opportunities. Many studies, including studies conducted by Forbes and the Harvard
Business Review have connected remote work to higher efficiency, higher morale and
higher productivity in workers.

There are also an increasing number of workers who are taking the virtual route.
More than 60% of workers surveyed said that they would give up a full-time job for a
remote opportunity that pay the same amount. Opportunities for a virtual position
also help to attract young, elite talent, especially in fast-moving industries such as
technology, biomedicine and pharmaceuticals.

Office politics are an issue in the virtual space - wherever there is personal interaction,
there is a possibility for inefficient social exchange. It is the job of management to pay
attention to the personal well being of individuals in the workforce as well as the
bonds between them.

Expanding personal horizons is a core incentive for individuals, but it is also an
effective way to build upon an enterprise architecture in a cost-effective way. It is in
the best interests of HR professionals to learn procedures to find self-starters with
experience in the remote environment as well as skill sets for the position itself. The
most successful organization will build itself around attracting, cultivating and
retaining the talent that can most effectively work within a virtual workforce without
losing efficiency and productivity.

Organizational

As an increasing number of individuals are finding personal satisfaction in the virtual workforce, enterprise architectures are being vastly improved through more sophisticated organizational structures. The virtual workforce allows for proximity between multiple cultures, even including the ability to target certain cultures with infrastructures located in those markets. Organizations also have a number of financial incentives to create a virtual workforce, among them less overhead, lower costs of hire, and improved efficiency per worker.

Enterprise architecture is also greatly improved by an increasing opportunity for compatibility within the virtual structure. Because most competitive businesses in the global landscape are moving into the virtual world, the most effective enterprise architecture to use in order to communicate with these businesses is the virtual structure. In short, basing an organizational structure around a virtual architecture future proofs that company's organizational structure.

OVERLAPPING DIMENSIONS

None of the five components of the virtual workforce exists in a vacuum. Every aspect of this enterprise architecture affects every other aspect of the architecture in various ways. Although the underlying technology is the bottleneck in creating connections between the other four dimensions, they all plan essential role in determining how effective a virtual workforce will be over time.

Success in the virtual world depends on the proper balance between five dimensions. No successful modern enterprise architecture can exist with one or two of the dimensions holding most of the weight while the others flounder in inefficiency. Companies will come into an initial analysis with different strengths and weaknesses. However, the most successful companies will retain a certain range of key performance metrics for each dimension that are usually compatible with other company structures of the same size and scale.

THE VIRTUALITY FIT MODEL

The most effective type of model to describe the interplay between dimensions of a virtual workforce must explain the development of processes within the enterprise. As mentioned before, the capabilities that an enterprise holds within its potential will determine the types of abilities that enterprise will be able to later produce. The Plan-Do-Check-Act model sets the standard for the new virtuality fit model, which is the best fit to employ if one is looking to develop the capability of the enterprise.

Virtuality refers to the notion of the virtual environment as essential to the growth and survival of the enterprise. The virtual aspects of the infrastructure are full and relevant components of the enterprise architecture. Virtuality also refers to the notion that the virtual architecture may actually be the catalyst for change in the more traditional aspects of the enterprise. In short, the implication of a virtuality fit is that the five dimensions of the virtual environment are just as "real" as the face to face interactions and processes that occur within the enterprise.

The concept of fit as related to the modern commercial enterprise comes from the intellectual disciplines of industrial and organizational psychology. In I/O psychology, fit refers to the relationship between what the model considers to be the major components that affect processes and capability transformations within the enterprise architecture.

Models in general may comment on multiple aspects of the enterprise. However, the most effective models will have a primary purpose and direction for their commentaries.

When taken through the context of the modern business landscape, the primary purpose of the virtuality fit model is to help companies understand how to infuse virtuality with their current processes. The virtuality fit model is also the best introduction to and description of the virtual workforce capability development lifecycle.

# THE VIRTUAL WORKFORCE CAPABILITY DEVELOPMENT LIFECYCLE

Studies including Managing the life cycle of virtual teams from Stacie Furst-Holloway, Martha Reeves, Benson Rosen and Richard Blackburn of the University of Cincinnati, Duke University, and the University of North Carolina at Chapel Hill have showcased the advantages of virtual teams through case studies that followed the life cycle of virtual project teams.

In general, these studies have found that a workforce is most effective when its members can easily combine the individual talents, experiences and skills within the optimal efficiency working relationships and enterprise processes. There are two traditional models that have been used to describe how teams evolve through this process - 1. Tuckman's Stage Model of Development and 2. Gersick's Punctuated Equilibrium Model.

Tuckman's Stage Model of Development   In his Stage Model of Development, Tuckman identified four stages of distinct development for teams.
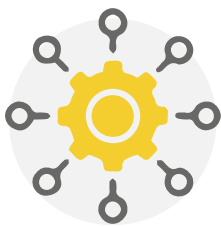
Forming - During this stage, team members share basic information about themselves primarily in relation to the task they share. This is done both explicitly and implicitly through physical characteristics, status symbols and other non verbal cues. This is also the stage in which trust is developed, the group explicitly states its goals and builds a list of shared expectations for group performance.

Storming - This is meant to be a stage of conflict as much as the Forming stage is one of coalition. The ideas that begin to emerge during the first stage are hashed out in the Storming stage, which is meant to bring out conflict and disagreements. Only the groups who can work through this stage will come through into the Norming stage.

Norming - After Storming, teams will begin to focus in on solutions that will bring it to its stated goals. Teams will also agree on ways of working together. Relationships during this stage will be much stronger than they were before the arguments of the Storming stage, and trust will be more fully developed.

Performing - The members of the team begin to work to the completion of the project and stated goals. Ideally, all team members are encouraging each other in their individual tasks.

Gersick's Punctuated Equilibrium Model

The Punctuated Equilibrium Model was primarily focused on the way that deadlines caused differences in team development. Gersick noted two distinct periods of team evolution - denoted as Phase I and Phase II - that were both characterized by sudden changes that occurred around halfway to the stated deadline.
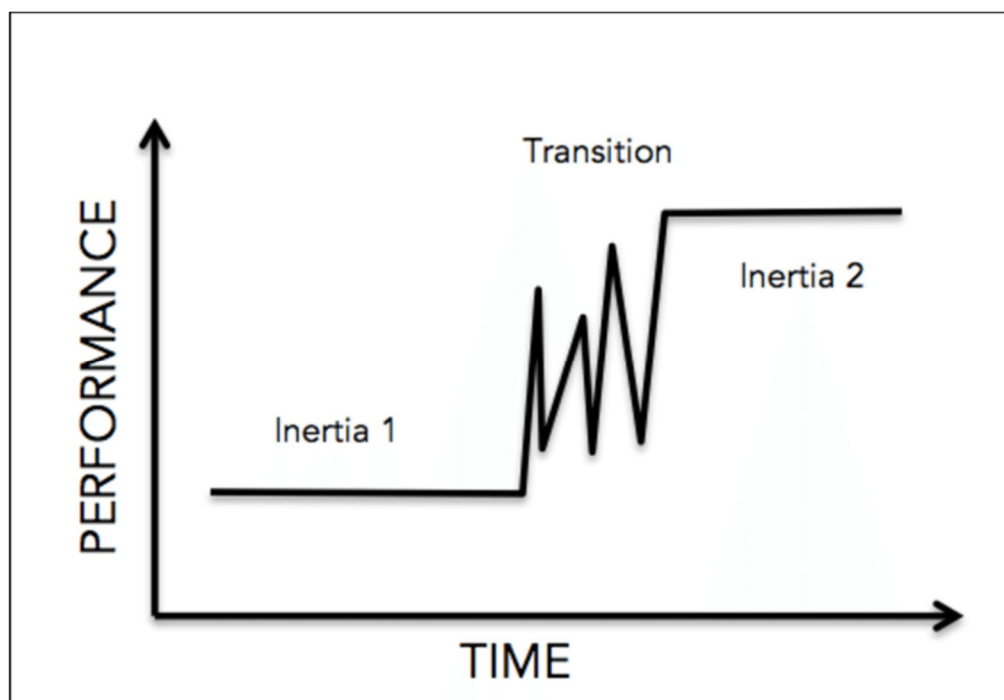
Phase I - This phase begins with the very first team meeting. The stage ends when the team is halfway to its project deadline. In this phase, teams work to develop a group agenda and the norms that will serve as the rules of engagement between each other and when addressing the project tasks. When compared to Tuckman's model, Phase I corresponds to the Forming, Storming and Norming stages.

Project midpoint - Teams assess their standards here and differences of opinion will begin to show themselves. If a team cannot come to its own resolutions, it may seek mentorship or complete solutions from an outside source. Groups will also seek mentorship in relation to its cultural norms if those norms are not producing an effective path to the goals stated in Phase I. If a team is satisfied with its performance, it will maintain the status quo that it has created for itself up until this point.

Phase II - This phase corresponds to the Performance aspect of the Tuckman model. Gersick found that teams would usually enter into this stage with a "burst of activity" (procrastination) to meet the deadline.

The virtual workforce capability development lifecycle represents an updated version of these two models. There is evidence that virtual teams develop along the same lines as the Gersick and Tuckman models; however, there are differences in the patterns and the velocity of development. Those differences are a product of the challenges that are associated with the formation of virtual teams, mentioned above in **"The Challenges of Virtual Teamworking."**

Although the two models above provide the traditional backdrop for much of modern research into the virtual workforce, the Plan, Do, Check, and Act model (PDCA) is perhaps the most relevant. This model corresponds to the basic tenants of the Gersick and Tuckman models, but the four sections are much more in line with what modern researchers have called the "virtuality effect." In short, technology has changed the business landscape enough that business psychology views the virtual world as legitimate in mainstream research.

In developing the virtual enterprise capability, the PDCA model provides a more precise process to move the needle for a mature investment in the proper direction. Most researchers agree that it is the model to use for assessment and standardization purposes.

VIRTUAL WORKFORCE
CHALLENGES IN TERMS OF FIT

It should be noted that Gersick and Tuckman have been challenged by a new generation of enterprises that are quite acclimated themselves to the virtual workplace. Since the 1980s, when the last study using Gersick and Tuckman models was conducted, there has been a significant change in the way that the average enterprise uses technology. Although there are many challenges still associated with the virtual workforce capability, they are addressed with more precision in the virtual fit model while continuing to hold to the intellectual rigor set forth by Gersick, Tuckman and other I/O psychologists.

The challenges of building an workforce enterprise capability are more along the lines of using the technology available rather than finding that technology. Since the days of Gersick and Tuckman, case studies (including those mentioned above) have proven that building out a virtual workforce is a matter of enterprise maturity rather than accessibility.

THE CORE FUNCTION OF THE VIRTUAL WORKFORCE CAPABILITY DEVELOPMENT LIFE CYCLE

The primary improvement of the virtual fit model and the virtual workforce capability development life cycle over previous fits and models is the acknowledgement of the capacity of the virtual workforce to improve over time. This is the core of the evolution of capabilities to abilities studied in modern enterprise architecture theory. The improvement of the capability development life cycle is essential to the improvement of the overall enterprise. This statement will become even more of a truism as the business landscape shifts into the virtual workforce as a mainstream resource rather than a luxury or cutting edge implementation.

The capability development life cycle is connected to many other operational and processional aspects of the enterprise architecture. When the life cycle is improved, there is an opportunity for an accelerated functionality across many disciplines. Because the virtual workforce offers so many opportunities for improvements in efficiency and production that are not offered through traditional face to face work structure mediums, the capability development life cycle should continue to be one of the most important aspects of any future model placed into the service of enterprise architecture productivity assessment.

Going deeper into the construction of the virtuality fit model means understanding the complex ways in which the five dimensions of the model - procedural, cultural, personal, organizational, technological - overlap with each other. Between the dimensions is a constant progression and reprogression through four stages of planning, doing, checking and acting. These four stages are consistently taking the enterprise through states of awareness and stabilization.

Evaluation - The Evaluation stage is also where the notion of awareness begins for the enterprise. The organization must check for its core issues, what it needs to invest in for the future, and the initial plan on how to fund and organize those efforts. This stage may be imposed because of a trigger or moved into because of a previous assessment process.

Decision - The Decision stage is created specifically to decide on the changes that are proposed in the Evaluation stage. Ideally, they should lead to an improved efficiency and productivity within the enterprise for the aspects of business that were being targeted. Many researchers mistakenly refer to this stage as the "final" stage of the life cycle, which is erroneous because of the circular format of the cycle. Although the Decision stage may coincide with the most quantifiable changes in the enterprise, those changes are ideally being immediately assessed and the next iteration of changes made in response to those findings. If the green light is given for these changes, then the organization moves into the Planning stage.

Planning - After a decision is made to make changes to improve the capability maturity, the organization will start planning for those changes in the Planning stage. Timelines, expected results and all relevant KPIs will be assessed and implemented during Planning to ensure a proper rendering of success or failure.

Implementation - Implementation is another word for "execution." The plans that are made during the Planning stage are deployed. The organization will then move into the reassessment of itself at the beginning of the circular life cycle, judging the new form of itself and starting the cycle over again.
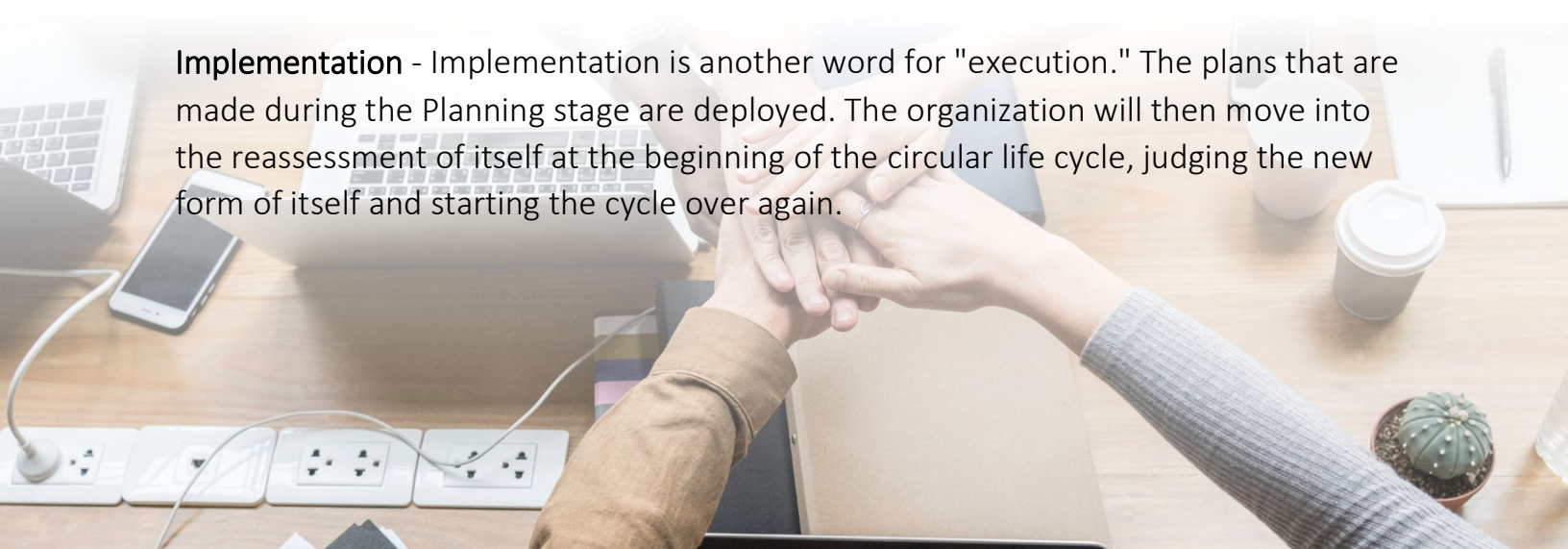
CAPABILITY MATURITY

An essential component of the life cycle is viewing its assessment through the lens of organizational and capability maturity over time. Virtualization only becomes possible at a level 3 maturity, which corresponds to a 50-60% probability of success for a virtual team. Any maturity level that is lower than that corresponds with a level of success that is unwise for an enterprise to take on without an outsized risk tolerance.

An organization must be able to assess where it is in the development life cycle. This is a vital step to identifying weaknesses, planning in response to those weaknesses and implementing efficient changes that will move the virtual workforce capability to a higher stage of virtualization.

As a virtual workforce matures as a capability in an enterprise, it requires less direct management. Ideally, organizations are looking for a virtuality fit schedule with a continuous improvement cycle (or an iterative cycle that is so small that it looks to be continuous), an effective system and a system that is evaluated proactively. The higher the maturity level of the enterprise capability, the more that it will be integrated into the cross section of the five overlapping dimensions mentioned above.

At its ideal maturity, considering the backdrop of our current technological advancements, the fully mature enterprise capability has the ability to assess itself from a completely internal perspective. Although external assessments may still be necessary to ensure proper inputs for certain aspects of the capability, for the most part, the capability will work on its own to evolve into a more mature version of itself.

CONCLUSION

Workforce virtualization is proven to be an important and even vital aspect of modern enterprise architecture, especially moving forward into new, globalized generations of business. Successful organizations will have the will and the components in place to assess their ability to move into higher levels of workforce virtualization maturity. They will be able to speed up the workforce capability life cycle to improve iterations of organizational abilities until those life cycles become continuous in nature.

One of the most important assessments that any organization can make is its current level of maturity in relation to its virtual workforce and capability lifecycle. Although an organization may not be able to assess this on its own, it can partner with a third-party organization to immediately create a multiparty infrastructure with those capabilities.

There are many challenges that are associated with implementing a virtual workforce. However, the advantages of such a workforce far outweigh the disadvantages. In the very near future, the virtual workforce will be an essential component in the majority of successful enterprise architectures. Any company that wishes to remain competitive must future proof its operations to work within the virtual framework. It must also learn to build this workforce and keep up with the accelerating rate of virtualization maturity that will undoubtedly occur within future business generations.