

CRYSTAL DELTA
MELBOURNE | CHENNAI

Work-Life and In-Between

How to empower a workforce
through effective collaboration technologies

White Paper

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1 Introduction

1.1 The Changing Notion of Work

The notion of work throughout history has constantly changed, though at times much slower and at other times much faster. The developed world is currently in the middle of a large amount of change occurring both at high speed and across a broad spectrum of industries, a phenomenon also known as **disruption**; It would seem that we can no longer delay the future.

1.1.1 The Modern Workplace

With increased degrees of deep machine learning the emphasis on immediate term individual decision making will give way to enabling teams geared toward medium to long term delivery. Already there is a service in the market that uses algorithms that can pick stocks at a greater investment return success rate than most brokers.

The modern workplace will have increasing amounts of automation and algorithm driven systems to manage the day-to-day operations, but it's the people that will execute a lot of the delivery and will be engaged in the consumer-facing aspects of the business. Team, group, and whole-of-organisation views have steadily increased in value, both internally and in the marketplace, and the only way to enable and grow this aspect is through **effective collaboration technologies**.

1.1.2 The Modern Worker

A recent research effort into the changing notion of work has calculated that by the year 2030, 50% of people in the developed world will derive their income from multiple sources. This will not be people working multiple jobs in order to make ends meet, rather the importance of manual labour and low skill work will be diminished in favour of low-cost automation, and it will give rise to a new concept referred to as cottage industrialization.

The modern worker will be equally at work when they are at home or anywhere else for that matter, as they will also become equally at home when they are at the workplace or somewhere else. The modern workplace will severely reduce the amount of tasks that can be completed by an individual, placing a higher emphasis on team delivery. In turn the modern worker will have more responsibility and more engagement, through the team structures, to affect the team deliverables, and at the same time not disengage from personal life or "extra-curricular" activities. A workforce that can effectively balance work, life, and the in-between is an **empowered workforce**.

1.2 Ubiquitous Access to Information

Information is one of the most valuable assets any organisation possesses, but you wouldn't know it if you had the chance to look inside most of them. Information is not just paramount to the inner-workings of an organisation, it is what the customers are consuming when they procure the organisation's goods or services.

It might not seem immediately apparent that an organisation that produces cars, or canned food is in the information business, but the consumer does not choose to buy, or continue to buy any product, be it for short-term or long-term use without information; Nutritional information on the can, or operational information about the specific car model or the car manufacturer. And let's not forget word of mouth.



So regardless of the size of the organisation, the size of its market, or the goods and services it produces; Effective use of information will differentiate a successful organisation from the mediocre organisations. To use information effectively it must be **accessible ubiquitously**, and it must also equally enable tactical and strategic decision making.

1.2.1 Tactical

Every day in everything individuals and groups in an organisation do, is dependent on information. What happens when, and who's doing what? And then there's the unpredictable nature of every day that constantly challenges us to consider new information and make a decision. It can be quite overwhelming, though mostly because we don't have the information to answer those questions. The longer it takes to answer them the more opportunity for new questions.

Tactically aligned information systems provide access to the appropriate information at the point of query, thus assuring a much more responsive operating model. Teams and groups can operate more effectively and the organisation's customers can be served more readily.

1.2.2 Strategic

While everyone is working on the day-to-day aspects there needs to be some time given to the longer-term aspects of the organisation. Inevitably someone will ask "Can we bring to market this new product or service by such and such date?" or "Can we add this many more customers to our existing system?" and the ability to answer these questions without unnecessary delay and with low levels of guessing will mean the difference between failure and success.

With strategically aligned information systems it is important to be able to correlate across multiple tactically aligned information systems; In most cases the information needed for longer term planning can be constructed from the short-term information, but only if the short-term information is of sufficient quality and quantity.

1.3 Common Hurdles

To some degree the main hurdle is having the knowledge and the skills to put in place the information services technologies to improve the organisation. That knowledge can be acquired, through internal uplift or through third parties like Crystal Delta.

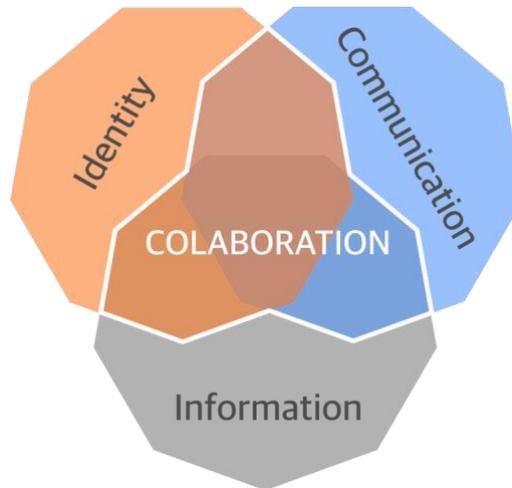
However, more commonly the hurdles to establishing an information services driven organisation are cultural. All too often access to information is constrained, limited, or outright forbidden. In some cases, the information is there but heavily guarded, and in other cases there is no value given to information so it is not stored appropriately or discarded completely.

The road to enabling an empowered workforce though effective collaboration technologies requires the removal of the cultural hurdle, but at the same time by implementing these technologies the hurdles are reduced. This is illustrated in the Crystal Delta Outcome Focused Framework (Section 4.1).



2 Collaboration

A step above Cooperation, in its simplest form Collaboration is two or more parties working on the same deliverable aimed at a common goal. Though in order for collaboration to be effective in the workplace it means that two or more parties that are working on a common deliverable have access to the appropriate information and are able to communicate with each other.



2.1 Identity

The key component to effective collaboration and yet the one that most organisations don't implement effectively. Before individuals can work on a common deliverable we need to identify them.

2.1.1 Managing Identity

Not all organisations have an Identity Management System in place, though it's been our experience that most medium to large enterprises have one or more and neither is used to its full potential.

Managing identity starts with an identity management system in which names and roles of individuals are captured. Many identity management systems are used in conjunction with an access management system. Together, access to systems is controlled based on access policies that are meant to align with roles as defined in the identity management system.

At a rudimentary level this is understood and implemented in organisations that have both, yet there is a constant struggle to gain access to information.

2.1.1.1 Consolidation and Federation

In larger enterprises that have operated for a long period, or are an amalgam of disparate businesses, often multiple identity and access management systems are in place.

In order to enable effective collaboration, it is important to consolidate the identity and access management capability and in the intermediate period enable federation between all the access



user directories and policy stores. Federation will allow for little to no disruption to existing system access whilst building the future identity management capability.

2.1.2 Beyond User IDs and Passwords

Appropriately identifying the actors in the deliverable means that access to the appropriate information can be readily enabled. The identity and access management capability for effective collaboration goes beyond user IDs and passwords. It captures and tracks multiple identifying markers of an actor and does not always require entering of passwords to allow access to information.

Moreover, user IDs and passwords have become a weak point in securing information access, thus systems with smarter multi-dimensional controls add additional security whilst reducing management overheads.

2.2 Information

One of the core assets of an organisation, though it is only an asset if it can be effectively accessed when the organisation requires it; Too often does an important report take a week to produce when it should be available within the same day.

2.2.1 Information Management

It cannot be stressed highly enough that managing information is the key task of any organisation that wishes to enhance its operations through effective collaboration.

What this means is a move away from burying information in obscure systems that very few individuals have access to. It also means that information needs to be stored in appropriate information management stores; Information stored in Word documents and in Excel spreadsheets are examples of poor information management.

There is no single way or system to encapsulate all of information management. The more complex the organisation, the more types of information it will generate and rely upon to operate. Suffice to say, the information management capability should allow for easy and speedy capturing, storing, and retrieving of information. The capability to efficiently manage that information over its entire lifecycle is an equally important consideration.



2.2.1.1 Meta

So your organisation is now collecting proverbial mountains of information stored in multiple information management systems: That doesn't automatically make information discovery easier. Any effective information management system needs to support the classification and tagging of information. In this way the organisation is creating information about the information, a.k.a. Metadata.

The main hurdle to achieving a 'level playing field' for information is that some of it is stored in databases (structured data) and some of it is in a file system (unstructured data). Being able to search and find information based on specific classes or metadata tags allows for quicker identification of the information and its appropriateness for the task or individual that is seeking it.

2.2.2 Information Display

When implementing information capture & store capabilities, it is important to consider in what form this information will need to be displayed. Potentially a level of information enrichment may need to be performed at time of capture or storing, to make the retrieval and display aligned to the way it is best consumed.

Ideally, the information management capability will discourage the creation of multiple copies of essentially the same set of information in order to present the information in different formats and channels.

There are also information management systems that have the ability to classify and tag *strings* of information inside a larger block of information. This can enable a much more streamlined information services organisation which does not need to produce separate information sets aligned to different consumers. The information display format or channel will only display the parts that are applicable based on the reading of classes and tags.

2.3 Communication

Most organisations on the planet will admit that "lack of effective communication" is one of the things that is behind its poor performance. It's a little strange that we learn to communicate very early in life and it seems by the time we enter the workforce we more or less become very bad at it.

Effective communication is not something that an organisation will learn on some team-building retreat. Like with effective collaboration, the obstacle is ingrained in the organisation's culture. One of the ways to change the culture is to put in place technologies that modify behaviour. This type of change can't happen overnight, but it is achievable.

2.3.1 Communication Management

Communication management in most organisations boils down to network management. Provide an efficient wired and wireless network for systems to connect to, and voila! But there's a little more to it than that. If it were so simple, you wouldn't have cases where an employee needs to make a critical international call to a support centre but is barred from making international calls from his or her handset.

Communications management is about understanding who needs to talk to whom, about what, when and where. So good communications management takes into account the users and makes sure that they can use the network with relative ease, that they can use different communication



styles to suit the topic and the content, and that they can communicate at required times independent of their location.

2.3.1.1 Device Management

More and more organisations are going wireless and mobile. Communication management also includes device management. Beyond asset tagging, device management ensures that standard operating environments are available on the devices that are aligned to the user's profile.

The ability to remotely erase the device also assists with better information management.

2.3.2 Effective Communication

Beyond the basics, effective communication means that the organisation also understands the 'why' of communication; What is the purpose of a specific communique? And therefore, what is the best way to present the communique? Essentially, effective communication considers the channels of communication.

In an organisation practicing effective communication, an email would never be sent where a phone call is the most appropriate, or a multi-paragraph web page is not constructed when a 500-word blog post is more suited.

All collaboration relies on communication, and effective collaboration uses all forms of communication:

One-way Communication

- In (information collection in parallel, serial, or federated modes)
- Out (information transmission in broadcast, simulcast, unicast, or multicast modes)

Two-way Communication

- Asynchronous (interaction with other parties is independent of their availability)
- Synchronous (interaction with other parties is dependent on their availability)



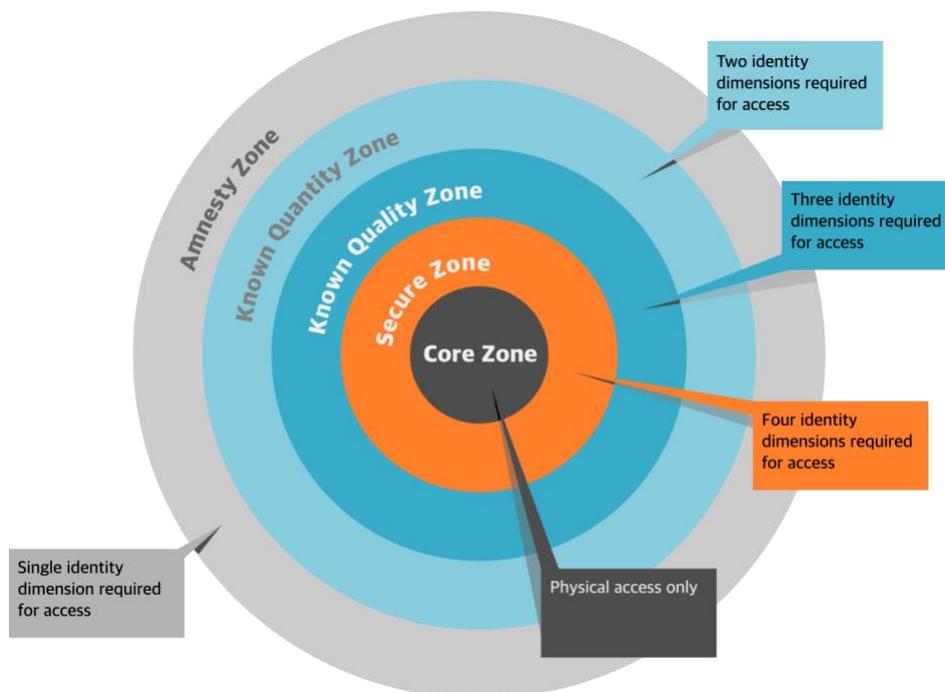
3 Implementing the New Landscape

3.1 Perimetric Security Model

Implementing the new information services landscape to enable high levels of collaboration cannot be done on the back of older security focused access control models. These models were designed for, and are more suited to hardware and software systems access, and as such are inadequate to provide the right level of flexible control for access to information.

A model that is more suited is the Perimetric Security Model. This model does not constitute a security architecture, and does not explicitly deal with security at the hardware and software layer; Details such as password complexity and strength, encryption types, standards, and key lengths, smart cards, and biometric devices, are left to be determined by the organisation's specific security requirements.

The aim for the Perimetric Security Model is to simplify and streamline access to information in organisations that are increasing focus on information services. Perimetric Security is more closely aligned to how individuals consume information and is therefore more intuitive. It also aligns network security (communications) with information security (IDAM), reducing management complexity. The best part is, the Perimetric Security Model remains the same regardless of the organisation size, commercial orientation, or environment complexity.



3.2 Rich Set of Collaboration Tools

The establishment of information services for a highly collaborative environment is the cornerstone for a workplace where Information is the key enabler of business capability and resource empowerment. The right collaboration tools deliver value by aligning both the underlying technology components and the organisation's culture and policies to information management.

With task execution moving toward multidisciplinary teams, with methodologies like Agile, and operating models like DevOps, and in work environments with varying degrees of externalized delivery through partners and 3rd party vendors, it is imperative to provide collaboration tools that cover all types of communication (Section 2.3.2):

- Wiki, blog, podcast, video streaming, document publishing (out)
- Feedback, surveys, feeds (in)
- Email, bulletin boards, forums, public folders, document management, task management, issue tracking (asynchronous)
- Instant messaging, telephony, video-conferencing, shared white-boards, document co-editing (synchronous)

There are simply too many collaboration tools to be specifically mentioned in this white paper and new ones are being developed every year. As a rule, the following set of attributes will be found in **effective collaboration tools**:

- Role based access – to allow for feature access control
- Externally available – the solution should be accessible without needing to be on the organisation's LAN (controlled through Perimetric Security Model)
- Mobility enabled – support for popular smart phone and tablet operating environments
- Workflow engine – to support the creation of workflows to better frame the collaborative work
- Reporting engine – to support improved decision making and continuous improvement
- Redaction – the ability to mask sensitive areas of documents which align with role-based access
- Open standards – reducing the need for proprietary software clients for collaboration access
- APIs – allowing for customized integration and extensibility for growth.

At the time of writing there is no single collaboration tool that provides all the functions listed above. The key is to find the right mix of multiple tools that suits the particular organisation, its policies, and its culture.

3.3 User Experience

When implementing collaboration tools to empower the organisation's workforce it is important to take into account the user experience (UX). Collaboration tools should always fit the user rather than the other way around.

An empowering UX for a workforce is one that does not treat them as mere consumers of information. Users must be given the tools to add and enrich information and be able to construct new uses for the organisation's core asset. This is referred to as an Independent Development Culture.



Ultimately, every organisation will benefit from having an independent development culture. Good ideas can come from almost anywhere and are not the sole provenance of a development or R&D group. It's those individuals who deal with an issue day-in and day-out that are most suited to tackling it, rather than moving things up and down a hierarchy.

3.3.1 Crowdsourcing

Crowdsourcing is a relatively recent trend in the socialisation of information. Crowdsourcing applies probability principles as the guide to decision making. As such it is a very effective tool for research and development, and solution discovery. Crowdsourcing is an important function in a workplace where information has been unlocked as a core asset and has been put to work to create value. Engaging users at this level represents democratisation of information, which in turn improves participation and increases decision adoption speed.

In the modern workplace, transparency is the new currency. The more information an organisation has and the more access to that information by the operators, the more valuable the organisation will become.

3.3.2 Self-Service

This white paper has outlined a decent amount of things that need to be added, removed, changed and improved in order to garner the benefits of a highly collaborative workplace. It would seem on the surface as a management and logistical nightmare.

The final key to providing empowerment in the workforce is delegation. This is where Self-Service Portals (SSP) play a role to support empowerment. Delegation allows for decisions to be made at the point where they are most effective, and effective decision-making points are where the information is the clearest. Empowered individuals would rely on information from the collaboration tools, with guidelines in place to ensure decisions are only made when the adequate level of information is present.

Wherever possible, the aim should be to implement self-service portals for as many tasks the information services can support. With appropriate information capture and reporting, and workflow capabilities, tasks can be completed much quicker whilst still keeping everyone in the loop.



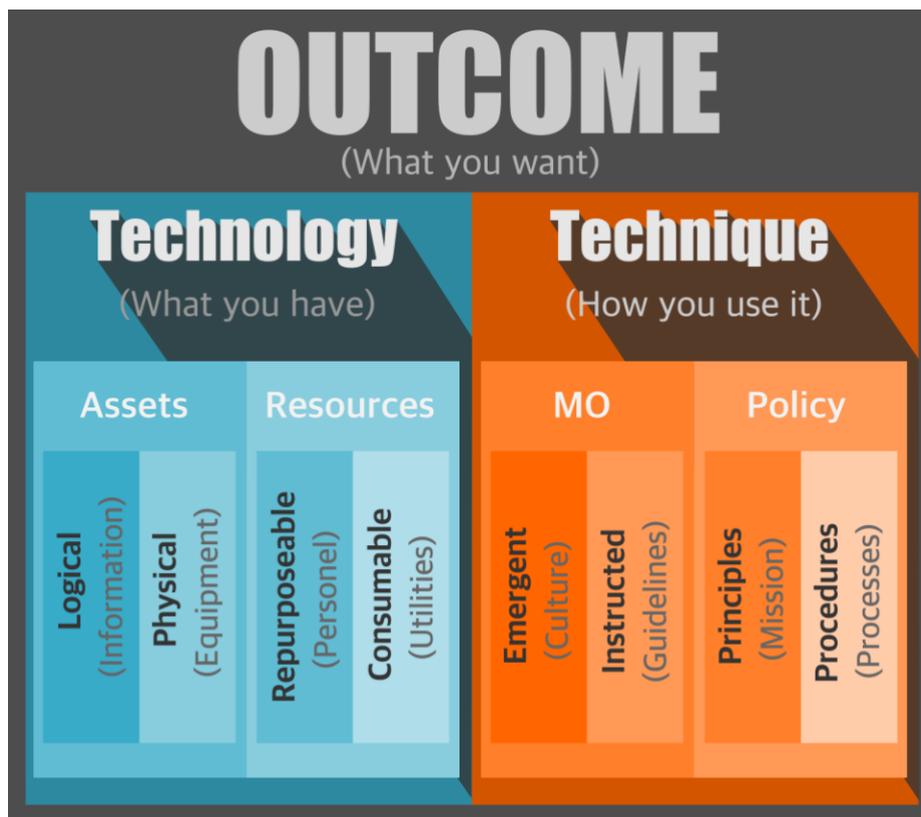
4 How Crystal Delta Executes

There are many ways in which the items outlined in this white paper can be implemented and it would be pointless to simply state that Crystal Delta will use an Agile/DevOps approach. Each organisation is different and ultimately we would work with the organisation to realise the outcomes. For this, Crystal Delta relies upon its Outcome Focused Framework.

4.1 The Outcome Focused Framework

The Outcome Focused Framework was developed by Crystal Delta as an internal delivery framework which enables quicker and clearer delivery, irrespective of the size and scope of the deliverable. The framework is a delivery guide which at a glance shows all the components required for a successful outcome and the component relationships.

Too many solutions focus on the Technology aspect and in many cases completely ignore the Technique aspect. Ignoring the technique is a key contributor to ineffective solution outcomes. The Outcome Focused Framework highlights the interconnectedness of outcome delivery components, and encourages any planner or decision maker to consider the flow-on effects of any change.



4.2 Operating Landscape Analysis

Before proceeding to define outcomes, Crystal Delta will assess the existing ICT environment in terms of alignment to the Perimetric Security Model (Section 3.1) and classify it into the following layers:

- **Users** – Location, access times, purpose, and skill level
- **Locations** – Head office, remote offices, data centres, and public locations
- **Activities** – General office activities, communication and collaboration, content creation and publishing, business intelligence and reporting
- **Services** – File, identity and access management, ERP, CRM, CMS, data storing and mining, and business continuity
- **Software** – Operating systems, operating environments, development and management software
- **Hardware** – Servers, PCs, mobile devices, networking, storage.

4.2.1 Dealing with What is Already In-Place

Crystal Delta will then perform triage on the existing environment; It will outline what needs to go, what can stay, and what needs to be added.

A transition plan for information and functions from decommissioned systems will be produced which will align with the Outcome Focused Framework (Section 4.1).

4.2.1.1 *Convergence and Disintermediation*

Another lens through which Crystal Delta will evaluate the existing landscape components is commoditisation. Typically, commoditisation is exhibited in the form of convergence and also disintermediation opportunities.

Often a system may have a secondary feature which is not in use, and could be adequately capable of performing the functions of a separate deployed system. Converging functions will reduce the number of duplicated functions across the landscape. And then there are cases where a particular task uses three functions when it can be performed with two. Disintermediating functions will streamline repeatable tasks delivery. In this way disintermediation is not to different from process optimisation.



5 Conclusion

It is Crystal Delta's belief that any organisation, irrespective of its size and industry, will benefit from information-based operation. But beyond that, one of the most underutilised resources in an organisation are the human resources. Too often are employees treated as two-dimensional characters and are perceived as only capable of the things they were hired for.

An information services oriented organisation and workforce culture is a reality. All of the technologies covered by this white paper exist and many of them are available as free open source products. The only remaining thing is the will of an organisation to treat information as an enabler for business, to treat its employees as skilful multidimensional adults, and to change its culture to where the work itself matters more than the workplace.

Collaboration can and does occur across locations and time-zones; There are organisations that coordinate operations on a global scale every day, and is as second nature to them as if it were all happening on the same level of the same building.

When the employees of an organisation are empowered to perform the work, they are more eager to take on tasks, and when the teams collaborate more, they are likely to bond more. This not only provides for less turnover in staff, but the organisation's customers will take notice as well. When everyone is drinking from the same "information well", then everyone is on the same page of the same mission.

5.1 Subject Matter Considerations and Influences

In constructing this white paper Crystal Delta incorporated knowledge from the fields of information dynamics and team collaboration. Here are some links:

Information Theory https://en.wikipedia.org/wiki/Information_theory

Linked: How Everything Is Connected to Everything Else and What It Means for Business, Science, and Everyday Life, by Albert-Laszlo Barabasi https://www.amazon.com.au/Linked-Everything-Connected-Business-Everyday-ebook/dp/B06XC9JM6Y/ref=sr_1_1?ie=UTF8&qid=1539314827&sr=8-1&keywords=barabasi

The Modern Workplace Presentation by Microsoft
http://download.microsoft.com/download/0/.../S1.P3_Microsoft_Marius%20Danescu.pdf

