Communications, Information, Technology, and Management (CiTM)
- From i3 Sytems and The I3 Consortium -

October 2021

THE EDITOR SPEAKS - Data and Ethics

Data ethics are the moral principles associated with data gathering, use, sharing, and protection of data. Laws define minimally acceptable levels of behavior (and consequences associated with these rules) but many behaviors that are legal are not be necessarily ethical. Conversations about data ethics often tend to focus on one of the many definitions of personally identifiable information (PII), but this issue is related to all forms of data. As a set of moral principles, ethics change over time as societal expectations change. Further, given that morality tends to be subjective, one organization's description of ethical data practices may differ from another.

The issue of data ownership complicates the data ethics conversation. When original data is first created, it is clear who owns that original data content. But, because data is inherently digital it can be easily copied. Copied digital data opens the door to questions about the ethical use of data copies. Does the creator own the rights to all the copies of the data as well as any derivative rights? Can the data creator give, sell, lease, or otherwise release a copy of the data they own with conditions and limitations? What about the scenario where a marketing firm collected information about individual income levels and combined that data to create a data set that describes household income? Might the individuals who contributed their income information during the process consider both their income data and the derived household data as data they own? Even if the individual identities were anonymized, would the data contributors have an ownership claim to this derived data? Book publishers struggled with this issue when copy machines became commonplace.   The entertainment industry continues to battle digital privacy even today.   To avoid such potential legal issues, organizations that collect data should be expected to disclose their data protection and data use policies as a part of any data collection program. Similarly, organizations that distribute data should demand that data buyers agree to protect associated data (including derived data) on terms that are acceptable to the data provider.

Numerous studies have pointed out that data exchange agreements, often written by lawyers for other lawyers, can be unclear and ignored. It can be argued that making data policies difficult to read and understand is an effort to discourage consumers from reading them. Some have pointed out that the complicated legal issues associated with data make complicated agreements a necessity. Some have suggested that because consumers are quick to trade away their data rights for a meager reward, data ownership is not a critical issue for them. However, it could be equally argued that the complexity of the issue encourages an initial agreement when there is an expectation that the decision can be withdrawn should compelling issues emerge.

Clearly, it would not be ethical to ask someone for their data under a false pretense or by promising to protect the data and then failing to sufficiently protect the data. Ethical data behaviors must also make a justifiable attempt to ensure the terms and conditions associated with a data disclosure are complete, easily understood, and accepted. Arguably, companies that are consciously vague or use complicated legal terminology to mask the limitations and uses of the data they receive are acting unethically.

Security and privacy protections are an essential part of any data ethics conversation. Data security refers to efforts to ensure data is being sufficiently protected to ensure that data does not fall into the hands of an unknown and potentially unscrupulous party. It is often assumed these unknown parties are malcontents looking to cause harm to either the organization or those that interact with the organization. In general, sufficient protection must be utilized to minimize the possibility that any data gets into the hands of an unauthorized person. Privacy, distinct from security, means that those with access to the data shall only use the data within the terms and conditions authorized by the disclosing party. While it is impossible to maintain privacy without security it is possible to have security without privacy.

Video (e.g. video surveillance) presents a vexing issue for data ethics. More specifically, if a camera is mounted in a public space, who is the creator and owner of the data stream? There is a strong argument to be made that the owner of the video camera is the owner of the data and should be cognizant of any applicable rules and regulations when they deploy a camera. People who have had their images captured by such a surveillance camera could express some privacy concerns because the camera can place a person at a specific location at a specific time. While detecting a person's presence in a public space may not be illegal, it may cause an ethical issue for a specific organization. In some situations, the posting of a sign to notify people of the surveillance camera might be needed to satisfy the ethical matter. For other organizations, they may establish guidelines that restrict images to the identification of humans (generically) but specific individuals cannot be identified. If the surveillance video is used in conjunction with facial analytics and the consented to the use of the technology by providing pictures for system use, this may be considered ethical use of facial recognition. However, if the system is based on publically available images, the use of the technology might be deemed unethical especially if that imagery has not been validated.

One of the most important points of any technology-ethics conversation relates to the actions that are driven by the use of technology.   Technology is used to efficiently collect and analyze data. The actions driven from these insights are a major determinant in whether the use of technology is good or bad. Most

data ethics conversations struggle to achieve a balance that maximizes the positive benefit of technology while minimizing the potential harm. In the end, organizations remain culpable for any actions that arise from the use of the technology.

HBR published an article on data ethics early in 2021 that took the position that there are five key components that must be considered when evaluating any data ethics issue. (1) ownership of the data involved has to be clear and this includes collected, purchased, leased, received, or otherwise derived data; (2) the process of managing and combining data to produce insights or actions must be clear and transparent (both the process and the resulting actions); (3) the use of the data sets expectations for the data producer and limits for the data consumer; (4) the intended use of the data must be clearly described by all parties; and (5) outcomes that might be derived from the data must be detailed. Unless these components are all in place, it is difficult to conclude whether a data use case should be considered ethical. An implicit aspect of ethics is the behavioral principles that shape activities have to be applied equitably. The establishment of an expected behavioral norm that is not universally applied, will be nothing more than window dressing. That reasoning can be extended to where a component of any ethics statement of principle should consider including an obligation to ensure that any adopted ethical principles are periodically audited both within the organization and for external organizations which could create indirect ethical use issues.

Some behaviors that are accepted as a societal norm become community expectations. Behaviors that are considered ethical (or unethical) by a specific organization may add the organization's specific understandings to the term ethical. Some organizations, such as the City of Los Angeles, are about to publish their own digital code of ethics. Such a document, along with other documents such as data privacy and security policies, serve to set expectations with customers, suppliers, and employees. Clearly defined expectations are the foundation that allows organizations to build trusted relationships with whom they interact.

UPCOMING VIRTUAL EVENTS

- Nov 2-4, 2021. The Infinity Festival Hollywood. A hybrid event (physical and virtual).
- Nov 16-18, 2021. Smart City Expo World Congress. A hybrid (physical and virtual) event focused on smart city technology.
- Nov 29-Dec 3, 2021. re: invent. A hybrid learning event hosted by AWS for the cloud community.
- Dec 2-3, 2021. International Conference on Urban Studies and Internet of Things. Sydney, Australia.
- Dec 3, 2021. I3 Consortium Virtual MeetingClick on the link to request be added to the Consortium meeting distribution list.
- Dec 9-10, 2021. International Conference on Smart Cities, Big Data, and Machine Learning. New York City, New York.
- Dec 10, 2021. Connected Communities Conference, Raleigh NC
- Dec 9-10, 2021. Conference on Urban Studies and the Internet of Things. London, England.

If you have an event that you would like us to include in our newsletter, please send an email to manager@i3-iot.net

THE i3 CORNER

The I3 Systems team has completed development of R1.1 and the software/documentation has entered testing. This new release will be supported on two configurations. R1.0 of the software was only certified for use on AWS whereas R1.1 will be certified to run in either AWS or a private server configuration. This release also includes several performance improvements and some significant documentation enhancements. R2.0 will focus on adding several software tools to simplify systems integration as well as some usability enhancements and feature extensions. R2.0 is being targeted for a release in the first half of 2022.

I3 Systems is first and foremost a software manufacturer. The core software can be treated as a thin, but important part of a larger data infrastructure. It is intended to be deployed as a component of a larger system that includes IoT devices, data applications, and database systems that work in concert to maximize the utilization of data within a larger data infrastructure. As such, I3 Systems has begun the process of building business relationships with distributors, integrators, consultants, and other parties that act as prime contractors for larger systems efforts. I3 Systems will sell its software directly to customers with the capability to undertake their own integration projects but i3 stands ready to support other companies that serve customers that are looking to outsource the larger systems integration function.

The next I3 Consortium meeting will be hosted by Ken Hayashida and others in the healthcare space that believe there is a potential need in the community that works with various enterprises with new technologies gracefully fit into established healthcare practices. There are many great healthcare technology companies in the SoCal region with great technology. The question is whether the region would benefit if there were a common resource that focused on assisting in healthcare technology integration in order to reduce tech adoption time.   This virtual meeting is scheduled for Friday, December 3, 1pm PST. Please send an email to i3-join@i3-iot.org to register for meeting details as they develop.

READER CONTRIBUTION: How to Build a Data Strategy
by Rich Peters, Founder, Tongere Partners.

A data strategy aligns your efforts with your Data Vision and Data Mission Statements. It brings forward all the necessary elements (People, Process, Technology and Data) to derive value from your data in a straightforward manner that you can execute.

Your data strategy is also a critical communication tool that ensures the organization will support the initiatives and provide the necessary resources. Most importantly, it brings your organization to the next level of detail where people can see what will physically be created or changed. Ultimately, people should be able to see how a data strategy will help the organization.

Most data strategies are based on a simple concept of how to get the right data into the right people's hands so they can make informed decisions. Data strategies are becoming even more important with the growth of predictive analytics, machine learning (ML), and artificial intelligence (AI). Every organization is different, which is why your data vision and mission statements are critical.

An important decision to consider: Is this strategy going to be a digital transformation where you radically change how your organization operates or is it going to focus on fully integrating data into how you operate today? There can be a benefit to becoming a data-driven organization and truly understanding your data prior to a full digital transformation.

Strategic questions to ask about your data

i. What data enables your organization's vision and mission statements, and who uses it?

- This is an excellent exercise that takes both a top-down (strategic) and a bottom-up (operational) approach to see how well they align.

ii. How is data used today, and are there areas for improvement?

- Most organizations have known issues. However, in many organizations, those issues change as people create workarounds or even create data to meet their needs.

iii. Does your organization have strategic initiatives in the planning stage or underway?

- Can you identify the data that will enable its success?
- Who will use the data?
- How and why they will use it?

During these discussions, it is essential to incorporate each of the data strategy elements (People, Process, Technology and Data) to reach a broad understanding of how the future state will function. Each of the elements will allow you to segment your needs and group them into definable projects. From this effort, you will create a series of high-level data needs that can be structured into objectives and capabilities.

It is crucial to stay at the objectives (or needs) and capabilities level in your discussions at this point in the process. Solving these objectives will come later in the assessment and road-mapping activities. However, it is also important to start to put a value and priority or ranking, on the objectives.

Start by framing up the discussions based on the core elements. Each of these data needs or capabilities will incorporate the following four core elements to varying degrees.

i. **People** – Who uses your data and why? What skills and experience do you need to execute the strategy and reach the vision?
ii. **Process** – How is data used in your processes? What procedures are needed to derive value from your data?
iii. **Technology** – What are the capabilities you need to reach the vision?
iv. **Data** – What types of internal and external data do you need? What level of data quality and how much history do you need? What level of integration and security do you need?

People

We start with people since one of our clear objectives is to ensure we get the right data into the right people's hands. We finish with data so that we come full circle and look at our data to see if it aligns with our people's needs.

People are more accepting of processes, technology and data when they are helpful, easy to understand, and easy to use. Using the lens of how people perceive and interact with each of the other components will help you make the right short and long-term strategic decisions.

There are several benefits to using people as the framework for building out your data strategy:

- First, most organizations' vision and mission statements relate to people. The Data Vision and Data Mission statements reflect these goals. This is important when you are determining why each of the components is valuable to the organization. The more tightly correlated your strategy and each component is to the organization's vision and strategic initiatives, the easier it is to put numbers to that value.
- Second, processes inherently involve people. It is easier to understand how data is created or consumed when you look at it from a people perspective.
- Third, technology is an enabler for people. Designed and implemented correctly, technology can dramatically improve your organization's efficiency and effectiveness.

- Fourth, people are the creators and consumers of data. They define data quality and data security for their needs.
- Finally, using people as the framework creates a foundation for your change management effort, which will lead to faster adoption and a shorter time to value.

The first step in utilizing the people element is segmenting all of your stakeholders. Segment at a strategic or high level to start. Internally you may segment by function such as Sales, Operations, Finance, etc. Externally you have vendors, customers, and the rest of your ecosystem. For some organizations, these may need to be broken down further.

As an example, Amazon has different customer segments—an Amazon Prime customer will have different data needs from a business using AWS. As you get into the assessment and road mapping steps, these groups may be broken down even further. At this point in the data strategy, you are only looking for the commonality of needs that can be grouped together by the elements of Process, Technology, and Data.

Process

The second step in framing up the discussion based on the core elements is to look at your organization's high-level processes and understand what types of data are needed to support each one. Here are examples of two different companies' sales processes:

- Company A sells services to businesses. They have a complex sales cycle and large sales funnel. They have many prospects for new clients and are always trying to get repeat business from existing clients. Their references from existing and past clients are critical to closing new ones, and their success with existing clients is crucial for future work.
- Company B produces consumer products that they primarily sell through a retail distribution model. They have customers who are the retailers and consumers who are the end purchasers of the products. Their sales team focuses on gaining distribution through their customers, while their marketing team targets driving demand from the end consumer.

While each of these examples shows high-level sales processes, they already reveal that the data needed to support each process is very different. For Company A, having data to show success at delivering services in a specific industry as well as understanding the needs of vital influencers and prospective clients will be crucial. Whereas for Company B, having third-party data that shows their product's growth or dominance in the market will help them leverage better deals with their customers. Company B can also use data to see the effectiveness of its advertising, PR and promotions across all its media channels to ensure they invest wisely in driving consumer demand.

One benefit of looking at your processes through a people and data lens is that the processes themselves can be simplified to get quality data into the people's hands faster. You may also discover that acquiring or creating additional data may improve certain processes.

Technology

Now that you have a view of who needs what data for your organization's high-level processes, you will focus on how people use the data. What capabilities do they need to be successful? Again, we use the people lens and segment based on stakeholders.

- What data do they need?
- How fast do they need the data?
- Do they need to manipulate it after they get it or does it provide a complete answer without manipulation?
- What happens next? Is new data generated? Is existing data modified? Is data sent to others for their use?

Some stakeholders are very data and technology savvy, such as your analysts and researchers, who will benefit from robust access and tools. However, others may just need a quick view of specific data to keep their process moving forward, such as a performance dashboard.

KEY QUESTION – Is self-service an essential capability? Self-service for data access and manipulation is incredibly powerful. However, it requires a larger investment in your technology, data and people to be successful.

Data

We finish with data to ensure we get the right data into the right people's hands. What is the strategic data for your organization? What are the key subject areas? Do you need external data? Who will own the data by subject area? Are there known critical gaps in your data? Which is the more significant need – providing access to your data or securing your data? Finding the balance between these needs is critical. How much transparency do you want to deliver across your stakeholders? What is the perceived quality of your data? Does it meet your current and future needs?

There is much more detail for all areas that will come out in the assessment phase. Your output from this Data Strategy effort should provide clear direction, objectives and capabilities that lead to clear assessment goals (the next installment in this series) and a roadmap.

Some examples for your Data Strategy's key objectives and capabilities:

What	How	Why	Value/Need
We will enable customers to see a 360 view of their accounts.	Provide payment history, payments due, order history, current products on order, delivery status and available product inventory	Drives higher customer satisfaction and lowers customer support costs. Takes friction out of the process and will increase sales	• $ to $$ • Redeploy headcount • Increase sales
Our sales, operations and finance people will see fully integrated forecasts.	Pull together all forecasts using a common data set. Integrate the forecasts with known capacity constraints in our supply chain and critical deadlines.	Accuracy of our forecasts and flexibility in our supply chain are significant drivers of our profitability.	• $$$ to $$$$ • Complex • High Value • High Priority
We will provide seamless customer and product data to our salesforce.	They can see current status, open issues, history along with customer and product profitability.	Blending Customer Relationship Management (CRM) data along with operational, historical, customer and product profitability will build stronger and more profitable relationships.	• $ to $$ • Low to Medium Value • Lower Priority • Simplifies what is done manually
We will publish our top 4 Key Performance Indicators for all employees.	Provide a portal (accessible through a secured device) where every employee can drill down and see how their efforts are making our organization successful.	Transparency and engagement build a more motivated workforce. Many great ideas and process improvements come from people understanding how their roles impact the organization.	• $$ to $$$ • Medium Value • Medium Priority • Is dependent on other initiatives

These objectives and capabilities need to be clear so that organizations can use them to build support from senior leadership for moving forward with the strategy and to build trust through the entire organization.

This article was taken from a three-part series of articles that can be found on the Tongere Partners Website. The other articles focus on the assessment of a data strategy and the creation of a strategy deployment roadmap.

Resilient Organizations
by Jerry Power

Regardless of whether someone works for a private company or for a government entity, operating conditions are becoming even more dynamic. It is impossible to build contingency plans for every possible scenario but contingency planning has become a requirement to ensure that the loss of critical components does not completely scuttle major projects. The potential loss of key personnel, supply chain disruptions, semiconductor chip shortages, and access to a suitable labor pool have all become issues that must be baked into every project plan.

Many organizations are taking steps to transform themselves into more resilient enterprises. These organizations put conscious effort into creating systems that are flexible and able to adapt in the face of unexpected disruptions. Depending on the organization, the enterprise can establish plans that permit them to move production from one site to another, split purchasing between suppliers, and manage a series of distribution channels. The end goal is to provide alternative sources of key materials or establishment of safety stocks of raw materials and finished goods. Many of the principles associated with a resilient organization fly in the face of efficiency-focused principles such as just-in-time or zero-inventory practices. Generally, such practices eliminated the slack in the production process - slack that provides the flexibility needed to recover from systemic process shocks. As a result, resilient operations cost more than efforts to maximize efficiency, but when faced with increased operational risks, the ability to maintain business operations through operational storms may be a good call.

Conversations concerning resilient operations often focus on manufacturing and supply chain issues since this can easily cripple any large organization. However, software and service companies also have their own resiliency issues to deal with. For example, when a software company spreads its

development centers over multiple geographically dispersed facilities, the communications and coordination efforts become more complicated, but the impact of localized disruptions is reduced. In the service industry example, companies that provide a living wage will have the ability to staff at levels that allow them sufficient latitude to shift resources between tasks during times of stress.

An important issue associated with any discussion of resilient enterprise that is often overlooked is the organization's need to detect potentially disruptive situations. The earlier an organization can detect a potential issue of concern, the greater the lead time they have to act on their contingency plans. For supply chains and key components, this may require that IoT (Internet of things) be installed to detect warehouse shortages or lengthening delivery times. For human resources, this can mean adding the ability to detect changes in productivity or a decline in workforce availability. For that matter, a reduction in customer traffic may indicate a change in conditions that prevent customers from completing their desired purchases. For this reason, as companies shift to becoming more resilient, there will always be increased use of technology within the organization.

 An organization should plan for success and at every opportunity take steps to maximize its potential. However, research demonstrates that organizations that accept they operate in an environment that inherently includes risk and organize its plans accordingly always outperforms the competition. In fact, the simple acknowledgment of these risks creates a culture where organizations are better able to respond to unexpected challenges. In an environment, like today's business climate, where the number of risks seems to be growing in frequency and impact, the call for increased business resiliency should be embraced by all.

READINGS FROM THE EDITOR'S DESK

- The Once and Future CIO: How The Role is Changing. CIOs have gone beyond being a support function. They are opportunity enablers as tech is required for any new strategic initiatives. They have also become defenders of ongoing business because cyber security threats can jeopardize existing businesses.
- Health Care at Home. Home health care is going well beyond virtual doctor visits. Home health care aids, remote chemotherapy, home births, and more (assisted by tech) can help people avoid overcrowded and expensive hospital stays.
- It's Time to Stop Talking About Generations. Using generational theory to discuss markets is flawed. While there are many behaviors that can be studied as cohort behaviors, these behaviors are often based on life-stage, background, or other factors - not generational differences.
- Why CIOs Must Become Data Champions. Data literacy is the ability to draw valid conclusions from data, including understanding the limits of interpretation and awareness of biases. A focus on the limitations of the findings is critical and often overlooked.
- Secondary Use of Health Data in Europe. European report advocates for the increased use of health and wellness data for the betterment of society. It also gives policy guidelines to ensure such data is properly managed in order to guard against abuse while increasing collaboration.
- Digital Transformation: Thinking Beyond the Core of Your Business Can Help You Grow. A digital transformation project is not transformative if all it does is automate an understood system. For a process to be transformational, it has to allow a company to pursue an opportunity outside its current core business.
- 7 Lessons Learned from the Vatican's Artificial Intelligence Symposium. Some thoughts on the future of AI as a technology that sits at the intersection of social science, engineering, ethics, theology, and law/regulation. Most prior technologies focused on targeted issues but AI has the potential to impact all these areas.

About I3 and I3 Systems

Originally founded under the guidance of USC, the Institute for Communication Technology and Management (CTM) was formed to support a deregulated telecom industry. I3 Consortium spun out of CTM based on the position that increased technology collaboration must be married to increased business and data collaboration. I3 Systems was formed to develop software tools and pursue commercial opportunities based on these concepts. This Newsletter was created as a vehicle to foster continued conversations about issues that transcend specific technologies and specific industries. When the CTM organization was shut down, support for this newsletter was picked up by I3 Systems to ensure these valuable conversations continue to occur.

If you wish to be removed from our distribution list, click here to unsubscribe

I3 Systems, 1146 N Central Ave #687, Glendale CA 91202, www.i3-iot.com
I3 Consortium, www.i3-iot.org