



A DATA DRIVEN ORGANIZATION

CREATING A DATA DRIVEN ORGANIZATION (2DO)

A key component for competitive advantage in the Age of Knowledge

BY: Nevin Taylor

Cultural transformation is the core to leveraging data as a strategic asset. As we transition from the Industrial Age to the Age of Knowledge, data has become the critical ingredient for empowering enlightened understanding. As such it serves as the catalyst to successfully carrying out operations in every organization. Recent articles in Harvard Business Review illustrate that “Companies are Failing in Their Efforts to Become Data-Driven.” Old thinking has become an impediment to the quintessential need to evolve to remain competitive in today’s transformative environment. Correspondingly, Randy Bean and Thomas Davenport’s article in Harvard Business Review indicates that efforts to become data-driven have regressed over the last three years: from 37.1% in 2017, to 32.4% in 2018, to only 31.0% in 2019. Despite an increase in funding and the establishment of formalized roles in the area of data operations, organizations have not yet seen a return on their investments in their efforts to leverage Big Data.

There is a growing need to operationalize data, exemplified by 77% of executives recognizing that current efforts to apply Big Data and adopt Artificial Intelligence (AI) initiatives is a prominent challenge. Currently, 93% of those surveyed identified people and processes as the major obstacle to progress. As organizations strive to address challenges

associated with organizing data to ensure it is fit for use, and structuring it to assure its operational relevance, they find the limited availability and accessibility of data preclude organizations from providing current and reliable analysis. Despite current efforts to structure disaggregated data, the rapid growth of data doubles every 18 months and the resulting complexity compounds an already overwhelming problem. It is only by registering and cataloging data at the point of creation that we can be assured it will effectively and reliably inform fact-based decisions.



LEVERAGING DATA to INFORM DECISIONS:

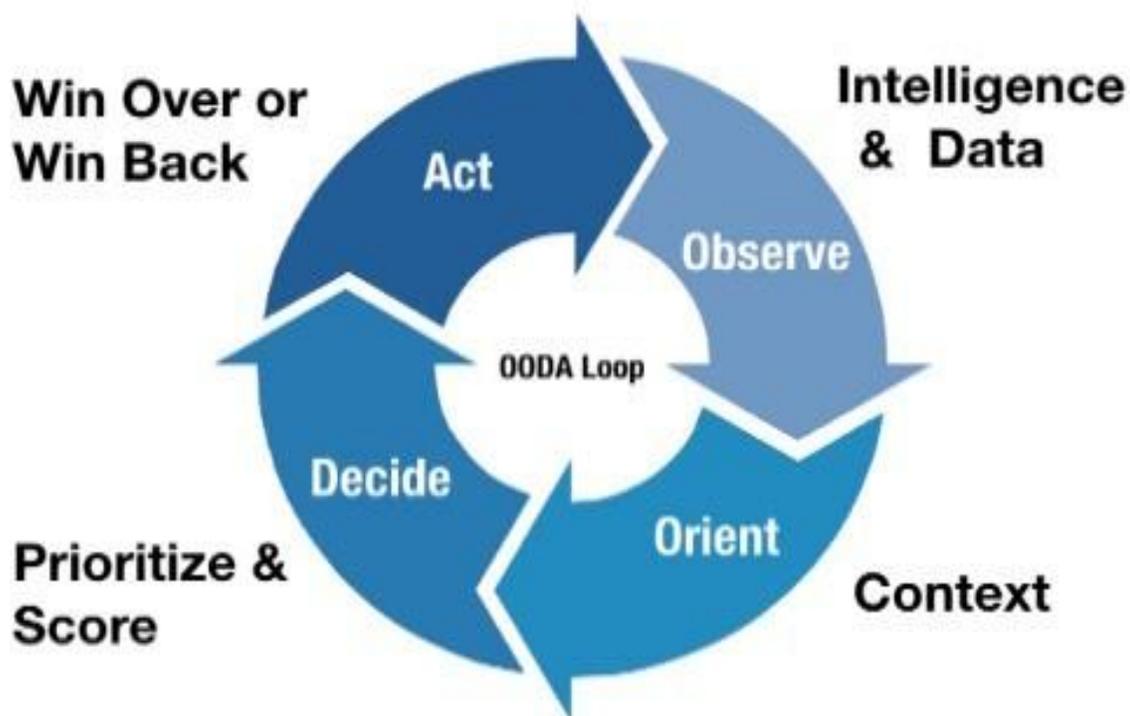
Recently, the digital age was abuzz with **BIG DATA**. Organizations began to realize the impact of the first stage: collecting copious amounts of data to document past activities and establish a solid frame of reference upon which to assess their progress. The Second-Stage of structuring data to ensure its operational relevance is critical to its ability to inform the organization's current status, known as situational awareness. It is these first two steps that establish the foundation for making decisions based on lessons learned from past activities. It is this foundational approach that underpins fact-based decisions made in full awareness of past actions to predict present outcomes in today's interlinked information environment.

The transformative effect of information serves as a catalyst to our journey out of the Industrial Age into the Knowledge Age. By applying technological solutions, like **ARTIFICIAL INTELLIGENCE (AI)**, in the Third-Stage of operationalizing data to inform planning choices, we begin to appreciate the influence of data as it evolves and transforms the

perceptions and perspective of our current-day society. It is the results of these influences identified in the Fourth-Stage of **BUSINESS INTELLIGENCE (BI)** that inform which options are available to fulfill organizational objectives.

Through these progressive stages, we are provided with the requisite facts to make evidence-based decisions. Properly applied, the previous four steps actualize the untapped potential that is the Fifth-Stage, **VISUAL SIMULATION (VS)**. The feedback of this data maturation process provides **CREATIVE INSIGHTS (CI)** derived from past experiences that capitalize on future opportunities. The ultimate goal of these efforts is to transform our current state into the desired future state, capitalizing on the competitive advantage derived from sound strategic choices. This learning environment informs and enlightens one to the opportunities available in our future state. Continual feedback enables adaptation based on lessons learned from the Fifth-Stage, **MATRICULATION LOOP (ML)**. It is through this iterative endeavor that the aforementioned process to offer us the means to verify the knowns, validate the unknowns, and visualize the unknowable:

- **OBSERVE**/Assess our environment
- **ORIENT**/Characterize behaviors
- **DECIDE**/Enlightened based on possibilities
- **ACT**/Empowered by the current potential
- **LOOP**/Evolve feedback to promote learning

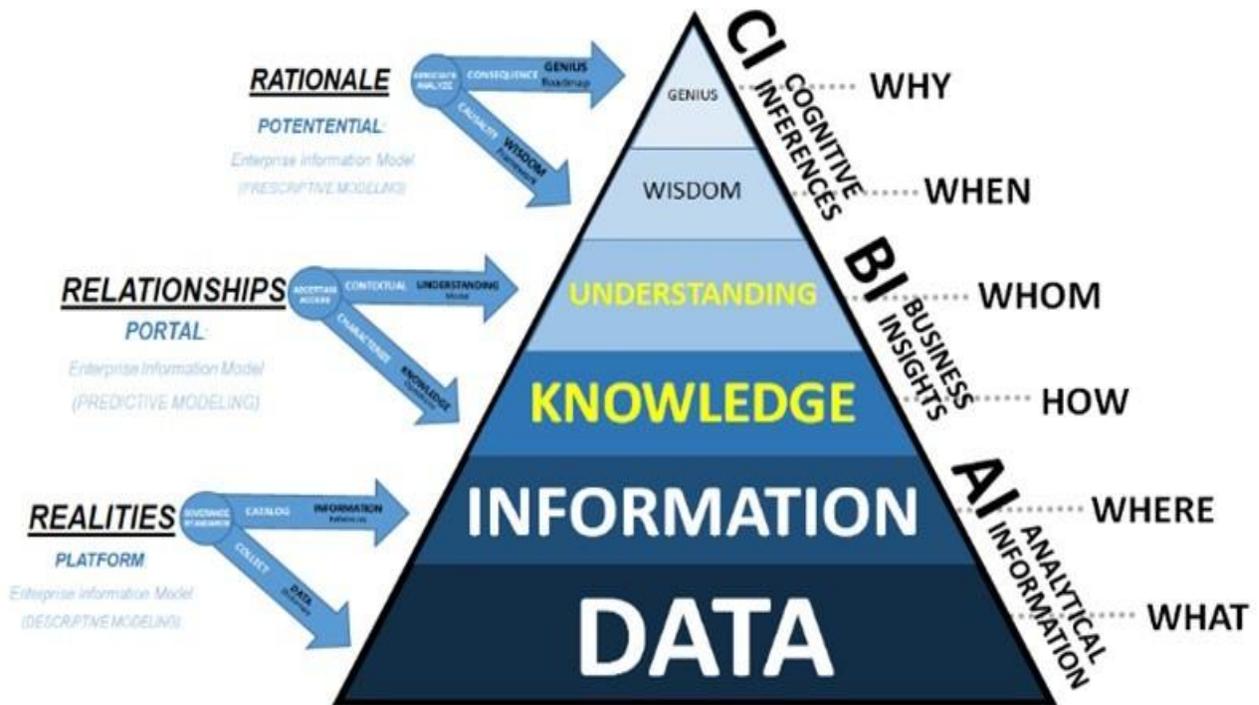


OPERATIONALIZING DATA as a STRATEGIC ASSET: To make evidence-based decision that evolve and transform the organization

$$X + Y - Z = A$$

Formula

The process of **ORGANIZING** data (*variable*) and **STRUCTURING** information (*mathematical symbols*) to provide **ANSWERS** knowledge (*summation*) produces understanding (*causality*) to derive wisdom (*consequence*) affords opportunities to effectively **PLAN/PROGRAM** to introduce genius into the cognitive process.



Steps 1-2 (*organize data / structure information*) allow analytical information/observations (*AI-Phase I*) to derive consistent answers in step three. Steps 4-5 (*relate knowledge / contextual understanding*) assure business Insights/options (*BI-Phase II*). Finally, through a matriculation loop (*ML*) (*evolve wisdom / inspire genius*) creative/cognitive insights (*CI-Phase III*).



FIVE STAGES of the COGNITIVE PROCESS:

BIG DATA - OBSERVE/ASSESS:

- o **COLLECT** data through a process of registration
- o **CATALOG** information to organize so it is fit for purpose

ARTIFICIAL INTELLIGENCE - ORIENT/CHARACTERIZE

- o **CORRELATE** knowledge so it is structured
- o **CHARACTERIZE** understanding relational dependencies

BUSINESS INTELLIGENCE - DECIDE/ENLIGHTEN

- o **COGNATE** wisdom to ascribe the options
- o **COST/BENEFIT** to inform genius that ascertains opportunities

VISUAL SIMULATION - ACT/EMPOWER

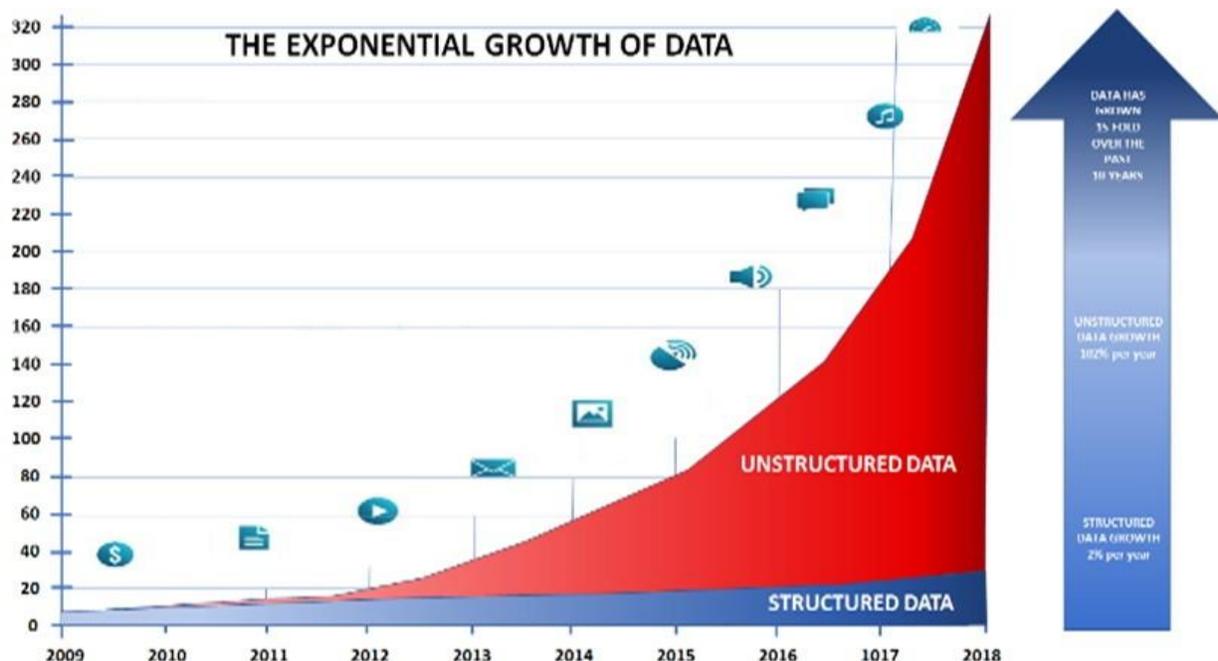
- o **CONTEXTUALIZE** illustrate the relational dependencies
- o **CONCEPTIONALIZE** illuminate the unlimited possibilities

MATRICATION LOOP - LOOP/EVOLVE

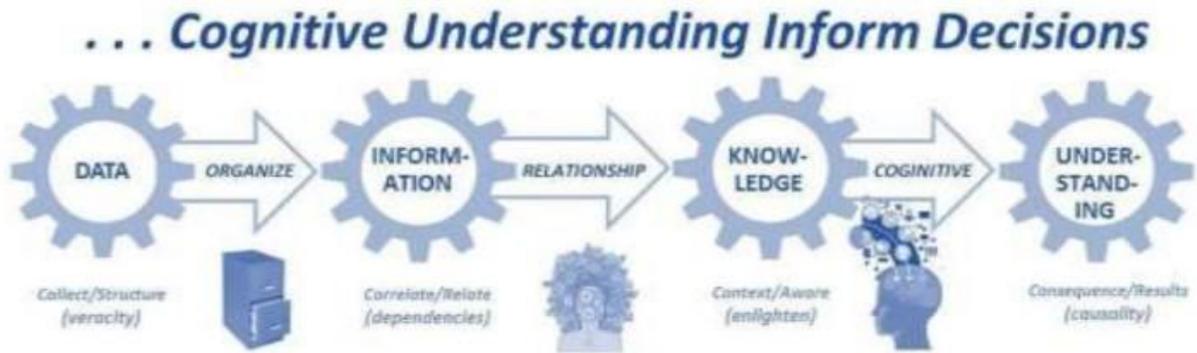
- o **CAUSALITY** of the influences that create impact
- o **CONSEQUENCE** manifestation of actions taken measure against results to be achieved

DATA MANAGEMENT versus OPERATIONALIZING DATA

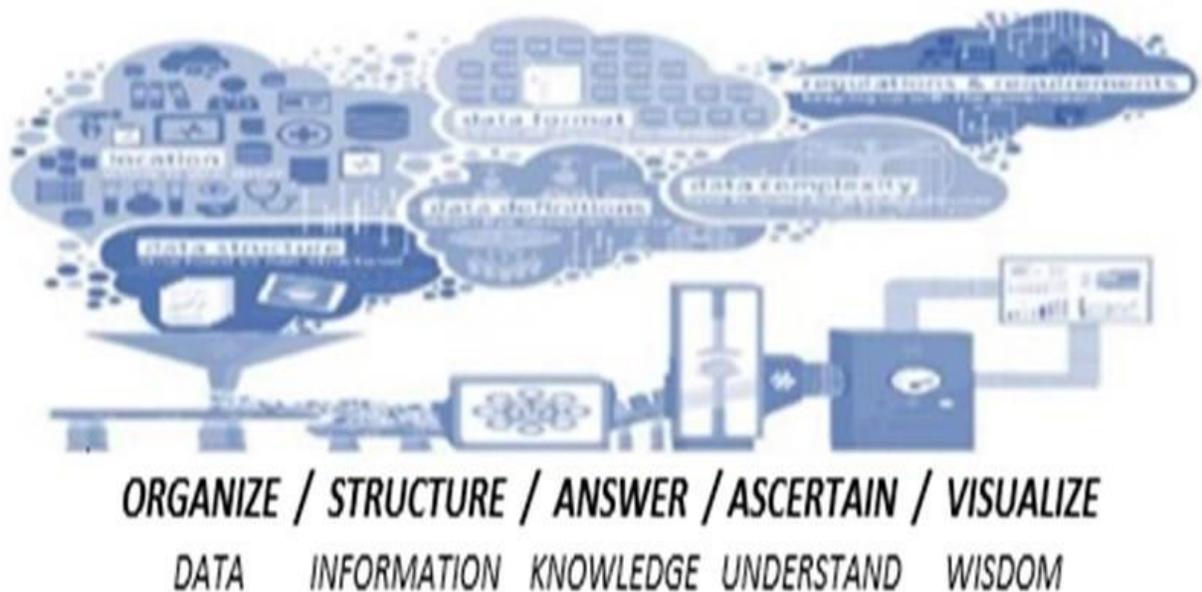
Historical approaches to manage data against a predefined schema was sufficient given low dependency on information. However, today's interlinked information environment collects and correlates data at the speed of light. Therefore the approach of managing data against a predefined master data reference library is far to restrictive to be effective and the historical approach of creating a "Gold Record" is counterproductive in providing timely reliable data upon which to base decisions.



The following demonstrates a framework of operationalizing data which informs the cognitive process. To that end, an adaptive and responsive program is required to autonomously organize and structure data to ensure it is fit for purpose and operationally relevant as illustrated below:

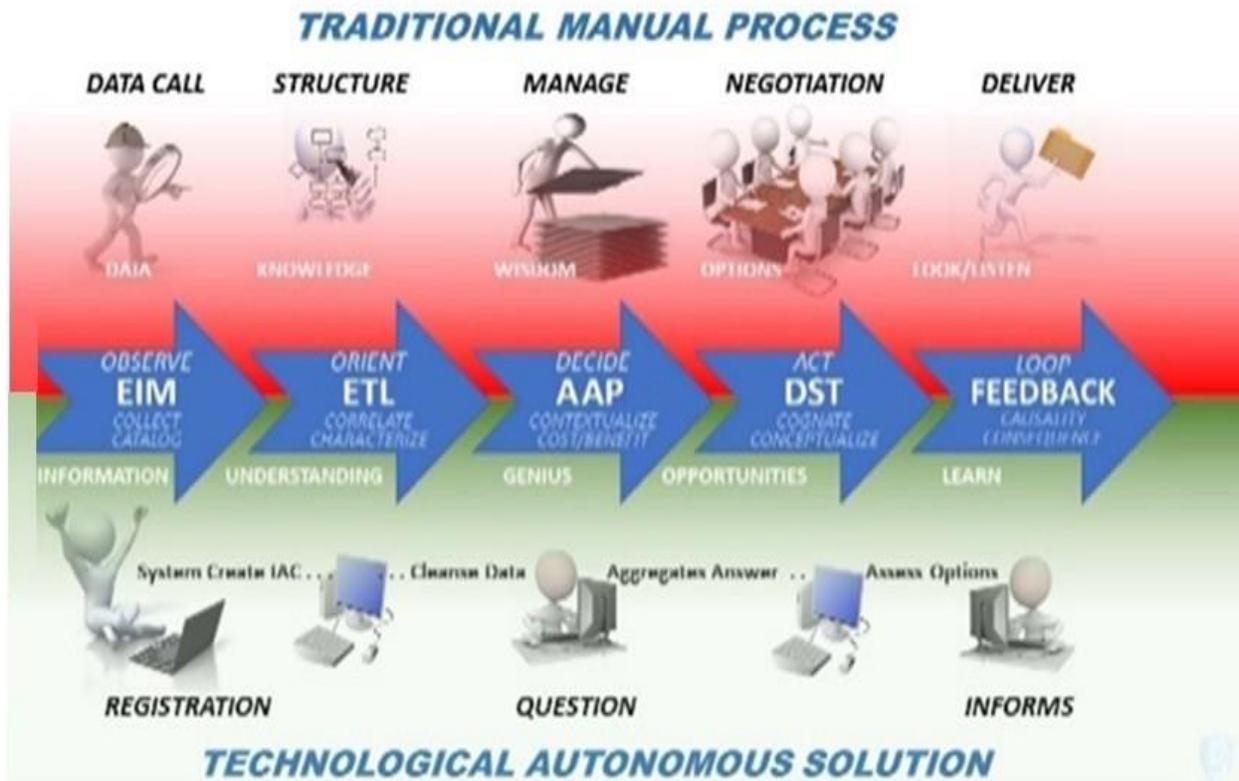


DATA MATURATION to INFORM COGNITION: *The Iterative Process to Provide Feedback to Learn*



Thus, it must be autonomously structured at the point of creation to keep pace with its adaptation. This affords the means to assure deconfliction validation throughout curation and provides the opportunity to discover it through the first phase and search it as a result of the efforts in the second stage. By applying the following framework, the ability to apply and matriculate data will facilitate the cognitive process. The resulting knowledge base will

afford well-informed decision, based on current facts and reliable relationships. By creating a framework to mature data in support of the cognitive model, we create a way to instantaneously answer today's most perplexing problems. It is through this progressive process that we will be able to leverage data as a strategic asset to make evidence-based decisions, directly resulting from organizing and structuring to provide consistent answers that illustrate available options while illuminating potential opportunities.

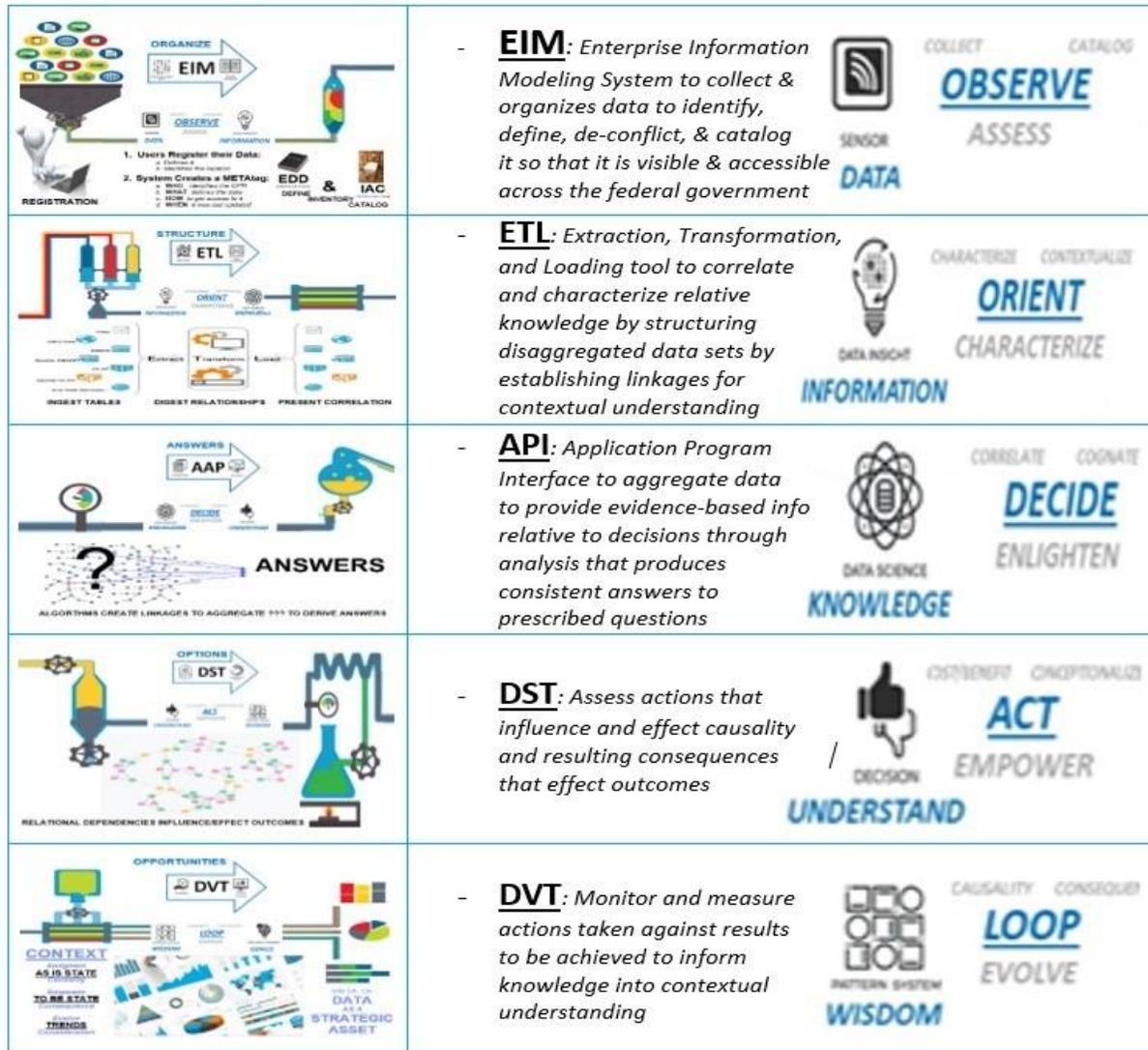


ORGANIZE - DATA / STRUCTURE - INFORMATION: *Apply the Science of the Probable to derive*

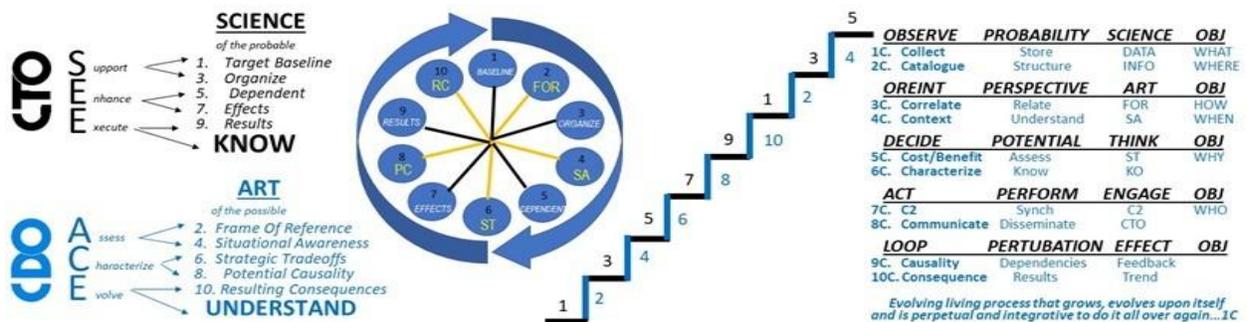
ANALYZE - ANSWERS: *From which to explore*

OPTION - KNOWLEDGE / OPPORTUNITY - UNDERSTANDING: *To Explore the Art of the Possible to derive a Strategic Competitive Advantage*

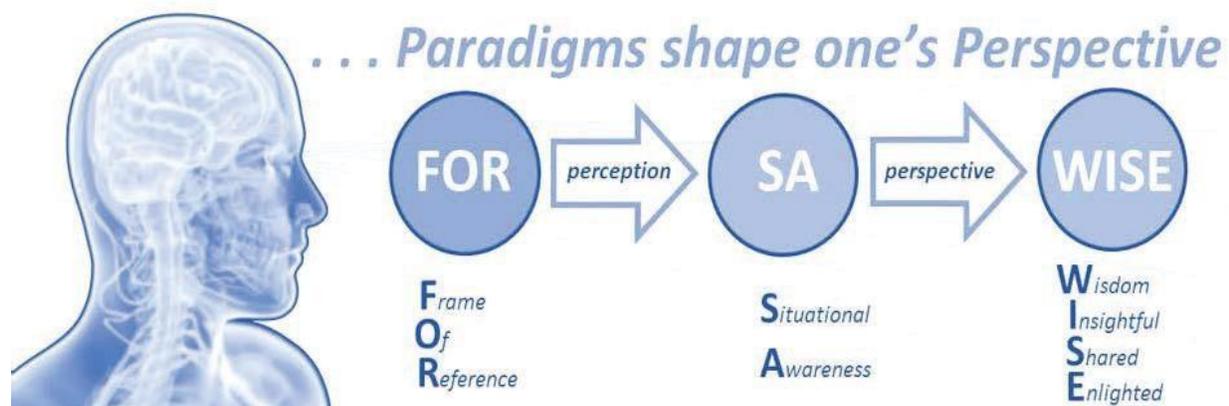
The following is the steps to make data fit for purpose and operationally relevant to assess, analyze, and ascertain the options that provide opportunities:



OPERATIONALIZING DATA as a STRATEGIC ASSET: To make evidence-based decisions that evolve and transform the organization

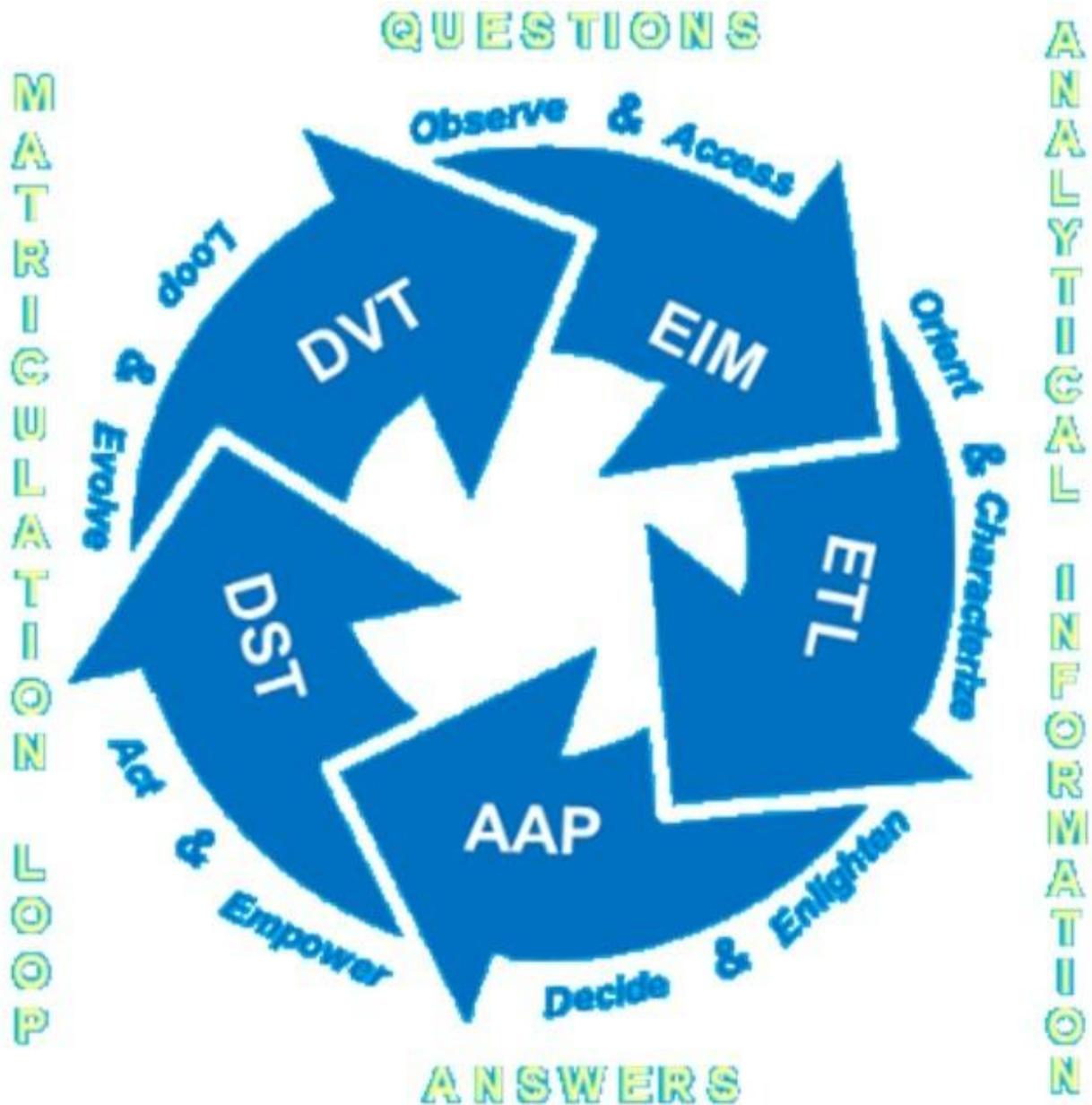


It is within this process that the **EIM** organizes data to enable discovery. The **ETL** structures provide relational information, making it accessible and searchable and enabling it to be shared across the enterprise. The result is analytical information (*AI*) available to answer predefined questions (algorithm aggregation process, **AAP**), which can be explored to ascertain the influences on outcomes. Through a decision support tool (**DST**), we begin to understand the influences/causality that affect outcomes/consequences. By contextually presenting the facts and identifying the relationships, the knowledge that surpasses understanding provides the wisdom which validates our knowns, verifies our unknowns, and visualizes the unknowable. It is from a data visualization tool (**DVT**) that a frame of reference (**FOR**) is illustrated, illuminating the current state of situational awareness (**SA**). It is through this framework that wise decisions can facilitate genius in the cognitive process.

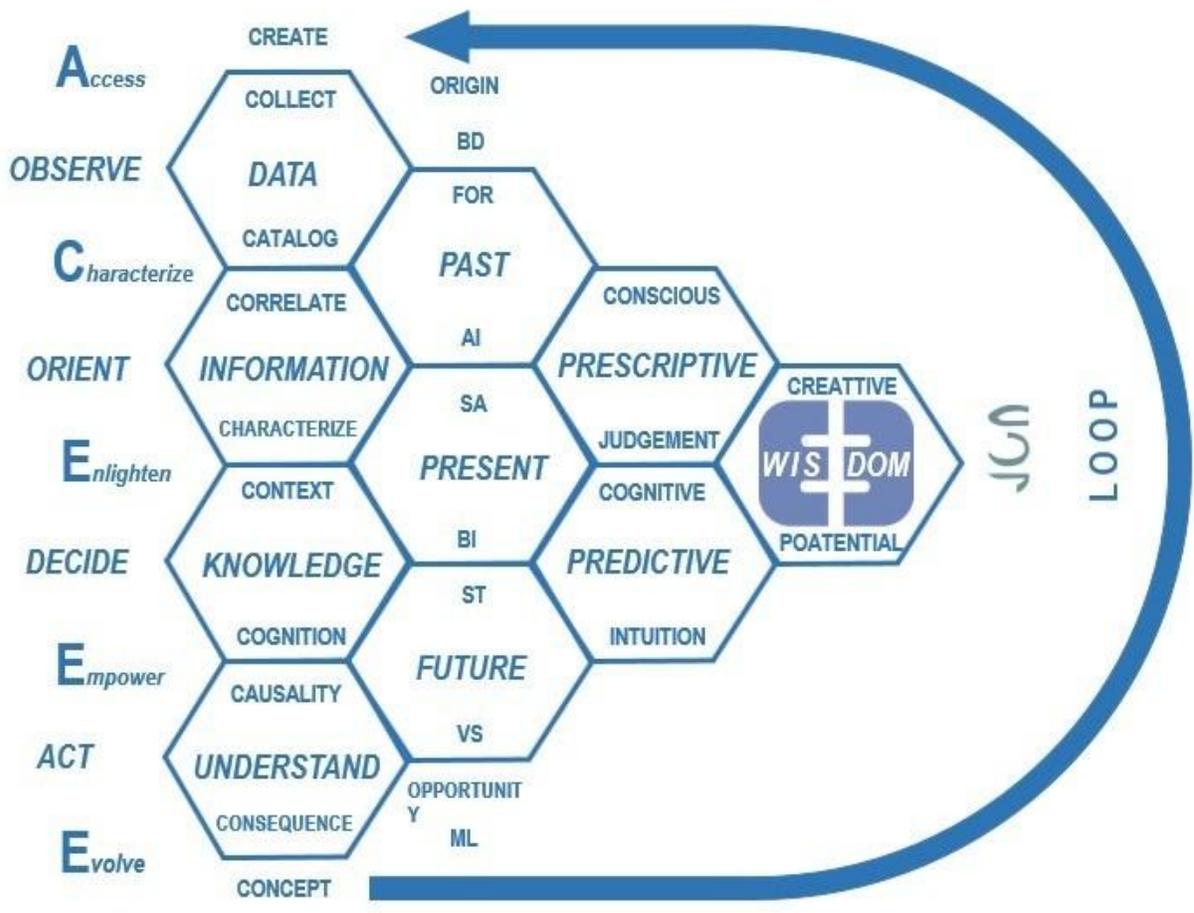


INFORM and INFLUENCE the TRANSITION to TRANSFORM: *Embarking on a Journey in Exploration of Wisdom and Genius by Looking / Listening / Learning*

Finally, throughout this iterative process, facts are refined and relationships are strengthened to inform the possibility of learning from the past and the resulting impact on the present, which provides the means to predict the potential the future holds. The standard references (*algebraic symbols/relationships*) that allow data to evolve, given the FOR of external influences that impact the outcomes, offer SA of actions taken, measured against the results to be achieved. This is presented in the following framework which provides the means to model the volume, variety, velocity, veracity, and value (5Vs) of data in order to inform the current state of the information environment. This is achievable due to sound standards (META) applied to link data that deconflicts the descriptors (*tagging*) with sufficient consistency to mature facts (*veracity*) and build confidence in the relationships (*dependencies*).



Overall, the cognitive process of applying facts relative to past perspectives influence current paradigms which impact future perspectives. It is through this progress process that the future is revealed. Thus, available options to capitalize on unforeseen opportunities allow the foresight to cultivate competitive strategic advantage. It is through this iterative process, that one can capitalize on the requisite flexibility essential to adapt and overcome the growing challenges within our everchanging world. It is thus imperative that we operationalize and leverage data as a strategic asset if we are to assure actions that ensure our vital national interest.



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