Team 4: It's Dow or Never

Transformation Plan

November 24, 2019

EXECUTIVE SUMMARY

Dow Chemical Company ($50B Market Share, 38000 Employees) is a large enterprise, best known for plastics, has seen a recent decline in revenue. It is trying to transform the enterprise to the Digital age by becoming an analytics company that focuses on data-based decisions and innovating in analytical mindset.

CURRENT STATE

Increased competition from head-to-head competitors requires Dow to evaluate its current model in the chemical and manufacturing arena.

1. Isolated functions across business units.
2. Culture and behavior challenges.
3. Failure to adopt new technology and methodology.
4. Data & security risks prevent collaboration.

FUTURE STATE

Dow has realized the need to adapt to the Digital and Analytical age by evolving in key areas within its business units and functional areas:

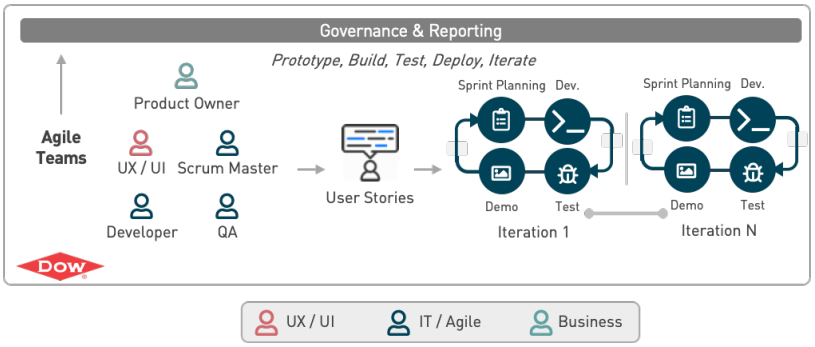
1. Culture of analytical-based initiatives.
2. Focus on high-value business.
3. Incorporate an environment of new technology (e.g.: cloud, tools, etc.).
4. Promote an enterprise-wide framework of data-based (KPIs)decision making.

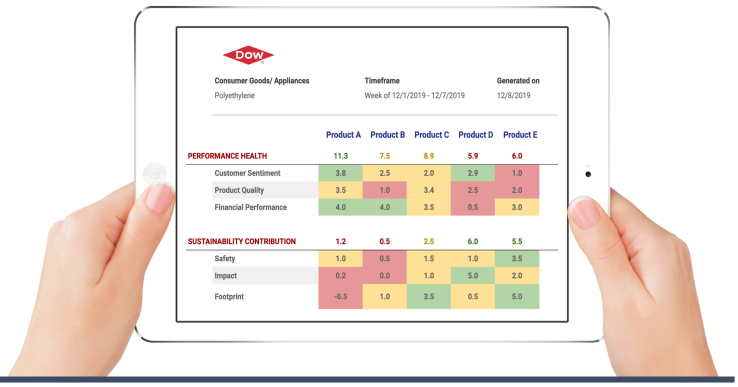
GAP

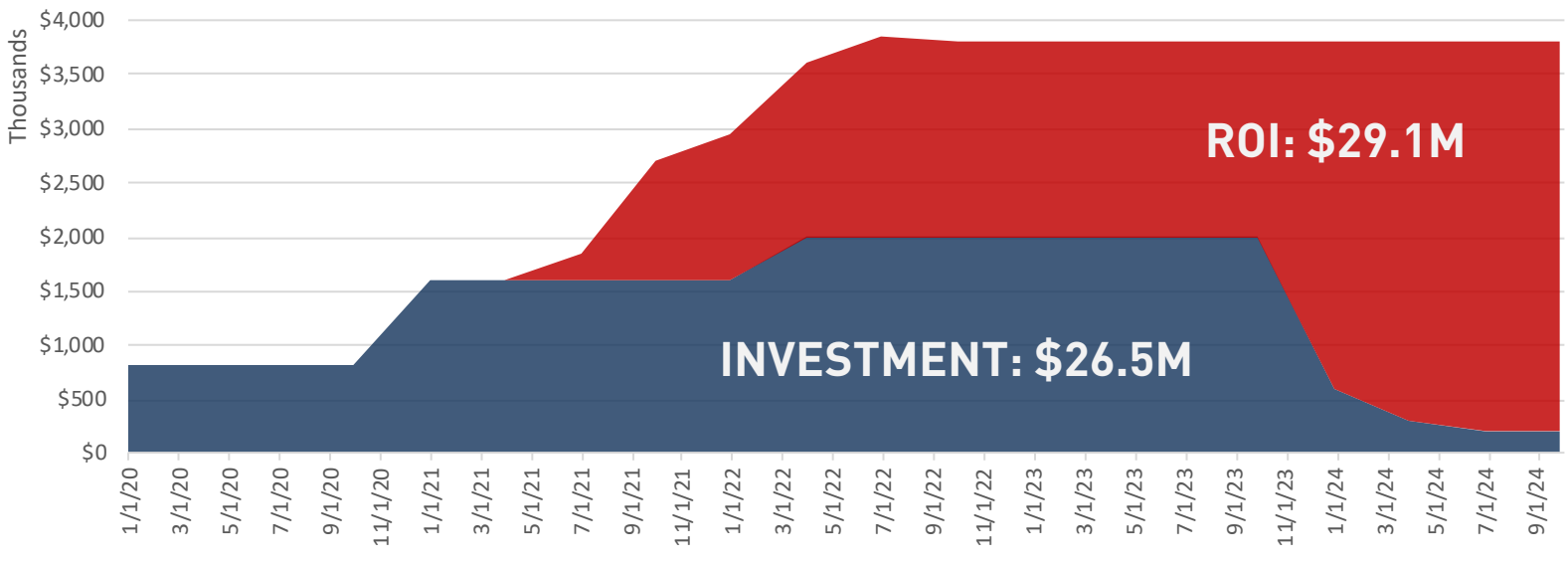
A successful transformation will address the gap for each of the 4 dimensions of the Analytical IQ (data maturity, analytical maturity, analytical culture, and scale and scope). Dow is between Stage 2 – Stage 3 in the Analytical Maturity Model and we believe we can shift it to Stage 4: analytical company.

JUMP THE GAP:

Our plan to jump the gap between current state and future state depends on improving Dow's analytical maturity, addressing data maturity concerns, establishing a new way of working and promoting a culture of decisions made by analytical resources. Below are two examples of how we will establish an agile methodology of using sprint planning and a Dow Product Scorecard to bring visibility to data-based decision.







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1. Transformation Frameworks

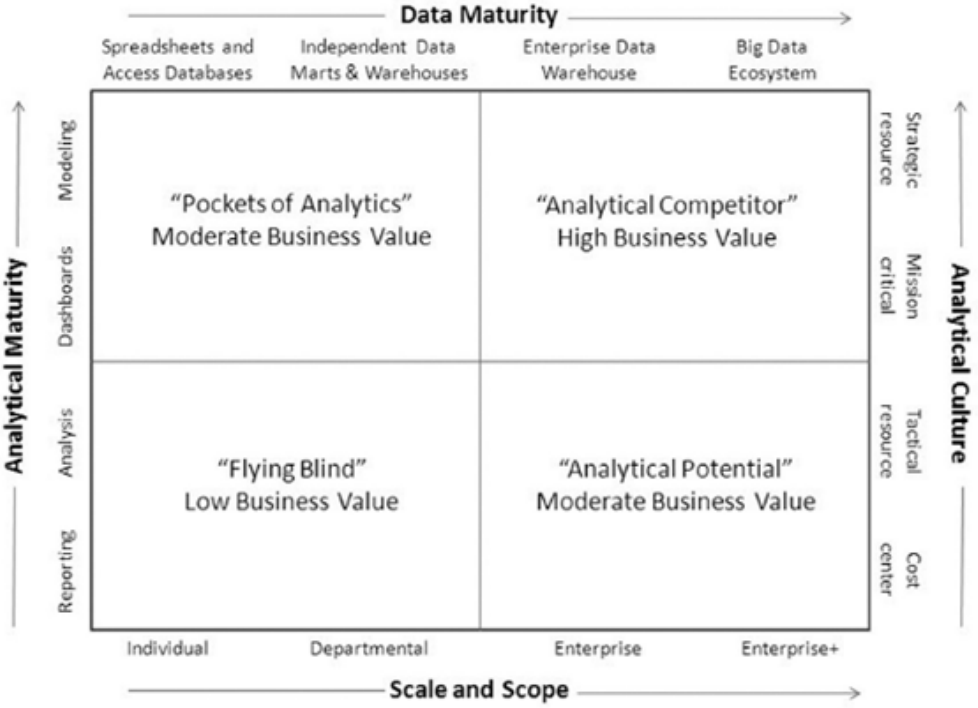
The transformation framework we will be using to define our current state and our desired future state will be a combination of two frameworks: (1) the Analytics Maturity Model, from Davenport, Tom, Jeanne Harris, and Robert Morison, *Analytics at Work: Smarter Decisions, Better Results*[1] And (2) the Analytical IQ Assessment from Secrets of Analytical Leaders by Wayne Eckerson[2]

The Analytics Maturity Model is a 5-stage model that tracks the analytical journey of an organization. Below are the 5 stages with a short description for each

STAGE	DESCRIPTION
1. Analytically Impaired	"Flying blind" – Lacks data, analysts, and executive interest
2. Localized Analytics	Pockets of analytical activity, but no coordinated activity or strategy
3. Analytical Aspirations	A few strategic initiatives underway but progress is slow
4. Analytical Companies	Benefits from regular use of analytics, but it's not strategic
5. Analytical Competitors	Widespread use of analytics which delivers a competitive advantage

Figure 1: Analytical Maturity Model

The Analytical IQ Assessment is a quadrant chart that plots four major dimensions of analytical IQ: data maturity, analytical maturity, analytical culture, and scale and scope. Notice the similarities within the quadrants to the above stages of the Analytics Maturity Model.



2. Analytics Gap and Strategy

Using these frameworks, we will determine what our current state is, and our desired future state. The transformation we undertake is how we will close the gap between the current state and the future state. We will identify the gap for each of the 4 dimensions of the Analytical IQ (data maturity, analytical maturity, analytical culture, and scale and scope), and along those 4 dimensions, lay out how we plan to jump the gap.

But first, why are we doing this transformation? We need to become a 21st century company. We can continue to carry on as is based on our market share, but to become THE dominant player in the market, we need to transform our data infrastructure, our people, our processes, and our culture. You know what they say, if you aren't growing, you're dying. We do not intend to die a slow death because we continue to do things a certain way because that's the way we have always done it.

Analytic Maturity Model Current and Future State

After evaluating the organization, we have determined that our current state is somewhere within the Stage 2 to Stage 3 range in our journey, which we will call localized analytics with analytical aspirations.

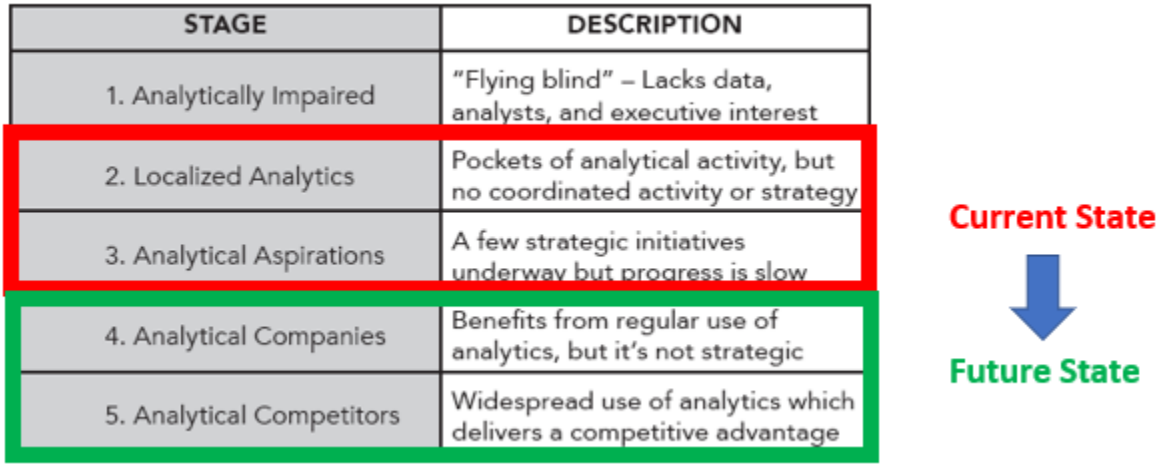


Figure 2: Analytical maturity model with current and future state identified

Whatever analytics we are currently performing, it is localized inside of different departments. There have been a few cross functional strategic initiatives, but nothing to scale. In order to be an analytical company verging into an analytical competitor, changes will have to be made. That is where the Analytical IQ Assessment comes in.

Analytical IQ Assessment Current and Future State

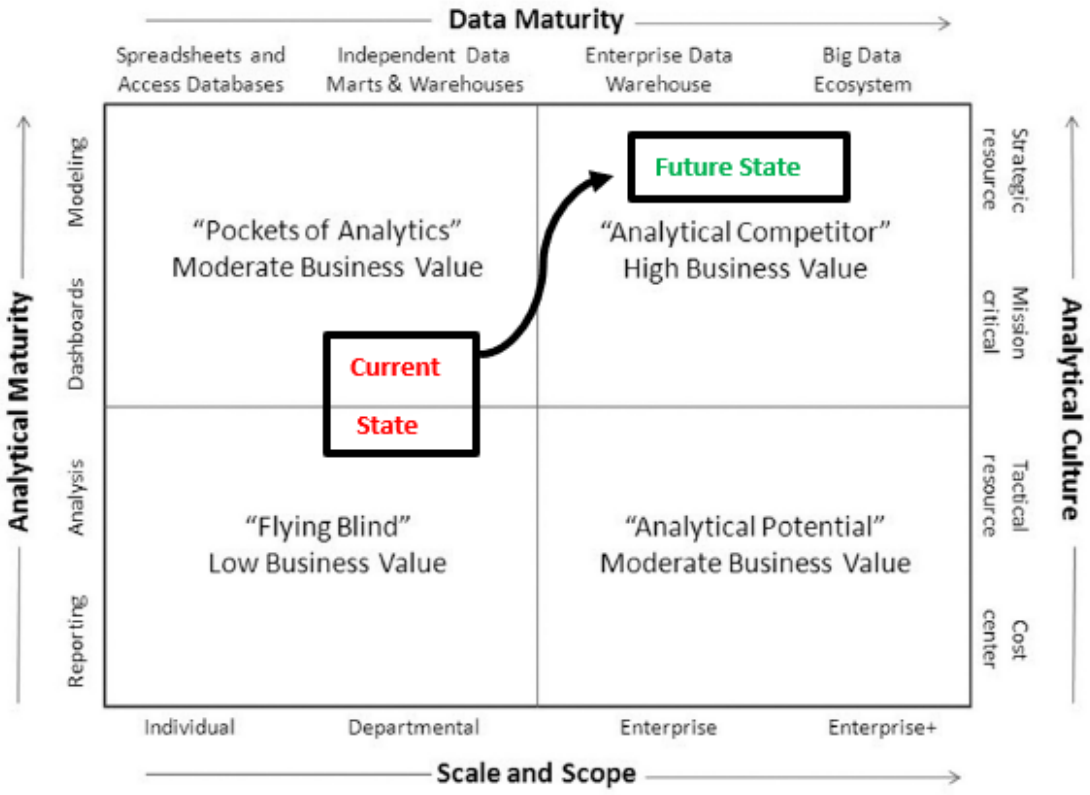


Figure 3: Analytical IQ Assessment with current and future state identified

Based on our evaluation, we have determined our current state in mostly in the "pockets of analytics" quadrant. Our desire is to move fully into the Analytical Competitor quadrant. To make that transformation, we will evaluate the current state and future state for each dimension, and how we will jump the gap in each dimension.

Four Dimension Current State, Future State, and How We Will Jump the Gap

- Analytical Maturity
    - Current State - ad hoc analysis and dashboards providing descriptive analytics for different areas of the business
    - Future State - uniform analytics structure across all areas of the company to make it easier to gather and utilize cross-departmental KPIs and business insights. Standardized analytics and reporting tools will make it easier for managers to share reporting and insights with upper-level leadership and enabling cross-departmental flow of information. In addition to uniform and cross-department descriptive analytics, develop a forward-looking modeling environment, providing us predictive and prescriptive analytics, forecasting *what will happen* and *how should we act.*
    - How we will jump the gap – we will invest $1 million in data engineers and data scientists over the next 12 months to deliver our standardized, cross-department

KPIs and insights, and our predictive and prescriptive modeling environment. We will create an estimated $5 million per year in value by improving decision making with cross-functional, data driven decision making, and reducing waste and inventory with better forecasting models

- Data Maturity
    - Current State - data is currently siloed within functional areas in different databases, excel sheets, and various reporting systems
    - Future State – a cloud-based enterprise data warehouse (EDW)
    - How we will jump the gap – we will invest $5 million in IT hardware and software over the next 12 months to deliver our cloud-based enterprise data warehouse. We will create an estimated $1 million per year in value by reducing current maintenance costs on existing data silos, and reducing data mining inefficiencies
- Scale and Scope
    - Current State - delivering value at the department level
    - Future State – delivering value at the enterprise level
    - How we will jump the gap – we will invest $1 million in Agile and Crisp-DM training, and a half million in hiring Scrum Masters over the next 12 months to deliver value at the enterprise level. We will create an estimated $1 million per year in value by improving project development and delivery through an Agile framework
- Analytical Culture
    - Current State – analytics is a tactical resource that supports decisions already made
    - Future State – analytics will be a strategic resource that drives decision making
    - How we will jump the gap – we will invest $1 million in developing transformational leadership and change management over the next 12 months to deliver a cultural change. We will create an estimated $5 million per year in value by improved decision making.

3. Pipeline of Demonstration Projects

Enterprise BI Reporting Tool

Enterprise level business intelligence tool will be implemented for company-wide reporting. Currently, all company reporting is done at the department level using various BI tools. Information is shared via excel files over email and other channels of communication. Bringing all reporting into a single tool will standardize reporting formats and metric definitions across all departments, making it easier for executive leadership to get quick and accurate updates on the status of the business. A single tool will also push for improved collaboration between departments to establish concrete metric definitions and standardize content output. This will reduce miscommunication and create unified understanding of business performance. More time will be spent discussing solutions to business problems rather than verifying data integrity and understanding.

A single reporting tool will also improve data security and integrity across all reporting channels. Hosting all reporting information in a single location will reduce information transfer over higher-risk channels such as email and remove the need to store sensitive content on local machines. It will also allow for easier management of role-level access to different security levels of data. IT department will have the ability to completely restrict access to sensitive company information when employees leave the organization or change positions. This level of security will prevent unwanted data breaches and protect company's intellectual property from leaving company premises.

Enterprise Analytics Tool

Another big issue with Dow's current analytical structure is the difficulty for advanced analysts to get proper access to raw company data. Most departments have a few analysts that utilize inter-department data to perform business analytics. It is often very hard to gain access to data outside of their department and then verify data integrity. An enterprise analytics tool will allow for advanced analysts across the company have access to vetted data from across the company. It will improve productivity by reducing the amount of time analysts spend tracking down proper data sources and doing the work to get that data ready for analysis. A single tool will help standardize how analytics insights are delivered to leadership and improve the security of Dow's sensitive information. Similarly, to an enterprise reporting tool, an analytics tool will help the IT team gain a better handle on securing who has access to insights and how information is shared across the company.

Another important advantage of having a single enterprise analytics tool is the ability of analysts to share their work and insights with other analysts across departments. Currently, all advances analytics are done in silos, so other departments often do not get exposed to the work done across the company. A place where analysts can collaborate on projects will improve flow of ideas and improve the quality of work across all areas of the business. This improvement to the analytics community within the company and overall quality of insights can result in both cost-savings and revenue-generation for Dow.

Enterprise Model Development Environment

After an enterprise reporting tool and analytics workspace, the team plans to create a proper development environment for all modeling work. Currently, all model development work is done in a scientist's locally built environments. Since the company is still in early stages of implementing forecasting models into their daily operations, there has not been an immediate need for a secure development environment. However, as more departments start to implement advanced statistical modeling into their workflows, it is important that all development work is done in a vetted and secure environment to reduce risk. Currently, the teams are trusting scientists to source and QA their own data for all modeling work. However, since the analytics teams are siloed, it is often difficult to ensure data integrity.

Providing a vetted development environment will improve scientist's productivity, reduce data integrity risks, and improve the quality of models being developed at Dow. It will also improve data security and protect company's intellectual property. Engineering team will own the maintenance of the development environment, so then data scientists can direct full focus into model development. This will result in shorter project timelines and quicker deliverables of advanced analytics

Enterprise Resource Planning Tool

Requested by the executive leadership is an enterprise planning tool that will encompass all areas of the business. The company is currently separately handling resource planning by business function. For example, product development utilizes their own tool to plan product material and labor costs, while marketing and sales utilizes a different tool to plan customer-level expenses. The goal is to bring all business functions into a single tool to give executive leadership visibility into all business processes in a single place. An ERP will improve efficiency by helping standardize the planning process and remove duplicate work across departments. The plan to implement an EPR is a lower priority item as there are current processes in place that have been utilized for many years at Dow.

This project will be one of the most challenging product implementations for the company and will require efforts from all departments along with a big team restructure to create enterprise finance and accounting teams. However, this project will yield significant future cost-savings for the company by improving visibility and unifying efforts across teams.

Customer Relationship Management Tool

A need for a central customer relationship management tool has been voiced by sales and customer service teams at Dow. Customer data is currently managed in various systems and teams are not using standardized information to manage current and potential customers. This makes it hard to determine the health of Dow's current customers across different areas of the business. Implementing an enterprise level customer relationship management tool will improve visibility into Dow's customer portfolio and give the customer facing team tools to be successful in their roles.

With access to an enterprise data warehouse, customer data can be standardized across all business areas. Standardized metrics can be imported into the CRM daily import to show the most current view of each customer account. This will improve the team's productivity because they will no longer need to utilize multiple channels of information to get a full overview of a customer's account. They will utilize a single tool to record and review all customer related data, enabling them to focus their efforts on servicing the customer rather than hunting for data.

An enterprise CRM will also improve customer experience with standardization of analytics sent to the customer. Dow wants to improve the flow of data analytics to their key accounts, but there are currently no established practices on how information is shared with the customer. With the standardized metrics imported from the data warehouse, leadership can establish company-wide guidelines on what data can be shared with current customers. Customers will benefit by getting regular updates on their account status in a standard format. Improved customer communication will improve customer satisfaction and increase their lifetime value.

4. People and Technology Infrastructure Investments

People Investments:

To increase our level of Data Maturity, we propose to invest in IT personnel and data engineers who will create and deploy the EDW. This needs to be completed prior to any of the proposed analytics for the product scorecard can take place. As outlined above, we will propose to make a significant investment in Data Scientists and Scrum Masters who will enable cross-departmental flow of information in the form of standardized analytics and reporting tools, as well as predictive and prescriptive models. These roles need to be in place in order to utilize the newly created EDW. The sooner these roles are established, and the scrum team can start to work together and get to know each other, the more productive they will be.

We propose an additional investment in transformational and adaptive leadership skills to propel our transformation plan forward. Leaders involved with the training would benefit from some training, which will require time and as well as potentially external training materials. This training should be one of the very first things to be completed, so the leaders can help drive the project.

Technology Investments:

The product scorecard artefact hinges on the utilization of an Enterprise Data Warehouse, which requires a significant investment in hardware and software. This can include cloud-based solutions out of the box from 3rd party vendors or on-premises servers, pending the results of the security assessment. As the EDW is the critical capability for a successful execution of the product scorecard, this needs to be completed ASAP.

Additionally, training in the technical side of using the new EDW will be required for practitioners performing the reporting/modeling. This piece will be likely last in the workflow as everything needs to be in place prior to training. Users will have to be trained in order to pull data and perform analytics using the EDW.

Challenges

People Challenges:

One of the biggest challenges will be a slow pace due to proximity challenges, given the global nature of the team. Currently, analytics teams are organized in a siloed, decentralized manner. Reorganization would be the ideal solution here, but we are not recommending it on top of all

the other changes. But at the very least, the data scientist roles described above should be embedded within the businesses, which Eckerson recommends for maximum efficiency in understanding the critical customer requirements (CCRs).

Culture Change/Management Challenges:

Changing culture goes hand in hand with the technical side of change, and it can be argued that it is often more difficult. Change management is dependent on how well individuals adapt to the change. If the change is not adopted, the full value of the change will not be realized. We propose to utilize ProSci change management methodology (shown below in Figure 4) to move users from the current state to the future state. This methodology is used by 80% of Fortune 100 companies including Kraft, Unilever, Adobe and Lockheed Martin.[3]

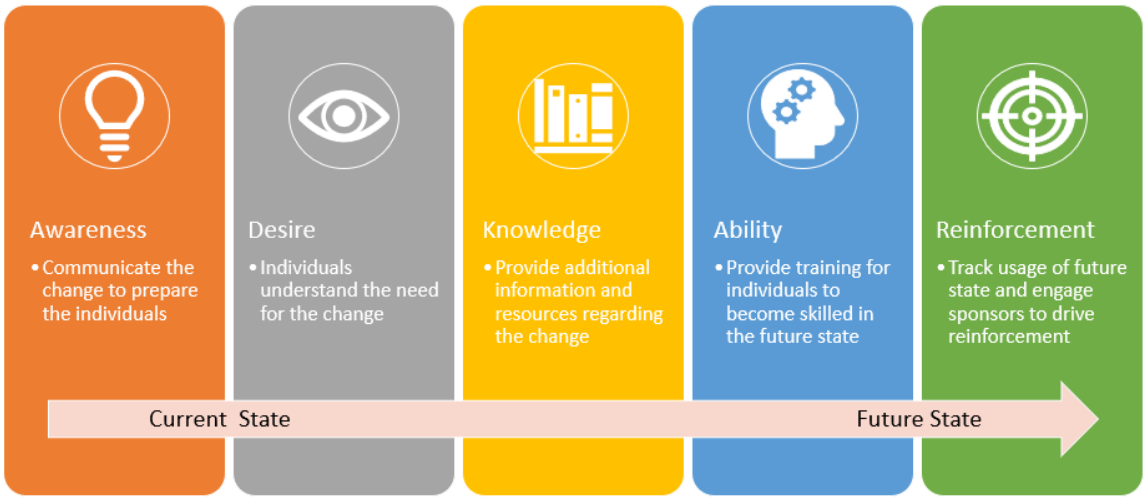


Figure 4: ProSci Change Management Methodology

Using the Prosci CM methodology allows us to proactively address any potential relapse in use of the tool. Engagement from sponsorship team from the beginning will allow for reinforcement to occur at all levels, as appropriate.

An additional culture challenge is resistance to the change. This can occur at any level, from the sponsor down to the individual level. Fortunately, there are methods to manage the resistance provided by the Prosci Change Management methodology.

Data and Technology Challenges

Creating and EDW and consolidating all the disparate data sources is a hefty task in and of itself. We will need buy in from the sponsors to enable this enterprise-wide mindset shift to one of being more open with data. There are justifiable reasons for the hesitation in sharing data, as unlike other industries, a substantial competitive advantage is to be gained with a data leak. This leads to a discussion regarding the security model and how it might impact the willingness to share the data within the EDW. Currently, the culture of data “hoarding” will make this very challenging. Using the Prosci Change Management methodology will likely motivate the data owners to share.

In addition to the investments in people and technology outlined above, we will also require additional help from the following organizations to make this transformation successful:

- Architects
- Data Owners
- Security
- DBA

5. Top Three Risks and Mitigation Strategies

Culture

The cultural change required is the largest risk, “creating a true analytical culture is 80% of the challenge we face.” (2012, Eckerson) Shifting form data only being the job of a few IT teams to being important to every employee is an enormous challenge.

Mitigation: To start “we must educate people at all levels of the organization and demonstrate business results.” (2012, Eckerson) Basic transactional leadership tactics can be used to initiate changes in culture by rewarding those that are part of the change, but a reward-based system is not sustainable. To help drive culture change and make it sustainable the following will be done:

Ongoing Mitigation:

- Driving Behavior changes: Communities of best practice- there will be a central team that works for the CDAO, this team will function as more of a consulting team that is used to help all the other areas address their challenging topics. This team will hold office hours each week in which all other teams can call in to discuss topics of need and have support to brainstorm or get additional assistance.
- Team inclusion opportunities- it will be important to take the time to build positive relationships between leaders and the teams as well as between the teams. Organizing company sponsored lunches in which people can take a break from work to spend time getting to know each other will aid in that process. Taking the time to do this builds the feeling of trust and family which will help with individual commitment to the corporate goals.
- Another team opportunity would be to work on a community volunteer project. This should be a company sponsored event, this shows the heart of the community and again will bring a team closer and build a bond between the company and employees. It also shows commitment to the people at DOW and community, taking the time to give back will build a greater bond to the company.

Failure to Adopt

It will be very important to get people to understand the importance of an analytical transformation. O’connor emphasizes the approach to the risk of failure to adopt that we are taking “we believe that communication and community building will help showcase the benefits of analytics and increase adoption.” (2012, Eckerson)

Mitigation: This will initially be addressed through a corporate communication plan. There will be a series of communications in various forms to be able to reach more people. The communication plan will start with an address from a corporate all hands with the CEO expressing the value and importance to the company and why it matters for every single person. After the initial meeting it will be important to quickly follow it with an email from each area leader that breaks down what this means at an individual level and how it impacts their work day to day, people want to know, “what does this mean to me?” Visually appealing posters will be distributed throughout office buildings to provide additional reinforcement and reminders of the change. It will also be very important to continue the conversation, recurring meetings and written communications will be set to help address challenges as they come up, show progress, and to emphasize the importance of the change to the company. For an employee to see the dedication for DOW will help to encourage them to get on board with the change. Understanding their individual commitment to the change and seeing the progress being tracked and communicated helps the change be achievable and recognizable to the employees.

Talent Management

“Talented analytical leaders are in high demand and continually seek new challenges, so they don’t stay long in one place!” (2012, Eckerson) It is very challenging in the current job market to attract and retain talent.

Mitigation:

- Overall review of compensation in the current market. It is important to make sure that current employees are fairly compensated and that it is a desirable place for experienced analytical professionals to go to. “It’s important to pay for top talent. In a creative field like analytics, the best people perform ten times better than average people.” (2012, Eckerson)
- Review policy for remote work, this will help cast a wider net for talent. Many people are seeking remote opportunities to improve work/life balance. It is important to create a remote work agreement and provide necessary equipment and accessibility to these employees.
- Invest in educating current employees that are interested in advancing their skills or upskilling. Ensure there are corporate licenses for training sites and encourage people to be proactive in continuing to build their skills. Having the commitment from DOW to invest in current employees will help them feel valued and inclined to stay.

6. Revisit Initial Demonstration Project

Value Proposition:

- Cost Savings - product scorecard will help provide quick insights into areas of concern which will support leadership in making quick targeted decisions to improve business performance
- Cost Avoidance – product scorecard will give leadership the ability to interpret new product success early in the product lifecycle before investing more capital into marketing and production. Quick failures are less costly to the company.

Workflow:

- Once variables are chosen, the scorecard will be refreshed weekly. The refreshed scores will be available on Monday mornings via enterprise reporting tool.
- Scorecard will be used by executive and department-level leadership during the monthly business reviews to discuss product health
- Different leaders will own different variables of the scorecard that best align with their business function (e.g. Marketing will own NPS)
- The meeting agenda will focus on the discussion of the “red” areas on the scorecard and responsible parties will come prepared to discuss reasons for month-over-month drops and actions their teams are planning to take to improve the scores
- Action items will be outlined at the end of the meeting and followed up upon in the next MBR

Model Validation:

- Initial model structure and variable selection will be evaluated over a six-month period. During this time the leadership team will be trained how to interpret the scorecard and implement regular discussions around model output in Monthly Business Reviews.
- Model will be continuously validated as actions are taken to improve “red” scores
- Some variables will be adjusted annually to align with company's annual goals
- Owners will be assigned to different variables of the scorecard. These owners are responsible for driving the actions from stakeholders across the company to improve/maintain scores

Risks:

- Under-utilization of the model insights – this tool will be completely new to the company's workflow and it is possible that not all leaders will be comfortable with implementing a new approach to reviewing product performance. A group of leaders in all management levels will be trained on how to interpret and utilize the model. Those leaders will be the main sponsors for driving conversation in various leadership meetings and MBRs.
- Variables chosen by the leadership team do not correlate with company goals – some variables are selected by the leadership team to align with the company goals. First few iterations of the model might have useless variables. This could discourage leadership from utilizing the model and further improving the planning process. The team will need

to closely work with the executive leadership team to help develop strong variables to input into the model and closely watch performance during the six-month testing phase.

- Scores take longer to improve than expected – some variable scores might take longer than others to react to changes in business processes. It will be important to provide frequent updates to leadership showing tending metrics and changes to scores
- Inconsistent data – scorecard variables will be made up from various data sources and standardized data refreshes are crucial to the model success. Issues with getting up to date third party data can result in incorrect variable scores. The team plans to establish secure access to all needed data sources with regular data integrity checks.

7. Personal Philosophy of Analytical Leadership

Current Leadership State:

The current state of leadership at DOW is a blend of adaptive and transformational, although it is not being used strategically. This blend of styles is beneficial to analytical transformation but it needs to be adjusted to have consistent leadership styles depending on level and the appropriate levels of leadership need to be in place to drive the change.

Future Leadership State:

The future state of the leadership philosophy at Dow will be depend on the Transformational Leadership Model. It will be critical for the C-level leaders to be able to inspire and motivate the company. They will need to have the skills to build connections with employees helps create trust and an environment that is open to communication and change. Under them at a director level and below Adaptive Leadership will be key. It is a large corporate change and people receive that differently. Being able to adapt to the needs of their followers will be critical to the success of the company through the transformation. For leaders under directors it will also be important to utilize Transactional Leadership because of human nature and the desire to feel gratitude and be rewarded. At lower levels of leadership, Transformational Leadership will also come back into play as the relationships built through day to day interaction with followers will help encourage them to continue working through challenges of analytical transformation. These interactions and relationships will have a significant impact on team morale.

Leadership Strategy:

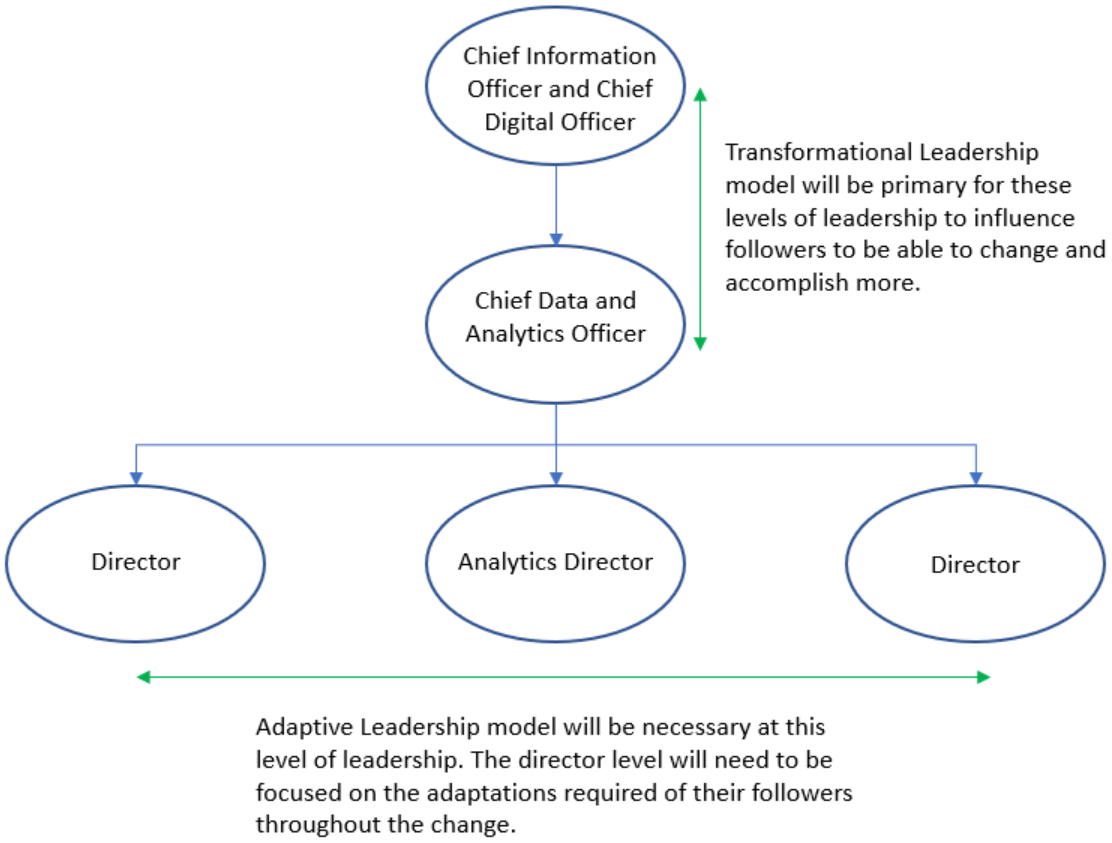


Figure 5: Leadership Model

- Chief Information Officer and Chief Digital Officer's role is to set the technology strategy for DOW. It will be important to standardize the tools used throughout the corporation to help with the ability to collaborate. This role is currently appointed and will work have the Chief Data and Analytics Officer reporting directly to them.
- Chief Data and Analytics Officer's role is to help manage data as a corporate asset. They will be responsible for DOW's enterprise wide data and information strategy. They will define data governance, control, and policy development. It will be important to have directors from every business area reporting, either directly or indirectly, to this person to have influence in all areas. This is role is an opportunity to bring in an external candidate that has previous experience in this role to help accelerate progress.
- Directors will have the most influence on levels below by setting strategy and goals for their individual areas. Having these leaders reporting to the CDAO will force their objective to incorporate the analytical change efforts.

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