

ISTM 684 –

Professional Internship Report



Arpita Deshmukh

MS in Management Information Systems

Name: Arpita Deshmukh

UIN: 327002589

Summer 2019

About Strategic Material Inc.

Introduction

Strategic Materials converts recyclable materials into valuable products that include the products used in our daily lives: food and beverage containers, fiberglass, wall insulations, and other consumer products. Headquartered at Houston, Texas, Strategic Materials, Inc. (SMI) began their journey in 1896. SMI is a leading recycling company with its facilities in the United States, Canada, and Mexico with nearly 50 plant locations in the US.

Products

SMI operates in two divisions: The glass division (Strategic Materials, Inc.) and the plastic division (NexCycle Canada). It is the largest glass processor in North America. Processed glass and plastic are used in products to increase the efficiency of the products for the customers and helps in the conservation of the earth's resources. [1]

Divisions

Glass Division

The Glass division is the largest business segment for SMI [2]. The company has been processing glass for more than 100 years. Processed glass is converted into a raw material called cullet and is sold majorly to fiberglass and glass container manufacturing companies for use in their processes [2] Glass manufacturers use recycled glass which not only improves sustainability but also saves them 30 % in energy cost [4]

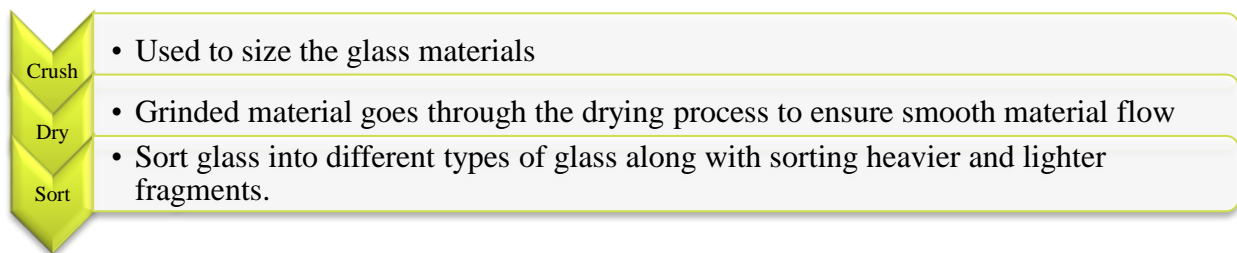
Plastic Division

NexCycle is the largest plastic processor in Canada. Plastic undergoes several processes and the end products are sold to several industrial customers with the production of film for the plastic bag market being a major application. Moreover, recycling plastic takes 88% less energy than making plastic from scratch [5]

Process Flows

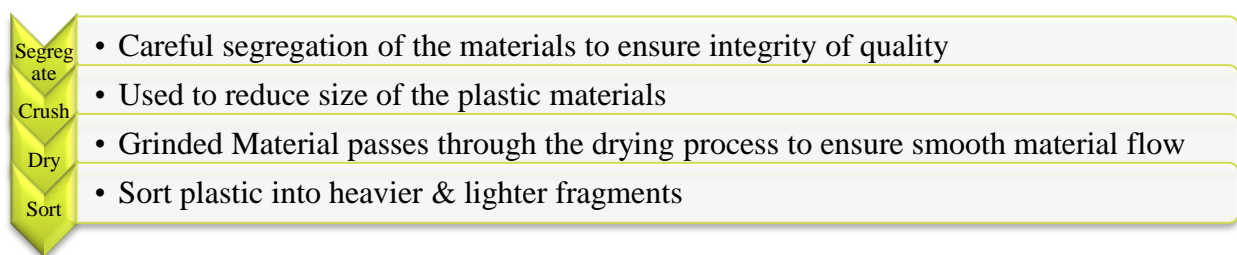
Glass

Collected glass is in a different color, type, and sizes. These materials undergo finely tuned production processes to produce a product that meets the specifications

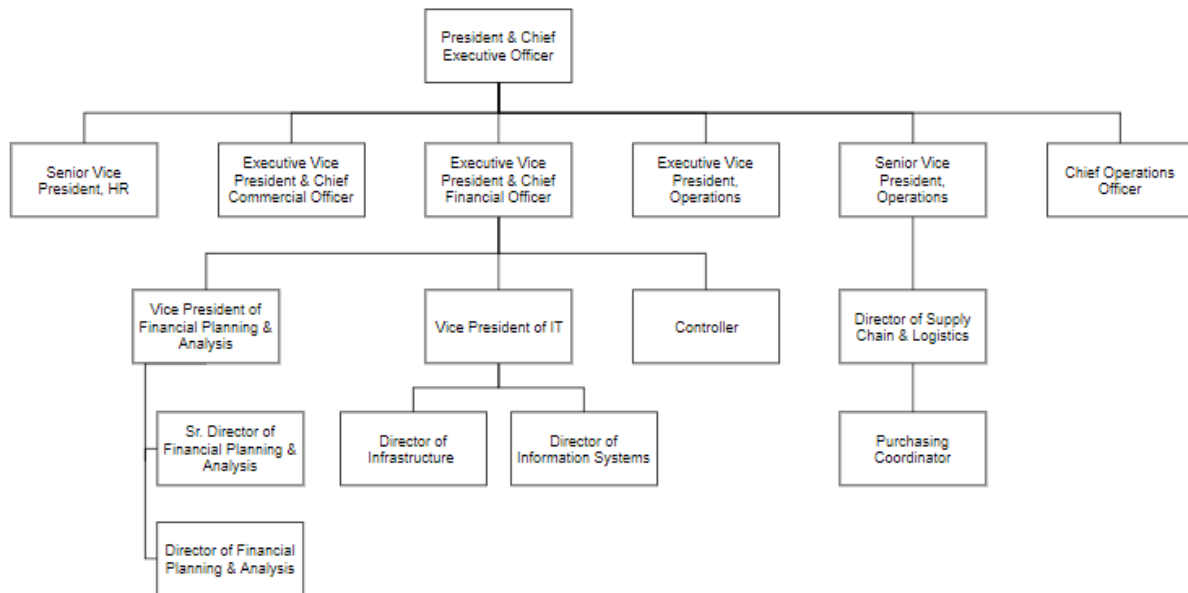


Plastic

Customer materials are carefully segregated for quality integrity and then size reduced, re-melted, filtrated and re-extruded into resin for use in their material blends. These resins can be further blended and compounded if required.



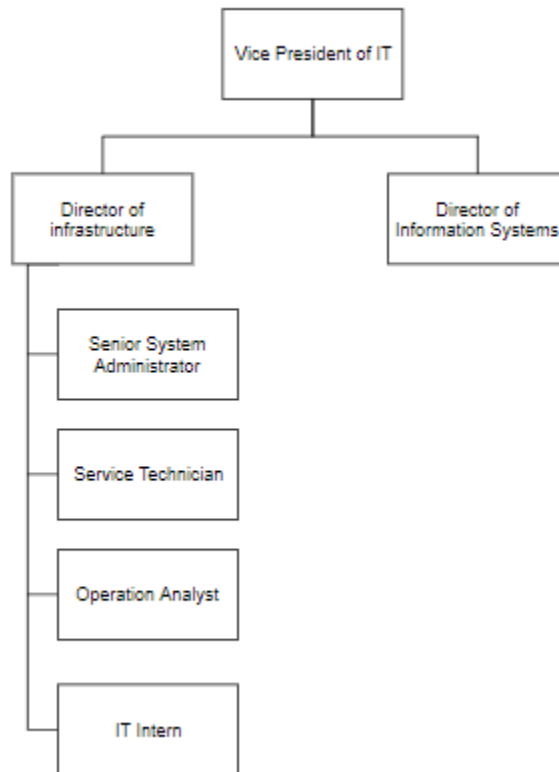
SMI Organizational Chart



Information Technology Department

The IT department at SMI resides in Houston, Texas which includes 6 employees. Some of the functions that SMI-IT is responsible for include setting up systems & computers, keeping the software updated, handling in-house securities, monitoring the network, giving access rights, collaborating with the vendors, etc.

IT Organizational Chart



My Role in IT

I worked as a Business Intelligence Analyst Intern at Strategic Materials, Inc. My job involved analyzing business processes & requirements, collaborating with other departments of the company to gain in-depth information about the requirements, and developing & managing BI solutions for the same. This role also involved integration with the company database and data warehousing wherein ETL operations were performed in order to use only the required data from source data. Throughout my Internship, I reported to Tom Lytle who is the Vice President of IT. Moreover, I closely worked with the executive operations team at SMI that involved recording the

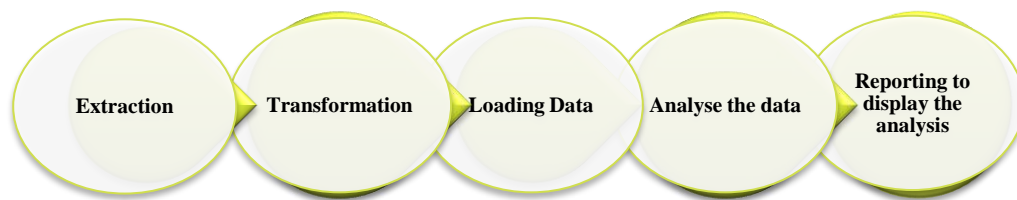
requirements and building dashboards to help them have a quick outlook & visualize the analytics that mattered.

ETL and Business Intelligence

ETL stands for Extract, Transform and Load. It is a process of extracting the data from the data source, transforming it into the desired format and then load it into a database wherein it could be retrieved later. While working on the assignment, I worked on the BI tool, Targit, which has an interface like Power BI. This tool contains interfaces to perform data visualizations as well as data warehousing. Moreover, I used SQL statements to perform the manipulation of data.

On the other hand, Business intelligence is used to perform visualizations on data coming from multiple data sources. It is used to analyze historical data and arrive at decisions and business strategies that would help in maximizing the benefits.

The steps involved in the entire process



Work Assignments

1. 6 Pack Dashboard



The 6 Pack is the most important dashboard used at SMI. The objective of building this interactive and dynamic dashboard is to have a quick look at all the crucial metrics in one place which could

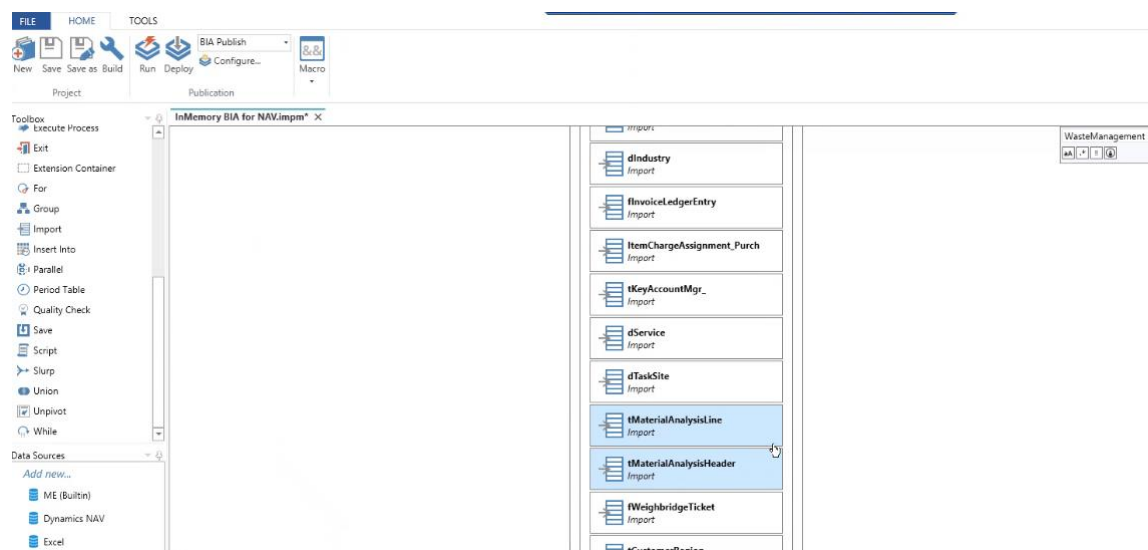
be accessible to all the employees. The department that uses this dashboard are: Operations, Finance, Commercial, Supply, and HR.

This dashboard includes the data for the Key Performance Indicators (KPIs) like Production, Sales, Yield, etc along with a comparison between actuals and budget(forecasted) values. The data used in the BI tool is stored in a data warehouse. So, before working on this dashboard, my task also included to ensure all the data was present in the cube which would help in pulling the data from the data source i.e. from MS Dynamics Nav. If the data wasn't present, ETL operations need to be performed to get access to the database via the BI tool. I had worked on creating a data warehouse in MS SSIS, and MS SSAS and hence building onto the pre-existing data warehouse became easier for me. This included the creation of cubes, data modeling, performing transformations using SQL, and loading the data. The challenging task was connecting multiple tables, requirements gathering from multiple departments in the company, change management, data integration since the entire company data was involved.

2. Executive Dashboard

CFO Dashboard Invoice and Payment Date							
Customer Name	Payment Customer Ledger Entry No.	Invoice Entry No.	Customer Ledger DocumentNo	Payment Date	Invoice Date	Days To Be Paid	
	13196737	12487961	WS1247894	02/15/2019	12/12/2018	65	
	14528083	13220445	WS1265990	05/29/2019	02/20/2019	98	
		13851256	WS1278300	05/29/2019	04/05/2019	54	
	11623400	12864795	WS1256737	02/13/2019	01/17/2019	27	
		13223426	SP007982	02/22/2019	02/22/2019	0	
	13215971	13223424	SP007981	02/22/2019	02/22/2019	0	
	14719969	14337549	WS1291913	06/24/2019	05/29/2019	26	
	13698931	12911306	WS1261026	04/11/2019	01/31/2019	70	
	12904280	12517791	WS1250347	01/31/2019	12/21/2018	41	
	14260977	14048655	WS1284823	05/21/2019	04/22/2019	29	
	13195167	12205549	WS1240672	02/13/2019	11/16/2018	89	
		12389153	SP007219	02/13/2019	12/05/2018	70	
	12789310	12375456	WS1244624	01/04/2019	11/30/2018	35	
	13679793	13184725	WS1283238	04/16/2019	02/10/2019	65	
		13231272	WS1266415	04/16/2019	02/13/2019	62	
	14641542	13350491	WS1272837	06/03/2019	03/16/2019	77	
	14707129	14048699	WS1264524	06/18/2019	04/26/2019	53	
	13259960	11296038	WS1216605	01/17/2019	08/23/2018	147	
	13234741	11169795	WS126218	02/26/2019	06/29/2018	181	
	14020044	11374345	WS1229244	04/25/2019	09/04/2018	213	
	6245420	13864582	SP006415	04/11/2019	04/11/2019	0	
	12872849	12347490	WS1243787	01/22/2019	11/26/2018	57	
		12462874	WS1245603	01/22/2019	12/05/2018	48	
	13149288	12504638	WS1249262	02/04/2019	12/18/2018	48	
		12509713	WS1249637	02/04/2019	12/19/2018	47	
	13223583	10942593	WS1213423	02/22/2019	06/13/2018	193	
	13548547	13182981	WS1262854	03/25/2019	02/04/2019	49	
		13183059	WS1262853	03/25/2019	02/04/2019	49	
	13811759	13200577	WS1283952	04/01/2019	02/11/2019	49	
		13240350	WS1267600	04/01/2019	02/15/2019	45	
	13864390	6293371	WS1120935	04/12/2019	09/05/2017	384	
	14006434	13313686	WS1271070	04/22/2019	03/04/2019	49	
	14209919	13291562	WS1268133	03/06/2019	02/26/2019	87	
		13529696	WS1272557	03/06/2019	03/18/2019	49	
	14236438	13335154	WS1274483	05/13/2019	03/25/2019	49	

I had designed the above dashboard to be viewed only by the CFO of the company. Working on this dashboard not only gave an opportunity of working on financial data. The major part of working on this dashboard involved performing the ETL operations. The steps included extraction of the relevant tables from Dynamics Nav, performing join & union operations and creating the data modeling in the preexisting model, performing transformations which included calculations and finally loading and visualization of data. While working on this dashboard, I learned that visualizing data using the BI tool is also a way of exhibiting if the integration process while performing ETL was technically correct. This is important because when implementing certain operations, it could result in the collapse of previously performed operations which would adversely affect calculations in other dashboards.



Key Takeaways

Interning at Strategic Materials, Inc gave me an opportunity of the practical application of classroom knowledge. At SMI, working with multiple departments help me understand the

meaning of the various terminologies used in the recycling industry. The courses that helped me to put my theoretical knowledge to test was data warehousing and the modeling class wherein I learn to work on a data visualization tool, Tableau. Moreover, during my internship program, I got exposed to newer technologies used in the industry and got a chance to interact with the executives at the company. Other learning points during my time spent at SMI were: how cleaning the data is extremely important. When the data is on production, it could produce glitches and be unavailable to the viewers. Also, it is extremely crucial to follow deadlines to be cognizant of the priorities of all the assigned tasks. Furthermore, the internship program helped me be a better team player and contributed towards improvement in my hard as well as my soft skills.

References

- [1] <https://www.strategicmaterials.com/>
- [2] https://www.strategicmaterials.com/UserFiles//File/Strategic_Materials_CompanyProfile.pdf
- [3] https://www.strategicmaterials.com/UserFiles//File/Strategic_Materials_Products.pdf
- [4] <https://www.strategicmaterials.com/glass-recycling/>
- [5] <https://www.strategicmaterials.com/plastic-recycling/>