Manufacturing Analytics Proof of Concept

Predictive Maintenance & Quality Seminar - IBM Buffalo Innovation Center

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RICH'S

About Rich's...

OUR
BUSINESS

SUMMARY

$3.5B
ANNUAL SALES

10,000+
ASSOCIATES

2,000+
PRODUCT CODES

THE RICH PROMISE

We will treat our customers, our associates and our communities the same way.

Like family.

OUR VALUES

- Cherish Our Culture
- Innovate
- Be The Trusted First Choice
- Better Our Communities
- Do What's Right

OUR
FOOD

PRODUCT PORTFOLIO


Toppings & Icings


Cakes & Desserts


Pizza & Flatbreads


Nut-Free Cookies


Bakery


Shrimp & Seafood


Appetizers & Snacks


Bar-B-Q


Meatballs & Pasta


Gluten-Free


Creams, Fillings & Soaks

Frozen Beverages

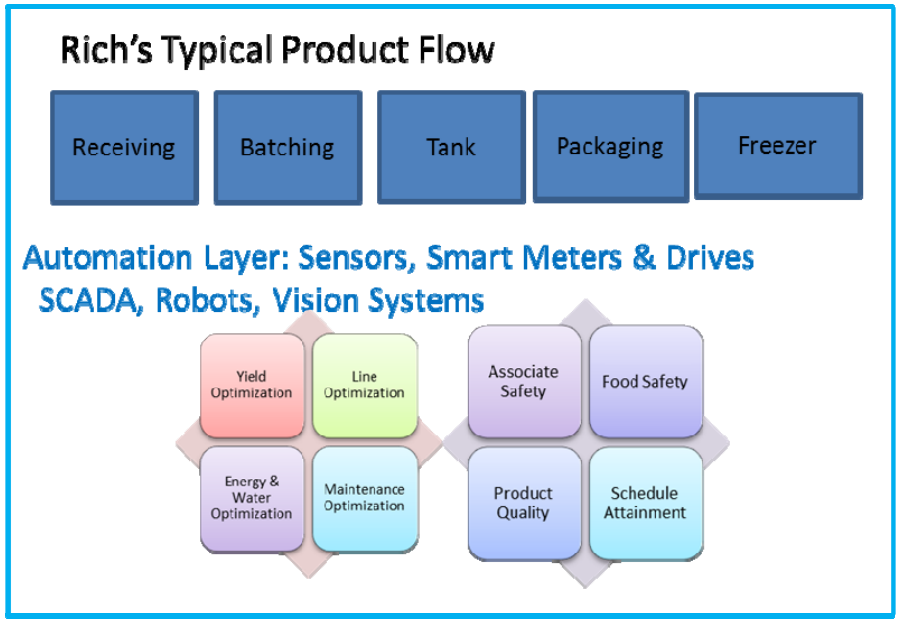
OUR BUSINESS

Headquartered in Buffalo, NY since 1945

Worldwide Sales Coverage - **112 Countries**

Manufacturing Facilities - **36 across the globe**

Existing systems provide control and scorecards to tell us how we did…



Our goal is analyze the data we've collected and look for patterns to predict what is likely to happen and take action before it does…

The main project objective was to analyze production data and develop insights regarding production downtime. Second, a knowledge transfer of analytic methods and tools will occur throughout this engagement and future engagements.

1) Answer the following question: Can we **predict equipment downtime** given the data we have

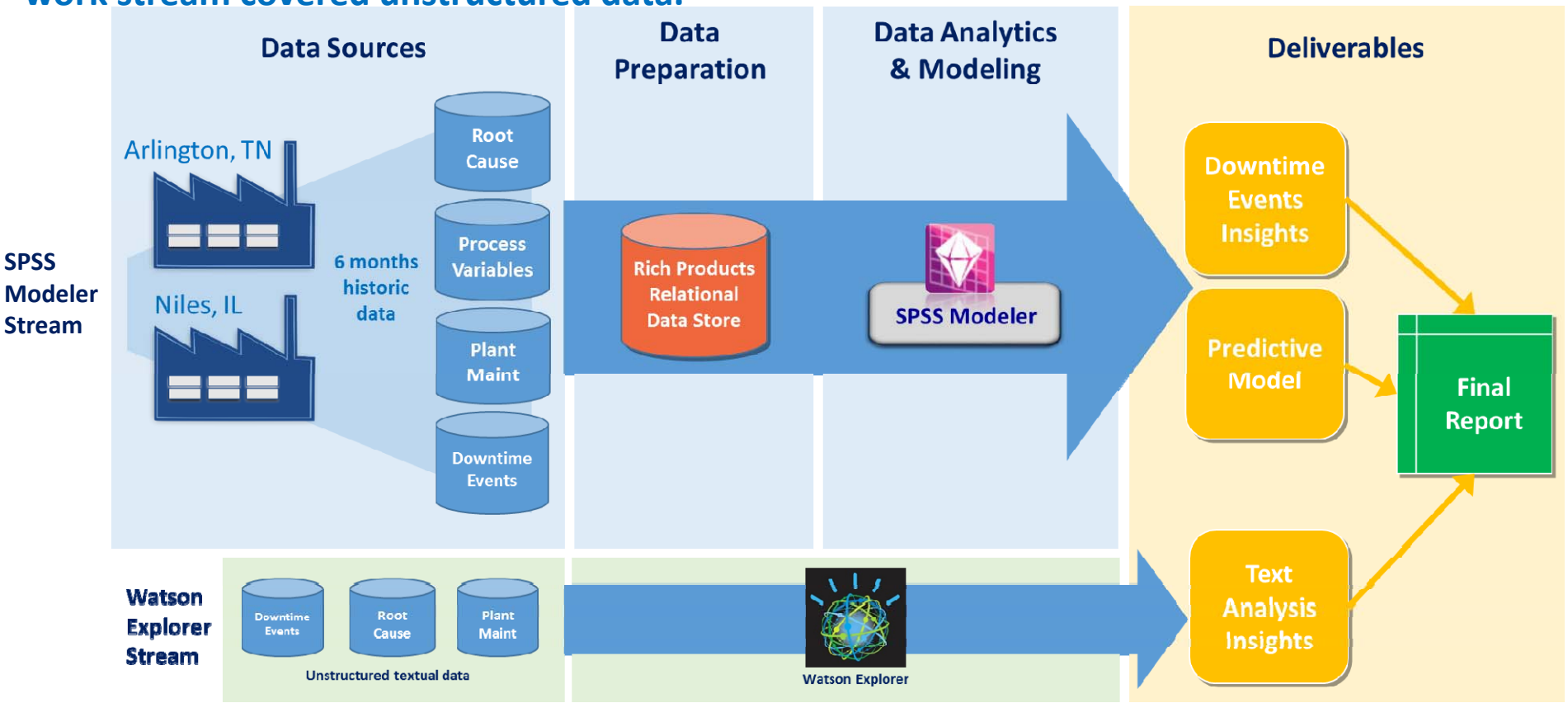
2) Set the **foundation** for Rich Products to become a **data-driven organization**

Take appropriate action based on insights

How are these objectives to be achieved?

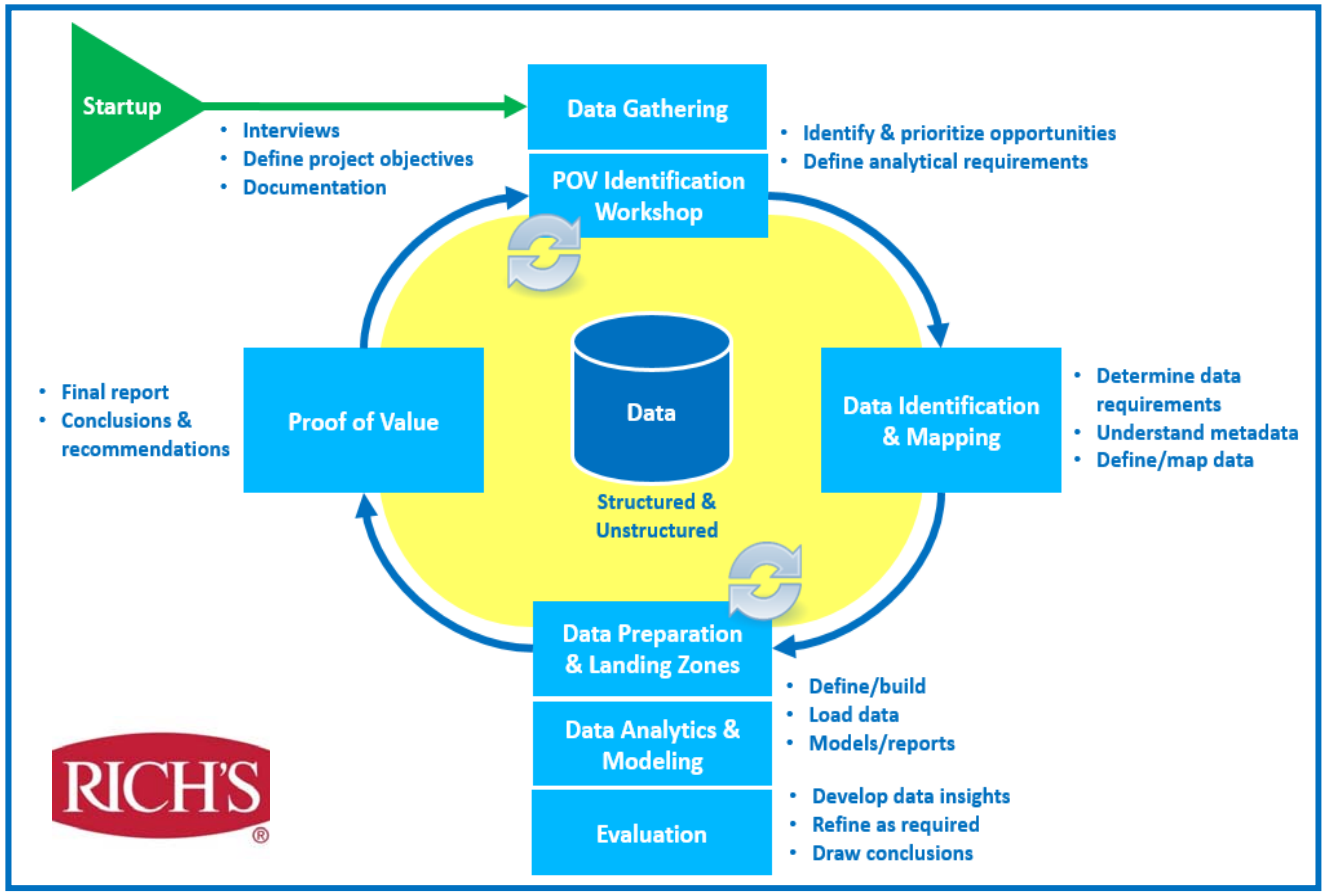
- Analyze data from multiple sources, i.e. **Downtime Events**, **Equipment Data**, **Root Cause Analysis,** and **Plant Maintenance** data to discover **data trends, data patterns, and correlations** associated with specific downtime events by product and their predictive value
- **Rich Products analysts** work collaboratively **with the IBM team** to understand the methodology in a **real-world use case** to apply on future projects

An end-to-end rapid analytics process was applied to this project. The primary SPSS work stream encompassed structured data and the secondary Watson work stream covered unstructured data.

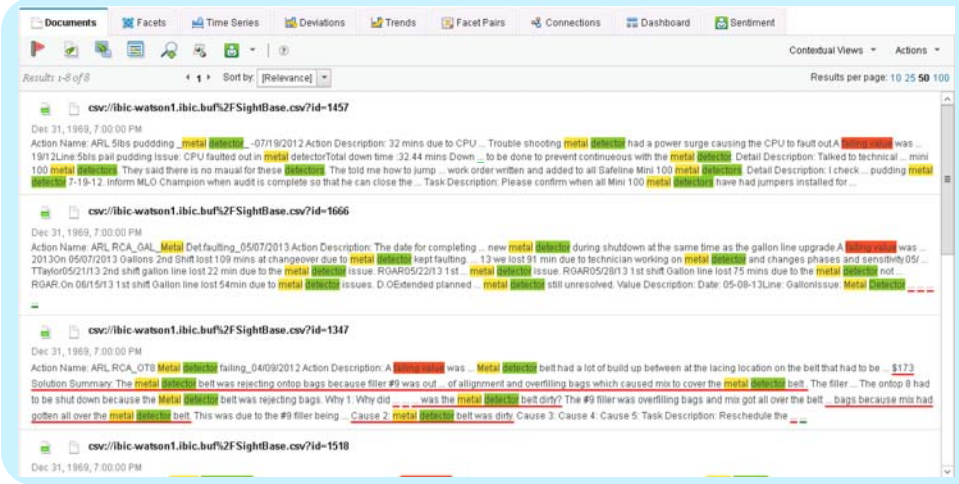


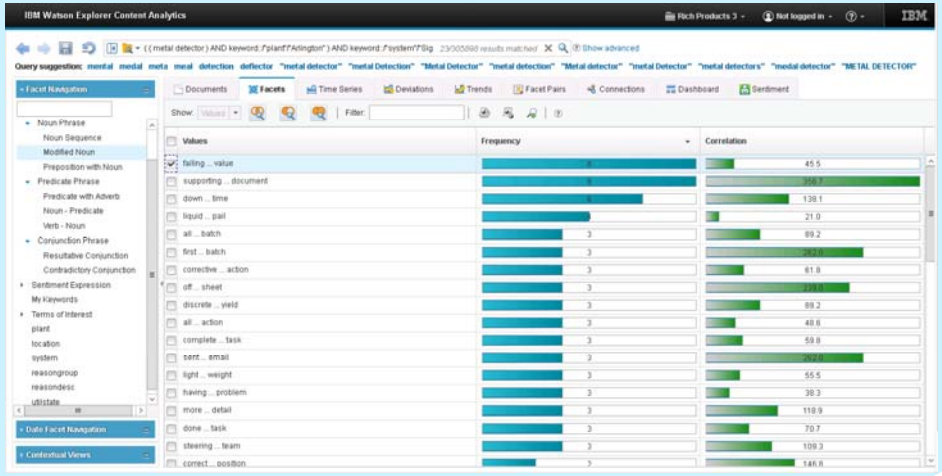
Rich Products may adopt this Rapid Analytics Method in the future.

- 5 week engagement leveraging **SPSS Modeler** and **Watson Explorer** analytics tools
- Hosted at the IBIC's big data analytics environment: **no infrastructure investment**
- Core client team worked in **collaboration** with the IBM team onsite at the Center to ensure **skills transfer** during data ingest process



On a parallel track, a load of unstructured data, i.e. free form text, was performed for analysis by Watson Explorer.





The analytic model concluded a relationship between SKU and SCADA to predict equipment downtime of 6 hrs/month with increasing accuracy.

Analytics Finding

- ✓ **There is a relationship between SKU and Process Variables to predict unplanned equipment downtime**
- ✓ Predicted average **6 hours** of unplanned equipment downtime per month
- ✓ Confidence level: **81% accuracy** in predicting combinations of events that led to unplanned equipment downtime

Rule sets generated: **60 combinations of SKUs and Process Variables that result in unplanned equipment downtime** (i.e. "If... then")

- E.g. "When XYZ product is on the line, and the line is running slow, and there has been a sanitation event in the past hour, equipment downtime will likely occur."

Model performance

Month	Accuracy
August 2014	63%
September 2014	(Used to train model)
October 2014	75%
November 2014	87%
December 2014	90%
January 2015	96%