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informsny
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Driving Business Value with Big Data and Analytics

Business Analytics Transformation
Making IBM a Smarter Enterprise

Agenda

- Case studies
  - **Human Resources**: Detect employees that are likely to leave the organization
  - **Manufacturing**: Optimally schedule work on a manufacturing line
  - **Supply Chain**: Detect quality problems in manufacturing
  - **Finance**: Identify risk of acquisitions
  - **Sales**: Boost effectiveness of sales resource
  - **Services**: Develop new business
- Emerging themes
- Look to the future

Today, applying analytics can make a positive impact in *all* industries.

"We believe that analytics is no longer an emerging field; today's businesses will thrive only if they master the application of analytics to all forms of data. Whether your office is a scientific lab, a manufacturing company, a government agency, or a professional sports stadium, there is no industry left where an analytics-trained professional cannot make a positive impact."

~ Brenda Dietrich, IBM Fellow and
Vice President, Emerging Technologies, IBM Watson

Human Resources: Tailored analytics driven recommendations reduces attrition of high-value employees

$85M

Estimated net benefit through reduced attrition in IBM's growth market employee population

325% ROI

For 2012-2013 investment

Solution components:
- IBM® SPSS Modeler
- IBM® Cognos BI

COGNOS
AN IBM® COMPANY

SPSS
AN IBM® COMPANY

Business problem: Employee attrition increases recruitment and training costs and decreases productivity while new employees ramp up. IBM needs a way to identify employees at-risk of leaving in order to optimally direct resources in an effort to retain them.

Solution: Use advanced predictive models to identify employees most at-risk of leaving and identify the characteristics that put them at risk. Align workforce policies to focus resources on high-value at-risk employees.

Leverage Cognos to provide HR leaders an aggregate view of which populations are at risk and what factors are increasing attrition rates. Provide managers risk levels of their respective employees along with employee-specific prescriptive recommendations to decrease probability of attrition.

Manufacturing: Optimization Research reduces production time on manufacturing line.

15%

Reduction in production times

Reduced overhead to adapt to changes

Solution component:

- ILOG Fab PowerOps
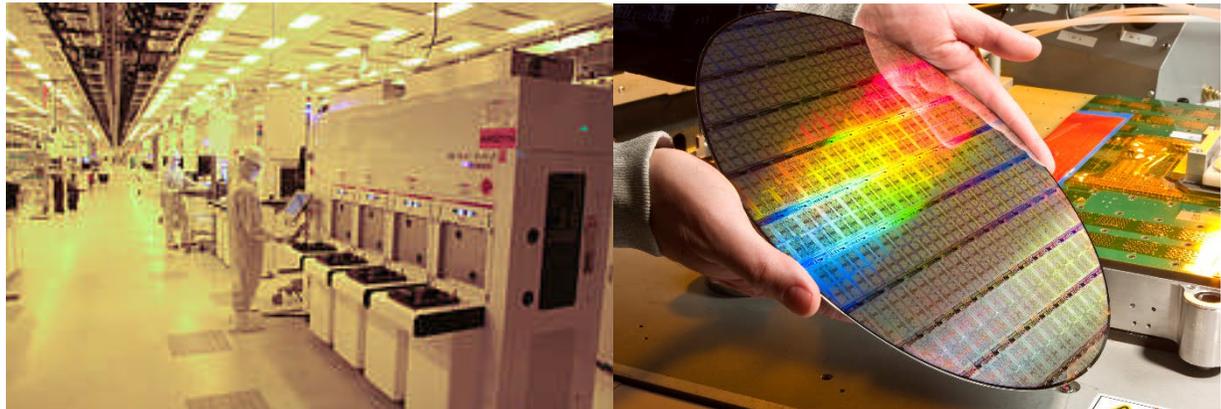
Business problem: Scheduling a complex manufacturing process in a semiconductor lab. IBM's 300-mm fab was one of the first fully automated semiconductor plans in the world. A major problem to solve was how to optimally schedule the lines to maximize overall throughput while taking into account variable priorities of the different types of wafers.

Solution: IBM and ILOG worked jointly to use mixed-integer programming and constraint programming in a special-purpose decomposition algorithm for scheduling of the fab.

The software evolved into ILOG Fab PowerOps, a flexible solution for semiconductor production scheduling.

Supply Chain: Quality Early Warning System (QEWS) – Detects problems up to 6 week earlier
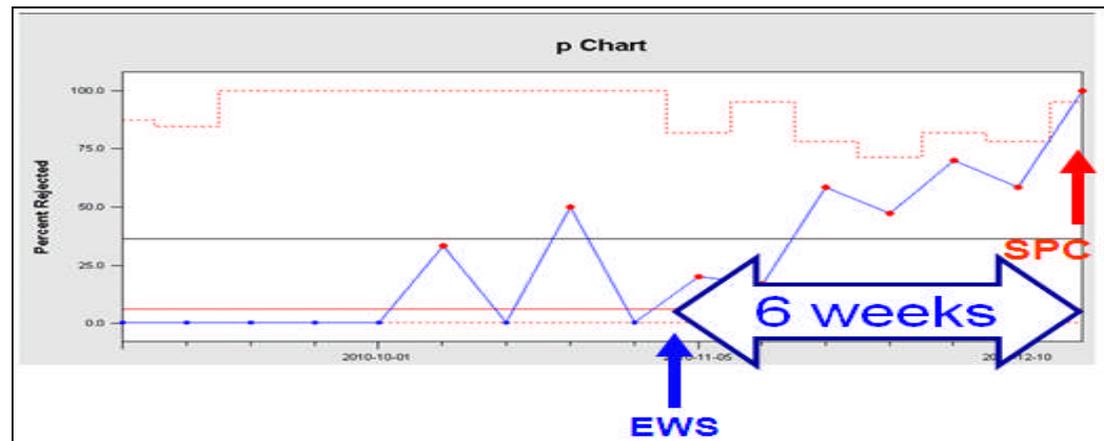
$50M

Cost savings, approximately
$10M / year

Proactive Quality Management

Improved Brand Value

Preventive Maintenance and Quality 2.0

  - Quality Early Warning System (QEWS) is now part of PMQ 2.0

Business problem: Needed to provide better detection of emerging defects on its manufacturing lines, and identifying true problems and not false alarms. Existing statistical process control (SPC) and rate-based management techniques were reactive, and often based on past performance and statistical relevance. Existing techniques were unable to predict what may occur in the future. Warnings were not ranked to focus on potential emerging issues.

Solution: Quality Early Warning System (QEWS) uses proprietary IBM technology to detect & prioritize quality problems earlier with fewer false alarms, coupled with push alert functionality for IBM & suppliers to proactively detect & manage quality issues at any stage of product lifecycle.

Finance: Identify and mitigate acquisition risk by leveraging data and analytics

80+ Acquisitions

benefited from headlights into execution risks to affect both deal pricing and integration plan

End-to-End Risk Management across the acquisition portfolio

Streamlined tracking and reporting to identify systemic risk and address challenges

Solution components:

- IBM® SPSS Modeler, Statistics
- IBM® Cognos BI
- IBM® WebSphere

Business problem: Acquisitions *'synergies'* are challenging to quantify and realize. Systemic and contextual risks can significantly alter performance & financial expectations.

Generally, corporate development business cases and executed contracts don't capture the majority of operational risks such as employee retention, system integration, sales execution & pipeline management.

Solution: Used rich acquisition data (structured and unstructured) and advanced analytics models to create tailored risk profiles for each contemplated deal and properly address throughout the acquisition lifecycle. Affects pricing discussions, terms and condition, and post acquisition resource deployment and management focus.

Note: Similar solution could potentially be applied to Vendor selection assessment and or ongoing reviews of risk exposure

Sales: Boost sales effectiveness by applying advanced analytics to align resources to market opportunity
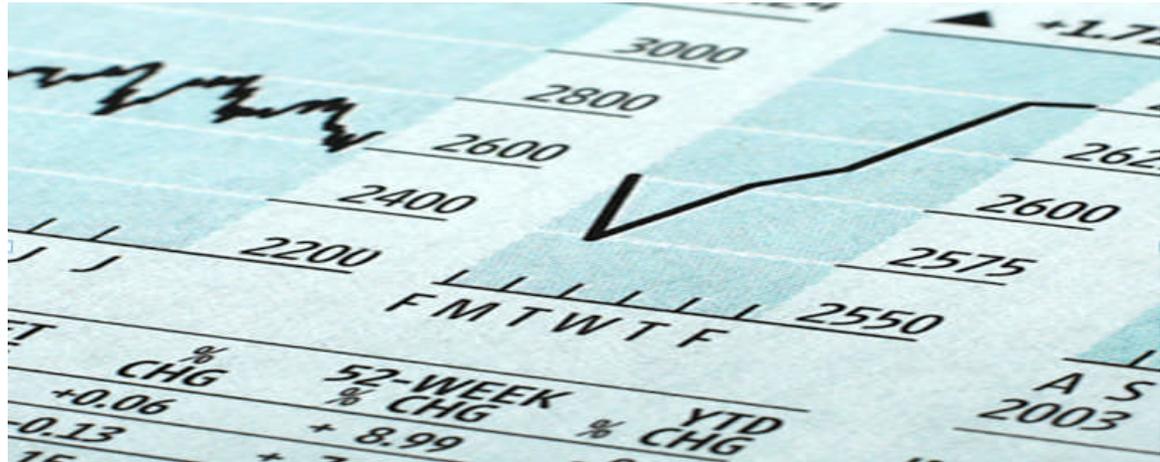
$300M

estimated additional revenue during 2013 due to sales force productivity increase

3000% ROI

for 2013, based on a yearly ongoing investment of $10M

Solution components:

- IBM® SPSS Modeler, Statistics
- IBM® Cognos BI
- IBM® Netezza

Business problem: Allocation of sales resources is not based on expected return on expense investment and, thus, suboptimal – also impacting client experience in high-potential accounts.

Solution: Created advanced analytical models that predict customer profit contribution based on historic revenue growth and opportunity headroom for every account.

Built recommendation engine allowing worldwide sales managers to generate real-time customized reports providing *Increase / Decrease / Maintain* resource shift recommendations at a client level.

Services: Develop new business using advanced analytics and social media

$M

Millions of dollars in increased revenue and millions of dollars in cost savings

Business problem: Developing new business in an existing market, finding new customers, finding new products and services for existing customers.

Solution components:

- IBM® SPSS Modeler, Text Analytics

Solution: IBM Global Technology Services and IBM Research developed the Long-Term Signings Platform.

- Analyzed over 30 data sources (IBM Connections, LinkdedIn, financial databases) to provide 360-degree view of clients; used three types of analytics (entity, text, and predictive)
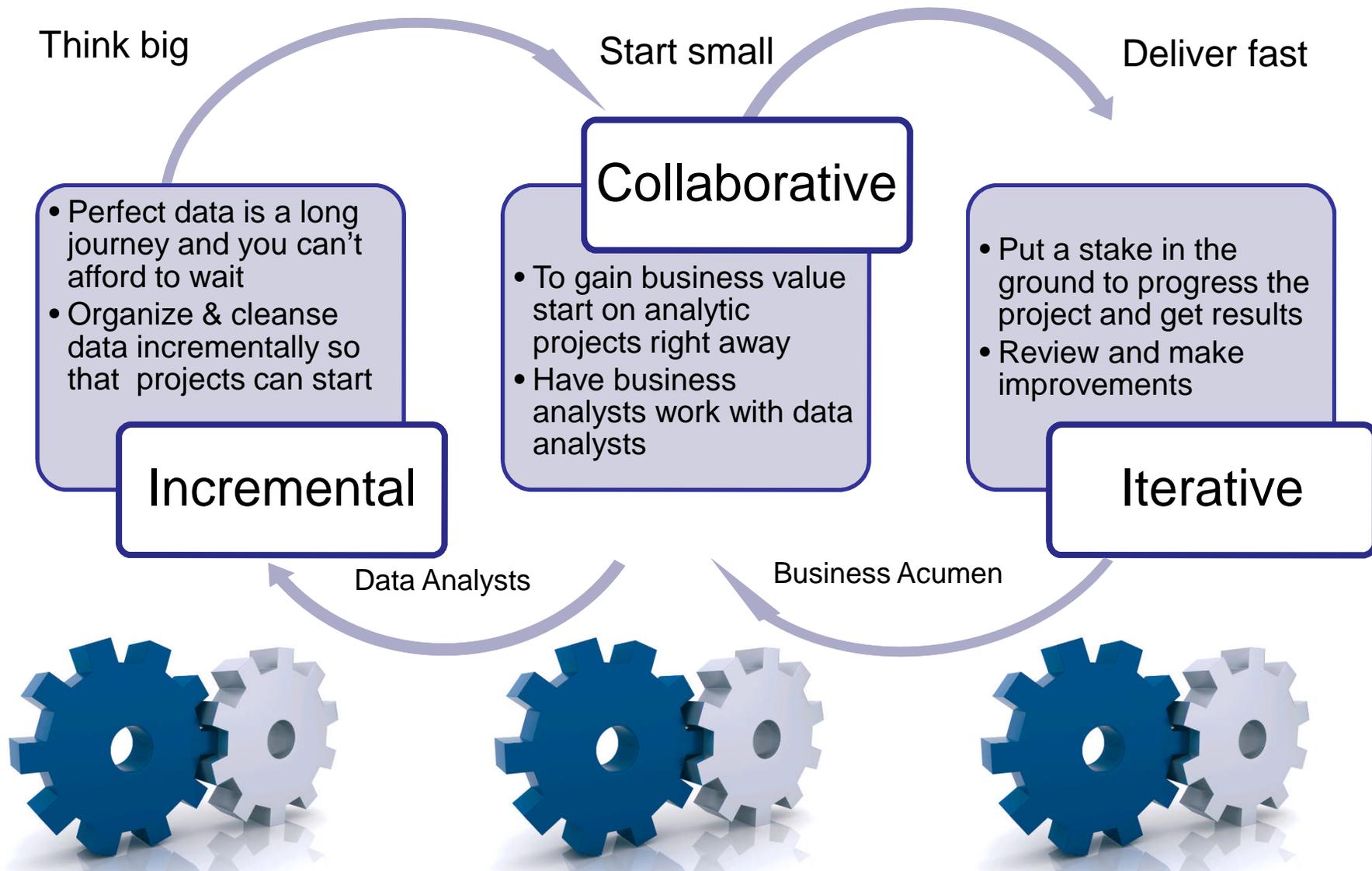- Discovered associations between clients and products

Several themes have emerged from our analytics solutions.

- Relationships inferred from data today may not be present in data collected tomorrow.

- You don't have to understand analytics technology to derive value from it.

- Fast, cheap processors and cheap storage make analysis on big data possible.

- Doing things fast is almost always better than doing things perfectly.

- Using analytics leads to better auditability and accountability.

Best practice Approach to Analytics

Think big   Start small   Deliver fast

Collaborative

- Perfect data is a long journey and you can't afford to wait
- Organize & cleanse data incrementally so that projects can start

- To gain business value start on analytic projects right away
- Have business analysts work with data analysts

- Put a stake in the ground to progress the project and get results
- Review and make improvements

Incremental

Iterative

Data Analysts   Business Acumen

Big data challenge

"The most competitive organizations are going to make sense of what they are observing fast enough to do something about it while they are still observing it."

~ *Jeff Jonas, IBM Fellow and Chief Scientist, Context Computing*

Several dynamics are underway that are shaping the future for big data and analytics.

- Growth of data – 2.5 billion gigabytes generated every day

- Unstructured data – 80% of big data growth is unstructured (social media, video, audio, images, data from sensors).

- Cognitive computing – Just when we need it, the third era of computing, cognitive, offers the promise of allowing us to rapidly explore big data and uncover insights.

IBM Watson