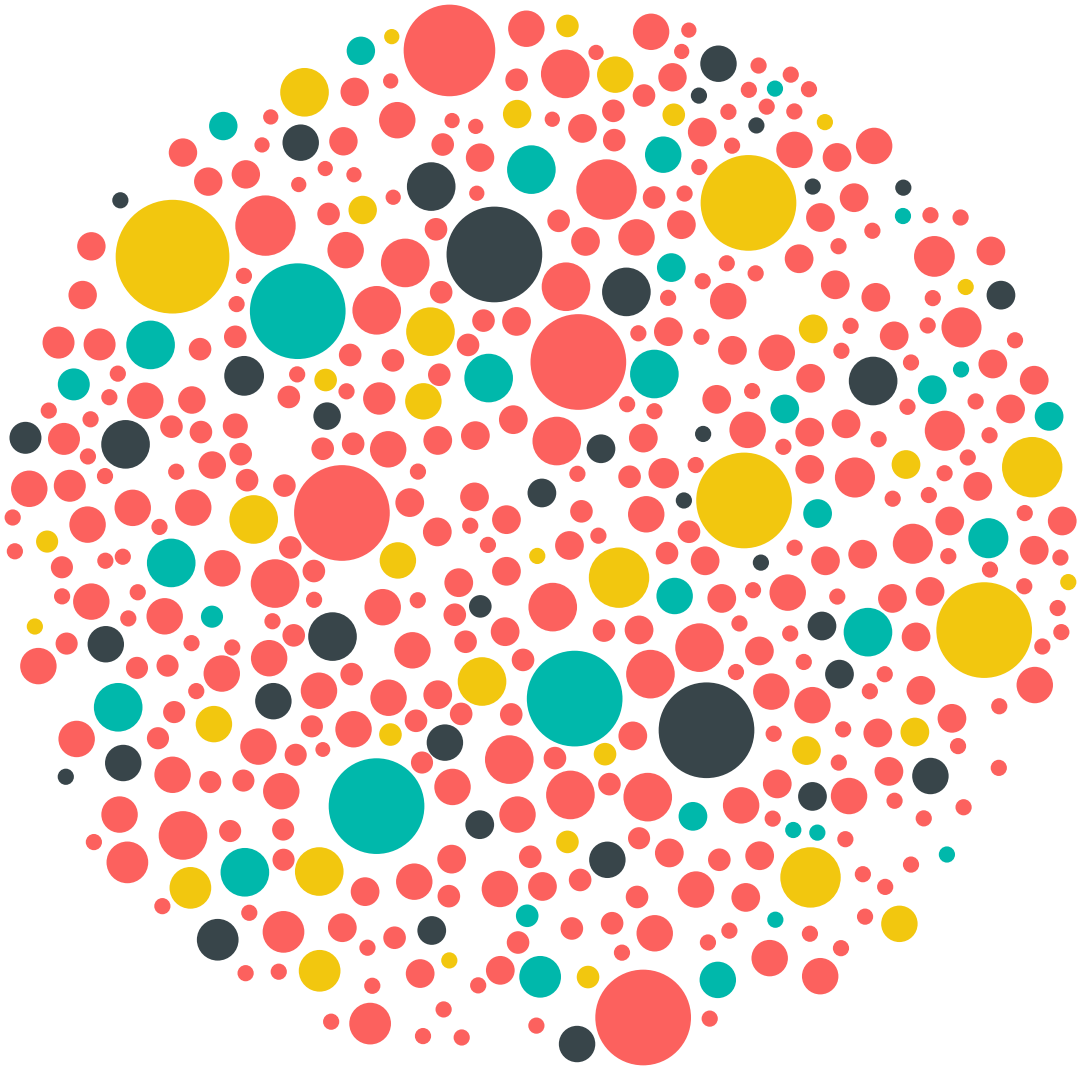
Microsoft

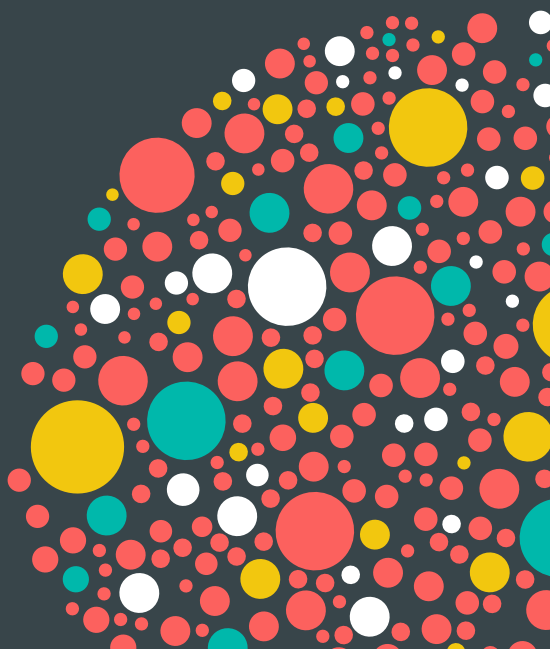
Advanced Analytics with Power BI



Data is everywhere. The world contains an astronomical amount of data, an amount that grows larger and larger each day. This vast collection of information has changed the way the world interacts, uncovered breakthroughs in medicine, and revealed new ways to understand trends in business and in our daily lives. With the increasing availability of data comes new challenges and opportunities as business leaders seek to gain important insights and transform information into actionable and meaningful results.

As data becomes more accessible, manipulating vast amounts of available data to drive insights and make business decisions can be a challenge. Business leaders at every level need to become data literate and be able to understand data and analytical concepts that may have previously seemed out of reach, including statistical methods, machine learning, and data manipulation. With this spread of data literacy comes the powerful ability to make educated business decisions that rely on the smart use of data, rather than on an individual's opinions. In the past, these tasks were extremely complex and would be handed off to engineers. With the tools that exist today, business leaders are able to dive into their own analytics and uncover powerful insights.

Microsoft Power BI brings advanced analytics to the daily business decision process, allowing users to extract useful knowledge from data to solve business problems. This white paper will cover the advanced analytic capabilities of Power BI, including predictive analytics, data visualizations, R integration, and data analysis expressions.



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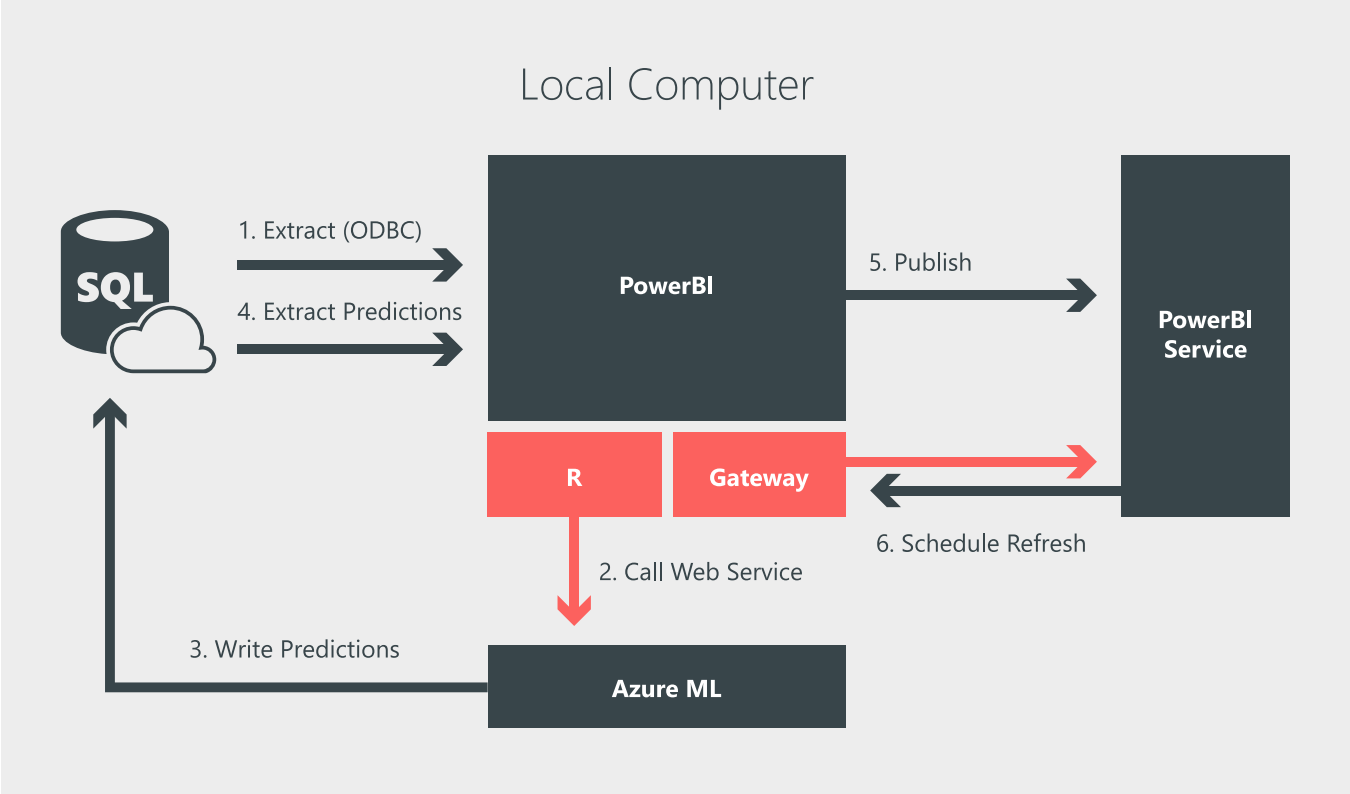
Predictive analytics with Azure

Imagine if you could review the latest output of your organization's fraud model on demand, or analyze the sentiment of social media users who tweet or post about your products. Power BI brings the predictive power of advanced analytics to allow users to create predictive models from their data, enabling organizations to make data-based decisions across all aspects of their business.

Through machine learning, computers are able to act without being explicitly programmed. Instead, they can teach themselves to grow and change when exposed to new data. Once the work of science fiction, machine learning is rapidly becoming part of our daily lives—through practical speech recognition programs, more effective web searches, and even self-driving cars. Using Azure Machine Learning Studio, users can quickly create predictive models by dragging, dropping, and connecting data modules. Power BI then allows users to visualize the results of their machine learning algorithm.



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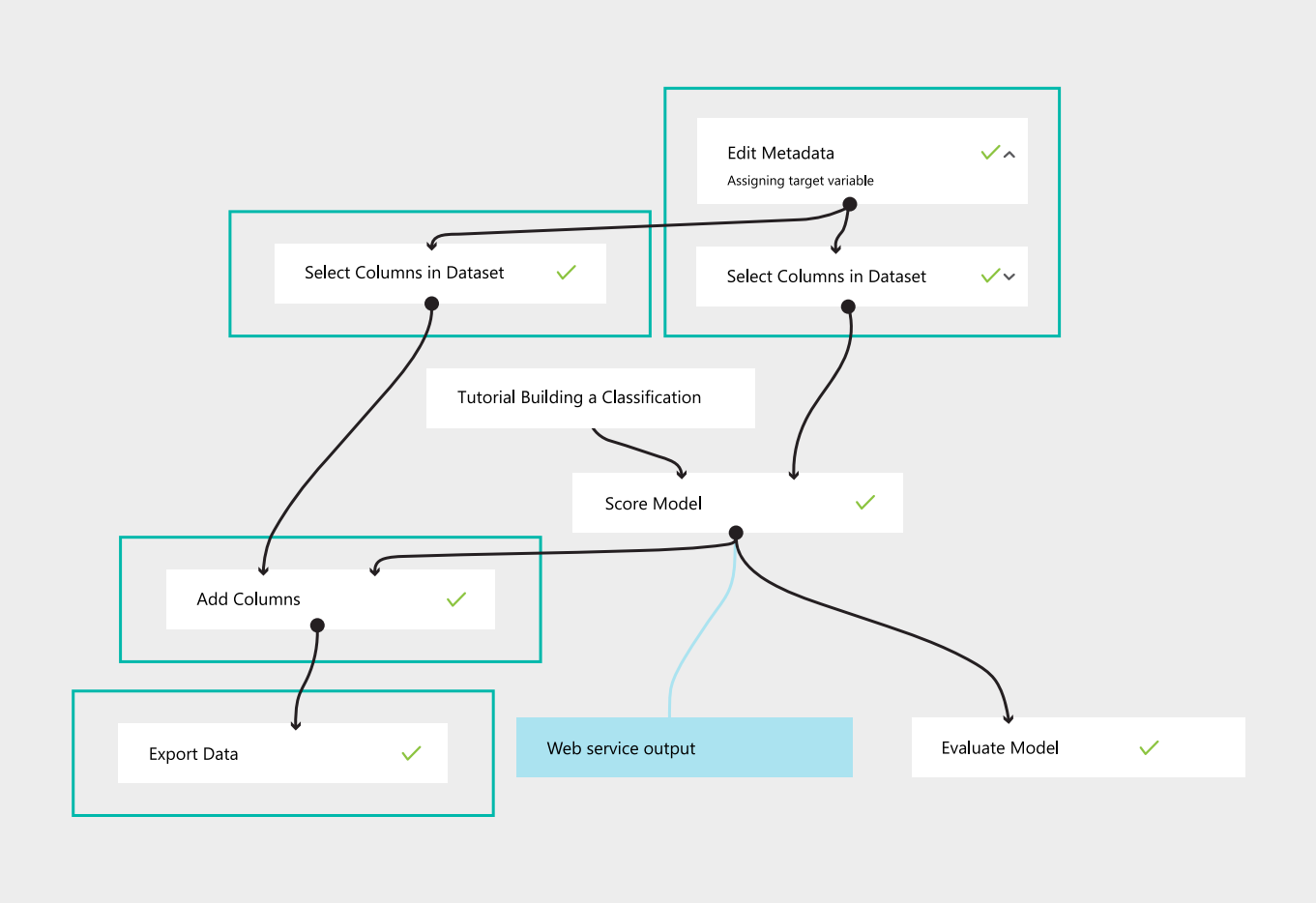
To accomplish this in Power BI, first use R to extract data from Azure SQL that has not yet been scored by the machine learning model. Next, use R to call the Azure Machine Learning web service and send it the unscored data. Write the output of the Azure Machine Learning model back into SQL and use R to read scored data into Power BI. Then, publish the Power BI file to the Power BI service. Finally, use the Personal Gateway to schedule a refresh of the data, which triggers a scheduled rerun of the R script and brings in the new predictions.



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