

SAP Innovation Awards 2021 Entry Pitch Deck

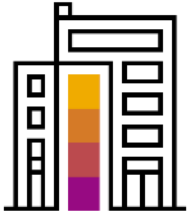
Optimized Pricing Through Machine Learning Utilizing
SAP Business Technology Platform

Bourns, Inc.

PUBLIC

THE BEST RUN





Company Information

Headquarters Riverside, California, USA

Industry High Tech

Web site <https://www.bourns.com/>

Bourns, Inc. is a 74-year-old family-owned business with 2020 revenues in excess of \$500M and 5,000+ employees spread across manufacturing plants and sales offices throughout North America, Europe, and Asia. Bourns is a leading manufacturer and supplier of circuit protection, power conversion, and sensing components, serving a broad range of markets, including industrial equipment, renewable energy, electric vehicles, and autonomous driving systems. Bourns has been recognized over the years with numerous [best supplier awards](#) from its customers, and its products have been used in some of mankind's greatest technological achievements, including the [Mars Rover](#), the [Apollo 11](#) lunar landing controls, and the Apollo astronauts' oxygen regulators as they walked on the moon.

Bourns is also active in the community. For the past seven years, Bourns has hosted [STEPCon](#), a two-week Science and Technology Education Partnership conference that in 2020 engaged over fifteen thousand local K-12 students to pursue higher education and careers in STEM-oriented fields. [Team Bourns](#) also raises money annually to combat breast cancer through volunteer participation in the Susan G. Komen walk.

Optimized Pricing Through Machine Learning...



Bourns, Inc.



Making the leap to machine learning-based price optimization with SAP provides Bourns a clear competitive edge to rapidly and profitably scaling our business in an increasingly complex global supply chain.

Gordon Bourns, Chairman and CEO Bourns, Inc.

Challenge

Bourns' pricing and quotations to its customers was a mostly manual effort by Pricing Analysts. Manual pricing was time-consuming and could not easily track the complexity of multiple product lines at various volumes across several different regions with complex supply chain requirements from distributors and end customers.

Solution

Utilizing the SAP Business Technology Platform, Bourns developed a customized deep-learning machine learning model in Python running millions of product line records to predict optimized market-rate pricing for Bourns' Pricing Analysts. Bourns' SAP Business Technology Platform includes SAP HANA, which allowed for a single source of truth; SAP Data Intelligence provided the machine learning pipeline, and SAP Analytics Cloud added analytic and interactive capabilities and visualization.

Outcome

Bourns now has a scalable, flexible, and automated advanced analytics solution that provides optimized market-rate pricing predictions based on a product line, volume, geography, and complex supply chain requirements. Pricing Analysts can offer the best market-rate quote to Bourns customers.



10X

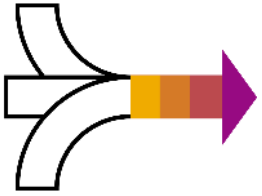
Ten's of thousands of quotes with multiple line items are generated each year

100%

All targeted Bourns product lines run optimized pricing

MM

Machine learning model runs on millions of records to produce market-rate pricing suggestions



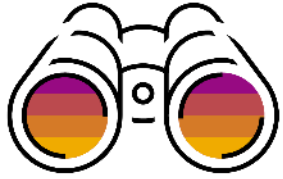
Business Challenges and Objectives

Pricing was almost entirely a manual process that required Pricing Analysts to generate pricing and approve quotes for Bourns' diverse global customer base.

Pricing was inefficient and costly to the business as a manual process consumed the Pricing Analyst's valuable time and inherently could introduce errors into the process. Additionally, pricing across multiple product lines, volumes, geographies, and complex supply chain requirements were not easily tracked.

Bourns sought to increase business value:

- Quotes based on logic executed by machine learning models looking at millions of data records produce optimized market rate quotes for Bourns' customers
- Automated quotes allow Pricing Analysts more time to focus on high-value tasks
- Automation enables the business to scale



Project or Use Case Details

2017: Bourns embarked on a digital transformation standardized on SAP solutions.

2018: Bourns decided to implement SAP HANA to consolidate data onto one platform.

2019: Bourns implemented SAP HANA as a single source of truth.

2020:

Q1'2020: A Bourns Product Management Executive had a hallway chat with a Bourns IT Executive and shared a vision of providing optimized market-rate pricing and customer quotes utilizing state-of-the-art machine learning capability to augment the manual pricing and quotes from Bourns' Pricing Analysts. This discussion kicked off a **POC requirements phase and the Phase 1 development of the POC.**

Q2'2020: The Phase 1 POC was completed and successfully ran on two Bourns product lines. SAP Data Intelligence served as a data pipeline that incorporated a custom deep-learning machine learning model in Python. This model could analyze millions of data records and predict an optimized market-based price. SAP Analytics Cloud provided visualization and what-if analysis ability based on quantity and price and associated prediction.

Q3-Q4'2020: The POC moved into production for all targeted Bourns product lines. Bourns' Pricing Analysts could now focus on high touch quotes. SAP solutions by Vistex and SAP Sales Cloud were purchased in Q4'20 to automate the quote process with analytics and machine learning.

2021: SAP solutions by Vistex and SAP Sales Cloud are being implemented to check quotes against business rules for Pricing Analyst review to automate a touchless quote.



Benefits and Outcomes

Business or Social

Bourns' business runs on a single version of the truth. Bourns now has a complete picture of optimized pricing across all targeted product lines, volumes, geographies, and complex supply chain requirements

2021 Targets:

- 1% revenue uplift
- 1% margin uplift

IT (optional)

SAP Data Intelligence is a Kubernetes-based data orchestration tool to deploy, manage and scale containers within the data pipeline: easy to set up and easily scales

SAP security features are built into the solution

Human Empowerment

Pricing Analysts can focus on high-value pricing and quotation tasks following automation of previously 100% manual effort

2021 Targets:

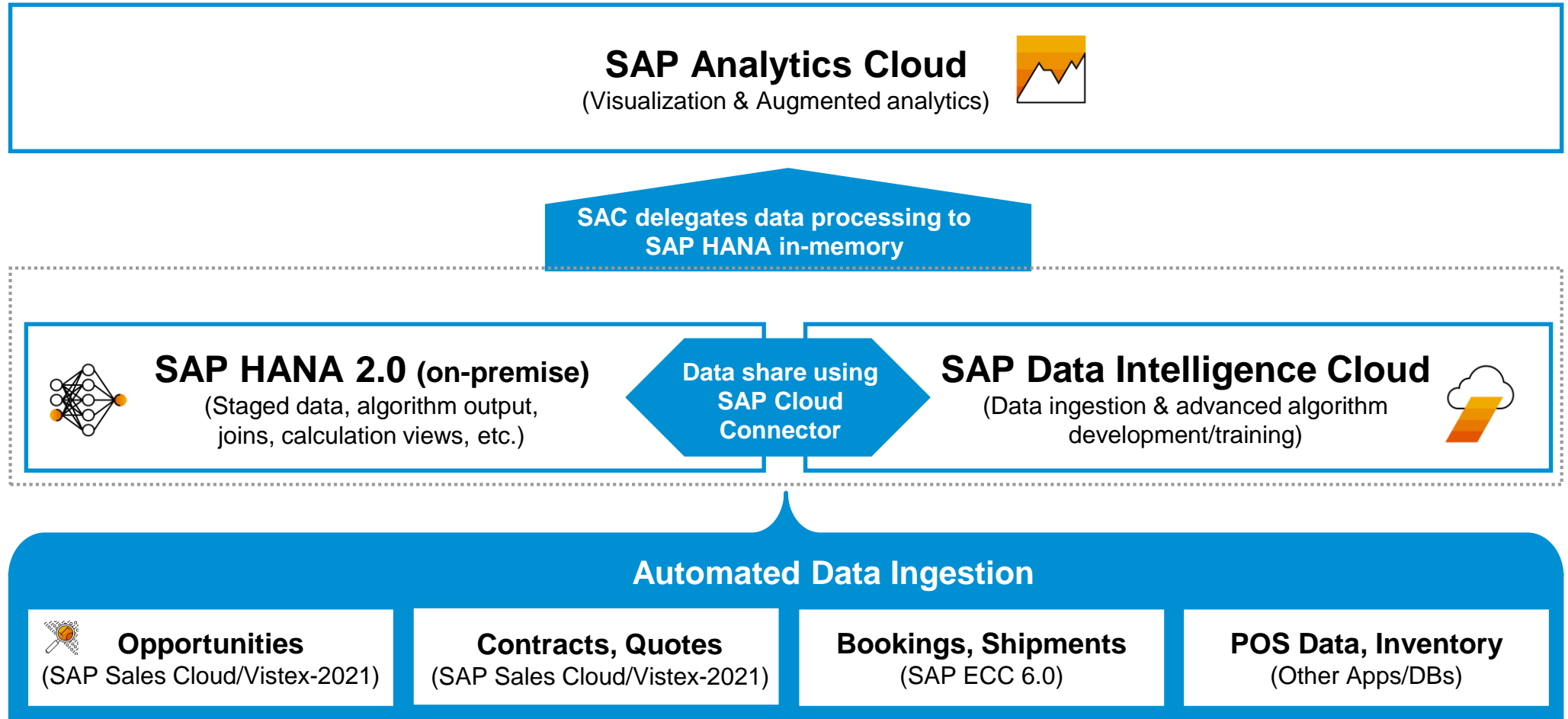
- 25% touchless quotes
- 35% reduced quote cycle time
- Single system for accessing all historical pricing data

New insights for Pricing Analysts to apply to value-add quotes



Architecture

Bourns – SAP Data Flow, 2020





Deployment

Deployment status Live

Date Aug - Dec 2020

Number of users 200

| SAP® technologies used: | | Deployment Status (Live or Proof of Concept [POC]) | Contribution to Project |
|-------------------------|---|--|---|
| SAP Product | | | |
| 1 | SAP Data Intelligence | Live | Provides data pipeline, ML model serving (output for model), metadata information: structured, unstructured |
| 2 | SAP Analytics Cloud | Live | Provides visualization through dashboards, what-if-analysis, historical quoting information, provides augmented analytics, auto-generated visualizations & analysis |
| 3 | SAP HANA | Live | On-premise database – SAC uses SAP HANA in-memory |
| 4 | SAP ERP Central Component | Live | SAP ERP ECC 6.0 |
| 5 | SAP Sales Cloud and SAP solutions by Vistex | POC | In process of deploying to add machine learning output to create 'touchless quotes' |

If you have used one or more of the services or support offerings from SAP Services and Support during the implementation or deployment phase, please indicate which one(s) below with an

- | | | |
|--|--|--|
| <input type="checkbox"/> SAP MaxAttention™ | <input type="checkbox"/> SAP ActiveAttention™ | <input type="checkbox"/> SAP Advanced Deployment |
| <input type="checkbox"/> SAP Value Assurance | <input type="checkbox"/> SAP Model Company | <input type="checkbox"/> Others: |
| <input type="checkbox"/> SAP Innovation Services | <input type="checkbox"/> SAP Innovative Business Solutions | |



Advanced Technologies (1 of 2)

The following **advanced technologies** were part of the project.

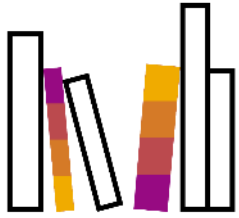
| Technology or use case | Product used* | Contribution to project and how product used integrates with SAP products |
|--|-----------------------|--|
| 1 Machine learning or artificial intelligence Robotic process automation, conversational AI, AI-based knowledge graph | SAP Data Intelligence | Provides data pipeline, ML model serving (output for model), metadata information: structured, unstructured |
| 2 Intelligent data management Multi-cloud, data virtualization and governance, smart data tiering, persistent memory, data privacy | | |
| 3 Advanced and augmented analytics <ul style="list-style-type: none">Real-time and streaming analytics, spatial analyticsNatural language query and generationAutoML to identify trends, patterns, outliersPredictive analytics (time series analysis and forecasting, regression, classification) | SAP Analytics Cloud | Utilizing augmented capabilities to automate dashboards with meaningful insights: <ul style="list-style-type: none">Relationships between important variablesChanges in one variable can predict a change in another associated field such as total revenue or contract consumption rateAny outliers in the data are highlighted |
| 4 Data and analytics solutions in the cloud <ul style="list-style-type: none">Unified data and analytics cloud platforms by SAPModern/self-service data to analytics | | |



Advanced Technologies (2 of 2)

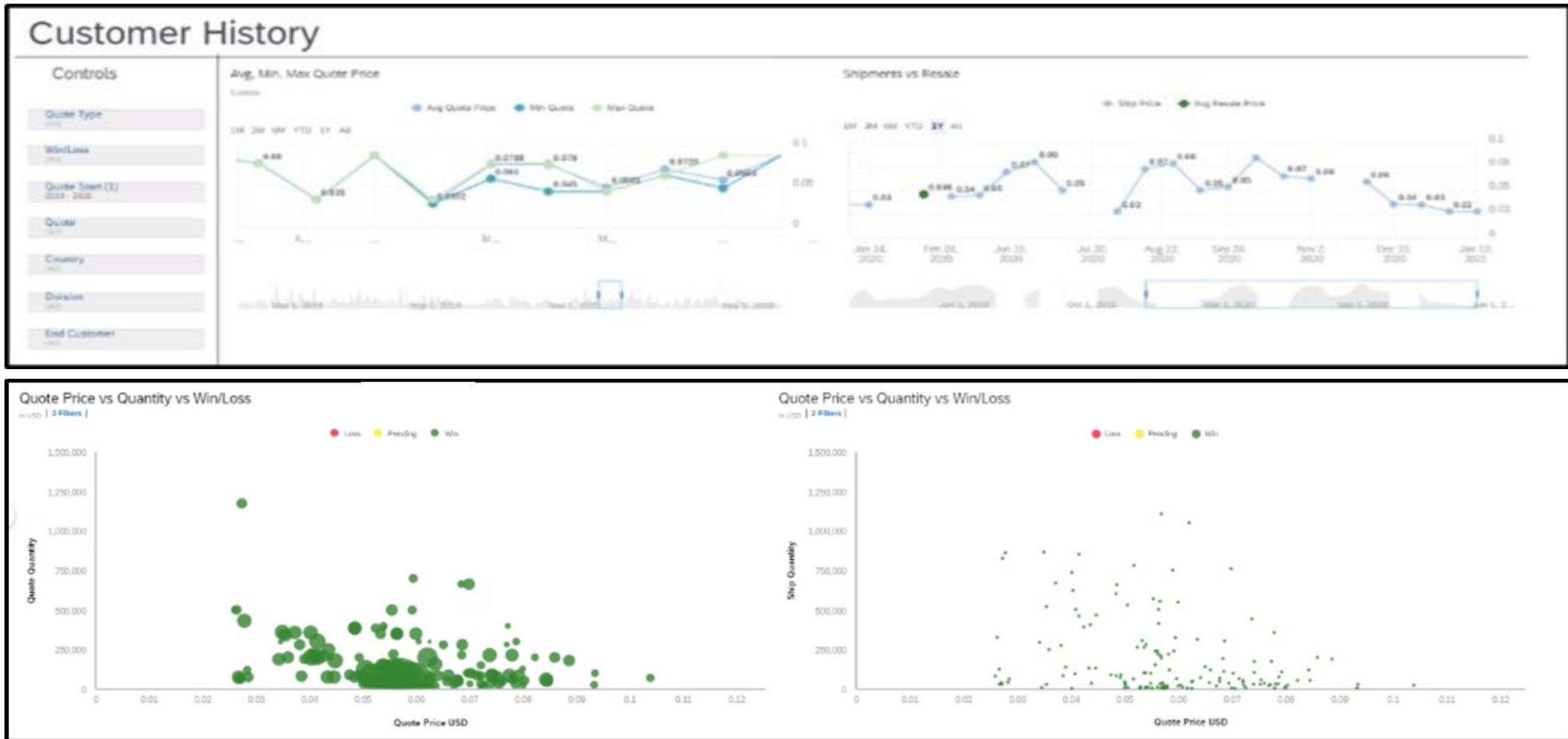
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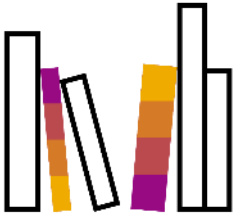
| Technology or use case | Product used* | Contribution to project and how product used integrates with SAP products |
|---|---------------|---|
| 5 Advanced cloud integration <ul style="list-style-type: none">• API economy (monetization and API marketplaces)• AI-based or crowdsourced integration• High throughput, low-latency digital integration hub | | |
| 6 Industry cloud platform | | |
| 7 Blockchain | | |
| 8 Internet of Things | | |
| 9 3D printing | | |



Additional Information

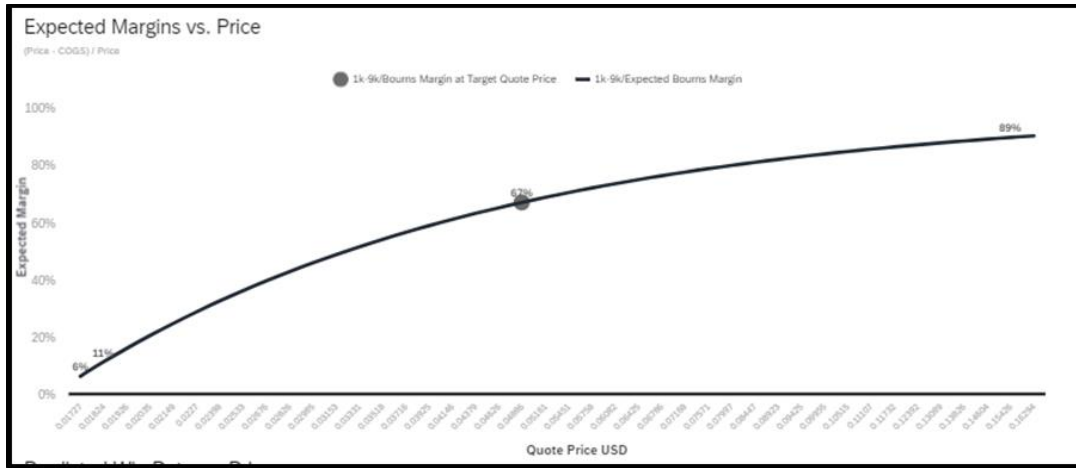
BOURNS Optimized Pricing Dashboards





Additional Information

BOURNS Optimized Pricing Dashboards



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