#ExploreSAS

SAS EXPLORE

Level Up Your Skills in AI and Analytics

Embracing the Power of Now: Real Time Predictive Analytics

Chalamayya Batchu

Sam Coyne

Ron Oudenaarden

SAS EXPLORE

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Georgia-Pacific Overview

- Headquartered in Atlanta, GA
- Employs more than 30,000 people directly and creates approximately 89,000 jobs indirectly
- Operates more than 150 facilities
- Georgia-Pacific Recycling subsidiary is among the world's largest recyclers of paper, metal and plastics.
- Global leader in forest and consumer products
- Leading producer of tissue, towels, napkins and tableware
- North America's premier building products manufacturer
- Global fluff pulp supplier
- One of North America's leading corrugated packaging supplier

Embracing the Power of Now: Real Time Predictive Analytics

Chalamayya Batchu
Enterprise Architect

An experienced Enterprise Architect and dynamic leader specializing in Data Strategy, Artificial Intelligence (AI), Machine Learning (ML), and Business Intelligence (BI). His passion lies in utilizing technology to drive business value and foster innovation. With a strong background in designing and implementing enterprise-scale data and analytics architectures, he excels in crafting data strategies that empower organizations to extract valuable insights from complex data sets leveraging cloud and analytics.

Sam Coyne
Sr. Director - AI

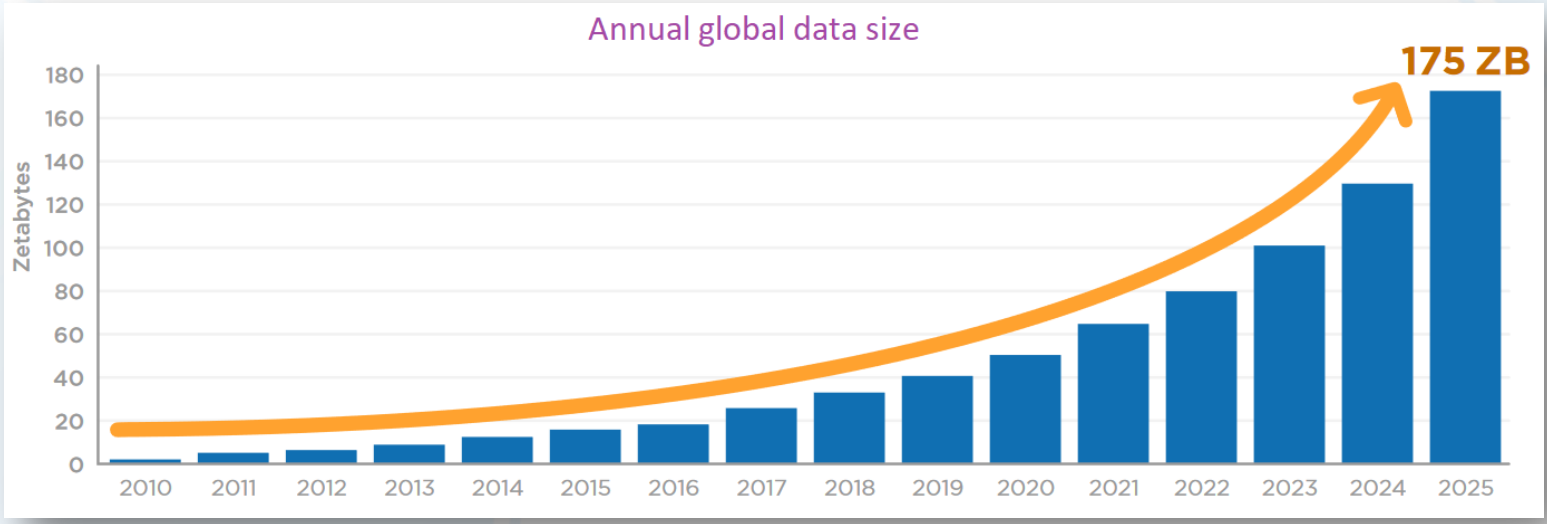
An experienced data science leader who specializes in time series modeling. He is currently the Sr. Director of AI at Georgia-Pacific's Collaboration and Support Center (CSC). Sam has held multiple analytical positions at Georgia-Pacific such as Sr. Analyst, Lead Analyst, Data Scientist, and Sr. Data Scientist. Sam works with a team of 19 other data scientists to develop and deploy data science solutions that support Georgia-Pacific's operations; his team uses a variety of tools such as SAS, Python, and AWS. In his spare time, he enjoys cycling / weight training, reading, music on vinyl, and spending time with his wife.

Ron Oudenaarden
Director - Optimization

An experienced IT professional, with 45+ years experience across various manufacturing businesses, from oil and gas to pulp and paper. Facilitates projects involving data scientist and site resources to expedite the building of ML and AI models to address various manufacturing challenges. Assisting the building of process and asset models at scale as well as consulting on high value one off challenges.

The Growing Importance of Real-Time and Why it Matters NOW

- "In the midst of a Digital Transformation..."
  - As industries evolve and technology becomes intrinsic, businesses are engulfed in a tidal wave of data every second.
- Explosive Growth in Data Generation (A Bar chart below)
- Enables organizations to catch problems in real-time



"In the age of immediacy, the power of now is not just a luxury, but a necessity"

The Crucial Role of Real-Time Predictive Analytics in Manufacturing

Enhanced Production Efficiency
Optimize machinery and eliminate bottlenecks.

Proactive Maintenance
Predict wear and tear reduce downtimes.

Inventory Balance Optimized stock levels; minimize storage costs.

Enhanced Quality Control
Detect and correct defects in real-time.

Demand Anticipation
Scale operations based on market trends.

Waste Minimization
Identify and curb resource wastage.

Informed Decisions
Act on real-time insights, not just intuition.

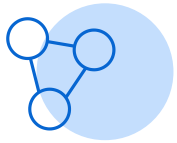
Cost Optimization
Highlight and address cost-overruns instantly.

Real-time Risk Management
Potential operational hitches, allowing for quick mitigation.

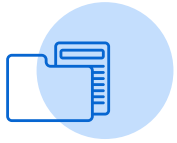
Resource Allocation
Dynamic distribution of workforce and machinery

Defining the Challenge

Manufacturing operations currently face inefficiencies due to unaddressed undesirable trends, resulting in significant downtime, production lags termed as 'slow backs', and prevailing quality issues, which compromise the intrinsic value of our operational processes."

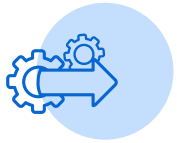


3 Major components orchestrated by AutoML: 1.) ETL 2.) Build 3.) Deploy



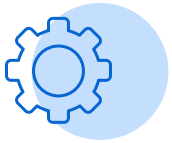
Where is the data and how is it contextualized?

Model Building, Model Deployment & Management



No Automation in current process

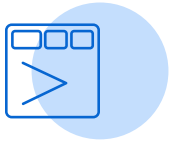
Solution Blueprint: What We Need



Execute thousands of models in real-time; models can be Python OR SAS based

Enables data scientists to own the model deployment, leading to a reduction in time to deploy. Speed is the key

Integrates seamlessly into existing manufacturing systems, whether it's legacy infrastructure or newer IoT setups.



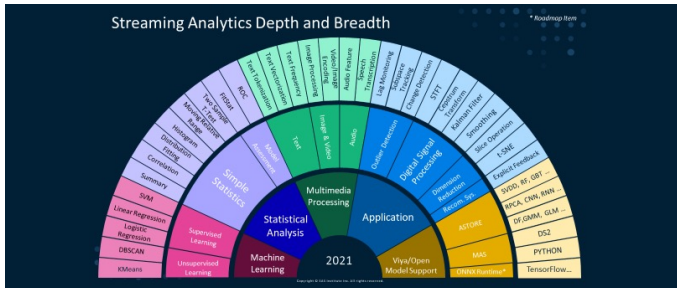
Scale to multiple sites and plants across GP

More automation and reduce human/manual intervention

SAS® Event Stream Processing

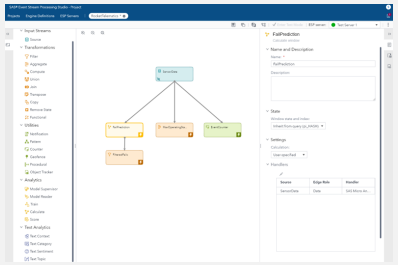
Streaming Analytics

- Wide variety of analytics available: AI/ML, Text, Predictive, Signal Proc.
- Built-in Analytic Capabilities and Data Transformations
- Open-Source Support: Python, ONNX
- Multi-phase Analytics



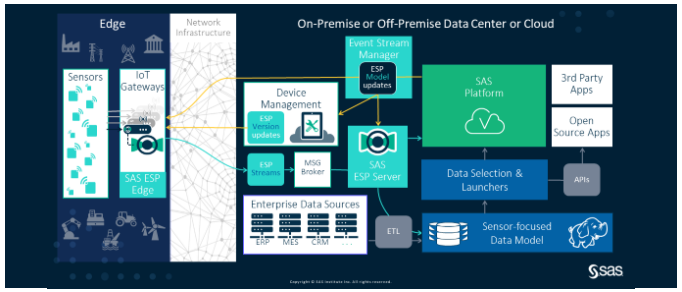
Flexibility

- Data Source Connectivity
- Design interfaces from Low/No Code to Programming
- Deployment anywhere from Edge to Cloud
- Open APIs: REST, Python, JavaScript

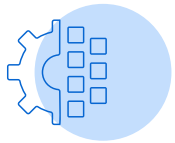


Execution

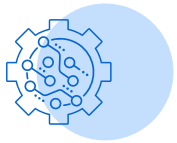
- High throughput, low latency
- In memory, streaming, fault-tolerant
- Highly scalable, elastic runtime (can use Kubernetes)
- Dynamic project updates



Harnessing the Power of SAS ESP at Scale



10K+ Models



Some of the types of models

- Regression and Anomaly used for process and asset health models
- Computer Vision

Utilize team of Data Scientists to develop custom solutions that require a more sophisticated modeling approach

Leveraging SAS with Python/Open Source to develop/deploy to achieve platform independence

Developing & Deploying them at scale where possible to offload Data Science team

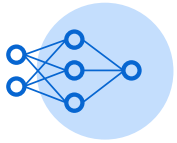
- Utilize SAS tools to perform auto ml on groups of models for a given asset class that exists over multiple manufacturing sites.
- Build of new models or retrain of existing
- 500 – 1000 per week is becoming the norm

Process Health Example

AutoML for IoT powered by SAS ESP

Engineers can easily define models that will assist them in monitoring assets at manufacturing facilities and have those models rapidly built and deployed

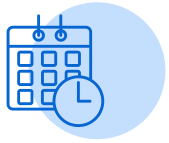
Production models used for monitoring/alerting will run reliably with no downtime



Tuning of certain models can be readily performed by data scientists and updates can seamlessly be integrated

Model management and promotion across environments will be integrated into model building tools, simplifying the process and providing all stakeholders greater visibility

From Past Gains to Future Goals: ESP's Role in Manufacturing



"For projects where we use ESP, we've seen 2 –3 weeks reduced lead time to deployment. This enables us to scale where successful and to fail quickly on others.“

ESP can also be used to deploy models that extrapolate (i.e. forecast).

Another benefit of ESP is that even complex, dense models, like deep learning can be deployed without being an expert in SAS.

SAS Optimization along with the Auto ML component allows:

- Merging of data from variety of data sources. GP has successfully built an optimization solution using data from real time sensors, lab quality results from a SQL Quality Data system, weather data from cloud local weather provider

Thank you!

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