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Talend Case Study:

Automation of Data Preparation and Upload Process for Foresight & Netop Applications

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About Client

Holcim is a global leader in sustainable building solutions, driving innovation and operational excellence across more than 70 countries. With a strong commitment to sustainability and digital transformation, Holcim continuously invests in data-driven initiatives to optimize its global supply chain, logistics, and transportation operations.

The **Transportation Analytics Center (TAC)** is a strategic initiative by Holcim designed to centralize and optimize transportation performance across all markets. The center leverages advanced analytics, business intelligence, and machine learning to monitor, evaluate, and enhance logistics efficiency.

Key Focus Areas of the Transportation Analytics Center:

- ✓ **Visibility & Transparency:** Providing end-to-end visibility of transportation data across countries and business units.
- ✓ **Performance Optimization:** Tracking KPIs such as cost per ton, route efficiency, turnaround time, and vehicle utilization.
- ✓ **Predictive Analytics:** Using data models to forecast demand, identify risks, and improve transport planning accuracy.
- ✓ **Sustainability Tracking:** Measuring CO_2 emissions and optimizing routes to reduce environmental impact.
- ✓ **Standardization:** Establishing a unified reporting and analytics framework for consistent global performance measurement.

Through the Transportation Analytics Center, Holcim is redefining how data and insights drive smarter, greener, and more efficient logistics operations worldwide.

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Current State Overview: Process Flow & Key Challenges

Background / Current Scenario:

The client focuses on two key applications critical to business operations:

- Foresight – Demand Forecasting Application
- Netop – Route Optimization Application

Currently, the data preparation and upload process for Foresight and Netop is a manual and time-consuming across all countries.

This results in delays, inefficiencies, and inconsistent data handling practices.

Existing Process Flow:

- Country teams extract data manually from various source systems.
- The extracted data is compiled and formatted in Excel files.
- Data files are manually validated and uploaded into multiple applications (Foresight / Netop) against each country.

Current Challenges:

- Manual Effort: High time and human effort required for repetitive data extraction and uploads.
- Data Quality Issues: Frequent mismatches in formats, inconsistent headers, and validation errors due to Excel-based workflows.
- Scalability Limitations: Each country follows its own manual process, leading to inefficiencies and lack of standardization.
- Frequency Limitation: The current process supports only monthly planning, restricting the ability to plan weekly or daily.
- Error-Prone Process: Manual handling introduces human errors and rework, affecting forecast accuracy.

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Proposed Automated Solution - Using Talend

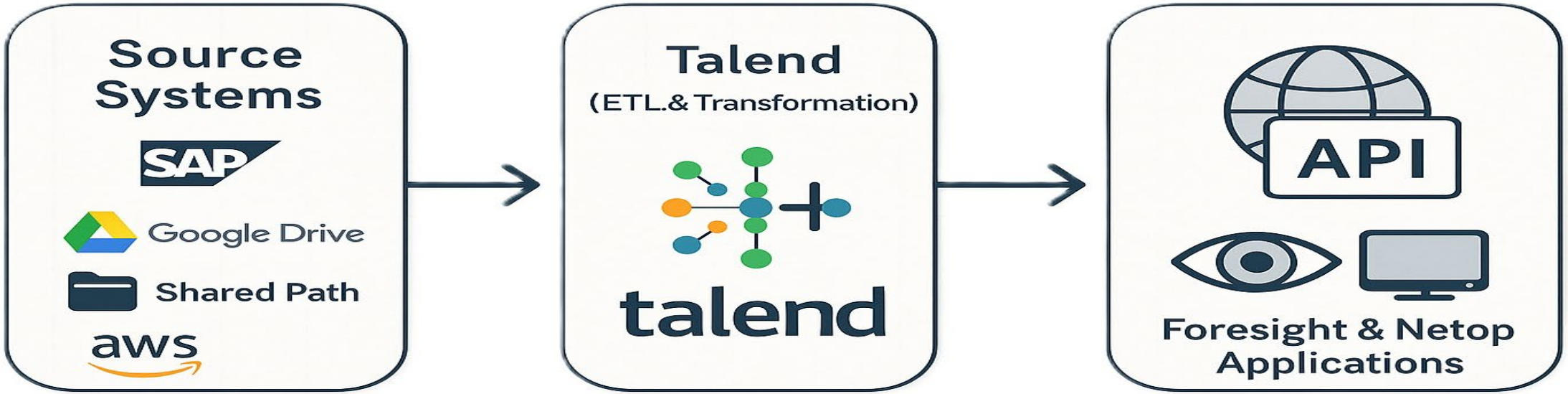
The proposed solution utilizes Talend Data Integration to automate the end-to-end data preparation and integration process.
This eliminates manual dependencies, ensures consistent data quality, and enables planning at higher frequencies (weekly/daily).

- **Source Systems Integration**: Establish direct connections with multiple data sources such as SAP, Google Drive, shared network paths, and AWS S3. Talend can leverage JDBC, REST, or file connectors for secure extraction.
- **Data Extraction & Transformation**: Talend jobs are scheduled to automatically extract raw data, apply business transformation, cleansing, and mapping logic to standardize data formats across countries.
- **Automated Data Preparation**: All transformation logic is parameterized, making the data preparation process scalable and reusable for each country's dataset.
- **API-Based Upload**: Post-transformation, Talend pushes validated data directly to the Foresight and Netop applications using secure REST API endpoints, handling authentication and error retries automatically.
- **Monitoring & Logging**: Each Talend job maintains detailed logs for success, failure, and data quality validations. Alerts are sent to stakeholders through email or integrated notification systems for full transparency.

Talend Architecture

Architecture Overview:

The new architecture establishes a seamless integration between data sources, Talend ETL layer, and the Foresight & Netop applications through an API-driven model. This ensures continuous, reliable, and scalable data movement and monitoring.



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Benefits Achieved:

- **Automation**: Fully automated data flow from source systems to Foresight and Netop applications.
- **Reduced Manual Intervention**: Eliminated repetitive manual steps, freeing up teams to focus on analysis and insights.
- **Improved Data Quality**: Standardized and validated data through transformation rules and automated checks.
- **Scalability**: A single, reusable Talend framework supporting multiple countries with configurable parameters.
- **Faster Planning**: Enabled data refresh and forecast runs at weekly or daily intervals, improving business agility.
- **Auditability**: Centralized logging and monitoring ensures transparency, traceability, and simplified troubleshooting.

Tools & Technologies:

- **Talend Data Integration**: For ETL workflows, data transformation, scheduling, and API integration.
- **SAP**: Primary source system for transactional sales and master data.
- **Google Drive / Shared Path**: Used for reference and configuration files.
- **AWS**: For storage and scalable data management.
- **REST API**: Used for automated, secure data uploads to Foresight and Netop applications.
- **Job Monitoring Tools**: For real-time tracking, notifications, and exception handling.

Conclusion:

This Talend-based automation framework significantly improves efficiency, data accuracy, and scalability for Foresight and Netop integrations. By removing manual touchpoints and establishing an API-driven workflow, the client can now enable more frequent forecasting, minimize operational risks, and ensure consistent data processing across all countries.

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