



## CASE STUDY

# 5S Scenario Builder. Corporate Hotel Program Optimization

## CHALLENGE

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The procurement team faces multiple challenges:

- Processing vast amounts of historical booking data across thousands of hotels
- Evaluating hundreds of potential hotel combinations for each city
- Balancing the "5S" criteria: Savings, Satisfaction, Security, Sustainability, and Safety
- Meeting new carbon reporting legislation requirements
- Creating and comparing multiple procurement scenarios with different priorities
- Completing the strategic hotel selection process earlier to allow sufficient time for negotiations
- Reducing manual work in managing hotel invitation lists for RFPs

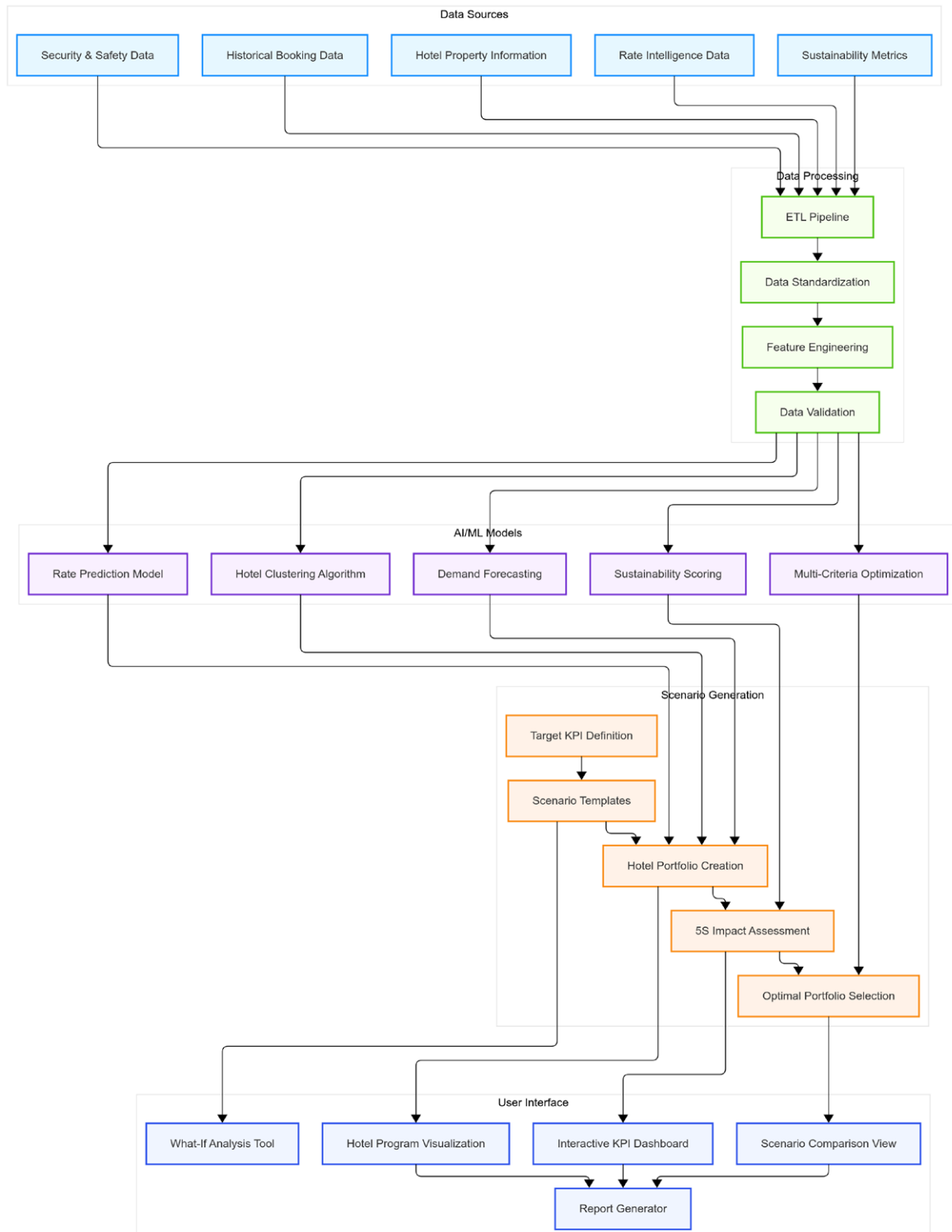
## SOLUTION: 5S SCENARIO BUILDER

### Big Data Components:

- **Historical Booking Analysis.** Process 3+ years of booking data (millions of transactions)
- **Hotel Performance Metrics.** Analyze data from 50,000+ hotels worldwide
- **Market Rate Intelligence.** Incorporate real-time and forecasted rate data across markets
- **Traveler Behavior Patterns.** Track location preferences, booking habits, and satisfaction metrics

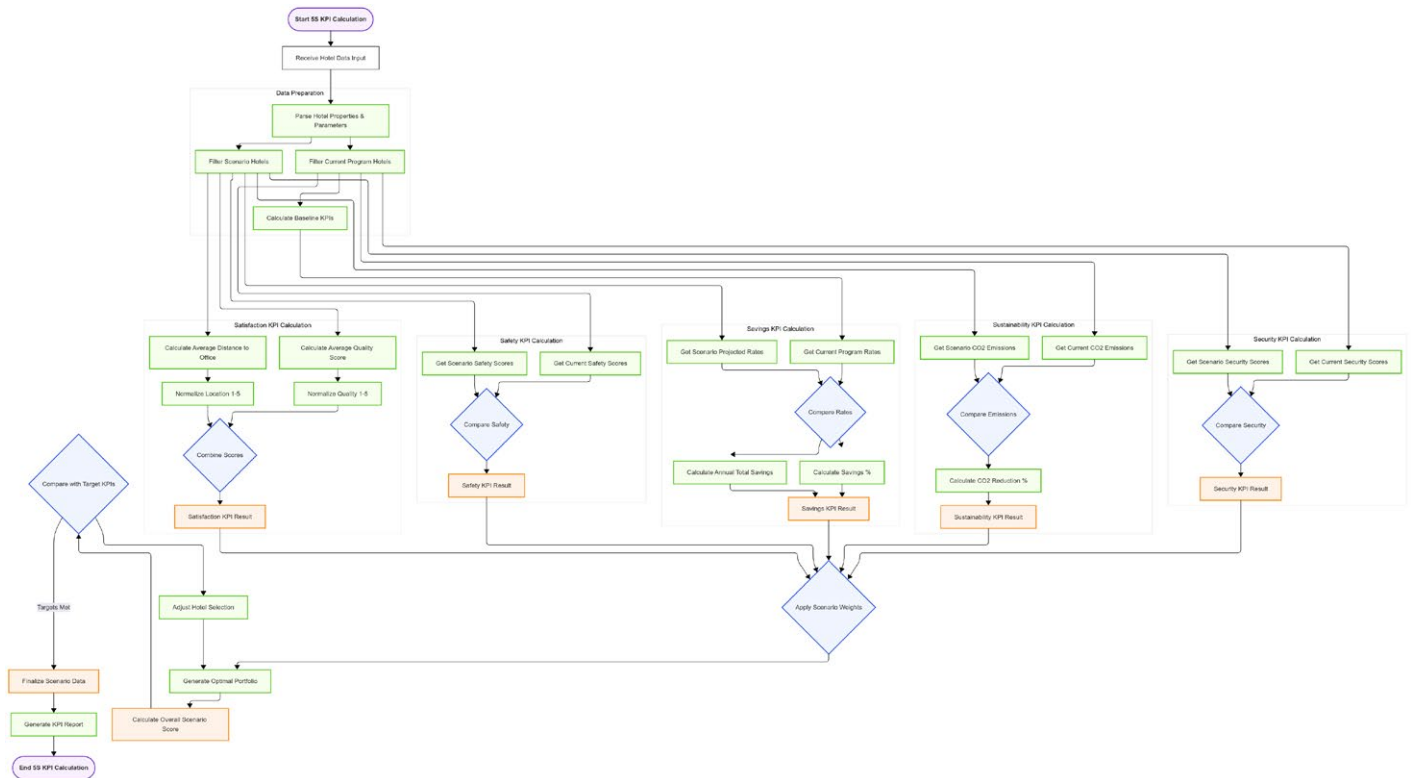
### Compliance Tracking:

Monitor adherence to negotiated rates and corporate policy.



## AI IMPLEMENTATION

- **Predictive Analytics Engine.** Forecasts future travel patterns and hotel rate trends
- **Multi-Criteria Optimization Algorithm.** Balances competing variables (cost, location, quality)
- **Automated Scenario Generation.** Creates potential hotel portfolio combinations
- **KPI Calculation Engine.** Computes 5S metrics and other performance indicators in real-time
- **Recommendation System.** Suggests optimal hotel portfolios based on company priorities



## SCENARIO CAPABILITIES

The 5S Scenario Builder allows procurement specialists to:

- Select from pre-defined, customer-specific scenarios tailored to their needs
- Compare multiple scenario outcomes against their current hotel program
- Visualize the impact on all 5S KPIs at global, continental, country, and city levels
- Understand trade-offs between different strategic priorities (e.g., sustainability vs. cost)
- Track how downstream decisions influence the agreed target KPIs
- View an "Optimal Portfolio" recommendation that best meets selected strategic goals
- Access forecasts of future performance based on current market data
- In future releases: Create and customize scenarios independently

Scenario name & description	Savings				Satisfaction			Sustainability		Safety	Security	
	Avg. Nego. rate (\$/Rev. per room)	Subst. share (%)	Breakfast incl. (%)	LRA Share (%)	Avg. category (1-5)	Avg. rating (1-5)	Distance index (0-100)	Carbon (t/room)	Carb. costs (\$/room)	Inspected hotels (%)	Security score (1-100)	
<b>Current hotel program</b>												
Today ⓘ	131.50 USD	0	46%	92%	3.1	8.1	0.25	3.5T	1.8K USD	79%	82	<a href="#">More details</a>
Forecasted ⓘ	132 USD	0	46%	92%	3.1	8.1	0.25	3.5T	1.8K USD	79%	82	<a href="#">More details</a>
<b>Next season strategy</b>												
<input type="radio"/> Just savings ⓘ	102 USD	43%	53%	83%	3.7	7.2	0.29	3.4T	1.3K USD	75%	75	<a href="#">More details</a>
<input type="radio"/> Rate in focus, subst. share in mind ⓘ <b>5S Recommendation</b>	109 USD	23%	56%	89%	3.6	7.8	0.38	3.4T	1.1K USD	76%	81	<a href="#">More details</a>
<input type="radio"/> Satisfaction in focus ⓘ	124 USD	31%	62%	86%	3.9	8.2	0.13	3.5T	1.8K USD	73%	78	<a href="#">More details</a>
<input type="radio"/> Sustainability first ⓘ	136 USD	41%	48%	87%	3.7	7.6	0.32	2.9T	1K USD	79%	77	<a href="#">More details</a>

## KEY VARIABLES

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The optimization engine processes numerous variables organized around the 5S framework:

<b>Savings</b>	<b>Security</b>	<b>Satisfaction</b>	<b>Sustainability</b>	<b>Safety</b>
<ul style="list-style-type: none"><li>• Current negotiated rates vs. projected market rates</li><li>• Total cost of stay including ancillary fees</li><li>• Volume-based discount opportunities</li><li>• Rate availability during peak periods</li><li>• Historical rate compliance</li></ul>	<ul style="list-style-type: none"><li>• Hotel location risk assessment</li><li>• Building security features</li><li>• Emergency protocols and staff training</li><li>• Data protection compliance</li><li>• Proximity to medical facilities</li></ul>	<ul style="list-style-type: none"><li>• Distance from key corporate locations</li><li>• Hotel quality ratings and reviews</li><li>• Amenities and services alignment with traveler preferences</li><li>• Historical booking patterns by traveler segment</li><li>• Preferred brand affiliations</li></ul>	<ul style="list-style-type: none"><li>• Carbon footprint metrics (scope 1, 2, and 3 emissions)</li><li>• Sustainability certifications</li><li>• Green building standards</li><li>• Waste and water management practices</li><li>• Sustainable food sourcing</li></ul>	<ul style="list-style-type: none"><li>• Historical safety incidents</li><li>• Health and hygiene protocols</li><li>• Food safety standards</li><li>• Fire safety compliance</li><li>• COVID-19 and pandemic readiness</li></ul>

## EXPECTED OUTCOMES

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- 8–12% reduction in overall hotel procurement costs
- 25% improvement in program sustainability metrics
- Clear alignment between corporate ESG goals and hotel selection
- 60% reduction in time spent on manual hotel invitation list management
- Data-driven negotiations with hotel suppliers
- Improved ability to forecast and demonstrate procurement value to executives

## TECHNICAL ARCHITECTURE

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### Data Layer

- Data Lake: AWS S3-based storage for raw booking data, hotel information, and market intelligence
- Data Warehouse-Snowflake implementation for structured historical data and performance metrics
- Real-time Processing- Apache Kafka streams for continuous market data updates and availability
- ETL Pipeline – AWS Glue for data transformation and enrichment tasks
- Cache Layer – Redis for high-performance access to frequently accessed calculations

### Application Layer

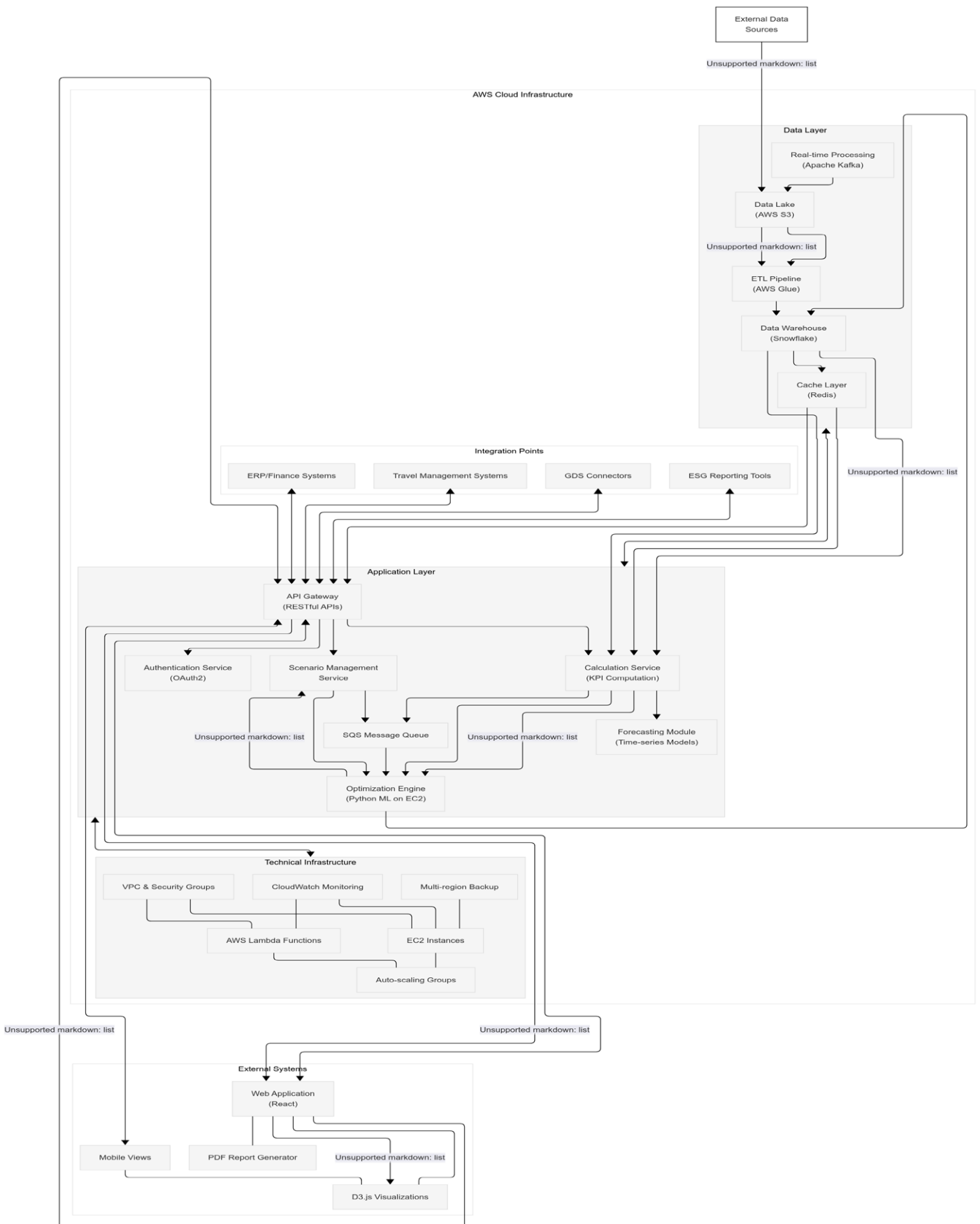
- Optimization Engine – Python-based machine learning algorithms running on AWS EC2 – API Gateway-RESTful interfaces for client applications and third-party integrations – Calculation Service – Specialized microservice for KPI metric computation
- Forecasting Module- Time-series prediction models for rate projections
- Scenario Management-Service handling scenario creation, comparison, and persistence – Authentication Service-OAuth2 implementation for secure access

### Presentation Layer

- Web Application – React-based interface for procurement specialists
- Visualization Components D3.js charts and interactive dashboards
- PDF Report Generator Automated export functionality for stakeholder presentations

### Integration Points

- GDS Connectors – API integrations with global distribution systems
- ERP/Finance Systems-Data exchange with corporate financial systems
- Travel Management Systems-Bidirectional interfaces with booking tools
- ESG Reporting Tools-Export capabilities for sustainability reporting
- SQS Message Queue – Asynchronous processing of optimization requests



Ready to take the next step? Reach us today at [info@brightgrove.com](mailto:info@brightgrove.com)