



Customer Case Study

*How to Save millions of dollars for Airlines
using Near-Real-time Auto Detection of
Tickets Pricing Anomaly*

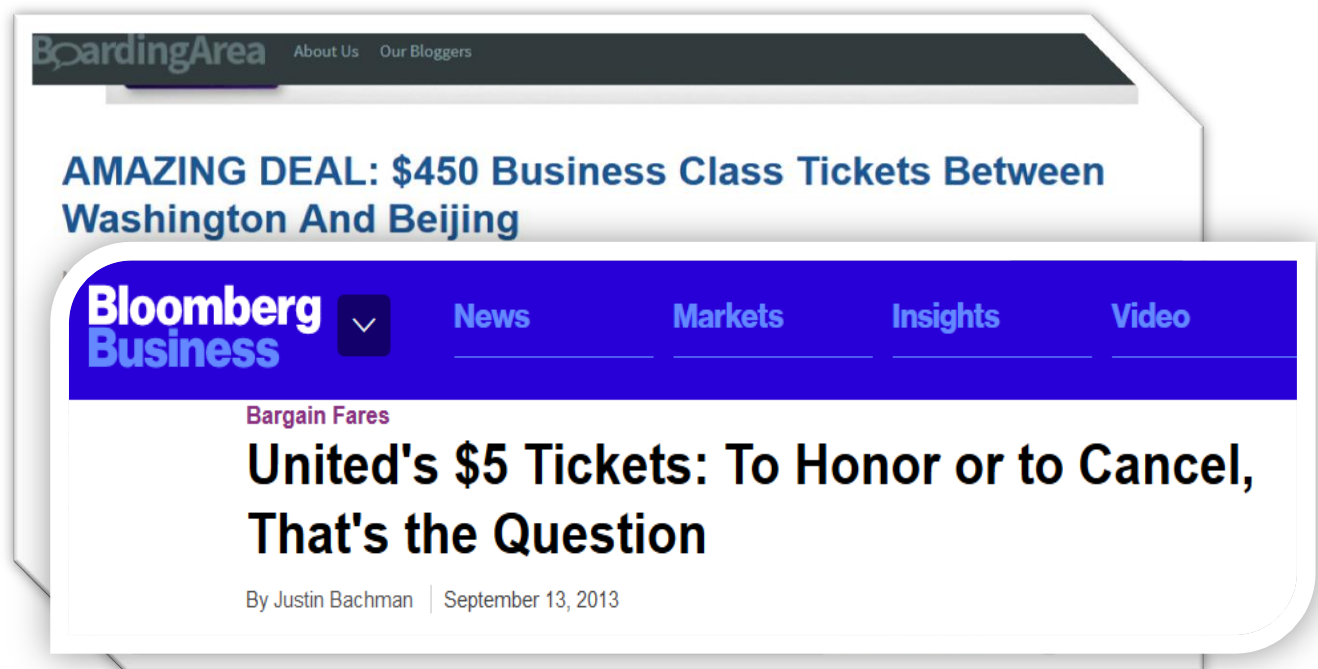
with Automated Straight-Through-Processing (STP) and Agile
Data Correlation and Visual Analytics Capability of SitScape

Business Challenges

The largest airlines in the world have hundreds of daily routes with a large number of airline tickets being sold constantly online, on the phone, or by agents.

Historically, due to human or computer errors, there have been a small percentage of routes that were ticketed incorrectly for some timeframes, and sold significantly lower than the correct price. Yet, those could be very high impact incidents once they do happen, which can lead to *millions of dollars of lost revenue in just one single such incident, plus related reputation damage*. [This happened to United Airlines](#) and [to American Airlines](#). Other airlines have felt this pain as well.

E.g. for one single incident: “...over the entire duration of 70 minutes we lost \$2.9M” [per UAL](#).



Historically, to combat this catastrophe, the airlines have hired operators to manually watch various internal software systems as well as various external web sites, including social media websites, BBS sites, and travel websites to catch these problems before they become major issues. This labor intensive process is neither efficient, nor effective.

The challenge: with so many daily airline routes and so many ticket purchases happening dynamically and continuously, employing a team of operators trying to catch pricing anomaly manually is not working well any more.

How can the airlines detect such anomalies automatically and can act faster?

Technical Challenges

For various technical reasons, the airline ticketing transaction system may not be able to send out every ticket's information for per-ticket analysis in real-time. Yet, the system can aggregate the most recent pricing data for each route and ticket category over the most recent timeframe (e.g. last 1-minute), to enable the operational team to conduct intelligence analysis.

An airline generally has the historical pricing data for all the routes and ticket categories in its data warehouse. The airline updates this data regularly with batch jobs and other methods.

Also, various data is available from external web sites such as social media web sites and air travel specific web sites such as flytalk.com that the airlines can gain access to.

The technical challenges are:

- (1) How to gain efficient access to both internal and external data, and turn the potentially non-structured data in web page into structured data.
- (2) How to correlate or blend disparate data from multiple internal and external data sources. One example is correlating near-real-time pricing data from transactional systems with historical data from the data warehouse or big data store.
- (3) How to easily apply data pre-processing and plug-and-play business-user-definable math models to detect anomalies based on the correlated or blended data.
- (4) How to visually define process flow to automate this whole complex process, in a 24/7 operational environment, while automatically detecting anomalies on a continuous basis, and alerting operational staff when the math model detects such events?

SitScape's Solution

Customers can use SitScape's **straight-through-processing (STP)** engine, in combination with SitScape's flexible **analytics engine** and **correlation engine**, to fully automate and streamline the processing of ticket pricing



anomalies detection from multiple disparate data sources.

The end result is a much smaller team of operators to watch and respond to the anomalies



auto-detected by SitScape software on a continuous basis. There is no longer a need for a large staff to manually monitor transactions. This directly led to better efficiency and big cost savings. Further, the new approach is significantly faster, more effective, and has the potential to save

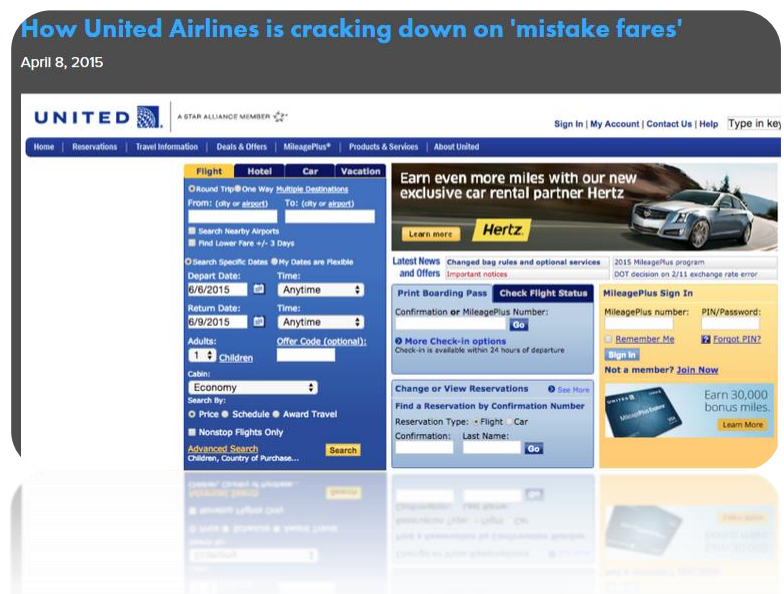
millions of dollars of lost revenue. The brand and reputation protection is also immeasurable.

Public News on United Airline Using SitScape's Technology

[Public news](#) about **United Airline** and their usage of **SitScape**:

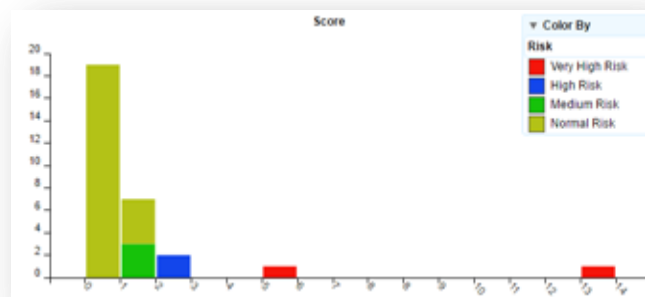
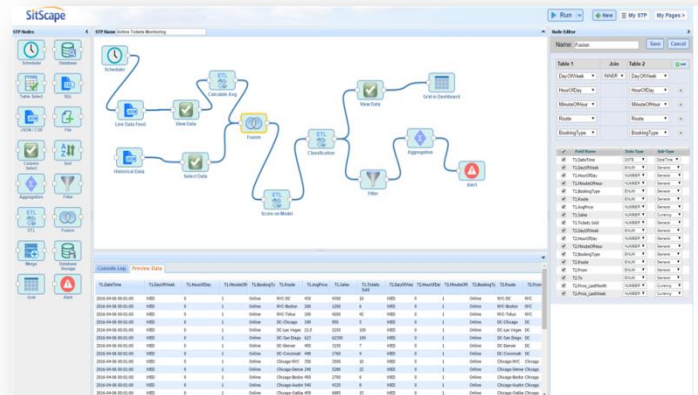
"At the Digital Operations Center, staff will use special software from SitScape and a 10-monitor video wall to detect commercial impacts, fraudulent activity and end user manipulations."

"Proactive monitoring will improve reliability of our digital channels, increase customer trust by proactively managing issues, and avoid costly PR and litigation"

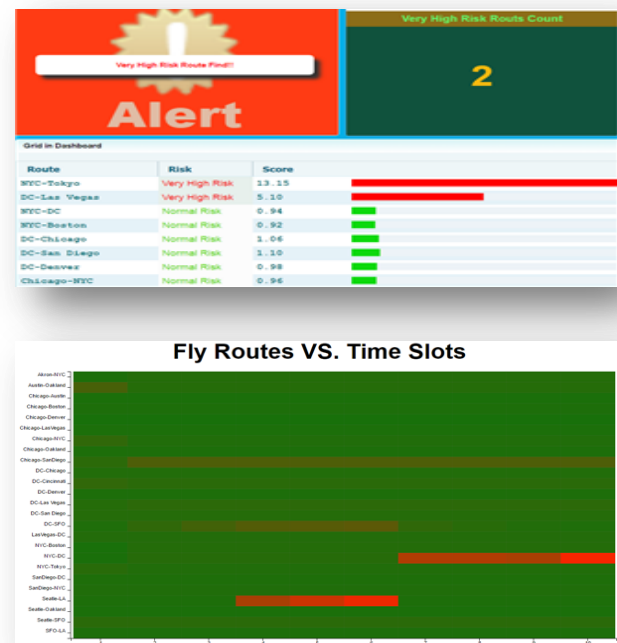


Solution Highlights

1. Use of SitScape's STP process to regularly calculate the statistical values of each route for various time slots using historical data.
2. SitScape's software can dynamically retrieve the latest ticketing data for the most recent timeframe driven by a user-defined scheduler
3. SitScape's STP engine can dynamically fuse and correlates the most recent data with the historical data, and other data feeds at run-time, based on the user-defined process flow and rules.
4. The SitScape software analytics engine enables user-definable mathematical calculations to compare the most recent pricing info with the calculated historical pricing statistical information, and scores the risk at run-time.
5. SitScape's analytical engine can then dynamically classify each route for the most recent timeframe into anomaly risk levels based on the latest dynamic analytics.
6. Then SitScape's straight-through-processing (STP) engine can update visualization and charts on the big screens of the Digital Operations Center or Web browser of the operator with the routes for each risk category and the related visualizations overtime. It can pin-point the routes that it discovered with high risk of pricing anomaly.



7. It can auto-generate an alert signal on the screen of the operator, and send an alert message or can attach detailed reports to the operator if there is any high risk route detected dynamically
8. This way, the Operator will be able to focus on the highlighted few potentially at-risk routes that are candidates for pricing anomaly on an on-going basis, and can quickly investigate, and drill-down to discover the root cause of the anomaly in a timely fashion. This can lead to large financial savings thanks to much rapid detection of such incidents



Broader Application and Higher Level Perspective

1. This technology highlighted here is actually very generic, and can be applied broadly to various other areas and industries such as cyber security, physical security, IT services monitoring, oil and gas monitoring, project management, portfolio management, financial analysis, call center, military situational awareness, traffic management and incident management etc.
2. This whole process can be automated by SitScape's core STP technology, empowering operators to utilize their time to focus on the most critical anomalies and risks
3. SitScape's User-Defined-Operating-Picture (UDOP), combined with the analytics engine and STP automation engine, goes way more than the traditional dashboards, and provides a dynamic, near-real-time digital performance optimization platform to enhance smarter decision making in support of mission critical business operations.
4. The software can correlate with other data sources such as open source data and social media data; perform cross-data agile analytics, visualization and self-service data discovery

5. The math model is configurable and refine-able to support more advanced mathematics, and can also use plug-and-play to integrate with external or 3rd-party analytics engines such as predictive analytics, machine learning or deep learning software modules.

Learn More

To learn more about how SitScape's technology solutions can help you increase your situational awareness, optimize your analytics-based decision making, improve your secure information sharing and real-time collaboration capabilities, please contact us at info@sitscape.com, or call us at 888-762-6562, or visit our web site at <http://www.sitscape.com>.



About SitScape, Inc.

SitScape Inc., the recognized leader of software solutions for data-driven Intelligent Digital Operations, is trusted by the Federal government and various Fortune 500 organizations for real-time collaboration, agile data correlation, continuous monitoring, analytical visualizations and flexible straight-through-processing (STP) automation. Our solutions support critical decision making at real-time with our self-service, easy-to-use, highly collaborative User Defined Operating Pictures (UDOP) graphical user interface, and the underlying engines with unmatched data correlation, analytics, monitoring/alerting and process automation capability for the next-generation digital operations.

Smart Operational Intelligence

Business Performance Analytics

Real-time Collaboration

Multi-Source Data Correlation Fabric

Continuous Monitoring | Alert | KPI

Straight-Through-Processing (STP)

Shared Situational Awareness

Common-Operating-Picture

User-Defined-Operating-Picture

User-Defined-Operating-Picture

Common-Operating-Picture

Common-Operating-Picture