

MICHIGAN STATE

U N I V E R S I T Y

Project Plan Presentation

Electronic Data Interchange (EDI) Monitoring

The Capstone Experience

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*From Students...
...to Professionals*

Project Sponsor Overview

- Stryker Corporation is a Fortune 500 medical technology company with specialties in orthopedics, neurotechnology, and surgical equipment
- Based in Kalamazoo, Michigan, Stryker was founded in 1941 by Dr. Homer Stryker
- Stryker has a history of rapid expansion and acquisitions



Project Functional Specifications

- Unify Dashboard Display of Data Across Various Middleware Solutions
- Add Analytical Features for Close Scrutiny of Transactional Metrics
- Enable Scheduled and Customizable Reporting
- **To Provide Stakeholders with a Consolidated System for Enhanced Decision-Making**



Project Design Specifications

- Search page: allows users to execute filtered searches on EDI transaction data with results displayed in tabular format
 - Users can view payload and error trace files for individual transactions as pop-ups
- Report Page: displays default and custom graphical visualizations of transaction data
- Alerts Page: users can create and schedule custom email alerts
- Admin Page: allows admins to customize search, table, and report options



Screen Mockup: Search Page

Search:
 Search
 Payload Search

Message Type: **From Date:** 9/14/2023 00:00:00 **Sender:** -- Select Sender --

Purchase Order: **To Date:** 9/14/2023 23:59:59 **Receiver:** -- Select Receiver --

Search Criteria: Composite Name is Blue **And Or X**

ID	Date/Time	Status	Error Message	DVM Response	Sender Identifier	PO Number	SO Number	ASN Number	Invoice Number	Type	Payload
1	9/14/23 12:00 AM	3	N/A	0	5	1	5	1254	248202	3848	3848
2	9/14/23 12:00 AM	5	N/A	1	5	1	4	1279	247944	3848	3848
3	9/14/23 12:00 AM	3	N/A	0	8	2	5	2894	389902	3848	3848
4	9/14/23 12:00 AM	2	N/A	8	6	2	3	2819	341878	3848	3848
5	9/17/23 12:00 AM	4	N/A	0	6	2	2	1088	401998	3848	3848
6	9/18/23 12:00 AM	5	N/A	54	5	2	2	1278	254574	3848	3848
7	9/19/23 12:00 AM	3	N/A	0	8	2	0	1294	248912	3848	3848
8	9/19/23 12:00 AM	3	N/A	0	12	8	4	8712	742448	3848	3848
9	9/19/23 12:00 AM	3	N/A	0	5	2	1	1025	106798	3848	3848
10	9/21/23 12:00 AM	2	N/A	0	6	2	1	2827	587422	3848	3848
11	9/21/23 12:00 AM	2	N/A	9	10	8	0	8285	898748	3848	3848
12	9/24/23 12:00 AM	2	N/A	0	12	8	1	8273	824742	3848	3848
13	9/25/23 12:00 AM	3	N/A	0	12	7	2	7286	447322	3848	3848
14	9/26/23 12:00 AM	1	N/A	0	12	8	1	8183	999734	3848	3848
15	9/27/23 12:00 AM	1	N/A	7	10	8	3	8423	842760	3848	3848
16	9/28/23 12:00 AM	2	N/A	0	10	8	1	8406	291222	3848	3848
17	9/29/23 12:00 AM	5	N/A	0	15	7	5	7460	885738	3848	3848
18	9/30/23 12:00 AM	3	N/A	0	10	8	6	8278	855748	3848	3848
19	10/1/23 12:00 AM	2	N/A	7	12	7	0	7076	495276	3848	3848
20	10/2/23 12:00 AM	4	N/A	0	12	8	0	8617	187424	3848	3848
21	10/3/23 12:00 AM	2	N/A	0	10	8	0	8581	876246	3848	3848
22	10/4/23 12:00 AM	2	N/A	0	10	8	9	8673	884548	3848	3848
23	10/5/23 12:00 AM	3	N/A	8	10	8	5	8847	180488	3848	3848
24	10/6/23 12:00 AM	4	N/A	0	5	1	5	1218	247930	3848	3848
25	10/7/23 12:00 AM	4	N/A	7	5	1	2	1247	389270	3848	3848
26	10/8/23 12:00 AM	4	N/A	0	7	0	2	3246	811728	3848	3848
27	10/9/23 12:00 AM	2	N/A	0	8	2	2	2048	408708	3848	3848
28	10/10/23 12:00 AM	1	N/A	0	7	2	0	3466	891088	3848	3848
29	10/11/23 12:00 AM	1	N/A	0	7	0	2	3812	761460	3848	3848
30	10/11/23 12:00 AM	1	N/A	0	10	8	2	8748	348878	3848	3848
31	10/13/23 12:00 AM	1	N/A	8	12	7	0	7749	349980	3848	3848

Page: 1, 2, 3, ... 25 Export



Screen Mockup: Search (Filtered)

The screenshot displays the Stryker EDI Dashboard search interface. The page title is "EDI Dashboard" and the URL is "stryker-edi-dashboard.com". The navigation bar includes "Search", "Reports", "Alerts", and "Admin". The search criteria are as follows:

- Message Type:** (Dropdown)
- From Date:** 9/14/2023 00:00:00
- Sender:** -- Select Sender --
- Purchase Order:** (Dropdown)
- To Date:** 9/14/2023 23:59:59
- Receiver:** -- Select Receiver --
- Status:** (Dropdown) is (Dropdown) 1 (Dropdown) X
- And** DVM Response (Dropdown) is less than (Dropdown) 7 (Dropdown) **And** **Or** X

The search results table is as follows:

Event Type	SearchKey ID	Company Name	GLID	Plan ID	Date/Time	Status	Error Message	DVM Response	Sender Id/Ref/Flr	PO Number	SO Number	ASN Number	Invoice Number	Trace	Payload
5	133405	Blue	1	3	9/13/23 12:00 AM	1	N/A	3	5	1	5	1234	248910	Trace	Payload
1	827571	Yellow	7	3	9/24/23 12:00 AM	1	N/A	8	12	8	1	8279	854743	Trace	Payload
8	72888	Pink	12	4	9/25/23 12:00 AM	1	N/A	2	11	7	2	2338	447512	Trace	Payload
7	628367	Red	4	3	9/26/23 12:00 AM	1	N/A	3	12	8	1	4283	656734	Trace	Payload
1	845811	Blue	113	27	9/28/23 12:00 AM	1	N/A	3	18	8	5	8458	291222	Trace	Payload
3	988123	Yellow	9	4	10/3/23 12:00 AM	1	N/A	3	13	9	3	9381	876248	Trace	Payload
3	348849	Blue	113	17	10/30/23 12:00 AM	1	N/A	3	7	5	3	3488	893286	Trace	Payload
0	381230	Green	25	7	10/11/23 12:00 AM	1	N/A	3	7	5	2	3812	763480	Trace	Payload
9	438829	Yellow	4	3	10/11/23 12:00 AM	1	N/A	3	18	6	1	4388	349678	Trace	Payload

Page: 1

Export

Screen Mockup: Search (Trace Pop-up)

The screenshot displays the Stryker EDI Dashboard search interface. At the top, there is a navigation bar with the Stryker logo, "EDI Tracking Tool", and links for Search, Reports, Alerts, and Admin. A user profile icon labeled "JG" is in the top right corner. Below the navigation bar, a search section is titled "Search:". It includes several input fields: "Message Type:", "Purchase Order:", "From Date:" (set to 9/14/2023 00:00:00), "To Date:" (set to 9/14/2023 23:59:59), "Sender:" (dropdown menu with "-- Select Sender --"), and "Receiver:" (dropdown menu with "-- Select Receiver --"). There are also buttons for "Search", "Add Sort Field", and "Save criteria as a preference".

Below the search filters, there is a table with columns for various EDI fields. A pop-up window titled "Timeline for Transaction: 123455" is overlaid on the table. The timeline shows a sequence of five steps connected by a horizontal line with colored dots: a green dot, a green dot, a green dot, a green dot, and a red dot. Below the timeline, there are labels for each step: "MFGNCD00K_MFGNCD00KtoSource", "BdG0000000ChgtoSource", "BdG0000000ChgtoTarget", "LSPR_F00ChgtoSource", and "AutoksaP00ChgtoTarget".

At the bottom of the dashboard, there is a page indicator "Page: 1, 2, 3, ... 25" and an "Export" button.



Screen Mockup: Search (Payload Pop-up)

The screenshot shows the Stryker EDI Dashboard search interface. The browser address bar displays "stryker.edi-support@stryker.com". The dashboard header includes the Stryker logo, "EDI Tracking Tool", and navigation links for Search, Reports, Alerts, and Admin. A user profile icon labeled "JG" is in the top right.

The search form includes the following fields and options:

- Search:** A yellow button labeled "Search".
- Add Sort Field:** A yellow button labeled "Add Sort Field".
- Save criteria as a preference:** A yellow button labeled "Save criteria as a preference".
- Message Type:** A dropdown menu.
- From Date:** A date input field with the value "9/14/2023 00:00:00".
- Sender:** A dropdown menu with the value "-- Select Sender --".
- Purchase Order:** A text input field.
- To Date:** A date input field with the value "9/14/2023 23:59:59".
- Receiver:** A dropdown menu with the value "-- Select Receiver --".
- Composite Name:** A dropdown menu with the value "is".
- Value:** A text input field with the value "Blue".
- Operators:** Buttons for "And", "Or", and "X".

The search results are displayed in a table with columns: Select Type, Source (with a dropdown), Composite Name, and a checkbox. The table contains 25 rows of data. A payload pop-up is visible in the center of the screen, displaying the following XML content:

```
<?xml version="1.0" encoding="UTF-8"?>
<Message>
</Message>
```

At the bottom of the page, there is a "Page: 1, 2, 3, ... 25" indicator and a yellow "Export" button.



Screen Mockup: Payload Search

EDI Dashboard
 stryker.edi-tracking.com

stryker B2B Tracking Tool
 GlobalEDSupport@Stryker.com

[Search](#) [Reports](#) [Alerts](#) [Admin](#) JK

Payload Search:

Message Type: From Date: To Date:

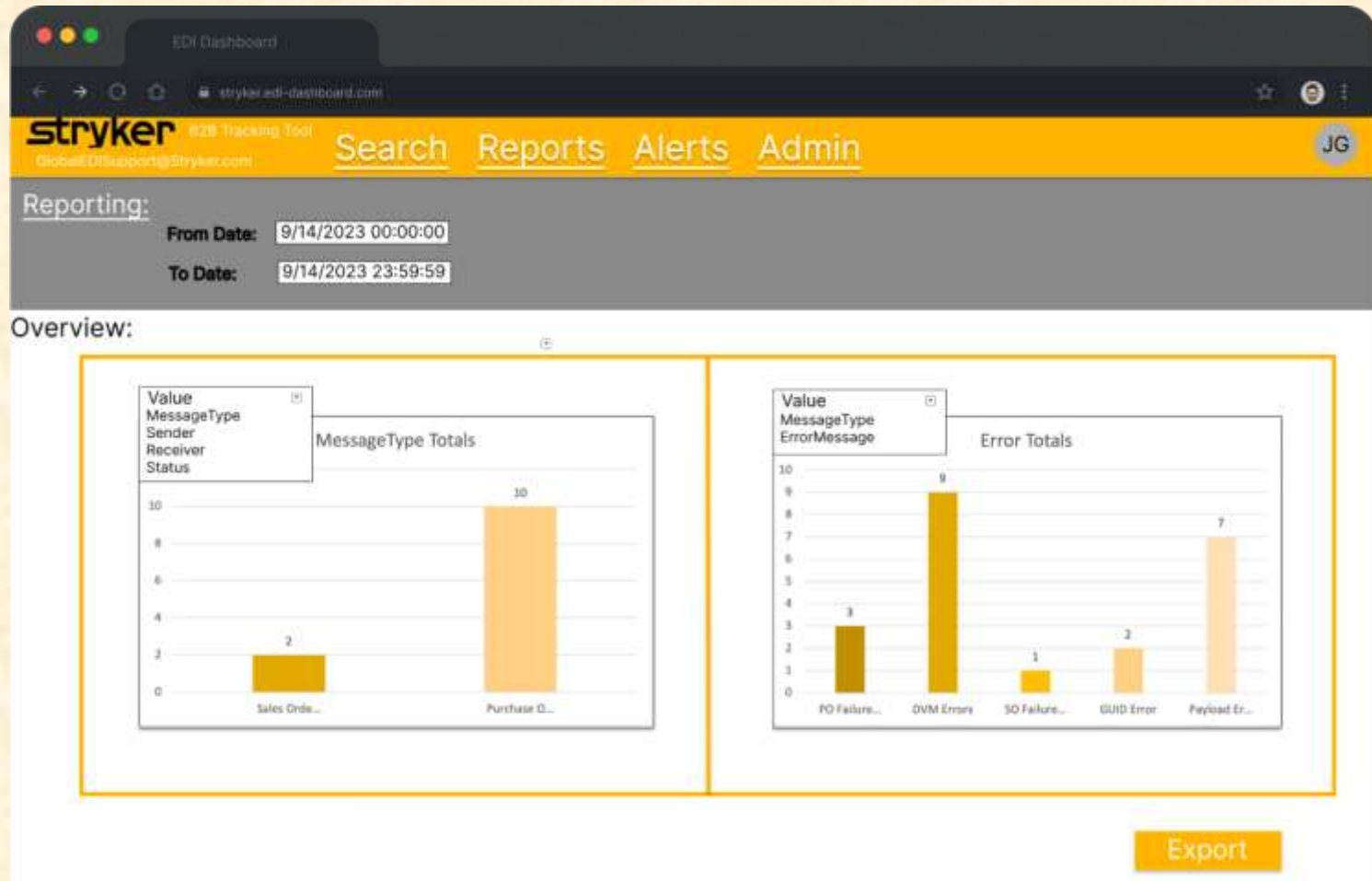
Payload contains does not contain

Event Type	Source Tech ID	Company Name	IDB	Item ID	DataTime	Status	Error Message	BVM Response	Sender Identifier	PII Number	ID Number	ASN Number	Invoice Number	Trace	Payload
3	223455	Blue	2	2	9/14/23 12:00 AM	3	N/A	3	5	1	5	1234	246900	Data	Payload
2	123456	Red	3	3	9/14/23 12:00 AM	3	N/A	1	5	1	4	1234	247994	Data	Payload
3	299473	Yellow	2	2	9/15/23 12:00 AM	3	N/A	3	8	1	5	2894	38842	Data	Payload
6	29139	Blue	4	3	9/16/23 11:00 AM	2	N/A	8	4	2	5	2919	56978	Data	Payload
8	300918	Red	6	3	9/17/23 12:00 AM	6	N/A	3	6	2	2	2029	407833	Data	Payload
7	127887	Yellow	7	3	9/18/23 12:00 AM	5	N/A	94	5	1	1	1278	194674	Data	Payload
8	123456	Blue	2	2	9/19/23 12:00 AM	2	N/A	3	2	1	0	1234	246822	Data	Payload
4	871234	Red	3	3	9/20/23 12:00 AM	2	N/A	3	12	8	4	8712	743448	Data	Payload
9	102399	Green	3	3	9/21/23 12:00 AM	2	N/A	8	3	1	3	1023	204798	Data	Payload
1	188711	Blue	3	3	9/22/23 12:00 AM	2	N/A	3	8	2	1	1887	567421	Data	Payload
2	828972	Black	98	13	9/23/23 12:00 AM	2	N/A	9	12	8	0	8289	696744	Data	Payload
1	827371	Yellow	7	3	9/24/23 12:00 AM	3	N/A	3	12	8	1	8273	654742	Data	Payload
6	728856	Pink	12	4	9/25/23 12:00 AM	3	N/A	2	12	7	2	7286	447322	Data	Payload
7	828967	Red	4	3	9/26/23 12:00 AM	3	N/A	3	12	8	1	8289	696744	Data	Payload
1	802881	Yellow	3	3	9/27/23 12:00 AM	3	N/A	7	18	8	3	8028	842782	Data	Payload
1	845611	Blue	123	17	9/28/23 12:00 AM	3	N/A	3	12	8	3	8456	281223	Data	Payload
9	748299	Red	14	5	9/29/23 12:00 AM	3	N/A	3	12	7	3	7482	482328	Data	Payload
4	927874	Yellow	5	3	9/30/23 12:00 AM	3	N/A	3	12	8	4	9278	850749	Data	Payload
8	727888	Purple	8	6	10/1/23 12:00 AM	2	N/A	7	12	7	0	7278	655278	Data	Payload
2	892711	Red	67	15	10/2/23 12:00 AM	4	N/A	3	12	8	0	8927	787424	Data	Payload
3	698123	Yellow	3	4	10/3/23 12:00 AM	3	N/A	3	12	9	5	6981	876345	Data	Payload
3	847291	Blue	67	19	10/4/23 12:00 AM	2	N/A	3	12	8	3	8472	694589	Data	Payload
9	884749	Red	56	13	10/5/23 12:00 AM	3	N/A	8	12	8	3	8847	799499	Data	Payload
5	123456	Brown	5	2	10/6/23 12:00 AM	4	N/A	3	3	1	5	1234	247994	Data	Payload
3	184785	Blue	143	73	10/7/23 12:00 AM	4	N/A	3	12	1	1	1847	389535	Data	Payload
4	302854	Red	618	83	10/8/23 12:00 AM	4	N/A	3	7	3	2	3028	611728	Data	Payload
4	204854	Yellow	24	7	10/9/23 12:00 AM	2	N/A	3	6	2	2	2048	408708	Data	Payload
3	949443	Blue	123	13	10/10/23 12:00 AM	3	N/A	3	7	3	3	9494	695281	Data	Payload
3	981230	Green	12	7	10/11/23 12:00 AM	3	N/A	3	3	2	2	9812	762460	Data	Payload
9	674858	Yellow	4	3	10/12/23 12:00 AM	3	N/A	3	10	4	1	6748	148474	Data	Payload
3	774888	Blue	6	3	10/13/23 12:00 AM	3	N/A	8	11	7	6	7748	688884	Data	Payload

Page: 1, 2, 3, ... 25 Export



Screen Mockup: Reports Page



Screen Mockup: Alerts Page

Showing all alerts:

<input type="checkbox"/>	Name	Alert Type	Email	
<input type="checkbox"/>	Custom1	PO Failure	JGreen@Stryker.com	
<input type="checkbox"/>	Custom2	DVM Error	JGreen@Stryker.com	

[Delete](#)



Screen Mockup: Alerts (Create Alert)

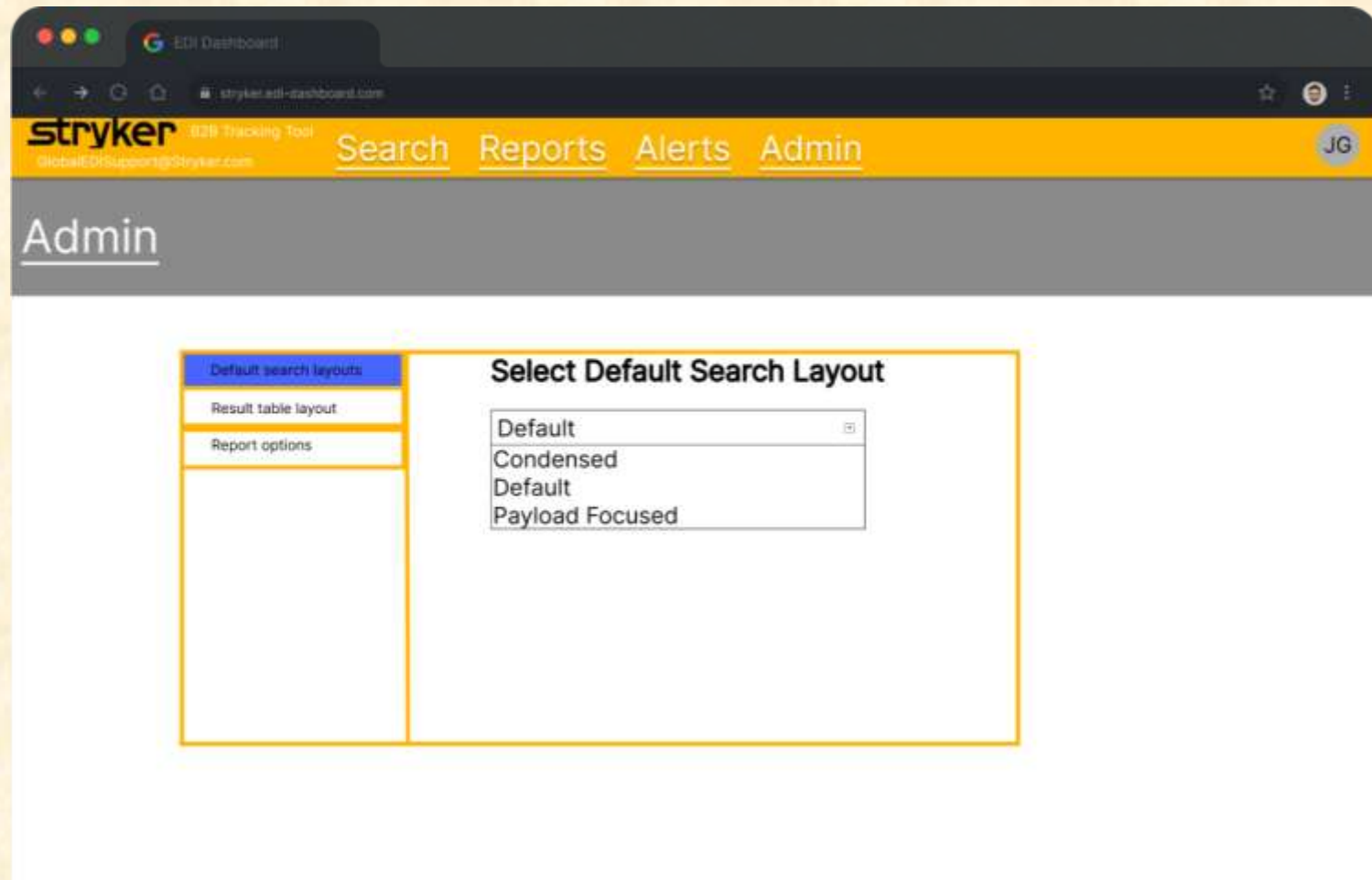
The screenshot shows a web browser window titled "EDI Dashboard" with the URL "stryker.edi-dashboard.com". The page features a yellow navigation bar with the Stryker logo, "EDI Tracking Tool", and links for "Search", "Reports", "Alerts", and "Admin". A user profile icon labeled "JG" is in the top right. Below the navigation bar, the heading "Alerts:" is followed by a yellow "Create +" button. The main content area is a form with the following fields:

- Name:** Custom3
- Alert Type:** SO Failure
- Email:** JGreen@Stryker.com
- Schedule:** 24 hours

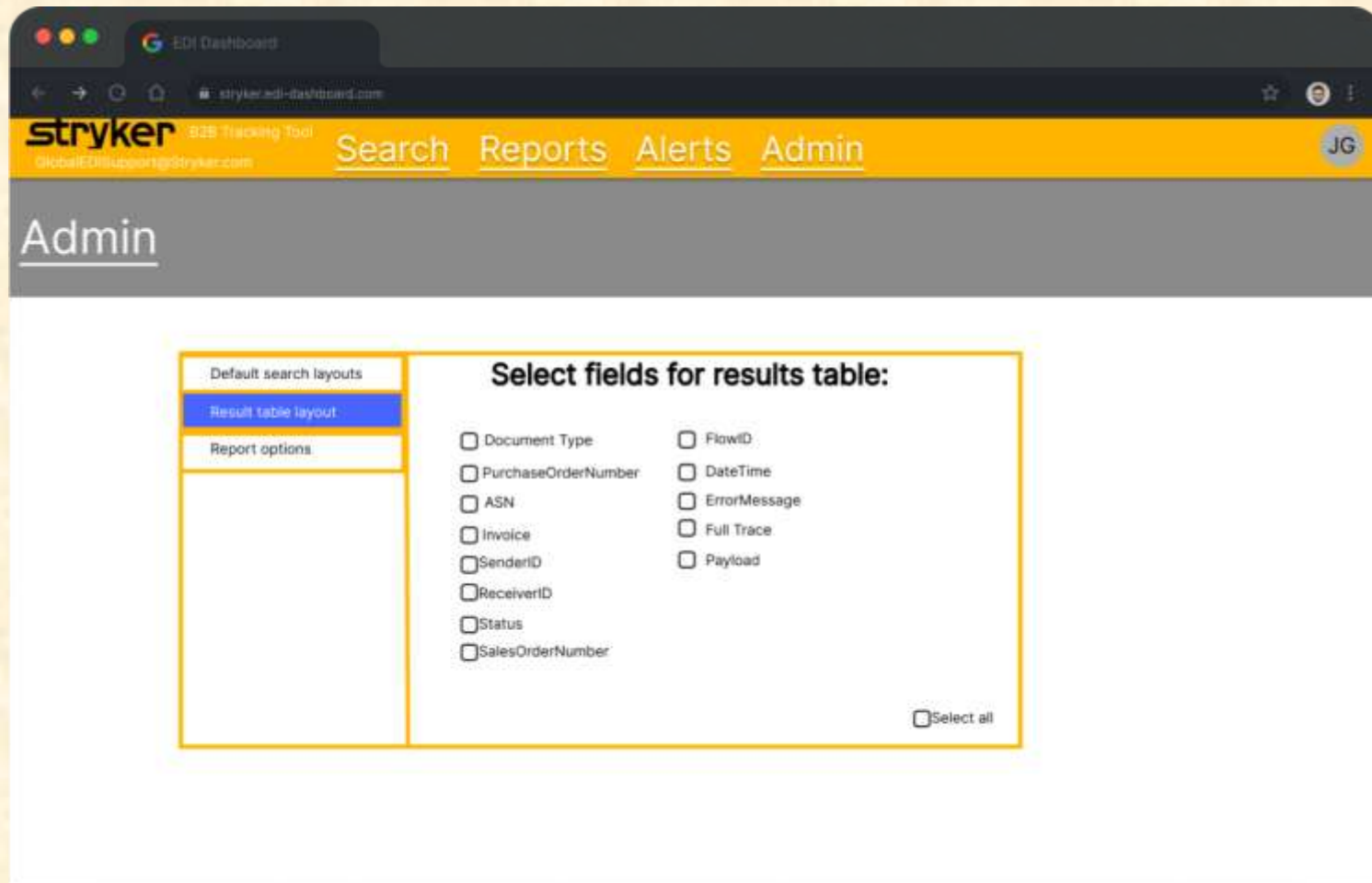
Below these fields is an "Advanced" section header. To the right of the form is a large grey area titled "Input SQL Query:" containing a text input field with the placeholder "Enter Query...". Two yellow icons are visible on the right side of the SQL query area. At the bottom of the form is a yellow "Add Alert" button.



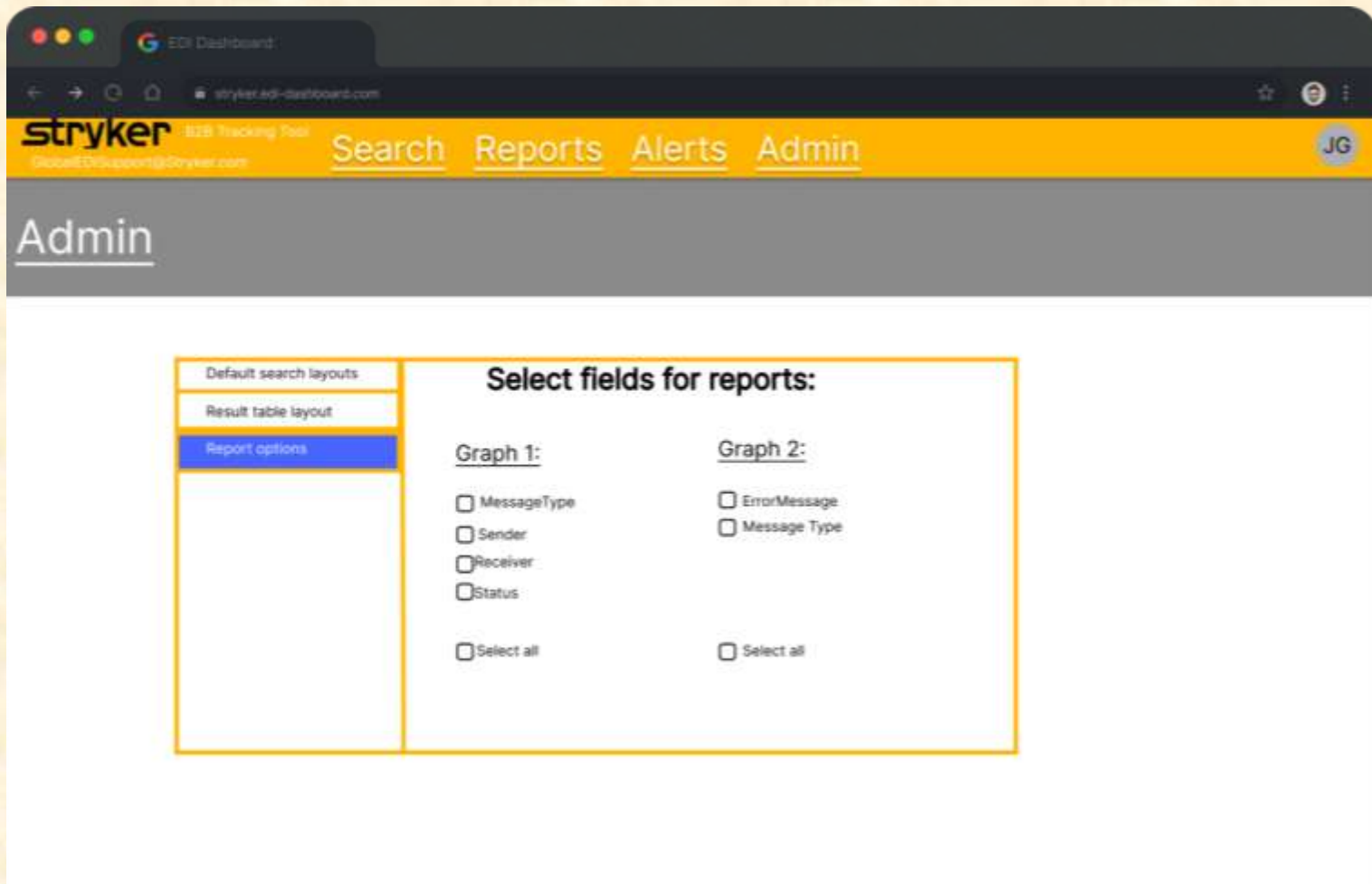
Screen Mockup: Admin Page (Default Search Layouts)



Screen Mockup: Admin Page (Result Table Layout)



Screen Mockup: Admin Page (Report options)

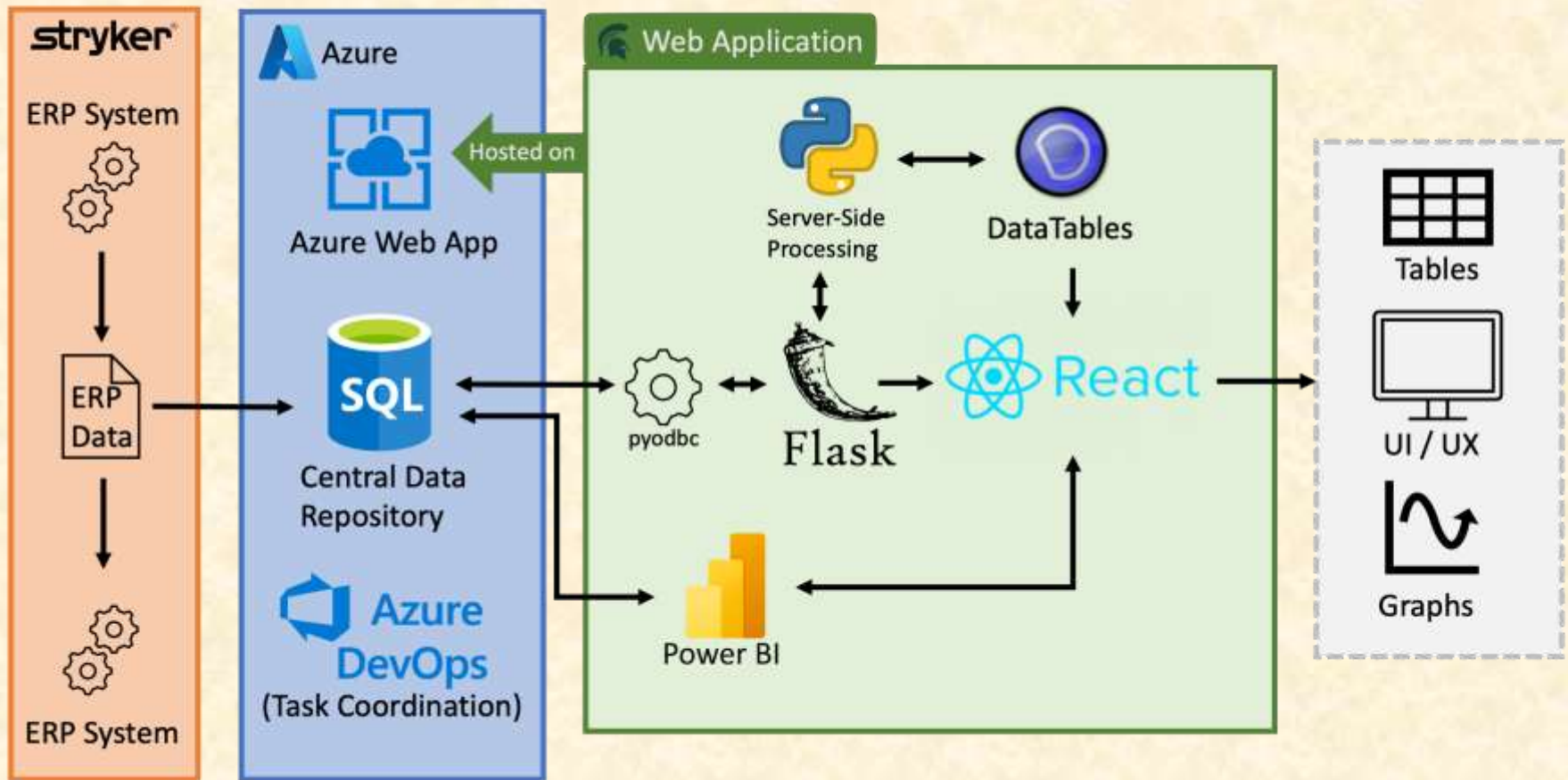


Project Technical Specifications

- Backend Infrastructure
 - The system uses Python and the Flask framework, hosted on Azure Web Server
- Data Storage and Management
 - Azure SQL Server serves as the central data repository, capturing and storing events from various ERP platforms.
- Frontend User Interface
 - Developed using ReactJS, the frontend dynamically communicates with Flask's API endpoints to fetch and render data.
- Table Functionalities
 - DataTables is integrated into the ReactJS framework to provide enhanced table features such as sorting, searching, and pagination.
- Analytics and Visualization
 - PowerBI is embedded within the ReactJS framework for real-time analytics, capable of sourcing data directly from the Azure SQL Server or via Flask APIs.



Project System Architecture



Project System Components

- **Software Platforms / Technologies**
 - **Microsoft Azure**
 - SQL Server – Central Data Repository
 - Web App – Hosting Platform
 - Dev Ops – Project Management
 - **Web Application**
 - Flask – backend framework
 - pyodbc – connect to Azure SQL
 - PowerBI – graphing and reporting
 - Datatables – creating dynamic table for large dataset
 - ReactJS – frontend framework



Project Risks

- Implementing Dynamic Tables and Graphs (High Priority)
 - Mitigation: Embed PowerBI reports for customizable graphs and utilize DataTables jQuery for flexible table displays.
- Database Schema for Storing EDI Data (High Priority)
 - Mitigation: Design the schema in Azure SQL Server with atomic data types like "varchar," "datetime," and "float."
- Optimizing Searching, Filtering, and Displaying Large Amounts of Data (High Priority)
 - Mitigation: Implement server-side data processing and pagination through Flask endpoints to improve latency and user experience.
- Generate and Send Custom Queries at Predefined Intervals (Medium Priority)
 - Mitigation: Store custom SQL queries in Azure SQL Server and automate email dispatch at specified intervals using Azure's built-in mailing capabilities.



Questions?

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