

Vital Insights - Decision Support System in Healthcare Clinic

Advisor: Albert Wong

Instructor: Vincent Yeung

Group 4:

Huan LV

Anthony Nguyen

Divyanshu Fialok

Date: 2024 Nov 22

Andy Nguyen

Dawn Dawn





Agenda



Project Overview



Our Client

- Renowned ADHD clinic in Toronto
- Long-term client of Langara College



Problem statement

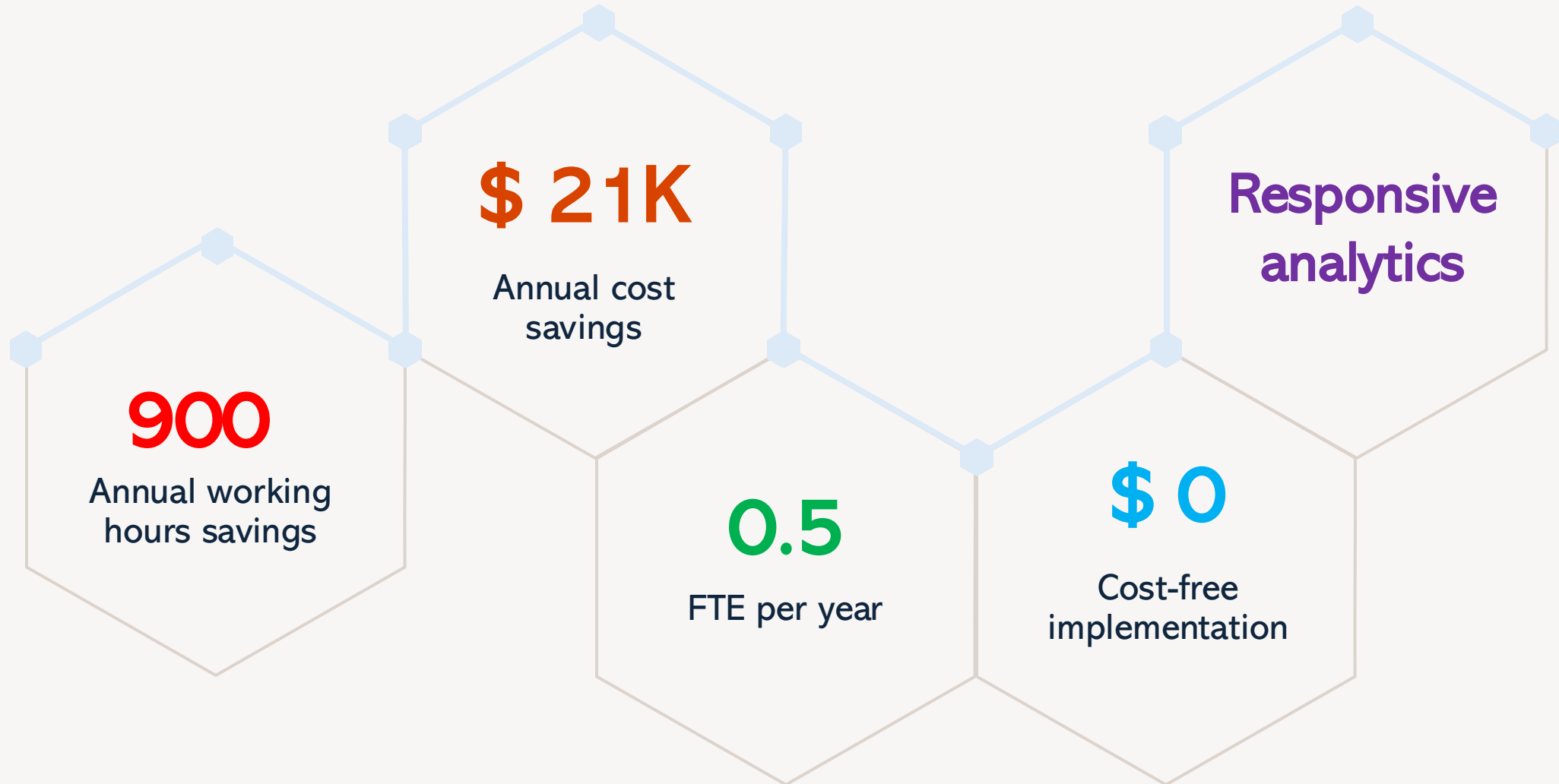
- Manually input target planning weekly by MS Excel
- Manually create monthly performance report



Deliverables

- Planning Management System for setting targets flexibly
- Real-time performance Dashboard
- End-to-end automatic data pipeline

Project Highlights



Proposed Solution



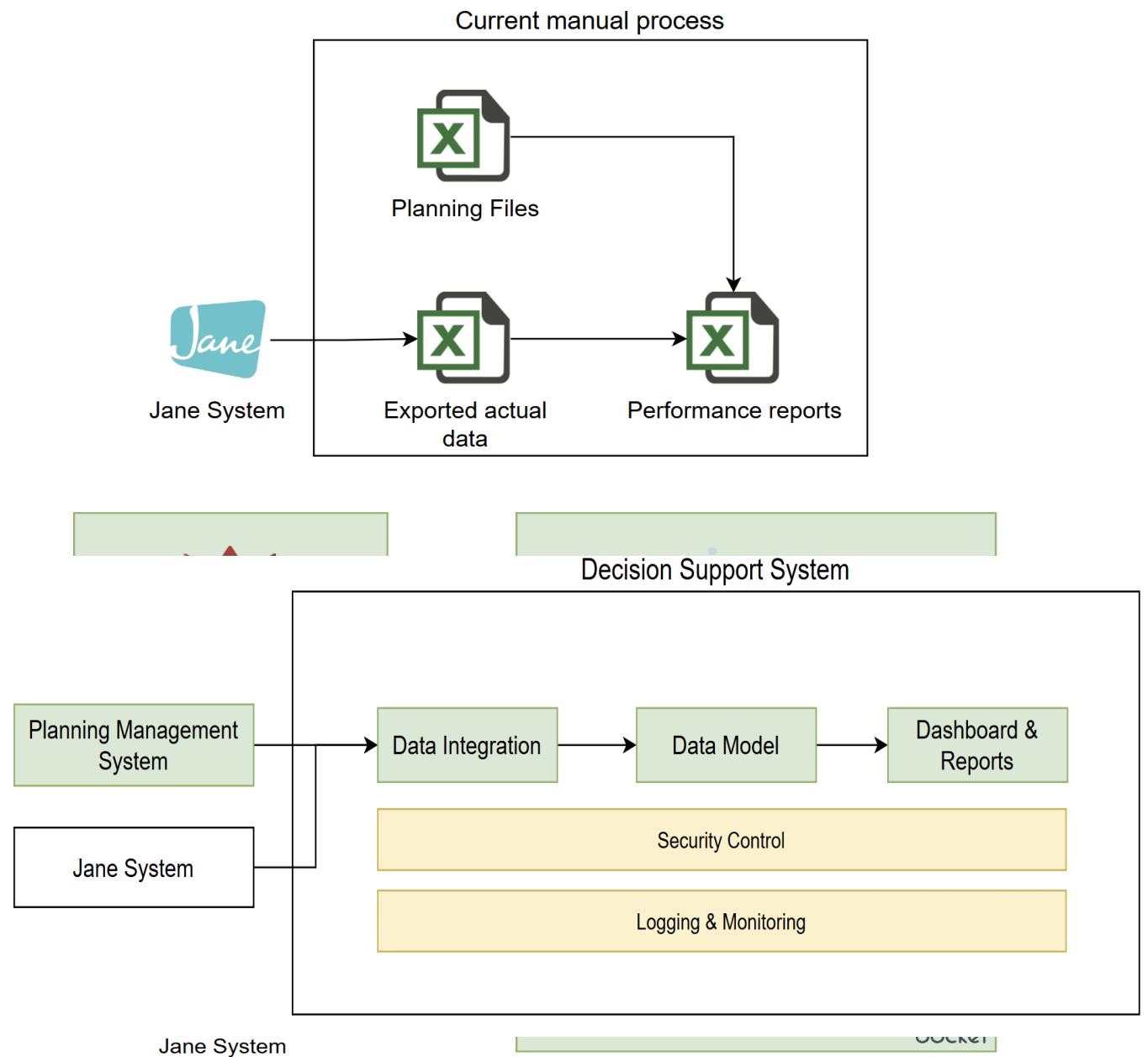
Data Volume:

- 25 users
- 25 target records daily (600 monthly)
- 150 appointment records daily (3600 monthly)



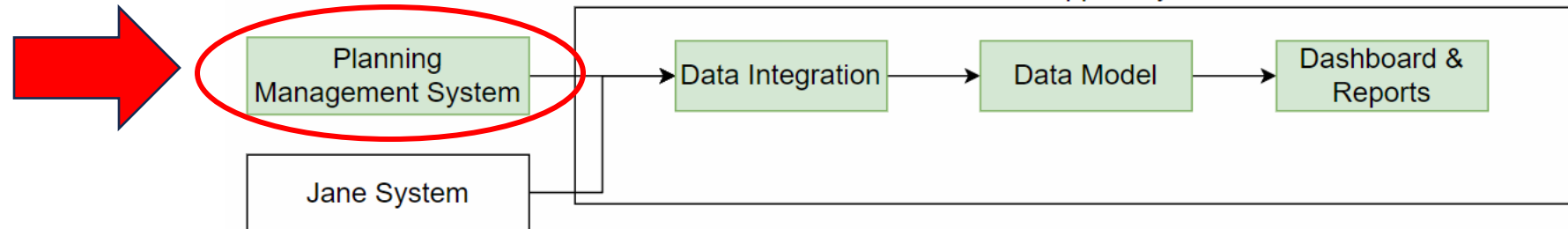
Criteria:

- Open source (free)
- Easy to use for non-technical users
- Easy to set up and maintain
- Market reputation



Replace target planning file by building an app

- Easy to make mistake
- Time consuming
- Hard to monitor



	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	2024
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Target - Hours

COPY AND PASTE FROM Coach Dashboard - V07.2024

Alessia													
Anne													
Diana KM	88	80	80	88	84	80	88	88	80				756.0
Douglas	79.2	72	72	79.2	79.2	68.4	79.2	75.6	18				622.8
Estefano	88	80	80	84	76	80	88	88	80				744.0
Kelly	32	32	30	34	26	32	36	26	32				280.0
Kim													0.0
Lois	70.4	56	57.2	48.8	50.4	56	61.6	61.6	56				518.0
Merav	86.4	72	68.4	75.6	79.2	72	79.2	57.8	68				658.6
Munira	48	80	78	76	88	80	76	80	20				626.0
Liz	45.5	52.5	45.5	36.75	45.5	42	54.5	52	48				422.3
Tara													0.0
Swathi	18.6	21.6	23	25.2	28.8	30	46.8	37.2	49.6				280.8

Video demo of Target Management App

The screenshot displays the Langara Target Management Application running in a web browser. The browser's address bar shows 'localhost:8501'. The application features a sidebar on the left with a large orange circle containing the 'Langara.' logo. Below the logo, the text 'Target Management' is visible, followed by an 'Admin Menu' section with buttons for 'Set', 'View', 'Edit', and 'Delete'. The main content area is titled 'Langara. Target Management Application' and 'Set Target'. It includes a section for 'Select Location, Manager, or Practitioner' with three dropdown menus. The first dropdown, 'Select Location(s)', shows 'Oakville' and 'Toronto'. The second, 'Select Manager(s)', shows 'Anne', 'Merav', 'Douglas', 'Tara', 'Jack', and 'Liz'. The third, 'Select Practitioner(s)', shows a list of 21 practitioners: Janice, Merav, Douglas, Tara, Stephanie, Estefano, Narges, Zoey, Alessia, Anne, Diana KM, Kim, Lois, Munira, Liz, Swathi, Eimear, Justine B, David, Meeta, and Nasim. A green box below the dropdowns indicates '21 practitioner(s) selected.' At the bottom, there are fields for 'Start Date' (2024/11/18) and 'End Date' (2024/11/18). The Windows taskbar at the bottom shows the system clock as 3°C Mostly cloudy, 2024/11/18, and a taskbar with various application icons. An 'Aiseesoft Free Online Screen Recorder' watermark is visible in the bottom right corner.

target_update_v9present x +

localhost:8501

Deploy

Langara.

Target Management Application

Set Target

Select Location, Manager, or Practitioner

Select Location(s)

Oakville x Toronto x

Select Manager(s)

Anne x Merav x Douglas x Tara x Jack x Liz x

Select Practitioner(s)

Janice x Merav x Douglas x Tara x Stephanie x Estefano x Narges x
Zoey x Alessia x Anne x Diana KM x Kim x Lois x Munira x Liz x
Swathi x Eimear x Justine B x David x Meeta x Nasim x

21 practitioner(s) selected.

Start Date

2024/11/18

End Date

2024/11/18

3°C Mostly cloudy

Search

Aiseesoft Free Online Screen Recorder

Data Model



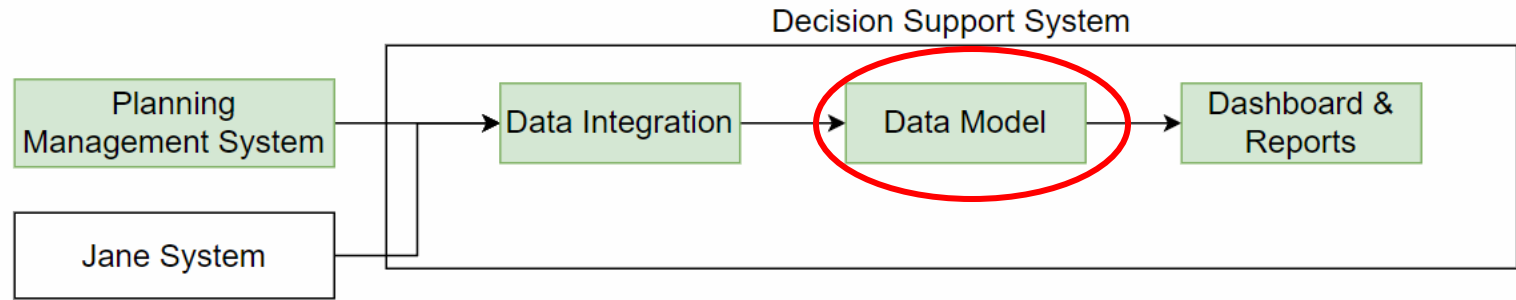
Why

- Centralize data
- Stability
- Scalability
- Performance

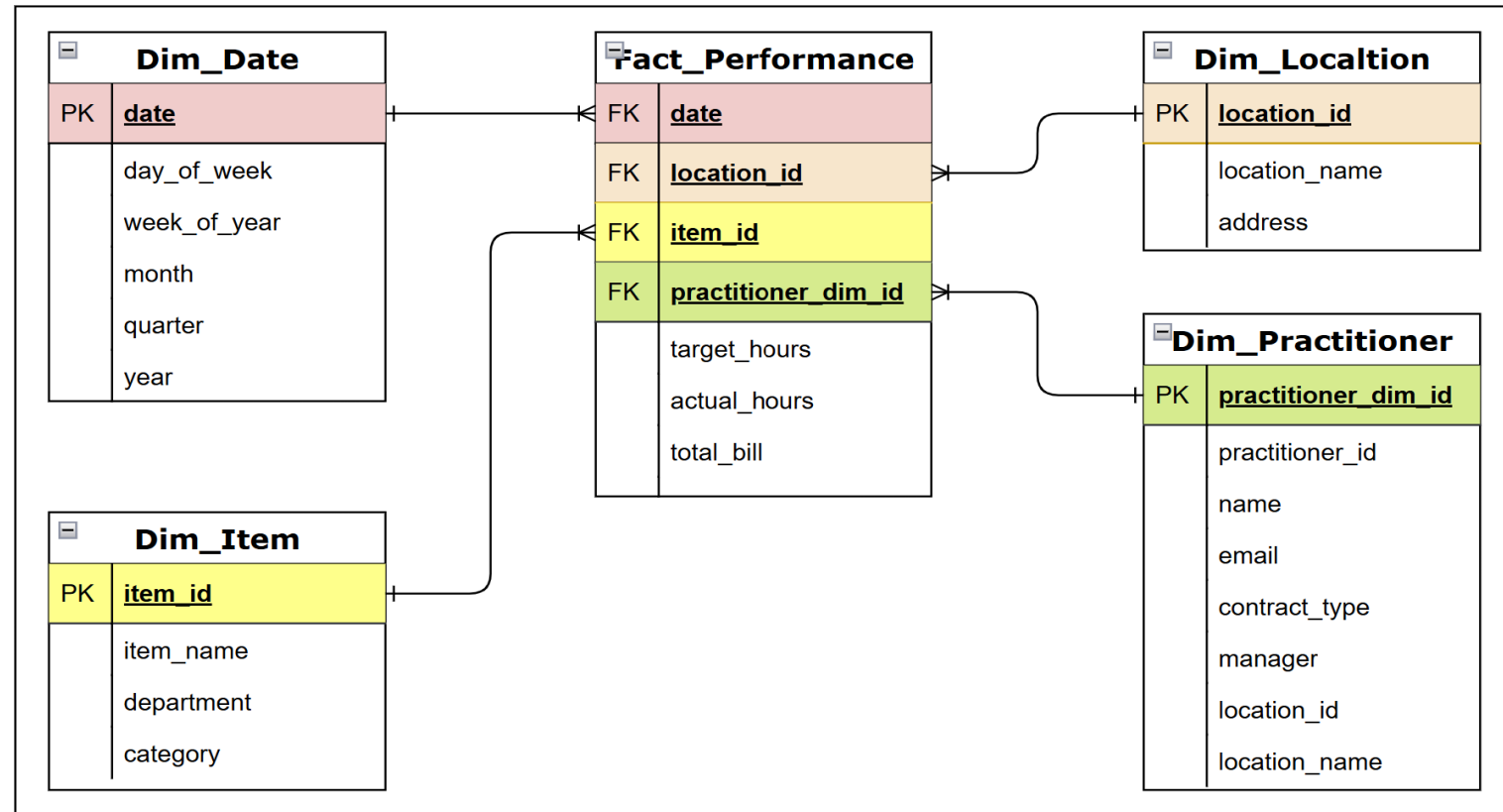


Select: **Star model (Star Schema)**

- Dimension/Fact tables
- Easy to Query
- Optimized for Analytics
- Supports clear business cases



Star Schema



Hierarchy Structure

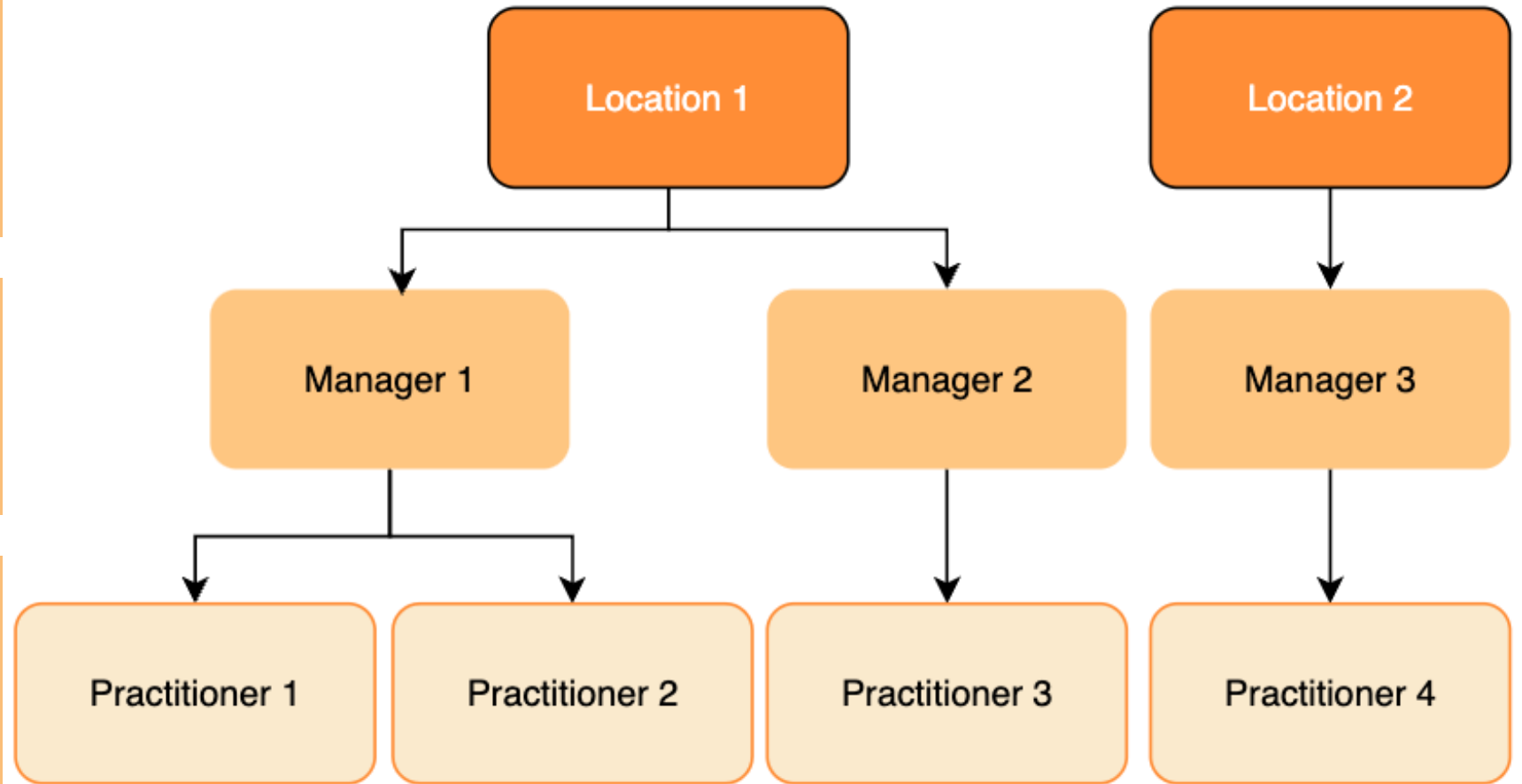
Targeted User

Corporate

Manager

Individual

Data Breakdown



Previously....

COACHING ONLY													
Staff	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	
1 Alessia	18%	34%	58%	61%	70%	81%	73%	73%	53%				63%
2 Anne	93%	114%	100%	71%	80%	98%	108%	105%	98%				96%
3 Ash	76%	83%	70%	75%	72%	54%	79%						73%
4 David	63%	66%	61%	31%	41%	45%	18%	7%	0%				42%
5 Diana KM	66%	67%	80%	70%	63%	61%	79%	65%	78%				70%
6 Douglas	88%	76%	74%	78%	86%	83%	92%	81%	80%				82%
7 Eimear		16%	19%	15%	16%	21%	10%	42%	12%				17%
8 Erin M	74%	89%	63%	64%	79%	83%	71%	68%	59%				72%
9 Estefano	67%	78%	69%	74%	91%	73%	54%	61%	59%				70%
10 Kelly	92%	92%	87%	81%	67%	44%	51%	79%	56%				72%
11 Kim	81%	84%	73%	76%									79%
12 Liz	53%	73%	66%	78%	88%	80%	66%	50%	42%				66%
13 Lois	65%	79%	66%	92%	75%	61%	46%	56%	79%				69%
14 Meeta	36%	56%	48%	42%	59%	39%	34%	50%	75%				49%
15 Merav	68%	96%	93%	86%	98%	83%	72%	79%	79%				84%
16 Munira	68%	74%	60%	76%	69%	68%	68%	69%	100%				72%
17 Narges	43%	85%	125%	101%	43%	56%	26%	25%	25%				
18 Nasim	13%	75%	45%	88%	92%	72%	44%	75%	75%				64%
19 Stephanie	42%	57%	92%	48%	56%	50%	82%	48%	29%				56%
20 Swathi	81%	60%	57%	62%	87%	72%	69%	86%	32%				67%
21 Tara	125%	103%	75%	65%	57%	86%	28%	35%	26%				75%
22 Zoey	54%	67%	33%	56%	63%	44%	50%	8%	13%				43%
	59%	73%	70%	68%	65%	62%	55%						63%

75%

85%



and now....

Corporate Dashboard

Quarter Month

Date Filter
June 1, 2024 - September 30, 2024

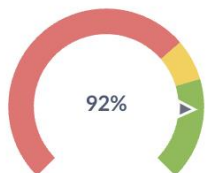
Location

Year to Date

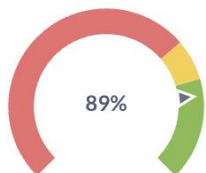
All locations



Oakville



Toronto



Quarter to Date

All locations

89%

Q4 2024

↓ 2.25% • vs. Q3: 91%

↓ 3.7% • vs. Q4 2023: 92%

Oakville

91%

Q4 2024

↓ 2.23% • vs. Q3: 94%

↑ 2.8% • vs. Q4 2023: 89%

Toronto

88%

Q4 2024

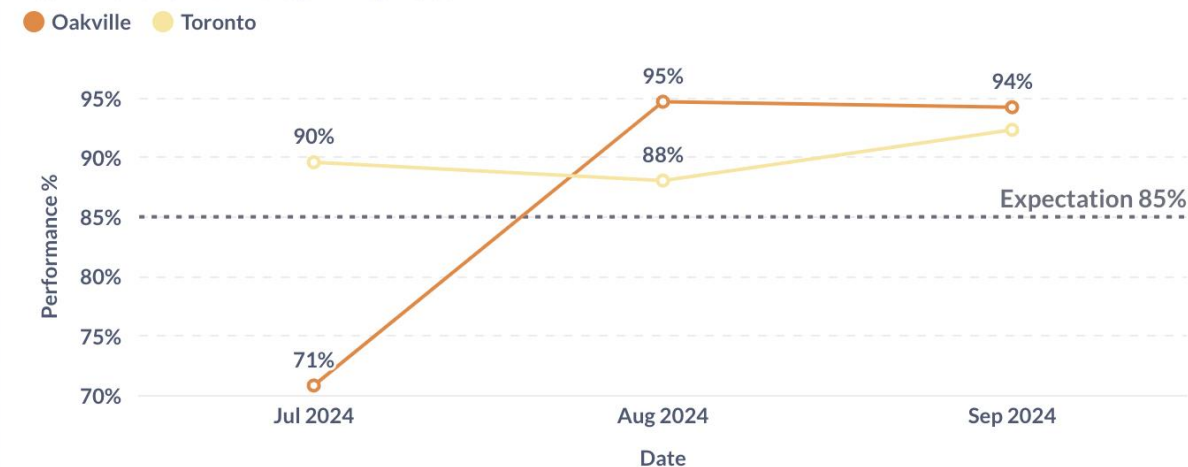
↓ 2.06% • vs. Q3: 90%

↓ 5.69% • vs. Q4 2023: 94%

Monthly View

Location	Jul 2024	Aug 2024	Sep 2024	Row totals
Oakville	71%	95%	94%	94%
Toronto	90%	88%	92%	90%
Grand tot...	86%	90%	93%	91%

Team Monthly View -Graph - Duplicate



See more Dashboards here:

Manager View Updated

Staff View Updated

Manager Dashboard

Quarterly

Daily

Date Filter

Previous 2 Weeks

Location

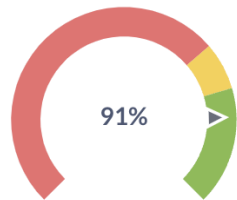
Toronto

Manager

2 selections

Toronto Office - Team Jack and Liz

Team Performance %



Number of staff:

5

Above Expectation

1

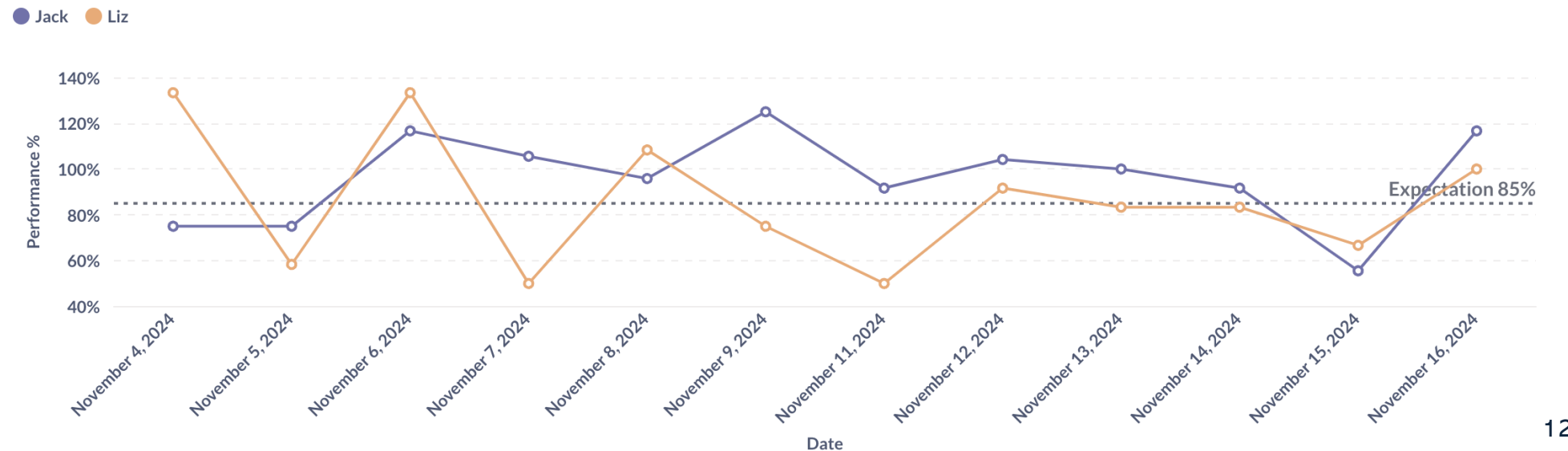
Meet Expectation

0

Below Expectation

Daily View Performance

Team	Staff Name	Nov 9, 2024	Nov 11, 2024	Nov 12, 2024	Nov 13, 2024	Nov 15, 2024	Nov 16, 2024	Nov 7, 2024	Nov 14, 2024	Row totals
Jack	Diana	133%	133%	117%	117%	67%	117%			103%
	Kim		117%	50%	117%	50%		117%	50%	93%
	Louis		50%	117%	67%	50%		83%	133%	88%
	Swathi	117%	67%	133%				117%		90%
Totals for Jack		125%	92%	104%	100%	56%	117%	106%	92%	94%



Individual Dashboard

2-week period

Previous 2 Weeks

Staff Name

David

Performance Report - David

Daily Performance in 2-week period												
	Nov 4, 2024	Nov 5, 2024	Nov 7, 2024	Nov 8, 2024	Nov 9, 2024	Nov 11, 2024	Nov 12, 2024	Nov 14, 2024	Nov 15, 2024	Nov 16, 2024		
Staff ID	Monday	Tuesday	Thursday	Friday	Saturday	Monday	Tuesday	Thursday	Friday	Saturday	Row totals	
8	133%	67%	50%	133%	50%	50%	100%	83%	50%	100%	82%	

Weekly Performance Trend

77%

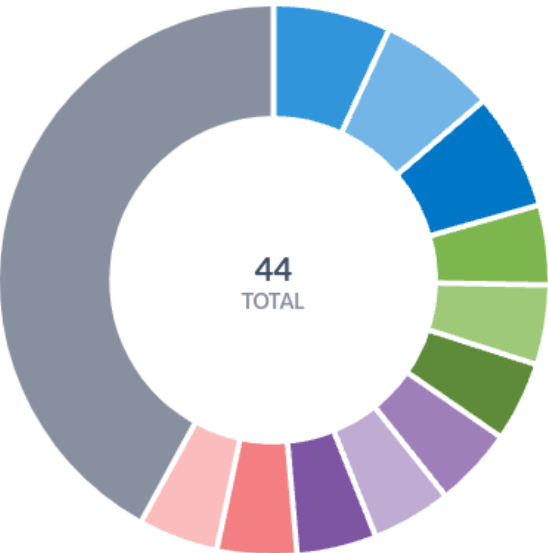
Nov 10–16, 2024

↓ 11.54% • vs. Nov 3–9: 87%

N/A • vs. Nov 12–18, 2023: (No data)

Number of Appointment Type per 2-week period

- IN-PERSON Couples Coaching (CRPO)
- 6.82%
- IN-PERSON Psychotherapy (Supervised by CRPO member)
- 6.82%
- ONLINE Executive Function Coaching (Supervised)
- 6.82%
- IN PERSON Executive Function Coaching (CRPO)
- 4.55%
- IN-PERSON Psychotherapy (Nurse Psychotherapist)
- 4.55%
- ONLINE Family Coaching/Psychotherapy (Social Worker)
- 4.55%
- ONLINE Individual Coaching/Psychotherapy
- 4.55%
- ONLINE Individual Coaching/Psychotherapy (Supervised) (Saturday)
- 4.55%
- ONLINE Parent Coaching (Supervised)
- 4.55%
- ONLINE Parent Coaching (Supervised by CRPO member)
- 4.55%
- ONLINE Psychotherapy (Nurse Psychotherapist)
- 4.55%
- Other
- 43.18%



QTD Performance Trend

86%

Q4 2024

↓ 9.82% • vs. Q3: 95%

↓ 8.28% • vs. Q4 2023: 93%

YTD Performance Trend

92%

2024

↑ 0.1% • vs. 2023: 92%

What's next



Complete UAT



Hand over technical documentation



Make the final product more eye-catching



Integrate with client systems



Deploy on the client systems

Lessons learnt

1

Communication is key

2

Adapt to new technology

3

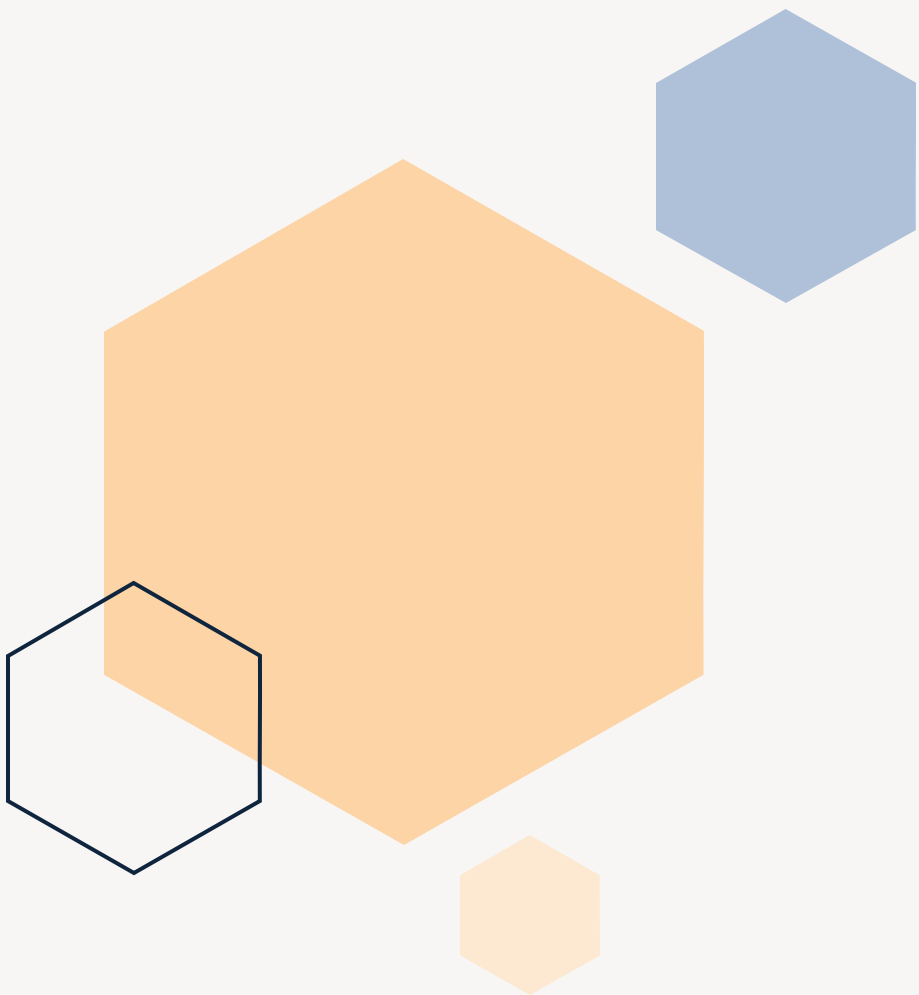
Teamwork makes
the dream work

A decorative graphic on the left side of the slide consists of a cluster of hexagons in various colors: light blue, orange, beige, grey, and dark blue. Some hexagons contain images: a person in a meeting, two people working at a desk, a smiling child, and a person looking at a wall covered in papers. The hexagons are arranged in a non-uniform, overlapping pattern.

Acknowledgement



Special thanks to Albert, Vincent, our clients and especially my amazing team members for going above and beyond to complete this project.

Love you all!



APPENDIX

Advantages of our system

Weekly task	Previous system	Proposed system
Target set	8 hour	1 hour
Edit/Delete target	1 h	5 min
Performance evaluation	3 h	0 min
Prepare report (chart, table) for 25 ea	6 h	0 min
Actionable performance data on daily basis		

Data Model

- Target:

Location	Target_date	Practitioner	Target Hours
Toronto	21-Nov-24	Nasim	6
Toronto	22-Nov-24	Nasim	5

- Actual:

Location	Appointment Date	Staff ID	Staff Name	Appointment Type	Actual Hours	Total Billing
Toronto	21-Nov-24	8	Nasim	ADHD Coaching	1	250
Toronto	21-Nov-24	8	Nasim	ONLINE Psychotherapy	1	250
Toronto	22-Nov-24	8	Nasim	ADHD Coaching	2	500
Toronto	22-Nov-24	8	Nasim	ONLINE Psychotherapy	1	250

- Org Chart:

Location	Staff Name	Manager
Toronto	Nasim	Douglas



- Dim Date:

Date	Day of Week	Week of Year	Month	Quarter	Year
21-Nov-24	Thu	47	11	4	2024
22-Nov-24	Fri	47	11	4	2024

- Dim Location:

Location ID	Location Name	Address
1	Toronto	Toronto, CA

- Dim Item

Item ID	Item Name	Item Category
1	ADHD Coaching	Coaching
2	ONLINE Psychotherapy	Psychotherapy

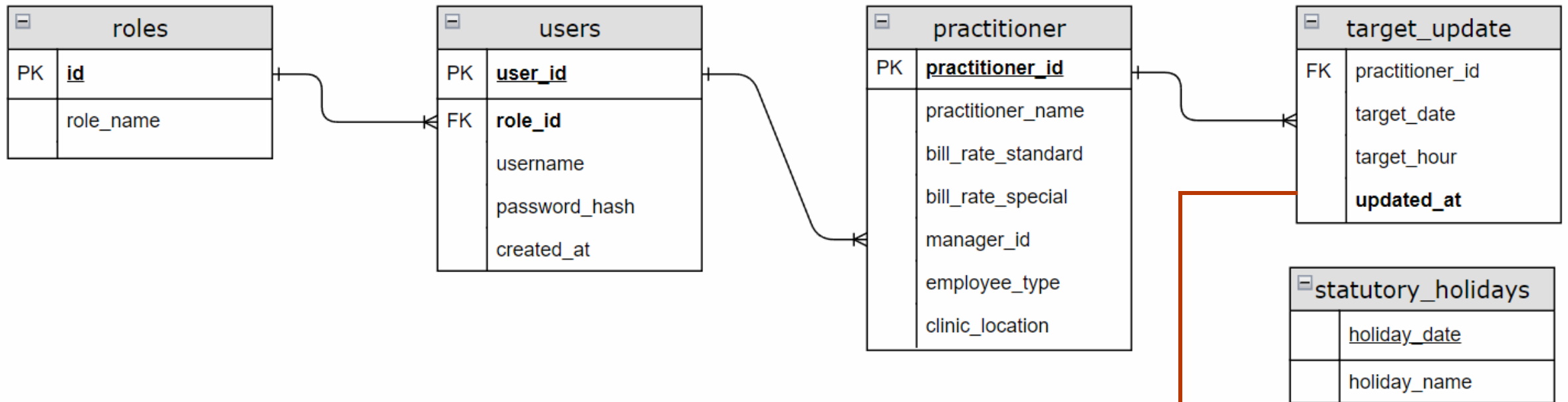
- Dim Practitioner

Practitioner ID	Practitioner Name	Location ID	Location	Manager	Contract type
1	Nasim	1	Toronto	Douglas	Fulltime

- Fact Performance

Date	Location ID	Practitioner ID	Target Hours	Actual Hours	Total Billing
21-Nov-24	1	1	6	2	500
22-Nov-24	1	1	5	3	750

ERD in PMS database



target_date: day that have target set
target_hour: target appointment hour

Proposed Solution



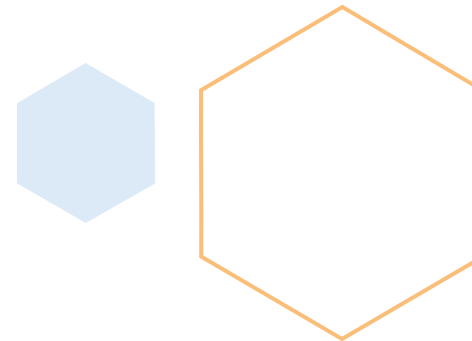
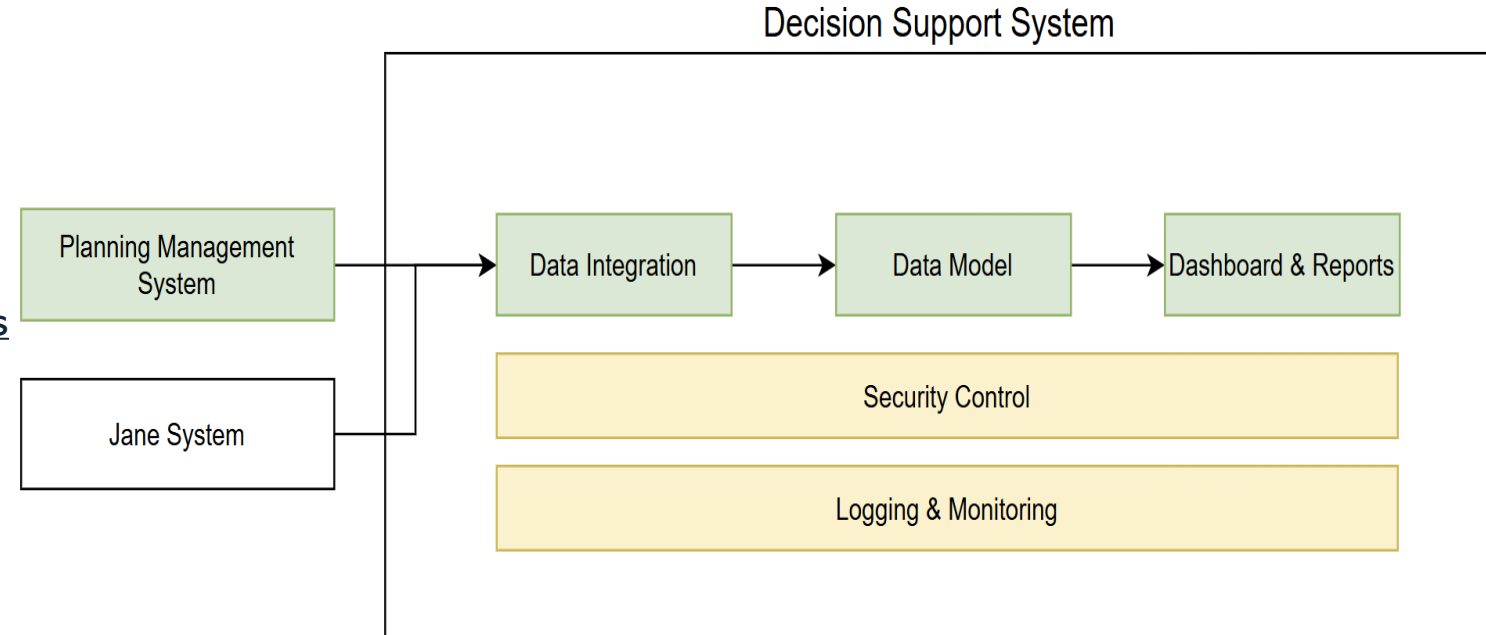
In scope:

- Manage target planning
- Manage and publish performance reports
- Centralize data to data model
- End-to-end automated data integration



In the future:

- Governance functions



Proposed Solution



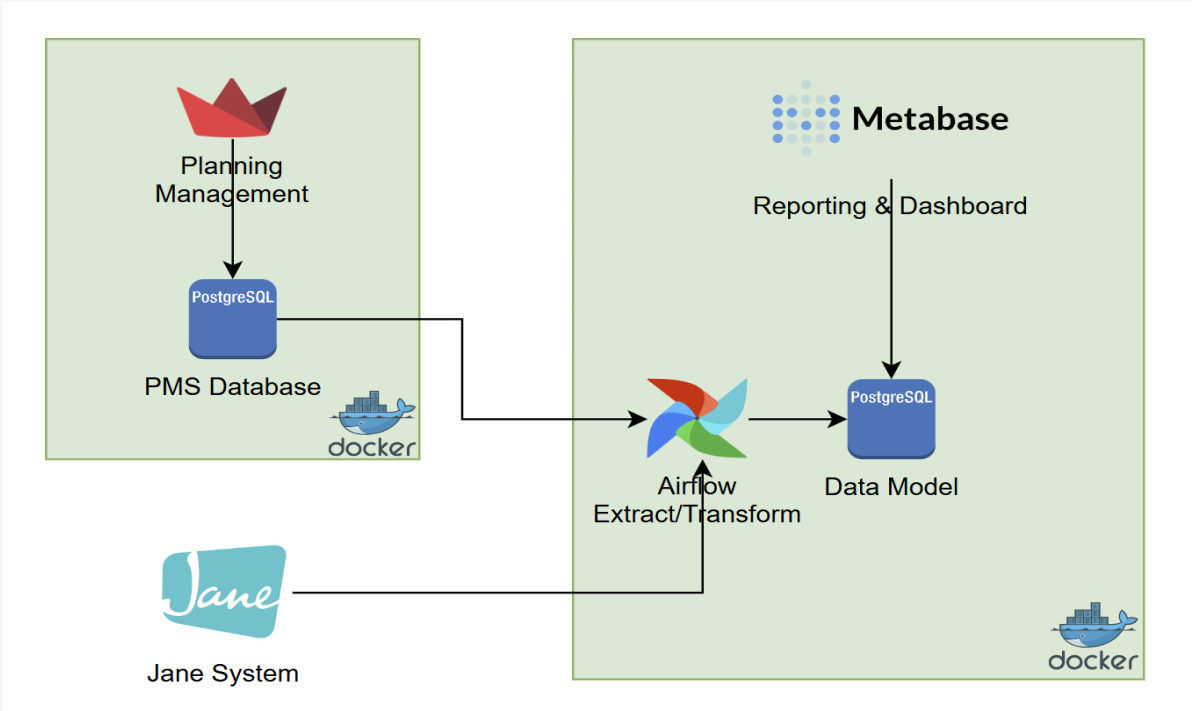
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Criteria:

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Web App	Streamlit	PHP
Database	PostgreSQL	Apache Druid
ETL	Apache Airflow	Apache NiFi
Report	Metabase	Apache Superset
Deployment	Docker	

Conclusion

- ✓ Streamline the process
- ✓ Enhance data-based decision-making
- ✓ Highly scalable, cost-effective
- ✓ Go above and beyond client's expectation
- ✓ Current status: UAT




Target Management App by Streamlit




Target Management

 Admin Menu

 Set

 View

 Edit

 **Delete**

Edit Individual Dates Delete Individual Dates

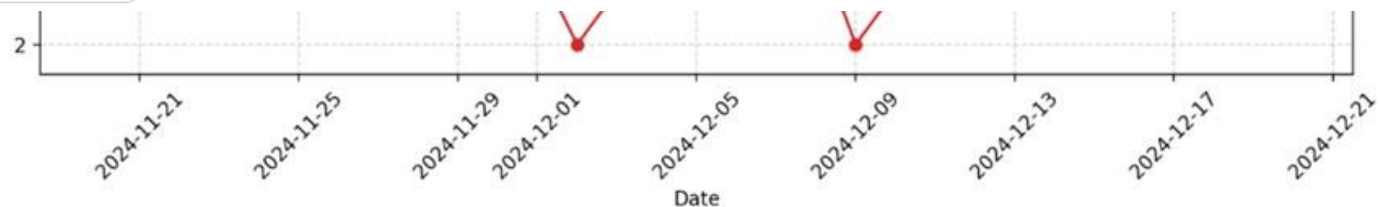
Click to select dates for deletion



Batch Delete All Dates in Range

Delete All Target Hours in Selected Range

Apply All



21 practitioner(s) selected.

Start Date

2024/11/20

End Date

2024/11/20