



**Singapore Healthcare Management 2017**

# DATABASE MANAGEMENT SYSTEM – To increase operational efficiency and streamline workflows in report generation

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## 1. INTRODUCTION

Since 2014, Centre of Resident and Faculty Development (CRAFD) has been tracking cumulatively the learning attendances and activities of about 1,000 residents in face-to-face CRAFD-organised workshops, E-Learning from 2 online portals (Institute of Healthcare Improvement and Blackboard) and Quality Improvement and/or Patient Safety Projects and collates all these information into a report to send back to 34 Program Directors once every 6 months.

About 10,000 residents' learning records stored in multiple spreadsheets are manually copied and pasted into 34 reports templates each time.

### CHALLENGES

- Multiple Data Sources
- Growing Volume of Data
- Dynamic Residents' Information
- Time Consuming
- Prone to Human Errors
- No Business Continuity

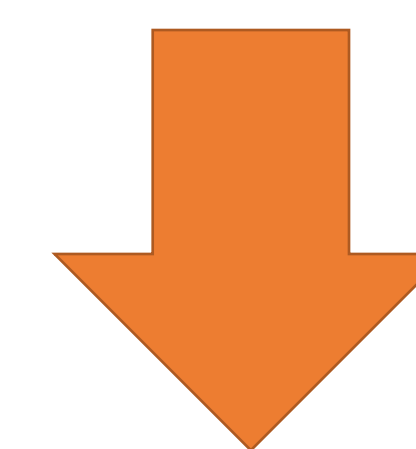
The team embarked on automating the reports generation with a database system.

## 3. RESULTS

Instead of depending on one person to manually organise the data from multiple sources to prepare the reports, the CRAFD DB allows any person in the team to generate the reports with a click of a button.

### Previous System of Using Spreadsheets

Count of MCR Number	Columns List	Name of Workshop	Competency Covered	Duration of workshop/h
0	R1 R2 R3 R4 R5 R6 SR1 SR2 SR3	Improving Doctor Patient Relationship	ICS	3.5 hours
0	0 0 0 0 0 0 0 0 0	Breaking Bad News	ICS	3 hours
0	0 0 0 0 0 0 0 0 0	Mastering Your Risk	ICS	3 hours
0	0 0 0 0 0 0 0 0 0	Mastering Adverse Outcomes	ICS	3 hours
0	0 0 0 0 0 0 0 0 0	Mastering Difficult Interactions with Patients	ICS	3 hours
0	0 0 0 0 0 0 0 0 0	Mastering Shared Decision Making	ICS, SBP	3 hours
0	0 0 0 0 0 0 0 0 0	Mastering Professional Interactions	ICS, SBP	3 hours
1	0 0 0 0 0 0 0 0 0	Evidence Based Medicine Workshop 1 (Searching for Literature)	PBLU	4 hours
2	0 0 0 0 0 0 0 0 0	Evidence Based Medicine Workshop 2 (CATs, Systematic Reviews, Meta-Analysis)	PBLU	4 hours
2	0 0 0 0 0 0 0 0 0	Talk on Quality Improvement/Patient Safety	PBLU	2 hours
2	0 0 0 0 0 0 0 0 0	RQI: Pre-Briefing Session	PBLU	2 hours
1	0 0 0 0 0 0 0 0 0	RQI: Workshop A	PBLU	4 hours
1	0 0 0 0 0 0 0 0 0	RQI: Midpoint Review A	PBLU	2 hours
2	0 0 0 0 0 0 0 0 0	RQI: Workshop B	PBLU	4 hours
2	0 0 0 0 0 0 0 0 0	RQI: Midpoint Review B	PBLU	2 hours
4	0 0 0 0 0 0 0 0 0	RQI Presentation	PBLU	2 hours
4	0 0 0 0 0 0 0 0 0	Health Law Seminar (Medicine, Doctor and the Law)	Professionalism, SBP	3 hours
0	0 0 0 0 0 0 0 0 0	Improving Doctor Patient Relationship Workshop	ICS, PBLU (SBP)	2.5 hours
4	0 0 0 0 0 0 0 0 0	Mastering Adverse Outcomes	ICS, PBLU (SBP)	2.5 hours



### Current System of Using CRAFD DB

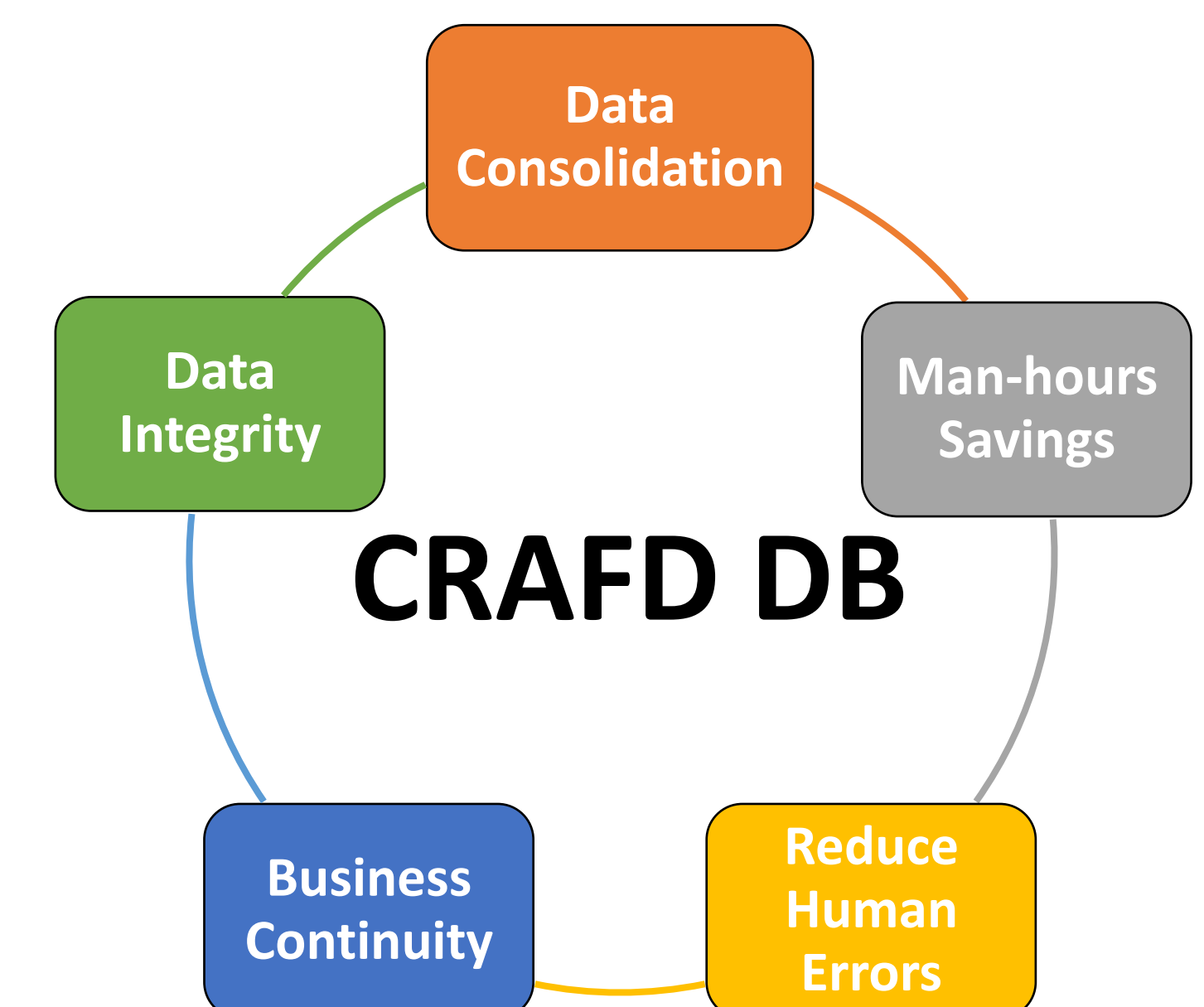
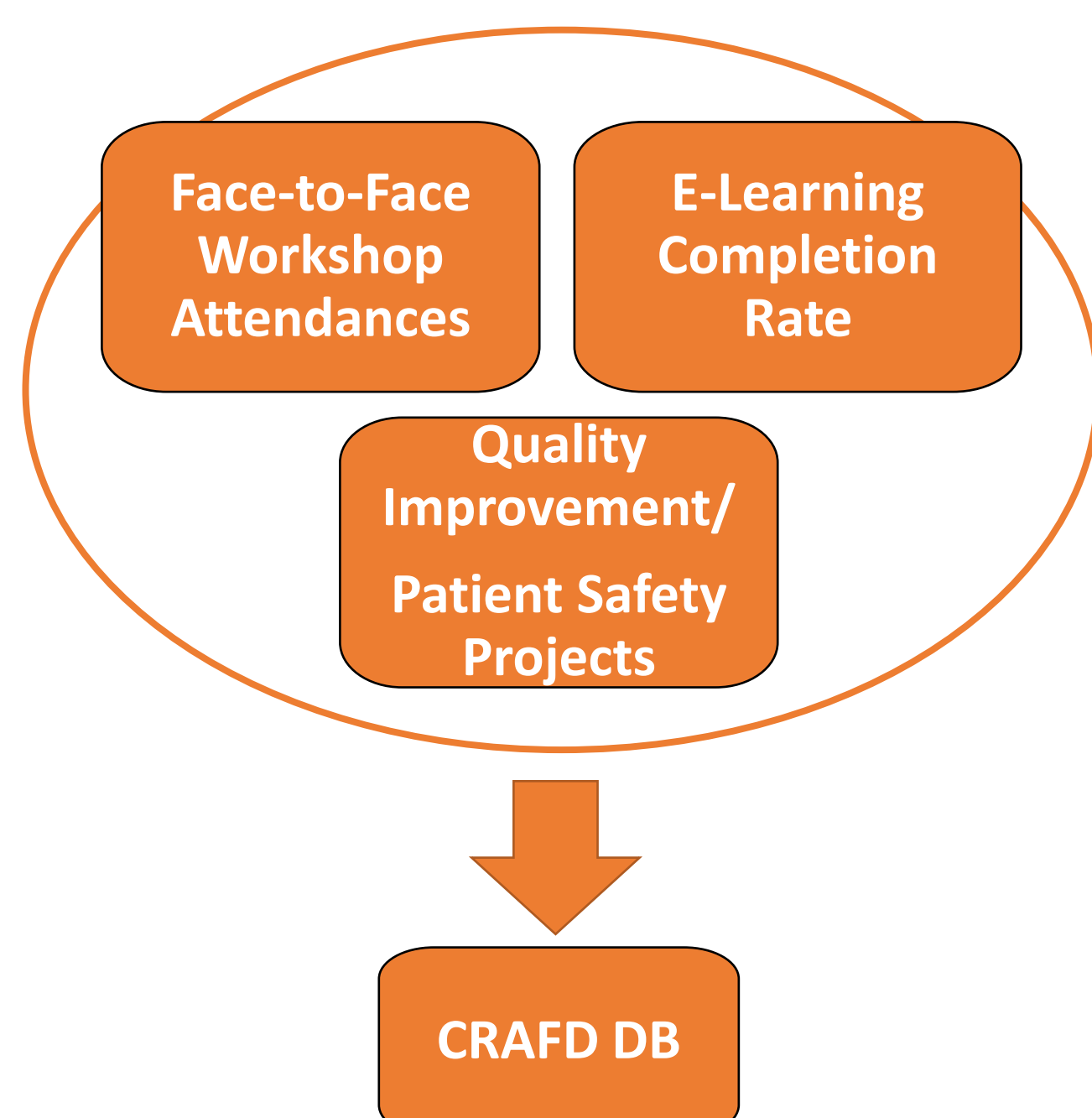


Diagram 1 : The benefits from CRAFD DB

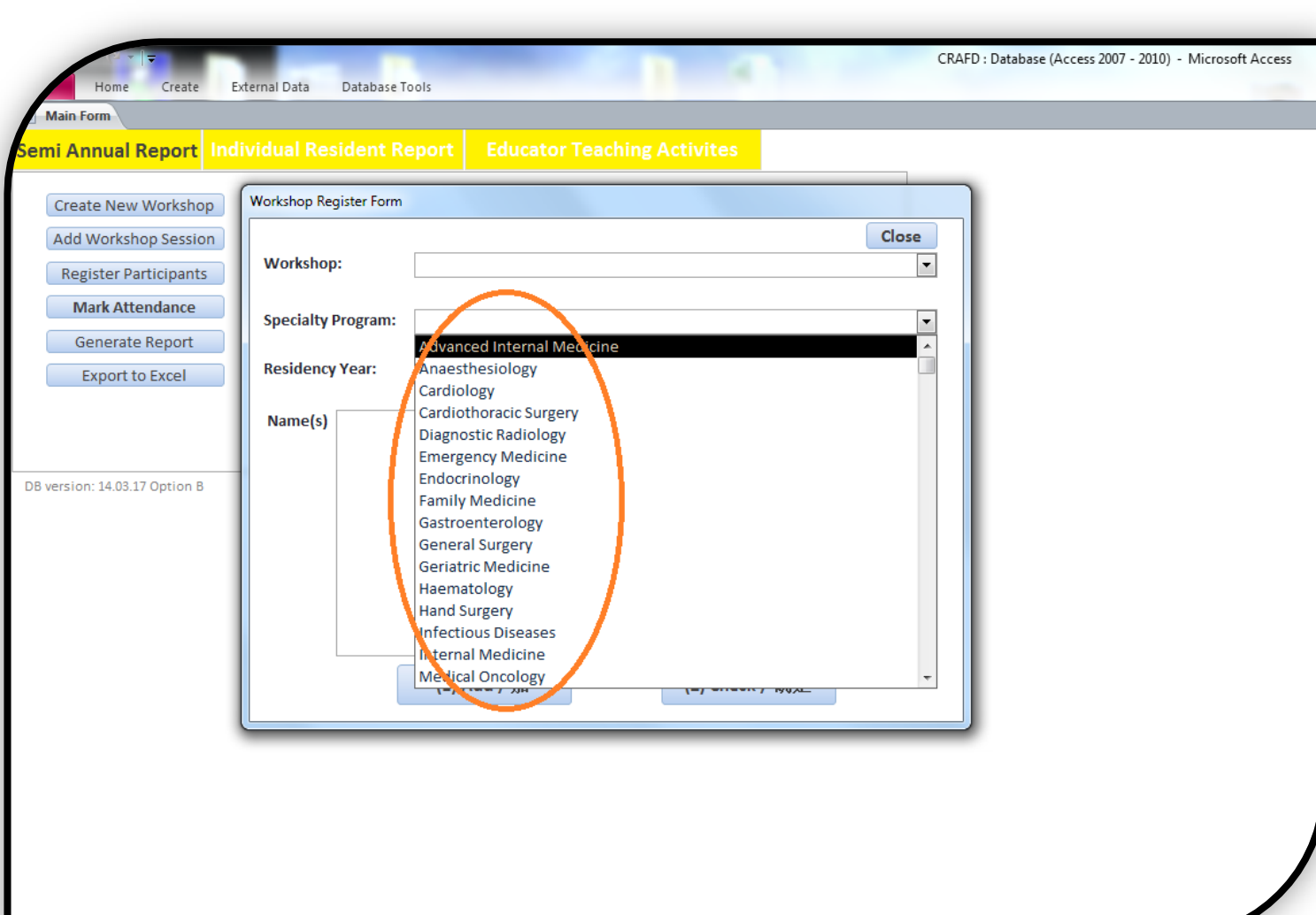
## 2. METHODOLOGY

A new database management system which forms the exoskeleton of report automation called CRAFD DB was developed.

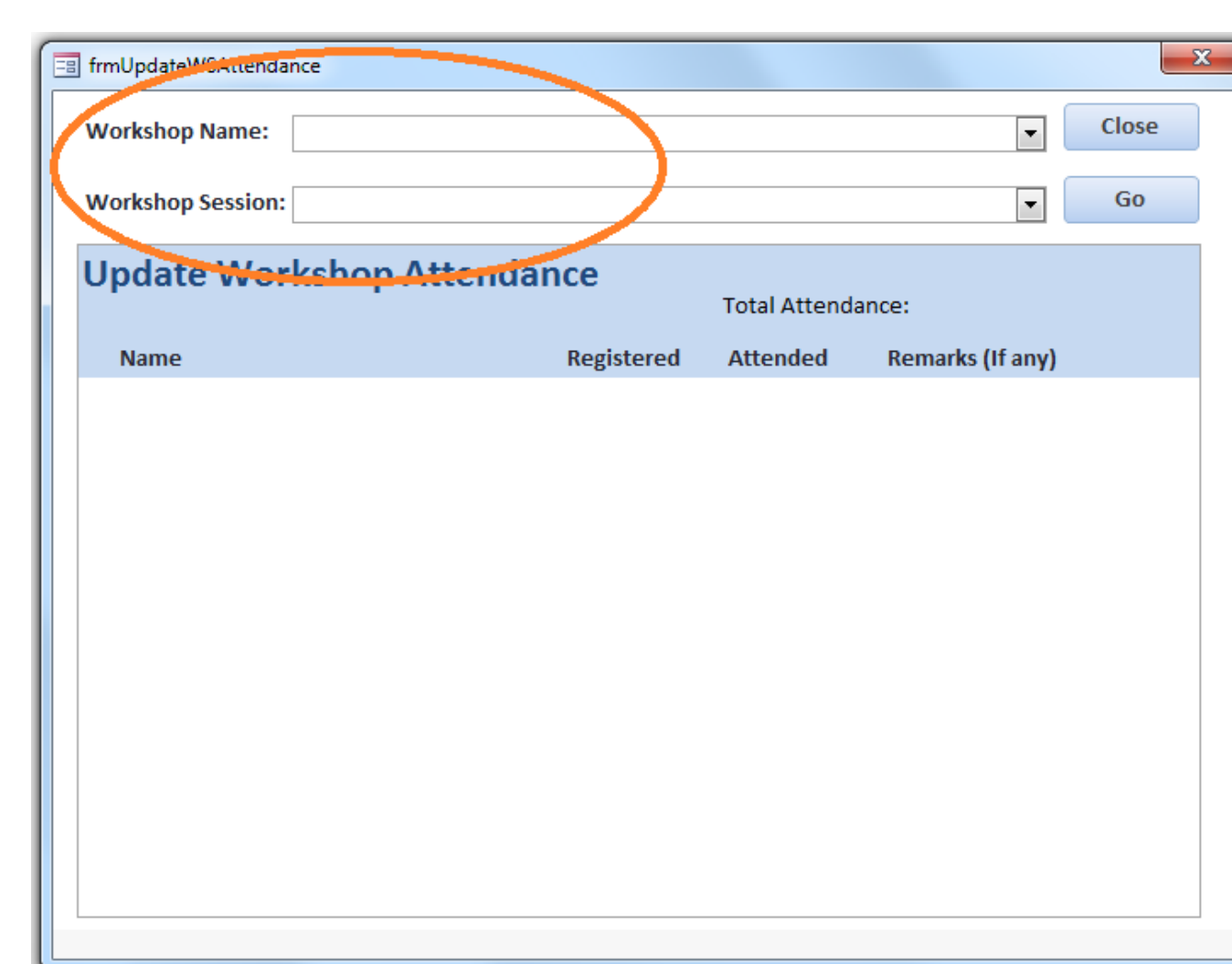
### Step 1: DATA MIGRATION into CRAFD DB



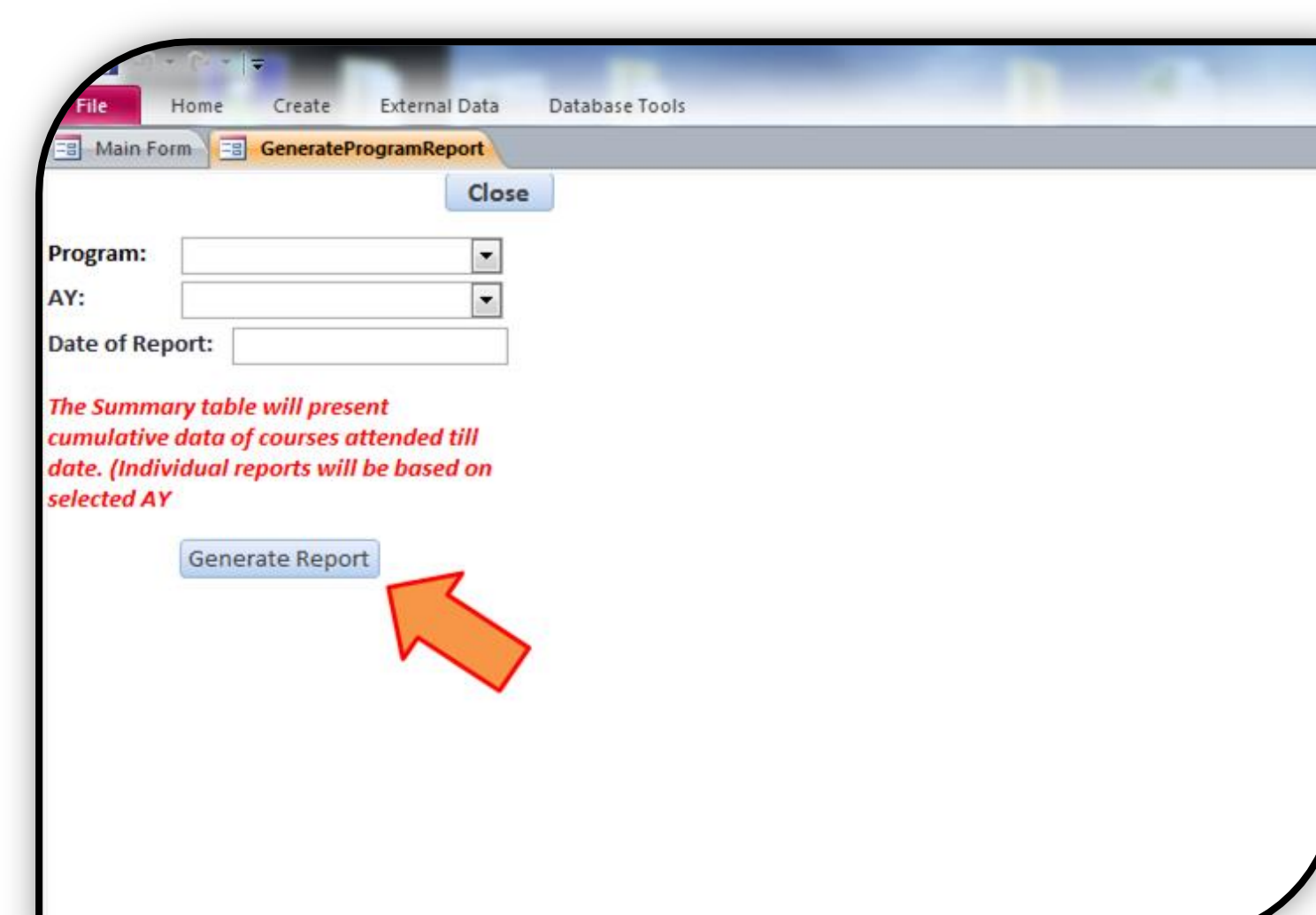
### Step 2: DATA INTEGRATION – Residents' Information from Residents Database is linked to CRAFD DB



### Step 3: ALIGN current PROCESSES of WORKFLOW – Data is now entered directly in CRAFD DB instead of processing it using spreadsheets



### Step 4: PROTOTYPE TESTING – Randomly-selected CRAFD DB reports were cross-checked with the reports generated using the previous system



## 4. CONCLUSIONS

### ACHIEVEMENTS

- Data Consolidation: Multiple spreadsheets into 1 database system
- Man-hours Savings: 80 hours per year
- Remove Human Errors
- Business Continuity: One-person to any team member (4 people)
- Preserve Data Integrity : Only the team can access CRAFD DB

With the man-hours savings derived from automation, the team can be deployed to do more productive work, increasing overall operational efficiency. The team also reported shorter turnaround time in generating updated reports for programs during accreditation peak periods.

## 5. FUTURE DEVELOPMENTS

2 modules will be developed for other CRAFD data to be entered directly in CRAFD DB to further streamline current workflows.