



Welcome!

RW CAREWare Interoperability
From fragmented to functional

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FL DOH Bureau of HIV/AIDS Structure



Functional Units	Systems/Databases		
Operations & Management	AIMS	FMIS	
Prevention	CTRS	TOPWA	
Patient Care	HMS	CAREWare	ADAP
Early Intervention	PEMS		
Surveillance	eHARS		
Hepatitis	HEPStudy		

Patient Care



CAREWare

HMS

ADAP

- Statewide Centralized System
- Medical Care
- Case Management
- HOPWA
- Eligibility
- Reporting

- Distributed System
- 67 CHDs, 67 instances of HMS
- 30 HIV CHDs

- Statewide Centralized System
- Manage and Dispense Medications

What Do We Need ?



Comprehensive Client Record

- **Need Linkage of Data**
- **Comply with RDR/RSR Reporting and other HRSA requirements**
- **Implement Quality Management**
- **Serve competing needs (Surveillance Vs Patient Management)**

What Do We Need ?



Reduce costs on providers

- **OTS Systems cost big money, users dependent, limited functionality, Maintenance**
- **Providers should be focused on client care**
- **Don't want each provider running an IT shop (IT Expertise - Limited to None)**
- **Reporting should be standardized**

Scenario



Client John Doe gets tested....

- **Tests Positive – Into CTRS database**
- **At CHD – Into HMS database**
- **Sent to Surveillance - into eHARS**
- **Linked to Case Management – Into CAREWare**
- **Case Manager refers, spends money – Into AIMS database**
- **Needs Meds – Into ADAP database**
- **Gets flu shot – Into FL SHOTS database**

How do we get to comprehensive Client record?



- **Everyone uses one system (hepatitis, HOPWA)**
- **Every database contains every data element**
- **Integrate the data on the back end (Warehouse)**

We do some of all three...

Integration



Two flavors of Integration

System Integration

Store and Forward (one time)

PDI (one time or ongoing)

Cloverleaf IB (ELR labs)

Maximum Flexibility – Reporting needs are always changing

Data Integration

SSIS (2005) or DTS (2000)

Barriers to Integration



- **Distributed legacy systems**
- **Different technologies and architectures, EMRs**
- **Security (governance, policy, existing infrastructure)**
- **Users**
- **Synchronization**
- **Data quality**
- **System / server availability and access**
- **System performance on production**
- **Availability of technical resources, hardware and software**
- **Multiple funding sources and HIPAA**

Integration – Source Information (System Integration)



- **Where is the data coming from? (System, Process, Web Service)**
- **What is the format of source data? (HL7, Text file, XML)**
- **How is the data accessed or delivered? (OLEDB, ODBC, SFTP, Web Service)**
- **Appropriate security privileges to access source data**

Integration – FL Dept of Health Sources (System Integration)



Integrating Health Departments with Private Providers

Source Information

- 67 Instances of HMS System
- Direct access to database via OLEDB Or ODBC
- Read privileges to database

Integrating Data from Electronic Labs Or Other Sources

Source Information

- Cloverleaf IB transforms HL7/XML/Webservice/Text incoming labs and stores into SQL server database
- Direct access to database via OLEDB Or ODBC
- Read privileges to database

Integration Process (CAREWare – Provider Data Import)



**Identify and
Map
Source
data elements**

**Manipulate
and Process
data elements**

**Store data to
PDI database
and import**

CAREWare – Provider Data Import (System Integration)



Identify and Map Source data elements

- **Identifying data elements in the source system**
- **Mapping data elements to CAREWare PDI template**
- **Build data crosswalks (services, labs, medications)**
- **Construct SSIS package**
- **Build query to extract data from source database**
- **Embed query in SSIS package**

CAREWare – Provider Data Import (System Integration)



Manipulate and Process data elements

- Clean, format and validate data in SSIS
- Lookup Services, Medications and Labs in CAREWare and get key value
- Log missing Services, Medications and Labs
- Log and report errors

CAREWare – Provider Data Import (System Integration)



Store and Import data to CAREWare

- **Drop data into PDI template database (Ensure database integrity)**
- **Open PDI database and generate EURN**
- **From CAREWare central admin select PDI template**
- **Import PDI to holding area and review errors**
- **Fix mapping errors and review import options**
- **Complete import**
- **Verify data placement in CAREWare**

PDI In Action - Demo



CAREWare – Provider Data Import (System Integration)



Automated Sub Service Mappings

For each import log record by user and date imported, get all unmapped services

For each unmapped service Check sub service table of CAREWare

If does not exists, Create new sub service

Check contract item sub service map table

If does not exists, Map contract item and update service holding table of PDI

Repeat the process for all unmapped services and for all import log

Review import log in CAREWare and process records to finish the import

Automated Service Mapping - Demo



CAREWare – Provider Data Import (System Integration)



Data Verification

- **Develop reports to verify imported data**
- **Run reports on Source system and on CAREWare to verify the data**
- **Get RDR report criteria from HRSA or JPROG**
- **Resolve any discrepancies by updating package**

Need For Data Warehouse (Data Integration)



Disadvantages of Conventional databases for comprehensive reporting

Conventional Databases

- Each one has different field names
- Each one has different data structures/characteristics
- Each one different data elements
- Nobody wants to give anything up

Use Fixed Reports

- Hard coded, requires coding need to be re-written when something changes
- No flexibility, can't data mine, filters are confusing to users little standardization
- Report requirements always changing
- Reporting causes performance hit

Need For Data Warehouse (Data Integration)



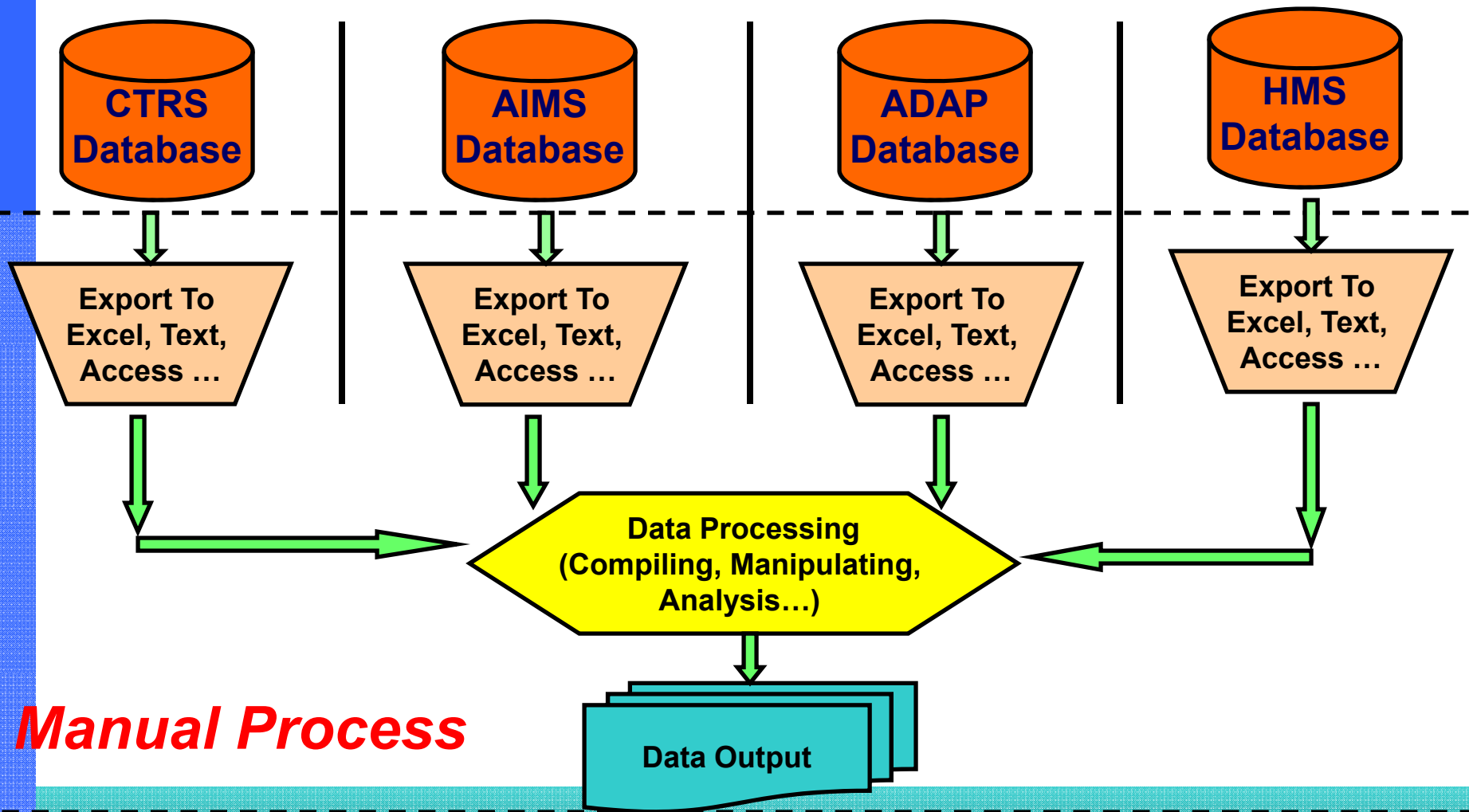
Advantages of Data Warehouse for comprehensive reporting

- DTS improves data quality when created
- Are virtual and require no maintenance
- Provides comprehensive data and can be created, modified or deleted at will
- We don't need all databases to house all data
- Provides maximum flexibility for reporting (Crystal Reports)

Data Integration Process



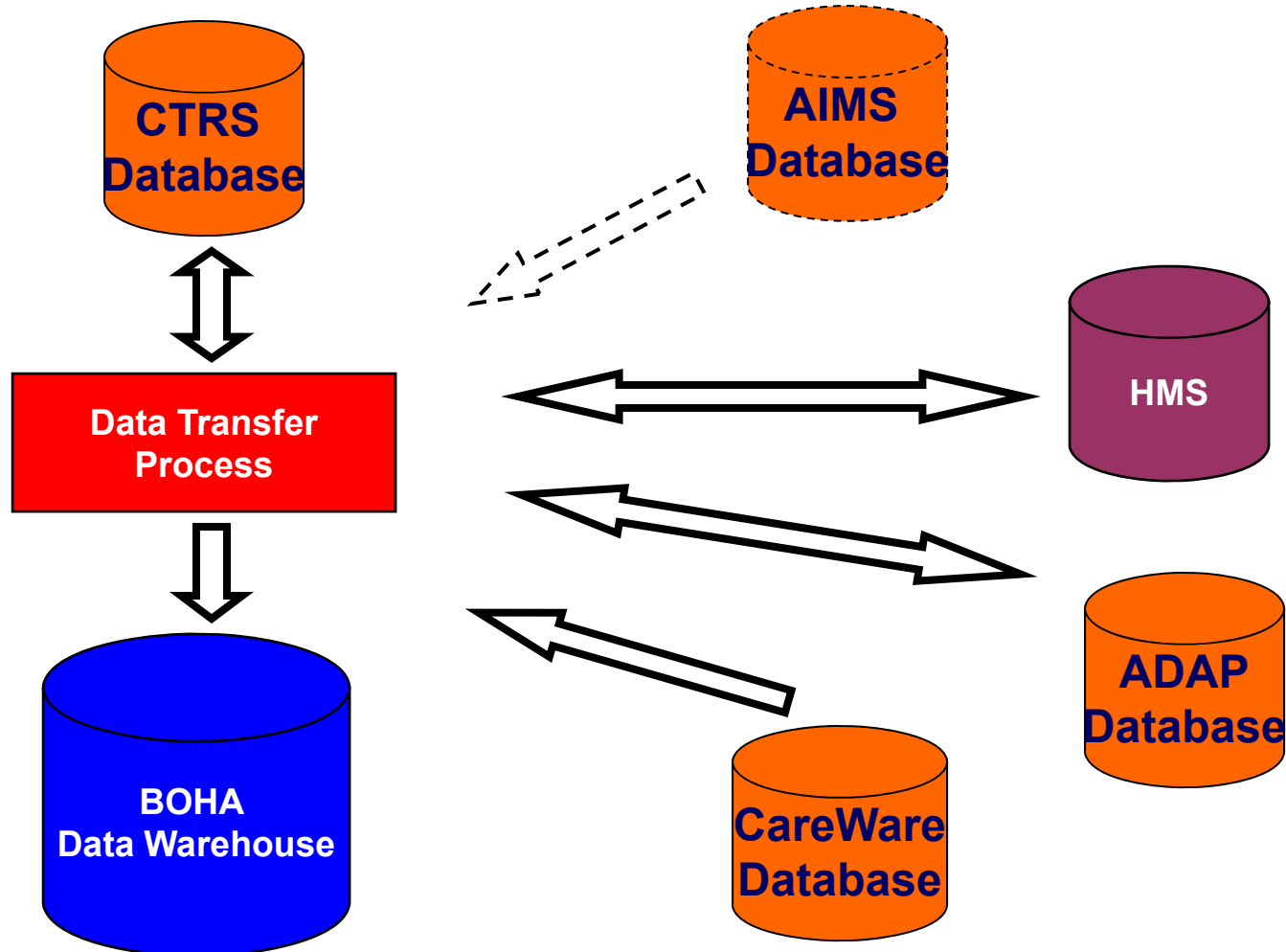
Existing/Current Structure of Bureau's Databases



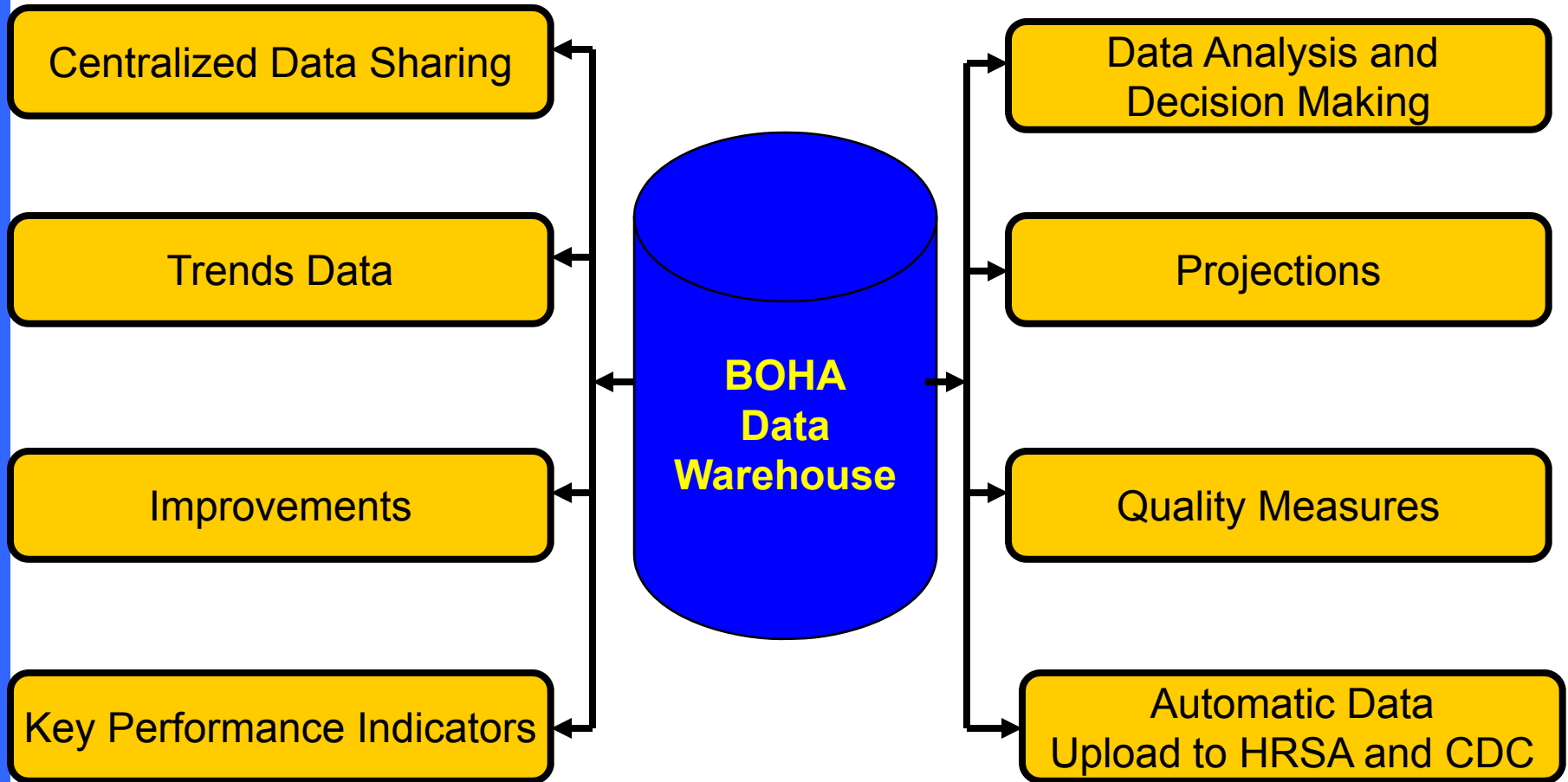
BOHA Data Warehouse



Data Transfer In Action



Benefits of BOHA Data Warehouse



Maintenance, Cost and Resources



Maintenance

- Schedule daily backups of databases
- Schedule and Monitor SSIS package
- Review and verify imported data to CAREWare
- Review and address errors

Cost & Resources

- Hardware & Software:
 - Server, Licenses (Operating System, SQL Server, Backup Program, Anti Virus, Firewall)
- Staff:
 - DBA or Business Intelligence Expert (1),
IT Tech Support (1)

OTS EMR and CAREWare Interface



Check List

- Data export features
- What data is exported and does it include PDI data elements
- Cost to export other data elements (including PDI)
- How data will be delivered and How often it will be delivered
- Does it include all records or only updated and deleted records
- Cost Structure to implement and any ongoing costs involved
- Review contracts to include data export option
- Security of data (Encrypted/Unencrypted)
- Contact persons or team that will be responsible to implement
- Hardware and software requirements

Conclusion



- Achieved comprehensive client record
- Flexible reporting
- Produce linkage data and track client records
- Implemented quality management
- Standardize and efficient data collection and reporting
- Designed funding allocation based on data collected
- Reduced cost on providers and to Bureau
- Moved reporting, maintenance, support and IT to bureau level from provider level

Thank You



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