

COLLABORATIVE NETWORK TECHNOLOGIES

FieldMetrix™ Home Care Edition – Open Data Model

White Paper

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October 22, 2004

Introduction

FieldMetrix – Home Care Edition enables mobile home care employees to access and utilize health care records stored in the back office. Given the variety of back office solutions available – some off the shelf and others that are custom built, FieldMetrix was built with an “Open” Data Model (ODM). The ODM architecture is such that, regardless of the format and storage of health care records in the back office, those records are reformatted and presented to the mobile home care employee in the same way. Expressed in another way, this means that the deployed mobile application does not require code customization to support new back office data or changes to the existing data’s storage model. When such changes are necessary, they would be made at the ODM layer where the implementation would be simplified since no software in the field is required to be updated.

Overview

Loosely speaking, the FieldMetrix ODM requires three categories of information regarding the delivery of home care services. We will summarize these as “Patient Encounter Data”.



Figure 1

Where possible, all of the data in these categories are obtained from the back office and provided to mobile employees via the FieldMetrix ODM.

Architecture

The FieldMetrix ODM is implemented as a collection of database views that are utilized by the FieldMetrix Server for the presentation of data to the home care employees' mobile device. The ODM serves to insulate the FieldMetrix Server from the complexity of the various back office application storage solutions while simultaneously providing a unified data access API for the mobile devices in the field. The relevant architectural components for the ODM are presented in Figure 2.

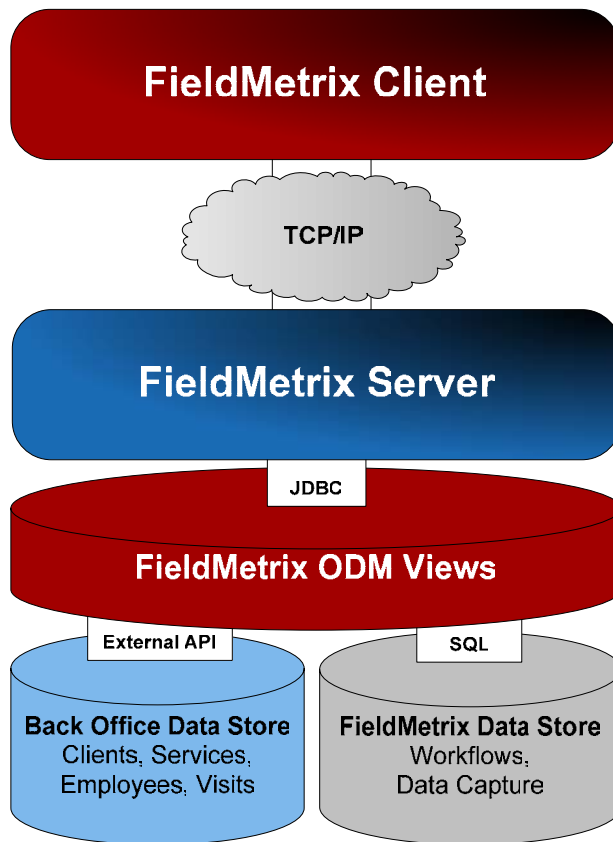


Figure 2

Figure 2 shows that the role of the ODM is to intermediate the transfer of data between the FieldMetrix Client software in the field and the Back Office Data Store in the organization. The FieldMetrix Server and the FieldMetrix Client do not need to be changed to accommodate changes in the Back Office Data Store. The ODM is also used to present FieldMetrix Workflow and Data Capture.

Implementation

The FieldMetrix ODM is implemented as a set of seven updateable views and three supporting read-only views in Microsoft SQL Server 2000. The implementation of these ten views is the only task that is required to support a new backend. Since the FieldMetrix ODM is built upon Microsoft SQL Server 2000, the ODM can support virtually any kind of access to the Patient Encounter Data: e.g. via ADO, ODBC, XML, or custom API etc.

During a data transfer operation on the mobile employee's handheld device, the FieldMetrix Server utilizes these views on behalf of the mobile employee.

Updatable View Definitions

The FieldMetrix ODM updatable views are defined in Figure 3 and Figure 4:

IMPLEMENTATION

CLIENT_VIEW		CLIENT_MEDS_VIEW		CONTACTS_VIEW		A_CLIENT_VIEW	
CLIENT_CD	varchar(14)	CLIENT_CD	varchar(14)	CLIENT_CD	varchar(14)	ALLERGY_CD	varchar(14)
F_NAME	varchar(20)	C_MED_CD	varchar(14)	CON_CD	varchar(14)	CLIENT_CD	varchar(14)
M_INITIAL	varchar(*)	MED_BNAME	varchar(30)	F_NAME	varchar(20)	A_NAME	varchar(30)
L_NAME	varchar(30)	MED_GNAME	varchar(10)	M_INITIAL	varchar(2)	REACT_DESC	varchar(2000)
ADDR_1	varchar(40)	DIN	varchar(8)	L_NAME	varchar(30)	A_SEV_CD	varchar(15)
ADDR_2	varchar(40)	DOSE	varchar(20)	PHON_H	varchar(12)	A_CAT_CD	varchar(*)
ADDR_3	varchar(40)	FREQ	varchar(20)	PHON_W	varchar(12)	INTR_REQ	int
CITY_TOWN	varchar(20)	ROUTE	varchar(20)	PHON_M	varchar(12)	CARE_PLAN	int
PROV_STATE	varchar(2)	PERIOD	int	ADDR_1	varchar(40)	DELETED	int
P_CODE	varchar(10)	PRES_BY	varchar(14)	ADDR_2	varchar(40)	D_DATE	datetime
COUNTRY	varchar(10)	PRES_DATE	datetime	ADDR_3	varchar(40)	D_USER_CD	varchar(50)
HEIGHT	varchar(20)	EXP_DATE	datetime	CITY_TOWN	varchar(20)	D_REASON	varchar(254)
MASS	varchar(20)	ASSIST_REQ	int	PROV_STATE	varchar(2)	D_APPT_CD	varchar(50)
PHON_H	varchar(12)	UNIT_CD	varchar(50)	COUNTRY	varchar(10)	ADDED	int
DOB	datetime	COMMENTS	varchar(2000)	F_CODE	varchar(10)	A_DATE	datetime
BAND_CD	varchar(20)	INTR_REQ	int	COMMENTS	varchar(2000)	A_USER_CD	varchar(50)
DIAG_COND	varchar(2000)	CARE_PLAN	int	DELETED	int	A_REASON	varchar(254)
SEX	varchar(*)	ADDED	int	D_DATE	datetime	A_APPT_CD	varchar(50)
RELIGION	varchar(20)	A_DATE	datetime	D_USER_CD	varchar(50)	CHANGED	int
REF_BY	varchar(50)	A_USER_CD	varchar(50)	D_REASON	varchar(254)	C_DATE	datetime
REF_PHON	varchar(12)	A_REASON	varchar(254)	D_APPT_CD	varchar(50)	C_USER_CD	varchar(50)
REF_EMAIL	varchar(50)	A_APPT_CD	varchar(50)	ADDED	int	C_REASON	varchar(254)
C_TYPE	varchar(50)	STOPPED	int	A_DATE	datetime	C_APPT_CD	varchar(50)
HC_CD	varchar(20)	S_DATE	datetime	A_USER_CD	varchar(50)	USER_CD	varchar(14)
ALLERGIES	varchar(2000)	S_USER_CD	varchar(50)	A_REASON	varchar(254)	ACTIVE	int
PMHX	varchar(2000)	S_REASON	varchar(254)	A_APPT_CD	varchar(50)		
DNR_STATUS	varchar(2000)	S_APPT_CD	varchar(50)	CHANGED	int		
ASS_SYN	varchar(4000)	CHANGED	int	C_DATE	datetime		
C_USER_CD	varchar(50)	C_DATE	datetime	C_USER_CD	varchar(50)		
C_DATE	datetime	C_USER_CD	varchar(50)	C_REASON	varchar(254)		
C_REASON	varchar(254)	C_REASON	varchar(254)	C_APPT_CD	varchar(50)		
C_APPT_CD	varchar(50)	C_APPT_CD	varchar(50)	C_T_CD	varchar(30)		
CHANGED	int	USER_CD	varchar(14)	C_T_DESC	varchar(30)		
P_ORDERS	varchar(254)	ACTIVE	int	FORMAL	int		
USER_CD	varchar(14)			USER_CD	varchar(14)		
ACTIVE	int			ACTIVE	int		

Figure 3

APPT_VIEW		PE_SERV_VIEW		UAP_VIEW	
SCHED_DATE_TIME	datetime	APPT_CD	varchar(14)	USER_CD	varchar(14)
APPT_CD	varchar(14)	CASE_CD	varchar(14)	ORG_CD	varchar(21)
CLIENT_CD	varchar(14)	END_DATE_TIME	datetime	USERNAME	varchar(20)
CASE_CD	varchar(14)	START_DATE_TIME	datetime	PASSWORD	varchar(20)
START_DATE_TIME	datetime	SERV_CD	varchar(14)	NEW_PW	varchar(20)
END_DATE_TIME	datetime	SERV_DESC	varchar(30)	F_NAME	varchar(20)
INTERVAL	int	PROT_CD	varchar(50)	M_INITIAL	varchar(2)
COMMENTS	varchar(255)	COMPLETED	int	L_NAME	varchar(30)
APPT_TYPE	varchar(16)	SERV_OCC	int	EMAIL	varchar(50)
PHON	varchar(12)	USER_CD	varchar(14)	USER_TYPE	varchar(12)
ADDR_1	varchar(40)	ACTIVE	int		
ADDR_2	varchar(40)	SCHED_DATE_TIME	datetime		
ADDR_3	varchar(40)	ORDER_BY	varchar(145)		
CITY_TOWN	varchar(20)				
APPT_DESC	nvarchar(62)				
COMPLETED	int				
USER_CD	varchar(14)				
ACTIVE	int				
ORDER_BY	datetime				

Figure 4

Read-only View Definitions

The FieldMetrix ODM read-only views are defined in Figure 5. These views fulfill a supporting role for the CONTACT_VIEW and A_CLIENT_VIEW views. The first view supports the idea of contact types that fall into formal and informal categories. A formal category type might be “Family Physician” where an informal category type might be “Spouse”. The last two views support the idea of client allergies that may have severity and category information i.e. a particular allergy might be mild or severe and also be environmental or food in nature.

CONTACT_TYPE_VIEW		A_CATEGORY_VIEW		A_SEVERITY_VIEW	
CON_TYPE_CD	varchar(4C)	A_CAT_CD	varchar(30)	A_SEV_CD	varchar(4C)
CON_TYPE_DESCRIPTION	varchar(4C)	A_CAT_NAME	varchar(4C)	A_SEV_NAME	varchar(4C)
FORMAL	int				

Figure 5

Notes on Figures 3 through 5:

The bolded items refer to NON-NULL columns – i.e. required.

The ACTIVE column refers to records in the view that are ready for transfer to the home care employee in the field.

All views are queried using a “WHERE USER_CD = ?” clause – i.e. these views are queried on a per employee basis by the FieldMetrix Server on behalf of mobile home care employees in the field.

If fields present in the ODM are not available in the office backend, dummy or place-holder values can be used in their place.