



***Case Study: Building composite applications
with the Lotus Expeditor Platform for the TD
Canada Trust Call Center***

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Agenda

- Introduction
- Business Background and Objectives
- Composite Application and Lotus Expeditor
- Design Approach and Considerations
- Challenges
- Getting Started
- Q&A

Business Background

- 3,300+ Specialist servicing more a few million calls every months
- Multiple onshore and offshore locations as well as working from home
- Four different managed desktop platforms
- Customer Centric
- Huge varieties of desktop applications to perform different business functions, including web based applications, java rich client application, Lotus Notes application and Host 3270 Green Screen application

Ongoing Business Objectives

- Maximize Customer experiences – First Call Resolution
- Maximize User experiences – Ease of access to the tools that fulfill customer request
- Optimize Average Handling Time (AHT)

Technical Objectives

- Create a reference architecture of the phone channel desktop that can be easily adaptable to different line of businesses

Analysis Approach

- Create a customer interaction business model
- Identify the tool/application that is involved in each step of the model
- Review the process within a single step as well as between the steps and identify the opportunities for improvement

Customer Interaction Model

- Customer Identification
- Customer Authentication
- Retrieve Customer Profile
- Fulfill Customer Request
 - Enquiry
 - Quick and Simple Transaction (e.g. Fund Transfer/Bill Payment)
 - Complicated Workflow (e.g. Open Account/Purchase GIC)
- Sales Opportunity
- Customer Tracking

What's our finding

- It takes a lot of time for the specialist to switch from one application to another
- Specialist repeatedly keying in the same information to each application
- Specialist has to be very experience in order to know which application to use for each business function
- Conclusion: There is a need to seamlessly integrate all business functions

Business Functions Integration Evolution and Challenge

- Manual Cut and Paste
 - Not efficient/Not acceptable
- Toolbar integration
 - Limited ability
 - One way communication from the toolbar to each application
 - No awareness or conversation between applications
- All-in-one application
 - Huge effort in order to re-create all business functions that involves multiple product area and lines of business
 - Need to create one application for each line of business because they are unique in some ways
 - Cannot integrate with the line of business which have their specialize application/platform (e.g. Collection)
 - Different timeline or readiness for each product area

Composite Application

- Use Plug-and-Play business functions to assemble unique application for each line of business
- Integrate different business functions/applications to share and exchange information
- Modular approach, everything is a plug-in and re-usable
- Performance and Scalability of a rich client application
- Integration with IBM Host-On-Demand application

Decision: Eclipse Rich Client Platform offered in IBM Lotus Expeditor product

What is Lotus Expeditor

- A IBM product that build on top of Eclipse RCP and is used by IBM to build the Lotus Notes and Sametime Client
- Provide Interaction Services
 - Embedded Browser, Workbench, Personalities
- Provide Access Services
 - Web Services, DB2 Everyplace, MQ, Security
- Provide Managed Client Services and Platform Management
 - Portability, Preferences

Design Approach

- Use a top down approach to identify what components are needs
- Design a standard specification of each component
 - Responsibility
 - Contracts (Behavior, Customization)
 - Dependency
- Decide which business functions depends on external applications and which ones are being built as part of the application
 - Ownership of the business functions
 - Availability of the web services for that business functions

Build Business Functions Components

- Customer Search
- Customer Profile Retrieval
- Connection to External Transaction Application
- Connection to External Workflow Application
- Sales Opportunity
- Customer Tracking
- User Authentication
- User Profile

Build Technical Components

- Web Application Connection
- Rich Client Application Connection
- Host On Demand Connection
- Web Services Connection
- CTI Server Connection
- Data Container

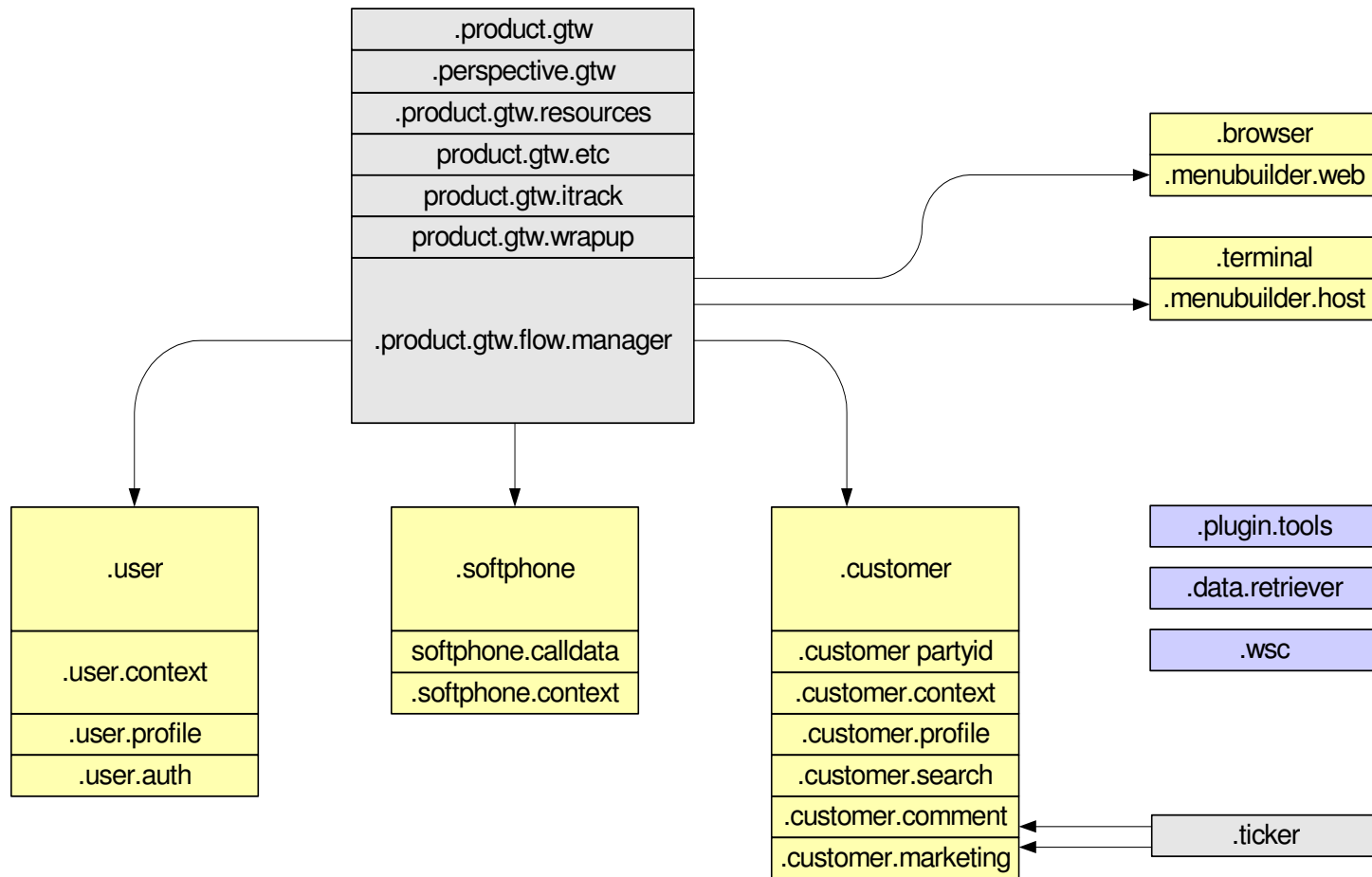
Plug-In Categories

- Product Plug-Ins
 - Entry point of the application
 - Responsible for the startup of the application
 - Workbench, Preferences, Menu Items, Theme, View/Perspectives etc...
 - Choreography of the behavior of the application
 - E.g. ".product.gtw"
- Product Specific Plug-Ins
 - Components that are unique to the product, not intended to be reusable by other products
 - Same ownership as in the product plug-ins
 - E.g. ".product.gtw.itrack"

Plug-In Categories

- Generic Plug-Ins
 - Components provide common functions that are re-usable in other products
 - No dependency of any product specific plug-ins
 - Share Ownership
 - E.g. ".customer.search"
- Utility Plug-Ins
 - Hidden Components
 - Generic Plug-Ins that does not any visual interface
 - Minimal/No dependency
 - Share Ownership
 - E.g. ".wsc" (web services client)

Application/Product Design



Plug-In Design Consideration

- Responsibilities
- Contracts
 - Wiring of the Plug-In, what it expose to others and what action can it does
 - Design Time Customization with Extension points
 - Run Time Customization with User Preferences

Plug-In User Interface Consideration

- Assembly/View Layout approach, choice of Tabs/Multiple views in a perspective
- Generic plug-ins need to have a flexible presentation. Accommodate the need of a major focus or minor focus view
- Choice of AWT and SWT
- Maintain Look and Feel consistency by following the product theme
- Hot Key short-cut access
- Be Accessible to works with tools like JAWS and ZoomText

Wiring

- Communication between the plug-ins
- Each plug-in need to expose its properties and action as part of the contract
- Currently using a in house pub-sub model

- Future Potential
 - Property Broker
 - Composite Application Editor

Sample Layout

Gateway - eBank [Window Controls]

File Specialist Customer Borrowing DayToDay eBanking Investing eSource Host

Personal Business

Name: MR TONY UNGER PAC: [Dropdown] Account: - CAP
 Card: UNAUTHENTICATED IVR: Home:

Alerts iTrack

Customer Search Financial Summary Add an iTrack CreditLink

ASSETS

Account	Balance	Branch	Status
GUARANTEED INVESTMENT ACCOUNT - 6572194	\$3,750.10	1020	ACTV
US \$ DAILY INTEREST CHEQUING ACCOUNT - 7145382	USD \$0.00	1020	ACTV JOINT - ANY ONE TO SIGN
Total Assets: CDN		\$3,750.10	
USD		\$0.00	

LIABILITIES

Account	Balance	Branch	Status
CAP -	\$0.00		APPLICANT
CAP -	\$0.00		APPLICANT
CAP -	\$0.00		APPLICANT
TD GREEN VISA - 4520 0180 0082 6102	\$0.00	0678	ADDR OWNER CR Limit: \$1,000.00
Total Liabilities: CDN		\$0.00	
Consolidated Balance: CDN		\$3,750.10	
USD		\$0.00	

SERVICES

Account	Branch	Status
SAFETY DEPOSIT BOX - 590	1020	ACTV

Line Information		Call Actions							Phone Status			
1	2 Unavailable	Answer	New call	Conferen...	Transfer	IVR	Hold	Drop	Release	Ready	Not Re...	ACW

Integration with external applications

- Web Based Application
- Rich Client Application
- Host 3270 Application
- Web Services

- Use of Container to wrap around existing application
- Provide Single Sign On
- Sharing Data/Context

Integrate Web Based Application

- Choice of Eclipse/Lotus Expeditor Browser Plug-In
- Single Sign On with Lotus Expeditor Account Manager Framework
- Choice of Basic HTTP Authentication/Challenge or SPNEGO
- Sharing Context by Cookies and Moniker

Line Information		Call Actions							Phone Status				
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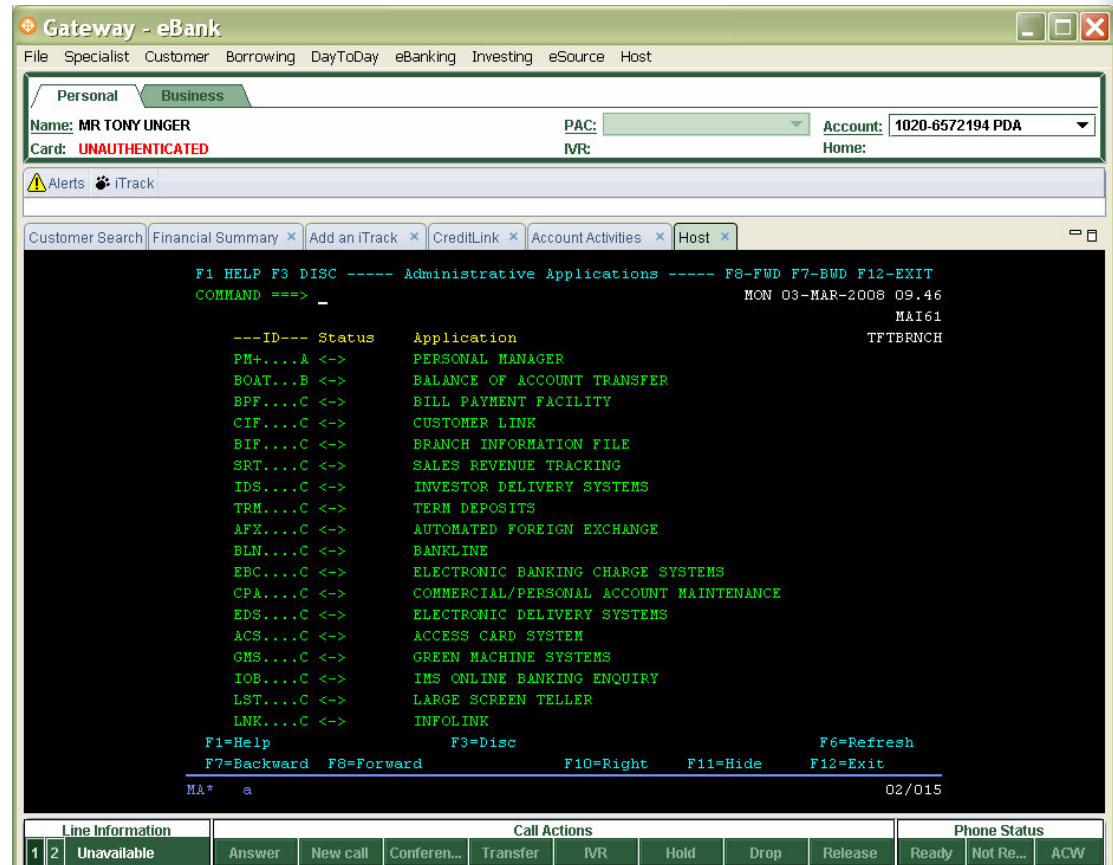
Integrate Rich Client Application

- Most Challenging Effort
- Sharing Context by invoking functions/libraries expose by the other client application
- OpenSpan Container for window application
- Microsoft Office Integration/IBM Offers e.g. symphony
- Lotus Notes Application Integration by Notes Container

- Best Practice : Minimize the number of Separate Rich Client applications on the desktop

Integrate Host 3270 Application

- In-House 3270 Terminal Plug-In or LE Host-On-Demand Container
- Single Sign On by capturing and encrypting user ID and password during the logon to the application
- Navigate the Host application with Host-On-Demand Macros
- Best Practices : minimize the dependency of the screen layout



Integrate Web Services

- Using the Job frame work
- Progress indicator
- Error handling

Result

- Flexible reference model to adapt to other line of business call center.
- From Telephone Banking to Investment Services, Sales Deliver and Visa Call Center
- The first version of the application saved 15 seconds per call which gave business payback on the investment in the first year of the deployment
- Shorten the delivery time of a new product for a specific line of business by re-using 70% of the code

Challenges

- Deployment of a rich client application
 - Updates Site/Feature Update not the best matched to the Managed Desktop platforms in TD
 - Decide to go with a self contain approach to provide a better control and fallback capability
- Support issues
 - Users unaware of the what application they are using
 - How does the help desk route the support ticket
 - Different SLA from external applications
- Governance/Ownership of the plug-ins
 - Different Line of Business has different requirements of the User Interface

Getting Started

- Eclipse 3.4 + WTP 3.0
 - <http://www.eclipse.org/>
- Eclipse learning resources
 - <http://www.eclipse.org/users/>
- Lotus Expeditor 6.2 Toolkit
 - <http://www.ibm.com/developerworks/lotus/downloads/toolkits.html>
- Lotus Expeditor developerWorks
 - <http://www.ibm.com/developerworks/lotus/products/expeditor/>
- Lotus Expeditor Wiki
 - <http://www-10.lotus.com/ldd/lewiki.nsf>
- Lotus Expeditor 6.2 Info center
 - <http://publib.boulder.ibm.com/infocenter/ledoc/v6r2/index.jsp>
- Composite Applications Wiki
 - <http://www-10.lotus.com/ldd/compappwiki.nsf>

Q&A

- Questions