CA Gen Enterprise Application Modernisation at Schuitema

Session 24

October 30, 2007 11:00 a.m. – 12:00 p.m.

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Abstract

Schuitema, second largest supermarket retailer in the Netherlands, and CA partner Jumar, will present a case study of re-factoring a Gen enterprise application.

The case study covers the componentisation and "fat-client" re-engineering of a core system within the Schuitema organisation and considers the project from business and technical perspectives. Aspects including cost justification, securing management buy-in, and business issues encountered will be supplemented with an overview of the technical steps undertaken, the role of Project Phoenix automation, and practical lessons learned.

If you are considering a Gen modernisation or upgrade initiative come and learn from the experiences gained at Schuitema.

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Agenda

- Introduction to Schuitema & Jumar
- Application Modernisation Objectives
- DA Architecture Transitioning
- Role of Project Phoenix Automation
- Modernisation Project Organisation & Planning
- Business & Technical Lessons Learned
- Next Steps
- Q&A

Schuitema

- Schuitema NV: Dutch Holding Group
  - Operates supermarket chains, franchises & food distribution companies
  - Owns Netherlands leading and fastest growing chain of independent supermarket retailers (C1000)
- Key Numbers
  - 458 supermarkets, 9,500 staff
- Provides Logistics, Marketing & IT Support
- 2 Main IT Departments
  - In store automation (ITC KGW)
  - Logistics automation (KGS)

The Application

- DA Application (Supermarket Management)
  - Mission critical application
  - Windows platform with Oracle RDBMS
  - Built in 1990's using Gen
  - Decentralised implementation (Runs on stand alone servers in stores)
  - Different methodologies and standards used over time

- Deals with most processes within the store
  - Article data (Artikel - ART)
  - Stock management (Voorraad – VRD)
  - Order management (Bestelling (BST)
  - Revenue (Omzet – OMZ)
  - Store personnel (Persoon - PER)
  - Cash register management (Kassa Admin – KAD)
  - Scales management (Weegschaal – WEG)
  - Infrastructure (BAT, LST, AUT, MLD, etc)

DA Sizing Overview

Legacy DA Models

> 26 Models

> 272 Entity Types

> 4,341 Action Blocks

> 1,077 Procedures

> 754 Procedures with Display

> 330 "Fat-Client" Procedures

Business Objectives

- Main Issue = Decentralisation of data
  - Application and Database in Stores
  - Long time to market
  - Inflexible
  - Little control
- Solution = Centralisation
  - Maintain the current functionality
  - Centralise the database
  - Centralise part of the functionality
  - Allow access through WAN or Internet
- Number of Technical Considerations
  - Current application makes use of “Fat Clients”
  - Functionality tightly coupled

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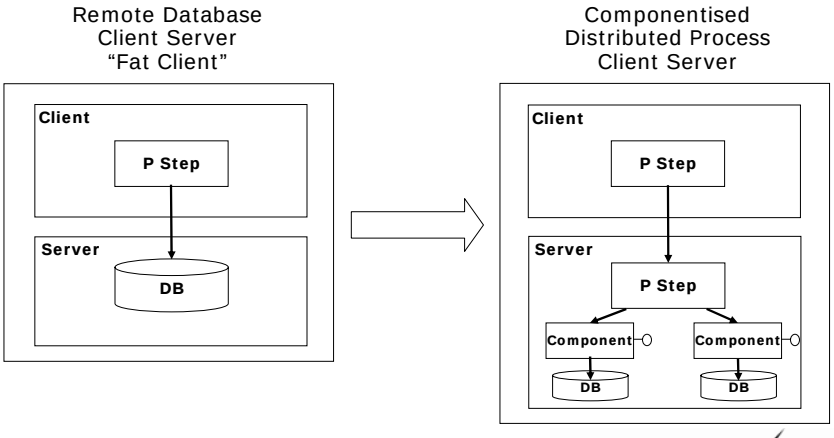
High Level Technical Objective



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Project Objectives & Guidelines

- Project Objectives
  - To achieve alignment with the target Schuitema TSOB Architecture
    - Component based
    - Client Server based
  - To increase flexibility and scalability
  - To allow a future move towards a web platform where appropriate
  - To lower maintenance costs
    - By applying a consistent structure
    - By applying Schuitema standards
- Project Guidelines
  - Schuitema involvement where ever possible
  - Automated transition where deemed cost beneficial

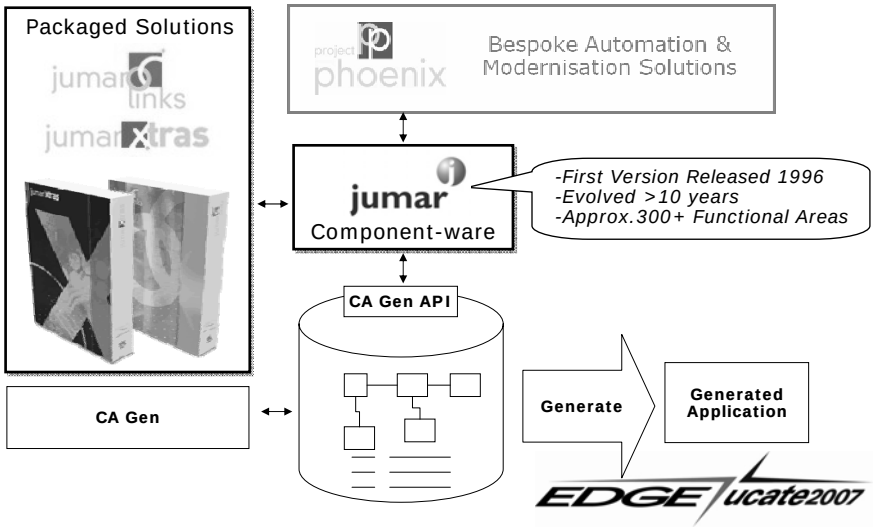
Jumar Solutions: Introduction

jumar

- Founded in 2000
- 360° Business and IT Solutions Company
- HQ in Solihull, UK
- Gen Specialists
  - CA Awards: 2002, 2003 & 2004 Best Development Services Partner
  - Automation Solution Leaders
- Rapid Growth
  - Deloitte Fast 50 UK Regional Winner 2003, 2004 & 2005
  - Ranked 8th (of 500) in EMEA 2004
  - Listed in Sunday Times TechTrack 2004
  - Deloitte Fast 50 UK National Winner 2005
- CA World / EDGE Exhibitor & Presenter
- Approx. 20 Permanent Staff, 90 Freelance Associates

Project Phoenix Overview

Automation Overview – Solutions Architecture



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Project Phoenix Overview

What is Project Phoenix?

- Collection of software tools and support services
  - With a focus on the upgrade and re-platforming of existing CA Gen applications to provide new CA Gen -based solutions
  - Repeatable process, high quality deliverables
- Configurable automation is key
  - Advanced analysis, editing and re-structuring of CA Gen models to meet customer modernisation requirements
  - Different flavours of automation support
  - Cost, manual effort, and duration reductions

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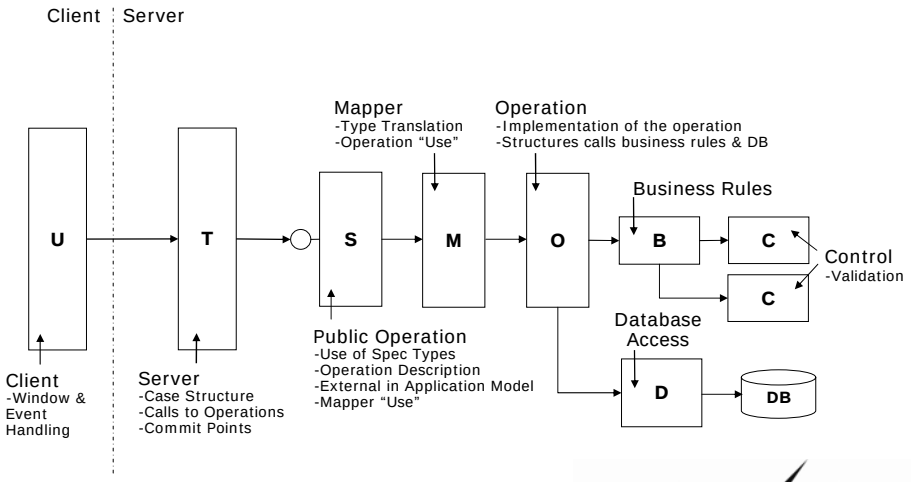
The Desired Schuitema Architecture



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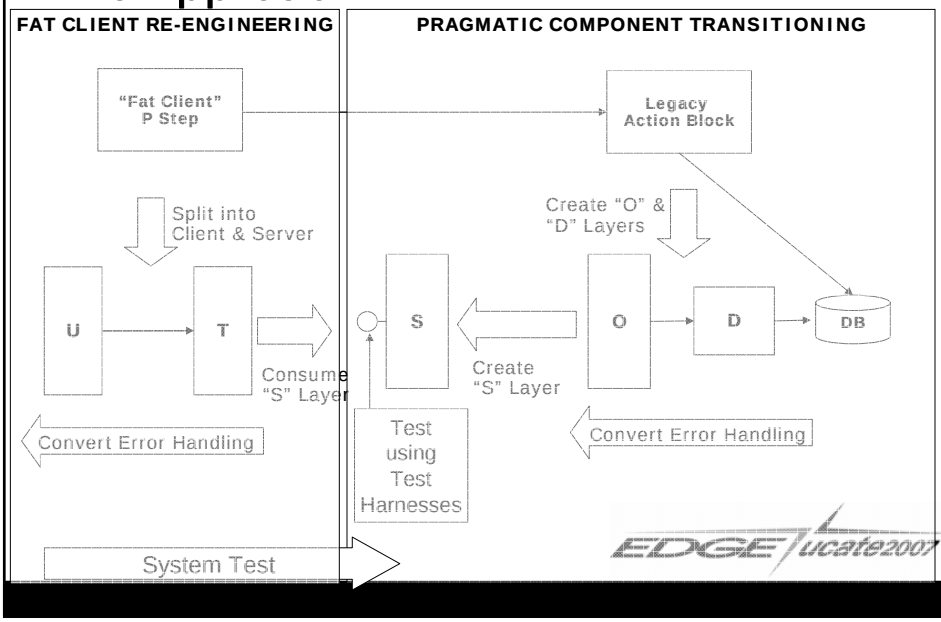
The Approach



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Analysis Automation

- Architecture Analysis
  - Candidate components
  - Potential Interface and Public Operations
  - Cross component relationships
  - Transitioning impact
- Standard and QA Analysis
  - Naming standards used
  - Coding standards applied
- Complexity Analysis
  - Structure determination
  - “Fat Client” transactional issues
- Tools Used:
  - Project Phoenix Model Analyser
  - Project Phoenix QA Compliance (bespoke)
  - Project Phoenix Architecture Analyser

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Componentisation Automation

- CBD Preparation
  - Creating the Specification Types
  - Creating the translators between spec types and imp types.
- Implementation Transitioning
- Specification Creation
- Publication and Consumption

Simple Example shown in the Following Screenshots

- Tool Used:
  - Bespoke version of CBD Re-engineering tool
  - Project Phoenix Test harness generator
  - Project Phoenix Test plan generator

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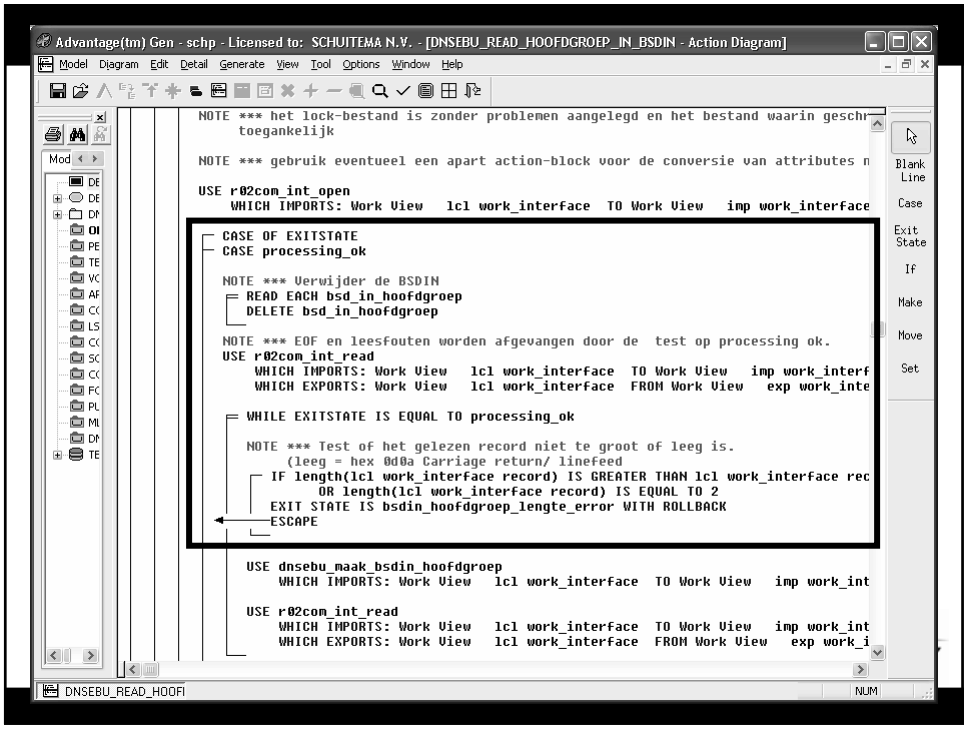
Advantage(tm) Gen - schp - Licensed to: SCHUITEMA N.V. - [DNSEBU_READ_HOOFDGROEP_IN_BSDIN - Action Diagram]
Model Diagram Edit Detail Generate View Tool Options Window Help
NOTE *** het lock-bestand is zonder problemen aangelegd en het bestand waarin geschr
toegankelijk
NOTE *** gebruik eventueel een apart action-block voor de conversie van attributes n
USE r02com_int_open
WHICH IMPORTS: Work View lcl work_interface TO Work View imp work_interface
CASE OF EXITSTATE
CASE processing_ok
NOTE *** Verwijder de BSDIN
READ EACH bsd_in_hoofdgroep
DELETE bsd_in_hoofdgroep
NOTE *** EOF en leesfouten worden afgevangen door de test op processing ok.
USE r02com_int_read
WHICH IMPORTS: Work View lcl work_interface TO Work View imp work_interf
WHICH EXPORTS: Work View lcl work_interface FROM Work View exp work_inte
WHILE EXITSTATE IS EQUAL TO processing_ok
NOTE *** Test of het gelezen record niet te groot of leeg is.
(leeg = hex 0d0a Carriage return/ linefeed
IF length(lcl work_interface record) IS GREATER THAN lcl work_interface rec
OR length(lcl work_interface record) IS EQUAL TO 2
EXIT STATE IS bsdin_hoofdgroep_lengte_error WITH ROLLBACK
ESCAPE
USE dnsebu_maak_bsdin_hoofdgroep
WHICH IMPORTS: Work View lcl work_interface TO Work View imp work_int
USE r02com_int_read
WHICH IMPORTS: Work View lcl work_interface TO Work View imp work_int
WHICH EXPORTS: Work View lcl work_interface FROM Work View exp work_i
Blank Line
Case
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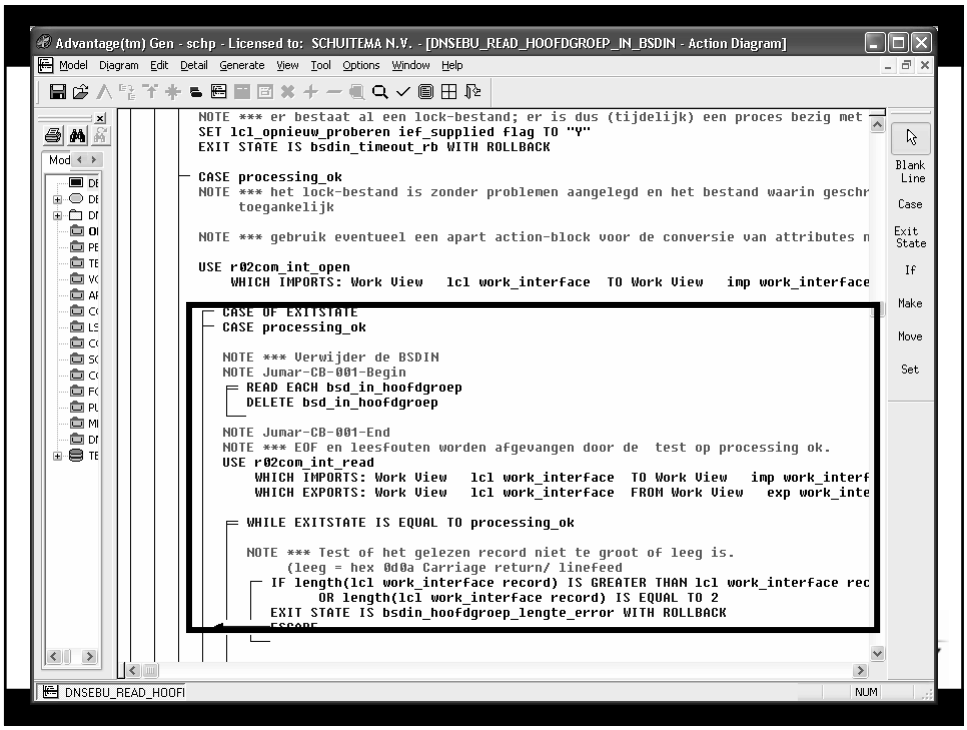
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Model Diagram Edit Detail Generate View Tool Options Window Help
NOTE *** er bestaat al een lock-bestand; er is dus (tijdelijk) een proces bezig met
SET lcl_opnieuw_proberen ief_supplied flag TO "Y"
EXIT STATE IS bsdin_timeout_rb WITH ROLLBACK
CASE processing_ok
NOTE *** het lock-bestand is zonder problemen aangelegd en het bestand waarin geschr
toegankelijk
NOTE *** gebruik eventueel een apart action-block voor de conversie van attributes n
USE r02com_int_open
WHICH IMPORTS: Work View lcl work_interface TO Work View imp work_interface
CASE OF EXITSTATE
CASE processing_ok
NOTE *** Verwijder de BSDIN
NOTE Jumar-CB-001-Begin
READ EACH bsd_in_hoofdgroep
DELETE bsd_in_hoofdgroep
NOTE Jumar-CB-001-End
NOTE *** EOF en leesfouten worden afgevangen door de test op processing ok.
USE r02com_int_read
WHICH IMPORTS: Work View lcl work_interface TO Work View imp work_interf
WHICH EXPORTS: Work View lcl work_interface FROM Work View exp work_inte
WHILE EXITSTATE IS EQUAL TO processing_ok
NOTE *** Test of het gelezen record niet te groot of leeg is.
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EXIT STATE IS bsdin_hoofdgroep_lengte_error WITH ROLLBACK
ESCAPE
Blank Line
Case
Exit State
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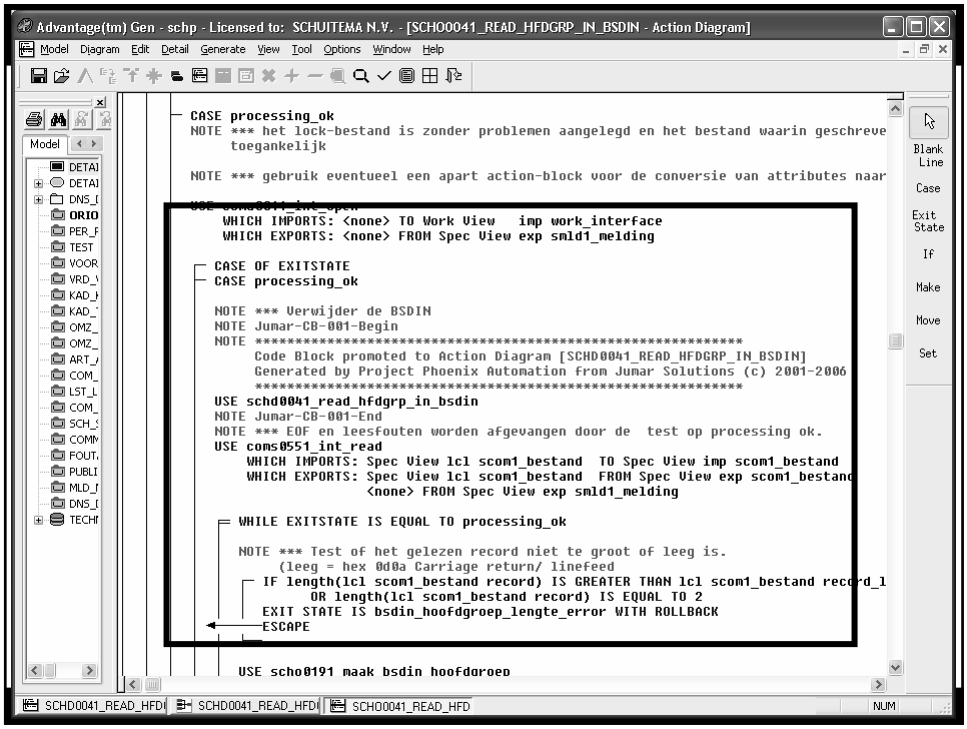
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Model Diagram Edit Detail Generate View Tool Options Window Help
CASE processing_ok
NOTE *** het lock-bestand is zonder problemen aangelegd en het bestand waarin geschreve
toegankelijk
NOTE *** gebruik eventueel een apart action-block voor de conversie van attributes naar
WHICH IMPORTS: <none> TO Work View imp work_interface
WHICH EXPORTS: <none> FROM Spec View exp smld1_melding
CASE OF EXITSTATE
CASE processing_ok
NOTE *** Verwijder de BSDIN
NOTE Jumar-CB-001-Begin
NOTE **********
Code Block promoted to Action Diagram [SCHD0041_READ_HFDGRP_IN_BSDIN]
Generated by Project Phoenix Automation from Jumar Solutions (c) 2001-2006
****
USE schd0041_read_hfdgrp_in_bsdin
NOTE Jumar-CB-001-End
NOTE *** EOF en leesfouten worden afgevangen door de test op processing ok.
USE coms0551_int_read
WHICH IMPORTS: Spec View lcl scom1_bestand TO Spec View imp scom1_bestand
WHICH EXPORTS: Spec View lcl scom1_bestand FROM Spec View exp scom1_bestand
<none> FROM Spec View exp smld1_melding
WHILE EXITSTATE IS EQUAL TO processing_ok
NOTE *** Test of het gelezen record niet te groot of leeg is.
(leeg = hex 0d0a Carriage return/ linefeed
IF length(lcl scom1_bestand record) IS GREATER THAN lcl scom1_bestand record_l
OR length(lcl scom1_bestand record) IS EQUAL TO 2
EXIT STATE IS bsdin_hoofdgroep_lengte_error WITH ROLLBACK
ESCAPE
USE scho0191 maak bsdin hoofdgroep
Blank Line
Case
Exit State
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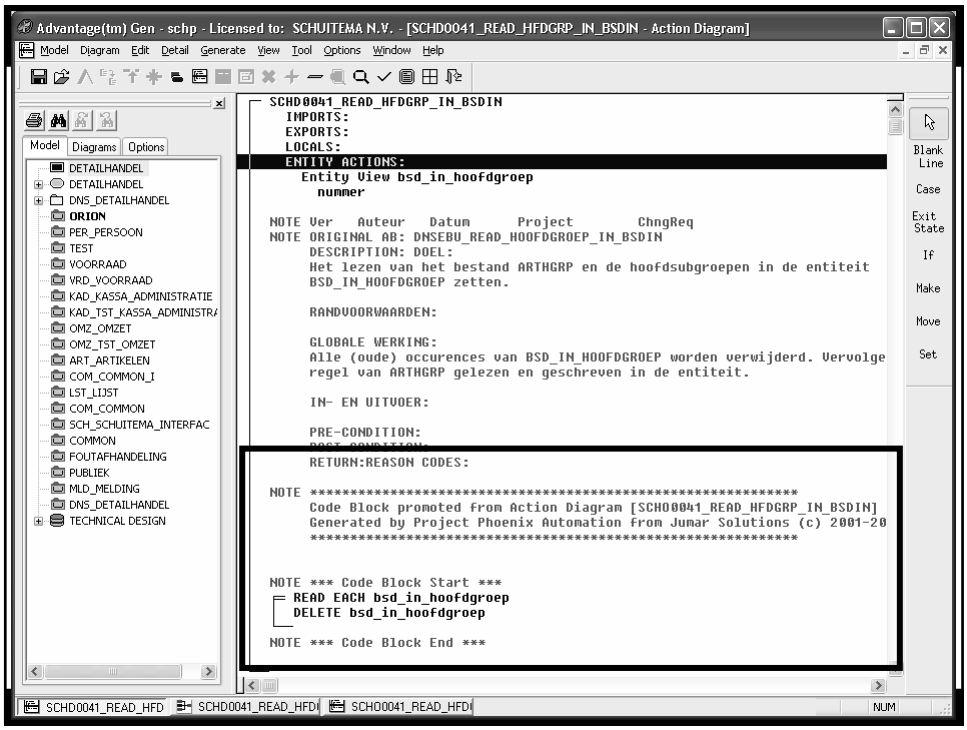
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Model Diagrams Options
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DNS_DETAILHANDEL
ORION
PER_PERSOON
TEST
VOORRAAD
VRD_VOORRAAD
KAD_KASSA_ADMINISTRATIE
KAD_TST_KASSA_ADMINISTRA
OMZ_OMZET
OMZ_TST_OMZET
ART_ARTIKELEN
COM_COMMON_I
LST_LIJST
COM_COMMON
SCH_SCHUITEMA_INTERFAC
COMMON
FOUTAFHANDELING
PUBLIEK
MLD_MELDING
DNS_DETAILHANDEL
TECHNICAL DESIGN
SCHD0041_READ_HFDGRP_IN_BSDIN
IMPORTS:
EXPORTS:
LOCALS:
ENTITY ACTIONS:
Entity View bsd_in_hoofdgroep
nummer
NOTE Ver Auteur Datum Project ChngReq
NOTE ORIGINAL AB: DNSEBU_READ_HOOFDGROEP_IN_BSDIN
DESCRIPTION: DOEL:
Het lezen van het bestand ARTHGRP en de hoofdsubgroepen in de entiteit
BSD_IN_HOOFDGROEP zetten.
RANDVOORWAARDEN:
GLOBALE WERKING:
Alle (oude) occurences van BSD_IN_HOOFDGROEP worden verwijderd. Vervolge
regel van ARTHGRP gelezen en geschreven in de entiteit.
IN- EN UITVOER:
PRE-CONDITION:
RETURN:REASON CODES:
NOTE **********
Code Block promoted from Action Diagram [SCHO0041_READ_HFDGRP_IN_BSDIN]
Generated by Project Phoenix Automation from Jumar Solutions (c) 2001-20
****
NOTE *** Code Block Start ***
READ EACH bsd_in_hoofdgroep
DELETE bsd_in_hoofdgroep
NOTE *** Code Block End ***
Blank Line
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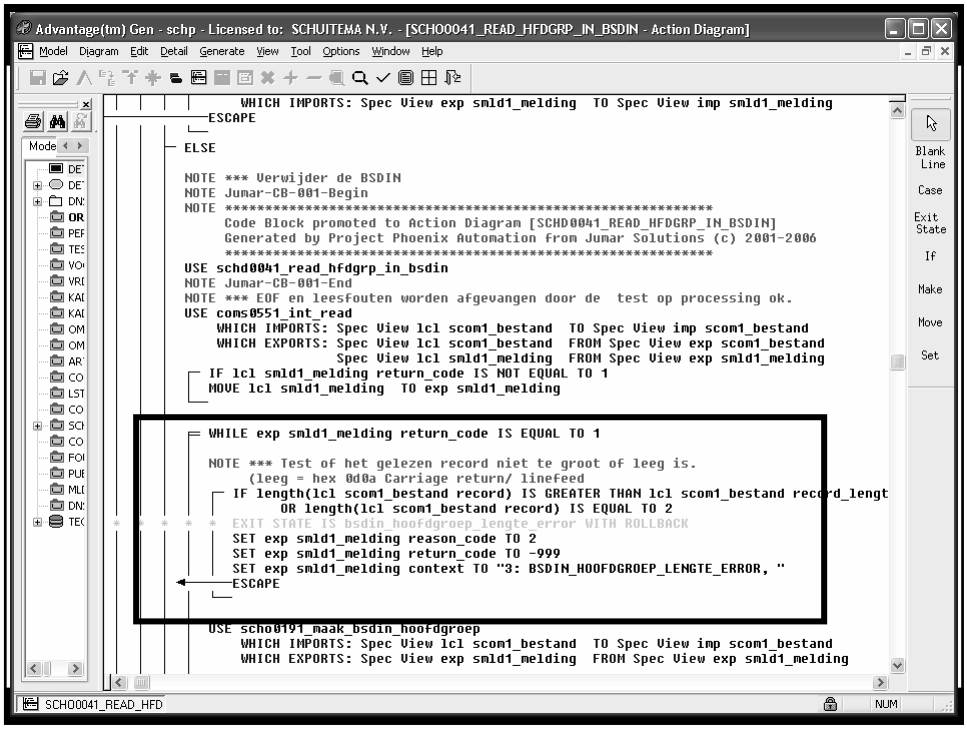
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Model Diagram Edit Detail Generate View Tool Options Window Help
WHICH IMPORTS: Spec View exp smld1_melding TO Spec View imp smld1_melding
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NOTE *** Verwijder de BSDIN
NOTE Jumar-CB-001-Begin
NOTE ***
Code Block promoted to Action Diagram [SCHD0041_READ_HFDGRP_IN_BSDIN]
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****
USE schd0041_read_hfdgrp_in_bsdin
NOTE Jumar-CB-001-End
NOTE *** EOF en leesfouten worden afgevangen door de test op processing ok.
USE coms0551_int_read
WHICH IMPORTS: Spec View lcl scom1_bestand TO Spec View imp scom1_bestand
WHICH EXPORTS: Spec View lcl scom1_bestand FROM Spec View exp scom1_bestand
Spec View lcl smld1_melding FROM Spec View exp smld1_melding
IF lcl smld1_melding return_code IS NOT EQUAL TO 1
MOVE lcl smld1_melding TO exp smld1_melding
WHILE exp smld1_melding return_code IS EQUAL TO 1
NOTE *** Test of het gelezen record niet te groot of leeg is.
(leeg = hex 0d0a Carriage return/ linefeed
IF length(lcl scom1_bestand record) IS GREATER THAN lcl scom1_bestand record_lengt
OR length(lcl scom1_bestand record) IS EQUAL TO 2
EXIT STATE IS bsdin_hoofdgroep_lengte_error WITH ROLLBACK
SET exp smld1_melding reason_code TO 2
SET exp smld1_melding return_code TO -999
SET exp smld1_melding context TO "3: BSDIN_HOOFDGROEP_LENGTE_ERROR, "
ESCAPE
USE scho0191_maak_bsdin_hoofdgroep
WHICH IMPORTS: Spec View lcl scom1_bestand TO Spec View imp scom1_bestand
WHICH EXPORTS: Spec View exp smld1_melding FROM Spec View exp smld1_melding
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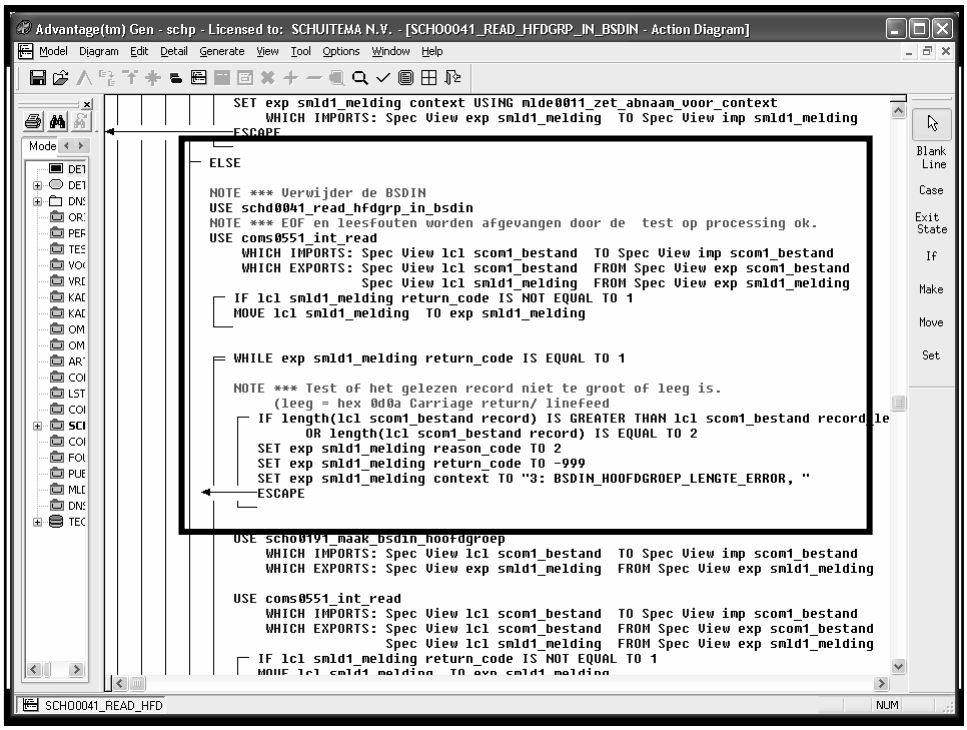
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Model Diagram Edit Detail Generate View Tool Options Window Help
SET exp smld1_melding context USING mlde0011_zet_abnaam_voor_context
WHICH IMPORTS: Spec View exp smld1_melding TO Spec View imp smld1_melding
ESCAPE
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NOTE *** Verwijder de BSDIN
USE schd0041_read_hfdgrp_in_bsdin
NOTE *** EOF en leesfouten worden afgevangen door de test op processing ok.
USE coms0551_int_read
WHICH IMPORTS: Spec View lcl scom1_bestand TO Spec View imp scom1_bestand
WHICH EXPORTS: Spec View lcl scom1_bestand FROM Spec View exp scom1_bestand
Spec View lcl smld1_melding FROM Spec View exp smld1_melding
IF lcl smld1_melding return_code IS NOT EQUAL TO 1
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SET exp smld1_melding reason_code TO 2
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SET exp smld1_melding context TO "3: BSDIN_HOOFDGROEP_LENGTE_ERROR, "
ESCAPE
USE scho0191_maak_bsdin_hoofdgroep
WHICH IMPORTS: Spec View lcl scom1_bestand TO Spec View imp scom1_bestand
WHICH EXPORTS: Spec View exp smld1_melding FROM Spec View exp smld1_melding
USE coms0551_int_read
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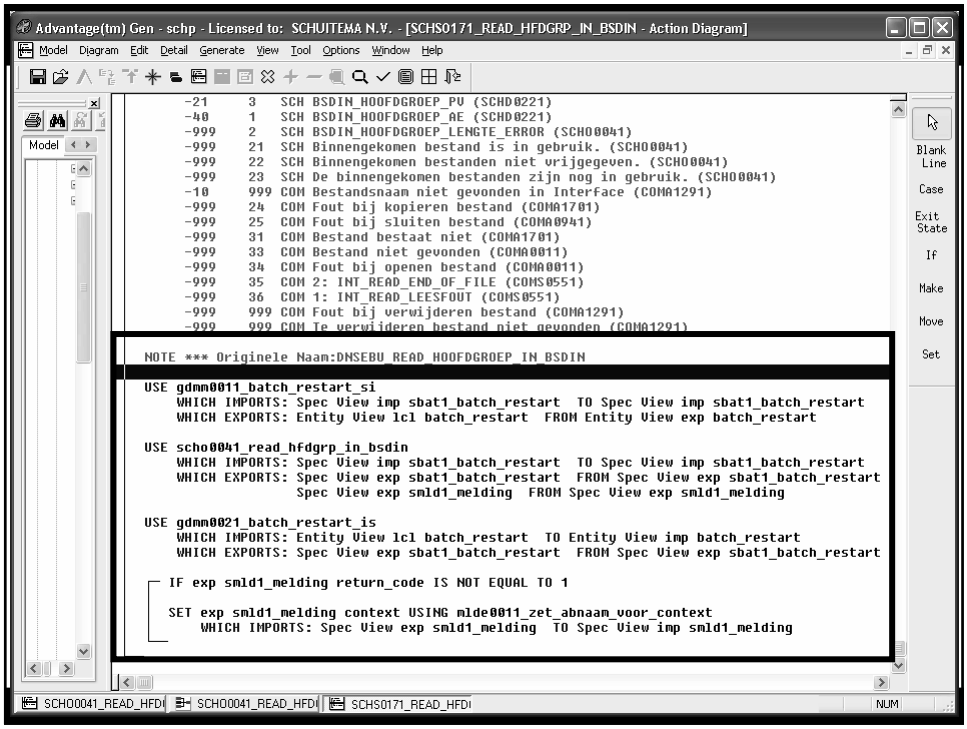

FCR Automation

- Client-side
  - Separating client side logic from server side logic
  - Replacing Implementation Types with Specification Types
  - Calling the correct server procedure steps
  - Ensuring that all dialog flows are recreated
- Server-side
  - Creating the Server side procedure steps with the server side logic
  - Calling the newly created operations
- Error Handling
  - Replacing the Exit States and existing R&R codes with new style Return and Reason codes
  - Replacing the Exit state handling with calls to the Error handling component
- Tool Used
  - Bespoke FCR Re-engineering tool

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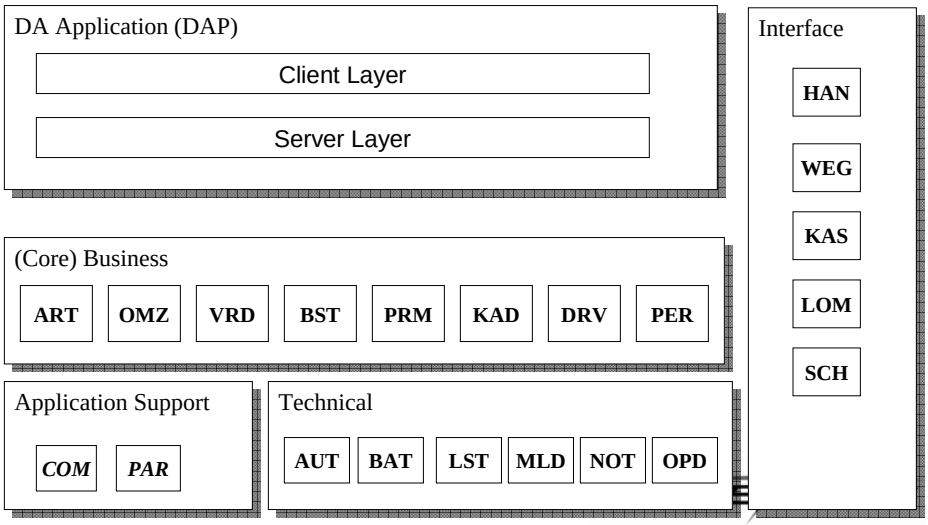
Post-Phoenix DA Architecture



DA Sizing Overview

Legacy DA Models

- 26 Models
- 272 Entity Types
- 4,341 Action Blocks
- 1,077 Procedures
- 754 Procedures with Display
- 330 “Fat-Client” Procedures

Re-engineered DA Models

- 21 Components
- 241 New Specification Types
- 1,788 Proper Pub. Operations
- 330 New U Layer Procedures
- Approx. 600 New T Layer Procedures
- 572 Updated Procedures

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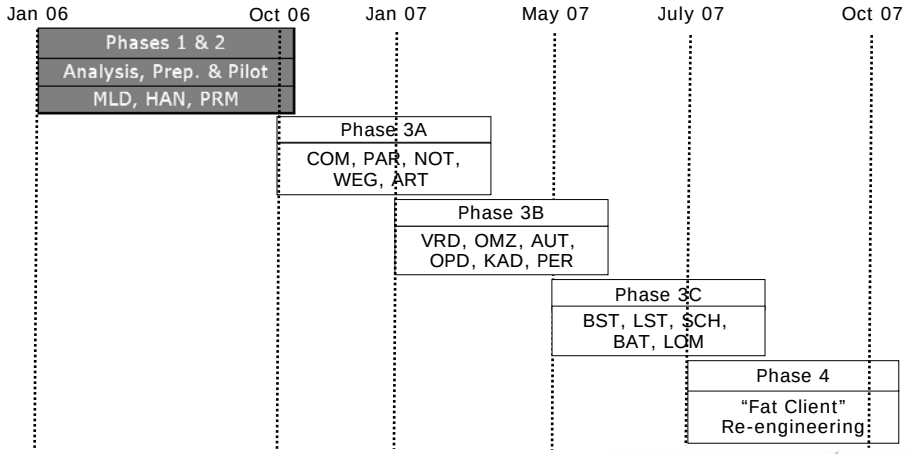
Transition Planning



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Project Team

Schuitema

jumar

- Jumar Team
  - Principal Consultant / PM
  - Technical Consultant
  - Automation Support (remote)
- Schuitema Team
  - Project Owner
  - Project Manager (not full time)
  - Model Manager (not full time)
  - Test Manager
  - Developers (x2 Internal, x4 via Jumar Managed Service)

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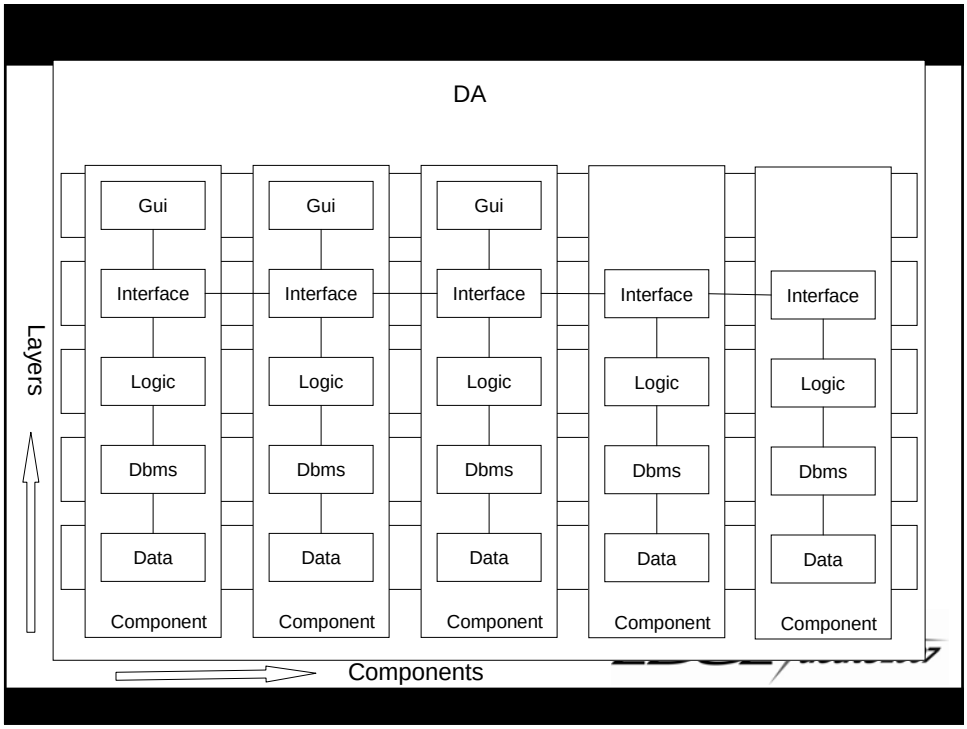
Automation vs. Manual Work

- 30 of the 41 transition steps were automated
- Steps which were done manually tended to be analysis, documentation and testing
  - The same steps would be required (whether manually or in an automated fashion)
- Full lifecycle savings through automation is on average: 24%
  - 16 % for the smallest component
  - 29 % for the biggest component
  - Includes analysis and testing
- Savings on the actual transition work is on average: 61%
  - Excludes analysis and testing
- Important factors were the quality of transition & reduced time duration
  - Results were consistent
  - Results complied to the standards set

Business Lessons Learned

- Keep it simple for Management
  - Explain it in terms of maintenance and flexibility
- Cultural shift needed to start thinking in CBD terms
  - Get internal developers involved early on
  - Impacts the analysis and design process
  - Pay attention to education
- Stay the course
  - Complexity will get worse before it gets better
  - But it will get better!!!
- Analysis and testing time is key
  - Automation will help in both areas
  - However, there will still be significant time spent on both



Project Structure, Lessons Learned

- Need "Guru's with Power"
  - A technical architect or designer who can make decisions
  - A functional specialist who can decide what goes where
- Need a strong project owner
  - Someone who can make budget decisions relatively quickly
- Use a QA board
  - Independent of the project
  - Reporting to the Steering Group
- Try to keep the same members on the team
  - Ensures consistency

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Technical Lessons Learned

- Don't underestimate the complexity
  - Has highlighted the different ways in which the same thing can be done
  - Pay particular attention to objects which are supposedly already completed or which are completed manually
- One repository of transition information is key
- Extremely difficult without GuardIEn - model management implications are fundamental
- Requires up to date desktop infrastructure in terms of Microsoft Office applications etc.
- Do not strive for 100% automation. Apply a high degree of automation (where cost beneficial) and do the rest manually

Next Steps

- Implemented with release of new POS software
- Centralisation
- Need to promote re-use of the operations
  - Component catalogue
  - A subsequent project has indicated that it will reuse some of the public operations
- Key is to keep the application conforming to standards
  - Tools used for this by Schuitema are:
    - Project Phoenix QA Compliance to do regular checks on the software
    - Jumar:Xtras Model Reporter for documentation
    - Project Phoenix Test Harness Generator for Public Ops testing

Summary

- Application Modernisation is happening at Schuitema with the help of Jumar Automation
- Business objectives of centralisation, flexibility and maintainability are being met
- The automation makes it possible within a reduced timeframe at a high quality
- The right team structure, planning and infrastructure is important
- Don't underestimate the complexity

More Info

- Please speak to Jumar for a full demonstration of the software used at Schuitema, including:
  - Model Analysis
  - Code Block promotion
  - Error handling substitution
  - Code block clean up
- Related presentations:
  - Session 11: Gen Portfolio and Model Analysis-Understanding What You've Got
  - Session 20: Modernizing Gen Applications using Automation
- Alternatively, visit our websites:
  - www.schuitema.nl
  - www.jumar-solutions.com

EDGE Needs Your Feedback!

- Please complete the conference evaluations
- Your feedback/suggestions are necessary to continue to bring you top-notch events

- Thank You for Coming – See you in 2008!