

전자상거래용 하이퍼미디어 시스템 개발 방법론

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요 약

인터넷 기술 특히, 웹 (WWW: World Wide Web) 의 비약적인 발전으로 기업 활동에 있어서 전자상거래 (EC: Electronic Commerce) 는 중요한 분야로 대두되고 있다. 본 논문은 시나리오 기반 객체지향 기술을 이용한 전자 상거래용 하이퍼미디어 시스템 개발 방법론과 이를 지원하는 설계 도구를 개발한다. 본 방법론은 영역 분석 (Domain analysis), 객체 모델링 (Object modeling), 뷰 설계 (View design), 네비게이션 설계 (Navigational design), 구현 설계 (Implementation design) 와 구현의 6 단계로 구성된다. 사용자의 요구사항은 시나리오를 통하여 분석, 객체지향 기법으로 모델링되며, 객체 뷰를 이용하여 네비게이션 설계와 구현 설계에 활용된다. 구현설계 단계는 구현에 필요한 데이터베이스 스키마와 사용자 인터페이스 설계로 구성된다. 본 방법론은 사용자의 요구사항으로부터 하이퍼미디어 구현에 필요한 요소들을 분석하여 사용자 요구에 적합한 분산하이퍼미디어 시스템 설계와 개발을 지원할 수 있다. 또한 개발 지원 도구는 기업 데이터베이스와 통합되어 운영되는 전자상거래용 하이퍼미디어 시스템 개발에 효율적으로 활용될 수 있을 것이다.

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내용

1. Introduction
2. Methodology Architecture
3. Methodology Details
 - 3.1 Domain Analysis
 - 3.2 Object Modeling
 - 3.3 View Design
 - 3.4 Navigation Design
 - 3.5 Implementation Design
 - 3.6 Construction
 - 3.7 SOHDM Meta Data
4. Methodology Comparison
5. Conclusions

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1. Introduction

• Research Background

- The Web technology is used as a platform for Information development
 - The Intranet
 - Expensive network and inconvenient application are replaced by Intranet
 - Infrastructure for Electronic Commerce
- Hypermedia application involve many different components
 - Navigation, User interfaces, and Content storage

• Research Issues

- Integration Hypermedia with enterprise database
- Effective hypermedia design and implementation

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2. Methodology Architecture

- 6 Phases

- Domain Analysis

- Delimit system to be developed
- Scenarios to identify users' requirements

- Object Modeling

- View Design

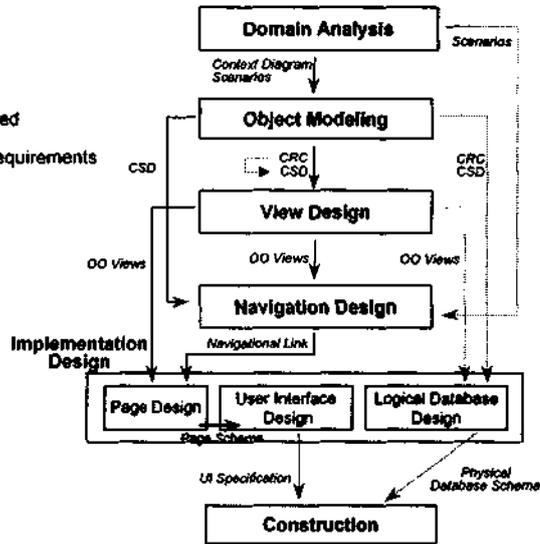
- Navigation Design

- Navigational paths

- Implementation Design

- Construction

- Feedback



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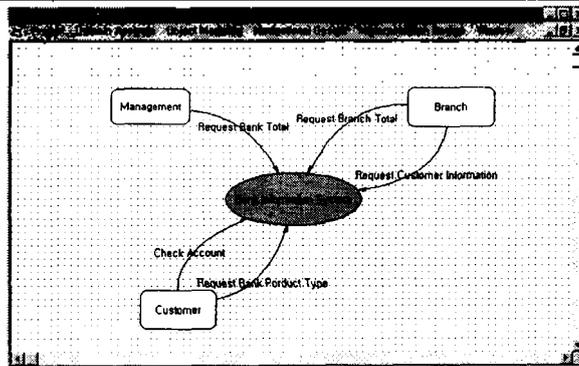
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Domain Analysis

3. Methodology Details

- System Scope Diagram

- Delimit the hypermedia system to be developed



- Event List

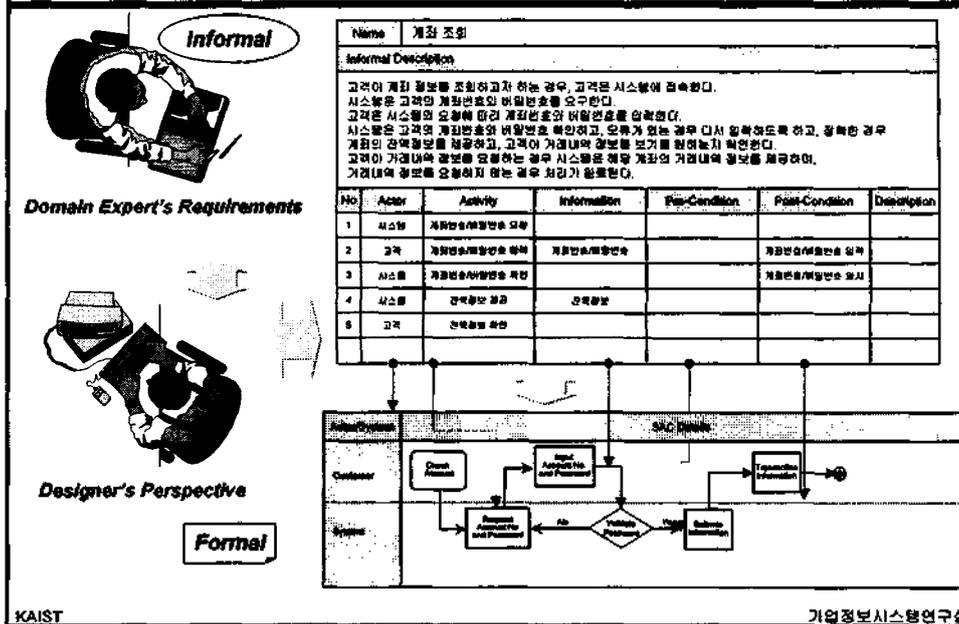
- For each external entities, event list is identified
- An Event is trigger

Source Entity	Event Name
Branch	Request Branch Total
	Request Customer Information
Customer	Check Account
	Identify Banking Product Type
Management	Request Bank Total

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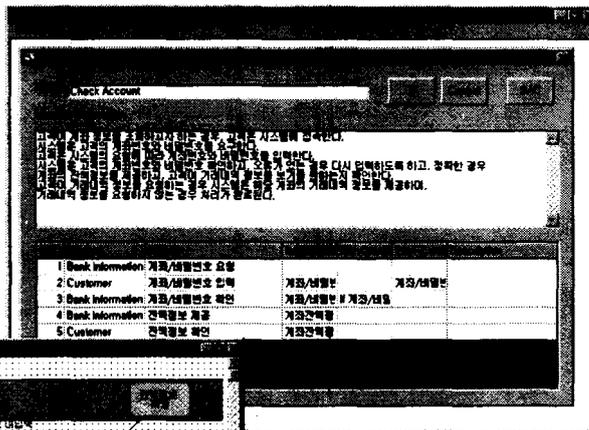
Domain Expert's Scenario and Designer's Scenario 3. Methodology Details



Domain Analysis

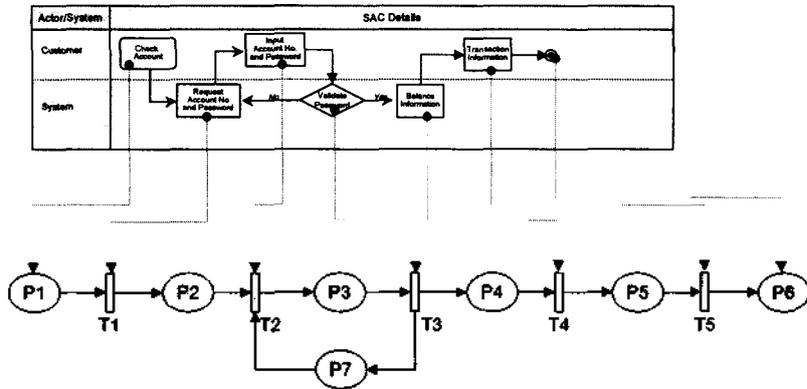
3. Methodology Details

- Scenario: Scenario Activity Charts (SACs)
 - From events
 - Describe business process according to external entity



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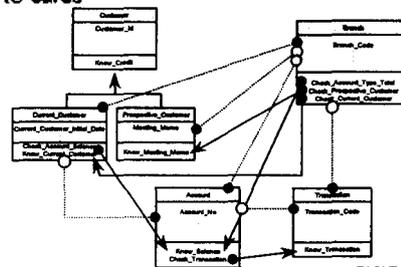


Petri Net Strength

1. Visual and easily understandable representation
2. Model concurrent and asynchronous system behavior
3. Mature analysis technique (Reachability, Deadlock, etc.)
4. Availability of *sw* tools

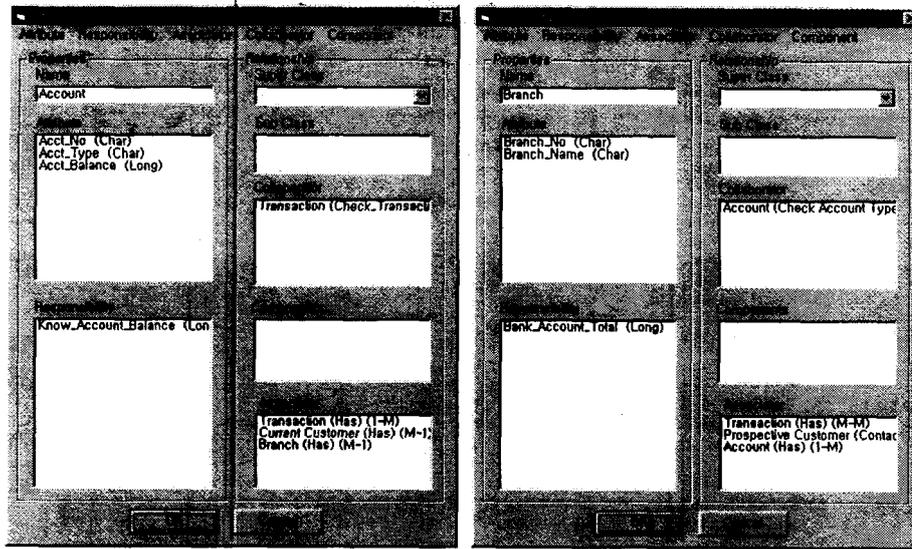
- Scenarios are used for object modeling
- CRC Cards
 - Extends original CRC Cards
 - Include components and associators
 - Repeatedly specified for refinement
 - Current_Customer, Prospective_Customer, and Customer
- Class Structure Diagram
 - To present relationship among CRC cards

Class : Current_Customer		Subject: Customer	
Attributes : Compst_Customer_Ident_Data		Subclass : Associators: Account (0) Branch (0)	
Responsibilities : Check_Account, Balance Check_Account_Transaction Know_Current_Customer		Collaborators: Account Assumt	



Object Modeling : CRC

3. Methodology Details

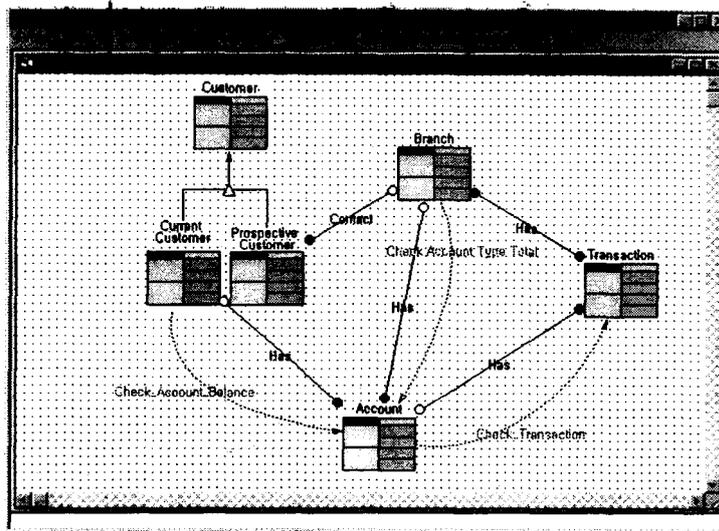


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Object Modeling

3. Methodology Details



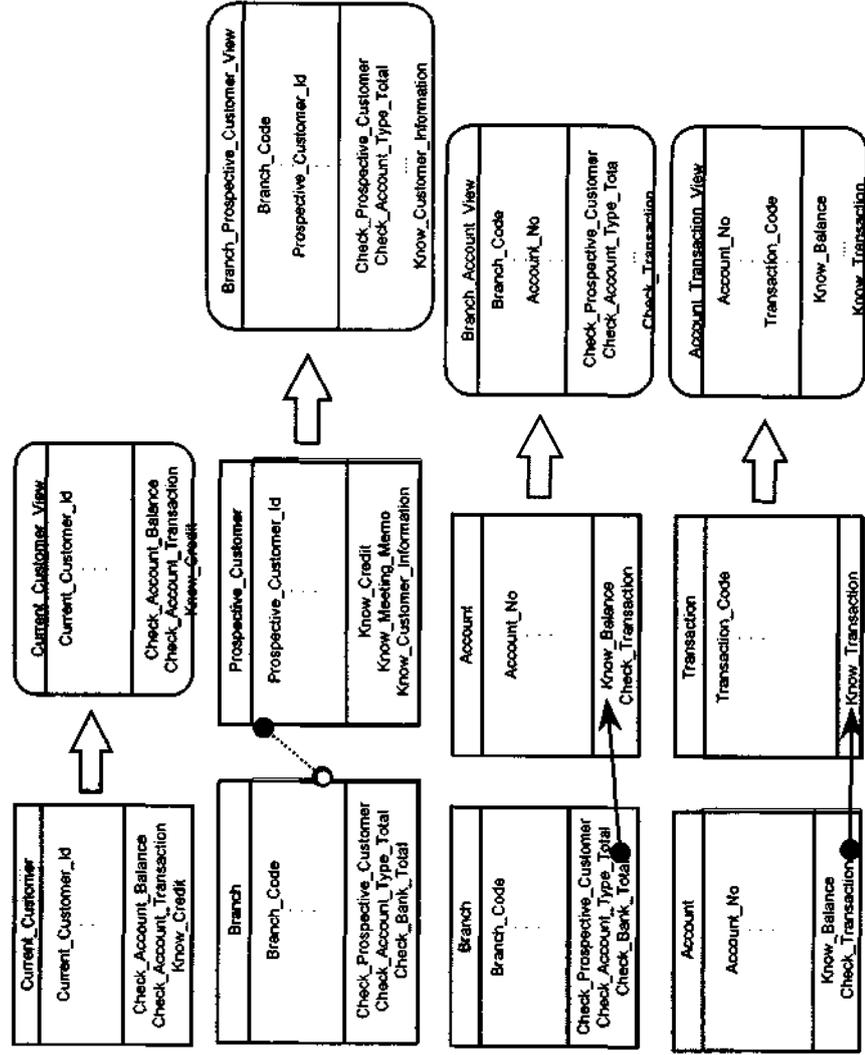
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View Design

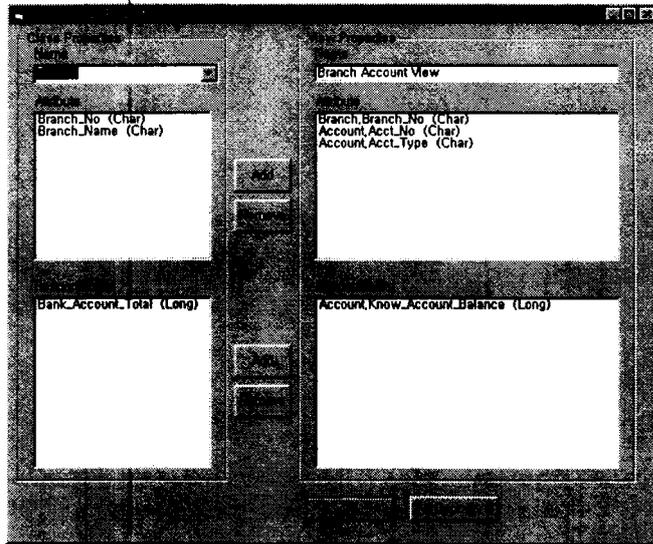
3. Methodology Details

- OO Views
 - Navigational unit
 - Are extracted from
 - Responsibilities and Attributes in CRC
 - Relationships in CSD
- Base View
 - A single object
- Associate View
 - Association Relationship
- Collaboration View
 - Collaboration Relationship



View Design

3. Methodology Details



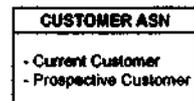
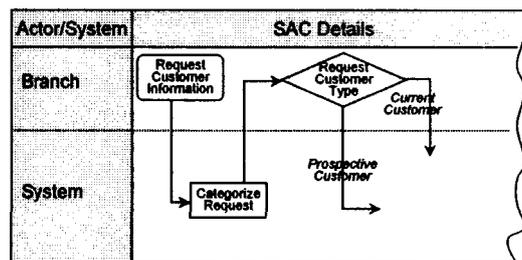
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Navigational Design

3. Methodology Details

- Navigation
 - The process of moving from one page to another, following hypermedia link
- Navigational Units
 - Access Structure Node (ASN)
 - Access path
 - Menu-like
 - OO views
 - Actual information

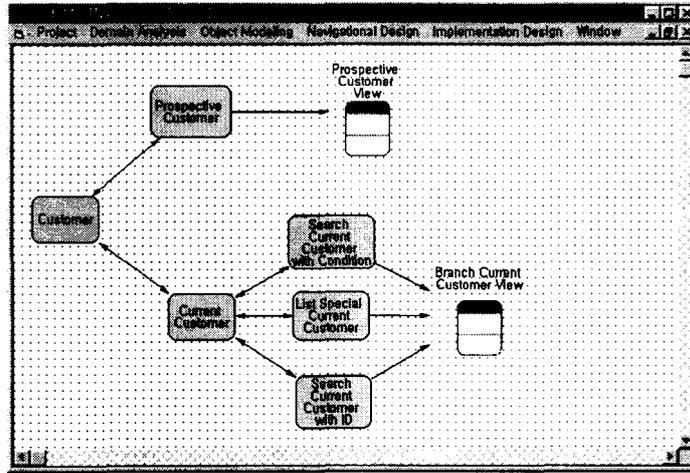


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Navigational Design

3. Methodology Details



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Navigational Link Matrix

3. Methodology Details

	Search Current Customer	Customer	Prospective Customer View	Prospective Customer	Current Customer	Search Current Customer with ID	List Special Current Customer	Search Current Customer
Branch Current Customer								
Customer		■	■					
Prospective Customer View		■						
Prospective Customer					■			
Current Customer					■			
Search Current Customer with ID	■				■			
List Special Current Customer								

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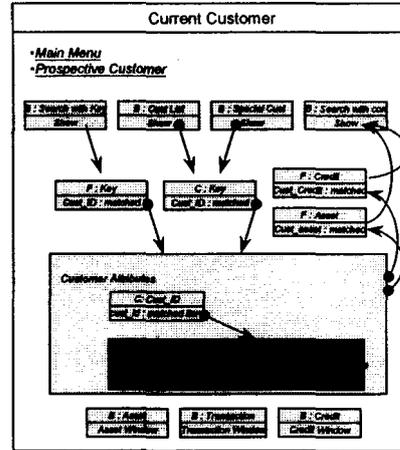
Implementation Design

3. Methodology Details

Page Schema

PID : Main_001	Title : Main Menu
• Views	
• Description Description of Main Menu	
• Anchor Current Customer / Current_Customer_001 Prospective Customer / Prospective_Customer_001 Management Information / MIS_001	
• Other Component Logo	
PID : Current_Customer_001	Title : Current Customer
• Views Current_Customer_View Account_Transaction_View	
• Description Description of Current Customer, and Help Message.	
• Anchor Main Menu / Main_001 Prospective Customer / Prospective_Customer_001	
• Other Component	

User Interface specification



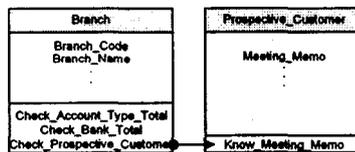
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Implementation Design

3. Methodology Details

- Object Model is transformed to logical database schema
 - Object Model → Object DB Schema
 - Object Model → Transformation → Relational DB Schema
 - Blaha's Transformation Rules
 - Class → Table
 - Generalization Relationship → A Super class Table & Sub class tables
 - Many-to-many Relationship → Table
 - Additional Rule
 - Collaboration Relationship → View or Stored Procedure



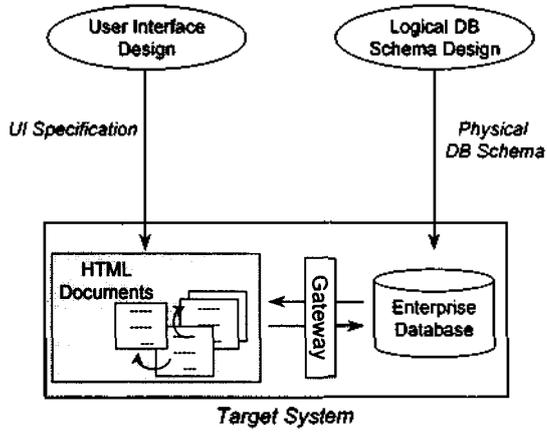
Branch (Branch_Code, Branch_Name, ...)
 Prospective_Customer (Proe_Cust_Id, Meeting_Memo, ...
 , Proe_Cust_Branch_Code)
 Branch_Prospective_Customer_View (Branch_Code, Branch_Name,
 , Proe_Cust_Id, Proe_Cust_Name, Meeting_Memo, ...)

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Construction

3. Methodology Details

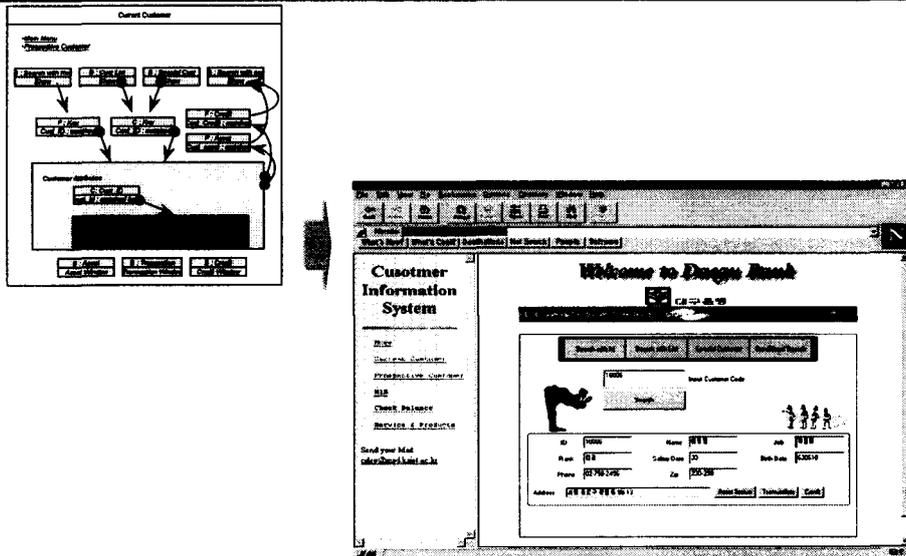


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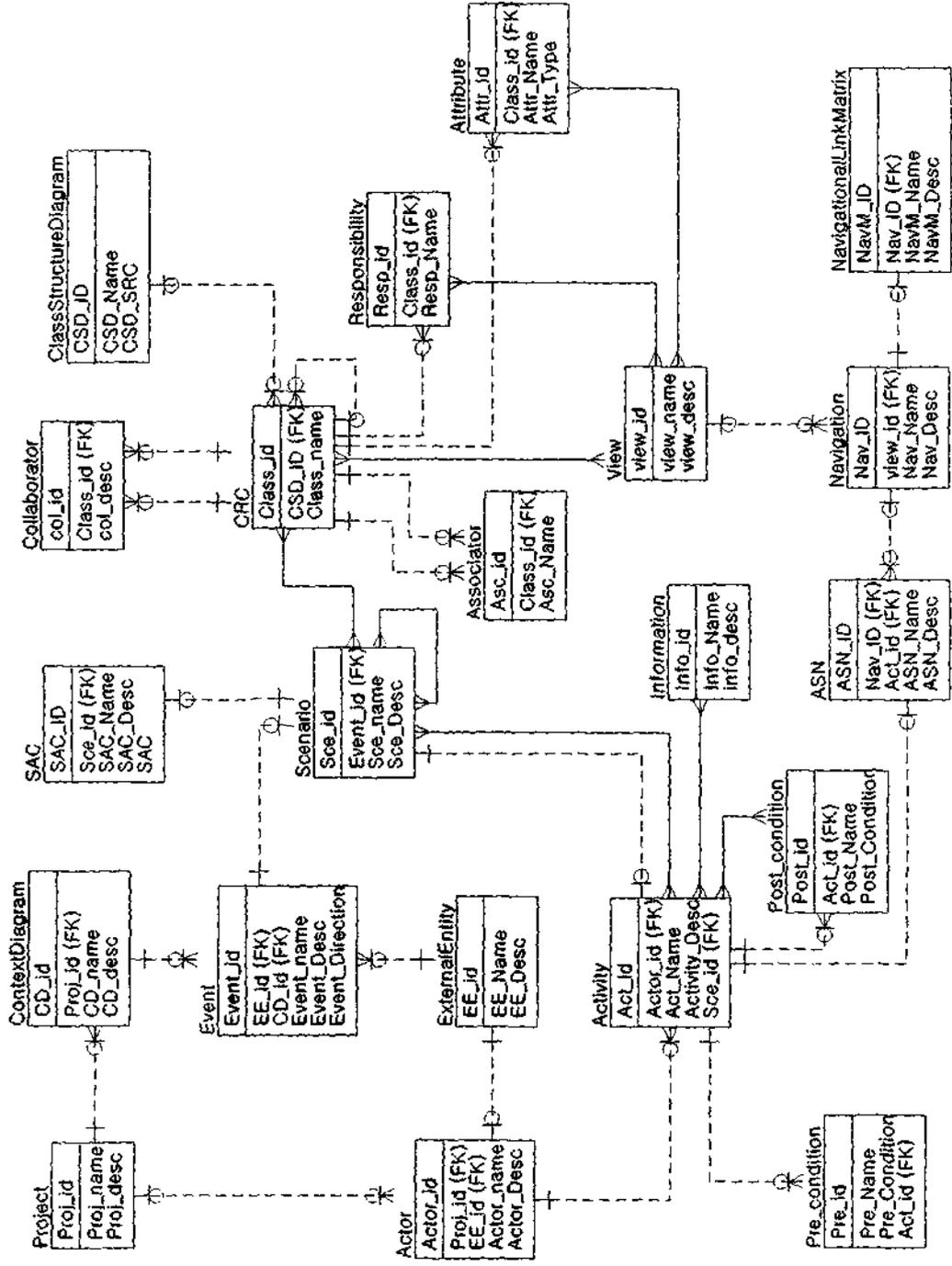
Construction

3. Methodology Details



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4. Methodology Comparison

Methodology	EORM (Lange et al. 1993)	RMM (Isakowitz et al. 1995)	OOHDM (Schwabe et al. 1995)	VHDM (Lee et al. 1995)	WHDM (Lee and Suh. 1999)	SOHDM
Criteria						
Key Modeling Technique	OO	E-R	OO	E-R	Workflow	OO
Source of Navigation	Object Relationship	Entity Relationship	Object Relationship	Entity Relationship	Document Relationship	Scenario & Object Relationship
Approach to Identifying Users' View	None	Slice	View	View	Contents Analysis Cards	View
Implemented System	ODMTool	RMCASE	NA	NA	HyDoMis	SOHDM

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5. Conclusion

• Summary

- Use scenario to capture hypermedia navigational requirements
- Effectively integrate www with enterprise database
- Efficiently and effectively design and implement hypermedia system for EC

• Future Research

- Usability Engineering

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저자소개

이희석 (Heeseok Lee)

현재 KAIST 테크노경영대학원 부교수로 재직 중이다. 서울대학교 공과대학을 졸업하고 KAIST 에서 석사학위를 University of Arizona 에서 경영정보공학 박사 학위를 취득하였다. 주요관심분야는 하이퍼미디어 설계 방법론, 지식관리, ERP, 데이터웨어하우스, 리파지토리, 비즈니스 엔지니어링 등이다.

이충석 (Choongseok Lee)

현재 KAIST 박사과정에 재학 중이다. KAIST 경영과학과를 졸업하고, KAIST 경영공학 석사 학위를 취득하였다. 주요관심분야는 하이퍼미디어 설계 방법론, 가상기업, 리파지토리 등이다.