



REQUIREMENTS ENGINEERING FOR THE
UGANDA POLICE FORCE
CRIME RECORDS MANAGEMENT SYSTEM



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UGANDA POLICE FORCE CRIME RECORDS MANAGEMENT SYSTEM PROJECT

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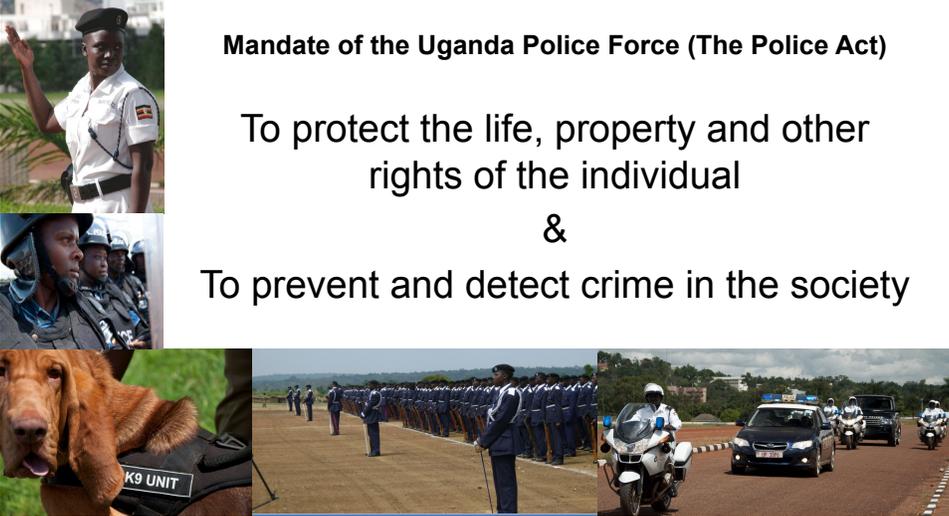
CONTENTS

- ➔ Project Rationale
- ➔ Project Structure
- ➔ System Goals
- ➔ Requirements Elicitation
- ➔ Requirements Analysis
- ➔ Requirements Specification
- ➔ Challenges
- ➔ Conclusion

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PROJECT RATIONALE



Mandate of the Uganda Police Force (The Police Act)

To protect the life, property and other
rights of the individual
&
To prevent and detect crime in the society

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PROJECT RATIONALE

Limitations of the Manual Practice

- ◆ Limited Capacity for Effective Tracking of Cases
 - ▶ Low Detection & Conviction Rates
 - ▶ High Case Backlog
- ◆ Lack of a Searchable Crime Database for Cross Referencing
 - ▶ Deficiencies in Crime Intelligence and Investigations
- ◆ Possible Irregular & Unauthorized Manipulation of Crime Records
 - ▶ e.g. Evidence Tampering. Leads to Low Conviction Rates
- ◆ Lack of System Support for Retrospective Reporting
 - ▶ Curtailed Police Operations and Crime Profiling.

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PROJECT STRUCTURE

- Custom Development
 - ▶ Off-the-Shelf Systems Not Readily Available & Very Expensive
 - ▶ No In-house Capacity Resident within the Uganda Police Force

- The ARMS Project, Makerere University
 - ▶ Computer Systems Engineering R&D Entity in the College of Engineering, Design, Art & Technology, Makerere University
 - ▶ Focuses on Web and Mobile Applications for e-Governance, e-Health and e-Commerce

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PROJECT STRUCTURE

Project Phases

- Phase 1: Initiation and Planning
 - ▶ Requirements Engineering
 - ▶ Project Initiation Documentation {Proposed Solution, Resource Plan, Implementation Plan, Communication Plan, Financial Plan & Contingency Plan}

- Phase 2: Pilot
 - ▶ Development of the CRMS
 - ▶ Piloting the System at the Division Headquarters in Kampala Metropolitan Police & Other Major Towns in Uganda

- Phase 3: Rollout
 - ▶ Countrywide Rollout

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SYSTEM GOALS

CRIME RECORDS MANAGEMENT SYSTEM

Case File Management

Goals

- Supporting Registration of Complaints
- Electronic Case File Management



Station Diary Constable
Traffic Station Diary Constable



Investigating Officers
Officers in Charge

Management Information & Decision Support

Goals

- Supporting Electronic Profiling of Crime and Criminals
- Multi-Dimensional Crime Reporting



Top Level Managers of Uganda Police
Inspector General of Police
Director Crime Investigations
Regional Police Commanders



Systems Administration

Goals

- Providing User Authorization
- Maintenance of Key System Libraries (e.g. Police Administrative Units, Police Officers etc.)
- Supporting Intra Communication with an Embedded Messaging Service & Virtual Notice Board
- Logging & Tracking User Activities based on CRUD (Create, Read, Update, Delete)



ICT Staff



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REQUIREMENTS ELICITATION

- ◆ User / Stakeholder Interviews
- ◆ Both Closed and Open Interview Methodologies Used
- ◆ Interviews Targeted Stakeholders Responsible for Specific Crime Records Management Business Processes
- ◆ The interviews were conducted at four police stations in Kampala

Station	Rationale
Katwe Police Station	Busiest Police Station in Kampala Metropolitan Police. Monthly turnover of over 400 cases.
Central Police Station Kampala	Another busy station located in the heart of Kampala City with a monthly turnover of over 287 cases.
Criminal Intelligence & Investigations Directorate	Has Very Unique Business Processes given its Nationwide Coordination Role for Crime Intelligence & Investigations
Uganda Police Headquarters	Has Unique Business Processes Associated with Systems Administration and the Office of the Inspector General of Police.

2



REQUIREMENTS ELICITATION

- Best Practices Benchmarking
 - ▶ Technical Requirements pertinent to Hosting, Accessibility and Security {e.g. User Authorization and Authentication, Human Computer Interaction, Transport Layer Security, Notifications, and Search Optimization}
 - ▶ Google Search, Gmail, Trulia, Amazon, Interpol, and Yahoo Mail
- User Interface Prototypes
 - ▶ Found Productive with Key Crime Records Operational Staff {Station Diary Constable, Investigating Officers etc...}

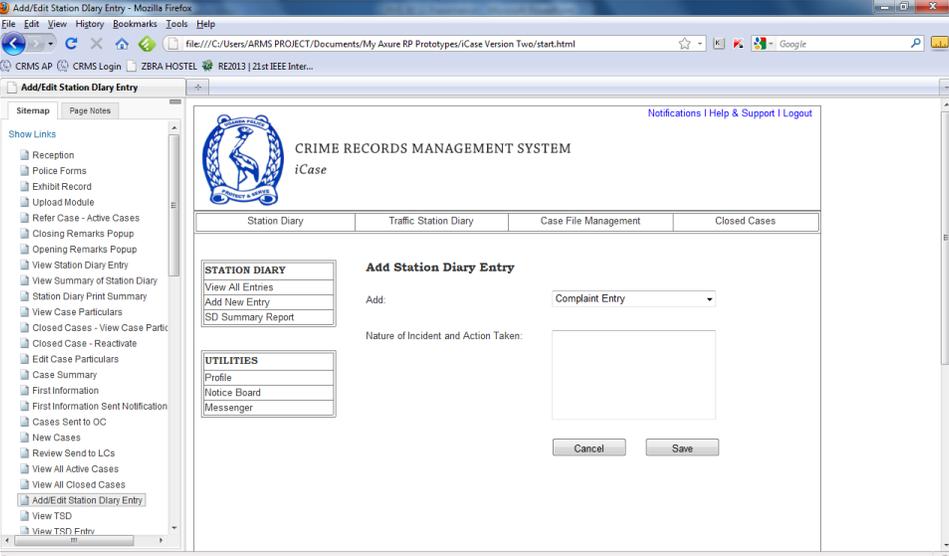
▶ Prototyping Tool used was Axure Pro 6

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REQUIREMENTS ELICITATION

Sample Prototype – Tool Used: Axure Pro



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REQUIREMENTS ELICITATION

- Joint Requirements Development Workshops
 - ▶ Often Brought Together Top Management in the Uganda Police Force
 - ▶ Mainly Used for Stakeholder Buy-In, Elimination of Conflicting Requirements and Building Consensus on Key Functional Requirements
- Study of Key Documents
 - ▶ Penal Code Act, The Uganda Police Act, The Uganda Police Force Management Structure and Schedule of Responsibilities for Key Positions in the Uganda Police Force

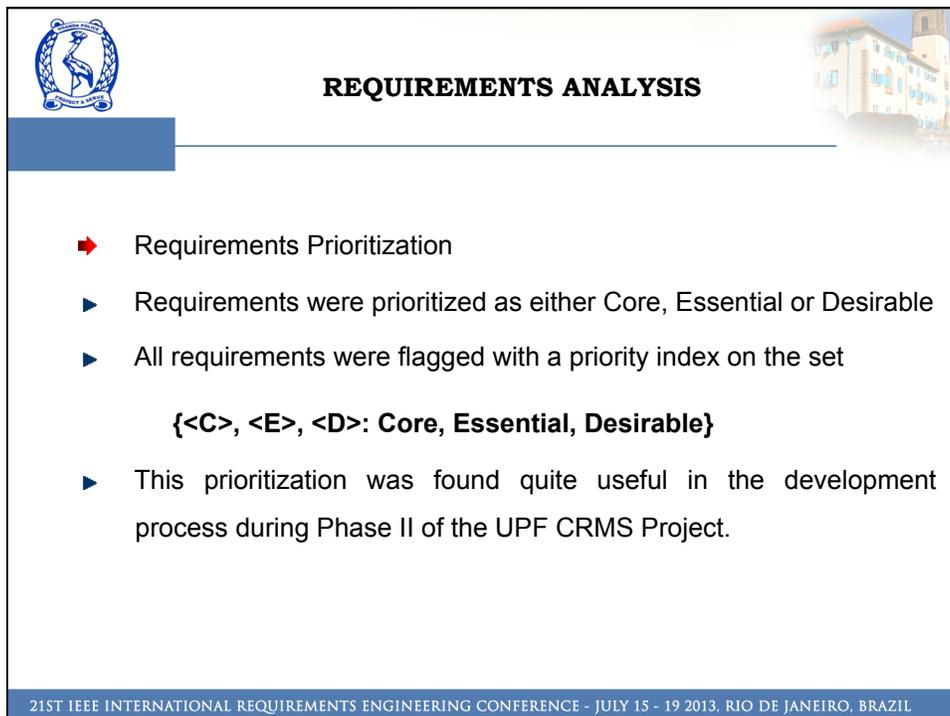
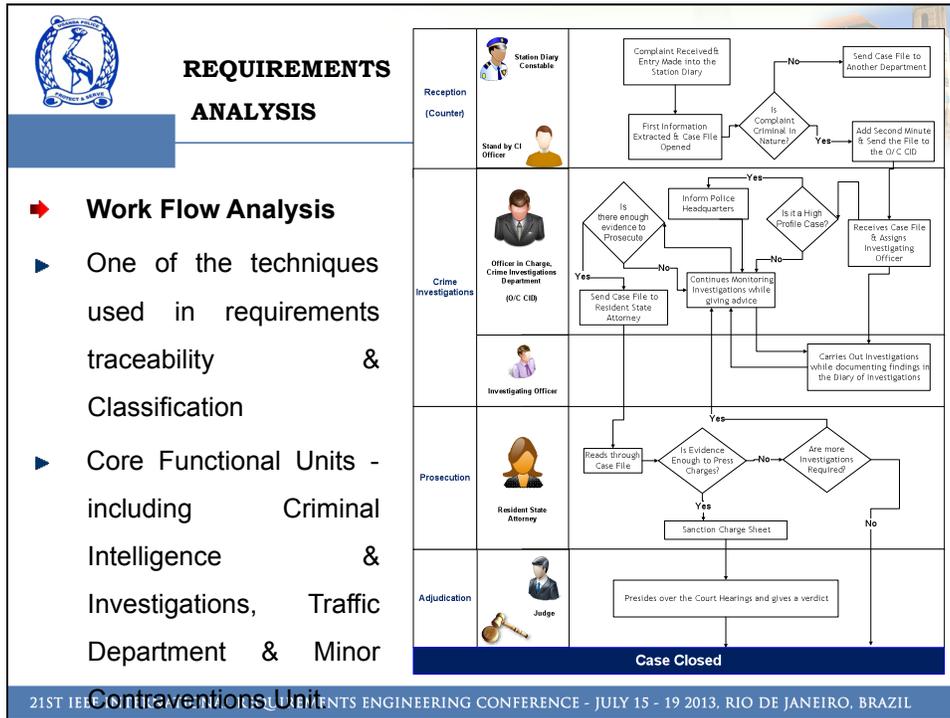
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REQUIREMENTS ANALYSIS

- Analysis Informed By Five Viewpoints
 - ▶ Functional (Desired UPF CRMS Capabilities)
 - ▶ Information (Data Elements pertinent to CRM Business Processes)
 - ▶ Development (Recommended Practice – Tools & Methodology)
 - ▶ Deployment (Data Center Optimization, Transport Layer Security & Disaster Recovery)
 - ▶ Operational (Systems Administration, Configuration Management and Maintenance & Support)
- Requirements Were Then Categorized into Four Classes
 - ▶ Functional Requirements (Impacting the Business Processes)
 - ▶ Technical Requirements (Impacting the System Infrastructure)
 - ▶ Operational Requirements (Impacting System Operation and Support)
 - ▶ Transitional Requirements (Impacting System Implementation and

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REQUIREMENTS SPECIFICATION



- The Uganda Police Force Crime Records Management System Requirements Specification was Developed
- Based on the IEEE Std. 1233-1998 (IEEE Guide for Developing System Requirements Specifications)
- The SyRS Signed Off by both the Uganda Police Force & the ARMS Project
- The Specification formed part of the contract between the Uganda Police and the ARMS Project for **Phase II: Piloting**

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CHALLENGES



- Frequent Transfers of Police Officers between Different Units
 - ▶ Designation of a Dedicated Team
 - ▶ This Team went on to be Instrumental in the Deployment & Validation Phases
- Fear of Losing Jobs Causing Attempts to Specify Untraceable & Frivolous Requirements
 - ▶ The Team was Diligent About Linking Requirements to Authentic Sources
- Uganda Police Team Composition: Mainly ICT Officers

➤ Top Management Designated Some Operational Staff from Key

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CONCLUSIONS

- ▶ Successful Requirements Engineering Requires Objective & Timely Consultations with the Client
- ▶ Involving the End User Helps in Defining Correct Requirements & Avoiding Re-Work
- ▶ Representation from All Functional Departments Paramount
- ▶ A Knowledgeable and Committed Client Team is Very Important in the Requirement Engineering Process.
- ▶ The Role of Management Support in the Requirements Engineering Process Cannot be Overemphasized.

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