




## 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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## 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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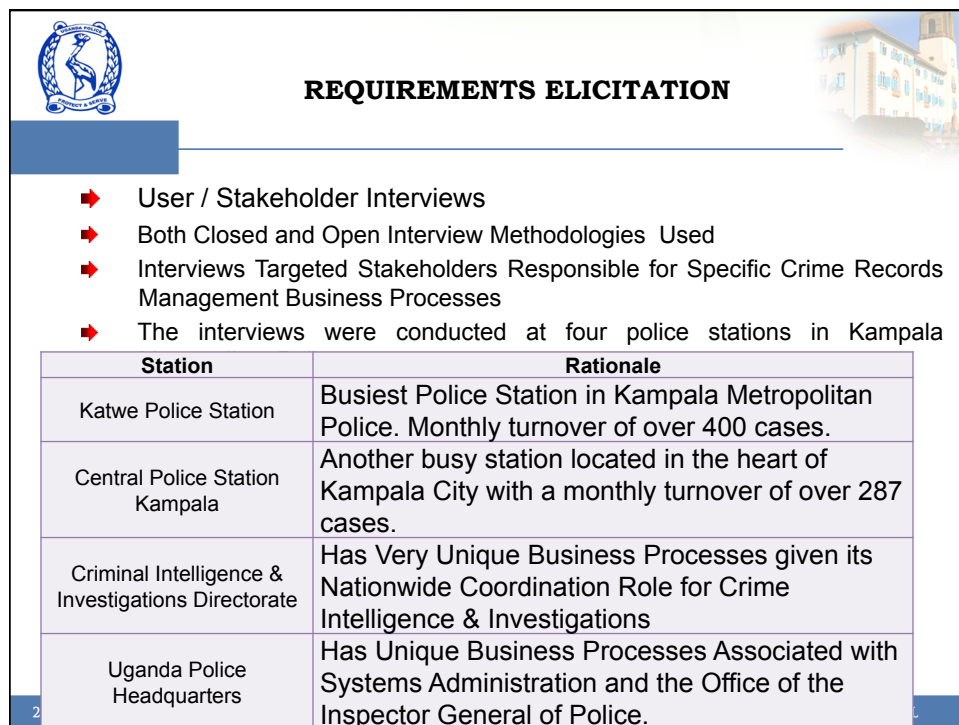
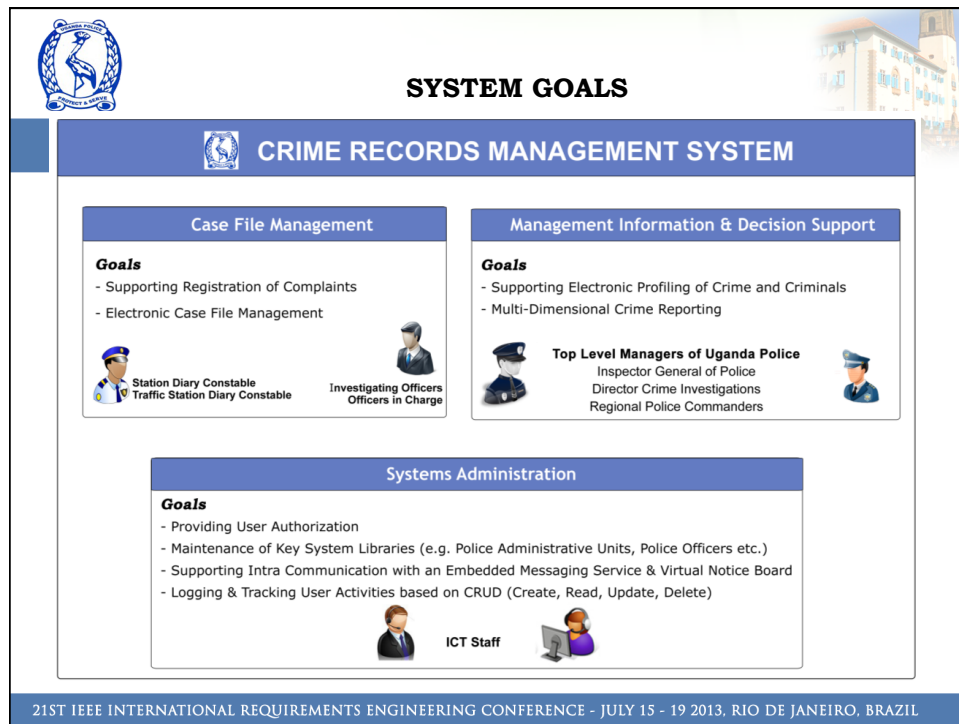



## PROJECT STRUCTURE

### *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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## REQUIREMENTS ELICITATION




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- 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...}

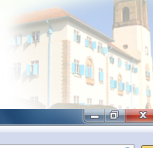
➤ Prototyping Tool used was Axure Pro 6

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## REQUIREMENTS ELICITATION

### *Sample Prototype – Tool Used: Axure Pro*



Add/Edit Station Diary Entry - Mozilla Firefox  
 File Edit View History Bookmarks Tools Help  
 file:///C:/Users/ARMS PROJECT/Documents/My Axure RP Prototypes/iCase Version Two/start.html

Notifications | Help & Support | Logout

**CRIME RECORDS MANAGEMENT SYSTEM**  
*iCase*

Station Diary    Traffic Station Diary    Case File Management    Closed Cases

**STATION DIARY**

View All Entries  
Add New Entry  
SD Summary Report

**UTILITIES**

Profile  
Notice Board  
Messenger

**Add Station Diary Entry**

Add: Complaint Entry

Nature of Incident and Action Taken:

Cancel
Save

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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

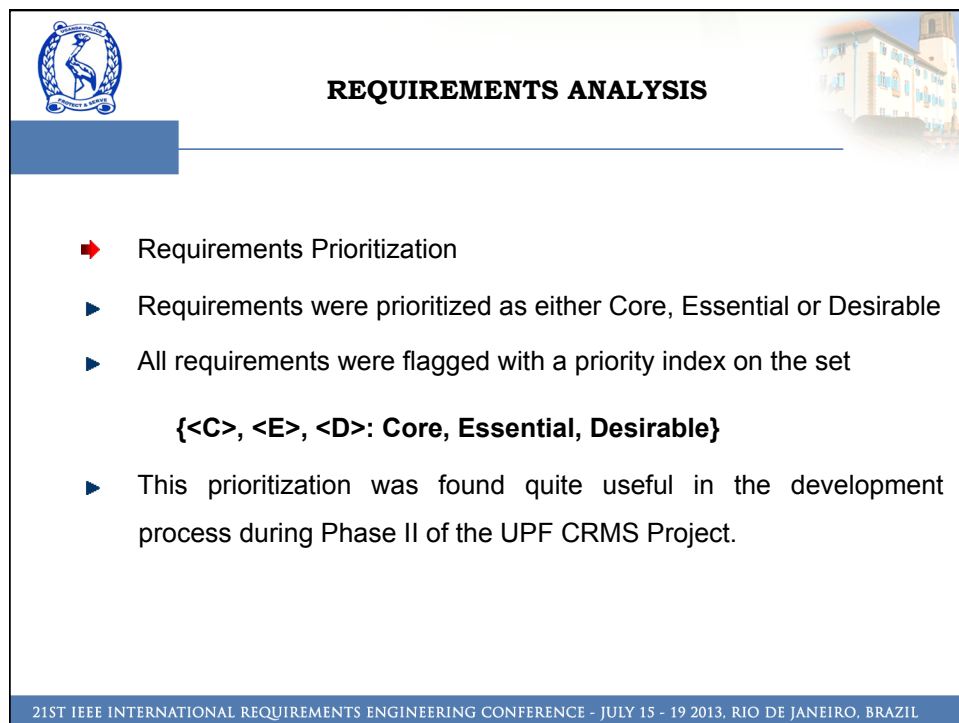
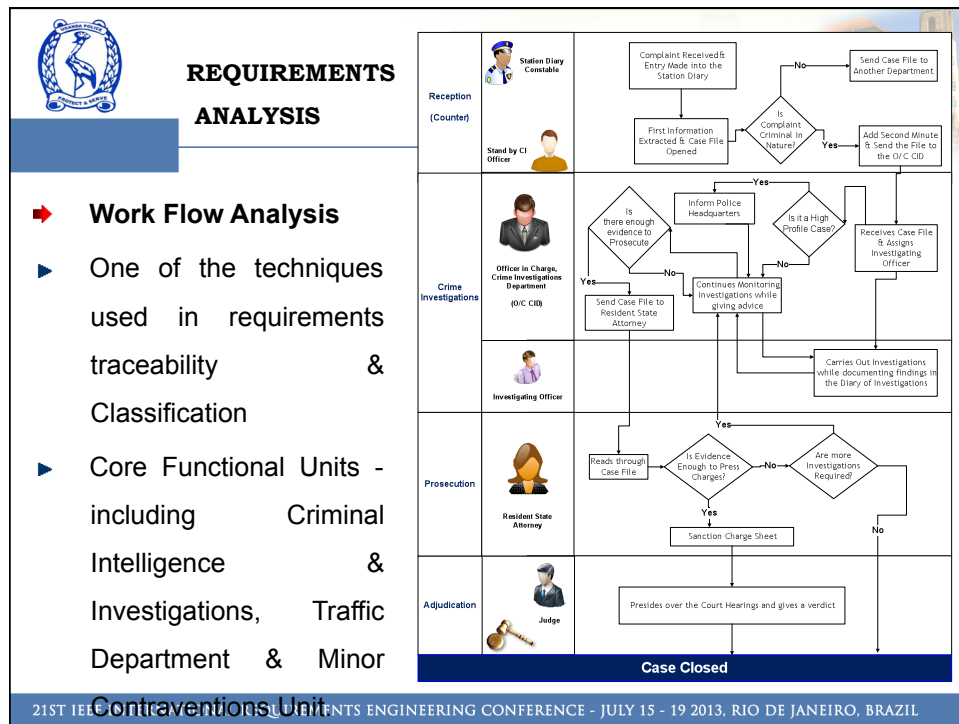
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## REQUIREMENTS ANALYSIS

- 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)

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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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