



BRAHMARSK



**Brahmarsk™** Biometrics Border Clearance

**Case Study**

## INTRODUCTION

The system-brief outlines of Brahmarsk™ Integrated Immigration Systems (BIIS) Border Control & Management System (BCMS) main features and a description of the Malaysian case study.

We strongly believe that we have succeeded, together with the customer, to implement a modernized IT system to support border management based on a unified intelligence and operational doctrine. Our experience, accompanied by proprietary technology developed specifically for this project, can become a great asset for similar initiatives carried out in other countries.

## SYSTEM GOALS

BCMS main goals are to protect the country from security threats and to prevent illegal immigrants. This will happen by enforcing entry, exit and stay laws, together with intelligence and government agencies policies. At the same time, BCMS keeps in balance with economic considerations through expediting cross-border legitimate trade and travel.

Another goal of great importance is to effectively share intelligence and mission needs across government stakeholders, so disparate agencies (such as agencies in counter terror operations) are brought together to act in an integrated manner.

BCMS incorporates all synchronized Ports of Entry (POE) data – Air, Sea, Land and regional HQs deployed throughout the country. It simplifies the handling of traveler information to provide more effective control of country borders and support for government stakeholders.

## BCMS MAIN FEATURES

The main goal is to effectively share intelligence:

- Absolute error-free identification of the crossing individuals.
- State of the Art biometric technology, using face, fingerprints and combination of biometrics features
- Check passenger status and crossing permits.
- Uses information received in advance to reduce workload and improve identification process.
- Used to identify and stop individuals, vehicles and merchandise in the Watch Lists.
- Integrated Multilingual NYSIIS [soundex] tool for name search, especially Semitic names.
- Performs logic checks – Correlation between entry and exit, time between two transactions, Passport and ID numbers.
- Displays comprehensive data processing to help the operator in his decision making.
- Computerizes processes of on-line and batch handling of Watch Lists, Permits List, Inquiries, Reports, etc.
- Records all crossing transactions within an integrated traveler folder.
- Provides crossing reports and real-time alerts to relevant government agencies.
- Re-uses existing computer hardware, readers and network infrastructure thus reducing capital investments

## BCMS CORE COMPONENTS

### Movements and History

The main role of the Movements and History component is to correlate entries and exits from all point of entries (POE) to detect suspicious patterns (e.g. last border crossing was in the same direction). It also triggers actions by reporting on foreign nationals who have overstayed the legal duration of their admission.

The Movements and History component supports identification of individuals who travel under different identities, using the concept of integrated traveler folder and support identification of citizens who travel with a foreign passport.

**NYSIIS [Soundex]**

The challenge of the NYSIIS tool is to find a person in the system, in real-time, based in the way his name sounds, rather than the way it is spelled, and without generating false matches.

NYSIIS is a morphological name search and matching tool that implements a popular scientific search algorithm.

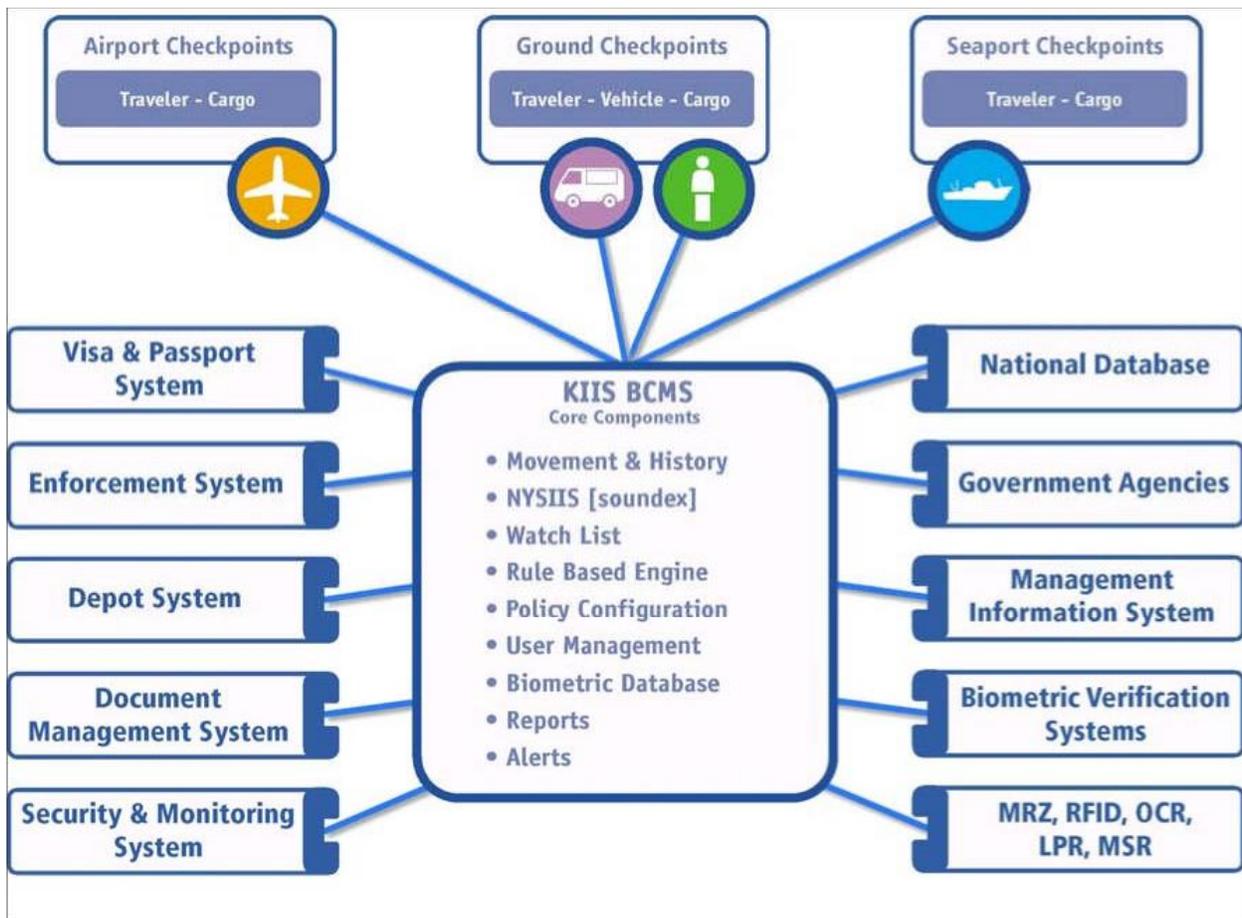


Figure 2 – BCMS Infrastructure Core Modules

**BCMS NYSIIS advantages are:**

Proprietary deployed rules to support regional names

- Supports more than the two conventional name elements: family, given, father's, grandfather's, mother's, former names etc'
- Handles name elements that are in the wrong order or appear more than once (e.g. more than one family name)
- Nicknames, e.g. Robert = Bob
- Name variation, e.g. Christie = Krissy
- Abbreviation, e.g. Mohamad = Mhd
- Multi-lingual, e.g. Rose = Shoshana
- Titles, Suffixes, Prefixes, e.g. Mr., M.D., Dr., Jr.
- Compound names, e.g. Abed El Baki = Abdel Baqi
- Initials, e.g. Frank Lee Adam = A. Frank Lee
- Search is performed efficiently in real-time on all databases (e.g. watch lists, visa, movements) as each database is encoded using the NYSIIS tool.
- The NYSIIS algorithm is controlled by the system administrator, allowing on-going refinements as required, and without slowing down the system
- Two operating modes are enabled:
  - Interactive query (e.g. check if a person named X is included in a certain list)
  - Automatic process (e.g. search for all entries in the Watch Lists relevant to a person passing through the border)

In order to narrow down the search results even more, presenting only the most relevant results and in a ranked order, the BCMS includes a Matching Factor tool.

The Matching Factor tool utilizes:

- Demographic data: date of birth, sex, country of birth, country of citizenship etc.
- Weight of each element in name and demographic data
- Penalty points for each non-match, per its type

The final search result list is presented in ranked order, parameter configured to:

- Screen out entries with low matching factor
- Define maximum number of entries to be displayed, sorted by decreasing matching factor

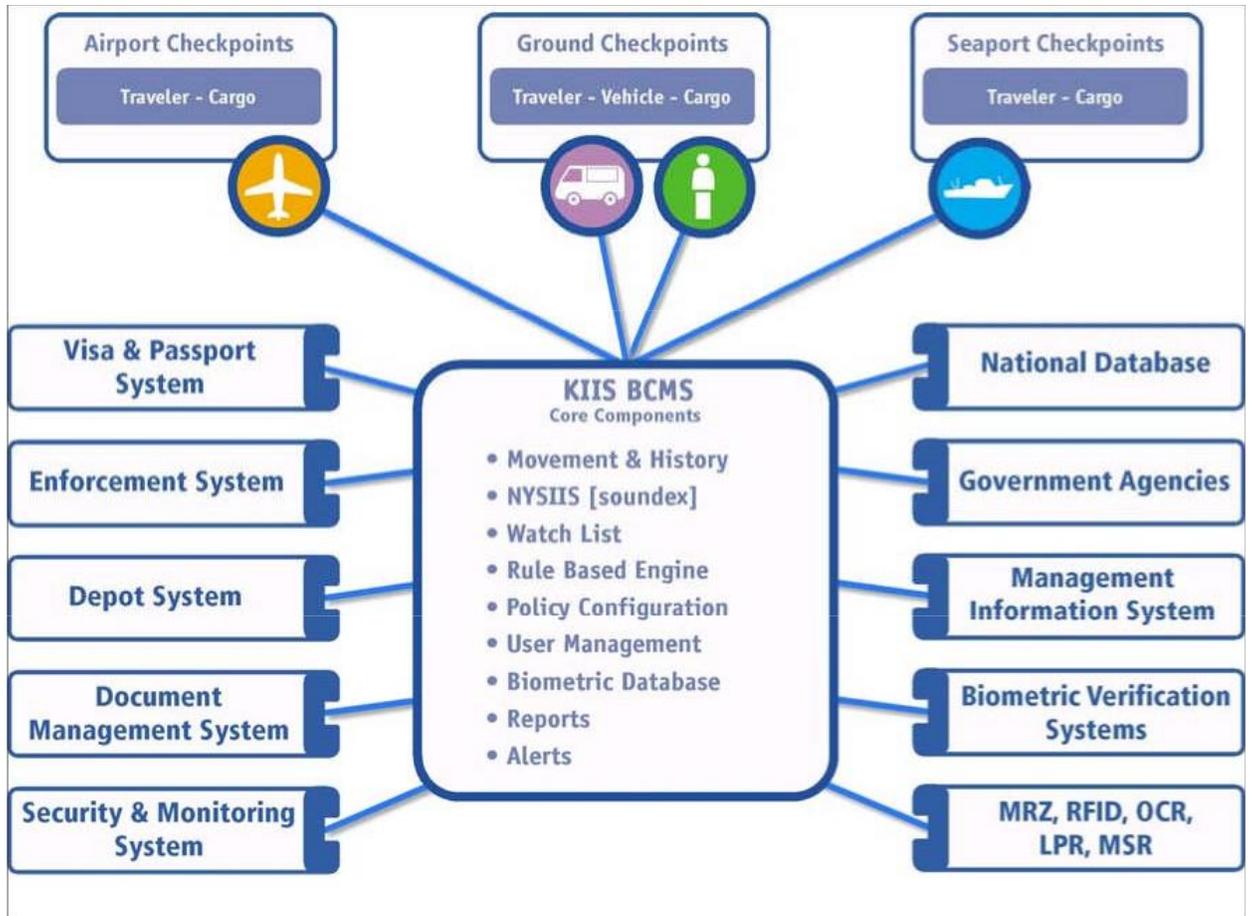


Figure 3 -BCMS Control Points

## Watch Lists

BCMS Watch Lists consolidate and share information, intelligence and mission needs across government stakeholders, in spite of the many laws and agency policies that prohibit sharing of information. Implementation is through well-defined connectors to remote government agencies for Watch Lists creation, update and query.

Watch Lists are used in three processes:

- Inspect ion
- Pre-arrival security check
- Visa issue

Watch Lists trigger display of instructions to the Immigration Officer (e.g. arrest, deny entry, debt payment) based on a <winner logic algorithm>, given situations of sometimes contradicting mission needs. They also trigger “behind the scene” actions, such as Intelligence alerts via pager, SMS, fax etc.

BCMS supports 3 levels of Watch Lists:

- Personal
- Partial personal data
- Group

BCMS supports 3 types of Watch Lists:

- Person
- Document
- Vehicle

### **Rule Base Engine**

Rule Base Engine guides the immigration officer through required steps to execute during the inspection, required papers to examine etc.

It implements permit restrictions, e.g.:

- Multiple entry
- Group visa
- Zone and direction
- Date and time

It implements past incidents of importance, unusual situations and patterns, and instructions to be presented to the Immigration Officer during the inspection, e.g.:

- Prior cases where the person was denied entry to the country
- Passport is registered as stolen
- Passenger is registered as deceased

### **Policy Configuration Systems**

Policy Configurations Systems provide real-time rules and policies updated without code changes or affecting system availability.

Rules and policies determination are enabled at:

- nation/country/arena/site levels
- government agency level

The following are examples of Configuration Systems that BCMS provides:

- Inspection process (e.g. what documents should be checked)
- Watch lists & instructions (e.g. definition of new agency)
- Winner logic
- Matching factor (e.g. maximum number of entries to be displayed)
- Identification criteria (e.g. biometric thresholds)



Figure 4 -Operator Management

## User Management

BCMS provides hierarchy management of border immigration officers (Inspectors) and other agencies operators. The hierarchy is both site oriented as well as agency oriented. The regular Inspectors will handle the usual border crossing activity. In case of certain exceptions (e.g. identification of a person in a Watch List) the handling may be transferred to the Chief Inspector residing in the same site. However, it is possible to define transactions performed by an operator from a certain agency to be transferred, for exception handling, only to the supervisor representing the same agency. Functions which each operator type is authorized to perform are defined in the System configuration which is controlled by the system manager.

While for big and medium sites all operators are on-site, for small crossing points, the supervisor will reside at a remote, bigger site.

## Connectors to External Devices

BCMS supports integration with the following devices for fast and error-free identification:

- High resolution document scanner
- MRZ & RFID Passport reader
- Biometric verification system

Optionally:

- Magnetic swipe reader
- Gate pass printer
- LPR-OCR vehicle identifier

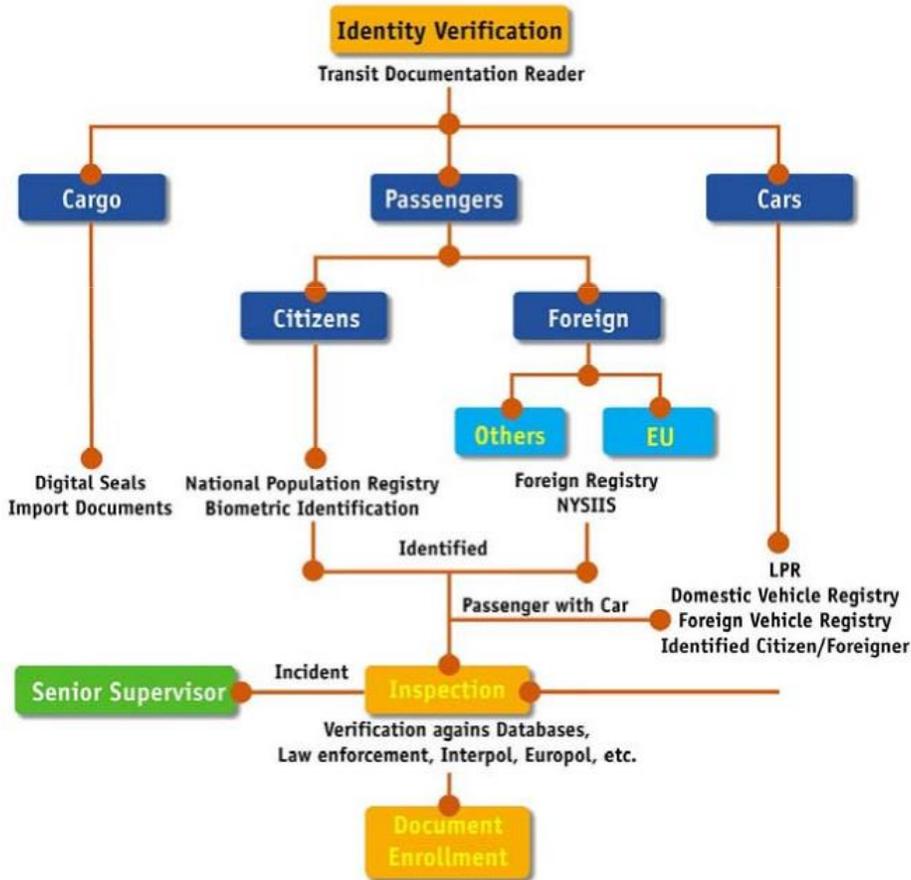


Figure 5 -Part of System Management Workflow

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