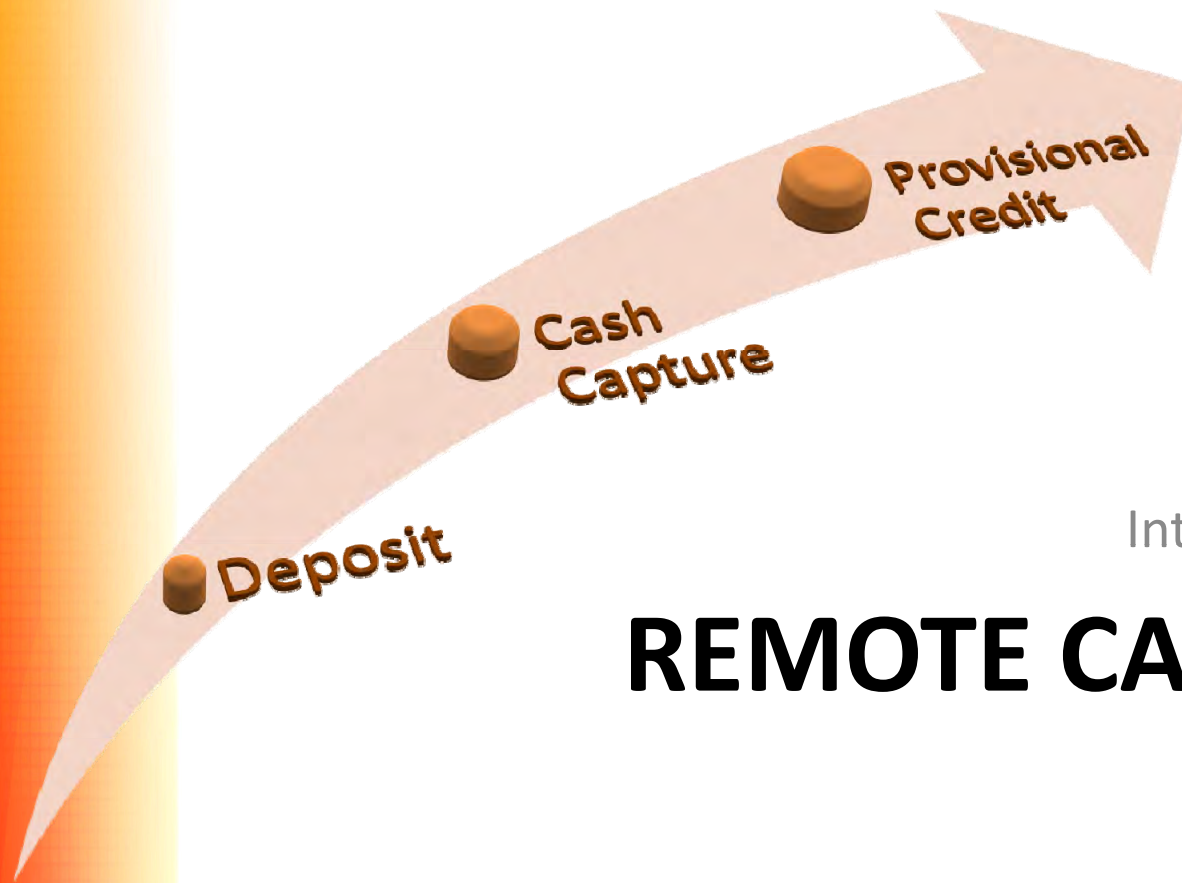# Remote Cash Control

An introductory presentation
for an end-to-end integrated
Remote Cash Control system

CubeIQ portfolio
of products, services
and web based software

R04.03 07-May-2012

- Introduction to **Remote Cash Control**

- **Smart Safes**: The Cash Handling Machines

- Cash Smart Safe **User Interface**

- Cash Management Center **Operations and Admin**

- Cash **Monitoring Center**

- **Incident Management** Custodian Workstation

Deposit

Cash
Capture

Provisional
Credit

Introduction to RCC Concept

REMOTE CASH CONTROL

Let your cash flow thru the web
...directly to your bank

A paradigm shift in to–date cash handling processes involving retailers

- Remote Cash Control (RCC), the deployment of secure smart safes at merchant locations coupled with information reporting and provisional credit mechanisms, has been utilized for nearly 15 years as a means of improving merchant cash cycle control. Since 2004, when banks gradually began offering provisional credit based on validated currency residing at the merchant location, the industry has witnessed a surge in interest and adoption of these devices.

CMN

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A paradigm shift in to–date cash handling processes involving retailers

- For most merchants, couriers and banks, cash handling is still predominantly manual, but a growing number of institutions are starting offering remote cash management products that sweeten the deal by offering provisional credit for deposits that are counted and validated by a "smart safe" that also provides audit trails for cash such as a Cash Recycler Machine (CRM*) or simply a Cash-In Machine (CIM*).

(*) Note: Cash Smart Safe (CSS) acronym will be used throughout this document, although the subject machine may be either CIM or CRM

A paradigm shift in to–date cash handling processes involving retailers
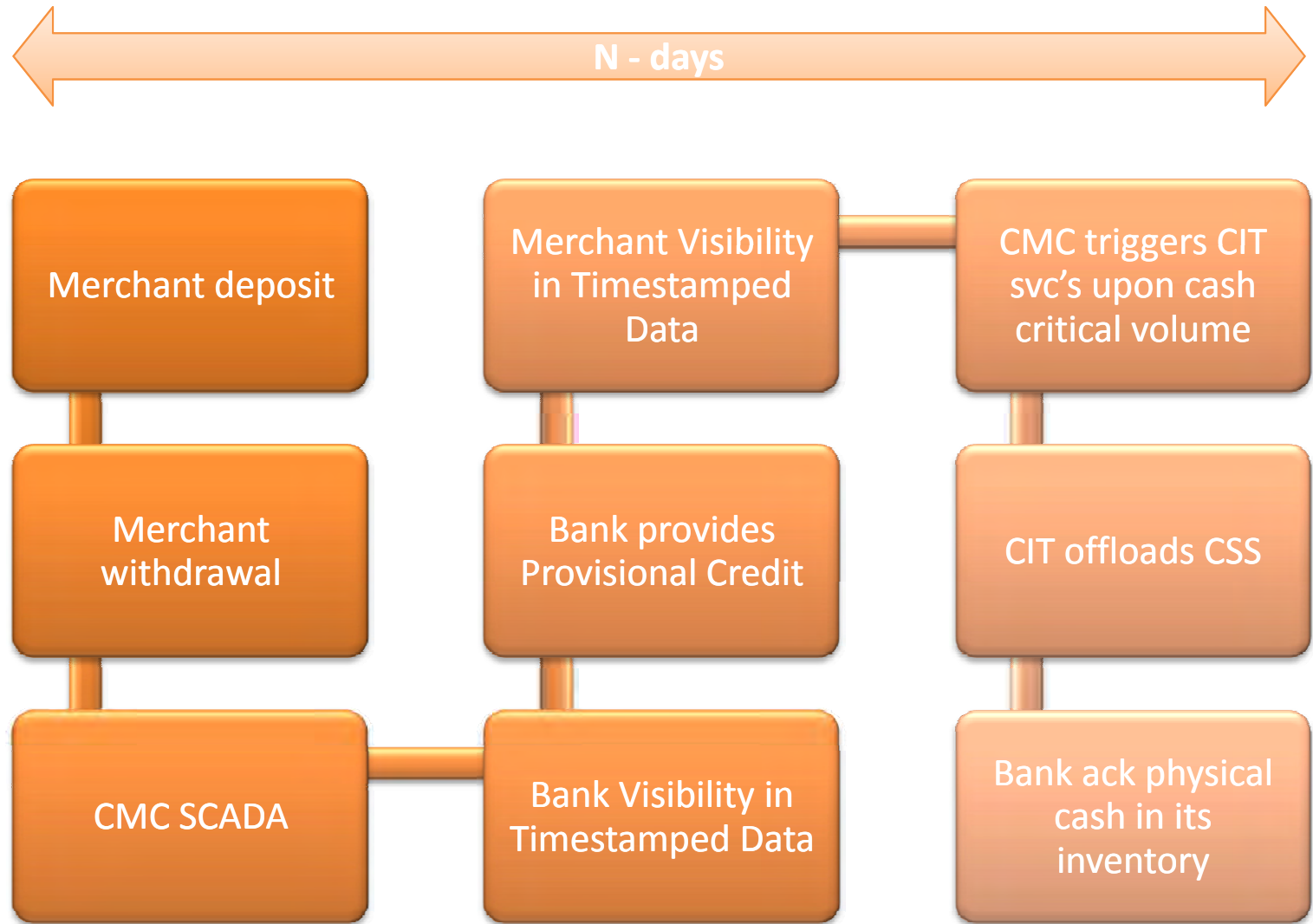
- The primary benefit of RCC provisional credit is that it facilitates wholesale reengineering of the cash cycle within merchants and between merchants, armored couriers and bank cash vault networks. RCC removes the substantial burden of cash handling typically carried by bank branch personnel historically, largely without the assistance of meaningful automation.

In a mature RCC model, there is a large population of retailers equipped with modern CSSs, where:
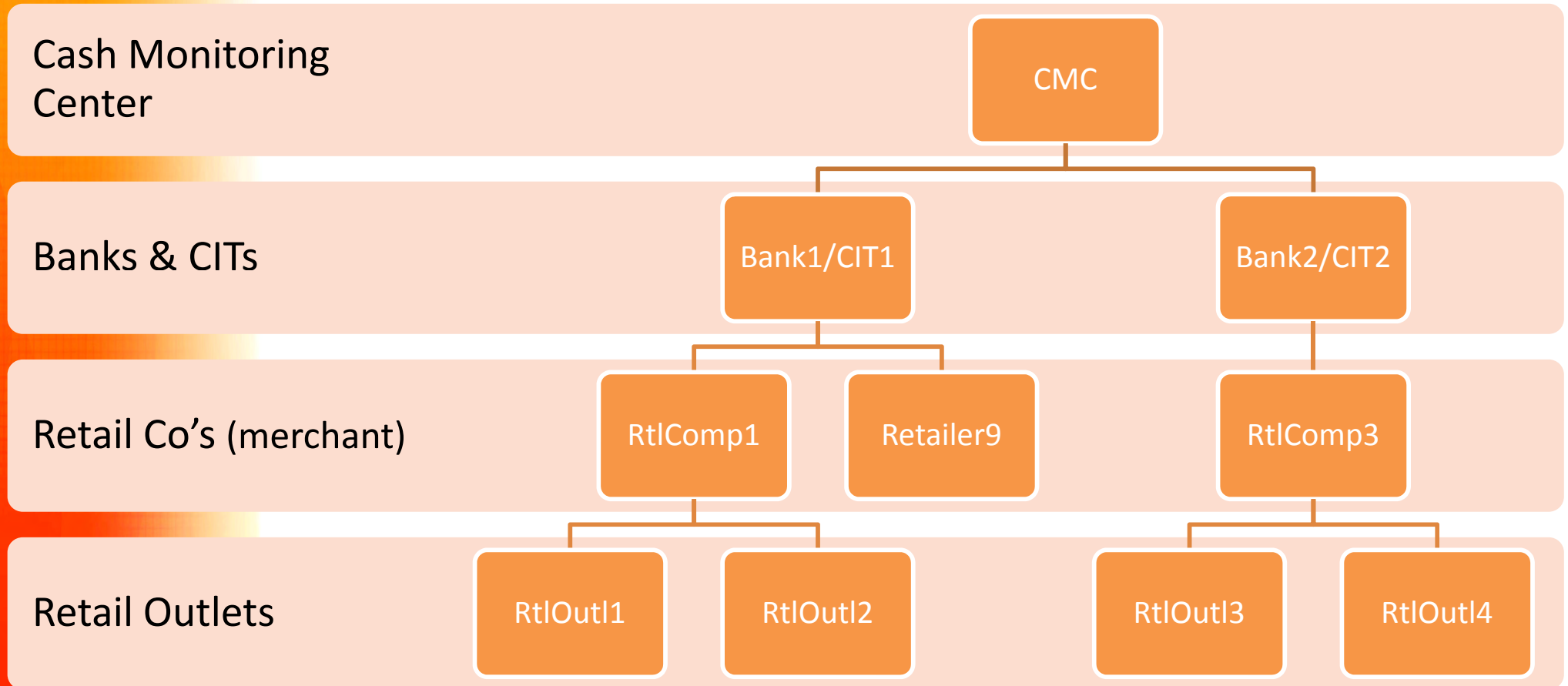
- Retail clusters are owned (or franchised) by a Retail Company.

- A Retail Company, based on a services agreement, is coming in collaboration with a bank, enjoying a number of benefits, primarily provisional credit for cash stored in the CSS device(s).

- Bank is monitoring the installed CSS via web communications through a Cash Monitoring Center with appropriate IT infrastructure

- Cash inventory is fed to the core banking IT systems

N - days

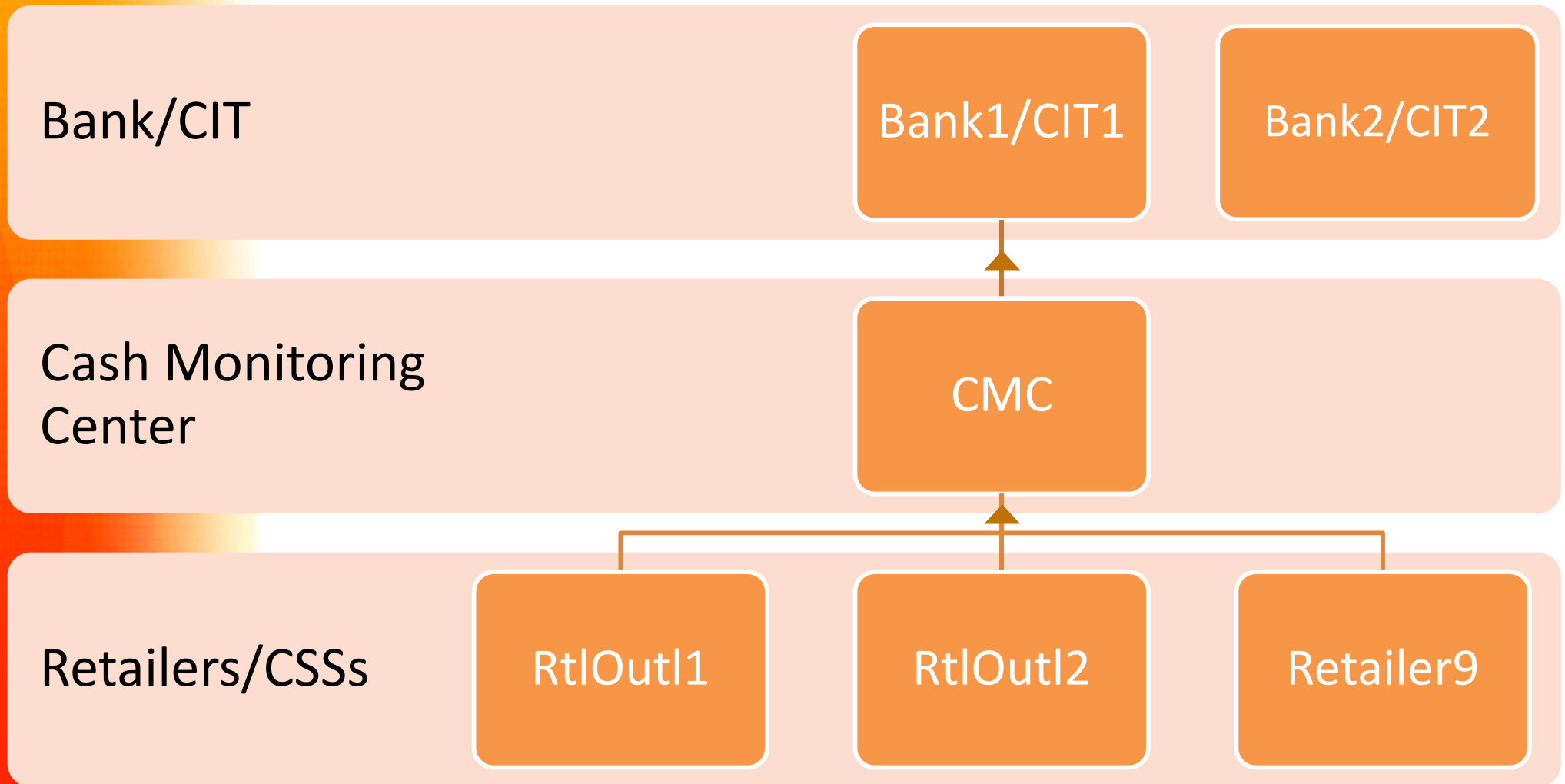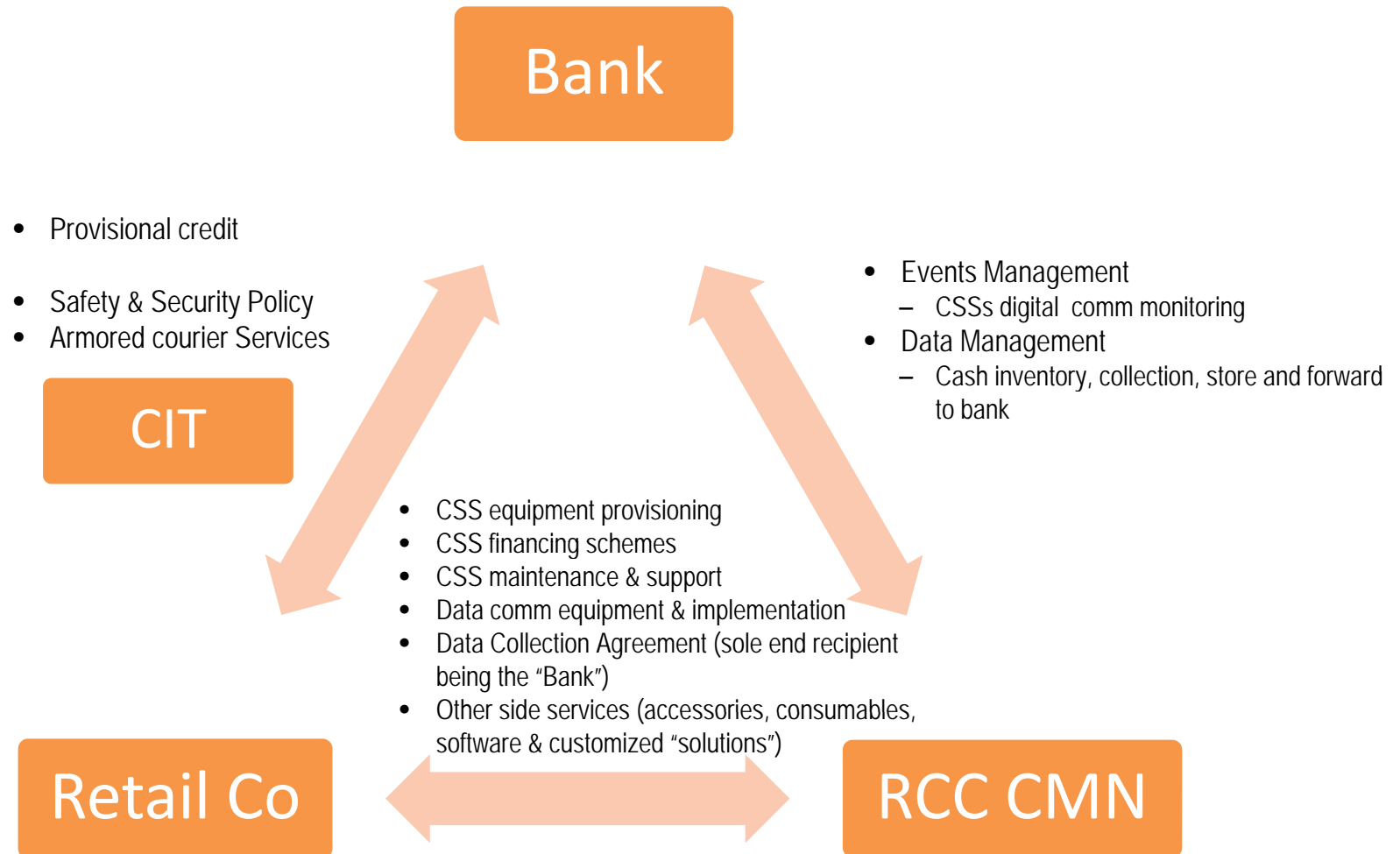|		
Merchant deposit	Merchant Visibility in Timestamped Data	CMC triggers CIT svc's upon cash critical volume
Merchant withdrawal	Bank provides Provisional Credit	CIT offloads CSS
CMC SCADA	Bank Visibility in Timestamped Data	Bank ack physical cash in its inventory

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Cash Monitoring Center	CMC
Banks & CITs	Bank1/CIT1 — Bank2/CIT2
Retail Co's (merchant)	RtlComp1 — Retailer9 — RtlComp3
Retail Outlets	RtlOutl1 — RtlOutl2 — RtlOutl3 — RtlOutl4

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Bank/CIT	Bank1/CIT1	Bank2/CIT2
Cash Monitoring Center	CMC	
Retailers/CSSs	RtlOutl1	RtlOutl2	Retailer9

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Bank

- Provisional credit

- Safety & Security Policy
- Armored courier Services

CIT

- Events Management
  - CSSs digital comm monitoring
- Data Management
  - Cash inventory, collection, store and forward to bank

- CSS equipment provisioning
- CSS financing schemes
- CSS maintenance & support
- Data comm equipment & implementation
- Data Collection Agreement (sole end recipient being the "Bank")
- Other side services (accessories, consumables, software & customized "solutions")

Retail Co

RCC CMN

Scalable technology for three tier retailer model

SMART SAFES:

CASH HANDLING MACHINES

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SID

deposit only

4k
banknotes capacity

cartridges: € none

bags:
$
4k
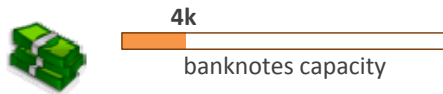
no cash bundles/wrapping

Self contained UI

FID

deposit only

10k
banknotes capacity

std	ext
€	€ €
€	€ €
2 X 2.5k each	**4 X 2.5k each**

OR

std	ext
$	$ $
5k	**2 X 5k each**
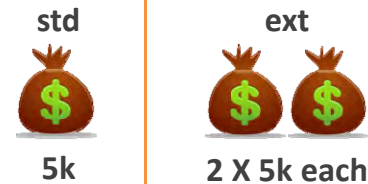
no cash bundles/wrapping

Self contained UI

CM24B

deposit, withdrawal, recycling

13.6k
banknotes capacity

€ €	€ €
€ €	€ €
4 X 0.9k each	**4 X 0.5k each**

$	$
4k	**4k**

w/wrapped cash bundles

UI in attached computer

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- Model "SID", manufactured by CTS Electronics, Italy
  - SID is a robust and sturdy device designed to deposit banknotes. After operator identification, the system allows to deposit bundle of mixed banknotes. After accurate counting and validation, they are then deposited into a self-sealing plastic bag located inside a robust and secure safe.
  - Each deposit transaction is monitored and all the data are available to the customer and to the bank. A receipt for each transaction is issued, which includes details of notes (quantity, denomination and total value).
- Operational features:
  - Deposit module for cash deposit with self-sealing bag welding mechanism
  - Safe: Steel strong box 6mm, optional UL291, CEN III
  - Lock: electronic lock (LaGard or similar) with 2 access code + door opening approval only after bag sealing
  - Security sensors: "door open" sensor
  - Touch screen 7" (16:9format, 800x480 resolution)
  - Deep insertion magnetic stripe reader track 1-2-3 and chip card reader for user identification
  - Thermal receipt printer: 80mm
  - Internal PC with Windows XP embedded
  - UPS
  - Front access for service and safe opening

- Notes Acceptor and Deposit Module standard features:
  - Drop in feeder capacity: 50 notes (even mixed)
  - One reject pocket, capacity:20notes
  - Transport speed: 180notes/min, 3notes/sec (Validation & Deposit)
  - Self-sealing plastic bag capacity: 4000 notes
  - Dimensions: Height: 776mm; Width: 430mm; Length: 640mm
  - Connection: LAN 100Mbit/sec - 1Gbit/sec
  - API for device integration with the customer SW application and device monitoring
  - Validation of Euro currency notes
  - Other denominations on request

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- **Model "FID", manufactured by CTS Electronics, Italy**
  - FID is a breakthrough innovation, with its name standing for Fast Intelligent Deposit. It is a self-banking or back office solution that allows users to deposit bulks of banknotes and cheques at an impressive speed. It is aimed to replace deposits made using envelops (as in night-drop deposits) as well as an automated solution either at the bank's lobby or in a self-service area, providing great improvement and benefits to banks as well as retail users. It can be used integrated in a Kiosk, inside an ATM or as a standalone back office unit.

- **Standard configuration features:**
  - Deposit Module for Cash deposit with 1 bag or 2 cartridges totaling 5,000 notes
  - Optional extension to 2nd bag or 2 addt'l cartridges totaling 10,000 notes
  - Safe: Iron strong box 6mm
  - Lock: electronic lock ("LaGard" or similar) with 2 access codes and one mechanical lock with one key
  - Security sensors: "door open" sensor
  - 7" display with touch screen (16:9, res.800x480)
  - Magnetic stripe reader tracks 1-2-3 and chip card reader for user identification and authentication
  - Thermal receipt printer: 80mm prints the total transaction amount and denominations breakdown
  - Integrated PC with Windows XP Embedded O.S.
  - Front access for service and safe opening
  - Gigabit LAN Ethernet connection

CMN

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- **Deposit Module features:**
  - Drop in auto feeder capacity: 150 notes (even mixed)
  - One reject pocket, capacity: 80notes
  - Escrow bay, capacity: 400 docs (metal, electr. locked, s/w managed)
  - 2 removable cassettes for cash deposit: 2500 docs each
  - Dimensions: Height: 1110mm; Width: 560mm; Length: 520mm
  - Weight: 206 kg

- **Cash Processing**
  - 800 docs/min processing, 13.5 docs/sec validating

- **Checks Processing**
  - 400 docs/min (200 DPI grayscale; MICR reading)
  - Max check size: length 180mm, height 85mm

- **Options**
  - Touch Memory reader for Dallas key and i-Buttons
  - UPS
  - KABA-Mas Cencon 2000 lock with dynamic code and Dallas key
  - Security sensors: to monitor vibration, lifting, abnormal temperature variation
  - Safe UL291

FID

CM24B is a high-end smart safe designed for handling and control of large volumes of cash withdrawal and deposit. The cash fitness sorting feature allows the recycling of only the fit banknotes, while the unfit ones can be removed from circulation.

The banknote "recycle" function reduces the money held in-place to a minimum. There are two separate safes, the main for recycling and the side safe for large deposits.

READER MODULE
- Recognition and classification of individual notes with full image visible spectrum analysis
- Validation with infrared, UV and magnetic analysis
- Fitness check
- Automatic rejection of unknown or unfit banknotes
- Handling of up to 32 denominations of notes
- Serial number capture

INPUT UNIT
- Feeding and counting of notes deposited
- Deposit of bundles of cash in mixed sizes and denominations
- Bundles of up to 200 notes for up to 8 denominations
- Pre-selection and automatic rejection of double/damaged notes
- Productivity: 4 notes/sec

OUTPUT UNIT
- Bundles of up to 200 notes
- Two separate openings (on for each operator) for cash dispensing
- Productivity: 5 notes/sec

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STORAGE UNIT

- Automatic insertion of deposited banknotes into storage modules and transportation bags

- Two separate safes:

  Main safe *for recycling storage modules*

  Capacity: 8 storage modules

  4 modules up to 900 notes each

  4 modules up to 500 notes each

CM24B

Side safe *for transportation bags*

Capacity: 2 cash bags, each one with capacity of up to 4000 notes

Total safe capacity 13,600 = 5,600 recycling + 8,000 deposit

Notes send to the bags are bundled by tape in batches of 20 to 100 notes; bags have unique bar code-id, and are auto-sealed by tamper evident tape.

Speed: 100 notes bundle in 45secs avg.

- UL291, CEN III safes choice

- Safe door opening controlled by software command (option)

- Equipped for installation of alarm sensors and standard locks

OPERATOR PANEL

- LCD display (2 lines) with 4 function keys

INTERFACES

- RS-232

- Web interface via LAN

SOFTWARE

- Microsoft Windows® driver

- Web interface wrapper

- Optional:

  - Advanced UI

  - WAN connection to Central Cash Monitoring and Management System

Cash Smart Safe User Interface

CSS USER INTERFACE

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- Many Cash Smart Safe types are offering autonomous user interfaces. However, high-end smart safes are typically resorting to an attached computer system, which is enabling users to exploit fully their rich features and advanced operations.

- In these situations the CMN System is offering a smart and features rich User Interface (CSS UI), which supports:

  - Keyboard-less operation with touch screen
  - Attached printer for user receipts and bag labels
  - Bar code reader
  - Card reader for enhanced user authentication

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- **The following user groups are allowed to access the CSS device:**
  - Shift **Supervisors**, responsible to start and end a shift, enabling access to users
  - **Cashiers**, who may execute financial transactions by depositing or withdrawing cash (subject to system parameters imposed by the bank)
  - **Depositors**, who may only execute deposits
  - Armored Courier company (**CIT**) designated employees, who may offload cash from the device

- The system provides users and supervisors with reports scoped within the area of their respective role and responsibility.
- History maintained at least for 7 days (may extend for 5 years)
- All local data are replicated continuously to the central system (in near real-time) and vice versa
- Data and communications encrypted and authenticated
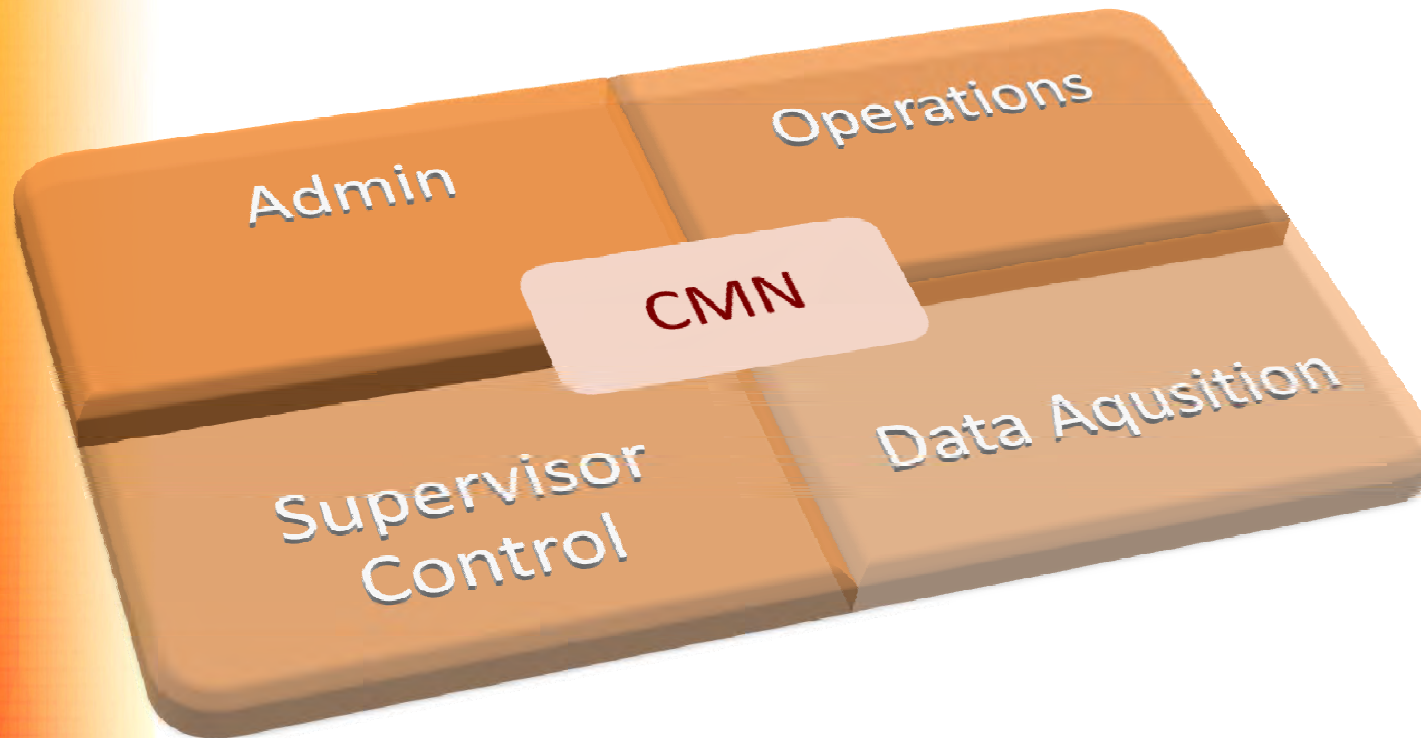
Cash Management Center

ADMIN & OPERATIONS

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The CMN Central System is:

- Cloud based

- Safe and Secure

- High capacity

- High performance

- Maintained continuously in-sync with the CSS's network

- 24x7 accessible, anytime, anywhere via the web

- Based on Open System Web Services architecture

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The CMN System core operations are:

- **New service creation**
  - Based on three key stakeholders (bank, CIT and merchant) a new service contract is established, addressing a new or existing CSS device

- **Service activation**
  - The key parameters are transferred/installed on the subject CSS device and the continuous live comm is commencing

- **Real-time monitor**
  - Backend continuous system scheduling and processing, supporting:
    - Data replication
    - Scheduled data reporting and comm
    - System housekeeping
    - Incidents management and escalation

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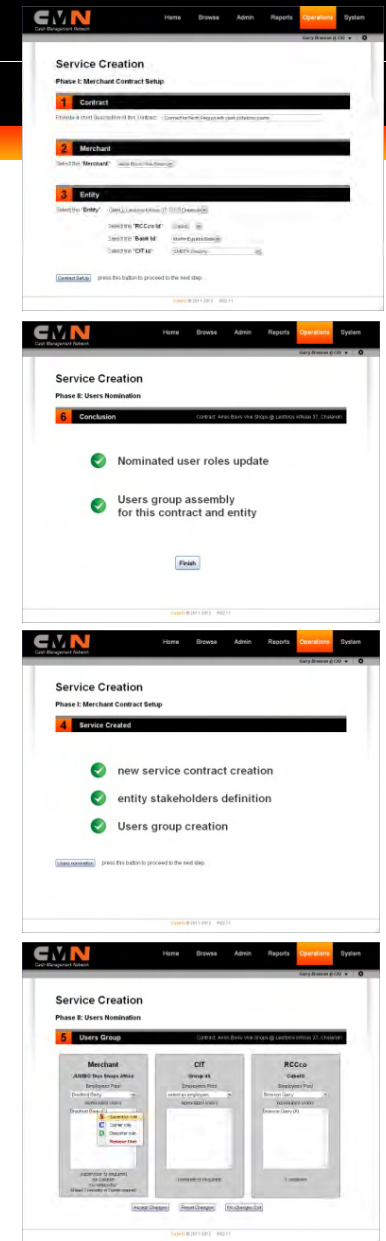
The system administration subsystem offers highly interactive user interface to facilitate:

- Stakeholders **data maintenance**
  - **Bank**
  - **Merchant**
  - **CIT** company
  - **Employees** (users of the system)

- **Reporting**
  - Reporting to all stakeholders scoped within their own area of responsibility (strictly need to know basis)
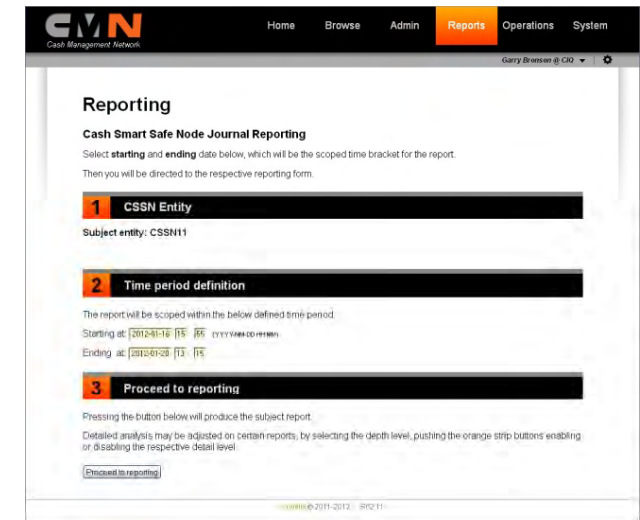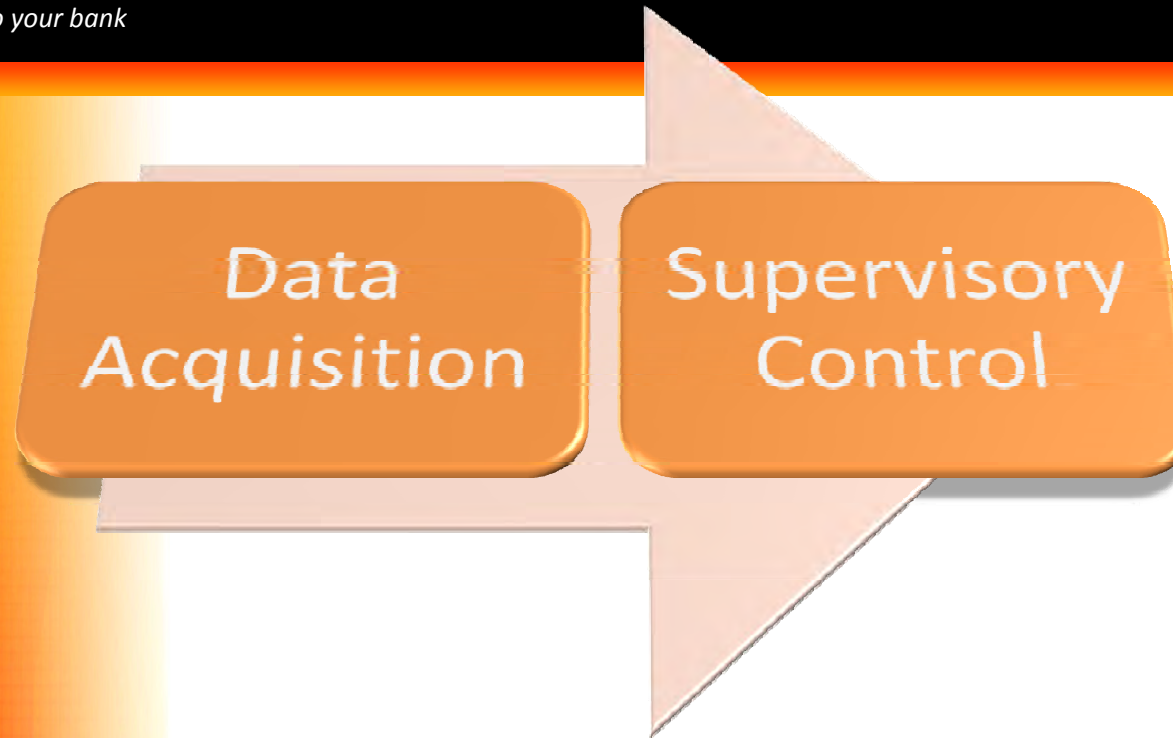
Supervisory Control and Data Acquisition (SCADA)

CASH MONITORING CENTER

Real-Time Network Monitoring

Monitor and control your cash collection points

Cash Monitoring Center provides you with the tools and the visibility to monitor and control your network of cash collection points in real time.

Get a view of collection points status

See on the map all your collection points' network, with status indicators to identify potential problems.

Discover cash inventory levels

Quick view on the map with the inventory level of all collection points, and drill down tool to get exact monetary amount.

Focus on specific network entities

Isolate banks, or retail chains, or single retail outlets. Select geographical area to focus into.
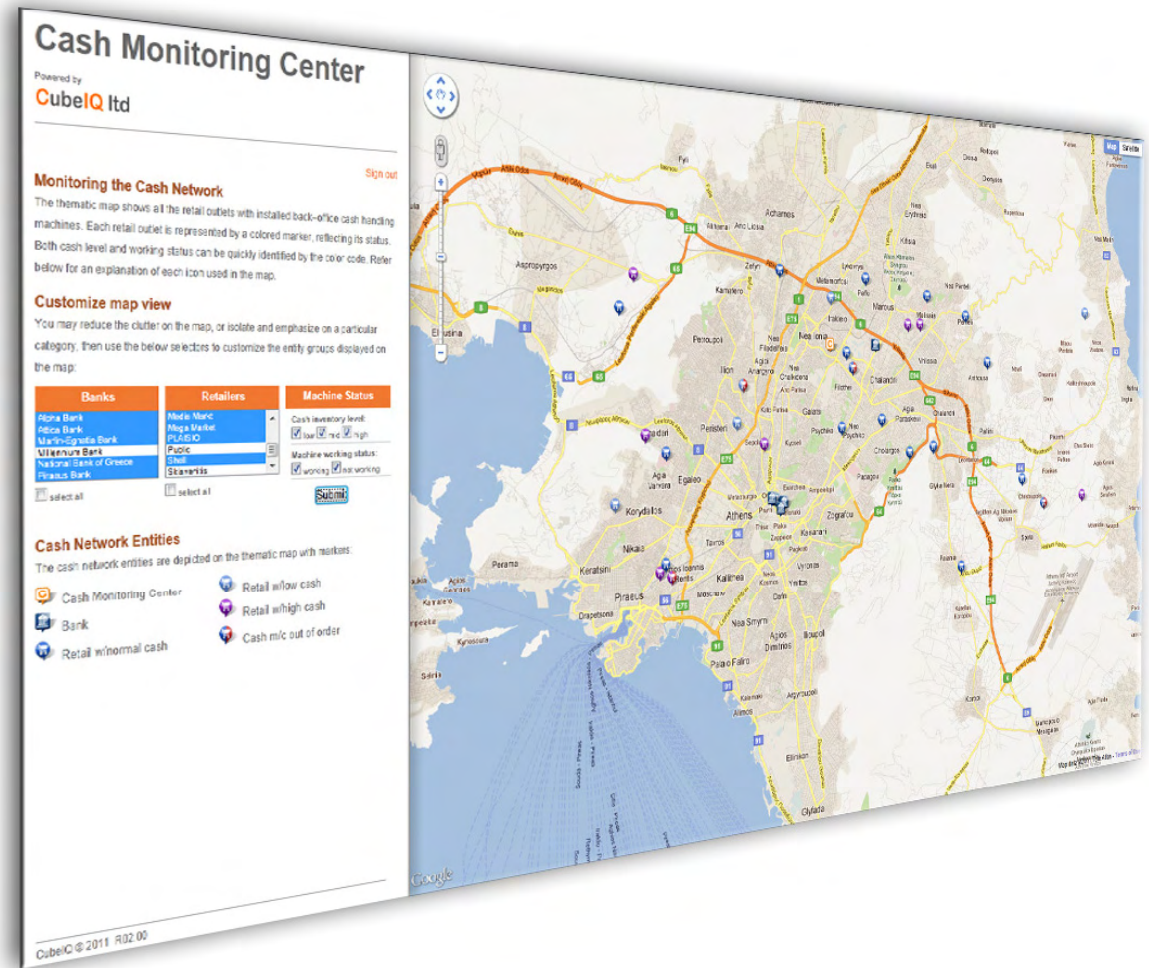
- The thematic map projects all entities by default.

- They are the Banks and the Retail Outlets

- Using the below selectors dashboard, the operator may reduce the clutter and focus on selected banks and/or retail outlets.

- The system is projecting all network entities in a list, as shown on the left.

- Originally the list is presenting the top level entities; i.e. the Banks

- By clicking on a row, the inner entities are expanded
  - Clicking on a bank, all retail companies in collaboration, are expanding their rows in the table
  - Clicking on a retail company, all outlet rows are shown

- Primary status details are shown for each outlet
  - Smart safe model
  - Working status
  - Cash inventory

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- The Smart Safe journal for the most recent seven (7) days is fetched in real-time from the retail outlet terminal device.

- The journal entries are projected in a dated list on a pop-up window.

- Hyperlinks to open this pop-up window are offered both in the map marker info window and the entities list, in the retail outlet row.

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- The CMS system collects near real-time Smart Safe information across the whole network via secure web connections

- The information are stored in a secure and resilient data base

- Compelling events are generating alarms that may be propagated outside the Cash Monitoring Center, to eligible stakeholders, such as Bank, Retail Company H/Q and Armored Courier Service

- Selective or aggregate information is forwarded to business stakeholders

  – Delivered on agreed timing schedule (push)

  – Available via SOA on demand (pull)

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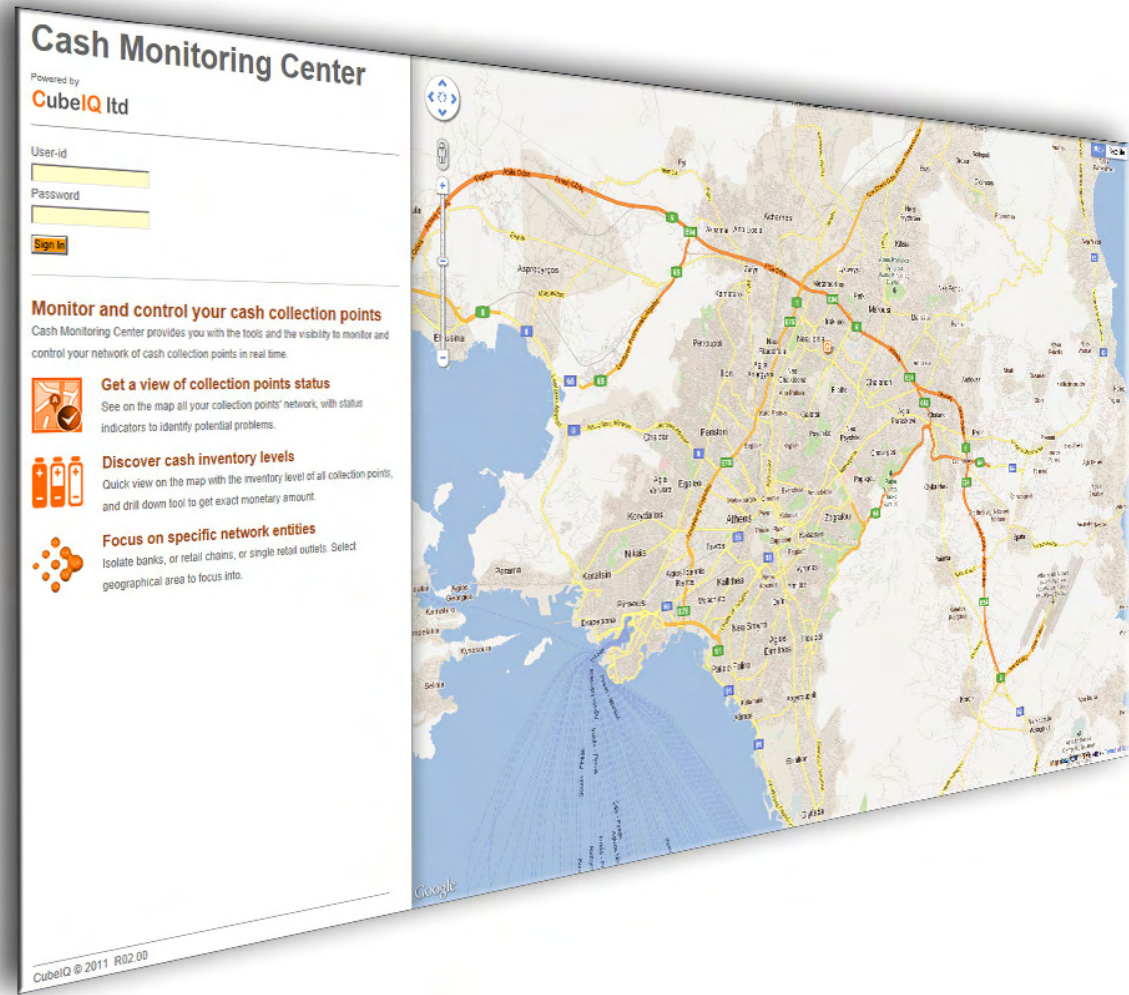
Sign-in

to our open access demo

URL: http://tcr-cubeiq.gr/cmc/
User-id: demo, Password: ciq

Incidents Management Custodian Workstation

INCIDENTS MANAGEMENT

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- A separate subsystem is the "Incidents Management Center" offering a real-time custodian workstation.

- By the time that the Cash Smart Safes geographically dispersed network will reach a large population, it will be an inevitable the operation of an "IcM" center staffed with competent professional "IRT" (Incident Response Team)

- This "IcM" subsystem facilitates the IRT team members to be highly effective in their job.

- "IcM" incident management has six basic components, based on "ITIL":
  - Incident detection and recording
  - Classification and initial support
  - Investigation and diagnosis
  - Resolution and recovery
  - Incident closure
  - Ownership, monitoring, tracking, and communication
    - monitoring the progress of the resolution of the incident
    - keeping those who are affected by the incident up to date with the status

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