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**(74) Agent: SEMOS, Robert, Ernest, Vickers; BT Group Legal Services, Intellectual Property Dept., 8th floor, 120 Holborn, London EC1N 2TE (GB).**

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(72) Inventors; and  
(75) Inventors/Applicants (for US only): ~~PEEL~~, Stephen, John [GB/GB]; 68 Sycamore Close, Ipswich, Suffolk IP8 3RL (GB). ~~WOODS~~, David, John [GB/GB]; Well Cottage, The Street, Tuddenham, Ipswich, Suffolk IP6 9BT (GB). ~~SCOTT~~, Michael [GB/GB]; 33 Chainhouse Road, Needham Market, Ipswich, Suffolk IP6 8TD (GB). ~~REGNAULT~~, John, Christopher [GB/GB]; 51 Woodbridge Road, Newbourn, Woodbridge, Suffolk IP12 4PA (GB). ~~GIBBINGS~~, Christopher, John [GB/GB]; 38 Tovells Road, Ipswich, Suffolk IP4 4DY (GB). ~~EADEN~~, Russel [GB/GB]; 8 Fritton Close, Ipswich, Suffolk IP2 9TE (GB).

The diagram illustrates the architecture of a fraud detection system, organized into five main functional areas:

- EXTERNAL INTERFACES (12):** This section handles external communications. It includes:
  - SCPs (44):** Service Control Points.
  - SCP INTERFACE (40):** Connects to SCPs.
  - MS (46):** Mobile Station.
  - MS INTERFACE (42):** Connects to the MS.
  - NETWORK MGT (50):** Network Management interface.
  - MS REPORTING (48):** Interface for mobile station reporting.
  - SHARED MEMORY EVENT QUEUE (44):** A central queue for event data.
- FRAUD SERVICES (14):** The core processing layer, including:
  - UNIX CONSOLE MONITOR (56):** Monitors console activity.
  - FRAUD DATA MANAGER (52):** Manages fraud-related data.
  - FRAUD DETECTION ENGINE (50):** The primary engine for detecting fraudulent activity.
  - PERMANENT STORAGE MONITOR (57):** Monitors data in permanent storage.
  - SYSTEM PROCESS MONITOR (62):** Monitors system-level processes.
  - LOGGING SERVER (58):** Handles logging of events.
  - ALARM MANAGER (54):** Manages the generation and handling of alarms.
  - ACCESS CONTROL SERVER (60):** Manages access control.
- USER APPLICATIONS (16):** The interface for system administrators, including:
  - PROCESS MANAGER (26):** Manages system processes.
  - USER COMMANDS (28):** Interface for user commands.
  - LOG QUERY (30):** Interface for querying logs.
  - ALARM PRESENTATION (34):** Interface for presenting alarm information.
  - USER LOGIN (32):** Interface for user login.
  - TOP LEVEL MENU (20):** The main menu for the user applications.
  - OPERATOR (68):** The human operator.
  - SYSTEM ADMINISTRATOR (64):** The system administrator.
- DATABASES (18):** Storage for critical system data:
  - PROVISIONING DATABASE (24):** Stores provisioning data.
  - FRAUD STATE (22):** Stores the current state of fraud detection.
  - ROLES & ACCESS RULES (28):** Stores roles and access rules.
  - LOGS (26):** Stores system logs.
- ADMINISTRATIVE FACILITIES (10):** Tools for system administration:
  - TOP LEVEL EDITOR (66):** The main administrative interface.
  - APPLICATION REFERENCE DATA EDITORS (62):** Tools for editing application reference data.
  - SYSTEM MONITOR EDITORS (64):** Tools for monitoring system status.
  - APPLICATION CONFIGURATION EDITORS (68):** Tools for configuring applications.
  - CHANGE AND RELEASE MANAGEMENT EDITORS (70):** Tools for managing changes and releases.

Arrows indicate the flow of data and control between these components, showing a highly integrated system architecture.

A method of, and a system for, detecting possible fraudulent use of a telecommunications network. Call event records, both call initiation and call completion records, are examined. A call record has a number of key fields, e.g. called number, calling number, calling card number, and for each field in turn the key is used to access a database containing an associated set of profiles. Each profile contains an algorithm defining a measurement process to be performed on the call data, e.g. determine the call duration. The respective process results are added to a respective set of stores associated with each profile, and an alarm response is generated when a threshold of a store is reached. An additional process for e.g. a call duration of e.g. called number card calling number key fields, convert the process results to penalty points which are added to a penalty points store associated with the calling card number key of the call event record under examination. Each response is recorded in a history file for that key.