

AVAILABLE PORTFOLIOS  
**DATA MANAGEMENT**

<b>PS 500</b>	<b>TECHNIQUES &amp; DEVICES FOR HIGH RESOLUTION IMAGE DISPLAY</b> <i>Hewlett Packard Co</i>
<b>PS 502</b>	<b>TECHNIQUES FOR MANAGING HOTEL OPERATIONS</b> <i>Cartmanager, LLC</i>
<b>PS 569</b>	<b>SEARCH ENGINE BASED ON LINGUISTIC &amp; SEMANTIC ASSOCIATION</b> <i>Douglas K. Keith</i>
<b>PS 578</b>	<b>NOVEL ELECTRONIC RIGHTS MANAGEMENT &amp; AUTHORIZATION PROCESS</b> <i>Copyright Clearance Center</i>

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## High Density & Low Cost Storage Devices

Hewlett Packard Co

This portfolio discloses various key components of probe storage technology and techniques for manufacturing them. Probe-based storage is an evolution in data storage technology that stores information on a very small scale through the measurement of holes in a base material using conductive properties. This storage technology greatly increases the data storage density over today's traditional magnetic storage devices while decreasing manufacturing costs and increasing access speeds. The capabilities of such devices depend on the probe density of the device, the probe movement management systems, and the design of the probes. The successful development and commercialization of this technology will require continued advancements in manufacturing techniques, probe design and processing functionality.

**Value Proposition:** This portfolio addresses market limitations by disclosing techniques for manufacturing storage devices, probes and the sensor circuits used for processing the probe outputs. The success of probe-based storage will hinge on the ability of manufacturers to overcome today's technical limitations. This portfolio discloses key advancements in the design and manufacturer of probe-based storage devices. Such advancements include monolithic semiconductor manufacturing processes that reduce manufacturing costs, superior probe designs that increase read/write speeds, and fabrication techniques allowing greater storage density. These advancements are essential for the wide-spread commercialization of probe-based storage.

**Priority Date:** 02-08-1995

**Forward Citing Companies:** Hewlett-Packard, Samsung, Seagate, IBM, Intel, Pioneer, LG, Xerox, Hitachi, Micron Technology, Symantec, Panasonic, Mitsubishi, Sony

**Representative Claim:** US 6,411,589 – Claim #1

1. A microfabricated data storage device comprising: a plurality of data storage media integrated within said microfabricated data storage system, each of said plurality of data storage media coupled to a separate movable support; a plurality of writing tips, each of said plurality of writing tips configured to write data to a respective one of said plurality of data storage media; a first plurality of electrodes coupled to said movable support; a plurality of flexures connecting a first layer of material of said device to said movable support, each of said plurality of flexures configured to resist motion of said movable support in a first predetermined direction more than motion of said movable support in a second predetermined direction; and a second plurality of electrodes coupled to a second layer of material of said microfabricated data storage device, at least one of said second plurality of electrodes configured to generate an electrical field that attracts an electrical field generated by one of said first plurality of electrodes in order to move said movable support in said second predetermined direction.

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**TECHNOLOGY**  
 DATA STORAGE

**NOVELTY**  
 HIGHER DENSITY DATA STORAGE WITH QUICK AND PRECISE DATA ACCESS

**IMPORTANCE**  
 KEY PORTFOLIO FOR MANUFACTURERS OF MEMORY AND STORAGE DEVICES WHO ARE LOOKING TO INCREASE DATA CAPACITY WHILE REDUCING ACCESS TIME

**NUMBER OF ASSETS**  
 41

**US PATENTS (41)**

5,851,902	7,212,488
5,886,922	7,215,633
5,936,243	7,236,446
5,953,306	7,239,544
6,411,589	7,254,108
6,671,778	7,288,425
6,784,592	7,295,506
6,784,593	7,301,886
6,784,630	7,310,298
6,944,114	7,315,505
6,996,051	7,373,265
7,118,679	7,380,050
7,133,322	7,423,954
7,142,449	7,436,753
7,148,549	7,443,781
7,164,646	7,460,462
7,167,434	7,471,615
7,167,435	7,494,593
7,171,512	7,508,747
7,184,388	7,522,506
7,212,487	

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## TECHNIQUES FOR MANAGING HOTEL OPERATIONS

*Cartmanager, LLC*

This portfolio discloses an advanced software management system for hotel and hospitality operations.

A hotel stay consists of a dizzying array of background activities that need to happen seamlessly and efficiently in order to deliver enjoyable experiences to its customers. The hotel management capabilities to deliver this experience are numerous and diverse. It includes everything from customer check-in to staff scheduling to money management. Inefficiencies in any area can lead to both poor customer experience and ruinous hotel management. One of the most challenging areas for hotel managers is communication and coordination among the myriad members of the hotel staff. This is an area that most dramatically effects the smooth and efficient operations of the hotel. Hotel managers constantly face problems with inefficient scheduling and incomplete tasks which create delay and displeasure for its guests. To tackle such challenges, modern hotels have turned to automated systems that simplify and coordinate many hotel management activities, while also enabling new services to be offered to their customers. Such systems have brought highly efficient process improvements to hotel operations while enabling new features such as automated customer check-out. Despite the benefits offered by such systems, all too often hotels face the problem of needing multiple systems to meet all of its automation needs which results in interoperability problems and the need to manage multiple systems. The market remains in need of singular solutions that can truly simplify hotel management.

**Value Proposition:** This portfolio discloses an automation platform for hospitality operations that implements a singular system to drive all operations. The system is designed as a source for project management and efficient operations. With this system, a manager has the ability to seamlessly communicate to an entire staff, assigning tasks and monitoring completion. For instance, the system is designed to connect wirelessly to computers on housekeeping carts allowing real-time management of the cleaning staff and the ability to assign and prioritize tasks. On the customer side, the system enables such features as the ability to make personal requests from housekeeping and room service. No matter who type of hospitality business operated, this platform can improve and simplify operations.

**Priority Date:** 07-10-2000

**Forward Citing Companies:** Konica Minolta Holdings

**Representative Claim:** US 7,523,046 – Claim #1

A method of managing hotel room servicing operations, said method comprising the steps of: (a) providing a plurality of housekeeping carts each including: (1) a mobile computing means including a first data storage means for storing data and a first microprocessor in the mobile computing means; (2) software means loaded in the mobile computing means for providing desired functions for manipulating and organizing the data, wherein the software means comprises a graphical user interface screen showing: available bed options, a list of available amenities, a time required for service completion, and a room service queue, and a screen for signifying completion of tasks on shift orders; (b) a central computing means including a second data storage means for storing data in a second microprocessor in the central computer means, the software means loaded in the central computing means for providing desired functions for manipulating and organizing the data, the software means further comprising a graphical user interface; (c) inputting data into the central computing means reflective of orders for rooms of the hotel said orders comprising a guest's preference for room amenities, a desired check-in time and a room type preference; (d) the software means prioritizing the orders for rooms of the hotel and creating shift orders, based on the orders for rooms of the hotel, wherein the orders for rooms of the hotel are prioritized by additional updates being periodically transmitted from

### TECHNOLOGY

HOSPITALITY SERVICES

### NOVELTY

ADVANCED  
COMMUNICATION  
SYSTEM FOR MANAGING  
HOTEL OPERATIONS

### IMPORTANCE

IP HAS SIGNIFICANT  
POTENTIAL IN THE MULTI-  
BILLION DOLLAR US HOTEL  
INDUSTRY

### NUMBER OF ASSETS

1

### US PATENTS (1)

7,523,046

the central computing means to the mobile computing means and wherein the prioritizing is reflective of additional tasks to be completed, said additional tasks being further prioritized within the shift orders; (e) when a preset number of orders for rooms of the hotel have been inputted into the central computing means wirelessly transmitting the shift orders to the plurality of mobile computing means designating selected mobile units to complete specific tasks on the shift orders wherein the shift orders comprise a room identification, time required and an amenity requirement; (f) housekeeping personnel associated with one of the plurality of housekeeping carts performing at least one task on the shift orders transmitted to the mobile computing means interconnected to their associated housekeeping carts and signifying the completion of the task on the shift order using the mobile computer means; (g) wirelessly transmitting completion of the task by one of the mobile computing means; (h) updating the shift orders based on completion of the task; (i) housekeeping personnel performing the next task on the shift order, and wirelessly transmitting completion of the next task by one of the mobile computing means; (j) further updating the shift orders based upon completion of the said next task; (k) repeating steps (i) and (j) until completion of the shift orders; and (l) transmitting intermediate updated information from the mobile computing means to the central computing means reflective of information generated by housekeeping personnel as to the status of the shift orders being worked on.

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## SEARCH DISPLAY METHODOLOGY BASED ON LINGUISTIC & SEMANTIC ASSOCIATION

*Douglas K. Keith*

This patent portfolio discloses a methodology that displays relations between the search query items in an N-dimensional space, in practical terms a three-dimensional or two-dimensional space. Conventional search engines display search results in list formats organized by placement strategies, sometimes paid, sometimes based on popularity of hits or other algorithms. The methodology described in the patent portfolio is disruptive to that strategy in that it displays large quantities of search results simultaneously in a visual scene that groups items into associated clusters and positions them in a virtual space such that items and clusters closely related in associative meaning to each other are positioned closer together than items and clusters that are less related. This process is calculated and displayed on-the-fly, avoiding the costly necessity of human involvement in indexing or categorizing data in pre-determined categories. The data items could be said to categorize and group themselves based on their own linguistic descriptions. Distances between items and clusters in the display also convey information about the degree to which items are related or not – distance implies relationship. Distance between items and clusters in the display also implies the degree of relationship of an item to more than one category, which is a characteristic of all real world objects, and which is also not possible to convey in a standard list-based display of search results. Most words, like most searches, are ambiguous. In spoken or written language, surrounding words disambiguate the meaning of individual words in a sentence: “Pitch the ball”, “Pitch of 440Hz”, “Steep pitch to the roof”. The patent methodology similarly presents a visual context to disambiguate search results and to quickly focus the user’s attention on relevant areas of the search results. The three-dimensional representation of the search information is navigable in much the same way as is a video game, and is similarly engaging, and clicking on objects in the space brings up their associated URL in another window.

**Value Proposition:** This patent portfolio discloses a search engine that displays implicit relations among the data items in a loosely structured data set. The technique allows a user to enter a search query that is processed by extracting root terms or concepts from the query results. The extracted information is analyzed using mathematical algorithms to generate inherent relational structures among the various items. The relational structures are then displayed in a computer simulated 3D view where each object represents the item or the root terms of the search query. Additionally, the distances between the objects represent the measures of similarities or relations between the items. A description of an item can be known by clicking on the object representing such item. The disclosed technique displays results that allow the user to quickly focus on the search results that are most relevant to the subjective intent of the search.

**Priority Date:** 04-28-1999

**Representative Claim:** US 6,629,097 - Claim # 2

A method for extracting inherent or implicit conceptual relationships or semantic associations that exist among items in a data set, and for representing said associations in a simulated three-dimensional space, said method comprising the steps of: organizing said items into a plurality of entity data pairs, each entity data pair comprising a label of an entity and a textual or symbolic entity description; creating a set of modified entity descriptions by pruning irrelevant terms from

### TECHNOLOGY SEARCH

#### NOVELTY

THREE DIMENSIONAL REPRESENTATIONS OF RELATIONS BETWEEN DATA ITEMS ENTERED IN A SEARCH QUERY BY DISPLAYING LINGUISTIC AND SEMANTIC ASSOCIATIONS BETWEEN ITEMS BASED ON THEIR RELATIVE DISTANCES FROM EACH OTHER, AND DESCRIBED BY CATEGORY LABELS CULLED FROM THE DATA SET ITSELF

#### IMPORTANCE

IMPORTANT PORTFOLIO FOR SEARCH ENGINE SERVICE PROVIDERS, LARGE-INVENTORY RETAILERS, NEWS AND INFORMATION AGGREGATORS, REAL-TIME QUALITATIVE DATA MINING, SOCIAL NETWORKING, AND SEARCH SOFTWARE DEVELOPERS

#### NUMBER OF ASSETS

3

#### US PATENTS (1)

6,629,097

#### US APPLICATIONS (2)

60/149,093  
60/131,411

each textual or symbolic entity description and reducing each remaining term to a linguistic root form; extracting concepts from said set of modified entity descriptions, each concept comprising a root term associated with at least two modified entity descriptions; producing a similarity matrix wherein each entity is represented as a column in said matrix and each concept is represented as a row, or vice-versa, with the element at the intersection of each said column and each said row containing a binary indication of whether the corresponding concept is present in the corresponding modified entity description; quantifying the associative structure of the data set by subjecting the similarity matrix to procedures comprising dual-scaling, in combination with a matrix transformation, thereby producing a set of coordinates for each concept and each entity in a multi-dimensional Euclidean space; and displaying the concepts as one type of virtual object and the entities as a second type of virtual object with each object located at the appropriate coordinates in the multi-dimensional space, wherein the relative distance between each pair of concept objects reflects the degree to which the concepts are associated with one another, wherein the relative distance between each pair of entity objects reflects the degree to which the entities are associated with one another and wherein the relative distance between each concept object and each entity object reflects the degree to which each entity is associated with each concept.

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## DIGITAL RIGHTS MANAGEMENT

*Copyright Clearance Center*

This patent portfolio discloses an electronic rights management and authorization system. The digital works are granular, such that they may include sub parts or divisions. Further, the digital rights may be dynamic or time based. Also, digital rights may be multidimensional and have different types of use for different works. These can include reproduction rights that may be licensed at different rates for different customers. However, conventional techniques for providing rights management are not effective at recognizing certain restrictions. Therefore, there is a need for an improved electronic rights management and authorization system.

**Value Proposition:** This patent portfolio addresses market limitations by disclosing an automated electronic rights management and authorization system that includes, for instance, two data files or relational tables each for work and rights. The work table includes information to identify works managed by the system. Further, each record in the rights table is associated with certain works. Records include date fields for providing dynamic rights. Further, the rights table includes a type of use field to identify a particular right for which authorization is given. Furthermore, to provide granularity, the work relational table is used to maintain relationships between works. This portfolio further discloses software for performing work and rights maintenance (e.g., intellectual, real, and personal property and contract management systems), such as adding, deleting, and editing entries and authorizations.

**Evidence of Use:** Yes (Disclosed under NDA)

**Forward Citing Companies include:** Microsoft, Digimarc, IBM, Cisco, Novell, Sony, Fuji Xerox, McAfee, Intertrust, HP, EMC, Luca Technologies

**Priority Date:** 04-01-1996

**Representative Claim:** US 6,795,922 – Claim 1

Apparatus for managing and authorizing rights associated with compound works that have other works with associated rights contained therein, the apparatus comprising: a work relation table that has a record that relates each work that is contained in another work with that other work; means responsive to a request for rights authorization to a desired work for searching the work relation table to determine whether the desired work is contained in another work; and means responsive to a determination that the desired work is contained in another work for determining whether rights are available for the desired work.

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### TECHNOLOGY

DIGITAL RIGHTS  
MANAGEMENT

### NOVELTY

USING DATE AND TYPE  
OF USE FIELDS TO  
PROVIDE DYNAMIC AND  
MULTIDIMENSIONAL  
RIGHTS

### IMPORTANCE

STRATEGIC PORTFOLIO  
FOR DATABASE AND  
DIGITAL RIGHTS  
MANAGEMENT  
APPLICATIONS

### NUMBER OF ASSETS

9

### PATENTS (6)

US 5,991,876  
US 6,618,808  
US 6,795,922  
US 6,859,880  
US 7,360,098  
AU 719229

### APPLICATIONS (3)

CA 19972235276  
EP 19970919942  
PCT/US97/05063