

HILBERT[®] ACCESS & ANALYSIS OVERVIEW



Ultra high-speed binary searching accelerates the access and analysis of data held in the Hilbert Space. While this searching algorithm is not unique to Hilbert, the pre-process quantizing of text data to integers allows the Hilbert Engine to apply this numerical search algorithm to data of a textual origin. This effectively enables an unparalleled speed in 'virtual' text searching.

Binary Search

The representation of all data as integers allows highly efficient mathematical algorithms to be employed in the access and analysis of information within the Hilbert Space. The power of mathematics, from simple arithmetic comparisons to advanced Fourier analysis can be applied to harvest the information that resides within data. Since Hilbert Space data are quantitative (numerical), the process of indexing, which is a time consuming process for existing databases, is not required.

| prcinfo_prc_amt | |
|-----------------|---------|
| 11 | 2497300 |
| 5 | 185385 |
| 7 | 79030 |
| 10 | 66611 |
| 20 | 47100 |
| 21 | 44200 |
| 6 | 33950 |
| 9 | 33302 |
| 16 | 28015 |
| 12 | 7250 |
| 17 | 5850 |
| 8 | 3000 |
| 18 | 2380 |
| 22 | 2300 |
| 3 | 2274 |
| 4 | 2274 |
| 19 | 2200 |
| 14 | 2190 |
| 15 | 1455 |
| 24 | 963 |
| 27 | 862 |
| 26 | 619 |
| 23 | 554 |
| 25 | 453 |
| 13 | 420 |
| 1 | 100 |
| 2 | 100 |

? Find 79030
→ Binary Search 5 Jumps

1. Start in the Middle
2. If smaller go up half
If greater go down half
3. If not found

Binary Search in Hilbert Engine

The effect on speed is dramatic. Searching and sorting are performed at the full numeric processing speed of the computer, with no added overhead. And because the information is always sorted, one of the fastest search algorithms, the binary search can be applied. (A binary search finds any number in a list of 4.2 billion numbers in 30 jumps, which takes 32 nanoseconds on a standard PC.) And applied not only to numbers, but to text that is in the Hilbert Space - remember, this text was converted to Base-40 integers during the Quantification phase.

Why Hilbert?

We are the only solution provider for ultra high-speed access, manipulation, storage and analysis of large volumes of structured and unstructured data.

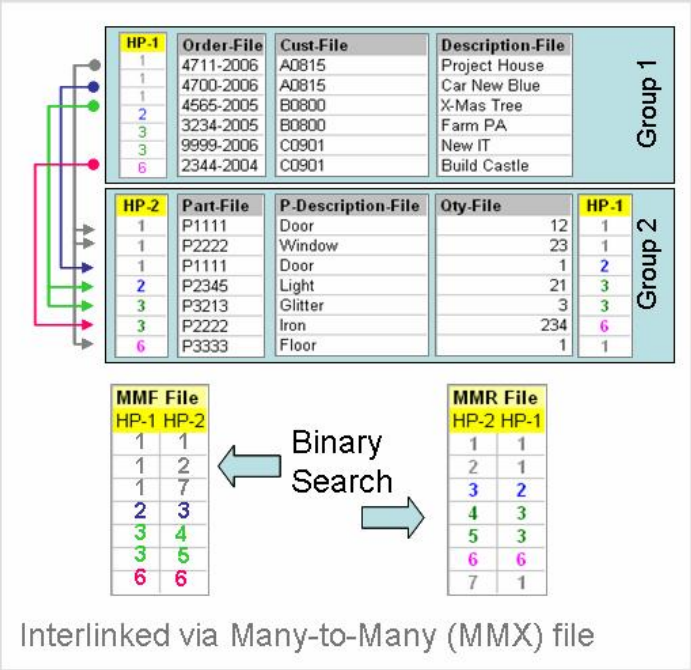
Speed, Flexibility and Scalability have been the design criteria of the Hilbert solution.

The Hilbert solutions are offered as embedded Hilbert Engine technology, standard products or industry specific solutions.

Bjorn Gruenwald, CEO and Founder of Hilbert Technology Inc.

MMX Files

Using its MMX files, which store information about the relationships between the single-number files, the Hilbert Engine quickly and efficiently resolves all the relationships to other data groups (a group is a set of single-number files which correspond to the fields in one database table) and files that are implied by the query. It thereby isolates a smaller set of completely related multidimensional data points, and displays this set as an extended matrix.

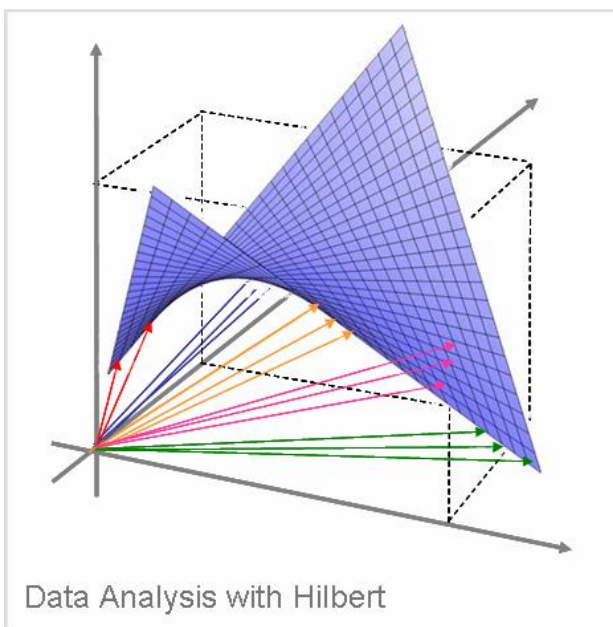


Any reports conceivable can be generated from this sample, because all data related to the query are captured in it. Often, most of this sample can be held entirely in memory, allowing the quick identification of groups or clusters of related phenomena through the application of well-known mathematical operations. That makes subsequent analysis radically faster and radically more efficient.

Analysis

Quantizing data, or converting ASCII text into Base-40 integers, has many important implications, the most significant of which is that all data can now be analyzed mathematically - bringing the power of mathematics to a problem field previously defined as a text problem field. The entire body of mathematical theorems and processes developed over the last several hundred years can now be applied in analyzing all the data.

Multiple vectors with similar attributes naturally cluster in multi-dimensional space, unbounded by rule-based algorithms. In this environment, fraud and duplicate entries are detectable, categorization of data can be automated, data records can be enriched or completed and marketing campaigns can be optimized to address people who have similar purchasing patterns or demographic profiles.



Analysis can encompass the entire data set or operate on a subset of the total data set. A subset contains only the attributes specified as relevant by the analyst. Patented, high-speed comparison algorithms provided in the Hilbert Engine make the results of analysis highly accurate and highly efficient.

The Hilbert Engine contains a patented algorithm that employs a control process to execute $N \times M$ comparisons in very much less than $N \times M$ time. For example, in a beta-site problem the Hilbert Engine performs what would be a 6 million x 6 million comparison in a conventional database - implying 36 trillion compound operations - in a few seconds on an 1 GHz Pentium PC with 512 MB of RAM. In consequence one may quickly and easily perform analyses using the Hilbert Engine that were formerly dismissed as far too costly in development and processing time.

About Hilbert

Pennsylvania based Hilbert Technology Inc. is an international provider of business intelligence (BI) solutions for large and medium size enterprises worldwide. The offering is based on the revolutionary, patented Hilbert Engine technology for the ultra high-speed access, manipulation, storage and analysis of large volumes of structured and unstructured data. The Hilbert solutions are offered as embedded Hilbert Engine technology, standard products or industry specific solutions. Organizations in public services, law, government, finance, communications, whole- and retail sales, transportation & tourism and chemical & pharmaceutical can employ Hilbert solutions to gain unparalleled speed in access and analysis over large data volumes.

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