Gravity Control

The simplest system for complex data search and management

Concept description

CONTENTS

GRAVITY CONTROL™

Gravity Control™ is the simplest system for complex data search and management. It is a new generation interface for handling information in a way that may be new for computer devices but comes very logically and naturally to users because it draws on instinctive aptitudes. Proof of this is the similarity between the way of work it provides and the ways children handle the sorting of palpable objects such as the buttons in the pictures to the right.

You will also see these pictures in the following chapters.

Figure 1

Gravity Control™ aims at making work with data easy and instinctive by allowing grouping and sorting of objects according to several criteria at once and by providing a convenient visualization of the relevance of the objects to each through the attraction between similar objects on the computer screen.

GRAVITY

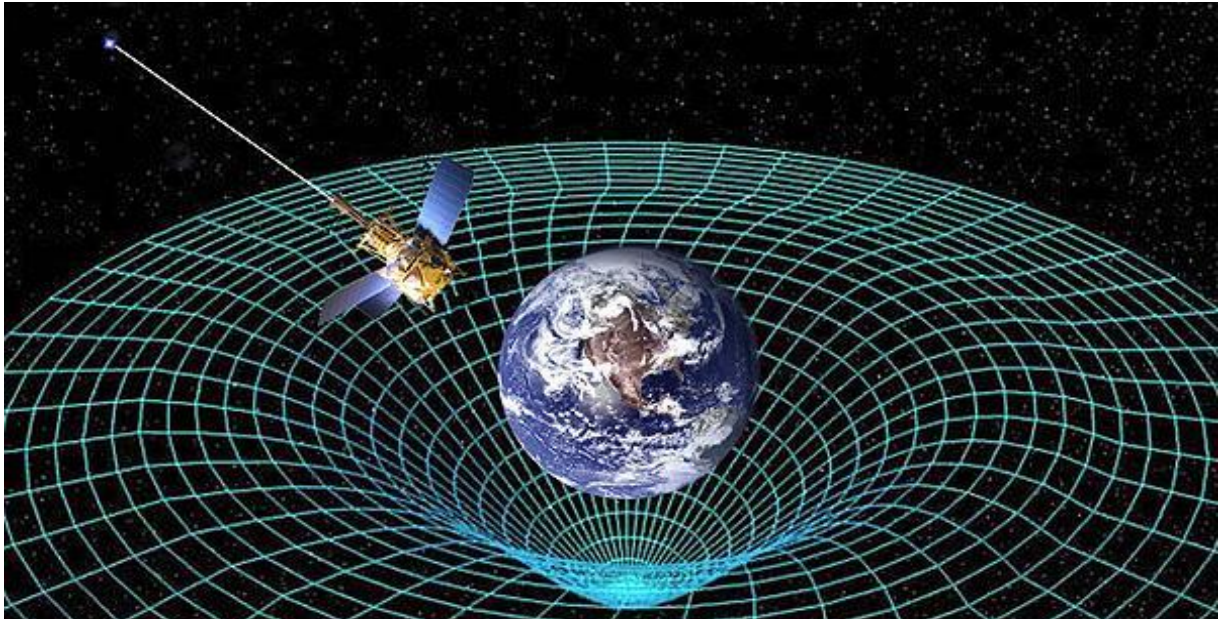In the Universe, each body attracts others with a force directly proportional to its mass.

Figure 2

In Gravity Control™ chosen pieces of information attract others with a force directly proportional to the similarity between them.
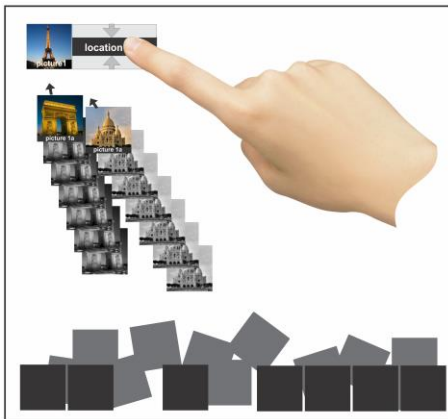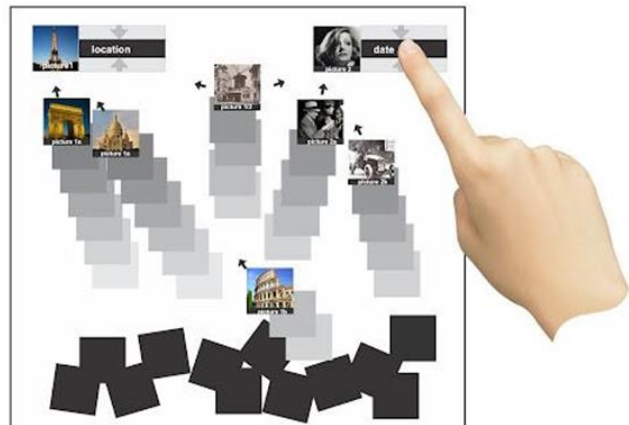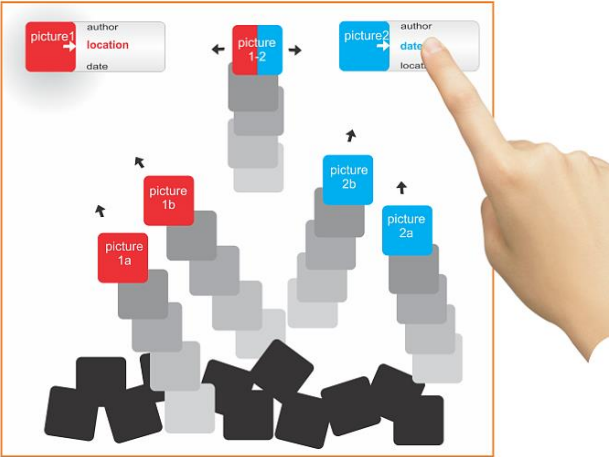

Figure 4

Figure 3

So, if gravity is good enough to run the Universe maybe Gravity Control™ is good enough to run your digital universe.

Gravity Interface	Can be implemented in every:	Can work simultaneously with:
  Figure 5	**Software product** **Cloud-based ecosystem** **Operational system** **Device firmware** **Database application** **Search engine** **Web application**	**Files** **Database entries** **Mobile device contacts** **Internet search results** **Social network data** **Music/image collections** **Warehouse items** **E-trade items** **E-mails** **Text messages** **etc.**

HOW IT WORKS?

These are the basics of how Gravity Control™ works. You can find more detailed examples in our *How It Works* paper, the *Developer's Help Notes* and the Video page on http://gravitycontrol.net.

The work space of the interface consists of three major fields – the main sorting and grouping field, the control panels and the Gravity Trap™ and Hyperspace™.

Loading objects onto the work space

Before starting work, the data objects to be sorted (e.g. the contents of a picture file directory and Internet search results) need to be loaded onto the space. With the initial loading, they are arranged by a random attribute.

Choosing and object of interest, defining grouping points and extracting criteria

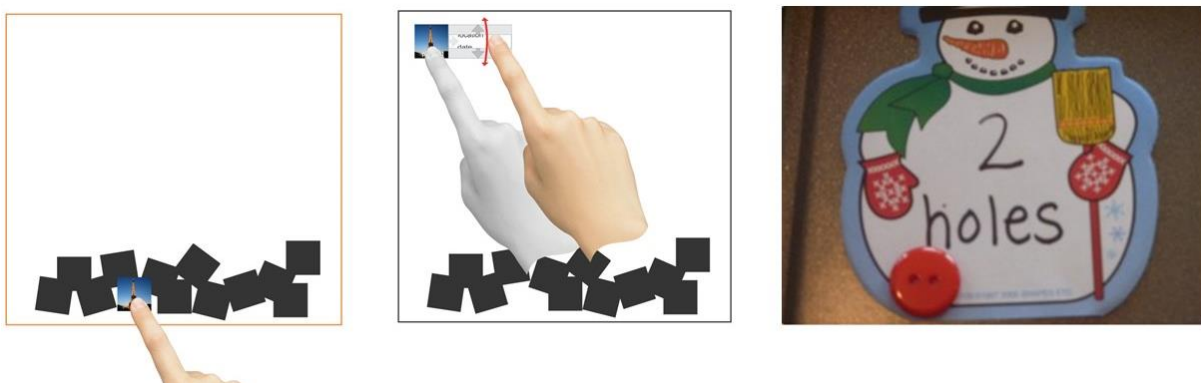To sort the data objects, the user chooses a point on the work space to become a grouping point or the hub of a Gravity System. When defining the point, users also indicate a sorting criterion by choosing from a predefined list (e.g. the list of mandatory file attributes or a classification) or manually (e.g. a character string to be contained in the file name). A feature not offered by other interfaces is the

convenient possibility to choose one of the set of objects, move it to any point of the work space, which then becomes a grouping point, and choose from the list of object attributes the one the user wants to have in all objects in the group (sorting by similarity).
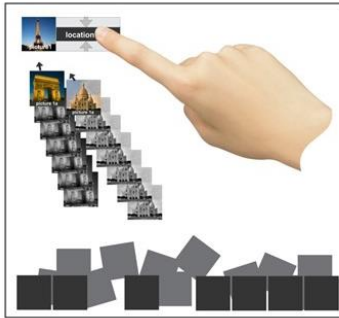
Grouping similar objects together

Figure 8

When the grouping points have been defined and the criteria set, the user activates the sorting process and the software retrieves all the objects that match the desired criteria and sends them travelling to the respective grouping point.

Movement and speed representing level of relevance
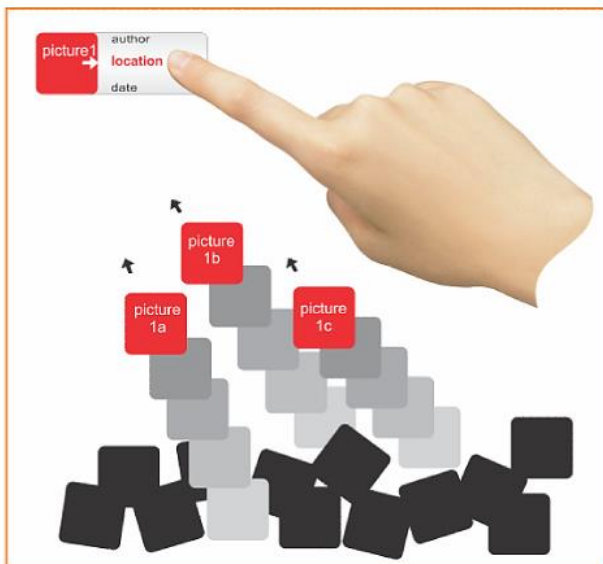

Figure 9

After initiating the sorting, those objects that are relevant to the user-defined criteria begin a movement toward the respective grouping points and those that are not relevant to any criteria fall to the bottom of the screen.

Movement is an important component as not all objects move at the same speed. If the criterion allows calculating a level of relevance, those objects that are more relevant move faster that the less relevant ones, which provides a graphic representation of the level of relevance and facilitates the user's choice. Upon arrival at the grouping point objects are again ordered by relevance in a list view.

Teleport

As functional as movement is in the representation of relevance, we realize that it will not be needed in each and every sort. This is why Gravity Control™ has a Teleport button, which instantly transports all data items to their designated location according to the user-defined criteria.

Simultaneous sorting by several criteria

An important distinctive feature of Gravity Control™ is the possibility to sort by more than one criterion simultaneously. In case of several user-defined grouping points the objects that meet more than one criterion are grouped in the calculated equilibrium points between the respective Gravity Systems. Objects that are relevant to Criterion A only travel to Point A while objects relevant to criterion B only travel to Point B. The objects relevant to both criteria travel to the equilibrium point between A and B, which is calculated by the interface algorithm.

A significant convenience for the user is the possibility to fine-tune or add new criteria and grouping points without having to wait for all objects to arrive at their destination or having to completely restart the sorting process. This means the user can keep their results and add to them. The same holds true for loading additional data objects to the work space.

Preforming further actions

In the grouping point, objects can be viewed and managed individually or handled with bulk actions affecting the whole group. They can be moved to a new position on the work space or a bulk management field or managed with commands (e.g. OPEN or SEND TO).

The bulk management fields - Gravity Trap™ and Hyperspace™ - can hold both groups of objects and individual objects, regardless of whether they are relevant to any criteria or not. The user can drag or send to them any piece of data, a whole grouping point, branches of connected grouping points or groups of manually chosen objects.

The objects in the Gravity Trap™ and Hyperspace™ stay motionless and do not take part in any further sorting even if they are relevant to activated criteria. They are also treated as one group even if the only common criterion for them is the fact that they have been chosen by the user.

Reporting on grouping results

Figure 12

When the user is done with the sorting for the moment, they can get a full report on the sorting results. This can be done for the whole workspace, for individual grouping points, branches of grouping points and bulk operation fields. The report contains detailed data about all objects in the group and can be configured to fit the user's needs.

We currently have working export to .csv, .pdf and native SQL.

Simultaneous work with different data types

Gravity Control™ has **no limitations on the types and combinations of types of data objects it can handle**. This means that you can load simultaneously contact information from your phone, email messages from the mail manager on your PC, Internet search results and documents from your hard drive for instance and sort them all according to the same criteria.
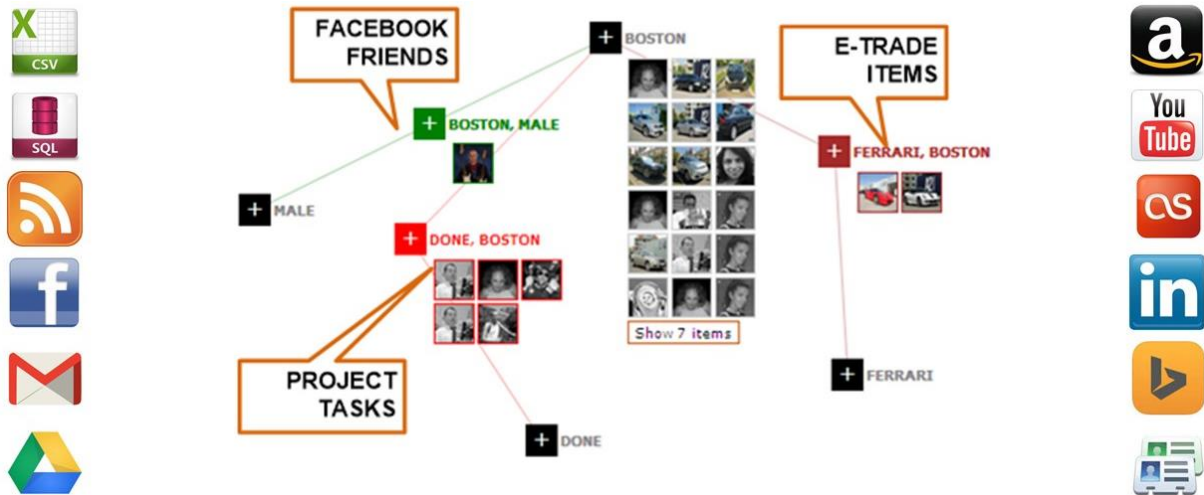
GRAVITY CONTROL™ – INTERFACE FOR THE DEVICES OF THE FUTURE
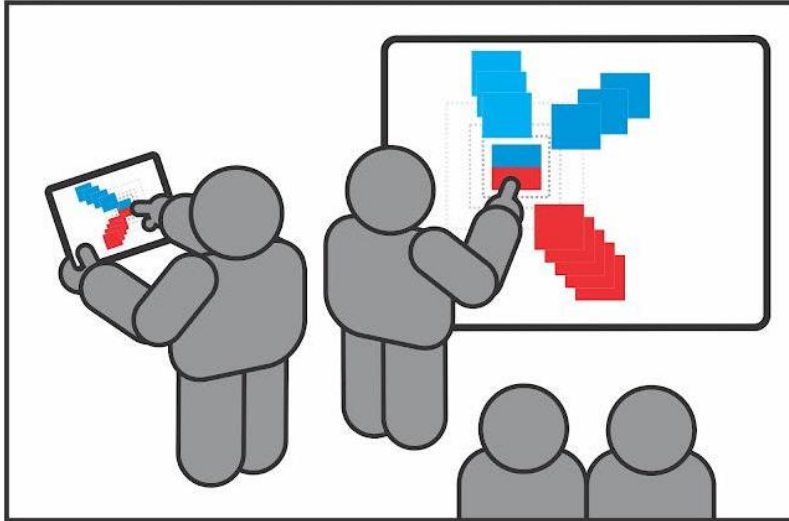
For touch screen devices

Figure 13

Gravity Control™ could become a must for mobile devises, tablets and especially for large touch boards, where the hardware is advancing at a fast pace leaving the software with a lot of catching up to do. The reason for this is the intuitive operation and the ease of use it offers when the pointing device is a finger, which makes our interface extremely convenient for highly effective specialized applications.
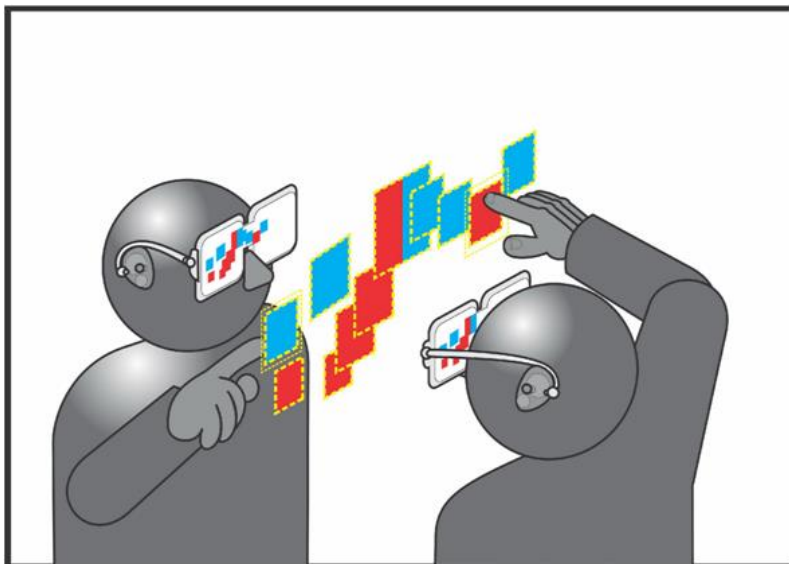
Like 3D work environments

Figure 15

The features that make Gravity Control™ so suitable for touch screens will also make it invaluable for working in digital 3D environments.

WHAT IS NEW?

A new way of searching and sorting information

Any of us who have ever had to search for data on a computer device, the Internet or any type of database, know that the quality of results and the time it takes to obtain them depend on how clear our idea of what we are looking for is from the very beginning of the search and our ability to conform to the rules of the search application and use them to our advantage. Gravity Control™ will change that. It changes the look of the work space and search results, it changes what the user can do with those elements, but above all it changes what we need to know before we start.

Unlike existing search systems Gravity Control™ allows all loaded objects to stay available to you on the screen regardless of relevance for as long as you desire. It uses multi-criteria and matrix analysis to provide feedback not only on the level of relevance to the selected criteria but also on all other attributes of relevant and irrelevant objects allowing the user to decide what exactly they are looking for in the process of searching instead or requiring clear definitions beforehand. And it achieves this by applying a series of new features.

A new type of graphic organization improves list/folder views

Figure 16

The first and most visible **difference between existing interfaces and Gravity Control™** is the way data objects are **listed on fixed positions** in either rows or a grid.
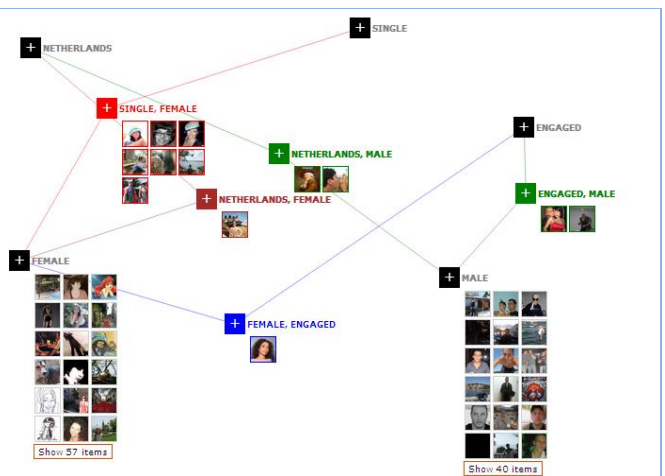

Figure 17

Gravity Control™ represents data objects in a multidimensional way – as dynamic groups formed according to user activated criteria in one or several grouping points (or Gravity Systems) on the work space. Apart from providing a clear visual representation, this organization allows simultaneously and conveniently displaying 7 times more objects compared to list views.
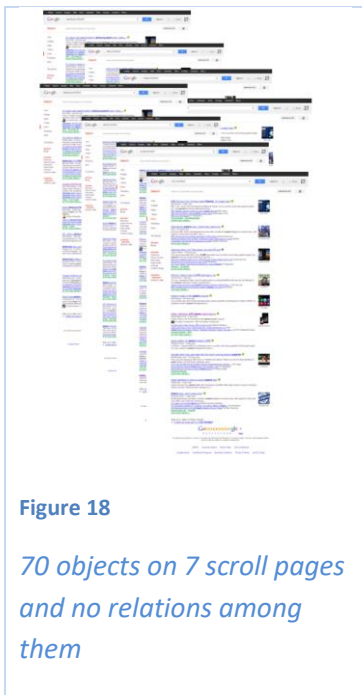
Representing objects with their relations

Figure 18

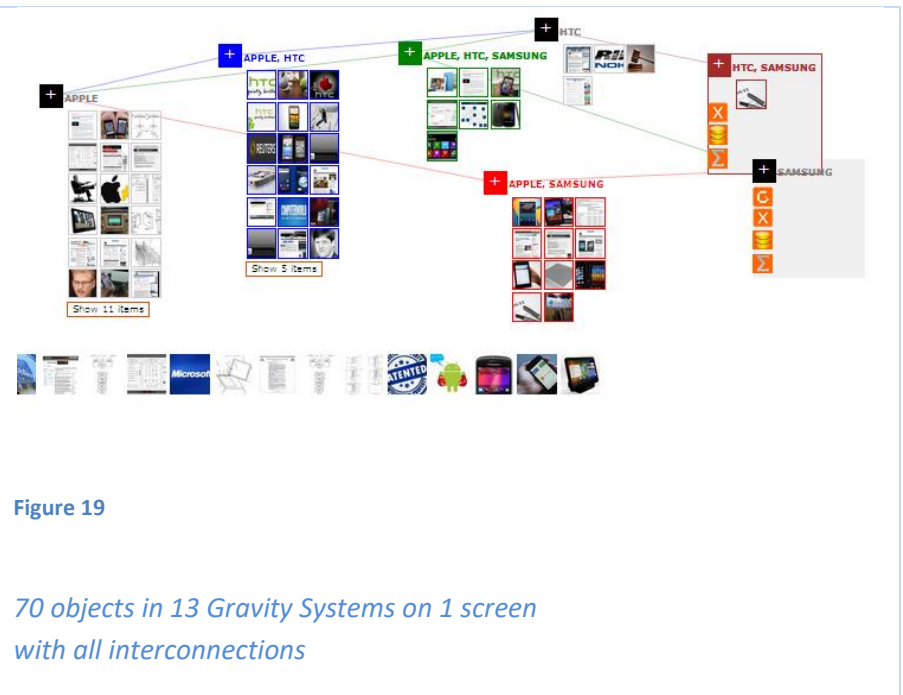*70 objects on 7 scroll pages and no relations among them*

Figure 19

70 objects in 13 Gravity Systems on 1 screen with all interconnections

A new effective graphic representation of relevance

When sorting criteria allow computing a level of relevance (e.g. distance from a certain date or geographic coordinates), the one- or two-dimensional lists we are used to (results of a search or sort command) provide no convenient way of representing that. A list only shows that Object 1 is more relevant to Criterion A than Object 2 but fails to demonstrate what exactly the difference in their level of relevance is.
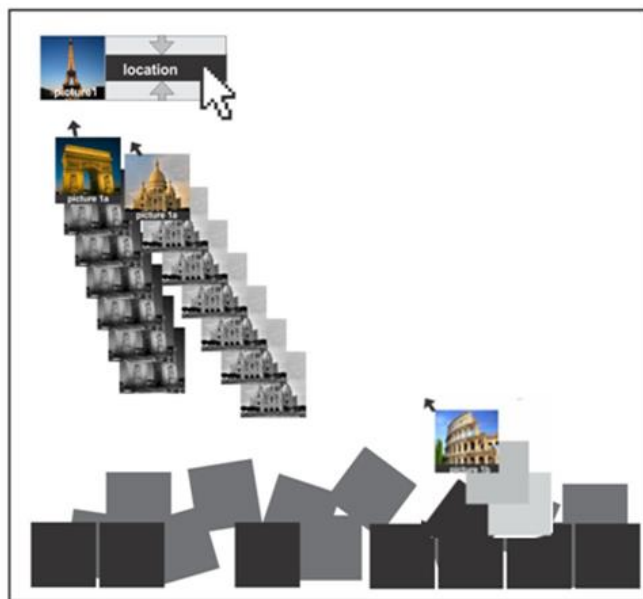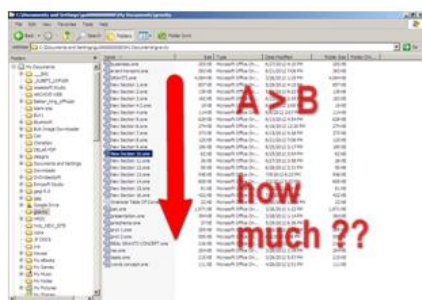

Figure 20

Since in Gravity Control™ objects perform a movement toward grouping points, this creates an opportunity to **graphically represent the level of relevance by different speeds**. The objects that are more relevant to the criterion move faster and the less relevant ones move slower. The speed can be calculated either in direct proportion, where every object moves at a different pace, or by distributing objects according to relevance into several groups, the number of which is set in the options panel, and assigning a standard difference in the speeds of adjacent levels.
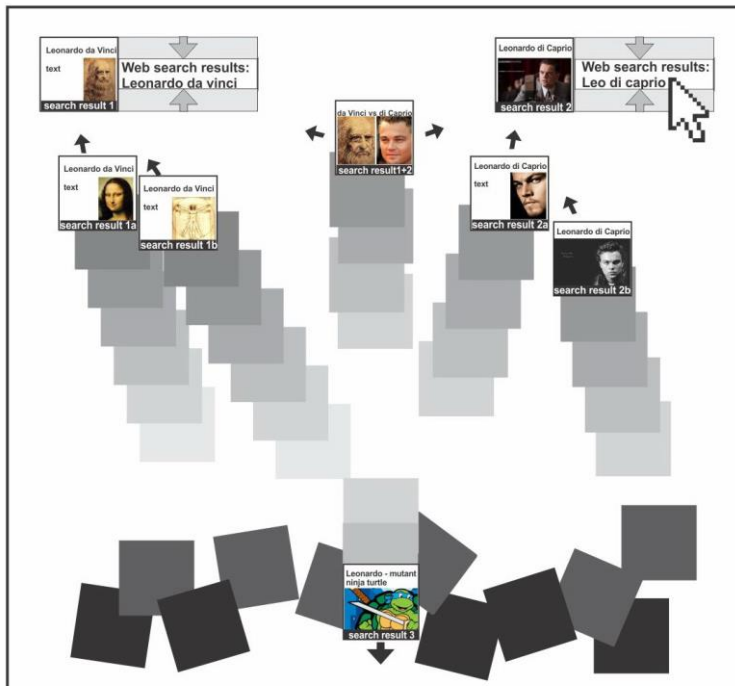
Simultaneous sorting by several criteria

Figure 21

In existing interfaces sorting by several criteria is done consecutively. The whole list is sorted by Criterion A first, then by Criterion B and so on until all defined criteria have been applied. The result is an abbreviated list of objects that meet all defined criteria but providing no information on whether the rejected objects meet none of the criteria or just some of them and which ones exactly.

Gravity Control™ **sorts files by several criteria simultaneously**. As criteria are defined in points of the work space, where all the relevant objects are moved and grouped, when several criteria are defined those objects that are relevant just to one criteria move to the respective grouping point and those that are relevant to two or several gather at the equilibrium point between all relevant grouping points. This **produces a respective number of groups in which all objects meet all of the same criteria**. It is also possible to **ghost copy** equilibrium point groups to all relevant user defined grouping points if needed.

Adding and refining search criteria and loading additional data during the progress of work

In existing interfaces, if one of the sorting criteria needs to be made more precise or if a criterion needs to be added, the application has to restart the entire process with the new set of criteria.

Gravity Control™ allows **changing and adding criteria not just after but also during the visualization of the previous sorting**. In that case, all the results of the previous sorting that are still valid will also remain on the screen.

The same is valid also when adding more data objects for sorting. In existing interfaces when additional objects are loaded, the application has to restart the sorting process with the new object set. With Gravity Control™ however **loading an additional set of photographs, for instance, will not disturb the already visualized results** and new files matching the active criteria will simply be added to the existing groups.

GRAVITY INTERFACE APPLICATIONS

As Gravity Control™ can be applied in any visualization of data objects on a computer device display, it can be implemented in a wide array of software products for professional and personal use.
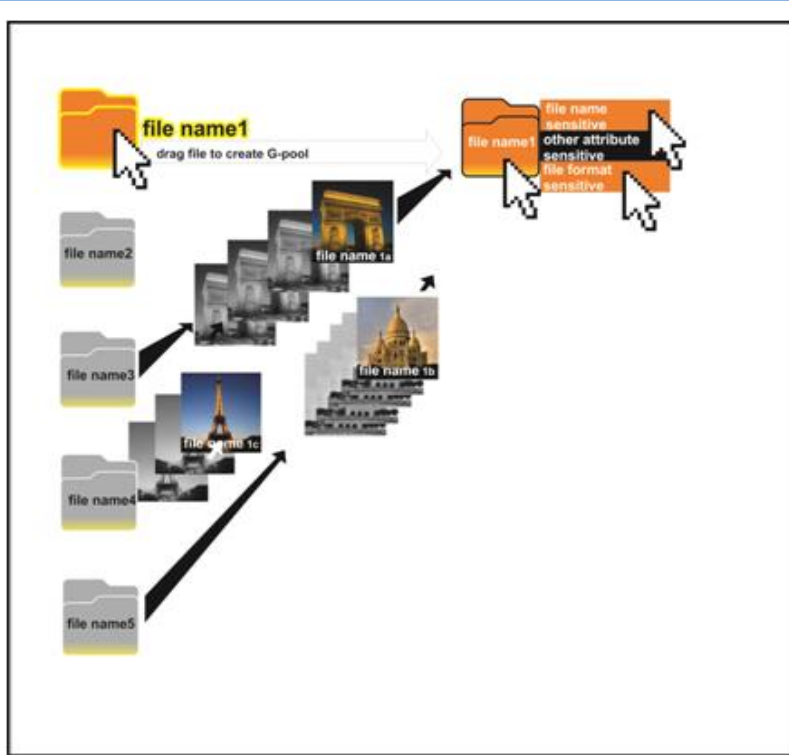
For file management in operating systems or any program that uses files

Figure 22

Gravity Control™ can be integrated into the operating system core or as a file management module in a separate program parallel to existing methods of file organization and management in order to widen the scope of operations available to the user.

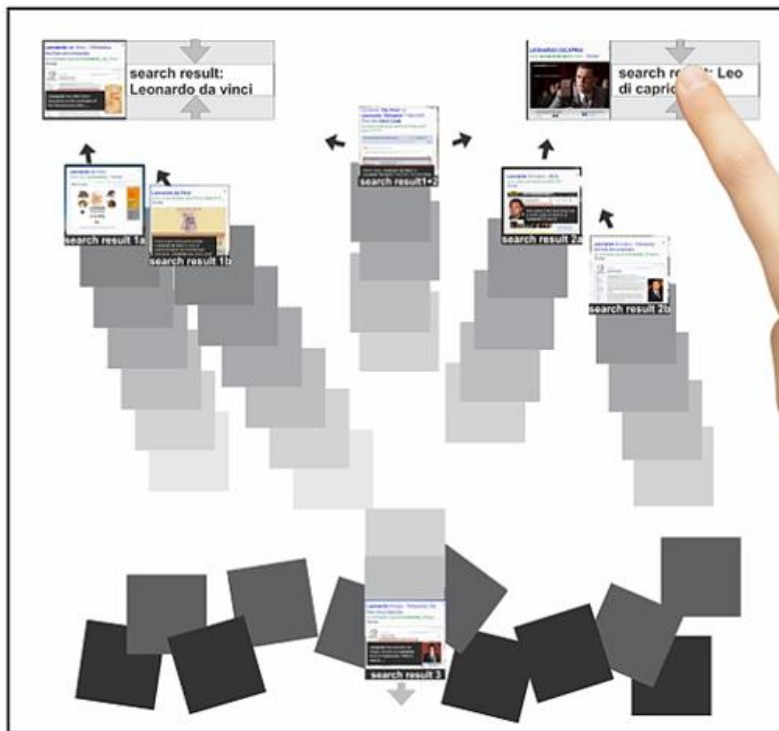## Applications for searching the Internet and sorting results

Gravity Control™ can introduce a completely new, graphic way to receive and manage results from Internet search engines. Its ability to sort by multiple criteria will be especially valuable in this environment.

Figure 23

Applications for searching databases and managing data

The possibility for simultaneous sorting by several criteria can also add significant functionality to professional applications dedicated to database search as many of those already require the application of complicated criteria sets.

In addition, the possibility to change values and create objects from the same window where the sorting is done turns Gravity Control™ applications into not just search but data management tools. They will provide interaction with the data according to the level of access of the user but also allow the user to personalize data without changing the main database.

Cumulative reporting and smart batch actions, on the other hand, shorten the time needed to reach, summarize and share results and undertake any further steps in the professional process.

In e-trade management systems

Just like warehouse systems, e-trade must handle quantities, stocks, logistic information and orders but also extensive financial information and documentation. The cumulative reporting of Gravity Control™ can make that an effortless task.
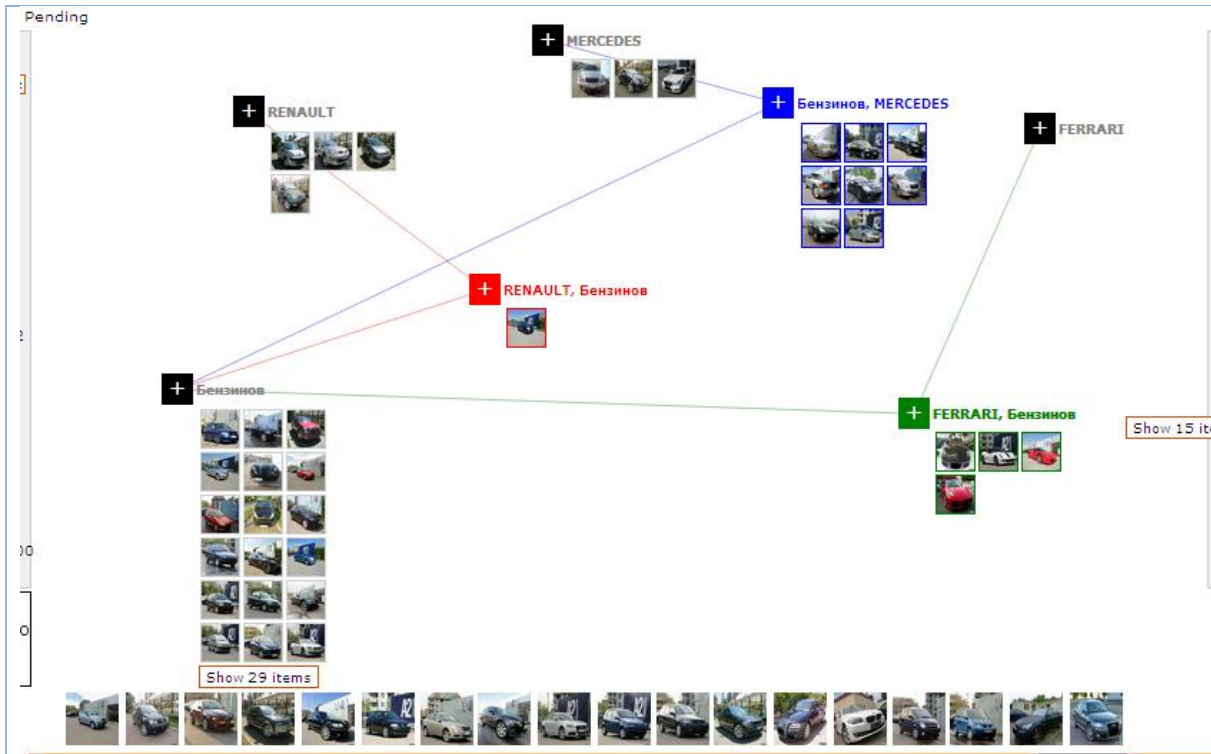

Figure 24

Figure 25

Applications for integrating social network data (photographs, posts, documents, friends, contacts, etc.)

Figure 26
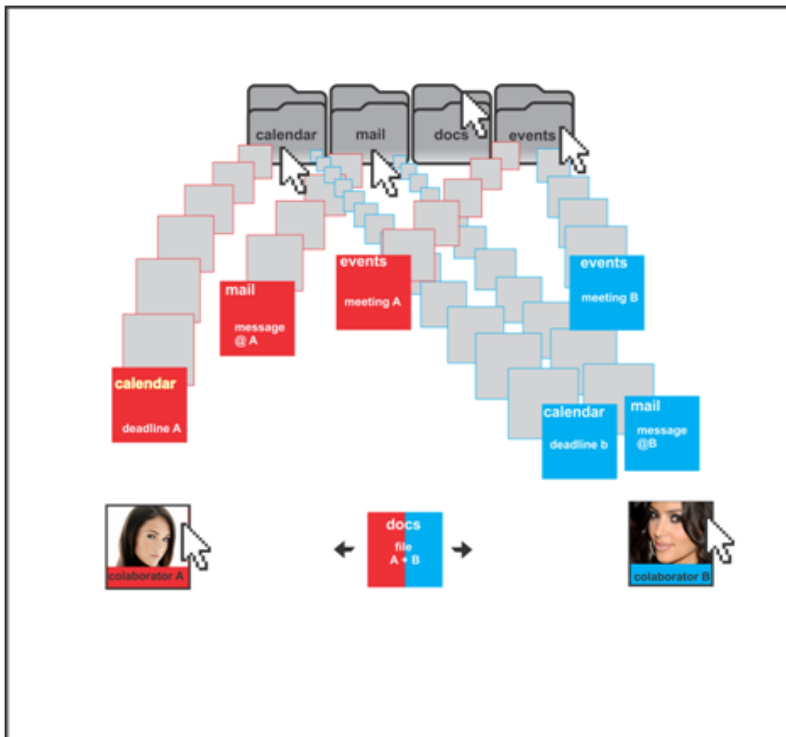
Because of its ability to sort simultaneously different types of data at the same time and by the same criteria, Gravity Control™ will be very convenient for use on social networks in order to provide a clear and intuitive screen organization of posts, contact information, personal and group messages, pictures and video, shared links and many more items that might also connected to multiple people or groups.
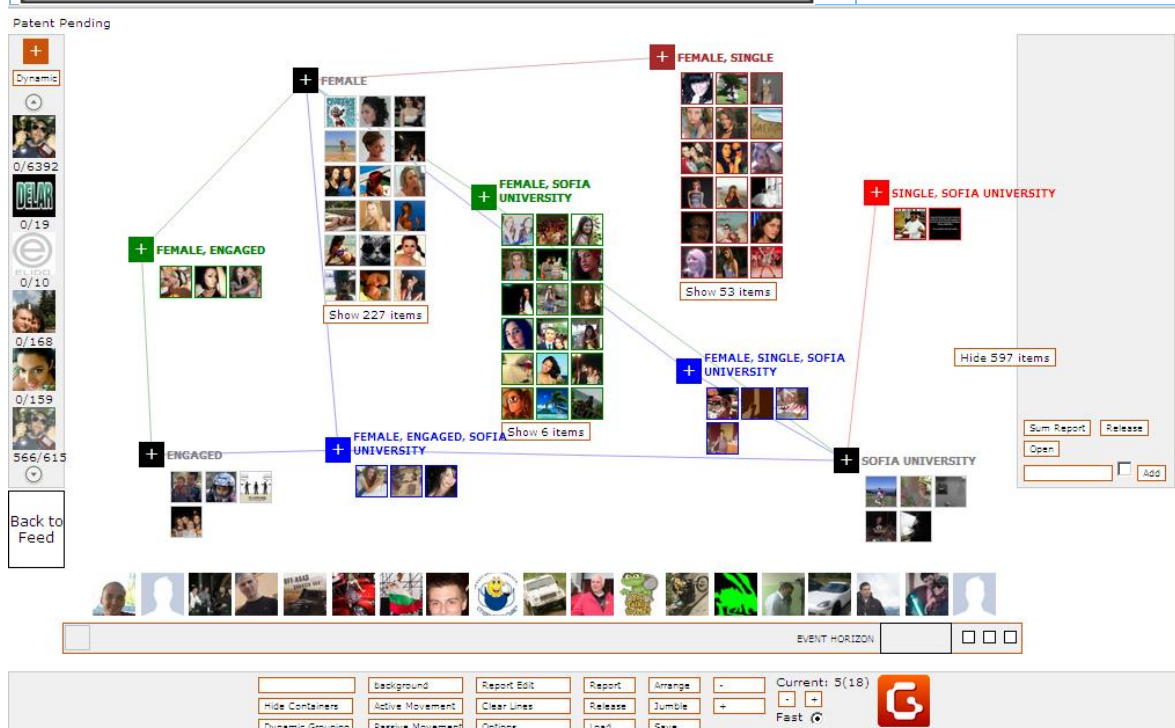

Figure 27

In photo viewing, grouping, sending and tagging applications

It is particularly easy to picture the advantages of Gravity Control™ for the management of image files whether for professional or personal use. The ease of sorting by different criteria like date, geographic coordinates and, with data from suitable face recognition software, participants will allow the user to not only easily sift through, group and organize photos but also find desired images in a large, complicated and even unorganized structure of old files, view them conveniently and manage them easily and freely.

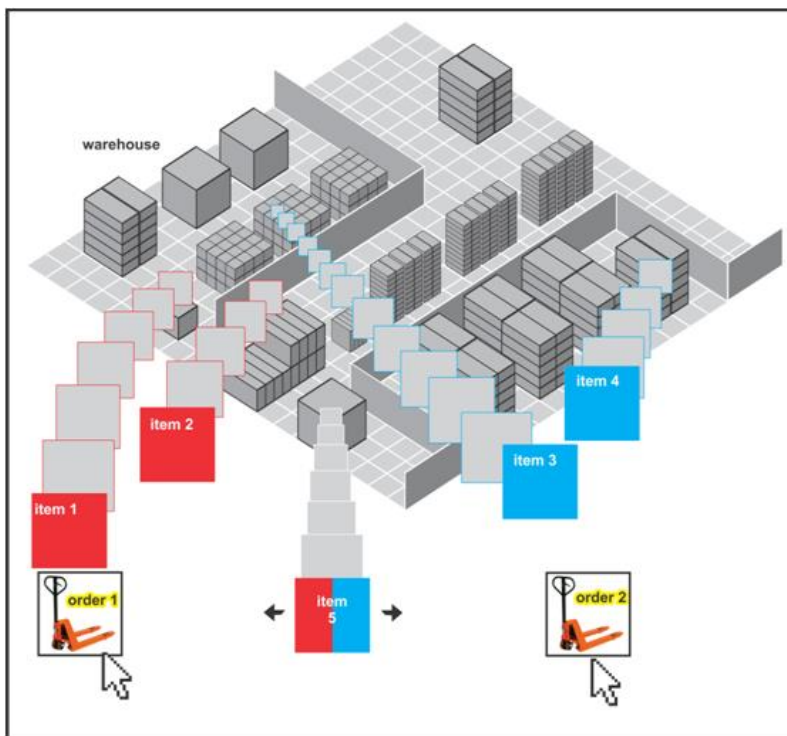## Applications for managing warehouse and logistic information

The multidimensional environment of Gravity Control™ allows providing the user with additional visual aids like the Plane Map for instance to graphically show the placement of items on a building or city plan and thus provide significant convenience in working environments requiring spatial orientation. Warehouses and logistic operation are an obvious example of such a situation. This way Gravity Control™ facilitates not just the management of the database and stock but even the planning of routes.

Figure 28

Data integration for different mobile device applications

As the graphic organization is intuitive and convenient for touch screens, Gravity Control™ becomes extremely suitable for managing the large number of entries generated by mobile devices like call registers, address book contacts, text messages, social network or application messages, photos, and voice notes among others. Gravity Control™ will give the user easy access to all the information related to a contact, group of contacts, topic, time period, or any desired criteria. Using a few simple operations, it will become possible to set priority for incoming calls and emails or automatic operations like rejecting or redirecting calls from certain contacts, overriding the sound off setting for specific situations or opening an email upon arrival without having to go through a series of individual device settings in the control panel and without having to choose contacts individually or presetting groups.

Project management applications

Sorting different types of data by multiple criteria different in nature can make project management a breeze. The ability to see at the same time who is doing what, documents they have produced or are collaborating on, calculate man hours and different costs and even send messages to team members from the same screen is a completely new and unique feature.

Real time data visualization and management applications

Gravity Control™ allows live loading and sorting of new data. The objects can be automatically added to the work space or stay in their respective data feed, in which case a notification appears on the screen to show which feeds contain objects relevant to the current sort that are not loaded onto the plane and how many. Relevant items that are currently not displayed can be loaded and sorted with just one click. This is very convenient for following news feeds or dynamic data feeds that are continuously or periodically updated, e.g. in transportation or security systems or sports results.

Press clipping applications

Dynamic data feeds and multiple criteria searching combined with additional features like automatic translation and the Event Horizon™ and Timeline turn Gravity Control™ into the perfect interface for extensive information reviewing tasks like press clipping. It allows the user to not only follow several sources but also to automatically sort new data by topics and any desired tag and even to perform a quick initial review of publications in languages unknown to the user so that they can decide on their relevance to the task at hand.
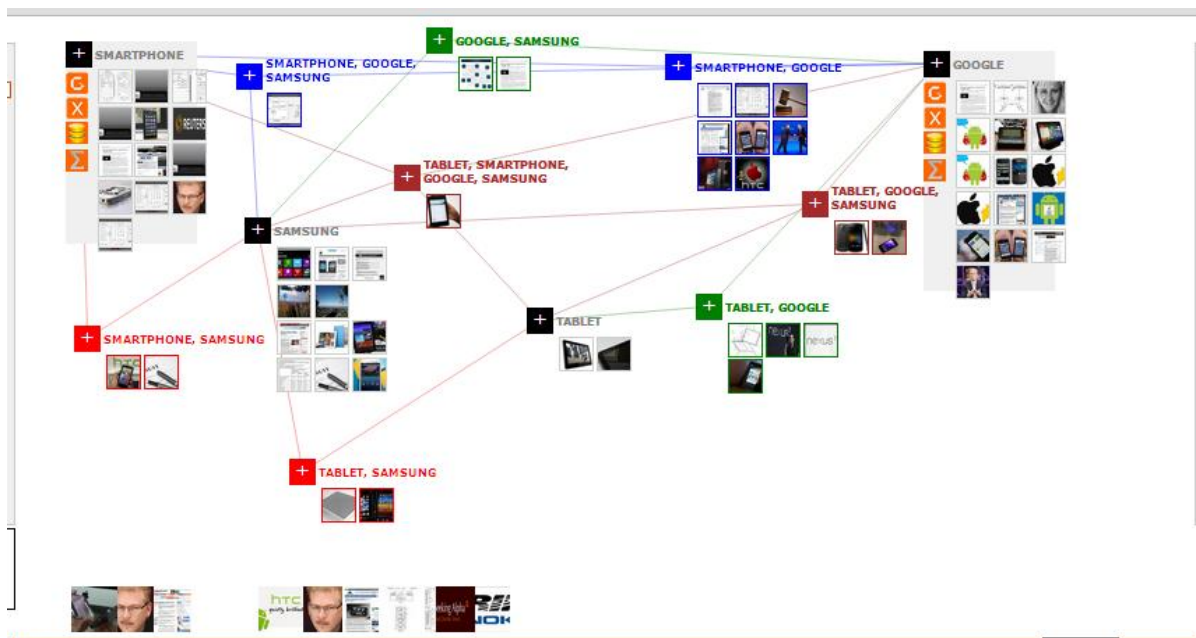
Figure 29

And any other Application, Device Firmware or Operational System Interface

We hope it has become obvious that Gravity Control™ is in its essence applicable anywhere that sorting, searching and managing data may be needed in software of any level or intended use.

Gravity interface can visualize simultaneously:

- **Files**

- **Database entries**

- **Mobile device contacts**

- **Internet Search results**

- **Social network data**

- **Music/Picture collections**

- **Warehouse items**

- **E-trade items**

- **E-mails**

- **Text messages**

- **Any other**

COUNTERREVOLUTION?

50 years of computer science development have taught us that we need to conform to strict rules and take the time to learn how to communicate with computer devices. Gravity Control™ directs the path of these technological advances to a new causeway. It may not yield revolutionary output data but we believe it can revolutionize the way users handle data objects.

When, in real life, children are asked to sort some objects they do not choose their criteria from a list and they do not arrange the items in a list. On the contrary, children take an object, look at it and choose criteria from its qualities and then pile the objects up by similarity.

Following the same principles, Gravity Control™ takes a step away from list organizations in order to bring the user experience closer to nature and allow us to interact with data the same way we interact with palpable objects. It gives us back the freedom of browsing without having a crystal clear idea of what we want – just like we would behave in a real book store because in life we seldom know what we are looking for before we find it. And then Gravity Control™ returns data items their full importance by making it possible to view them in their complete scope and interactivity letting them show their weight in a gravity system of their own. In this way Gravity Control™ can drastically cut back the time it takes us to learn how to handle data on computer devices and actually get down to work.

If you then happen to remember the mind-blowing 3D interface Tom Cruise was using in Minority Report you will also recall how logical and easy to use that looked. In 2002 the futuristic data interface in question was just computer graphics. Ten years later John Underkoffler's and Oblong have turned the idea into a spatial operating environment - very real and applicable technology just waiting for standard hardware to catch up in a matter of probably years. If you now imagine Gravity Control™ working on a similar platform, you are imagining the future. And a not that distant future at that as Gravity can be and is being developed for current standard hardware and under the right conditions it can come to your fingertips on existing devices in less than two years time, giving you a taste of the sci-fi experience.
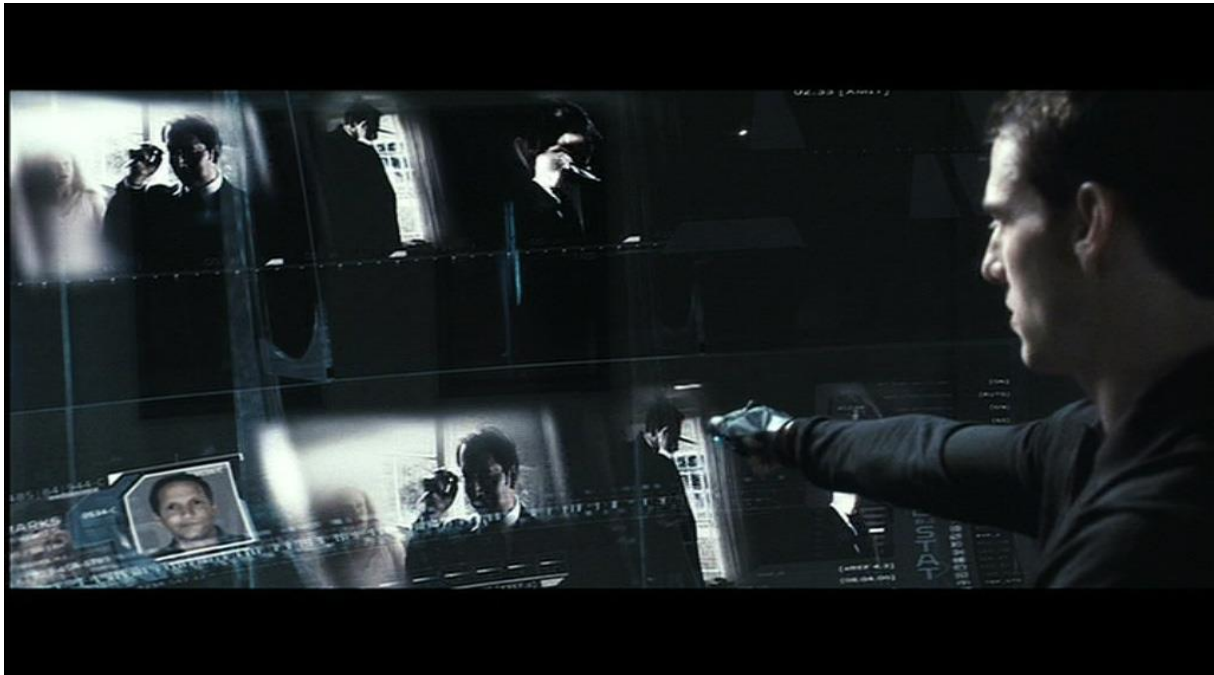
ABOUT THE DEVELOPER

The company behind Gravity Control™ Elido JSC was founded in April 2006 but its founders and core team have significant previous experience. Its main subject of activity is information systems integration, database architecture and development, IT and database consultancy, efficiency analysis of existing IT solutions, optimization of corporate data flows, development and support of web based information resources, warehouse management software, content management system integration, development of user interfaces for graphical environments, and IT training.

The company has years of experience in working with institutional and business clients, including:

- World Intellectual Property Organization

- Bulgarian Patent Office

- Council of Ministers of the Republic of Bulgaria

- Bulgarian Academy of Sciences

- National Library

- Bulgarian Red Cross

- Bulgarian Olympic Committee

- Bulgarian Trade Promotion Agency

- and others.

Its core activities are in the field of study and development of specialized solutions for large databases, content management systems, logistic and SAP-compatible systems, web service management, and multimedia and IT consultancy.