Gravity Control

The simplest system for complex data search and management

Project Units Description

PROJECT UNITS SYSTEM

The Logic Behind

The project unit system is designed to make it easier to estimate project costs for the development of specific applications in the Gravity Control™ family range depending on the requirements of the client and the available time. It is based on our experience in handling large programming projects and the specifics of the Gravity Control™ software.

Each unit is responsible for the development of a relatively technically independent block communicating with other blocks by means of a standard API. Each block can be added to or removed from the concrete application/system without affecting the basic functionality, which constitutes a separate block developed and maintained by Unit 1. Additional functionality blocks can also be implemented in other software solutions, e.g. if they are provided as SaaS (Azure functions).

Project units consist of an optimum number of developers and can work in cooperation depending on project specifics. The same task can be handled by one unit for a longer period of time and by two or more units for a shorter period of time but at a greater monthly/yearly expense. Shortening development times can only be achieved within certain technological limits.

According to preliminary estimations, the cost of each unit is about €200 000 per year. Unit 1 is the only exception at about €300 000 per year because it includes the project management team as well as developers. This makes Unit 1 responsible for the overall coordination between units. Alternatively, project management can be extracted and provided either as an internal or an external service for the company.

The project units list comprises of the following:

- **UNIT 1** **Basic functionality and Cloud Service Development**
- **UNIT 2** **API**
- **UNIT 3** **Multiuser Capabilities - Gravity Ether**
- **UNIT 4** **Advanced analytical tools**
- **UNIT 5** **Advanced geolocation and numeric range tools**
- **UNIT 6** **Classifications**
- **UNIT 7** **Development for mobile devices**
- **UNIT 8** **Customer service, compatibility, billing**
- **UNIT 9** **Security and Authorization**

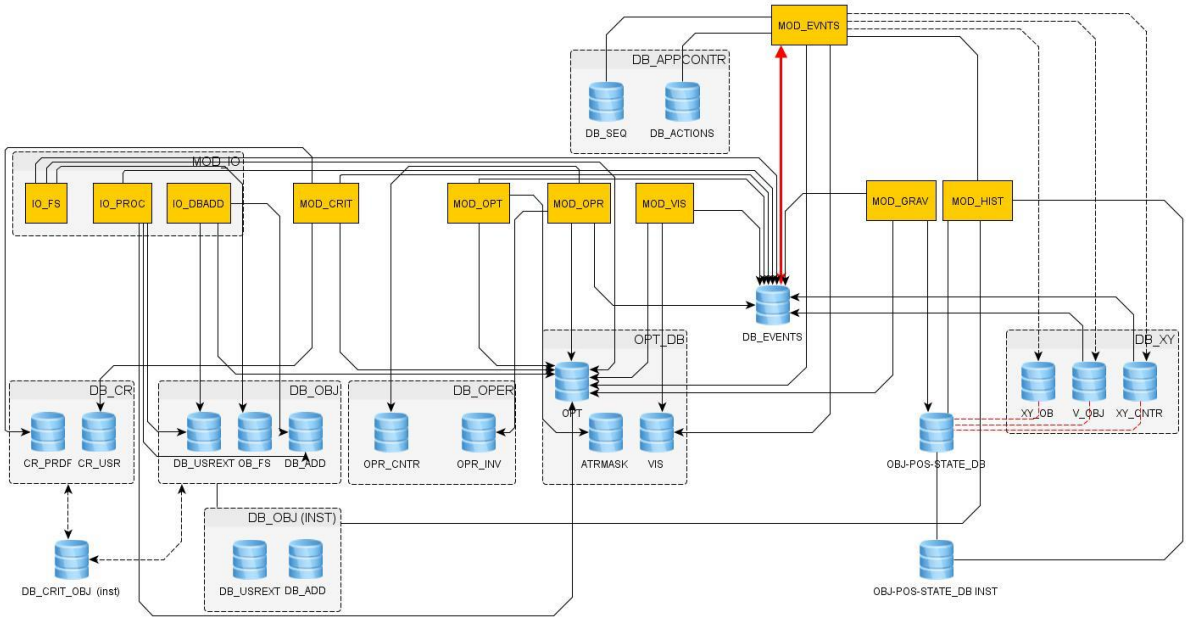
Programming Ideology

Main participating components

1. **Data structures -** in the form of MySQL tables predominantly and in some cases data structures similar to the ones that are being altered within the Java Script execution.
2. **Program modules** – being altered by the data structures
3. **Events –** an event is being generated when a data structure is altered where the programming logic is described.

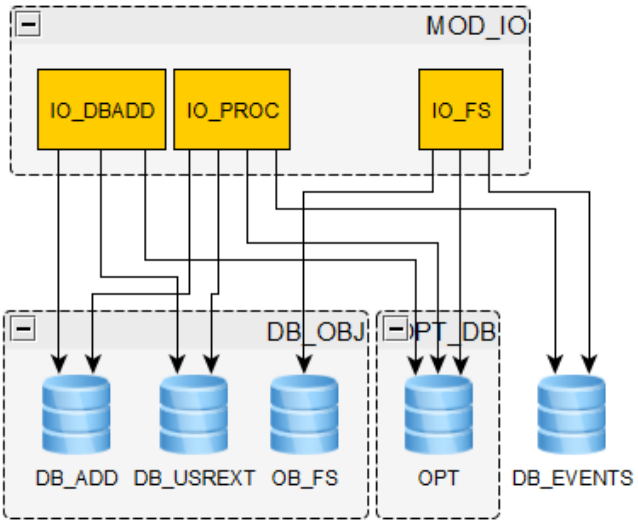
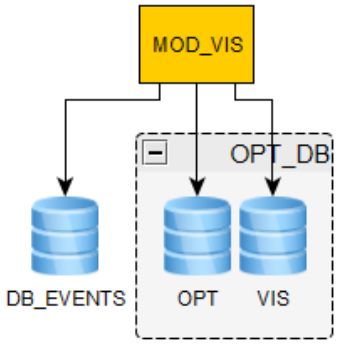
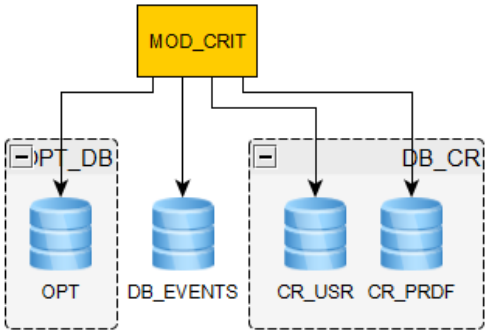
Databases are not dependent on the program modules. The advantage of using the three main components in this way is that the programming can be executed in either of the following approaches – object-oriented programming, module programming, event-driven programming.

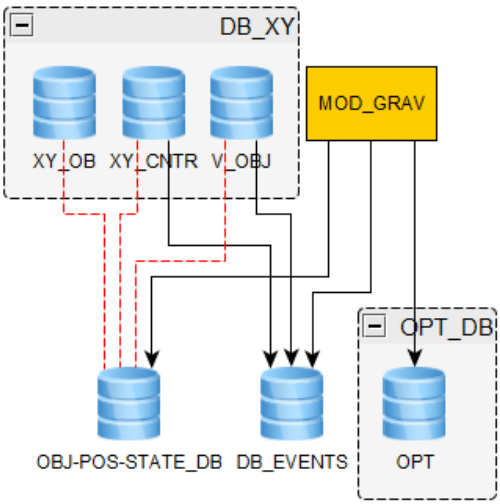
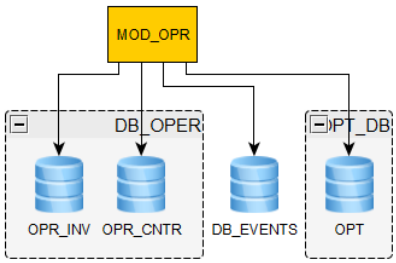
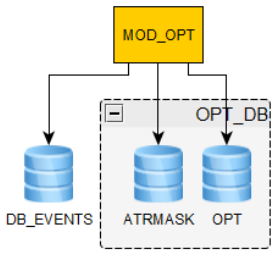
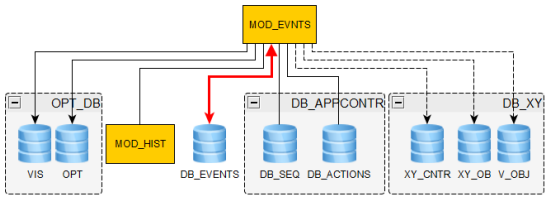
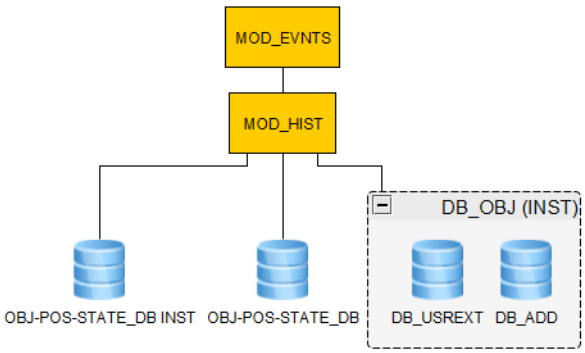
Current Programming and Database Architecture



This following figure shows the architecture or the prototype. It was implemented in chiefly Java Script, PHP and MySQL and has been proven technically viable. The core Unit 1 will translate this architecture to a cloud environment. It will work on all modules and databases. The remaining units will only work within their designated sections as shown in the table below.

SOFTWARE MODULE	CODE	DATABASE INTERRACTION	PROJECT UNITS
1. Data Entry Module	MOD_IO		UNIT 2: Third-Part APIs

1.1. Entry of data accessible to the device	IO_FS		
1.2. Entry of data accessible through DB connection	IO_DBADD		
1.3. Data extraction from the object	IO_PROC		
2. Object visualization module	MOD_VIS		UNIT 2: Third-Part APIs
3. Logical criteria setting module	MOD_CRIT		UNIT 4: Advanced Analysis Tools UNIT 5: Geotagging and Ranges UNIT 6: Classifications

4. Object Movement Module	MOD_GRAV		
5. Object Management Module – (Operations on objects)	MOD_OPR		UNIT 2: Third-Part APIs UNIT 4: Advanced Analysis Tools
6. System Control Module (Options)	MOD_OPT		
7. Events Module	MOD_EVNTS		UNIT 3: Multiuser Capabilities
8. History Module	MOD_HIST		

UNIT 1 Basic functionality and Cloud Service Development

Currently the Gravity Control™ software is at the stage of development of a prototype that successfully proved the viability and effectiveness of the database architecture and the software module structure. The implementation however is not cloud-based and in some cases utilizes technical shortcuts.

This unit is responsible for implementing the core functionality in a cloud environment and with a cloud database combined with the improved design of the graphic interface based on the user interaction tests.

Main activities:

- Translation of the developed common cloud-based application architecture and initial version of the cloud-databases
- Development of application modules
- Application design implementation and testing
- Optimization of the common application architecture and the databases
- Modules optimization
- Program logic optimization
- Basic security and authorization
- Central management

After finishing the cloud implementation, this unit will take over the technical support, maintenance, additional module integration and support of additional module development. As mentioned above, this is also the unit that coordinates the work of all other units.

UNIT 2 API

This unit is responsible for the Integration of third-party API(s), wizards for data entry including advanced strategies for social-based data entry, crawlers' setup wizards. In case for the particular project such dedicated unit is not deemed necessary, small scale of basic functionalities can be implemented by Unit 1.

As a rule, third-party API integration is more straightforward when it comes to retrieving data. Experience shows that sending data to the remote system and performing actions in it is the more time consuming task.

APIs for database communication as shown on the architecture table above:

- Objects Information database (DB_OBJ) – 2 sections – 1) Basic object information (DB_ADD) and 2) Specific object information (DB_USREXT)
- Available operations database (OPT_DB) - object specific functions based on API type, a relation between the object and an operation executable in an external application/program

While UNIT 1 Core API's functionality is standardized data gathering, this unit's advanced API functionality advantage is that new objects can be adapted dependent on the changing API specifications.

The work span of this unit is directly related to the type of application which is to be developed.

UNIT 3 Multiuser Capabilities - Gravity Ether

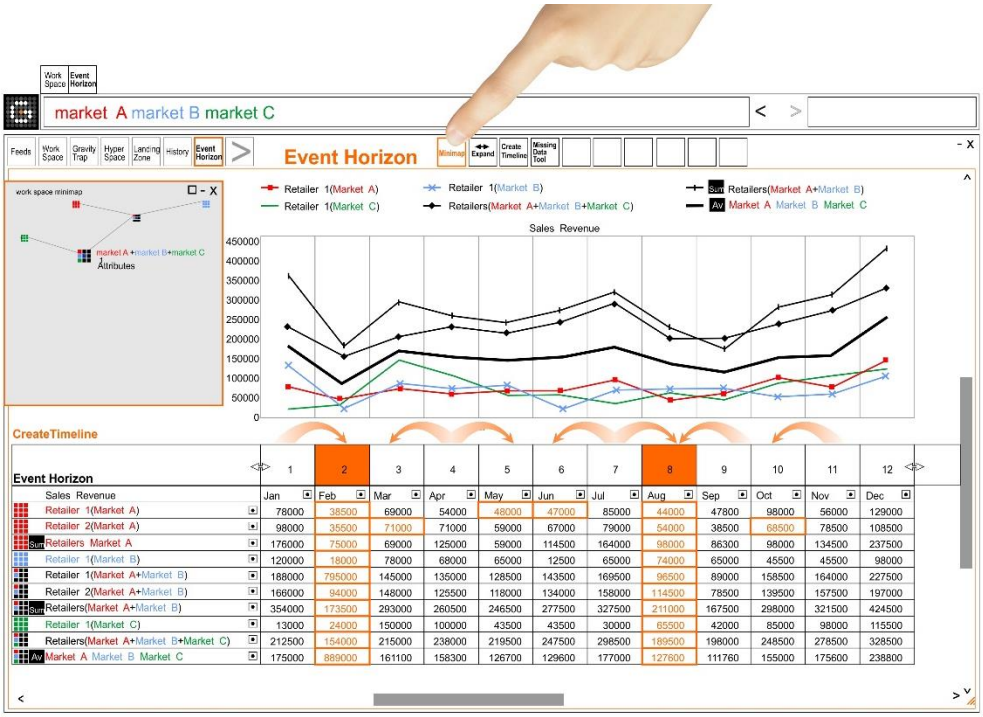
A unit dedicated to developing tools for simultaneous work of more than one user on the same database and on the same workspace while observing data access permissions for each one.

When equal access permissions are observed, the user who initiated an event on the workspace first gets the right to continue the work while the rest remain as observers.

UNIT 4 Advanced analytical tools

Advanced analytical tools include financial and other calculations, operations on numerical data and fuzzy sets operations and the list may be expanded according to the application needs. These tools use numeric data from the database to calculate new values that can be fed back to the database.

A good example of advanced analytical tools are the tools used in the financial application concept – the event horizon, the timeline, the filling missing data series tool, the graphing tools, future projections, etc.



Sales Revenue	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Retailer 1(Market A)	78000	38500	69000	54000	48000	47000	85000	44000	47800	98000	56000	129000
Retailer 2(Market A)	98000	35500	71000	71000	59000	67000	79000	54000	38500	68500	78500	108500
Sum Retailers Market A	176000	75000	69000	125000	59000	114500	164000	98000	86300	98000	134500	237500
Retailer 1(Market B)	120000	18000	78000	68000	65000	12500	65000	74000	65000	45500	45500	98000
Retailer 1(Market A+Market B)	188000	795000	145000	135000	128500	143500	169500	96500	89000	158500	164000	227500
Retailer 2(Market A+Market B)	166000	94000	148000	125500	118000	134000	158000	114500	78500	139500	157500	197000
Sum Retailers(Market A+Market B)	354000	173500	293000	260500	246500	277500	327500	211000	167500	298000	321500	424500
Retailer 1(Market C)	13000	24000	150000	100000	43500	43500	30000	65500	42000	85000	98000	115500
Retailers(Market A+Market B+Market C)	212500	154000	215000	238000	219500	247500	298500	189500	198000	248500	278500	328500
AV Market A Market B Market C	175000	889000	161100	158300	126700	129600	177000	127600	111760	155000	175600	238800

Method for complex logical expressions definition

Important part of the work of this unit would be related to the definition of complex logical expressions, including numeric and geolocation range. This would shed new light on the way data is visualized and worked with on any device but especially on the tactile ones.

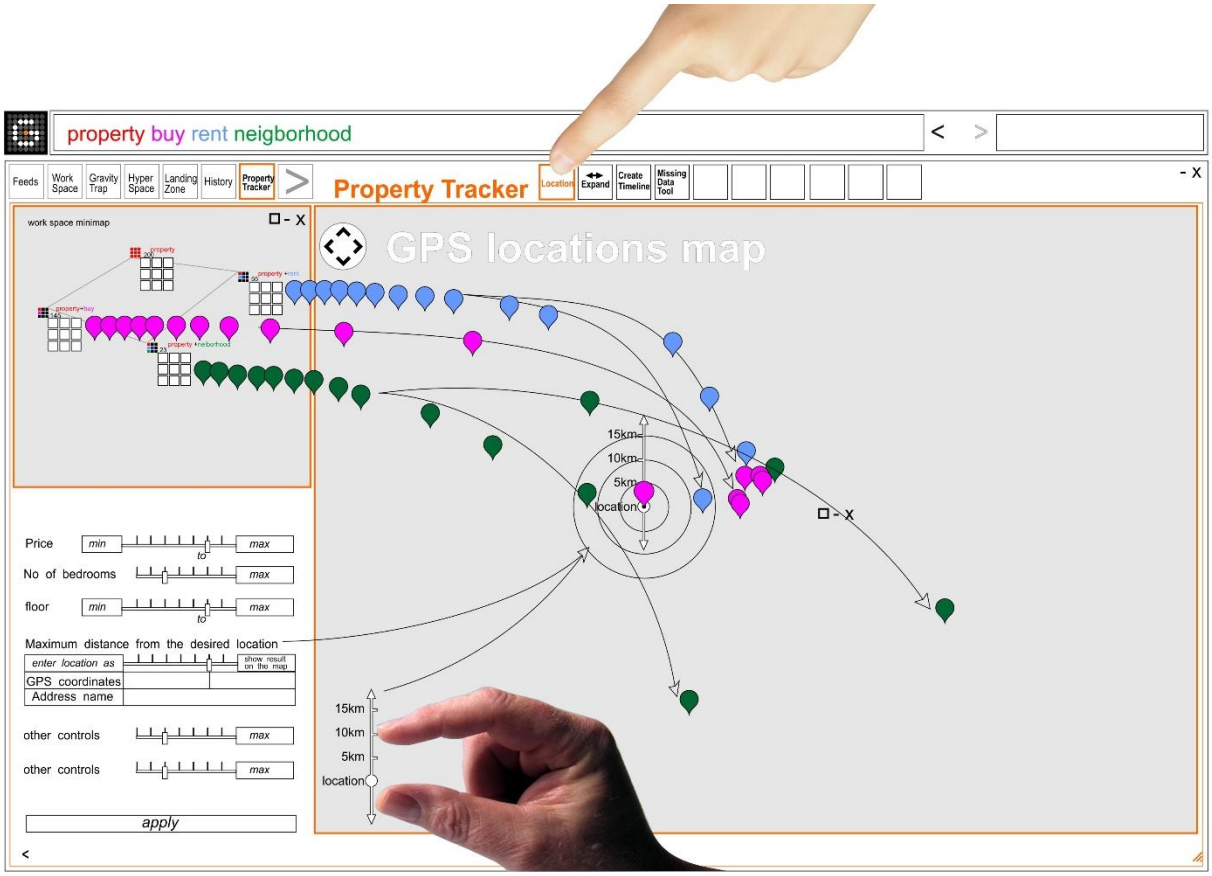
If you are interested in more details about the Gravity Control ™ Logical Expressions Definition utility model document, please refer to the [non-disclosure agreement on our website] in order to obtain it.

Preliminary utility model pending /related to application for intellectual property right at the Bulgarian Patent Office/.

UNIT 5 Advanced geolocation and numeric range tools

Geolocation tools allow formulating searching and sorting criteria for ranges of values extending from one central value. They also include tools for transforming values to ranges and referencing coordinates with regions and locations from a list or classification.

Visual example of the Gravity Control™ Estates application concept using geolocation range to sort through real estate property.



Preliminary utility model pending /related to application for intellectual property right at the Bulgarian Patent Office/.

UNIT 6 Classifications

This unit is responsible for formatting and entering the desired existing classifications in the dedicated DB structures. Classifications that we have worked with, tested or consider to be of possible interest include:

- International Patent Classification
- International Library Classification
- Nice Classification of trademarks including the creative industries
- Harmonized Commodity Description and Coding System (HS)

UNIT 7 Development for mobile devices

A unit dedicated to the development and consequently maintenance and support of mobile apps for iOS and Android. The span of work of this unit is directly related to the span of activities of the units above.

- Development of mobile devices modules to work with the existing databases and API(s)
- Application Design Implementation and Testing

UNIT 8 Customer service, compatibility, billing

The number of units for this task depends on the size of the client base.

UNIT 9 Security and Authorization

Above standard security implemented by cloud services which can be made compatible with either the ETSI Cyber Security Technical Committee or the NIST Cybersecurity Network standards or any other high-level framework standard depending on the respective application’s requirements.