



## **Informer for MultiValue databases**

Explore, Visualize and Analyze All Your Data in One Place

by Andrew Morovati  
Chief Solutions Architect



## Why Entrinsik Informer is the best reporting and analytics option for MultiValue

### Getting at the data

There are significant challenges accessing data in MultiValue databases. Originally designed as operating systems, MultiValue databases included the data processing programs with them. Reports could be printed directly from the environment by means of Basic programs, or 4GL tools such as SystemBuilder. This meant that reporting was dependent on the developers of the programs.

Since MultiValue applications were traditionally accessed with so-called dumb terminals, there was rarely a need for a programmatic interface to the data itself. Users would interact with the application and the data via the terminal.

As applications moved to graphical user interface (GUI) desktop applications as well as browser based applications, there needed to be an application programming interface (API) available to perform database tasks, and for UniVerse and UniData (U2) systems, Uniobjects was an answer. Uniobjects for Java was the platform independent version of this interface. It allowed for much of the low level programming tasks that BASIC programs did, including CRUD operations (create, read, update, delete) as well as allowing for any command that can be executed at the command line, whether it be TCL in UniVerse or the colon prompt in UniData.

For U2, Entrinsik Informer uses the Uniobjects for Java interface to deliver the data to the user. This means that any combination of SELECT statements, saved lists, proprietary programs to manipulate active select lists, or TCL list commands like MERGE-LIST are available when putting your query into Informer. It also means that once the data gets to Informer, it is in the format that your database saves it in, with all the nested multivalued data intact and in order.

“The security in Informer is very granular and it’s been great to be able to control access to everything down to the row level. We know exactly who has access to what data.”

Jessy Owsley  
SMC Electric Supply

### Modeling the schema

Getting a clear picture of the database schema in a MultiValue database has its challenges. There are no data types. There are no foreign key constraints. There can be an infinite number of names for the same field. There are derived fields, from either correlatives or I-descriptors. There isn’t even a need for a field definition for an attribute of a record, for there to be data in it.

Entrinsik Informer enables you to surround your database with a robust metadata layer. You can define *Mappings* which represent database files. You define *Fields* to translate dictionary entries as typed, friendly named columns. You define *Links* to seamlessly include fields from other files, as a SQL join would. Correlatives and I-types become part of mappings.

Mappings can reduce a cluttered dictionary into a discrete list of fields. Anyone that has worked with MultiValue databases has seen the file with many duplicate field names. For instance, the PERSON file may have FIRSTNAME, FIRST, NAME, FNAME, FIRST, etc. Also, your dictionary items may not have descriptive names at all. How many databases have you seen that have something like “MC3DR” as a field name. Or even worse, a dictionary that is just a number. A field named “14” is fine if you want to know that the data is in attribute 14, but it tells us nothing about what it represents. Informer allows you to construct a list of fields inside the mapping, and tailor the names of them to represent what the attribute actually contains. You are also able to give the fields a data type. That means dates can be dates, numbers can be numbers.

Links introduce a final dimension to the datasource schema. By identifying common keys among fields in files, you can link the files together. This means when reporting from one file, you can include fields from linked files. And, fields from files linked to them. This also means that when you are selecting information, you can also select using linked fields as well. So if PERSON is linked to COMPANY using the COMPANY.ID field on person, when running a query on PERSON data, you can include COMPANY data as well. For example, you can write a query that contains the names and addresses of persons, as well as their company addresses, of all the persons that work for companies in Mexico.

## Informer plays nice with multivalued

Since multivalued data has a structure and purpose, its structure should be retained by the reporting software that presents it. Solutions that deal with SQL data, which is normalized, won't be able to do this. Informer does.

Consider a hypothetical example of a product order. In a normalized database, you would have an order\_master table, with perhaps the client information, the salesman, etc. Then you would have the order\_detail table, with the individual product ids, quantities, and prices. A listing of an order would look like this which is how the database would have stored it:

ORDERID	CUSTOMER	PRODUCT	QTY	PRICE
0001	ACME	P101	40	3.95
0001	ACME	P102	3	2.95
0001	ACME	P103	1000	0.02

In a multivalued database, you would have one ORDERS file, and the data would be represented like this:

ORDERID	CUSTOMER	PRODUCT	QTY	PRICE
0001	ACME	P101	40	3.95
		P102	3	2.95
		P103	1000	0.02

In Informer, this data is represented using scalar values for ORDERID and PRODUCT, and array values for PRODUCT, QUANTITY, and PRICE. In other words, it is available in the same format your multivalued database stores it.

Informer will present linked multivalued data in an intuitive way as well. You may set up a link from a multivalued foreign key to the file it references. In this scenario, all linked data is multivalued as well.

Link from Salesperson to Orders, Orders is a multivalued id field on Salesperson.

Salesperson	Orders ->OrderID	Orders->Product
Andrew	0001	P101, P102, P103
	0002	P102, P104

Here, we have 2 Order records with multivalued Product fields on them. Andrew has sold 2 orders. OrderId is multivalued. Product is sub-valued.

## Do what you do

Informer handles the same query flow as a MultiValue query sequence. That means you can do:

```
SELECT
SAVE-LIST
GET-LIST
SELECT file BY-EXP
SELECT file RETURNING/SAVING foreignId
MERGE.LIST
```

Saved lists that you use for your business processes are able to be used in Informer. Subroutines that create active select lists can be used in Informer.

With Informer queries, you don't even need to worry about ordering the SELECT statements, or siphoning parts of your query off to intermediate select lists. It is perfectly acceptable to write a report that is as complicated as something like:

```
GET.LIST ORDERS.US
SELECT ORDER.DETAIL WHERE ORDER.AMT > 100.00
OR
GET.LIST ORDERS.MEX
SELECT ORDER.DETAIL WHERE ORDER.AMT > 1000.00
```

In Informer, you just add selection criteria, using familiar concepts, and it takes care of the processing.

## Cultural challenges

Finally, we all know that finding personnel that can understand legacy systems that use MultiValue query sentences for reporting is a daunting task. The pool of qualified talent for such tasks is shrinking. So while on the one hand you want reporting software that speaks the legacy language, you also need reporting software that can be accessible to someone without the aforementioned qualifications.

Informer enables you to offload the nuanced approaches to complex queries to the software, giving greater access to the data and helping ensure that it will be accessible in the future. Informer will evolve with the culture of the organization, forever retaining the knowledge necessary to access the data.

Currently, Entrinsik Informer is only available for Rocket UniVerse and UniData MultiValue systems. If your system is built on a different MultiValue database, please contact me at [andrew@entrinsik.com](mailto:andrew@entrinsik.com) to discuss how we can provide the power of Informer for your MultiValue system.

## Key Features of Informer 5

**Intuitive user interface** Clean, modern screen layout and navigation provides a familiar user experience, drastically cutting the learning curve compared to most BI products.

**Intelligent visualization guidance** The Discover feature automatically creates meaningful graphic visualizations that can be published, shared, and embedded.

**Compare feature** With just a few clicks, create side-by-side comparison boards providing interactive visual analyses.

**Personalization** Pin frequently used Informer Reports to a personalized Informer home page and view activity feeds with relevant content and notifications.

**Sharing and Collaboration** Comment and collaborate on shared content. Securely publish Reports inside websites and portals with a simple hyperlink.

**Easy, fast data access** Connect to traditional databases, spreadsheets, or unstructured data streams, all without complex and time-consuming data warehousing or cubing.

**Easy data governance** Review and transform data as it flows into Informer. Join data from disparate sources, scrub duplicates, and normalize fields with a few clicks.

**Curated Datasets for end users** Generate subsets of curated, relevant data to provide a single source of truth for end users to explore and analyze.

**Drag and drop support** Create your own custom Data-source Workspace by importing multiple spreadsheets. Simply drag and drop to import data from Excel or CSV.

**Reliable Security** Have user and team level security with versioning and data traceability.

**Integrated web-based platform** Access on any device with no need to switch tools for different functionality.

**Enterprise-level performance** Informer handles millions of data points with fast data rendering.

**Plugin architecture** Scale up and out when needed by integrating resources specific to your industry or product.

**Predictable cost structure** Simple, flexible pricing structure based on platform usage.



### About Andrew Morovati

Andrew has over 20 years of experience in software engineering working on key areas of Informer business intelligence and data analytics software. Currently Andrew is Chief Solutions Architect at Entrinsik. He has worked as a project manager on Informer customer implementation projects. He has also managed Informer customer support and been a key instructor for Informer training. Andrew has a B.S. from Boston University and a M.Ed. from the University of Massachusetts at Boston. Formerly he was Senior Software engineer at Noverant, Inc.

## Getting Started

To get started on a free trial, contact sales at [informersales@entrinsik.com](mailto:informersales@entrinsik.com) or call 888-703-0016. Visit <https://entrinsik.com/multivalue> for more details.

