

ProtoMart

Version 1.2

“The Data Mart Builder”



Seward Consulting Ltd.

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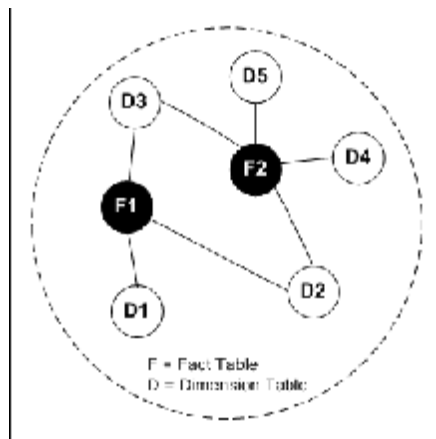
1 ProtoMart – An Overview

ProtoMart incorporates many features of its predecessor, Previewer 2.0. With Previewer, users could quickly define what a cube should look like in terms of Dimensions, Measures, and Allocation percentages at each level in the Dimension hierarchy. Generated data points could then be converted to cubes. ProtoMart still offers the same quick method of generating realistic cubes that Previewer did. The big improvement however, is that ProtoMart facilitates the management of data mart design and construction. This document introduces you to the features of ProtoMart and highlights the benefits of using ProtoMart for data mart creation.

1.1 The Solution for Data Mart Design and Construction

ProtoMart is a Windows based application that gives you the power to easily design and construct data marts. ProtoMart supports all the major features of data mart modeling:

- Design and construction of multiple Fact tables.
- Multiple Fact tables sharing one or more Dimension tables (Figure 1).



• Figure 1 – Data Mart Design

- Definition of multiple Dimension Hierarchies.
- Definition of Surrogate keys for Dimension tables.

1.1.1 Major Features

Major features that are unique to ProtoMart include:

- Incremental Dimension Building.
- Tools to enable generation of realistic data for Fact tables.
- Definition of Custom columns to be included in Dimension and Fact tables for the purpose of database build specifications.
- Importation of Dimension definitions from MS-SQL, Oracle, Access, Excel or Text sources.
- Star Generation:
 - Data mart build / refresh (MS-Sql, Oracle, and Access).
 - Data point fabrication: loading of representative business data.
- Cube definition generation.

1.2 Reduce the Pain and Frustration of Data Mart Construction

The process of defining and loading a data mart with representative business data can be a drawn out process that is sometimes painful and frustrating.

ProtoMart is here to supply the remedies!

ANALYSIS

Pain:

Defining user requirements can be a tedious process of verbal, written, or graphic communication before a tangible data mart prototype is built, that in the end, may have to be revised or thrown away. Many times users do not understand the terminology or technical design concepts.

Remedy:

With ProtoMart, you can quickly prototype a data mart at a fraction of the cost of traditional methods. Data Warehouse analysts and business users can work together to build a tangible prototype that the users can see and use. Problems are discovered at the prototyping phase (rather than in Production) where it is easier and less expensive to make changes to the design.

TEST DATA POPULATION

Pain:

During the prototyping phase, the Data Warehouse analyst is required to use ETL (Extract, Transform and Load) tools or SQL extractions to load the test data mart.

Remedy:

With ProtoMart you can create data for the test data marts based on defined parameters for the Fact table measures and allocations. Representative data is created and is based on business knowledge. This reduces development time and allows the Data Warehouse analyst the freedom to focus on data mart design issues.

CUBE CREATION

Pain:

Once a data mart is created, it is necessary to define a cube model so that users can use OLAP tools to query the data in the data mart prototype.

Remedy:

With ProtoMart cube models can be generated in various formats¹, such as Excel Pivot Tables, based on defined Facts, Dimensions, Hierarchies, and Measures.

BUILD SPECIFICATIONS

Pain:

Creating database build specifications for Data Warehouse technicians are often tedious and difficult to make consistent.

Remedy:

ProtoMart can automatically generate most of what is required in a “database build requirements” document. Custom fields can be defined and inserted into the data mart specification in a consistent manner. ProtoMart produces a professionally formatted HTML or RTF document.²

¹ As of version 1.2, ProtoMart supports Pivot Tables; other formats are under development.

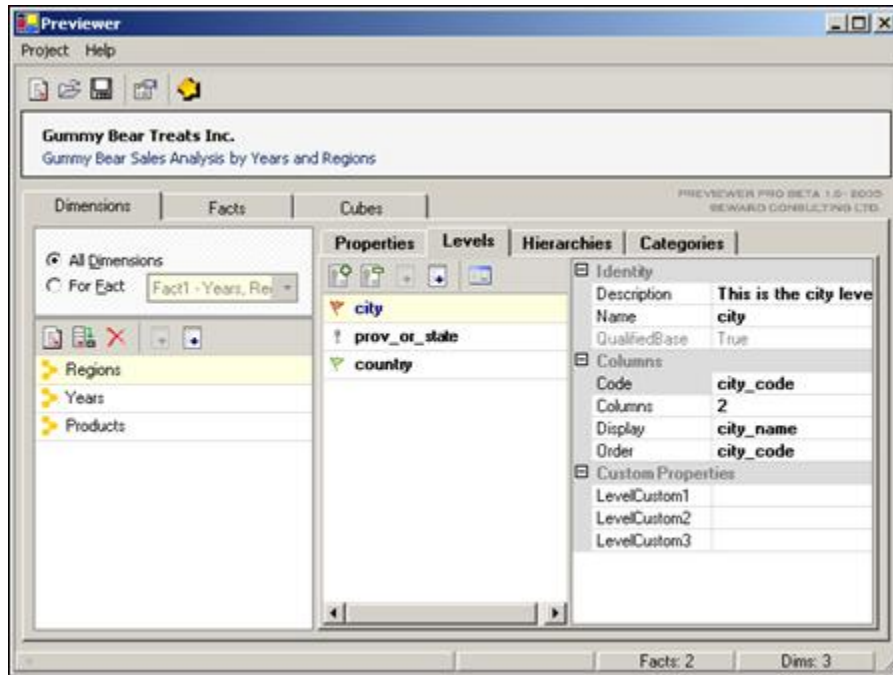
² As of version 1.2, this component is under development.

All of these remedies contribute to ProtoMart’s major advantage: dramatically reduced development time and costs for data mart creation.

1.3 Use ProtoMart Throughout the Data Mart Construction Cycle

Using the ProtoMart interface (Figure 2), you can quickly define all components of a data mart prototype:

- Dimensions, Facts, and Measures can easily be defined or adjusted.
- The data mart can be built or refreshed with representative business data.
- Cube definitions can be generated for selected Dimensions, Hierarchies, and Measures.



• Figure 2 – The ProtoMart Interface (Dimensions / Levels Sub-tab)

1.3.1 Definition of Dimensions, Facts, and Measures

ProtoMart provides the option of defining Dimensions from “scratch” based on your own business knowledge or importing Dimension definitions from various data sources (MS-Sql, Oracle, Access, or Excel/Text). One or both of these options can be used when building a data mart prototype.

Dimensions

Dimension Levels, Hierarchies, and Categories can be quickly defined using the ProtoMart interface. Each of these Dimension components is defined on a separate Dimension sub-tab.

Facts and Measures

Multiple Fact tables can be defined and associated (joined) with one or more Dimension tables. For each Fact, measures are defined along with data point generation parameters (see: Adjust Allocations and Ratios). ProtoMart uses the Measures and point generation parameters to create the representative business data to be loaded into the Fact tables.

The point generation parameters consist of minimum values, and measure totals for Independent Measures and ratios (minimum, average and maximum) for Weighted Measures.

1.3.2 Adjust Allocations and Ratios

ProtoMart provides the tools to adjust the Independent Measure allocations and the Weighted Measure ratios defined for a Fact.

Independent Measure Allocations

Allocations are the distribution of the Independent Measure total across the base level categories for each Dimension. When ProtoMart generates Independent Measure points it does so in such a way as to conform this distribution. The generated points are therefore randomly chosen but constrained to the desired distribution.

Weighted Measure Ratios

Ratios are associated with each base level category in the Weighting Dimension. For every point that is generated in the Weighting Dimension, ProtoMart calculates a Weighted Measure point based on the associated ratios. In this way, Weighted Measure points are dependent on their Source Measure but with some random variation controlled by the ratios.

1.3.3 Star Generation

After the Dimensions and Facts have been defined, the next step is to generate the data mart.

The ProtoMart “star generator” builds and loads the Dimension and Fact tables with representative business data for the selected Dimensions and Facts. Each Dimension table “record” consists of a key field and the defined category code values for each Level in the Dimension hierarchy. Each Fact table “record” consists of one reference column for each associated Dimension table key and generated point values for each defined Measure.

ProtoMart generates point values for the Fact table measures based on the defined Independent Measure allocations and Weighted Measure ratios.

1.3.4 Rework the Prototype or Start the Incremental Build?

ProtoMart is a valuable tool in the continuous cycle of prototyping and building data marts (Figure 3).



• Figure 3 – Data mart Creation Process

Once the data mart prototype is created, the design and functionality can be evaluated to determine if it meets the defined data query requirements. If not, the Dimensions, Facts, and Measures can be adjusted/redefined and the data mart refreshed with new data. This iterative process continues until all aspects of the data mart prototype satisfy the defined requirements.

When approval is received on various phases of the data mart prototype, the incremental build of the production data mart can begin, one Dimension at a time using the ProtoMart definitions.

1.3.5 Generation of Database Build Specification Documents

With ProtoMart, you can generate the database build specification documents³. ProtoMart gives you the ability to define and insert custom fields into the data base specification for each Dimension and Fact component. When the data mart prototyping is completed, Business Intelligence (BI) DBA's can use the database build specification documents (HTML or RFT format) to guide them in the incremental build process of the production data mart.

1.3.6 Cube Generation

ProtoMart generates cube models based on the prototype data mart definition. ProtoMart provides options for selecting and renaming the Facts and associated Dimensions, Hierarchies, Measures to be included in the model.

1.4 The Case for ProtoMart

The case for ProtoMart is clear!

✓ Rapid Data Mart Prototyping and Test Data Creation

A prototype data mart can rapidly be designed, built, loaded with representative business data before the production data mart is created.

✓ Instant Feedback and Improved Communication

Business users can see and use a tangible prototype, making it much easier to “flush out” and finalize requirements. Design flaws are more likely to be discovered in the prototyping phase, rather than in production. Data mart prototyping can continue until all requirements are finalized.

✓ Incremental Dimension Building

As requirements are refined, the production data mart can be built one Dimension at a time.

✓ Build Specifications


BI DBA's can use ProtoMart generated data base build specifications to guide them in the incremental build process of the production databases.³

✓ Cube Definition Generation

ProtoMart creates cube definitions based on the prototype data mart definitions. Cubes can be created for selected Dimensions and Facts.

³ As of version 1.2, this component is under development.

Please contact us to learn more information about ProtoMart. We would be pleased to discuss with you how you can use ProtoMart to increase the productivity and reduce the costs of data mart creation.

 Seward Consulting Ltd.
Suite 1812, 10025 – 102A Avenue
Edmonton, Alberta
Canada T5J 2Z2

Phone: (780) 448-0745
Fax: (780) 425-0465
Email: support@sewardconsulting.com
Web: www.sewardconsulting.com