

IPRO 349: Wireless ISP and Customer Loyalty Information Technology Solutions

Advisor: Dr. David Pistrui
Assistant Advisor: Zach Hench
Mentor: Marcin Budny

Development Team
Krzysztof Drzyzdzyk
Przemyslaw Warzynski

Research and Documentation Team
Katherine Hadou
Jessica Schmit

Table of Contents

1.0 Revised Objectives	Page 1
Fig. 1.1 Data Conversion for Mapping Component	Page 1
Fig 1.2 Iterative Approach to Methodology	Page 2
Fig. 1.3 Use-case Scenario	Page 3
Fig. 1.4 Drill Down Feature	Page 4
2.0 Results to Date	Page 5
Fig. 2.1 List of Dundas Clients	Page 6
Fig. 2.2 Top Ten Partners of 2007	Page 7
Fig, 2.4 Example of Mapping	Page 8
Fig. 2.5 Example of Map Reporting Chart	Page 8
Fig. 2.6 Program Flow Chart	Page 9
Fig. 2.7 Program Structure	Page 10
3.0 Revised Task/ Event Schedule	Page 12
4.0 Changes in Task Assignments and Designation of Roles and Team Organization	Page 13
5.0. Barriers and Obstacles	Page 14
Fig. 5.1 Map Error	Page 15
Fig. 5.2 Correct Map	Page 15
6.0 Code of Ethics	Page 15
Appendix A	Page 16
Appendix B	Page 24

1.0 Revised Objectives

IPRO 349 2.1 is focused on creating a prototype of a map reporting component that will be used as an addition to the ComArch Report Book software. Report Book is a software bundle used for customized data analysis, depending on client needs. The data, both transactional and control, is formatted in an XML database. For example, it interprets data collected from transactions at stores through the register data gathered during the day, but can also help companies analyze why profit margins are different in different regions. The map reporting component will be a visual depiction of this data on a geographical map. A chart explaining exactly what the program itself does can be found in Figure 1.1.

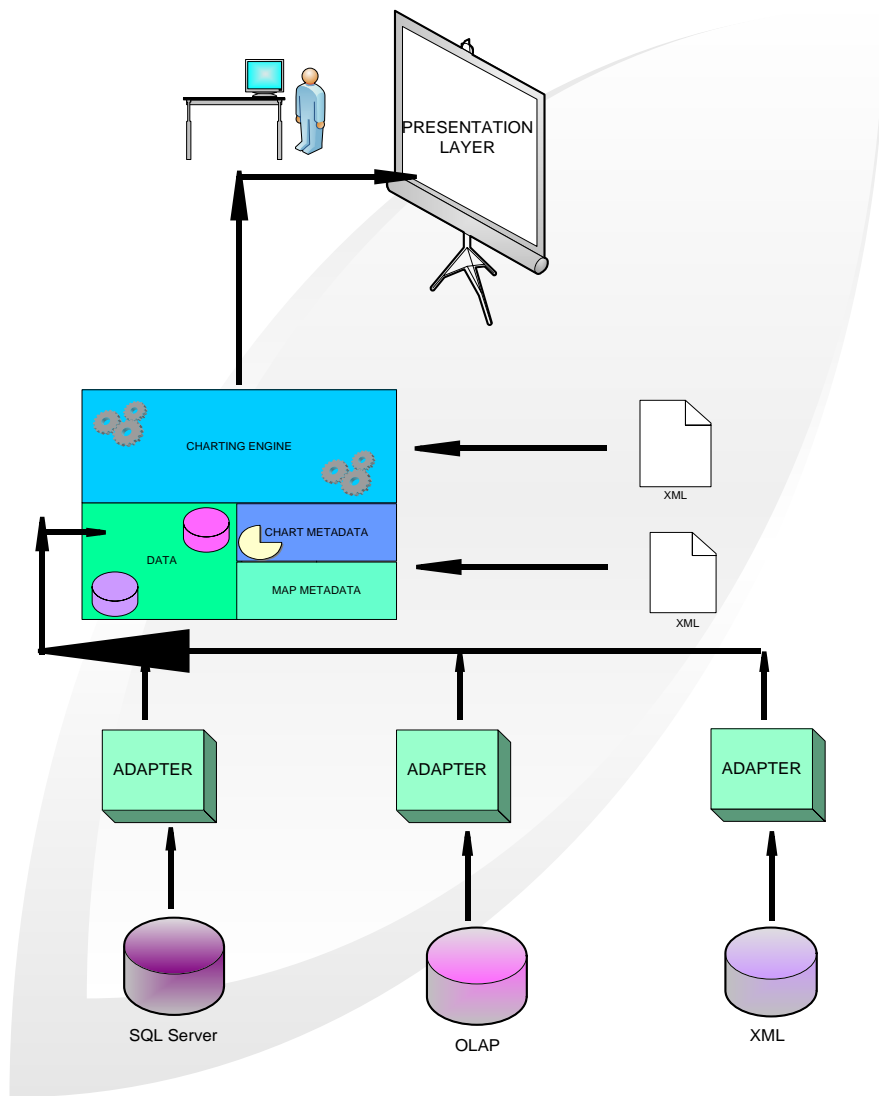


Figure 1.1 Data Conversion for Mapping Component

The map reporting component will be added to the software in order to increase the value to the client. The objectives for this group are to create this prototype and track its progress from the gathering of user requirements through the actual development of the software using IT project methodology. The methodology shows us an ideal model where none of the phases need to be repeated. In reality, however, it is expected that design, development and testing will be repeated many times before the project is actually deployed to the consumer.

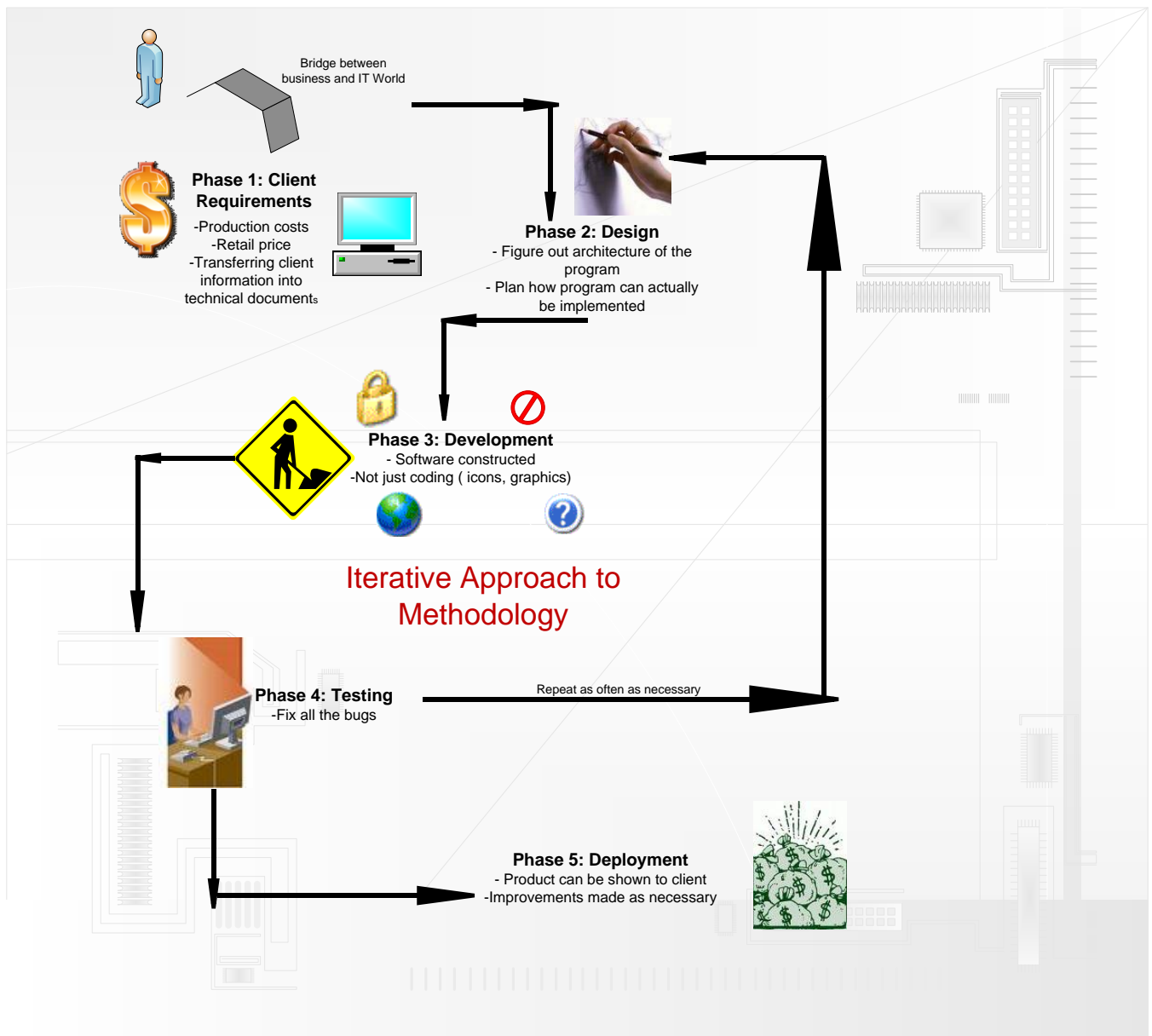


Figure 1.2 Iterative Approach to Methodology

The client will be able to analyze both transactional and control data. The team is using C# and Microsoft's .NET Framework along with Visual Studio 2005 to write the code for the actual program, as well as Visio and Inkscape to create prototype maps for the client. Figure 2.3 shows the use-case scenario showing what each participant wants from the system.

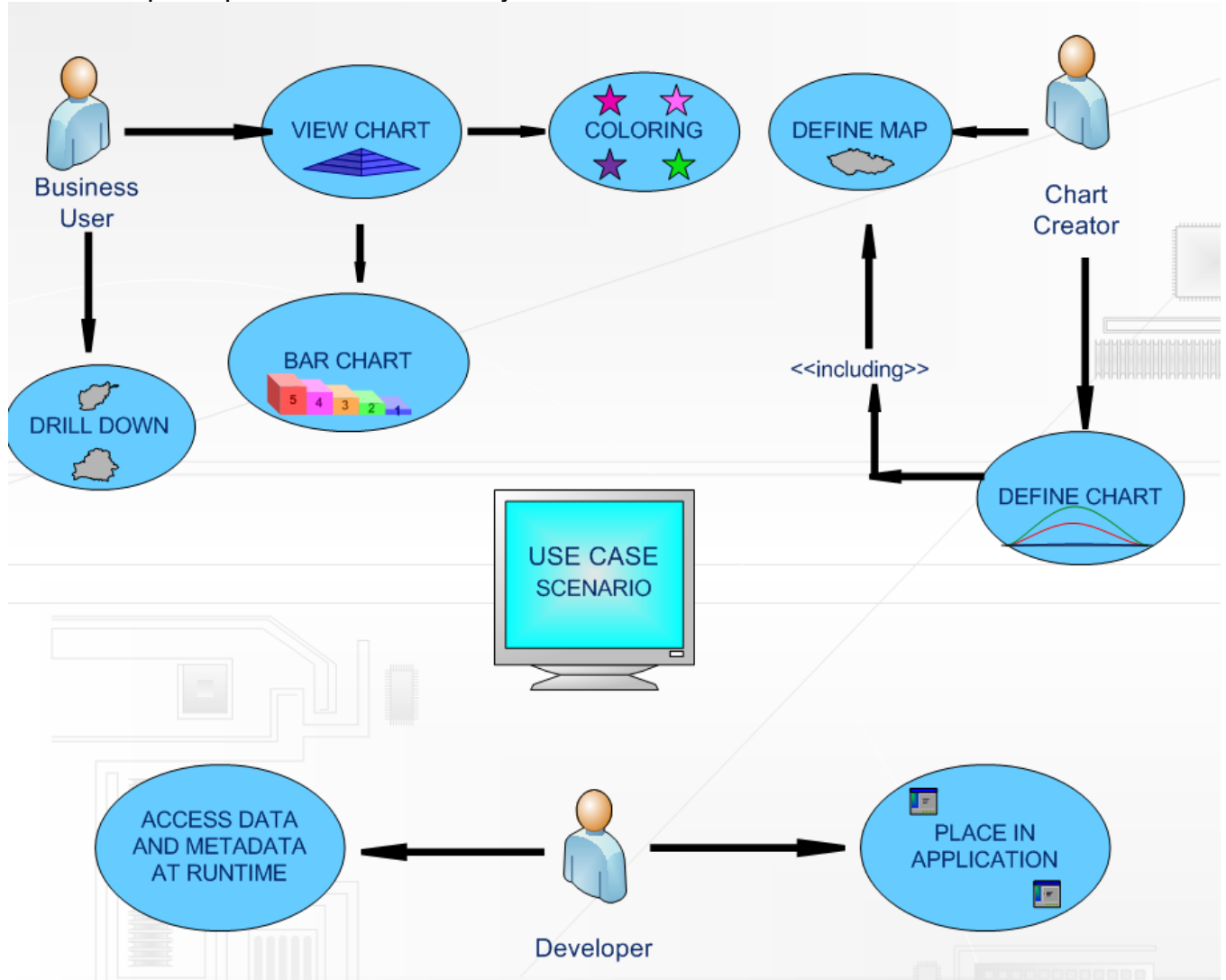


Figure 1.3 Use-case Scenario

The Development team is in charge of creating a program that will allow the user to display maps with pie charts, colors (as in winning candidate scenarios) and bar graphs. The data that is used to create these charts can come from the operator of the software, ranging from when the product arrives at the warehouse to when the product is literally scanned to be purchased. One of the main goals of the product is to provide a sense of versatility to the consumer, so that it can be used in many different ways. The maps must also provide for a drill down feature, explained further in Figure 1.4. The research and documentation team did research on the mapping components of other companies and the presentation can be seen in Appendix A, and as far as we know there have been no major attempts at creating mapping components for ComArch thus far.

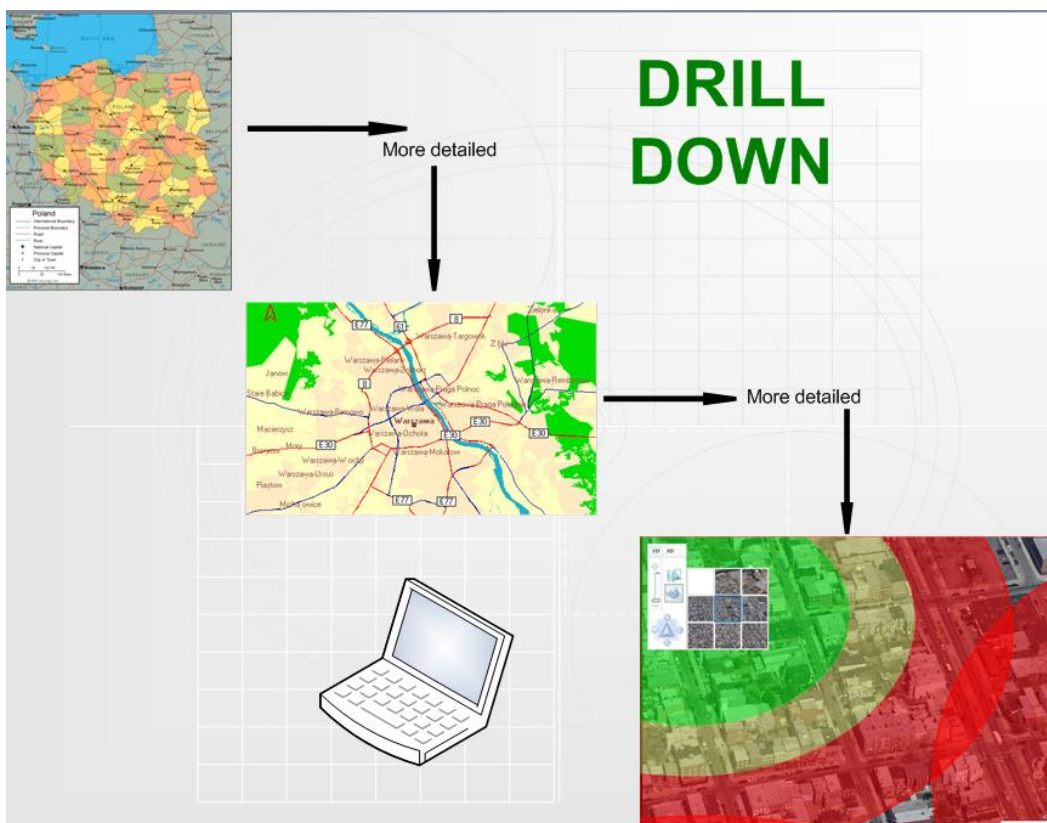


Figure 1.4 Drill Down Feature

These objectives have not changed since their original establishment in the Project Plan. The necessary tasks have been further described and distributed amongst the two sub-teams.

Development Team

- Design the concept map for general map reporting component
- Develop program prototype that is able to connect to the desired database and adapt information into a compatible form (adaptor function)
- Develop program prototype that is able to analyze and represent data in a graphic, geographic display
- Develop autonomous testing methods to insure functionality of map reporting component and utilize outputs to fix the bugs of the program

Research and Documentation Team

- Research ComArch's competitors and distinguish the advantages/ disadvantages of their programs in comparison to our mapping solution.
- Research ComArch's primary customers and ensure map reporting components functionality
- Research business aspect of marketing software and ways to improve current distribution
- Create maps of Poland using Inkscape and Visio in a wide range of details to be implemented within the program
- Document Development team's progress
- Produce method to manually test prototype to improve user-friendliness, versatility, and functionality
- Create IPRO deliverables, as well as presentations and deliverables required by ComArch

Bi-weekly meetings with Marcin Budny ensure the group maintains frequent communication and an understanding of the other members' progress.

2.0 Results to Date

Both sub-teams have been working hard to produce a functional prototype that can be easily incorporated into Report Book.

The Research and Documentation Team began by creating a summary of the functions that are included in ComArch's competitors' version of the map reporting component and presenting these findings to Marcin Budny. This presentation can be found in Appendix A. In addition to this research, they also investigated ComArch's current and potential clients in order to make Report Book more versatile and usable product. A list of marketing targets can be seen in the chart below.

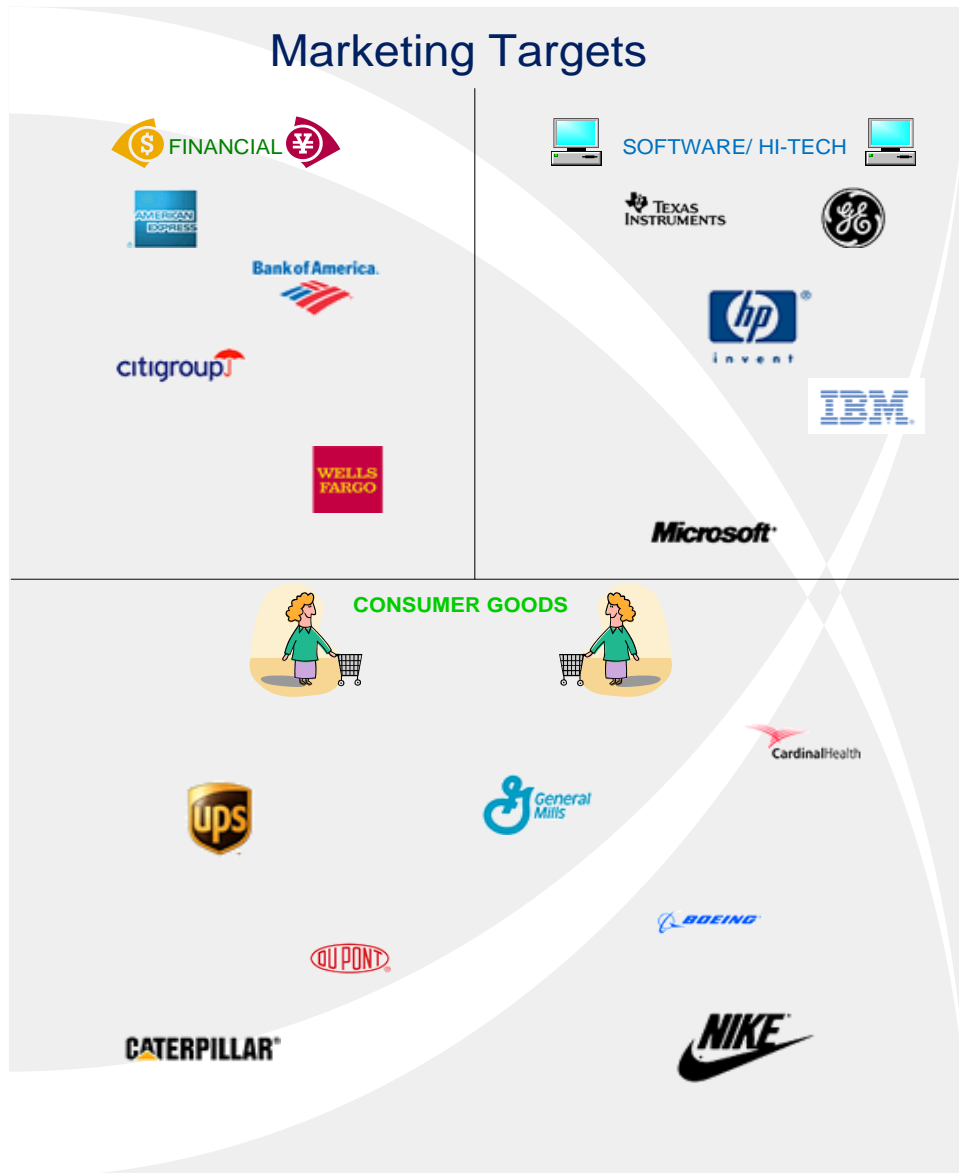


Fig. 2.1 List of Dundas Clients

Report Book generally caters to medium-sized companies, which is defined as any business with less than 500 employees. Some of Report Book's current customers are Sokołów SA and PKM Duda. However, with the added versatility that a map reporting component would offer Report Book, it would be possible to expand to large and even Fortune 500 companies, much like Dundas.

The Research and Documentation Team also researched the business aspect of Report Book. It is sold as a part of the CDN XL program, which ComArch does not directly sell to customers. Instead they have several hundred small companies that are referred to as partners. The partners resell CDN XL and provide users with support. A list of the top ten partners can be seen in Fig. 2.2.



Figure 2.2 Top Ten Partners of 2007

The Research and Documentation team found that CDN XL has many prominent customers, such as Lovely Look, which has become the largest full service hair salon in Poland within the last ten years. They boast about being one of the most modern Polish hairstyling sectors because of their use of CDN XL. They attribute it as the best way to “better monitor the activities in the salons, cut the costs of accounting, and improve direct marketing with regular customers.” With such great buzz surrounding CDN XL, Report Book is guaranteed to become one of the most successful analytical programs on the market. ComArch makes revenues by obtaining licenses for programs like CDN XL and offers customization of programs for concrete clients.

The Research and Documentation Team learned the client requirements from Marcin Budny, which showed that the map reporting component will be an addition to the Comarch Report Book already in use. Using current maps of Poland, they have used Inkscape to create much more detailed maps that will be integrated into the map reporting function. An example section of counties in the Malopolskie region can be seen in Figure 2.3.



Figure 2.4 Example of Mapping

They have also produced the Project Plan. In order to illustrate the team's plan on how to achieve completion of the prototype, it was necessary to learn how to use vector graphics programs, such as Inkscape and Visio.

The Development team has created a concept map to plan out the overall architecture of the program, and a simplified version can be seen below in Figure 2.5. The team split the work into two portions: the charting engine and the presentation layer. The charting engine takes XML chart metadata and converts it into the object model, then loads the data from the database through an adaptor. Finally, it associates the regions with their corresponding data. The presentation layer takes the products of the charting engine and displays the actual charts. An example of map created by the prototype can be seen in Fig. 2.5

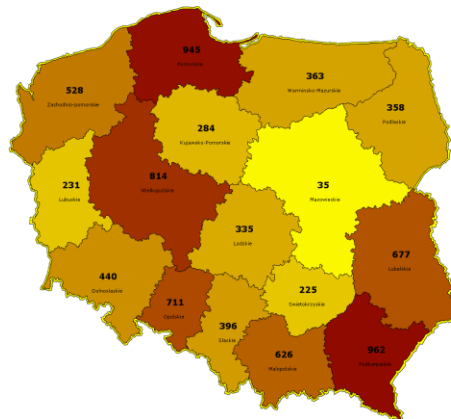


Figure 2.5 Example of Map Reporting Chart

The program structure developed by the Development team can be seen in Figure 2.6. The team learned to adapt their skills with Java and C++ to C# and Microsoft's .NET Framework along with Visual Studio 2005 with the help of a 3-day tutorial. Sample code can be found in Appendix B.

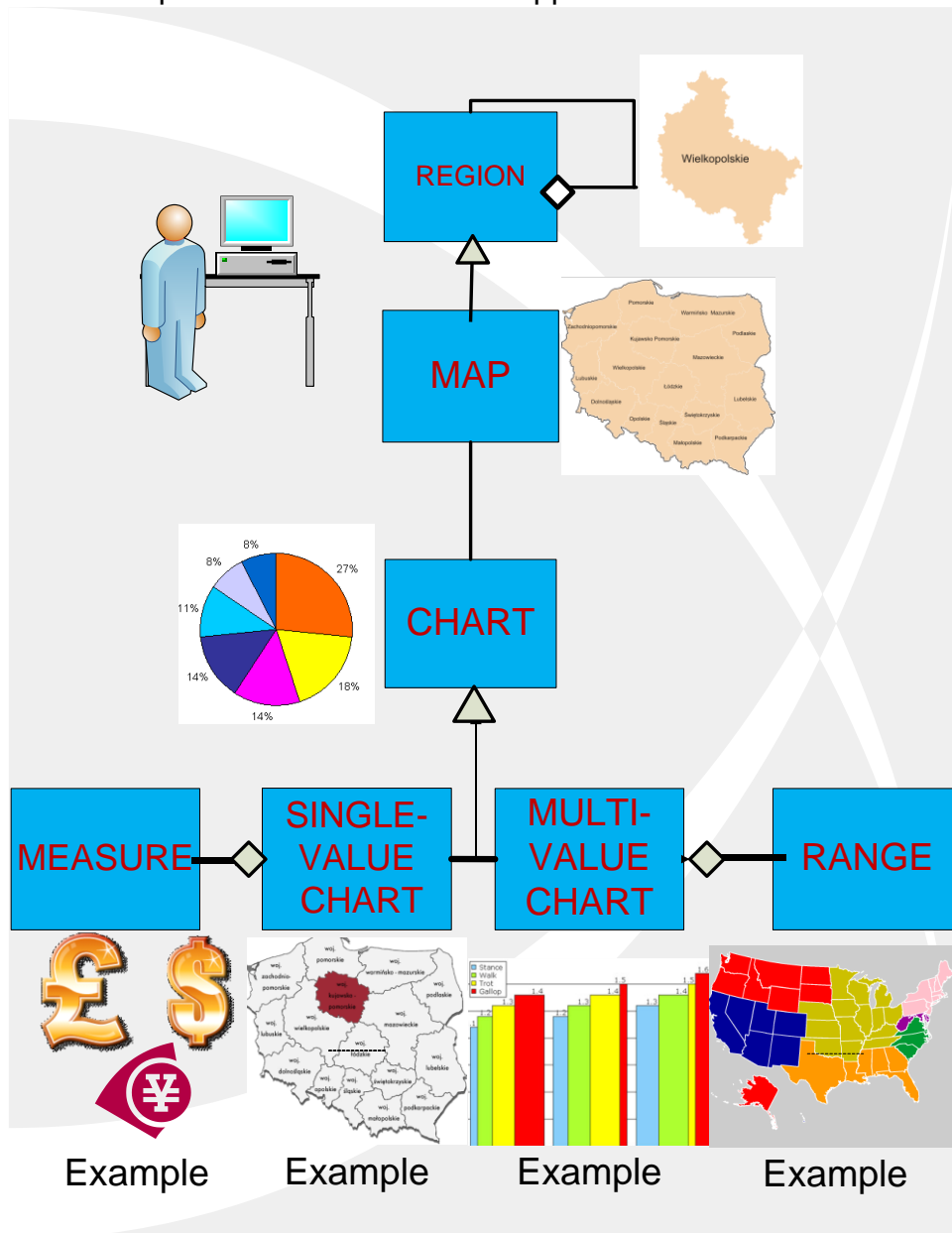


Figure 2.6 Program Structure

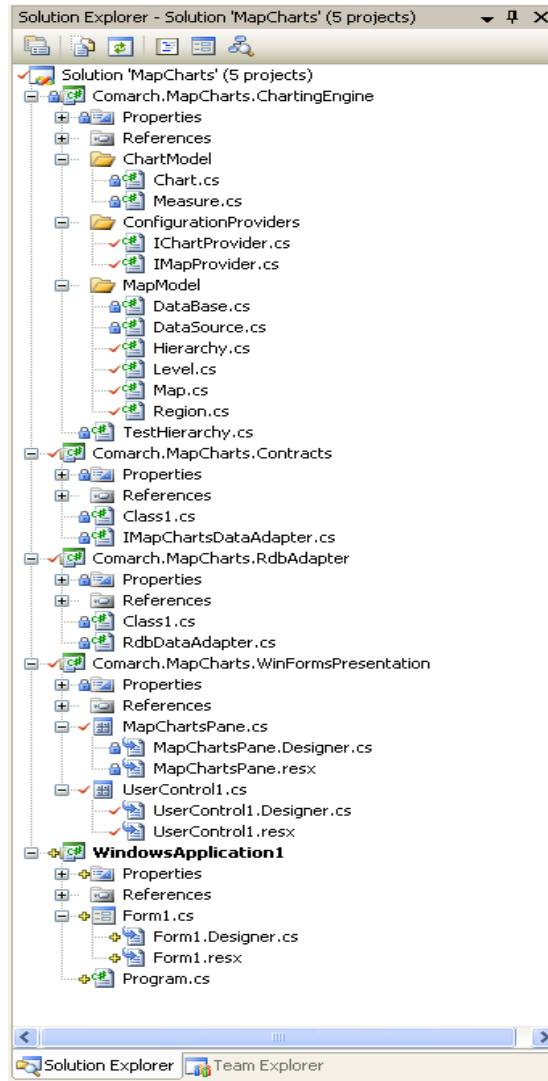


Figure 2.7 Program Structure and Code Files

As a team, there have been several productive meetings with David Pistrui, ranging from rapid prototyping exercises to team bonding activities. After his departure from Poland, the team routinely keeps up with David Pistrui with weekly conference calls. In addition to building a good team dynamic, each member has written a reflection of the past week, as well as keeping a personal journal.

The development team will be able to combine the two segments of the program to work together and create a working prototype. This will then be autonomously tested by the Development Team and manually tested by the Research and Documentation Team. These scenarios are being developed. If this testing does not produce the desired chart, the code will be re-evaluated and corrected.

Currently, a working prototype is under production and will not be delivered to ComArch upon the midterm. However, the business research the group has accomplished will benefit not only the map reporting component, but also Report Book as a whole.

3.0 Revised Task/ Event Schedule

Task	Assigned To	Due By	Assigned To	Skills/ Education Necessary	Hours
Meetings	Marcin Budny	Throughout	Marcin Budny	Management and Communication Skills	3
Programming Prototype	Development Team	Throughout	Development Team	Computer Science Background, Knowledge of C # and .NET	120
Project Plan	Research and Documentation Team	June 26, 2007	Research and Documentation Team	Proficient with Microsoft Word and Visio	20
Concept Chart of Program	Development Team	July 5, 2007	Development Team	Computer Science Background	2
Midterm Report	Research and Documentation Team	July 6, 2007	Research and Documentation Team	Proficient with Microsoft Word and Visio	20
Drill-Down Version of Maps	Research and Documentation Team	July 19,2007	Research and Documentation Team	Proficient with Microsoft Visio and Inkscape	60
Final Prototype	Development Team	Jul 20, 2007	Development Team	Computer Science Background, Knowledge of C# and .NET	200
Exhibit/Poster	Research and Documentation Team	July 23, 2007	Research and Documentation Team	Proficient with Microsoft Word and Visio and Adobe Photoshop	10
Abstract/ Brochure	Research and Documentation Team	July 24, 2007	Research and Documentation Team	Proficient with Microsoft Word and Visio and Adobe Photoshop	10
Presentation	Research and Documentation Team And Development Team	July 24, 2007	Research and Documentation Team And Development Team	Public Speaking Skills	20
Final Report	Research and Documentation Team	July 25, 2007	Research and Documentation Team	Proficient with Microsoft Word and Visio	20
Meeting Minutes	Research and Documentation Team	July 25, 2007	Research and Documentation Team	Proficient with Microsoft Word	2
CD of Deliverables	Research and Documentation Team And Development Team	July 27, 2007	Research and Documentation Team And Development Team	Proficient with Microsoft Word	1
IPRO Day	2 presenters (1 AGH, 1 IIT), TBD	July 27, 2007	2 presenters (1 AGH, 1 IIT), TBD	Public Speaking Skills	1

The team decided to set dates for the necessary milestones of the project, to insure the group stays on target, considering they only have 6 weeks to complete a complex program. The team set dates for when the concept chart, different versions of the maps, and prototypes should be tentatively completed. This will allow ample time to correct mistakes and become comfortable with the final products.

The team has two weekly meetings with Marcin Budny to establish a good communication flow and to help the team stay on track. The team has accomplished all of the current goals to date, including the concept map, Project Plan, and the Midterm Report. These will serve as the foundation of the rest of our project.

4.0 Changes in Task Assignments and Designation of Roles and Team Organization

Name	School	Major	Sub-Team	Skill Set
Krzysztof Drzyzdyk	AGH	Applied Computer Science	Development	English, Microsoft fluency, typing skills, C++, C, Java, ADA
Katherine Hadou	IIT	Biology Biochemistry and Premed Focus Music Minor	Research and Documentation	Typing and research skills, Microsoft fluency, Polish fluency, communication skills, IPRO experience, helps parents run small business
Jessica Schmit	IIT	Biology Psychology Premed Focus	Research and Documentation	Typing skills, Dreamweaver, 3DMax, Microsoft fluency
Przemyslaw Warzynski	AGH	Computer Science	Development	English, Java, Eiffel, C++, Microsoft fluency, some graphic design experience, typing skills

Team Leader/Mentor: Marcin Budny

Because our sub-teams have only two members each, we decided that sub-team leaders would be unnecessary. The research and documentation team is in charge of doing any research required for this project, such as what ComArch already has in place regarding mapping components and what other companies have in place. They will also be in charge of all documentation that IPRO and ComArch require for the team. Finally, the research and documentation team will create a sample map using Visio and Inkscape. The development team will use C# and create the actual prototype mapping component.

These sub-teams have not changed, as certain educational requirements are needed for each group. The Development team has a firm grasp on computer science skills and is able to utilize C# and .NET. The Research and Development team are fluent in English and are more business-oriented.

5.0. Barriers and Obstacles

One of the main problems facing the group is the language barrier. Although we have one IIT student who speaks fluent Polish, some technical explanations take quite a while to be understood by both subgroups. The Polish team members practice their English frequently and communication becomes easier every day. Another problem the team faces is that the developers have never used C# before. As a result, they have had to have a “crash course” in programming with it, but their backgrounds in Java and C++ have helped them understand and use the new programming language. Finally, the team has the problem that the research and documentation team have no programming experience, and very limited graphic design experience. They have overcome that problem by asking their supervisors and colleagues for help whenever they need it and playing around with the Visio and Inkscape programs to find new tricks and features.

The Development team is currently having problems while testing the display of the maps. Although the code produces maps, they have errant lines in them, shown in Figure 5.1, which need to be fixed before the prototype can be functional. Marcin Budny is working closely with them to try to rectify this problem.

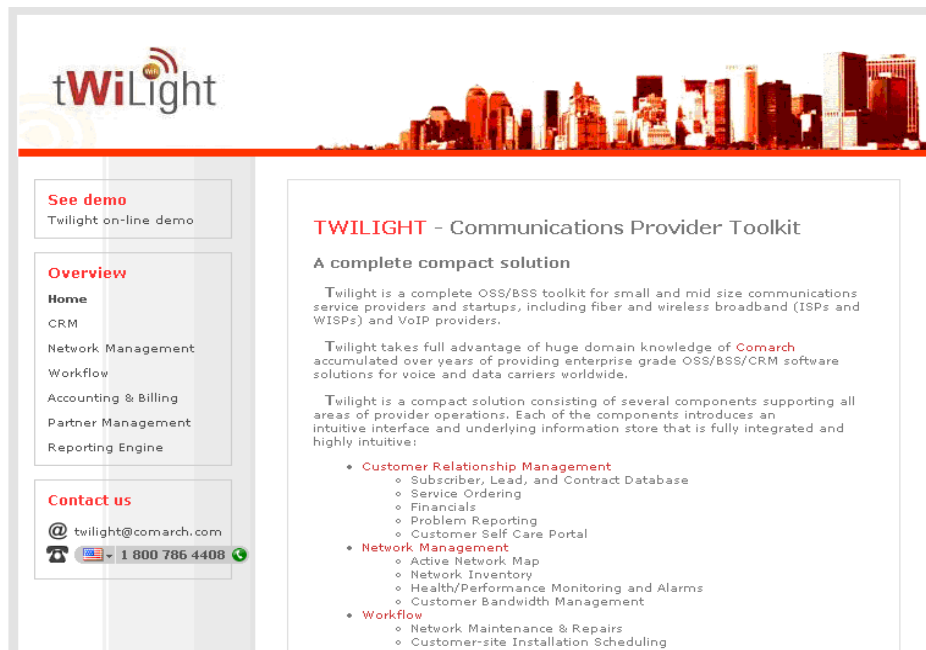


Figure 5.1 Map Error



Figure 5.2 Correct Map

Appendix A



See demo
TwiLight on-line demo

Overview

- Home
- CRM
- Network Management
- Workflow
- Accounting & Billing
- Partner Management
- Reporting Engine

Contact us

@ twilight@comarch.com
☎ +1 800 786 4408

TWILIGHT - Communications Provider Toolkit

A complete compact solution

TwiLight is a complete OSS/BSS toolkit for small and mid size communications service providers and startups, including fiber and wireless broadband (ISPs and WISPs) and VoIP providers.

TwiLight takes full advantage of huge domain knowledge of Comarch accumulated over years of providing enterprise grade OSS/BSS/CRM software solutions for voice and data carriers worldwide.

TwiLight is a compact solution consisting of several components supporting all areas of provider operations. Each of the components introduces an intuitive interface and underlying information store that is fully integrated and highly intuitive:

- **Customer Relationship Management**
 - Subscriber, Lead, and Contract Database
 - Service Ordering
 - Financials
 - Problem Reporting
 - Customer Self Care Portal
- **Network Management**
 - Active Network Map
 - Network Inventory
 - Health/Performance Monitoring and Alarms
 - Customer Bandwidth Management
- **Workflow**
 - Network Maintenance & Repairs
 - Customer-site Installation Scheduling

Headquarters: Krakow, Poland

Faults:

Not eye-catching

Organized

Not quite enough information

Somewhat confusing for small business owners without computer gurus on staff

Ambiguous descriptions

No specific section for map reporting component

No price range

DOES NOT SHOW UP ON GOOGLE SEARCH!

Features:

AMAZING DEMO

Automatic SNMP topology discovery

Logical network map, with the visualization of network equipment status

Geographical base system coverage map

Integrated state and performance information

Map is more detailed, animated

Device inventory performance monitoring

Including trends and thresholds

Network related tasks scheduling and monitoring

Real view map, coordinate plane

More offered than with any other company

Faults:

Simplistic

Versatility is questionable

24-hour support only through email

No packages

Features:

CHEAP - \$199

Chart options for map, wide-range resolution support, custom background

VERY user-friendly, colorful, catchy

Today's Tip of the Day from Dr. Presentation

Minimal effort, no installation needed (smartCh@rt technology),

cut and paste from Excel

Direct support for Oracle, Microsoft SQL, MS Access (MDB) and

ODBC database loading

Supports JPEG, TIFF, PNG, BMP, WMF and GIF image formats

AVI movie format

Language options, map options

Free, unlimited, 24-hour support

Zip-compression of charts

Direct email attachment

Home page includes:

Buy Now link, Guide link

Key features

Top reasons to buy

Examples, tips

SoftwareFX Your Information In Focus.

.NET Products **COM** **JAVA** **IT|SQL** Downloads Order Support Corporate Search SoftwareFX.com Go

Extensions Pack

Quicklinks

- Overview
- Financial
- OLAP
- Statistical
- Maps
- Licensing
- Pricing
- Support
- Download Trial
- Purchase
- Chart Gallery

Chart FX Maps

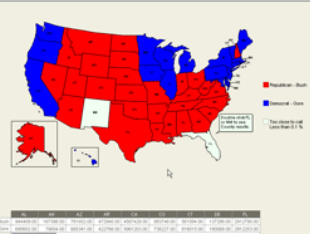


Chart FX Maps provides a full library of dynamic maps that you can integrate with Chart FX to display data graphically through objects in a map. Chart FX Maps, a .NET control, not only offers a comprehensive svg maps library, but it also allows the developer to add their own custom maps through the universal SVG standard.

Powerful Mapping Features

- [Value Range Coloring](#)
- [Winning Series](#)
- [Multilevel Maps](#)
- [Zooming & Scrolling](#)
- [Object Overlays](#)

Visualize Geographic Data



[View Movie \(Small\)](#) [View Movie \(Large\)](#)

Geographic data can be a complicated subject to visualize. Chart FX Maps allows you to apply your geographic data to any of the maps included in our comprehensive library while taking advantage of the powerful Chart FX interface.

Chart FX Maps Resources

[Chart FX Maps Quick Tour](#)
Review an application using Chart FX Maps in a Web Forms environment.

[Chart FX Maps Quick Start Guide](#)
A guide to get you up and running quickly with Chart FX Maps.

[Chart FX Maps Feature Film](#)



Headquarters: Sacramento, California, USA

Faults:

AWFUL DEMO

Extension Pack

A lot of information needs to be downloaded

Features:

Information downloads provided

Most maps available

Price: \$1499

Extension to ChartFX - \$2699

FLEXIBLE!

Not just geographic maps



Dundas Data Visualization **Advanced Data Visualization for Microsoft™ Technologies**

Home | Contact
Sales: 800.463.1492
Int'l: + 416.467.5100

Buy Now! | Products | Technologies | Downloads | Gallery | Company | Consulting | Support

A Global View of Your Data **Dundas Map** for .NET for Reporting Services

Industry leading Data Visualization Solutions for Microsoft Technologies.

Our industry leading technology has benefited Fortune 500 companies for over a decade.

We offer products for Charting, Data Visualization and the creation of Digital Dashboards for .NET, Reporting Services & SharePoint

skip

News & Press more »

SDTimes 2007 100 **Dundas wins 5th SDTimes 100 award**
Once again winners in the components category. [more »](#)

Version 2.0 **Dundas Gauge for .NET v2.0 now available**
AJAX enabled with new 3D styles, Bullet

Why Dundas for Data Visualization?

Data Visualization Technologies
Dundas offers solutions for .NET, SQL Reporting Services & SharePoint [more »](#)

Success Stories
Some examples of how we've helped some customers achieve their goals [more »](#)

Dundas Announcement

Just Announced
Dundas Data Visualization to be part of **SQL Server 2008**

Headquarters: Toronto, Ontario, Canada

Faults:

Lengthy tutorial

Not hands-on

Predefined maps from library

Features:

Appears on all pertinent Google Searches

Cost - \$699

Informative tutorial

Built-in panning and zooming

World and continent maps

Predefined maps from library

Serialize maps as XML or binary

Symbols/pictures attached to all/some layers

Distance scale/legend/color configuration

Dundas Data Visualization *Advanced Data Visualization for Microsoft™ Technologies*

Home | Contact
Sales: 800.463.1492
Int'l: + 416.467.5100

Buy Now! | Products | Technologies | Downloads | Gallery | Company | Consulting | Support

A Global View of Your Data **Dundas Map**
for .NET
for Reporting Services

Industry leading Data Visualization Solutions for Microsoft Technologies.

Our industry leading technology has benefited Fortune 500 companies for over a decade.

We offer products for Charting, Data Visualization and the creation of Digital Dashboards for .NET, Reporting Services & SharePoint

skip ↗

News & Press [more »](#) | Why Dundas for Data Visualization? | Dundas Announcement

SDTimes 2007 100 **Dundas wins 5th SDTimes 100 award**
Once again winners in the components category. [more »](#)

Version 2.0 **Dundas Gauge for .NET v2.0 now available**
AJAX enabled with new 3D styles, Bullet

Data Visualization Technologies
Dundas offers solutions for .NET, SQL Reporting Services & SharePoint [more »](#)

Success Stories
Some examples of how we've helped some customers achieve their goals [more »](#)

Just Announced
Dundas Data Visualization to be part of **SQL Server 2008**

Headquarters: Toronto, Ontario, Canada

Faults:

Lengthy tutorial

Not hands-on

Predefined maps from library

Features:

Appears on all pertinent Google Searches

Cost - \$699

Informative tutorial

Built-in panning and zooming

World and continent maps

Predefined maps from library

Serialize maps as XML or binary

Symbols/pictures attached to all/some layers

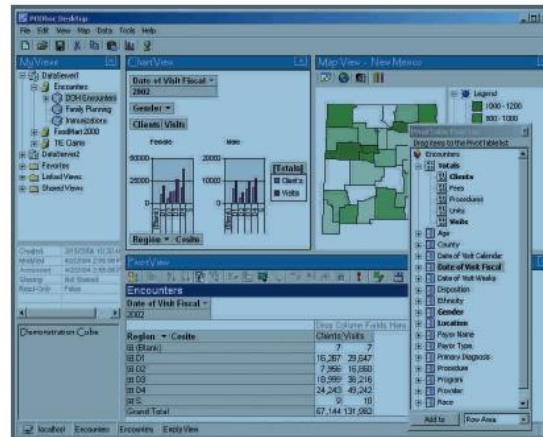
Distance scale/legend/color configuration



POD_{hoc} Reporting

Comprehensive Ad Hoc Reporting Tool

Starting with the pivot table field list, the number of clients and visits to public health offices were dragged and dropped into the pivot view, generating a chart view that provides a breakout by gender and visits. The map view (available with the GIS version of PODhoc Reporting) dynamically updates for each selected cell in the pivot view showing the geographic disbursement of clients across the state.



How does it work?

All data in a database or series of databases can be connected to a data cube for ad hoc reporting. Then users with privileges to a particular cube can drag and

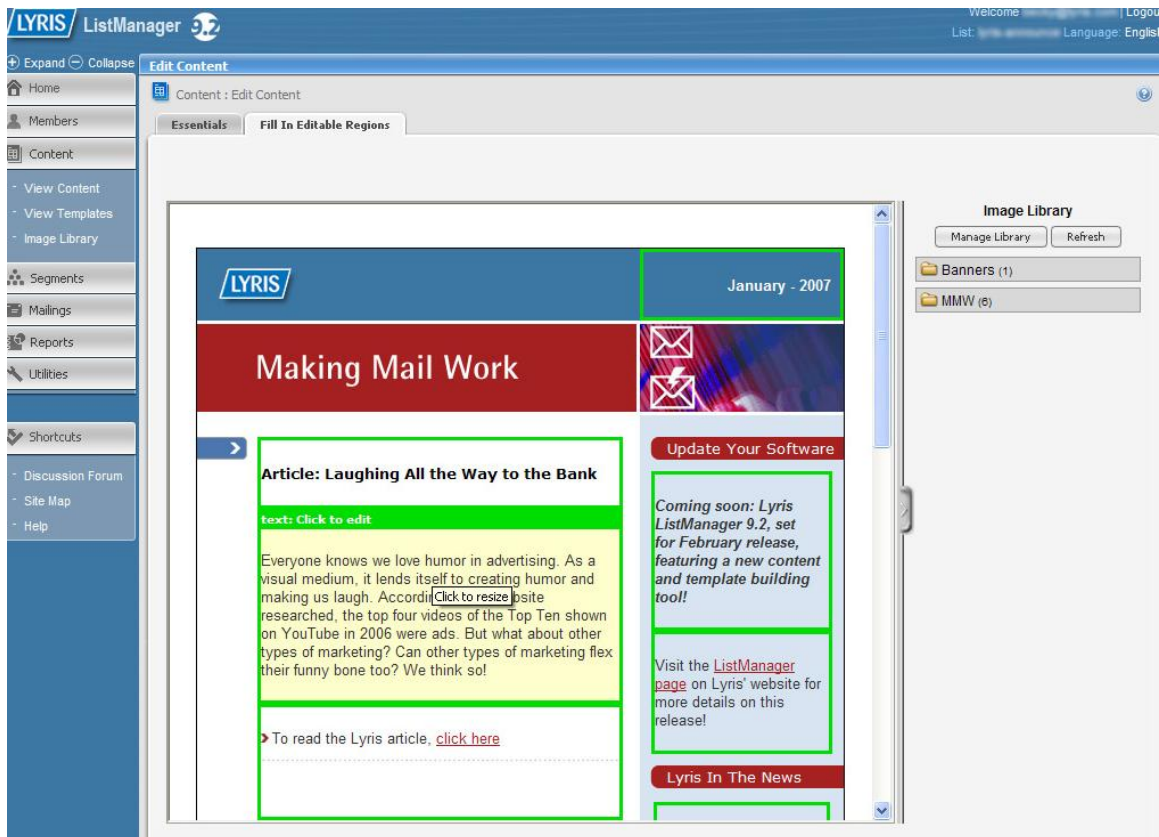
Headquarters: Albuquerque, New Mexico

Faults:

- Requires a LOT of extra software
- No links on the site; long and lengthy
- No demo

Features:

- Uses OLAP technology and supports all ODBC compliant data sources
- Integrated with Microsoft Office and paste graphs directly, export data from Excel
- Drag and drop data elements
- Real time GIS data mapping provides visualization
- Creates new elements without touching the data source



Headquarters: Emeryville, California

Faults:

- Customer representatives must call to use demo
- Exclusively used for tracking email campaigns, newsletters and discussion groups
- Powered by Yahoo Maps
- Only have maps from the United States

Features:

- Very cheap (starting at \$675)
- Free downloads for up to 200 people
- HTML editor
- Large Image Library, with drag and drop simplicity

XCEED
MULTI-TALENTED COMPONENTS

Welcome
 > Index

Look & feel
 Solid foundation
 Grid regions
 Custom painting

Editing
 Rich cell editors
 Dynamic editor display
 Validation
 Error display



Data presentation
 Grouping
 Master/detail



Printing and Exporting
 Print and export grid
 Create Reports

Data binding
 Powerful data binding
 True unbound mode

Extensibility
 Extensibility
 Advanced example


Download / Purchase


 Sales
 Support


 1-800-865-2626
 1-450-442-2626


Welcome to the Xceed Grid Live Explorer!


Select a topic to see how Xceed Grid for .NET can perfectly meet your needs.


 Solid foundation


 Grid regions


 Custom painting


 Rich cell editors


 Dynamic editor display


 Validation


 Error display

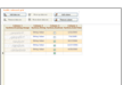
 Grouping

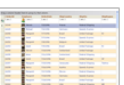
 Master/detail


 Print and export grid

 Create Reports

 Powerful data binding

 True unbound mode

 Extensibility

 Advanced example

Headquarters: Emeryville, CA

Faults:

- Minimal cost is \$10,350
- \$50 minimum for support
- Cannot import from Excel directly
- Very technical website

Features:

- Supports custom grouping and multiple group levels
- Binds more data sources than any other grid (jagged arrays, ILists, IListSouces)
- Unlimited-size fixed header and footer regions that versatile
- Lots of VB.NET and C# samples

LogiXML | BUILDING BLOCKS FOR AN INTELLIGENT ENTERPRISE

Search | Profile | Contact | Site Map | Privacy |

Logi DevNet | Logi BizComm | FreeReporting.

Home | Products | Solutions | Customers | Partners | Support | Company

Logi 8 | Logi 8 Components | **Logi 8 Products**

Products > Logi 8 > Logi OLAP Reporting > Overview

PRODUCTS

LogiXML OLAP Reporting

Dynamic Interactive Analysis and Sophisticated Visualization of your OLAP Cubes

Logi OLAP Some organizations deal with massive numbers of records and need to optimize their data for analysis, keeping pre-calculated data dimensions in [OLAP 'cubes'](#) to get faster answers to critical business questions.

LogiXML's zero-footprint, Logi OLAP Reporting product brings the power of [OLAP analysis](#) to any users across your organization. It empowers your users to quickly make sense of the corporate data in your Microsoft Analysis Services OLAP cubes. They can get immediate answers to their 'why' questions.

Full-featured yet straightforward and easy to use, from deployment to use, you take advantage of OLAP analysis features with no real reliance on IT resources. Other than the initial connection to your cubes, which takes only minutes, your business users are up and running to perform on demand analysis of your cube data.

Logi OLAP is part of our complete BI solution, [Logi 8](#), which also includes Logi Ad Hoc, Logi Info, and Logi Mart. For information about purchasing the Logi 8 platform including Logi OLAP on a subscription basis, please visit the [Logi 8](#) pricing page.

Logi 8 Products

- Logi 8
- Logi Ad Hoc Reporting
- Logi Info
- Logi OLAP Reporting
- Logi Mart

Library

- Datasheet
- White Papers
- DevNet
- Glossary

What Do You Want To Do

- Take a Product Tour
- Request a Demo
- Get Training
- Contact Us

REQUEST A DEMO

Headquarters: McLean, Virginia

Faults:

- Relatively pricy
- Very long tutorial, without any “do-it-yourself” usability
- Website is bland
- Minimal of \$749 for year-long of support
- \$300 2 hours training session
- Requires Microsoft Analysis Service
- Relatively expensive (\$5,000 per processor)

Features:

- User-friendly website
- Versatility (allows you to adjust cube dimension and measure selections)
- Wide variety of standard charts
- Animated flash charts
- Imports data directly from Excel
- Able to create into PDF

Appendix B

```
public static SVGRectangle Parse(XmlNode node)
{
    SVGRectangle rect=new SVGRectangle();
    rect.X=float.Parse(node.Attributes["x"].Value);
    rect.Y=float.Parse(node.Attributes["y"].Value);
    rect.width=float.Parse(node.Attributes["width"].Value);
    rect.height = float.Parse(node.Attributes["height"].Value);
    rect.style =
SVGStyle.ParseStyle(node.Attributes["style"].Value);
    return rect;
}

public void Translate(float dx, float dy)
{
    X += dx; Y += dy;
}
}

//class SVGCircle
public class SVGCircle : SVGShape
{
    public float Cx
    {
        get { return X; }
        set { X = value; }
    }
    public float Cy
    {
        get { return Y; }
        set { Y = value; }
    }

    private float r;
    public float R
    {
        get { return r; }
        set { r = value; }
    }

    private SVGStyle style;
    public SVGStyle Style
    {
        get { return style; }
        set { style = value; }
    }

    public SVGCircle()
    {
        r = 0.0F;
    }

    public static SVGCircle Parse(XmlNode node)
    {

```

```

        SVGCircle circle = new SVGCircle();
        String s = "";
        foreach (XmlAttribute attr in node.Attributes)
            s += attr.Name + ":" + attr.Value + ";";
        circle.style = SVGStyle.ParseStyle(s);
        circle.Cx = float.Parse(node.Attributes["cx"].Value);
        circle.Cy = float.Parse(node.Attributes["cy"].Value);
        circle.r = float.Parse(node.Attributes["r"].Value);
        return circle;
    }

    public void Draw(Graphics g)
    {
        if (style.IsFilled)
            g.FillEllipse(new SolidBrush(style.FillColor), Cx - (r
- style.StrokeWidth / 2), Cy - (r - style.StrokeWidth / 2), 2 * (r -
style.StrokeWidth / 2), 2 * (r - style.StrokeWidth / 2));

            g.DrawEllipse(new Pen(style.StrokeColor,
style.StrokeWidth), Cx - r, Cy - r, 2 * r, 2 * r);
        }

    public void Translate(float dx, float dy)
    {
        X += dx; Y += dy;
    }
}

    public static SVGLine Parse(XmlNode node)
    {
        SVGLine el = new SVGLine();
        el.style =
SVGStyle.ParseStyle(node.Attributes["style"].Value);
        el.X1 = float.Parse(node.Attributes["x1"].Value);
        el.Y1 = float.Parse(node.Attributes["y1"].Value);
        el.X2 = float.Parse(node.Attributes["x2"].Value);
        el.Y2 = float.Parse(node.Attributes["y2"].Value);
        return el;
    }

    public void Draw(Graphics g)
    {
        g.DrawLine(new Pen(style.StrokeColor, style.StrokeWidth),
X1, Y1, X2, Y2);
    }

    public void Translate(float dx, float dy)
    {
        X1 += dx; Y1 += dy;
        X2 += dx; Y2 += dy;
    }
}

//class SVGEllipse
public class SVGEllipse : SVGShape

```

Bibliography

1. "Database Definitions for Lyris ListManager." Lyris. 20 June 2007
<http://www.lyris.com/products/listmanager/db_defined.html>.
2. "Dundas Map for .NET Detailed Feature List." Dundas Data Visualization. 20 June 2007
<http://www.dundas.com/Products/Map/NET/Features/index.aspx#Map_Wizard>.
3. "Extensions Pack: Chart FX Maps." Software FX. 21 June 2007
<<http://eu.softwarefx.com/EXTENSIONS/FEATURESMAPS.ASPX?USSfxRef=www.google.com%2fsearch%3fq%3dmap%2breporting%2c%2bmap%2bchart%26hl%3den%26start%3d50%26sa%3dN>>.
4. "GeoBrush." Belltech Systems. 20 June 2007 <<http://www.geobrush.com/>>.
5. "Logi OLAP Reporting." Zero Footprint. LogiXML: Building Blocks for an Intelligent Enterprise. 20 June 2007
<<http://www.logixml.com/rdPage.aspx?rdReport=LogiOLAPFeatures#01>>.
6. "PODhoc Reporting." POD, Inc. 21 June 2007
<<http://www.podassoc.com/PODHoc.pdf>>.
7. "Siec Sprzedazy COMARCH S.a." CDN XL. Comarch. 28 June 2007
<<http://www.comarch.pl/cdn/Gdzie%20kupic>>.
8. "Sokolow Main Page." Sokolow. 26 June 2007 <<http://www.sokolow.pl/>>.
9. "Some of Our Customers." Dundas Data Visualization. 26 June 2007
<<http://www.dundas.com/Company/Why/Customers.aspx>>.
10. "The Meat Sector." PKM Duda. 26 June 2007
<<http://www.zmduda.pl/en/meat.htm>>.
11. "Traffic Manager." deCarta. 21 June 2007
<<http://www.decarta.com/products/tm/index.html>>.
12. "TWILIGHT - Communications Provider Toolkit." ComArch Information Technology. 21 June 2007 <<http://twilight.comarch.com/>>.
13. "Xceed Grid for .NET." Xceed Multitalented Components. 21 June 2007
<http://xceed.com/Grid_WinForms_Intro.html>.