Review: Reporting Tools

by David Sutherland

Whenever a group of Delphi developers are in a room together, it doesn't seem long before someone raises the issue of report writing in Delphi and what alternatives there are to ReportSmith.

At the last count, I found 10 alternatives which are either written in Delphi or available as VCL components (there are many more generalised products). In this review, we'll look at five of these, which in my humble opinion are the major players in the market. Personal opinions come strongly into this area, as we will see. Each of them takes a different route to the common end, that of producing either on screen or in print information that will assist an individual or organization in making decisions.

At the end of the day, there is no one killer product, each has its own benefits and drawbacks, but by the end of the review, I hope that you will be able to make a more informed decision on the right tool, or tools, for your own needs.

The five products I've selected are Ace Reporter, Piparti Pro, QuickReport, Report Writer Pro and Shazam Report Wizard. At the end of the review there is a table allowing a comparison of each product's main features, so in the main text I've only discussed features that distinguish the products from their competitors.

Reporting Concepts

Before we look at the products themselves, a quick consideration of the two different reporting concepts used by the products. The most common is the banded concept. In this one the report consists of a number of bands, like this:

```
Report Header
  Page Header
    Group Header
      Detail
    Group Footer
  Page Footer
Report Footer
```

An example of this would be a listing of orders by customer, where, for example, you would place on the report header band the organization name, on the page header you would place the report title, on the group header the customer's details, then on the detail band would be placed details of the orders for that customer. The group footer could contain a count of orders and the total value of those orders, and on a page footer you might place the page number together with the date and time when the report was printed.

The alternative approach is the free format concept, where you place report objects onto a "blank" piece of paper, either at design time through drag and drop, or at run-time through code.

One other issue worth raising at this point is that for those whose roots lie in Paradox these report writers, unlike the Paradox report writer and indeed the Access report writer, do not group the data automatically, but simply start a new group upon every occurrence of new data in the field being grouped by. A way to overcome this problem is to base the report on a `TQuery` rather than a `TTable`. This then lets you incorporate all the information you wish to report on in one dataset rather than basing the report on a master table plus several detail tables, performing the required sorting and grouping within the `TQuery`.

Demos And Tutorials

All the products contain glossy demonstration programs. I agree that the provision of a good demo is important, especially to show what can be done once the initial learning stage is over, but they can be overwhelming without a basic understanding of how the product is put together and how the basic report is built up step by step.

This area of how to get started and overcome the initial learning curve is crucial to the success of a product, especially one where you can obtain trial versions, which require the investment of one's time to establish whether to buy the full product. This applies to all these products, as indeed very many Delphi add-ons. One of the many things that make Delphi so attractive as a developer's tool is the existence of these superb add-ons to expand and enhance the basic package provided by Borland.

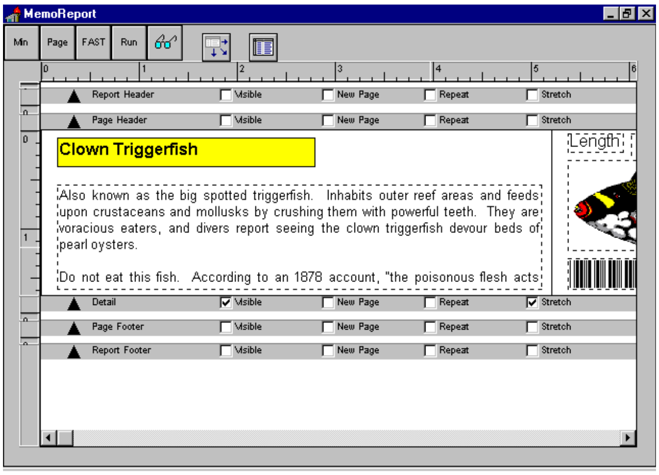
Ace Reporter

Ace Reporter has been available since Christmas 1995 and at the time of writing is in version 1.09. It is a fully featured banded report writer. In order to use it, you need to drop `Dataset`, `DataSource` and `SctReport` components onto a form and then connect them up in the Object Inspector.

By connecting the `SctReport` to a `DataSource`, it by default places report header, page header, detail, page footer and report footer bands on the report. You can then choose which of these you wish to be visible at run-time by way of a check box placed on the report band description. See Figure 1.

The heart of Ace Reporter is its in built expert, the Page Manager, where the majority of the work necessary to produce a report is undertaken (Figure 2).

The Page Manager has four pages. First is the Variables page, which allows you to define report variables of the following types: fields, expressions and totals. Field variables are normally generated automatically for each field of the datasets placed on the form, though you can choose for this default behavior to be switched off in the DataSources page. Expression variables allow you to display any item of information that you wish to calculate at run time. An example of this might be an individual's name, where you had stored the name as first name and last name



▲ Report Header □ Visible □ New Page □ Repeat □ Stretch
▲ Page Header □ Visible □ New Page □ Repeat □ Stretch

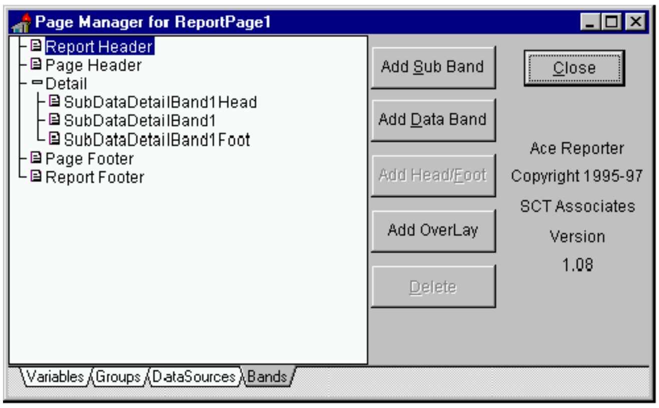
Clown Triggerfish

Also known as the big spotted triggerfish. Inhabits outer reef areas and feeds upon crustaceans and mollusks by crushing them with powerful teeth. They are voracious eaters, and divers report seeing the clown triggerfish devour beds of pearl oysters.

Do not eat this fish. According to an 1878 account, "the poisonous flesh acts

Length

▲ Detail ☑ Visible □ New Page □ Repeat ☑ Stretch
▲ Page Footer □ Visible □ New Page □ Repeat □ Stretch
▲ Report Footer □ Visible □ New Page □ Repeat □ Stretch



Ace Reporter
Copyright 1995-97
SCT Associates
Version
1.08

➤ *Left: Figure 1, Right: Figure 2*

fields. You would define a new variable then set its UpdateLevel property in the Object Inspector to one of the bands in the report. Then when the report is about to be printed, the variable's GetData event will be fired and in the event handler you would place the required code. The Expression variable type allows you to perform any operation that Object Pascal allows.

The Total variable type is used when you want to calculate the sum, count, minimum, maximum or average of a field. In the Page Manager you simply add a Total variable and state the field variable you wish to base the calculation on. Totals are one of the features that distinguish Ace from its rivals. Once you have defined the variable you add a TotalLabel from the palette to the required report band and set its TotalVariable property to the total variable required. You then set the Type property to the calculation type required, ie Sum, Count etc.

Here's the really nice part: if you then simply copy the TotalLabel you have just created and paste it, say, to the report footer as opposed to a group footer, it resets itself to calculate the report total rather than the group total. Then if you want a count of the records rather than the total, just copy and paste again, but now set the Type property to Count.

The Groups page is where you define groups and the order in which they should appear. Once defined you set the field variable on which to group the data.

The DataSources page is where you can choose not to have field variables automatically created for each field in the selected datasets.

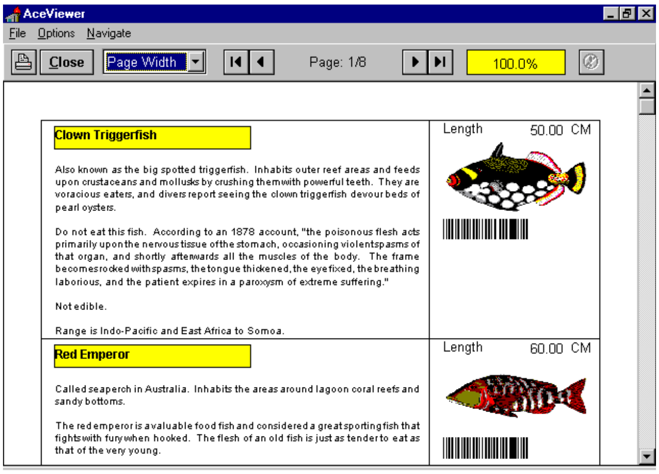
Last is the Bands page: this shows all of the bands you have available and allows you to define further bands as required. By selecting any one of the created bands you can set any of its properties in the Object Inspector.

Having used the Page Manager facility to set out the basic structure of the report, we come to the FAST button (see Figure 1), which displays the Auto Create Labels dialog box, allowing you to create labels for any selected variable previously defined. Then you can select which bands you wish first the labels and secondly the variables themselves to be placed on. This allows you to place in one operation any number of variables, rather than dropping labels and field components one by one onto a report (though you can do this if you wish). One word of caution here: it is very easy to place items on top of other items, when this facility is used more than once in constructing a particular band of the report. It is essential to make space by selecting and then dragging the items already placed on the report. An undo facility would be a welcome addition here, and while I'm making requests for future enhancements, you can't drag items from one band to another, instead you have to cut or copy them and then paste them on to the new band.

There are several other features of Ace which help with report development. Firstly there's the ability to set any report to print either all the records in the current dataset or just the currently selected record. This is of great value if you wish to print out a representation of the current form. Rather than making a call to Form1.Print and having a bitmap image slowly print out, you can design a report which is a representation of the screen form and then when printing the report via the custom TSctButton button provided, set the DataRange to a single record and print the desired report.

Second is the SctBarCodeLabel component: drop it on the report and set its DataField property to any variable which you wish to represent as a barcode at run-time. Currently only 3 of 9 style barcodes are supported. The character set supported includes the numerals 0 to 9, characters A to Z (upper case only), various marks (- . * $ / + %) and space (ascii 32).

Third is the support for the placing of images on reports, together with shapes, lines and borders. The line facility is very easy to use. Each line is contained in a rectangle and you can place the printed line on either edge of the rectangle. The advantage of this that it is easy to drag the rectangle across the report and its keeps the line perfectly straight as you do so. By adjusting the size of the rectangle you can add space above or below the line. An alternative is the ability to place vertical dividers between variables when placing them via the FAST button and to set the



Clown Triggerfish

Also known as the big spotted triggerfish. Inhabits outer reef areas and feeds upon crustaceans and mollusks by crushing them with powerful teeth. They are voracious eaters, and divers report seeing the clown triggerfish devour beds of pearl oysters.

Do not eat this fish. According to an 1878 account, "the poisonous flesh acts primarily upon the nervous tissue of the stomach, occasioning violent spasms of that organ, and shortly afterwards all the muscles of the body. The frame becomes rocked with spasms, the tongue thickened, the eye fixed, the breathing laborious, and the patient expires in a paroxysm of extreme suffering."

Not edible.

Range is Indo-Pacific and East Africa to Somoa.

Length 50.00 CM

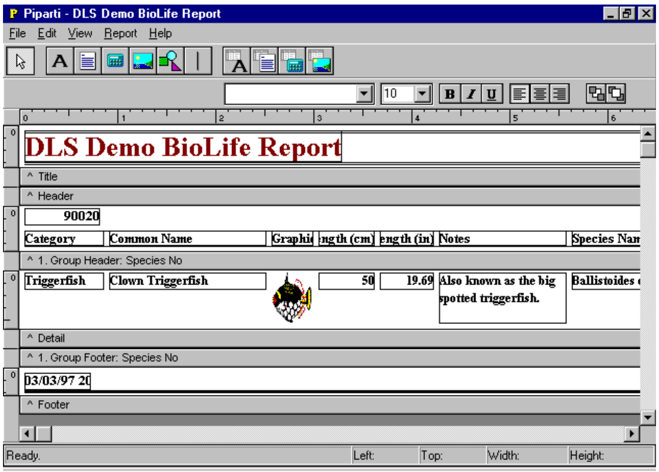
Red Emperor

Called seaperch in Australia. Inhabits the areas around lagoon coral reefs and sandy bottoms.

The red emperor is a valuable food fish and considered a great sporting fish that fights with fury when hooked. The flesh of an old fish is just as tender to eat as that of the very young.

Length 60.00 CM

➤ *Figure 3*


Piparti - DLS Demo BioLife Report
File Edit View Report Help
10
B I U
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DLS Demo BioLife Report

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Category | Common Name | Graphic | ngth (cm) | ength (in) | Notes | Species Nam

Triggerfish | Clown Triggerfish | | 50 | 19.69 | Also known as the big spotted triggerfish. | Ballistoides c

03/03/97 20

➤ *Figure 4*

BorderType property of a band to provide horizontal lines.

There are events associated with before/after printing a band which allow you, for example, to allocate unique numbers to a report.

You can preview a report during design mode by clicking the Run button on the SctReport component. This preview is almost the same as at run-time, except that expression variables are only calculated at run-time (Figure 3).

Ace Reporter comes with full help files together with a *get you started* tutorial, which is now integrated into the help. It is only missing an end user report designer facility to make it truly complete.

Piparti Pro

The authors of Piparti Pro are targeting the top end of the VCL-based report writer market and have priced it accordingly. So how does it compare with its lower-cost rivals?

In simple terms, to use Piparti Pro you just to need to drop TppReport, DataSet and DataSource components onto a form. After connecting them up you double-click on the TppReport component and the Piparti designer appears (Figure 4). From here you can lay the report out to your heart's content. From within the Piparti designer you can add groups and additional report bands. You are supplied with floating alignment and graphics palettes. One very useful feature is the ability to drag and drop between bands.

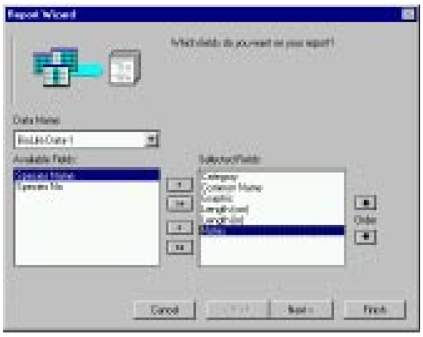
To run a Piparti Pro report only takes the following code:

```
ppBioLife.Device := dvPrinter;
ppBioLife.PrintReport;
```

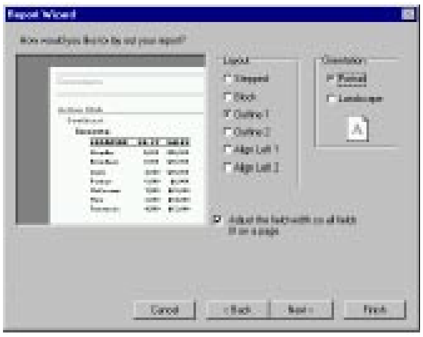
which sends the specified report direct to the currently selected printer.

As with Ace Reporter there are a full range of methods associated with each part of the report, allowing you to add custom variables and perform calculations as the report is being printed. You can switch from design to preview mode at any time.

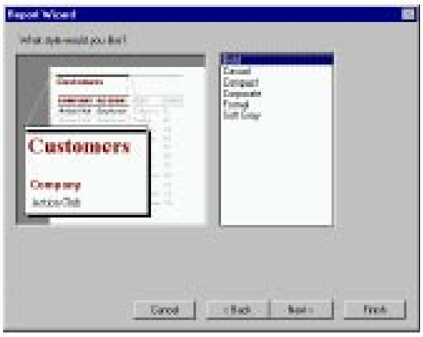
In the basic version of Piparti there is no equivalent of Ace's FAST button and each field has to be individually selected and added. However, Piparti Pro comes with full end-user design facilities allowing you to provide the user of your applications with the functionality described above. This works as follows: the End-User Reporting Framework contains a DataView class which you can use to create default sets of data, which you can then allow the end-user to further customise with search and sort criteria, through the use of a Data Wizard. This allows you to use meaningful field names where you link field aliases.



➤ *Figure 5*

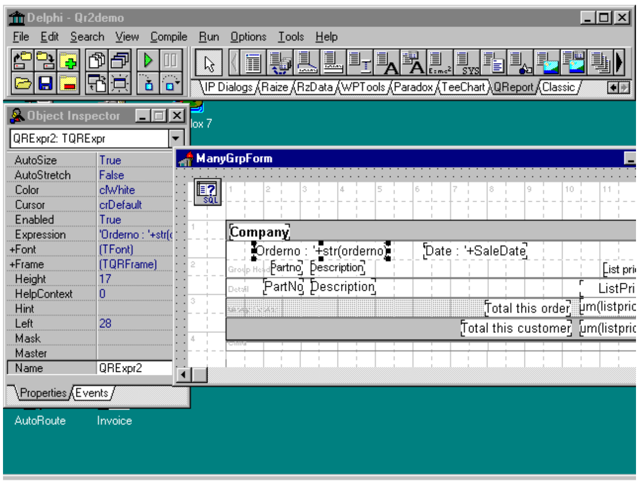


➤ *Figure 6*



➤ *Figure 7*

The *piece de resistance* is the Report Wizard facility, which is similar to the report wizard included with Access and allows you to provide a step by step guide to end-user report production (see Figures 5 to 7; note that not all the steps are shown here). These report definitions can then be saved for future re-use. In fact by compiling the provided example you can

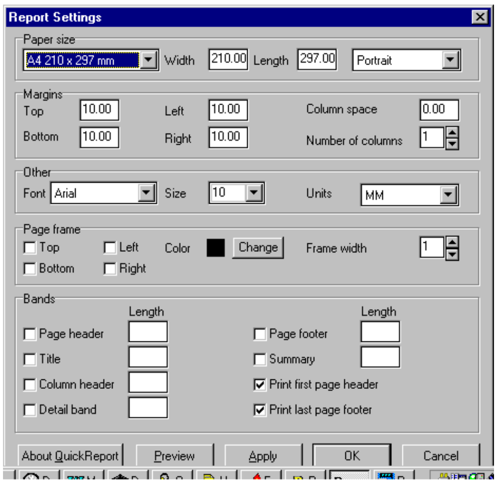

Delphi - Qr2demo
File Edit Search View Compile Run Options Tools Help
IP Dialogs Raize RzData WPTools Paradox TeeChart QReport Classic
Object Inspector
lox 7
ManyGrpForm
SQL
Properties Events
AutoRoute Invoice

QRExpr2: TQRExpr

AutoSize	True
AutoStretch	False
Color	clWhite
Cursor	crDefault
Enabled	True
Expression	'Orderno : '+str((
+Font	(TFont)
+Frame	(TQRFrame)
Height	17
HelpContext	0
Hint	
Left	28
Mask	
Master	
Name	QRExpr2

Company
Orderno : '+str(orderno) Date : '+SaleDate
Group Head Partno Description List pri
Detail PartNo Description ListPri
Total this order um(listpric
Total this customer um(listpric

➤ Left: Figure 8



Paper size: A4 210 x 297 mm Width 210.00 Length 297.00 Portrait

Margins: Top 10.00 Bottom 10.00 Left 10.00 Right 10.00 Column space 0.00 Number of columns 1

Other: Font Arial Size 10 Units MM

Page frame: □ Top □ Bottom □ Left □ Right Color ■ Frame width 1

Bands:
□ Page header Length
□ Title
□ Column header
□ Detail band
□ Page footer Length
□ Summary
☑ Print first page header
☑ Print last page footer

➤ Right: Figure 9

provide yourself with the same functionality by adding the resultant executable to the Delphi tools menu. This is of great assistance in producing pre-defined reports which you can add into your application.

Piparti Pro contains excellent support for newspaper column style reports and for mailing label production. It comes with sample Avery label templates pre-defined and ready for use either by yourself as a developer or by the users of your applications.

I found Piparti Pro to be very highly featured, with a very impressive range of demo programs. However, it also has a very steep initial learning curve. What has impressed me about the authors of the product is their willingness to listen to my comments and their rapid response to them. They provided me with a Tech Tips document, which allowed me to take a step by step approach to developing with Piparti and thus understand the benefits of so doing. These Tech Tips have now been integrated into the product.

Although the most expensive product reviewed, in terms of its overall quality I believe Piparti Pro is certainly one of the leaders and should be evaluated by anyone who is half-way serious about report writing.

QuickReport

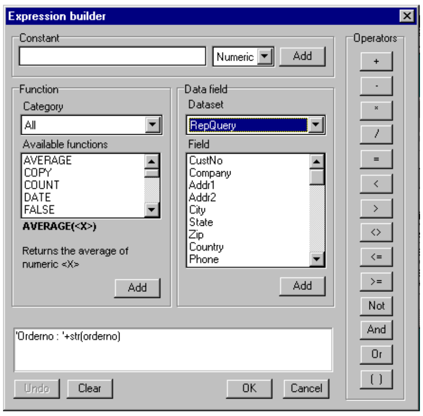
QuickReport is the grandaddy of the visual report writers for Delphi. It first came out for Delphi 1 and was included with Delphi 2. The version I tested was 2.0d, which is the first product released stated to be compatible with Delphi 1, 2 *and* 3. As with Delphi 2, a .DCU-only copy of QuickReport will be bundled with certain flavours of Delphi 3. The author has informed me that this will be a restricted version only and to obtain the full benefits of the product you need to purchase a full copy, complete with source code.

The main difference between the new version and QuickReport 1 (QR1) is that the report component which you add to a form (`TQuickReport`, connected to a `TDataSet`) is a visual component, unlike the report controller in QR1. You then add bands onto this. See Figure 8.

QuickReport builds on the banded approach and aims to provide an easier to use product by means of editors, which allow you to control report layout (Figure 9) and data selection and can be accessed by right clicking the main report component, or by using the Object Inspector.

End-user report facilities are included, but unlike in Piparti Pro I was unable to make use of these when testing the product.

Under Delphi 1 there are problems with missing properties. In addition to this, while it does work under Delphi 2 it is restricted to working with one table at a time, though this can be overcome by using SQL typed directly into the data selection editor. I also had problems with the Expression Builder supplied (Figure 10), the equivalent of the custom expression dialog box in Shazam Report Wizard. This was overcome by changing the stack size to 48Kb (while this is in the documentation it is well hidden...).



Category: All
Available functions: AVERAGE, COPY, COUNT, DATE, FALSE

AVERAGE(<X>)

Returns the average of numeric <X>

Dataset: RepQuery
Field: CustNo, Company, Addr1, Addr2, City, State, Zip, Country, Phone

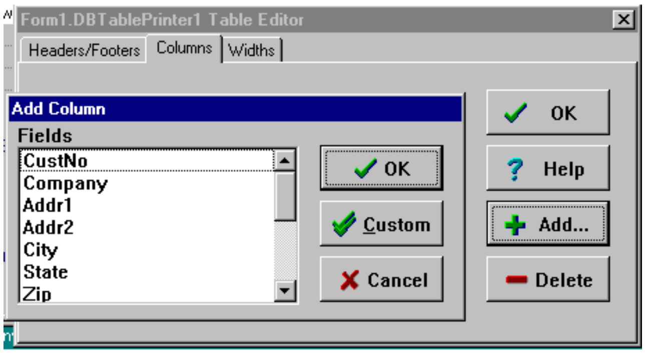
'Orderno : '+str(orderno)

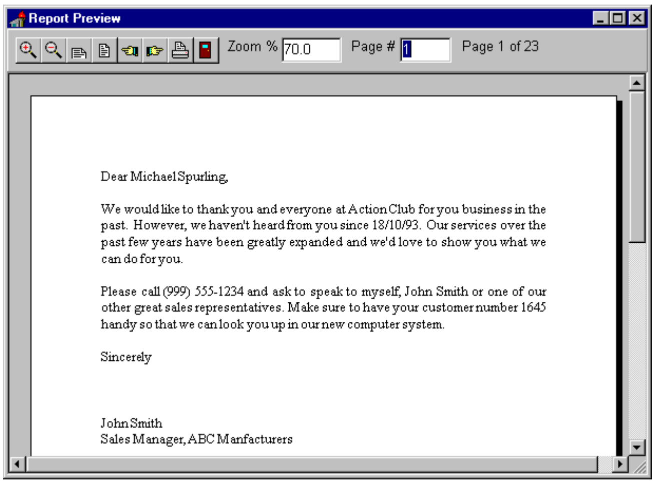
➤ Figure 10

It would seem from the Delphi forums on CompuServe that I'm not alone in having problems with QuickReport 2.0. Though it has an impressive features list, in the version tested (2.0d) it is not yet ready for commercial release. What is probably most worrying is that technical support is conspicuous by its absence (there have been many CompuServe forum threads asking how to get a response from QuSoft), despite promises made of a 24 hour turnaround for technical questions. This is definitely a wait and see product; hopefully by the release of Delphi 3.0 its impressive ambitions will be met.

Report Printer Pro

Where Report Printer Pro differs from the other products is that is largely code-based and adopts a non-visual approach to report designing. The benefit of this is its unrivalled flexibility. It comes with





Dear Michael Spurling,

We would like to thank you and everyone at Action Club for you business in the past. However, we haven't heard from you since 18/10/93. Our services over the past few years have been greatly expanded and we'd love to show you what we can do for you.

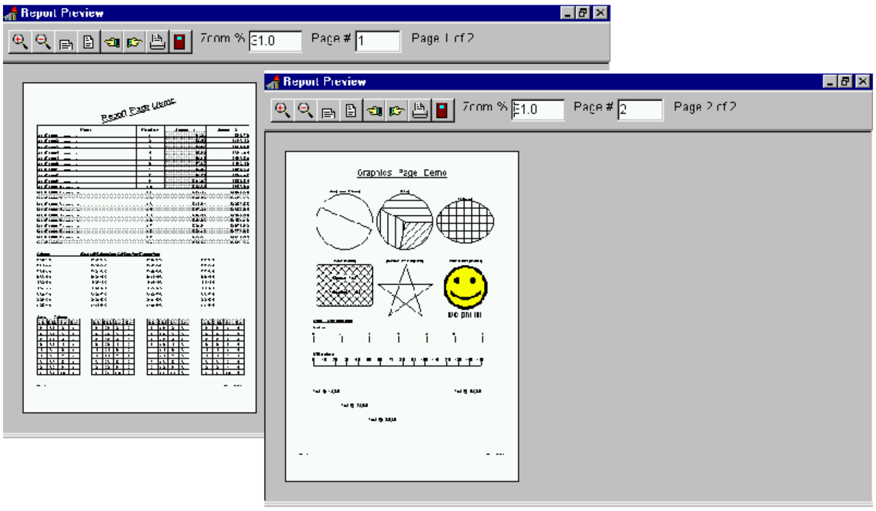
Please call (999) 555-1234 and ask to speak to myself, John Smith or one of our other great sales representatives. Make sure to have your customer number 1645 handy so that we can look you up in our new computer system.

Sincerely

John Smith
Sales Manager, ABC Manfacturers

➤ *Above: Figure 12*

➤ *Right: Figure 13*



➤ *Figure 11*

a very detailed step by step tutorial and a comprehensive help file.

As you can see from Figure 11 Report Printer Pro can include a wide range of report elements. The downside comes when you look at the code required to produce this report: some 308 lines!

Before you get turned off, Report Printer Pro comes with a number of shell components designed to provide the report skeleton. For example, to produce a columnar report you add a `DBTablePrinter` component to a form together with a `Dataset` and `DataSource` and then when you want to print the report add this code to an event handler:

```
DBTablePrinter1.Execute(
  Sender as TBaseReport)
```

However, before you get too carried away, you potentially have hundreds of properties to set via the Object Inspector to get the desired report format if the default is not acceptable. You must also select the fields to be included via the Table Editor built into the `DBTablePrinter` component (see Figure 12).

Alternatively, to generate banded reports you add a number of `TDBTablePrinter` components and link them together. Again you use the Table Editor and Object Inspector to arrive at the required layout. You can also use Report Printer Pro to produce excellent form letters (Figure 13).

In terms of the degree of control available to the developer, Report Printer Pro is unrivalled. However, as one who believes that just as Delphi is a visual development tool so should be any add-ons (whenever possible), I feel that unless you really need this level of control over your reports the other visual products should be at the top of your list.

Shazam Report Wizard

Shazam is quite different from the other products reviewed here in that it incorporates a visual SQL generator together with a visual report layout tool. It is principally designed for use as an end-user tool, to be incorporated into your application, though it can also be used to design specific reports. The SQL generator is handy for creating SQL code which you can then paste into a `TQuery`.

To use Shazam you drop a `TSRW` component onto a form and then call it with

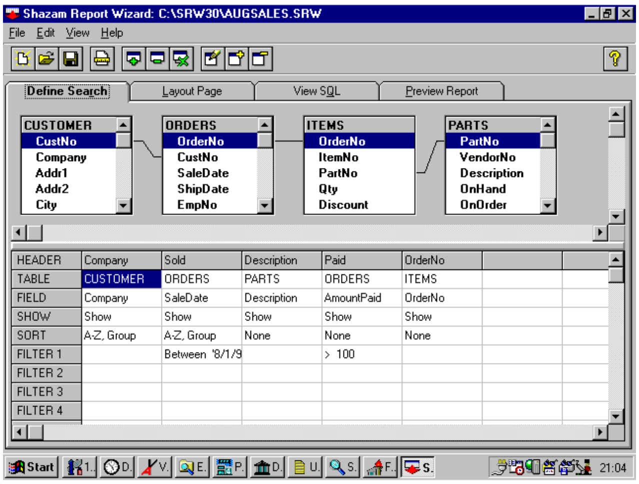
```
SRW1.Active := True;
```

This calls the Shazam Report Wizard, which consists of four pages, the first of which is shown in Figure 14.

Here you select the tables to use for the report, visually link them and then drag and drop the fields to base the report on. You then set the format of these fields, the sort order and any grouping and filtering you require. At the same time you can create custom variables (Figure 15).

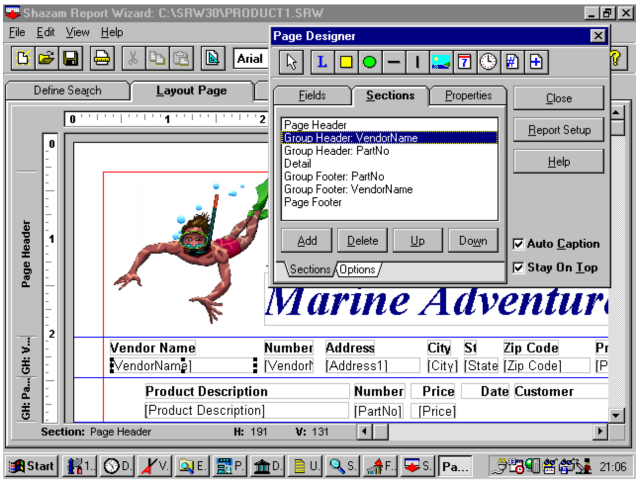
You will note that this setting up of the fields' format is quite different from the other products, where this task is done either in the visual design mode or through the Object Inspector.

Figure 16 shows the visual layout page, where you use the Page Designer dialog to select and drop on the page the various variables generated through the visual query. You can also define group bands and summary fields. The



HEADER	Company	Sold	Description	Paid	OrderNo
TABLE	CUSTOMER	ORDERS	PARTS	ORDERS	ITEMS
FIELD	Company	SaleDate	Description	AmountPaid	OrderNo
SHOW	Show	Show	Show	Show	Show
SORT	A-Z, Group	A-Z, Group	None	None	None
FILTER 1		Between '8/1/9		> 100	
FILTER 2					
FILTER 3					
FILTER 4					

➤ *Figure 14*



Page Header
Group Header: VendorName
Group Header: PartNo
Detail
Group Footer: PartNo
Group Footer: VendorName
Page Footer

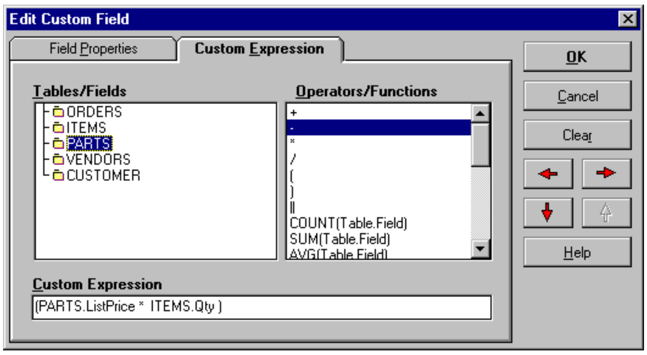
Vendor Name	Number	Address	City	St	Zip Code	Pr
[VendorName]	[VendorN	[Address1]	[City]	[State	[Zip Code]	[P

Product Description	Number	Price	Date	Customer
[Product Description]	[PartNo]	[Price]		

Section: Page Header H: 191 V: 131

➤ *Figure 16*

➤ *Figure 15*



ORDERS
ITEMS
PARTS
VENDORS
CUSTOMER

+
-
*
/
(
)
||
COUNT(Table.Field)
SUM(Table.Field)
AVG(Table.Field)

Custom Expression
(PARTS.ListPrice * ITEMS.Qty)

Page Designer also allows you to add images, shapes and lines to the report, plus the paper layout and report title. A nice feature here is that if, for example, you had sorted records by Company in the query page and then grouped them by Product in the layout page, you are asked if you wish to automatically change the query to match the desired layout.

You can review the SQL generated by Shazam, which sensibly only creates SQL which is valid for the database type being used. A full preview of the report is also available in the Wizard. An end-user help file is provided, which you can distribute with your apps, together with a developer's help file.

As the developer you have full control, via properties adjustable in the Object Inspector at design time or through code at run-time, over which facilities are available to the end-user. For example, you could restrict them to the use of tables within a specified alias. You can also provide table and field aliasing similar to Piparti Pro.

Whilst Shazam Report Wizard is totally visual, you do have the option to generate a report entirely from code if required. Or, after designing a report visually, you can modify it at run-time via the `OnOpen` and `OnQuery` events.

To use the reports you have designed in a similar way to Ace Reporter then you would use:

```
with SRW do begin
  activate;
  OpenReport('AugSales.srw',
    srwPromptIsNo);
  ChangeTab(srwTabPreview,
    True);
end;
```

which loads the specified file and moves straight to the Preview page of the Wizard. The difference from Ace Reporter is that the reports are not bound into the executable.

This is a very straightforward product, with a very low learning curve. For developers who only need to report on data contained in database files it provides a good method of producing packaged reports, but also has the facility to, in the words of the authors, "support the unplanned and gotta have it yesterday reports".

Delphi 3

You will see from the features listings (Table 1) that all the authors have stated their intention to support Delphi 3. At the time of writing, QuickReport definitely does. I've received the changes necessary for Ace to work under Delphi 3 and as these are minimal I'm confident that the release of Delphi 3 will be very closely followed by an updated version of Ace. The technical support and assistance provided to me by the authors of Piparti again fill me with confidence in their ability to meet their promise of a rapid update. In terms of Shazam, my only concern is that as the shipping date for Shazam 3.0 has slipped from December back to April, there may be delays once Delphi 3 is released (the authors has stated that support for Delphi 3.0 will be provided as a free downloadable patch within 30 days of Delphi 3.0 shipping). The authors of Report Printer Pro claim an upgrade to Report Printer Pro will ship within 30 days of Delphi 3.0 release.

Conclusions

I hope that this review will assist you in deciding which reporting tool, or combination of tools, will meet your own needs. Like many things in life, there is no substitute for experience.

Once you have established a short list, obtain trial copies and

	AceReporter	Piparti Pro	QuickReport	ReportPrinter Pro	Shazam Report Wizard
Author and email*	SCT Associates 73766,1224	Digital Metaphors 105170,1644	QDS 101372,3471	Nevrona 70711,2020	Shazam Ware 70562,412
Version reviewed	1.09	2.092	2.0d	2.00g	3.0 (beta)
Demo included	Yes	Yes	Yes	Yes	Yes
Tutorial	Yes	Yes	Yes	Yes	Yes
Source code available	Yes	On request	Yes	Yes	Yes
Printed documentation	Yes	No	Extra charge	Yes	No
Online help	Yes	Yes	Yes	Yes	Yes
C++ Builder support	Yes	If demand	Yes	Yes	Yes
Type of reporter	Banded	Banded	Banded	Free format	Banded
Visual design	Yes	Yes	Yes	No	Yes
Master/detail support	Yes	Yes	Yes	Yes	Yes
Visual SQL generator	No	No	No	No	Yes
Expert	Page Manager	Yes	Yes	No	Yes
Blob support (memo/graphic)	Yes	Yes	Yes	Yes	Yes
Non BDE reports	Yes	Yes	Yes	Yes	No
End user design capability	No	Yes (with Wizard)	Yes	No	Yes
Add-ons available	Notes provided on integration methods	Hooks for query builders	Yes	No	No
List Price	$245	$495	$99	$149	$179
Support methods	email, web, fax, voice	email, web	email, web, voice by Borland	email, web, fax, voice	email, web, fax

*Email addresses are CompuServe, from the internet use, for example, 73766.1224@compuserve.com (NB use . not ,)

➤ *Table 1: Feature comparisons*

see how your expectations are met. This will be time well spent: there is nothing worse than making a selection and after producing a number of carefully crafted masterpieces realizing you were wrong and either having to start from scratch or trying to work round the limitations that you have imposed on yourself...

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