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Supporting users throughout their entire journey of learning model-based systems engineering (MBSE) is central to Vitech’s mission. For users looking for additional resources outside of this document, please refer to the links below. Alternatively, all links may be found at www.vitechcorp.com/online-resources/.

**Webinars**
Immense, on-demand library of webinar recordings, including systems engineering industry and tool-specific content.

**Screencasts**
Short videos to guide users through installation and usage of GENESYS.

**A Primer for Model-Based Systems Engineering**
Our free eBook and our most popular resource for new and experienced practitioners alike.

**Help Files**
Searchable online access to GENESYS help files.

**Technical Papers**
Library of technical and white papers for download, authored by Vitech systems engineers.

**Technical Support**
Frequently Asked Questions (FAQ), support-ticket web form, and information regarding email, phone, and chat support options.
INTRODUCTION

This document is an introductory guide for writing GENESYS™ reports. To facilitate the explanation of the concepts, the following example reports are produced:

- **Hello World** – a trivial report that displays the string “Hello World!”
- **List of Concerns** – a report that displays project concerns, and
- **Requirements with Concerns** – a report that displays concerns identified during requirements analysis.

The sample project, Geospatial Library, is the data source for the report outputs exhibited in this document. To achieve results consistent with the instructions herein, the reader should Import and Open the Geospatial Library sample project.

MANAGING REPORTS

The GENESYS reports are partitioned and stored in an arrangement of folders that is representative of those partitions. Expanding the Reports branch in the Project Explorer pane reveals the arrangement of GENESYS report folders. Clicking on a report folder will reveal its contents in the Browser window. For example, click on the Common Subreports folder and the Browser window displays the list of reports residing in Common Subreports folder.

Prior to adding a new report, it is helpful to consider in which folder that report will reside. The recommended practice is to establish a new folder or folders to isolate user generated reports from the GENESYS base reports. Accordingly, for the reports generated in this document, a new folder is created.
Introduction to Writing Reports

- In the Project Explorer pane, right-click on the Reports branch.
- Click on the New Folder command.
- Enter the folder name: “Toolkit”.
- Click OK.

![Figure 2: New Folder](image)

The first report will simply display the static text string: “Hello World!” Add this report to the Toolkit folder.

- In the Project Explorer pane, right-click on the Toolkit folder.
- Click on the New Report Definition command.
- Enter the report name: “Hello World”.
- Click OK.
Figure 3: Create the Hello World Report

The GENESYS Report Editor opens and presents an empty design surface. The design surface resembles a sheet of graph paper and resides in the center of the Report Editor window. Controls are used to display data. The available Controls are located in the Report Designer’s Toolbox window. A Label control is used to display plain text and is chosen to add the “Hello World!” string to the report.

1. This report will only display a single line of text. Therefore, the design surface will easily accommodate a larger font size. Prior to adding Controls, set the default font size (located in the Font section of the Report Editor’s ribbon) to 12.
2. Drag the Label control from the Toolbox window and drop it on the Detail section of the design surface.
3. Double-click inside the Label control box and type “Hello World!”
4. Click on the design surface (outside of the Label control box).
Figure 4: Inserting a Label Control

5. Click on the Save command in the Report Editor ribbon to save the effected changes.
6. Click on the Preview command in the Report Editor ribbon to view the report’s output. (*The output should consist of a single page containing the string “Hello World!”*)
7. Close the Preview window.
8. Exit the Report Editor.

At this point, the Hello World report exists in the Toolkit folder of the repository. In the browser window, select the Hello World report to open its Property Sheet. Notice that GENESYS initialized the report’s Description attribute with a default text string.
Figure 5: Default Report Description

A report's description is editable. Open the GENESYS text editor by clicking on the pencil icon adjacent to the Description attribute text box. Use the text editor to replace the default description with a more representative explanation of the report. The updated report description is shown below.
The GENESYS *Export* and *Import* commands provide the means for backing up and restoring report folders. The *Export* produces a *gnsx* file that is external to the GENESYS repository. The *gnsx* file is selected during an *Import* to restore the report folder and its contents.

**CONSTRUCTING REPORTS**

This section presents guidance for incorporating GENESYS repository data into reports. The instruction emphasizes how to locate and display the GENESYS data objects of interest. In general, *Bands* are used to retrieve data and *Controls* are used to display data. Binding is the technique that connects a *Control* to the data captured in a *Band*.

**Locating the Data – Detail Report Bands**

The GENESYS Report Designer utilizes *Detail Report Bands* to traverse and iterate over the structure and hierarchy of the GENESYS™ repository data. Assembling an organized sequence of *Detail Report Bands* enables the reporting tool logic to navigate the repository to the data of interest. As depicted in the following diagram, similarities can be visualized between *Detail Report Bands* and the GENESYS *Project Explorer* and *Browser* panes.
The iterative capability of Detail Report Bands enables the reporting tool logic to process all or a subset of the objects contained in the repository structure associated with the particular band. (For example, the Folders band iterates over a project’s folders.)
Introduction to Writing Reports

Displaying the Data – Controls and Data Binding
Introduced in section 1, Controls are used to display data. While the Hello World report introduced static content, the reports that follow will feature dynamic content derived from the GENESYS repository data.

In order for a Control to represent GENESYS repository data, the Control must be associated with a specific type of repository object (e.g., folder, entity, attribute, etc.). The technique of Data Binding defines the link between a Control and a repository object retrieved in a Band.

List of Concerns Report
The List of Concerns report will evolve using a staged approach. At each stage, content is added or revised and subsequently, the report’s output is generated and verified. The conclusion of this process will yield a report that displays the project’s open concerns together with selected attributes defined for those concerns.

Stage 1 – Display the Project Name
Start simply, by displaying the Project name.

1. In the Toolkit folder, create a report named “List of Concerns”.
2. Verify that the report is opened for editing.
3. This report is not displaying a large amount of text. Therefore, the design surface will easily accommodate a larger font size. Prior to adding Controls, set the default font size (located in the Font section of the Report Editor’s ribbon) to 12.
4. Insert a Projects band within the Detail band.
   • Right-click in the Detail band’s design surface space,
   • Expand the Insert Detail Report sub-menu, and
   • Click on the “Projects” identifier.
Introduction to Writing Reports

Figure 9: Inserting a *Projects* Band

5. The Project name is simple text, so drop a *Label* control within the *Projects* band space on the design surface.

Figure 10: Inserting a *Label* Control into the *Projects* Band

6. Bind the *Label* control to the *Project* object.
   - Expand the *Projects* band in the *Field List* window.
   - Drag the *Project* item from the *Field List* and drop it onto the *Label*.
   - Observe that the text inside the *Label* changes to “[Project]”. 
7. Save and then Preview the report.

The report output (shown below) consists of a single page with the Project name appearing in the upper left corner of the page.
| SAMPLE: Geospatial Library |  |

Figure 12: *List of Concerns* Output – Stage 1
Why didn’t the Projects band iterate over all projects in the repository?

(Note: If repository being used does not contain additional projects, import the Fast Food Sample project and preview the report again.)

The Projects collection associated with the Projects band identifies the repository projects over which the Projects band will iterate. The default value of the Projects collection is “Current”—meaning that the Projects band will only iterate over the active project. The Projects collection can be viewed via the Smart Tag associated with the Projects band.

![Figure 13: Projects Band Smart Tag](image)

When no projects are selected (i.e., checked) in the Projects collection, the Projects band will iterate over all repository projects.

Stage 2 – List the Project Classes

Extend the report to the list the names of the project’s Classes.

1. Add the Data band.
   - Right-click in the detail section of the Projects band,
   - Expand the Insert Detail Report sub-menu, and
   - Click on the “Data” identifier.
2. Add the *Folders* band.
   - Right-click in the detail section of the *Data* band (i.e., “Projects.Data”),
   - Expand the *Insert Detail Report* sub-menu, and
   - Click on the “Folders” identifier.
3. The Folder name is simple text, so drop a Label control within the Folders band space on the design surface.
4. Bind the Label control to the Folder object.
   • Expand the Data band in the Field List window.
   • Expand the Folders band in the Field List window.
   • Drag the Folder item from the Field List and drop it onto the Label.
   • Observe that the text inside the Label changes to "[Folder]".
5. Save and then Preview the report.

The report output (first page shown below) consists of five pages containing the Project name followed by a complete list of the project’s Class names.
SAMPLE:
Geospatial Library

Category

Change
Request
Package

Component

Concern

Constraint Definition

Defined Team

Document

Figure 17: List of Concerns Output – Stage 2
Is there a way to avoid the word wrapping on the Project and Folder names?

Yes. The size of a Control is adjustable via its handles. Eliminate the word wrapping applied to the Project and Folder names by increasing the width of those Label controls. (For example, click on the Project name Label and drag its right-side, middle handle to the right.)

![Figure 18: Adjusting the Size of a Control](image)

Stage 3 – Restrict the Folder Iteration

Since the List of Concerns report is exclusively interested in the Concern class entities, it is unnecessary to iterate over the entire collection of Project classes. Limit the iteration of the Folders band to the Concern class.

- Click on the Smart Tag of the Folders band (i.e., “Projects.Data.Folders”).
- Open the Folders collection and check the Concern box.
- Click in the Folders band grid space.
Save and Preview the report. Notice the change in the report’s output (shown below); the class list is comprised of a single class name: **Concern**.
SAMPLE: Geospatial Library

Concerns
Stage 4 – Display the Class Entities

Expand the report to include the names of the entities within the Concern class.

1. Add the Entities band.
   - Right-click in the detail section of the Folders band (i.e., “Projects.Data.Folders”),
   - Expand the Insert Detail Report sub-menu, and
   - Click on the “Entities” identifier.

![Image of report design with Entities band and Label control]

Figure 21: Inserting an Entities Band

2. The Entity name is simple text, so drop a Label control within the Entities band space on the design surface.

3. Bind the Label control to the Entity object.
   - Expand the Entities band in the Field List window.
   - Drag the Entity item from the Field List and drop it onto the Label.
   - Observe that the text inside the Label changes to “[Entity]”.

---

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A Zuken Company

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4. Save and then Preview the report.

The report output (shown below) consists of a single page that includes the Project name, Concern class name, and the names of the four Concern entities in the Geospatial Library project.
SAMPLE: Geospatial Library

- Concern

  Criteria for
  Determining
  Certified User

  Criteria for
  Self
  Assessment

  Determining
  the Means of
  Certifying a
  User

  Media of
  Request

Figure 23: List of Concerns Output – Stage 4
Is there a way to compress the vertical spacing of the report output?

Yes. The appearance of the design surface is significant as it reflects the report's output. When the report output is generated, each iteration of a band consumes space equivalent to that which is allocated to that band on the design surface. Minimizing the unused space on the design surface will condense a report's output.

The vertical spacing associated with a band is adjusted by dragging the band's bottom border. Eliminate the unused space in the top four bands by dragging their bottom borders upward. (Additionally, remove the word wrapping applied to the Concern entity names by widening the associated Label.)

Figure 24: Compressing Vertical Spacing of Report Output
Save and Preview the report. Note the condensed report output (shown below).

**Figure 25: List of Concerns Output – Condensed Spacing**
Stage 5 – Incorporate Entity Attributes
Augment the report to include each entity’s *Description*, *Importance* and *Status* attributes.

Within the *Entities* band space on the design surface, insert three additional *Label* controls (all bound to the Entity object).

![Diagram of report design with Entity attributes](image)

**Figure 26: Augmenting Report to Include Description, Importance, and Status**

The four *Label* controls in the *Entities* band have identical binding and appear to be the same. In fact, a preview of the report displays each *Concern* entity name four times.

The process of binding a data object to a *Label* control establishes the object’s name as the *Label*’s default representation of that object. Differentiate the *Label* controls by changing their representation of the bound object.

- Select the *Label* control in the middle row of the *Entities* band.
- Click on its Smart Tag.
- Click on the ellipses to open the *Entity Representation* definition.
In the Field column, change the selected attribute from “name” to “description”.

Click “OK” to complete the change.
Open the Entity Representation for the left Label control in the bottom row of the Entities band.
In the Prefix column, add the string “Importance: ”.
In the Field column, change the selected attribute from “name” to “importance”.
Click “OK” to complete the change.

Figure 29: Entity Representation - Importance Attribute

In similar fashion, change the representation of the right Label control in the bottom row of the Entities band to display the “status” Field with a Prefix of “Status: ”.

Save and then Preview the report. The report output is a single page that contains an alphabetic listing of the four Concern entities with their Description, Importance, and Status attributes.
### SAMPLE: Geospatial Library

<table>
<thead>
<tr>
<th>Concern</th>
<th>Criteria for Determining Certified User</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The requirement states that the system shall accept information requests from certified users. What are the criteria that define a certified user?</td>
</tr>
<tr>
<td>Importance: Essential</td>
<td>Status: Closed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Criteria for Self Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are the criteria to be used to assess the quality of system’s performance?</td>
</tr>
<tr>
<td>Importance: Important</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Determining the Means of Certifying a User</th>
</tr>
</thead>
<tbody>
<tr>
<td>The requirement states that the system shall accept information requests from certified users. Where would the Certification Authority be located?</td>
</tr>
<tr>
<td>Importance: Critical</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Media of Request</th>
</tr>
</thead>
<tbody>
<tr>
<td>The requirement states that the system shall accept information requests from certified users. What are the request media that the system must be able to accommodate?</td>
</tr>
<tr>
<td>Importance: Essential</td>
</tr>
</tbody>
</table>

---

**Figure 30: List of Concerns Output – Stage 5**
Stage 6 - Sort the Entities
The Sort Block assigned to the Entities band determines the order in which its entities are displayed. By default, the entities are sorted alphabetically by name. For this report, a different Sort Block is required as the preferred ordering of the Concern entities is by the value of their Importance attribute. The Sort Block is accessible through the band’s Smart Tag.

- Open the Smart Tag of the Entities band.
- Expand the Sortblock drop-down list and choose the Concern Importance sort block.

![Figure 31: Sorting the Entities Band Output](image)

Save and Preview the report. Observe that the Concern entities are listed in order by their Importance attribute.
### SAMPLE: Geospatial Library

#### Concern

**Determining the Means of Certifying a User**

The requirement states that the system shall accept information requests from certified users. Where would the Certification Authority be located?

- **Importance:** Critical
- **Status:** Open

**Criteria for Determining Certified User**

The requirement states that the system shall accept information requests from certified users. What are the criteria that define a certified user?

- **Importance:** Essential
- **Status:** Closed

**Media of Request**

The requirement states that the system shall accept information requests from certified users. What are the request media that the system must be able to accommodate?

- **Importance:** Essential
- **Status:** Closed

**Criteria for Self-Assessment**

What are the criteria to be used to assess the quality of system's performance?

- **Importance:** Important
- **Status:** Open

---

**Figure 32: List of Concerns Output – Sorted by Importance**
Stage 7 – Filter the Entities
The Filter assigned to the Entities band determines which entities are displayed. All entities are displayed when no Filter is assigned. For this report, a Filter is needed as only the open concerns are to be displayed. The Filter is accessible through the band’s Smart Tag.

- Open the Smart Tag of the Entities band.
- Expand the Filter drop-down list and choose the “Open Concerns” filter.

![Figure 33: Filtering the Entities Band Output](image)

Save and Preview the report. Observe that only open Concern entities are displayed.
SAMPLE: Geospatial Library
Concern
Determining the Means of Certifying a User
The requirement states that the system shall accept information requests from certified users. Where would the Certification Authority be located?

Importance: Critical  Status: Open

Criteria for Self Assessment
What are the criteria to be used to assess the quality of system’s performance?

Importance: Important  Status: Open

Figure 34: List of Concerns Output – Filtered for Open Concerns
Introduction to Writing Reports

Requirements with Concerns report
The *Requirements with Concerns* report introduces several new features of the Report Editor. These include the *Relationships* band, the *Entity Diagram* control, and the *Property Grid*. Once again, the report is developed in stages. The culmination of this process will yield a report that identifies the project requirements that generate concerns and include the hierarchy diagrams of those requirements.

Stage 1 – Create the report
Create the report and lay the foundational bands.

1. In the *Toolkit* folder, create a report file named “Requirements with Concerns”.
2. Verify that the report is opened for editing.
3. Insert a *Projects* band within the *Detail* band.
4. Insert a *Data* band within the *Projects* band.
5. Insert a *Folders* band within the *Data* band.
6. Insert an *Entities* band within the *Folders* band.
7. Insert a *Relationships* band within the *Entities* band.
8. For all bands, except the *Relationships* band, eliminate the allocated design surface space.

![Figure 35: Foundational Bands for the Requirements with Concerns Report](image)

This report is tracing the *generates* relationship of *Requirement* entities to determine which, if any, produce concerns. As such, the *Folders* band need only examine the *Requirement* class folder, and the *Relationships* band need only consider the *generates* relation.

9. Confine the *Folders* band iteration to the *Requirement* class. Open the Smart Tag of the *Folders* band and check the *Requirement* box.
10. Constrain the Relationships band iteration to the generates relation.

- Open the Relationships collection and check the generates box.
- Click in the Relationships band grid space.

![Figure 36: Restricting the Relationships Band Iteration](image)

Stage 2 – Add Requirements with Concerns matrix

This report is not displaying a large amount of text. Therefore, the design surface will easily accommodate a larger font size. Prior to adding Controls, set the default font size (located in the Font section of the Report Editor’s ribbon) to 12.

In the Relationships band detail space, drop and resize four Label controls in a pattern that forms a two-column by two-row matrix. The top row of the matrix serves as its header. Set the text in the left Label to “Requirement” and the text in the right Label to “Concern”.

Dynamic text is rendered by the Label controls of the second row. Specifically, the Label controls are used to display the name of a Requirement entity and the name(s) of any Concern entities that are generated by the Requirement entity. Bind the Label control in the left column to the Entity object and the Label control in the right column to the Relationship Target object.
Save and Preview the report. The first page of the report output (shown below) discloses some issues with the report. One issue is that the requirements that do not generate concerns are being displayed.
## Introduction to Writing Reports

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accept Media of Requests</td>
<td></td>
</tr>
<tr>
<td>Accept Requests</td>
<td>Media of Request</td>
</tr>
<tr>
<td>Accept Requests from Certified Customers</td>
<td>Criteria for Determining Certified User</td>
</tr>
<tr>
<td>Accept Requests from Certified Customers</td>
<td>Determining the Means of Certifying a User</td>
</tr>
<tr>
<td>Adding Imagery Products to Inventory</td>
<td></td>
</tr>
<tr>
<td>Assess Self Performance</td>
<td>Criteria for Self Assessment</td>
</tr>
<tr>
<td>Availability</td>
<td></td>
</tr>
<tr>
<td>Certify Customers</td>
<td></td>
</tr>
<tr>
<td>Continuous Support</td>
<td></td>
</tr>
</tbody>
</table>

Figure 38: Requirements with Concerns Output – All Requirements
Introduction to Writing Reports

To remove such requirements from the report, the *Print when Data Source is Empty* option of the *Relationships* band needs to be disabled. This print option is accessible through the Report Designer's *Property Grid*.

- Select the *Relationships* Band.
- In the *Property Grid*, expand the *Report Print Options* property.
- Set the *Print when Data Source is Empty* option to "No".

![Figure 39: Relationships Band Property - Print When Data Source is Empty](image-url)
Save and Preview the report. The report output (shown below) has been reduced to a single page containing only the requirements that generate concerns.

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accept Requests</td>
<td>Media of Request</td>
</tr>
<tr>
<td>Accept Requests from Certified Customers</td>
<td>Criteria for Determining Certified User</td>
</tr>
<tr>
<td>Accept Requests from Certified Customers</td>
<td>Determining the Means of Certifying a User</td>
</tr>
<tr>
<td>Assess Self Performance</td>
<td>Criteria for Self Assessment</td>
</tr>
</tbody>
</table>

Figure 40: *Requirements with Concerns* Output – Concern Producing Requirements Only
Further simplification of this report can be achieved by excluding repetitive Requirement entity names. *(Accept Requests from Certified Customers, in this case.)* The Label property—Process Duplicates Mode—defines the processing for repeated values of the Label. This behavior property is accessible through the Report Designer’s Property Grid.

- Select the Label bound to the Entity object.
- In the Property Grid, set the Process Duplicates Mode property value to “Suppress and Shrink”.
### Introduction to Writing Reports

#### Figure 41: Label Control Property - Process Duplicates Mode
The display of the matrix header is also replicated for repetitive Requirement entity names. Correct this by setting the Process Duplicates Mode property of the matrix header Label controls to the “Suppress and Shrink” value.

Save and Preview the report. The report output (shown below) no longer repeats the Accept Requests from Certified Customers Requirement entity.
<table>
<thead>
<tr>
<th>Requirement</th>
<th>Concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accept Requests</td>
<td>Media of Request</td>
</tr>
<tr>
<td>Accept Requests from Certified Customers</td>
<td>Criteria for Determining Certified User</td>
</tr>
<tr>
<td></td>
<td>Determining the Means of Certifying a User</td>
</tr>
<tr>
<td>Assess Self Performance</td>
<td>Criteria for Self Assessment</td>
</tr>
</tbody>
</table>

Figure 42: Requirements with Concerns Output – Sans Repeated Requirement Entity Names
Stage 3 – Add Hierarchy diagrams
Supplement this report by incorporating the Hierarchy diagrams for each Requirement entity displayed in the matrix.

To prevent these diagrams from disrupting the matrix of a requirement that generates multiple concerns, another Relationships band is inserted within the existing Entities band. (Don’t forget to constrain this Relationships band iteration to the “generates” relation.)

The Entity Diagram control is used to display GENESYS diagrams. Drop an Entity Diagram control into the relationshipsReportBand2 band. Bind the control to the Entity object. Finally, the diagram type needs to be assigned to the Control. Open the Smart Tag for the Entity Diagram control and set the Diagram Type to “Hierarchy”.

Figure 43: Adding a Hierarchy Diagram

Include a caption for the Hierarchy diagram by dropping a Label control under the Entity Diagram control. Bind the Label control to the Entity object and set the Suffix field of the Label control’s Entity Representation to the string “Hierarchy Diagram”.

Ensure adequate sizing of the rendered diagrams by horizontally stretching the Entity Diagram control so that it occupies the entire space between the design surface margins. Accordingly, the diagram’s caption is to be centered under the diagram. Therefore, horizontally stretch the Label control so that it occupies the
entire space between the design surface margins, and use the Font controls in the Report Editor ribbon to center the text of the *Label* control.

Avoid the problems discovered in the previous development stage. First, disable the *Print when Data Source is Empty* option of the *relationshipsReportBand2* band to prevent display of Hierarchy diagrams for *Requirement* entities that don’t generate concerns. Second, exclude repetitive display of the Hierarchy diagram for *Requirement* entities that generate multiple concerns (e.g., *Accept Requests from Certified Customers*). For both the *Entity Diagram* control and the *Label* control, set the *Process Duplicates Mode* property value to “Suppress and Shrink”.

To improve the data segregation of the report output, set the *Page Break* property of the *relationshipsReportBand2* band to the value “After the Band”.

- Click on the Smart Tag of the *relationshipsReportBand2* band.
- Open the *Page Break* collection and select the “After the Band” value.
- Click in the *relationshipsReportBand2* band grid space.

![Figure 44: Relationship Band’s Page Break Property](image-url)
Save and Preview the report. The report output (shown below) is three pages and includes the Hierarchy diagrams for each Requirement entity.

Figure 45: Requirements with Concerns Output – Page 1
Figure 46: Requirements with Concerns Output – Page 2
Figure 47: Requirements with Concerns Output – Page 3
FINISHING TOUCHES

This section demonstrates ways to apply some structure to the Requirements with Concerns by integrating page numbering and a Cover Page into the report.

Page Numbering

To highlight the inclusion of page numbers, it is helpful to simplify the design surface by collapsing the bands used to produce the report data. Collapsing and expanding a band is accomplished by clicking on the arrowhead associated with the band.

Click on the arrowhead of the Projects.Data band to collapse it. (Notice that the arrowhead points to the right to indicate that the band is collapsed.)

GroupHeader and GroupFooter bands are used to delineate a grouping of the report’s data bands. Page numbering can be incremented over the output produced by such a grouping.

Insert the GroupHeader band.

- Right-click on the Projects band,
- Expand the Insert Band sub-menu, and
- Click on the GroupHeader identifier.
Using a similar approach, insert the GroupFooter band.

Drop a *Page Info* control into the GroupFooter band. In the Report Editor’s ribbon, use the horizontal centering button to position the control in the top-center of the band. Establish the control’s font size (e.g., 10) and text alignment (center).

The information rendered by a *Page Info* control is defined by its *Page Information* property. The default value is set for displaying the current or total pages. The *Page Information* property is accessible through the Smart Tag associated with the control. Set this property to the value “Page Number”.

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**Figure 49: Inserting a GroupHeader Band**

**Figure 50: Horizontal Centering**
Before proceeding, resize the GroupHeader and GroupFooter bands to remove unused design surface space.

The Running Band property of the Page Info control defines the band over which the control is executed. Click on the control's Smart Tag and set the Running Band property to the value “GroupHeader1”.

Figure 51: Setting the format of the Page Info Control

Figure 52: Establishing the Running Band for the Page Info Control
Introduction to Writing Reports

Save and Preview the report. Observe that only the final page of the report displays a page number and that it is located in the vicinity of the center of that page. To show page numbers on all pages, enable the Repeat Every Page property of the GroupFooter band, and to position the page number at the bottom of each page, enable the Print at Bottom property of the GroupFooter band. Quick access to these properties are available via the band’s Smart Tag.

Figure 53: Repeat Every Page and Print at Bottom Properties

Save and Preview the report. Now, the page number appears at the bottom of all pages. Another refinement that will move the page number closer to the bottom of the page is to decrease the size of the bottom margin. Drag the bottom margin upward to reduce the vertical space by half.

Figure 54: Decreasing the Size of the Bottom Margin
Save and Preview the report. The report output is shown below.

Accept Requests Hierarchy Diagram

Figure 55: Report Output with Page Numbering - Page 1
Accept Requests from Certified Customers Hierarchy Diagram

Figure 56: Report Output with Page Numbering - Page 2
<table>
<thead>
<tr>
<th>Requirement</th>
<th>Concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assess Self Performance</td>
<td>Criteria for Self Assessment</td>
</tr>
</tbody>
</table>

Assess Self Performance Hierarchy Diagram

Figure 57: Report Output with Page Numbering - Page 3
Cover Page

To sharpen the focus on the cover page development, it is helpful to simplify the design surface by collapsing the Projects band. Click on the arrowhead of the Projects band to collapse it.

For this report, create a simple cover page containing

- a title,
- the current date and time, and
- the name of the GENESYS project.

Insert an Unbound band within the Detail band.

- Right-click in the Detail band,
- Expand the Insert Detail Report sub-menu, and
- Click on the “Unbound” identifier.

The Unbound band is added with the default name “detailReportBandDefault2”. Rename and reposition the band.

- Right-click on the detailReportBandDefault2 band.
- Click on the Edit and Reorder Bands … command to open the Report Editor window.
- In the left side of the Report Editor window, select the “detailReportBandDefault2” band and click on the up arrow.
- In the right side of the Report Editor window, change the band’s name to “coverPageBand”.
- Close the Report Editor window.
Before adding content, double the vertical space allocated to the `coverPageBand`, and establish a page break to separate the cover page from the rest of the report.

- Click on the `coverPageBand` Smart Tag.
- Open the `Page Break` property drop-down box and select the value “After the Band”.

![Figure 60: Repositioning and Renaming a Band](image)

![Figure 61: Setting a Band's Page Break Property](image)
Add cover page content.

- Drop a Label control into the coverPageBand design surface.
- Extend the Label control horizontally to utilize the entire space between the design surface margins.
- Set the Label control’s font size to 16 and text alignment to center.
- Set the Label control’s Text property to the string “Requirements with Concerns Report”.
- Drop a Label control into the coverPageBand design surface and below the previous Label control.
- Extend the Label control horizontally to utilize the entire space between the design surface margins.
- Set the Label control’s font size to 12 and text alignment to center.
- Set the Label control’s Text property to the string “created on”.
- Drop a Page Info control into the coverPageBand design surface and below the previous Label control.
- Extend the Page Info control horizontally to utilize the entire space between the design surface margins.
- Set the Page Info control’s font size to 12 and text alignment to center.
- Set the Page Info control’s Page Information property to the value “Current Date and Time”. (Hint: Use the control’s Smart Tag.)
- Drop another Label control into the coverPageBand design surface and below the Page Info control.
- Extend the Label control horizontally to utilize the entire space between the design surface margins.
- Set the Label control’s font size to 12 and text alignment to center.
- Set the Label control’s Text property to the string “for the project”.

![Figure 62: Requirements with Concerns Cover Page](image)

Include the project name to complete the cover page.

- Insert a Projects band within the detail section of the coverPageBand.
- Rename the band to “coverPageProjectsBand”.
- Drop a Label control into the coverPageProjectsBand design surface.
- Extend the Label control horizontally to utilize the entire space between the design surface margins.
- Set the Label control’s font size to 12 and text alignment to center.
- Bind the Label control to the Project object.
- Eliminate the unused space at the bottom of the coverPageProjectsBand.
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Figure 63: Requirements with Concerns – Completed Cover Page

Save and Preview the report. The cover page (shown below) is the first page of the report output.
Requirements with Concerns Report

created on

Thursday, March 29, 2018

for the project

SAMPLE: Geospatial Library

Figure 64: Cover Page Output
ADDITIONAL RESOURCES

1. GENESYS Report Writer Course
2. Dev Express Xtra Reports documentation: https://devexpress.com/Support/Documentation (Click on the Reporting link.)