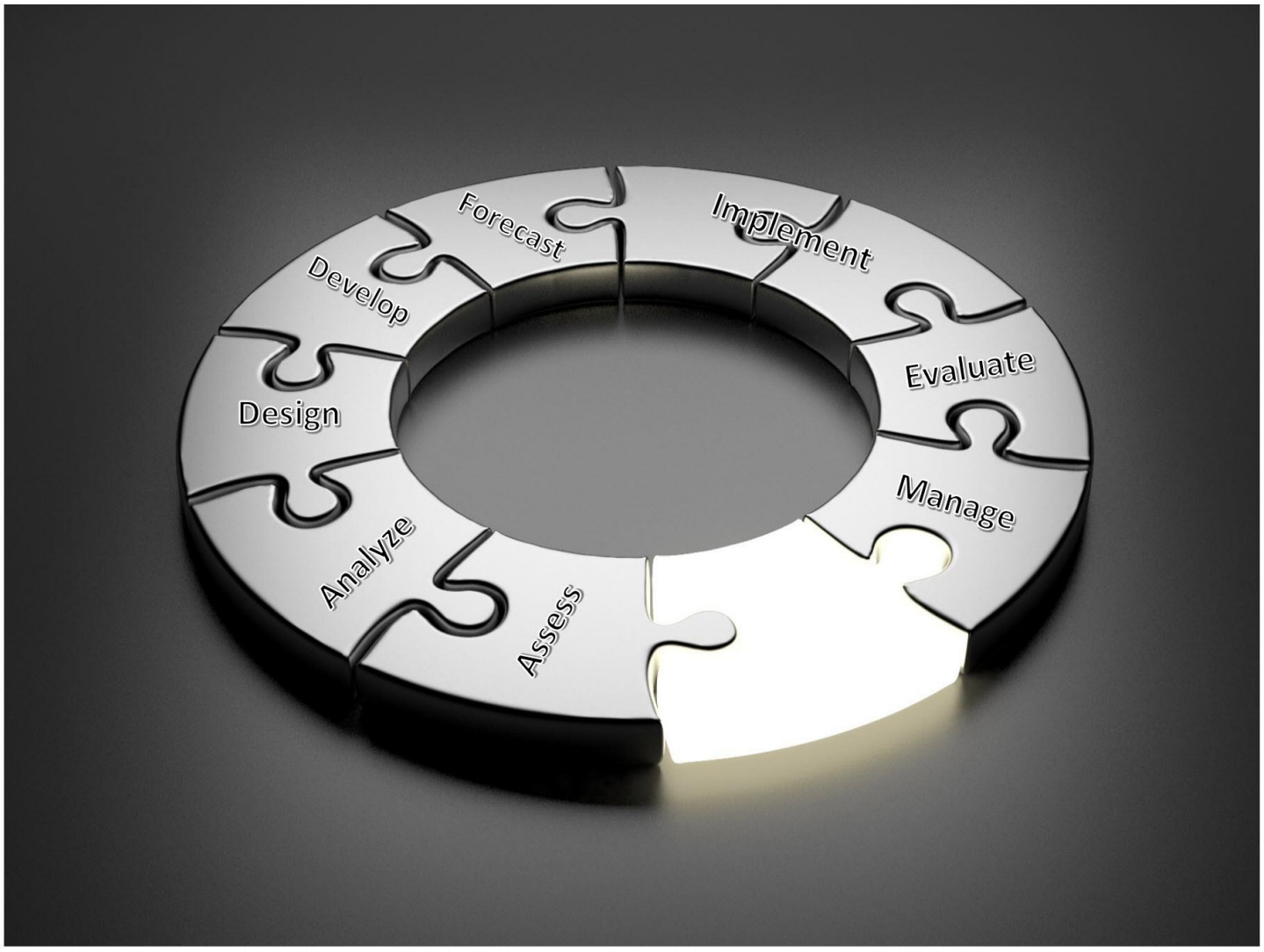
ADVISOR ENTERPRISE

Plan better… Achieve more!

Fidelity Analysis User Guide



ADVISOR Enterprise User's Guide

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Foreword

ADVISOR Enterprise is a Training Management System that drives training efficiency by (a) aligning current and future training activities to operational requirements to identify gaps, duplications, and training with minimal value; (b) forecasting and comparing the costs of viable delivery options; (c) uncovering cost drivers; and (d) improving resource allocation. ADVISOR is built around the ADDIE model with the added flexibility of starting the analysis at any level. ADVISOR is made up of the following modules that can be used separately or in any combination.

Needs Assessment

Assess: To find out "*the cause of the problem and potential solutions*". Provides a step by step approach for understanding a problem before selecting the solution – in other words, before assuming that training is needed. Needs Assessment provides an audit trail and serves as the foundation for decisions by zeroing in on the source of the problem, identifying solutions that can produce the desired level of productivity, and highlighting actions that will generate the greatest impact. [Scope and Needs Assessment].

Training Analysis

Analysis: To find out "*who needs to be trained, on what and why*". Provides a step by step approach for conducting Training Needs Analysis (TNA) or Training Systems Requirements Analysis (TSRA) to identify training needed by each job, position and employee to perform duties to the desired standard under the prescribed conditions. Four approaches may be used to conduct training analysis, namely Mission, System, Competency or Job. [Mission Analysis, Competency Analysis, System Analysis, Job Task Analysis, Knowledge/Skill Gap Analysis and Training Requirements Analysis].

Training Design

Design: To find out "*what is the most effective and economical way to deliver training*". Provides a step by step approach for conducting Training Media Analysis (TMA) or Option Analysis to identify the most cost effective strategy for the delivery of training and generates Training Plans. The analysis takes into account limitations, instructional design requirements, upfront and recurring costs over training program life as well as risks associated with the introduction of new technology. [Media Analysis, Cost Analysis and Training Plans].

Fidelity Analysis

Develop: To find out the "*fidelity requirements of training devices*". Provides a step by step approach for assessing the functional requirements of trainers and simulators based on training needs and performance objectives. It identifies visual, tactile, olfactory, affective, and auditory sensory cues needed to practice tasks, within realistic environments, under preset conditions to attain the desired level of competency. In addition, ADVISOR takes into account elements within the virtual world and how users interact with each.,

Resource Management

Implementation: To find out "*how much money and resources are needed*". Compiles and analyzes missions/goals, competencies, systems, jobs, tasks, training requirements, courses, activities, costs, personnel, and resources to generate concise, up to date and actionable reports. The reports provide insight on planned training activities for any time period; training requirements for each job/employee; budget, personnel and resource requirements, training impact as well as how to drive training effectiveness and efficiency by leveraging technology, improving resource allocation and identifying gaps, duplications and unwarranted training. [Forecast and Optimize Training Budgets, Personnel and Resources].

Project Management

Implementation: To find out "*how training should be implemented*". Provides a step by step approach for planning a project and tracking progress in real time. This includes the setup of phases and tasks, dependencies and constraints, timelines as well as the assignment of personnel and resources needed to complete. Moreover, ADVISOR tracks progress by comparing hours worked and money spent on each task to project plan, to anticipate delays, facilitate the implementation of corrective measures, and keep projects on-time and within budget. [Develop Project Plans and Track Progress].

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Performance Analysis

Evaluation: To find out "*how training impacts performance and organizational goals*". Provides a step by step approach for improving performance by zeroing in on the source of the problem and identifying solutions that can produce the desired level of productivity. Moreover, ADVISOR highlights actions that will generate the greatest impact by assessing the feasibility of implementing plausible solutions as well as forecasting the costs, benefits, and Return on Investment (ROI) of each intervention. [Performance Gap Analysis, Root Cause Analysis and Cost Benefit Analysis].

Training Life Cycle Management

Manage: To "*continually uncover venues to drive training effectiveness & efficiency*". Maintains training effectiveness and efficiency over time by continually assessing the impact of changes to missions, jobs, tasks, systems, policies, technologies, throughput, and so forth on training content and activities; as well as budget, personnel and resource requirements. This is attained through a digital-twin model that continually aligns training activities to operational requirements to identify gaps, duplications, and training with minimal value. Results (personnel/resource requirements for any time period; cost drivers; bottlenecks and deficiencies) are quickly and concisely communicated through dashboards. Actions that drive training effectiveness and efficiency are also highlighted.

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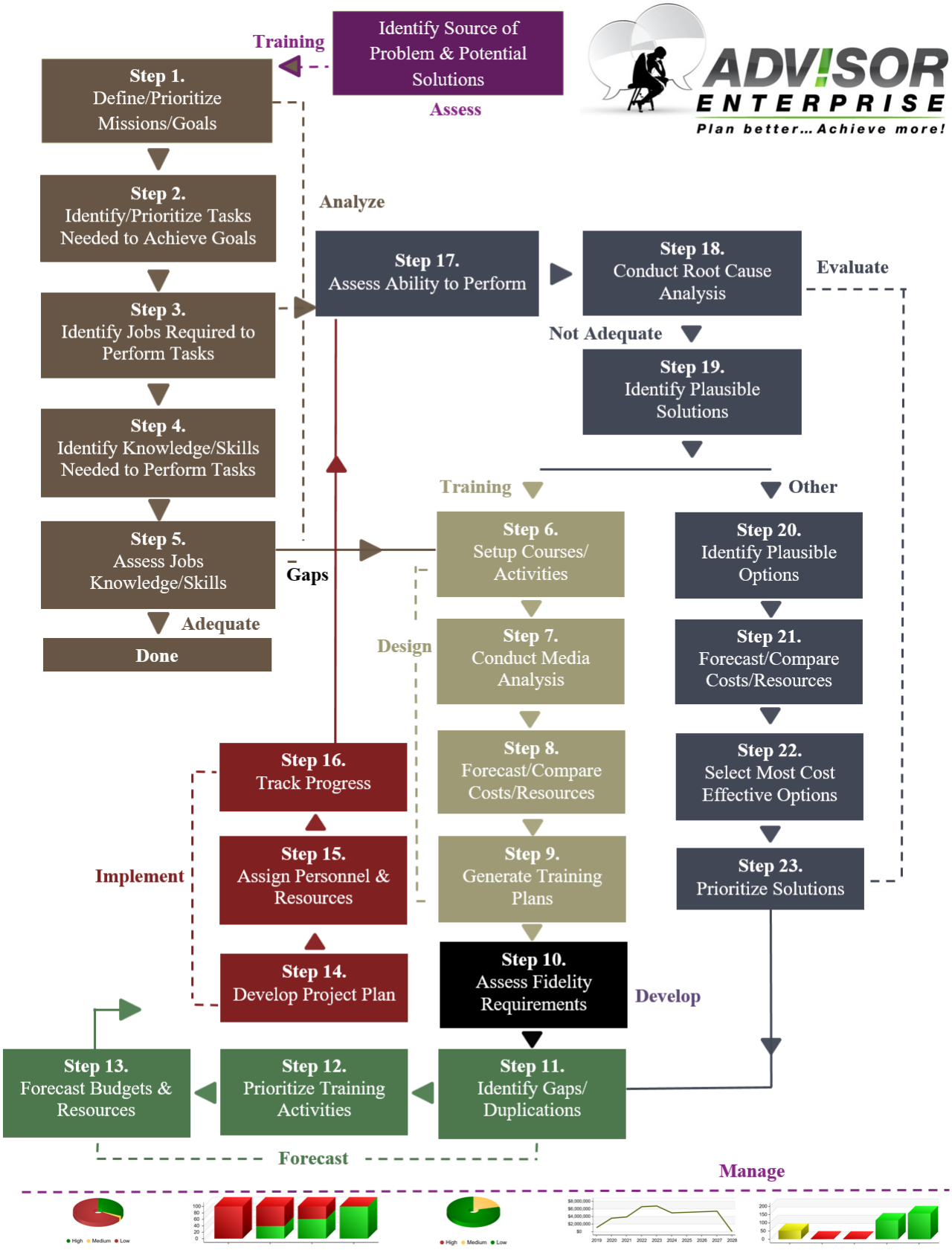

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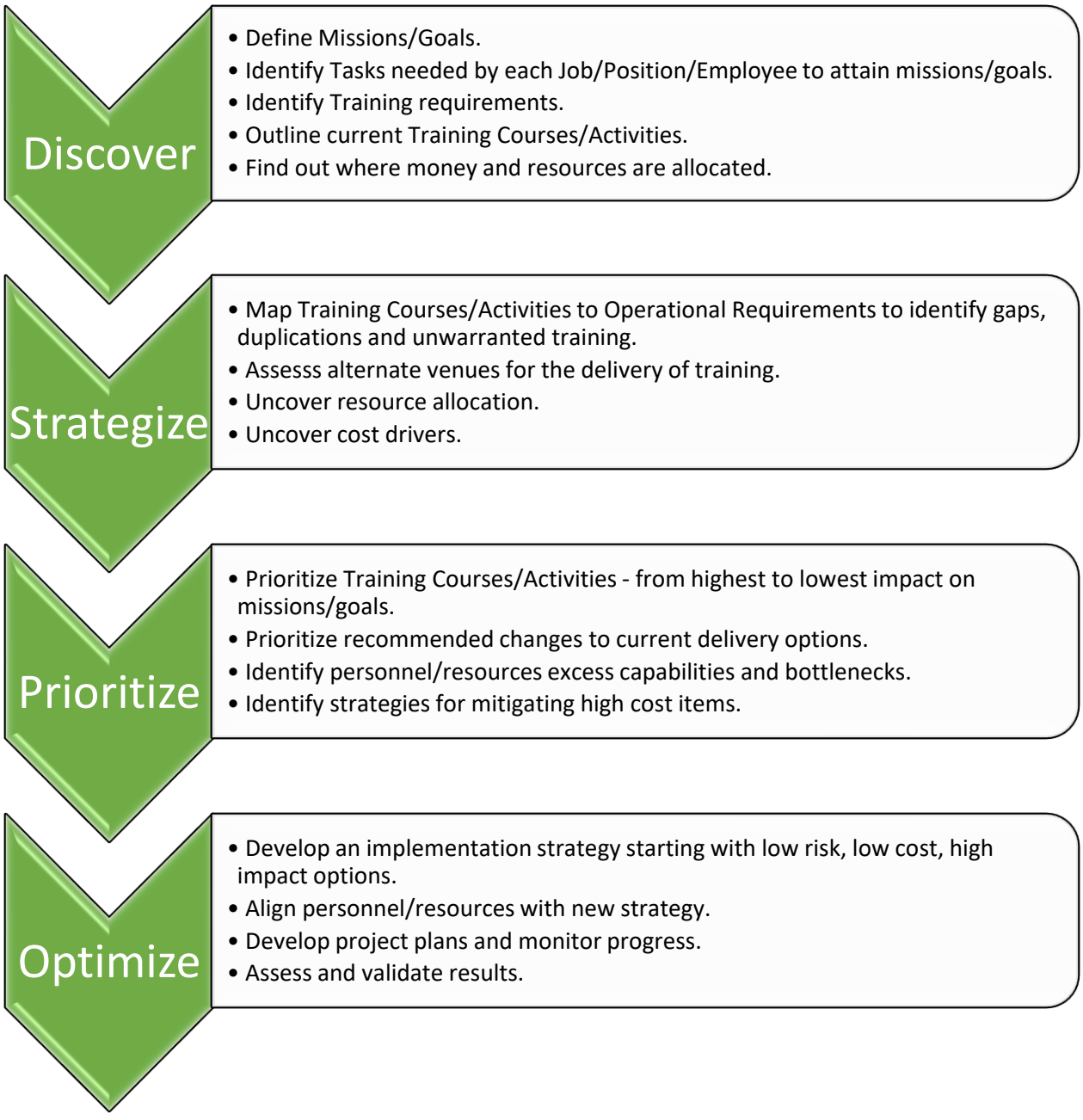
Approach

Why is ADVISOR Enterprise so effective? Because it focuses on operational requirements – i.e., identifies the knowledge, skills and competencies needed by each job, position, and employee to attain organizational missions/goals, as well as the most efficient way to achieve. In addition, facts support the decision making process, helping you create consensus to stay the course.

Using our proprietary methodology, your efforts unfold in four phases, as follows:



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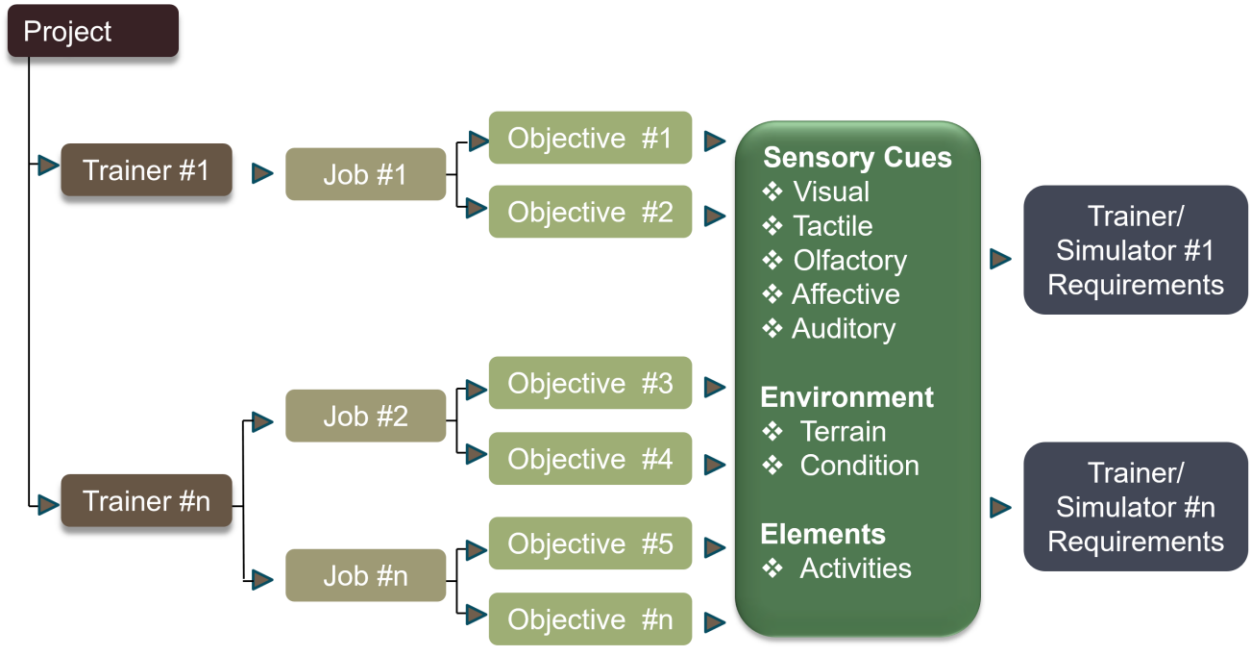
Fidelity Analysis Module

ADVISOR Fidelity Analysis module provides a step by step approach for assessing the functional requirements of trainers and simulators based on training needs and performance objectives. It identifies visual, tactile, olfactory, affective, and auditory sensory cues needed to practice tasks, within realistic environments, under preset conditions to attain the desired level of competency. In addition, ADVISOR takes into account elements within the virtual world and how users interact with each.

ADVISOR is far more robust than any other option that we have investigated.

Ron Hackbart
Project Manager, First Data



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ADVISOR Features

Training Device Analysis: Identify Components that require special assessment.

Job Analysis: Identify the target audience for the Training Device – i.e., all Jobs/Occupations that will use the Training Device for training.

Performance Objective Analysis: Identify Tasks to be trained on Training Device. Decompose into Enabling Objectives, Steps and Sub Steps. Define the standards and conditions for each.

Course Analysis: Identify Training Courses/Activities that use or recommend the use of the Training Device.

Learning Objective Analysis: Identify Learning Objectives that use or recommend the use of the Training Device including learning outcome and skill level.

Synthetic Environment Analysis: Identify the terrain, environmental conditions, and desired user controls.

Synthetic Elements Analysis: Identify elements within the synthetic environment and how users interact with each.

Sensory Cues Analysis: Organize sensory cues in a repository under various categories (visual, tactile, olfactory, affective, auditory, etc.) to assess the fidelity requirement of each objective.

ADVISOR Benefits

Facilitate Configuration: Align with CFITES, MIL-HDBK-29612-2A or DSAT requirements in a single click, or set-up in-line with needs.

Speed Data Collection: Collect data from Subject Matter Experts offline through custom-built Excel spreadsheets and upload to ADVISOR in a single click. Exchange data with other systems through xml.

Facilitate Collaboration: Store all data in a centralized database accessible anytime and from anywhere by team members with only a Browser; and track changes made by each individual.

Speed Analysis: Search and import relevant Performance or Learning Objectives with a single click to identify Training Device requirements or its ability to support needs.

Facilitate Reusability: Search, locate and copy relevant sensory cues from one device to another with ease.

Minimize Costs: Assess the impact of each Training Device feature on training needs to maximize investment by zeroing-in on features that offer the greatest value.

Preserve Integrity: Generate audit trail with one click to track where each requirement has been addressed.

Speed Report Generation: Compile data from all Objectives and Elements to generate Trainer System Requirements Report in a single click.

ADVISOR will provide instructional designers with the knowledge and skills needed to effectively communicate with engineers.

Prof. Ronald Tarr
University of Central Florida

Live to Train – Train to Fight – Fight to Win. It's all about training, the key to operational readiness and mission success.

Capt. (ret) Kelly "Bam Bam" Henderson
USfalcon

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Acknowledgement

ADVISOR Enterprise is the result of over twenty years of research and development. Dozens of organizations and hundreds of individuals have contributed to the development and evolution of ADVISOR and for this we are very appreciative. Our primary objective is to develop a practical, reliable, and robust tool that simplifies and speeds training analysis, forecasts and optimizes training resources, improves resource allocation, generates audit trail to support recommendations, facilitates collaboration and sharing of data among team members, minimizes duplication as well as facilitates the upkeep of analysis over time to keep training programs effective, efficient, and relevant. We believe that with the assistance and contribution of the following organizations and individuals, we have been able to accomplish this goal.

- CAE
- Canadian National Defence
- Federal Deposit Insurance Agency
- Lockheed Martin
- National Security Agency
- Merck Company
- Nortel Networks
- Pearson TQ
- Raytheon Systems Company
- Southern Steel Company
- UK Ministry of Defence
- United States Air Force
- United States Army
- United States Coast Guard
- United States Marine Corps
- United States Navy

- Lisa Abramson – Merck & Company
- Larry Alberter – National Security Agency
- Cathi Billings – Sheppard AFB
- Ferrell Briggs – Naval Aviation Maintenance Training Group
- Tim Bothell – Franklin Covey Company
- Greg Campbell – Canadian National Defence
- Bruce Castle – Lockheed Martin
- Bryan Chapman – Brandon-Hall.com
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- Dr. Ed Chenette – Chief of Naval Education and Training
- Dr. Adelaide Cherry – Maxwell AFB
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- Beverly Condon – Goodfellow AFB
- Dr. Dennis Duke – US Navy Naval Air Systems Command
- Dr. Bruce Eddy – Lockheed Martin
- Russell Edmonds – UK MoD, Training and Simulation Systems Programme (TSSP)
- Frederick Glover – Naval Aviation Maintenance Training Group

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- Richard Grahlman – Naval Postgraduate School
- Dr. Jo Ann Graves – Expeditionary Warfare Training Group, Pacific
- Dr. Anthony Head – UK MoD, HQ Land Forces
- Janet Heins – Merck & Company
- Peter Hope – Canadian National Defence
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- James Kalivoda – Naval Education and Training Professional
- David M Lorage – US Coast Guard
- Dr. Fred Madsen – Lockheed Martin
- Dr. Tim McLaughlin – Raytheon Professional Services
- Dr. Bill Melton, US Army – TRADOC
- Jesse Martinez – US Marine Corps
- Dr. Arlen Michaels – Nortel Networks
- Hector Moya – Goodfellow AFB
- Vangie Nix – Maxwell AFB
- Stephane Ouellet - CAE
- Arlene Parker – Keesler AFB
- Dr. Albert Pruett – Naval Aviation Maintenance Training Group
- Peter Sabiston – Canadian National Defence
- Mike Sazma – Great Lakes Naval Training Center
- Fred Roberts – Federal Deposit Insurance Corporation
- Roger St. Pierre – Canadian National Defence
- William Schafer – Trident Training Facility Bangor
- Dr. Bill Shook – Boeing Company
- Robert Simmon – Naval Technical Training Center
- John Stacy – Kraft Foods
- Karl Stradley – Raytheon Professional Services
- Gary Troy – Goodfellow AFB
- Dr. Steve Ulosevich – Southern Steel Company
- Chris Winters – Raytheon Systems Company
- Pete Willey – Pearson TQ
- Dr. Kenneth Woolman – Lockheed Martin

Thank you.

J. Bahlis, Ph.D., P.Eng.
President
BNH Expert Software Inc.

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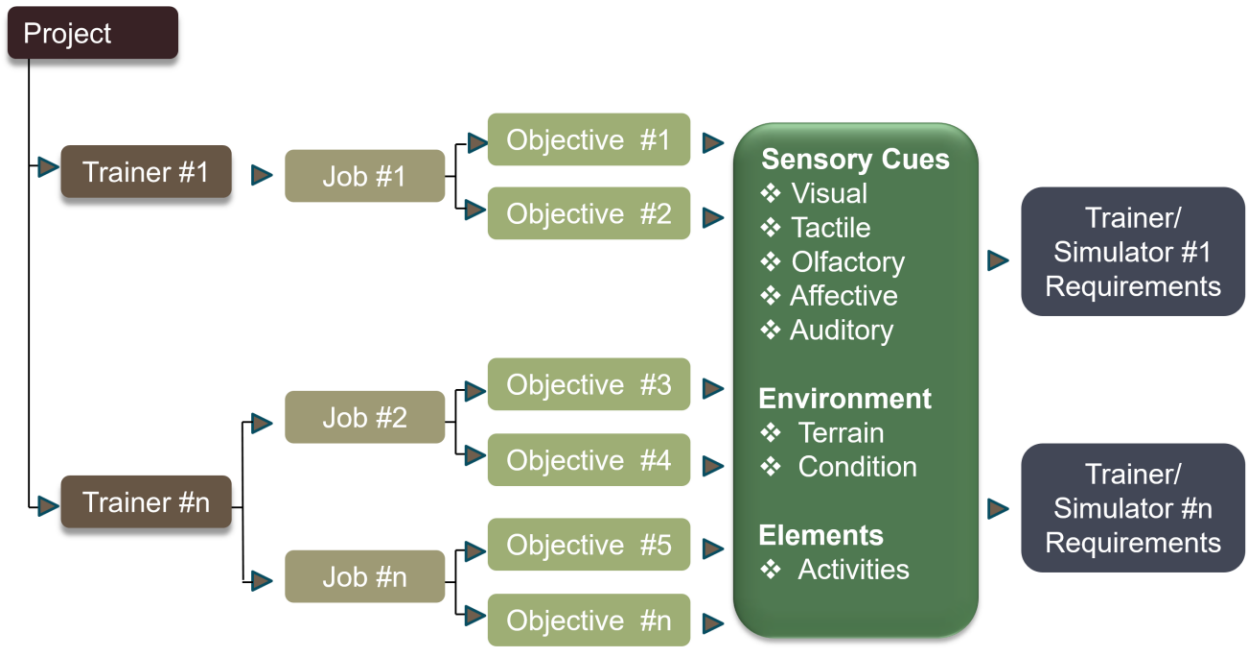
Chapter 1: Getting Started

1.1 Introduction

In general, Trainers and Simulators offer several advantages. These include the simulation of dangerous, life-threatening situations; safe training environment; learning from doing; opportunity to make mistakes, as well as a more efficient learning environment. To achieve these benefits, Trainers and Simulators should allow students to practice all relevant tasks, within realistic environments, under preset conditions, with sufficient level of fidelity to attain the desired level of competency. In other words, the requirements for Trainers and Simulators should be driven by learning needs and performance objectives.

Whether you are investigating the viability of off-the-shelf trainers/simulators or procuring a custom-built trainer/simulator, the types and fidelity of visual, tactile, olfactory, affective, and auditory sensory cues; as well as the synthetic environment requirements and elements should be clearly articulated. With accurate, factual data in hand, you can maximize the benefits of your trainers/simulators investment by zeroing-in on requirements that offer the greatest value.



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1.2 How Can ADVISOR Help You?

In addition to simplifying and speeding Training Needs Analysis (TNA) and Training Systems Requirements Analysis (TSRA), ADVISOR Enterprise drives training efficiency by aligning current and future training activities to operational requirements to identify gaps, duplications and training with minimal value; uncovering cost drivers; forecasting and comparing the costs of viable delivery options; improving resource allocation; identifying/mitigating bottlenecks; producing training plans that leverage existing training programs/resources and generating audit trail to support recommendations.

Moreover, ADVISOR preserves training integrity, effectiveness, efficiency, and relevance by quickly identifying training activities that could be impacted by a change to a mission, system, job, policy or publication; facilitates reusability and collaboration by storing all data in a centralized database that can be accessed anytime and from anywhere by all team members with only a browser; simplifies data collection from Subject Matter Experts through custom build Excel spreadsheets; speeds data analysis; simplifies data manipulation; tracks changes made by each team member; and generates dozens of reports in a single click. ADVISOR is also web based, can be installed on a local Server, or used off BNH Server (cloud option), consists of 8 modules that can be used separately or in combination to meet various needs, and can be customized in line with requirements.

More specifically, follows are ADVISOR "Fidelity Analysis" module features and benefits.

ADVISOR Features

Training Device Analysis: Identify Components that require special assessment.

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Capt. (ret) Kelly "Bam Bam" Henderson
USfalcon

1.3 System Requirements

Database/Server Minimum Requirements

- 2 CPU Processor with 4GB of RAM
- 50 GB of free Hard Disk Space
- Windows 2000, 2003, 2008, 2012 R2, 2016, 2019, 7, 8, 8.1, 10, 11, NT, **or** Sun Solaris 9.0 or higher, **or** Linux Red Hat 6.0 or higher
- Web Server that supports Java Virtual Machine and can run Java Servlet. Supported products include: Tomcat 8.x, Tomcat 9.x, IBM WebSphere 4.0 or higher, Resin, Oracle Application Server, Jserv and others…
- Java version 1.7 or higher or JDK 14.0.2 or higher
- Oracle version 11g, 12c, 18c, 19c or 21c

Workstation/Desktop Minimum Requirements

- Pentium IV with 512 MB RAM
- 200 MB of free Hard Disk Space
- Windows 98, ME, XP, VISTA, 7, 8, 10, 11, NT, 2000, 2003, 2008, 2012 R2, 2016, 2019 or Oracle Solaris 9.0 or higher **or** Linux Red Hat 6.0 or higher
- Internet Explorer 6.0 or higher, Microsoft Edge, Mozilla Firefox or higher, Google Chrome, or Safari

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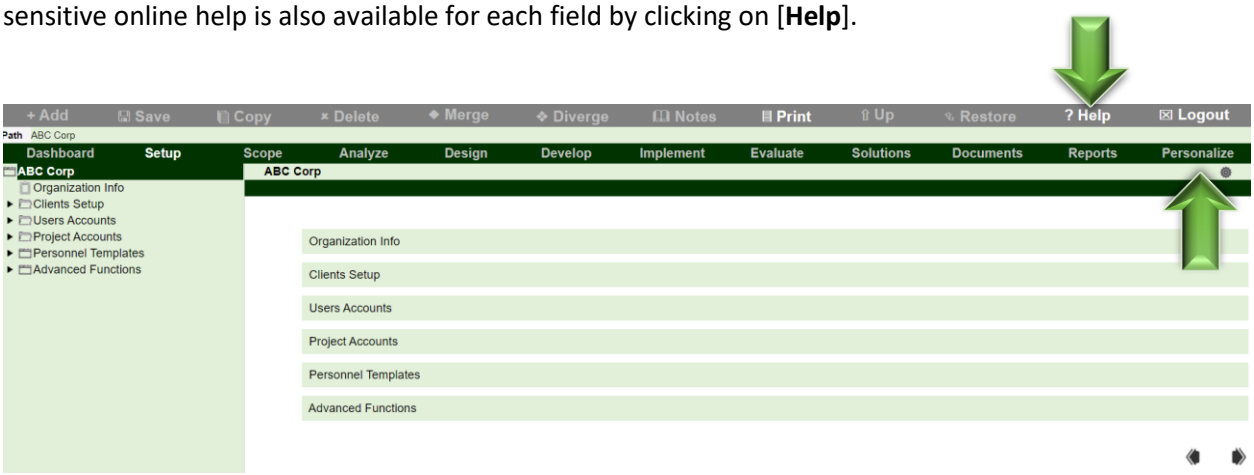
1.4 Getting Started

To log on to ADVISOR Enterprise, go to http://www.bnhexpertsoft.com, click on "**Log in**", input your Username and Password, and click [Login]. A Popup Window with step by step instructions is presented to familiarize you with ADVISOR. You may change your username, password, and preferences by clicking on the Preferences node under the **Personalize** tab, editing the required items and clicking [**Save**]. For example, you may hide or display the Popup Window under the [**Options**] tab under the Preferences node by placing or removing the checkmark next to the ADVISOR Tour field and clicking [**Save**]. Context sensitive online help is also available for each field by clicking on [**Help**].



To make the most out of ADVISOR Enterprise, Chapters 2 through 7 should be thoroughly reviewed to gain clear understanding of the system's capabilities and how to configure ADVISOR to best meet your needs.

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1.5 How is ADVISOR Organized?

ADVISOR has five main components organized within 3 windows (top, left and right – the sizes of the windows can be adjusted by dragging the border). Once you become familiar with these components, the system operation and navigation will become fairly simple.

a) Basic Functions (top window) – Actions available to user are presented at the top of the screen. You can Add, Save, Copy, Delete, Merge, Diverge, add comments/assumptions to a screen (Notes), Print a screen, Return to previous level (Up), Restore previous values, display context sensitive Help or Logout. Information is only saved when you click [**Save**].

b) Path (top window) – Tracks your progress as you navigate through ADVISOR.

c) Tree (left window) – Lists options (nodes) available to user. To expand an option (node), click on the [▶] icon. To view the contents of an option (node), click on corresponding node.

d) Tabs (top of right window) – Data for some nodes are divided into several tabs. Click on tab to view its contents.

e) Main Window (right window) – Content of each screen is presented in this window.

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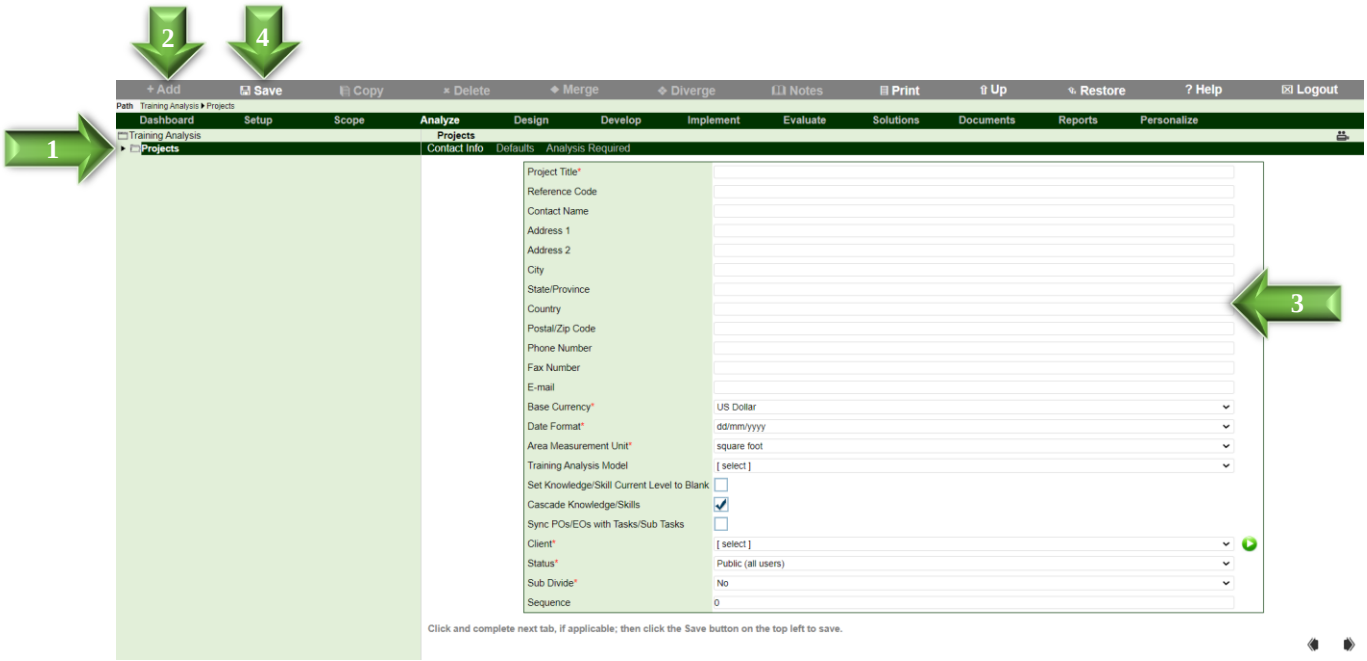
1.6 Basic ADVISOR Functions

Add: To add a Project, Mission, Job, Task, Objective, Course, or any other element:
Step 1: Click on corresponding folder (Projects, for example).
Step 2: Click on [**Add**].
Step 3: Input the desired info.
Step 4: Click on [**Save**].



Edit: To edit a Project, Mission, Job, Task, Objective, Course, or any other element:
Step 1: Click on corresponding element (Project A, for example).
Step 2: Modify the desired info.
Step 3: Click on [**Save**].

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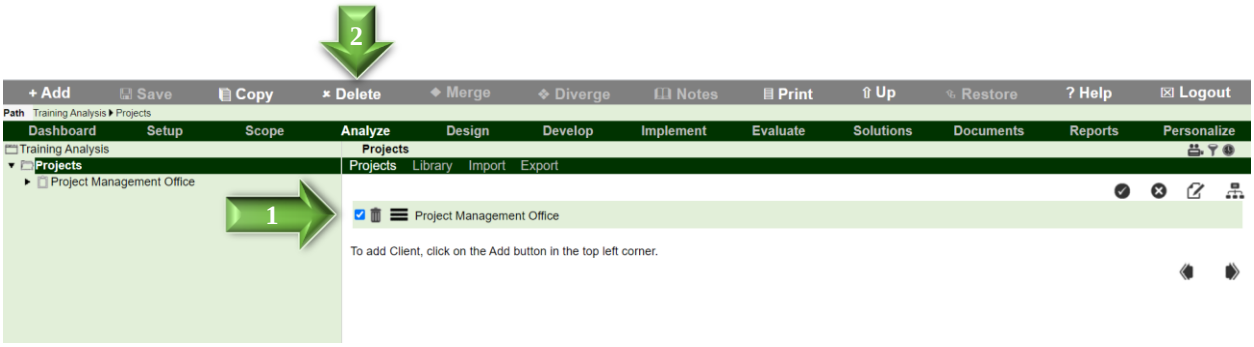
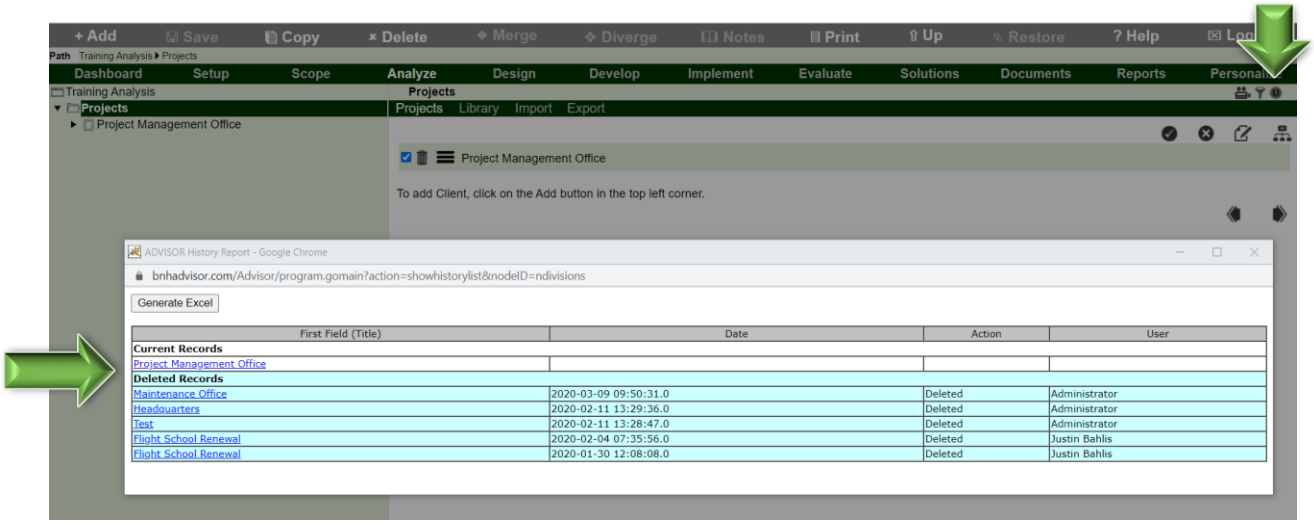
Delete: To delete a Project, Mission, Job, Task, Objective, Course, or any other element:
Step 1: Place checkmarks next to the desired records (Project Management Office, for example).
Step 2: Click on [**Delete**].



Track Changes: To find out when an element was created, modified, or deleted and by whom, click on the View History icon to display relevant data.



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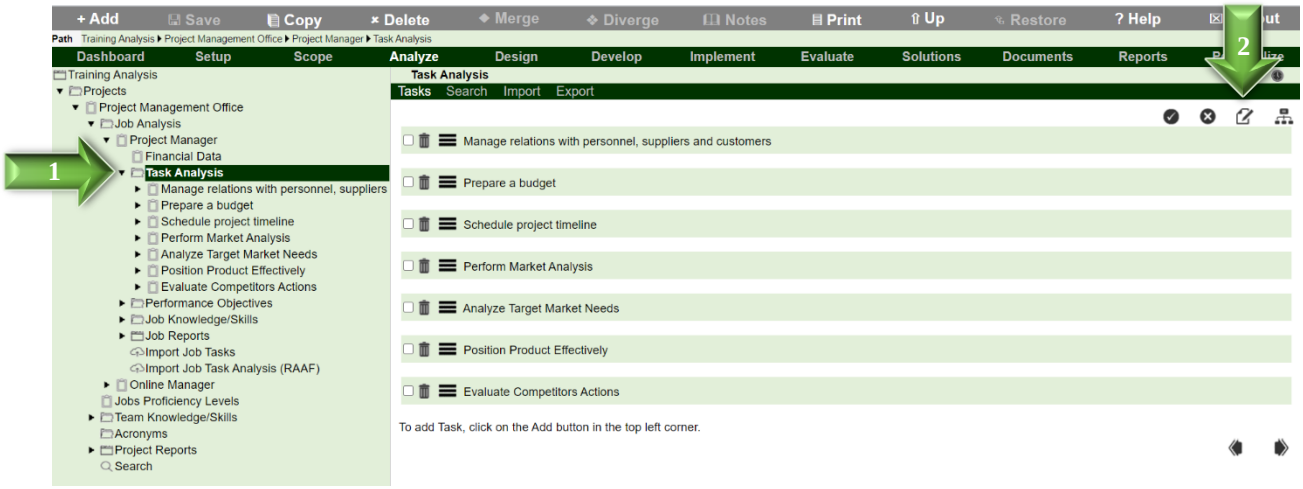
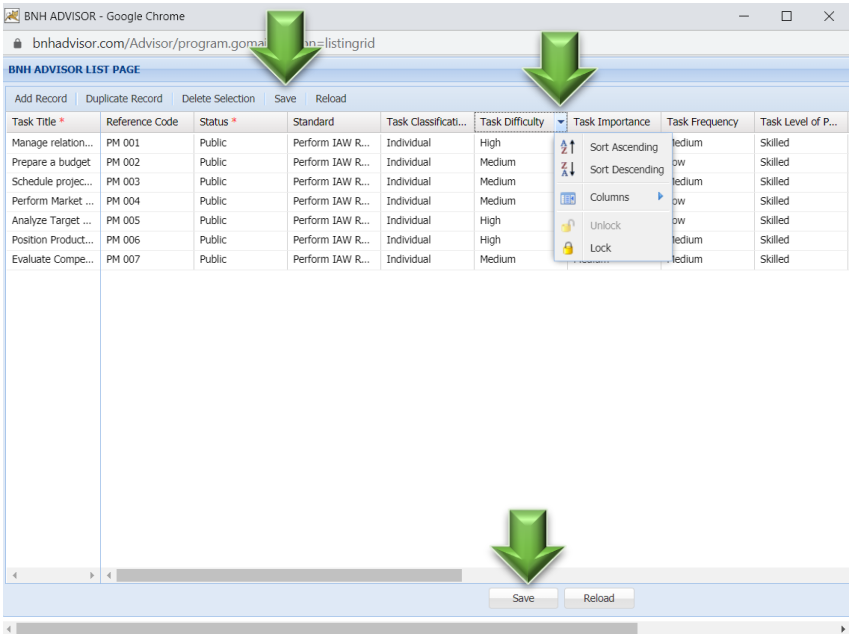
Edit Multiple Records: To edit multiple Projects, Missions, Jobs, Tasks, Objectives, Courses, or any other elements:

Step 1: Click on the corresponding folder.

Step 2: Click on the **Edit All** icon.



The Projects, Missions, Jobs, Tasks, Objectives, Courses, and so forth are presented in an Excel like tabular format. You may sort the data on any column (Title, for example), or lock (prevent the column from scrolling), by clicking on the arrow to the right of the column title, and selecting desired option. To edit a field, click on the field, input or select option. Once the desired fields/records are edited, click on [**Save**] to save all changes.



Notes:

- Fields/Attributes hidden in ADIVSOR main screen, will be automatically hidden in the Edit All window.
- You can reorder fields by dragging and dropping columns to the desired position, placing checkmark next to Override Default filed, and clicking [**Save**]. Preferred order will be maintained for all projects. To restore default order, remove the checkmark next to Override Default and click [**Save**].

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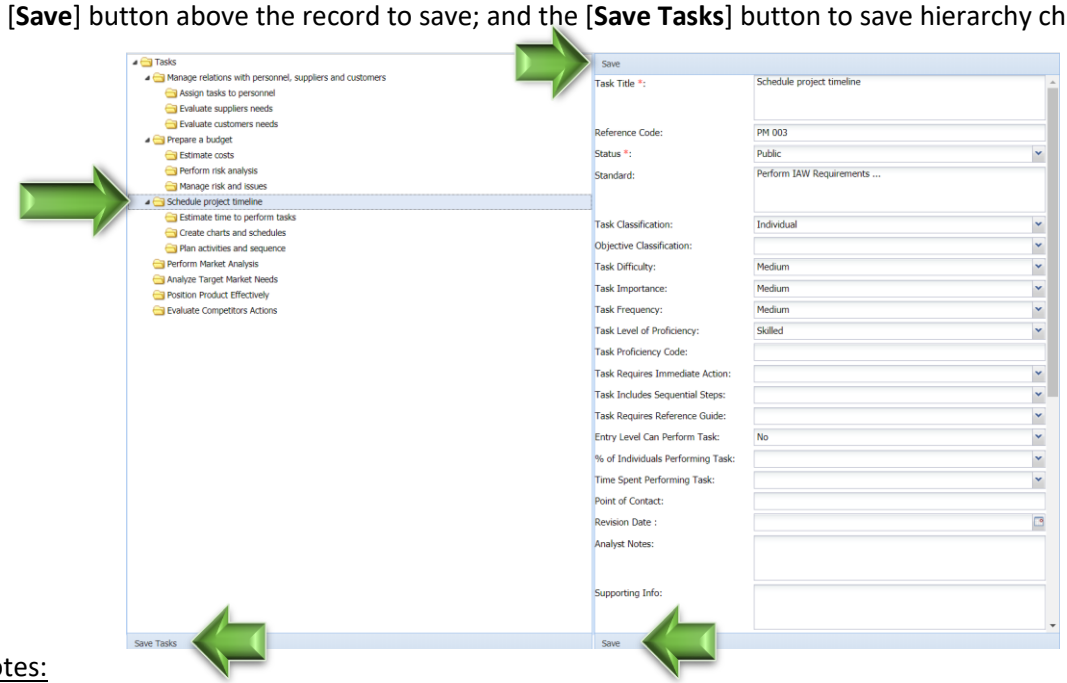
Modify Hierarchy: To change the hierarchy or the order of Tasks or Objectives:
Step 1: Click on the corresponding folder.
Step 2: Click on the **Edit Tree** icon.

Tasks or Objectives are presented in a tree like structure. To change the hierarchy or order, simply drag and drop the tasks or objectives to the desired locations. All links to Missions, Jobs, Objectives, Courses, etc.; as well as attributes including Knowledge, Skills, Attitudes, References and so forth are preserved. For example, "Perform risk analysis" sub task may be dragged under the Tasks folder to become a Task. Moreover, all its links and attributes will remain intact. You may also view and edit the attributes of any Task or Objective by right clicking on the Task and selecting the Edit option. Once record is edited, click on [**Save**] button above the record to save; and the [**Save Tasks**] button to save hierarchy changes.



Notes:

- To copy record including children, right click on record (Task, for example) and select "Copy". Next, right click on another item in the tree and click "Paste".
- To delete multiple records at one time, press "Ctrl +C" to select tasks and click "Delete Task" button.
- Status of folders (i.e., open and or closed) is maintained after each Save.
- To minimize data loss due to timeout, warning is provided to alert users to save data each 15 minutes.

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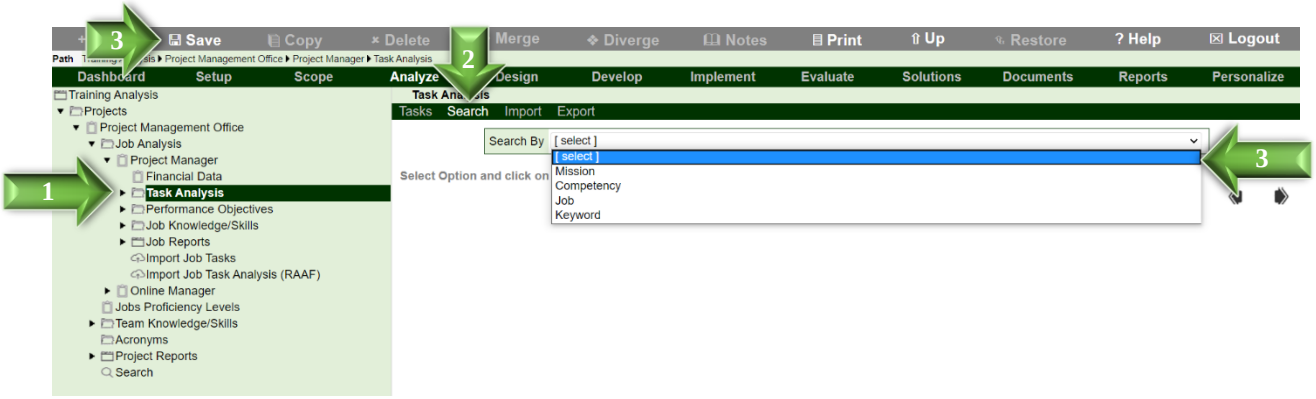
Search and Copy: You can search and copy Missions, Systems, Jobs, Tasks, Performance Objectives, Courses as follows:

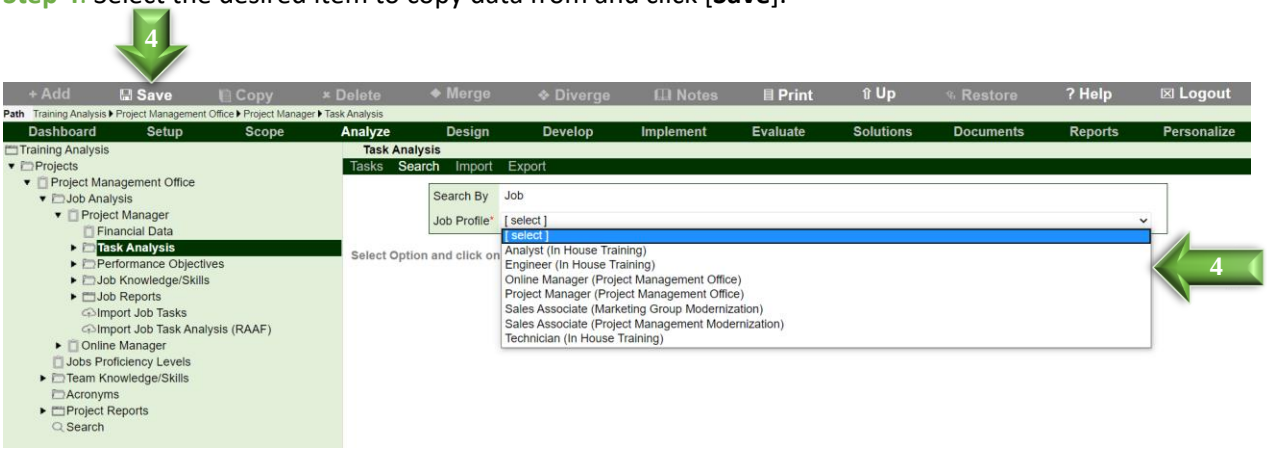
Step 1: Click on the desired folder – Mission Analysis, System Analysis, Job Analysis, Tasks Analysis, Performance Objectives or Course Analysis.

Step 2: Click on the [**Search**] tab.

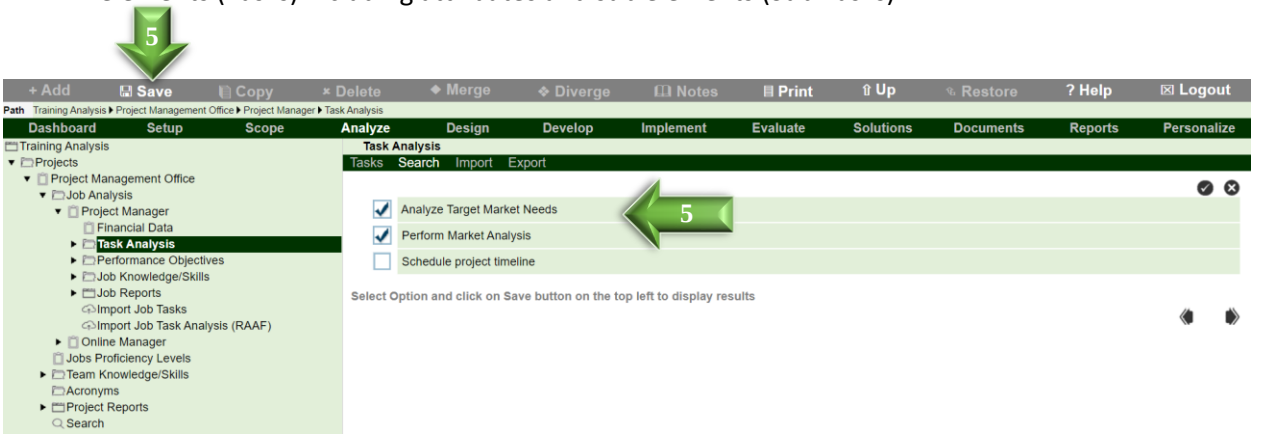
Step 3: Select the desired search criterion and click [**Save**] – more options may be provided – to display available elements.



Step 4: Select the desired item to copy data from and click [**Save**].



Step 5: Place checkmarks next to the desired elements (Tasks, for example) and click [**Save**] to copy the elements (Tasks) including attributes and sub elements (Sub Tasks).



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Import Data: Dozens of Excel Spreadsheets are provided (http://www.bnhexpertsoft.com/data-collection-forms-training-development-version-12/) to simplify and speed offline data collection from Subject Matter Experts (SMEs). The attributes and options within each form (Job Tasks, for example) are identical to the corresponding (Job Tasks) fields within ADVISOR. Once completed, the data can be uploaded to ADVISOR Enterprise with a few mouse clicks, as follows:

Step 1: Click on the folder where data should be imported. Please note that each spreadsheet is designed to import data under a specific folder within ADVISOR Enterprise. For example, the Mission Tasks spreadsheet is designed to import Tasks under Missions, while the Job Tasks spreadsheet is designed to import Tasks under Jobs.

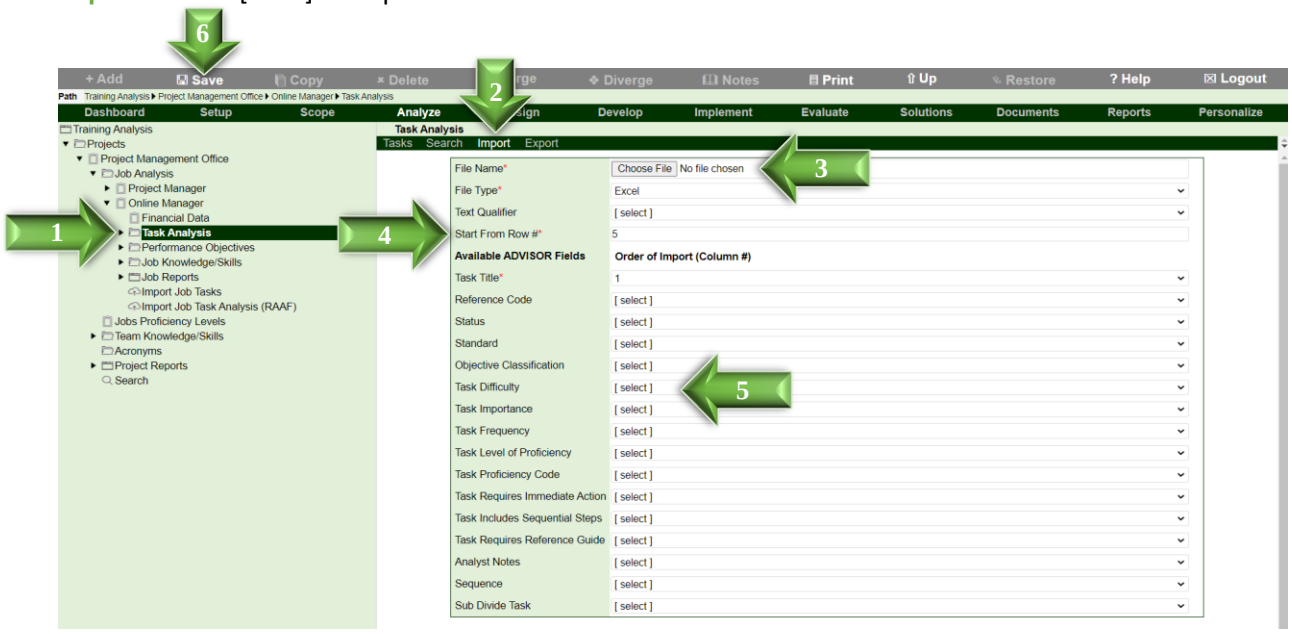
Step 2: Click on the [**Import**] tab.

Step 3: Click [**Choose File**] and select the desired spreadsheet.

Step 4: Row on which data import should start, should be specified in the **Start From Row** field. The top 4 rows in ADVISOR Excel spreadsheets are reserved for headings and instructions. Collected data typically starts on the 5th row.

Step 5: Indicate where the data for each field resides within the Excel spreadsheet. For example, if Task Title is stored in column 1, then input 1; and so forth. Data in Excel spreadsheets is sequentially mapped to corresponding fields in ADVISOR. You are not required to import all attributes. For example, if the Status and Task Classification attributes are not required, do not input column numbers for these fields. ADVISOR will not import data for attributes that have not been assigned a column number.

Step 6: Click on [**Save**] to import.



Note: **Reference Code** is also used for detecting duplicate records. For example, if Job Task is imported, ADVISOR will 1st verify whether the Job already has a Task with the same Reference Code. If it does, the following message will appear "Duplicate Records already exist. Overwrite attributes?" If Ok is selected, the attributes of the Job Task in ADVISOR will be updated. If Cancel is selected, the import will be aborted.

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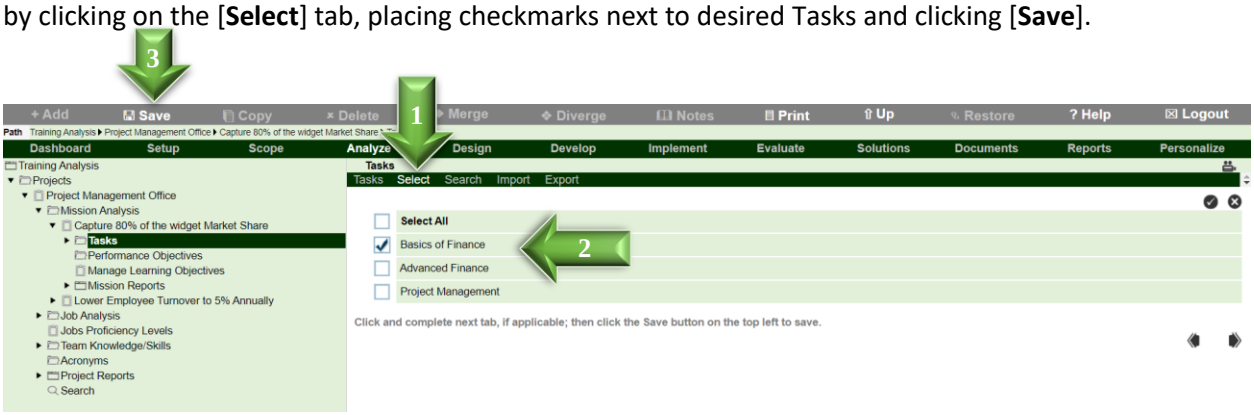
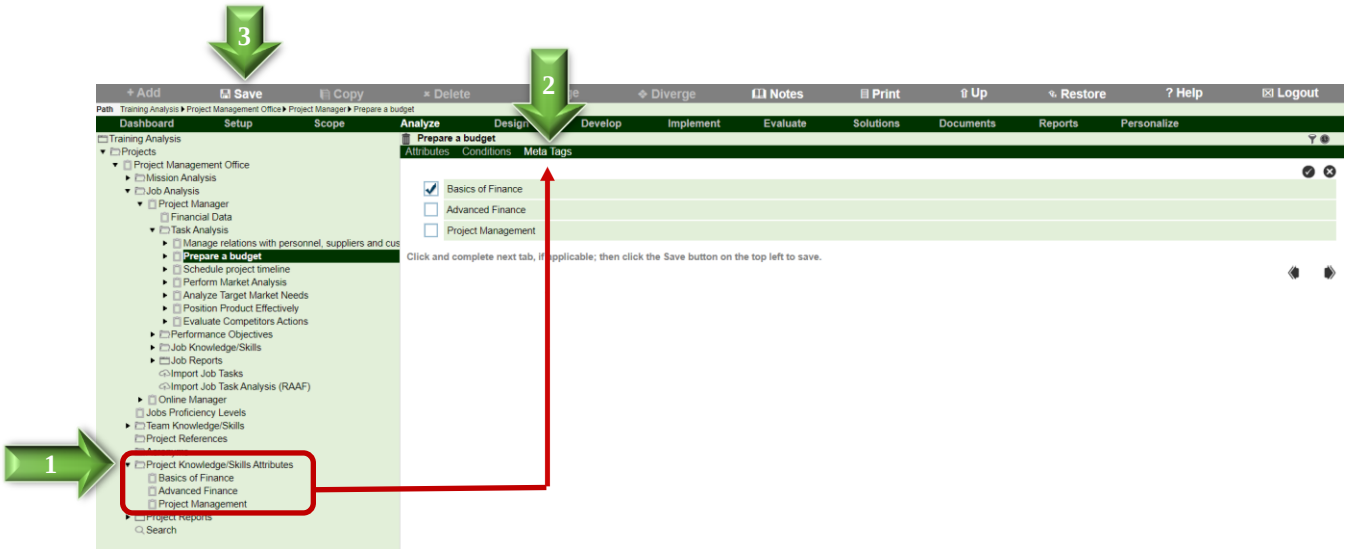
Setup and Assign Meta Tags: To minimize duplication each time a Mission, System or Project Task is added, it is stored in a centralized repository. The Tasks can, in-turn, be assigned to any Mission or System by clicking on the [**Select**] tab, placing checkmarks next to desired Tasks and clicking [**Save**].



Similarly, Knowledge, Skills and Attitudes (KSAs) are stored in a centralized repository and can be assigned to any Task or Objective.

To quickly zero in on desired Tasks or KSAs within a repository, Meta Tags can be created under the Project Knowledge/Skills Attribute folder and assigned to any Task or KSA by clicking on [**Meta Tag**] tab, selecting the desired Meta Tags and clicking [**Save**].



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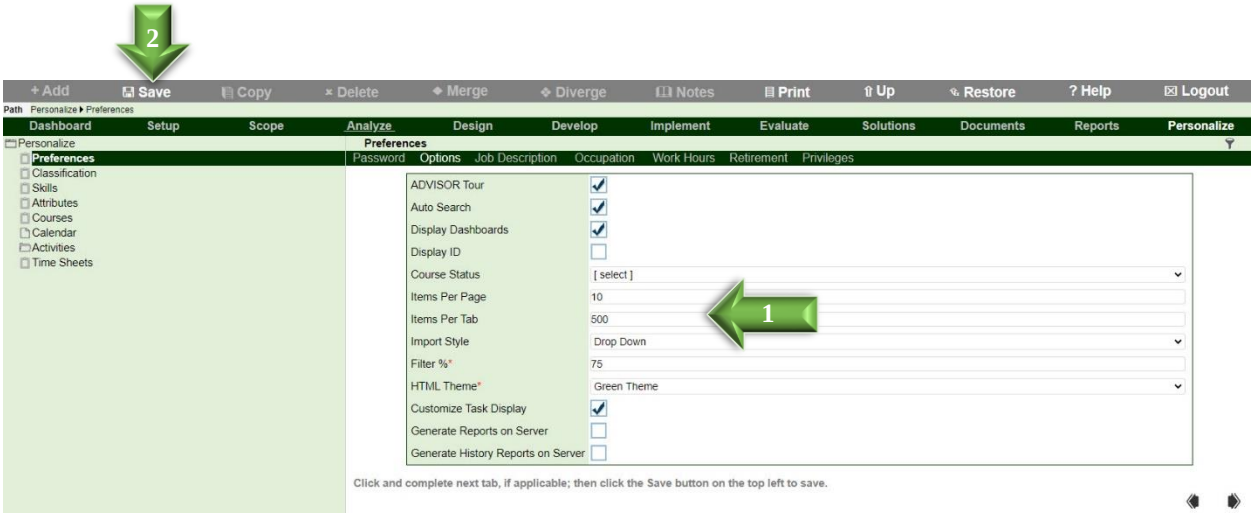
Specify Items per Page: By default, 10 items (such as Projects, Tasks, Objectives, Knowledge/Skills, and so forth) are displayed on each page. Once the number of items exceeds 10, the remaining items are displayed on subsequent pages. The number of pages available for each item is indicated on the top right as shown below. To display the items within each page, click on the corresponding page number.

You can modify the number of items to be displayed on each page under [**Options**] tab for the **Preferences** node under the **Personalize** tab by specifying the number of items to be displayed on each page and clicking [**Save**].



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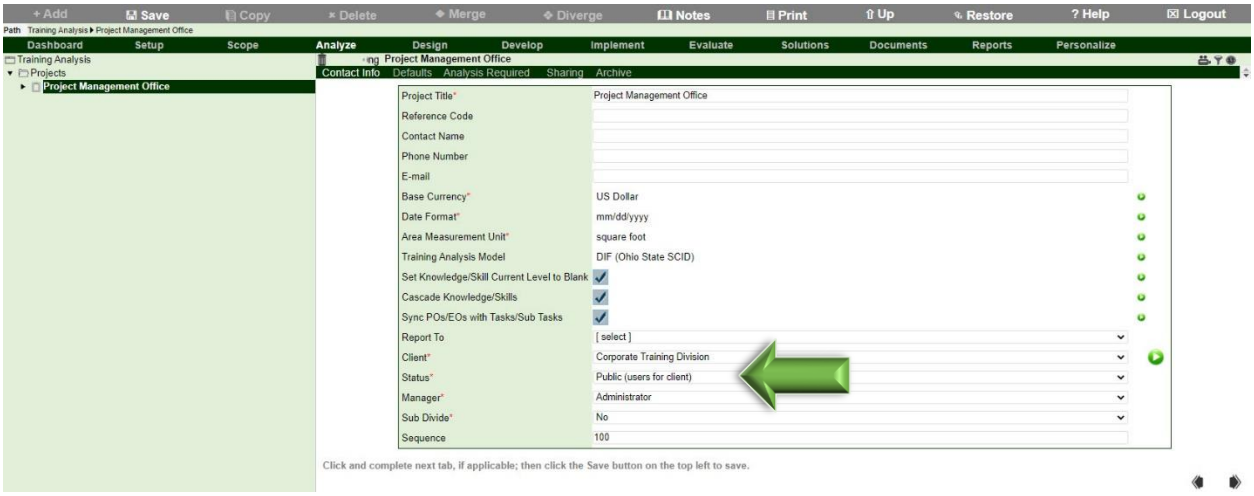
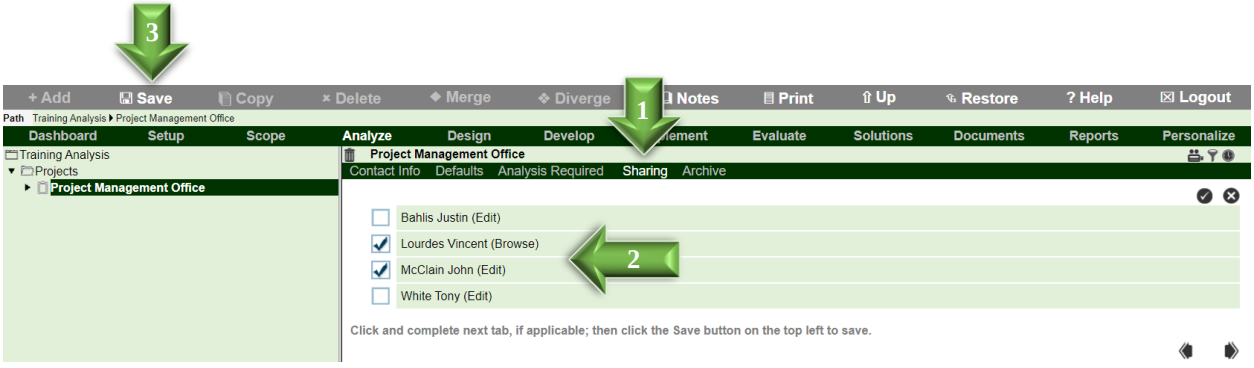
Limit Access to Data/Analysis: By default, when a new Project, Job, Task, and so forth is created, its **Status** is set to **Public** to permit other Users to find, copy and reuse the Project, Job or Task using the Search function and in-turn minimize the effort needed to conduct the analysis. This does not imply that other Users can review and edit your Project, Job or Task. It simply implies that they can reuse. To maintain anonymity, you can set the Project, Job or Task Status to **Private**, and in-turn exclude them from the Search function.



Collaborate with Team: Each analysis including Project, Course and so forth is assigned to a specific User (Manager) – typically the individual that created the Project or Course. By default, only the Manager can view the Project or Course and make changes. To allow other Users to review and make changes, the Project or Course can be shared with them by clicking on the [**Sharing**] tab, placing checkmarks next their name and clicking [**Save**]. Please note that the privilege that each user possesses is indicated after their name. "Browse" indicates that the individual can view and add notes to the analysis, but cannot edit. "Edit", on the other hand, indicates that the individual can add, modify or delete any item. If the Project or Course Manager reports to another User, the Project or Course will be automatically shared with them. In this case, the checkmark next to the Supervisor name is presented in read only mode.



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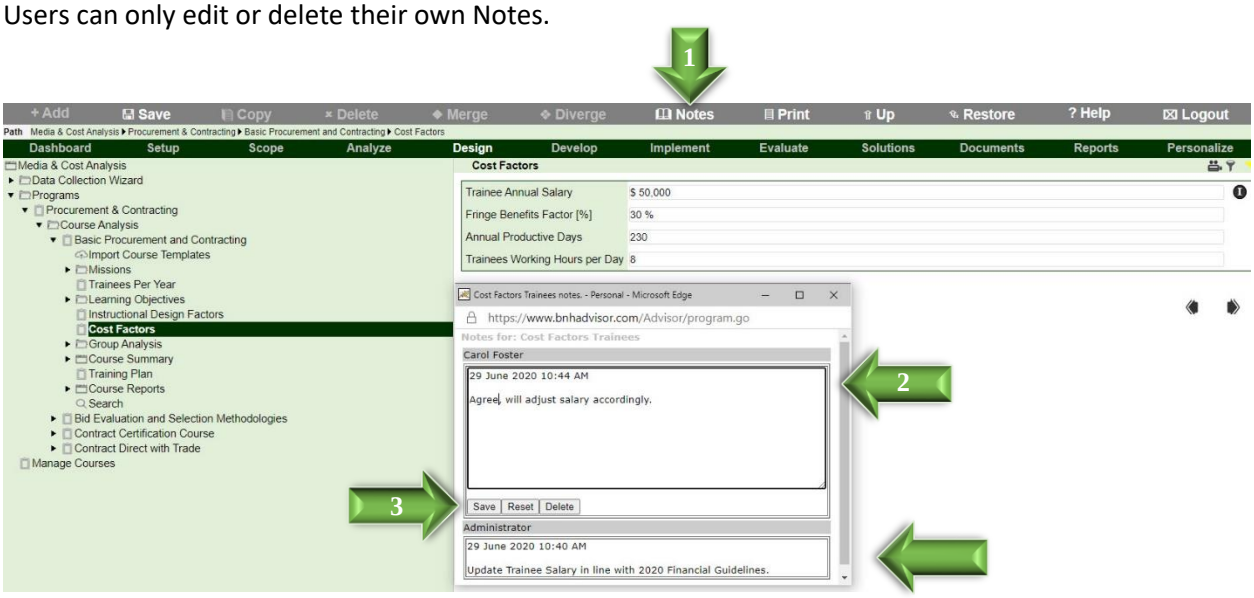
Add Notes: Users may add a Note to any screen by clicking on [**Notes**], typing the note in the new window and clicking [**Save**]. Notes from other Users are presented in read only mode in the bottom of the window. Users can only edit or delete their own Notes.



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1.7 Learning ADVISOR

To use ADVISOR, you should know how to perform basic computer, Windows and Browser operations. For example, how to start and quit applications, select commands and dialog box options. To facilitate the learning process, ADVISOR comes with its own set of online tools. These include:

- **Online Tour:** a slide show that highlights ADVISOR's main features. It is presented after User logs on ADVISOR. You can hide and redisplay by unchecking or rechecking the ADVISOR Tour field under the [**Options**] tab, under the Preferences node under the **Personalize** tab and clicking [**Save**].

- **Video Clips** to gain a better understanding of ADVISOR's main functions and features. To view, please visit the following: http://www.bnhexpertsoft.com/how-to-video-overview/ .

- **Step-by-Step Guides** for configuring ADVISOR, as well as conducting mission analysis, system analysis, competency analysis, job task analysis, media analysis, cost analysis, fidelity analysis, performance analysis, etc. To view and download, please visit the following: http://www.bnhexpertsoft.com/user-guides-version-12/,

- **Answers to Frequently Asked Questions** are available online at: http://www.bnhexpertsoft.com/faq-1-install/.

- **Context Sensitive Online Help** can be displayed for each screen by clicking on [**Help**]. Context sensitive video clips are also embedded throughout ADVISOR and can be viewed by clicking on the video icon.

- **Basic Excel Data Collection Forms** for various ADVISOR data elements along with data import instructions are available online at: http://www.bnhexpertsoft.com/data-collection-forms-training-development-version-12/.

- **Detailed Excel Data Collection Forms** for Project Tasks, System/Competency Tasks and Job Tasks along with data import instructions are available online at: http://www.bnhexpertsoft.com/detailed-data-collection-forms-version-12/ .

- **Sample Reports** from each module are available online at: http://www.bnhexpertsoft.com/reports/.

- **Technical Support:** Available 8:00 am to 6:00 pm EST by calling 1 (514) 745-4010. You may also fax your questions to 1 (514) 745-4011 or E-mail to support@bnhexpertsoft.com.

1.8 References

Canadian Forces Individual Training & Education System (2003), Analysis of Instructional Requirements, Volume 3 of 13, CFITES.

Ministry of Defence, Joint Service Publication (JSP) 822 (March 2016), Defence Systems Approach to Training – Direction and Guidance for Individual and Collective Training, Part 2: Guidance.

United States, Department of Defense (2001), Instructional Systems Development/Systems Approach to Training and Education, Part 2 of 5, MIL-HDBK-29612-2A.

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Chapter 2: Setup Projects and Training Devices

2.1 Introduction

In general, Trainers and Simulators offer several advantages. These include the simulation of dangerous, life-threatening situations; safe training environment; learning from doing; opportunity to make mistakes, as well as a more efficient learning environment. To achieve these benefits, Trainers and Simulators should allow students to practice all relevant tasks, within realistic environments, under preset conditions, with sufficient level of fidelity to attain the desired level of competency. In other words, the requirements for Trainers and Simulators should be driven by learning needs and performance objectives.

Whether you are investigating the viability of off-the-shelf trainers/simulators or procuring a custom-built trainer/simulator, the types and fidelity of visual, tactile, olfactory, affective, and auditory sensory cues; as well as the synthetic environment requirements and elements should be clearly articulated.

Two approaches can be used to Perform Fidelity Analysis within ADVISOR:

Task Based Fidelity Analysis. Relies on the Tasks that individuals perform on-the-job to identify the functional requirements for the trainers/simulators, as well as the synthetic environment requirements, synthetic environment elements and activities, and sensory cues. This approach is best suited in the early stages of the analysis when training requirements/ activities have not been defined.

Activity Based Fidelity Analysis. Relies on the Activities (i.e., Learning Objectives) that individuals are expected to master to identify the functional requirements for the trainers/simulators, as well as the synthetic environment requirements, synthetic environment elements and activities, and sensory cues. This approach can only be used once training requirements/ activities have been defined and trainers/simulators have been identified as a viable delivery option (refer to Training Design User Guide).

Step by step process for identifying trainers/simulators requirements using Task Based Fidelity Analysis and Activity Based Fidelity Analysis are presented in this user guide. Separate Step-by-Step Guides are also available for conducting Task Based Fidelity Analysis and Activity Based Fidelity Analysis. For info on basic functionality and how to configure ADVISOR in line with needs, please refer to the Configure ADVISOR Step by Step or User Guide. Remember that context sensitive help for each screen is also available by clicking on [**Help**].

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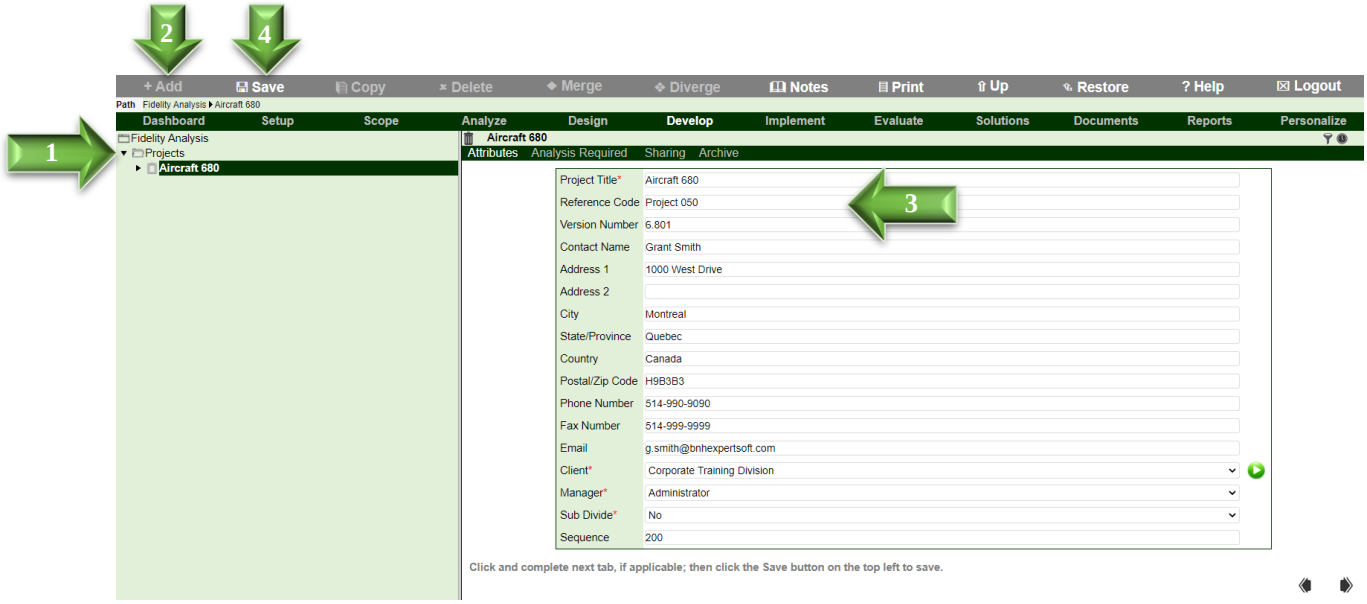
2.2 Setup New Projects

Step 1: To create a new Project, click on the **Projects** folder.
Step 2: Click [**Add**].
Step 3: Input the Project Title, Contact Name, Client, and other info. Data required by ADVISOR is identified by a red asterisk (*). Of course, the more data you provide, the better the results.
Step 4: Click [**Save**] to create the Project.



Notes:

- To facilitate Configuration Management, a version # can be assigned to each project.
- To divide the Project into Segments, select "Yes" under the Sub Divide field.
- Once the project analysis is completed or a milestone is reached, you can Archive the Project. This will create a duplicate copy of the analysis that can be viewed in read only mode to preserve integrity. Changes to the current analysis will not impact archived data. To archive an analysis, click on the (**project**) node, then click on the [**Archive**] tab, input the Version Title and click [**Save**]. The date on which the archive was created is automatically saved.
- You may view an archived version in read only mode, delete as well as recover (i.e., overwrite existing version) by clicking on the corresponding tabs. Of course, if a Project is deleted, all archived versions of the Project will be automatically deleted as well.
- You may also share the analysis with colleagues (i.e., Users assigned to same Client) by clicking on [**Sharing**] tab, placing checkmarks next to their names and clicking [**Save**].

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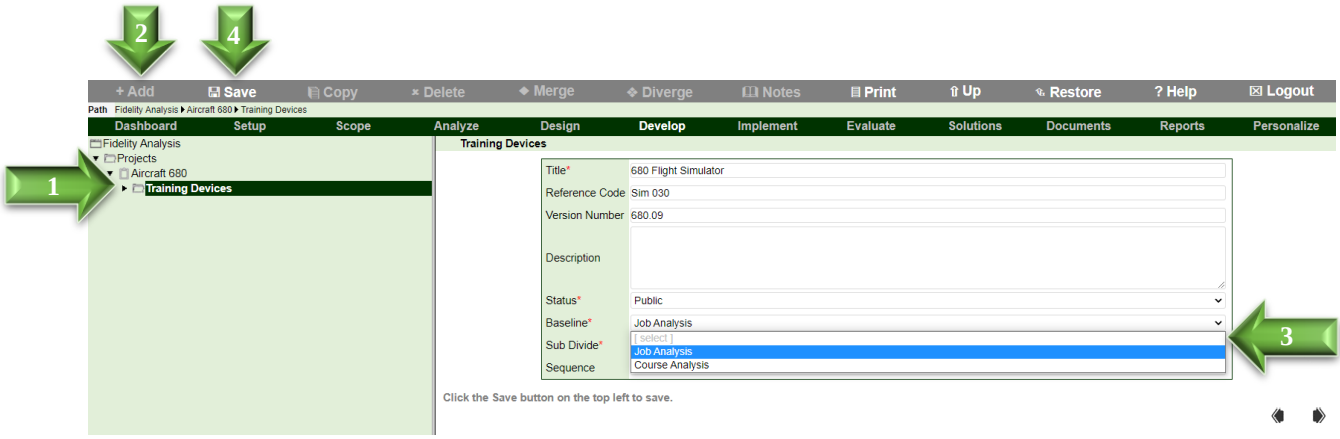
2.3 Setup Training Devices and Select Approach

Step 1: To assess the requirements for a Training Device, click on the **Training Devices** folder.
Step 2: Click [**Add**].
Step 3: Input the Training Device Title, Description, Manager, **Baseline**, and other info. Data required by ADVISOR is identified by a red asterisk (*). Of course, the more data you provide, the better the results.
Step 4: Click [**Save**] to create the Training Device.



Implication: Baseline specifies the approach for conducting Fidelity Analysis. Job Analysis indicates a Task Based approach and Course Analysis indicates an Activity Based approach. ADVISOR's interface will vary based on selected option. The following guideline is recommended for selecting baseline option:

- Job Analysis should be selected if training requirements have not been defined and media analysis has not been conducted. In other words, Performance Objectives (Tasks that require training) will be used to identify Sensory Cues requirements. Details are outlined in Chapter 4.
- Course Analysis should be selected if media analysis has been conducted. In other words, Learning Objectives (Activities) will be used to identify Sensory Cues requirements. Details are outlined in Chapter 5.

Notes:

- To divide the Training Device into Components, select "Yes" under the Sub Divide field.
- To minimize the effort required to conduct Fidelity Analysis, if training requirements/activities have been defined and trainers/simulators have been identified as a viable delivery option (refer to Training Design User Guide), then Training Devices along with Courses and relevant Learning Objectives (Activities) can be imported by clicking on the [**Search**] tab of the **Training Device** folder, selecting Course, for example, under the **Search by** field, as well as Currently Used or User Recommended under the **Delivery Option** field and clicking [**Save**] to display the list of available courses. Place checkmarks next to desired Courses and click [**Save**] to automatically identify and copy Training Devices from the Currently Used or User Recommended delivery options along with relevant Learning Objectives (Activities).

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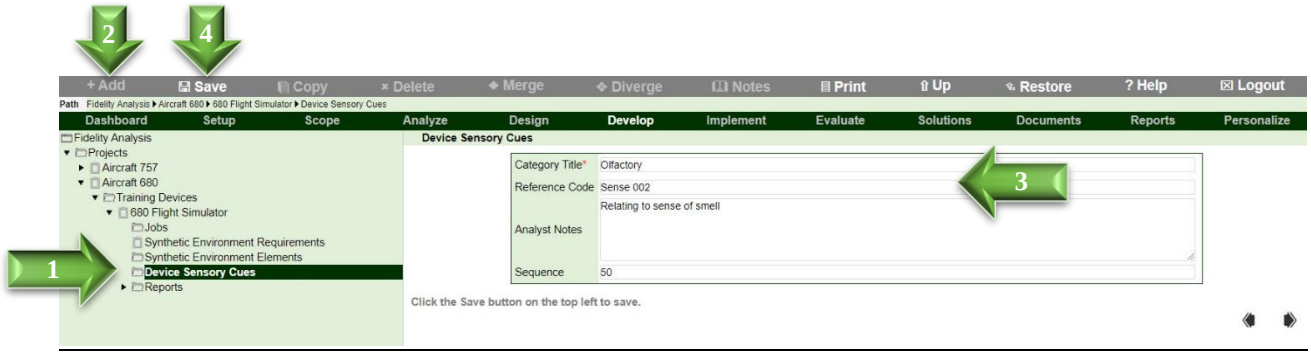
Chapter 3: Define Sensory Cues Repository

3.1 Define Sensory Cues Repository

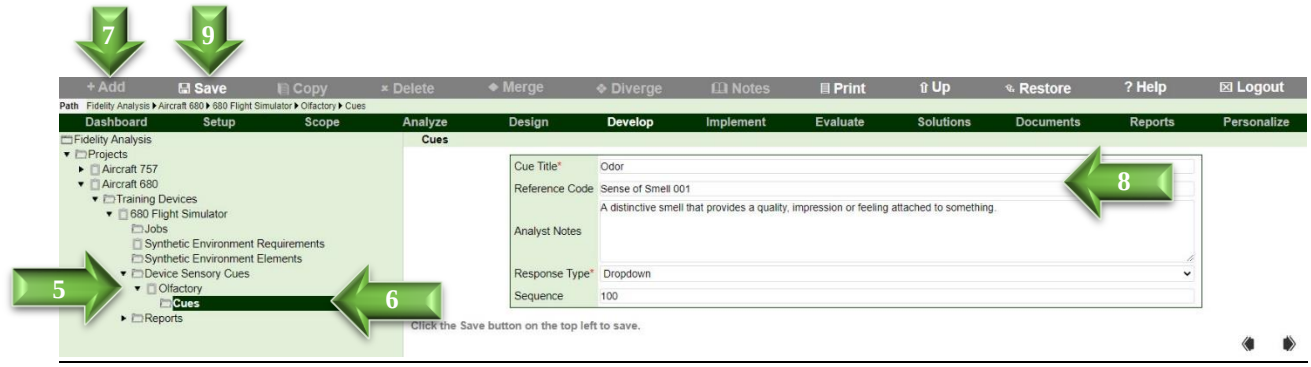
To identify the Sensory Cues Requirements for each Performance Objective (Task) or Learning Objective (Activity) and in-turn the trainer/simulator, a repository of sensory cues to be considered should 1st be created under the **Device Sensory Cues** folder. To facilitate the selection process, the Cues can be organized under various Categories such as "Visual", "Tactile", "Olfactory", "Affective", "Auditory", etc. To create a sensory cue Category for the Training Device:

Step 1: Click on the **Device Sensory Cues** folder.
Step 2: Click [**Add**].
Step 3: Input the Category Title, Analyst Notes and other information.
Step 4: Click [**Save**] to create the Sensory Cue Category.



For each Category, "Visual", for example, various Cues can be created such as "Brightness", "Color", "Field of View", and so forth. To add a Cue under a Category:

Step 5: Click ▶ next to (**Category**) node (**Olfactory** for example).
Step 6: Click on the **Cues** folder.
Step 7: Click [**Add**].
Step 8: Input the Cue Title, Analyst Notes, Response Type, and other information.
Step 9: Click [**Save**] to create the Cue.



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Implications: Two options can be selected under the **Response Type** field Alphanumeric or Dropdown. Alphanumeric will allow users to input an alphanumeric value for the Cue; while Dropdown will limit users' response to predefined options, such as: Low, Medium, and High. If Dropdown is selected, Dropdown Options for the Cue can be defined as follows:

Step 10: Click on the **Options** folder.
Step 11: Click [**Add**].
Step 12: Input the Option Title and Sequence.
Step 13: Click [**Save**] to create Option for the Cue.

Note:

- Once Cues have been defined under one Training Device, they can be easily copied under other Training Devices by clicking on the [**Search**] tab of the **Device Sensory Cues** folder.

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Chapter 4: Define Cues Requirements: Task Based Approach

4.1 Overview

Two approaches may be used to define Training Device Requirements (Section 2.3):

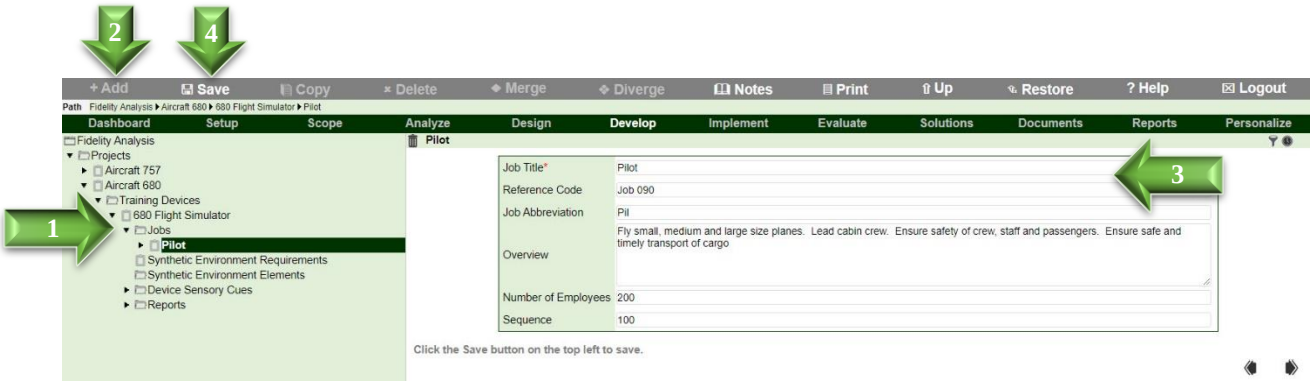
Task Based Approach (Job Analysis) should be selected if training requirements have not been defined and media analysis has not been conducted. In other words, Performance Objectives (Tasks that require training) will be used to identify Sensory Cues requirements. This approach is presented in this Chapter.

Activity Based Approach (Course Analysis) should be selected if media analysis has been conducted. In other words, Learning Objectives (Activities) will be used to identify Sensory Cues requirements. This approach is presented in Chapter 5.

4.2 Identify Jobs

To identify the target audience for the Training Device – i.e., all Jobs (Occupations) that will be trained on this Device:

Step 1: Click on the Jobs folder under the (**training device**) node.
Step 2: Click [**Add**].
Step 3: Input the Job/Role Title, a brief overview, the number of employees that work in this capacity and other require information.
Step 4: Click [**Save**] to create the Job.



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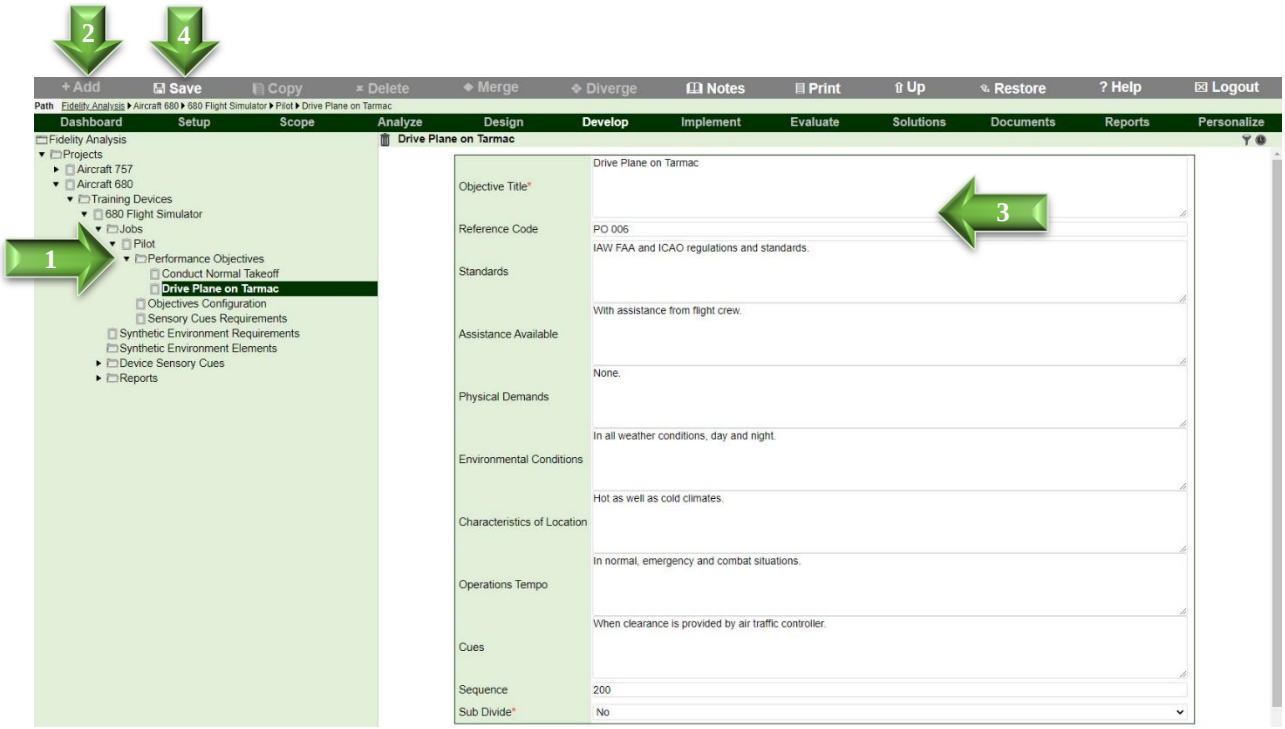
4.3 Create/Manage Performance Objectives

Create Performance Objectives

Tasks refer to activities that individuals are expected to perform on the job. Although individuals may require training on some Tasks to master them, simpler Tasks with minimal impact may not require any training. In general, Performance Objectives can be viewed as Tasks that require training. To determine the Fidelity Requirements of the Training Device all Performance Objectives that will be trained on this Device must be analyzed. To add a Performance Objective:

Step 1: Click on the **Performance Objectives** folder under the **(job)** node.
Step 2: Click [**Add**].
Step 3: Input the Objective Title, Standards, Conditions, and other attributes.
Step 4: Click [**Save**] to create the Performance Objective.



Note:

- Performance Objectives can be subdivided into Enabling Objectives, if required, by selecting "Yes" for the **Sub Divide** field.

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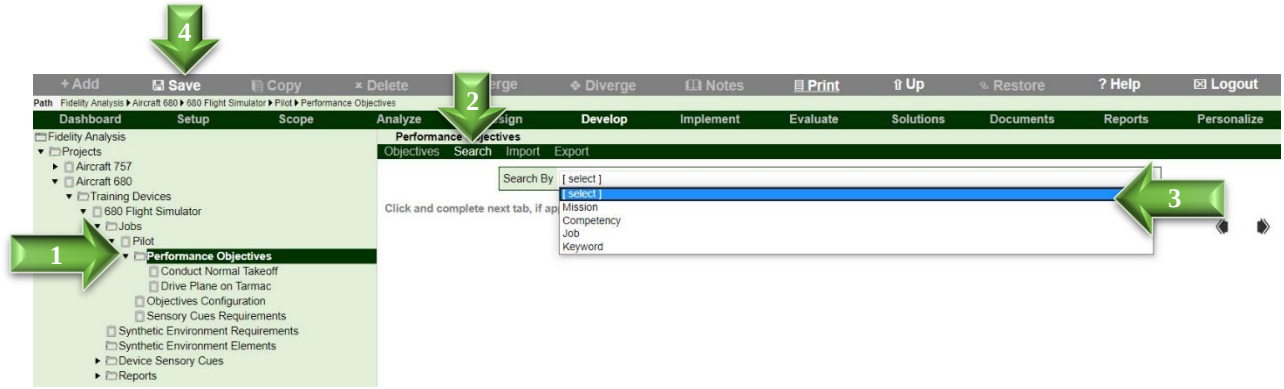
Find/Copy Performance Objectives

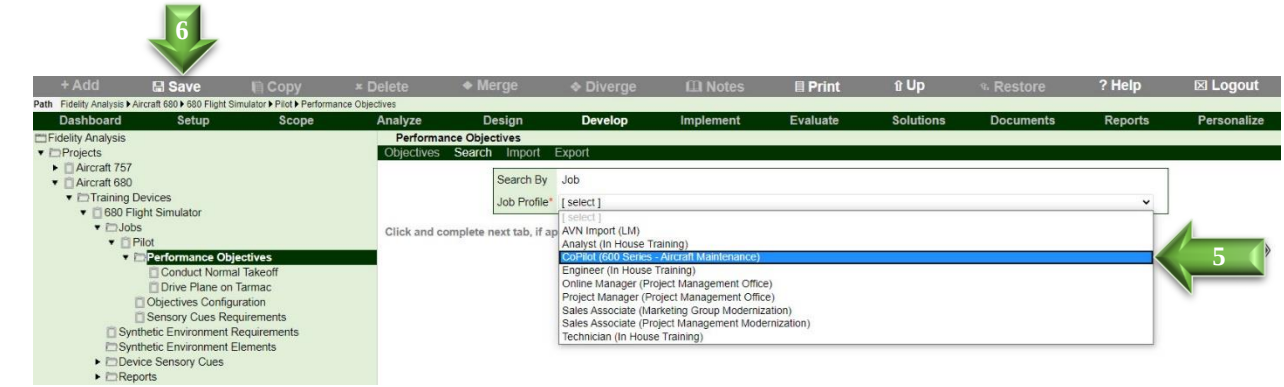
To minimize the effort required to identify relevant Performance and Enabling Objectives, a search function is provided to assist analysts in finding and copying existing Performance and Enabling Objectives. Multiple venues may be used to search for Performance Objectives: Mission, Competency, System, Job, or Keyword. To search for Performance Objectives:

Step 1: Click on the **Performance Objectives** folder.
Step 2: Click on the [**Search**] tab.
Step 3: Select search criterion i.e., Mission, Competency/System, Job, or Keyword.
Step 4: Click [**Save**].



Step 5: Based on the selected Search By criterion, relevant Missions, Competencies, Systems or Jobs are presented in a dropdown menu. Select the desired Mission, Competency, System or Job.

Step 6: Click [**Save**] to display the Performance Objectives for the selected option.



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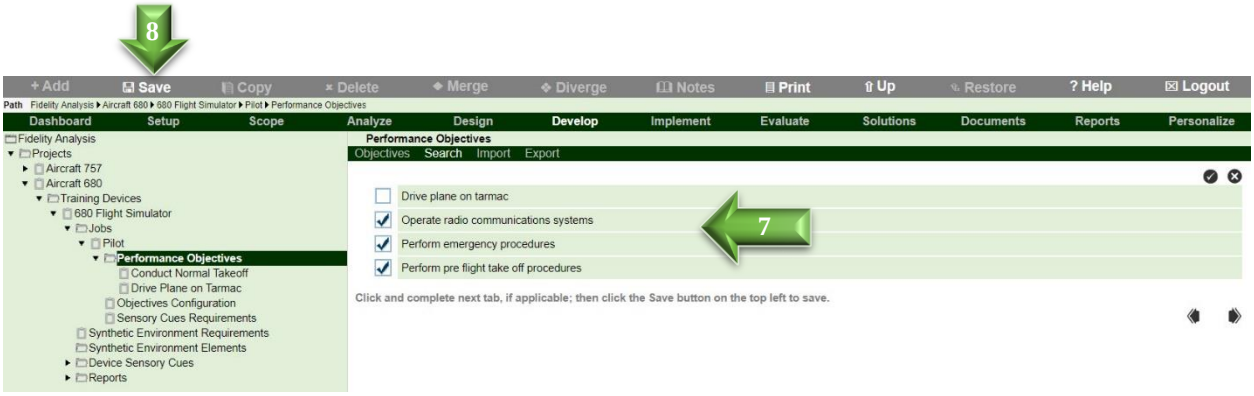
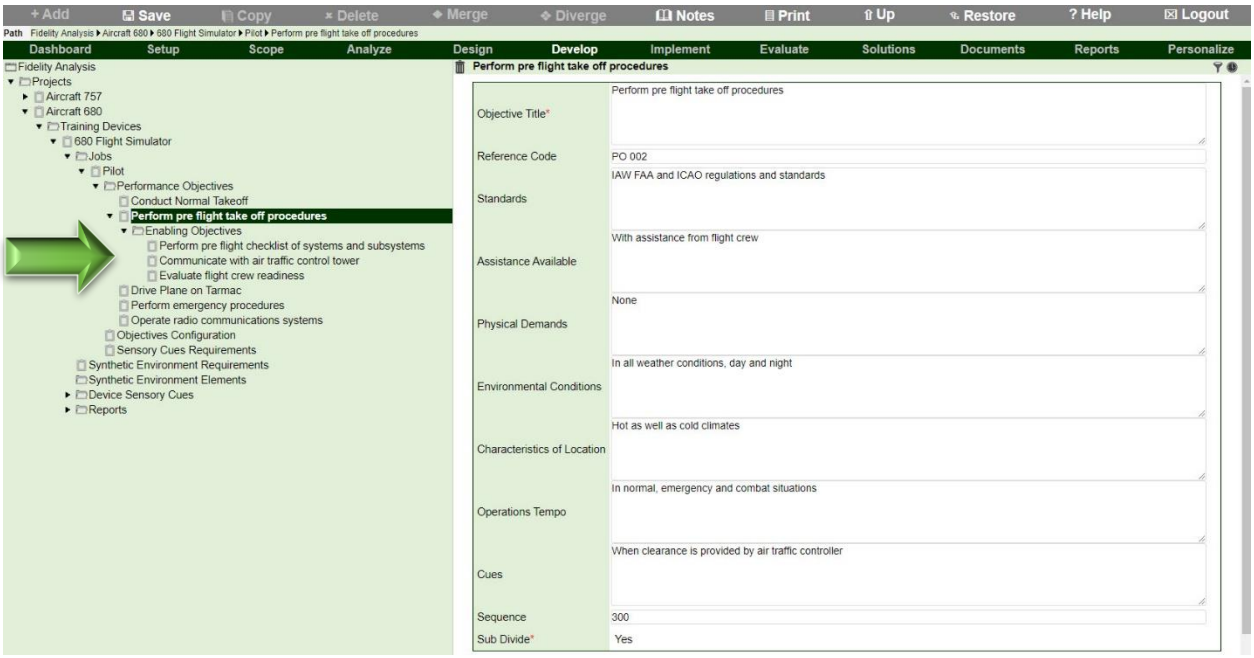
Step 7: To copy, place checkmarks next to the desired Performance Objectives.
Step 8: Click [**Save**].



All Objectives, Steps and Sub Steps including attributes for selected Performance Objectives are also copied.



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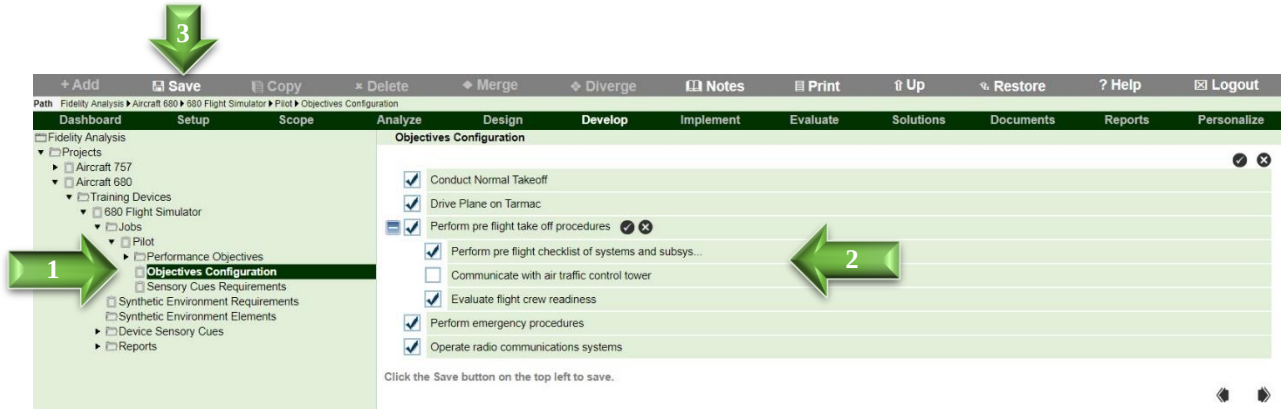
4.4 Select Relevant Objectives

Although multiple Tasks may be performed by a Job/Occupation, only a few of those Tasks may be trained on the Device under investigation. To select relevant Performance and Enabling Objectives (by default all Objectives are selected):

Step 1: Click on the **Objectives Configuration** node.
Step 2: Place checkmarks next to relevant Performance and Enabling Objectives, in other words, deselect Performance and Enabling Objectives that are not relevant.
Step 3: Click [**Save**].



Note:

- Only selected Performance and Enabling Objectives will be presented under the **Sensory Cues Requirements** node.

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4.5 Identify Sensory Cues Requirements

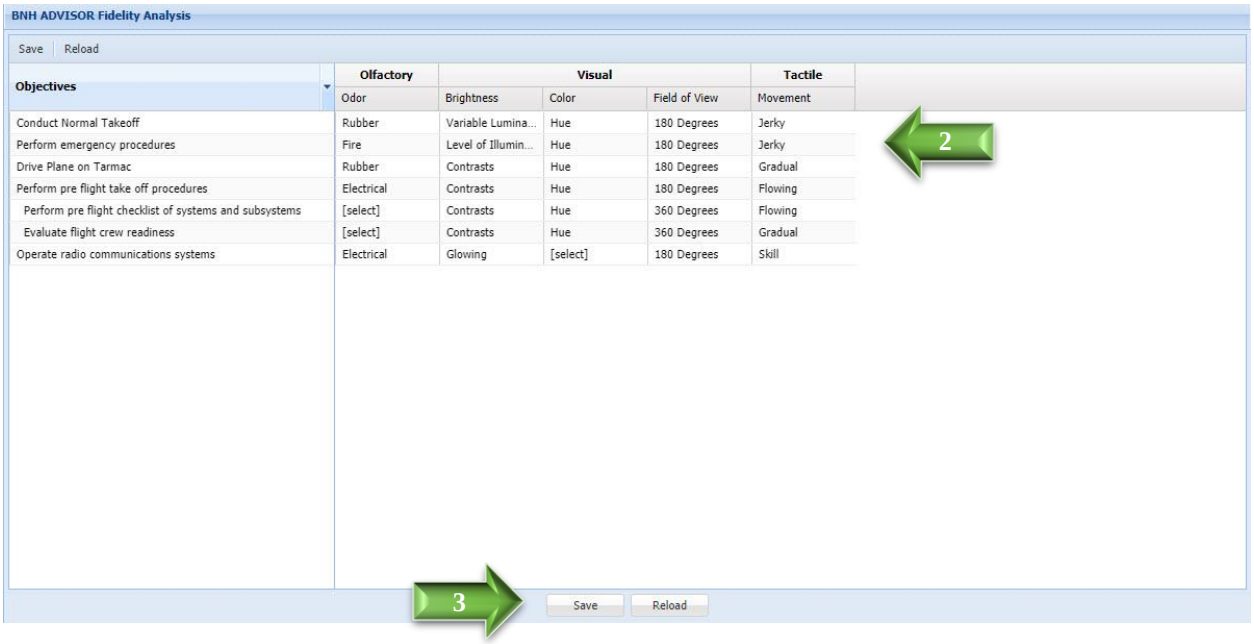
To simplify and speed Fidelity Analysis, only relevant/selected Performance and Enabling Objectives (Section 4.4) will be assessed. To identify the Sensory Cues Requirements for each Objective:

Step 1: Click on the **Sensory Cues Requirements** node.

A table is presented with relevant Performance and Enabling Objectives in 1st Column. Sensory Cues (defined in Chapter 3) are presented on the top Row.

Step 2: For each Performance and Enabling Objective, select or input the appropriate response for each Cue.

Step 3: Once all Cues have been selected, click [**Save**].



Note:

- If you click the [**Reload**] button, the responses for each Cue will revert to the last saved value.

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Chapter 5: Define Cues Requirements: Activity Based Approach

5.1 Overview

Two approaches may be used to define Training Device Requirements (Section 2.3):

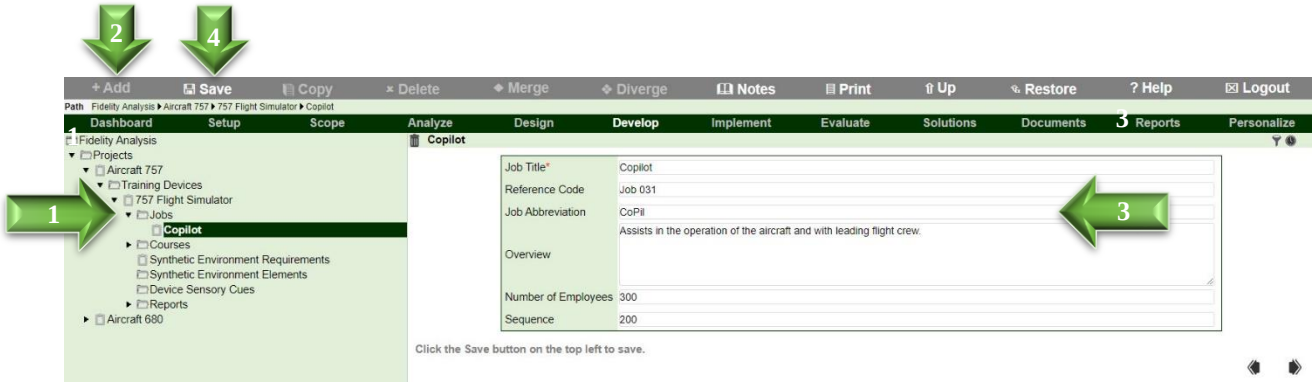
Task Based Approach (Job Analysis) should be selected if training requirements have not been defined and media analysis has not been conducted. In other words, Performance Objectives (Tasks that require training) will be used to identify Sensory Cues requirements. This approach is presented in Chapter 4.

Activity Based Approach (Course Analysis) should be selected if media analysis has been conducted. In other words, Learning Objectives (Activities) will be used to identify Sensory Cues requirements. This approach is presented in this Chapter.

5.2 Identify Jobs

To identify the target audience for the Training Device – i.e., all Jobs (Occupations) that will be trained on this Device:

Step 1: Click on the Jobs folder under the (training device) node.
Step 2: Click [**Add**].
Step 3: Input the Job/Role Title, a brief overview, the number of employees that work in this capacity and other required information.
Step 4: Click [**Save**] to create the Job.



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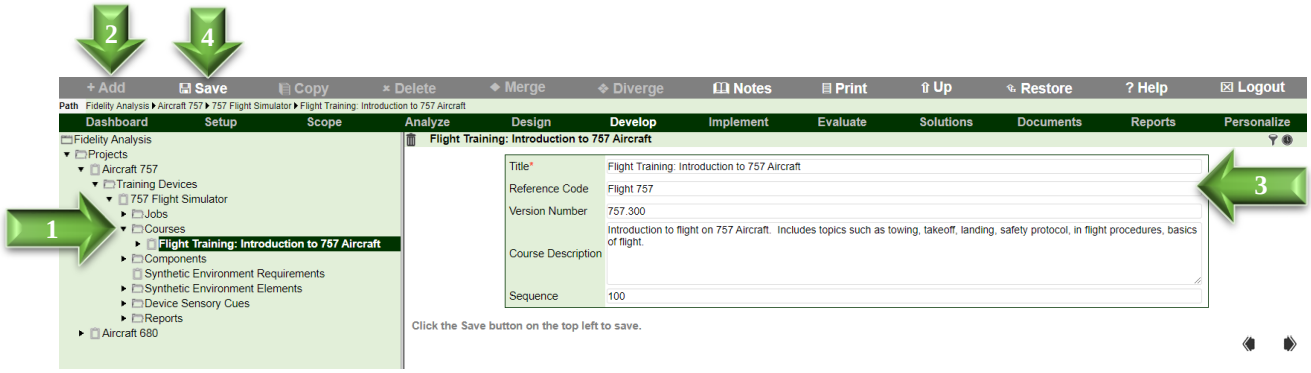
5.3 Identify Courses

To identify Courses and in-turn Learning Objectives (Activities) that will be taught on the Training Device.

Step 1: Click on the **Courses** folder under the (**training device**) node.
Step 2: Click [**Add**].
Step 3: Input Course Title, Reference Code, Description, etc.
Step 4: Click [**Save**] to create the Course.



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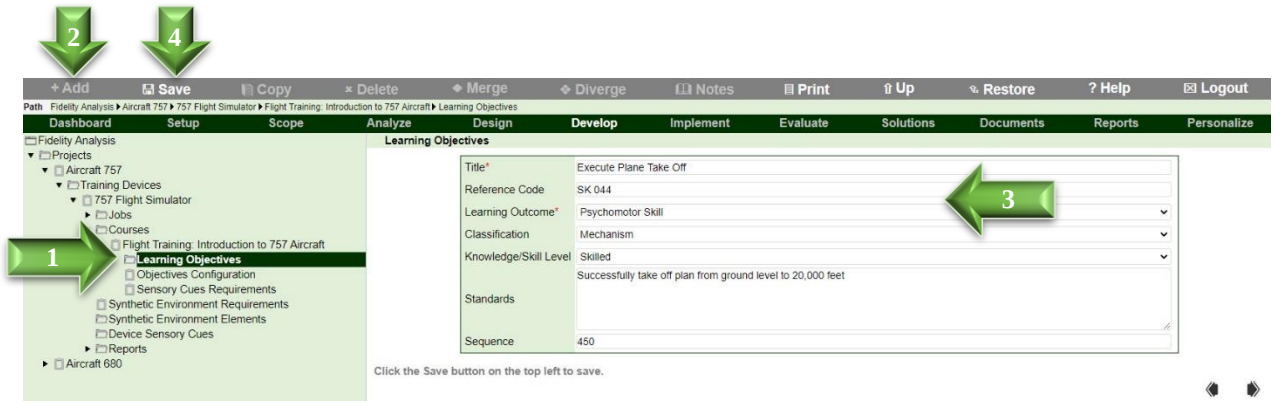
5.4 Create/Manage Learning Objectives

Create Learning Objectives

The Learning Objectives (Activities) for each Course are defined under the **Learning Objectives** folder. To determine the Fidelity Requirements of the Training Device all Learning Objectives (Activities) that will be trained on this Device must be analyzed. To add a Learning Objective (Activity):

Step 1: Click on the **Learning Objectives** folder under the **(course)** node.
Step 2: Click [**Add**].
Step 3: Input the Learning Objective title, indicate its primary learning outcome and classification, knowledge/skill level, as well as other required information.
Step 4: Click [**Save**] to create the Learning Objective.



Note:

- To facilitate the identification of qualifications – i.e., learning domain and learning level [Knowledge: Fact, Rule, Procedure, Discrimination, or Problem Solving; Skill: Perception, Gross Motor Skills, Continuous Movement, Readiness, Mechanism, or Adaptation; Attitude: Receiving, Responding, Valuing, Competence, or Innovation]; an option is now available to automatically detect the verb while the user is typing the statement and allocate appropriate learning domain and learning level. To activate, simply check the "Recommend Outcome/Classification" box under the [**Personalize**] tab, **(Preferences)** node, [**Options**] tab. If checked, ADVISOR will automatically detect the verb while the user is typing the knowledge, skill, attitude or learning objective statement, and select appropriate learning domain and learning level.

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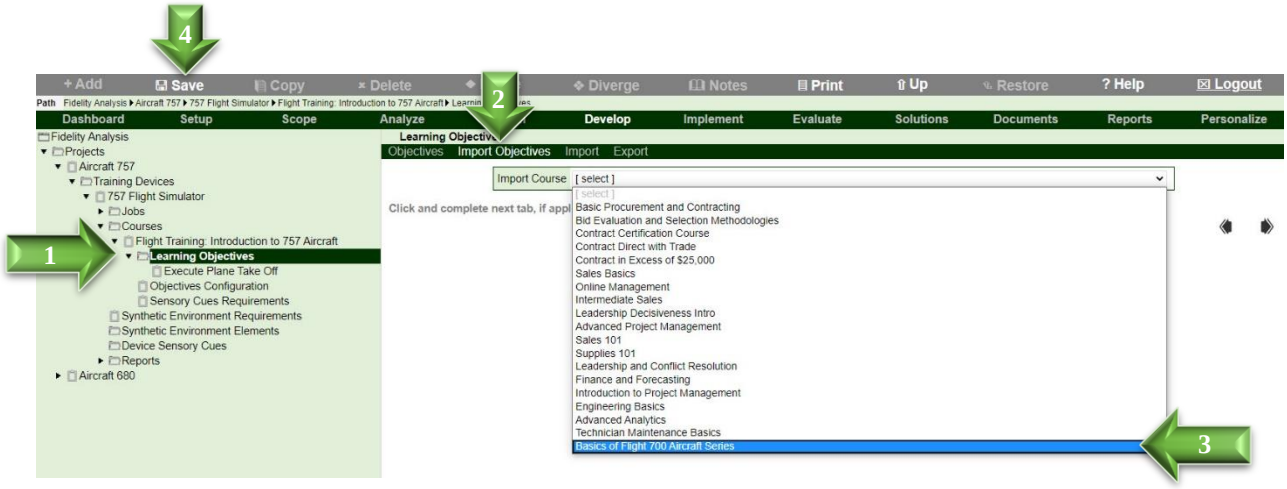
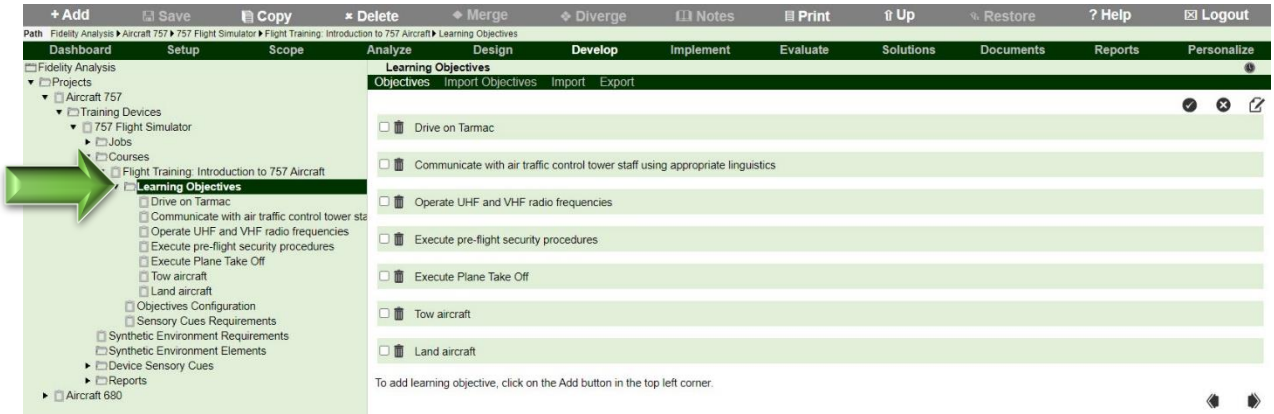
Import Learning Objectives

To minimize the effort required to identify relevant Learning Objectives (Activities), an import function is provided to assist analysts in copying Learning Objectives from existing Courses. To import Learning Objectives from a Course (created under Course Analysis folder under Design tab):

Step 1: Click on the **Learning Objectives** folder.
Step 2: Click on the [**Import Objectives**] tab.
Step 3: Select the desired Course.
Step 4: Click [**Save**] to import the Learning Objectives from selected Course.



Note: All Learning Objectives from selected Course will be automatically imported (i.e., copied) to the **Learning Objectives** folder.



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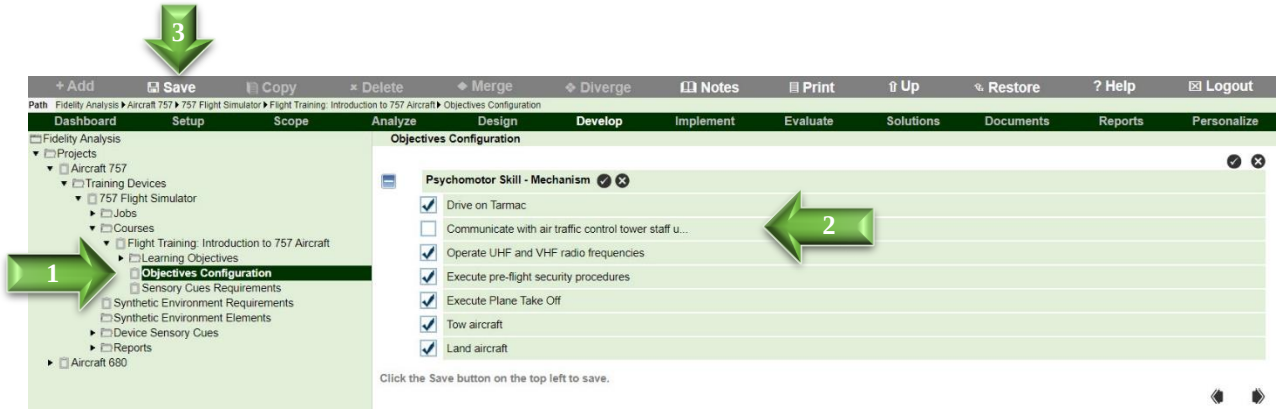
5.5 Select Relevant Objectives

Although multiple Learning Objectives (Activities) may exist under a Course, only few of those Learning Objectives (Activities) may be trained on this Device. To select relevant Learning Objectives (Activities) (by default all Learning Objectives are selected):

Step 1: Click on the **Objectives Configuration** node.
Step 2: Place checkmarks next to relevant Learning Objectives; in other words, deselect Objectives that are not relevant.
Step 3: Click [**Save**].



Note:

- Only selected Learning Objectives (Activities) will be presented under the **Sensory Cues Requirements** node.

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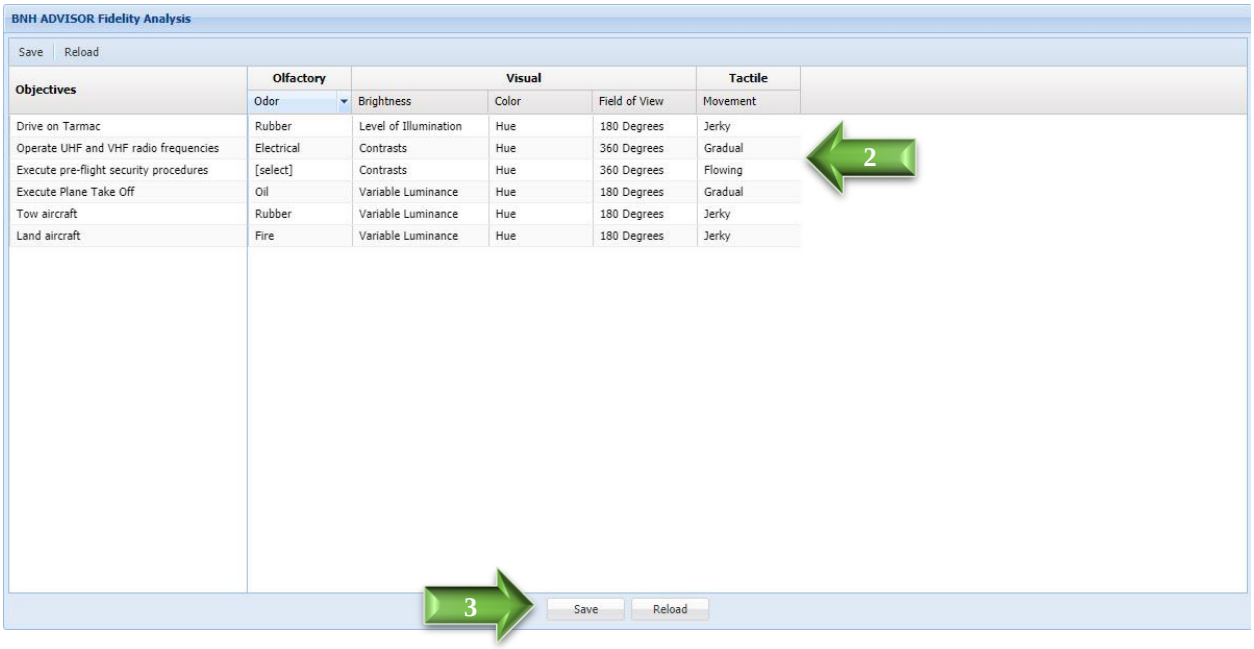
5.6 Identify Sensory Cues Requirements

To simplify and speed Fidelity Analysis, only relevant/selected Learning Objectives (Activities) (Section 5.5) will be assessed. To identify the Sensory Cues Requirements for each Objective (Activity):

Step 1: Click on the **Sensory Cues Requirements** node.

A table is presented with relevant Learning Objectives (Activities) in 1st Column. Sensory Cues (defined in Chapter 3) are presented on the top row.

Step 2: For each Learning Objective (Activity), select or input the appropriate response for each Cue.
Step 3: Once all Cues have been selected, click [**Save**].



Note:

- If you click the [**Reload**] button, the responses for each Cue will revert to the last saved value.

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Chapter 6: Define Synthetic Environment

6.1 Overview

Training Devices typically operate within a synthetic (virtual) environment and trainees may be required to interact with virtual elements/objects within this synthetic/virtual environment. The process used to define both items is presented in this chapter. The process of defining the Synthetic Environment for Task Based Approach (Chapter 4) and Activity Based Approach (Chapter 5) is similar.

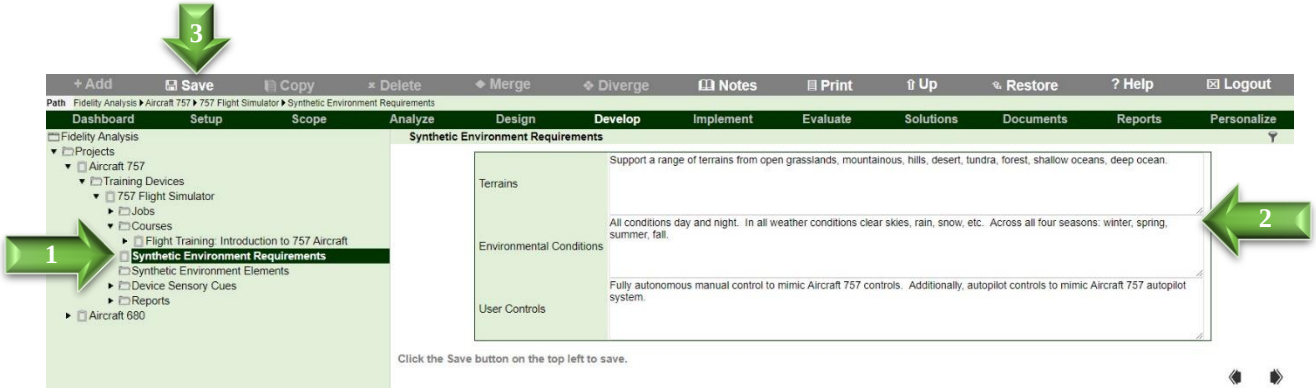
6.2 Define Synthetic Environment

To define the synthetic environment requirements:

Step 1: Click on the **Synthetic Environment Requirements** node, under the (**training device**) node, (**757 Flight Simulator**, for example).

Step 2: Define the required Terrains, Environmental Conditions and User Controls for Training Device. For example, Terrain may be defined as entire planet, specific locations, or specific characteristics such as flora, fauna and manmade. Environmental Conditions may include Day and Night, Seasonal Changes (Winter, Summer, Spring and Fall), and so forth.

Step 3: Click [**Save**].



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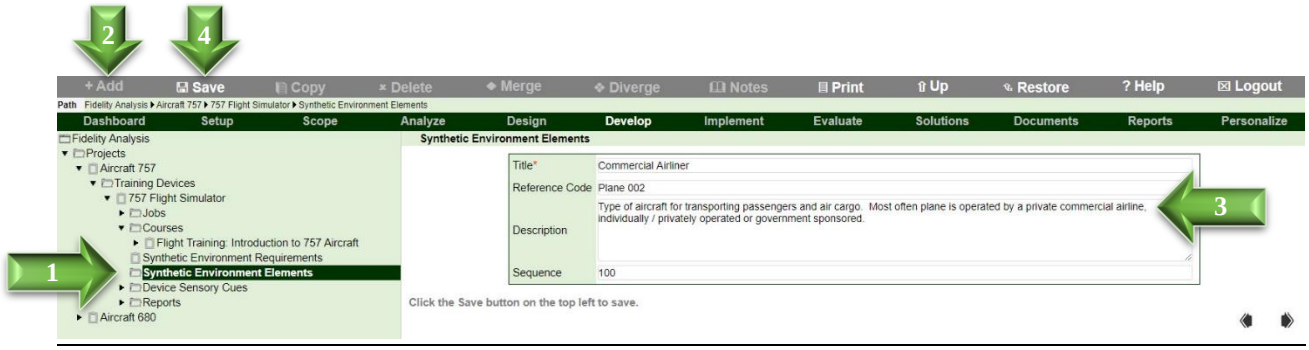
6.3 Define Elements and Activities

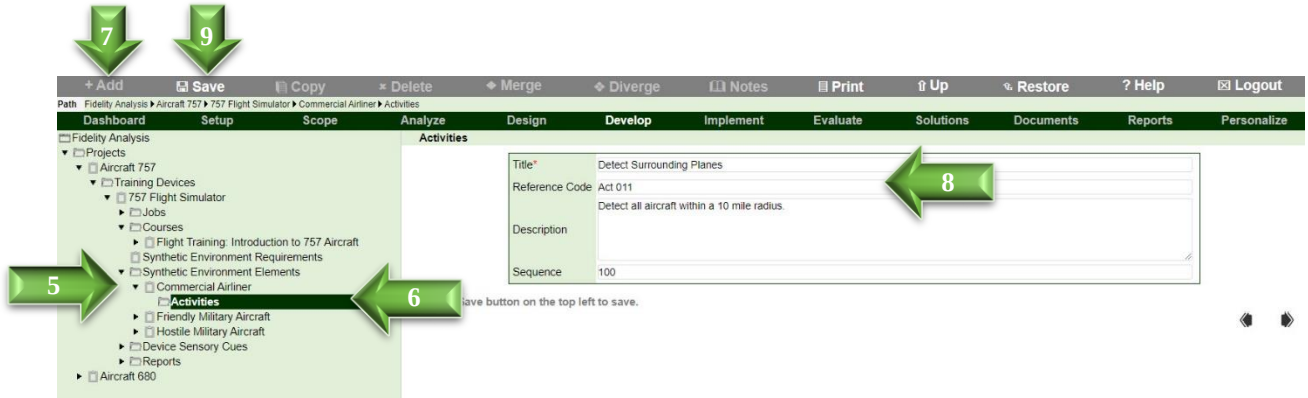
To define Elements/Objects within the Synthetic Environment including Activities – i.e., how users will interact with those Elements:

Step 1: Click on the **Synthetic Environment Elements** folder.
Step 2: Click [**Add**].
Step 3: Input the Element Title, Description, and other attributes. These may include, as an example, enemy, friendly or neutral vehicles, aircrafts, ships, and UAVs.
Step 4: Click [**Save**] to create the Element/Object.



To define how users will interact with these Elements/Objects:

Step 5: Click ▶ next to the (**element title**) node, (**Commercial Airliner**, for example) to expand.
Step 6: Click on the **Activities** folder.
Step 7: Click [**Add**].
Step 8: Input the Activity Title, Description, and other attributes. This may include, as an example, users should be able to detect, observe, recognize, identify, communicate, or engage with the Element/ Object within a specific distance.
Step 9: Click [**Save**] to create the Activity.



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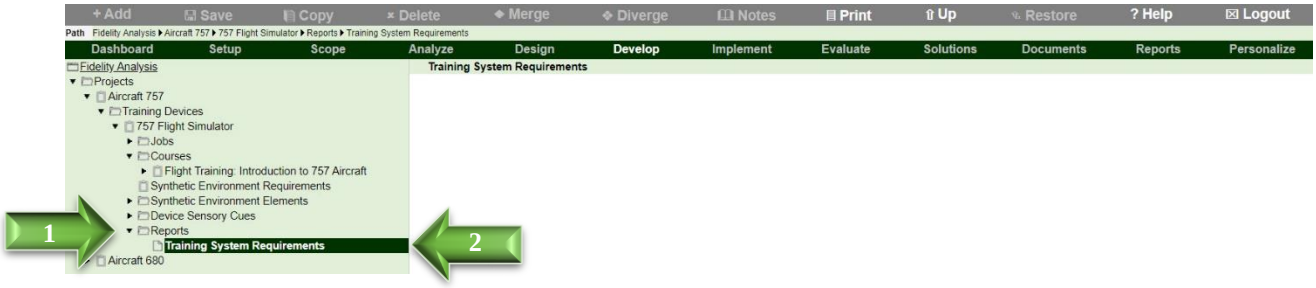
Chapter 7: Generate Reports

7.1 Training System Requirements Report

One of ADVISOR's key benefits is the ease and speed in which various types of reports can be generated. The Training System Requirements Report generates a concise summary of Training Device requirements based on defined parameters including Functional Requirements – i.e., Tasks (Performance and Enabling Objectives) or Activities (Learning Objectives) that each Job/Occupation is expected to perform on the Training Device; Sensory Cues Requirements for Training Device and Components; Synthetic Environment Requirements; as well as Synthetic Environment Elements/Objectives and Activities. To generate:

Step 1: Click on ▶ next to the **Reports** folder to expand.
Step 2: Click on the **Training System Requirements** node to generate the report in a new window.



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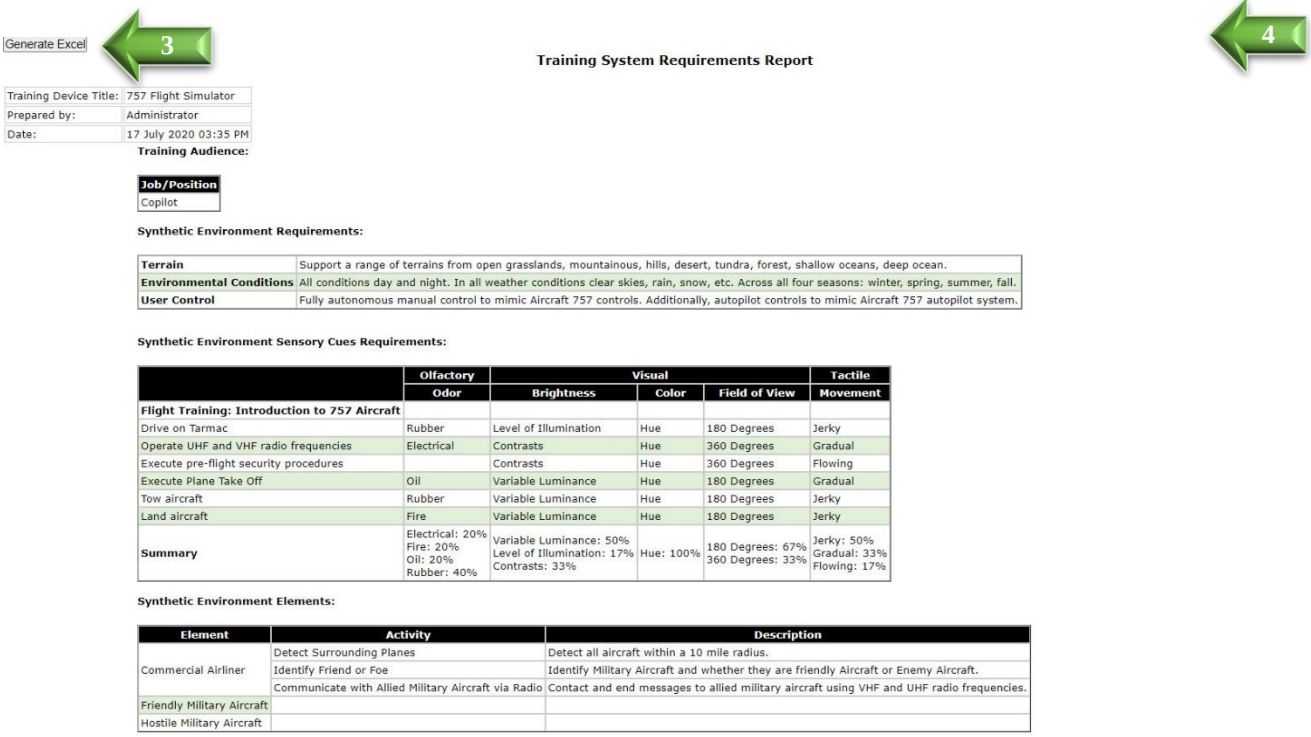
Step 3: You can export the report to MS Excel by clicking the [**Generate Excel**] button.
Step 4: To return to ADVISOR, close the Report window.



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Annex A: Sensory Stimulus Cues

Sensory Stimulus Cues from JSP 822 and MIL-HDBK-29612-2A are presented below as a reference of the types of stimulus cues that are typically considered for Training Devices.

JSP 822

Category	Sub Category
Physical Fidelity	Layout
	Look
	Feel
Functional Fidelity	Format
	Content
	Response
Environmental Fidelity	Sound
	Motion
	Ambience
	Geographic Features
Tactical & Cultural Fidelity	Threats

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MIL-HDBK-29612-2A

Category	Sub Category
Visual	Brightness
	Color
	Composition
	Chart
	Field of View
	Form
	Graph
	Light
	Movement
	Perception
	Pictorial
	Print
	Rate
	Scale
	Sequence
	Shape
	Size
	Structure
	Temperature
	Texture
	Thermal Signature
	Topography
	Vibration
	Vibration Frequency
	Wind
Tactile Cues	Manipulate Foot/Leg
	Manipulate Hand/Finger
	Resistance
	Shape
	Size
	Temperature
	Texture
	Whole Body Movement
Olfactory Cues	Chemical
	Engine Exhaust
	Fragrance
	Fuel
	Gun Powder
	Odor
	Taste
Affective Cues	Attitude
	Physiological Condition

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Category	Sub Category
Auditory Cues	Duration
	Music
	Pitch
	Quality
	Rate
	Rhythm
	Sound
	Tempo
	Timbre
	Verbal
	Voice
	Volume

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