

# **Autosaving in GoAgile MAP**

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## **Summary**

I examine the details of saving and opening KnowledgeBase files in GoAgile MAP. This background information goes hand in hand with the usage of the autosave facility to ensure that you never “lose” any data.

## **Keywords**

“GoAgile MAP”, Autosave, Backup, Recovery

## Introduction

Please note that this article was written specifically for a stand-alone GoAgile MAP environment. In Teamwork the functionality is very similar, but the details differ slightly.

Like all software, GoAgile MAP is not perfect. Among a number of other frailties, it does crash from time to time and this could cause problems if we do not handle such situations with the necessary care. A little under-the-hood knowledge about GoAgile MAP can go a long way towards avoiding problems and containing the effects of an abnormal end. This article will attempt to provide the reader with the necessary knowledge and also give some tips that will ensure that you never "lose" any information.

## KnowledgeBase Segments

The first step is to understand the various segments of a GoAgile MAP KnowledgeBase and the relationships between them. The information (Diagrams, Objects and Relationships) you see when you browse a GoAgile MAP KnowledgeBase is not stored in a single location. Generally a MAP KnowledgeBase consists of three segments, namely:

- Base Segment
- User Segment
- User Extension Segment

In the MAP front-end, you will notice a tab in the Project Workspace for each of these segments.

### *The Base Segment*

The base segment is shared by all Knowledgebases for a given MAP installation (this pretty much means all the KnowledgeBases on your machine). It contains the vanilla metamodels, tool folders, queries, forms and reference objects. This segment is fixed and cannot be changed by the user. It is stored in a .KB file in the Program folder of your MAP installation.

### *The User Segment*

The user segment is unique for each KnowledgeBase. It contains the diagrams, objects and forms created by the user. Incidentally, it could also contain metamodels and tool folders, but it is generally not a good idea to store such objects in the user segment. The user segment is mainly stored in a .KBC file, but I'll delve a bit deeper into the various files a bit later.

### *The User Extension Segment*

The User Extension segment is a redistributable segment containing metamodels, tools folders, queries, forms and other objects. It is used to define a customised modelling environment that can be used consistently on a large number of MAP installations. The User Extension Segment is mainly stored in a .PUX file, but those details will be examined shortly.

## KnowledgeBase Files

By now you should be aware of the fact that a GoAgile MAP session combines information stored in a number of files to display it to the user in a single, seamless manner. The files involved are:

- Base Segment
  - PtBase.kb
- User Segment
  - kb\_name.kbc
  - kb\_name.kbc.bak
  - kb\_name\_cache.pkb
  - kb\_name\_cache.pkb.bak
  - kb\_name\_cache.pkb.tmp
- User Extension Segment
  - user\_extension\_name.pux
  - PtUsrExtCache.uxt
  - PtUsrExtCache.uxt.tmp

The following table describes each file type separately.

.kbc	The KBC (KnowledgeBase Component) file is the main storage location for all the objects that are stored within the User segment of a GoAgile MAP KnowledgeBase. This is the most important file and it is also the only truly portable version of the KnowledgeBase. If you want to give your KnowledgeBase to someone else you can just give them a copy of the KBC (and the PUX) file and they would be able to open the KnowledgeBase successfully.
.kbc.bak	The KBC.BAK file is a backup copy of the KBC file. It is created each time the KBC is saved.
_cache.pkb	When you edit the information in a MAP KnowledgeBase the information is not directly manipulated in the KBC file. Instead MAP uses a set of cache and temporary files to store the information while you are working. The cache file's name is similar to the .kbc file, but it has a different postfix. For example, if your KnowledgeBase is called HR.kbc then the cache file would be HR_cache.pkb
_cache.pkb.bak	This is a backup version of the cache file. It is only created at start-up after an abnormal end.
.tmp	The TMP file is the factory floor of your MAP KnowledgeBase. While you are busy modelling in MAP, information is stored in the computer's RAM, but when an autosave event is triggered (or when the save button is clicked) the information is transferred to the temporary file. As a result the TMP file always contains the latest version of the user segment of your KnowledgeBase.
.pux	The PUX file is a portable version of the user extension. It is similar to the KBC file except for the fact that it stores the User Extension details. Generally the PUX file is used for storing shared metamodels, tool folders, queries and forms that must be used by a number of modellers.
PtUsrExtCache.uxt	The UXT file is not a portable file. It is derived from the PUX file and consequently has to be regenerated every time the PUX changes.

There are some other files applicable to the KnowledgeBase, most notably when you use any of the GoAgile Accelerators, but they are not important for our current scope.

### *Where are the files stored?*

So now that you understand the various files that are involved, I'll proceed to explain where they are stored and also summarise the different files in our fictional Human Resources KnowledgeBase. When you initially create a KnowledgeBase you select the location where the .KBC file should be created. Once this location is defined all the other files (except possibly the TMP file) are stored in the same place as the .KBC.

The location of the TMP file is configurable in your MAP.ini file. It could be in the same location as the KBC, but it may also be in another fixed location. Generally I prefer it if they are all stored in the same place.

So if we were to create a KnowledgeBase called HR and store it in the KBS folder, the following files would be contained in the **c:\GoAgileMAP\KBS\** folder:

- HR.kbc
- HR.kbc.bak
- HR\_cache.pkb
- HR\_cache.pkb.bak (not always)
- HR\_cache.pkb.tmp (only while the KnowledgeBase is open)
- PtUsrExtCache.uxt (only if a user extension is associated with the KnowledgeBase)
- puxname.pux

### **Events**

The files that form part of the KnowledgeBase are manipulated after various events. These events are:

- A new KnowledgeBase is created
- An existing KnowledgeBase is opened
- A KnowledgeBase is saved manually
- A KnowledgeBase is saved automatically
- A KnowledgeBase is closed

This section of the article will examine what happens during each of these KnowledgeBase events. Sometimes the steps performed by MAP are simple, but under certain conditions (such as after an abnormal end) the steps are fairly complex. I've decided to use process models to depict the actions in those cases where a simple list would not suffice.

### ***A new KnowledgeBase is created***

When a new knowledgebase is created the following steps are performed:

1. The knowledgebase is created in the computer's RAM
2. A TMP file is created
3. If a PUX is associated with the KnowledgeBase a PtUsrExtCache.uxt is created.

No KBC is created at this stage, it is only created when the KnowledgeBase is manually saved for the first time.

### ***An existing KnowledgeBase is opened***

Opening an existing KnowledgeBase is a complex process that depends on a number of factors such as:

1. Are any cache files available?
2. Are the existing cache files and the KBC file in synch?
3. Was the previous shutdown completed successfully?

The following process diagram explains the procedure in a fair amount of detail

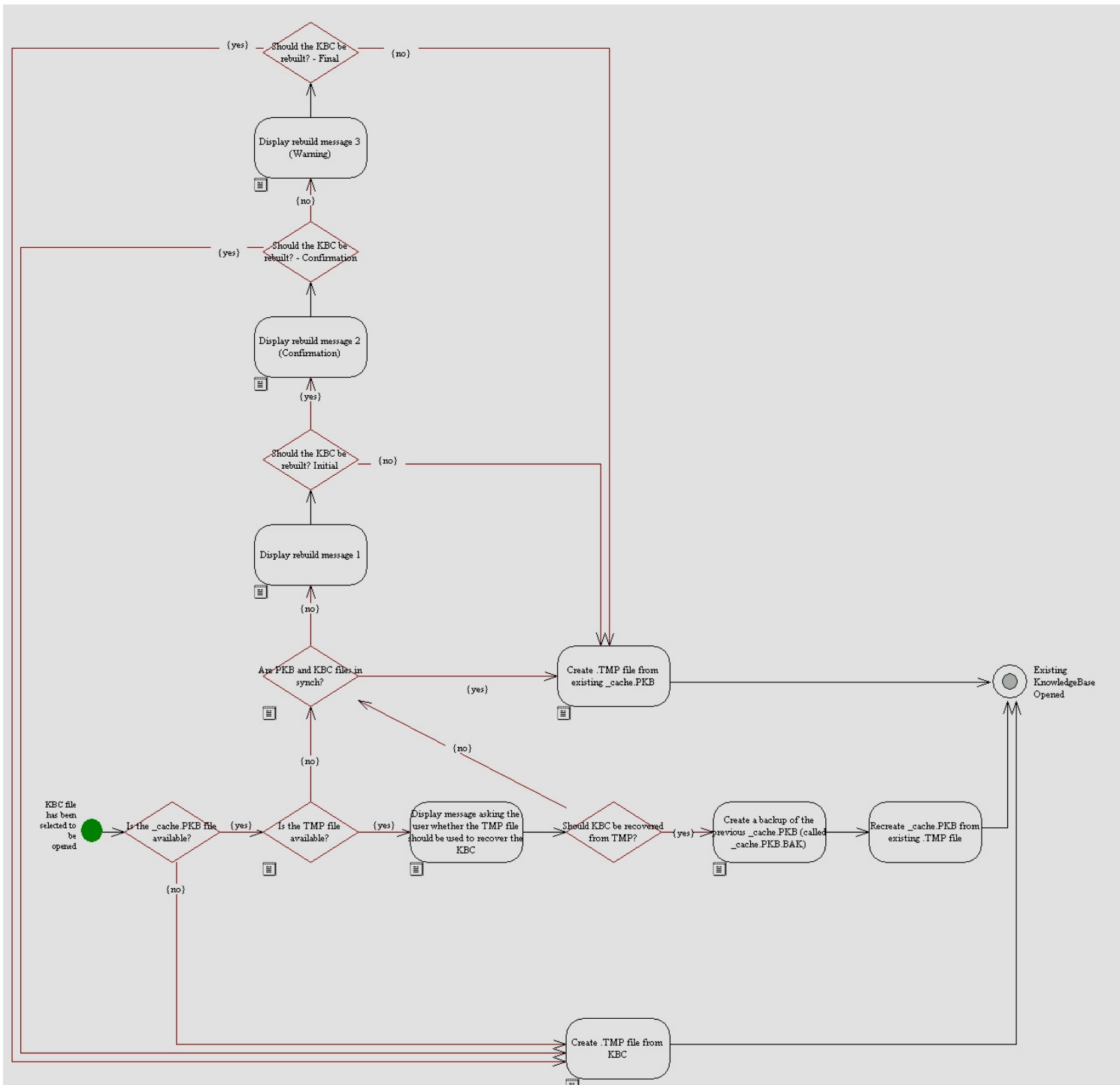


Figure 1: Opening an existing knowledgebase in MAP

### ***A KnowledgeBase is saved manually***

A manual save happens if the user selects the save option or if the user selects the save option while closing the KnowledgeBase. During a manual save the following happens:

1. The current KnowledgeBase information is transferred from RAM to the TMP file
2. A new PKB file is created from the TMP file
3. If there is an existing .KBC.BAK it is deleted
4. The existing .KBC is renamed to .KBC.BAK
5. A new .KBC is created from the PKB file

### ***A KnowledgeBase is saved automatically***

If the autosave functionality has been activated MAP will automatically save the KnowledgeBase from the computer's RAM to the .TMP file according to the intervals specified by the user. It is important to note that the autosave functionality does not affect the .KBC or cache files; it only saves the information to the .TMP file.

### ***A KnowledgeBase is closed***

A KnowledgeBase can be closed by selecting File -> Exit, or by clicking the default close button (X) on the active window. At that stage the user has to decide whether a manual save should be performed or not, which affects the process slightly. The steps are as follows:

1. If the user selected the save option, a manual save is performed.
2. The .TMP file is deleted.

### **Setting up your autosave interval**

To set up your autosave interval you need to open the "General" tab in the "Options" window (Click on Tools > Options > General). On the General tab you are able to specify the autosave interval in minutes. Take note that setting it to 0 effectively turns autosave off.

## **Using this information in the event of an abnormal end**

Abnormal ends come in a number of forms, such as:

- The GoAgile MAP software crashes
- A power failure causes the machine to shut down while a MAP KnowledgeBase is open
- A user decides to terminate the map.exe process for some reason.

Generally such abnormal ends are not a very big deal. From the discussion above it should be clear that the software uses a substantial amount of redundancy to ensure that information cannot really be lost. Of course, like with any other software, you cannot recover anything that was done since the last time the KnowledgeBase was saved (or autosaved).

The safest option when experiencing a crash is to immediately create a temporary folder and create a manual backup of all the relevant files. This backup should include the KBC file, all cache files, the PUX and UXT files as well as the TMP file (very important). As described above, you'll notice that the TMP file may be stored in a different location so you'll need to copy it from there. Once you've created the backup you can restart MAP and open your KnowledgeBase from the original files (NOT THE BACKUP COPY - This is extremely important).

Generally you'll just open your last KnowledgeBase from the Recent Files list. It is critical that you don't merely open the KBC again without creating the temporary backups because that would overwrite some of the cache files that may be needed to recover your data if something did go seriously wrong. To understand the effect of the various options when opening a KnowledgeBase after an abnormal end, please refer to the process diagram above.

## **Additional measures to ensure that your data remains safe**

Like in all other cases where substantial amounts of data are involved it is prudent to ensure that backups are created regularly. These should include at least a weekly backup of the KBC and PUX files, but could also include the use of source control software such as MS SourceSafe, Subversion or CVS. If you are using GoAgile Teamwork, the Teamwork server will fulfil the role of the source control software, but weekly backups will still be a good idea.

I hope this helps.