ASG Software Solutions

ASG-Manager Products™ Status Concepts

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Preface

This *ASG-Manager Products Status Concepts* is one of a series describing the Manager family of program products for use on IBM System/370, 30*xx* and 4300 series, and plug compatible machines.

This manual deals with the concept of dictionary statuses and their use. It is intended for new users of ASG-ControlManager's (herein called ControlManager) Basic Status and Advanced Status facilities (selectable units CMR-DD2 and CMR-AD21, respectively). It explains the concepts that are common to both facilities. The contents of this manual should be understood by dictionary controllers and other dictionary users alike before the installed status facility is used.

There are separate documentation manuals for the use of each facility and for the aid of dictionary controllers. If you do not know which facility is installed at your site, enter this command:

```
ENVIRONMENT ALL ;
```

This will provide a list of all ASG-Manager products (herein called Manager Products) and selectable units your organization has installed.

ASG welcomes your comments, as a preferred or prospective customer, on this publication or on the Manager family of products.

About this Publication

The *ASG-Manager Products Status Concepts* consists of these chapters:

- Chapter 1, "Status Concepts," describes the purpose of status facilities.
- Chapter 2, "Status Structures," explains successive and lateral redefinition, and direct, indirect, base, and dependent statuses.
- Chapter 3, "Your View of the Dictionary from a Status," provides step-by-step procedures for updating and interrogating the dictionary.
- Chapter 4, "Conclusion of Status Concepts," defines basic and advanced status.

Publication Conventions

Allen Systems Group, Inc.'s technical publications use these conventions:

Convention	Represents
ALL CAPITALS	Directory, path, file, dataset, member, database, program, command, and parameter names.
Initial Capitals on Each Word	Window, field, field group, check box, button, panel (or screen), option names, and names of keys. A plus sign (+) is inserted for key combinations (e.g., Alt+Tab).
`lowercase italic monospace`	Information that you provide according to your particular situation. For example, you would replace *`filename`* with the actual name of the file.
`Monospace`	Characters you must type exactly as they are shown. Code, JCL, file listings, or command/statement syntax. Also used for denoting brief examples in a paragraph.

1 Status Concepts

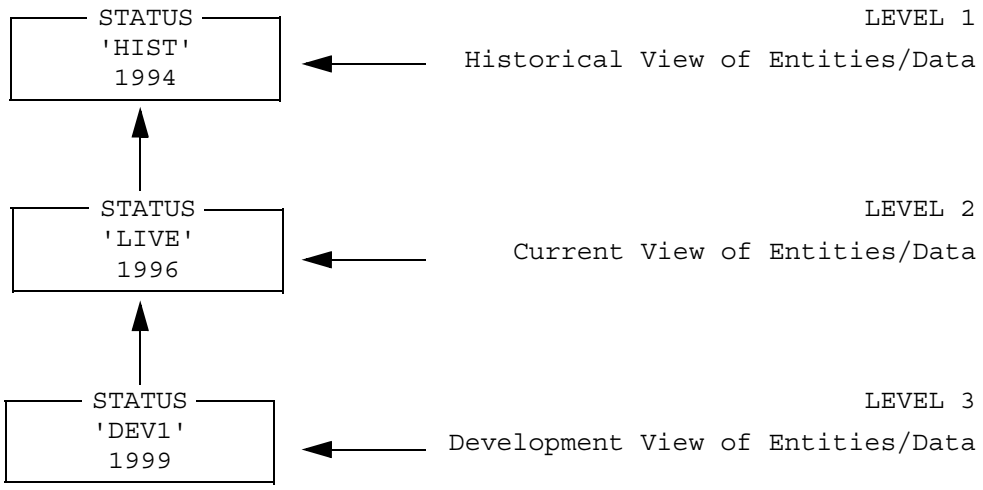

Figure 1. Redefinition at Different Points in Time

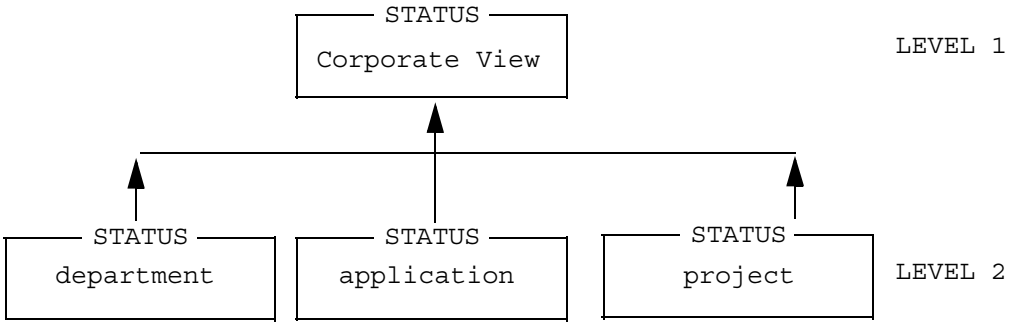

Figure 2. Redefinition in Different Functional Environments

The Purpose of Statuses

If a ControlManager Status facility is installed, a Manager Products dictionary can be partitioned into as many as 255 statuses. Then you can:

- Record several definitions, one in each status, of the same dictionary member, so that the dictionary contains several versions of that member
- Specify different attributes and/or different relationships in each of those definitions.

Where no Status facility is installed, only one definition can be recorded for each member of a Manager Products dictionary.

A Status facility enables your organization to achieve these objectives:

- Redefinition at different points in time. A record can be kept of how the entity/data definitions in the dictionary, and the relationships between them, have changed at different points in time.

  Statuses can be used in a sequential manner to record superseded, current, and proposed definitions of dictionary members in a Systems Life Cycle environment.

- Redefinition in different functional environments. Different definitions and/or different relationships with other members can be established for the same dictionary member based upon different functional views of that member.

  This allows for the support of a data processing environment where separate departments and/or project areas have different functional views of corporate entities/data. Alternatively, in a Database Management System environment, statuses can be used to record both the physical database and various application views of it.

As well as enabling you to record different versions of the same dictionary members, one in each status, ControlManager also provides status-related commands and selection keywords that enable you to compare and analyze the contents of those statuses.

So, ControlManager's Status facilities provide an organization with the ability to compare entity/data definitions across departments and projects.

And, they allow an organization to control and manage successive changes to entity/data definitions throughout a Systems Life Cycle.

Finally, the Status facilities are extremely flexible tools. Each organization may find different uses for the facilities in attempting to solve its own, unique, entity/data definition problems.

The Status Facilities

ControlManager offers Status facilities as these two optional selectable units:

- Basic Status (selectable unit CMR-DD2)
- Advanced Status (selectable unit CMR-AD21).

Basic Status provides the capabilities necessary to partition the dictionary into several statuses and allow several versions of the same dictionary member to be recorded - one in each status Status-related interrogation capabilities are provided to enable you to compare and analyze the contents of those statuses.

Advanced Status incorporates all Basic Status capabilities. In addition, any status may be updatable and a Status Window feature is provided.

Note that although Basic Status is a prerequisite for the installation of Advanced Status, from an operational viewpoint they are mutually exclusive. You will be using either Advanced Status or Basic Status, not both.

This publication explains the concepts that are common to both facilities, and what can be achieved by using them. For a summary of the different features offered by each facility refer to Chapter 4, "Conclusion of Status Concepts," on page 19.

2 Status Structures

Introduction

It is the responsibility of a dictionary Controller to establish statuses in the dictionary and to arrange the relationships between them, in order to suit an organization's needs. The following sections describe the status structures that can be built and how they can be used.

Basing One Status Upon Another

Statuses can be based upon one another in order to create an overlay relationship.

Where one status is based upon another, a member defined in the *base status* can be redefined in the status based upon it (the *dependent status*). A definition of that member will then exist in both statuses. And, members defined in the base status which are not redefined in the dependent status, are visible from it, although physically they exist only in the base status.

For example, a dictionary consists of two statuses, LIVE and DEV1 as represented in Figure 3 on page 5.

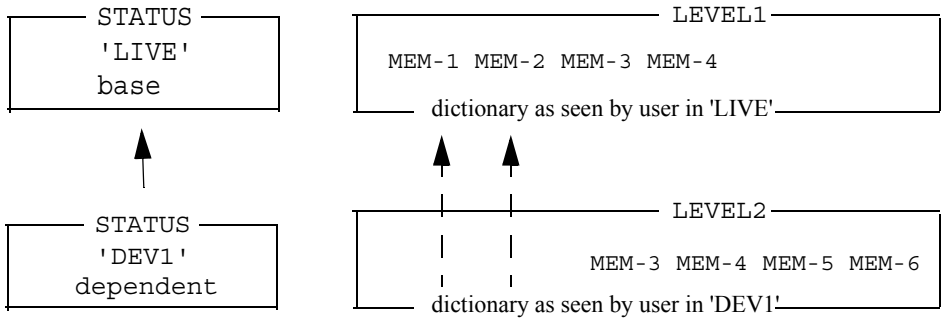

Figure 3. Basing One Status Upon Another

As you can see, DEV1 is based upon LIVE. Some members defined in LIVE have been redefined in DEV1 where some new members have also been recorded.

If you choose to work in the base status LIVE, your view of the entities/data recorded in the dictionary consists in all definitions that physically exist in that status; that is, MEM-1, MEM-2, MEM-3, and MEM4.

However, if you choose to work in the dependent status, DEV1, your view includes:

- New members added to the dictionary in DEV1 (MEM-5 and MEM-6)
- Definitions in DEV1, of members for which a definition is also recorded in the base status LIVE; these effectively overlay the definitions recorded in the base status (MEM-3 and MEM4)
- All other members contained in LIVE (MEM-1 and MEM-2).

So, your view of the dictionary consists of all definitions that physically exist in the status in which you are working, and, if you are working in a dependent status, the definitions of all other members recorded in the base status.

Thus, a dependent status overlays its base status. It constitutes a modified view of the entities/data recorded in the base Status, without necessitating either their alteration or their physical duplication.

Users of the dictionary will have a different view of the members it contains, and they will receive different responses to dictionary interrogations, according to the status in which they are working.

Example: Successive Redefinition

Statuses are an essential dictionary facility in a System Life Cycle environment and for organizations involved in the development of new or existing systems. Statuses enable an organization to record superseded, current, and proposed definitions of the same entities/data.

The dictionary can be partitioned into statuses so that the definitions which describe the entities /data currently used by an organization are held in a base status. This might be called, for example, LIVE. Refer to Figure 4 on page 6.

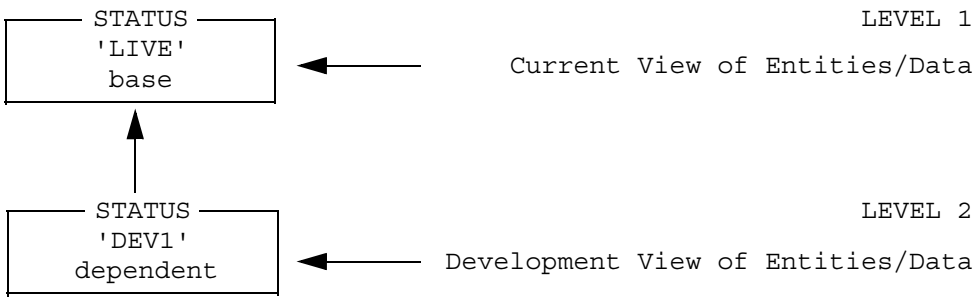

Figure 4. Successive Redefinition

A dependent status called DEV1 is created for use by a development team. It is based directly upon LIVE.

Working in the dependent status the development team can record a modified view of the dictionary which reflects the changing state of the system under development, without affecting its existing definition in the base status.

The team is free to test programs, build test data structures and generate programing source language (if the appropriate selectable unit is installed) from new, changed, and unchanged definitions.

Once development work is completed, agreed and implemented, DEV1 will replace LIVE as the status reflecting the entities/data currently used by the organization.

The dictionary Controller could then rename the statuses appropriately and create a new status for ongoing development.

The dictionary would then reflect a superseded, a current, and a development view of the entities/data used by the organization. Refer to Figure 5 on page 7.

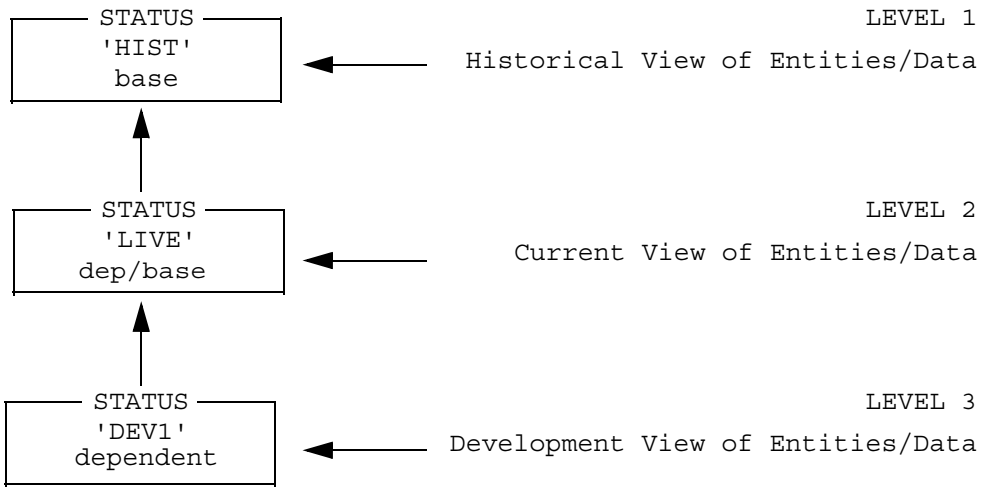

Figure 5. Historical View of Dictionary

As you can see, a dependent status may also be a base status, so that successive levels of statuses can be based upon one another.

Direct and Indirect Base Statuses

Statuses can be based upon one another both directly and indirectly. For example, a dictionary might consist of three statuses as represented in Figure 6 on page 8.

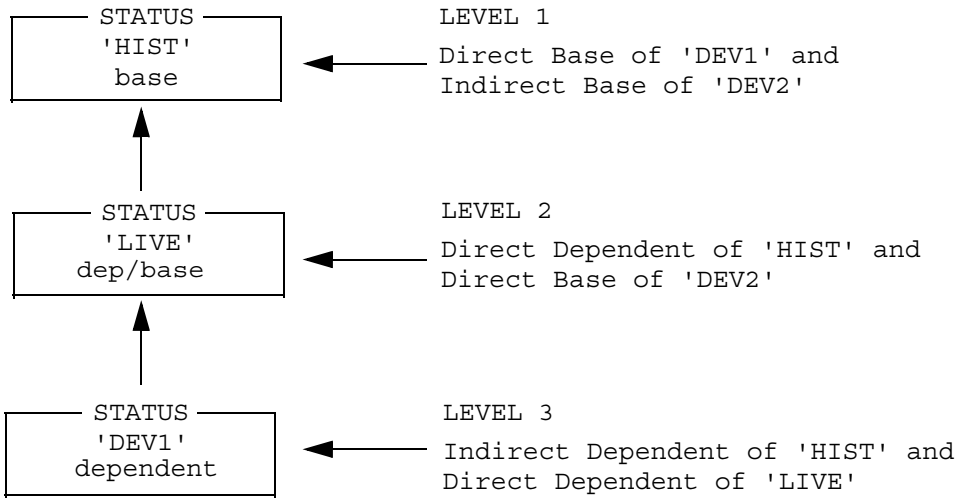

Figure 6. Direct and Indirect Base Statuses

Where statuses are based upon one another indirectly, the 'overlay' relationship is extended, as represented in Figure 7 on page 8.

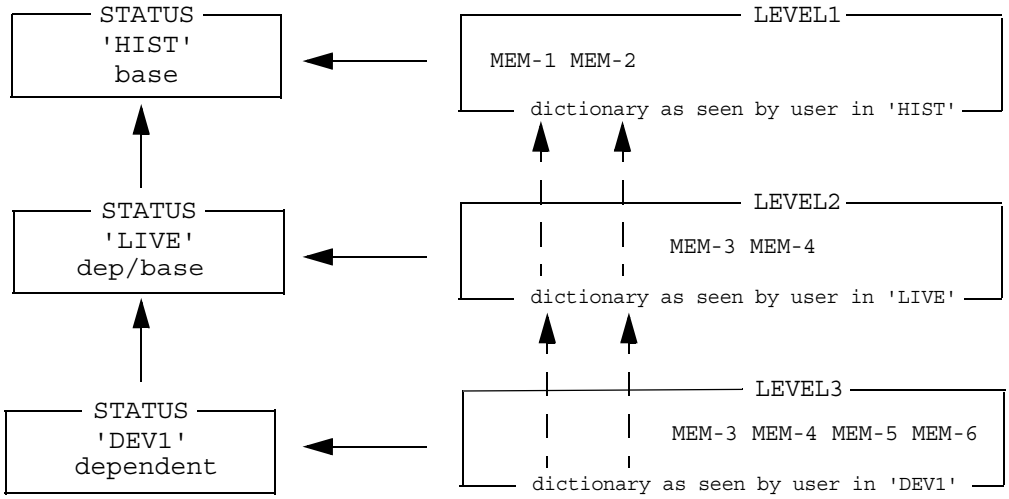

Figure 7. Direct and Indirect Base Statuses

The view of the dictionary from an indirect dependent status (DEV2) is a composite of definitions recorded in it, its direct base status and its indirect base status.

When you are working in a dependent status, redefinitions recorded in that status overlay definitions of the same dictionary members recorded in its direct and/or indirect base statuses.

Dependent statuses may have several *indirect* base statuses, but they can only have one *direct* base status.

A status structure can consist of statuses based upon one another to any number of successive levels within the physical limitation of 255 statuses per dictionary.

While basing one status upon another enables you to record successive redefinitions of entities/data, basing several statuses directly upon one other status enables you to redefine laterally.

Base Statuses and Dependent Statuses

A base status may have several statuses based directly upon it. Each of those dependent statuses may then be used to record a different view of entities/data recorded in the base status. Refer to Figure 8 on page 9.

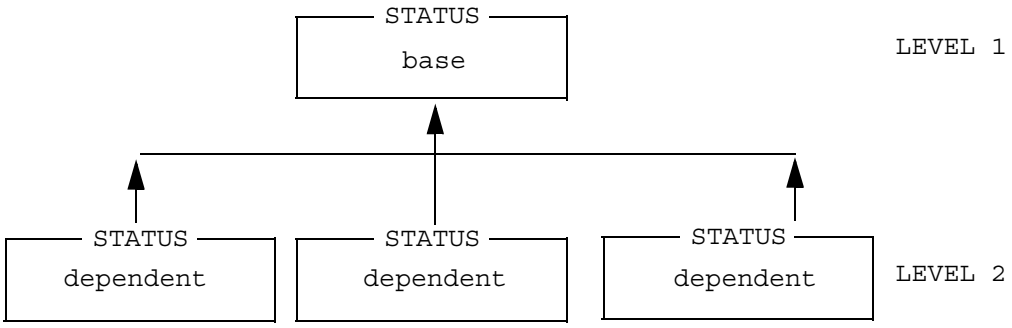

Figure 8. Base Statuses and Dependent Statuses

There is an overlay relationship between each dependent status and the base status, but not between the dependent statuses themselves.

If you are working in one of the dependent statuses your view of the dictionary is a composite of definitions recorded in it and definitions recorded in the base status. It will not include any definitions recorded in the other dependent statuses.

Working in a dependent status you can add new members to the dictionary and redefine members which already exist in its direct and/or indirect base statuses.

A dependent status may have several indirect base statuses but only one direct base status.

Example: Lateral Redefinition

Statuses enable the dictionary to reflect a distributed data processing environment where several departments or project areas each use a separate status to achieve a unique view of the entities/data recorded in the dictionary.

For example, an organization consisting of several departments has a Manager Products dictionary in which it has recorded definitions that represent the corporate view of the entities/data used throughout the organization.

However, each department/project has a requirement to record definitions of entities/data that are unique to it.

A further requirement is to enable each department/project to change some corporate definitions so that they reflect the particular use of certain entities/data by a department/project.

These requirements can be satisfied and the corporate view retained using statuses. The dictionary could be partitioned as represented in Figure 9 on page 10.

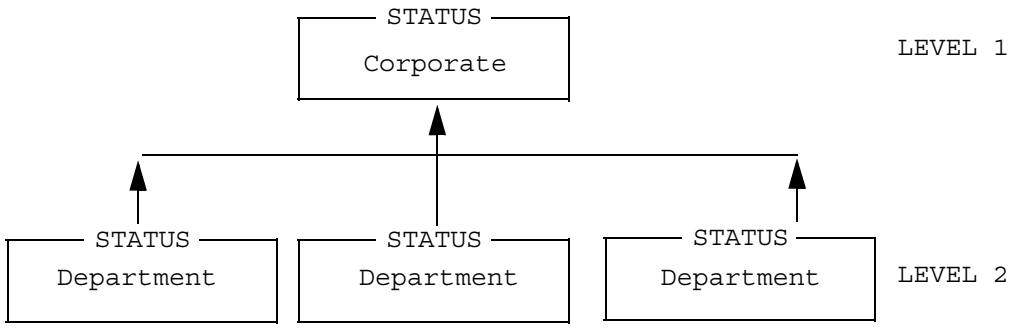

Figure 9. Lateral Redefinition

Working in its own status each department can:

- Add new members to the dictionary
- Redefine corporate entities/data, without altering the corporate view of the dictionary.

At the same time they have a coherent and complete view of the dictionary that includes all corporate definitions of the entities/data they have not redefined.

So, the dictionary reflects both a corporate view of the entities/data used in the organization and functional views of the entities/data used according to department/project.

The Status Hierarchy

Where several statuses are based upon one another a hierarchical structure emerges. Figure 10 on page 11 illustrates the composite parts of a Status hierarchy.

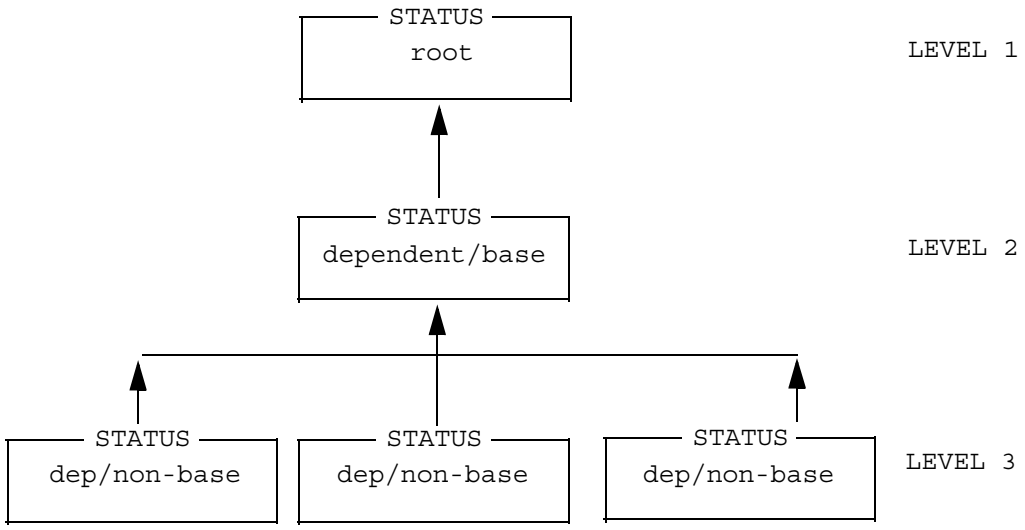

Figure 10. The Status Hierarchy

The hierarchy consists of base statuses and their dependent statuses. As you can see, the first base status in the hierarchy is the *root status*. The dependent statuses at the lowest level in the hierarchy, (level 3 in Figure 10 on page 11) are *non-base* Statuses, since they have no dependents.

Several root statuses may be established but they could not have any dependent statuses. Refer to Figure 11 on page 11.

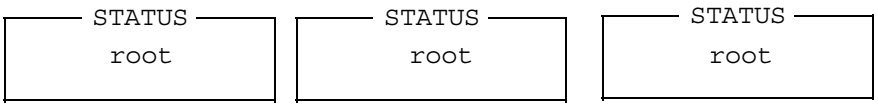

Figure 11. Several Root Statuses-No Dependents

In this case, there are no dependent statuses. So, although there are separate work-areas, you would not be able to re-define entities/data several times and you would not be able to see any definitions in the dictionary, except those in the current status. Only one definition could be recorded for each dictionary member.

3 Your View of the Dictionary from a Status

Introduction

The status in which you are working at any one time is your current status. Your view of the entities/data recorded in the dictionary from that status consists of:

- New members added to the dictionary in that status
- Redefinitions of members for which definitions are also recorded in that status' direct and/or indirect base statuses (if it has any)
- The first definition found for members not redefined in that status, looking first in its direct base status and then each indirect base Status in turn, down to the root status.

Your view would not include any definitions/redefinitions recorded in statuses which are neither direct or indirect base statuses of your current status.

For example, a dictionary is structured as represented in Figure 12 on page 13.

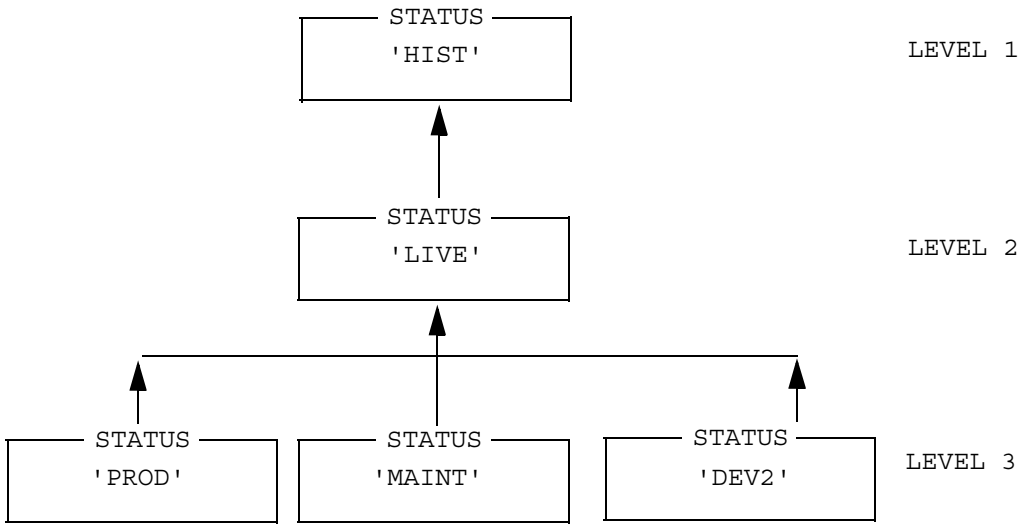

Figure 12. View from a Status-Example 1

Assuming that the definitions held in DEV2, LIVE, and HIST are as follows:

LEVEL 1 HIST	LEVEL 2 LIVE	LEVEL 3 DEV2
MEM-1	MEM-3	MEM-5
MEM-2	MEM-4	MEM-6

then the view of the dictionary from each of these statuses is represented in Figure 13 on page 14.

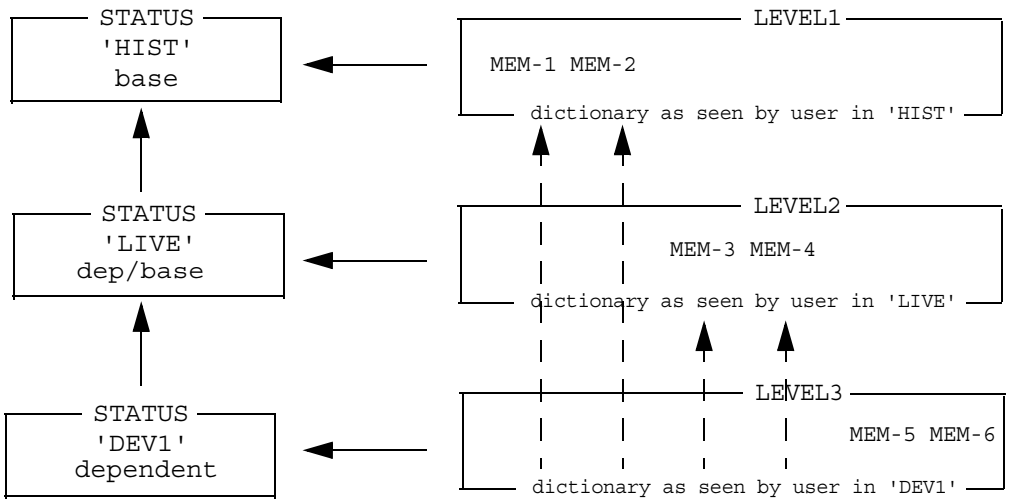

Figure 13. View from a Status-Example 2

Similarly, the view from PROD and from MAINT is a composite of the definitions physically present in those statuses and the definitions held in LIVE and HIST.

So, your view of the dictionary from the current status is a composite of definitions recorded in it and definitions which are visible from it, but which actually exist in its direct and/or indirect base statuses.

The view from the current status determines which definitions are available to you for the purpose of most dictionary activities.

Updating in a Status

Statuses are either read-only or update. Typically, an update status is a status used for development or test purposes, whereas a read-only status is a status that reflects a current or superseded view of entities/data used by an organization.

When working in a *read-only* status you cannot update any members in the dictionary or add new members to it.

When working in an *update* status you can update any member that is visible from it, and you can add new members to the dictionary (in that status).

If you attempt to update a member that is visible from the current status, but which actually exists in one of its direct or indirect base statuses, ControlManager automatically copies the definition of that member, from the base status, into the current status. The member will then physically exist in both statuses (except when you use the UPDATE command and QUIT instead of FILEing the member).

It does not matter if the base status from which the copy is taken is a read-only status. The definition in that status is not affected.

So, you can re-define members that exist in the current status' direct and/or indirect base statuses.

If you are using the Basic Status facility then all base statuses must be read-only statuses, whereas non-base statuses may be either read-only or update. If you are using the Advanced Status facility, all statuses may be either read-only or update.

Within the above mentioned constraints the dictionary Controller may change the read-only/update condition of a status at any time.

Example: Updating in a Status

The following example, represented in Figure 14 on page 15, demonstrates the updating of a member that is visible from, but does not exist in, the current status.

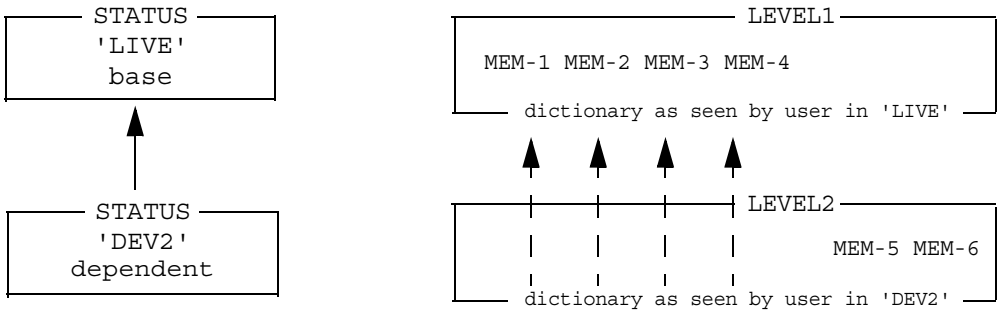

Figure 14. Updating in a Status

If you are working in the dependent status DEV2, MEM-l is visible, although physically, it exists only in the base status, LIVE.

If you attempt to update MEM-1 (using UPDATE and FILE or a MODIFY command, for example) a copy of its definition is taken automatically from LIVE and brought into DEV2 where you can update it.

The member will then physically exist in both LIVE and DEV2 (except when you use the UPDATE command and QUIT instead of FILEing the member), as represented in Figure 15 on page 16.

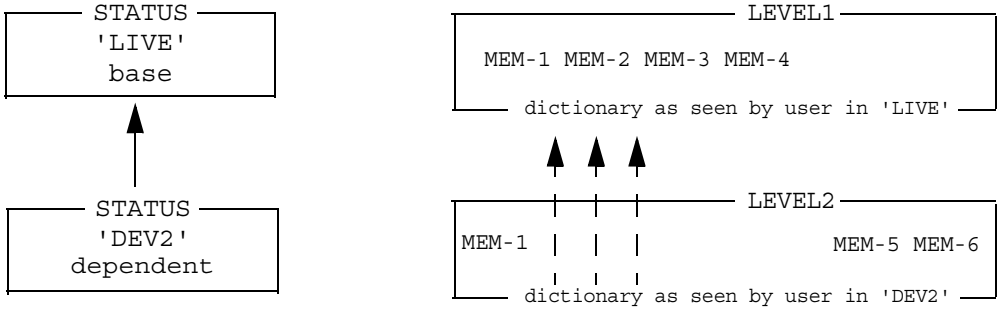

Figure 15. Updating a Status

Subsequently, the definition in DEV2 will be the visible definition when you are working in that status. In order to see or process the definition in 'LIVE', you would have to access that status.

The example represented in Figure 14 on page 15 involves a base status and its direct dependent status. However, the same rules apply when you update members that are visible from your current status but which physically exist in its direct or indirect base statuses.

Interrogating the Dictionary From a Status

The view from your current status determines the response you receive when interrogating the dictionary. For example a dictionary is structured as represented in Figure 16 on page 16.

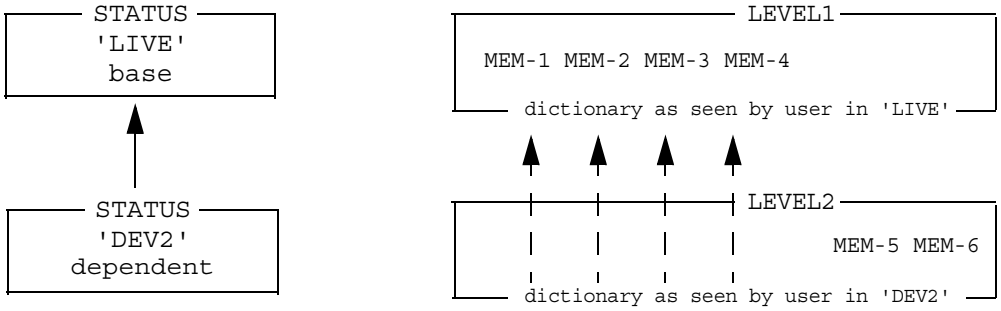

Figure 16. Interrogating the Dictionary from a Status

Please assume that all members represented in Figure 16 on page 16 are ITEM member types. If DEV2 is your current status, then this command:

```
LIST ITEMS ;
```

would produce a list including entries for MEM-1, MEM-2, MEM-3, MEM-4, MEM-5, and MEM-6 inclusive.

However, if LIVE is your current status, the same command would produce a list including entries for MEM-1, MEM-2, MEM-3, and MEM-4 only. MEM-5 and MEM-6 would not be listed because they are not visible from the current status.

For most purposes, interrogation commands apply only to the entity/data definitions visible from the current status.

However, ControlManager also provides capabilities for status related interrogation that enable you to interrogate statuses and to compare their contents.

For example, using the LIST HISTORY command you can track the history of a member through the status structure. Output from the LIST HISTORY command will tell you every status in which selected members are defined.

Similarly, using the status-related-selection keyword DIVERGING, you can compare entity/data definitions across departments/projects and this involves interrogating the contents of statuses which would not normally be visible from your current status.

These are simple examples. When combined with other Manager Products commands, the full range of status-related commands and selection keywords enable you to make complex interrogations.

If you are using Advanced Status, the Status Window feature enables certain types of status-related interrogation to be controlled so that they apply to a predefined range of statuses only. This enables you and/or the dictionary Controller to exclude statuses, those used by other departments/projects perhaps, that are not considered relevant in the context of your work in the current status.

4 Conclusion of Status Concepts

Basic Status and Advanced Status

The different features offered by the Basic Status and the Advanced Status facilities can be summarized as follows:

- Advanced Status allows any status in the dictionary to be read-only or update, whereas with Basic Status all base statuses must be read-only.
- Advanced Status provides the Status Window feature. This enables certain types of status-related interrogation to be controlled so that they apply to a predefined range of statuses only. Statuses that are not considered relevant, those used by other project teams perhaps, may be excluded from processing.
- The Status Window feature also enables you, when used in conjunction with the ALL-STATUSES keyword, to apply certain types of status-related interrogation to members that are not visible from your current status.

Glossary

base status
A base status is any status that has another status based upon it; that is, a status which has a direct dependent status.

current status
Your current status is the status in which you are working. To find out the name of your current status, enter: `STATUS ;`

default status
The default status is the status, designated by the Systems Administrator, into which you are taken automatically each time you access the dictionary.

dependent status
A dependent status is any status which is based upon another status; that is, a status which has a direct base status.

hierarchical sequence
Refers to the top-down, left-to-right processing of statuses. Whenever you use a command that produces output from several statuses, LIST HISTORY and STATUS LIST for example, the output is given in hierarchical sequence.

non-base status
Any status which has no dependent statuses based upon it.

read-only status
A status in which you cannot update members of the dictionary.

root status
A root status is the first base status in a status hierarchy; that is, the status from which all other statuses in a hierarchy derive. Alternatively, where only one status or several independent statuses exist, each status is considered to be a root status.

sibling statuses
Dependent statuses which share the same direct base status.

Status Window
A feature provided by the Advanced Status facility which enables certain types of status-related interrogation to be controlled so that they apply only to a predefined range of statuses.

update status

An update status is one in which members of the dictionary can be updated.

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