Technical Note PT20
MacApp 'View' Adventure Game

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This Technical Note describes the new MacApp 3.0 `'View'` resource.

[Sep 01 1992]

Introduction

The new MacApp 3.0 `'View'` format is defined in the `ViewTypes.r` file (`{MacApp}Includes:RIncludes` folder). However, this file is hard to understand the first time. This Technical Note explains how the new `'View'` format is constructed and how to write and modify these view resources. A good resource editor should produce `'View'` resources in most cases. However, there are cases when the programmer can't avoid reading and modifying text-based `'View'` resources.

An intelligent reader might figure out all the fields by reading `ViewTypes.r`. Consider this Technote to be a document that you can read in ten minutes to quickly understand the new `'View'` format. For more information, please consult the MacApp samples that have resource files containing `'View'` resources (our walk through example is based on these samples).

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Issues Related to the 'View' Resource Use

The 'Read Me' file in the ViewPromoter folder, MacApp 3.0 distribution, provides information about how to convert MacApp 2.0 `'view'` resources to the new `'View'` resource format.

Include `"ViewTypes.r"` in your resource file if you want to include the new `'View'` resource templates.

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Instructions

Do a walk through of the `'View'` resource, starting from the top and slowly penetrating step by step into the finer substructures.

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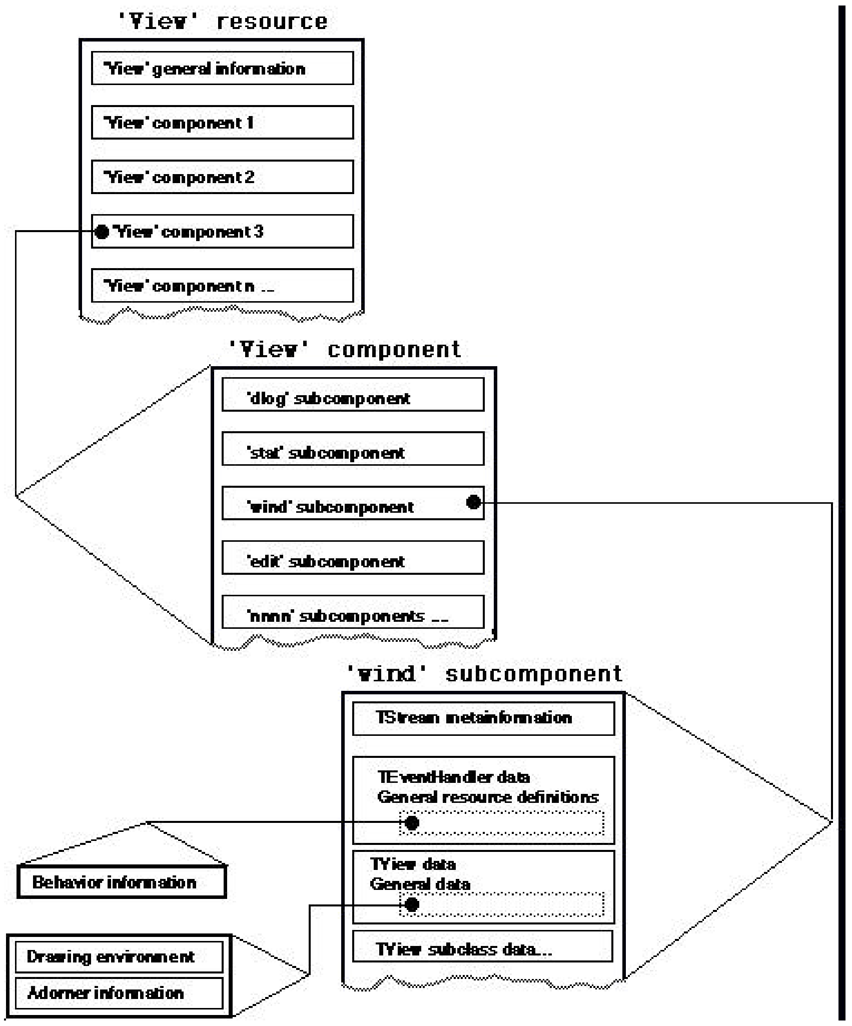
Overall Structure of the 'View' Resource Template

Usually the typical outline of the `'View'` structures added to the MacApp 3.0 project looks like this:



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'View' Resource Fields Described

Here's a field-by-field description of the `'View'` format using an example, including comments about the use of the field.

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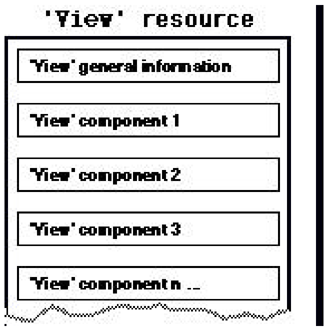
View Header: 'View' General Information



The top of the 'View' definition specifies the view ID, and whether the 'View' resource is purgeable or not.

```
resource 'View' (1000,
#if qNames
"Spreadsheet",
#endif
purgeable)
```

MAThreeOh is the 'View' template version number, the main release in the upper byte, and the dot release in the lower byte. For instance, MacApp 3.0 has a constant kMAThreeOhTemplateVersion that has the hex value 0x0300. We should not change this field unless we know what we are doing (sort of).

```
...
purgeable)
{MAThreeOh,
    {
...
```

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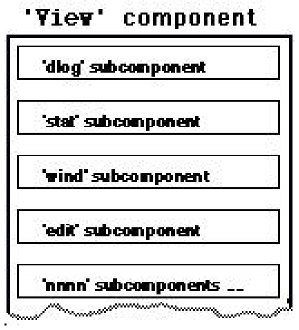
View Component Level



This view block contains an array of view components, window, dialog, static text, and similar building blocks.

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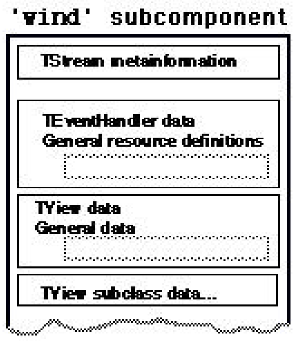
View Component Level: 'wind' Subcomponent



Now we are diving into the subcomponent level, in this case into the `'wind'` subcomponent.

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'wind' Subcomponent : TStream Metainformation

The first field inside this subcomponent is a special TStream metainformation field, used with MacApp stream handling.

The first field defines the view type:

```
...
{MAThreeOh,
    {
    ViewSignatureAndClassname
...
```

We could have various labels here, such as:

`ViewSignatureAndClassname` defines the `'View'` type, if it's a:

`NullObject` null/unused view

`LocalObject` local object

`ViewSignatureAndClassname` view that has a signature and class name (most typical case)

The first field is a `ViewSignatureAndClassname` type view, so the next fields deal with this type. `'wind'` defines the *template signature*, which MacApp uses when it creates and accesses the view from various other MacApp member functions:

```
...{
    ViewSignatureAndClassname
        {'wind',
...
```

The following field defines the *size of the view*:

```
... {'wind', 1402, ...
```

The following field is a Pascal string that defines the *class name* of the view object. This name is used when creating the object using ViewServer, so it is important to have the right name when a basic class is inherited and a new subclass is doing most of the work.

```
..., 1402, "TCalcWindow", 'WIND',...
```

The following field corresponds to the `fIdentifier` field, used with adorners, behaviors, and other classes to distinguish the instance of the object from other instances.

```
..."TCalcWindow", 'WIND', enabled,...
```

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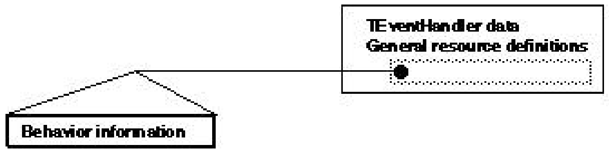
'wind' Subcomponent : TEventHandler Information



The next major subcomponent field describes the TEventHandler view information.

```
... 'WIND', enabled, noIdle,...
```

The following field corresponds to the `fIdleFreq` field in the `TEventHandler` class. `fIdleFreq` defines how often MacApp will call `DoIdle (`idle frequency). The default value (`noIdle`) corresponds to `kMaxIdleTime` (call every `fIdleFreq` tick).

```
..., enabled, noIdle, {},...
```

The next field defines *behaviors* attached to the '`View'` resources. In this case we don't have any behaviors attached to the `'View'` so it's empty. See section "TEventHandler Data: Behavior Resources" for more information about how behaviors are defined in the '`View'` resource.

```
..., noIdle, {}, MAThreeOh, ...
```

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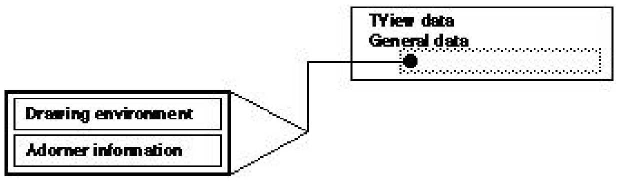
TView Data



The following fields define the general view information related to coordinates, target management, and general view handling.

The next field yet again defines the *version number* for the view.

```
...{}, MAThreeOh,  {40, 10},...
```

The next two fields deal with the coordinates. The first one is a `VPoint` that defines the view *placement* inside the parent view. The second pair is also a `VPoint` that defines the *size* of the view.

```
..., MAThreeOh, {40, 10}, {288, 447},...
```

The two following fields define the *vertical and horizontal view determiners*.

```
...{288, 447}, sizeVariable, sizeVariable, shown,...
```

They might have the following values:

`sizeSuperView` view is the same size as superview

`sizeRelSuperView` view is relative to the superview

`sizePage` view is to be the size of one page

`sizeFillPages` view fills an exact number of pages

`sizeVariable` size criteria are application specific

`sizeFixed` no default handling of size

The next field defines whether the view is initially *shown* or not, corresponding to the `fShown` field (`TView`).

```
...sizeVariable, shown, doesntWantToBeTarget, ...
```

The next field defines whether the view wants to act as a *target* or not. The two values it could contain are `wantsToBeTarget` and `doesntWantToBeTarget`.

```
...shown,doesntWantToBeTarget, handlesCursor,
letsSubViewsHandleCursor,...
```

The following fields are used for cursor handling. The first one specifies whether the view should handle a cursor or not. It can have the values `handlesCursor` or `doesntHandleCursor`. The following field specifies whether the subview is able to handle the cursor. It could contain the values `letsSubViewHandleCursor` and `doesntLetSubViewsHandleCursor`. The third field defines the *cursor ID* . Define the ID and place a cursor resource with the same ID into the resource fork, which makes it possible to switch to this cursor when the mouse moves over the specified view.

```
...doesntWantToBeTarget, handlesCursor, letsSubViewsHandleCursor,
noCursorID,
```

The following fields are used for System 7 Help support. The first field defines whether the view will show a balloon--the two values are `handlesHelp` and `doesntHandleHelp`. The following one defines whether the subview will also show a balloon--the two values are `letsSubViewHandleHelp` and `doesnLetSubViewHandleHelp`. The third field is the help ID number. `noHelpID` signals no balloon resource. The last help field is the *help index number* .

```
...noCursorID, handlesHelp, letsSubViewsHandleHelp, noHelpID,
1,...
```

The next field defines the drawing environment for the view. See the section "TView Data: DrawingEnvironment Resources" concerning this field. In this case we don't have a drawing environment.

```
...1, NoDrawingEnvironment {},  AdornerListSignatureAndClassname...
```

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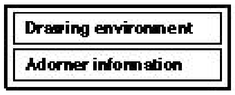
TView Data: Adorner Resources



The special adorner fields will define the adorner resources allocated to the special view object.

The `AdornerListSignatureAndClassname` will signal that the following fields are related to an adorner that is part of the enclosed object (`'view'`, `'wind'`, other components . . .).

```
AdornerListSignatureAndClassname {NoIdentifier, AdornerList,
```

We might have the following labels:

`NoAdorners`,

`AdornerListLocalObject`,

`AdornerListClassIDAndClassname`

`AdornerListSignatureAndClassname`.

The next field defines the signature, usually `NoIdentifier`.

```
AdornerListSignatureAndClassname {NoIdentifier, AdornerList,
```

The following fields define the adorner list itself, the size, size shift, and allocation increment. Most of these values are already hardcoded so there's seldom any need to modify these.

```
{NoIdentifier,AdornerList,AdornerElementSize,AdornerElementSizeShift,
DynamicArrayAllocationIncrement, {
```

Following this we have the adorner list. Specify as many adorners as needed in the following closure.

```
                DynamicArrayAllocationIncrement, {
AdornFirst, AdornerLocalObject {EraseAdorner},
```

The first field inside this closure defines how and when the adorner will trigger. The following list describes the order of adorner execution, from the first adorner to the last:

AdornFirst - AdornBefore - DrawView - AdornAfter - AdornLast

The following fields define the adorner itself. You might either have a MacApp-defined adorner (AdornerLocalObject), or an adorner that is registered from the application code (AdornerClassIDandClassname or AdornerSignatureAndClassname).

```
AdornFirst, AdornerLocalObject {EraseAdorner},
```

In this case we have a MacApp-provided adorner called EraseAdorner that will erase the contents of the specified resource first (see earlier statement). The following MacApp 3.0-provided adorners are available:

EraseAdorner erase the contents of the adorner

DrawAdorner draw the contents of the resource

DimAdorner dim the contents

HiliteAdorner highlight the contents

PrintAdorner print the contents

ResizeIconAdorner resize icon drawing

SelectionAdorner highlight selection in window when window not active

Here's a typical list of adorners:

```
        AdornFirst, AdornerLocalObject {EraseAdorner},
        DrawView, AdornerLocalObject {DrawAdorner},
        AdornLast, AdornerLocalObject {ResizeIconAdorner}}}
```

Here's an example of a TFrameAdorner that is defined used an external signature and a possible class name:

```
AdornAfter, AdornerSignatureAndClassname {"fram", "", 'fram',
freeOnDeletion, $""}
```

AdornerSignatureAndClassname specifies that the following adorner will be created using an external registered signature (and possible class name). Inside this closure the first field defines the signature ('fram' as in TFrameAdorner), used when creating the adorner from the resource information. The second field should define the class name. The third field is another signature field that is the actual signature for the adorner. The fourth field defines whether the adorner should free on deletion. For instance, whether we have one single global adorner it does not make sense to delete it when the view is destructed. The two values are freeOnDeletion and dontFreeOnDeletion. The final field defines optional data that a developer could use.

Finally the last field is a *userArea* , usually defined empty (0). This field is four bytes. Examples of use are for instance separation of globally propagated views using this field as the label field.

```
AdornerLocalObject {ResizeIconAdorner}}}, 0,
```

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TView Data: Drawing Environment Resources

The Drawing environment closure is very simple. It is used for defining the QuickDraw pen modes and colors. Here's an example of a Drawing environment:

```
DrawingEnvironmentClassIDAndClassname {74, DrawingEnvironment, {3,
3}, 8, $"FFFF FFFF FFFF FFFF", {0, 0, 0}, {65535, 65535, 65535}}
```

As with other 'View' components we could have:

```
NoDrawingEnvironment,
DrawingEnvironmentLocalObject,
DrawingEnvironmentClassIDAndClassname
DrawingEnvironmentSignatureAndClassname
```

In this case we have a drawing environment with class ID and a name.

The first field is the *Class ID* , and the following field is the name of the class, the default case "TDrawingEnvironment".

```
DrawingEnvironmentClassIDAndClassname {74,
DrawingEnvironment, {3, 3}, 8, $"FFFF FFFF FFFF FFFF", {0, 0, 0},
{65535, 65535, 65535}}
```

The first two fields in the actual drawing environment define the pen size (fPenSize) and the pen mode (fPenMode):

```
DrawingEnvironmentClassIDAndClassname {74, DrawingEnvironment, {3,
3}, 8, $"FFFF FFFF FFFF FFFF", {0, 0, 0}, {65535, 65535,
65535}}
```

The following field defines the pen pattern (fPenPattern):

```
DrawingEnvironmentClassIDAndClassname {74, DrawingEnvironment, {3, 3}, 8,
$"FFFF FFFF FFFF FFFF", {0, 0, 0}, {65535, 65535, 65535}}
```

The final two fields will define the foreground (fForegroundColor) and the background color (fBackgroundColor) of the drawing environment.

```
DrawingEnvironmentClassIDAndClassname {74, DrawingEnvironment, {3, 3}, 8,
$"FFFF FFFF FFFF FFFF", {0, 0, 0}, {65535, 65535, 65535}}
```

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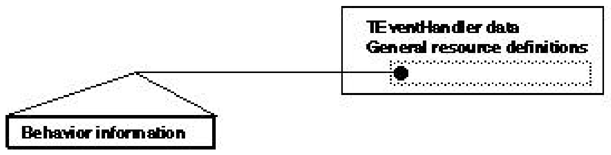
TEventHandler Data: Behavior Resources



As with other 'View'-based resources, you could define the behaviors attached to the main view by using the following constructs:

```
BehaviorNullObject
BehaviorLocalObject
BehaviorClassIDAndClassname
BehaviorSignatureAndClassname
```

Here's an example, in which we have BehaviorSignatureAndClassname as the template:

```
BehaviorSignatureAndClassname{kSectionBehavior,"TSECTIONBEHAVIOR",
Behavior {enabled, noIdle}}
```

The signature is defined, as well as the name of the class.

```
BehaviorSignatureAndClassname{kSectionBehavior,"TSECTIONBEHAVIOR",
Behavior {enabled, noIdle}}
```

Finally the behavior itself is defined. The behavior label is tested, and if, for instance, we defined a `TDialogBehavior` we would use a separate closure for the data that is part of the specified behavior. In this case we have a general behavior, so the only two data fields are the standard `enabled` / `notEnabled` and the `fIdleFreq` field, in this cased defined as `noIdle`.

```
BehaviorSignatureAndClassname{kSectionBehavior,"TSECTIONBEHAVIOR",
Behavior {enabled, noIdle}}
```

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Other Resources

MacApp provides many other resource components (buttons, checkboxes, radio buttons . . .). Please consult the files in the `{RIncludes}` folder for more information.

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Conclusion

This walk through of the `'View'` resource descriptions provided a short guided tour, and there are more exotic structures for the brave MacApp adventure to explore. "You are in a maze of twisty little passages, all alike."

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References

MacApp 3.0 documentation

DemoDialogs MacApp 3.0 sample code

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Downloadables

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