TESTING WIDGET GEOMETRY MANAGEMENT

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Agenda

- Geometry Management.
  - Generalities
  - Xt model
- The GeoTattler Widget.
  - Description
  - Limitations
- The XtGeo library.
  - Presentation
  - Example

Definition

- Static layout is a limitation for the end user.

- Geometry Management is the part of a User Interface system that changes the size and position, or reacts to modifications in size and position of graphical objects on the screen.

- It can be found:

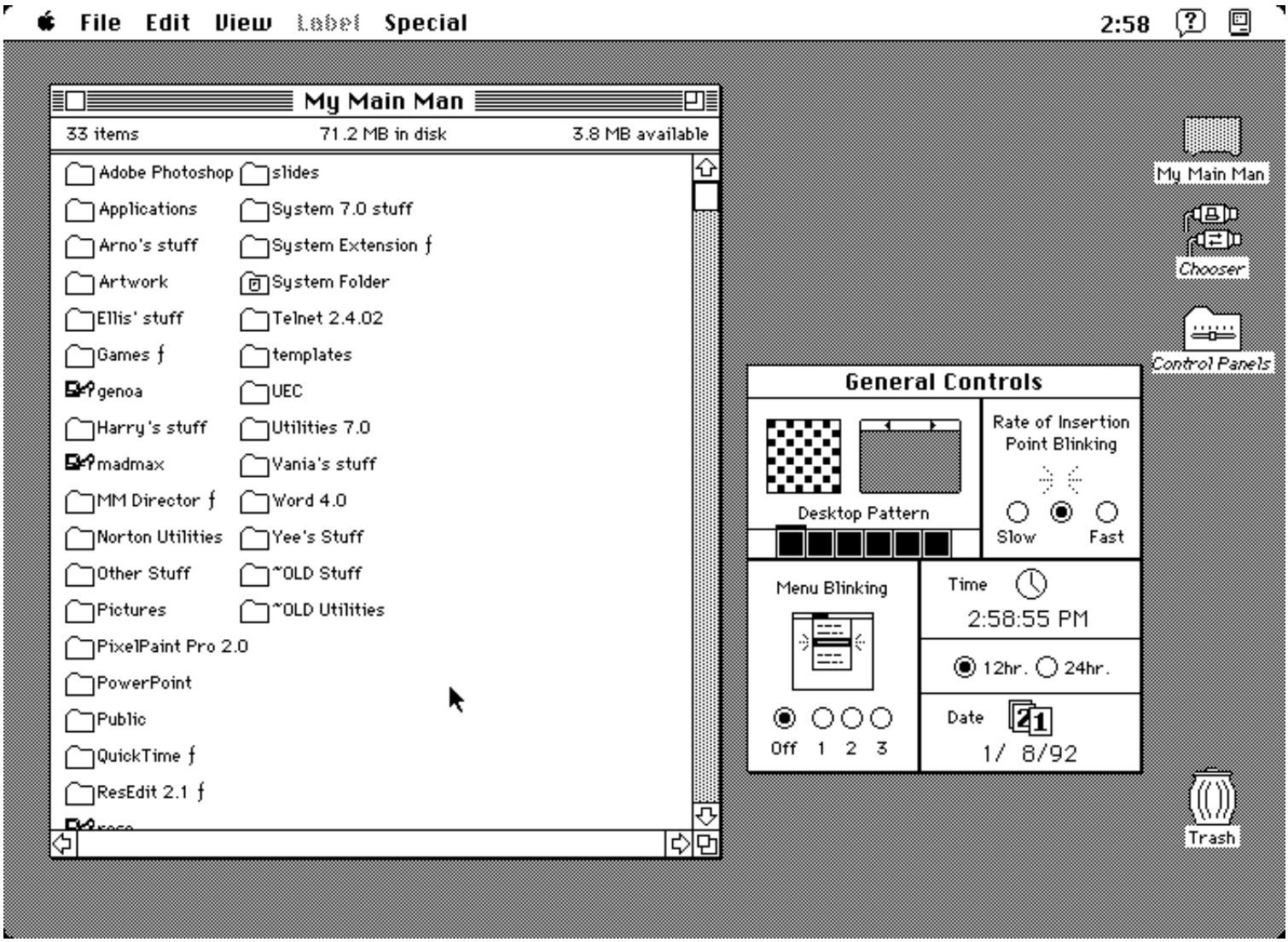
  - in the toolkit

  - in the application

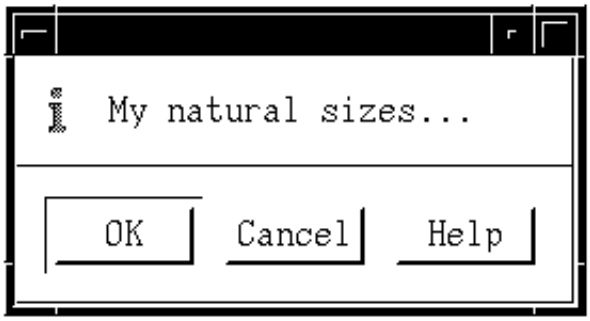
  - at the user level

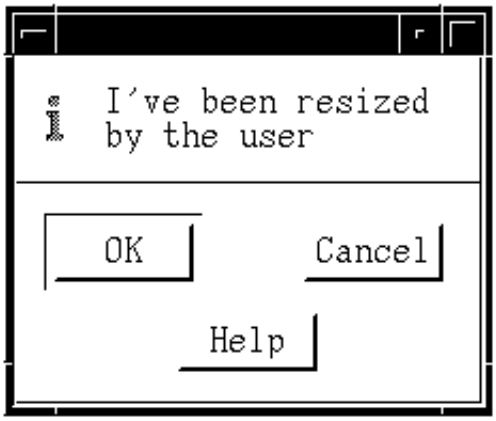
- Geometry Management can be very complex,
  it involves a protocol.

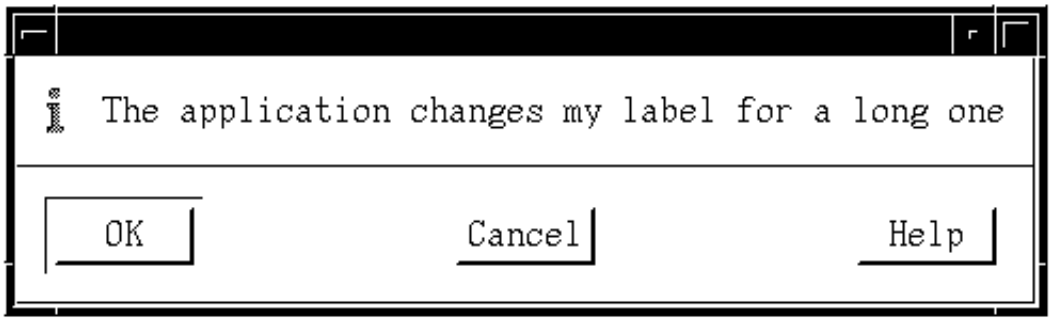
Mac and PC: static layout



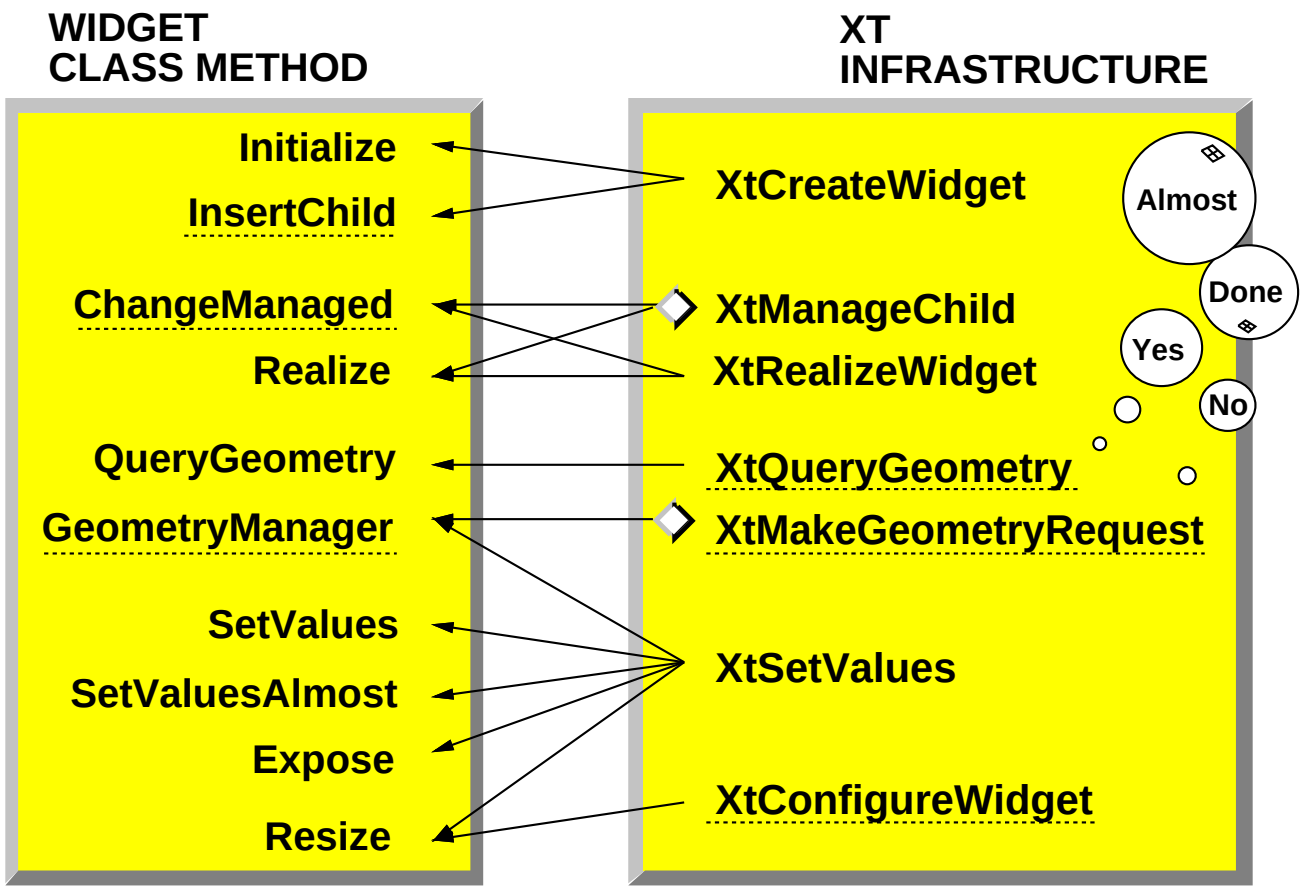
Dynamic layout in Motif with Xt



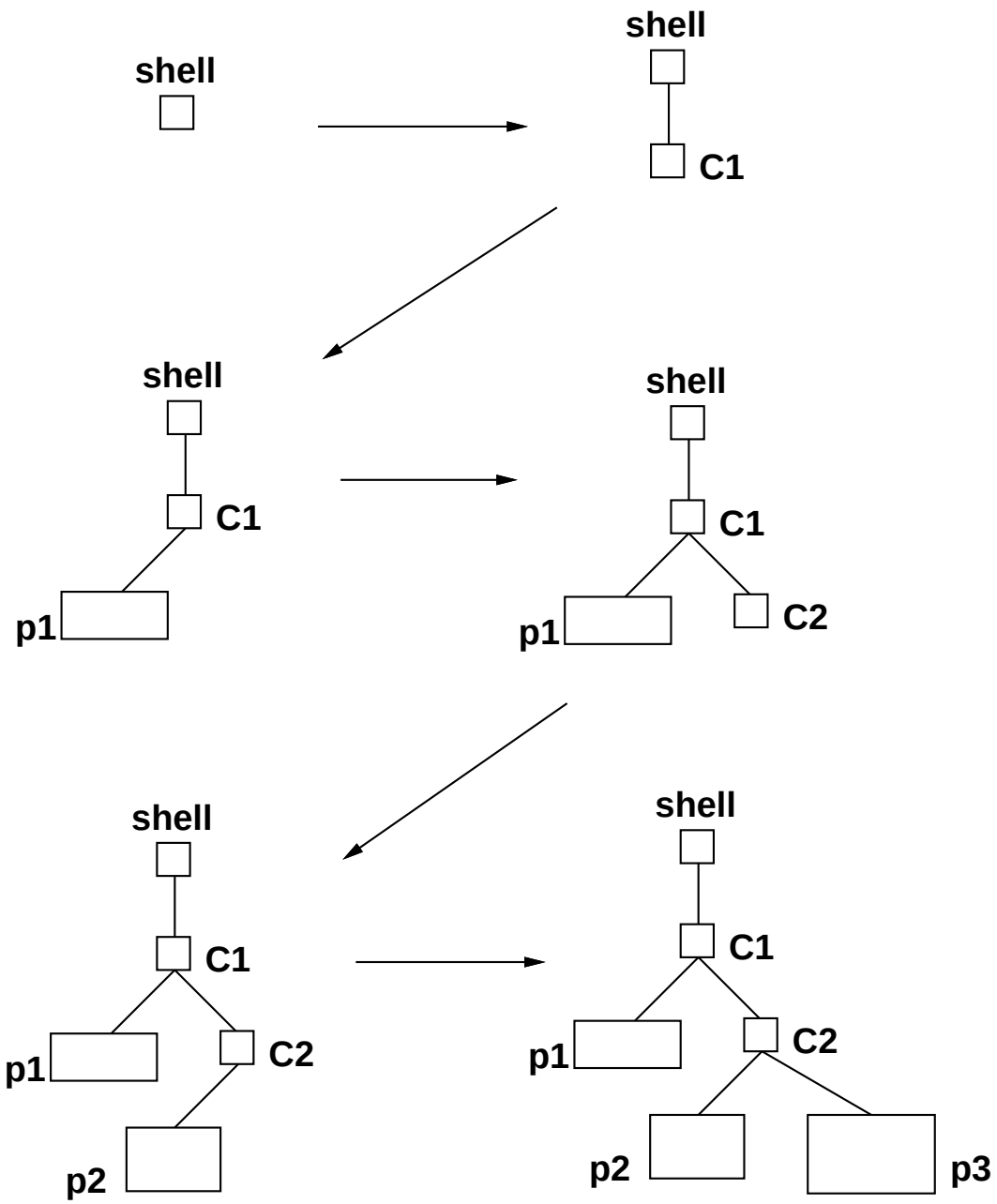




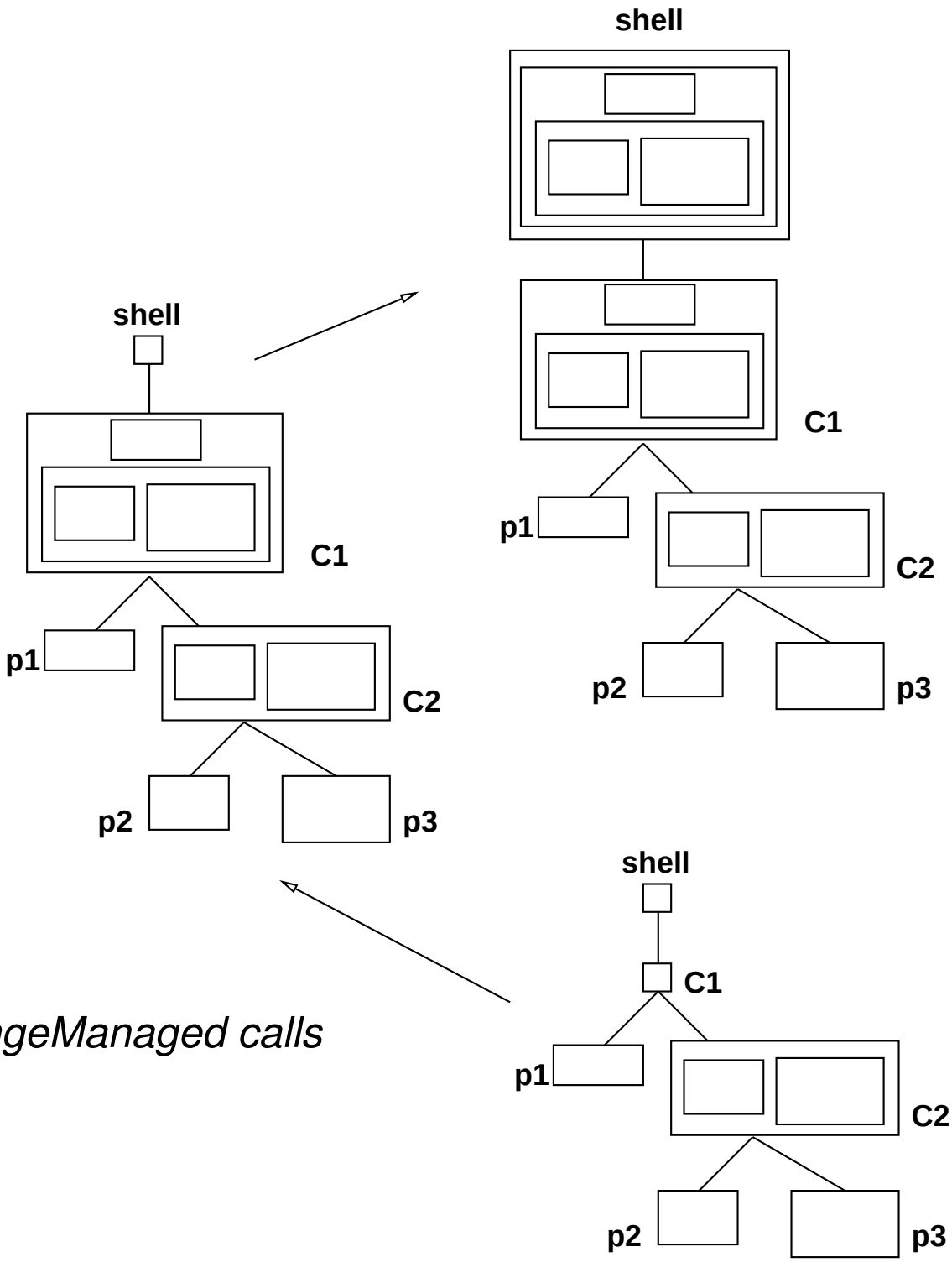
Xt Geometry Chart



Widget Creation Phase

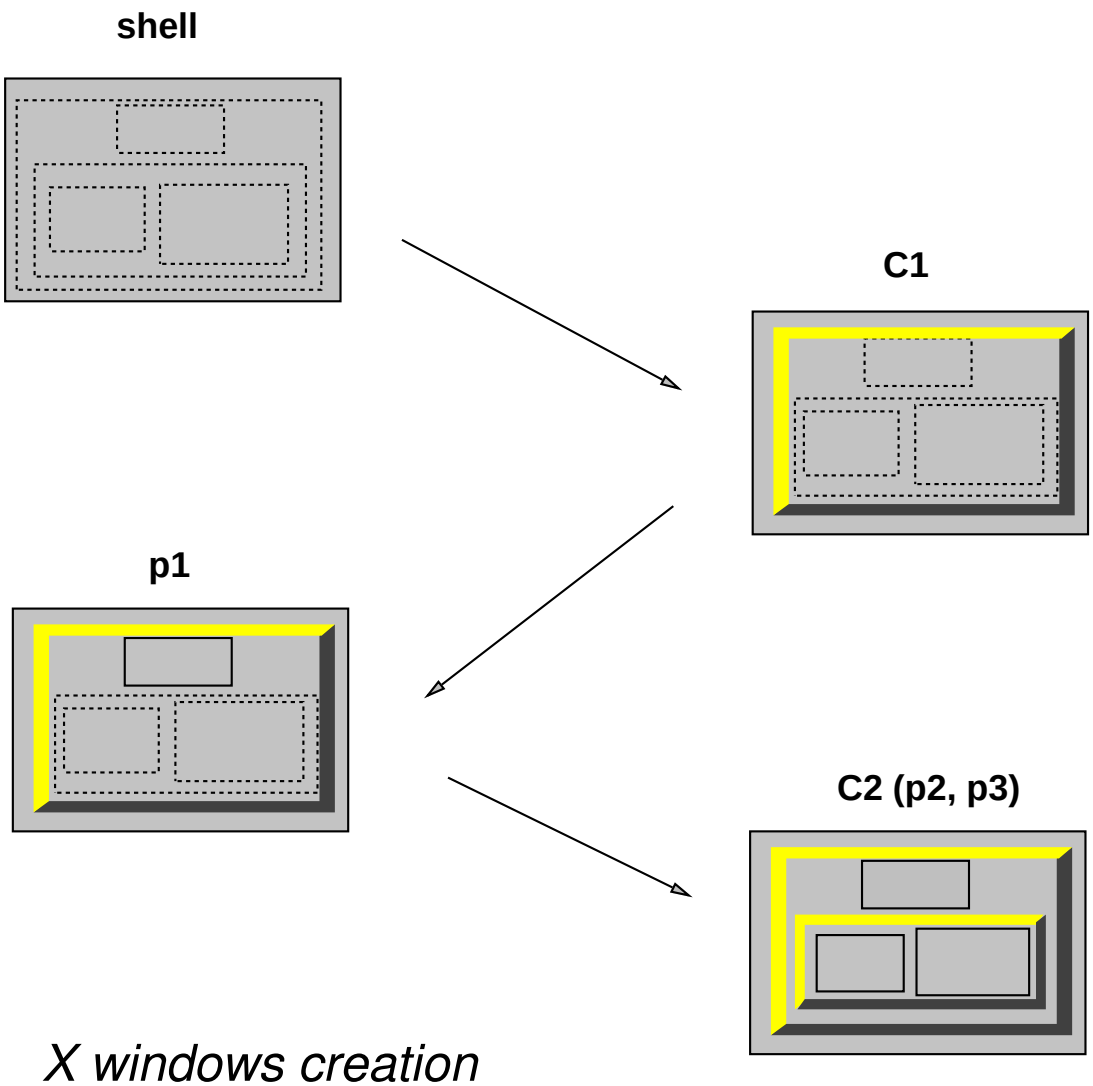


Layout Phase



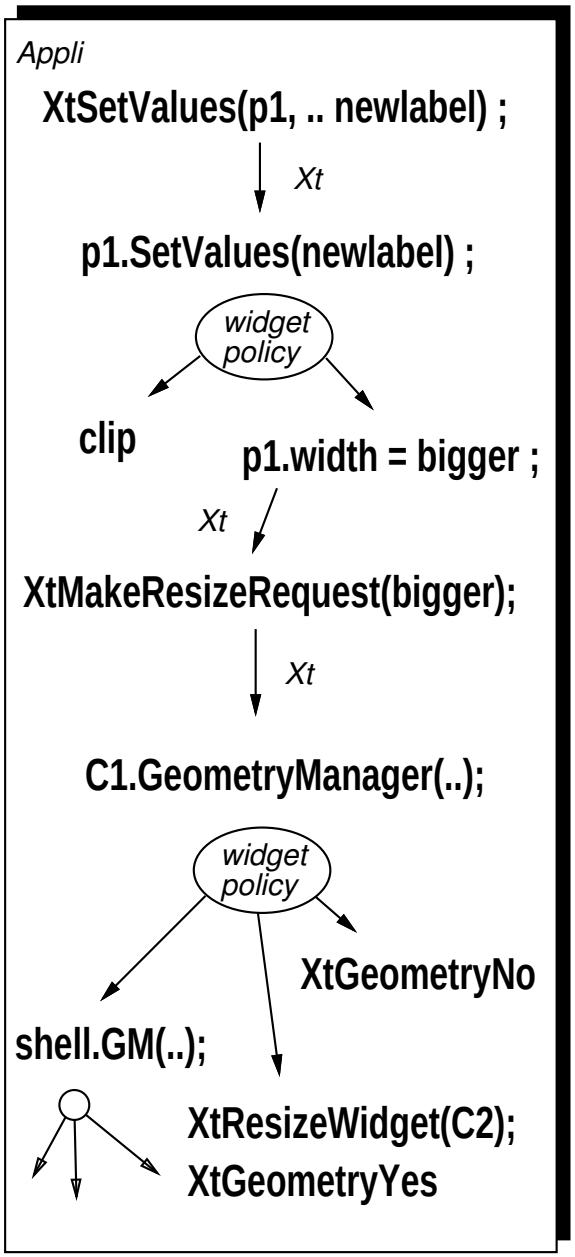
ChangeManaged calls

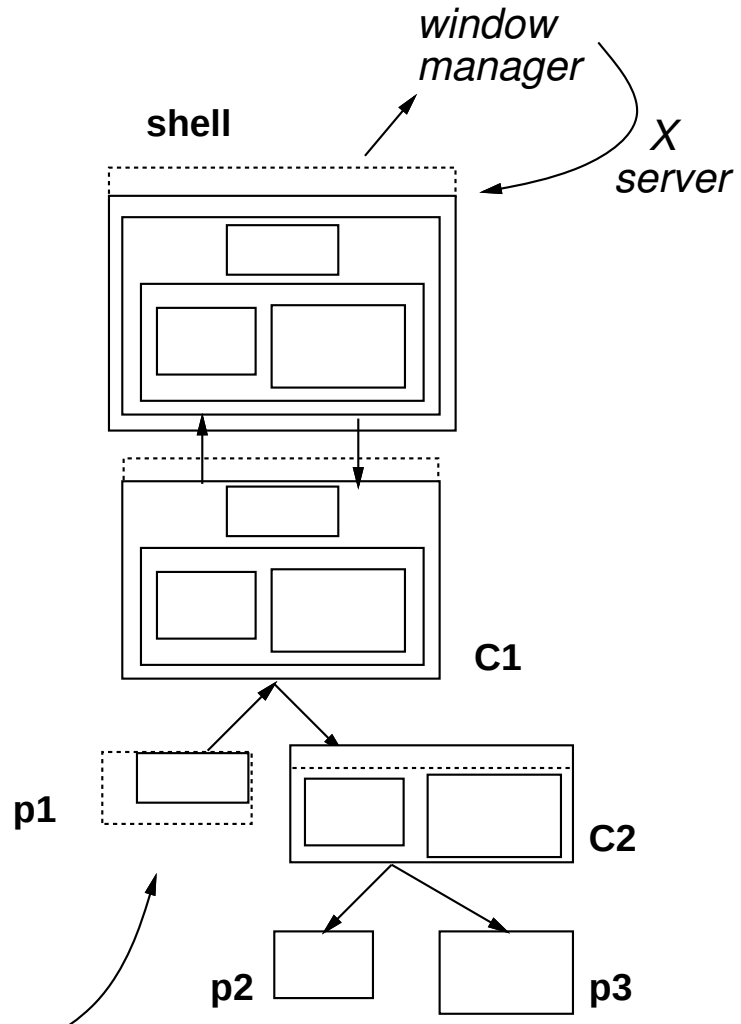
Window Creation Phase



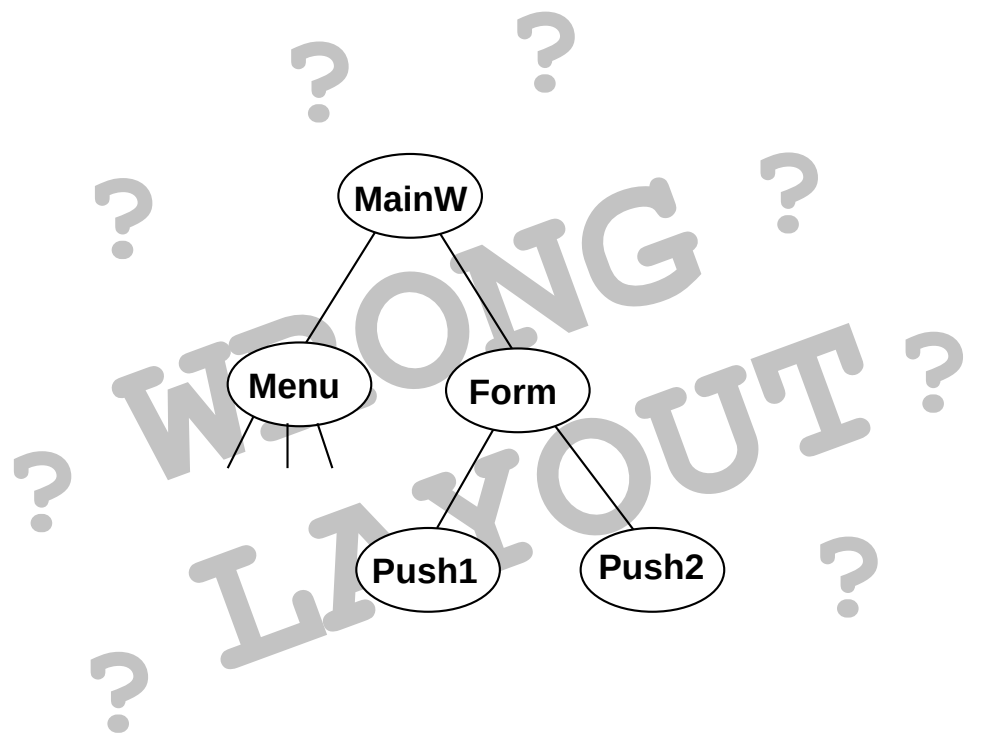
X windows creation

Geometry Request processing

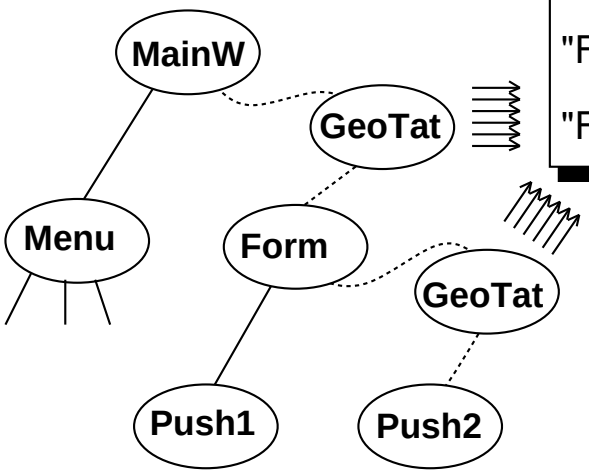




The GeoTattler Widget (1)



"Push2" is doing a geometry request
– width wants to move
from 226 to 284
to its parent "Form".
"Form" is resizing its child "Push1"
– to (200,32)
"Form" replies Yes to the request.



The GeoTattler Widget (2)

Initialize	**initializes some instance flags;**
InsertChild	**checks if XtIsRectObj and num_children == 1;**
ChangeManaged	**aligns its managed state on its child state and requests the parent using the child's size;**
QueryGeometry	**queries the child and returns that desire size to the parent;**
GeometryManager	**propagates the request to parent and returns the parent's reply to the instigator;**
Expose	**deals with gadgets;**
Resize	**propagate the resize to the child;**

A convenient way to use the GeoTattler without recompilation of the application is to modify **`XtCreateWidget`** so that when the pseudo–resource **`XtNgeoTattler`** matches the created widget class, name and parent, the GeoTattler is automatically inserted.

```
*XmForm*geoTattler: ON
sample*Push1.geoTattler: OFF
```

The GeoTattler Widget (3)

- The parent has a good XtGeometryDone or XtGeometryYes policy.
- The child is not requesting its parent from its resize proc.
- The parent is not considering any unmanaged child.
- The child deals properly with a XtGeometryAlmost reply.
- The parent accepts its own previous XtGeometryAlmost proposal.
- The parent has a compliant XtGeometryNo and Almost policy.
- XtCWQueryOnly bit set is honored by the parent.
- The child is not making a geometry request from its SetValues.
- The child QueryGeometry is conformant to the specification.

The GeoTattler Widget (4)

Problem: the original application object structure has changed.

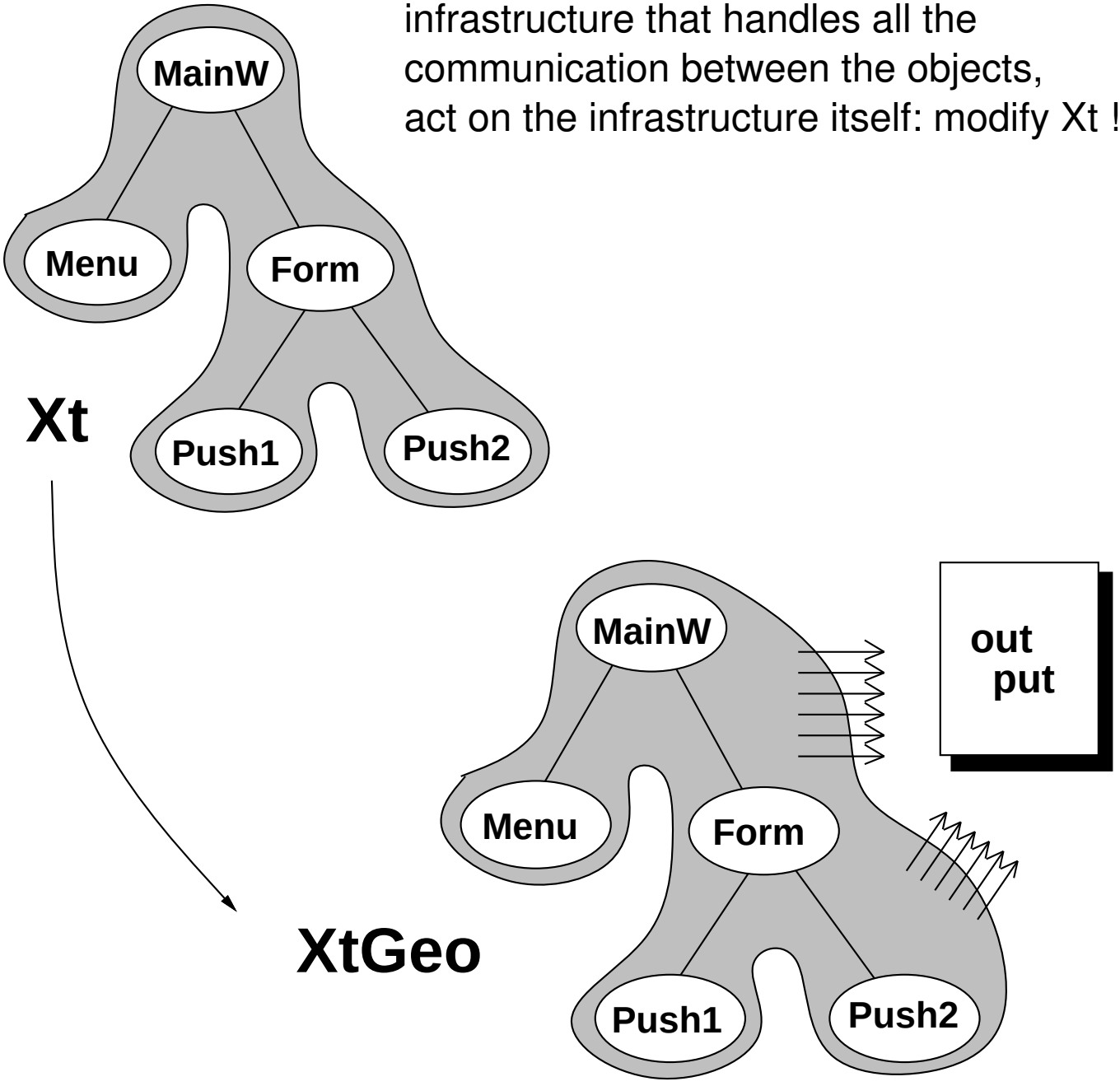
- Parent/child class dependences no longer valid.
- User resource specification can be broken:

```
myapp*XmFrame.XmPushButton.background: red
myapp*XmPushButton.geoTattler: ON
```

- Constraint resources management not done.
- Sibling relationship changed.

The XtGeo library (1)

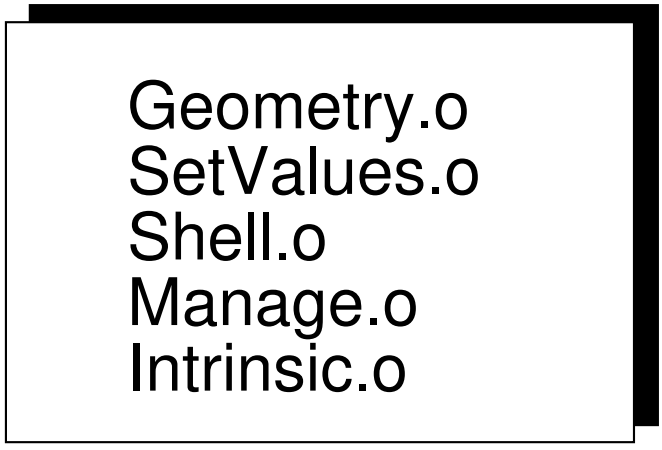
Instead of inserting new objects in the tree, and since there is an infrastructure that handles all the communication between the objects, act on the infrastructure itself: modify Xt !



The XtGeo library (2)

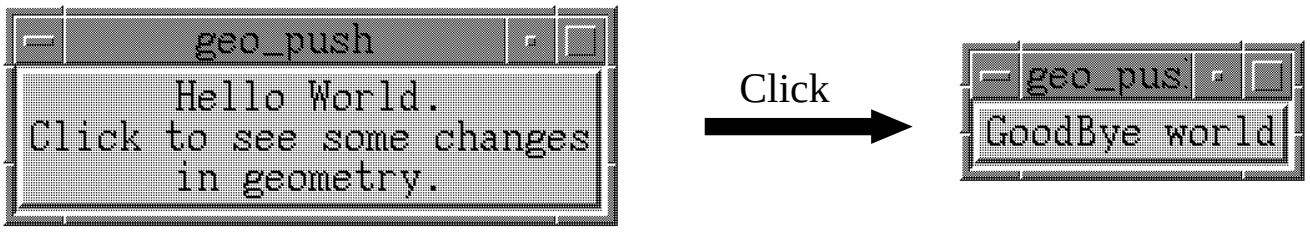
Create something that is more than a "compiled DEBUG" library and offers more than a symbolic debugger or a C interpreter.

- Only show what is "interesting" in Xt in the geometry management work.
- Uses the **`XtNgeoTattler`** resource to control which part of the tree needs to be spied.
- Provide "pretty printing" output under the form of indentation that reflects the geometry request flow in the tree.
- Provide dynamic activation of the tracing code (via Editres).



The XtGeo library (3)

```
geo_push*push.labelString:Hello World.\n\
                    Click to see some changes\n\
                    in geometry.
geo_push*allowShellResize:True
geo_push*geoTattler: ON
```




```
XtSetValues on "push" sees some geometry changes.
    "push" is making a geometry request to its parent "geo_push".
        Asking for a change in width: from 235 to 127.
        Asking for a change in height: from 58 to 26.
        Go ask the geometry manager.
           "geo_push" is making a geometry request to its parent Root.
                 Asking for a change in width: from 235 to 127.
                 Asking for a change in height: from 58 to 26.
                 Go ask the RootGeometryManager.
                      Configuring the Shell X window :
                               width = 127
                               height = 26
                      ConfigureNotify succeed, return XtGeometryYes.
           Root returns XtGeometryYes.
           Reconfigure "push"'s window.
     "geo_push" returns XtGeometryYes.
     XtSetValues calls "push"'s resize proc.
XtSetValues calls XClearArea on "push".
```