
Subject: Multi monitor support for X11 backend
Posted by [Zbych](#) on Sun, 09 Jun 2013 13:20:29 GMT
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Hi,

I would like to improve a little bit multi monitor handling in X11 backend. Right now two (or more) screens are treated as one big display.

We can use Xinerama or Xrandr to get information on screens resolution & position and `_NET_WM_STRUT_PARTIAL` to mark areas occupied by menus, status bars etc.

Bellow are modified functions:

CtrlCore.upp:

```
library(LINUX !RAINBOW) "X11 Xrender Xinerama";
```

X11Gui.h:

```
#include <X11/extensions/Xrender.h>  
#include <X11/extensions/Xinerama.h> //<--- new header
```

X11App.cpp:

```
static Array<Rect> GetScreenArea()  
{  
    Array<Rect> out;  
    int displays;  
  
    XineramaScreenInfo * si = XineramaQueryScreens (Xdisplay, &displays);  
    if (si == NULL || displays < 1) out.Add(RectC(0, 0, Xwidth, Xheight));  
    else{  
        for (int i = 0; i < displays; i++){  
            out.Add(RectC(si[i].x_org, si[i].y_org, si[i].width, si[i].height));  
        }  
        XFree(si);  
    }  
    return out;  
}  
  
void Ctrl::GetWorkArea(Array<Rect>& out)  
{  
    enum { left = 0, right, top, bottom,  
          left_start_y, left_end_y,  
          right_start_y, right_end_y,  
          top_start_x, top_end_x,
```

```

    bottom_start_x, bottom_end_x
};

Array<Rect> sa = GetScreenArea();
out <<= sa;

Rect total(sa[0]);
for (int i = 1; i < sa.GetCount(); i++){
    total |= sa[i];
}

Vector<int> wnd_lst = GetPropertyInts(Xroot, XAtom("_NET_CLIENT_LIST"));
for (int i = 0; i < wnd_lst.GetCount(); i++){
    Vector<int> struts = GetPropertyInts(wnd_lst[i], XAtom("_NET_WM_STRUT_PARTIAL"));
    if (struts.GetCount() != 12) continue;

    for (int j = 0; j < sa.GetCount(); j++){

        if (struts[left] && sa[j].left <= struts[left] && sa[j].right >= struts[left]
            && sa[j].Intersects(Rect(sa[j].left, struts[left_start_y], struts[left], struts[left_end_y])))
            out[j].left = struts[left];

        int tmp = total.right - struts[right];
        if (struts[right] && sa[j].left <= struts[right] && sa[j].right >= struts[right]
            && sa[j].Intersects(Rect(tmp, struts[right_start_y], total.right, struts[right_end_y])))
            out[j].right = tmp;

        if (struts[top] && sa[j].top <= struts[top] && sa[j].bottom >= struts[top]
            && sa[j].Intersects(Rect(struts[top_start_x], sa[j].top, struts[top_end_x], struts[top])))
            out[j].top = struts[top];

        tmp = total.bottom - struts[bottom];
        if (struts[bottom] && sa[j].top <= struts[bottom] && sa[j].bottom >= struts[bottom]
            && sa[j].Intersects(Rect(struts[bottom_start_x], tmp, struts[bottom_end_x], total.bottom)))
            out[j].bottom = tmp;
    }
}

Rect Ctrl::GetWorkArea() const
{
    return GetPrimaryWorkArea();
}

Rect Ctrl::GetWorkArea(Point pt)
{
    Array<Rect> rc;
    GetWorkArea(rc);
}

```

```
for(int i = 0; i < rc.GetCount(); i++)
  if(rc[i].Contains(pt))
    return rc[i];
return rc[0];
}
```

```
Rect Ctrl::GetVirtualWorkArea()
{
  Array <Rect> wa;
  GetWorkArea(wa);
  Rect r(wa[0]);
  for (int i = 1; i < wa.GetCount(); i++)
    r |= wa[i];

  return r;
}
```

```
Rect Ctrl::GetVirtualScreenArea()
{
  Array<Rect> sa = GetScreenArea();

  Rect out(sa[0]);
  for (int i = 1; i < sa.GetCount(); i++){
    out |= sa[i];
  }

  return out;
}
```

```
Rect Ctrl::GetPrimaryWorkArea()
{
  Array<Rect> x;
  GetWorkArea(x);
  return x[0];
}
```

```
Rect Ctrl::GetPrimaryScreenArea()
{
  return GetScreenArea()[0];
}
```

So far I made test on ATI and Intel graphics. Can someone compile Thelde in NOGTK mode and test window positioning on NVidia card?

Edit:

New version uploaded, should work with bottom and right panels.

Subject: Re: Multi monitor support for X11 backend
Posted by [Klugier](#) on Sun, 09 Jun 2013 15:37:15 GMT
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Hello Zbych,

For me this patch is useless (NVIDIA GPU). I have noticed a lot of graphical glitches. For instance: menu toolbar bars is out of the window, running new windows from application make crash, some windows have different resolution than previous (they are smaller), the IDE start logo is half on existing screen and half on no existing screen!!! (It should be in different place) etc.

I have NO recommended this patch as a linux multi-monitor user in its present form.

P.S.

1. I have tested it on two monitors with 1920x1080 resolution each.
2. I have used Kubuntu 13.04 x86_64 with nvidia 313.30 driver.

Sincerely,
Klugier

Subject: Re: Multi monitor support for X11 backend
Posted by [Zbych](#) on Sun, 09 Jun 2013 17:47:42 GMT
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Thank you Klugier for testing.

Wrong window placement is definitely caused by this patch, but it shouldn't influence resolution. Can you revert changes in upp, run attached test application and paste output log here?

Thanks in advance.

File Attachments

1) [MultiMonitorTest.7z](#), downloaded 435 times

Subject: Re: Multi monitor support for X11 backend
Posted by [Klugier](#) on Sun, 09 Jun 2013 19:17:03 GMT
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Hello Zbych,

Here is my log file:

```
* /home/klugier/upp-out/MyApps/GCC.Force_Speed.Gui.Nogtk.Shared.Sse2/MultiMonitorTest  
09.06.2013 21:11:51, user: klugier
```

09.06.2013 21:11:51 VGA-0: 1920x1080+1920+0
09.06.2013 21:11:51 HDMI-0: 1920x1080+0+0
09.06.2013 21:11:51 TIMING GetScreenArea : 69.00 ms - 69.00 ms (69.00 ms / 1), min: 69.00 ms, max: 69.00 ms, nesting: 1 - 1

Sincerely,
Klugier

Subject: Re: Multi monitor support for X11 backend
Posted by [Zbych](#) on Sun, 09 Jun 2013 19:29:09 GMT
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Can you paste log from debug version as well?

Subject: Re: Multi monitor support for X11 backend
Posted by [Klugier](#) on Sun, 09 Jun 2013 20:14:53 GMT
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Hello Zbych,

Here is my log file from debug mode:

*

/home/klugier/upp-out/MyApps/GCC.Debug.Debug_Full.Gui.Noblitz.Nogtk.Shared.Sse2/MultiMonitorTest 09.06.2013 22:12:23, user: klugier

09.06.2013 22:12:23 VGA-0: 1920x1080+1920+0
09.06.2013 22:12:23 HDMI-0: 1920x1080+0+0
09.06.2013 22:12:23 XrandrGetScreenArea(true):
09.06.2013 22:12:23 [0] = [1920, 0] - [3840, 1080] : (1920, 1080)
09.06.2013 22:12:23 [1] = [0, 0] - [1920, 1080] : (1920, 1080)
09.06.2013 22:12:23 XineramaGetScreenArea():
09.06.2013 22:12:23 [0] = [1920, 0] - [3840, 1080] : (1920, 1080)
09.06.2013 22:12:23 [1] = [0, 0] - [1920, 1080] : (1920, 1080)
09.06.2013 22:12:23 struts:
09.06.2013 22:12:23 [0] = 0
09.06.2013 22:12:23 [1] = 0
09.06.2013 22:12:23 [2] = 0
09.06.2013 22:12:23 [3] = 45
09.06.2013 22:12:23 [4] = 0
09.06.2013 22:12:23 [5] = 0
09.06.2013 22:12:23 [6] = 0

09.06.2013 22:12:23 [7] = 0
09.06.2013 22:12:23 [8] = 0
09.06.2013 22:12:23 [9] = 0
09.06.2013 22:12:23 [10] = 1920
09.06.2013 22:12:23 [11] = 3839
09.06.2013 22:12:23 work_area:
09.06.2013 22:12:23 [0] = [1920, 0] - [3840, 45] : (1920, 45)
09.06.2013 22:12:23 [1] = [0, 0] - [1920, 1080] : (1920, 1080)
09.06.2013 22:12:23 original_work_area:
09.06.2013 22:12:23 [0] = [0, 0] - [3840, 1035] : (3840, 1035)
09.06.2013 22:12:23 Ctrl::GetVirtualScreenArea() = [0, 0] - [3840, 1080] : (3840, 1080)
09.06.2013 22:12:23 Ctrl::GetVirtualWorkArea() = [0, 0] - [3840, 1035] : (3840, 1035)
09.06.2013 22:12:23 TIMING GetScreenArea : 70.00 ms - 70.00 ms (70.00 ms / 1), min: 70.00
ms, max: 70.00 ms, nesting: 1 - 1

Sincerely,
Klugier

Subject: Re: Multi monitor support for X11 backend
Posted by [mirek](#) on Sun, 09 Jun 2013 20:35:02 GMT
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I am planning to replace X11 with GTK backend soon; I believe that multimonitor support should work fine already there.

Mirek

Subject: Re: Multi monitor support for X11 backend
Posted by [Zbych](#) on Sun, 09 Jun 2013 20:50:33 GMT
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klugier wrote on Sun, 09 June 2013 22:14Hello Zbych,

Here is my log file from debug mode:

Thanks. It appears that I misinterpreted struts coordinates.

Subject: Re: Multi monitor support for X11 backend

Posted by [Zbych](#) on Sun, 09 Jun 2013 20:53:14 GMT

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mirek wrote on Sun, 09 June 2013 22:35I am planning to replace X11 with GTK backend soon; I believe that multimonitor support should work fine already there.

Mirek

Does it mean that you want to get rid of X11 completely? Or just remove X11 from GTK backend?

Subject: Re: Multi monitor support for X11 backend
Posted by [mirek](#) on Mon, 10 Jun 2013 10:32:35 GMT

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Zbych wrote on Sun, 09 June 2013 16:53mirek wrote on Sun, 09 June 2013 22:35I am planning to replace X11 with GTK backend soon; I believe that multimonitor support should work fine already there.

Mirek

Does it mean that you want to get rid of X11 completely? Or just remove X11 from GTK backend?

I mean using GTK API instead of X11 API as U++ backend. Of course, GTK then uses X11... (or anything else). I hope this could iron out some hard to catch X11 issues.

You can check multimonitor support now, just place GTK into main config.

Mirek

Subject: Re: Multi monitor support for X11 backend
Posted by [Zbych](#) on Mon, 10 Jun 2013 11:03:04 GMT

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I know that GTK uses X11 under the hood. Question is whether you are going to remove X11 from Upp.

I ask because I have a few embedded applications that use X11 backend and I would like to avoid additional dependencies on GTK.

PS. I uploaded modified version of multi monitor support to my first post. Klugier can you test it?

Subject: Re: Multi monitor support for X11 backend
Posted by [mirek](#) on Mon, 10 Jun 2013 11:09:06 GMT
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Zbych wrote on Mon, 10 June 2013 07:03 I know that GTK uses X11 under the hood. Question is whether you are going to remove X11 from Upp.

I ask because I have a few embedded applications that use X11 backend and I would like to avoid additional dependencies on GTK.

Nope, but I planned to make GTK default (and X11 on config option).

Subject: Re: Multi monitor support for X11 backend
Posted by [mirek](#) on Mon, 10 Jun 2013 11:10:52 GMT
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Zbych wrote on Mon, 10 June 2013 07:03 I know that GTK uses X11 under the hood. Question is whether you are going to remove X11 from Upp.

I ask because I have a few embedded applications that use X11 backend and I would like to avoid additional dependencies on GTK.

BTW, thing I am working on now is

- "minimal" U++ implementation (keeping dependencies at minimum)
- SDL2.0 backend (with HW acceleration)

Perhaps these might be a better option for embeded in the future?

Mirek

Subject: Re: Multi monitor support for X11 backend
Posted by [Zbych](#) on Mon, 10 Jun 2013 11:21:07 GMT
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mirek wrote on Mon, 10 June 2013 13:10 BTW, thing I am working on now is

- "minimal" U++ implementation (keeping dependencies at minimum)
-

- SDL2.0 backend (with HW acceleration)

Perhaps these might be a better option for embedded in the future?

Mirek

It sounds nice

Subject: Re: Multi monitor support for X11 backend
Posted by [Klugier](#) on Mon, 20 Jan 2014 20:04:35 GMT
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Hello,

Announcement:

Now, X11 backend has got minimal multi monitor support.

Sincerely,
Klugier