

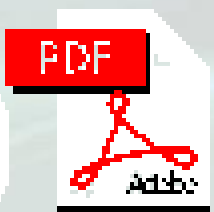
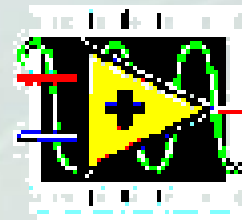


flexible front panel scaling



Carya Automatisering Delft

- **Wiebe Walstra**
- **Test- en Meetopstellingen**
- **Olie & gas t/m lucht- & ruimtevaart**
- **Pilot plants: farmacie, chemie**
- **Projecten en ondersteuning**





Agenda

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- **Evaluation**
- **Sub-problems (& solutions)**
- **Scaling examples**
- **Scaling tool demo**
- **Show-off**
- **Questions\Discussion**



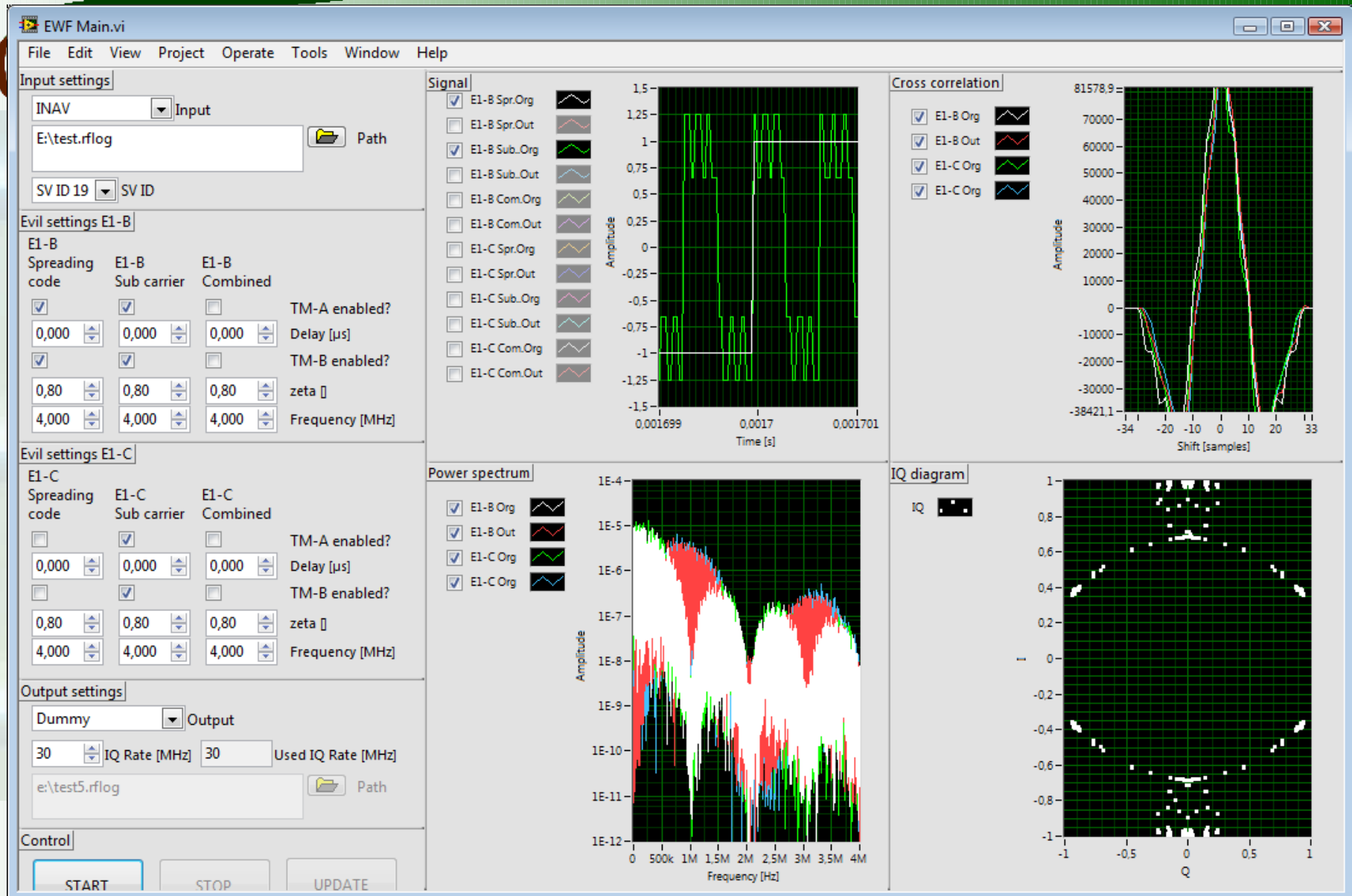
Evaluation



Evaluation

- **Fit to pane \ Scale object with pane**
 - **Only one object**

Evaluation





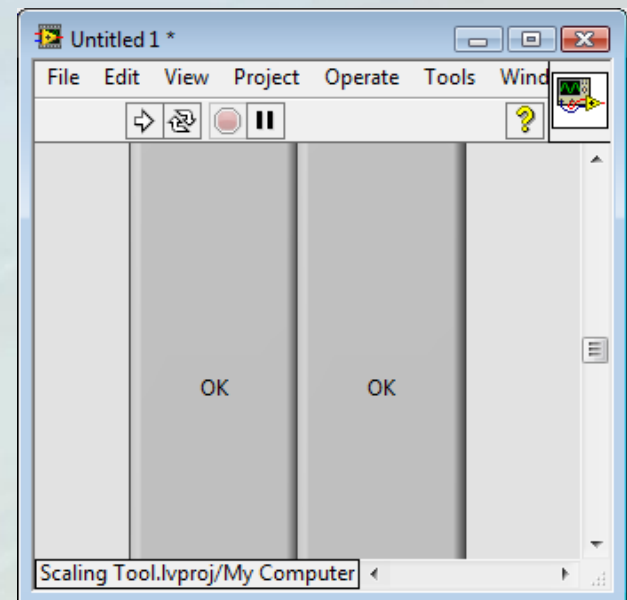
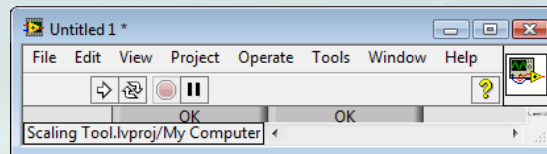
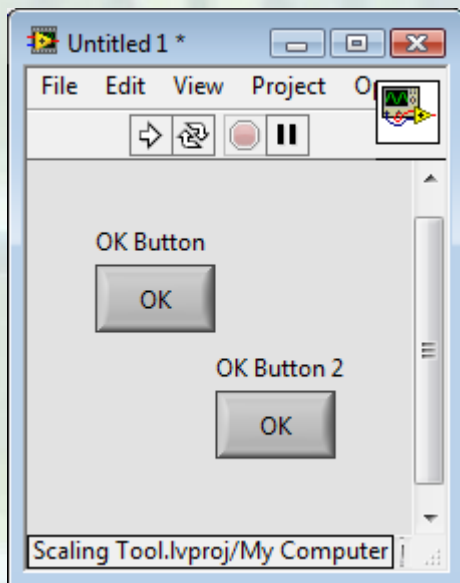
Evaluation

- **Scale all objects on front panel**
 - **Limited to single pane panels**
 - **Scales both X and Y**
 - **Very poor results**

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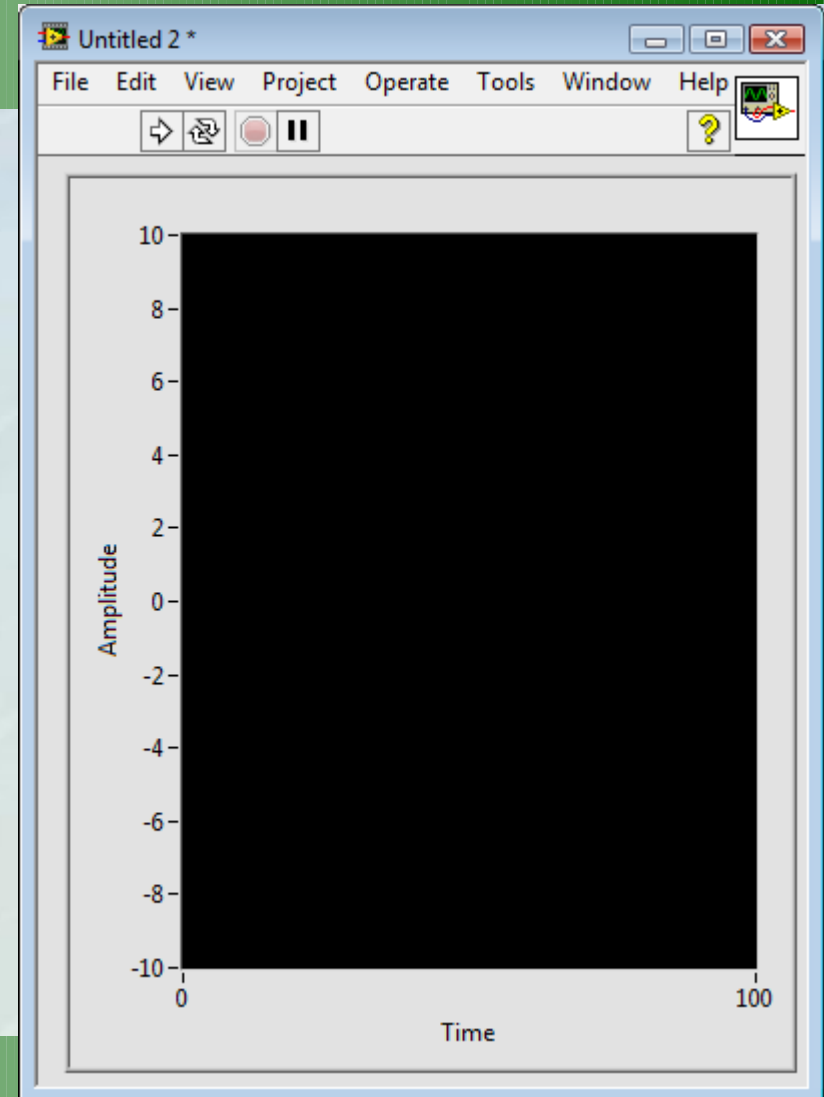
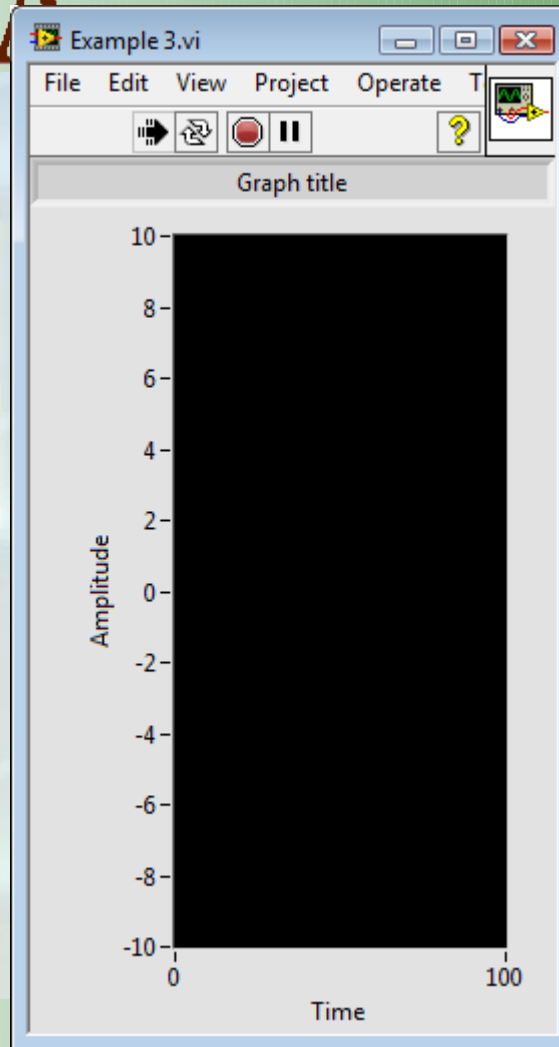
Evaluation

- **Scale all objects on front panel**



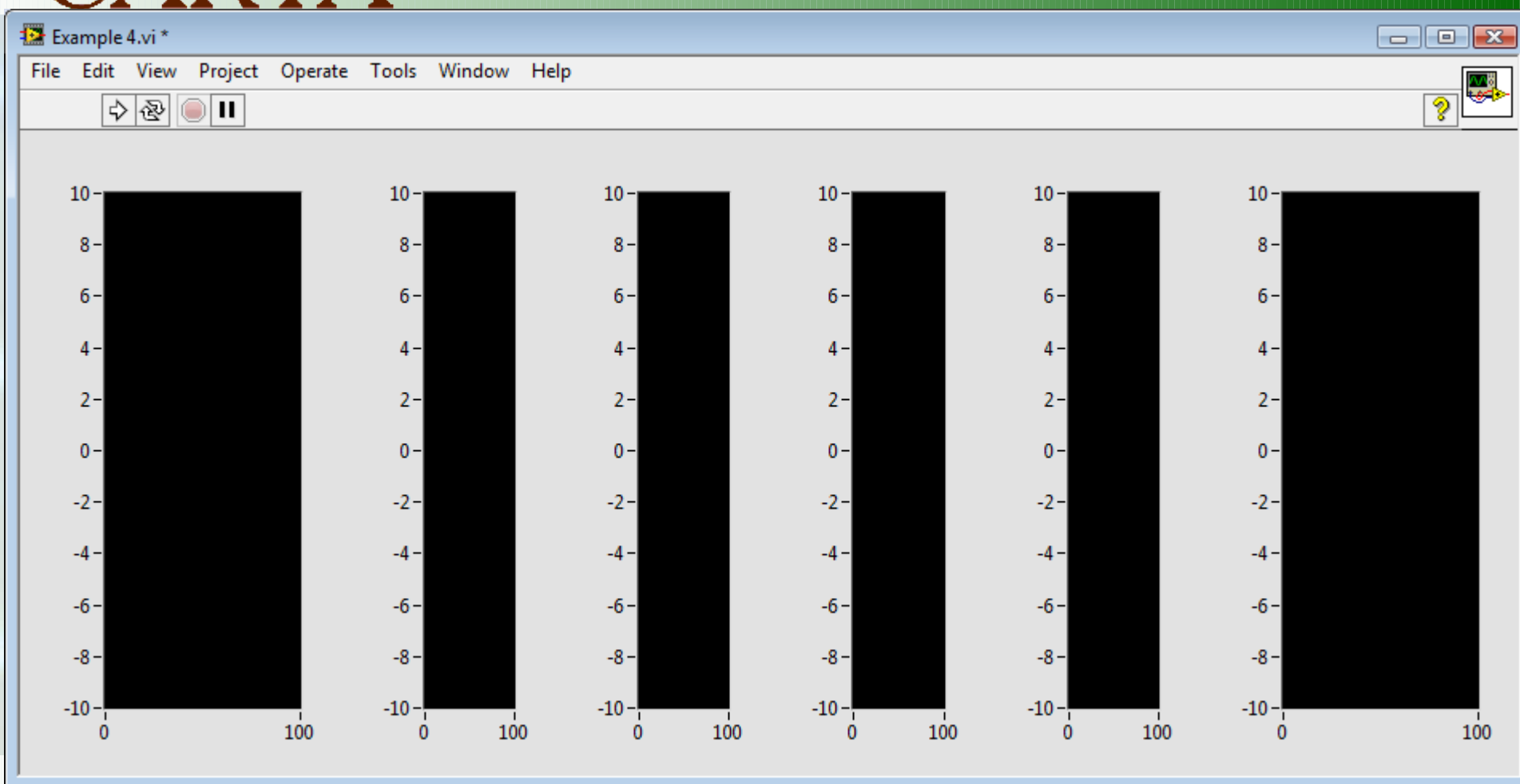
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Evaluation



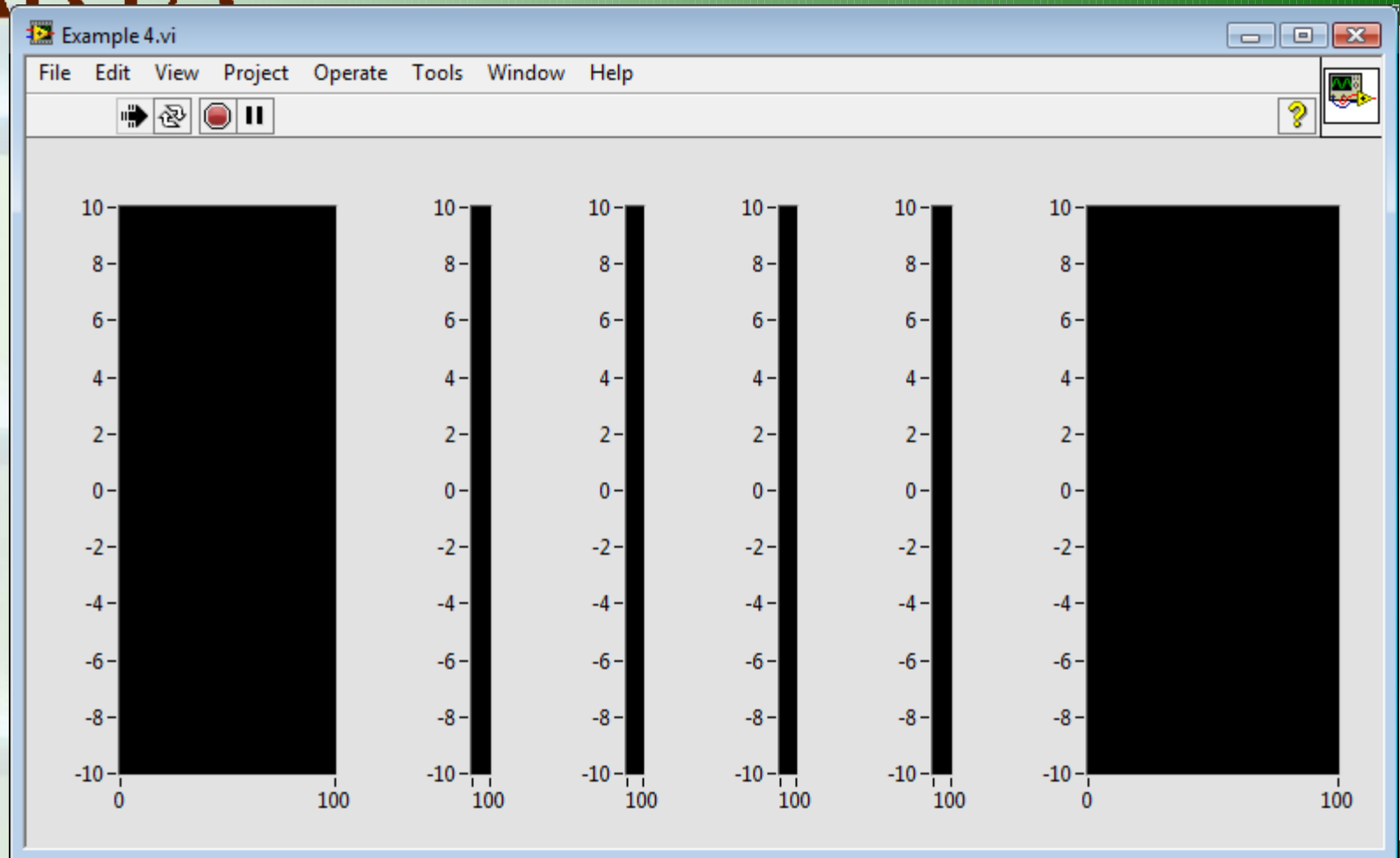


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18 November 2014

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18 November 2014



Evaluation

- **Manual**
 - **On “Pane size” event**
 - **Difficult with graphs**
 - **Very laborious**



Sub-problems



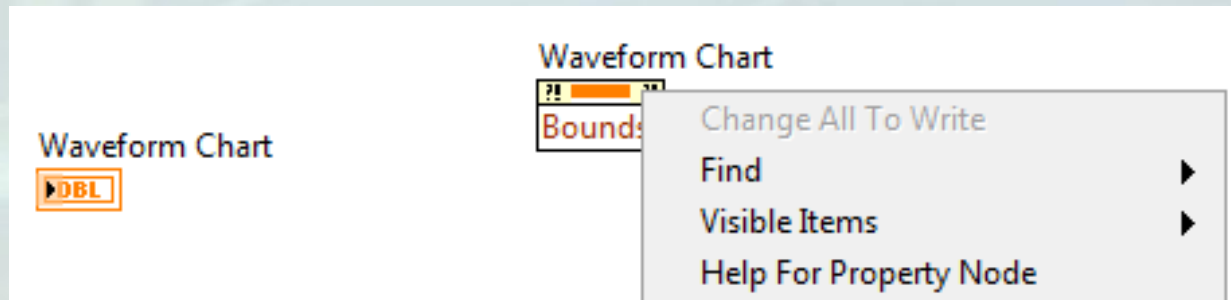
Evaluation

- **How to scale anything by reference?**
- **How to specify?**
- **Where to keep the scaling info?**



Sub-problems


- Not everything can be scaled by reference






Sub-problems

- Undocumented LabVIEW export

Library name or path
LabVIEW 

☐ Specify path on diagram

Function name
ResizeObjFromRef 

Thread
☒ Run in UI thread
☐ Run in any thread

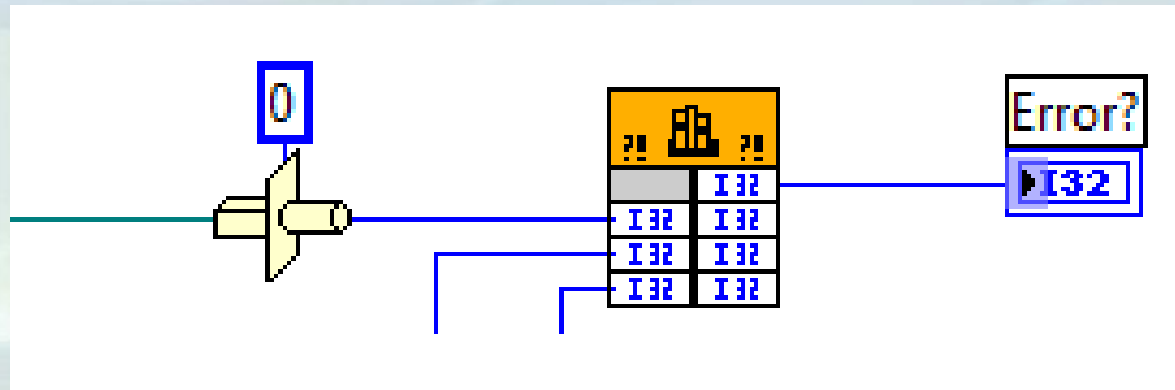
Calling convention
☐ stdcall (WINAPI)
☒ C

Function prototype
`int32_t ResizeObjFromRef(int32_t Reference, int32_t *AddX, int32_t *AddY);`

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Sub-problems

- Undocumented LabVIEW export

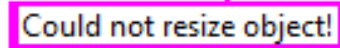




Sub-problems

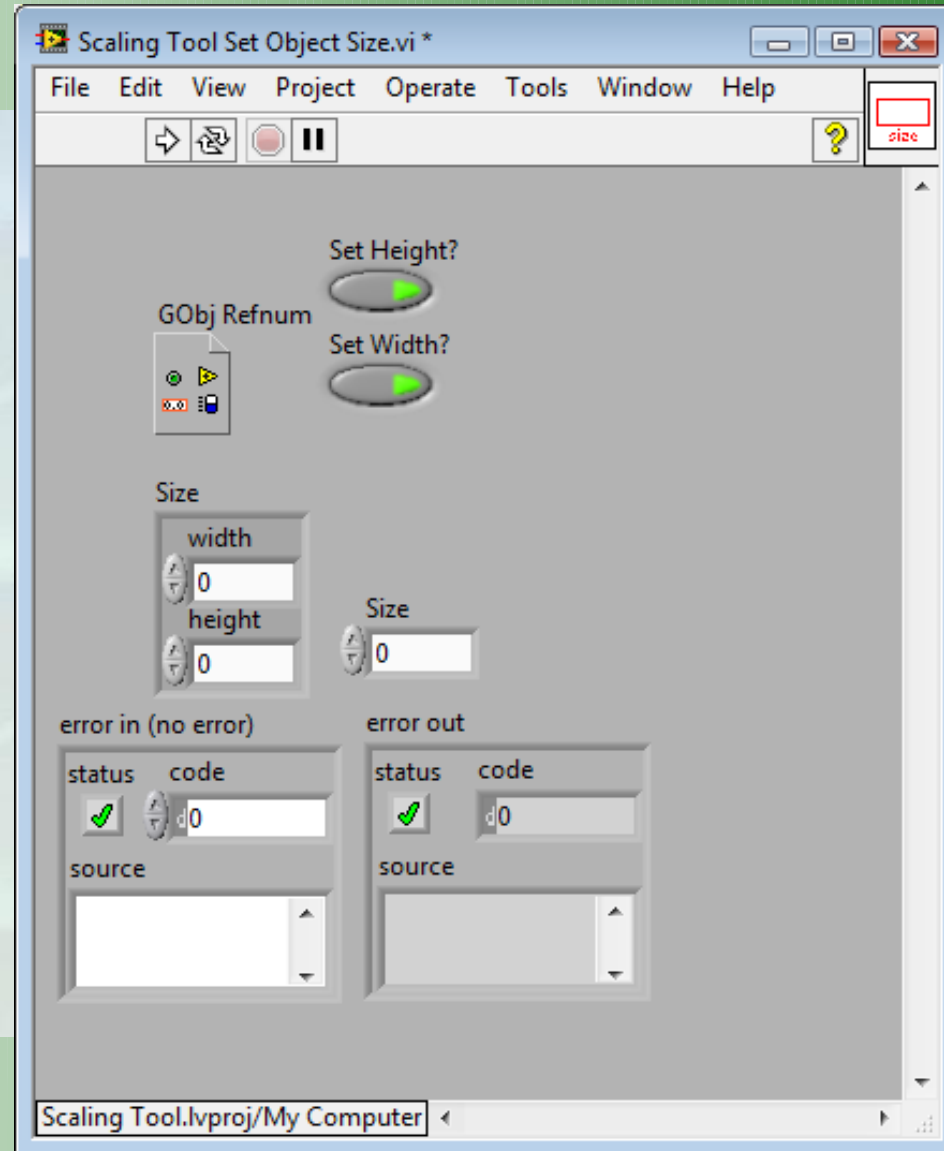
- Undocumented LabVIEW export
 - Inputs are
 - Reference
 - dX !!
 - dY !!

Sub-problems



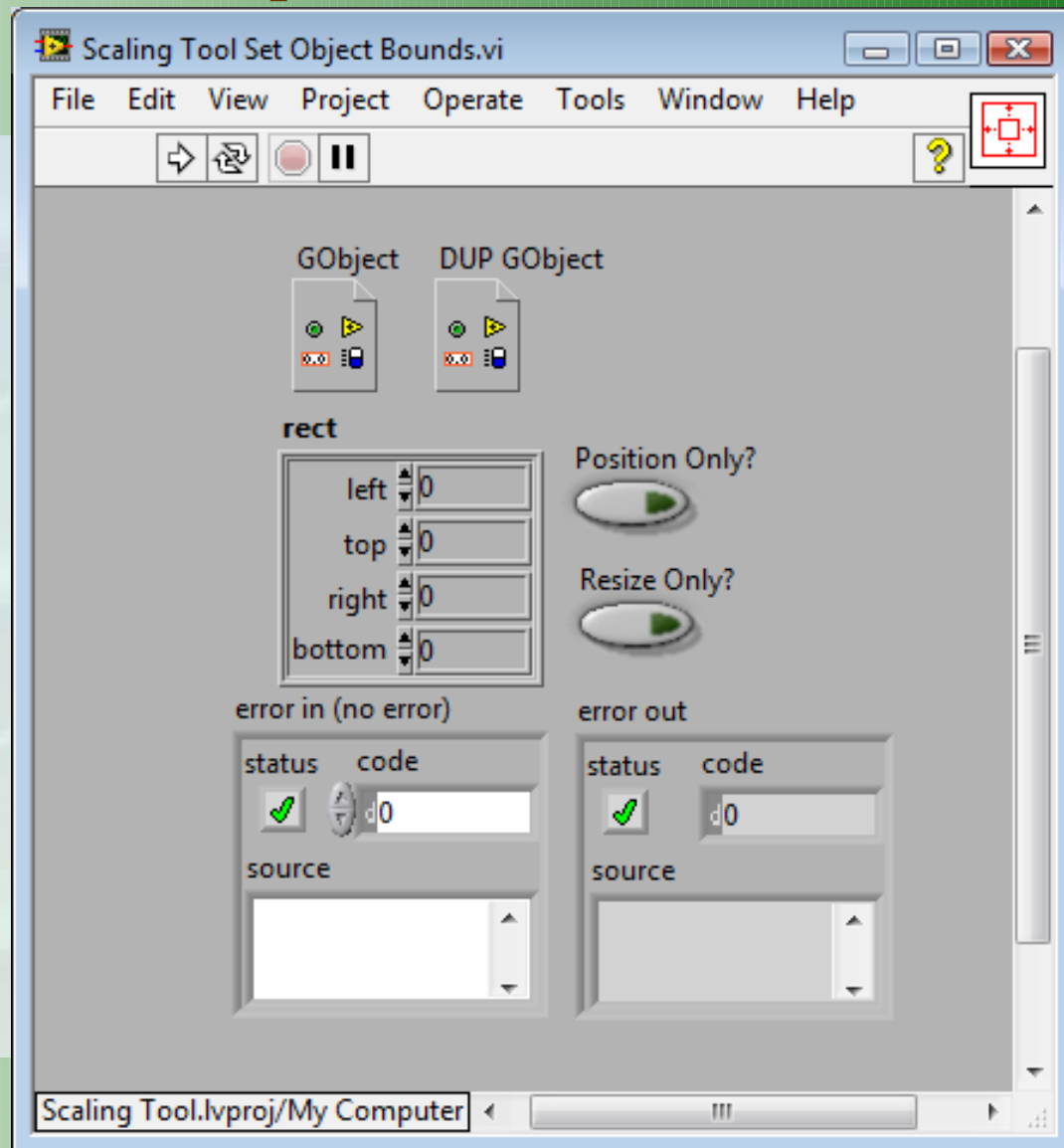
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Sub-problems



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Sub-problems





Sub-problems

- **How to specify?**
 - **What do we want?**
 - **How do we do that?**
- **What did I need...**



Sub-problems

- Treat X and Y separate
- Create "reference points"
- Connect control bounds to these points



Sub-problems

- Create "reference points"



Sub-problems

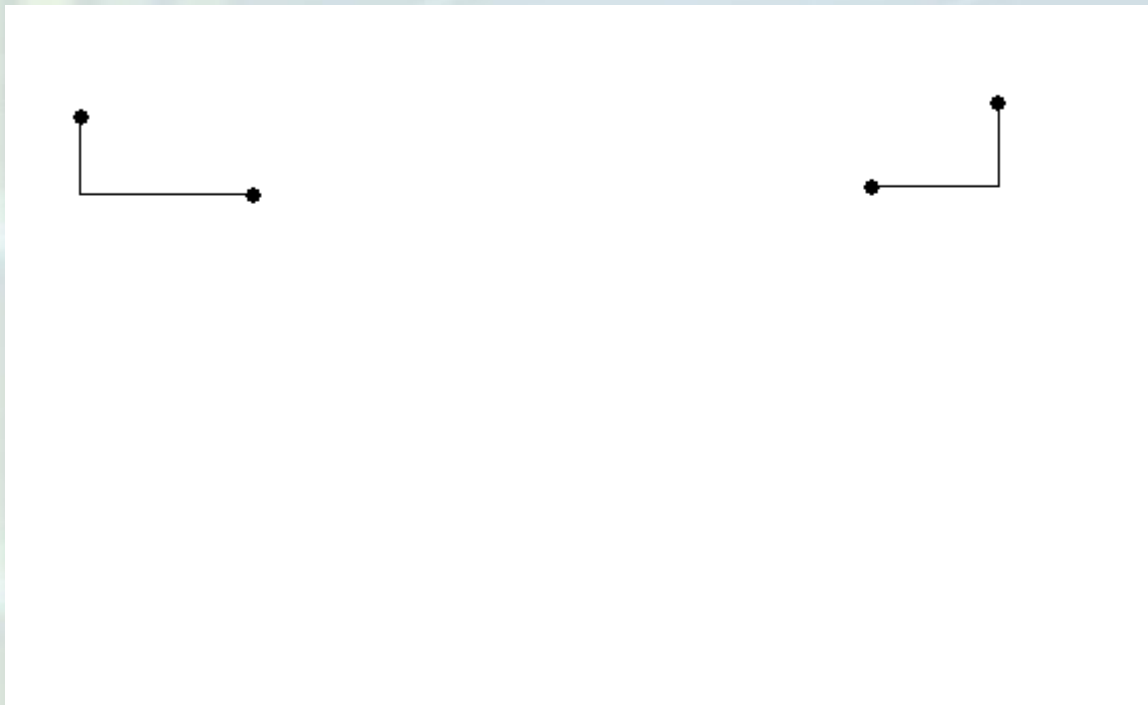
- **Start with origin (0)**
- **And width**





Sub-problems

- **Allow definition of new points**
- **Relative to defined point**





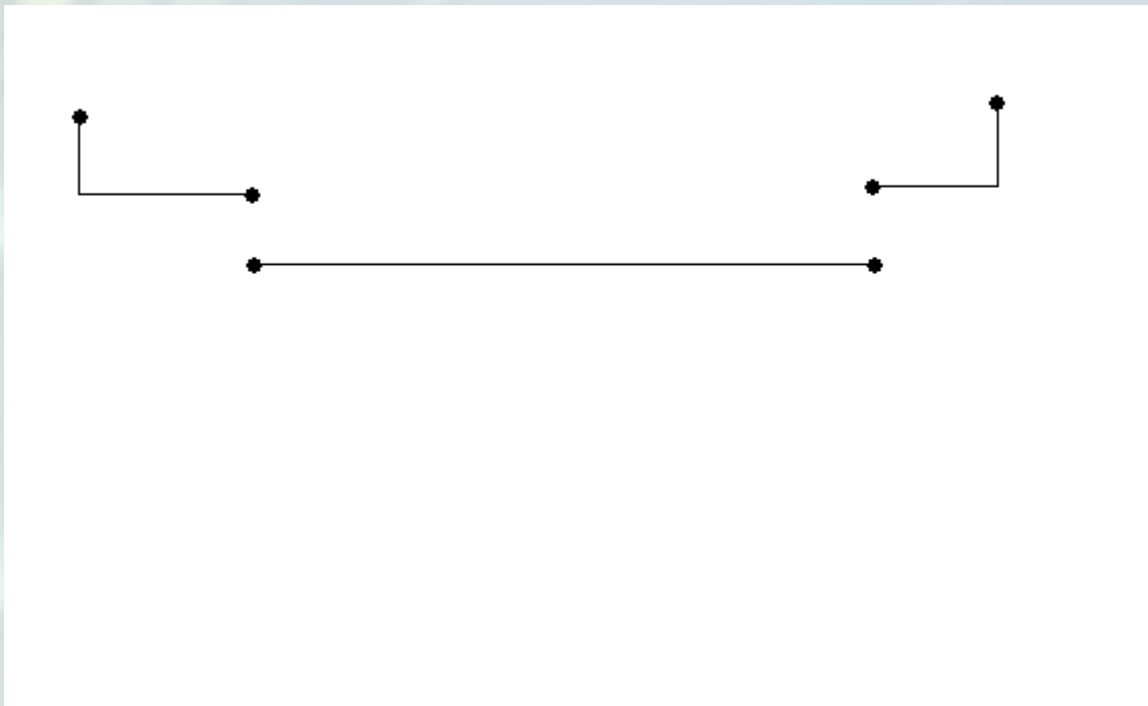
Sub-problems

- But how to divide the pane?



Sub-problems

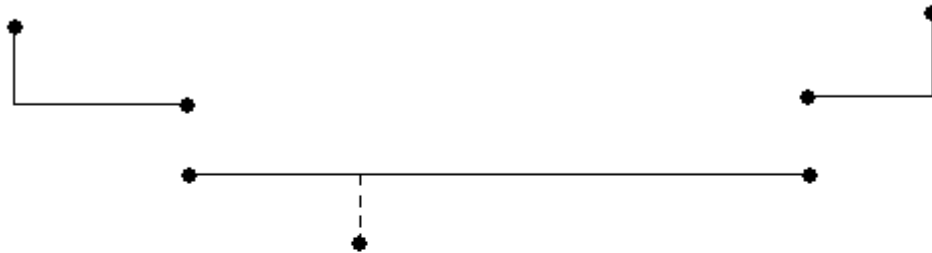
- Allow definition of ranges
- From point to point





Sub-problems

- Allow definition points
- As % of range





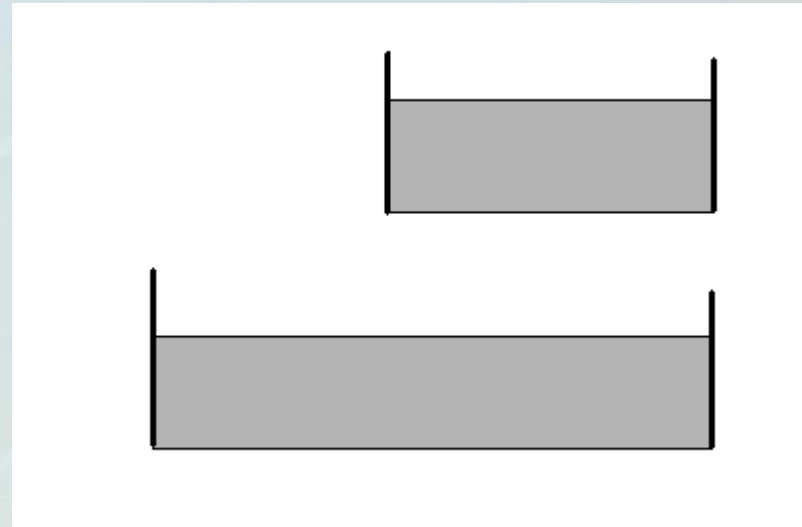
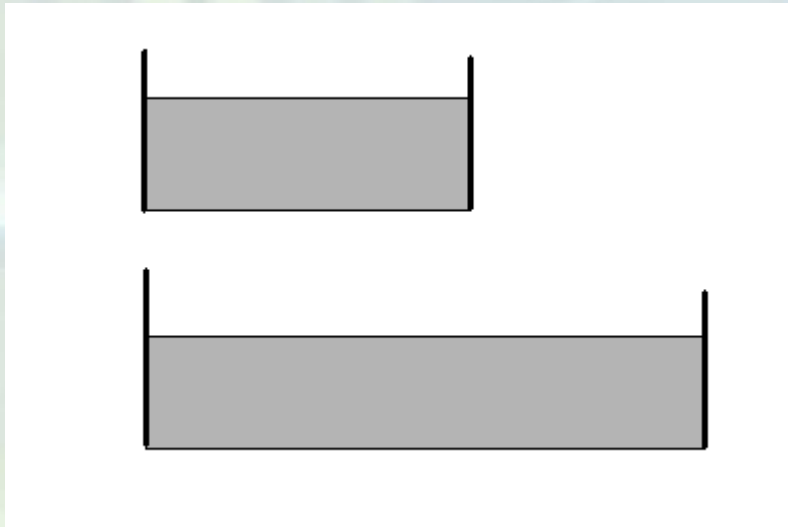
Sub-problems

- **Connect control bounds to these points**



Sub-problems

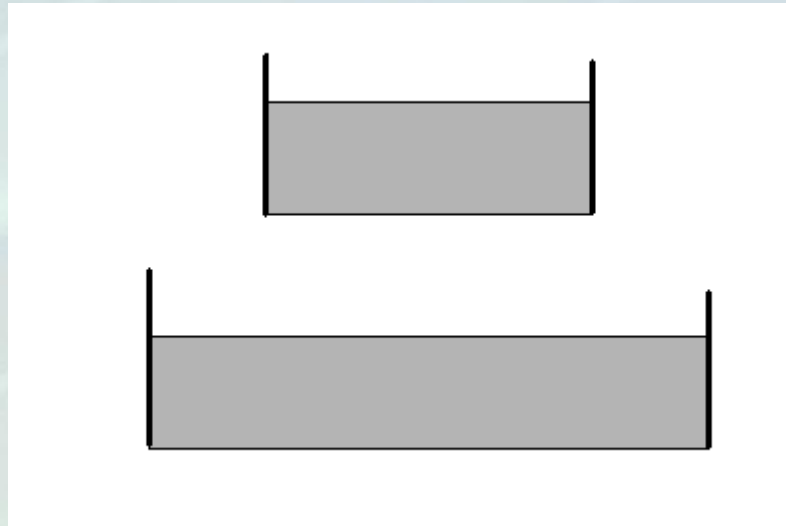
- Set right \ left (top \ bottom)





Sub-problems

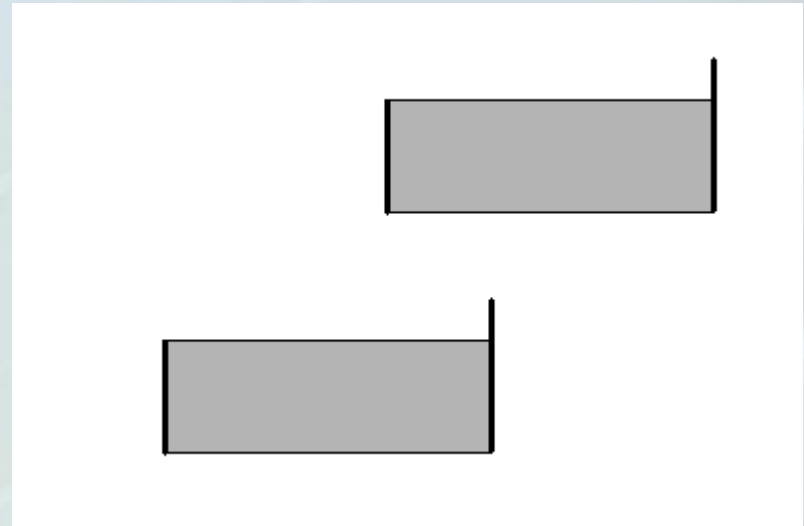
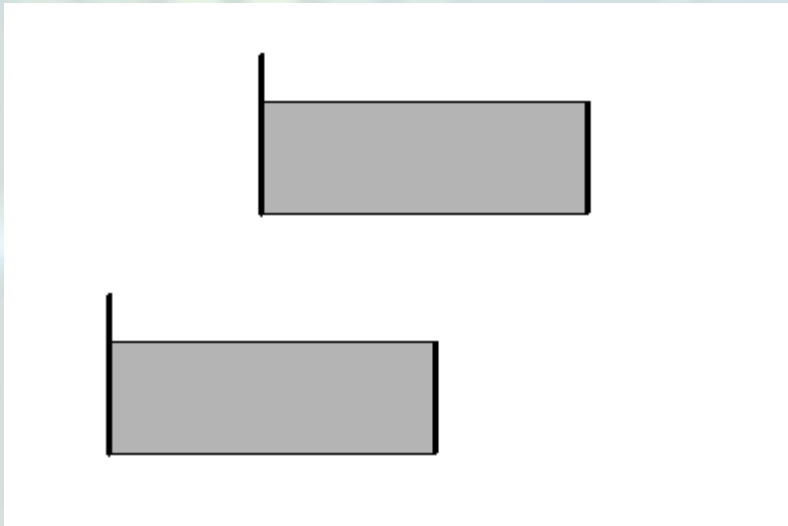
- **Set right & left (top & bottom)**





Sub-problems

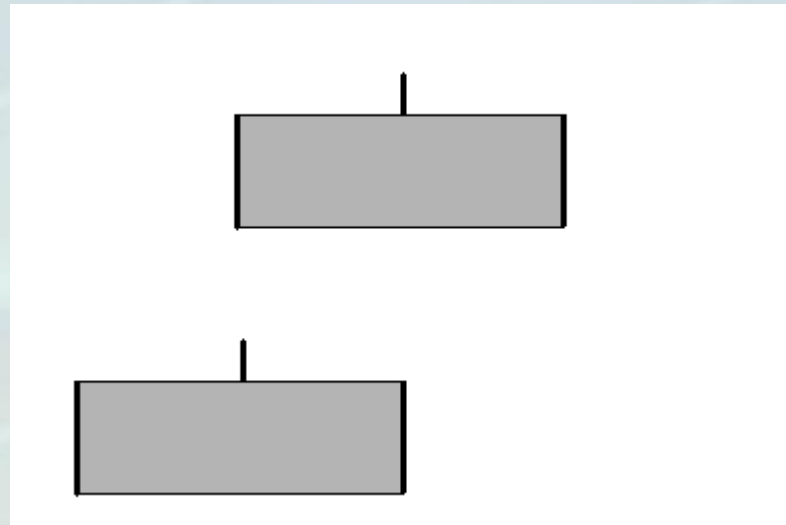
- **Align right \ left (top \ bottom)**





Sub-problems

- **Set center**





Sub-problems

- **Summary:**
 - **External points: 0 and width**
 - **Define points rel. to points**
 - **Define ranges**
 - **Define points as % of range**
- **Connect left, right, top and\or bottom**
- **Connect center**



Sub-problems

- Where to keep the scaling info?
 - Put reference points IN pane
 - Put control ref. points IN control

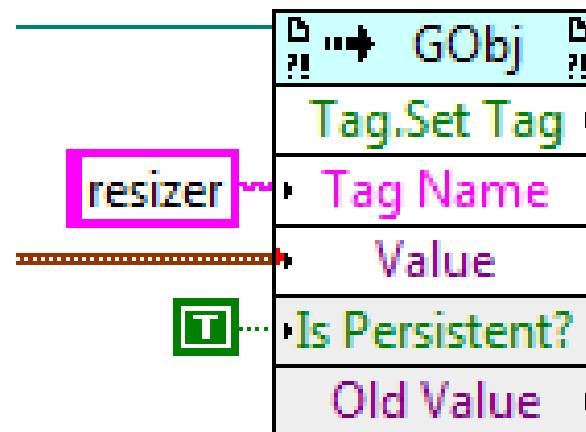
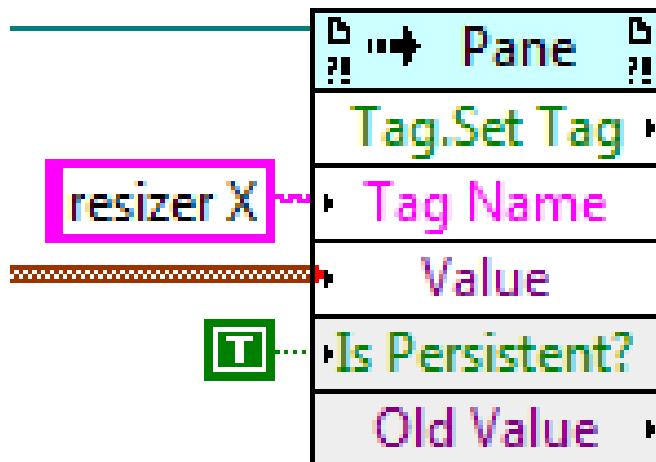


Sub-problems

- Where to keep the scaling info?
 - Use scripting
 - Each object can be “tagged”
 - Each tag has a name and value



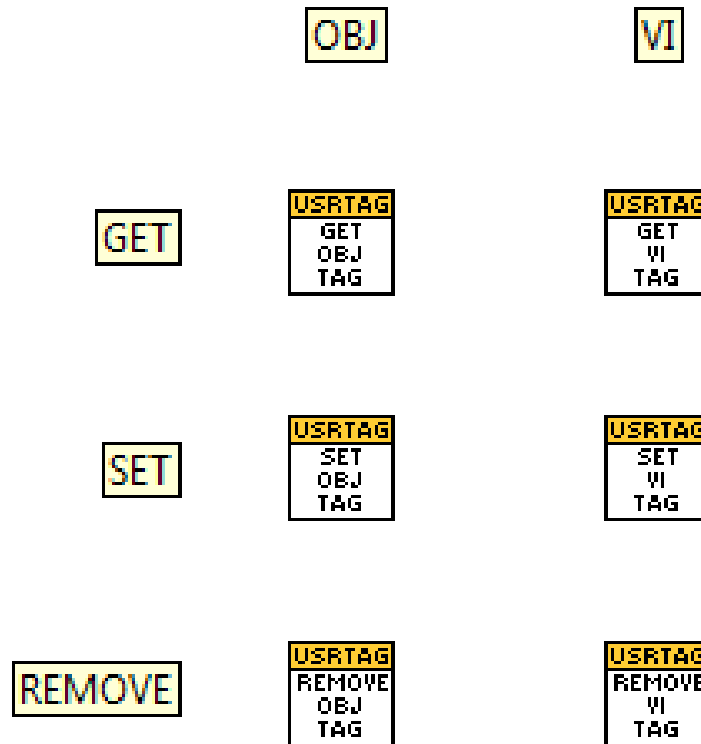
Sub-problems





Sub-problems

C:\Program Files\National Instruments\LabVIEW 2013\vi.lib\UserTags





Sub-problems

- **To scale a Panel:**
 - **For each pane**
 - **Scale pane**
- **On pane scale**
 - **Get reference points (tags)**
 - **For each object (recursive)**
 - **Get connection points (tags)**
 - **Calc. Bounds**
 - **Set bounds**



Sub-problems

- **Also works in clusters**
- **Also works in tab controls**
- **Also works in sub panel**

- **Can be combined with LV scaling**
- **Can be combined with manual scaling**

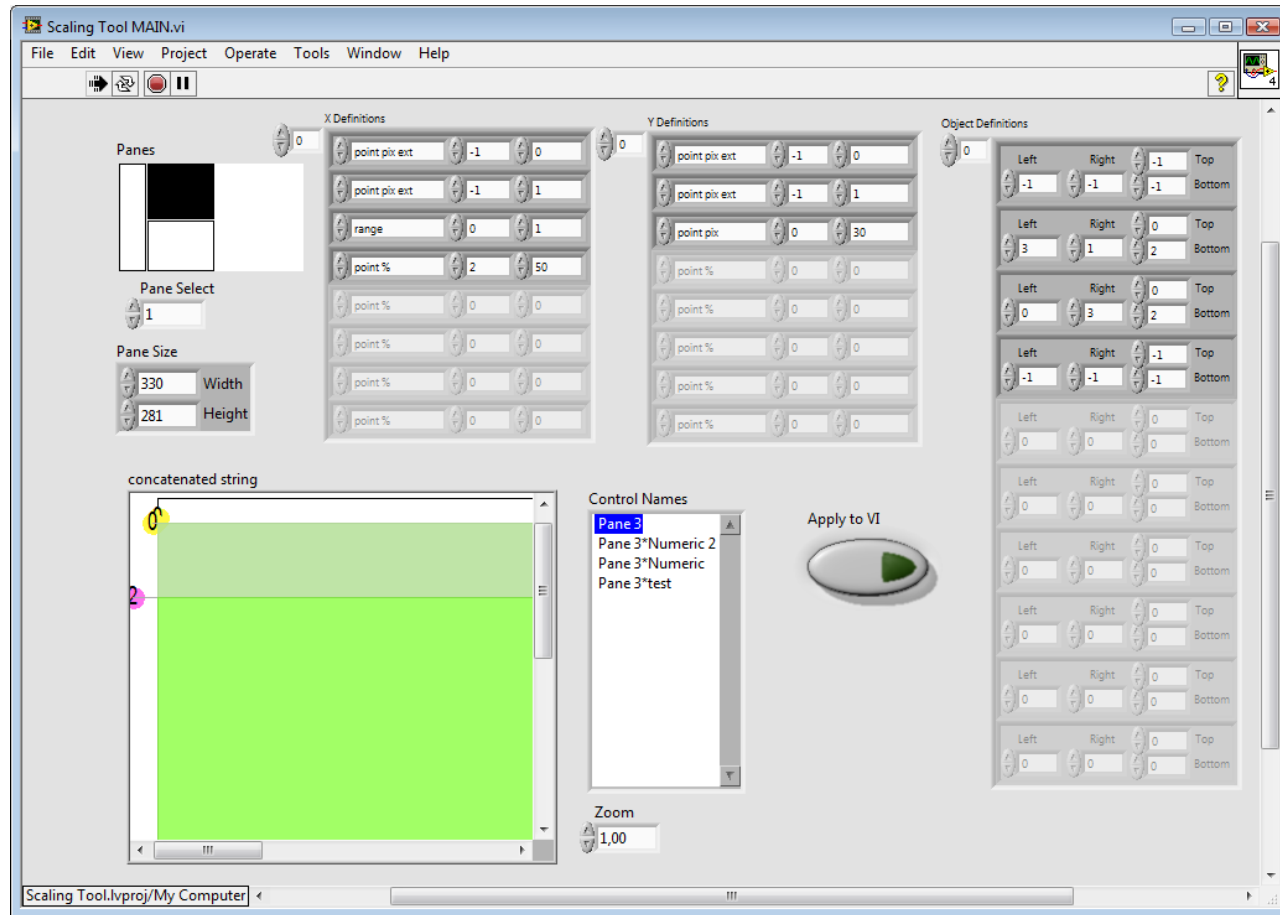


Scaling tool demo

Scaling tool

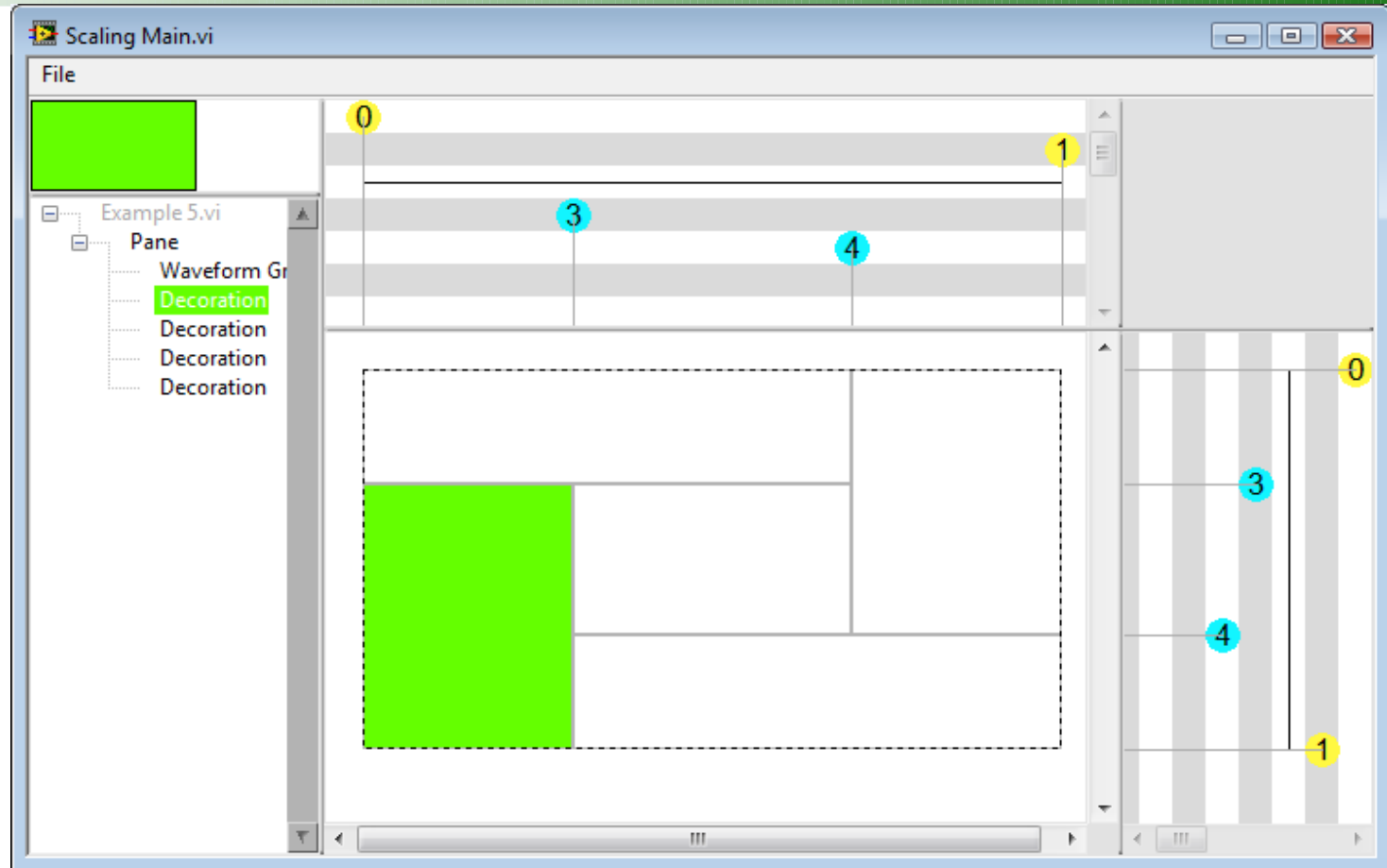
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Scaling tool V0



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Scaling tool V1





Scaling tool demo

Scaling tool demo



Show-off



**[https://decibel.ni.com/content/groups/
flexible-front-panel-scaling](https://decibel.ni.com/content/groups/flexible-front-panel-scaling)**



Questions?