

OpenPICs Status Update

openPICs WP3 PHX-0574

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APR 4TH 2018

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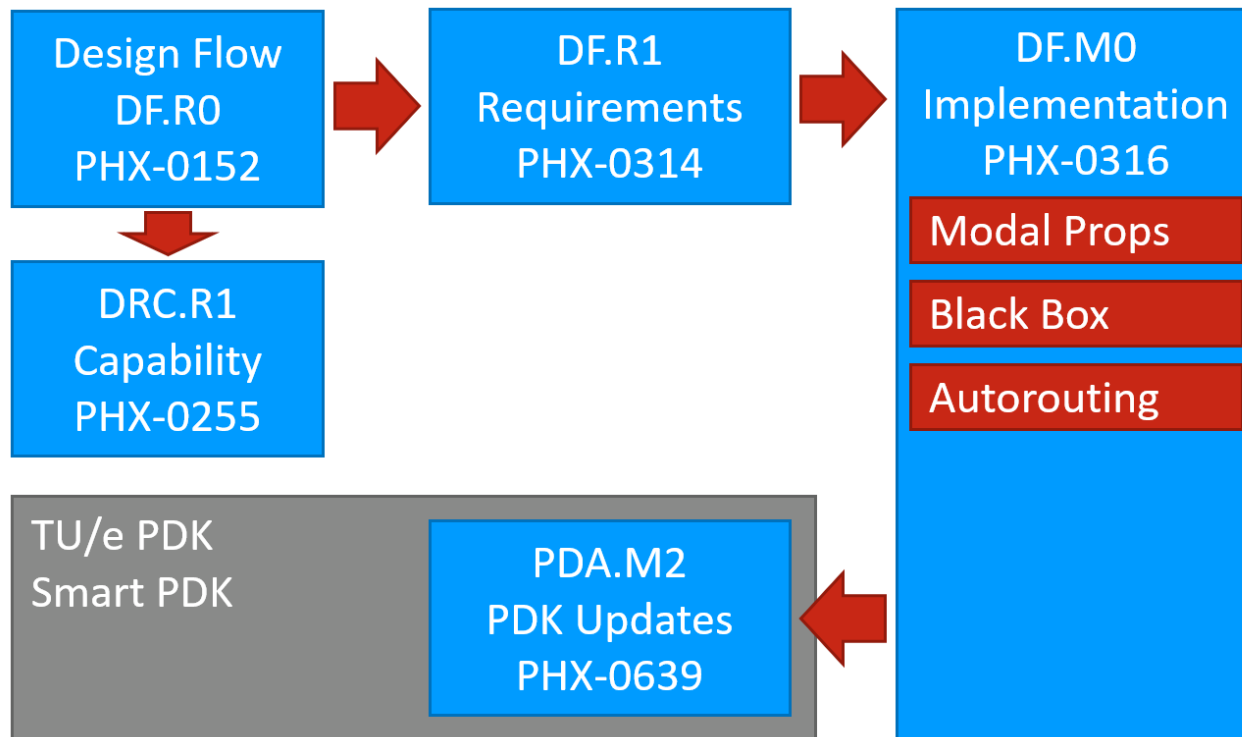


Main focus points Phoenix

- Design Flow WP3.4.DF
- Execution Flow WP3.4.EF
- PDAFlow Template WP3.4.PDA
- Design Rule Checks WP3.4.DRC



Design Flow





Design Flow WP3.4.DF

- **Deliverables**
 - R0 Mar 17: Design Flow document ([PHX-0152](#))
 - **Submitted** Rev 01: 13 Mar 2018; Rev 02 in progress
 - R1 Apr 17: List of improvement points ([PHX-0314](#))
 - **Submitted** Rev 00: 13 Mar 2018; Rev 01 in progress
 - M1 Jan 18: Implementation of improvement points ([PHX-0316](#))
 - **Submitted** Rev 00: 03 Apr 2018; Rev 01 started
 - R2 Aug 19: Final Design Flow document ([PHX-0152](#))
 - **Pending** Final revision of PHX-0152 at the end of the project
 - PDA.M2 Jun 18: Update of Smart and TU/e PDK ([PHX-0639](#))
 - **Pending**

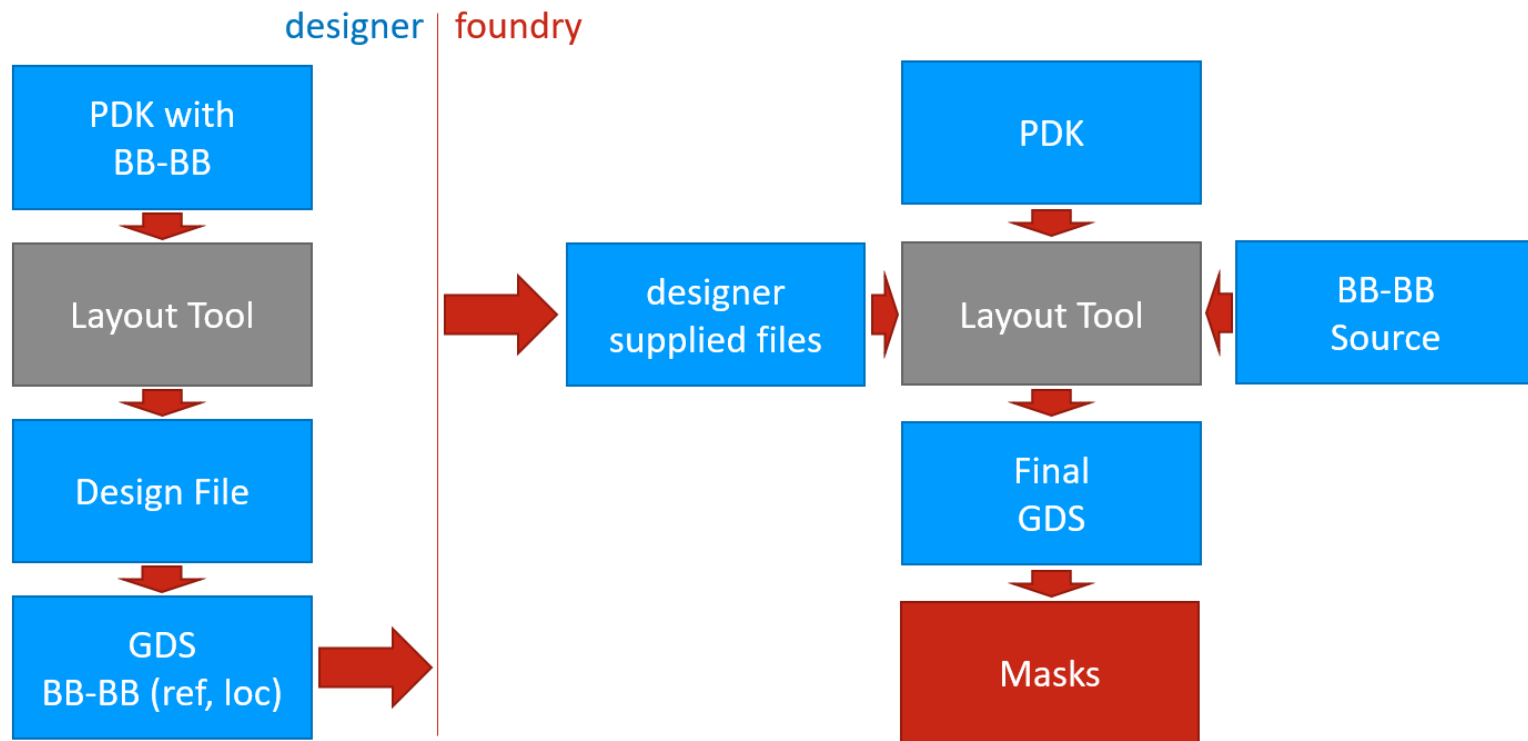


DF Improvement Points

- **M1 Implemented Improvement points**
 - Including Modal Properties in PDKs
 - Available in OptoDesigner 5.2
 - Extend documentation
 - Black Box Handling (GDS + SPT)
 - Available in OptoDesigner 5.2
 - Adding new classes for usability
 - Use case tested, initial documentation submitted, need some cleanup.
 - Autorouting
 - Available in OptoDesigner 5.2



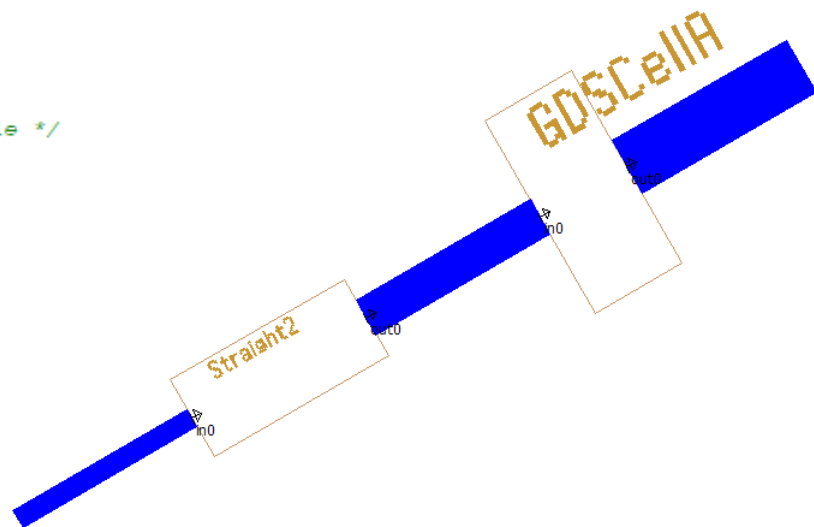
Black Box use case





User design

```
/* --- PDK (make sure nothing else from spt in PDAConfig.ini is used) --- */  
pda::loadFoundry("NONE");  
pda::enableFoundry("NONE");  
  
/* --- Load Layout library, and SPT files marked as Layout --- */  
#include @layout;  
  
/* --- Design with a simple Black Box --- */  
ml::Straight( cin -> [0, 0, 30] : wfix(1), 10);  
ml::imosStraightNoParams_BlackBox( last :); /* 10 X 0.4 rectangle */  
ml::Straight( last : wfix(2), 10);  
ml::imosGDSCellA_BlackBox( last :);  
ml::Straight( last : wfix(3), 10);  
  
/* --- Export the design with Black Boxes ---*/  
pdkExport("./Export/UserDesign", "GDSTopCell");
```





User Export

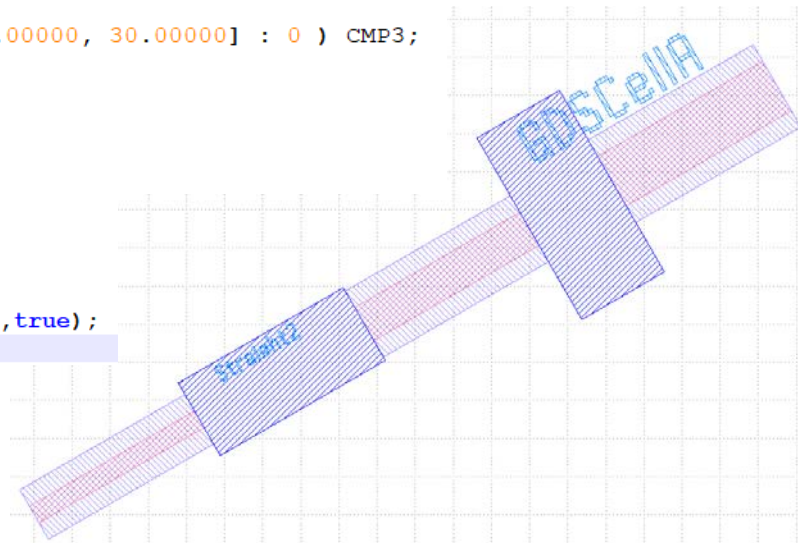
```
#include @layout;

layout final_GDSTopCell() {
    mask::setLayoutPort(this,"org");
    string fMain=mask::loadFile(DIR_UserDesigns+"\UserDesign04-04-2018_IMOS.gds",true);
    ml::Maskfile_MapLayer(wher->this@org : fMain,,1,);
    ml::imosStraightNoParams_BBSource(org->this@org+[8.66025, 5.00000, 30.00000] : 0 ) CMP3;
}

ml::final_GDSTopCell(org->[0,0]:);
string projectname = "ProjectIMOS";

// Load GDS file
string fLib=mask::loadFile("cellLibIMOS.gds",false);

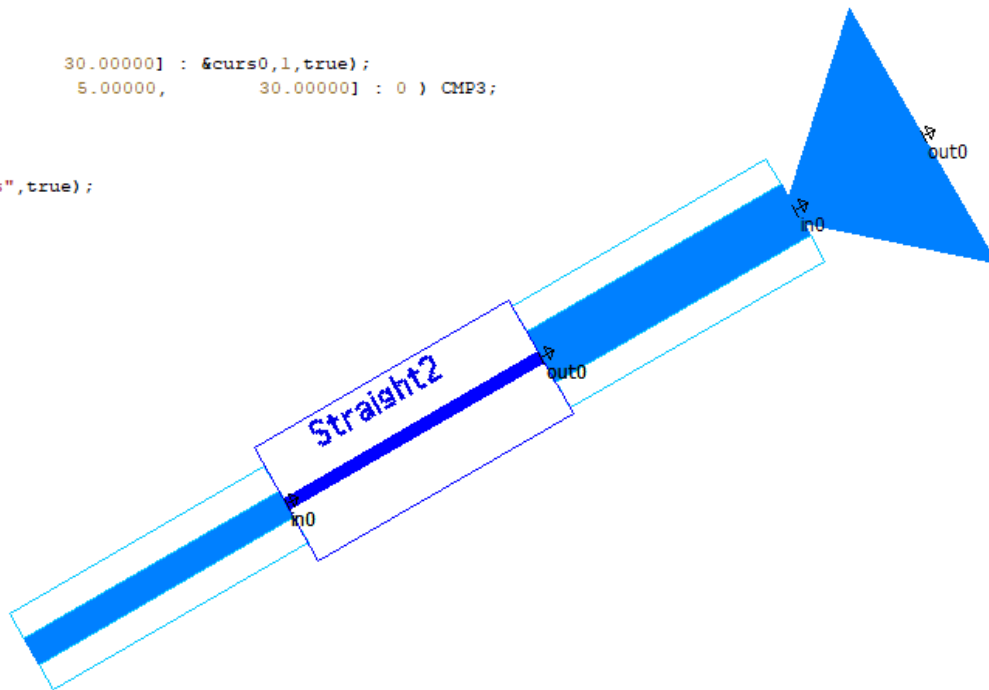
var curs0=mask::getCursor(fLib,"GDSCellA");
ml::maskCursor(wher-> [25.98076, 15.00000, 30.00000] : &curs0,1,true);
```





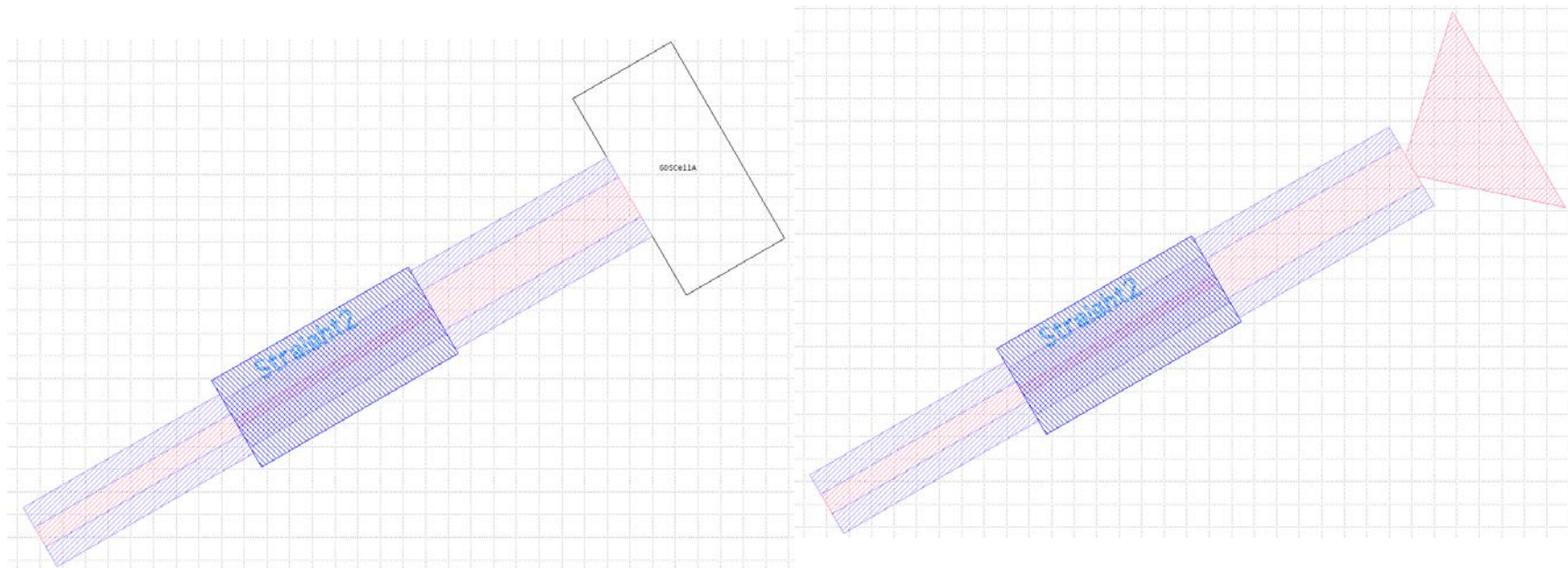
Foundry assembly

```
string fLib=mask::loadFile("cellLibIMOS.gds",false);  
var curs0=mask::getCursor(fLib,"GDSCellA");  
ml::maskCursor(wher-> [      25.98076,      15.00000,      30.00000] : &curs0,1,true);  
ml::imosStraightNoParams_BBSource(org->[      8.66025,      5.00000,      30.00000] : 0 ) CMP3;  
▼ layout final_GDSTopCell() {  
  mask::setLayoutPort(this,"org");  
  string fMain=mask::loadFile("UserDesign15-03-2018_IMOS.gds",true);  
  ml::Maskfile_MapLayer(wher->this@org : fMain,,1,);  
}
```





Foundry Export





Execution Flow WP3.4.EF

- **Deliverables**
 - R0: Execution Flow Document ([PHX-0258](#))
 - **Not submitted**
 - M0: Implementation of an Execution DB
 - R1: Final Execution Flow Document
- **Focus on how to include manufacturing process and measurements**
 - Need to provide measurement support files from the design tools
 - Is available in OptoDesigner
 - Need to know related information for analysis

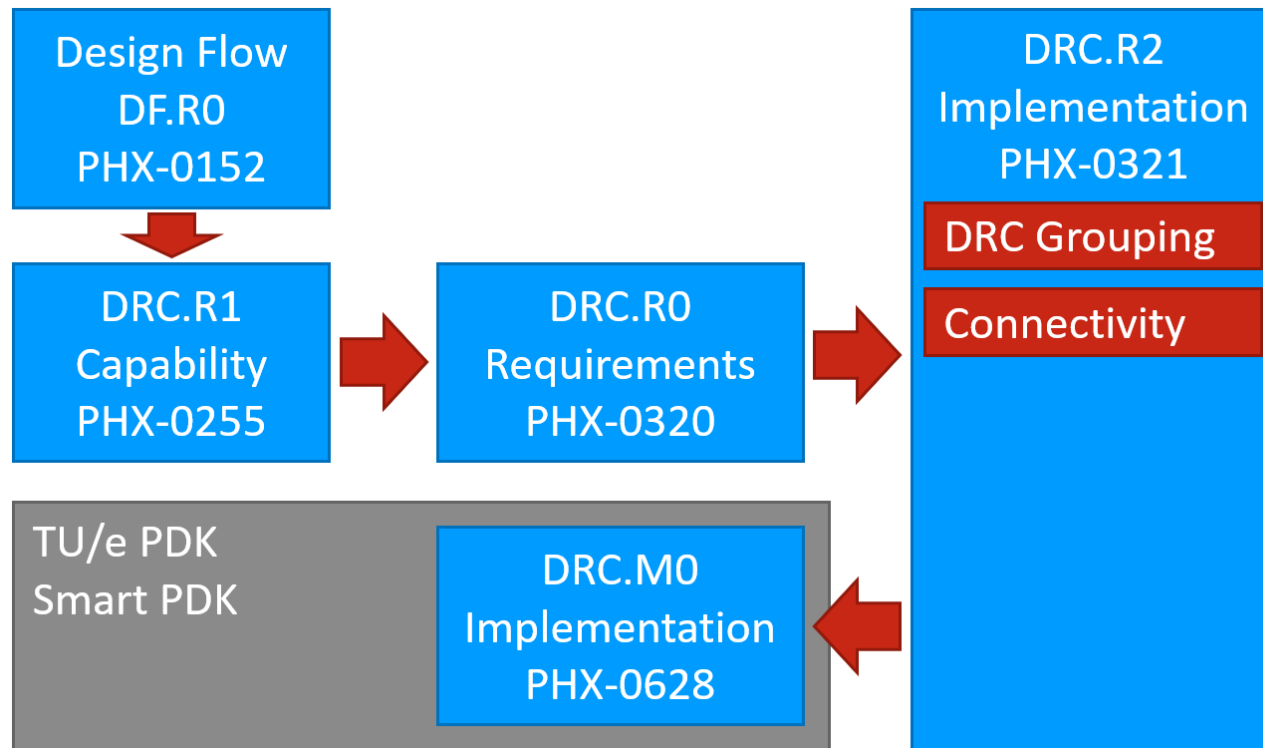


PDAFlow WP3.4.PDA

- **Deliverables**
 - M0 Mar 17: Development of PDAFlow template ([PHX-0317](#))
 - **Submitted:** 19 Jun 2017
 - M1 Apr 17: Implementation of first Building Block
 - **Implemented:** no specific document yet.
 - R0 Mar 17: Full documentation of template ([PHX-0112](#))
 - **Submitted:** 13 Mar 2018
- **PDAFlow developments**
 - Set up compile environment at TU/e
 - Basic IMOS PDK implemented with online documentation
 - **Problems with ADS implementation**



DRC Improvements





Design Rule Checks WP3.4.DRC

- Deliverables
 - R0 May 17: DRC requirement report ([PHX-0320](#))
 - Submitted: 03 April 2018 (Improvement Points)
 - R1 Aug 17: Documentation of DRC Capability ([PHX-0255](#))
 - Submitted: 14 March 2018 Rev 01
 - M0 Nov 17: DRC Implementation in PDKs ([PHX-0628](#))
 - Submitted: 12 March 2018
 - R2 Aug 18: Implementation of new DRC functionality ([PHX-0321](#))
 - Submitted: 03 April 2018 Rev 00



DRC Improvement Points

- DRC developments
 - Implemented grouping PDK capability
 - Connectivity checks



Connectivity

Continuous connection



Width change



Gap



Layer change



Offset



Floating



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