OBELIX

DESIGN

Tomasz Hemperek

hemperek@uni-bonn.de

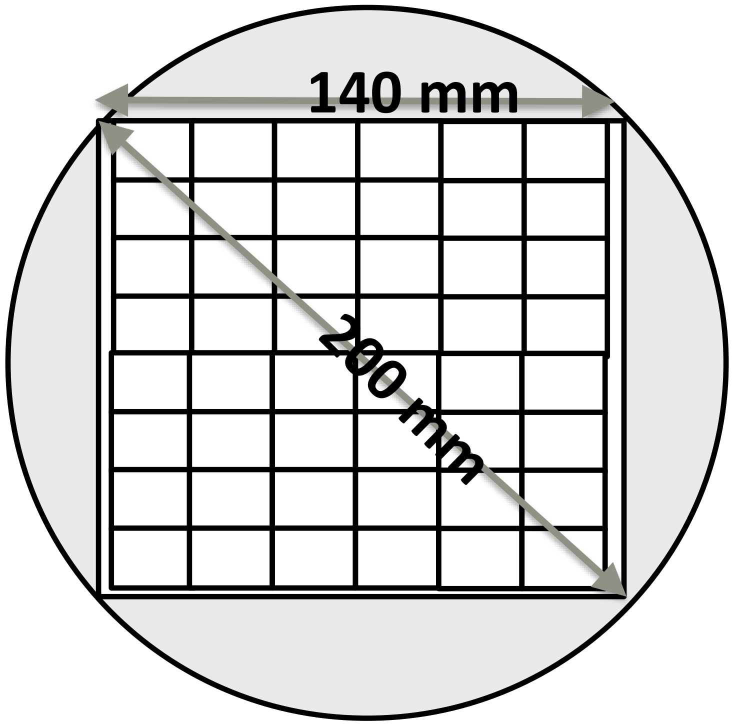
Legal issues

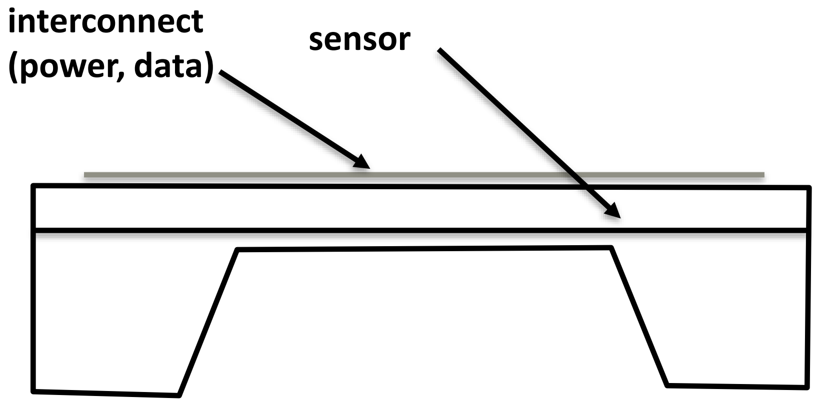
- In order to share layout we need clear legal situation (Tower + CERN).
- Digital design of Monopix2 can be shared immediately.

We need MoU?

hemperek@uni-bonn.de

Si-Module



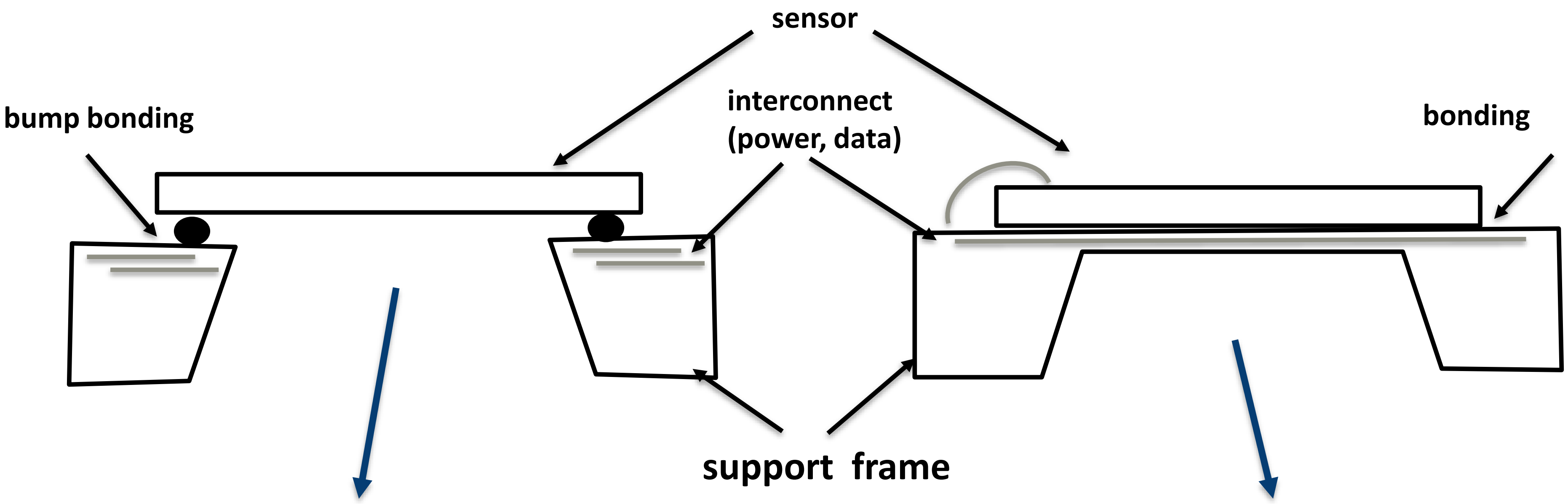


- deposit RDL (1-2 metal system) (up to 5um Cu)
- etch selectively backside
- cut

Need prototype for signal integrity etc. (need wafers)

hemperek@uni-bonn.de

Si-Module



sensor

bump bonding

interconnect
(power, data)

bonding

support frame

Critical:
Flip-chip (release) thin chips after bonding

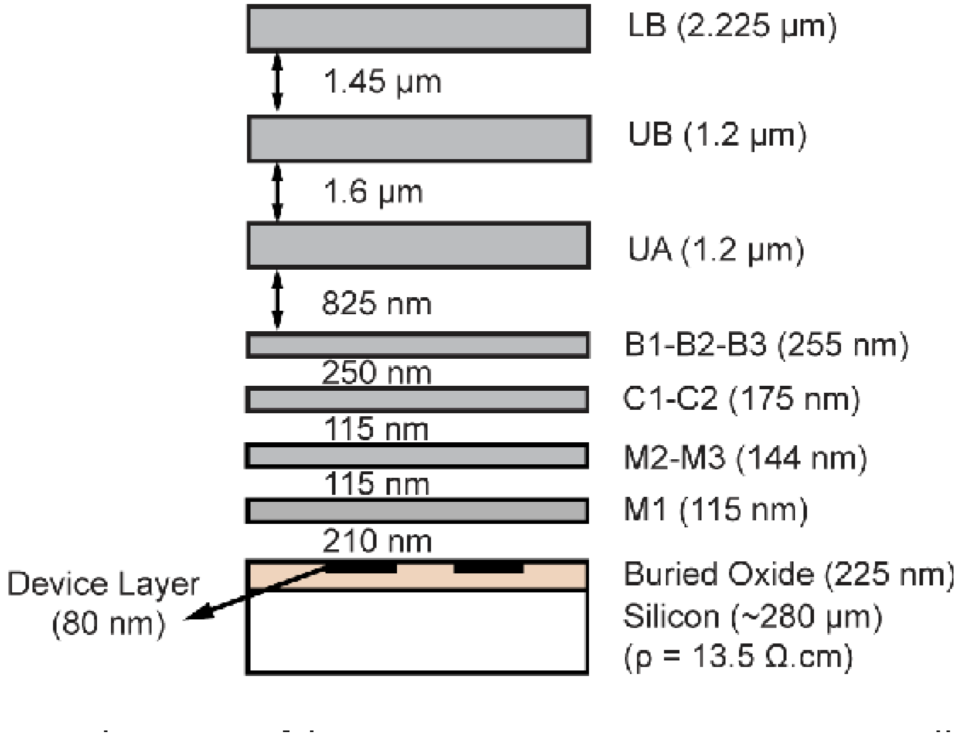
Critical:
Etch backside after bonding

Need checking/prototyping

hemperek@uni-bonn.de

Metal Stack

!ARBITRATY PICTURE FROM INTERNET

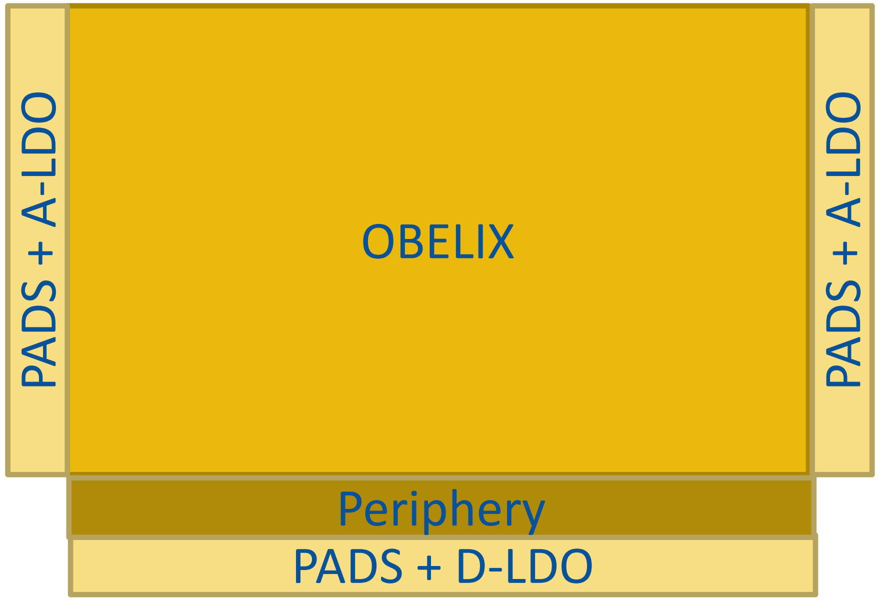


- There are multiple metal options including thick metal Cu, Al, RDL
- Need to know what is available in practice
- Carefully understand and pick most suitable
- Need **NDA** protected group to disuses this

hemperek@uni-bonn.de

Obelix Powering

Power from the sides



PADS + A-LDO

OBELIX

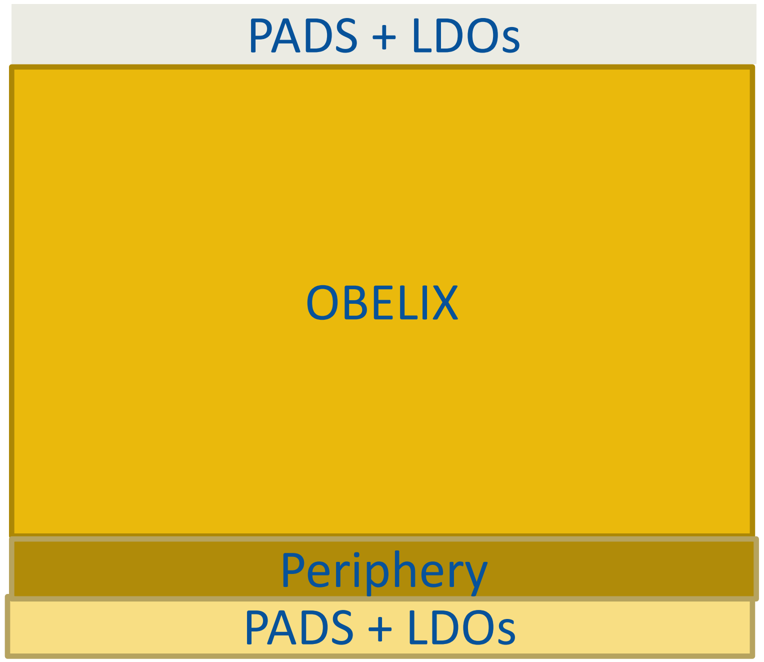
PADS + A-LDO

Periphery

PADS + D-LDO

- Can use design as is*
- LDO + PADs <~ **150um (ACTION ITEM)**
- Power distribution from PADS to matrix

Power from bottom/top



PADS + LDOs

OBELIX

Periphery

PADS + LDOs

- Mayor pixel redesign needed
- Metal stack choice is critical
- **ACTION ITEM: investigate voltage drop dependence on pixel/threshold**)

Communication

Group chat

https://chat.belle2.org/channel/vtx_upgrade_obelix