

Technology Transfer from Medipix Collaborations

TIPP'14

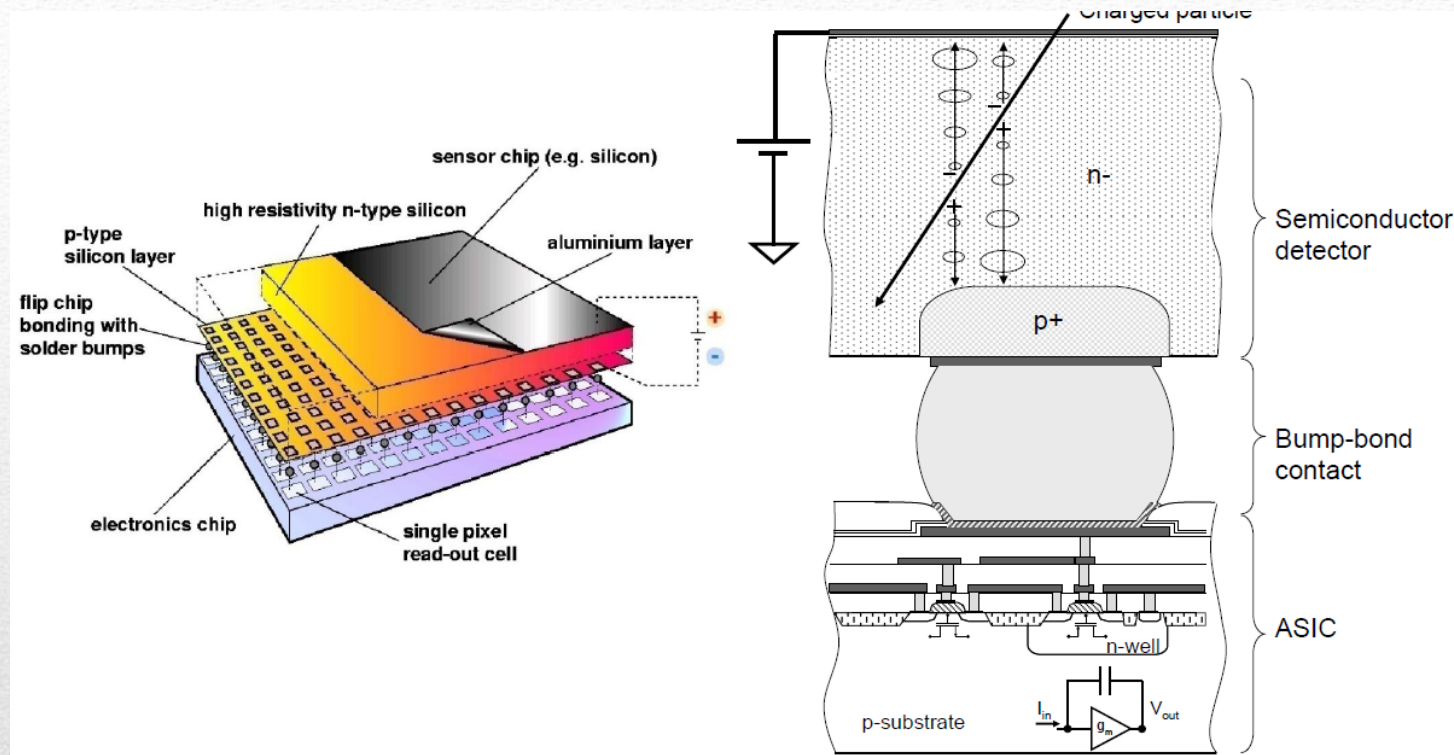
Amsterdam, 4th June 2014

- Medipix collaborations
- Technology transfer
- Key lessons learned

Content



MEDIPIX COLLABORATIONS



High spatial, high contrast resolving CMOS pixel read-out chip working in single photon counting mode

Medipix chips

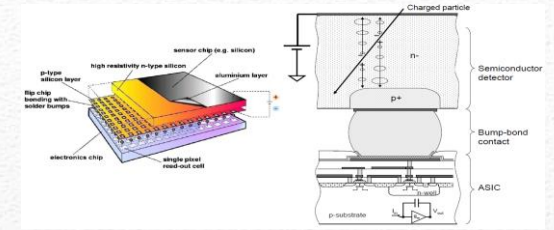
- **Medipix2 collaboration**

- IFAE Barcelona
- University of Cagliari
- University of California, Berkeley
- CEA
- CERN
- CTU Prague
- Erlangen
- ESRF
- University Freiburg
- University of Glasgow
- University of Houston
- Medical Research Council MRC
- Mid-Sweden University
- University of Napoli
- NIKHEF
- University of Pisa

- **Medipix3 collaboration**

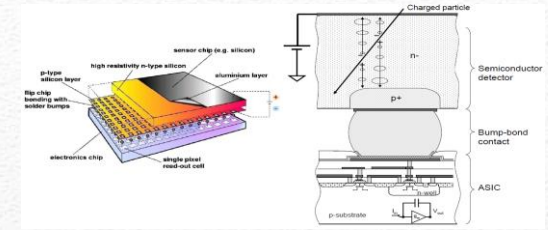
- University of Canterbury, Christchurch
- CEA
- CERN
- DESY
- Diamond Light Source
- CTU Prague
- Erlangen
- ESRF
- University of Bonn
- University of California, Berkeley
- University Freiburg
- University of Glasgow
- Leiden University
- KIT
- University of Houston
- Medical Research Council MRC
- Mid-Sweden University
- NIKHEF
- VTT
- ITER
- Bogota

Medipix Collaborations



Medipix chip

Collaborating



Read-out board1

Read-out board 2

Software

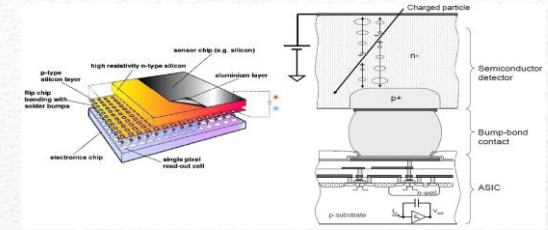
Medipix chip

High Z sensors

Conversion method
1

Conversion method
2

Collaborating



X-ray material analysis	Gamma camera	CT imaging
Read-out board1	Read-out board 2	Software
Medipix chip		
High Z sensors	Conversion method 1	Conversion method 2
Electron microscopy	Dosimetry	Radiation monitoring

Collaborating



TECHNOLOGY TRANSFER

- Development of the chips co-financed by the collaboration members
- The Intellectual Property related to the chips is vested to CERN
- Exploitation agreements have to be approved by the collaboration board
- Revenue from exploitation are shared according to the following scheme:
 - 50% to the IP owner
 - 10% to the deal initiator
 - 40% to the other collaboration members

Collaboration agreement

- Chip design is kept secret, the secrecy is the main way Intellectual Property is protected and the basis for exclusivity
- The collaborations members are keen at keeping the design secret to keep the dissemination under control and to ensure proper recognition of the origin of the development
- Free access to chips to the collaboration member for R&D purpose

Access

- In addition to the financial contribution of the collaboration member, the lump sums of the exclusive license have so far been used to finance the development projects.
- Note: exclusivity is granted is very specific and limited field

Financing

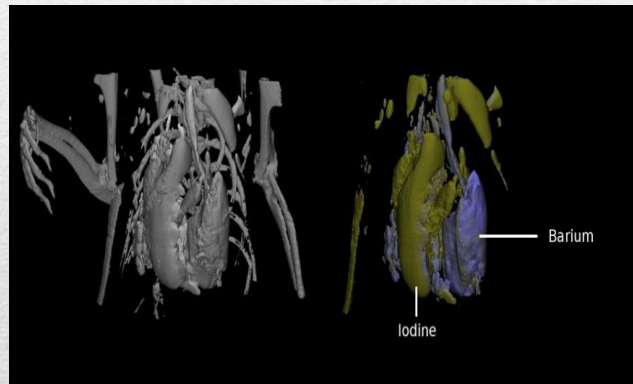
- Exclusive license to a PANalytical in the field of X-Ray diffraction analysis
- More than 1000 detectors/systems commercialized



(courtesy of PanAlytical)

Dissemination

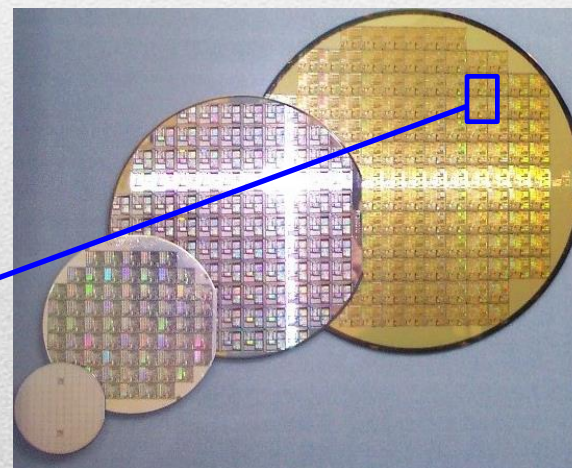
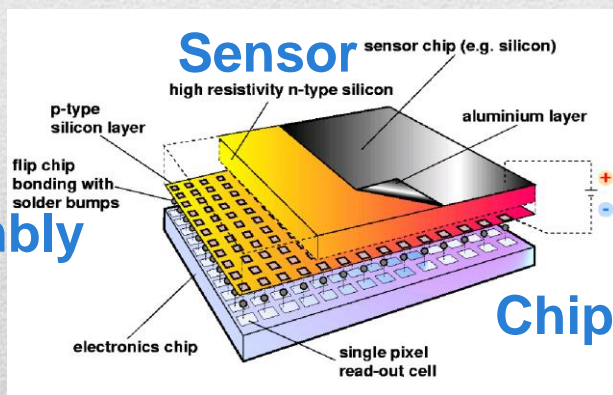
- Exclusive license to a start-up company from New-Zealand in the field of small animal CT
- First prototypes delivered to research institutes



(courtesy of MARS Bioimaging Ltd)

Dissemination

- 4 production licenses to collaboration member spin-off companies for the production of Medipix2/Timepix-based products:
 - Naked chip
 - Assemblies
 - Products



Wafer

Dissemination

- Development are on-going in the following fields:
 - Material analysis using synchrotron light
 - Neutron imaging
 - X-ray inspection
 - Gamma camera
 - Dosimetry
 - Homeland security
 - Electron microscopy
 - Etc...

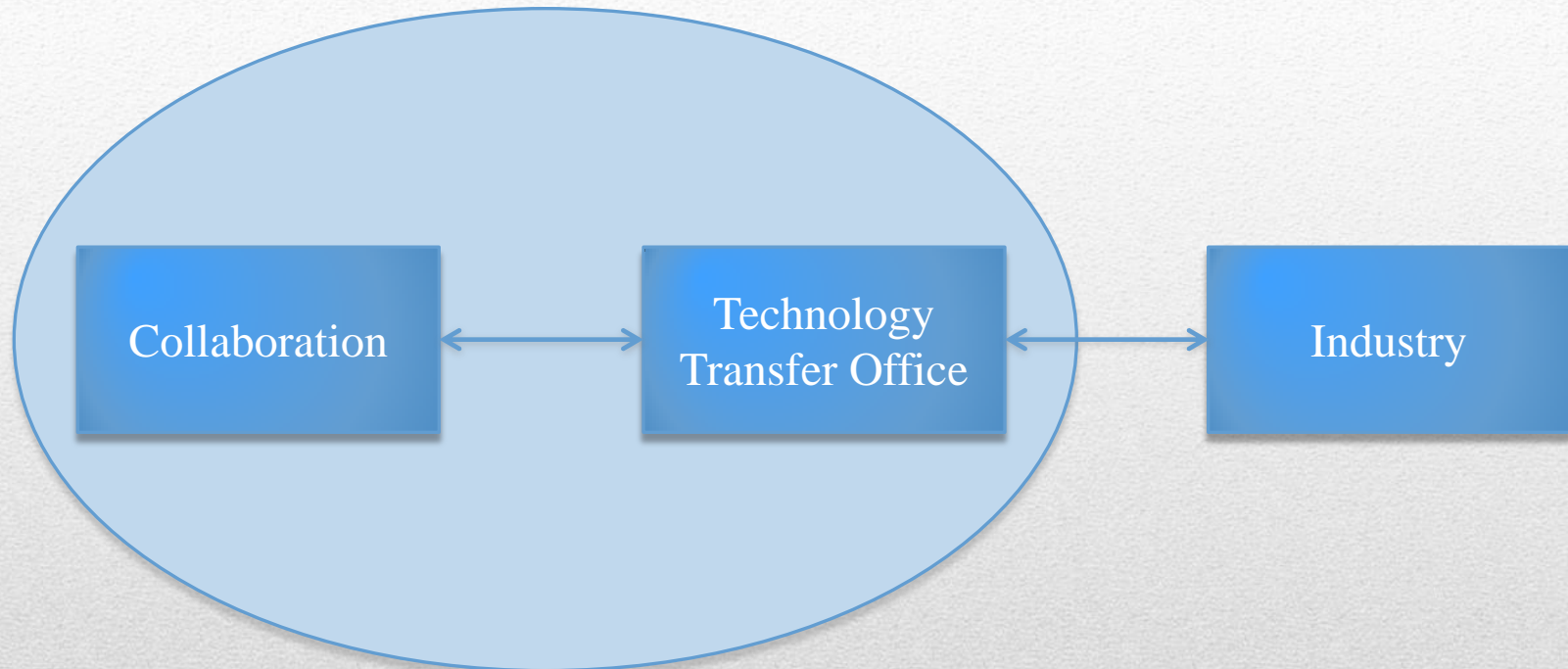
Dissemination



KEY LESSONS LEARNED

- Different perceptions of the value of a technology
- What is good for academia may not be good enough for industry:
 - improved quality thanks to feedbacks from industry
 - difficulty to define what is a “working chip”

Academia versus industry



Role of Technology Transfer Office

- At the outset:
 - Clear Intellectual Property provisions
 - Simple ownership scheme
 - Pre-defined revenue distribution scheme

Collaboration agreement

- Negotiated deals must be perceived as fair by the scientists
- Equal treatment for various industrial players
- In case of exclusivity, need for a very precise definition of the field of use

Technology transfer deals



Thank you...

B. Denis - CERN Knowledge Transfer Group