

# LIMA workshop

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- 2D detectors controls at SOLEIL
  - ✓ Current status and solutions implemented
  - ✓ New requirements : NeXus format file storage, new detectors, new data analysis algorithms, unified framework
  - ✓ Potential solutions: areaDetector, LIMA
- LIMA project
  - ✓ Current status of the project
  - ✓ Short and long term roadmap
- Setting up a potential collaboration ?
  - ✓ Milestones and ressources on the ESRF side
  - ✓ Milestones and ressources on the SOLEIL side
  - ✓ Organising co-development :
    - Source code repository and access for SOLEIL
    - BugTracker ?
    - Commit and release policy
  - ✓ Setting up a « gentlemen agreement »

# 2D detectors Controls at SOLEIL

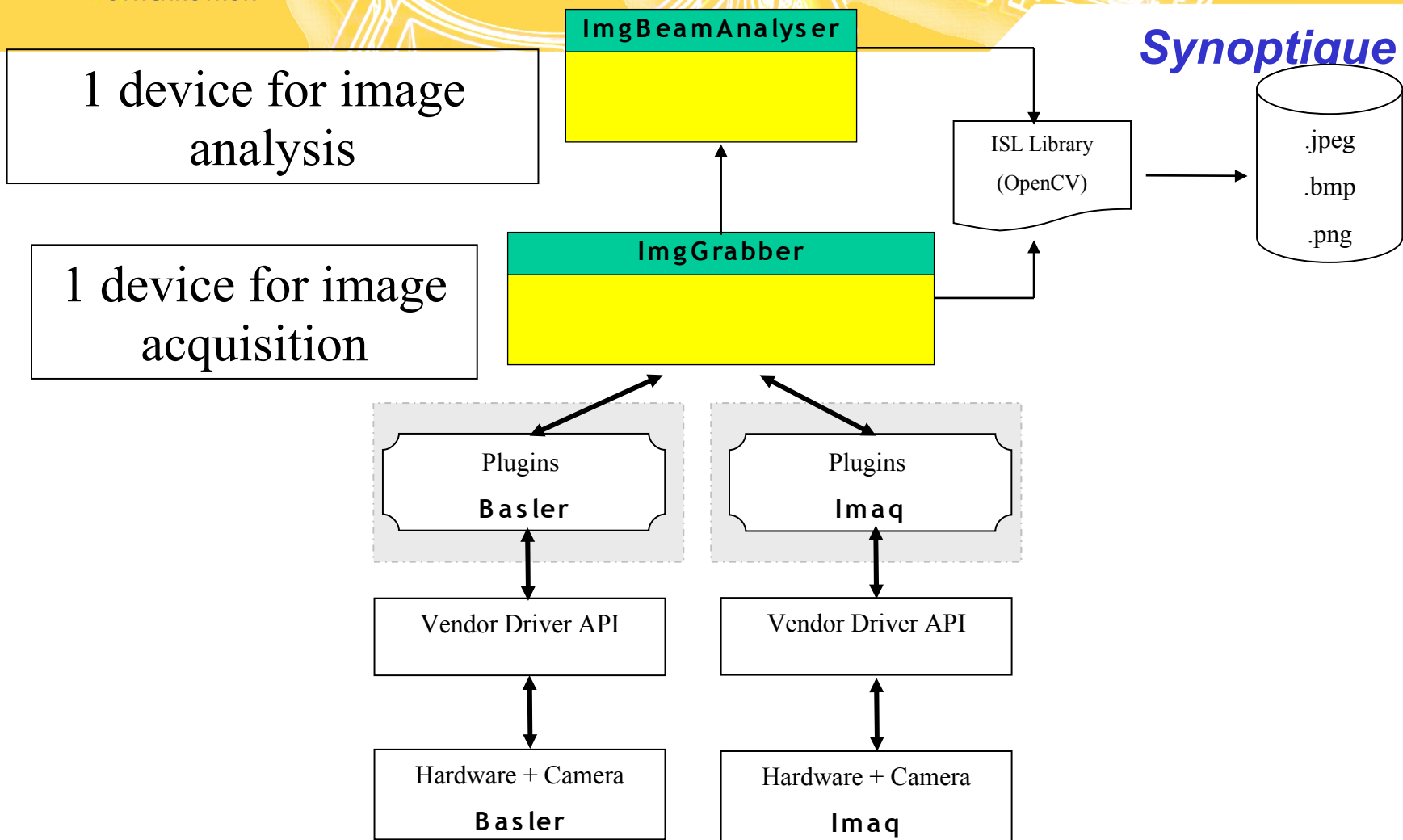
# Current status and solutions

- 2 historical main developments way :
  - ✓ Beam monitors : the ImgGrabber project
  - ✓ CCD for beamline experiments : the CCDSL project

## *ImgGrabber project :*

- *On SourceForge*
- *Used by (at least) ALBA who did enhancements to the device*

- **Approche par la généralisation**
  
- **Currently implemented for :**
  - ✓ **Camera Imaq (NI1409)**
  - ✓ **Basler (Pylon V1)**
  
- **Platform Windows only**



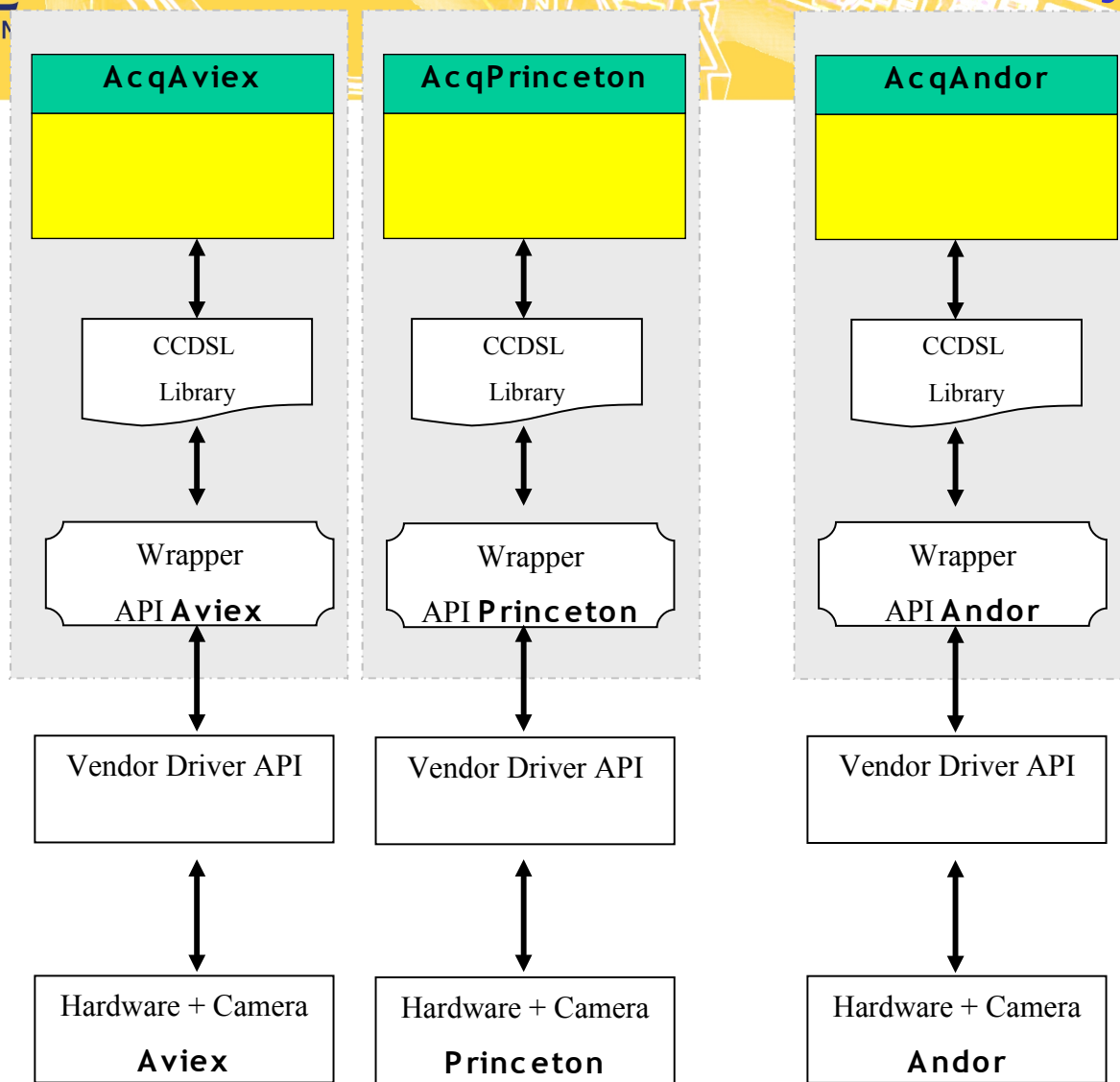
- Un Device unique pour l'acquisition des caméras
- Interfacier une nouvelle caméra => Ecriture d'un nouveau plugin uniquement.
- Séparation entre acquisition et traitement.

- Device unique acquisition => Difficulté de gérer des modes très spécifiques à chaque caméra.
- Pas de gestion du format Nexus
- Plateforme Windows uniquement (Pylon2 sous Linux en cours de test)

## *CCDSL project :*

- *Used only by SOLEIL*

- **Approche par la spécialisation**
- **Détection derrière l'échantillon  
(partie expérimentale)**
- **caméra Avix / Princeton / Andor**
- **Plateforme Windows / Linux**



- Un Device spécifique pour l'acquisition => Gestion des modes très spécifiques à chaque caméra
- Interface du device est au plus proche des besoins de l'utilisateur
- Plateforme Windows/Linux
- Déjà 3 formats de caméra supportés

- Redondance du code et multiplicité des Devices => Maintenance plus difficile.
- Pas de gestion du format Nexus
- Couplage fort entre l'acquisition et le traitement

# New requirements

- New detectors to interface in the next 12 months
  - ✓ Mar300, MarCCD , Pilatus, Color basler, Crysalis, PixelFly, ....
- Refactoring in the new framework of existing detectors at SOLEIL:
  - ✓ MAR345
  - ✓ Princeton
  - ✓ Andor
  - ✓ Aviex
  - ✓ XPAD
  - ✓ Basler
  - ✓ IMAQ
- Stockage de données ( Nexus, .. )
- Traitement d'images en « temps réel »
- Lecture fichiers Images (Mar345, ...)

- Direct NeXus data format storage
  - ✓ With acquisition data rate : 10 images/sec for example
- Making « best effort time » analysis within the Tango CCD device
  - ✓ Using for example « ImgBeamAnalyzer » algorithms (which are encapsulated in the IBA sourceforge library)
- Adding new algorithms easily independantly of the CCD device
  - ✓ for example « phase contrast imaging »
  - ✓ MX algorithms ?
  - ✓ Tomography algorithms ?



# Potential solutions

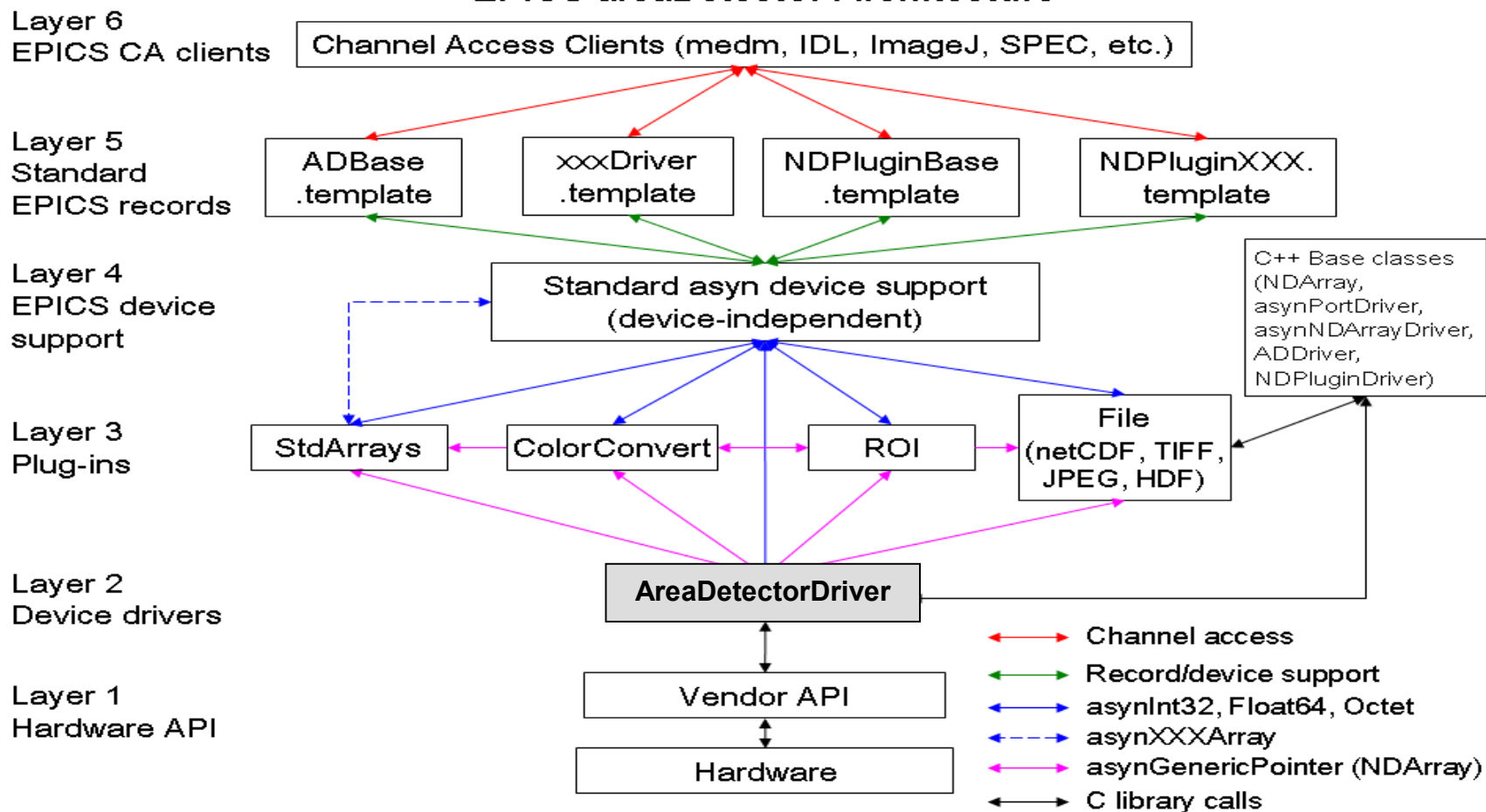
## Refactoring of our existing ImgGrabber and CCDSL libraries

- Our top management ask us to find external collaboration
  - ✓ To reduce costs
  - ✓ To gain experience from others institutes
  - ✓ To have more fonctionnalities and detectors interfaced
- But collaborating is difficult !!
  - ✓ And if necessary we will ask for dedicated resources on this project

# Potential solutions AreaDetector

- Approche par la généralisation globale
- EPICS
- caméras mar345 / MarCCD / Pilatus / Prosilica / Roper / ADSC/ Perkin-Elmer / ...
- **Plateforme Windows / Linux**

## EPICS areaDetector Architecture



- Interfacier nouvelle caméra => Ecriture uniquement d'un nouveau AreaDetectorDriver
- Plugin possible pour stockage dans de nouveau format
  - ✓ NeXusSOLEIL
- Beaucoup de formats de caméra déjà supportés (qui nous intéressent)
  - ✓ PILATUS, MarCCD, ADSC, MAR345, Princeton, ...
- Plateform Windows/Linux

- Dépendance via à vis d'EPICS des librairies utilitaires *asyn / libCom*
  - ✓ *Peut être complexe à «nettoyer» ?*

# LIMA presentation by ESRF

# ESRF-SOLEIL potential collaboration

# ESRF milestones

# SOLEIL milestones



<i>Who</i>	<i>What</i>	<i>When</i>
<b>SOLEIL</b>	Decision on the framework for CCD	June 2010
<b>SOLEIL</b>	Integration of a new detector in the framework	July 2010
<b>SOLEIL</b>	Integration of SOLEIL NeXus API in the framework	July/August 2010
<b>SOLEIL</b>	First device in production on aSOLEIL beamline	September 2010

# Organising co-development

- Source code repository:
  - ✓ Which one ? : BlissGarden ?, SourceForge ?
  - ✓ Setting up an access for SOLEIL developers
- Who does what at the source level ?
  - ✓ Code commits
  - ✓ Making official releases
- Following requests and evolutions:
  - ✓ Using SOLEIL MANTIS bug tracker ?
  - ✓ Using another tracker ?
- SOLEIL needs to setup a « gentlemen agreement »
  - ✓ See the ANSTO example
- How to organize project follow-up
  - ✓ LIMA workshop ?, skype meeting ?