Open 3D™ Platform

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Introduction to Open 3D™ Platform

- **The concept:**
  - Open 3D™ is a 3D technology offer, targeting industrial & academic customers
  - Open 3D™ will give access to 3D innovative technologies with the following key drivers:
    - Moderate access cost to technologies:
      - Based on mature technologies
    - Customization upon request
    - Short cycle time

- **Means & Facilities:**
  - Open 3D™ will operate on CEA-LETI technological platforms: 200 & 300 mm
  - Support by LETI skills on layout, process, metrology, characterization, tests & reliability
  - Global offer from 3D design to component final packaging
Introduction to Open 3D™ Platform

- Customer advantages:
  - Open 3D™ commitment: moderate cost & reduce cycle time.
  - Access to 3D innovative technologies for any wafer format (200 & soon 300 mm)
  - Boost customer innovation thanks to 3D innovative technologies
  - Possibility to make proof-of-concept, prototyping & small volume production

- Open 3D customer’s typology:
  - Laboratories, universities and international Institutions
  - Fabless
  - “Niche” markets manufacturers & integrators
  - IDM

Projects already started with:

- CERN
- CASSIDIAN
Technological offer overview

- Technological modules definitions:
  - Through Silicon via (TSV)
  - Redistribution layer (RDL)
  - UBM

  - Interconnections
  - Components stacking
  - Packaging with partner collaboration

Diagram:
- Top die
- Front side UBM
- Bottom die or interposer
- RDL
- Back side UBM
- Micro-bumps
- Micro pillars
- TSV
- Passivation
- Bumps
- Pillars
- Substrate or BGA or package
Technological offer overview

Open 3D™ TechBox
As a Lego™ approach

Design & Layout

3D Technology
- TSV
- Interconnections
- Metalization
- Components stacking

Electrical Tests

Packaging

Open 3D presentation – D.Henry | 5
How to work with Open 3D™

- Simple process for customer

Possible access to layout & Wafers through CMP

Tech. Specifications / planning

Device layout

Wafers

PO

Open 3D™ TechBox

Design & Layout

3D Technology

Tests

3D Packaging

Innovative product for your market

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Open 3D™: Technological roadmap

Technologies

- Fine pitch interco
- TSV last shrinking
  - TSV Middle
  - Damascene RDL
- TSV Last AR 3:1
  - Stacking D2W
- TSV Last AR 1:1 & 2:1
  - \(\mu\)bumps / \(\mu\)pillars
  - Bumps / pillars
  - UBM

Available for:
- Proof of concept
- Prototyping
- Small volume production
- Prototyping
- Small volume production
- Prototyping
- Small volume production
Conclusions / Prospects

- Conclusions:
  - Open 3D™ is a LETI 3D technologies offer, targeting industrial & academics customers
  - Open 3D™ will give access to 3D mature technologies with the following key drivers:
    - Moderate cost technologies
    - Short cycle time
  - Open 3D™ will operate on LETI facilities @ Minatec campus / Grenoble – France
  - Already two projects have started on the platform

- Open 3D prospects:
  - Continue to fill the Open 3D catalog with new mature technologies in very close collaboration with LETI R&D projects
Contact

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Thank you for your attention