



X-IMPACT Project

X-ray Imaging Micro-system for Medical Application Including Wireless Transmission



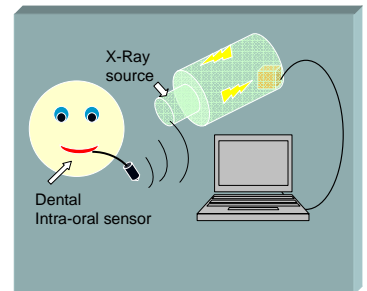
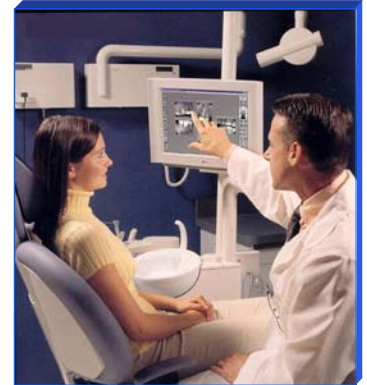
Motivation and background

X-ray imaging is widely used in **medical applications** as diagnostic tool. Digital Dental sensors for intra-oral radiography have been developed and are replacing conventional photosensitive films. They bring significant advantages :

- **Film replacement / no chemical bath**
- **Digital imaging / Instantaneous image / Storage / Archiving**
- **Low patient X-dose**

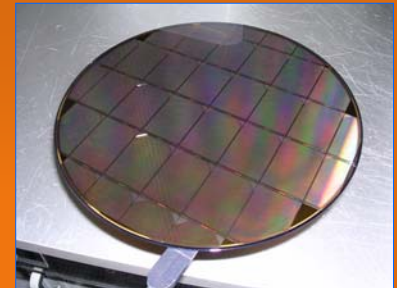
Current systems integrate CCD sensors, but new generation includes CMOS sensors with the possibility of adding electronic functions. Among these new features, the suppression of the cable between the sensor and the computer is the core of the project, by developing and integrating a wireless transmission in the Micro-System. Such techniques are currently part of our environment and the challenge is to develop the right one, that can give best performances and comfort for dental X-ray imagers.

- **Cable suppression**
- **Autonomy thank to Low power consumption**
- **Safe and secure data transmission**

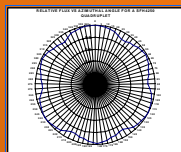


Main Achievements

- **Very large size CMOS sensor**
25 x 35 mm² Silicon die (900 mm²)
Photolithography using stitching technique
- **Infrared Wireless link**
360° emission
3 seconds per image (10 Mbits/s)
immunity to direct light (> 10 000 lux)
immunity to RF environment



Emission head and diagram



Demonstration mock up

- **autonomy > 150 images**



Integration : dental sensor



IR transceiver

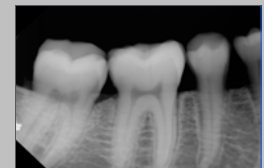


Image with CMOS Sensor

Tekes



PLANMECA

e2v

