

Setting up a Medical Physics Department.

The experience of an Expert in Medical Physics

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A bit about myself...

- 1995: Engineer in Physics
- 1997: Specialisation in biomedical engineering, option radiation physics
- 2002: PhD with MEDISIP (coincidence detection with a gamma camera)
- 2002-2008: Postdoctoral researcher UGent MEDISIP
- 2008: Medical Physicist at the Ghent University Hospital



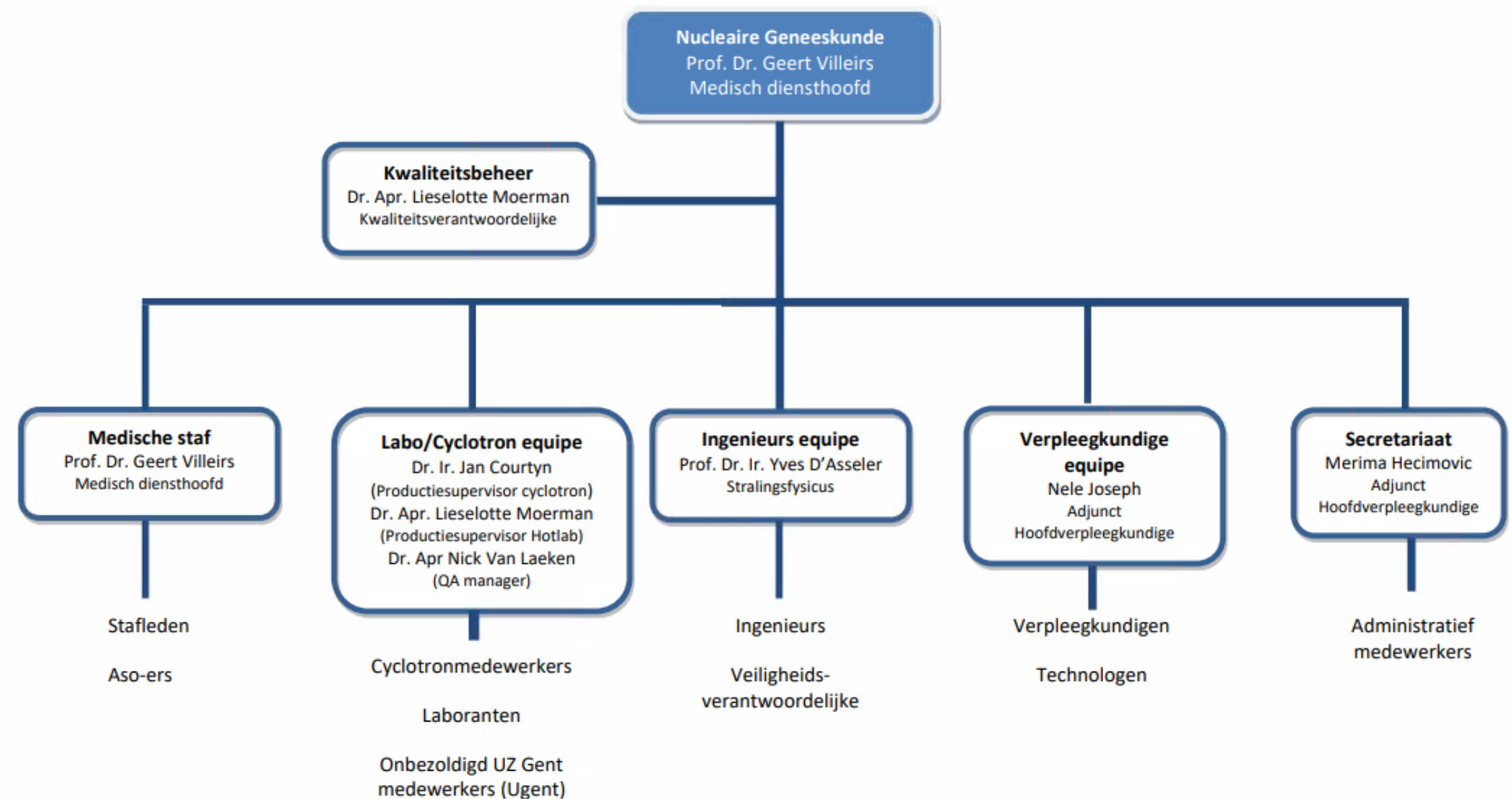
The Nuclear Medicine Department at the Ghent University hospital

- 2 SPECT/CT's, 2 gamma cameras
- 2 PET/CT's
- 2 therapy rooms
- Cyclotron + hotcells
- Iris injection system
- 5+ dose calibrators
- Metabolic therapies:
I131, Ra223, Y90, Lu177



The Nuclear Medicine Department at the Ghent University hospital Staff

- 4 physicians
- 1 MPE, 1 medical physicist
- Ca. 10 Nurses and technologists
- 8 Radiopharmacists/radiochemists / Laboratory
- 3 Secretaries



Tasks as a MPE

- Acquisition and acceptance of new devices
- QC / QA of gamma- and PET camera's, dose calibrators, safety equipment such as EPD's, ...
- Dosimetry in radionuclide therapy
- Optimisation of acquisition protocols
- Implementation of complex imaging processing and data analysis techniques
- Support in clinical trials
- Training and education (e.g. technologists, MPE one year internship)
- ...



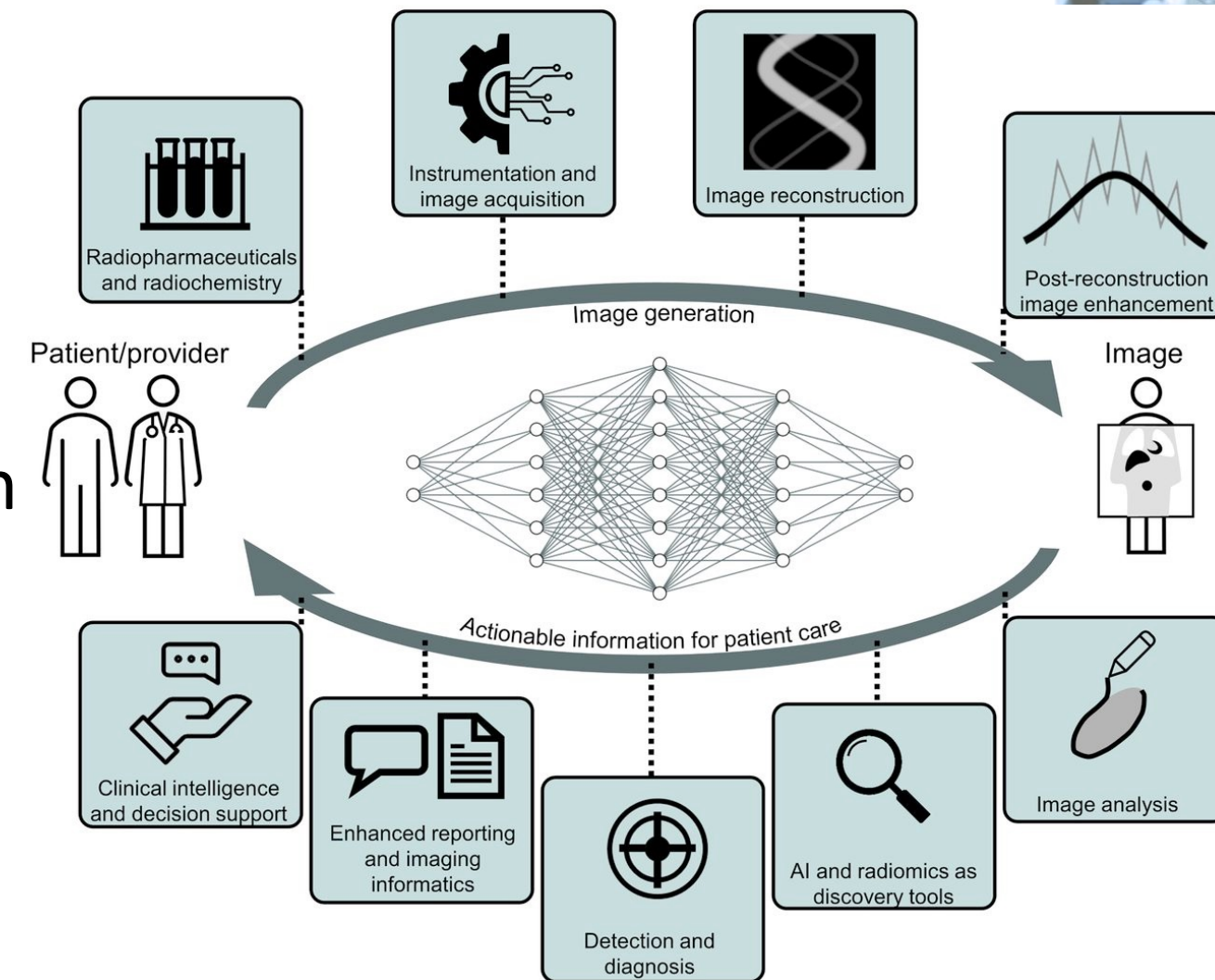
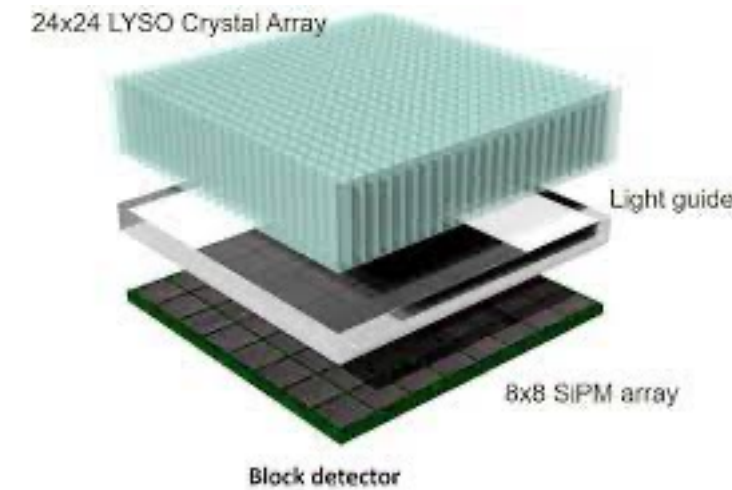
Tasks as a Physicist in a NM Department

- Not only Strictly Medical Physics related...
- Medical Physicist, when available, is often also RPO
- First line troubleshooting for hardware and software issues
- ICT for department specific applications
- PACS support
- Data management
-



Continuing education

- Rapidly evolving field...
- Mandatory to keep accreditation from FANC: 50 hours/year, report every 6 years
- New technologies
 - Digital detectors
 - New geometries
 - AI in acquisition, processing, interpretation
 - ...



Continuing education

- BHPA (Belgian Hospital Physicists Association)
- Regular meetings among NM MPE's
- Return on Experience
- Work on particular projects, e.g. On new technologies



The Department of Medical Physics



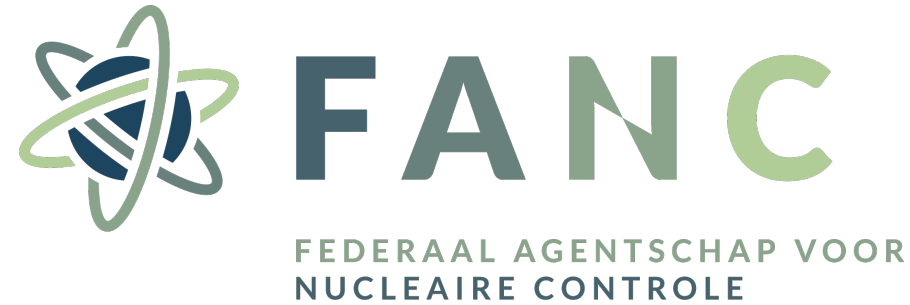
COUNCIL DIRECTIVE 2013/59/EURATOM of 5 December 2013

laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation, and repealing Directives 89/618/Euratom, 90/641/Euratom, 96/29/Euratom, 97/43/Euratom and 2003/122/Euratom



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Clarifying note of FANC

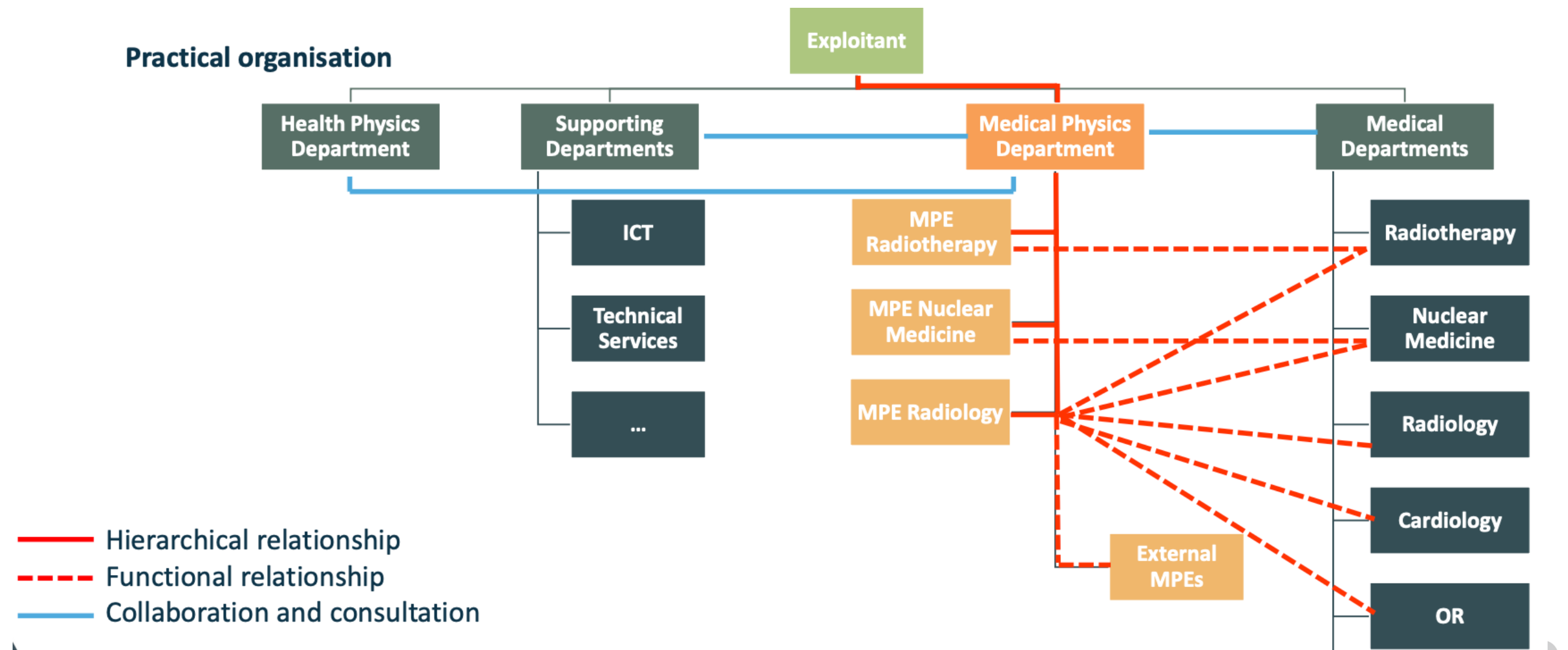


- Het is absoluut niet de bedoeling dat de deskundigen in de medische stralingsfysica uit de medische diensten getrokken worden om in een geïsoleerde dienst te worden ondergebracht.
- Integendeel, de deskundigen in de medische stralingsfysica blijven **functioneel** rapporteren aan hun medisch diensthoofd maar rapporteren **hiërarchisch** aan het diensthoofd medische stralingsfysica.
- L'intention n'est absolument pas que les services médicaux soient « vidés » de leurs experts en radiophysique médicale afin d'intégrer ceux-ci dans un service isolé.
- Au contraire, d'un point de vue **fonctionnel**, les experts en radiophysique médicale continuent de dépendre directement de leur chef de service médical, mais d'un point de vue **hiérarchique**, ils dépendent du chef du service de radiophysique médicale.



The Department of Medical Physics

Organigram
proposed by FANC



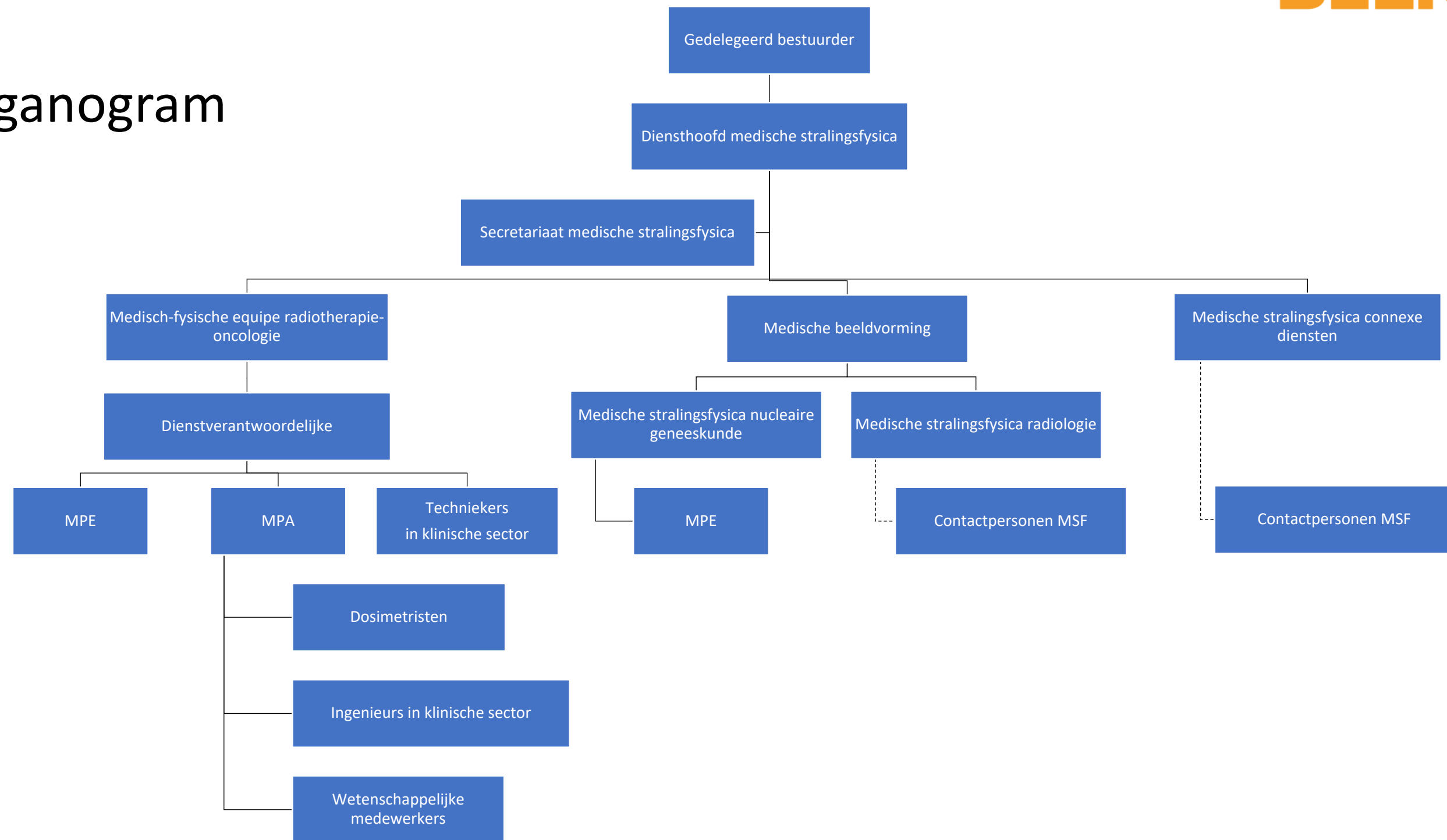
Medical Physics Department @ UZGent

- Established 1/10/2021
- Head Medical Physics (40% Frederik Vanhoutte)
- Radiotherapy: 8 MPE (of which one accredited Radiology), 7 MPA
- Radiology: external service QCC (Klaus Bacher and team)
- Nuclear Medicine: 1 MPE, 1 medical physicist (not accredited)



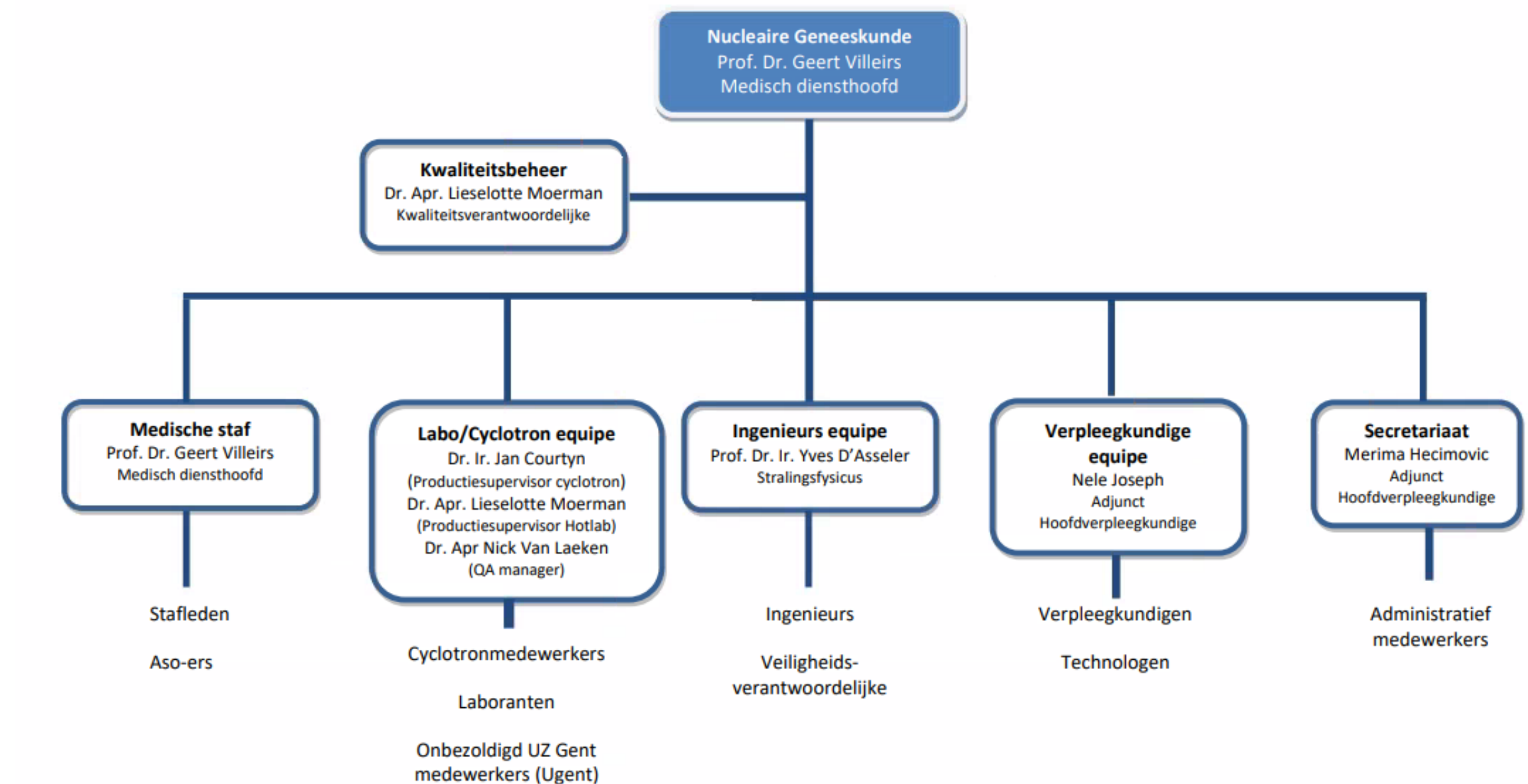
Medical Physics Department @ UZGent

- Hierarchical organogram



Functional Organigram

- Functional organigram stayed the same



Medical Physics Department Processes

- Organisation of communication between
 - Exploitant
 - Task group monthly meetings: Head Medical Physics + every subspecialty, Health Physics, Biomedical Technical Service
 - On a project base with implicated departments and various supporting departments in the hospital (ICT, infractructure, Technical services)

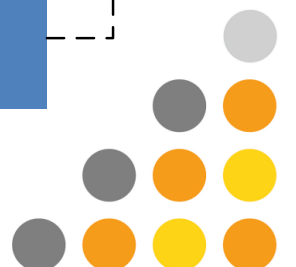
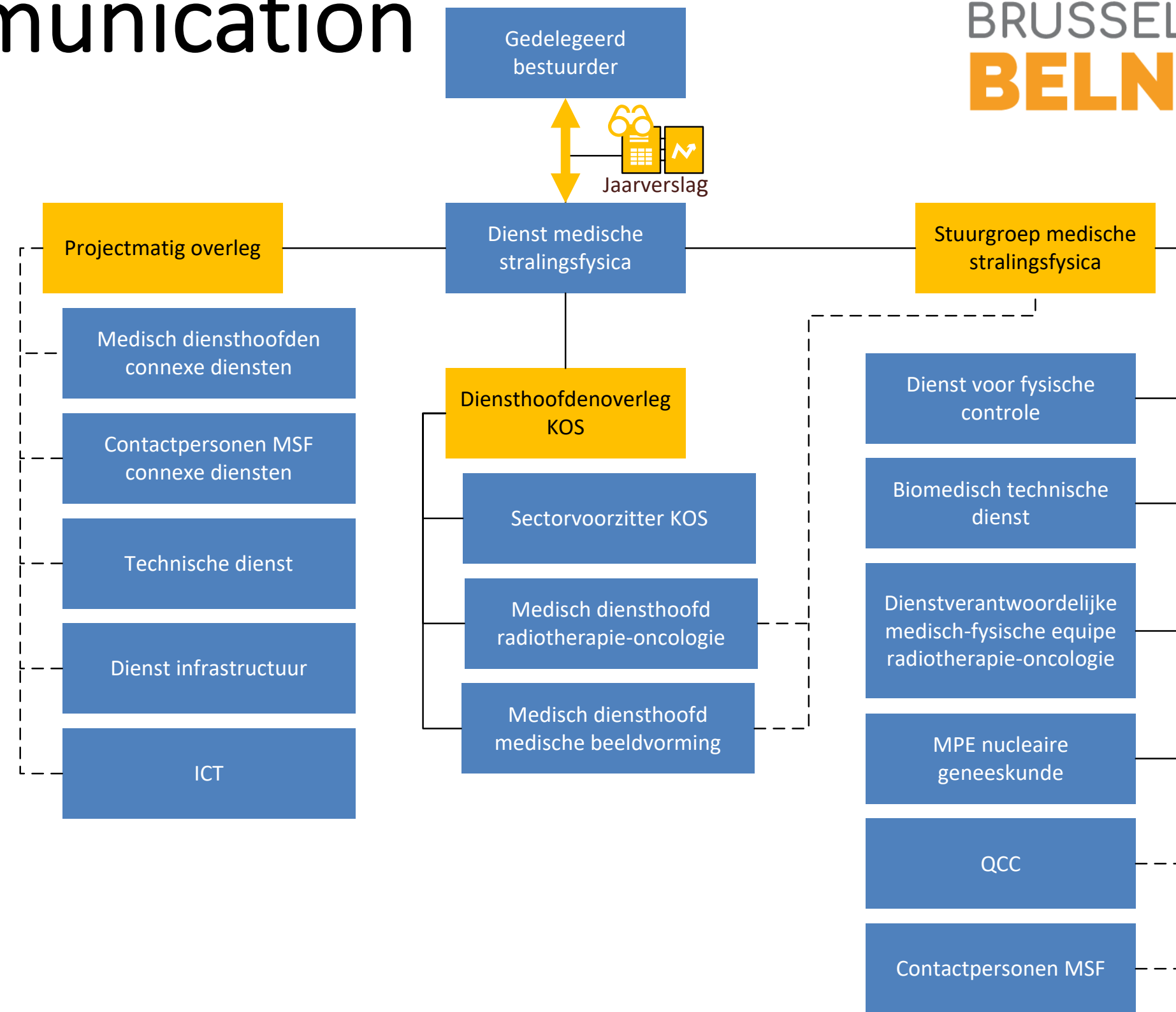


Medical Physics Department Processes

- Equipment: central list of equipment with status
 - Acceptance
 - Commissioning
 - QA
 - Interventions
 - Decommissioning



Medical Physics communication



Opportunities

- More visibility on hospital level
- More communication between specialties
- Point of contact with other hospital wide departments such as ICT, biomedical technical department, ...
- Service to departments without Medical Physics
 - in UZGent: gamma probe, DEXA
 - Radiation safety equipment



Open questions

- The organisation of the Medical Physics Department is still in an exploratory phase, evaluation of workload and processes is under evaluation
- Is medical Physics only ionising radiation physics? (e.g. What with MRI physicist?)
- Whether and how to organise a common Medical Physics Department for several hospitals in the network.



Thank you

Thanks to Frederik Vanhoutte for input on slides

