

# TRANSPORT OF RADIOPHARMACEUTICALS, CRADLE TO THE PATIENT.

Association of Imaging Producers  
and Equipment Suppliers  
(AIPES)

PATRAM  
October 6<sup>th</sup>, 2010  
London, U.K.



*Association of Imaging Producers and Equipment Suppliers*  
Nuclear Medicine and Molecular Healthcare

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and

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# Content of the presentation

- Introduction of AIPES
- Overview of the topic
- Impact on non-deliveries
- The Distribution Challenge
- Distribution Issues
- How do we do it?

# Introduction AIPES

The **A**ssociation of **I**maging **P**roducers and **E**quipment **S**uppliers (AIPES) is a European Economic Interest Group (EEIG) based in Brussels, Belgium.

Several Working Groups have been instituted within AIPES, e.g. the Transport Working Group



PHILIPS



SIEMENS



Association of Imaging Producers and Equipment Suppliers  
Nuclear Medicine and Molecular Healthcare

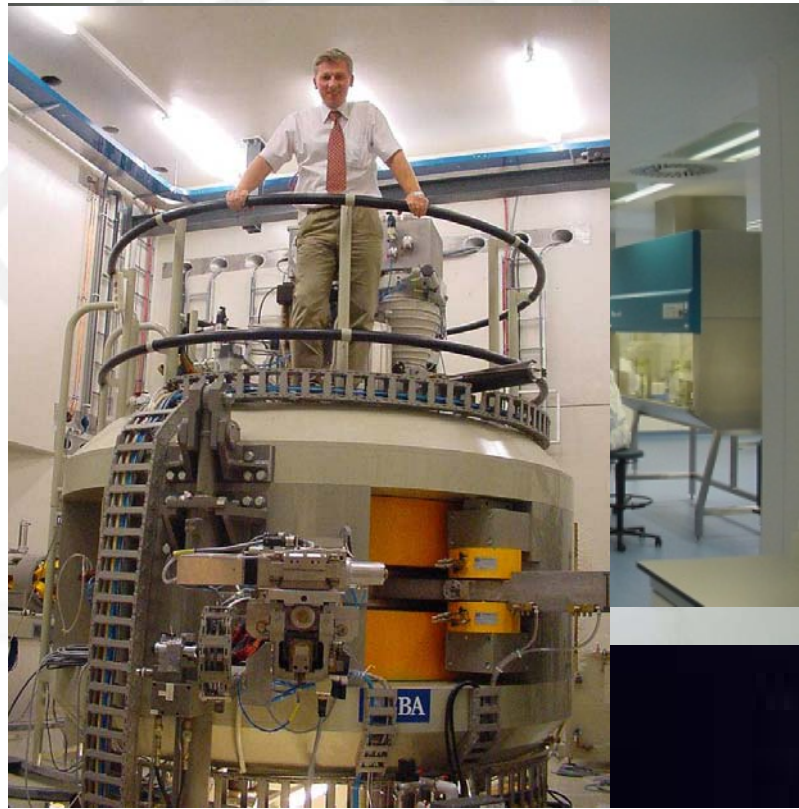
More info: [www.aipes-eeig.org](http://www.aipes-eeig.org)

# AIPES Transport Group

- The group was set up to have a common understanding and to set up Standards for the safe and secure transport of Radioactive Material (RAM);
  - We have the same stakeholders, i.e.:
    - Raw material suppliers
    - Carriers
    - Customers /End-users



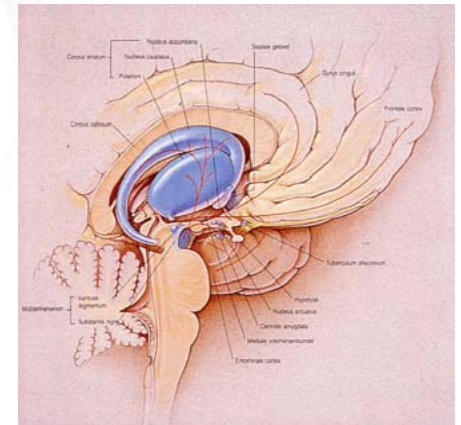
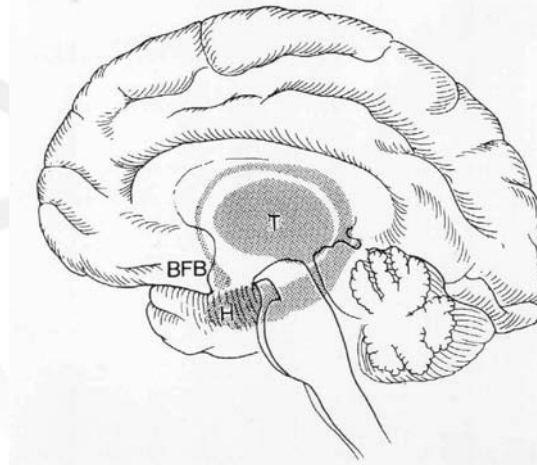
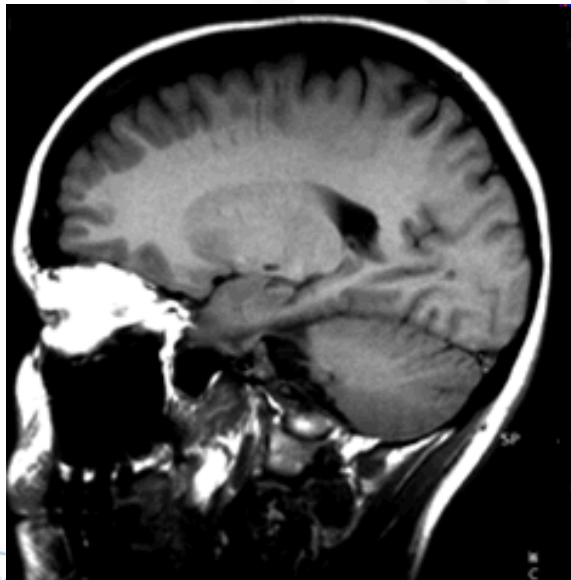
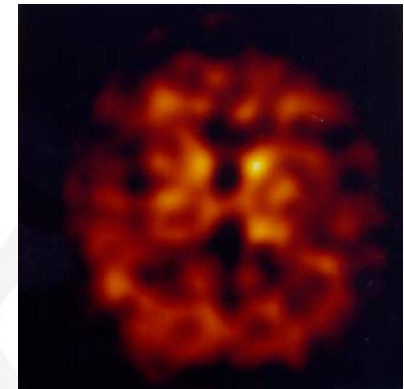
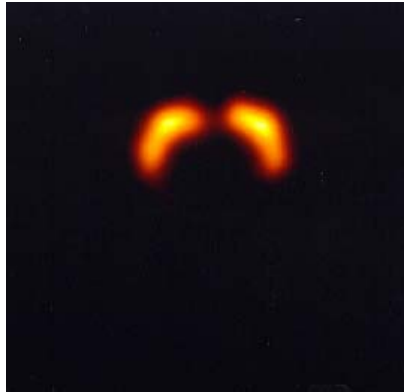
# In birds-eye view



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# Nuclear Medicine

## Patient Diagnosis



Parkinson's disease

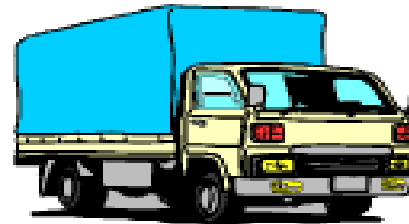
# Impact in case of non-delivery

- Urgently needed treatment could be delayed
  - inability of diagnosing the patient.
  - can have an effect on the prognosis of the patient.
- Patient travel to the hospital
- Cost for not using the gamma camera
- Sometimes room is booked for a patient
- Intangible costs
  - in terms of damage caused to the patients for stopping their medication or for the opposite, some have to be given a medication prior to the treatment/diagnose.
- losing one day of work





# Radiopharmaceuticals Distribution



**- the ultimate distribution challenge**

# The Distribution Challenge

- Dangerous Goods regulations
  - ICAO/IATA, ADR
- Pharmaceutical regulations
  - GMP, GDP, MHRA, FDA
- Speed of delivery
  - decaying products
    - $^{18}\text{F}$ -FDG, half-life: 118 mins
    - $^{123}\text{I}$ -prods, half-life: 13,2 hours,
    - $^{99}\text{Mo}$ , half-life: 66 hours
- Reliability
  - 99%+ service levels

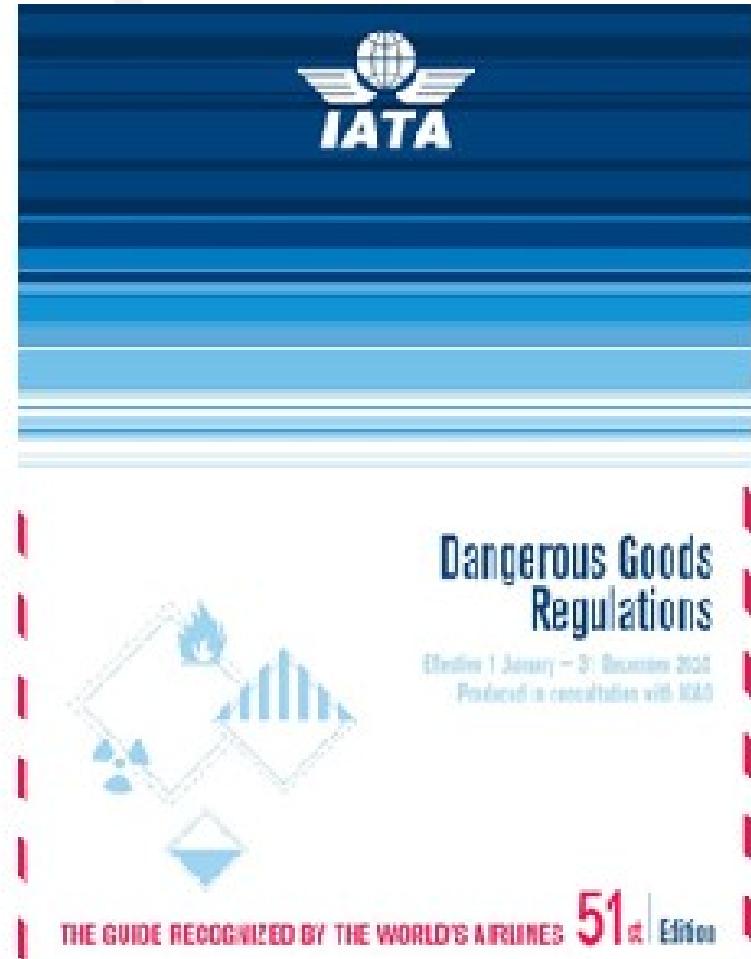


# Dangerous Goods

## Class 7: Radioactive

**Accord Européen  
relatif au Transport  
des Marchandises  
Dangereuses par Route**

**Class 7, UN2915  
RADIOACTIVE MATERIAL,  
TYPE A PACKAGE,  
non-special form,  
non fissile or  
fissile-excepted**



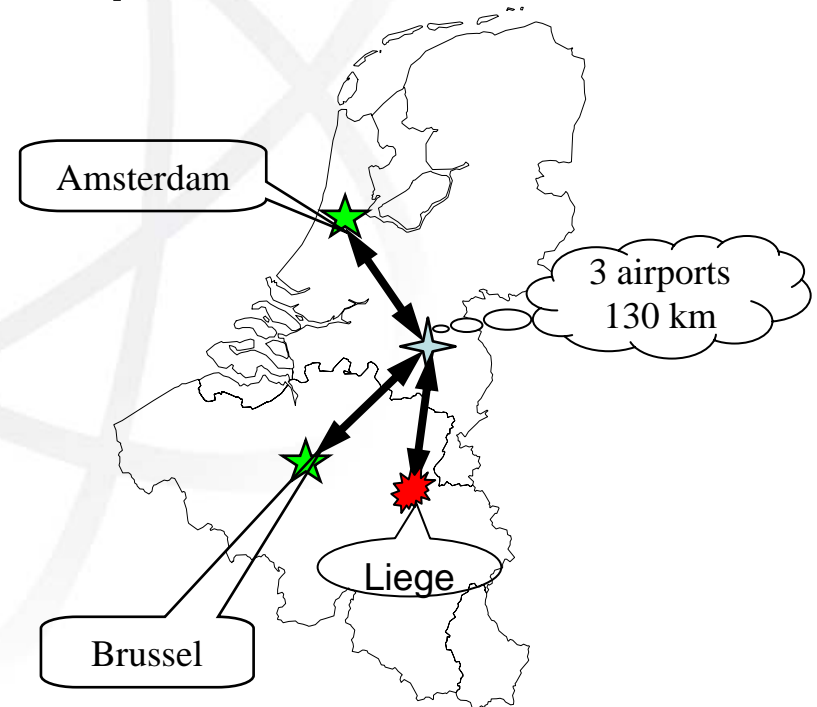
# ADR requirements

- Comply with “local” country regulations, including reporting
- Dangerous Goods Safety Advisor (DGSA)
- Packing, marking and labelling
- Transport documentation
- Vehicle placards and equipment
- Driver Training
- Security Awareness
  - AEO and Known Shipper

# Time Pressure!

## (example)

- $^{123}\text{I}$ -product ready at noon for dispatch
- Need to be injected into patient before noon next day.

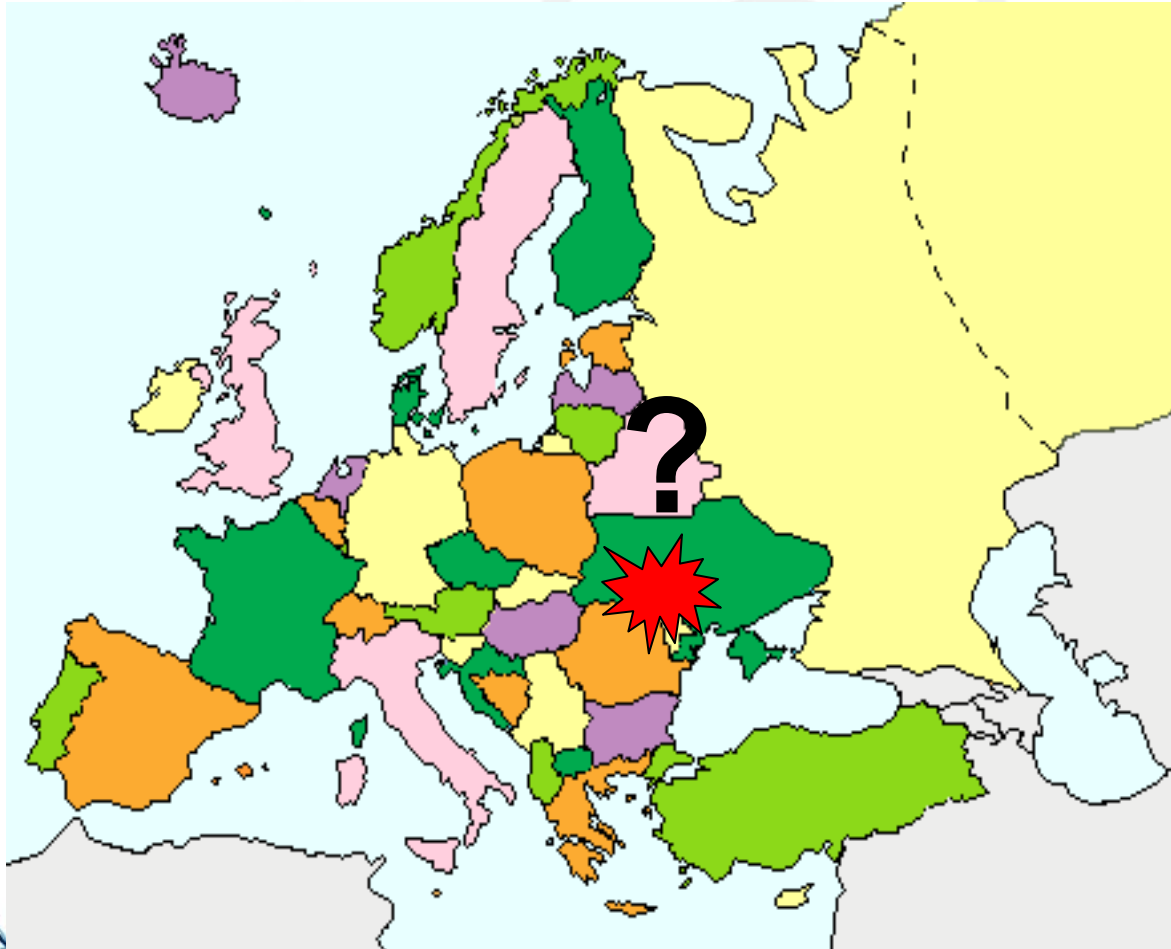


# Airfreight

## Boundary conditions

- Driving time to airports: 2 hrs.
- Lead time airports:
  - Brussels: 4 hrs.
  - Amsterdam: 3 hrs.
  - Frankfurt: 12 hrs.
- Earliest Departure time 17.00 p.m.
- Some airports do not accept RADAC
- Some airlines do not accept RADAC
- some flights do not accept RADAC

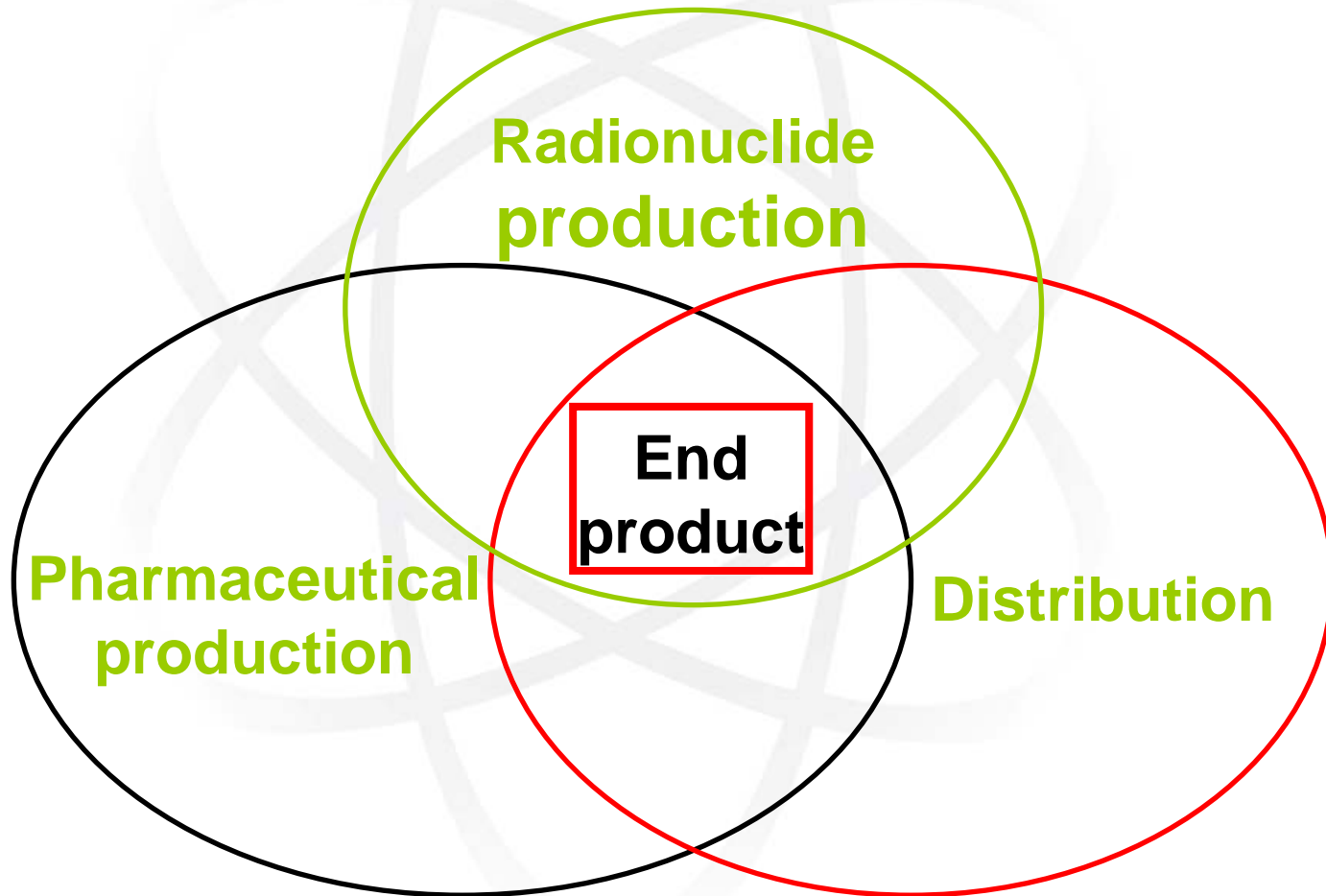
# New destinations??



## Criteria:

- Availability
  - Road/Air
- Timing
- Reliability
  - Transfers
  - Via Vienna
- Cost

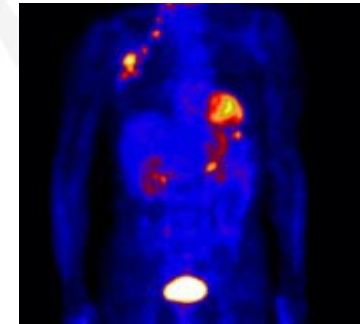
# Distribution Philosophy





# Distribution – End Deliveries

Ultimate goal:



Patient treatment as planned by Customer

# Why DO things go wrong??

- **Booking process**
  - Producer → Booking Agent → GSA → Airline
  - TI capacity on aircraft not always known (comp.)
- **Physical transport**
  - Producer → Carrier → ground handler → airp. Cargo agent → airline → airport Cargo agent → carrier → CUSTOMER
- **Other issues**
  - Technical problems, missing paperwork, weather issues, ash clouds, strikes
- **Denial of shipment**
- **Awareness of the nature of the product**
  - At acceptance but even more difficult in case of transfers



# Requirements of Carriers

- 100% regulatory compliance
- Reliability
  - high service levels
- Flexibility + powers of recovery
- Communications
  - 24/7 for lost/stolen/damaged packages
  - ASAP for delays



# So how do we do it?

- Safely dispatch product
  - Train: staff, Drivers, contractors
- Ensure shipments are within airline capacity
- Produce correct paperwork:
  - radioactive label
  - dispatch notes
  - dangerous goods declaration
- Ensure handlers/carriers are operating safely
- Check and double check
- Build relationships & trust
- Offer 24/7 Logistics Emergency Support

Don't accept a no go!!



# Summary

- “Just IN Time” is not enough
- “MUST BE IN TIME” is the only choice
- Distribution reliability of 99% means
- 10 out of 1000 patients did not get diagnosed or treated as planned!!



Thank you for your attention  
and  
enjoy the rest of the  
PATRAM Conference

