'Experience of deploying a SNOMED CT based EMR using a French translated subset in an academic Belgian hospital'

Olivier Le Moine, MD,PhD
Associate Medical Director for IT

Hôpital Erasme, ULB, Brussels, Belgium

BACKGROUND

- Semantic interoperability of health care data, using SNOMED CT, is a cornerstone of the Belgian eHealth plan 2015-2018

- As the Belgian software market does not provide a solution fully-based on SNOMED CT, we developed an in-house EMR able to exploit the richness of the terminology.

- The objective is to share with you this Belgian experience, targeting deployment of a newly available SNOMED CT (subset) translation

METHODS: FRENCH SUBSET OF SNOMED CT

- Belgian NRC subset
  - Initial: 79287 Clinical Findings & 25249 Procedures (2010)
  - Selection & translation in french and dutch of 43% and 70% of Clinical Findings and Procedures, respectively.
  - Retrospective testing on hospital records -> 85% adequate coverage
  - Flat lists, no use of relationships
  - Translation still ongoing

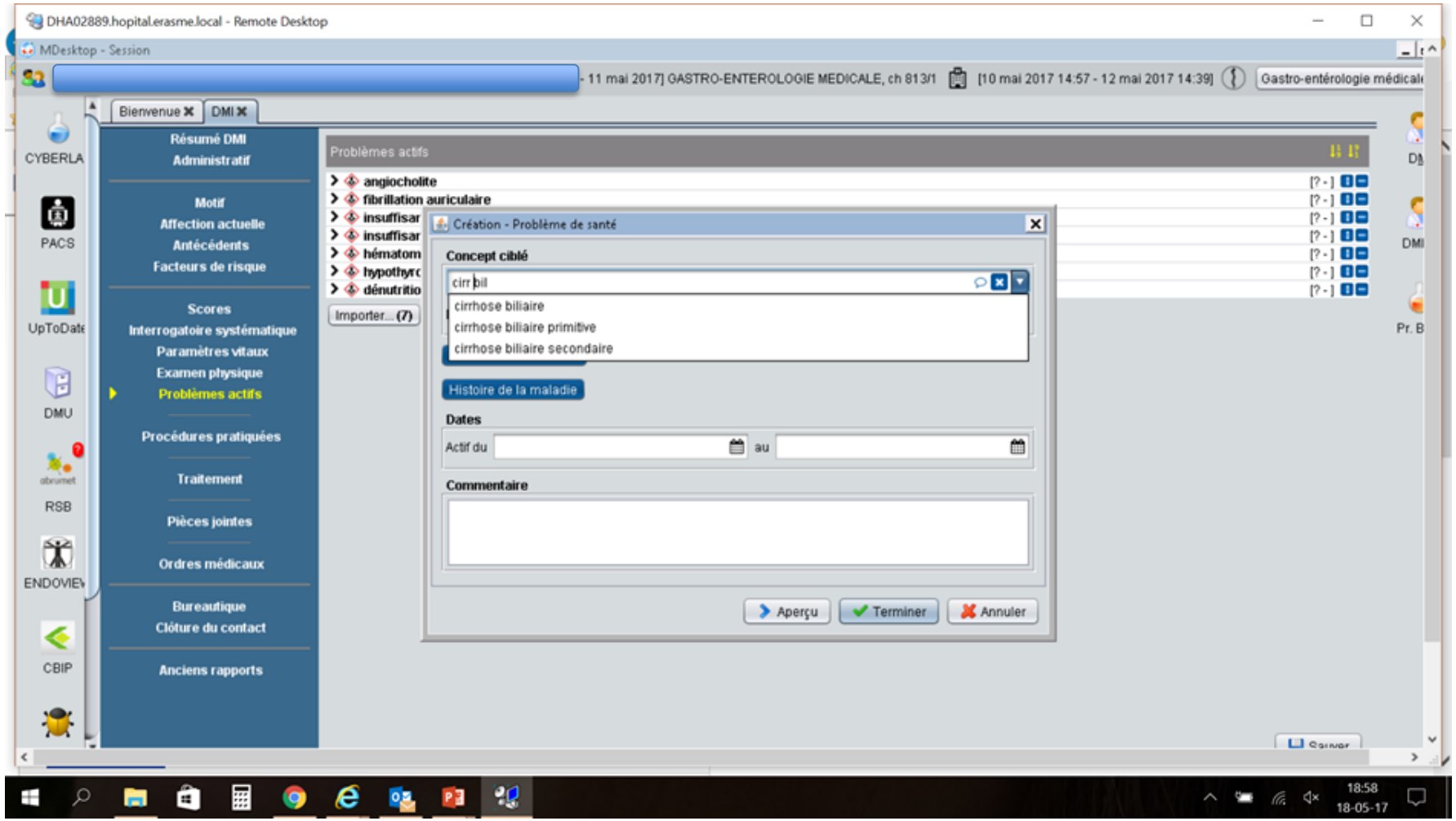
- Erasme Hospital extension
  - French NRC subset +
  - Standardization, adding parent concepts and terms asked by medical specialists
  - Only preferred terms, no synonyms
  - Precoordinated expressions

METHODS: EMR

- Hospital IT team developpment (Snomed CT backbone)
- Artifacts covered: reason for admission, risk factors (allergies, implants, nutritional, addictions, social factors…), systematic review of systems, physical examination, past history (personal & familial), active problems, procedures, staging & scales
- Artifacts and values are coded in Snomed CT
- Free text is only allowed to improve the granularity of a structured item
- Only 3 general templates (admission, discharge, consultation) for all medical / surgical specialties

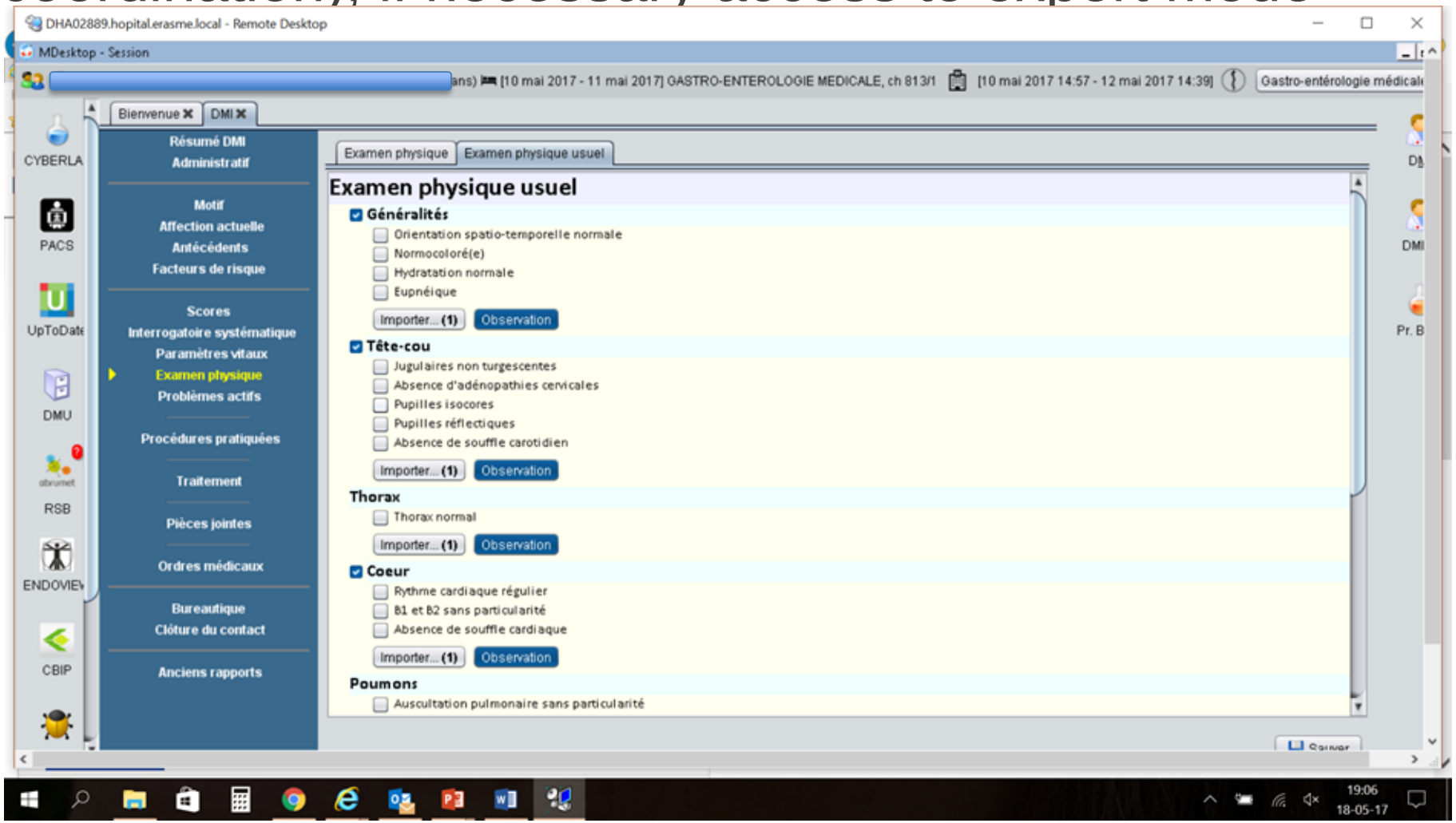
METHODS: DATA ENTRY (1)

- Expert mode: lists and letters to select the adequate description

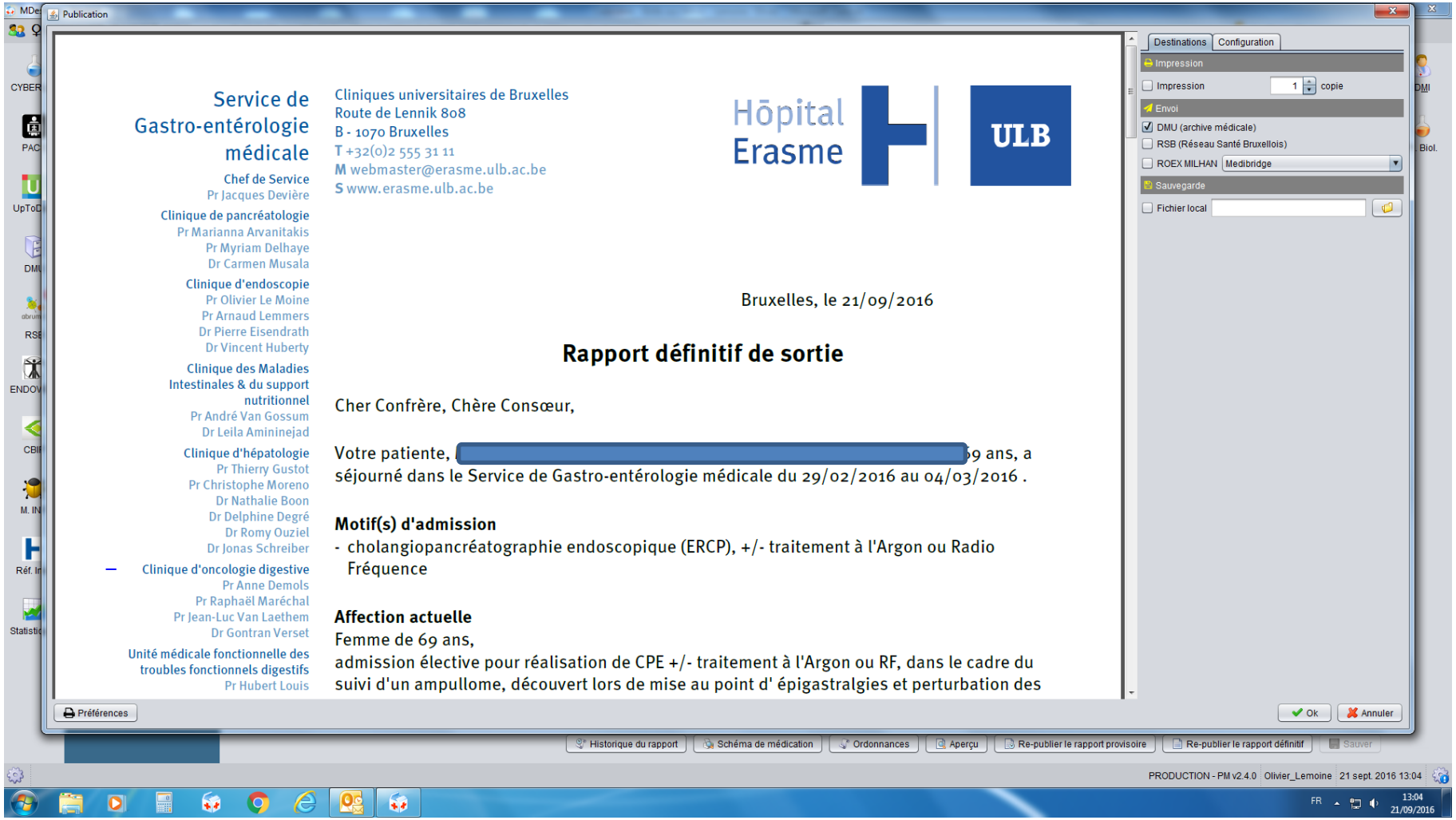


METHODS: DATA ENTRY (2)

- Template mode: check boxes, short lists (may include postcoordination), if necessary access to expert mode



METHODS: OUTPUTS (READY FOR INTEROPERABILITY)



METHODS: DEPLOYMENT STRATEGY

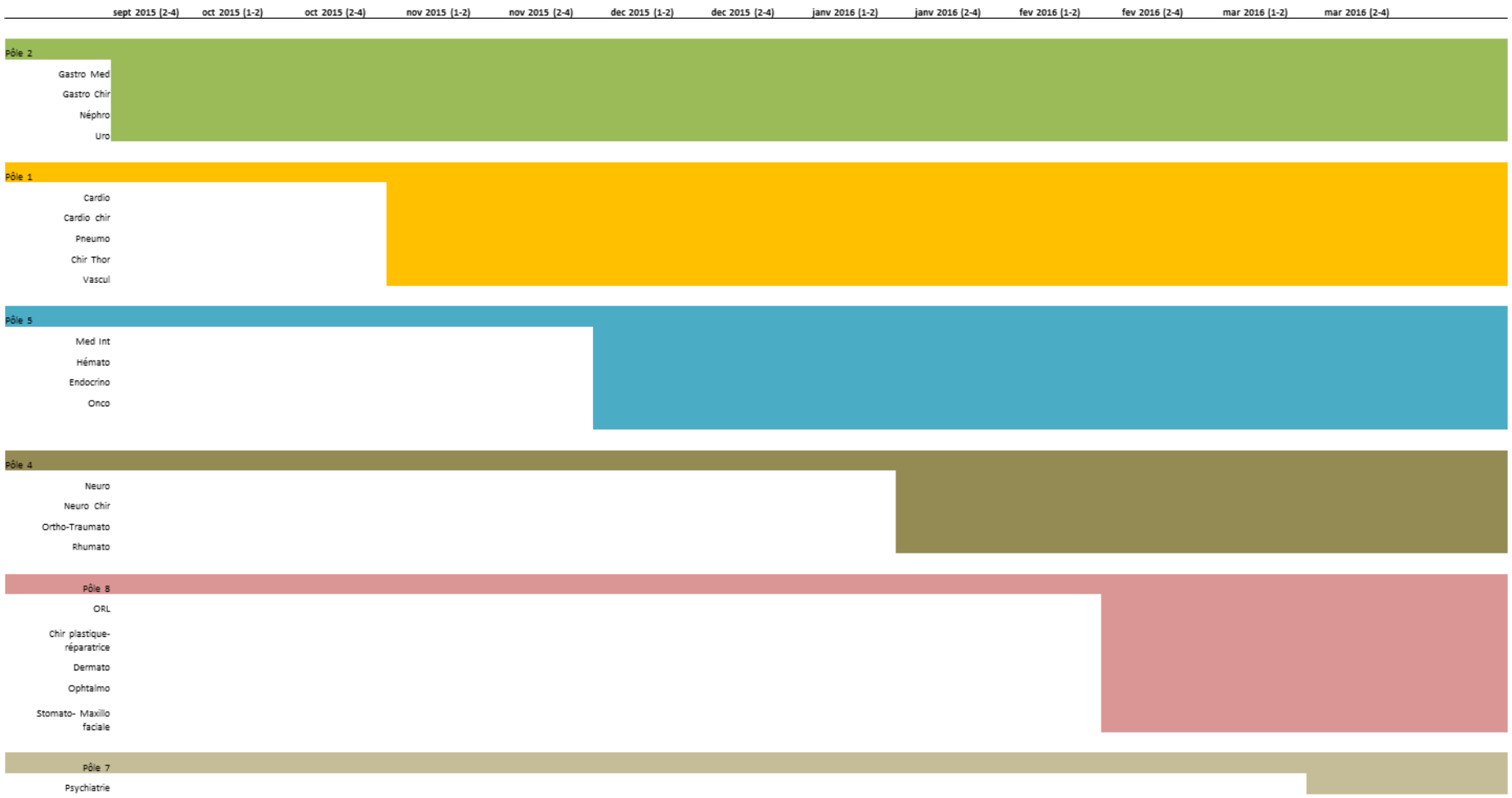
- Strong support from executives
- Information on Snomed CT & EMR benefits (all care givers) during the year before deployment
- Creation of a specific Multidisciplinary Support Group for information, training and support
- Training to EMR 1 month before deployment
- Continuous education/training (new doctors, students)
- Continuous information (new releases)
- Continuous information to users about EMR usage (statistics) in the Hospital

SETTING:

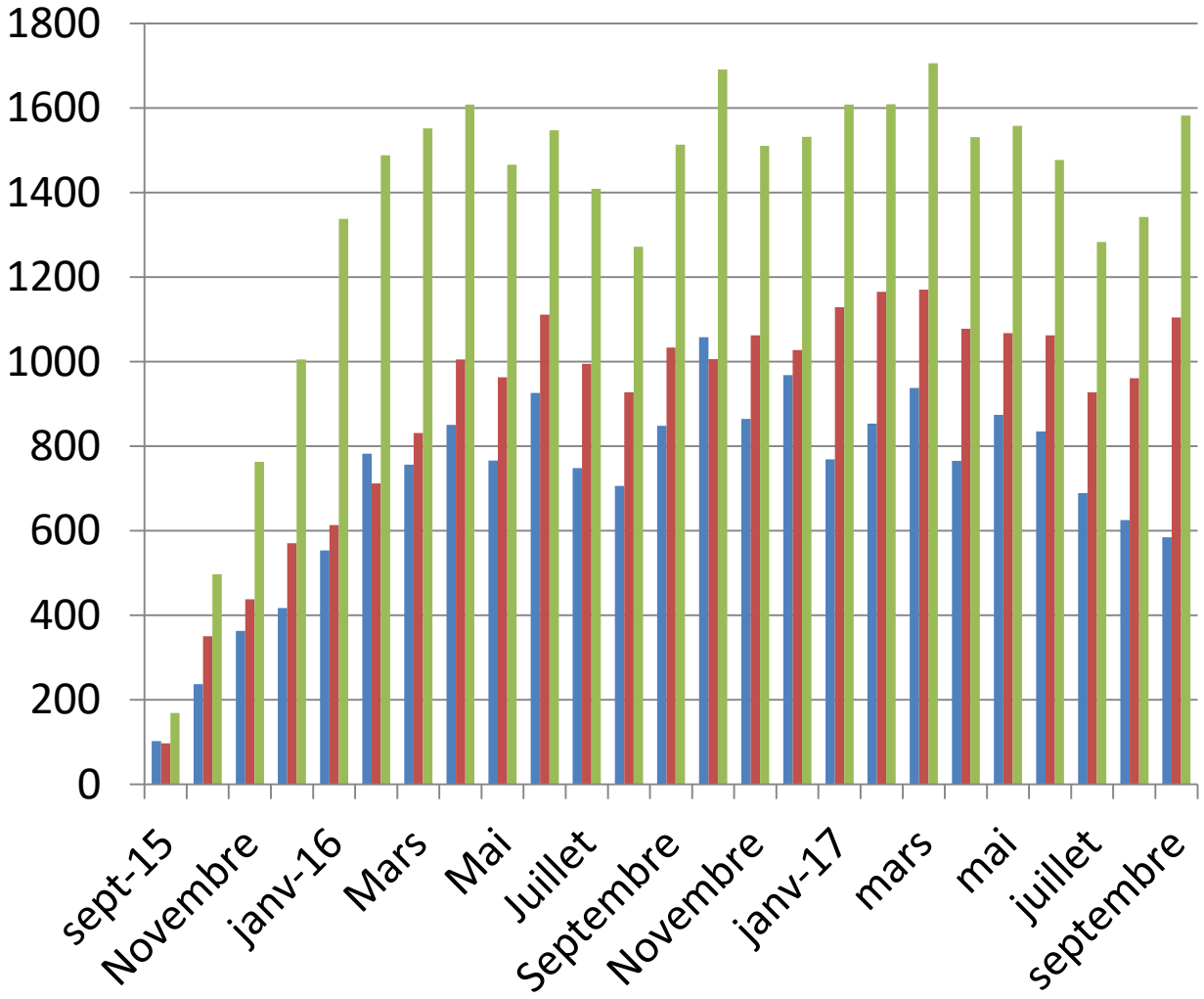
- Academic Hospital (tertiary/quaternary)
- ~ 900 beds
- ~ 45.000 admissions
- ~ 360.000 outpatients
- ~ 3.500 employees
- ~ 500 doctors & medical students

- INITIAL SCOPE of the EMR: **inpatients** excluding One-Day clinic and some clinical departments having already an IT solution

RESULTS: MASSIVE DEPLOYMENT OVER 6 MONTHS



Discharge reports generated monthly since September 2015

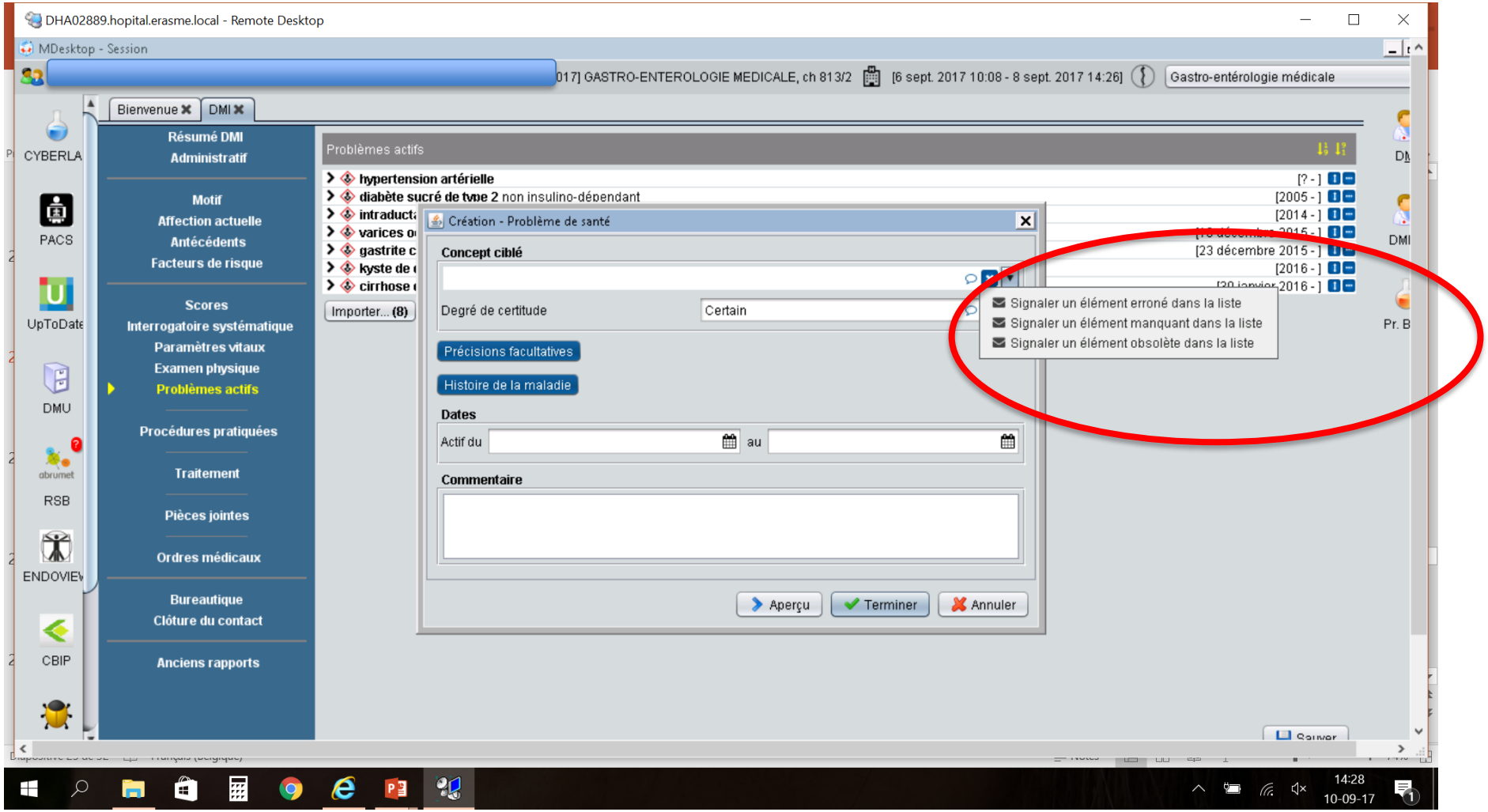


70% inpatient activity

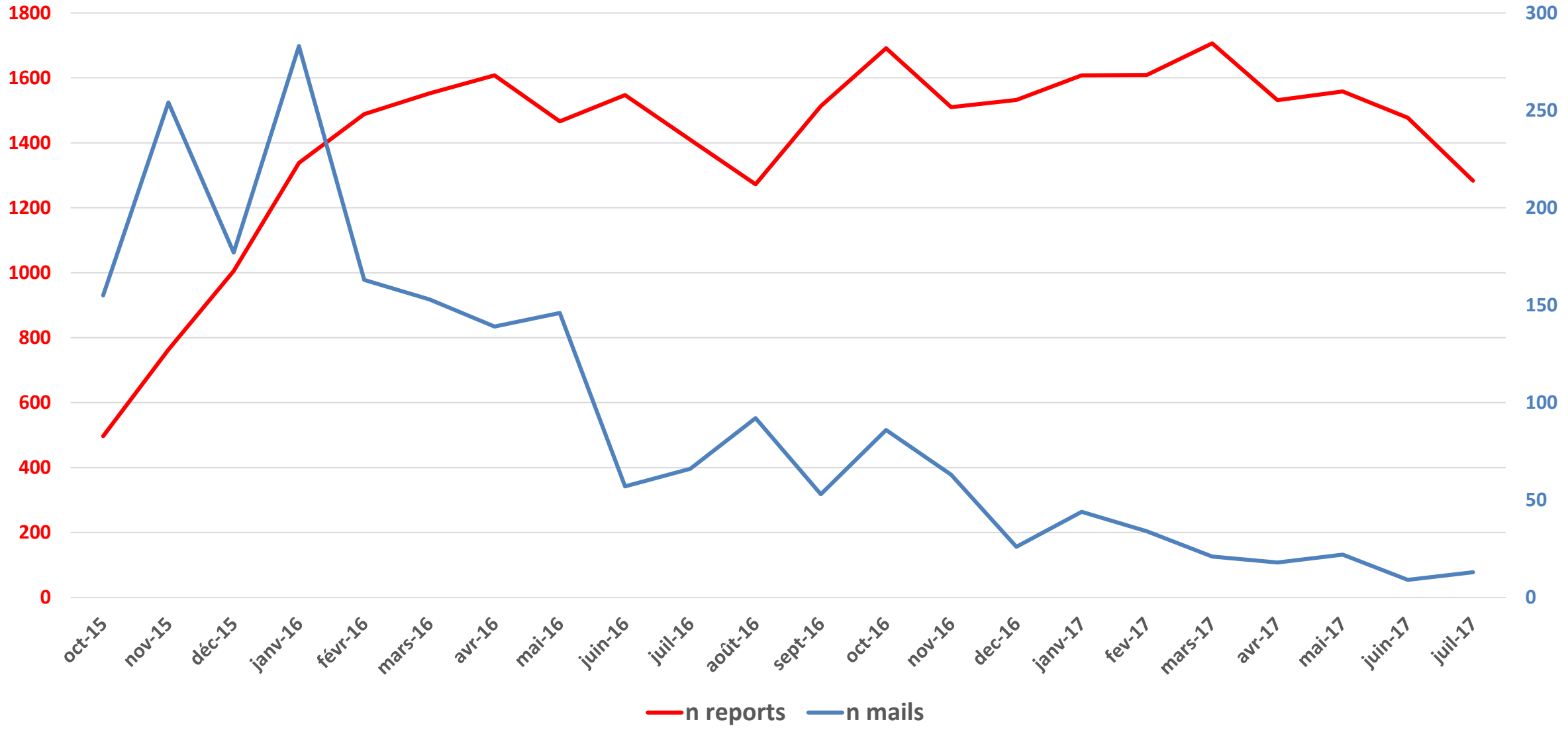
55.000 discharge letters

> 1.000.000 concepts

TERMINOLOGY REQUESTS ONLINE / REALTIME !



NUMBER OF CHANGE REQUESTS TO TERMINOLOGY OVER TIME: A CONTINUOUS CHALLENGE



PROPORTION OF CHANGE REQUESTS : TERMINOLOGY IS A CONTINUOUS CHALLENGE AS OF JULY 2017

Hôpital Erasme | ULB

Type of request	Proportion
Missing terms	92 % (2080)
Erroneous terms	7 % (161)
Obsolete terms	1 % (20)

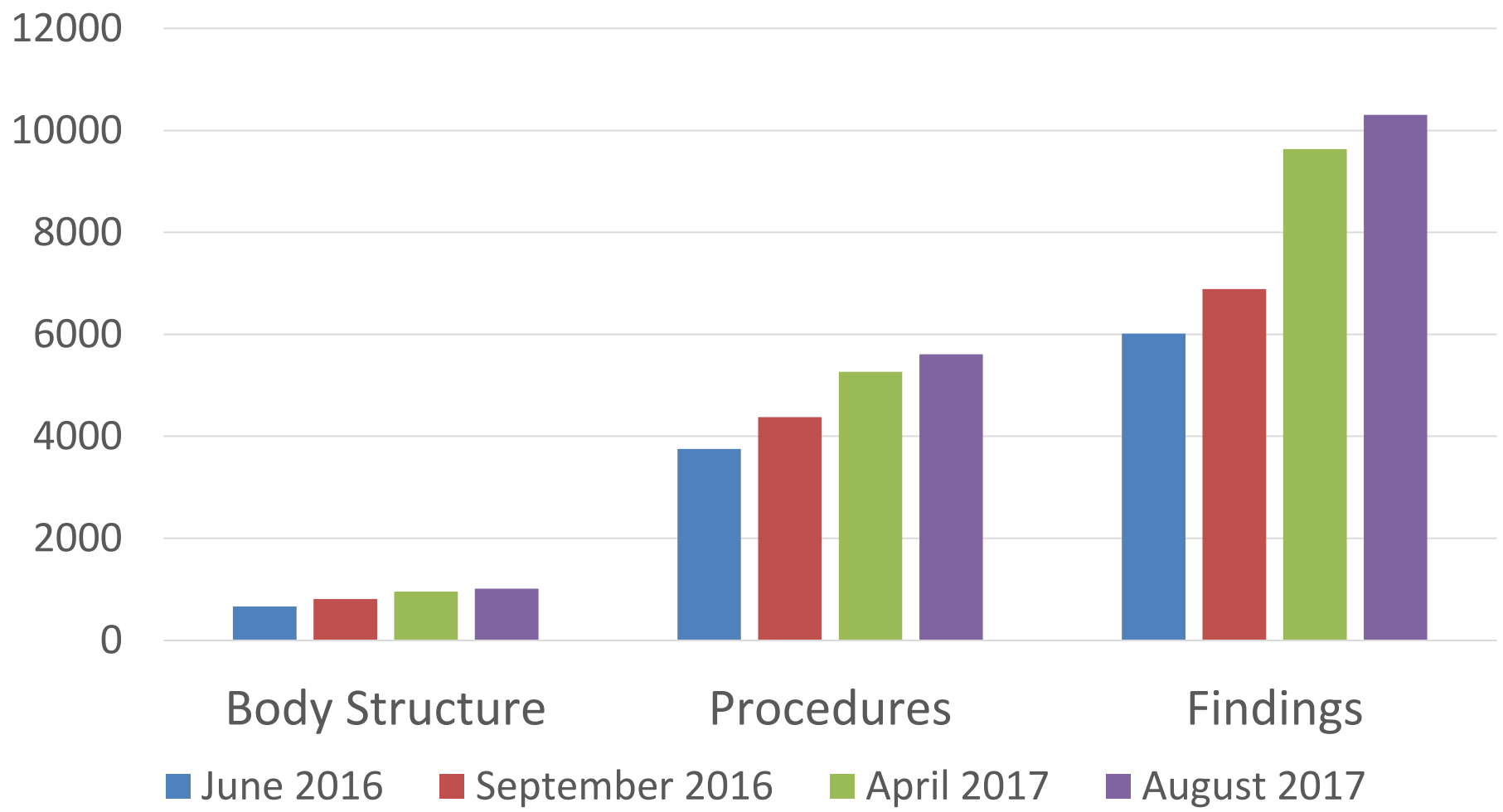
ACTUAL NUMBER OF TRANSLATED CONCEPTS (JUNE 2017)

Hôpital Erasme | ULB

Hierarchy	Number in french (preferred terms)
Findings	36477
Procedures	19139
Qualifiers	1195
Body structure	8826
Substances	2149
Objects	1440
Organisms	24563
Social context	432
Total Erasme extension (Be)	***94221***

Total SNOMED CT en USA	***326905***
Total Rouen extension (Fr)	***181105***

TERMS USAGE COMPARISON BETWEEN JUNE 2016 AND AUGUST 2017 (~ 20% OF THE EXTENSION)



CHERRIES ON THE CAKE FOR DOCTORS

- Initially they are not convinced or even refractory…
- Afterwards they become interested and even addicted…
  - Reuse of data (enter once, use many)
  - Personal database
  - Department database
  - Queries (audits or research)
  - Transversal queries (infection control…)
- Then, they participate to improvement

STRUCTURATION : A PRIORI OR A POSTERIORI DATA ENTRY ?

Hôpital Erasme | ULB

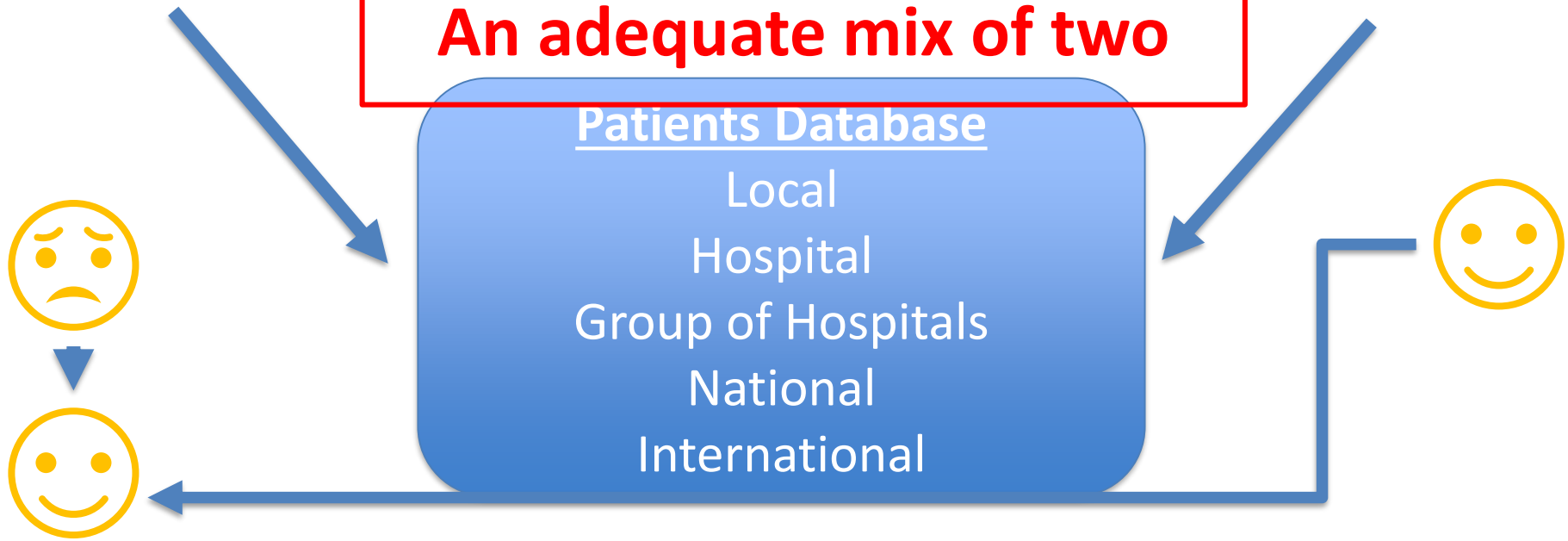
A priori encoding

- Direct validation
- User Interface !
- Few loss of information
- Education

A posteriori encoding

- Intermediation of validation
- NLP, Cost in HR !
- Loss of information
- No education

An adequate mix of two



IMPACT OF FUTURE DEVELOPMENTS ON THE CLINICAL USAGE OF SNOMED CT

Hôpital Erasme

ULB

- Specific templates for specialties not yet deployed
- Snomed CT Terminology Server (relationships, synonyms, Refsets of specialties using constraint language)
- Implementation of MRCM for the use of postcoordination
- NLP to prepopulate patient charts from different sources

TAKE HOME MESSAGES

- End-Users most often do not know what SNOMED CT is and the benefits to adopt it. Information and Education are paramount.
- When implementing a newly translated subset of SNOMED CT, reactivity to end-users requests is cornerstone for adoption.
- Prepare (IT) to deploy all the functionalities of Snomed CT and interoperability of healthcare data.

COAUTHORS OF THIS PAPER FROM THE IT DEPARTMENT

- Allard Alain
- Barbiaux Robert
- Bayle Florent
- Lefever Lénaic
- Panzer Jérémie

THANKS TO THEM !