COMP3342:
Health Systems Interoperability and Integration

Introduction

Time: **Tuesday+ Thursday: 11:25-12:45**

Location: **Masri204**

Section: **1**

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Co-funded by the Erasmus+ Programme of the European Union

Health Informatics in Healthcare

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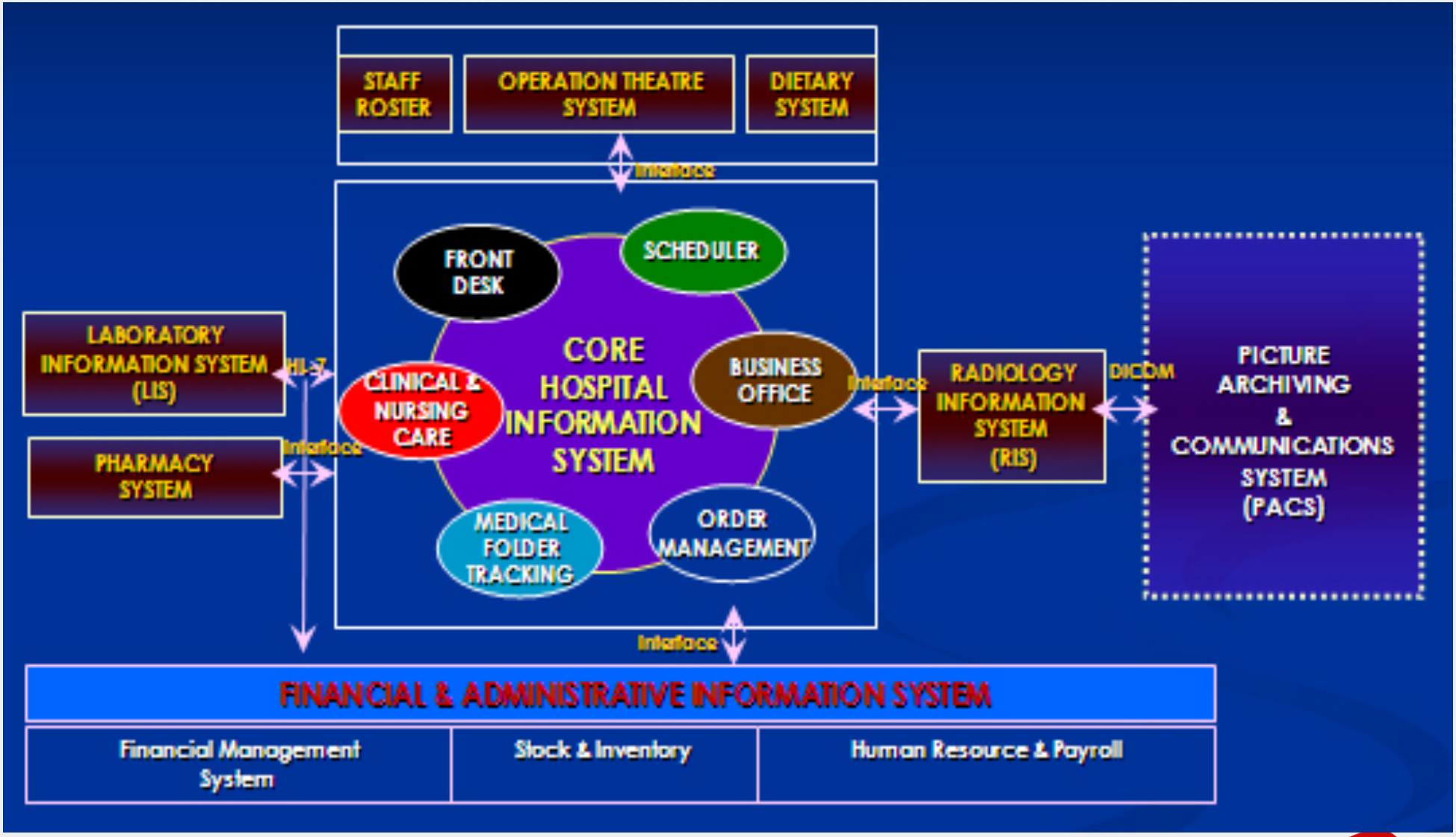
Integrated HISs



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Health Information Systems' Collaboration: within an organisation

- Effective collaboration requires **sharing** of knowledge and **exchange** of information.

- To succeed, it requires a multidisciplinary approach, with systems that can work in:
  - a complex healthcare organizations environment
  - diverse and complex patient populations.

http://hitinfrastructure.com/news/clinical-communication-collaboration-key-for-hit-systems

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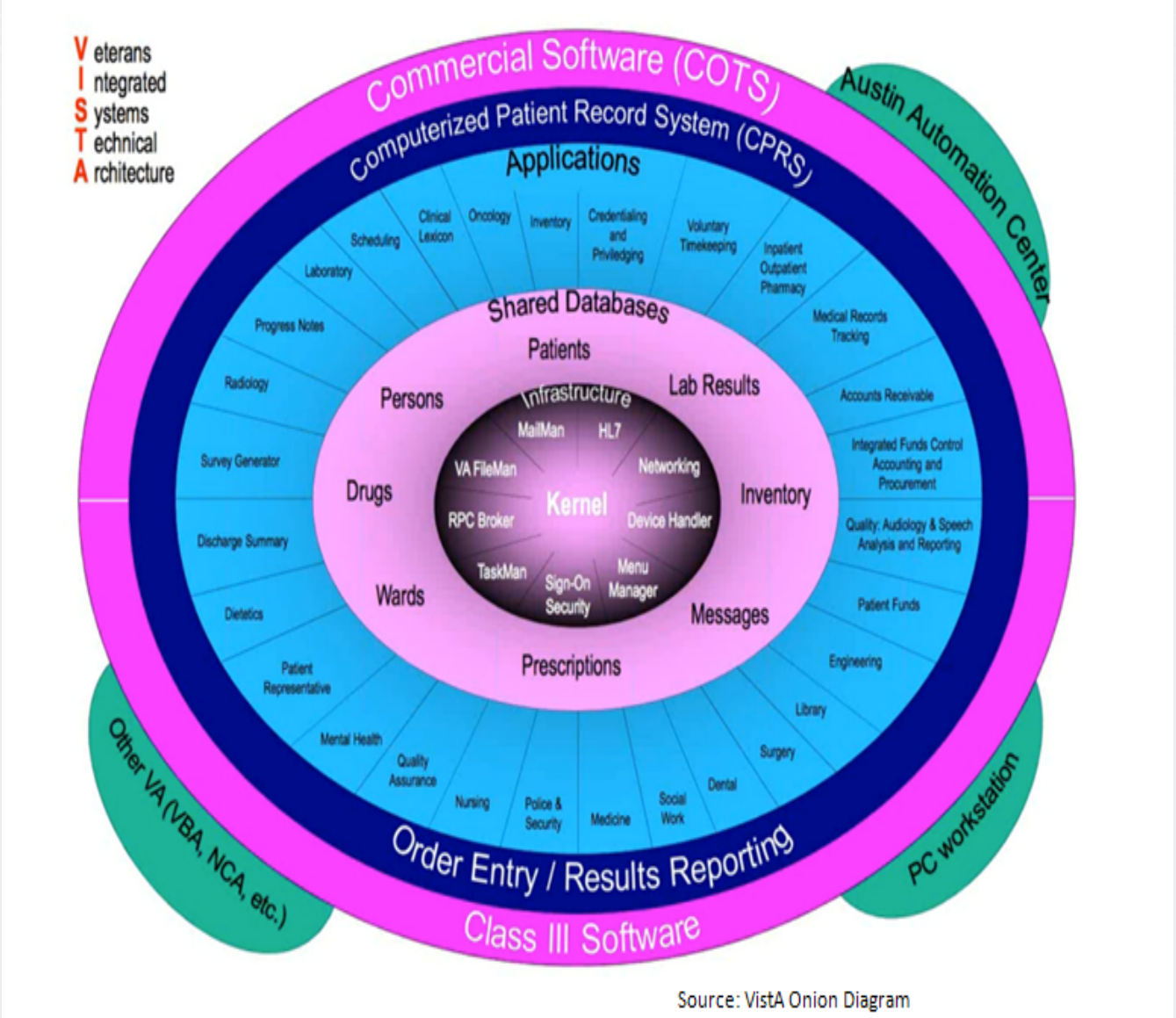
Integrated Health: within a health organisation

http://hitinfrastructure.com/news/clinical-communication-collaboration-key-for-hit-systems

Open Source EHR System Example: VistA



Source: VistA Onion Diagram

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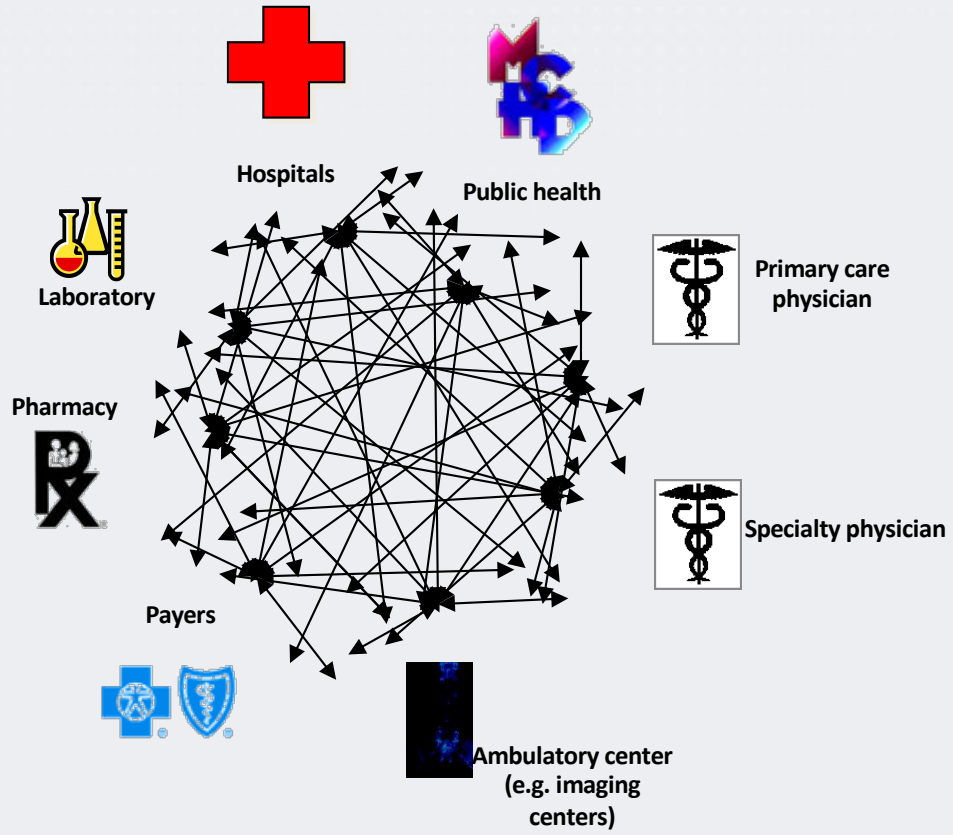
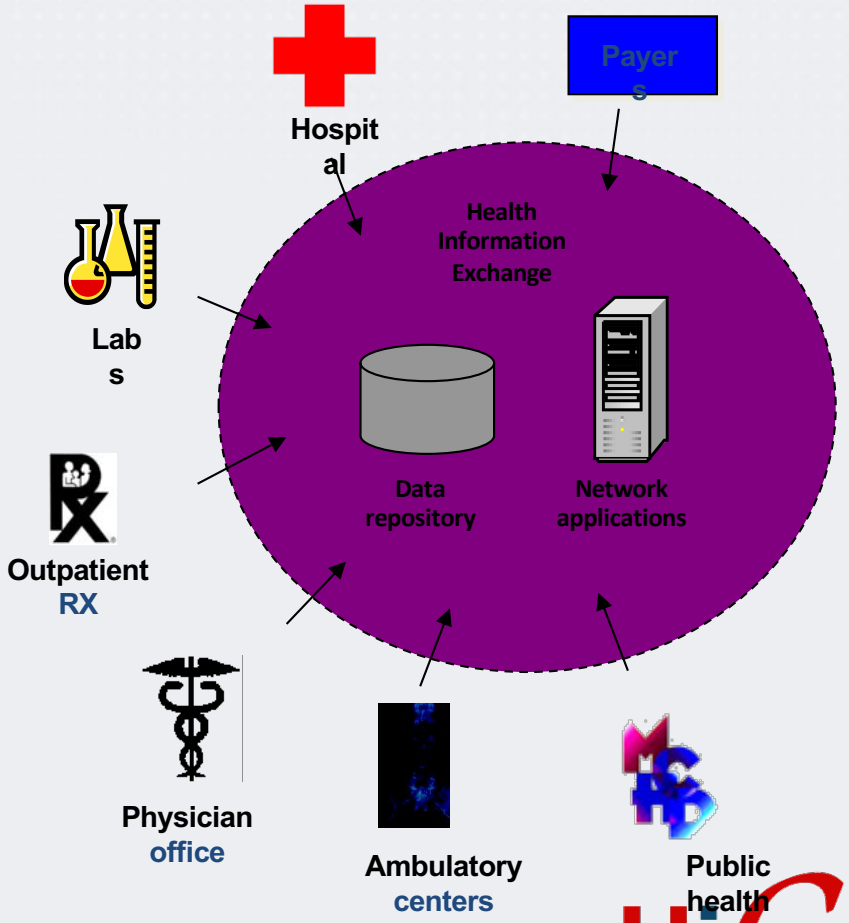
Integrated Healthcare: Disconnected data!

Current system fragments patient information and creates **redundant**, **inefficient** efforts



Future system will consolidate information and provide a foundation for **unifying** efforts



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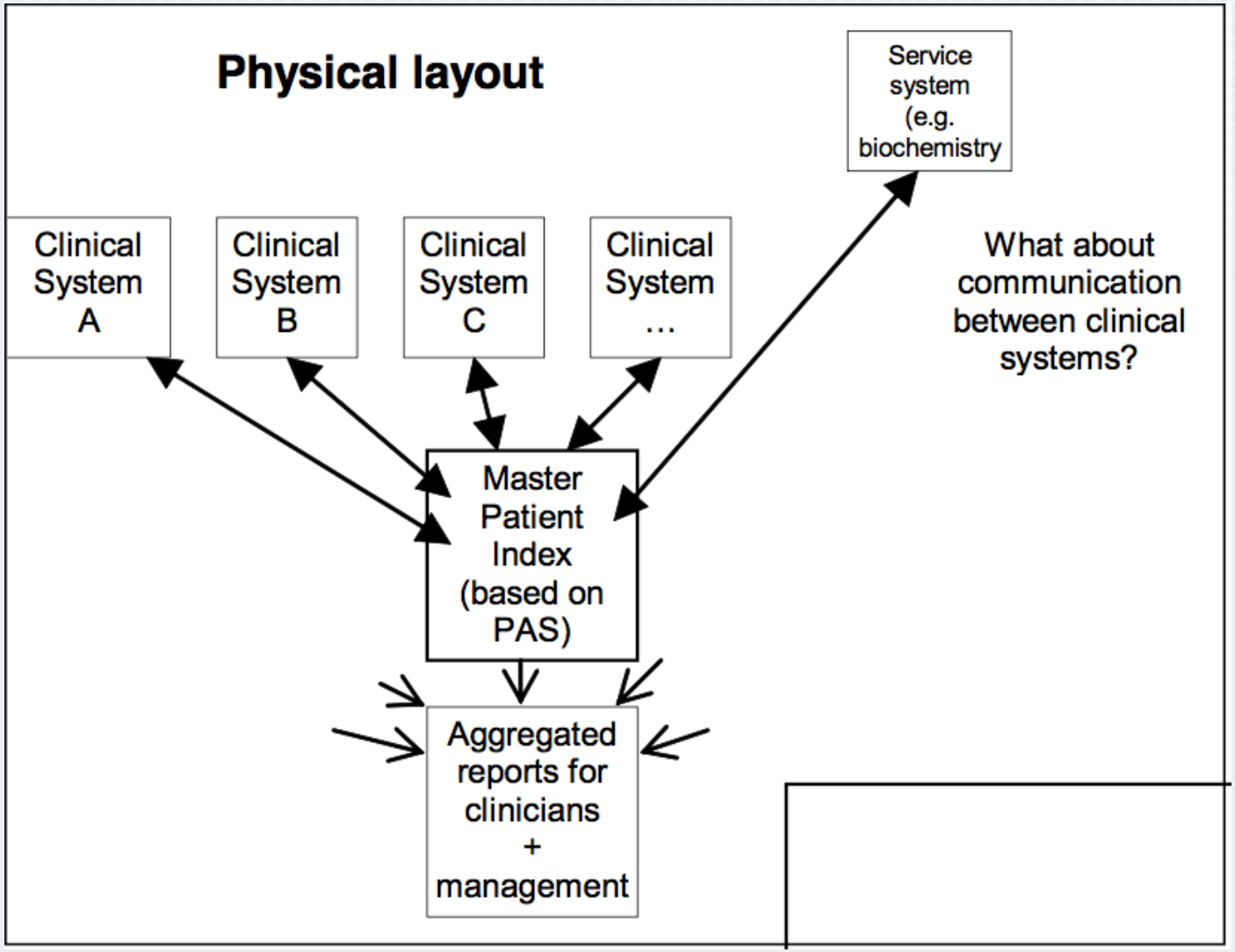
HIS in a Hospital: Layout



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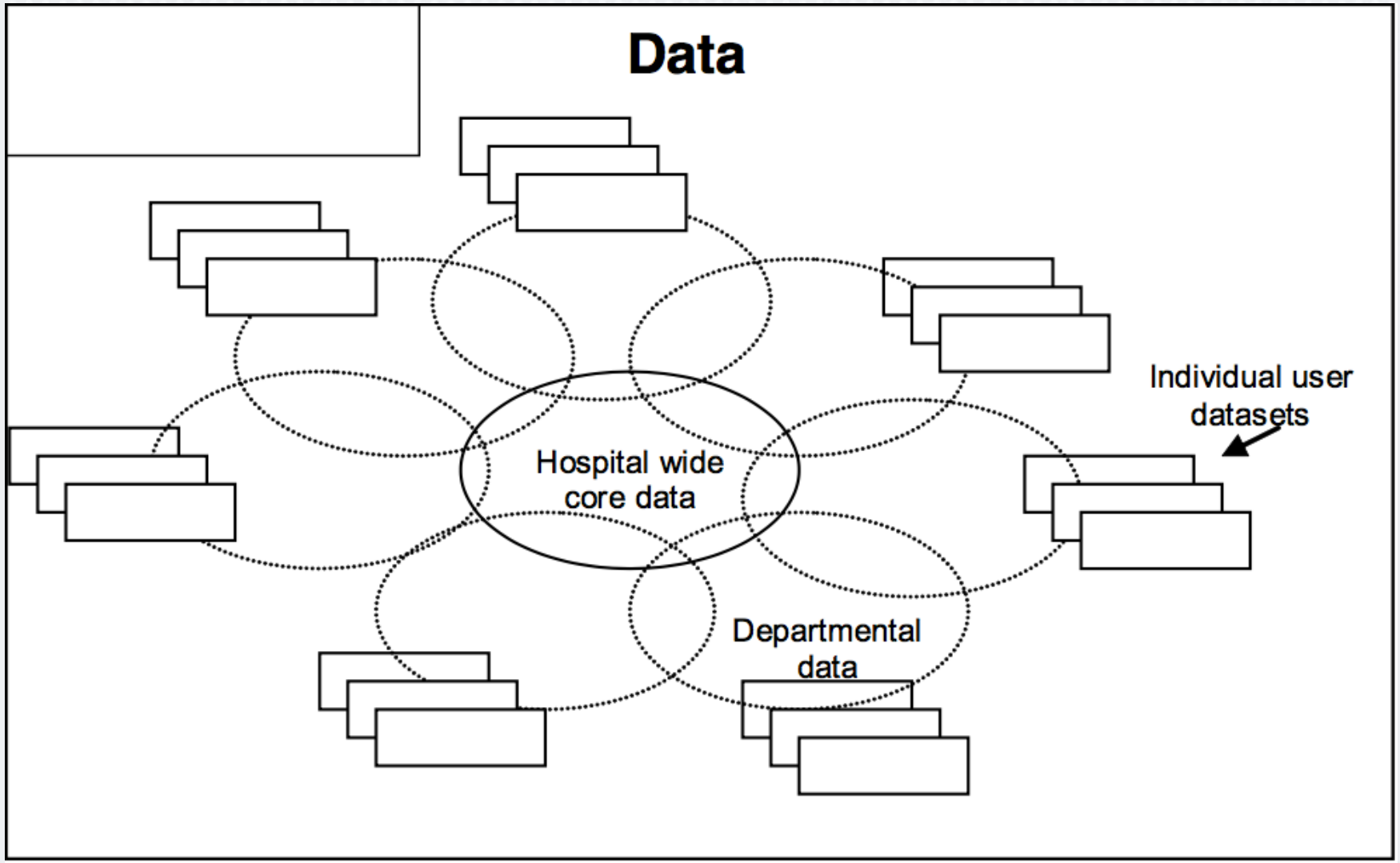
HIS in a Hospital: Data



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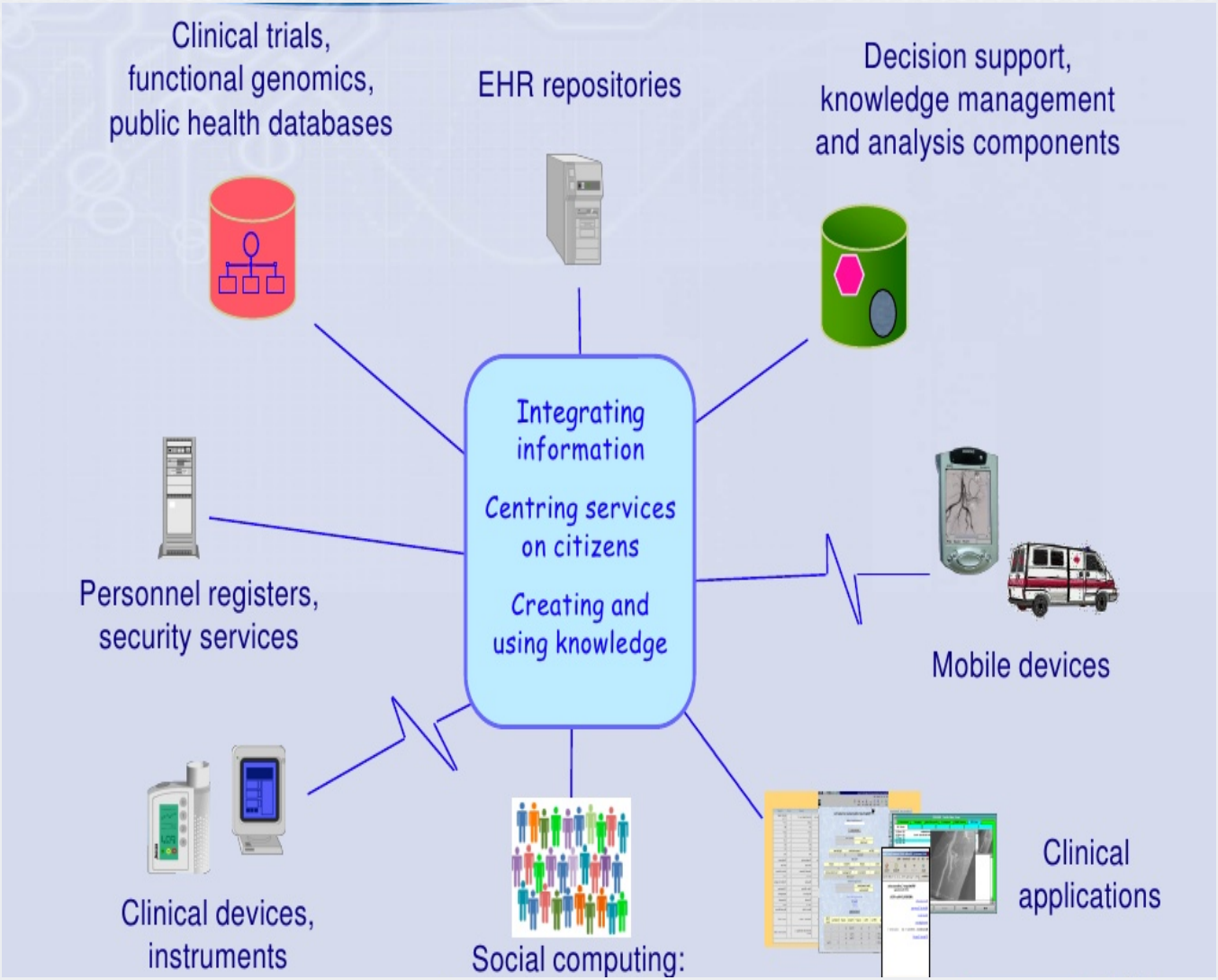
Electronic Health Records Land escape



Source: Eurorec

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EHR System objectives

The EHR should enable the consistent capture, processing, retention, protection and communication of health information such that interoperability is achieved in support of shared care, improved quality of care, effective resource management, providing evidence of actions taken in health(care), and in support of the uses of anonymized information for health system management.

[ISO 18308]

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EHR System objectives...

The EHR should enable the communication (or exchange) of all health information between care settings, subject to appropriate consent and access rights, to a sufficient quality to support safe shared clinical care.

[ISO 18308]

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Why share Medical Data?

- Increases patient safety
- Lowers Healthcare costs
- Allows for coordination of care
- Increases communication between providers

=> Similar to a Banking analogy of providing banking services in multiple branches

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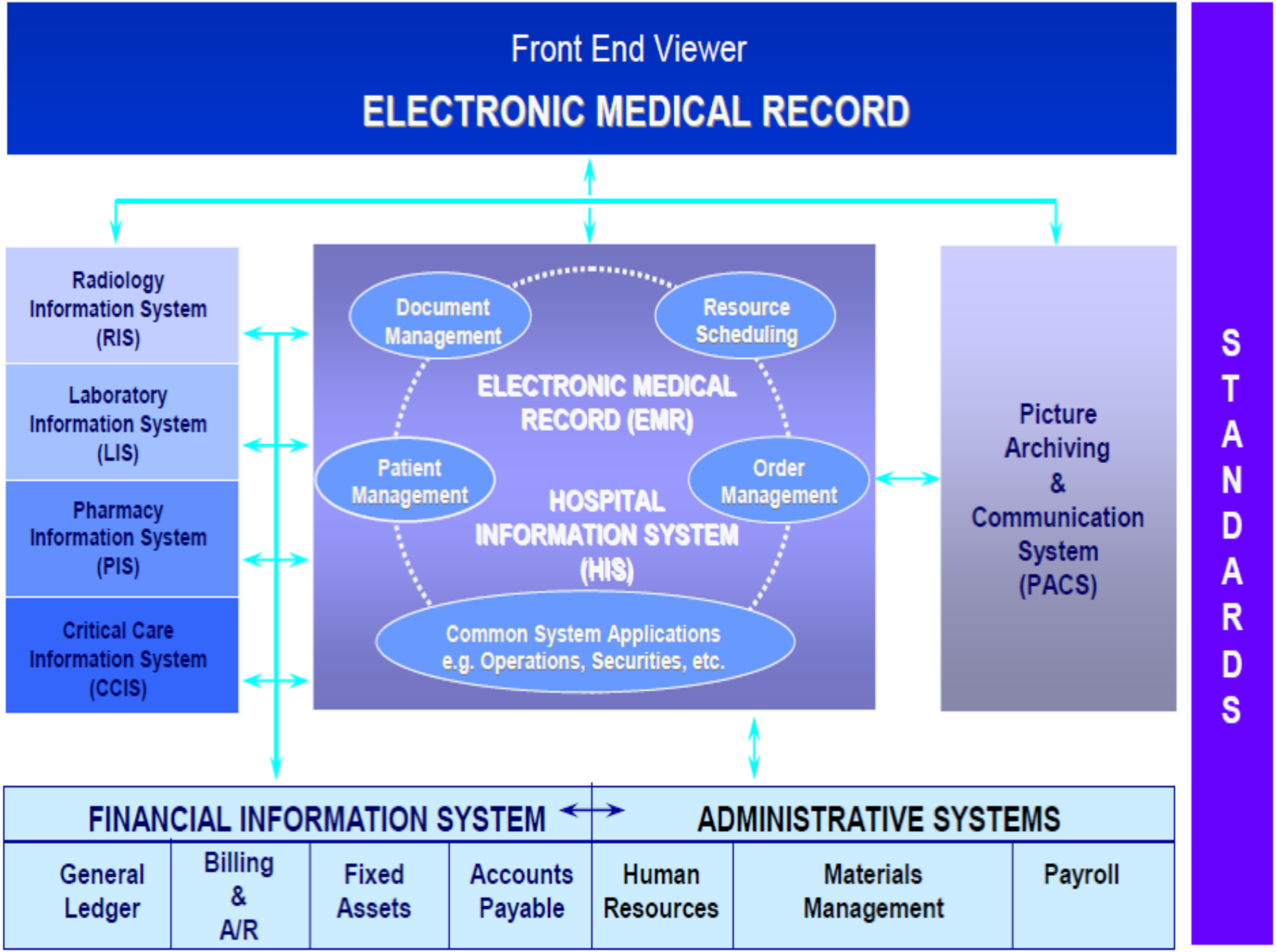
Front End Viewer
ELECTRONIC MEDICAL RECORD
Radiology Information System (RIS)
Laboratory Information System (LIS)
Pharmacy Information System (PIS)
Critical Care Information System (CCIS)
Document Management
Resource Scheduling
ELECTRONIC MEDICAL RECORD (EMR)
Patient Management
Order Management
HOSPITAL INFORMATION SYSTEM (HIS)
Common System Applications e.g. Operations, Securities, etc.
Picture Archiving & Communication System (PACS)
STANDARDS
FINANCIAL INFORMATION SYSTEM
ADMINISTRATIVE SYSTEMS
General Ledger
Billing & A/R
Fixed Assets
Accounts Payable
Human Resources
Materials Management
Payroll

Teaching method

- Lectures **(~ 3hrs per week)**
- Independent Student Reading
- Practical work: (+ **Group project**)
- Tutorials/Case study discussion (**in lectures**)

---------- **Course Assessment** ----------

In-Class Work	**10%**
Project+Presentation	**60%**
Assignments+Presentation	**30%**

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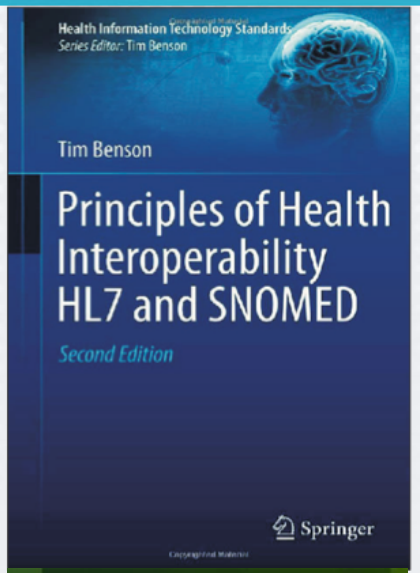
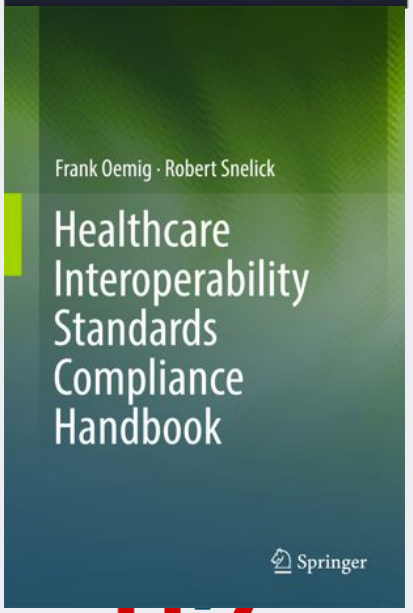
Recommended Course Textbooks

- Tim Benson, Grahame Grieve (2016). **Principles of Health Interoperability: SNOMED CT, HL7 and FHIR (Health Information Technology Standards),** 3rd ed. 2016 Edition

- Oemig, F., & Snelick, R. (2016). **Healthcare interoperability standards compliance handbook**. *Cham, The Netherlands: Springer International Publishing*.

- Health Information and Quality Authority, **Overview of Healthcare Interoperability Standards**, https://www.hiqa.ie/sites/default/files/2017-01/Healthcare-Interoperability-Standards.pdf





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