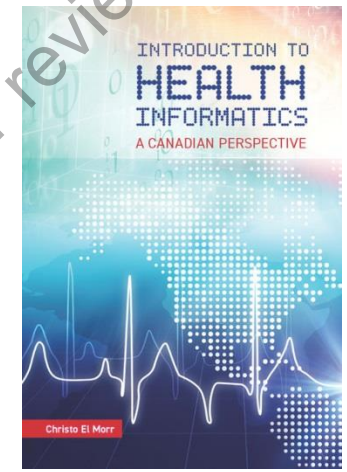
Chapter 1: Introduction to Health Informatics

Christo El Morr, PhD



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Learning Objectives

By the end of this chapter you should be able to

1. Describe the evolution of health informatics.
2. List health informatics systems.
3. Explain the differences among many health informatics systems.
4. Explain the intersection between health informatics and health management.
5. Explain the intersection between health informatics and health policy.
6. Appreciate the technological context within which health informatics evolves.
7. Describe the competencies needed by a health informatics professional (HIP).

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Introduction

- Informatik: 1968
- Informatique Médicale: 1979
- Medical computing, medical computer science, computer medicine, medical information processing, medical information science, medical software engineering, and medical computer technology
- “the interdisciplinary field that studies and pursues the effective uses of biomedical data, information, and knowledge for scientific inquiry, problem solving, and decision making, motivated by efforts to improve human health” (AMIA, 2012)
- “the application of information technology to facilitate the creation and use of health-related data, information and knowledge” (COACH)

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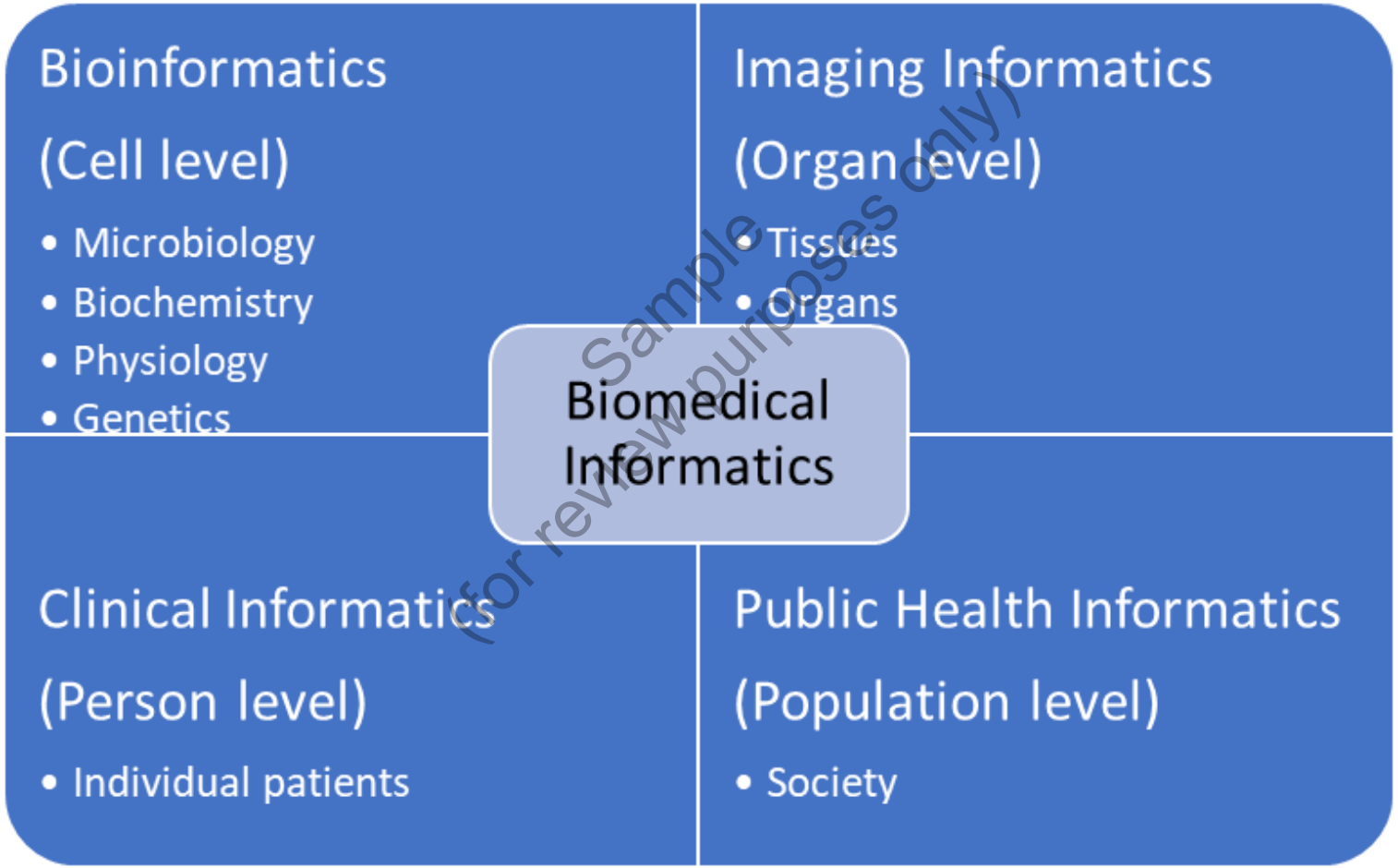
Informatics Domains



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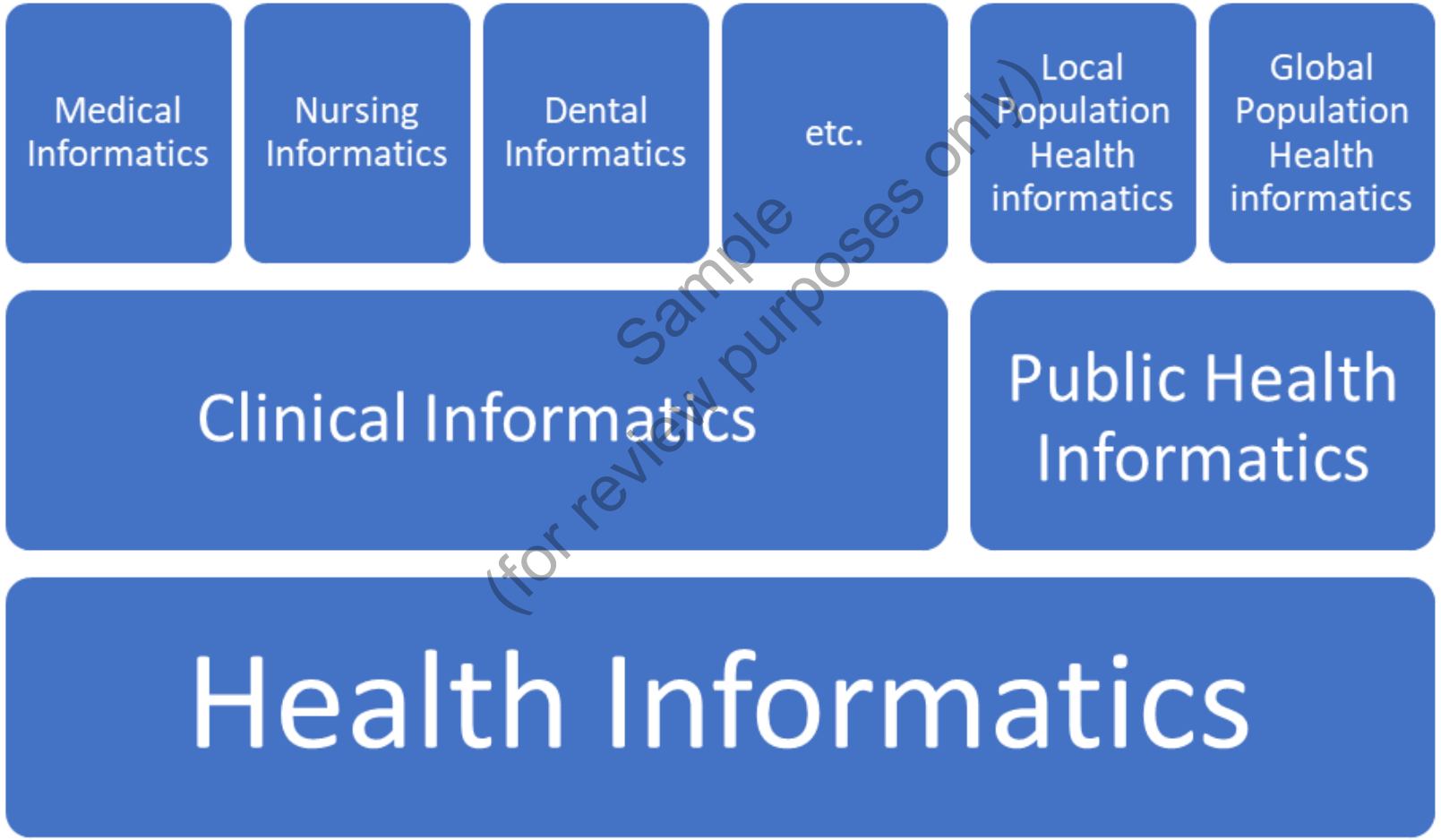
Health Informatics



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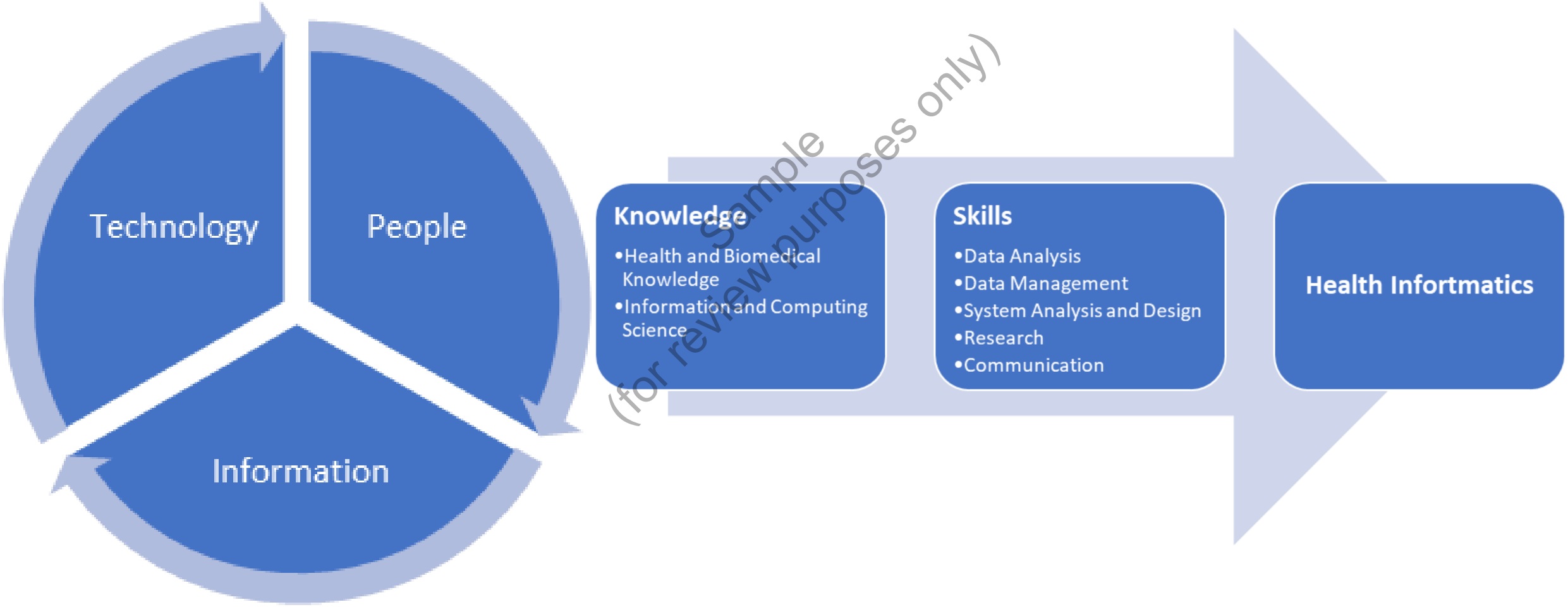
Multidisciplinary Field



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Health Informatics Professional (HIP)

- **Information Sciences Competencies**
  - Information management competencies:
    - Data and information
    - Informatics systems
  - IT concepts:
    - Software: DBMS
    - Hardware: computing devices, networks
    - Informatics models: data structure, privacy, security

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Health Informatics Professional (HIP)

- **Health Sciences Competencies**
  - Clinical and health terminology
  - Canadian health system
  - Social determinants of health
  - Institutions

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Health Informatics Professional (HIP)

- **Management Sciences Competencies**
  - Project management
  - Change management
  - Customer relationships
  - Information culture promotion

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Health Informatics Professional (HIP)

- **Data Analysis, Research, and Communication Skills**
  - Data analysis
  - Research design
  - Implementation and assessment
  - Requirements analysis
  - Communication skills

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HIP Jobs

- Information Systems Manager
- Health Information Manager
- Quality Improvement Coordinator
- Clinical/Systems/Information Analyst
- Project Manager or Sales Executive in an IT company
- Systems Administrator
- Health Consultant
- Clinical Applications Coordinator/Data Manager
- Clinical Project Manager, Senior Project Manager
- Clinical Researcher/Research Associate
- Clinical Vocabulary Manager
- Enterprise Applications Specialist
- Health Systems Specialist
- Health Information Services Department Technician
- Information Privacy Coordinator
- Integration Architect (Implementation)
- Records and Information Coordinator

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HIP Institutions

- Teaching and community hospitals
- Local Health Integration Networks (LHINs) and/or health authorities
- Community and public healthcare organizations
- Government ministries, departments, and electronic health (eHealth) agencies
- Research institutions
- Health or disease advocacy organizations
- Vendors and/or application developers
- Consulting firms

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Health Informatics and Health Management

- Local health institutions
- Regional health authorities
- Canada Health Infoway: CIHI

- Electronic Medical Records (EMR)
- Electronic Health Records (EHR)
- Internet/web
- Virtual Reality / Augmented Reality
- Decision support systems
- Managing all of the above

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Health Informatics and Health Policy

- Health Policy: "decisions, plans, and actions that are undertaken to achieve specific healthcare goals within a society. An explicit health policy can achieve several things: it defines a vision for the future, which in turn helps to establish targets and points of reference for the short and medium term" (World Health Organization: WHO)
- Health care as a human right
- Canada Health Act
- Federal and provincial governments play an impactful role

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Health Informatics and Health Policy

Social Determinants of Health:

1. Aboriginal status
2. Disability
3. Early life
4. Education
5. Employment and working conditions
6. Food insecurity
7. Gender
8. Health services
9. Housing
10. Income and income distribution
11. Race
12. Social exclusion
13. Social safety net
14. Unemployment and job security
15. Immigration status

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Health Informatics Systems

- Electronic Medical Records (EMRs)
- Clinical Decision Support Systems (CDSS)
- Picture Archiving and Communication Systems (PACS)
- Computerized Provider Ordering System (CPOE)
- Telemedicine / Telehealth
- Consumer Informatics
- Public Health Informatics
- Role of Big Data
- Role of Usability

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