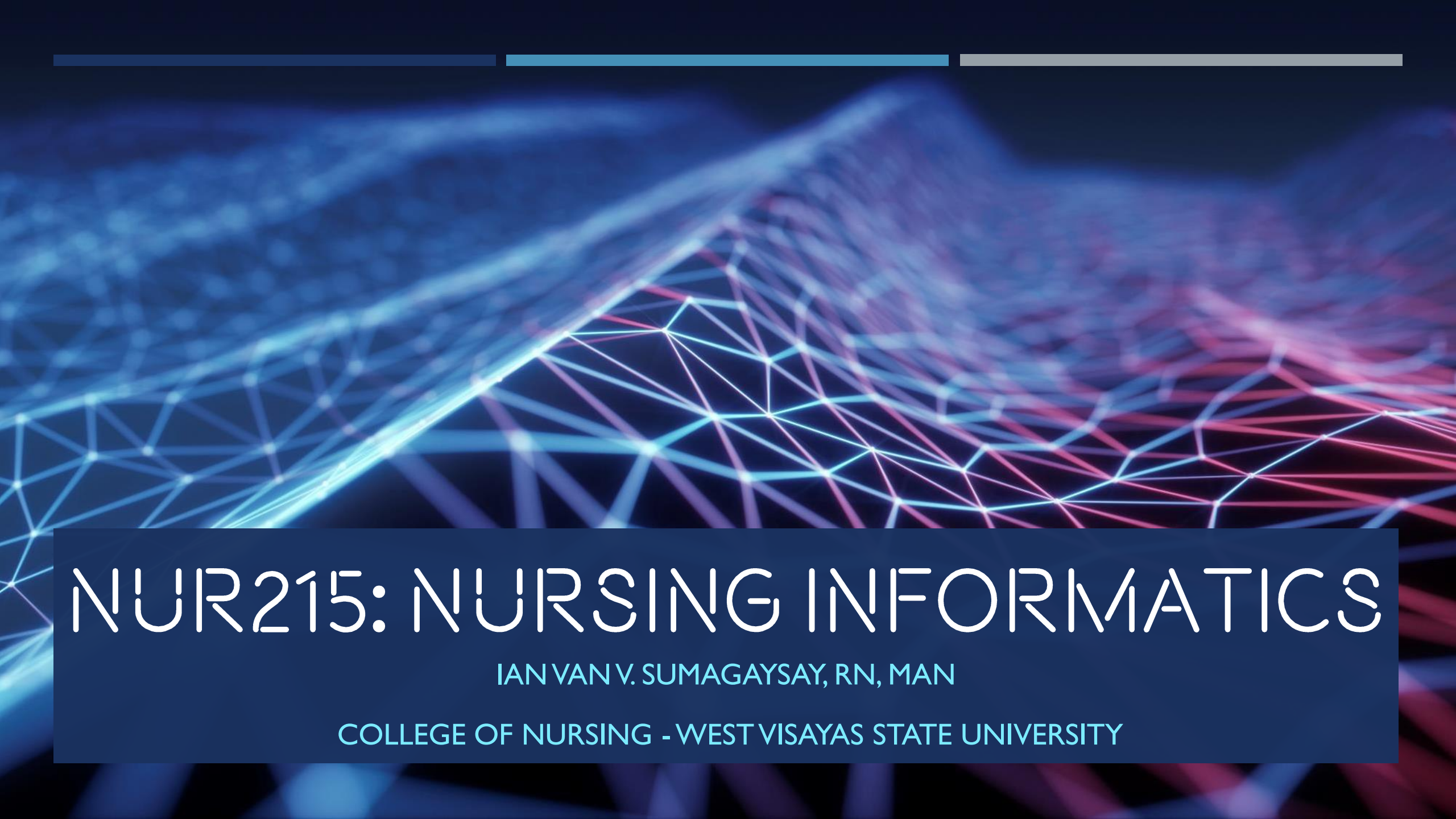

NUR215: NURSING INFORMATICS

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COLLEGE OF NURSING - WEST VISAYAS STATE UNIVERSITY

COURSE REQUIREMENTS:

- Course No. and Title: NUR215 – Nursing Informatics
- Course Credit: 2 units – 36 hours (lecture), 1 unit (laboratory) – 54 hours
- Course Description: This course deals with concepts, principles, theories and techniques on nursing informatics in clinical practice, education and research. The learners are expected to use the system of informatics to support the delivery of health care.

CRITERIA FOR GRADING

- Lecture:

Quizzes	60%	Midterm Lecture Grade	50%
Midterm/Final term Exam	40%	Final term Lecture Grade	50%
Term Lecture Grade	100%	Final Grade for Lecture	100%

- Laboratory (To be discussed during laboratory class)
- 60% of Lecture Grade + 40% of Laboratory Grade = Final Grade for Nur215

TECH REQUIREMENTS:

INTERNET CONNECTION

LAPTOP/ MOBILE DEVICE

GOOGLE ACCOUNT

CONCEPTS, PRINCIPLES AND THEORIES IN NURSING INFORMATICS

Informatics Theory

Computer Systems

IT System Application in Nursing

HISTORICAL PERSPECTIVES OF NURSING INFORMATICS

Objective:

1. Integrate relevant principles social, physical, natural and health sciences and humanities in nursing informatics.

HISTORICAL PERSPECTIVES OF NURSING INFORMATICS

Nursing Informatics

- Evolved from the German "*Informatik*" (1957) or French word "*Informatique*" (1962) defined as Automatic/Automated Information.
- Referred to the field of applied computer science.
- Concerned with the processing of information such as nursing information.

HISTORICAL PERSPECTIVES OF NURSING INFORMATICS

Computers

- First introduced into healthcare facilities in the 1960s.
- For the processing of basic administrative tasks.
- The computer is an essential tool in Healthcare Information Technology (HIT) systems.

HEALTH INFORMATION TECHNOLOGY (HIT)

Health Information Technology (HIT)

- HIT is an all-encompassing term
- Refers to technology that:

  a. Captures health information

  b. Processes health information

  c. Generates health information

HEALTH INFORMATION TECHNOLOGY (HIT)

Computerization affects all aspects of healthcare delivery including:

a. Provision and documentation of patient care

b. Education of healthcare providers

c. Scientific research for advancing healthcare delivery

d. Administration of healthcare delivery services

e. Reimbursement for patient care

f. Legal and ethical implications

g. Safety and quality issues

HEALTH INFORMATION TECHNOLOGY (HIT)

Currently, it is shifting toward:

a. Integrating multiple technologies and telecommunication devices

b. Invisible storage devices such as cloud storage

c. User-friendly, menu-driven, touchscreen manipulation methods

HEALTH INFORMATION TECHNOLOGY (HIT)

Computers in nursing are used for:

a. Managing patient care information

b. Monitoring quality

c. Evaluating outcomes

d. Communicating data and messaged via the Internet

e. Accessing resources

f. Interacting with patients on the Web

HEALTH INFORMATION TECHNOLOGY (HIT)

g. Documenting and processing real-time plans of care

h. Supporting nursing research

i. Testing new systems

j. Designing new knowledge databases

k. Developing data warehouses

l. Advancing the role of nursing in the healthcare industry and nursing science

MAJOR HISTORICAL PERSPECTIVES OF NURSING AND COMPUTERS

Seven Time Periods

1. Prior to the 1960s

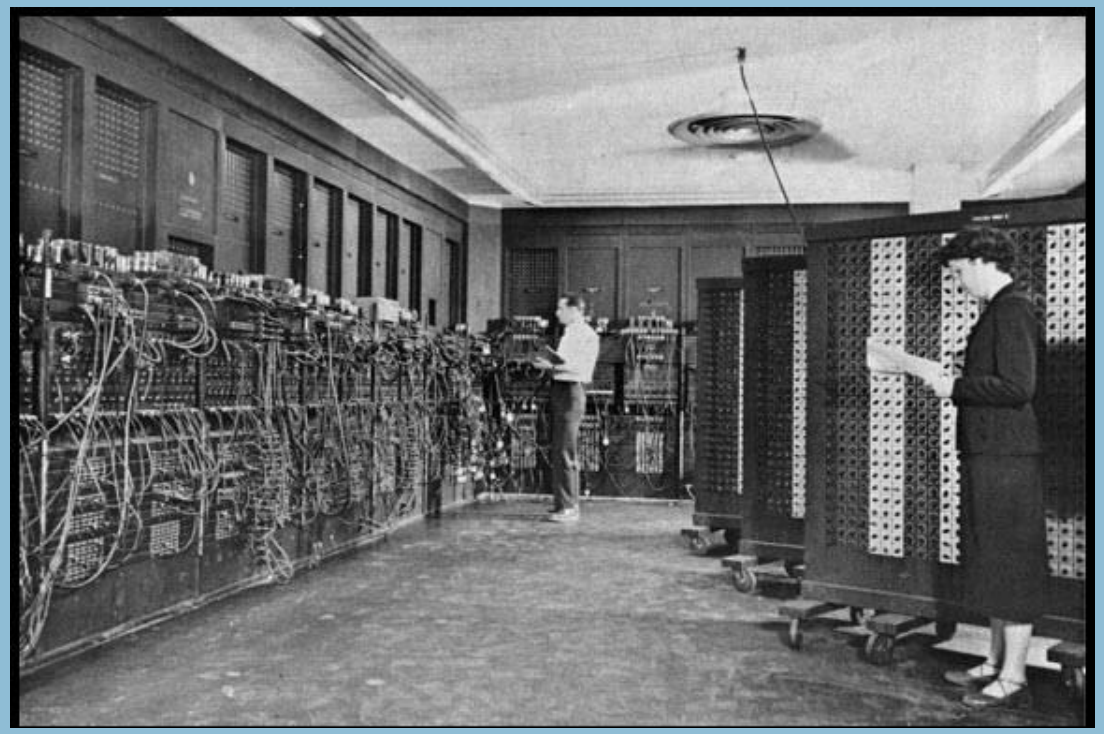
a. Developed in the late 1930s and early 1940s.

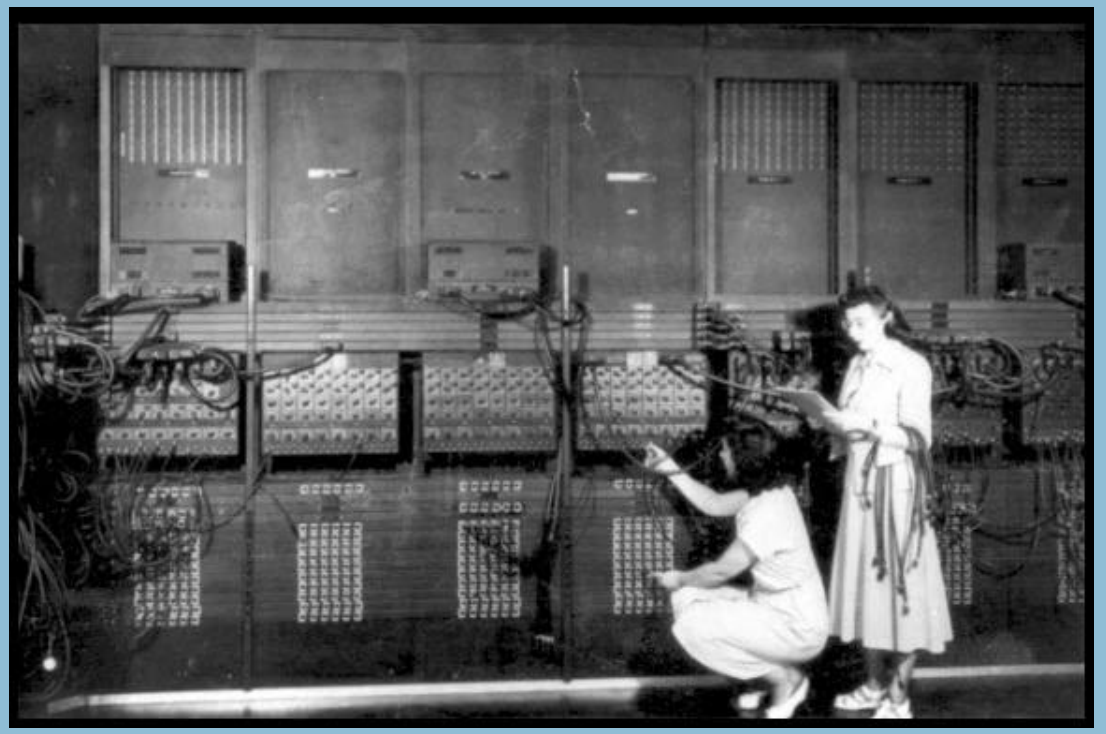
b. Use in healthcare did not begin until the 1950s and 1960s.

c. A few experts formed a cadre to adapt computers to healthcare and nursing.

d. Computers in healthcare were used for administrative and accounting functions.

ENIAC COMPUTER (1944)





https://www.pingdom.com/

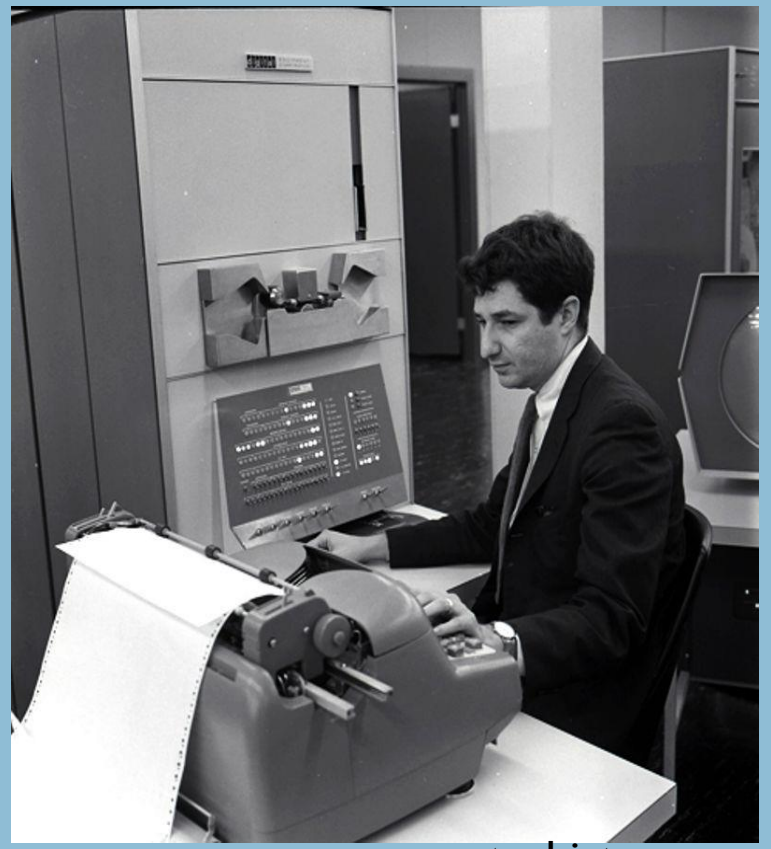
MAJOR HISTORICAL PERSPECTIVES OF NURSING AND COMPUTERS

2. 1960s

a. Use of computer technology began to be explored

b. Studies were conducted to determine how computer technology could be utilized.

c. The nurses' station was viewed as the most appropriate center for the development of computer applications.



www.computerhistory.org

MAJOR HISTORICAL PERSPECTIVES OF NURSING AND COMPUTERS

d. The mid-1960s presented nurses with new opportunities for computer use.

e. Increased time devoted to documentation and a rise in medication errors prompted the investigation of emerging computer-based information systems.

MAJOR HISTORICAL PERSPECTIVES OF NURSING AND COMPUTERS

3. 1970: During the late 1960s through the 1970s, hospitals began developing computer-based information systems which initially focused on:

(1) Physician order entry

(2) Results reporting

(3) Pharmacy

(5) Radiology reports

(6) Information for financial and managerial purposes

(7) Physiologic monitoring systems in the intensive care units

MAJOR HISTORICAL PERSPECTIVES OF NURSING AND COMPUTERS

A few systems started to include:

(1) Care planning

(2) Decision support

(3) Interdisciplinary problem lists

- Nurses were often involved in implementing systems.
- Interest in computers and nursing began to emerge in public and home health and education.

MAJOR HISTORICAL PERSPECTIVES OF NURSING AND COMPUTERS

In the 1970s, conferences helped public and home health nurses:

(1) Understand the importance of nursing data and their relationship to new Medicare and Medicaid legislation.

(2) Provide information on the usefulness of computers for capturing and aggregating home health and public health information.

MAJOR HISTORICAL PERSPECTIVES OF NURSING AND COMPUTERS

- Hospitals and public health agencies embarked on investigating computers and nursing.
- The opportunity to improve education using computer technology also began.
- Early nursing networks helped to expand nursing awareness of computers and the impact HIT could have on practice.

MAJOR HISTORICAL PERSPECTIVES OF NURSING AND COMPUTERS

- The Clinical Center at the National Institutes of Health implemented the Technicon Medical Information System (TDS) computer system.
- TDS one of the earliest clinical information systems (called Eclipsys & Allscripts).
- TDS was the first system to include nursing practice protocols.

MAJOR HISTORICAL PERSPECTIVES OF NURSING AND COMPUTERS

4. 1980s

a. The field of nursing informatics exploded and became visible in the healthcare and nursing

b. The nursing profession needed to update its practice standards and determine its data standards, vocabularies, and classification schemes that could be used for the computer based patient record systems

c. Many mainframe healthcare information systems (HISs) emerged with nursing subsystems

MAJOR HISTORICAL PERSPECTIVES OF NURSING AND COMPUTERS

d. These systems documented several aspects of the patient record

e. The microcomputer or personal computer (PC) emerged during this period.

f. The first Nursing Special Interest Group on Computers met for the first time during SCAMC (Symposium on Computer Applications in Medical Care) in 1981.

g. In 1985, the ANA approved the formation of the Council on Computer Applications in Nursing (CCAN).

MAJOR HISTORICAL PERSPECTIVES OF NURSING AND COMPUTERS

h. CCAN became a very powerful force in integrating compute applications into the nursing profession.

i. The first edition of Essentials of Nursing Informatics was published in 1986.

https://www.ictlounge.com/

MAJOR HISTORICAL PERSPECTIVES OF NURSING AND COMPUTERS

5. 1990s

a. Advances in relational databases, client-server architectures, and new programming methods

b. Better application development at lower costs

c. Legislative activity in the mid-1990s paved the way for electronic health records through the Health Insurance Portability and Accountability Act (HIPAA) of 1996 (public-law 104-19)

MAJOR HISTORICAL PERSPECTIVES OF NURSING AND COMPUTERS

d. The complexity of technology, workflow analysis, and regulations shaped new roles in nursing

e. In 1992, the ANA recognized nursing informatics as a new nursing specialty separate Scope of Nursing Informatics Practice Standards, and also established a specific credentialing examination for it

f. The demand for nursing informatics (NI) expertise increased

MAJOR HISTORICAL PERSPECTIVES OF NURSING AND COMPUTERS

g. The ANA developed the Nursing Information and Data Set Evaluation Standards (NIDSEC) to evaluate and Recognize nursing technology rapidly changed in the 1990s

(1) PCs became smaller

(2) Computer notebooks became affordable

(3) Computers were linked through networks

(4) The Internet became mainstream

(5) The World Wide Web (WWW) increased access to information

MAJOR HISTORICAL PERSPECTIVES OF NURSING AND COMPUTERS

h. The purpose of Information systems was to guide the development and selection of nursing systems that included standardized nursing terminologies integrated throughout the system.

https://www.pinterest.com/

MAJOR HISTORICAL PERSPECTIVES OF NURSING AND COMPUTERS

6. 2000s

a. More healthcare information became digitalized and newer technologies emerged

b. In 2004, Executive Order 13335 (1) Established the Office of the National Coordinator (ONC) for Healthcare Information Technology (HIT)

(2) Issued a recommendation calling for all healthcare providers to adopt interoperable electronic health records (EHRs) by 2014/2015

MAJOR HISTORICAL PERSPECTIVES OF NURSING AND COMPUTERS

c. Wireless, point of care, regional database projects, and increased IT solutions proliferated

d. The use of bar coding and radio-frequency identification (RFID) emerged as a useful technology

e. Smaller mobile devices with wireless or Internet access increased access to information for nurses within hospitals and in the community

MAJOR HISTORICAL PERSPECTIVES OF NURSING AND COMPUTERS

f. The development and refinement of voice over Internet protocol (VoIP) provided voice cost-effective communication

g. The Internet provided a means for development of clinical applications

h. The nursing informatics research agenda promoted the integration of nursing care data in HIT systems that would also generate data for analysis, reuse, and aggregation

MAJOR HISTORICAL PERSPECTIVES OF NURSING AND COMPUTERS

7. 2010s

a. The impact of the Nursing Minimum Data Set (NMDS) demonstrated that continued consensus and effort was needed to bring to fruition the vision and implementation of minimum nursing data into clinical practice

b. A new nursing informatics research agenda for 2008–2018 emerged as critical for this specialty

c. The new agenda is built on one originally developed and published by the National Institute for Nursing Research (NINR) in 1993

MAJOR HISTORICAL PERSPECTIVES OF NURSING AND COMPUTERS

d. During 2010, the ONC convened two national committees:

(1) National Committee on Health Policy

(2) National Committee on Health Standards which outlined and designed the focus for the "Meaningful Use" (MU) legislation

e. Meaningful Use was designed to be implemented in at least three stages

f. Consists of the regulations which built onto each other with the ultimate goal of implementing a complete an interoperable EHR and/or HIT system in all US hospitals

MAJOR HISTORICAL PERSPECTIVES OF NURSING AND COMPUTERS

g. In 2011/2012 MU Stage 1 was initiated focusing primarily on the Computerized Physician Order Entry (CPOE) Initiative for physicians

h. In 2012/2013 MU Stage 2 was introduced focusing Primarily on the implementation of Quality Indicators

i. The Quality Indicators are used to guide hospitals in patient safety and if not implemented used as indicators subject to financial penalties

MAJOR HISTORICAL PERSPECTIVES OF NURSING AND COMPUTERS

j. It is anticipated that MU Stage 3 will be implemented in 2014/2015

k. The Center for Medicare and Medicaid Services (CMS) plans to increase reimbursement for the implementation of "MU" regulations in their HIT and/or EHR systems through 2015

l. CMS may even penalize eligible providers and facilities who do not meet the proposed MU criteria

MAJOR HISTORICAL PERSPECTIVES OF NURSING AND COMPUTERS

m. As the MU requirements increase they will impact on the role of the NI experts in hospitals

n. MU requirements ultimately on the roles of all nurses in the inpatient facilities, making NI an integral component of all professional nursing services

CONSUMER-CENTRIC HEALTHCARE SYSTEM

1. There is a shift to a consumer-centric healthcare system due to escalating costs
2. Consumers are encouraged to be active partners in their care
3. A variety of technologies have evolved to enable consumers to have access to their health information

CONSUMER-CENTRIC HEALTHCARE SYSTEM

4. Consumers can choose whether to share this across healthcare providers and settings

5. Personal health records multiplied as either stand-alone systems or those tethered to EHRs

6. Consumers are more literate regarding healthcare information literacy and expect to become more involved in managing their own health

NURSING INFORMATICS PIONEERS

I.V. Sumagaysay, WVSU-CON

HISTORY PROJECT

1. In 1995, Saba initiated a history of NI at the National Library of Medicine, which consisted of the collection of archival documents from the NI pioneers

2. The history project was initiated based on a recommendation by Dr. Morris Collen

3. In 2001, that the Nursing Informatics Working Group (NIWG) of the American Medical Informatics Association (AMIA) became involved (https://www.amia.org/working-groups/nursing-informatics/history-project)

HISTORY PROJECT

4. The NI History Committee was established to take on this project

5. The committee solicited archival material from the known NI pioneers for a History of Nursing Informatics to be housed in the NLM as part of its History Collection

6. In 2004, the rich stories of pioneers in nursing informatics were captured through a project sponsored by the AMIA-NIWG

HISTORY PROJECT

7. Pioneers were defined as those who "opened up" a new area in nursing informatics and provided a sustained contribution to the specialty

8. The 33 videotaped stories are available on the AMIA website: www.amia.org/niwg-history-page

9. The early pioneers came from a variety of backgrounds as nursing education in nursing informatics didn't exist in the 1960s

HISTORY PROJECT

10. Almost all of the pioneers were educated as nurses, though a few were not

11. The pioneers had a vision that technology could make nursing practice better

12. The nursing pioneers influenced the evolution of informatics as a specialty from

HISTORY OF NURSING INFORMATICS IN THE PHILIPPINES

I.V. Sumagaysay, WVSU-CON

HISTORY OF NURSING INFORMATICS IN THE PHILIPPINES

Origins

- Since 1998, several faculty members of the University of the Philippines began formal education and training. Dr. Herman Tolentino took a post-doctoral fellowship in medical informatics at the University of Washington.
- Dr. Alvin Marcelo followed a year later for his training at the National Library of Medicine.
- Dr. Cito Maramba went to Coventry for his Masters in Information Sciences at the University of Warwick.

HISTORY OF NURSING INFORMATICS IN THE PHILIPPINES

- They were later followed by other physicians such as Dr. Micheal Muin and Dr. Ryan Bañez.
- By the year 2003, a Master of Science in Health Informatics was proposed to be offered by UP-Manila College of Medicine (major in medical informatics) and the College of Arts and Science (major in bioinformatics) and was later approved to be offered starting academic year 2005-2006.

HISTORY OF NURSING INFORMATICS IN THE PHILIPPINES

- In 1999, a study group was formed headed by the National Institute of Health of the University of the Philippines Manila. This group identified international standards for health information and their adaptability in the Philippines. The document is referred to as the "Standards of Health Information in the Philippines, 1999 version" or "SHIP99". Representatives from various sectors collaborated on this project including the Philippine Nurses Association (PNA) in the person of Ms. Evelyn Protacio.

HISTORY OF NURSING INFORMATICS IN THE PHILIPPINES

- The Philippine Medical Informatics Society (PMIS) and its founders had strong influence in the development of health informatics in the Philippines. The PMIA was officially registered under the Securities and Exchange Commission in 1996 by its board composed of eleven physicians. The organization was headed by Dr. Alvin Marcelo.

HISTORY OF NURSING INFORMATICS IN THE PHILIPPINES

CHED as a Catalyst

- The nursing community was still yet to follow its international counterparts in the adoption of information, communication and technology in nursing practice in the Philippines.
- Despite the inclusion of Informatics course in the undergraduate curriculum which focused on basic desktop applications, the need for genuine nursing informatics course had not yet been realized.

HISTORY OF NURSING INFORMATICS IN THE PHILIPPINES

- In 2008, Nursing Informatics course in the undergraduate curriculum was defined by the Commission on Higher Education (CHED) Memorandum Order 5 Series of 2008. This was later revised and included as Health Informatics course in CHED Memorandum Order 14 Series of 2009. This was first implemented in the summer of 2010.

HISTORY OF NURSING INFORMATICS IN THE PHILIPPINES

Organization

- Early in 2009, Mr. Kristian R. Sumabat and Ms. Mia Alcantara-Santiago, both nurses and graduate students of Master of Science in Health Informatics at the University of the Philippines, Manila began drafting plans to create a nursing informatics organization. In February 2010, they began recruiting other nursing informatics specialists and practitioners to organize a group which later became as the Philippine Nursing Informatics Association.

HISTORY OF NURSING INFORMATICS IN THE PHILIPPINES

Issues and Challenges

- Like many other disciplines, nursing informatics face many challenges while in its infancy stage.
- The inclusion of informatics as an integral part of the undergraduate curriculum has been one of the most influential factors for the increased awareness and interest in this field of nursing.
- However, the contents of the curriculum was adapted from international materials which does not match the local needs.

HISTORY OF NURSING INFORMATICS IN THE PHILIPPINES

- A community-centered approach to the use of information, communication and technology in nursing practice must be adapted to ensure the impact of the program in the local healthcare system.
- Lack of certification and credentialing programs in post-graduate levels are also absent with the scarcity of local nursing informatics experts.
- This new field has yet to gain acceptance and recognition in the nursing community as a sub-specialty.

HISTORY OF NURSING INFORMATICS IN THE PHILIPPINES

Future Direction

- Development of training, certification and credentialing programs are in the pipeline for the Philippine Nursing Informatics Association.
- Future partnerships with local and international nursing and health informatics organizations have started as well.
- Other programs are expected to be slowly delivered with PNIA's CORE X strategic platform which stands for Competency, Organization, Recognition, Experience and Expertise.

HISTORY OF NURSING INFORMATICS IN THE PHILIPPINES

- It is also a major thrust to support the use of health information standards in the Philippines and to have nursing informatics specialists in every hospital in the country.

INFORMATICS NURSE SPECIALIST

I.V. Sumagaysay, WVSU-CON

INFORMATICS NURSE/INFORMATICS NURSE SPECIALIST

1. An informatics nurse (IN) is a registered nurse who has experience in nursing informatics
2. Informatics nurse specialists (INS) are prepared at the graduate level (master's degree) with specialty courses in nursing informatics
3. An INS functions as a graduate-level-prepared specialty nurse

INFORMATICS NURSE/INFORMATICS NURSE SPECIALIST

4. The ANA's Nursing: Scope and Standards of Practice, Second Edition, further reinforces the recognition of nursing as a cognitive profession

5. This cognitive work begins with the critical-thinking and decision-making components of the nursing process that occur before nursing action can begin

NURSING PROCESS FOR AN INFORMATICS NURSE

The nursing process provides a delineated pathway and process for decision making

a. Assessment, or data collection and information processing, begins the nursing process

b. Diagnosis or problem definition, the second step, reflects the interpretation of the data and information gathered during the assessment

NURSING PROCESS FOR AN INFORMATICS NURSE

c. Outcomes identification is the third step, followed by planning as the fourth step

d. Implementation of a plan is the fifth step

e. The final component of the nursing process is evaluation

f. The nursing process is most often presented as a linear process with evaluation listed as the last step

g. The nursing process really is iterative, includes numerous feedback loops, and incorporates evaluation activities throughout the sequencing

NURSING PROCESS FOR AN INFORMATICS NURSE

The collection of data about a client or about a management, education, or research situation is guided by a nurse's knowledge base built on

a. Formal and informal educational preparation

b. Evidence and research

c. Previous experiences

IMPORTANCE OF AN INFORMATICS NURSE

In healthcare, data, information, and knowledge are growing at astronomical rates and demand increasing reliance on computer and information systems for:

a. Collection

b. Storage

c. Organization and management

d. Analysis

e. Dissemination

COMPETENCIES OF AN INFORMATICS NURSE

- The Technology Informatics Guiding Educational Reform Initiative (TIGER) collaboratively identified the minimum set of competencies needed by every nurse.
- These competencies were organized into three categories:

  a. Basic computer skills

  b. Information literacy

  c. Information management

  d. elements of nursing practice

NURSING INFORMATICS AS A NURSING SPECIALTY

Nursing informatics is the nursing specialty that endeavors to make the:

a. Collection

b. Management

c. Dissemination of data, information, and knowledge—to support decision making—easier for the practitioner, regardless of the domain and setting

NURSING INFORMATICS AS A NURSING SPECIALTY

1. Informatics is a science that combines
    a. A domain science
    b. Computer science
    c. Information science
    d. Cognitive science
2. It is a multidisciplinary science, drawing from varied theories and knowledge applications

NURSING INFORMATICS AS A NURSING SPECIALTY

3. Healthcare informatics may be defined as the integration of
    a. Healthcare sciences
    b. Computer science
    c. Information science
    d. Cognitive science to assist in the management of healthcare information
4. Healthcare informatics is a subset of informatics

NURSING INFORMATICS AS A NURSING SPECIALTY

5. Because healthcare informatics is a relatively young addition to the informatics umbrella, you may see other terms that seem to be synonyms for this same area, such as

    a. Health informatics

    b. Or medical informatics

6. Medical informatics, historically, was used in Europe and the United States as the preferred term for healthcare informatics

NURSING INFORMATICS AS A NURSING SPECIALTY

7. Now, medical informatics is more clearly realized as a subset of healthcare informatics

8. Health informatics may mean informatics used in educating healthcare clients and/or the general public

9. As healthcare informatics evolves, so will the clarity in definition of terms and scopes of practice

10. Healthcare informatics addresses the study and management of healthcare information

NURSING INFORMATICS AS A NURSING SPECIALTY

Healthcare informatics would be the largest encompassing circle surrounding smaller intersecting circles and these aspects include:

a. Information retrieval

b. Ethics

c. Security

d. Decision support

e. Patient care

NURSING INFORMATICS AS A NURSING SPECIALTY

f. System life cycle

g. Evaluation

h. Human-computer interaction (HCI)

i. Standards

j. Telehealth

k. Healthcare information systems

l. Imaging

m. Knowledge representation

n. Electronic health records (EHRs)

o. Education

p. Information retrieval

NURSING INFORMATICS AS A NURSING SPECIALTY

Nursing informatics focuses on the information of nursing needed to address these core phenomena Within this focus are the meta-structures or overarching concepts of nursing informatics:

a. Data

b. Information

c. Knowledge

d. Wisdom

THEORIES IN NURSING INFORMATICS

I.V. Sumagaysay, WVSU-CON

THEORIES SUPPORTING NURSING INFORMATICS

Overview

a. A theory is a scholarly, organized view of some aspect of the world (reality)

(1) Theories can describe, explain, predict, or prescribe selected phenomena within this reality

(2) The concepts within a theory are interrelated

(3) Testing of these relationships through research is how theories gain or lose supporting evidence

(4) A profession needs theories to build evidence for the existence of a unique body of knowledge

THEORIES SUPPORTING NURSING INFORMATICS

Theories can be classified as **grand**, **middle-range**, and **situation-specific** or **practice theories**:

(1) Grand theories are broad in scope and the most complex of the three classifications

(2) Practice theories are the most specific of the three

(3) These theories usually provide prescriptions or directions for practitioners

(4) Middle-range theories are somewhere in the middle of these two ends—they are more specific than grand theories but not as prescriptive as practice theories

THEORIES SUPPORTING NURSING INFORMATICS

- **Nursing theories** are about nursing practice—a nurse's interactions or relationships with individuals, groups, or communities (also known as patients or clients) focused on applying the nursing process.
- **Novice to Expert**. Patricia Benner and other nurse educators adapted this model to explain how nursing students and professional nurses acquired nursing skills.
- **Computer science** is the study of algorithms for solving computation problems.
- **Information science** focuses on the gathering, manipulation, classification, storage, and retrieval of recorded knowledge.

THEORIES SUPPORTING NURSING INFORMATICS

- **Communication theory** uses these core concepts and additional principles developed since then to analyze information transfer and the effectiveness and efficiency of communications.
- **Cognitive Science** is the study of the mind—of how we think and it looks at our mental activities and processes.
- **Systems theory** relates to the properties of systems as a whole, focuses on the organization and interdependence of relationships within a system.
- The study of behavior—the processes driving actions—is the focus of the **Behavioral and Social sciences.**

THEORIES SUPPORTING NURSING INFORMATICS

- **Change** processes entail not only structures and ways of doing tasks, but also the performance, expectations, and perceptions of all involved parties.
- **Learning** is a process of acquiring knowledge, skills, attitudes, or values through study, experience, or teaching.
- **Organizational Behavior** where organizations are examined, using the methods drawn from economics, sociology, political science, anthropology, and psychology.
- **Management** science uses mathematics and other analytical methods to help make better decisions, generally in a business context.
- **Group dynamics** is a social science field that focuses on the nature of groups.

MODELS IN NURSING INFORMATICS

MODELS IN NURSING INFORMATICS

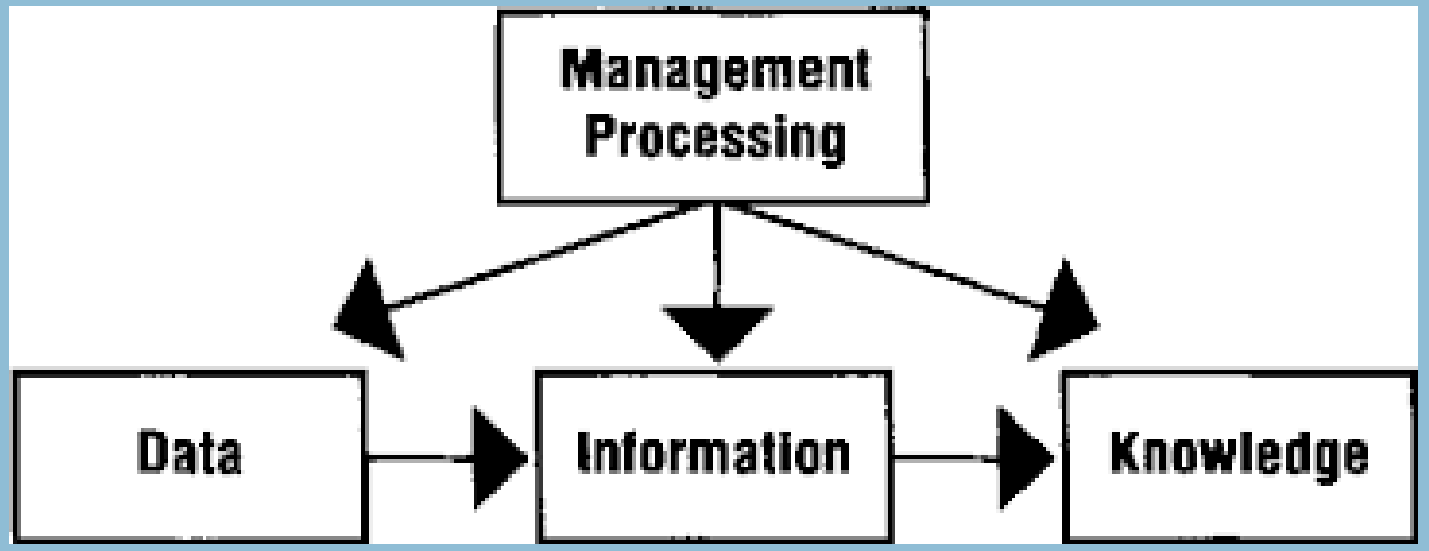
- **Models** are representations of some aspect of the real world.
- The foundations of nursing informatics are the **core phenomena** and **nursing-informatics models.**
- **Core phenomena** are data, information, knowledge, and wisdom and the transformations that each of these undergo.
- It is important to remember that different models reflect different viewpoints and are not necessarily competitive, that is, there is no one **"right"** model.

GRAVES AND CORCORAN'S (1989) MODEL OF NURSING INFORMATICS

- In 1989, Judith Graves and Sheila Corcoran published their article using the concepts of data, information, and knowledge in defining nursing informatics as a scientific discipline.
- The model presented the three concepts of nursing data, information and knowledge in a linearly relationship with data leading to information and information leading to knowledge. Procedural knowledge involves knowing how to do something.

GRAVES AND CORCORAN'S (1989) MODEL OF NURSING INFORMATICS

- For example, knowing how to assess a patient's breath sounds requires procedural knowledge. In the Graves model, management processing is the procedural knowledge used to process data, information, and knowledge.



(Informatics: Evolution of the Nelson Data, Information, Knowledge and Wisdom Model: Part 1, 2020)

GRAVES AND CORCORAN'S (1989) MODEL OF NURSING INFORMATICS

a. Their model placed data, information, and knowledge in sequential boxes with one-way arrows pointing from data to information to knowledge

b. The management processing box is directly above, with arrows pointing in one direction from management processing to each of the three boxes

c. The model is a direct depiction of their definition of nursing informatics

PATRICIA SCHWIRIAN' (1986) MODEL OF NURSING INFORMATICS

- In 1986, Patricia Schwirian proposed a model of nursing informatics intended to stimulate and guide systematic research in this discipline.
- The model provides a framework for identifying significant information needs, which in turn can foster research
- In this model, there are four primary elements arranged in a pyramid with a triangular base

PATRICIA SCHWIRIAN' (1986) MODEL OF NURSING INFORMATICS

Four elements are:

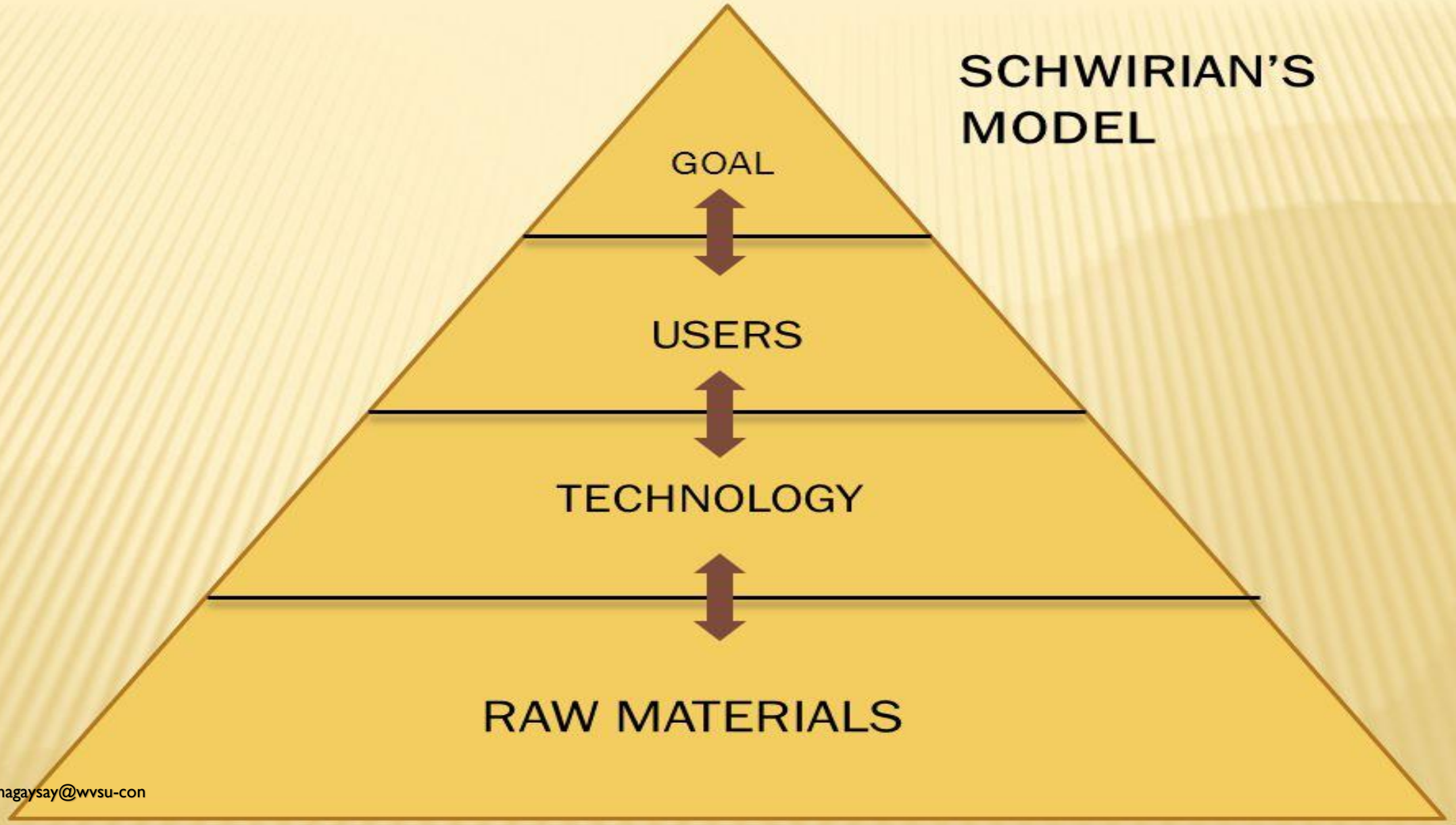
(1) Raw material (nursing-related information)

(2) Technology (a computing system comprised of hardware and software)

(3) Users surrounded by context (nurses, students)

(4) Goal (or objective) toward which the preceding elements are directed

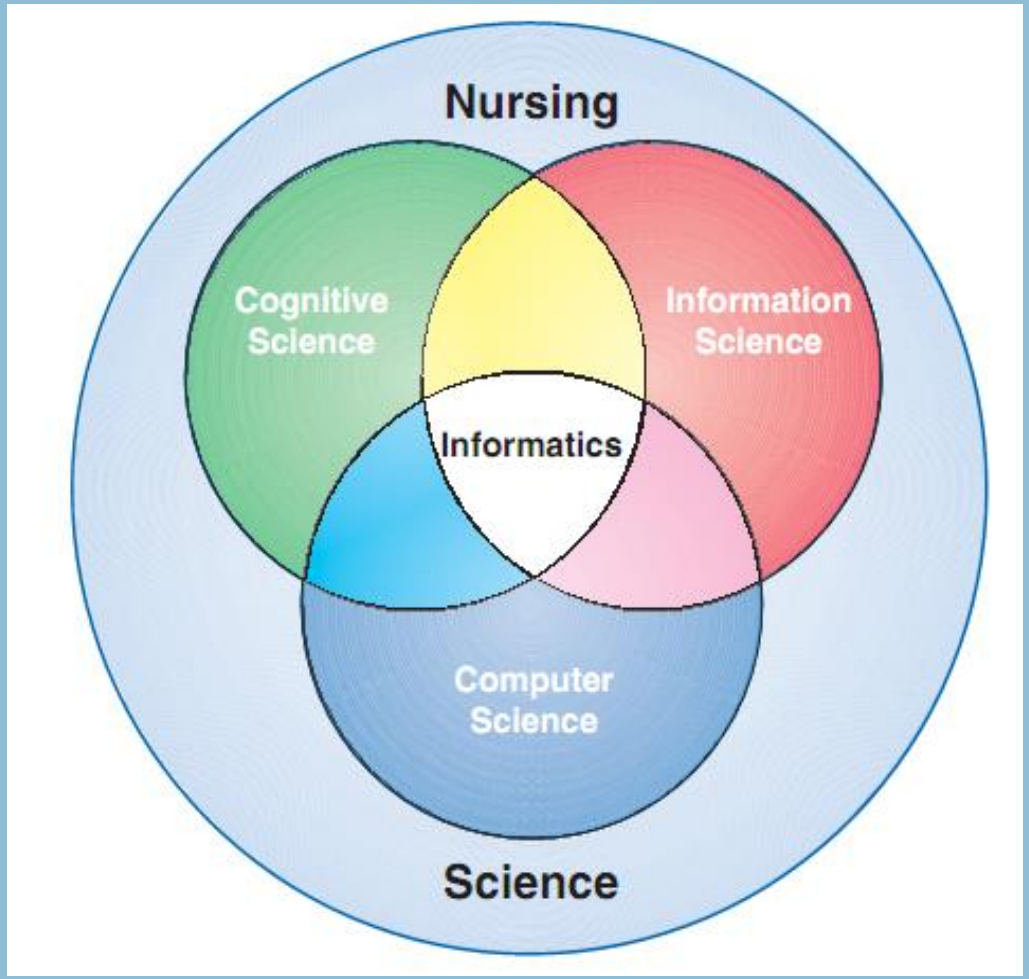
SCHWIRIAN'S MODEL



JAMES P. TURLEY'S MODEL (1996) MODEL OF NURSING INFORMATICS

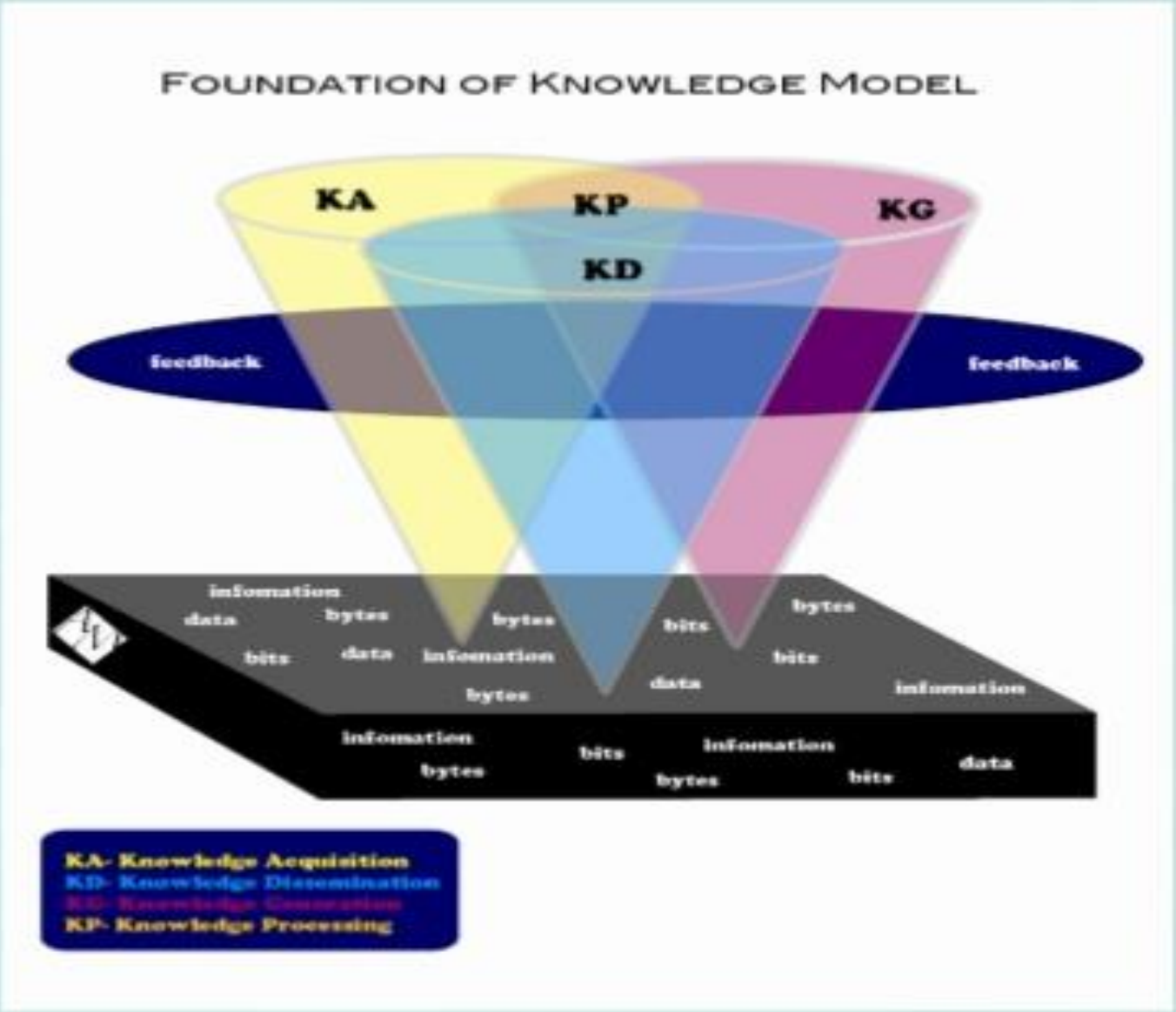
- Proponent: James P. Turley (1996)
- In which the core components of informatics (cognitive science, information science, and computer science) are depicted as intersecting circles.
- Nursing science is a larger circle that completely encompasses the intersecting circles.
- Nursing informatics is the intersection between the discipline-specific science (nursing) and the area of informatics.

JAMES P. TURLEY'S MODEL (1996) MODEL OF NURSING INFORMATICS



MCGONIGLE AND MASTRIAN'S (2009) FOUNDATION OF KNOWLEDGE MODEL

- Proponent: Dee McGonigle and Kathleen Mastrian
- The base of this model shows data and information distributed randomly.
- From this base, transparent cones grow upward and intersect.
- The upward cones represent acquisition, generation, and dissemination of knowledge.
- Knowledge processing is represented by the intersections of these three cones.
- Circling and connecting all of the cones is feedback.



TECHNOLOGICAL COMPETENCY AS CARING IN NURSING: A MODEL FOR PRACTICE

- Proponent: Rozzano C. Locsin, PhD, RN, FAAN
- A conceptual model that presents the link between technology and caring in nursing as coexisting harmoniously. (Locsin, 1995)

TECHNOLOGICAL COMPETENCY AS CARING IN NURSING: A MODEL FOR PRACTICE

FRAMEWORKS IN NURSING INFORMATICS

FRAMEWORKS IN NURSING INFORMATICS

- Nursing frameworks were proposed to illustrate dynamic interactions occurring between nurses, computers, and enabling elements that optimize a user's ability to process information via computers.
- There were still limitations identified in the early models because they did not:

a. Explicitly make the patient part of the model

b. Define the context

c. Or include all elements of nursing's metaparadigm (PHEN)

FRAMEWORKS IN NURSING INFORMATICS

- Judith A. Effken, PhD (2003) proposed the Informatics Research Organizing Model which emphasized all elements of nursing's metaparadigm including the system, nurse, patient, and health

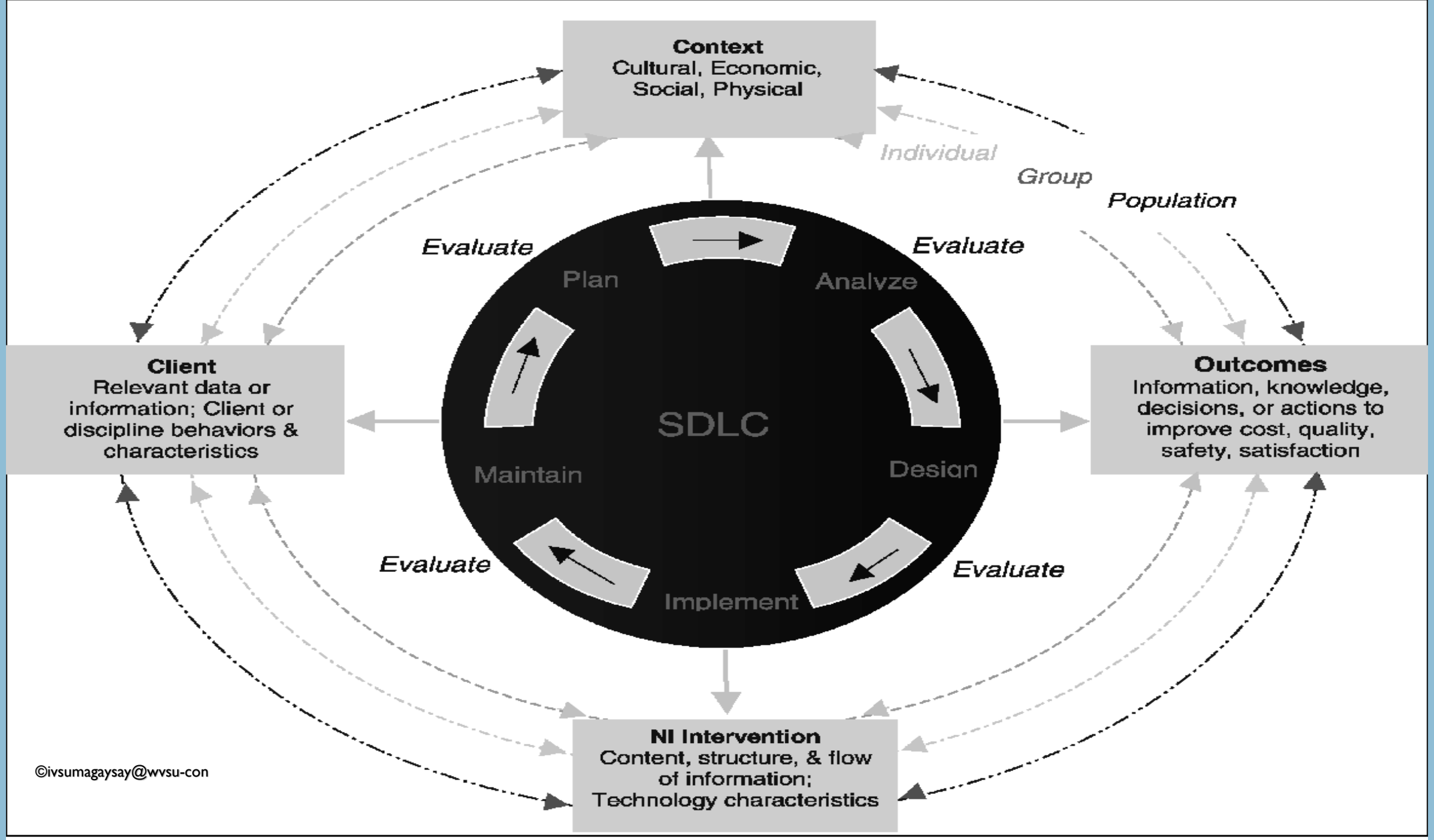


FIGURE 4 The informatics research organizing (IRO) model. The organizing model is composed of 3 component

FRAMEWORKS IN NURSING INFORMATICS

- Gregory L. Alexander (2007) proposed the Nurse—Patient Trajectory Framework.
- Alexander's framework utilizes

a. Nursing process theory

b. Human factors

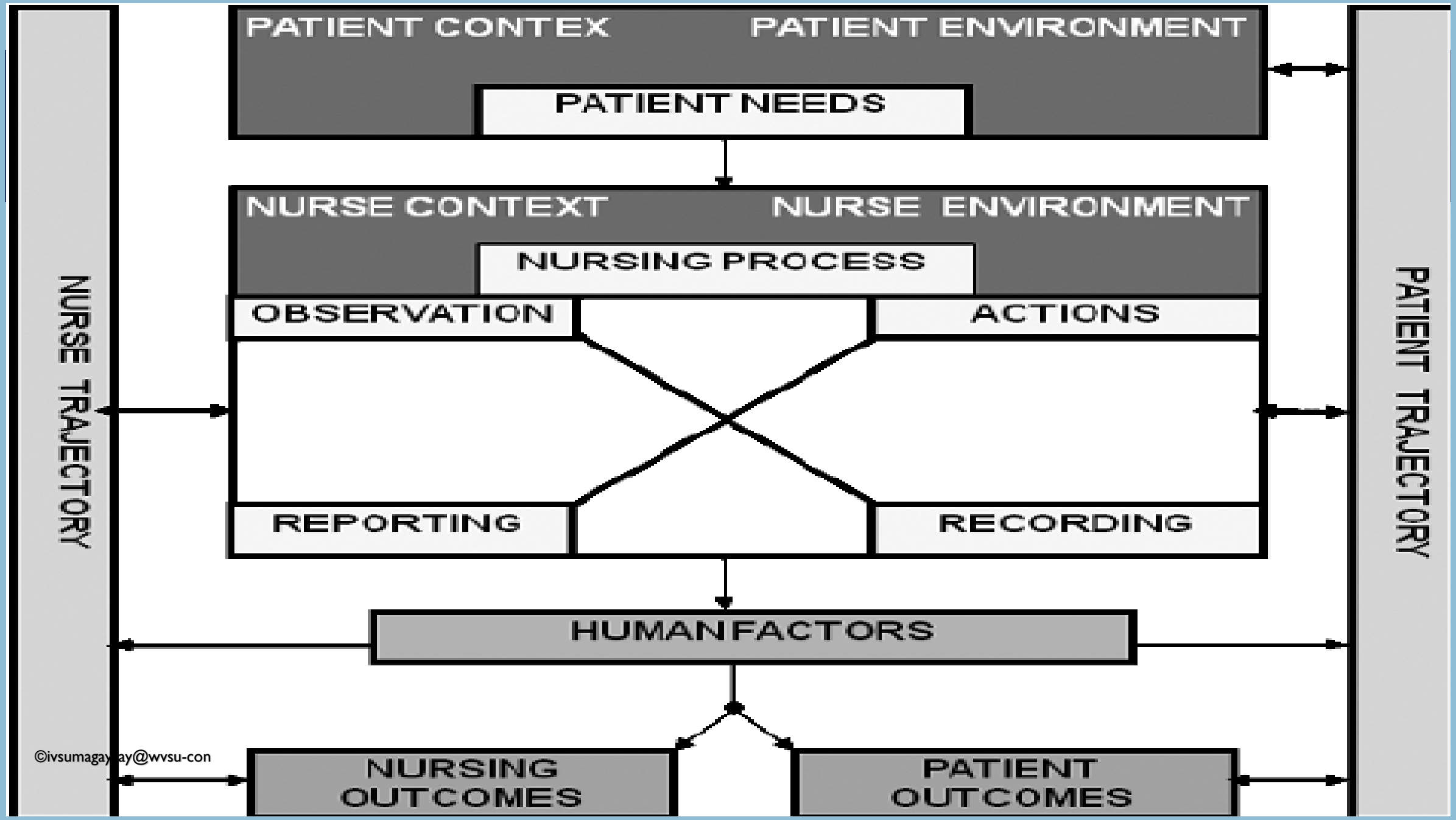
c. Nursing and patient trajectories as components of a framework that can be used to evaluate patient care systems

FRAMEWORKS IN NURSING INFORMATICS

d. The midrange framework specifically emphasizes the use of human factors approaches to link patient care processes, nurse and patient trajectories, and nursing and patient outcomes

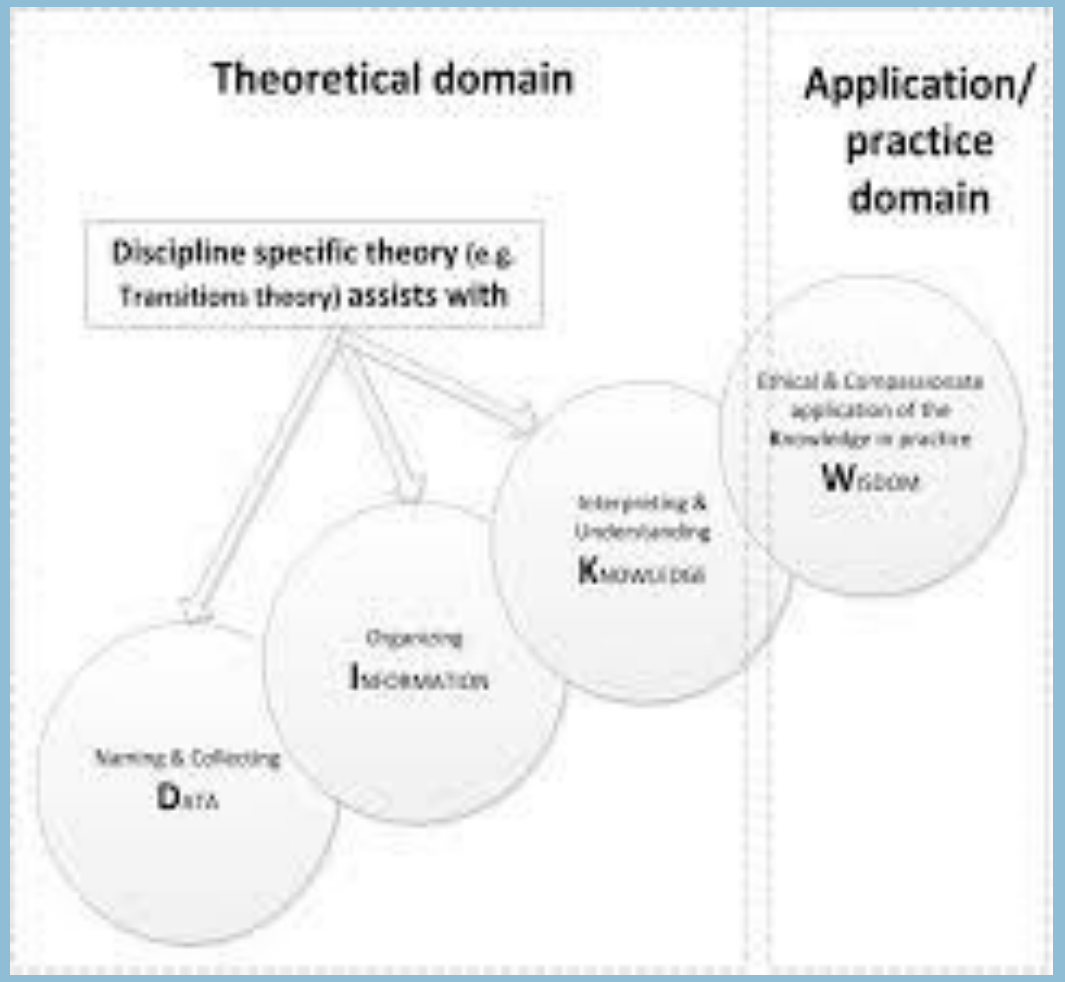
e. In this discussion, the framework has been modified to explore HCI in the context of nurse and patient trajectories as technology is integrated into nurse-led systems

f. Examples of HCI design and research using this model will be used to achieve the objectives



FRAMEWORKS IN NURSING INFORMATICS

- Historically, the development of the DIKW framework was urged by a search f or a new theoretical model explaining the emerging field of Nursing Informatics in 1980-90s.
- In their seminal work, Graves and Corcoran (1989), defined that data, information, and knowledge are fundamental concepts f or the discipline.
- Their framework was widely accepted by the international nursing community



SUMMARY

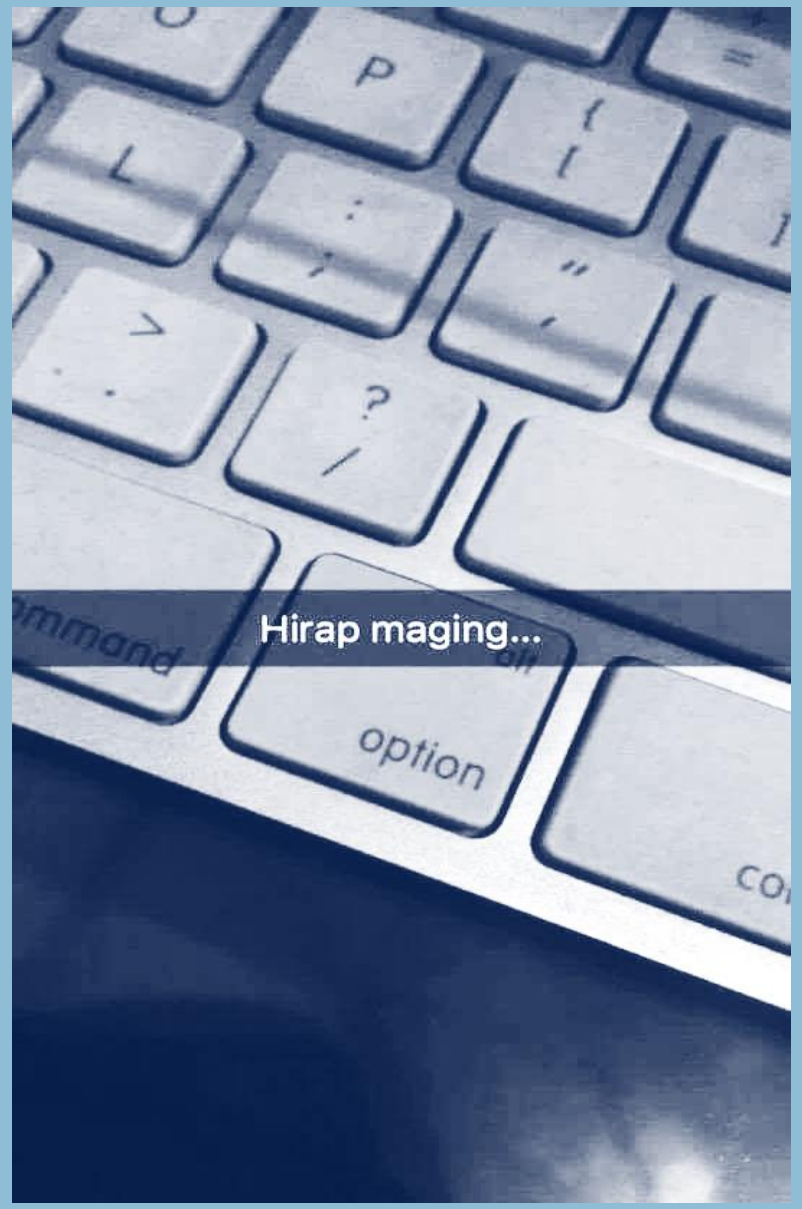
- Computers, and subsequently information technology, emerged during the past five decades in the healthcare industry.
- Hospitals began to use computers as tools to update paper based patient records.
- Computer systems in healthcare settings provided the information management capabilities needed to: Assess, Document, Process, Communicate patient care.

SUMMARY

- Innumerable organizations sprang up in an attempt to
  - Set standards for nursing practice and education
  - Standardize the terminologies
  - Create standard structures for EHRs
  - Attempt to create uniformity for the electronic exchange of information

SUMMARY

- Concepts of informatics, healthcare informatics, and nursing informatics were explained and their relationships to each other were discussed.
- The core concepts of nursing informatics were presented and described. The establishment of the specialty of nursing informatics was explained.
- Models of nursing informatics were described, and supporting models and theories were summarized.
- Competency work related to the practice of nursing informatics was presented. International and national resources for informatics nurses were provided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