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# Building the Future with e-Health

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# Information is key to health and health care





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# Health Information for the 21st Century

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- Person-oriented
- Respectful of privacy and secure
- High quality
- Relevant
- Inter-operable
- Flexible
- User-Friendly and accessible
- Focus on care, in addition to efficiency



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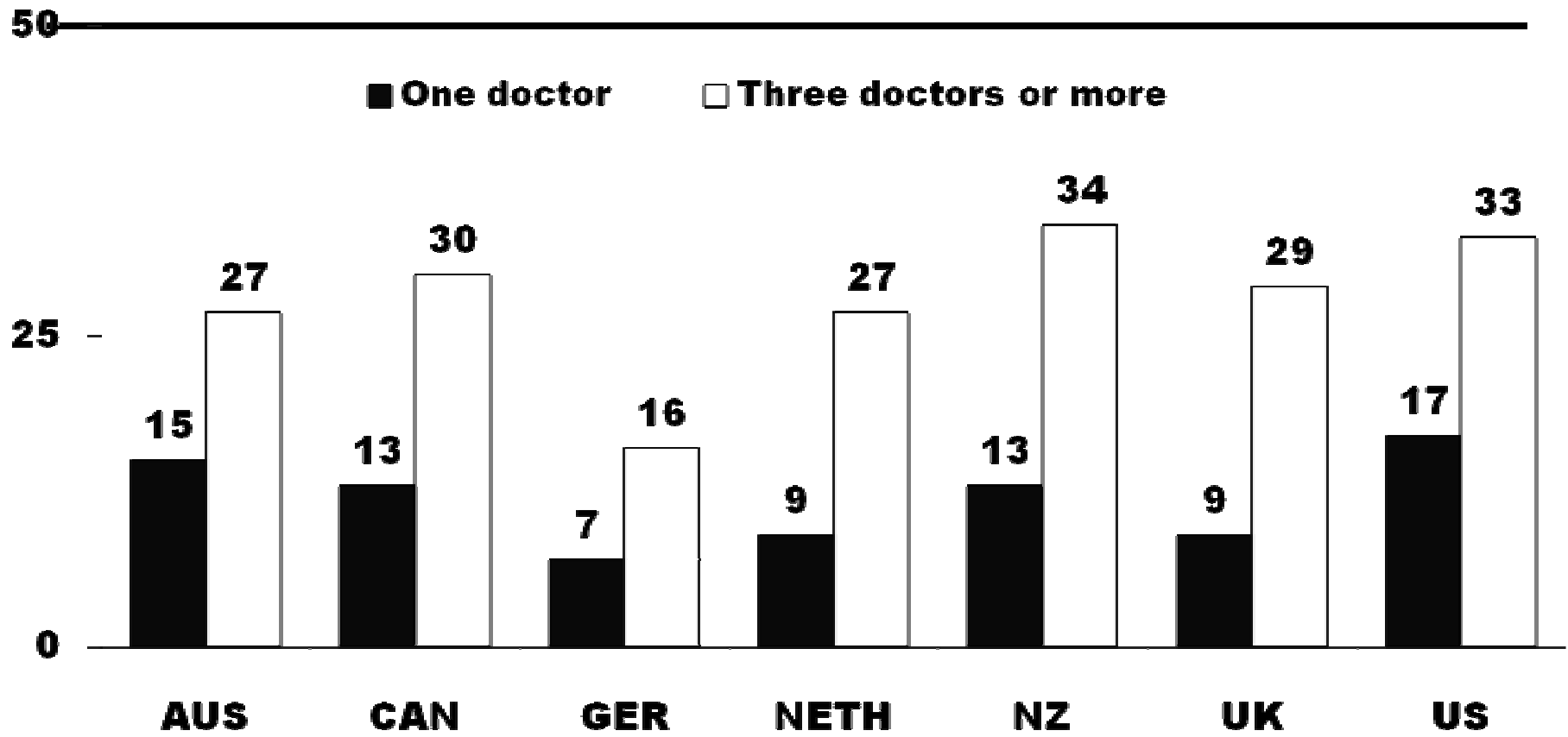
# Progress Made But Challenges Remain

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- Of adults with health problems surveyed
  - 1 in 2 had to tell same story to multiple providers
  - 1 in 5 sent for duplicate tests by multiple providers
  - 1 in 5 reported that records/tests didn't reach office in time for appointment



## % Any Error, by Number of Doctors Seen



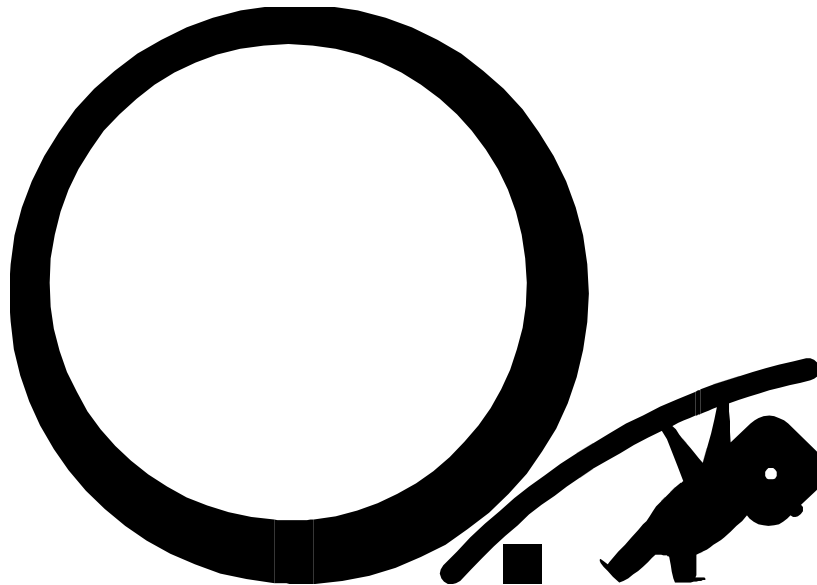
Note: Errors include medical mistake, wrong dose/medication, or lab test error.  
Source: 2007 Commonwealth Fund International Health Policy Survey. Data collection: Harris Interactive, Inc.



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# Information enabling change ...

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## Shared Goals: Real & Lasting Change

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- Safe, effective, and responsive health services
- Appropriate information sharing between providers and with patients/clients
- Better chronic disease management and public health surveillance
- Help clinicians and patients make better decisions
- Engaging patients
- Reducing duplication and other inefficiencies
- etc.



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## Approaches Vary

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- Centralized vs. Decentralized decisions
- Organizational arrangements
- Funding mechanisms
- Engagement of the public
- Engagement of clinicians
- Etc.



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## As Do Areas of Focus/Progress

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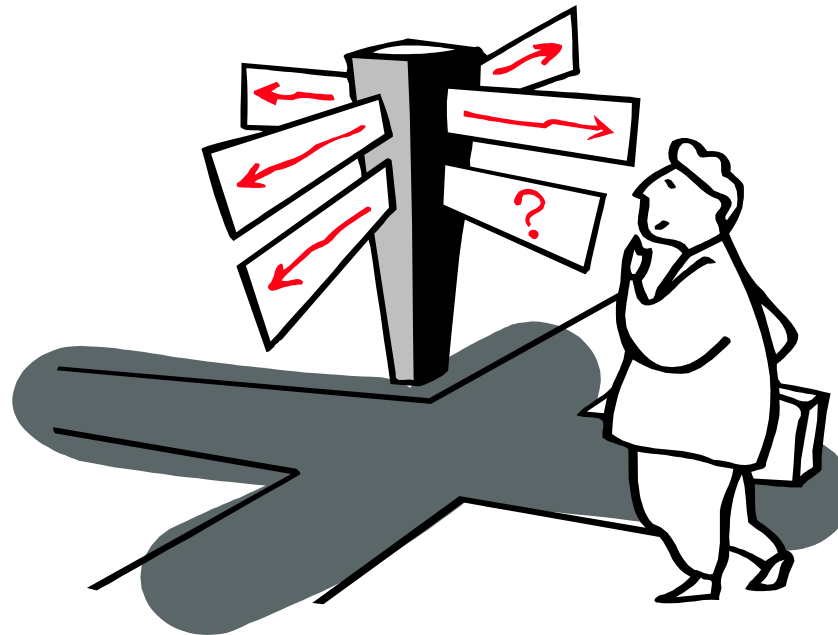
- Primary vs. Secondary/Tertiary Care
  - Renewal of legacy systems also a challenge
- Degree of specialized systems (e.g. e-prescribing or appointment booking) vs. integrated solutions
- Extent of focus on telehealth & integration of medical devices
- Personal health records and patient consultations
- IT to enable patient access/use
- Public health surveillance
- Quality improvement & accountability
- Etc.



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# Nobody has it all solved ...

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... But in many ways we share challenges & a vision



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## Just some of the challenges ...

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- What is the patient's problem list?
- Is a new drug safe to prescribe?
- What are the latest test results?
- Is recommended preventive care due?
- How can I track my progress versus my health goals?
- How long are patients waiting?
- Can I learn from others about how to improve care?



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# Common Themes Internationally (1)

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- Information to enable patient/client care, e.g.
  - Electronic health records (for professionals and individuals)
  - Knowledgebases
  - Clinical decision support
  - Access to care, chronic disease management, and similar services
  - Integration with medical devices, telehealth, etc.



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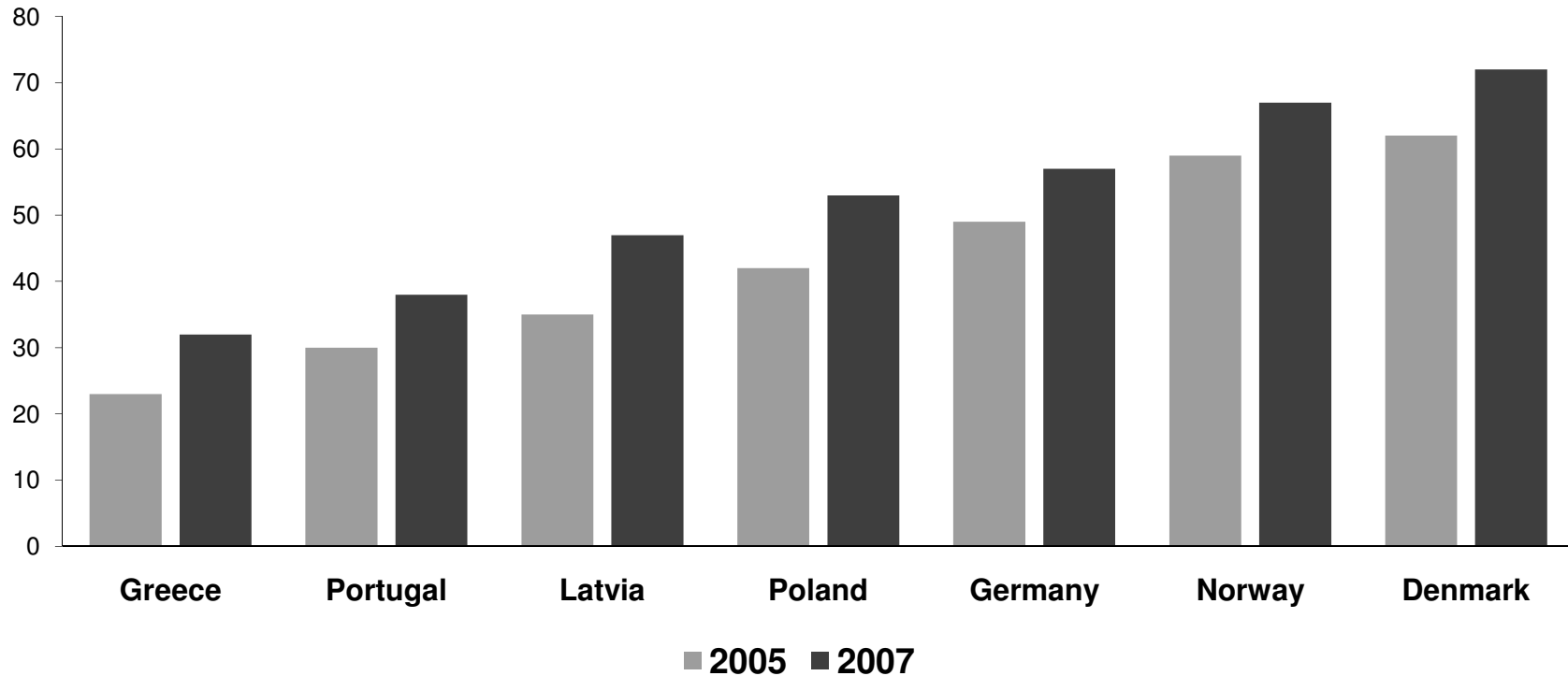
## Common Themes Internationally (2)

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- Increasing use of information and communications technologies by patients/clients
  - To find information about health and health care



## % who used the Internet for health purposes





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## Common Themes Internationally (2)

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- Increasing use of information and communications technologies by patients/clients
  - To find information about health and health care
  - To monitor health using medical devices
  - To choose health care options and schedule appointments
  - To communicate with health professionals
  - To access and contribute to a personal health record
  - etc.
- Ensuring privacy, confidentiality, and security



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## Common Themes Internationally (3)

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- Health system uses of information also matter, e.g.
  - Quality improvement & health policy
  - Accountability
  - Funding
  - Research
  - Public health
- Increasing the flexibility, integration, and use of information
- Growing international cooperation in health information
  - Standards, systems, best practices, policies, etc.
- Building capacity – people, infrastructure, etc.
- Focus on benefits evaluation & best practices



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# A problem shared is a problem halved

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**“In the highly interconnected and readily traversed ‘global village’ of our time, one nation’s problem soon becomes every nation’s problem”**

***Source: Smolinski et al (2003) Microbial Threats to Health :  
Emergence, Detection and Response***



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# Interoperability is Key

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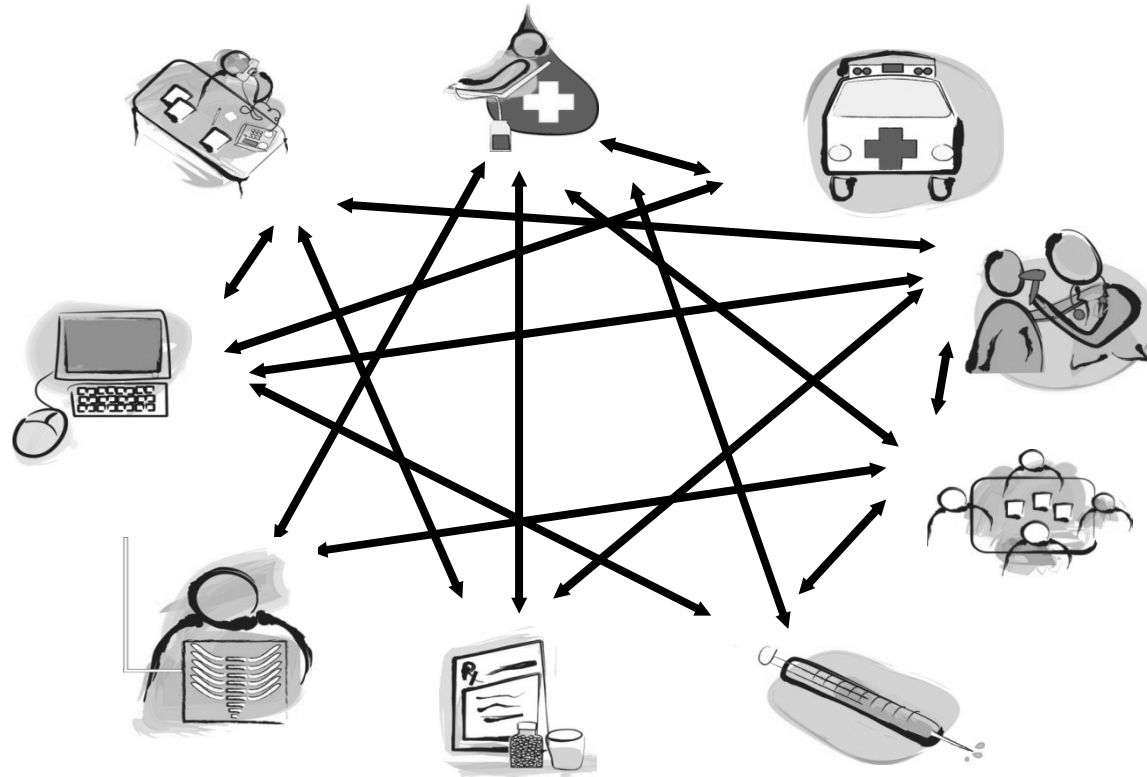
## The Vision for IHTSDO

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- To enhance the health of human-kind by facilitating better health information management
- To contribute to improved delivery of care by clinical and social care professions
- To facilitate the accurate sharing of clinical and related health information, and the semantic interoperability of health records



# Without Standards...





# Standards-based Interoperability





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## Achieving the Vision will require

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- A globally co-ordinated effort
- Agreement on a core Terminology for recording and sharing of health information
- Pooling of resources to share the costs and benefits relating to the development and maintenance of the Terminology Products
- Consistent promotion of the uptake and correct use of the Terminology
- Active harmonization activity with other SDOs



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# What is SNOMED CT?

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- Systematized Nomenclature of Medicine Clinical Terms (SNOMED CT®)
- A comprehensive clinical terminology covering diseases, clinical findings, and procedures
- Represents the meaning of concepts using formal definitions
- Helps to structure and computerize health records allowing for a consistent way of indexing, storing, retrieving and aggregating clinical data



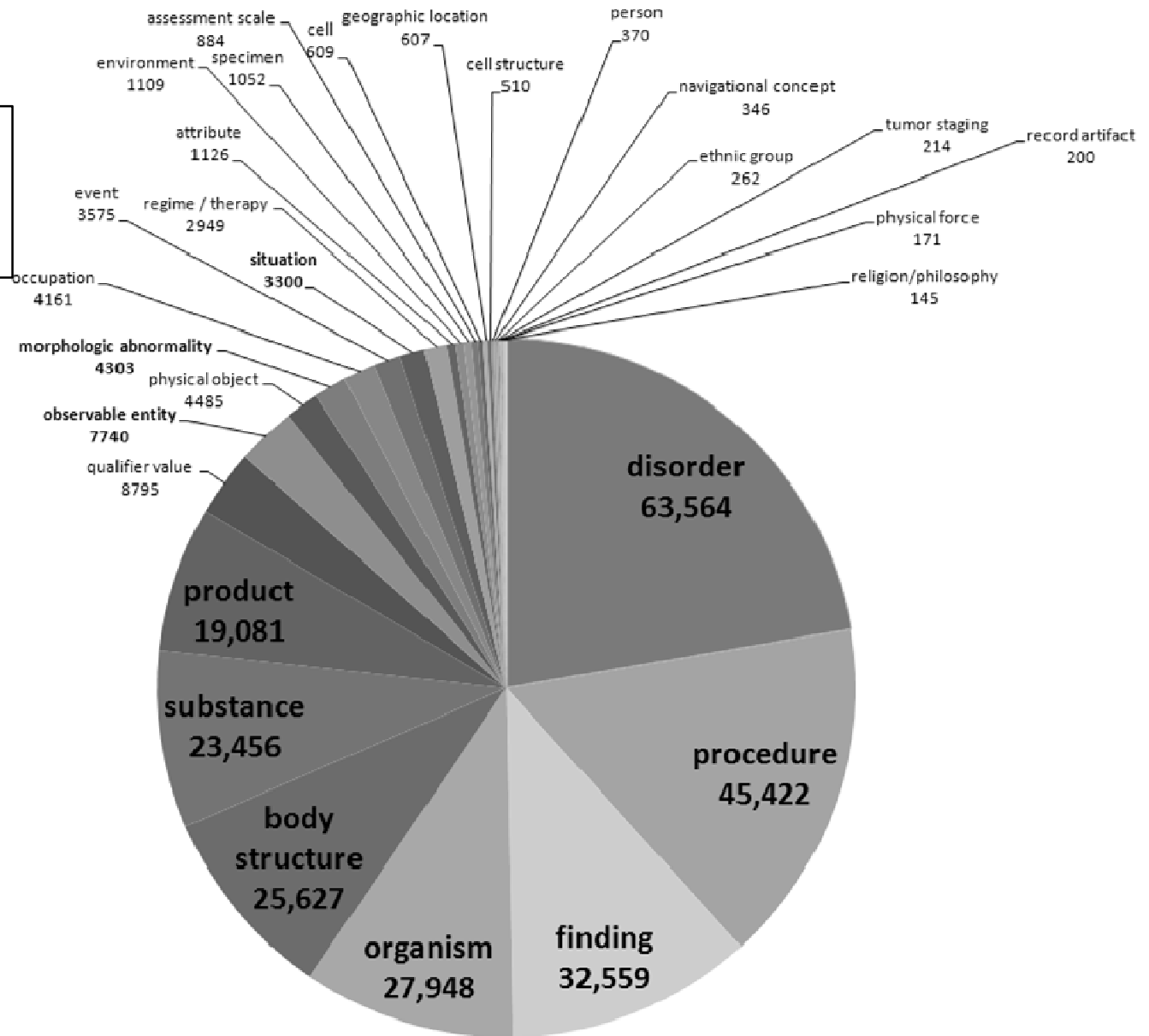
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# What is it made of?

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- Components
- So-called “core” components:
  - Concepts
  - Descriptions (terms)
  - Relationships
- Other components:
  - Reference Sets (RefSets), RefSet Members
  - CrossMap Sets, Cross Maps, Cross Map Targets

Active concepts  
Jan 2008 Release  
By FSN Tag





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## SNOMED CT Aims To ...

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- Provide a consistent way of indexing, storing, retrieving and aggregating clinical data from structured, computerised clinical records
- Represent health information
  - Recording statements about health and health care of an individual patient
  - At the level of detail clinicians prefer
    - Not forced into arbitrary categories
    - Can be abstracted/interpreted at different levels
  - In coordination with a known information model



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To a clinician, these are related. But what about to a computer?

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- Myocardial infarction
- Myocardial infarct
- MI
- AMI
- Heart attack
- Infarction of heart
- Cardiac infarction
- ...



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# Enabling decision support: An Example

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- Influenza vaccination reminder
- decision support program criterion:
  - chronic cardiorespiratory disorders
- patient record:
  - mild persistent asthma





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## What SNOMED is not

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- SNOMED is not an attempt to
  - standardise the *language* of health care providers
  - get everyone to speak the same language
- Clinicians (and people in general) determine what words mean by how they use them
  - SNOMED attempts to properly reflect the meanings given to words and phrases by people
- SNOMED is not an attempt to independently create standard meanings for health professions or scientists
  - It follows existing published standards
  - It seeks to encourage scientific and professional groups to come to consensus and publish standards



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# Status Updates (1)

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- IHTSDO provides new organizing structure
  - Broader participation and use, including by researchers
  - New ways to access and influence SNOMED CT
  - User-driven priorities for progress
- January 2009 Release
  - > 315,000 active concepts, ~ 806,000 descriptions, ~ 1M defining relationships in international release
  - Continuous improvement focus
- IHTSDO Workbench for shared terminology development and maintenance



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## Status Updates (2)

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- Multilingual and multi-cultural/dialect support
  - Guidelines for concept-based translation
  - Input from broader range of countries/cultures
  - Number of translations increasing
- Harmonization efforts with others
  - Variety of models to respond to unique circumstances of different SDOs and user communities



# A Wide Range of Relevant Organisations

- HL7
- OpenEHR
- ICN
- WONCA
- ICH MedDRA
- ADA
- IEEE
- LOINC
- CDISC
- OHT
- Continua
- IUPAC
- WHO Family of International Classifications
- ISO TC 215/  
CEN TC 251



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  - Variety of models to respond to unique circumstances of different SDOs and user communities
- Growing implementation base
  - Within and outside member countries

■ INTERNATIONAL HEALTH TERMINOLOGY  
STANDARDS DEVELOPMENT ORGANISATION



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# Using SNOMED CT



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## What happens when ...

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- You move, you travel ... and you still need healthcare
- A friend has a life-threatening allergy
- A family member's doctor retires
- Clinicians in your hospital trained somewhere else or practice in more than one site
- A medical device used in your facility is withdrawn
- Your health region's boundaries get re-drawn
- You want to be able to select the best IT systems available globally



## Use in Electronic Health Records

- Used as the core terminology for electronic health records
  - Primary care
  - Specialist care
  - Tertiary care
  - Health systems
- Use in specialized systems
  - e.g. pathology reporting





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## Use in Personal Health Histories/Records

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- Adoption of SNOMED for use in personal health history application and in personal health records
- Use usually transparent to user but intended to facilitate interoperability, data exchange, and decision support



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## Use in Drug Labels

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- Adoption of SNOMED for use in "highlights" section of electronic prescription drug labels
- Standard vocabulary is intended to help prevent medical errors



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## Use in Public Health Surveillance

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- In the UK to power “Public Health Language”, a thesaurus used by public health clinicians and organizations
- In Canada to track and analyze information about vaccinations, public health investigations/outbreaks, etc.
- By CDC in the US for public health reporting and biosurveillance
- By the Middle East Consortium on Infectious Disease Surveillance for monitoring outbreaks of foodborne and infectious disease (in progress)
- Etc.



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## And more, for example ...

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- Cancer Registries
- Clinical Guidelines
- Clinical Trials
- Decision Support
- Disease Surveillance
- Electronic Health Records
- Tissue Annotation
- Hospital Mgt Systems
- Laboratory Info Systems
- Medical Research
- Nursing Systems
- Pharmaceutical Databases
- Publication Indices
- Radiology
- Bibliographic referencing
- Veterinary Medicine



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# The Challenge – and Opportunity – Ahead

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## Please Join Us: Influencing SNOMED CT & Making Improvements

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- Using SNOMED CT and sharing experiences
- Working groups
  - Project groups
  - Special interest groups
- Become active in the Community of Practice
  - Collaborative web site, Affiliate Forum
  - Sharing experiences through local and international meetings, forums, connections
  - Contribute suggestions for improving the standard
- We welcome more countries as Members



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# The Journey Ahead ...

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*How do we make it easier to use ehealth than not to?*