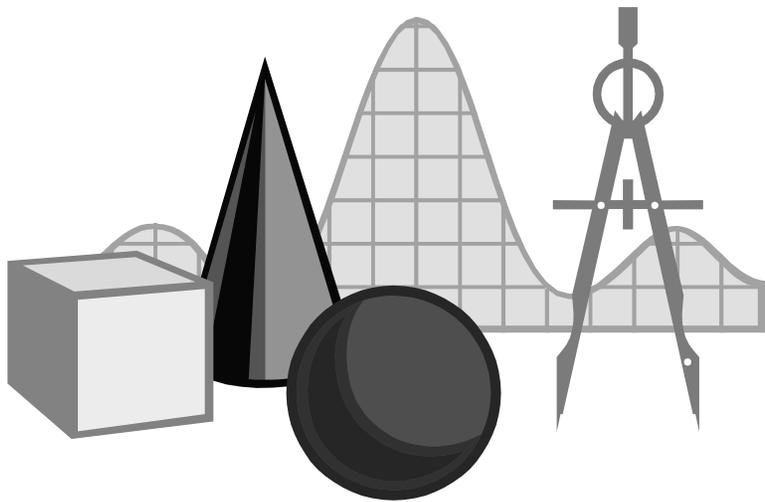


Architecture: A Plan for How Parts of a Structure Fit Together to Achieve its Purpose



- **Components of the NHII**
- **Where They Live**
- **How They Communicate**

William W. Stead, M.D.

July 1, 2003



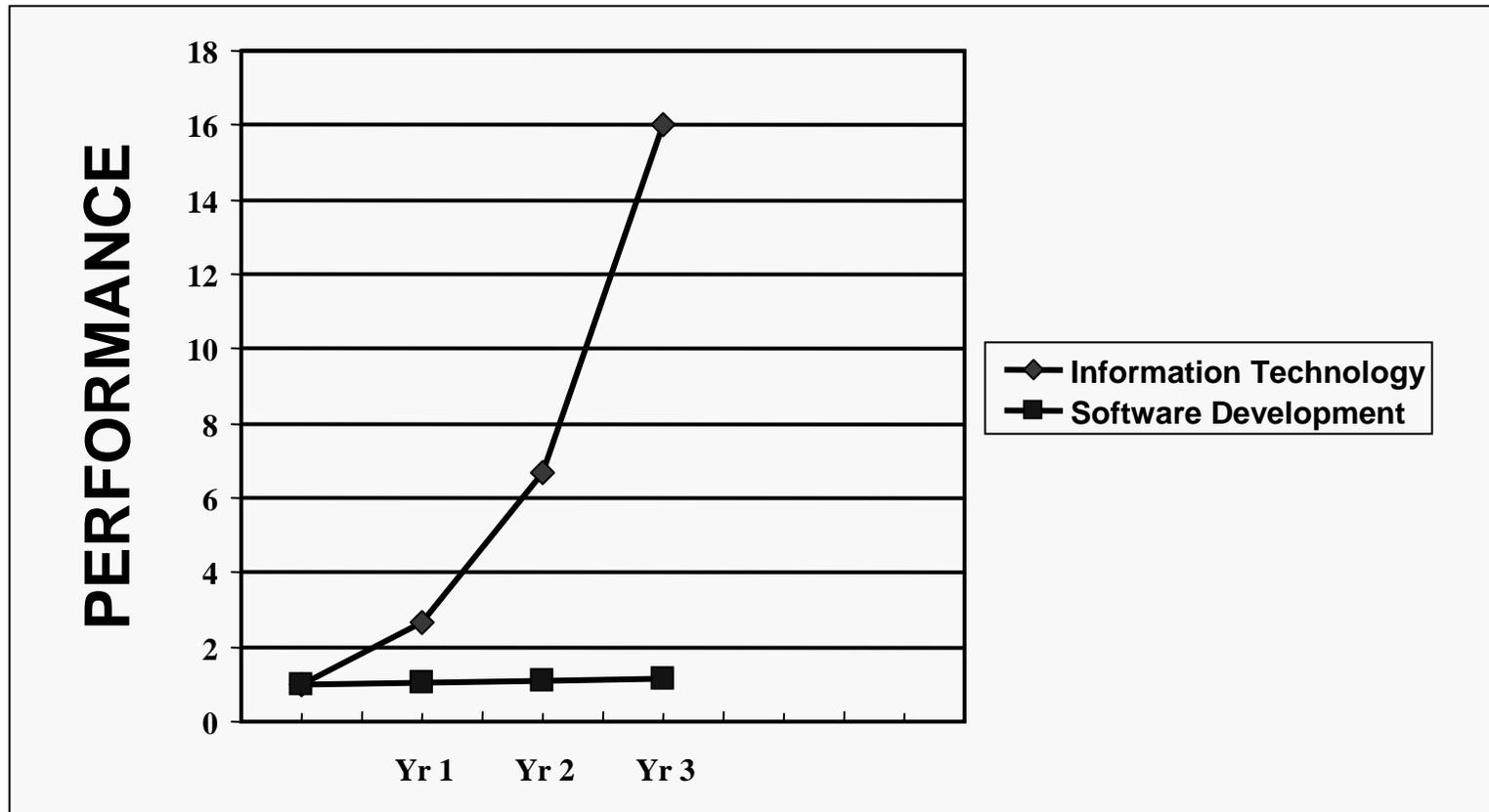
Vanderbilt
University Medical Center

Architectural Challenges of the NHII

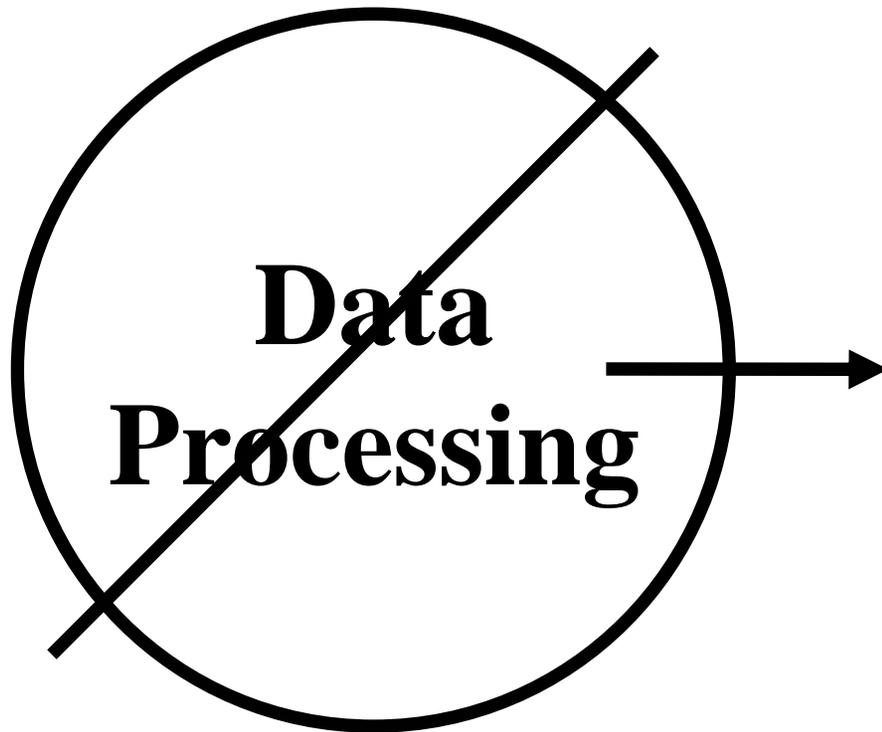
- **Scale and scope**
 - ◆ National scale, local implementation
 - ◆ Multiple dimensions, e.g. public health, health care, personal actions and records
- **Both short and long term horizons**
 - ◆ Permit significant benefit in 3-5 years
 - ◆ Doing things in a way that achieves the ultimate vision in 20-25 years
- **In an environment of constant change**
 - ◆ Explosion in biomedical knowledge
 - ◆ Innovation in health practice and policy



Technical Reality



Implications for technical approach



- **Communication**
- **Data Mining**
- **Visualization**



Implications for role of standards

↓ **Prescriptive standards specifying exactly what must be done in a designated situation**

↑ **Reference standards requiring**

- ◆ **That each term (or block of information) has an explicit mapping to related terms**
- ◆ **A definition that may be understood by computer programs**



Straw Person Architecture for the NHII

- **NHII is an information infrastructure, not information system**
- **NHII sits beside the legacy systems of providers, payers, etc.**
 - ◆ **Reduces local implementation barriers while making the meaning of content in local systems increasingly explicit with time**
 - ◆ **Facilitates direct access to external information if permitted by patient consent**
 - ◆ **Facilitates incorporation of practice guides**
- **NHII evolves to decouple the management of information about patients from the systems that automate practice**



Time-line for evolution of the NHII

Near Term

- **Computable reference standards applied at point of manufacture**
 - ◆ **Terms for reimbursement contracts**
 - ◆ **Drug substance, drug form**
 - ◆ **Applicable elements of LOINC for tests**
- **Single source to computer readable information standards together with tools to ease incorporation in local system implementations**
- **Eligibility queries via APIs**
- **Clinical data exports as text reports with tags according to a document architecture**



Time-line for evolution of the NHII

Intermediate Term

- **Patient ID and visit record via smart card**
- **Self charting tools**
- **Export de-identified data for surveillance and quality monitoring**
- **APIs for clinical document queries**
- **Publish practice guides with tags according to a documented architecture**



Time-line for evolution of the NHII

Long Term

- **Authentication services**
- **Consent services**
- **Digital rights technology to protect clinical content**
- **Application components**

