



# Information Technology, Health and HealthCare



# Four Futures for 2025

- Free Market Forces
- Evidence Based Government
- Healthy Communities
- Harder Times



# Four Futures Tables for 2025

	<b>Free Market Forces</b>	<b>Evidence Based Government</b>	<b>Healthy Communities</b>	<b>Harder Times</b>
<b>Value</b>	Individual	Rationalist	Community	Survival
<b>Economic philosophy</b>	NeoLiberal Capitalism	Regulated market	Regionalism within Globalism	Jungle capitalism
<b>Techno-philosophy</b>	"If we can do it we should."	"If we can prove its cost/benefits we should.."	"Maybe we could, but should we?"	"We wish we could"



# The Old Physics

- **The Baconian Revolution**
- **Unlocking the secrets of the universe**
- **The Clockwork Universe**
  - **Animals as mechanisms**
- **Determinism**
  - **Astronomy**
  - **Universal laws are timeless**
- **Control: Explanation, Causal links and Prediction**



# LaPlace's Demon

- **State Description of Universe**
- **Knowledge of all Laws of Nature**
- **Deduction of everything that will ever happen**
- **Deduction of everything that has happened**
- **Hence Control**



# The Old E World

- **Gather all information about state of universe**
- **Babbage's machine**
  - **The effort to calculate log tables**
    - **France after the revolution**
    - **Hairdressers as chips with redundancy**
- **Laplace: If I had all the info then.....**
- **“More information, more knowledge, more prediction and control”**



# The New Physics

- **What we see and how we explain**
  - There are lots non-forecastable phenomena
  - Stockmarket, weather, the next throw of the dice
  - The convergence of matter and energy
- **Heisenberg's Uncertainty Principle**
- **Complexity Theory**
  - Attack/Escape instability
  - Butterflies and Hurricanes
- **Instability and Stability go together**



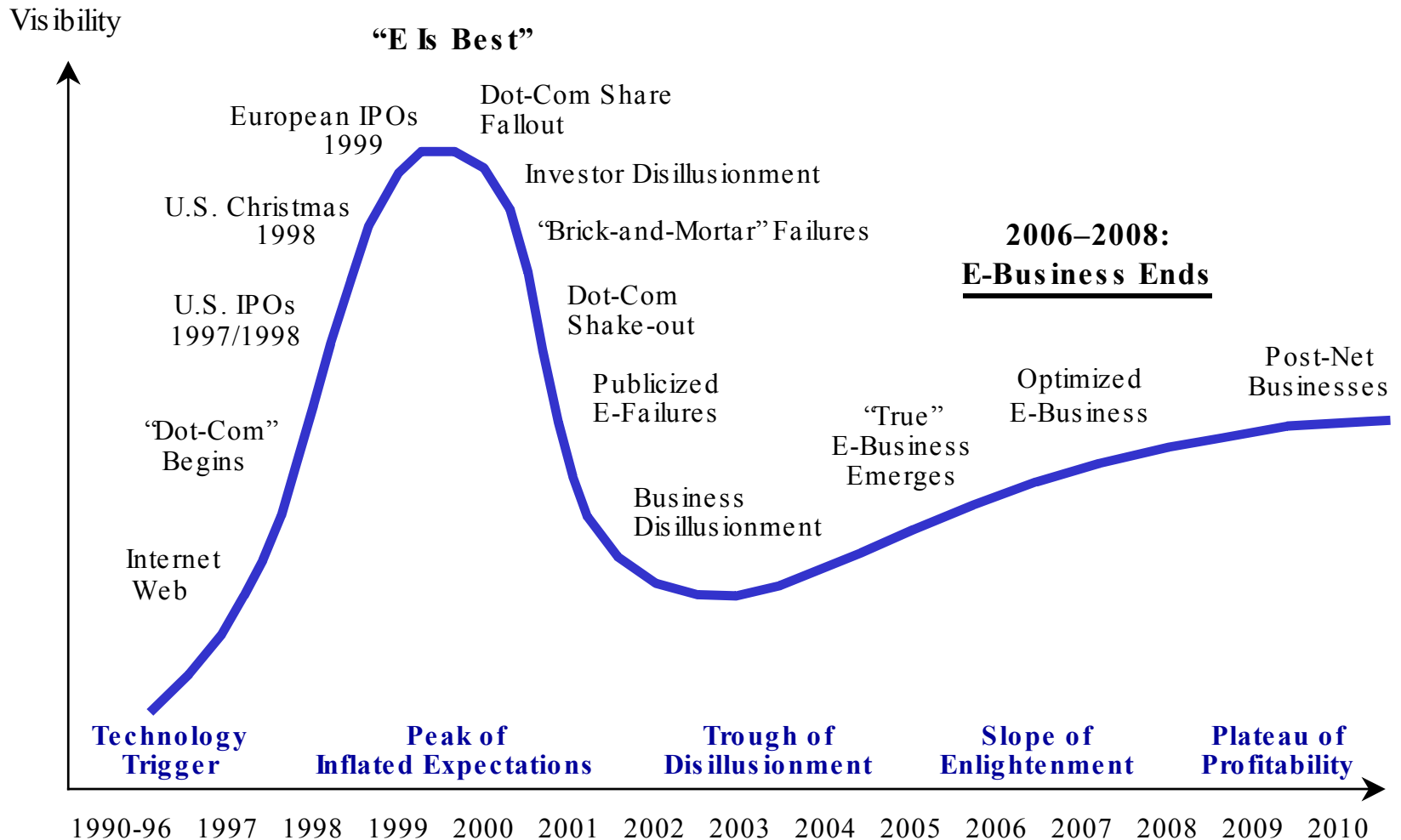
# The New E World

- **What we see and how we explain**
  - There are lots of non-forecastable phenomena
  - The Internet, commercial possibilities, the stockmarket
- **Moore's Law** (memory/\$ doubles every 18 mos)
  - The convergence of communications & IT
  - The divergence of methods of data holding
- **Complexity Theory**
  - Future instability and greater uncertainty go together with new stability and more knowledge
    - Computers process data but have not given strong decision support
  - Microsoft vs. Apple: positive feedback loops



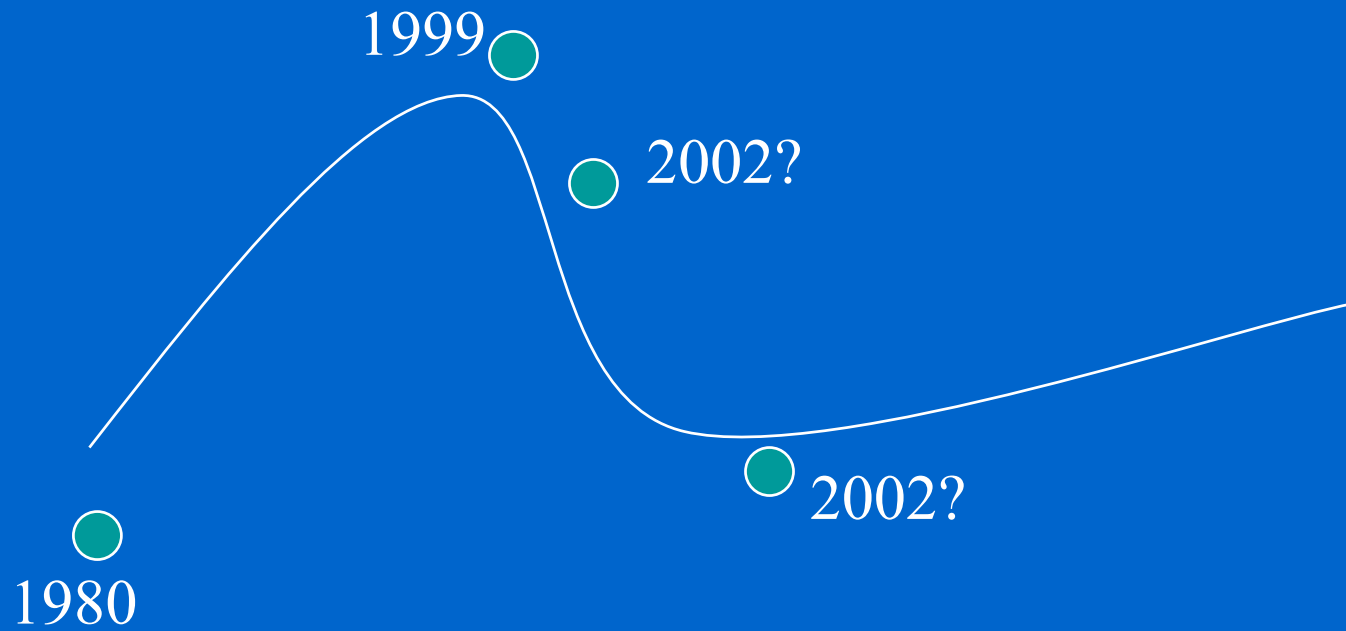
# The hype ends ...and the real work begins

Source: Gartner Group





# Where are we on this Voyage?



Neil's Presentation



# How to Change Systems

It must be remembered that there is nothing more difficult to plan, more doubtful to succeed nor more dangerous to manage than the creation of a new system. For the initiator has the enmity of all who would profit by the preservation of the old institution and merely lukewarm defenders in those who would gain by the new one.

Machiavelli



# 5 Major Health Care Issues in 2001

- **Centralization vs. decentralization**
- **Fewer larger health organizations vs. primary care led community based services**
- **Publicly vs. privately funded systems**
- **Professional vs Patient Dominance**
- **Increasing vs reducing inequalities in health**



# Centralization vs. Decentralization

## Pressures for centralization

- Expenditure containment
- Manpower limits
- Capital savings
- Duplication of services
- More control

## Pressures for decentralization

- Local ownership of Institutions
- Local Commitment
- Understanding of local needs
- Quicker response
- Local adaptation and accountability



# Few large HCOs vs. Primary care base

**Pressures for  
larger integrated  
health care  
organizations**

- **Full range of services**
- **Consolidation of services**
- **Shared Technology**
- **Economies of scale**

**Primary care focus**

- **Locally sensitive services**
- **Local pressure groups**
- **Less institutional care**
- **Human services at a human scale**



# Public Private Mix

## Pressures for public funding

- Equity
- Health as infrastructure
- Overall social costs
- Ideological commitment

## Pressures for private funding

- Pressure of excessive public cost
- User fee debate
- Rationing debate
- Ideological commitment



# Provider Dominance vs Patient Dominance

## Pressures for more professional boundaries

- Direction of most health professions
- Increased scientific knowledge
- Smaller role - info brokers
- Vertical knowledge
- Quality Issues: caring
- Supply control

## Pressures for fewer professional boundaries

- Reduce professional dominance of health
- Increased consumer knowledge
- Larger role for Drug Cos
- Horizontal knowledge
- Increase cost efficiency
- Extreme view of health vs. Health care





# Increasing vs reducing inequalities in health

## Greater Disparities along SES

- More access to info by best off
- Segmentation of customer base
- Better educated respond best to education
- Resources to best off

## Fewer Disparities along SES

- Equal access to IT
- Customization for all
- Customized strategies for all patient groups
- Redistribution of resources



# Provider Dominance vs Patient Dominance

## Provider Dominance

- **Traditional professional authority**
- **Proprietary knowledge**
- **Specialized skills**
- **Regulated access**

## Patient Dominance

- **Growing patient mistrust of authority**
- **Transparent knowledge**
- **Technologically supplemented skills**
- **Patient choice**



# Philosophical Antinomies affected by changes in Physics

- **Mind**
- **Freedom**
- **Absolute**
- **Objective**
- **Knowledge**
- **Rational**
- **Abstract**
- **Universal**
- **Body**
- **Determinism**
- **Relative**
- **Subjective**
- **Belief**
- **Empirical**
- **Concrete**
- **Particular**



## Political & Organizational Antinomies affected by IT

- **Left**
- **Hierarchy**
- **Regulation**
- **Public**
- **Central Planning**
- **Nurture**
- **Collective**
- **Institutional Focus**
- **Right**
- **Market**
- **Deregulation**
- **Private**
- **Individual Rights**
- **Nature**
- **Individual**
- **Patient Focus**



## Information Technology Antinomies that are changing

- Central Database
- Location
- More Information
- Impersonal Contact
- Transparency
- Standardization
- Public good
- Unit costs down
- Town square
- Local Database
- Cyberspace
- More Uncertainty
- Human Contact
- Privacy
- Customization
- Commercial Possibilities
- Overall costs up
- Market



# How IT affects Antinomies

- It will dissolve apparent contradictions
- It will find new alternatives
- It will accept both horns of the dilemma
- It will create new problems
- It will not reduce uncertainty



# How IT will affect some Antinomies

- **Central/Local Knowledge Base**
- **Transparency/Privacy**
- **Standardization/Customization**
- **Public Good/Commercial**
- **Possibilities**
- **Unit Costs Down/Overall Costs Up**



# Local/Central

- **Location is not relevant: Sharing is!**
  - Networked databases. Will they be easy to read?
  - Cyberspace is not in space (Snow Crash 1995)
  - Individually held record is possible but has problems
- **More knowledge more uncertainty**
  - 18 articles on Migraine give me a bigger head ache
  - More medical scientific articles published since 1996 than in all the years before that.
- **Prediction is a mug's game**





# Transparency/Privacy

- Access to information for better decisions.
- What you know about them
  - Answers on the net
- And what they know about you
  - Targeted supermarket coupons
  - When you need your shot
- ICES now holds information on every single Ontarian in this room who has seen a doctor or been in a hospital since 1991
  - Do you want the Ritz Carleton to know who comes to your room?



# Standardization/Customization

- **Regulation gets blown up by the Net**
- **Standardization of information is needed**
  - low quality patient information
  - accreditation of sites
  - information brokerage becomes a role (Who?)
- **Increased Customization**
  - adds value and possibly improved compliance
  - increases threats to privacy, increases opportunities for new forms of intrusive marketing



# Public Good/Commercial Possibilities

- **Three medical records and privacy**
  - The Statscan record for planning
  - The Local Record (Drs sell information)
  - UMED-style Record (Gates sells information to anyone)
    - value added/commercial possibilities
- **Intrusive/Permissive customized direct marketing by pharmaceutical companies**
  - Laura Newman
- **Non-pharmaceutical ways of reducing health anxiety and uncertainty of outcome will be less available**



## Unit Costs Down/Overall Costs Up

- **More transactions with lower unit costs and higher overall costs**
  - Redundancy means paper stays and grows
  - Software will remain unstable due to “improvements”
- **“When we have to make critical decisions we never have the right information from the right source at the right time.” Kenneth Arrow**
  - Drs will continue to work in a relative information vacuum and luckily will be trained to do so



# 4 Major Health Care Issues in 2025

- **Centralization vs. decentralization**
  - Location location location
- **Fewer larger health organizations vs. more smaller community oriented services**
- **Publicly vs. privately funded systems**
  - Commercial inroads into publicly funded
- **Professional vs Patient Dominance**
  - different boundaries new roles      more equality
  - Should we allow drug co. to play Dr. role?
- **Increasing or reducing health inequalities**
  - ???????



# Some Tips About Information in the New Age

- **Recognize that no one can do it alone**
  - Partnerships in knowledge will be more important
  - Knowledge brokerages are a fast growing industry
  - Knowledge workers will become even more important
- **People must think through issues together**
  - Provide resources to support cross/interest inquiries
  - Expect and use conflict to move forward
  - Expect many parallel networked efforts
  - Build on existing relationships across traditional boundaries
- **Retain your healthy scepticism**
  - Prepare for unexpected consequences
  - Learn to live with uncertainty
  - Surprising growth and decay will occur



# Next Steps

- More applications to prospective cases
- Develop trilateral case study base
- To help please contact

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