Foresight – ’50s to ‘90s

- **’50s:** The principles of trend extrapolation and social indicators, and the methods of expert analysis (e.g. Delphi & cross-impact). First computer simulations become well-known
- **’60s:** Narrowly focused technology-oriented forecasting activities – the probabilistic assessment of what is likely to happen in the future
- **’70s:** Change in the understanding of forecasting due to increasing complexity and uncertainty of societies and economies (e.g. unpredicted oil shocks in the ‘70s)
- **’80s:** Multiple futures thinking, participatory activities, where both processes (i.e. networks, tacit outcomes) and products (i.e. codified outputs) were given emphasis
- **’90s:** Foresight for **S&T policy making** by government, industry and other organisations
Change in the S&T dominated appearance with increasing concerns on social aspects due to:

- **The increasing importance of innovation** (both technological and organisational)
- **The development of service economies.** Considerable portions of economic activity, employment and output have started taking place in service sectors of the economy
- **Other developments** including globalisation, changes in demographic structures and in cultural practices, and environmental affairs
- **Recognition of the close relationship between S&T and society**
Next generation Foresight – 2010s & beyond

• New global context and challenges for Foresight

  – Increased financial, trade and investment flows
  – Rapid and accelerating technological progress; ICTs, biotechnology, fuel cells, nanotechnologies
  – New international regulations and standards on trade, quality, labor, environment, intellectual property rights
  – New systems to design, produce, distribute, and manage products and services
  – Global value chains and production networks
Increasing push for greater efficiency and decarbonisation of the energy system because of environmental and energy security concerns.

Trends

Drivers of change

Wild cards

Environmental policies change behaviours and shift societal actions more toward integral or internalized measures—such as recycling requirements.

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In the 15th-20th centuries, mention of global warming and climate change by Fed leaders and mayors.


DNA sequence data from genome projects.

Discontinuities

Advances in nanotechnology, genomics and quantum computing, if realized within the next decade, could fundamentally alter our ways of making materials, practicing medicine and computation-making calculations, with pervasive societal impacts.
New Foresight landscape

Corporate Industrial activity

Socio-cultural evolution

Governance

Foresight
Diagram showing the interconnections between various economic, social, and environmental factors, including:

- Corporate financial market interests
- Investment objectives of sovereign wealth funds
- Socially responsible investment
- Corporate social responsibility
- Corporate investment objectives

Linked to broader themes such as:

- New forms of global governance
- Globalisation & glocalisation
- Corporate governance
- Employment & skill patterns
- Governments' economic objectives
- Governments' interests

Influenced by factors like:

- Policy 'nuts & bolts'
- International conflict & terrorism
- International agreements
- Social cohesion

With considerations for sustainability, socio-cultural evolution, population growth, and resource management.
Key requirements for Foresight

• Understanding
  – Real-life systems and natural settings with a multi-contextual and systemic focus
  – Increasing interrelationships and interdependencies and thus more complex and uncertain situations

• Anticipation
  – Understanding, appreciating and modelling present & anticipated long-term developments
  – Intelligence gathering to explore novel ideas and avoid shocks

• Inclusivity
  – Interactive and participative ways of debate and analysis
  – Continuous interaction of stakeholders on equal terms
  – Establishment of new social networks

• Policy and action orientation
  – Elaboration of strategic visions based on a shared sense of commitment
  – Implications for present-day decisions and actions

• Methodological support
  – Using quantitative and qualitative methods and building methodologies by combining them to fit for purpose
  – Integration of best practices, methods and tools

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Basis for Systemic Foresight Methodology

Systemic & inter-connected problems
- call for –

Systemic & inter-connected solutions ("development pathways")
-based on –

Systemic analysis, methods, tools
- supported by -

Systemic theory & cognitive framework
- implemented with –

Systemic information / intelligence systems

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Systemic Foresight Methodology: Concept

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Systemic Foresight Methodology: Phases

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# Systemic Foresight Methodology: Architecture

## Foresight process orientation

<table>
<thead>
<tr>
<th>INTELLIGENCE</th>
<th>IMAGINATION</th>
<th>INTEGRATION</th>
<th>INTERPRETATION</th>
<th>INTERVENTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>scope phase</strong></td>
<td><strong>creative phase</strong></td>
<td><strong>ordering phase</strong></td>
<td><strong>application phase</strong></td>
<td><strong>dissemination</strong></td>
</tr>
</tbody>
</table>

### Strands of foresight

- **Worldviews / goals (why):** the values, worldviews and discourses between different stakeholders
- **STI regimes / inst.s (what):** factors in the regimes or institutions of STI that are also relevant
- **Futures strand (when):** systematic exploration of trends, projections, scenarios, wild cards, and policy responses
- **Capacity strand (who):** a systematic development of shared learning, networking, collaboration and intelligence between all stakeholders involved
- **Strategy strand (how):** a systematic application to longer term policy, in the context of uncertainty, complexity and controversy of the issue
- **Theme strand (which):** specific areas in sectors or technologies as the focus of enquiry

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# SFM: Methods & Tools

<table>
<thead>
<tr>
<th>PHASES</th>
<th>INTELLIGENCE</th>
<th>IMAGINATION</th>
<th>INTEGRATION</th>
<th>INTERPRETATION</th>
<th>INTERVENTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>FUNCTIONS</td>
<td>Scoping / surveying phase</td>
<td>Creative phase</td>
<td>Ordering phase</td>
<td>Strategy phase</td>
<td>Action phase</td>
</tr>
<tr>
<td>ACTIVITIES</td>
<td>Survey, scan, evidence</td>
<td>Concept model, visions, scenarios</td>
<td>Priorities, analysis, negotiations</td>
<td>Agendas, strategies</td>
<td>Plans, policies, actions</td>
</tr>
</tbody>
</table>

## Divergent Methods (more open, creative)
- Horizon scanning
- Social Network Analysis
- Knowledge / research map
- Literature review
- STI policy analysis
- Bibliometric / patent analysis

## Convergent methods (more specific, quantitative)
- Scenario stories / images
- Gaming
- Visioning
- Agent -based modelling
- Scenario modelling
- System dynamics

- Backcasting
- Delphi
- Success scenarios
- Multi-criteria analysis
- Risk assessment
- Cost-benefit analysis

- SWOT analysis
- Strategic planning
- Roadmapping
- Cross-impact analysis
- Logic framework
- Linear programming

- R&D planning
- Operational research
- Action planning
- Policy impact assessment
- Priority lists
- Critical / key technologies
### SFM: Example methods

<table>
<thead>
<tr>
<th>Phases</th>
<th>INTELLIGENCE</th>
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<td>Functions</td>
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<td>Agendas, strategies</td>
<td>Plans, policies, actions</td>
</tr>
<tr>
<td></td>
<td>CTI – Competitive Technical Intelligence</td>
<td>ABM – Agent Based Modelling</td>
<td>CSF – Critical Success Factors</td>
<td>TRM – Technology Road mapping</td>
<td>TIA – Trend Impact Analysis</td>
</tr>
<tr>
<td></td>
<td>TDM – Technology Data Mining</td>
<td>GFI – Genius Forecasting and Intuition</td>
<td>CSC – Computerised Scenario Comparisons</td>
<td>FRT – Factor Relevance Trees</td>
<td>CKT – Critical &amp; Key Technologies</td>
</tr>
</tbody>
</table>

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Objectives and paths

- **Research path** - where foresight is applied to determine next stage or longer term research priorities;
- **Technology path** – where foresight is applied to ascertain prospective shifts and new types of technologies and the implications related to their potential adoption;
- **Structural path** - where foresight is applied to envisioning how key structures – systems, organizations, funding procedures etc. could change and what implications might follow;
- **Policy path** – where foresight is applied to provide insights, multiple options and guidance to governance stakeholders, policy planners and decision makers;
- **Strategy path** - where foresight is used to develop strategies for individuals and organizations to be agile, adaptive, anticipatory and effective in terms of preparedness, readiness and capacity for action to avoid surprise and be positioned for coping or prospering from change;
- **Business / Market path** – where foresight is applied to anticipate potential shifts and changes in business conditions, market constraints and opportunities, including weak signals about new, emergent and prospective future markets;
- **Vision path** – where foresight is applied to create, validate or change the future vision guiding a set of stakeholders, clients and participants;
Objectives of the Regional Foresight exercise:

- Policies and strategies for the Renewable Energies sector (e.g. improve competitiveness of companies, scientific organizations and intermediaries; establish the capital region as relevant and attractive location; improve services; and exploit a large market in the region and beyond)

- Identification of key technologies (e.g. identify key technologies for the next 10-20 years; promote technology learning; strengthen technology transfer; utilize existing technologies; and involve in the development, shaping and expert technologies)

- Structural and organizational improvement of the sector (e.g. improve collaboration among actors; improve supplier / value chains; initiate new partnerships and investments; establish state-wide SME network; and establish international activities)
**Policy path**

- **Scanning**: For the analysis of STEEPV systems to understand what type of energies will be needed and what kind of demand will come out
- **Key Indicators / Forecasting**: For the analysis of sectoral forecasts and long-term projections
- **Mega trend analysis**: To understand the broad policy tendencies at the Global/European/National levels
- **Synthesis of previous work**: Large amount of the work on energy futures exists including plenty of scenario work (reviewing those scenarios would be useful to suggest a set of “synthesis scenarios”)
- **Scenarios**: To discover alternative futures on policy developments
- **SWOT analysis** of the regional capabilities against the visionary scenario
- **Roadmapping**: Illustrating the priority areas, the actions to be taken in long, medium and short terms and the distribution of initiatives among the actors in the sector
- **Policy Recommendations**: Policy actions to be taken in the short term

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Scanning: For the analysis of STEEPV systems and discuss their implications on technologies

Bibliometrics/Literature Review: For the review the technologies to generate energy and discuss in panels which are relevant and promising for the region

Key Indicators/Forecasts: Analysis of sectoral forecasts and long term projections on technologies

Synthesis: For the review and synthesis of the previous Foresight work

Scenarios with wide participation (including citizens) identify the ‘demands of society’ from the technology

Delphi: Represents the ‘supply’ side – whether the demands in the scenarios are possible and feasible or not. Helps to define time of realisation for selected technologies and technology areas. Also helps to identify priority technologies

Roadmaps: For the development of Technology Roadmaps for prioritised technologies at different levels such as Technology – Product / Capability / Development / Research

Produce a list of critical technologies

Suggest R&D projects and plan R&D activities and resources
- **System Analysis**: Analysis of the value chain helps to come to a better understanding of how the sector works and what the actors/stakeholders are.

- **Clustering** by stakeholder mapping helps to map the actors in the sector and to indicate ‘who is doing what’.

- **Mega trend analysis**: Sectoral megatrends will give clues on changing roles in the sectors and inclusion of new actors/stakeholders in the process in the future.

- **Scenarios**: Various scenarios around Input-Output relationships illustrate the future organisation of the sector.

- **SWOT analysis** of the existing structures against the structures suggested in the visionary/most desirable scenario.

- **Delphi**: To identify types of collaborations needed among stakeholders in order to establish new links in the system.

- **Strategic plans**: For the restructuring of the sector in the medium term.

- **Action planning**: To suggest immediate actions to change/improve structures and organisations and to introduce new rules and regulations.
<table>
<thead>
<tr>
<th>METHODS</th>
<th>Policy Path</th>
<th>Tech Path</th>
<th>Structural Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scanning</td>
<td>★</td>
<td>★</td>
<td></td>
</tr>
<tr>
<td>Bibliometrics</td>
<td></td>
<td>★</td>
<td></td>
</tr>
<tr>
<td>Literature Review</td>
<td></td>
<td></td>
<td>★</td>
</tr>
<tr>
<td>Key Indicators</td>
<td>★</td>
<td>★</td>
<td></td>
</tr>
<tr>
<td>Stakeholder Mapping</td>
<td></td>
<td></td>
<td>★</td>
</tr>
<tr>
<td>System Analysis</td>
<td></td>
<td></td>
<td>★</td>
</tr>
<tr>
<td>Megatrend Analysis</td>
<td>★</td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td>Scenarios</td>
<td>★</td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td>Weak Signals</td>
<td></td>
<td></td>
<td>★</td>
</tr>
<tr>
<td>SWOT Analysis</td>
<td>★</td>
<td>☆</td>
<td>★</td>
</tr>
<tr>
<td>Delphi Survey</td>
<td>☆</td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td>Roadmapping</td>
<td></td>
<td></td>
<td>★</td>
</tr>
<tr>
<td>Relevance Trees</td>
<td></td>
<td></td>
<td>★</td>
</tr>
<tr>
<td>Strategic Planning</td>
<td></td>
<td></td>
<td>★</td>
</tr>
<tr>
<td>Critical / Key Techs</td>
<td></td>
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<td>★</td>
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<tr>
<td>R&amp;D Planning</td>
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<td>★</td>
</tr>
<tr>
<td>Policy Recommendations</td>
<td></td>
<td>★</td>
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</tr>
<tr>
<td>Action Planning</td>
<td>☆</td>
<td></td>
<td>★</td>
</tr>
</tbody>
</table>
Health scenarios

The future of Health and Social Services in Europe for the European Monitoring Centre of Change (EMCC)

• **Step 1: Understanding the healthcare system**
  • A review of Health and Social Services in Europe
  • Trends and driving forces

• **Step 2: Scenarios**
  • Analysis of the Healthcare and Social Services system
  • Health and Social Services Scenarios
  • Towards integrated visions
  • Wildcards

• **Step 3: Policy and action proposals**
  • European health policy landscape
  • Community action programme for public health
  • Specific policy challenges

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Step 1: Understanding the healthcare system

• Definitions of “healthcare sector” and “social services”
  – The **healthcare sector** refers primarily to those services provided by hospitals, general practitioners and community clinics in the prevention, diagnosis, and treatment of illness
  – **Social services** is confined to work rendered by any person or organisation in furtherance of the general welfare of citizens. This includes,
    • children and their families;
    • disabled people of all ages;
    • elderly people (especially those with mental health problems);
    • people who misuse drugs and alcohol; and
    • services in relation to HIV/AIDS
Step 1: Understanding the healthcare system

- Statistical data:

Figure 1: Total expenditure on health as % GDP

Source: OECD, 2003

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Step 1: Understanding the healthcare system

• Trends and driving forces:
  – Demographic and societal change
  – Rising expectations and consumerism
  – Health informatics and telemedicine
  – New medical technologies
  – Increasing costs of health and social services provision

Figure 2: Age groups 15-24 and 55-64 as % of age group 15-64 - EU15 - 1995-2025

Source: Coomans, 1999
Step 1: Understanding the healthcare system

- Demographic and societal change

<table>
<thead>
<tr>
<th>Area</th>
<th>Trends and developments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic and societal change</td>
<td>Ageing (‘triple ageing’)</td>
</tr>
<tr>
<td></td>
<td>Increasing long-term care expenditure</td>
</tr>
<tr>
<td></td>
<td>Implications for recruitment to health and social services jobs</td>
</tr>
<tr>
<td></td>
<td>- acute shortages of doctors, nurses and social workers</td>
</tr>
<tr>
<td></td>
<td>- increase in the age-profile of the professional workforce</td>
</tr>
<tr>
<td></td>
<td>- increasing recruitment of migrant workers in the healthcare sector</td>
</tr>
<tr>
<td></td>
<td>- initiatives to activate the latent workforce</td>
</tr>
<tr>
<td></td>
<td>- delaying the age of retirement</td>
</tr>
<tr>
<td></td>
<td>Downward trend of co-residence of older people, upward trend in older people living alone</td>
</tr>
<tr>
<td></td>
<td>- declining female care-giving, rising female employment rates</td>
</tr>
<tr>
<td></td>
<td>- reduction in informal care, more demand on professional care</td>
</tr>
</tbody>
</table>
Step 2: Scenarios

- Understanding of the interdependencies and dynamics of the health and social services system

Figure 1: Interdependency of sub-systems in the welfare system
Step 2: Scenarios

- Existing scenarios from the health and social services

<table>
<thead>
<tr>
<th>Name of study</th>
<th>Institute</th>
<th>Pub. year</th>
<th>Time horizon</th>
<th>Country or region</th>
<th>No. of scenarios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health and Care in 2022</td>
<td>WHO Europe</td>
<td>2002</td>
<td>2022</td>
<td>Europe</td>
<td>1</td>
</tr>
<tr>
<td>The Wanless Review of the UK NHS</td>
<td>HM Treasury</td>
<td>2002</td>
<td>2022</td>
<td>UK</td>
<td>3</td>
</tr>
<tr>
<td>The Madingley Scenarios</td>
<td>National Health Service</td>
<td>1998</td>
<td>2020</td>
<td>UK</td>
<td>2</td>
</tr>
<tr>
<td>Health and Healthcare 2010</td>
<td>The Institute for the Future</td>
<td>2003</td>
<td>2010</td>
<td>USA</td>
<td>3</td>
</tr>
<tr>
<td>Futur</td>
<td>BMBF(^1)</td>
<td>2002</td>
<td>2020</td>
<td>Germany</td>
<td>1</td>
</tr>
<tr>
<td>Teknisk Framsyn Health Panel Report</td>
<td>VINNOVA(^2)</td>
<td>2000</td>
<td>2020</td>
<td>Sweden</td>
<td>2</td>
</tr>
</tbody>
</table>

\(^1\) Bundesministerium für Bildung und Forschung  
\(^2\) Swedish Agency for Innovation Systems (Verket för innovationssystem)
<table>
<thead>
<tr>
<th>UK Wanless</th>
<th>Solid progress</th>
<th>Reasonably positive, with health targets largely met, people becoming more engaged in relation to their healthcare, and the health service responsive and efficient, making good use of technology.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Slow uptake</td>
<td>Most negative of the three scenarios, with no change in level of public engagement, population health status remains constant or deteriorates, and the health service remains unresponsive with low rates of technology uptake and low productivity.</td>
</tr>
<tr>
<td></td>
<td>Fully engaged</td>
<td>Most positive scenario, with dramatic improvements in health status and high confidence in the health service, which is efficient and makes extensive use of technology, especially in relation to disease prevention.</td>
</tr>
<tr>
<td>UK Madingley</td>
<td>Find my way</td>
<td>A world of individuals with little trust in institutions. There is a focus on developing rounded individuals out of children irrespective of their background. The elderly take the lead in redressing the dependency crisis. Social and health divides widen.</td>
</tr>
<tr>
<td></td>
<td>Trust their guidance</td>
<td>Existing institutions have adapted to become trusted sources of information. Government plays a leading (often paternalistic) role in care for children and the elderly, whilst support for the poor is conditionally provided.</td>
</tr>
<tr>
<td>US Health and Healthcare 2010</td>
<td>Stormy weather</td>
<td>Draws a pessimistic picture with rising costs, increasing dissatisfaction among healthcare providers and patients, inequality of access to care, greedy profit takers, and repeated scandals.</td>
</tr>
<tr>
<td></td>
<td>The long and winding road</td>
<td>Incremental developments in the revision of healthcare system. Successive attempts at revising parts of the healthcare system work sufficiently well that tinkering continues.</td>
</tr>
<tr>
<td></td>
<td>The sunny side of the street</td>
<td>Presents a bright picture of 2010. Earlier efforts and investment create a sustainable and efficient healthcare system.</td>
</tr>
</tbody>
</table>
Nine indicators around which there are variable degrees of uncertainty

1. Health status of the population: life expectancy; morbidity rates, especially amongst the elderly; health divides and health tiering
2. Lifestyles and values: individualism versus collectivism; standing of expert knowledge; consumption; intergenerational harmony and/or ageism; life-style drugs
3. Health and social care funding regimes: dependency ratios; public versus private/market provision; cost containment measures; co-payments and self-rationing; incentives (e.g. reduced insurance payments) to encourage self-care
4. Prevention and self-care
5. Growing and changing demand on services
6. Widespread use of ICT
7. Genomics and biotechnology
8. Primary and community care
9. Employment organisation and workforce skills

Step 2: Scenarios

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Step 2: Scenarios

- Three integrated visions
  1. A best ‘guesstimate’
  2. Problem plagued
  3. Visionary

**Integrated vision 1 - A best ‘guesstimate’**

In this vision, many of the targets set today are met by 2015-2020. Life expectancy moderately increases, with some of this increase spent in good health. Individualism and consumption are stronger than today but society still holds together. Dependency ratios deteriorate as expected, but are manageable, and health costs increase only slightly more than GDP growth. Health divides widen slightly, with an increase in co-payments and the availability of some therapies only privately. Divides are exacerbated in part by an uneven adoption of self-care and preventative measures. The welfare system slowly adapts to new and emerging health and care demands, whilst patient groups are rather powerful at lobbying for resources. ICT have a large impact on health and social care delivery and management. Genomics and other advances in biotechnology are also widely applied. There is improved integration of health and social services, with less time spent in hospital. The health and social care workforce has a good mix of skills and is comfortable with using new technologies.
**Step 2: Scenarios**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Best ‘guesstimate’</th>
<th>Problem plagued</th>
<th>Visionary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Health status of the population</strong></td>
<td>Life expectancy increases by 4 years, with half this increase spent in good health. Health divides widen slightly as the more expensive treatments are available only to those who can afford them.</td>
<td>Life expectancy increases by 2 years, with this increase spent mostly in ill health. Health divides increase markedly as health systems are unable to cope with the pressures of an ageing society.</td>
<td>Life expectancy increases by 10 years, with more than half this time spent in good health. Health divides are slightly reduced, as prevention programmes and new therapies benefit all, especially the poor.</td>
</tr>
<tr>
<td><strong>Lifestyles and values</strong></td>
<td>Individualism and personal consumption are more pronounced than today. Lifestyle drugs are extensively used. Expert knowledge is treated with some scepticism. The elderly are seen as a resource, reflecting in part the influence of ‘grey power’.</td>
<td>Rampant individualism and consumption extend to health and social care, creating distortions in the welfare system. Life-style drugs are used by those who can afford them. Expert knowledge is treated with disdain. The elderly are viewed as a burden on society and are regularly vilified in the youth-oriented media.</td>
<td>Whilst consumption is high, greater local activism breeds a stronger sense of community. Lifestyle drugs are used, but most people prefer to follow the ‘Natural Plan to Wellness’. Expert knowledge is treated with a healthy dose of scepticism, but people widely marvel at the benefits they enjoy from new technological developments. The elderly are seen as an important resource.</td>
</tr>
</tbody>
</table>
**Step 2: Scenarios**

- **Wildcards**
  
  “...events that have less than a 10 per cent chance of occurring, but will have a tremendous impact on society and business if they do occur” (R. Amara et al, p.xxii)

<table>
<thead>
<tr>
<th>Area</th>
<th>Breakthroughs</th>
</tr>
</thead>
</table>
| Information and communication technologies| - Dream therapy comes into wide use by doctors and other healthcare providers. The use of virtual reality and lucid dreaming techniques creates out-of-body experiences that transcend our physical limitations. We ‘feel’ healthier even if our bodies are ravaged by disease or disability. [IAF][1]
|                                           | - Telepathic communication replaces electronic communication. We are all connected mentally. Mind-to-mind replaces computer-to-computer as the quickest and most preferred method of transmitting information. [IAF]
|                                           | - Completely self-managed care, aided by artificial intelligence measures. [CHSRF][2]                                                                                                                      |

<table>
<thead>
<tr>
<th>Area</th>
<th>Setbacks</th>
</tr>
</thead>
</table>
| Information and communication technologies| - Early large-scale implementation of information systems to support and case manage the chronically ill show no cost-benefit advantages compared to traditional lower-end technology care. Given the cost of system installation, the development of home monitoring and case management remains in its current embryonic state. [H&H][1]
|                                           | - Information technologies are flagrantly abused. Medical records are manipulated, causing erroneous treatment. Information on DNA fingerprints, health and psychological conditions, and economic patterns becomes available to computer hackers, criminals, and others who can threaten our health and well-being. [IAF][2] |
Step 3: Policy and action proposals

- European health policy landscape
- Community action programme for public health

Figure 1: EC’s action programme on public health (2003–2008)
Specific policy challenges:

- reforming health and social care funding systems;
- exploiting ICT;
- tackling major health determinants;
- exploiting and regulating developments in genomics and other biotechnologies
End of presentation

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