

# PHILIPS

sense and simplicity  
sense and simplicity

## e-Science: A Philips Research Perspective

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Acknowledgement:  
Serge Vrijaldenhoven  
Arie Kaizer

# Developments in digitization



Briefno. ▼	Datum ▲	Correspondent ▼	Verzendplaats ▼	PDF
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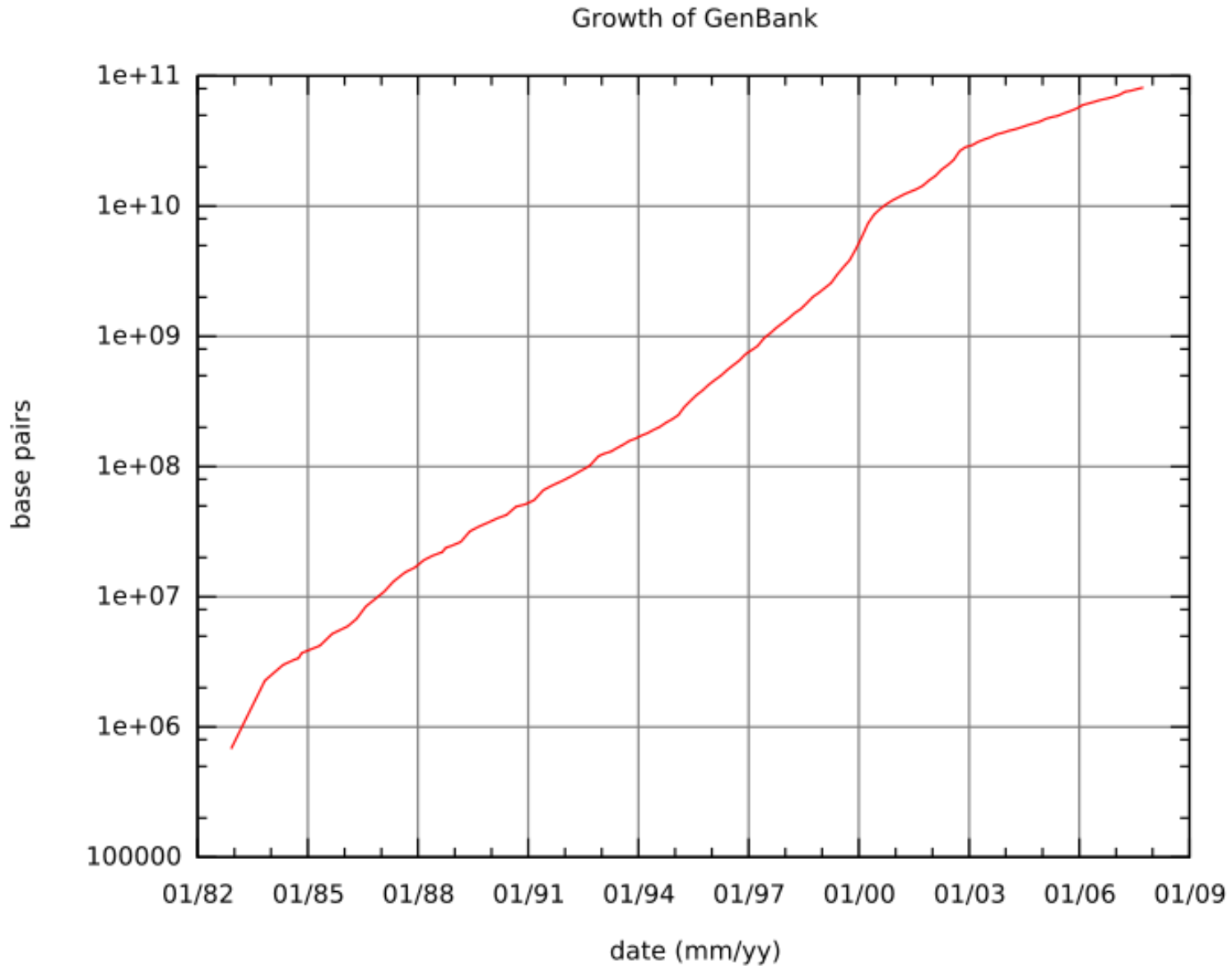
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## Did You know by Scott McLeod

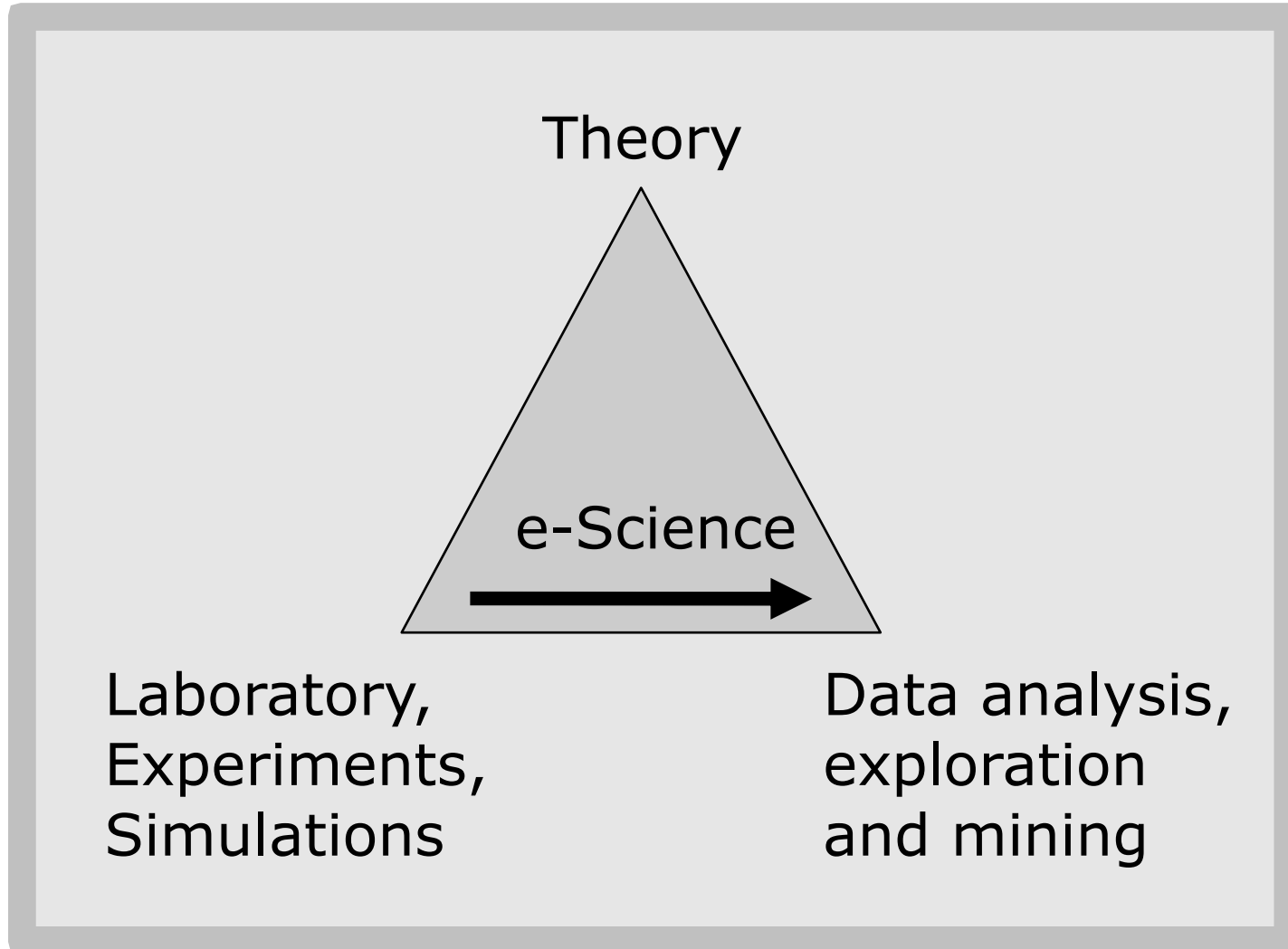
- The number of text messages sent and received every day exceeds the population of the planet.
- It's estimated that a week's worth of New York Times contains more information than a person was likely to come across in a *lifetime* in the 18<sup>th</sup> century.
- It's estimated that 40 exabytes (that's  $4.0 \times 10^{19}$ ) of unique new information will be generated worldwide this year (2007), which more than in the previous 5,000 years.
- The amount of new technical information is doubling every 2 years and will double every 72 hours by 2010.

Did You Know" is a presentation that was put on YouTube early 2007 by Scott McLeod who modified an earlier version prepared by Karl Fisch for a lecture at the Arapahoe High School in Littleton, Minnesota. The presentation reveals in a strikingly simple manner the major developments taking place over the past years. It has been viewed in the mean time by more than 10 million persons.

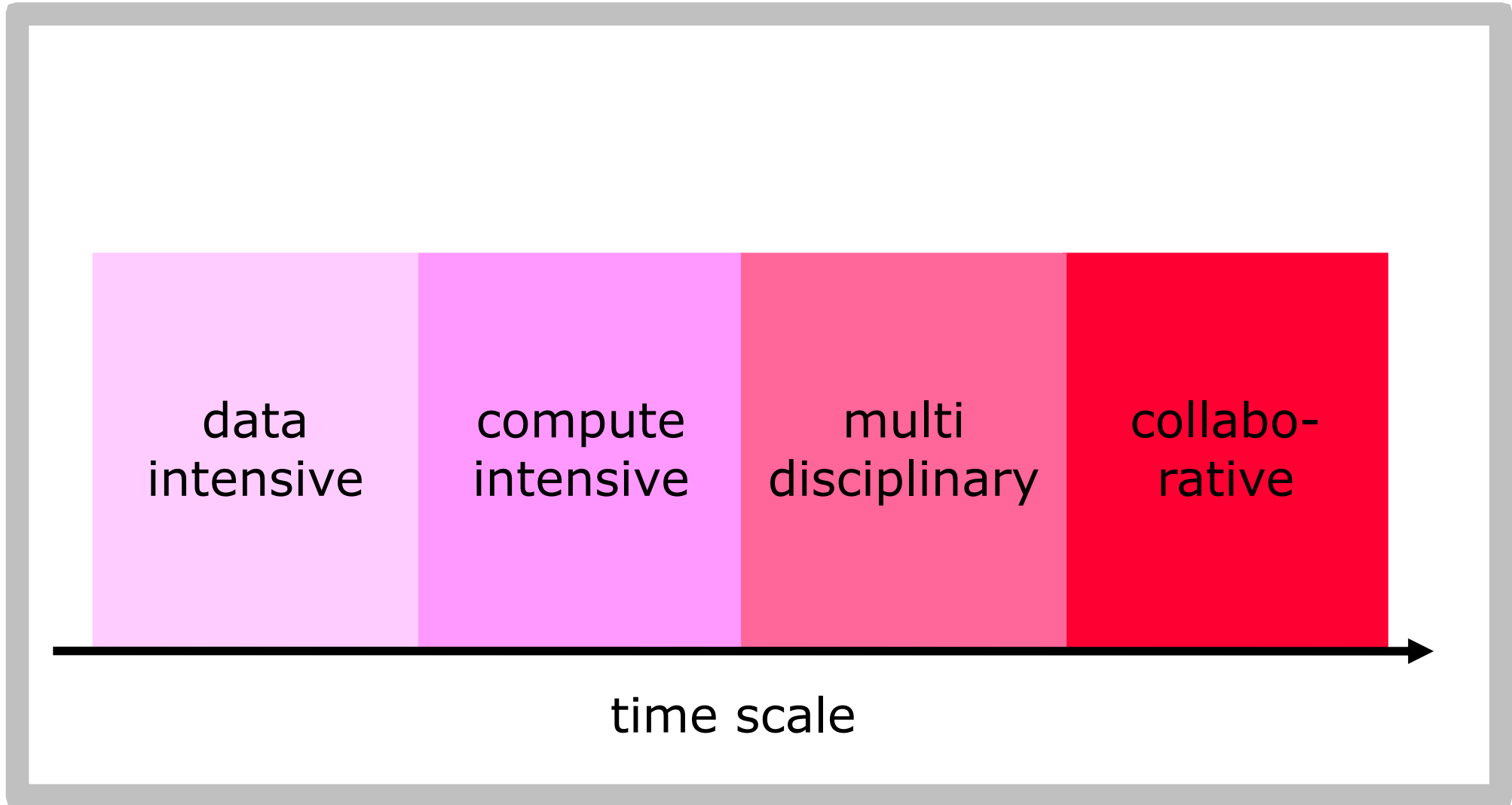
# Exponential data growth



# A shift in computing paradigm



This requires new ways of working



## Three e-Science definitions

### Wikipedia:

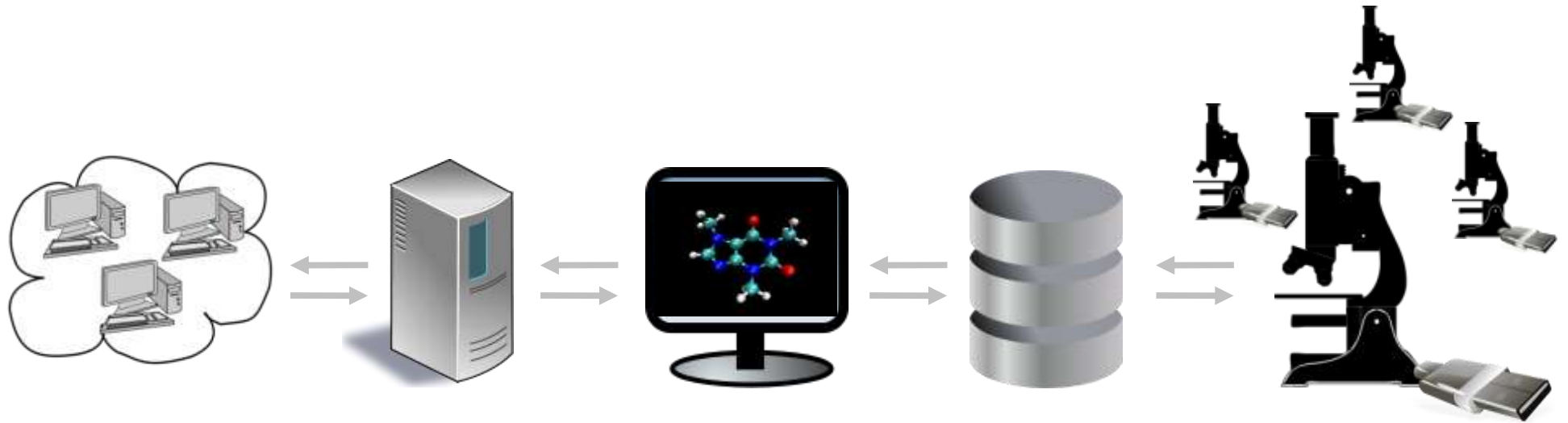
The term e-Science (or eScience) is used to describe **computationally intensive science** that is carried out in highly **distributed** network environments, or science that uses **immense data sets** that require grid computing; the term sometimes includes technologies that enable distributed collaboration.

### NeSC:

e-Science will refer to the large scale science that will increasingly be carried out through distributed global collaborations enabled by the Internet. Typically, a feature of such collaborative scientific enterprises is that they will require access to **very large data collections, very large scale computing resources and high performance visualisation** back to the individual user scientists.

CeSC: eScience is "research into new ways of using the Internet to do science".

# e-Science infrastructures



computer networks

high performance computing

visualisation systems

federated databases

network-enabled research instrumentation, sensor networks

Grid supports the entire chain to maximize its value

## Our Market Sectors

### Philips Healthcare



- Imaging Systems
- Customer Services
- Healthcare Informatics
- Ultrasound & Monitoring Solutions
- Home Healthcare Solutions

### Philips Lighting



- Lamps
- Professional Luminaires & Systems
- Home Luminaires & Systems
- Lighting Electronics
- Automotive
- Solid State Modules
- Special Lighting Applications

### Philips Consumer Lifestyle



- Domestic Appliances
- Health and Wellness
- Shaving and Beauty
- Connected Displays
- Peripherals and Accessories
- Home Networks
- Video and Multimedia
- Audio and Multimedia
- Professional and Business Solutions

*Acquisitions in Blue made in the last 2 years.* Abbreviations: PLI: Partners in Lighting; TIR: TIR Sstems; DLO: Digital Lifestyle Outfitters;

## Our Market Sectors

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- Healthcare Informatics
- Ultrasound & Monitoring Solutions
- Home Healthcare Solutions

### Philips Lighting



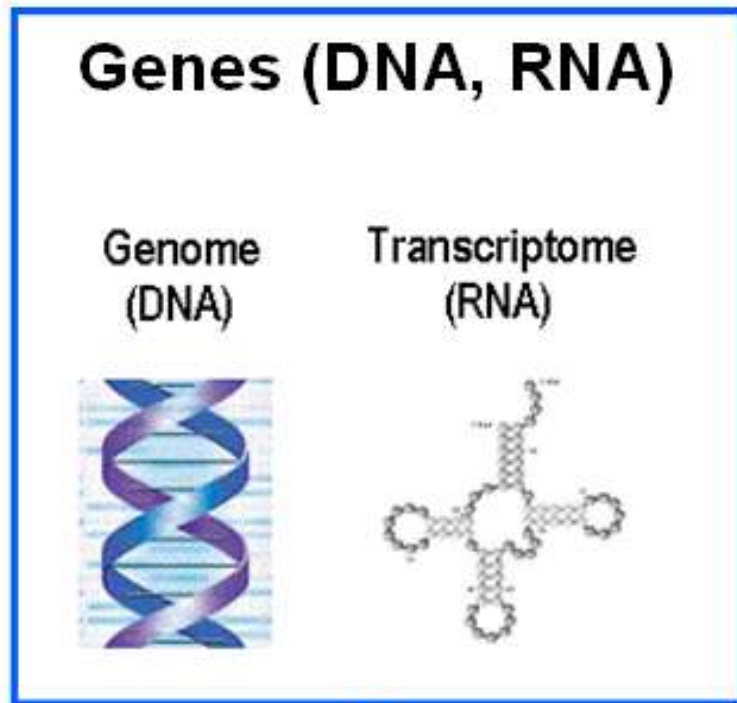
- Lamps
- Professional Luminaires & Systems
- Home Luminaires & Systems
- Lighting Electronics
- Automotive
- Solid State Modules
- Special Lighting Applications

### Philips Consumer Lifestyle



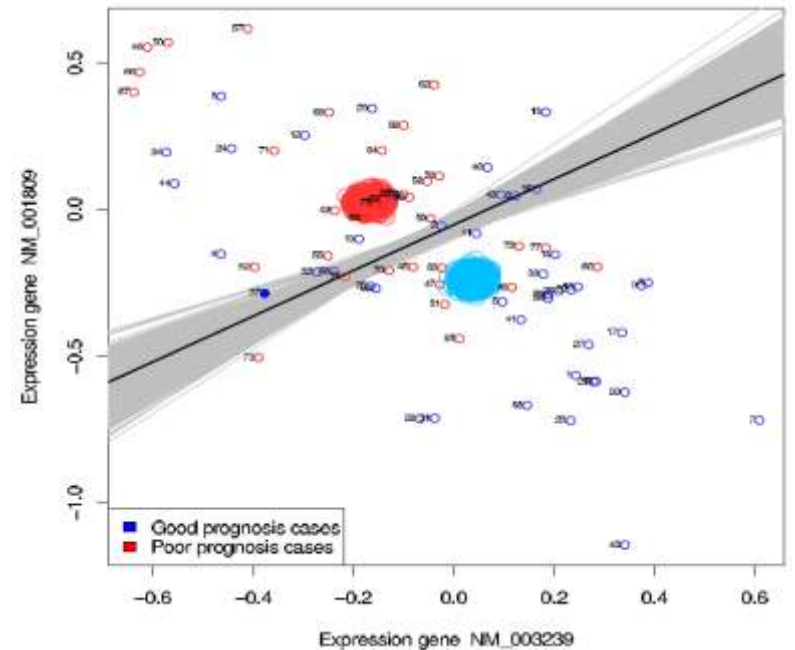
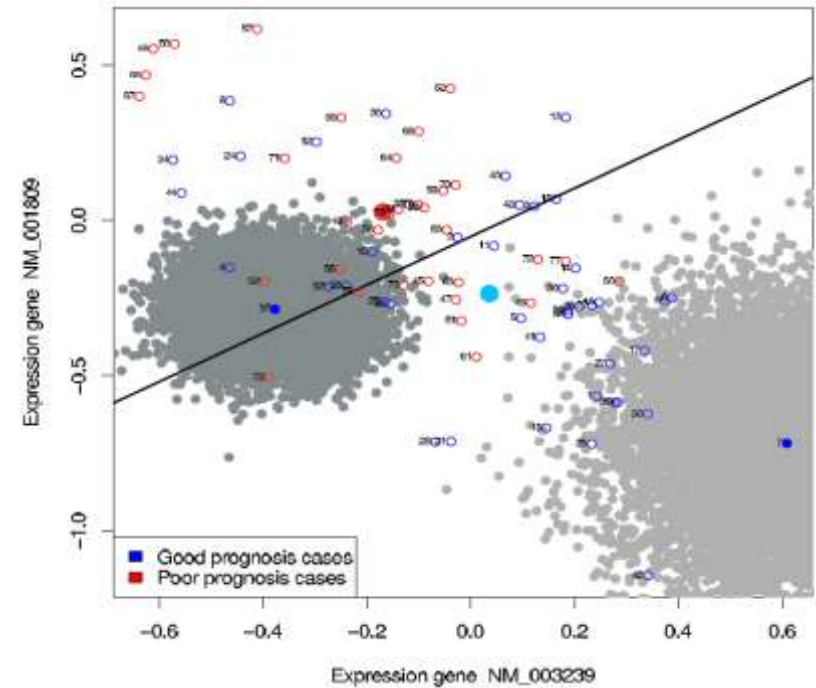
- Domestic Appliances
- Health and Wellness
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## Molecular Diagnostics



### Molecular Diagnostics (MDx)

- Genetic predisposition
- Pathogen detection
- DNA modifications (SNP)



## Clinical Decision Support

*(data generation)*

### Imaging physics

- CT and PET scanners
- MRI magnet design and pulse sequences
- high resolution / contrast



*(data augmentation/ improvement)*

### Image processing

- segmentation
- registration
- modeling
- visualization



*(knowledge creation)*

### Clinical science

- clinical trials
- medical literature
- evidence-based medicine



*(evidence integration)*

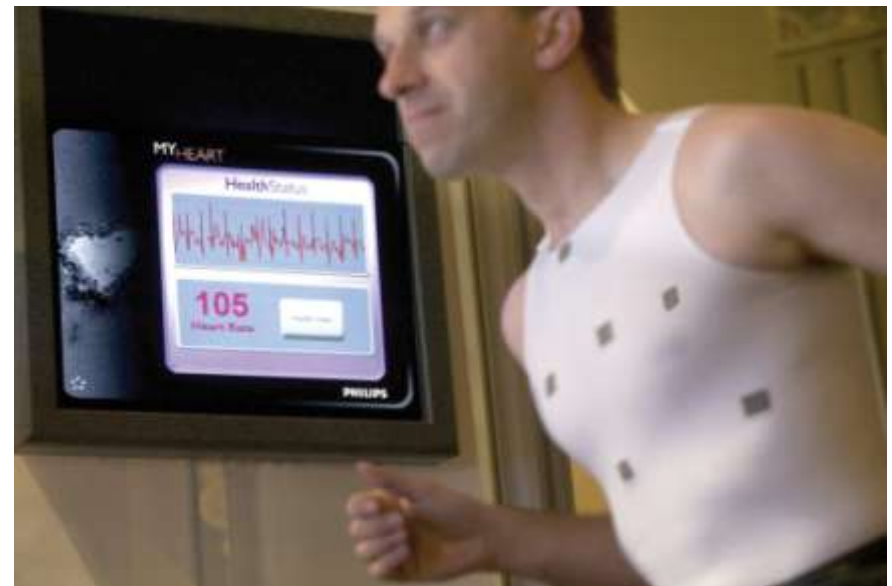
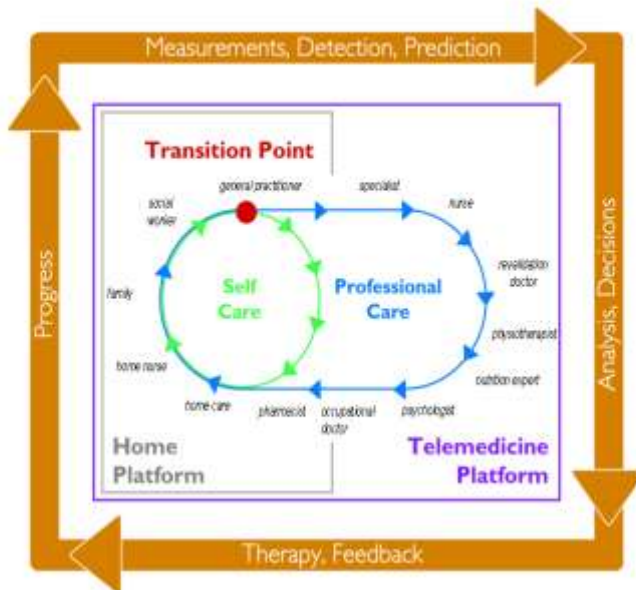
### Imaging informatics

- computer-aided detection
- computer-aided quantification
- computer-aided diagnosis
- intelligent image retrieval
- therapy planning

## Home Health Care



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## Needs and aims comply

Support data-intensive, compute-intensive, multidisciplinary and collaborative research by providing access to and support of global eScience infrastructures.

BiG Grid

...BiG Grid will be at the centre, providing data storage facilities, compute capacity, databases and more key eScience resources coupled together via the grid.

"1+1=3"

# Walk the talk

Man soll nicht nur wissen,  
sondern auch anwenden!

Man soll nicht nur wollen,  
sondern auch tun

Johann Wolfgang von Goethe

