

Global Technology Indicators 2004 - 2010

Published Apr 13th 2010

1	Purpose of This Document	1
2	High Tech Indicators for 2004 to 2010	2
3	Conclusions	4
4	References	5

IN A NUTSHELL - For the busy reader: This document showcases technology indicators that describe the boundary conditions for new products and applications. The predictions make it possible for product developers to assess when new market entries are feasible.

1 Purpose of This Document

This document provides an overview of global technology indicators for 2004 to 2016. For most companies, active in the mentioned areas, these values are an important guideline. In a highly interdependent economy companies, developing products, which are neither enablers nor participants of these technologies but based on the availability of the discussed technologies need to watch these trends closely. The document is part of our High Tech Series [1].

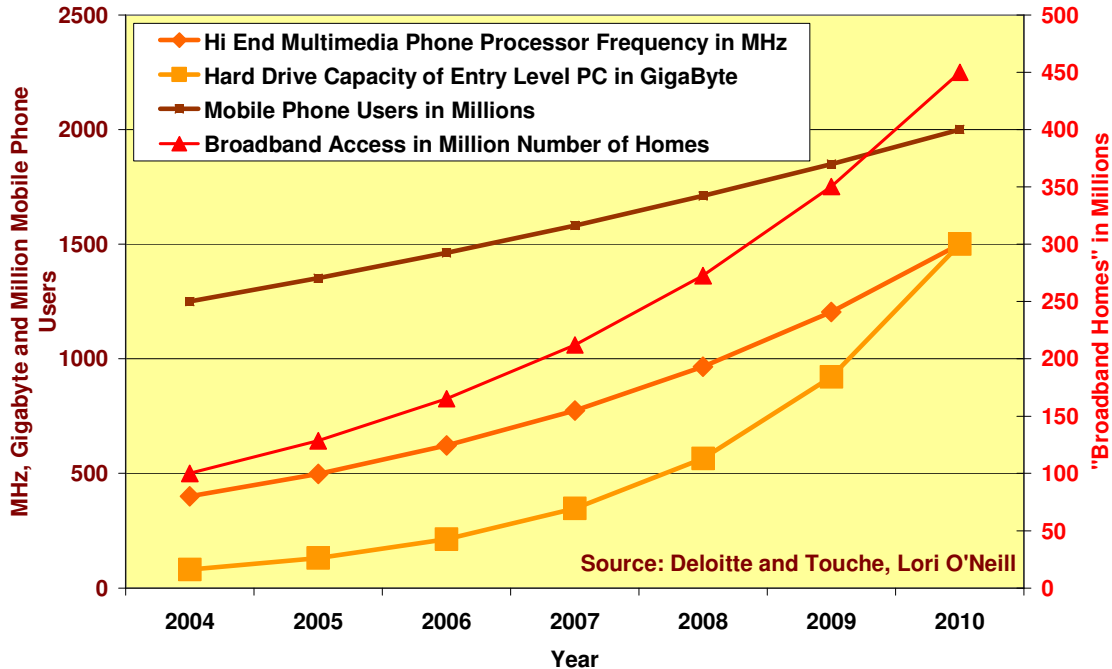


Figure 1: Forecasted development of global Hi Tech indicators between 2004 and 2010. The "Broadband Homes" are described in Millions on a separate scale on the right. All other curves refer to the left scale.

2 High Tech Indicators for 2004 to 2010

Figures 1 and 2 in this document are based on data, published in reference [2]. Figures 3 and 4 are based on reference [7]. The following observations and comments can be made:

- Core technology indicators, such as the processor frequency of cell phones and typical hard drive capacities, show the same rapid growth as the number of participants/consumers in high technology, expressed here as the number of mobile phone users and number of homes with broadband access. These two developments drive each other. Better Figures of Merit and combined Figures of Merit [8] drive technology availability while the revenue generated from higher user numbers can be used to further develop the core technologies.
- The rapid progress in technology forces companies to
 - strictly align their product development with the anticipated trends.
 - radically control cost while increasing product performance, as the obtainable product prices do not follow accordingly.
- There is a strong need for guidelines which allow companies to plan precisely for years in advance – for one of the most advanced examples see reference [3].
- The foreseeable growth in high technology participants allows companies to shape their pricing models both for products as well as provider services.
- In order to better show the differences between the growth of the chosen indicators we have plotted the Compounded Annual Growth Rates (CAGR) for 2004 to 2010 in Figure 2. The conclusions there are that the hard drive capacity for typical PCs is increasing by 2/3 every year. The double digit annual growth for mobile phone users (approx. 10%) and broadband access (approx. 30 %) will persist until 2010.

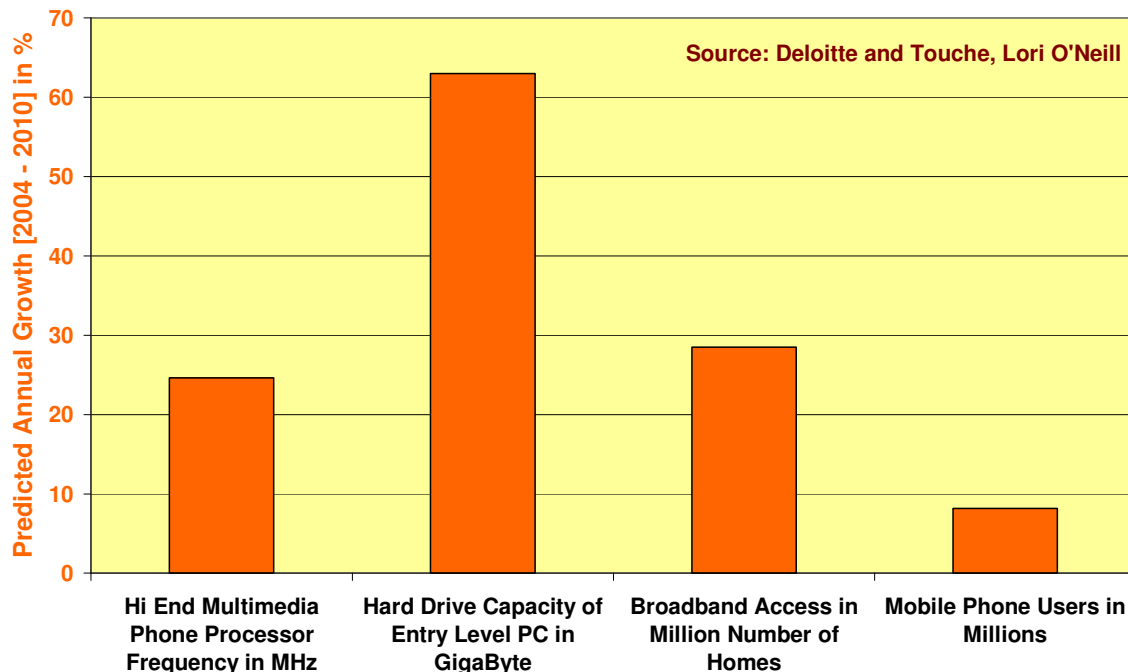


Figure 2: Compounded Annual Growth Rates (CAGR) in percent from 2004 to 2010 for Global High Technology indicators.

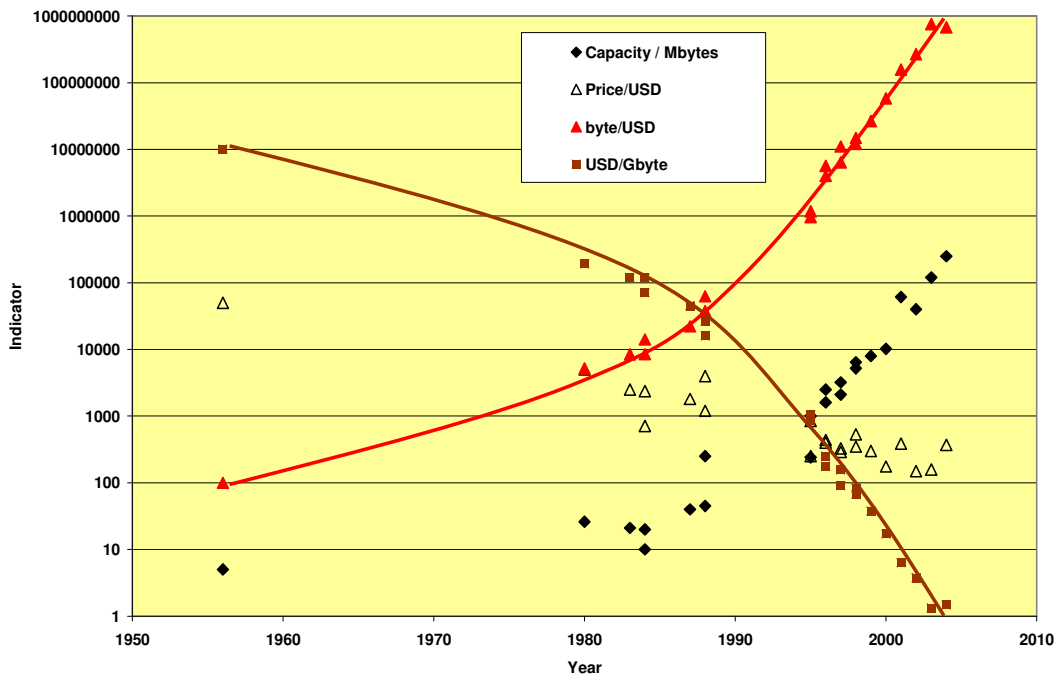


Figure 3: The historical development of typical harddrive capacities and price are shown, starting with the first device by IBM in 1956 – data are taken from [7].

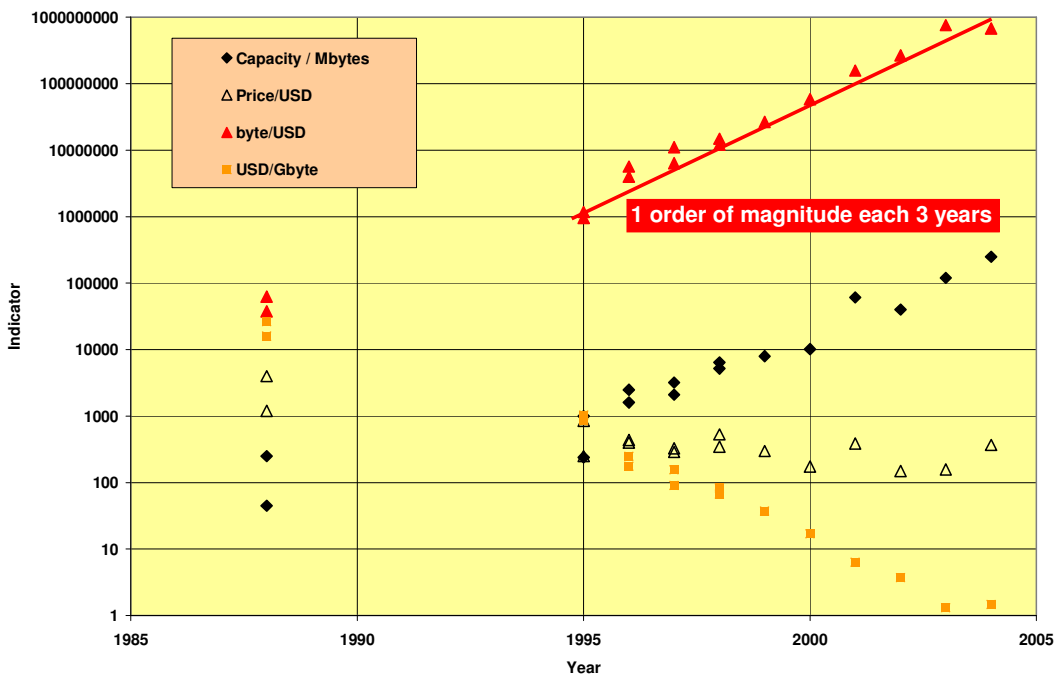


Figure 4: The historical development of typical harddrive capacities and price are shown, starting with the introduction of the personal computer by IBM in the early 80s – data are taken from [7].

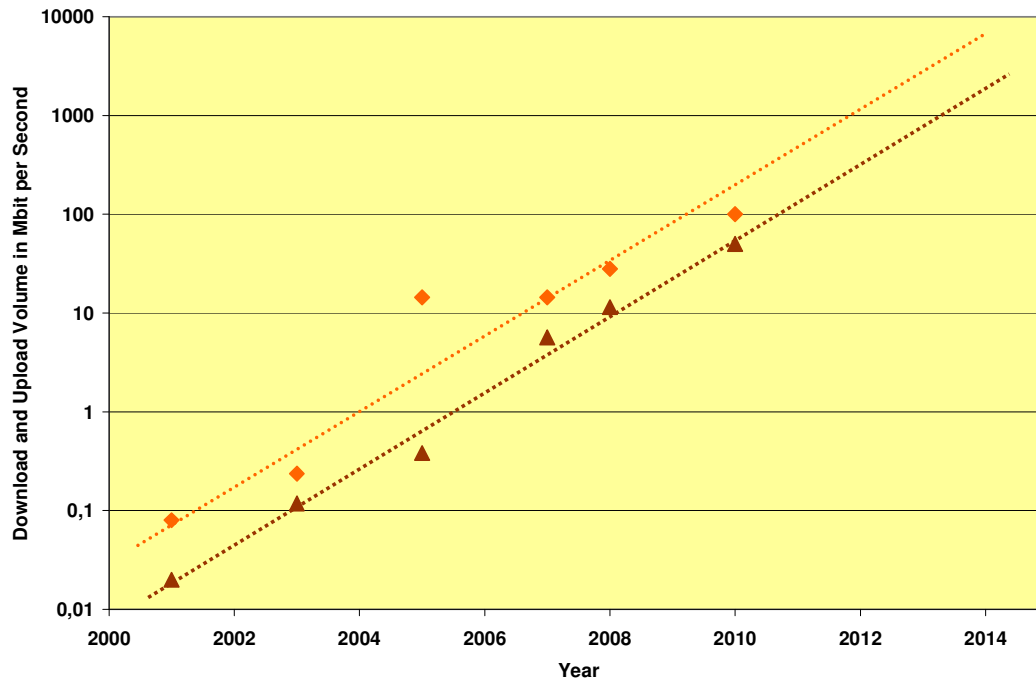


Figure 5: The historical development of cellphone data transfer standards – data are taken from sources listed in [9]. Based on the values shown we are predicting download speeds of 30 Gbit/sec for 2016 with corresponding upload speeds of 10 Gbit/sec. The data speed increased by a factor of 2.37 every year.

3 Conclusions

We have provided a summary of global high technology indicators with the following conclusions:

- There is steady double digit growth for key product performance indicators and user numbers in essential information technologies from 2004 to 2010.
- The mentioned indicators provide a guideline for product development and pricing models of service providers.
- The development of harddrives has been slow between 1956 and the early 80s – after the introduction of the personal computer it accelerated tremendously leading to a
 - Decrease in Price per Gbyte of a factor of 10 every year
 - Increase of typical storage capacity of a factor of 10 every 5 years (see Figure 4).
- For cellphone-based data services we are predicting download speeds of 30 Gbit/sec for 2016 with corresponding upload speeds of 10 Gbit/sec. The data speed increase observed so far suggests an acceleration by 2.37 every year.

Updates of this document will appear whenever relevant data are available to re-assess the annual global figures or the decision is made to include additional indicators. If you should find Sections not clear enough or if information, you expected, was missing, please contact office@mqs.at with your feedback.



4 References

- [1] Please visit www.mqs.at for more information on High Tech Applications.
- [2] Presentation by Lori O'Neill for Deloitte and Touche, http://209.87.231.94/files/PDF/Media_Events/2005Outlook/Deloitte-TechnologyTrends-Ottawa.pdf.
- [3] International Technology Roadmap for Semiconductors (ITRS) – www.itrs.net .
- [4] For training, consulting, project management and part-time engineers/managers please contact us under office@mqs.at.
- [5] Nistads International Workshop on "Emerging trends in science and technology indicators: Aspects of collaboration" 20-25 February, 2001 - <http://www.collnet.de/program.pdf>.
- [6] Third European Report on Science & Technology Indicators 2003 - http://www.demokritos.gr/word_documents/2003EU_3rd_report.pdf.
- [7] Historic data on capacity and price for harddrives - <http://www.alts.net/ns1625/winchest.html>
- [8] http://www.mqs.at/index_files/HighTechBenchmarks.pdf
- [9] Data for Figure 5 were taken from:
 - Süddeutsche Zeitung 12. April 2010, Seite 17; as well as
 - <http://misnt.indstate.edu/harper/Students/GPRS/GPRS.html>
 - http://en.wikipedia.org/wiki/Enhanced_Data_Rates_for_GSM_Evolution
 - <http://en.wikipedia.org/wiki/HSPA%2B>