Typical versus Worst Case

by Gerrit Muller

Philips Research

IST - SWA - AmE

Abstract

A continuous tension exists between the day to day requirements for a new product and the requirements in exceptional cases. The System Architect must understand both requirements and be able to discuss them in terms of value in order to make a balanced product. This article gives some handles to tackle this problem.
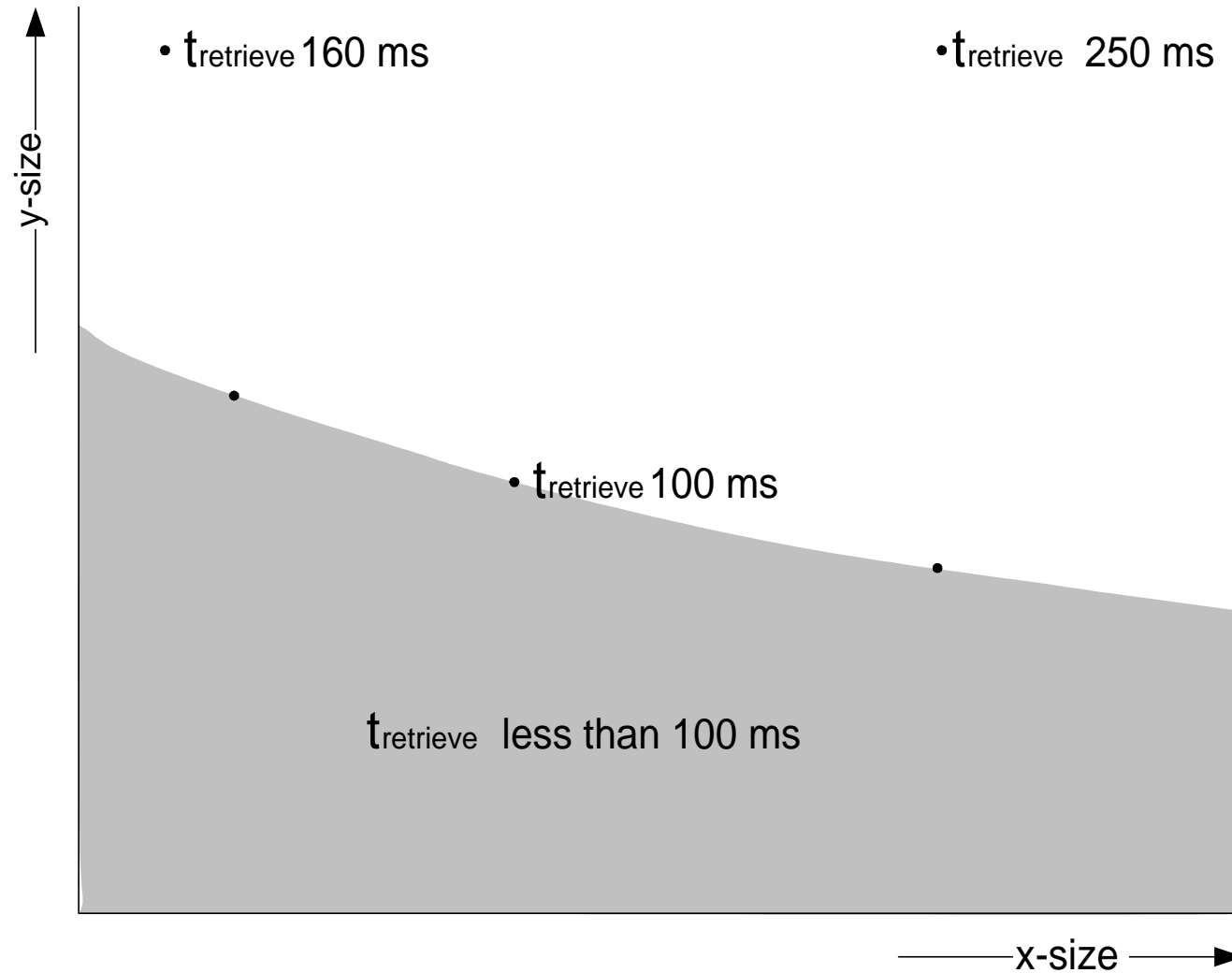
17th November 1999   version: 0

Example Image Retrieval Requirements

y-size

• $t_{retrieve}$ 160 ms

•$t_{retrieve}$ 250 ms

• $t_{retrieve}$ 100 ms

$t_{retrieve}$ less than 100 ms

x-size

Typical versus Worst Case
Gerrit Muller

2

17th November 1999
version: 0
SimpleParameterExample

PHILIPS

Research

IST - SWA - AmE

Technical constraints on retrieve time

$$t_{retrieve} = y_{size} * (t_{rowoverhead} + x_{size} * t_{pixeloverhead})$$

where

$$t_{rowoverhead} = 15\mu sec$$

$$t_{pixeloverhead} = 100nsec$$

Typical versus Worst Case
Gerrit Muller

3

17th November 1999
version: 0
ImageExampleFormula

PHILIPS

Research
IST - SWA - AmE

Example formulations of requirements

1. Images upto 1k*1k, retrieve time less than 100 ms

2. Images upto 1k*1k, retrieve time 100ms@500*500

3. Images upto 1k*1k, retrieve time 100ms@500*500, 200 ms@1000*1000

4. Images upto 1k*1k, retrieve time number of pixels * 200 ns.

5. Images upto 1k*1k, $t_{retrieve} = y_{size} * (15 \mu sec + x_{size} * 100 ns)$

Typical versus Worst Case
Gerrit Muller

4

17th November 1999
version: 0
ImageExampleFormulationList

PHILIPS

Research

IST - SWA - AmE