Typical Versus Worst Case

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Abstract

System design must address the typical needs and expectations of the user as well as the worst case use conditions. 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.

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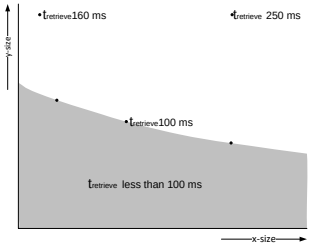
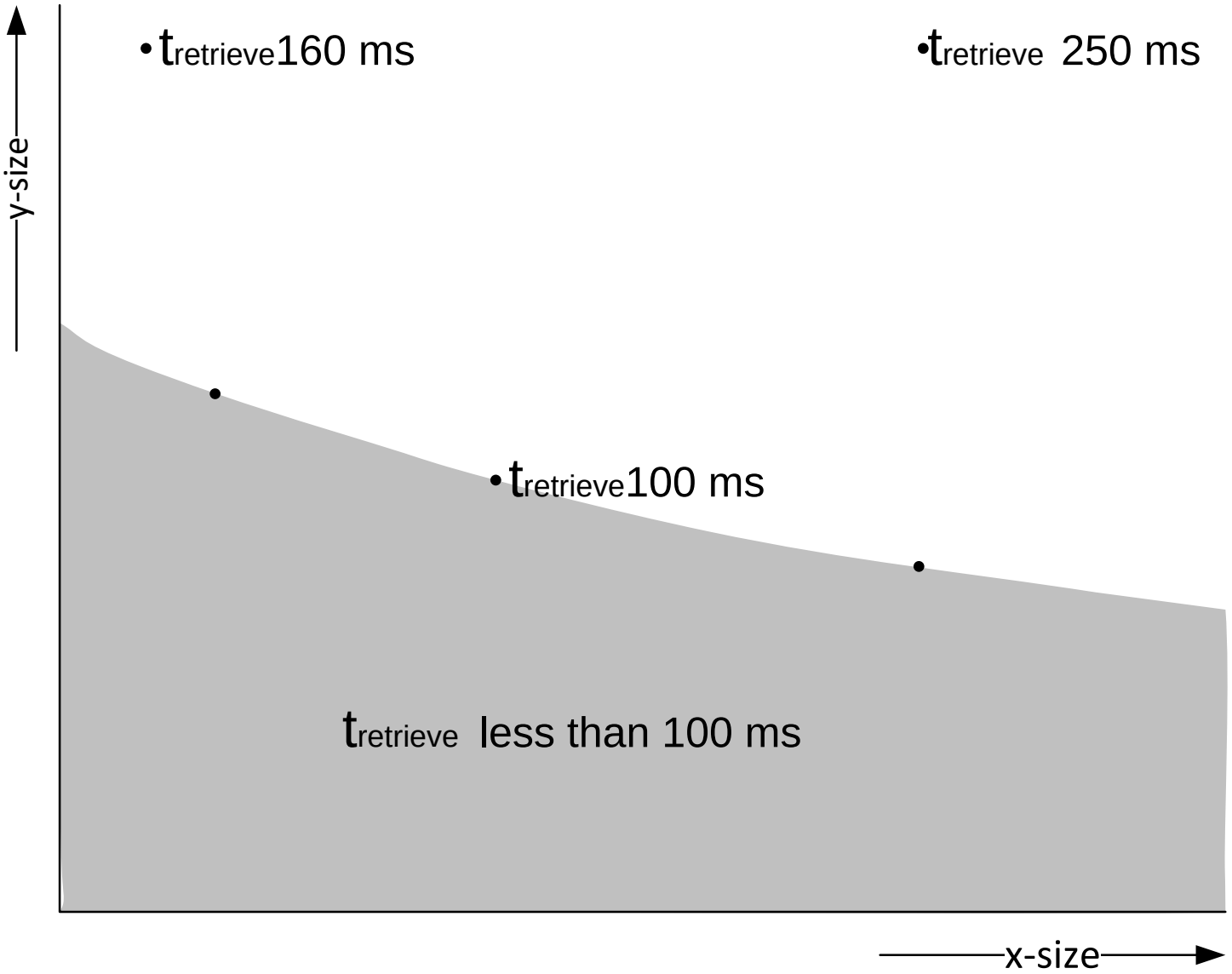


Example Image Retrieval Requirements



Technical constraints on retrieve time

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

where

$t_{rowoverhead} = 15\mu sec$

$t_{pixeloverhead} = 100nsec$

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, $t_{retrieve} = y_{size} * (15\mu sec + x_{size} * 100ns)$