Ksysguard

performance monitoring for KDE

For the Ksysguard software project the first step was to define the product with its goals and target group. After considering what and who is it for, as well as the value it shall deliver, a product vision was developed.

Ksysguard allows to monitor different soft- and hardware parameters that influence the performance and stability of a local or remote computer system.

It allows tech-knowledgeable users or admins of a few computers to detect and to go to the bottom of (rising) problems, and to do something about them.

According to this, the mission for the project was to provide an overview of the computer "health" so that users can recognize at one glance if everything is working fine. In a few seconds users should get the feeling for the performance and stability of the computer system at the very moment and the last minutes.

The next step was to decide which parameters should be shown in the overview, according to the product vision. Those parameters are:

- Partitions
- CPU
- Memory
- Temperature
- PSI Bus Error
- Disk prefailure

After that a investigation of the way to display all these different parameters followed. Different dimensions are:

- Shape
- Color
- Texture
- Space (3D or 2D)
- Animation
- Transparency

For the creation of the concept several problems had to be solved, for example:

How to keep the overall design clear, when you have many computers with a lot of processors? How to catch attention when a problem rises or an error warning appears? How to show the overview of different processes happened the last minutes?

CPU

CPU total load per processor and the average of total load for all CPUs. The average usage of all CPUs and the usage of every single processor at the moment and during the last minutes.

Memory

Current amount of free space for the physical and the swap memory. Amount of space used by every running application. Trend of change of free space during the last 15 minutes.

Partitions

Current amount of free space for every hard disk partition.

Temperature

Warning for any high or dangerous temperature processors and disks. Temperature per processors, graphic processor and disk at the moment and during the last minutes.

Basics about the concept

The overview can be placed everywhere on the desktop by clicking and moving of the place holder ring. The performance of up to 6 computers can be monitored on one desktop, even if each computer has 16 processors.

Therefore one of the biggest problems was to find the balance between a general overview and showing details. So it was necessary to work with different levels.

Details, showed outside of the place holder ring, are opened by a click inside the different inner rings. They can be closed again by a click inside the outer ring.

If you click on the small info button, you will get further explanation to the product.

The memory status with all opened details is shown here.

Applications using more than 5% of the physical memory are shown in the outer circles. If you want to go to the bottom of a problem, you can click inside one of the detail- rings and you get further standard displays of graphs or offered the possibility to do something about a rising problem.

The right half of the ring shows the physical memory usage, the left half the swap memory usage. The trend of change is shown by a small white circle on the right hand of the ring. When it moves up, the memory usage decreases.

In this example one of the applications consumes more than 40% of the physical memory and therefore the background colours show a critical status.
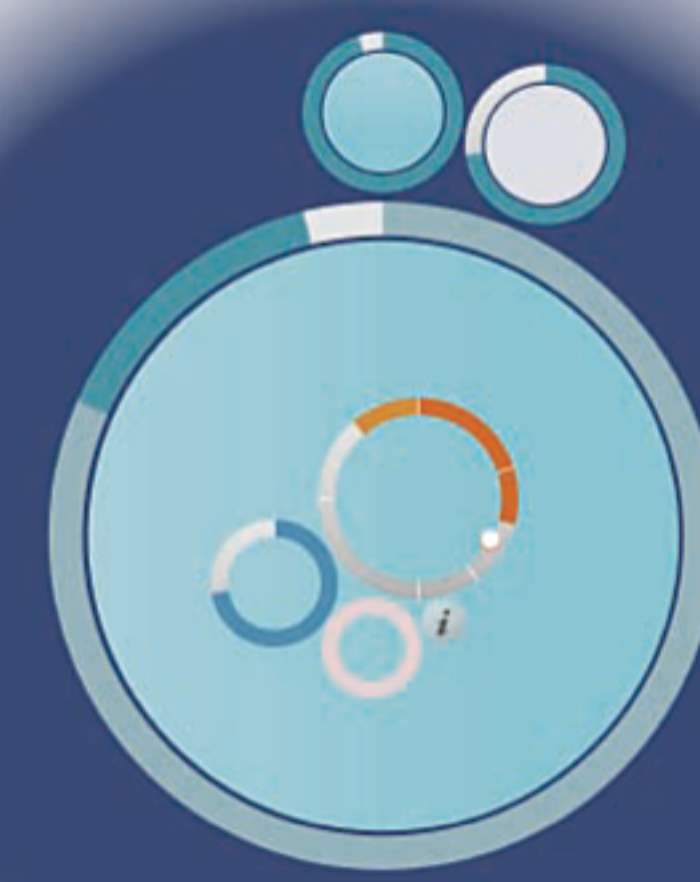
A further problem was to show the current performance and also for some parameters an overview of the last few minutes. Therefore you see a history by opening the processes details (not shown here). Every 2 seconds the history changes and the lines are edging out, so you can get the feeling for time.

The ring shows the peak and average values of the CPUs usage.

The background of the CPU- ring shows the total load of the most heavily loaded processor. Transparent to opaque means a total load of 0 to 3. If its colour changes from white to blue, the total load gets a value of over 3 and therefore critical.

When a parameter becomes critical, the ring of the parameter grows, and its background gets more opaque in a colour matching its outer ring.

In this example the temperature of the computer gets very critical. You should shut down now.
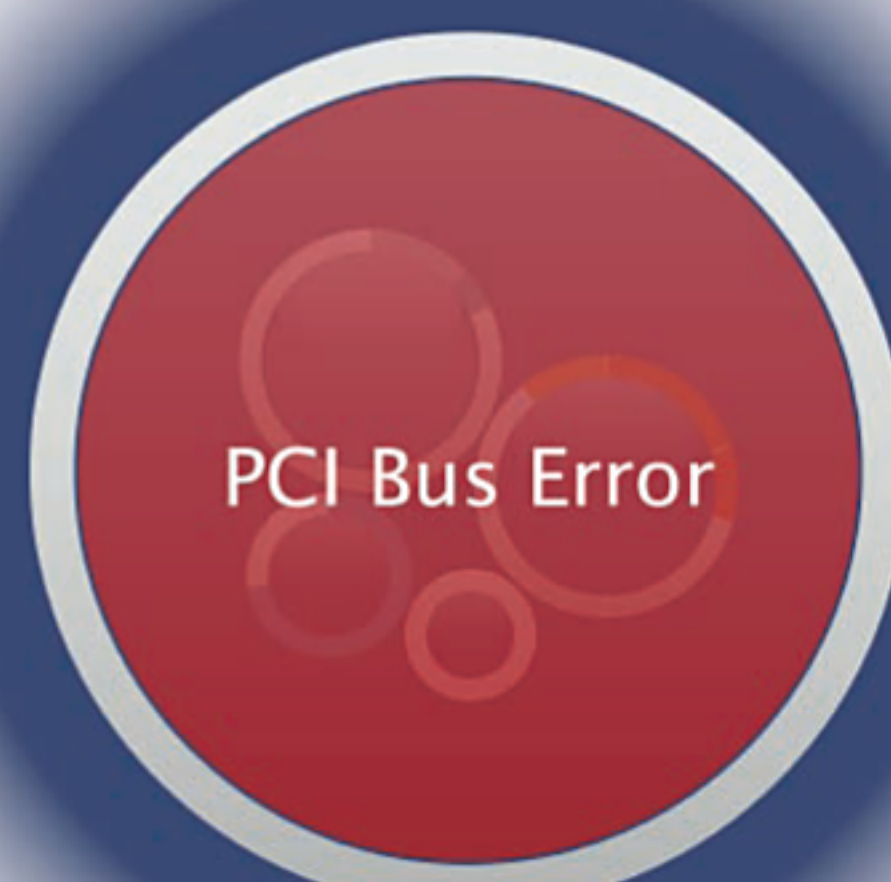
When a PCI Bus Error happens, an error warning appears. For a moment the whole inner circle is covered by a red warning colour. After the error message, a new ring inside the place holder ring appears. If more PCI Bus errors appear, the ring grows constantly.

Also in other critical situations, or when a disk prefailure happens, the red warning colour with an error message appears.

PCI Bus Error