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Bring Color To The Game

For what is Color Management used

Color management was long time not from interest on the Linux desktop, or better not for many people. Most people think Color Management is only necessary for designers and artists. But this is not true. Color Management is important for a wider audience.

Color Management is the controlled conversion between different devices, in order to have on all this devices nearly the same representation of colors.

In practice Color Management is not only needed from designers as the following examples show:

For people with visual impairment is it easier to recognize things if they are allways in the same color.

For medical purposes are today often colored pictures used, little differences in the color are used for diagnoses.

Companies with online trading spent a lot of money with dissatisfied customers. They didnt get the color they did expect.

What is ICC styled Color Management

An ICC profile is a set of data that characterizes a color input or output device, or a color space., which are standardized from the International Color Consortium (ICC). The International Color Consortium was formed in 1993 from various companies to create an open color management system which would work between different operating systems.

An ICC profile describes the color characterization of a particular device. ICC profiles are often used for printing, computerbased artwork and design.

Desktop and Color Management

MAC OS X have Color Management since the begin and on Windows is Color Management also implemented. On free desktop there was long time no interest from users to implement Color Management. But the Linux desktop is now withly used and more users ask for this feature and there are some solutions for the Linux desktop.

Applications for Color Management on the Linux desktop

Applications for monitor profile setup

Most known applications here are colord and Oyranos. colord is a system service which manages and installs color profiles. Easy installation of vendor supplied .ICC or .ICM files with double-click. The service provides a D-Bus API so that applications can communicate with it. Integration X11 by setting the per-screen and per-output _ICC_PROFILE atom, which most color managed applications use for get their information. Deep integration into the GNOME and free software stack.

Oyranos is a Colour Management System on operating system level. It allows to match predictably input device colours to output device colours across supporting applications. One goal is to make colour management useful for all users in a automated fashion and regardless of any technical knowledge.Oyranos is not an service it is a modular system, most dependencies reside in runtime switchable modules. Modules can be easily extended and installations can be customised.

Compared to colord provides Oyranos via CompICC an full screen desktop color correction.

Frontends for the CMS

GNOME Color Manager, KolorManager, Synnefo and KDE-colord enables the user to configure their devices and CMS.

ICC profile creation and distribution

DispcalGUI is an application for the monitor calibration and profiling tools of Argyll CMS. It calibrate and characterize display devices with supported hardware sensors and creates ICC profiles. Since version 0.8 these profiles can be uploaded to Taxi DB if the user whishes that.

Taxi DB is an online data base for free and user generated device profiles. Its first implementation was done during the GsoC 2011. Oyranos can download the profile from there and dispcalGUI can upload created profiles to it. Taxi DB has an JSON API which can easy used from any Color Management System for download/upload profiles.

Color Matching Module

Color Matching Module are used to integrate color conversation in applications. There are some free implementations of such CMM available, Mozilla e.g. Uses QCMS as such one. But the most applications use LittleCMS for integration of color conversation.

ArgyllCMS

ArgyllCMS is an ICC compatible color management system, which is used from colord and dispcalGUI for profile generation, ArgyllCMS can also serve as an CMM. But for ArgyllCMS exists no frontend which makes it for end-users easy usable. With the help of ArgyllCMS can more devices as monitors calibrated. The problem here is that for e.g. calibrating printers an spectrometer is needed which are expensive (X-Rite ColorMunki arround 350€) .

How to install and use and color managed desktop

Oyranos and colord are for the most distributions as package available and easy to install. Ubuntu has colord since 11.10 per default installed and Fedora installs colord also per default. That is mostly colord is a dependency for GNOME.

So if the users like colord there can be used the command line or GNOME color manger for creating devices and configuration of colord

Oyranos is also packaged for the most distributions and can also easy installed. For the configuration can be KolorManager or Synnefo used, but the last one is not available as binary.

Future development

The future in color management is definitly full screen color management - FSCM, as it Oyranos with CompICC can do today. But Compiz has not really a future on Linux distributions except Ubuntu. So there must be new solutions, on KDE this means Color Management has to be implemented in Kwin and on GNOME in mutter.

On Kwin the work has already begun, there is an GsoC project for implementing it. For mutter there might be some problems with clutter?

Another topic for the future of Color Management will be the integration inside the toolkits. An possibilty for implementation might be Cairo.

But on the end there is a lot of work for FSCM on the Linux desktop to do.