



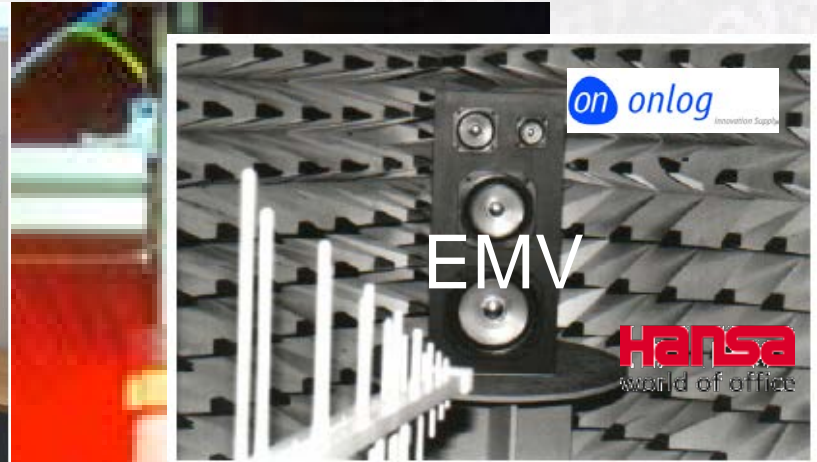
**LED illumination
measurement today
is a challenge**
LED's in the goniometer
and
an Ulbricht sphere



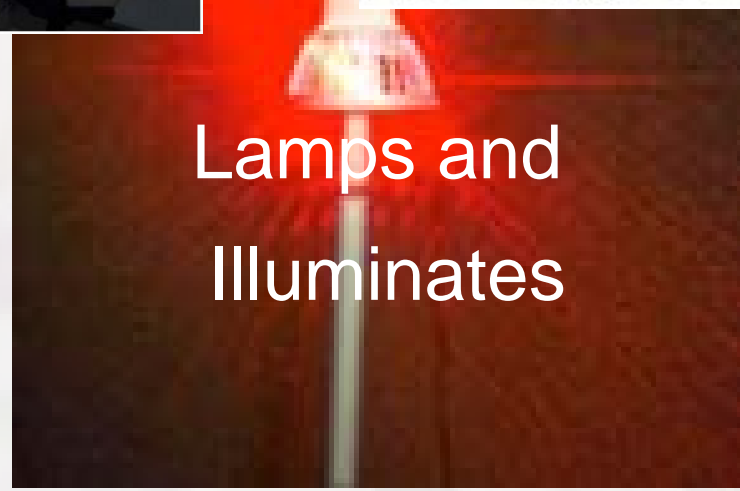
Who are we?



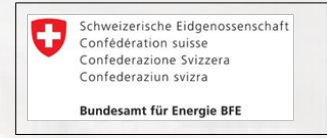
Energy efficiency



EMV



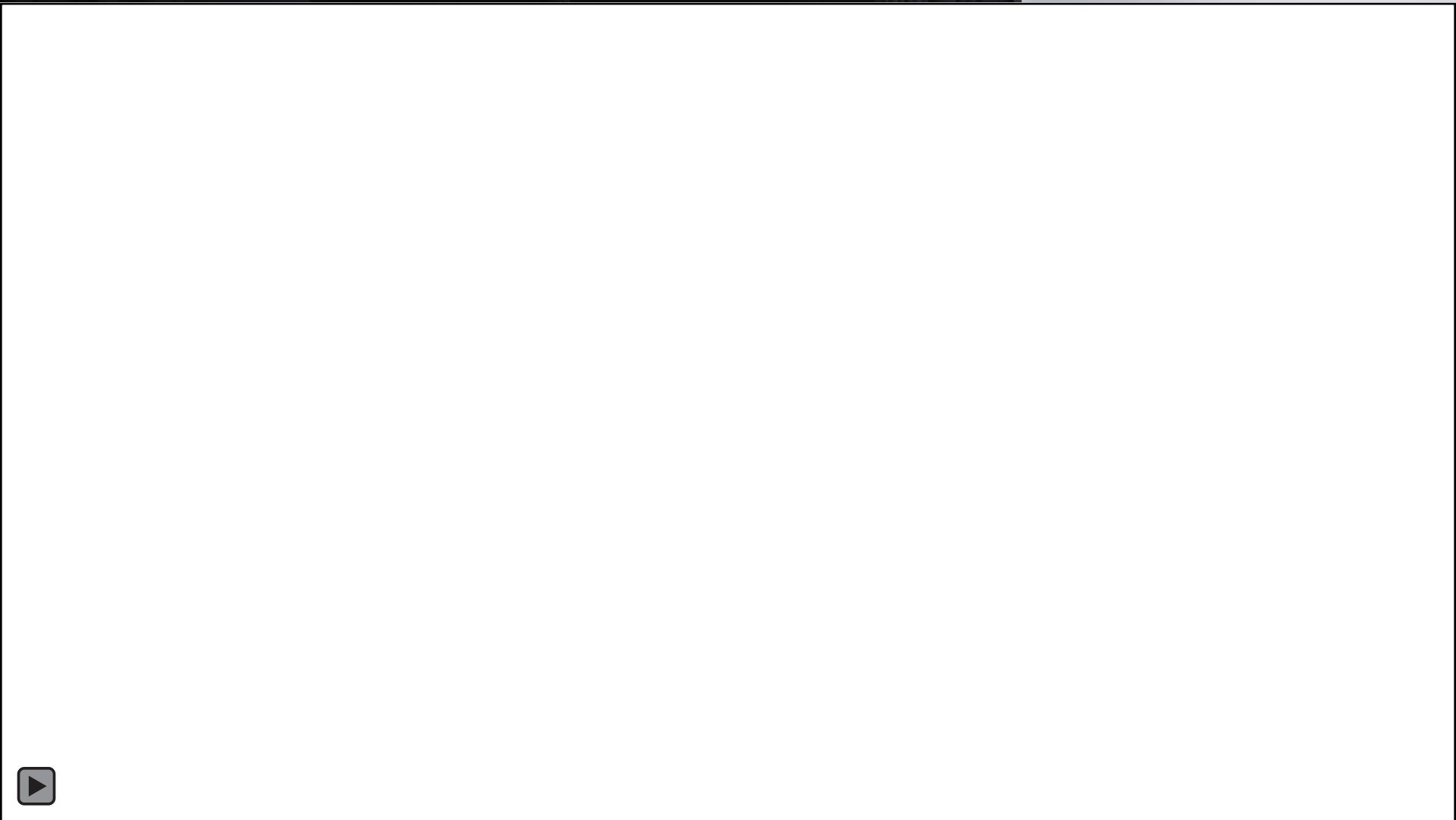
Lamps and
Illuminates





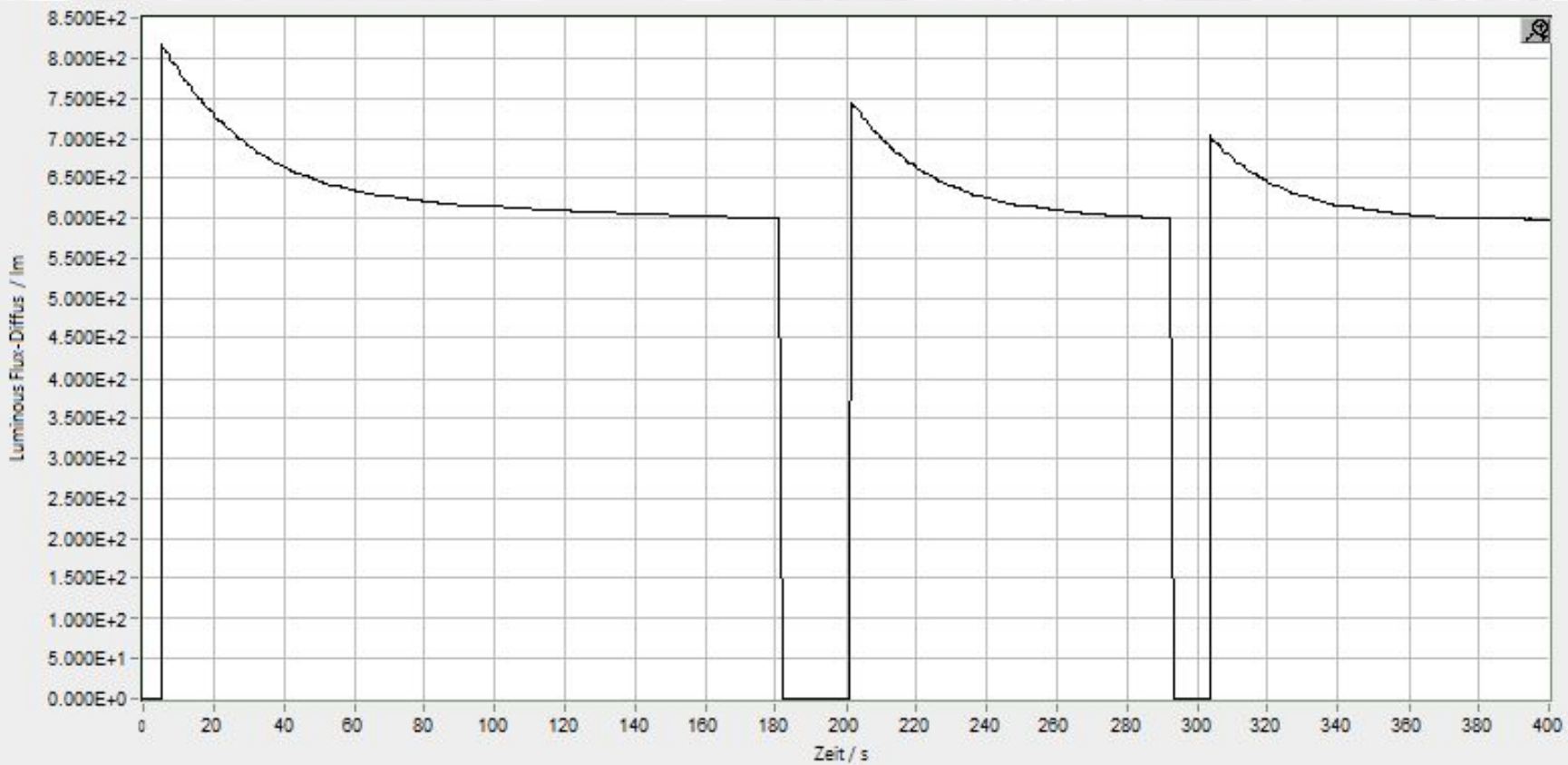
How do we measure?







What do we measure?

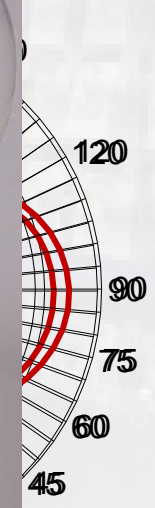
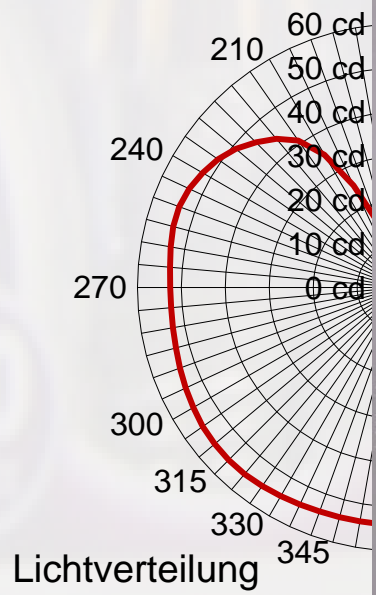




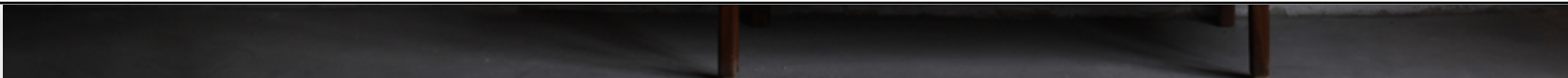
What do we measure?

Incandescen

Incandescen



60W,





Stepping up from illuminates to lamps





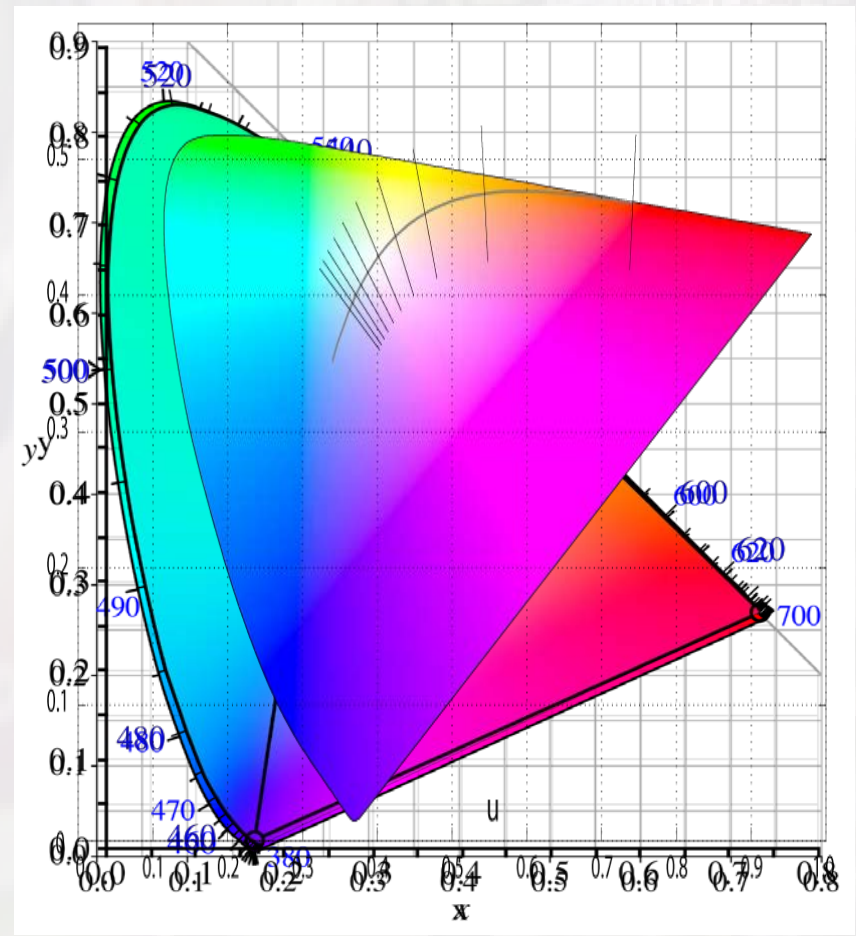
What do we need?

- We need proper declaration of the characteristics of an illuminate, a lamp, a lighting system on the packaging
- We need well-educated sales personell, able to tell customers the implications of modern LED illuminate design



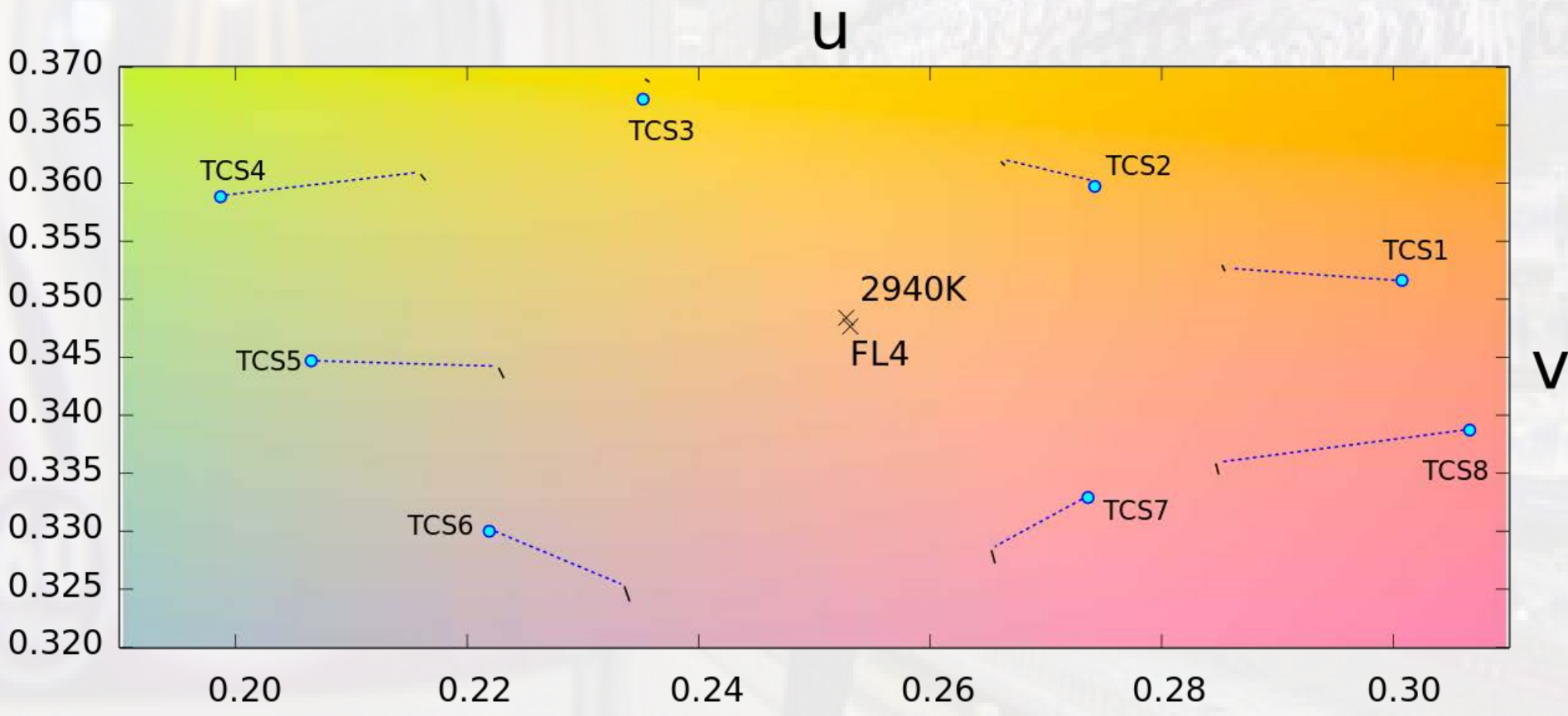
From brightness to colour

MacAdams
0.05 (1936)
(1940)





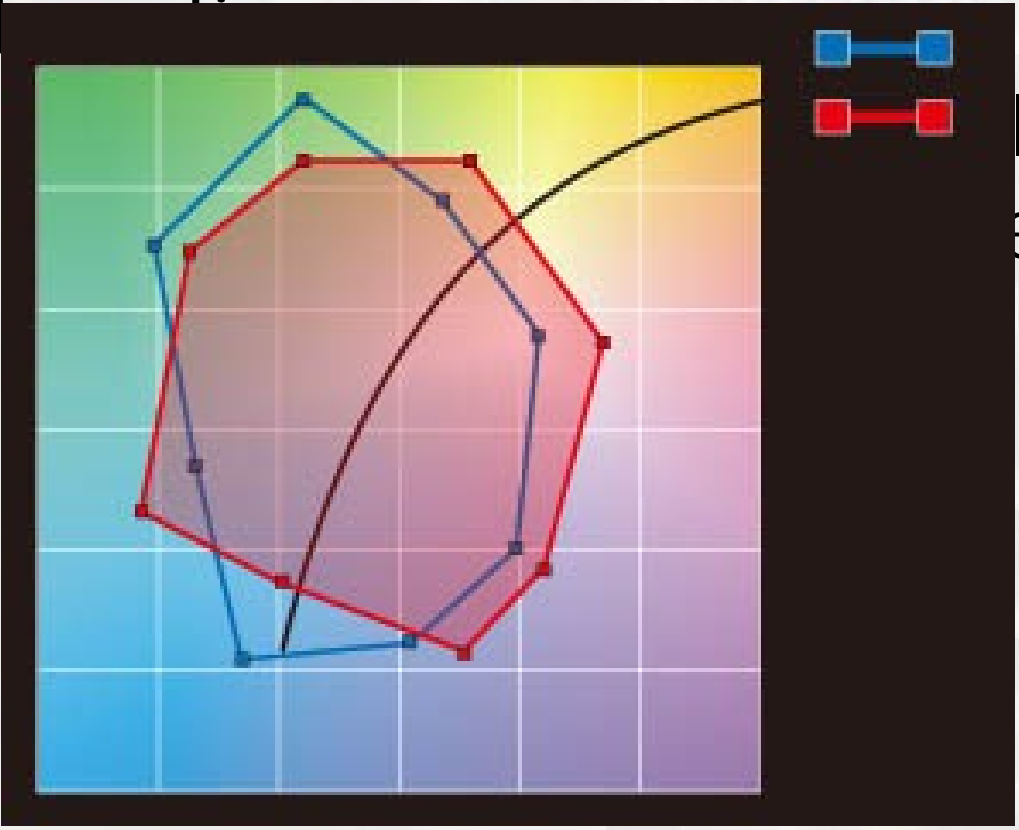
Quality of color resemblance





Quality of color resemblance

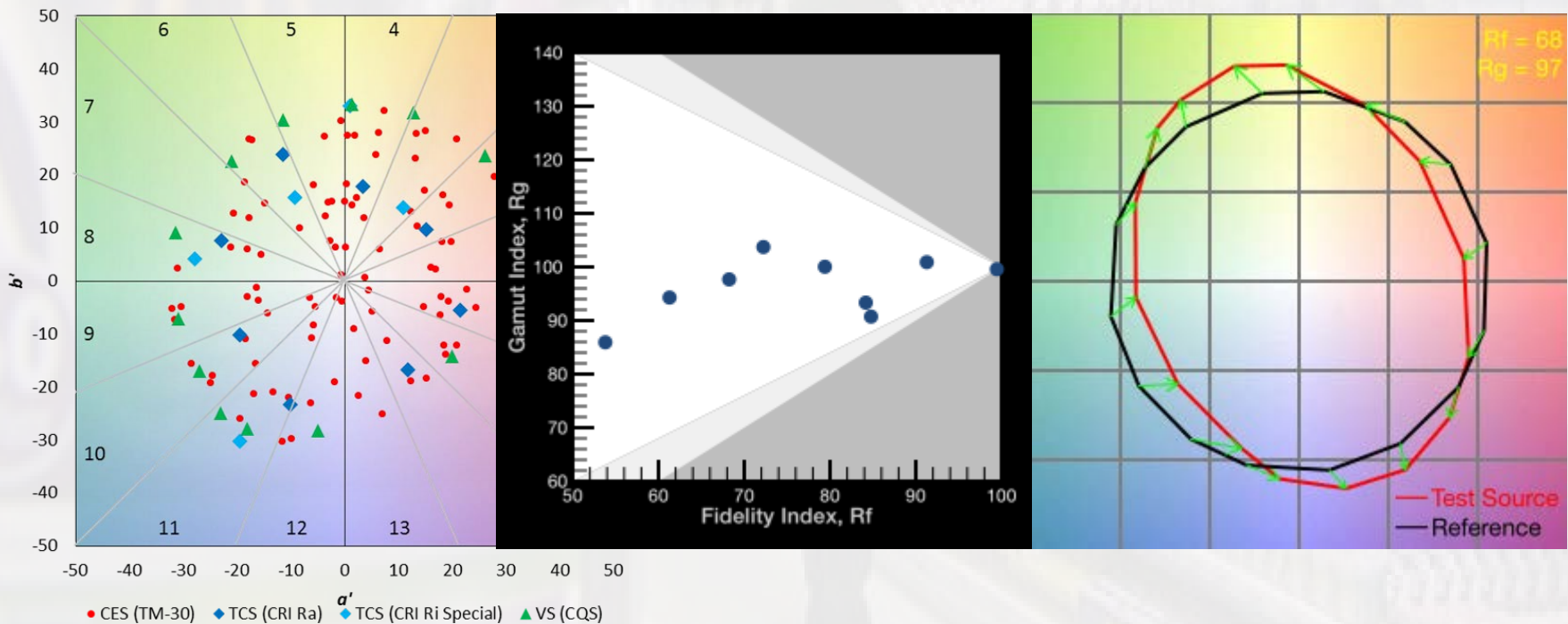
- Alternative
-
-
-
-
-



(Colours)
 (Frequency
 Colours)

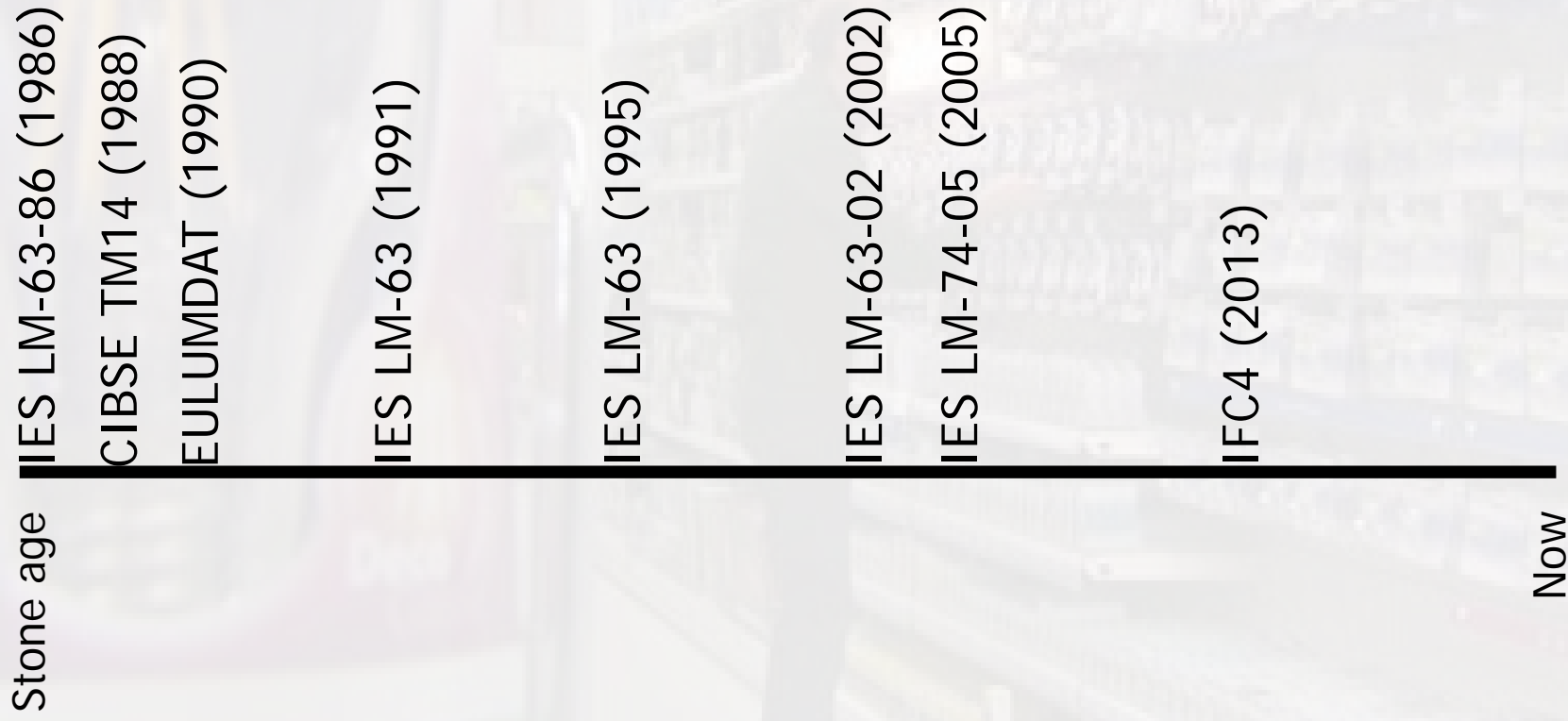
Quality of color resemblance

- Recent Work: IES-Standard TM30-15
 - 99 Reference Colours -> Rf (Fidelity)
 - 16 Reference Colours -> Rg (Gamut)





Common File Formats





What do we need

1. We need to employ standards to be able to capture the quality of color rendition properly
2. We need to be able to use standards capture
 - Measure
 - Plan
 - Simulate
 - Make better products





**We
Need
YOU...**

