iccMAX: New Colour Management Paradigm

William Li

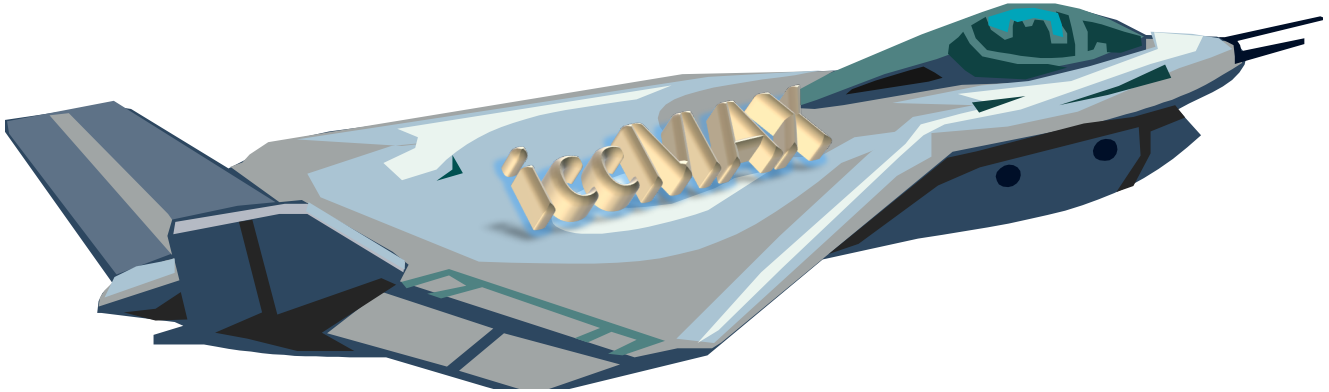
Co-Chair ICC

Contact: william.li@kodak.com

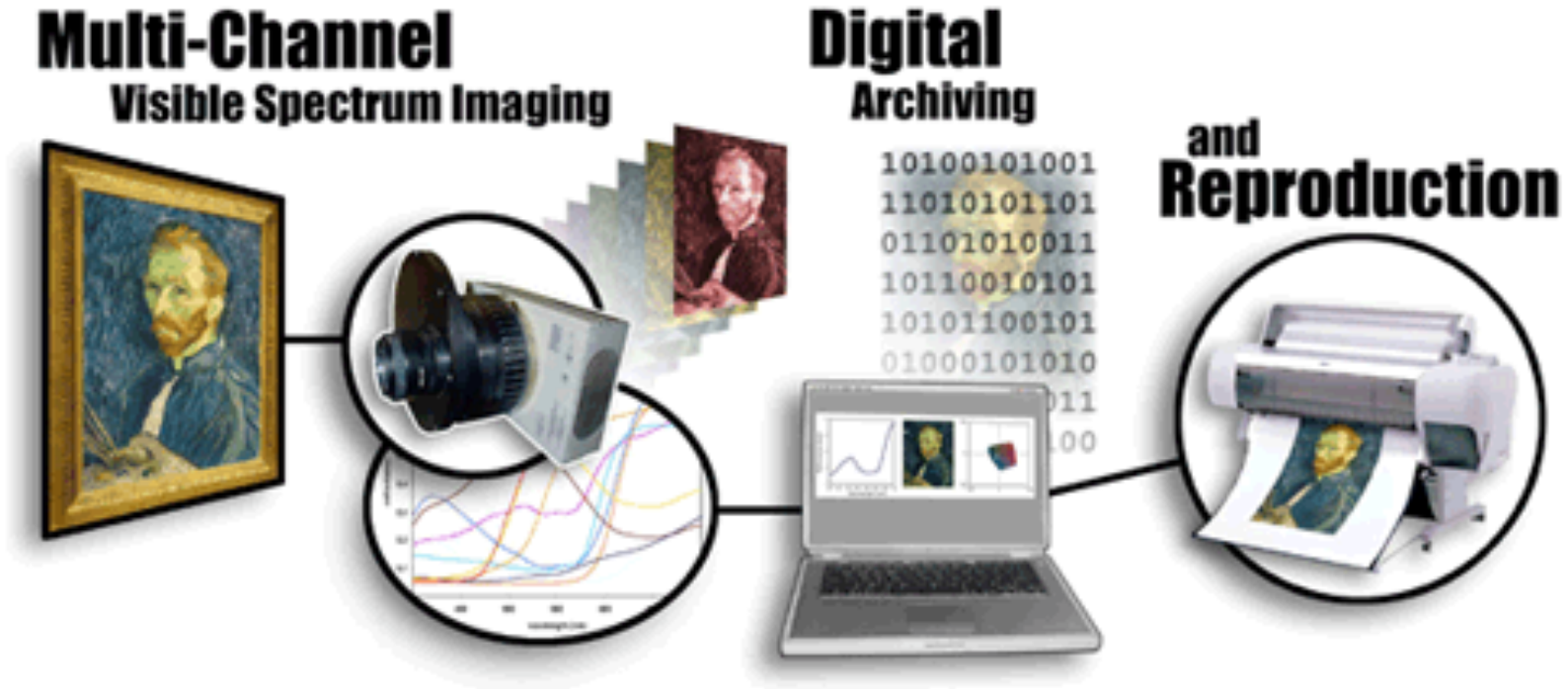
iccMAX

What is v4 Good For?

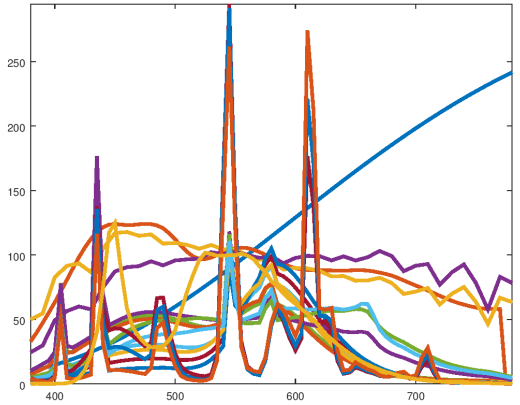
iccMAX vs. v4: Related but Different

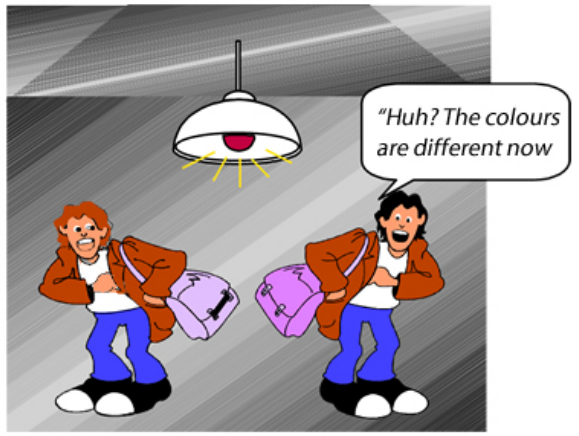


#1: Light (and Observer) Independent Color Capture and Reproduction



#2: Handle (predict) changes in lighting



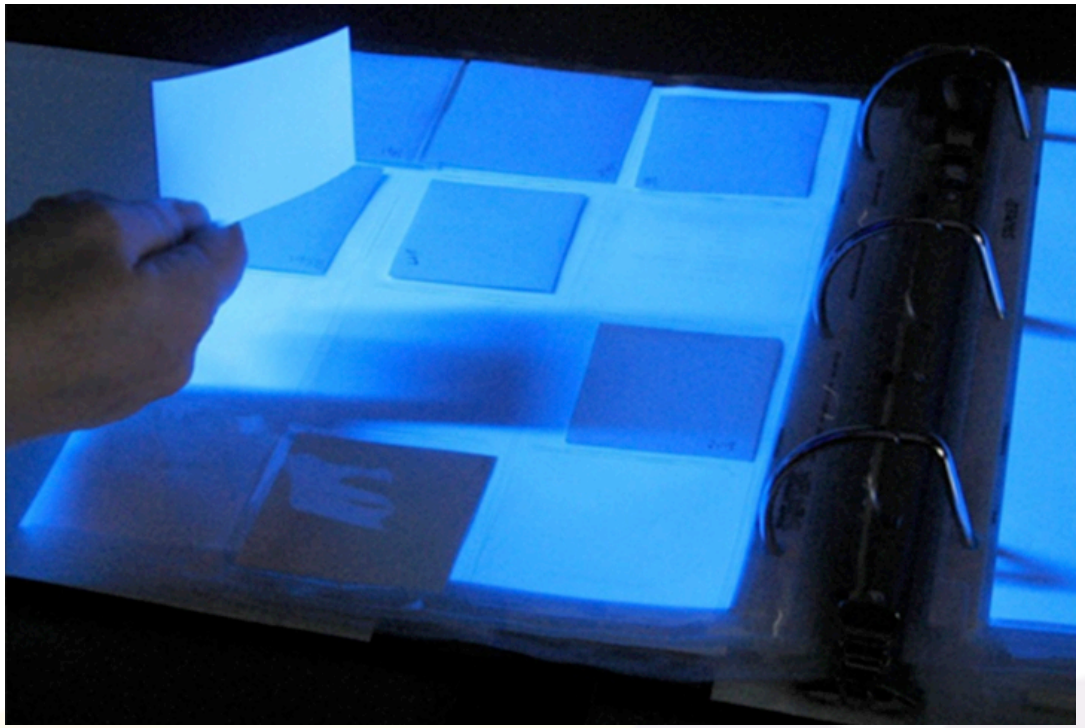


(Picture from http://www.coatsindustrial.com/en/information-hub/apparel-expertise/metamerism-and-illuminants)

#3: Lightweight Profiles for Capture

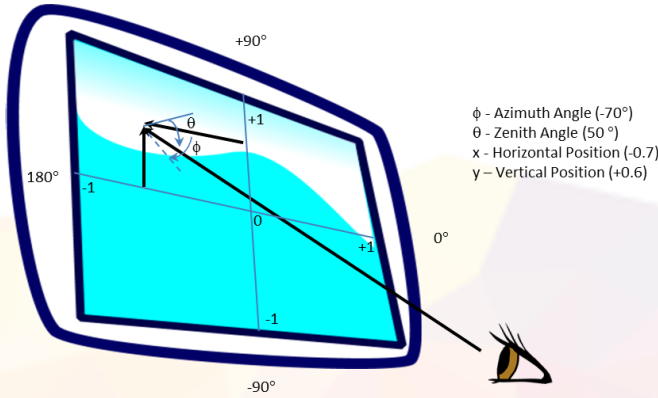
#4: Wavelength Changes in Reflected Light (Fluorescence)

(Picture from https://www.keech.org.uk/about/news-media/273-fluorescent-fun-for-keech-mum)

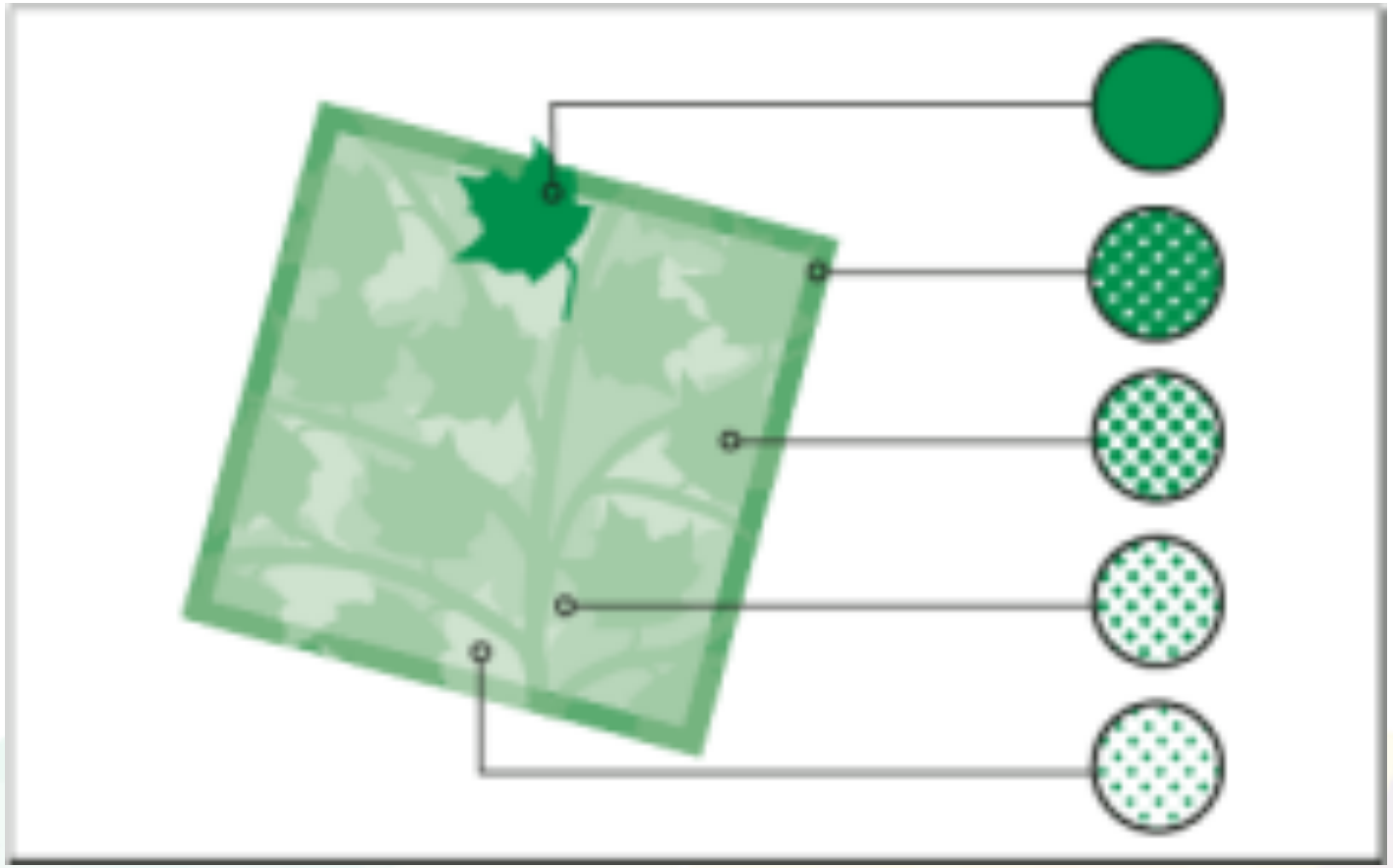


(Picture from http://news.yale.edu/2015/02/19/yale-launch-lens-media-lab-photograph-research-and-conservation)

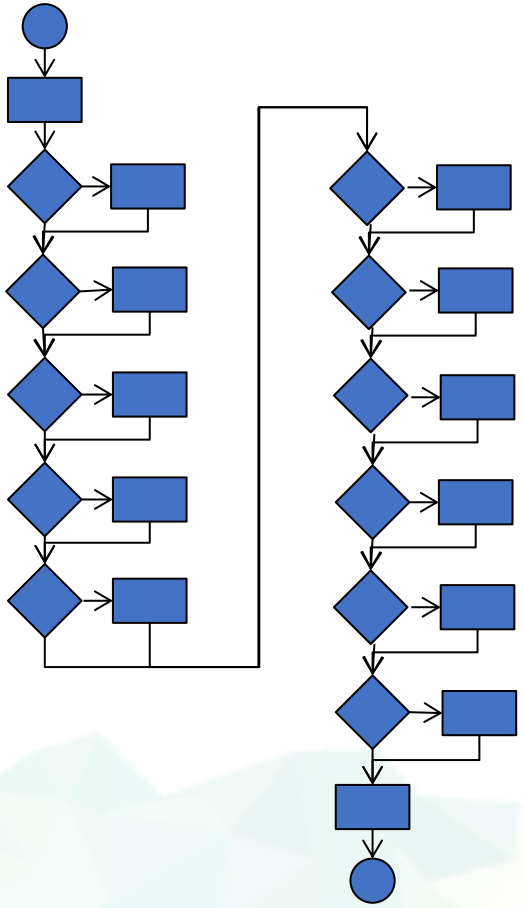
#5: Dependency of Lighting and Viewing Angles

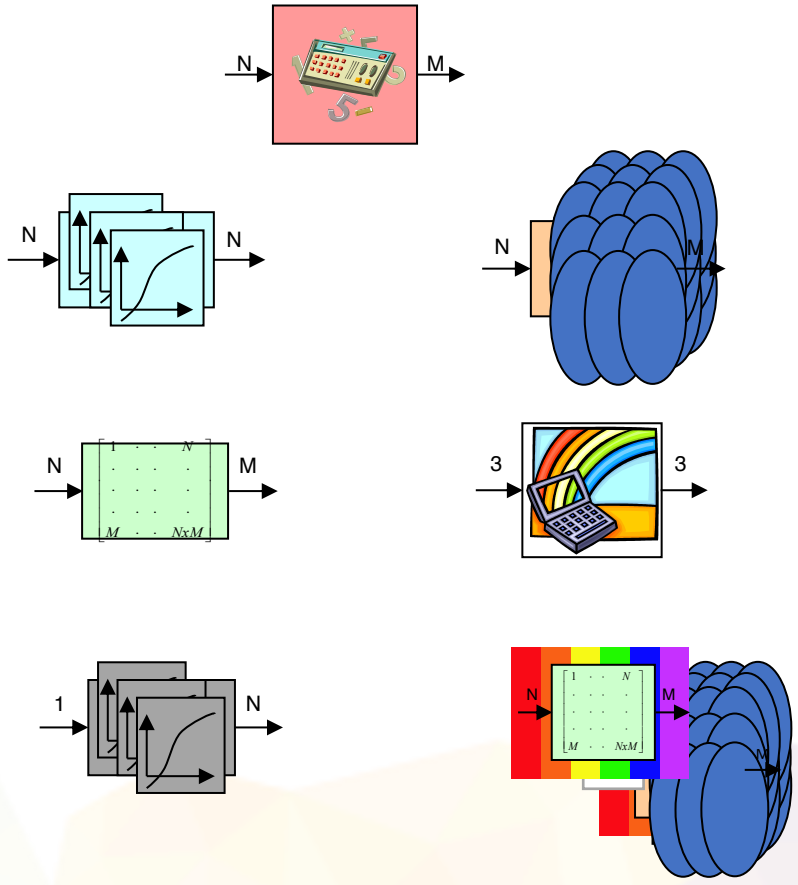


#6: Describe tints of named colors



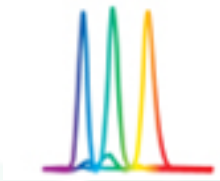
#7: Compact Profiles Using Algorithms



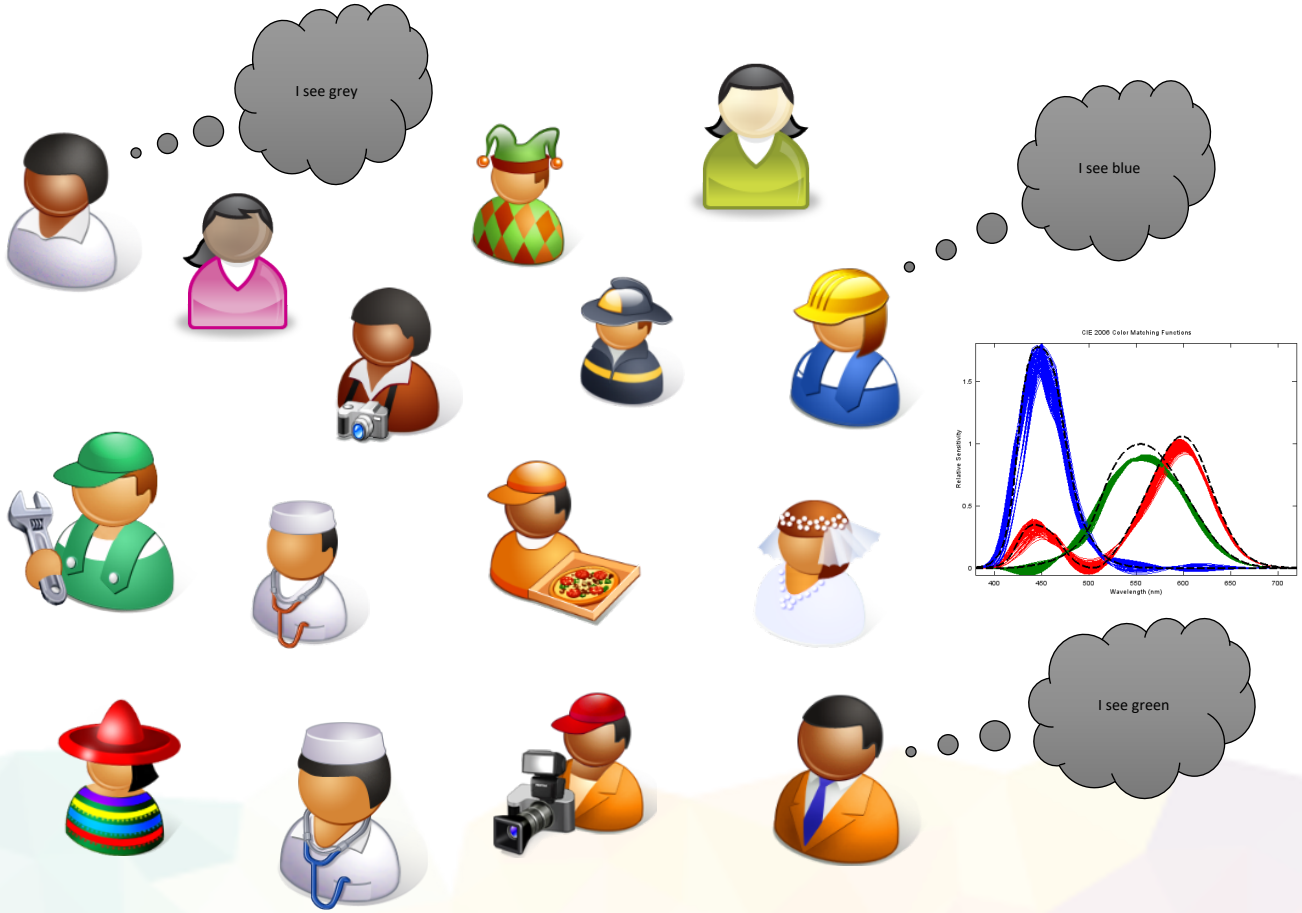


#8: Account for differences between observers

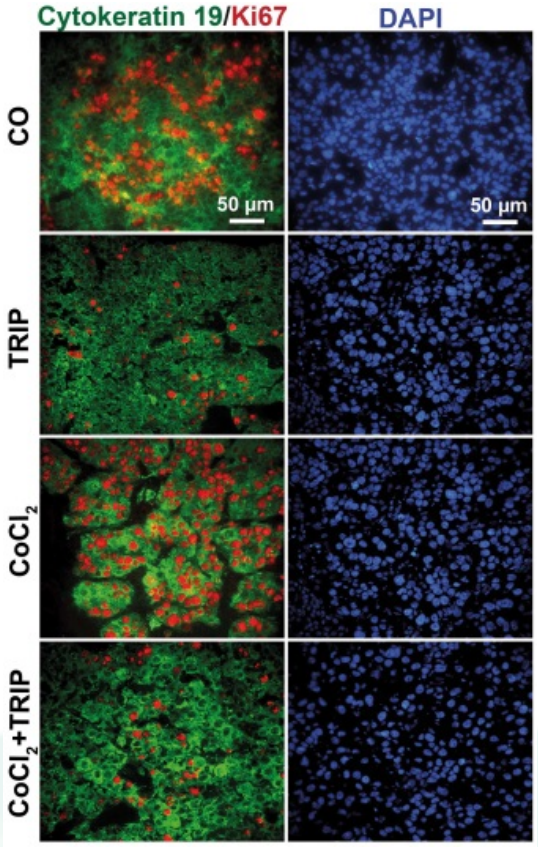
LCD Display



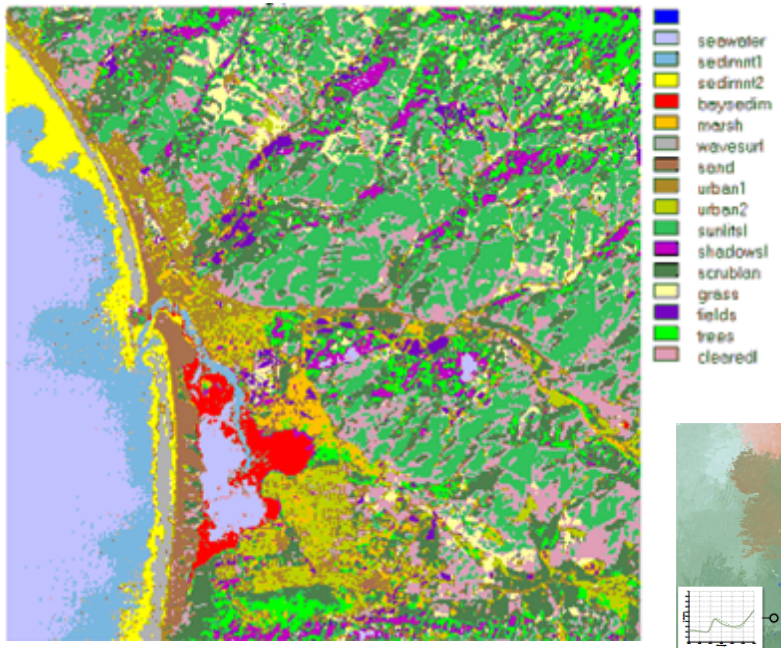
Quantum Dot Display



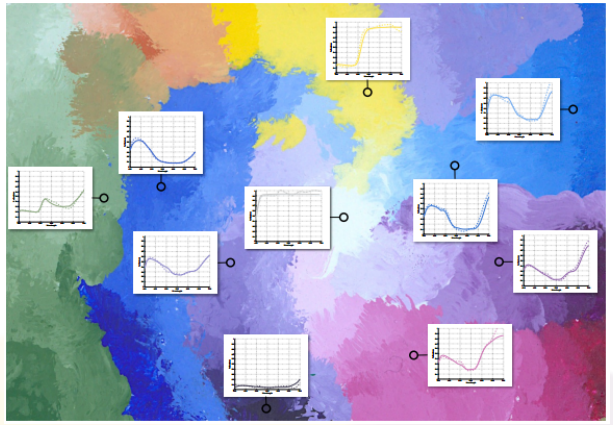
#9: Describe and visualize “color” in terms of “What is it?”



(Picture from https://www.spandidos-publications.com/10.3892/or.2014.3196)



(Picture from http://wgbis.ces.iisc.ernet.in/envisrs/?q=node/26/)



(Picture from http://scholarworks.rit.edu/cgi/viewcontent.cgi?article=9306&context=theses)

iccMAX: From the Bottom Up

Connection Space Extensions

- **Spectral profile header extensions**
- **Profile Connection Condition (PCC) tags**
- **PCS Transforms**
- **Sparse matrix encoding**
- **Multiplex Connection Spaces**

multiProcessingElements

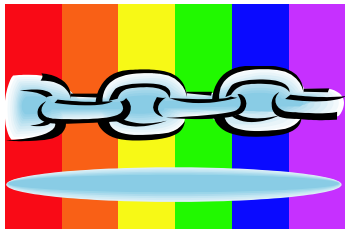
- **1-D Look Up Tables (LUTs)**
- **Matrices**
- **N-dimensional LUTs**
- **Calculator element**
- **ICC Color Appearance Model element**
- **Tint Array element**

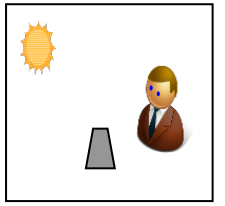
Hierarchical tag types

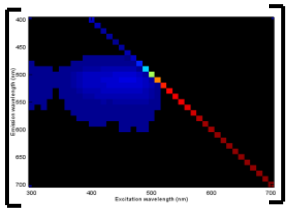
- **Named Color Tag Array**
- **Support for angular dependencies via Bidirectional Reflectance Distribution Functions (BRDF)**
- ***Profile Sequence Information***

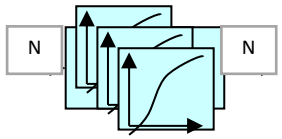
Other Extensions

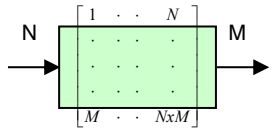
- **Color Space Encoding profiles**
- **Gamut Boundary Description encoding**
- ***Color Measurement (CxF) tag encoding***
- ***UTF8 text & UTF16 encoding***
- ***Additional Numeric Array Types***

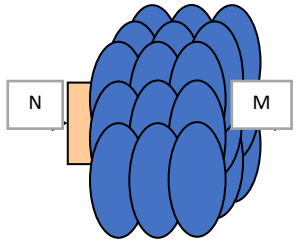


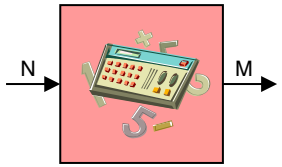


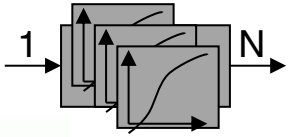


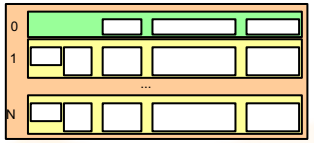


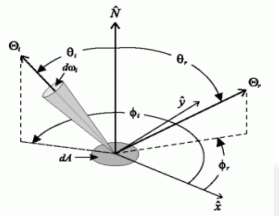


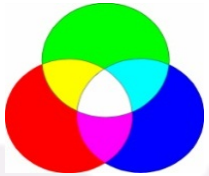


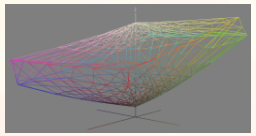












CxF

iccMAX (v5) vs. v4

iccMAX profiles have same header + tag structure as v4 profiles, but:

- Different values possible in header.
- Some retained tag types from v4, some new tag types.
- Some v4 tag types deprecated.
- New color space types, PCS types, data tags.

iccMAX CMMs generally intended to use v4 profiles, but v4 CMMs will not need to be compatible with iccMAX profiles.

See You All

November 23, 2020