



DATE: 1999-05-31

<p style="text-align: center;">ISO/IEC JTC 1/SC 28 OFFICE EQUIPMENT Secretariat: Brazil (ABNT)</p>

DOC TYPE: Report

TITLE: Future New Work Item Proposal on Image Quality for Printer Systems

SOURCE: SC 28 Secretariat

STATUS: Final

ACTION ID: FYI

DUE DATE: -

DISTRIBUTION: P, O and L members of JTC 1 /SC 28, JTC 1 Secretariat, ITTF

MEDIUM: Electronic (E-mail and Web server)

NO. OF PAGES: 06

Address Reply to:

Secretariat - ISO/IEC JTC1/SC28 - ABNT/CB-21

R. do Ouvidor, 60/1204 - Rio de Janeiro - RJ - 20040-030, Brazil.

Telephone: +55 21 508-9862; Facsimile: +55 21 508-5629; Email: sc28@actech.com.br;

WWW: <http://www.actech.com.br/sc28>

G1 New Work Item Proposal

PROPOSAL FOR A NEW WORK ITEM

Date of presentation of proposal: 1999-05-21	Proposer: ISO/IEC JTC 1/SC XX
Secretariat: National Body	ISO/IEC JTC 1 N XXXX

A proposal for a new work item shall be submitted to the secretariat of the ISO/IEC joint technical committee concerned with a copy to the ISO Central Secretariat.

Presentation of the proposal - to be completed by the proposer Guidelines for proposing and justifying a new work item are given in ISO Guide 26.

Title (subject to be covered and type of standard, e.g. terminology, method of test, performance requirements, etc.) Specification of Data Value Domain

Image Quality for Printer Systems

Scope (and field of application)

Definition: A printer system includes the printer and any other hardware and software which is used for printing hardcopy output.

- This project will result in the development of standards for evaluation of "paper-like" hardcopy output which include:

- 1) Definitions of quantifiable image quality attributes
- 2) Definitions of standard test patterns for measuring these attributes
- 3) Evaluation methods and conditions
- 4) Definitions of relevant image quality terminology

- Not included in the scope are:

- 1) copiers
- 2) digital input (scanners and cameras)
- 3) video displays
- 4) Target values and tolerances for each attribute
- 5) Overall image quality -- weighting and integration of attributes

Please note that Microsoft and Hewlett-Packard have collaborated to develop a document, "Windows Color Quality Specifications for Printer OEM's", which will soon be published. This work has been contributed for use by the IEC (International Electrotechnical commission) TC-100, Project Team 61966. In order to avoid duplication of effort, the present proposed standard will use the TC-100 standard as the color part of the standard and request additional work by TC-100 if necessary.

CIE is working on color appearance models, color difference equations for images and other related activities. This standard will defer to CIE for guidance on these topics.

Purpose and justification - attach a separate page as annex, if necessary

Since the printed page, or output image is the product of a printing system, the quality of this image is an important factor to the manufacturers, users and evaluators of printing systems.

Most printer users, and even magazine reviewers of printers, have little knowledge of what IQ (image quality) is or how to measure it. The use of phrases like "600 DPI (dots per inch) quality" illustrates this lack of knowledge.

The purpose of this project is to produce a standard for evaluation of IQ which is appearance based. In other words it will be based on human perception and not on printer technology characteristics such as engine DPI, or colour registration etc

The project will involve selecting a set of IQ attributes. The requirements for these attributes are:

- 1) Minimal and sufficient set
- 2) Capable of describing all significant aspects of Image Quality with as few attributes as possible
- 3) Use of a goodness scale if possible (larger is better)
- 4) Appearance based

Xerox has proposed a set of ten IQ attributes as a starting point for the work. They are:

- 1) Line Quality: overall quality of lines (jagged, fuzzy or ragged, inadequate density)
- 2) Text Quality: overall quality of text.
- 3) Adjacency: lack of any defects associated with edges between two colors (including white)
- 4) Micro-uniformity: lack of non-uniformity visible in small areas (< 6mm) intended to be smooth and uniform
- 5) Macro-uniformity: lack of non-uniformity visible in large areas intended to be smooth and uniform
- 6) Effective Resolution: related to pictorial sharpness, but distinct from print engine resolution and addressability.
- 7) Effective Tone Levels: quality of tone gradients, including freedom from contouring.
- 8) Color Rendition: deals with color balance, gray balance, continuity, dynamic range, etc.
- 9) Process Color Gamut: range of colors printable on a process color system
- 10) Gloss Uniformity: uniformity of the glossy or specular component of the light reflected off of the image

A short history of the origin of this project follows. Dr. Norm Burningham of Hewlett-Packard Company perceived the need for a sensible, scientifically based method of measuring image quality. He invited interested people at three Imaging Science and Technology conferences to attend after-hours meetings to discuss the issues. These were PICS-98 in Portland, May 19, 1998, NIP14, Toronto, October 21, 1998, and PICS-99, Savannah, April 27, 1999. A total of more than 175 attended, and about 20 have agreed to help on a working group for the development of a standard if an NP is approved. From this high interest level it is clear that there is a perceived need for such a standard by academic and industry specialists in the IQ field.

The availability of such a standard measurement method as an international standard by making it easier to compare printer performance with measurement methods based on human perception. Magazine reviewers of printers would have an accepted method of measuring the most fundamental IQ attributes. Manufacturers would benefit because a standard set of methods for evaluation of hardcopy output for printing systems would be available.

Programme of work

If the proposed new work item is approved , which of the following document(s) is (are) expected to be developed?

- a single International Standard more than one International Standard (expected number:)
 a multi-part International Standard consisting of parts
 an amendment or amendments to the following International Standard(s)
 a technical report , for part of the work.

For example, a report containing a clear explanation of the concepts of image quality would be a very useful educational tool.

Relevant documents to be considered

Cooperation and liaison IEC TC-100, CIE

Preparatory work offered with target date(s)

Material from previous work has been presented above.

Signature:

Will the service of a maintenance agency or registration authority be required?

- If yes, have you identified a potential candidate?
 - If yes, indicate name

Are there any known requirements for coding???.....

-If yes, please specify on a separate page

Does the proposed standard concern known patented items?NO.....

- If yes, please provide full information in an annex

Comments and recommendations of the JTC 1 Secretariat - attach a separate page as an annex, if necessary

Comments with respect to the proposal in general, and recommendations thereon:

It is proposed to assign this new item to JTC 1/SC XX

Voting on the proposal - Each P-member of the ISO/IEC joint technical committee has an obligation to vote within the time limits laid down (normally three months after the date of circulation).

Date of circulation:
YYYY-MM-DD

Closing date for voting:
YYYY-MM-DD

Signature of JTC 1 Secretary:
Lisa A. Rajchel

NEW WORK ITEM PROPOSAL - PROJECT ACCEPTANCE CRITERIA		
Criterion	Validity	Explanation
A Business Requirement		
A.1 Market Requirement	Essential ___ Desirable <u>X</u> ___ Supportive ___	
A.2 Regulatory Context	Essential ___ Desirable ___ Supportive ___ Not Relevant <u>X</u> ___	

B. Related Work		
B.1 Completion/Maintenance of current standards	Yes ___ No <input checked="" type="checkbox"/>	
B.2 Commitment to other organization	Yes ___ No <input checked="" type="checkbox"/>	Not yet – possible liaison with one or more other stds. Organiz.
B.3 Other Source of standards	Yes <input checked="" type="checkbox"/> No ___	
C. Technical Status		
C.1 Mature Technology	Yes <input checked="" type="checkbox"/> No ___	
C.2 Prospective Technology	Yes ___ No ___	
C.3 Models/Tools	Yes ___ No ___	Perhaps
D. Conformity Assessment and Interoperability		
D.1 Conformity Assessment	Yes ___ No ___	Not yet determined
D.2 Interoperability	Yes ___ No ___	
E. Other Justification		

Notes to Proforma

A. Business Relevance. That which identifies market place relevance in terms of what problem is being solved and or need being addressed.

A.1. Market Requirement. When submitting a NP, the proposer shall identify the nature of the Market Requirement, assessing the extent to which it is essential, desirable or merely supportive of some other project.

A.2 Technical Regulation. If a Regulatory requirement is deemed to exist - e.g. for an area of public concern e.g. Information Security, Data protection, potentially leading to regulatory/public interest action based on the use of this voluntary international standard - the proposer shall identify this here.

B. Related Work. Aspects of the relationship of this NP to other areas of standardization work shall be identified in this section.

B.1 Competition/Maintenance. If this NP is concerned with completing or maintaining existing standards, those concerned shall be identified here.

B.2 External Commitment. Groups, bodies, or fora external to JTC 1 to which a commitment has been made by JTC for cooperation and or collaboration on this NP shall be identified here.

B.3 External Std/Specification. If other activities creating standards or specifications in this topic area are known to exist or be planned, and which might be available to JTC 1 as PAS, they shall be identified here.

C. Technical Status. The proposer shall indicate here an assessment of the extent to which the proposed standard is supported by current technology.

C.1 Mature Technology. Indicate here the extent to which the technology is reasonably stable and ripe for standardization.

C.2 Prospective Technology. If the NP is anticipatory in nature based on expected or forecasted need, this shall be indicated here.

C.3 Models/Tools. If the NP relates to the creation of supportive reference models or tools, this shall be indicated here.

D. Any other aspects of background information justifying this NP shall be indicated here.

D. Conformity Assessment and Interoperability

D.1 Indicate here if Conformity Assessment is relevant to your project. If so, indicate how it is addressed in your project plan.

D.2 Indicate here if Interoperability is relevant to your project. If so, indicate how it is addressed in your project plan.