Developing and following an objective definition of image quality has proven elusive. In addition, the jargon used across the industry to describe image quality has not been precise and is frequently not very helpful. From a payments perspective, it is not the appearance of the image that is most important but whether the payment instructions can be determined to allow appropriate posting to the drawer’s account. Therefore, the ability to use the image is more important than the appearance of the image. The following comments describe image quality (defect metrics) and image usability and encourage industry practices that will minimize the avoidable issues that could delay the payment and/or return of individual check image payments.

Much effort has already been expended by the industry to understand and describe these two aspects of image payments and how they relate to processing requirements. However, additional time and experience are needed to clearly articulate the technical specifications necessary for computers to replicate the consistent determination of what is good quality and what is not. Once articulated, the solution must be cost effective and operationally efficient. Given that there are limitations in technology, for at least the near-term, the primary focus should be on whether the image can be used by the institution for all of its processing requirements.

First a review of some assumptions may be helpful. Industry practices should promote the creation and maintenance of images that can be used by institutions for processing payments. The risk associated with images that are unusable is manageable and tends to be self-regulating for images created by financial institutions since the parties most affected by unusable images are the paying institutions themselves and their customers. Obtain usable images begins with good quality paper documents. There are industry standards that address the quality of original paper checks and it is the responsibility of each financial institution to promote its customer’s use of quality original paper checks. It is also the responsibility of the financial institution to discourage its customer from buying or printing paper checks that will create processing problems and from “writing” checks with poor quality computer ribbons, cartridges, etc. or using unacceptable instruments, such as gel pens in metallic or neon colors. Next, with proper maintenance of the equipment, the usability of images should be similar to the usability of the original paper item. Finally, financial institutions should take commercially reasonable measures to limit the number of unusable images that are exchanged, and to apply practical and objective reasons to determine whether to process or return an image for suspected poor quality. Institutions that do not provide usable images may be requested to supply a better copy. This could mean that the Sending Bank needs to retain an image in an alternate format (e.g. grayscale), needs to keep a better copy of the image or needs to retain the Related Physical Check.

The concepts of quality and usability of an image address the differences in the medium of the payment and the specifications of the payment. The medium is used to deliver the payment to the appropriate financial institution and subsequently to its customer. The usability of the image addresses the bank’s ability to process the payment which is dependent on the receipt of the key elements of a check; e.g. the identification of the paying institution, identification of the drawer’s account, the amount that is authorized for payment, drawer’s signature, etc. It is possible for many aspects of the image to be incomplete while the information needed for posting or for subsequent processing to be in perfect condition. One example is the picture of the family pet in the background could be mostly illegible and yet the identification of the drawer’s account number might be very clear. This concept is addressed in Regulation CC, Subpart D concerning the creation of substitute checks from images. Reg CC says that it is not necessary to reproduce all background designs and colors to create a substitute check that is the legal equivalent of the original paper check. Another example is that one or more corners could be torn or folded, thus reducing the quality of the image but having no impact on the posting of the payment.

Some characteristics of images can be measured and can predict with a reasonable probability whether the image is likely to be usable. These measurements are the size of the original document imaged and whether the image is too dark or too light. If the size of the original document as represented by the image is, for example, only one inch by one inch, it is not likely that the information on the image will be sufficiently useful for posting. The quality of the image of that one inch square document may be exceptional but not useful as a payment. Likewise, a solid black image is likely not usable. Rather than the quality of the image overall, what is most important is whether the information fields can be used for
the bank’s and the customer’s purposes to effect payment. Typically, posting of the item is from the data on the MICR line and not from the image of the check.

From the FSTC study, images with the following characteristics are potentially unusable images:

Front:
- Image Too Dark – required threshold of >39.0% for exchange environment – Failure is likely to result in an unusable image.
- Image Too Light – required threshold of <2.1%

The FSTC had no recommendations for the back of the image. (One note of caution: application of standard measurements for too light and too dark should be considered separately for the front and back of a check. Frequently the back of the check will be blank on a forward item and therefore will be lighter than its corresponding front; while a returned check image with many endorsements may be darker than its corresponding front.)

In addition to the recommendations in the FSTC report, the following measurements serve as reasonable indicators of usability and should generate relatively few alerts.

<table>
<thead>
<tr>
<th></th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height Dimension</td>
<td>2.2 inches</td>
<td>4.8 inches</td>
</tr>
<tr>
<td>Width Dimension</td>
<td>5.5 inches</td>
<td>9.4 inches</td>
</tr>
<tr>
<td>Height Mismatch</td>
<td>N/A</td>
<td>.6 inches</td>
</tr>
<tr>
<td>Width Mismatch</td>
<td>N/A</td>
<td>.5 inches</td>
</tr>
</tbody>
</table>

For example, images with dimensions smaller than the minimum size in the table are probably not usable and images with dimensions larger than the maximum size in the table are probably not usable. The height, width and mismatch dimensions are based on FSTC data, vendor and bank testing.

Some questions have been raised about whether an image with additional information overlaid on the image is evidence of poor quality? The Check 21 Act and its implementing regulation, Regulation CC, Subpart D, provide for certain information to be placed over the original image. It is permissible to add information to images so long as the overlay does not obscure any of the key elements needed for posting and subsequent processing.

At the beginning of this document, it was stated that developing and following an objective definition of image quality has proven elusive. While the primary focus of this document is on image usability, the industry is continuing to develop and implement standardized image defect metrics tools. Such tools could provide a valuable ability to monitor the health of the industry and of individual participants in their management of the check collection and return systems.
RESOURCES FOR GUIDANCE ON INDUSTRY PRACTICE FOR IMAGE QUALITY AND USABILITY
(Please note that X9 standards are updated periodically)

1. FSTC “Image Quality and Usability Assurance: Phase 1”
2. FSTC “Image Quality and Usability Assurance: Phase 1 Project – Image Defect Metrics
3. FSTC’s final report Phase 2 “Image Quality and Usability Assurance”
4. ANS X9.100-110 Bank Check Background and Numerical Convenience Amount Field Specification
5. ANS X9.100-10 Paper Specifications for MICR Documents
6. ANS X9.100-20 Print and Test Specifications for Magnetic Ink Printing (MICR)
7. ANS X9.100-40-1 Specifications for Check Image Tests
   - Part 1 - Definition of Elements and Structures for Check Image Tests
8. ANS X9.100-40-2 Specifications for Check Image Tests
   - Part 2: Applications and Registration Procedures for Check Image Tests
9. ANS X9.100-111 Specification for Check Endorsements
11. ANS X9.100-151 Check Correction Strip Specification
12. ANS X9.100-160-1 Part 1: Placement and Location of Magnetic Ink Printing (MICR)
14. ANS X9.100-187 Specifications for Electronic Exchange of Check and Image Data
15. X9’s TR 2 Understanding, Designing and Producing Checks
17. X9’s TR 8 Check Security Guideline
18. X9's TR 33 Check Image Quality Assurance – Standards and Processes