One Device to Document Them All:
Exploring an All-in-One Solution for Digital Condition Reporting & Beyond

by Raina Chao and Hugh Shockey

Introduction

HS: The genesis for finding a more efficient method of condition reporting was born out of my own personal practice and frustration with the traditional model of documentation. Despite computers being a regular fixture of the workplace during the course of my career, there has been limited progress in harnessing their use to improve efficiency and reduce the time required for conservators to create useful documentation for the permanent record. This is not to say that attempts have not been made (e.g. PDF annotations on iPads or purpose built software a la ConservationSpace and Conservation Studio) but in almost all instances, the solutions do not reduce the number of steps required for producing a report and are often plagued with workarounds or specialty software that may or may not integrate with collections databases. I kept asking myself, why isn't there a better more efficient way than being stuck in the 1970s?

For several years, I had been watching the slow but steady growth of tablet computers, with on board cameras and touch sensitive screens, capable of running full-fledged operating systems. These devices offer a mobile platform with the capability of photographic capture, image annotation, enterprise networkability, and most importantly the ability to run full versions of software most often used in institutional conservation labs, including collections databases. With the idea of an all-in-one device that would allow the user to capture and annotate data then append the information directly to a collections database, I opened a conversation with the IT department at SLAM shortly after my arrival as the head of conservation. Meeting with SLAM's IT department, I shared my thoughts of a do-it-all hardware platform, showed them what our traditional

reporting looked like, and discussed the multiple steps required to generate reports using current software and tools. During our discussion, a possible solution began to emerge in the minds of our IT colleagues, using productivity software already supported by the institution that could offer flexibility and efficiency. The proposed solution was the use of Microsoft OneNote (OneNote from hereon) on Microsoft Surface tablets. The use of OneNote as a possible solution was intriguing since it is a program that is bundled with all Microsoft Office productivity suites. The evolution of our use of this combination of hardware and software is described in the following text.

Implementation

RC: I must admit that I was somewhat skeptical of the idea when I was tasked with piloting OneNote condition reporting. My hesitation was two-fold. First, I had experience using a variety of programs to create digital annotated images, but these had always been much more time consuming than I thought practical for routine condition reporting. Second, I have a fondness for multicolored pens and being able to use them for a "valid" work reason made me happy. Nevertheless, always game to play with new tools, and armed with a quick introduction from our IT department's resident OneNote guru, Mike Peters, I dove in.

Despite my qualms, it took very little time for condition reporting via OneNote to win me over (see Fig. 1). OneNote is designed as a notetaking tool, so its basic architecture is simple and intuitive. Within each page, it allows for a large amount of flexibility in formatting – ideal for the flexibility and multiple views often required to fully document three-dimensional objects (see Fig. 2). Microsoft Surface tablets

Figure 1: Using OneNote to condition report loaned works in the gallery.

Photo Credit: Hugh Shockey.

Figure 2: Examples of OneNote condition reports
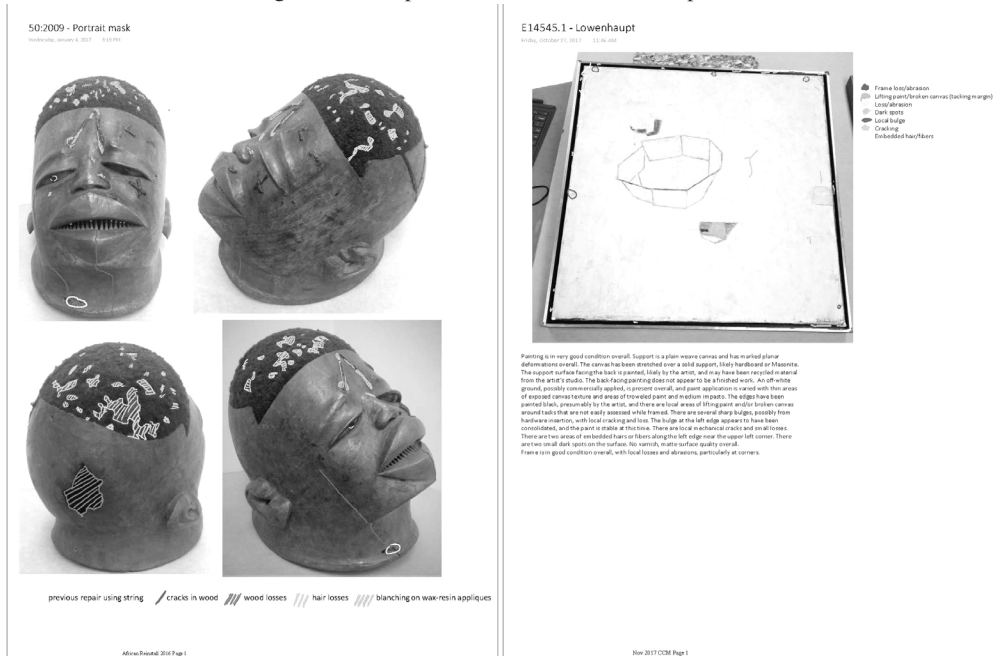
have a familiar operating system and interface, and the built in camera is both familiar to those of us with Smartphones and produces far higher quality images than I had expected.

Finally, and almost most importantly, the stylus functions well and responds to pressure variations, much like a real writing implement. I quickly developed a basic workflow for condition reporting using OneNote, which I have adapted over time, but not changed drastically. The detailed procedure is included in Appendix 1.

Advantages

The many advantages of this method of condition reporting were almost immediately apparent. The all-in-one nature of doing photography, annotations, and reporting on a tablet makes it easy to produce a large number of condition reports in a short span of time. With WIFI connectivity and cloud computing in the form of Microsoft 365, OneNote can be set to sync automatically, meaning that the data is constantly saving and updating. Even better, the OneNote reports can be accessed from anywhere using Microsoft 365 in almost real time, enabling colleagues to view the information quickly and collaborate as necessary. WIFI connectivity also allows condition report PDFs to be uploaded to our collections database (we use TMS) directly from the networked tablet.

Finally, the nature of OneNote and Microsoft 365, as inherent features of our institution's enterprise Microsoft software license, means that the program itself and the Surface are fully supported by our IT department. If problems arise with software and/or hardware, numerous individuals can help assist us in solving it, which is not always the case with more boutique or proprietary software or apps.

Practical Considerations

Despite the many advantages detailed above, there are some considerations and limitations that we have yet to find solutions to that one should keep in mind.

There is no way to easily import a form or letterhead to produce "more official looking" reports. A quick search of OneNote forums reveals that this is a common complaint and therefore one that might be addressed in future software updates.

Currently, there is no easy reliable way to white balance an image using the built-in photo editing abilities of a Surface tablet. Of course, an image could be captured with an X-Rite card or other target designed to aid white balance, and the image could be corrected with Photoshop or another photo-editing program, which can be installed on the Surface. Larger notebooks sometimes run into syncing difficulties, especially over WIFI, due to the amount of data that they're trying to update. This issue can be somewhat mitigated through organization.

OneNote's formatting (or lack thereof) is not particularly conducive to attractive export and can often result in awkwardly cut off or duplicated images. Some tips and tricks to manage these, and other issues, follow.

Tips & Tricks

In order to make PDF export easier and prettier, it is best to insert all images that you'd like to annotate, arrange them, and then check their size and positioning via "Print Preview" before beginning your annotations. If you attempt to rescale images after the fact, the images will rescale but the annotations will not scale with them, which can be very frustrating.

OneNote does a certain amount of auto-scaling based on your content, often cutting off the display area directly adjacent to your images. In order to produce nicer margins, particularly on the right-hand side of the document, add a small dot in an inconspicuous color to your annotations at the point where you would like your margin. The dot will be barely noticeable, and the margins will be much more attractive.

If you're in a rush, the fastest way to crop and insert images into an OneNote page is by using "Insert Screen-Clipping." This allows you to select part or the entire previous screen you were viewing and insert it into the OneNote page as an image. This is very quick but it can be somewhat difficult to control and the images produced will be limited to the resolution of the screen (like a screen shot) rather than the full resolution that the built-in camera produces.

If you're working on a small or detailed object, it's best to maintain full resolution and insert images using the "Insert > Pictures" option. Images can be cropped, straightened, and adjusted as needed in the Photos application prior to insertion.

In order to alleviate syncing issues, especially as Notebooks get large and ungainly, create an archive notebook and move sections and pages to the archive once they are no longer actively being worked on. The archive Notebook can then be "closed" on each individual device to prevent the device from trying to sync all that information every time. Of course, the archive Notebook can be easily reopened and searched as needed.

Sections of the same type can be merged into "Section Groups" to reduce clutter in either the active or the archive Notebook.

Beyond Condition Reporting

The Survey

The success of the test implementation of digital condition reporting at SLAM led us to think of other potential applications for this technology. The timing conveniently coincided with the planning for a collections survey that SLAM was about to embark on. Given the size of our collection and the time allotted for the survey, we wanted to ensure that we could collect as much pertinent condition information on each object as possible, without slowing the progress of the survey. Therefore, we turned to the tool that had most recently increased our efficiency and productivity, OneNote and Microsoft Surfaces.

Since efficiency was paramount with the survey, the production of born-digital information on an object level was very attractive, as was the ability to seamlessly integrate with TMS, the chief resource being utilized for the survey. Much like the process for creating OneNote condition reports, we used the traditional method – paper forms based on CAP survey templates – for inspiration in developing the OneNote forms. The detailed procedure for creating the form templates is detailed in Appendix 2.

The forms themselves (see Fig. 3) rely on check boxes for various condition issues. There are also spaces for additional text or for drawings or other freeform annotations. Once the template is finalized, it can be added as a template and a fresh form will appear each time a page is added. Customized forms were created for media types (paintings, paper, objects, etc.) much like traditional survey forms.

The forms, once filled out, can be exported as PDFs and easily attached to TMS, thereby skipping the digitization step that paper forms would need to undergo to be included in the collections database. The files are still preserved in multiple places, in the Cloud (Microsoft 365), on our servers, and in TMS, but could be printed out individually as well, if desired. Another benefit of digital forms is that any text typed in the forms is searchable.

While the survey forms themselves and the procedures for use have evolved slightly as different conservators join the survey project, the OneNote forms have been generally easy to learn and use and have successfully captured the necessary information at a rapid pace (see Fig. 4).

The Future

The survey project, with its multiple users, has highlighted one of the key strengths of using OneNote, the integration with cloud computing via Microsoft 365. The ease of adding content remotely to communicate and collaborate with colleagues has great potential for other applications.

One area that we are particularly interested in exploring is using OneNote condition reports and tablets for loan documentation and couriered works. The prevalence of WIFI and ease of login to Microsoft 365 means that condition reports could be consulted and updated as needed, no matter where in the world the work is on loan.

If issues arise that need to be communicated back to colleagues at one's home institution, they can simply view the changes that are synced to the OneNote Notebook once they're made. These features offer great potential for improving communication and documentation for international loans and courier trips. All that is needed is WIFI connectivity, an ever-increasing resource in our modern era.

Conclusions

Microsoft OneNote and tablets have greatly improved our efficiency and workflow for condition reports and beyond and, with the addition of cloud computing, have the potential to improve it even further. While the use of this technology has its challenges, the benefits currently far outweigh the drawbacks. Technology, in general, is quickly improving, so it is reasonable to predict that advancements will increase functionality and ease of use.

As with any new(er) technology, there are hiccups and crashes that can be frustrating to troubleshoot. Yet the fact that both OneNote and Microsoft 365 are features of Microsoft Office, an almost ubiquitous software in most institutions, means that OneNote is often fully supported by institutional IT departments, providing a whole department of experts to turn to for help. This feature also made this system much easier to pitch to our institution's administration; relying on tools and resources we already had made institutional buy in much easier.

While we use Microsoft Surfaces, the procedure could be easily adapted to any tablet, or, in a pinch, a Smartphone and a stylus. As we look toward applying this technology towards documentation for international loans and courier trips, these alternative hardware options are realms we intend to explore.

Acknowledgements

Figure 4: OneNote and Surface in use for the survey project. Photo credit: Kelsey McGinnis.
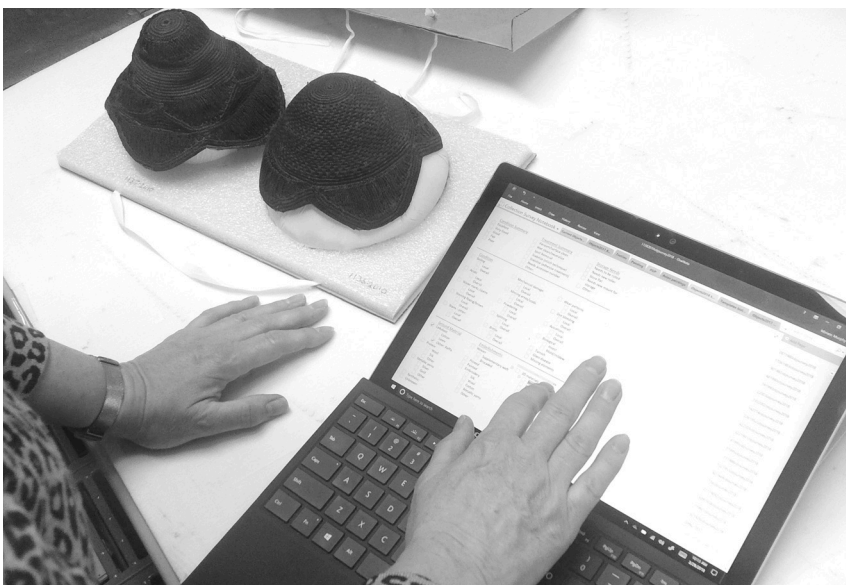
Figure 3: A sample OneNote Survey form

Objects Survey Sample Template

Monday, January 1, 2018   12:00 AM

Condition Summary

(Un)Stable

- ☐ ☐ Structure
- ☐ ☐ Surface

- ☐ ☐ For Handling
- ☐ ☐ For Exhibition
- ☐ ☐ For Travel

- ☐ Needs Immediate Attention

- ☐ Active Corrosion
- ☐ Active infestation
- ☐ Active Salts

- ☐ Caution: Toxins

Comments:

Treatment Summary

- ☐ Major Treatment
- ☐ Intermediate Treatment
- ☐ Minor Treatment

- ☐ Anoxia/freezing needed
- ☐ Superficial cleaning

- ☐ No Treatment Needed
- ☐ Needs Monitoring
- ☐ Depends on Artist/Culture

Housing/Display

- ☐ Needs Rehousing
- ☐ Needs Mount (storage)
- ☐ Needs Microclimate
- ☐ Needs Scavenger

- ☐ Danger to Other Materials (Relocate and/or Isolate)
- ☐ Danger to Itself (Ventilate and/or Separate Components)

Materials

☐ Needs Further Identification

- ☐ Plant
  - ☐ Wood
  - ☐ Basketry
  - ☐ Other
- ☐ Animal
  - ☐ Leather
  - ☐ Semi-tanned/Rawhide
  - ☐ Hair
  - ☐ Feathers/Quills
  - ☐ Horn
  - ☐ Tortoiseshell
  - ☐ Bone
  - ☐ Ivory/Other Teeth
  - ☐ Sea Shell

- ☐ Textile
- ☐ Other Organics
- ☐ Gums/Resins
- ☐ Rubber
- ☐ Plastic
  - ☐ Hard (Thermoset)
  - ☐ Flexible (Thermoplastic)
- ☐ Ceramic
  - ☐ Unglazed
  - ☐ Slipped
  - ☐ Glazed
- ☐ Plaster

Description:

- ☐ Stone
  - ☐ Marble
  - ☐ Granite
  - ☐ Semi-precious
  - ☐ Other -
- ☐ Glass
- ☐ Metal
  - ☐ Silver
  - ☐ Copper Alloy
  - ☐ Iron/Steel
  - ☐ Lead
  - ☐ Tin Alloy
  - ☐ Gold
  - ☐ Other -

Surface Decoration

- ☐ Coating
- ☐ Dye
- ☐ Embroidery
- ☐ Enamel
- ☐ Engrave/Etch/Incise
- ☐ Gilding
- ☐ Inlay
- ☐ Paint
- ☐ Bimetallic
- ☐ Veneer
- ☐ Other -

Structure

- ☐ Complete
- ☐ Missing Parts/Attachments
- ☐ Fragmentary
- ☐ Loose Parts/Attachments
- ☐ Mobile Parts/Attachments
- ☐ Extra Components

- ☐ Stable
- ☐ Unstable

- ☐ Checking
- ☐ Cracks
- ☐ Delamination
- ☐ Dents
- ☐ Loss(es)
- ☐ Fraying
- ☐ Spalling
- ☐ Tearing/Breaks
- ☐ Warping/Distortion

- ☐ Previous Repairs

Surface

- ☐ Abrasions (overall/local)
- ☐ Scratches, Dents, Gouges (overall/local)
- ☐ Wear
- ☐ Soiling
  - ☐ Dusty
  - ☐ Grime
  - ☐ Fingerprints
  - ☐ Particulates
- ☐ Residue (from use/other)
- ☐ Losses
- ☐ Flaking
  - ☐ Paint
  - ☐ Other -
- ☐ Delamination
- ☐ Powdery/friable
  - ☐ Paint
  - Other-

Notes:

- ☐ Stains (overall/local)
- ☐ Accretions (overall/local)
- ☐ Transfer pigments
- ☐ Efflorescence
  - ☐ Bloom
- ☐ Exudate (fluid/dried)

Degradation

- ☐ Weak
- ☐ Stiff
- ☐ Brittle
- ☐ Desiccated
- ☐ Discolored
- ☐ Faded
- ☐ Acidic
- ☐ Interacting with adjacent material
- ☐ Other -

Biological Activity

- ☐ Insect
- ☐ Fungi
- ☐ Red Rot   ☐ Active
- ☐ Rodent   ☐ Inactive
- ☐ Mold
- ☐ Other -

Metals

- ☐ Corrosion/Rust/Tarnish
  - ☐ Light   ☐ Active
  - ☐ Med   ☐ Inactive
  - ☐ Heavy
- ☐ Other -

Glass/ Glaze

- ☐ Crizzling/ crazing
- ☐ Sweating or Weeping
- ☐ Iridescence

Plastic

- ☐ Brittle
- ☐ Sticky
- ☐ Discolored

Appendix 1 – Procedure for Condition Reporting Using Microsoft OneNote

(Due to the fast pace of technological advancement, our implementation of digital condition reporting has already spanned a generation of Microsoft Surfaces and countless software updates. For the sake of space, these instructions were created with the most recent versions (as of writing) in mind.)

Create an overall Notebook. These can be individual, or shared so that multiple people can contribute and view the information. At SLAM we have a Conservation Notebook accessible to all members of the conservation department.

Add a new Section to the Notebook. This can be renamed for a project, exhibition, etc.

Within a section, add a new page for each object you want to condition and rename it with the object's accession and/or loan number and title (e.g. 1:2017 – Vase) or other standardized nomenclature to identify the object. The page will automatically be time stamped when it is created, this will appear under the title unless it is manually edited or removed.

Open the Camera app and take all images of the object that you'd like to include in the condition report. These can include multiple overall views, details, etc. These images can be viewed in the Photos App after capture; this app can also be used to crop and edit images.

Insert images into the OneNote page via one of two methods:

The "Screen Clipping" function under the Insert tab will allow you to select part or the entire screen, insert it into the OneNote page as an image. The selection is restricted to the screen that was most recently viewed before OneNote, so it is important to switch only between the image and OneNote for the import to be successful. The resolution of images imported in this fashion is restricted to the Surface's screen resolution.

The "Insert Picture" function under the Insert tab allows you to import a full resolution image into the OneNote page. This can be an image captured with the built-in camera and stored in the "Camera Roll" or from another source such as a DSLR camera – whether captured and uploaded or captured tethered directly to the Surface itself. The lender, collections database, and the internet are also possibilities.

Arrange and scale the images as desired to produce a logical order. Depending on the desired output, this step will be of greater or lesser importance as it influences the attractiveness of the final exported report. The positioning and sizing for PDF output can be checked by going to File > Print Preview. This step may need to be repeated several times until the desired appearance is achieved. Annotate condition issues using the variety of colors and styles available under the Draw tab.

Create a key for the annotated issues. If there are multiple pages, ensure a key is visible on each page.

Add text to the report to accompany the images, if desired. Generate a PDF version of the condition report by going to File > Export > Page > PDF. Whole Sections or Notebooks can also be exported, though the page formatting does not always translate well in these batch exports.

Appendix 2– Procedure for Creating and Using Survey Forms

(Due to the fast pace of technological advancement, our implementation of digital condition reporting has already spanned a generation of Microsoft Surfaces and countless software updates. For the sake of space, these instructions were created with the most recent versions (as of writing) in mind.)

Create an overall Survey Notebook.

Subdivide the Survey Notebook by media type by creating individual sections for Objects, Paintings, Paper, etc.

Format the first Page of the section to be limited to an 8 ½ x 11 in area by going to the View tab, selecting "Paper Size." This allows the form to reflect a typical paper survey form. Annotations and text can go beyond these limits, but it allows for ease in creating the template.

Determine the parameters and condition issues desired for capture by the survey form. Objects are particularly difficult. Our three main sections are Condition and Recommendations Summary (top), Materials (middle), and Condition Issues (bottom).

Each section is comprised of a number of categories and check boxes and an area for additional comments or notes. Check boxes can be inserted by: right-clicking or pressing the screen and holding until the menu appears and then selecting "Tags" and picking a check box from the drop down menu. Alternatively, the command Ctrl+1 will also produce a check box. It is easiest to create columns of checkboxes with associated text.

Add areas of text by simply selecting an area of the page and beginning to type.

Arrange the check boxes and text in order to produce the form layout desired. Additional features such as lines can be added for clarity by going to the Insert tab and selecting the desired shape. Once the form is finalized, save it as a template by going to the View tab > Paper Size > "Save current page as template." It will then prompt you to name the template. The name doesn't matter, but make sure to check the "Set as default template for new pages in the current section" option in the dialog box. Now, each time a new page is added to the section, the blank survey form will appear.

This can be repeated in each section for different forms customized to media type.

To use the forms, rename each page to a predetermined nomenclature that uniquely identifies the object and fill out the form. Check boxes can be checked by selecting them with finger pressure or the stylus. Add notes by typing in designated areas, using the stylus to write freehand, or using the script to text function. Typed responses can be searchable, while freehand annotations are not.

In special cases, the OneNote forms can also support additional annotations or images as needed.
Once complete, the forms can be exported as PDFs by going to File > Export > Page > PDF.