All questions will be asked verbally, and MITRE will take notes on the discussions. No written responses will be collected from Controller participants. Scenarios 1 and 2 are sub-divided into tasks. Questions apply to individual tasks, the scenario, or the entire session.

**Scenario 1: Tower Operations (only Clearance Delivery is done via app)**

The tower scenario reflects flights departing from an airport with an active tower. Tower Controllers will only be able to send IFR clearances using the app.

Questions asked during the Tower scenario (corresponding to specific tasks):

*- Was it apparent when a pilot established a session?*

*- Was it apparent when a pilot’s app received the Clearance?*

*- Was it apparent when a pilot viewed the Clearance?*

*- Was the pilot’s response clear (wilco or unable)?*

*- Was the information on the Clearance Delivery screen organized well?*

*- Is the use of pull-down menu items appropriate?*

*- Was the new route of flight clearly indicated after selecting a SID/transition?*

*- Were you able to send a revised route to the pilot? Did you have any problems sending a revised route to the pilot?*

*- Were you able to send a revised altitude to the pilot? Did you have any problems sending a revised altitude to the pilot?*

*- Are the steps clear for how to amend a clearance via the app, after a pilot has accepted it?*

*- Are there any additional messages or information that you would like to send to the pilot that were not available in the ATC interface?*

*- Did the app clearly indicate to you that Clearance Delivery transactions had been completed?*

Questions asked at the end of the Tower scenario:

*- Were you able to send a Clearance when you wanted to?*

*- If a pilot does not accept a Clearance, is it displayed appropriately on the Controller interface?*

*- Were you able to send an amendment to a pilot via the app when you wanted to?*

*- Does the organization of information on the Clearance Delivery screen relate well to flight progress strips?*

*- Did you find the app helpful when issuing a clearance with a long or complicated route? How?*

**Scenario 2: TRACON Operations (Clearance Delivery, IFR Release, and IFR Cancellation via app)**

The TRACON Scenario reflects flights departing from non-controlled airports or airports where the Tower is currently closed. Clearance Delivery and IFR Release may be done using the app when a pilot is departing from one of these airports. IFR flight plans may be cancelled via the app when a flight arrives at a non-controlled airport or an airport where the Tower is currently closed. Although we will use Potomac TRACON as the facility, the concept generally applies to operations in a RADAR facility that could include an ARTCC.

Questions asked during the TRACON scenario (corresponding to specific tasks):

*- Was it apparent when a pilot sends a release request?*

*- Is the way IFR Release void times are represented on the interface appropriate?*

*- Was it apparent when the pilot’s app received the Release?*

*- Was it apparent when the pilot viewed the Release?*

- *Was it clear when the pilot rejects the Clearance as issued, initially? What would you expect to occur if a pilot WILCOs a Clearance first and then is unable to comply with the clearance as accepted?*

*- Was the notification clear when a pilot cancels an IFR Release Request after Wilco’ing a release or HFR?*

- *If you are unable to release someone at the time requested (now, perhaps) and you send a HFR, are the choices of HFR reasons you are able to give via the app appropriate? Are there other HFR reasons you recommend including in the dropdown list?*

Questions asked at the end of the TRACON scenario:

*- If there was an amendment to a route, were you able to provide that amendment to the pilot via the app?*

- *Are the steps clear for how to amend a clearance via the app, after a pilot has accepted it?*

*- Does the Controller interface appropriately represent when a pilot has Wilco’d something?*

*- Was the information on the IFR Release screen organized well?*

*- When would you expect a pilot to send you a release request (e.g., number one at the runway)?*

*- Is it clear when a pilot responds to a release, HFR, or UNABLE?*

*- Are the release instruction fields (altitude, heading, release remarks) sufficient?*

*- Would you use the FREE TEXT capability and what messages might you put there?*

*- What situations may cause you to use the “Unable to Release” option instead of HFR?*

*- Was it apparent when a pilot wished to cancel his/her IFR flight plan?*

*- When a pilot cancels IFR on the ground using the app, is this appropriately represented on the Controller interface?*

*- Did the app clearly indicate to you when transactions had been completed? (CD, IFR Release, and IFR Cancellation)*

*- Is it clear when you are waiting for the pilot to do something vs. when the pilot is waiting for a response from you?*

**Discussion at end of Individual Sessions**

These are general questions that will be asked at the end of the session.

*- Were you able to issue IFR Clearances using the app when you wanted to?*

*- Were you able to issue IFR Releases using the app when you wanted to?*

*- When a pilot requested an IFR Release, was the information provided by the app sufficient (runway, ready time, off time) for you to formulate release instructions?*

*- When pilots requested an IFR Release, were the READY times (Now, 5 mins, 10 mins, 15 mins) appropriate available options?*

*- When pilots requested an IFR Release, were the OFF times (5 mins, 10 mins, 15 mins, 20 mins) appropriate available options?  (these might be adjusted based on feedback from pilot session that were recently completed)*

*- If you had any difficulty handling a situation where you could not release an aircraft when requested, please explain.*

*- Were you able to recognize and acknowledge an IFR cancellation request using the app?*

*- If you had any difficulty using the application to confirm an IFR cancellation request, please explain.*

*- Were there any abbreviations in the clearance or release message choices to send to pilots that should be spelled out or changed?*

*- Did you reference the History Log at all?
- When do you think History Log information might be useful?*

*- If you worked in a tower that closed at night, how do you envision positively transferring responsibility of electronic CD to the overlying facility (e.g., verbally, electronically using the app)?*

*- Is it important that the pilot understands what facility they are communicating with when using the app for CD, release, or cancellation? Please explain.*

*- What situation(s) might cause you to transition from using the app to verbally exchanging information with the pilot?*

*- If a pilot chooses to stay on voice to receive a route amendment during taxi, how could you be sure that the information in the electronic CD system matches what you are providing to the pilot verbally?*

*- Is it important that a controller knows that someone has the ability to exchange clearance information using an app? Please explain.*

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**Group Session Follow Up Discussions (topics and examples to be refined based on feedback from Controllers during individual sessions)**

Two-hour group sessions will be held as a follow-up activity within a couple of weeks of the one-on-one sessions.

Review Screen Layout / Navigation

* CD screen vs. Release vs. Cancel (not really tabs, more like screens?). *Is this a common setup versus tabs for other Controller displays?*

The use of symbology and color in the app

* open box (no session established)
* box with dot (for pilot session established, awaiting clearance)
- w (for pilot Wilco)
- u (for pilot Unable)
* t (timeout)
- up arrow (outlined vs. filled in vs. circled)
	+ *Is symbology alone sufficient? (would displays like this ever chime or flash or highlight?)*
	+ *Would the use of color be beneficial on any of the ATC screens?*

Discuss common wording on the pilot and Controller interfaces (to mimic spoken clearances)

Data Integrity

* *Are there some standard procedures you envision will be needed to be sure the pilot and controller both have the most current information, regarding Clearances and Releases?*
* *Do you think there would be any potential for miscommunication that a pilot might depart only after getting the clearance (and not wait for a release?)* Discuss hold for release function for departures from uncontrolled airports.

Operational Considerations - integration of tasks using 2 methodologies (electronic and voice)

* Tower with paper strips
	+ *How would you be clear that clearance and revisions have been issued?*
* TRACON / Center
	+ *How would you be clear that clearance, release (and revision) and Cancel IFR have been done?*

Discuss hybrid approach integrated with the voice-only pilots. (Envision the environment where you have some people using this system and some not.)

Workload

* *Do you think using this system would increase or decrease your workload?*
* *Do you have any concerns about workload using this system?*

Situational Awareness

 Discuss situational awareness considerations.