

The logo for GadgEon, with 'Gadg' in blue and 'Eon' in orange, set against a background of a modern glass skyscraper and a bright sky with clouds.

GadgEon

Engineering Smartness

AUGMENTED REALITY BASED AIRCRAFT MAINTENANCE SOLUTION

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Version 01



Augmented Reality for Aircraft Maintenance



A major Solution provider from North America for industrial and military sector wanted to develop an easy to use, efficient, and effective Maintenance instruction rendering solution, so that the maintenance personnel are prompted in real-time the steps to follow as well how to perform complex tasks correctly with out interruptions. The system will save the mechanic from being non-compliance of standard operating procedure and also generate audit trails of the maintenance conducted on the equipment.

Solution Description

- Gadgeon developed an AR based solution with Industrial grade smart glasses that renders the maintenance steps to be followed line by line.
- The mechanic can use voice to navigate the steps, makes the SOP compliance as well the maintenance error free.
- The solution has the following major functional components:
 - **Server Application** – manages the assignment of work to each technician and downloading of required set of manuals, images and videos to the AR headset.
 - **Glass Application** - Android based application supports secure login, voice activated navigation through the maintenance manuals. The amount of time spent on each step is available for the supervisor to review.

Outcome and Benefits Delivered

- Voice activated navigation, head movements and gesture controls allows the mechanic to be hands-free, improves efficiency and reduces errors
- By leveraging images, videos and the AR content, makes the maintenance of even the most complex parts efficient irrespective of the experience level of the technician.
- Two-way video call with remote technicians, in case any issues during the maintenance session, further enhanced the efficiency, accuracy, and faster ramping up of maintenance staff.
- Supervisors are able to review each mechanic's performance and make informed decision on their training needs as well performance reviews.



The Business Context and Challenges of the Customer

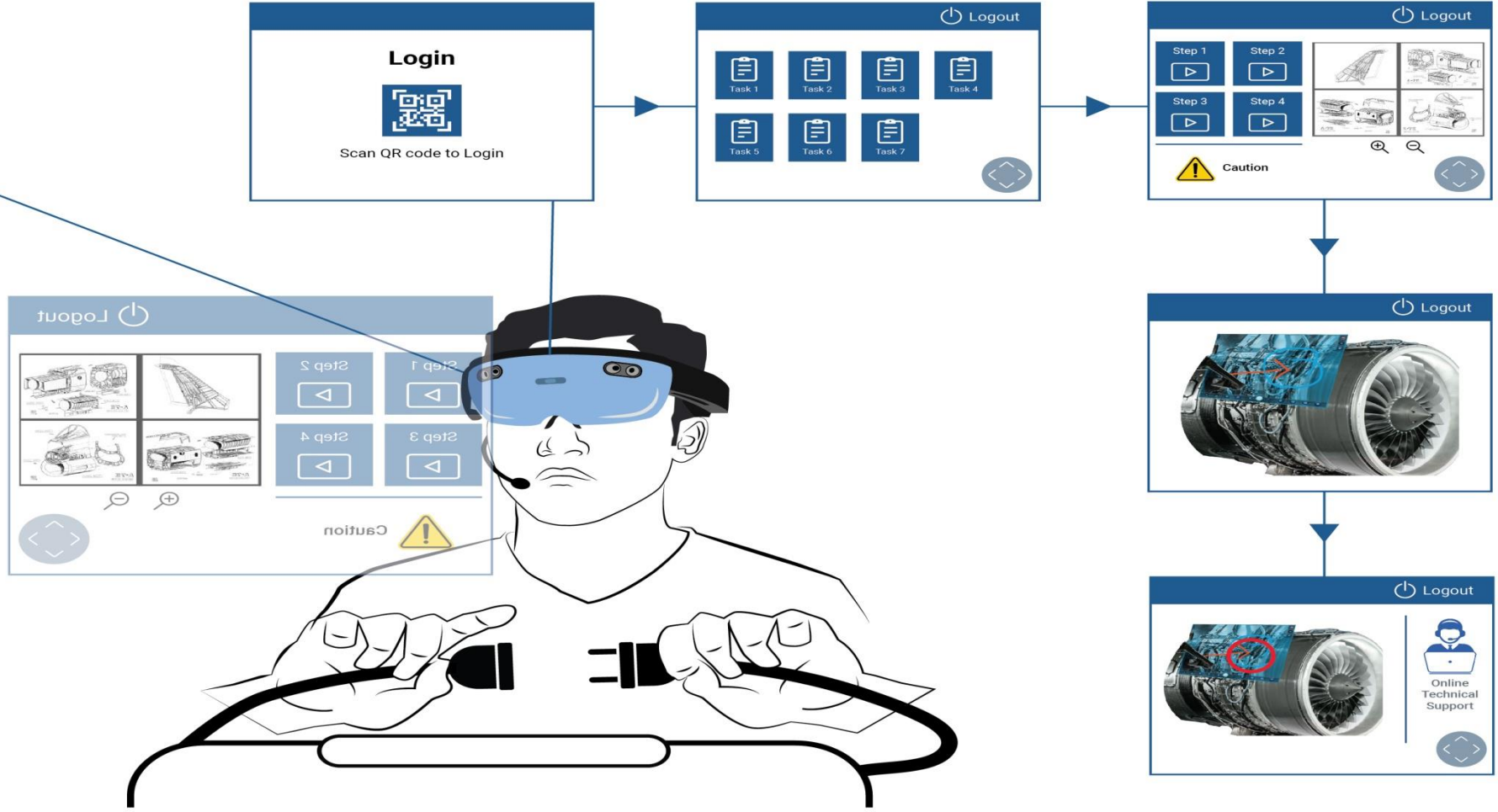
- Aircraft maintenance organizations, of all sizes, have many programs to help manage human error. Even after all the training, maintenance is still a headache for the aviation industry.
- The challenge starts from finding, training, and keeping qualified personnel and the list goes on. So it is necessary that to keep things up to date and to continuously ensure that instructions are compatible.
- The airline maintenance occupation, especially airlines, conducts a lot of night and early morning work. The combination of insufficient rest, long working hours, and middle of the night maintenance activity has a significant impact on worker performance.
- Airlines and MROs rely on key performance indicators (KPIs) to impact safety and financial decisions. MROs and airline maintenance organizations can count maintenance-caused delays or returns, rework, warranty issues, and more. Even with all this data, it is difficult to fully identify and understand the contributing factors of a maintenance discrepancy. For maintenance performance, human generated event reports are better than automated data collection.



System / Architecture Description



- Task needed to be fulfilled and associated documents can be downloaded
- Assign or can view the work in progress of each Assignee
- History of all work performed can be reviewed.





The Solution / System Description

Server Application

The server application manages the assignment of work to each technician and downloading the required set of documents and associated images and videos to the AR headset. Supervisor users can assign tasks to maintenance technicians and review the tasks performed. History of all the maintenance work performed will be available in the server.

Glass Application

Android based glass application is developed on HMD hardware. Glass application supports a maintainer to login with <unique ID>. Once logged in, the maintainer will see the set of documents corresponding to the tasks assigned by the supervisor. He will be able to navigate the documents based on voice commands which leaves his hands free to do the work. Each step of the instruction can be navigated sequentially. The amount of time spent on each step is available for the supervisor to review.

Depending on the maintenance procedure, there may be linked images and videos. Maintainer can view images and play the videos by voice commands. He can also enter in to a 2-way video call with a technician using webrtc to debug specific issues.

THANK YOU



For More Details, Let's Connect



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