

# Training Plan Design Document

## Case Study: Designing a Virtual Reality (VR) based gamified Surveyor Training Program to improve outcomes in Nursing Homes

### Background:

The mission of the Center for Medicare & Medicaid (CMS)'s Quality Survey & Operations Group (QSOG) organization is dedicated to ensuring the health care quality and safety for all patients, residents and clients receiving care from Medicare and Medicaid certified institutional providers.

QSOG's "Survey & Certification" (S&C) program mandates State Survey Agencies (SA) and Accrediting Organizations (AOs) to provide onsite, objective and outcome-based verification by knowledgeable and trained individuals to assure that basic standards of quality are being met by healthcare providers across the nation or, if not met, that appropriate remedies are promptly applied and implemented effectively.

### The Problem:

A report of the study conducted on Nursing Homes by the Office of Inspector General (OIG) from FY2015 - FY2018 has identified that more than half the states (28 of 52) has failed to meet one or more of the performance standards set by CMS/HHS for Nursing Homes.

The study has found problems with performance by some States—for example, one study found that States did not always verify whether nursing homes corrected deficiencies cited during the surveys. Another study found that several States fell far short in conducting timely surveys following serious complaints about nursing homes, such as complaints alleging serious injury. These findings raise questions about the effectiveness of CMS oversight of State performance in conducting nursing home surveys, and the ability of CMS to hold States accountable when problems arise.

The number of nursing home complaint surveys increased by over 8,700 since FY 2015 (a 16% increase) while the total number of nursing homes decreased by 366.

Considering the complaint backlog that states are facing (as noted in QSO-22-12-All) and the limited resources due to flatlined budgets, CMS has established the following priorities:

1. Investigation of patient complaints, as these are active quality concerns that must be reviewed to protect the health and safety of the public.
2. Survey and recertification of statutory facilities such as nursing homes, home health agencies (HHAs), and hospices as required by current law; and
3. Survey and recertification of non-statutory facilities, as required by CMS policy with consideration of available funding once priorities one and two have been accomplished.

With the above priorities established by CMS, State Survey Agencies (SA) have set the following measurable business objectives for their state surveyors to help them achieve their goals.

### Business Objectives:

- Reduce complaints and citations by 10% by end of FY 2024

- Achieve a 30% Increase in surveyor training completions by FY 2024
- Decrease survey backlog by 25% between FY 2024 and FY 2025
- Achieve a score of 90% or higher on Nursing Home surveys to correctly cite situations that are related to Life Safety Code (LSC), Emergency Preparedness (EP) and Immediate Jeopardy (ID) which can cause serious harm and leading to substandard quality of care.

**Learner Persona: State/Federal Surveyor**

State Survey Agency (SA) and Accreditation Organizations (AOs) employ federal and state surveyors who are trained professionals who survey CMS and state provider facilities. State Survey Agency Supervisor/Manager staff play a vital role throughout the surveyor’s orientation, training, and testing program.

The person we are designing this game for is a State/Federal Surveyor who is employed by the State Agency to survey Nursing Home facilities within the state.

State/Federal Surveyors are motivated by:

- Curiosity (the desire for understanding)
- Order (the desire for structure and stability)
- Acceptance (the desire to avoid failure and criticism)
- Idealism (the desire for social justice)
- Status (the desire for Respect Based on Social Standing)
- Social Contact (the desire for Peer Companionship)

**Narrative:**

Character: Our main character in this game is Sherlock (He/She). You the surveyor will play the role of Sherlock in this game and will play the game to solve the various mysteries and tasks that have been assigned to you within a given time limit. As Sherlock you will survey various CMS Nursing Home facilities based on increasing levels of complexity. You will wear your investigative hat to survey various nursing homes to explore, observe, investigate, analyze, and solve challenges presented to you. Along the way, you will be collecting points, scores, health, and other items that will be presented in a leaderboard showing your training progress.



Challenge/Problem: As Sherlock, (You, the Surveyor), your mission in each level of the game is to investigate complaints you received about services and facilities in the Nursing Homes in your state. You will be presented with levels of the game starting from easy to progressively harder and complex situations. Your challenge is to navigate through each level, observe the various situations presented to you, investigate evidence, data, interview or refer to resources and identify and make expert decisions using your superior Sherlock powers.

As you go about the various levels of the game, your performance will be measured in the following areas.

1. Total training completed or Health points accumulated. (You will be penalized points for any training/health that you did not find.
2. Total number of levels/surveys completed successfully.
3. Correctly identify and report situations or incidents that are dangerous or pose a hazard constituting an Immediate Jeopardy situation.
4. Level completed with re-checks. Bonus points collected through re-checks.
5. Assistance provided to fellow surveyors.

By successfully completing all the levels of the game, you achieve a feather on your Sherlock Homes hat. As a leader with the most successful wins and maximum points, you are treated as an expert investigator and leader in your State Survey Agency and you are called in as an expert for all investigations.

Motivation:

The character is motivated primarily due to their curiosity, Idealism and Status which drives their behaviors and actions. The surveyors are driven by their need to understand better, their idealism to do their best and the right thing, they are also driven by the status and social contact they make among their peers and with their supervisors within their agency. They are motivated to act and be rewarded and seen by their peers and supervisors, they are motivated to see that the actions they take have a positive impact on the public. They enjoy friendly competition that boosts friendly competition, camaraderie, and on the job performance.

Setting: The setting for the game is a contemporary nursing home location in Maryland. You will be given a Virtual Reality headset and will walk through the facility to observe, examine evidence, interview, and solve the various tasks ahead of you. You will be using your headset and two hand controllers to navigate through each level of the game to solve challenges.

Obstacles: At the start of the game, Sherlock must identify whether they have all the credentials (training/health) before he/she can proceed to *unlock* the level. Failing will not let them proceed to *unlock* the level to survey. Sherlock is faced with an unfamiliar nursing home facility with different situations and varying levels of deficiencies. Sherlock must complete the tasks given to them in the beginning of their investigation within a set time. A timer starts timing when Sherlock starts their investigation.

Sherlock sometimes will be faced with complex situations where they will need additional information to make a sound decision or sometimes, they can get stuck without additional information, in situations like these, they can click on the *Hint* button on the top right corner to get help.

They can be faced with situations that can pose a genuine hazard but can be a distraction. Sherlock must be careful to avoid losing focus and wasting time. Incorrect identification of situations or leaving behind

training /health points will result in penalties, which will reduce the overall surveyor points in the leader board.

The greatest obstacle for Sherlock is often their own ego. The game presents progressively tricky situations for solving as you progress through the game. The game adapts to present you with progressively challenging tasks. Sherlock must recognize that they can be their own greatest enemy and proceed wisely.

Climax: As Sherlock you are making significant progress in the game and are unlocking new levels as you successfully complete each level. Your biggest challenge is to make sure you collect all the points for training/health, and you successfully identify IJ situations within the allotted time.

Outcome: The outcome of this game is Sherlock (the surveyor) learns to successfully investigate, detect, and report incidents at Nursing Home facilities and reduce complaints and costs to the state.

**Learning Outcomes:**

- Reinforce that surveyors need to complete necessary training before investigations/surveys.
- Correctly recognize, detect, and identify situations that are deficiencies and that causes Immediate Jeopardy
- Recognize situations of non-compliance
- Report deficiencies to law enforcement

**Method of Instructions/Deployment:**

Mechanics & Motivators: the table below describes the game mechanics that will be deployed to match the motivation / desires of our players.

MOTIVATOR	Mechanics 1	Mechanics 2	Mechanics 3
Curiosity	Easter eggs	Collect & Trade	
Order	Performance Bars	Structure Building	Unlock
Acceptance	Life Jacket	Booster	Hints
Idealism	Badges	Penalty	
Status	Leaderboard		
Social Contact	Knowledge Share	Mentorship	

The game starts in a traditional game level format. The player starts at level 0 where the player makes selections to ensure they have met all the requirements (trainings) before they can unlock level 1. Training points are shown on the screen as Health points. Once the required points are reached, they can unlock the next level of the game.



Player's progress through the game is tracked using a performance bar and time in the game is tracked with a timer clock that can be toggled on/off. Progress in the game is tracked as the players complete their assigned tasks, and correctly identifies the various deficiencies, the progress will be shown on the performance bar.



Players can explore the facility to discover hints or easter eggs that are hidden all around the facility. Easter eggs can be surprising facts, information, data that may help new information helping the surveyor solve or decide or can act as a distraction. Easter Eggs may increase player points.



Players receive points for correctly identifying situations that pose non-compliance of deficiencies and receive extra bonus points when they correctly identify situations that may cause life safety, emergency preparedness or immediate jeopardy related conditions and pose danger to the patient.

**Aesthetics and Fun:** The VR game allows the surveyor to select their custom avatar, make changes to their appearance, clothing, and accessories. Surveyor / Player can customize their Sherlock costume, appearance etc. Since Sherlock loves violin, the game starts with violin tune or melody in the background.

Players also receive bonus points for re-checking or returning to check on a specific task or situation if they were not able to previously complete. By going back to the situation to re-check the player reinforces the learning to make sure the situation or incident is resolved before they can complete the game.



Boosters are bonus reward points given when a player completes the required tasks before the timer runs out.










The number of successful surveys/investigations completed is shown on the leaderboard with a magnifying glass.



The number of Immediate Jeopardy situations solved and reported to law enforcement is shown as Trophies.



**Sample Leaderboard:**

LEADERBOARD						
						
RANKING	PLAYER NAME	TRAININGS	SURVEYS	IJ	RE-CHECKS	ASSISTS
						
1	Nancy Drew	 94%	50	15	12	05
2	Watson	 65%	23	10	08	04
3	Arthur Conan Doyle	 48%	18	08	04	01

## Sample Virtual Reality scenario of a Nursing Home

