



Embedded Assessments & Analytics in Data Driven Virtual Immersive Simulations

I M A G I N A T I O N U N L I M I T E D

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Table of Content	3
1. Company overview	4
2. How we Assess -	6
Current Challenges : Trainings & Assessments currently are	6
Aten Assessments & Features :	6
3. Specific Details/Examples on Various Embedded Assessments included in these Virtual Simulations :	9
1. Immersive & Interactive, with embedded Performance Assessments	9
2. Experiential and Situational	10
3. Stealth Assessments	11
4. Formative Assessments & Feedback	12
5. Diagnostic & Descriptive Data tracking / Assessments	13
6. Standard Assessments	14
7. Summative Data tracking & assessments	15
4. Data Dash boards, Reports, AI Analytics etc	16

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1. Company overview

"Its very easy to learn & grasp as a lot of people are hands on .When I can see something and then do it, I learn better !" - Eisai Pharma user

Aten Inc., a North Carolina based Corporation, (WBE/MBE), is an Award winning pioneer in the Serious Game/Simulation based Training industry, with multiple Fortune 500 clients, involved in early research with NCSU & Virginia Tech.

- 2017 - Cited as one of the Key Players in the Serious Games development market in The World Serious Game Market Forecast 2017 -2023
-
- 2015 National Board of Medical Examiners Centennial Competition - SemiFinalist
-
- 2012 J P Morgan internal award for Excellence in Innovation
-
- 2011 Gates Foundation - NextGen Learning Challenge Finalist
-
- 2010 MacArthur Foundation - Digital & Learning Media Competition Finalist

We bring to you our experiences & expertise over the last 10+ years in

- Training & Assessments using Immersive Simulations & Serious games
- Situational & Experiential Assessments
- Embedded Formative tracking & Feedback ,
- Stealth, Diagnostic & Summative Assessments
- AI & Predictive Analytics.

These **Research proven**, highly engaging, **immersive simulations mimic core experiences** that users have in a **professional practicum** in the field, enabling **measurement of different types of learning, tracking of individual strengths /weaknesses** and are structured to measure active

construction of knowledge, **performance on realistic complex tasks and numerous extremely valuable constructs which cannot otherwise be measured.** (A few sample demos can be previewed at <http://ateninc.com/homepage/portfolio.html>)

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Initiated by the Department Of Defense, 3D Immersive Simulations using principles of evidence centered design, have been widely researched by Universities/Organizations like National Center for Research on Evaluation (UCLA), Harvard, NC State, Virginia Tech etc as well as used by numerous Organizations like IBM, CISCO. They are now accepted across industries as one of the most effective methods of training and assessment.

Research reiterates-

WE Remember
ONLY

10% of what we READ

90% if we DO IT OURSELVES

even as a SIMULATION !!



➤ *Annetta (2007).*



➤ *Evans (2008).*



➤ *Dede (2004).*

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2. How we Assess -

Current Challenges : Trainings & Assessments currently are

- Non interactive
- Non scaleable
- Instructor lead & Unidirectional
- Powerpoint/ similar
- Multiple Choice - Assesses Content - NOT PERFORMANCE
- Written or Online SOPs & Manuals
- No Embedded assessments & No Data Tracking & No connected Analytics

Aten Assessments & Features :

Our Approach to embedded **Performance based Assessments** follows the **Evidence Centered Design** methodology at multiple levels.



- What complex of knowledge, skills, or other attributes should be assessed?
- What behaviors or performances should reveal those constructs?
- What tasks or situations should elicit those behaviors?

- Designed & built around Specific **Skills / Competencies / Behaviors / Performances / Learning outcomes** using **Evidence Centered Design** it is

1. Immersive & Interactive, with embedded Performance Assessments

- showing users what & how to do,

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- making them do & **tracking & assessing while they do it**
- Thus it is their **Performance that is assessed !**



Aten's CEREBELLUM™ Data Tracking Framework & ARETE™ Analytics Platform

2. Experiential and Situational Assessments

- Enabling various **decision making experiences & Assessing those**
- Taking them through **multiple situations branching based on their decision making & assessing them**
- **Virtual Mentor** to guide them through learning outcomes with each experiences

3. Stealth Assessments

- Designed using **Evidence Centered Design** in such a way that **users don't realize what they are being assessed on**
- Enables **measurement of otherwise difficult to measure aspects** like
 - Communication Skills
 - Collaborative Skills
 - Critical Thinking & Decision Making Skills
 - Creative Problems Solving Skills
 - Time Management
 - Reaction under pressure
- Stealth assessments offers the opportunity to inform and support a **wider variety of knowledge, skills, and thinking**

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- Additionally, there are **numerous and valuable constructs that cannot be measured except in complex immersive situations.**

4. **Formative Assessments & Feedback**

- **Personalized/ Individualized Feedback** instantly
- Enabling **Coach like Assessment & Feedback** on where you are and how to improve and reach goals
- Includes **Adaptive Intelligence** to take them back to areas which need reiteration or reinforcement

5. **Diagnostic & Descriptive Assessments**

- What happened & Why did it happen
- **Individual strengths and weaknesses of the student** / group may be capitalized on and bolstered, respectively
- **Different types of learning may be verified and measured** during the immersive experience

6. **Summative Data tracking & assessments**

- Allows Gamification & intrinsic and extrinsic rewards
- Individual scores & progress across topics
- Certify completion of the training.

7. **Standard Assessments**

- Multiple Choice ones where content knowledge assessment is needed
- **Data Dashboard & On going tracking** on Aten's Data Tracking framework
- Further based on existing and ongoing **collation of big data** on individuals against base data sets use **AI/Neural networks for Predictive Analytics and Machine Learning**
- **Scaleable** with Multi- Language possibilities for Global localization

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3. Specific Details/Examples on Various Embedded Assessments included in these Virtual Simulations :

1. Immersive & Interactive, with embedded Performance Assessments

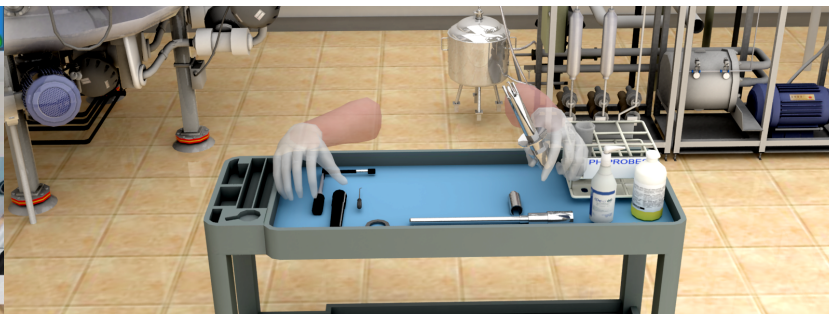
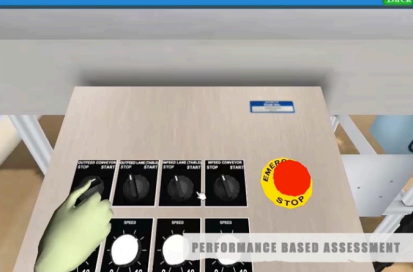
- As seen through out these training & assessment modules for Biogen Idec & Helicopter Aviation Training it is highly **engaging, Immersive & Interactive & Embedded**

Assessments are Performance Based

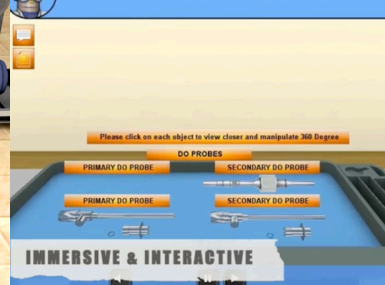
- From the offset, users get to
 - Virtually Manipulate , turn around, view at all angles etc each part .
 - While they do so, details are given and critical differentiators explained
- As each section is completed they **are assessed both with Standard & Performance based assessments** to confirm that they have understood what is being taught.



This is the Infeed Accumulator table. click on each black knob to turn on the Infeed Accumulator



Now let us examine the equipment installed on the Bioreactor



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2. Experiential and Situational

- In this Time Management example (00:40 to 01:00 m) for one of the largest Fortune 50 Financial Corporations, the users are immersed in

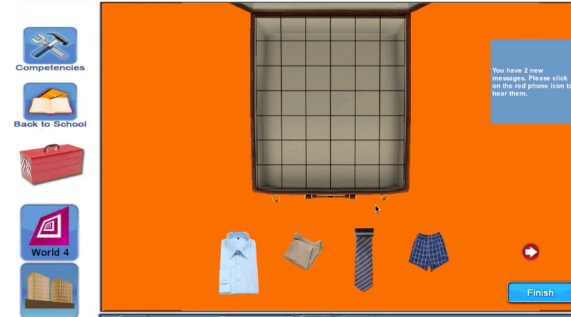
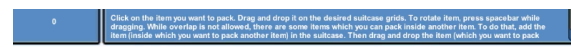
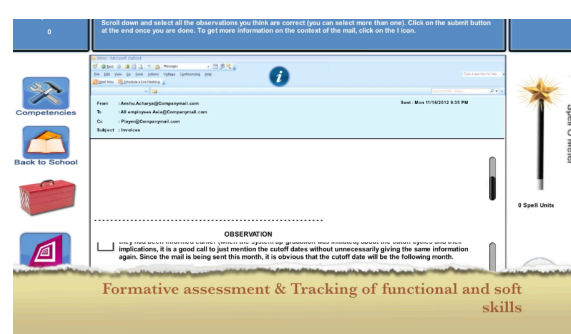
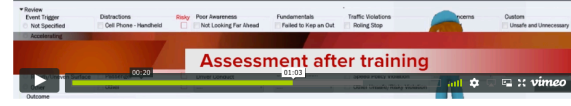
various Experiences and Situations.

- In the Driver Training example (00: 50 to 00:53) Driver mistakes in various situations are assessed

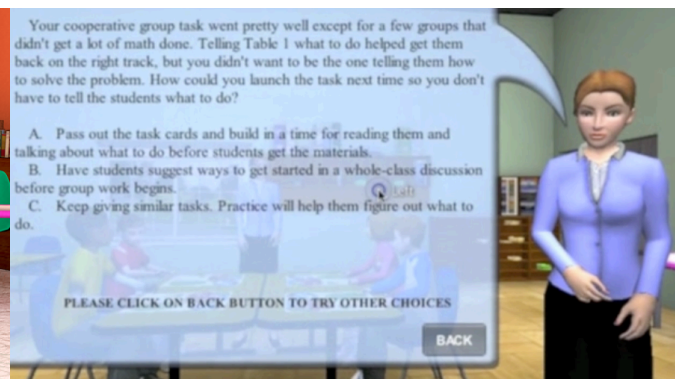
•The actions they take in those situations and decisions they make are tracked , assessed and feedback given .

- Users are often encouraged by the Virtual Mentor to **go through different experiences** so that they learn from being in a variety of such situations . In this example (minutes 00:19 , 00:37) the trainee teacher is put into variety of classroom experiences and Situations and her decisions tracked and reactions assessed.

Driver Training
Assessments & Big Data



Virtual Aviation Training spaces



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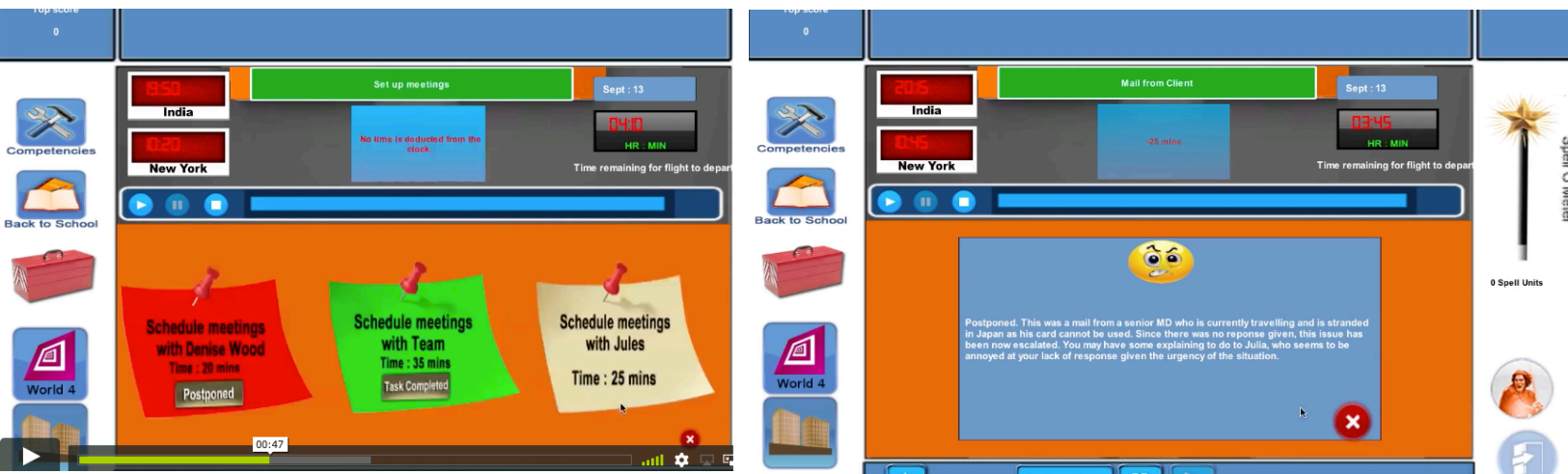
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3. Stealth Assessments

- Users think they are being tested for one aspect but there could be **multiple other elements being assessed in Stealth** which they don't realize.



- In this example users have to prioritize and complete a variety of tasks prior theme runs out.
- Multiple elements come into play to **increase pressure to the situation**.
- Their Time Management and Critical Thinking and Decision Making skills are being **assessed in stealth** even while they are focussed on completing tasks.
- In the one below(00:45 to 01:00m) Problem Solving, Critical Thinking , Scientific Reasoning, Reaction under pressure etc, are assessed.



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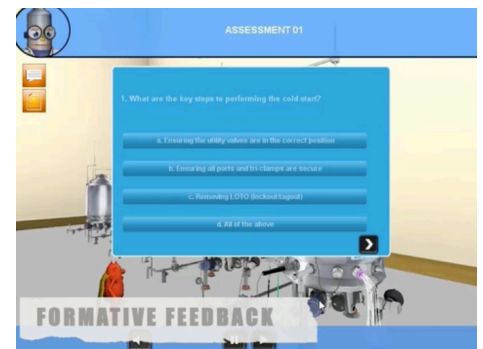
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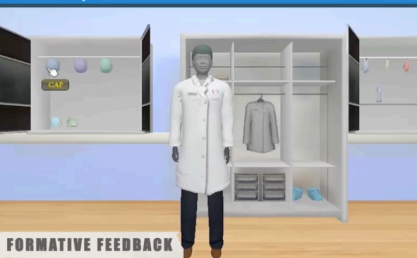
4. Formative Assessments & Feedback

- As each section/sub-section of a topic/competency are taught the users are assessed in multiple ways to ensure mastery .
- **Formative Assessment & Feedback** is instantly given similar to a Coach's Personalized feedback in the Biogen example. (00:40: 01:00m)



- **Adaptive Intelligence** (02:00 to 07:00 in video) ensures that users who make mistakes in the assessments are taken back to that particular topic which is reiterated and reassessed ensuring complete understanding prior progressing
- Thus a **very Personalized and Individualized training and assessment** is provided.
- At the same time it enables **Measurement of a highly detailed and specific level of Individual Skills and Abilities** .
- In example (18:00 to 00:53)or EISAI you can notice the instant Formative Feedback given as well as in the Helicopter Aviation Virtual Reality Training Space at 00:27 and forward.

As per the SOP, Before entering Packaging Area, please wear the Lab-Apparel [cap, gloves, mask & shoe-cover].



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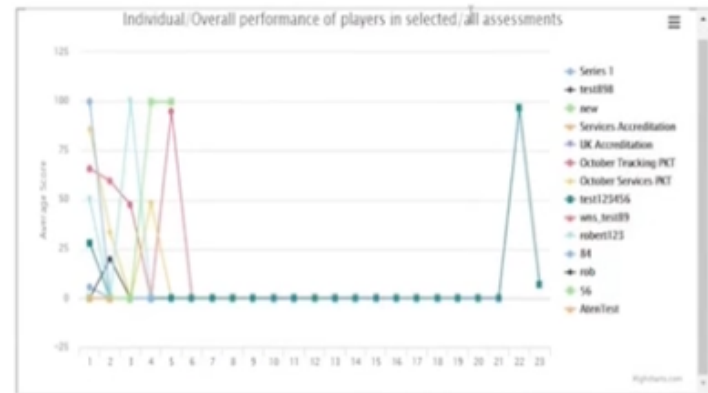
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5. Diagnostic & Descriptive Data tracking / Assessments

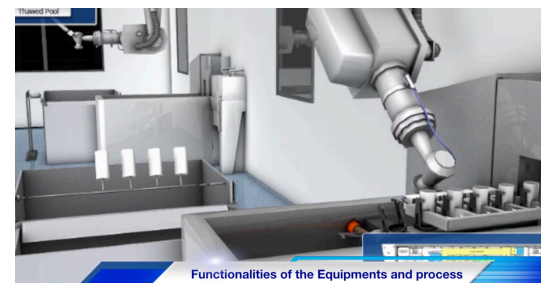
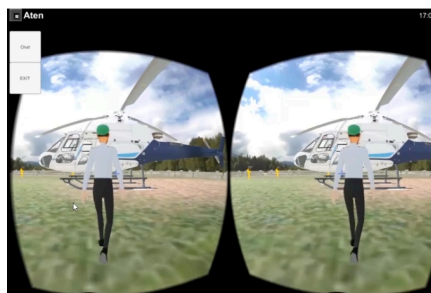
- What did the user do?
- Why did he do that ?
- How much time did she spend idle at a question ? Did she get stuck there ?
- Similar diagnostic/ Descriptive assessments are also embedded based on customer needs.
- It covers Diagnostics for both individual and entire groups of users - DRA Assessment Tool demo above (00:40 to 00:50)
- viz. Did an entire group find some questions difficult ;
- if so why ?
- Is that an area that needs additional attention for the individual or the group ?
- It also gives us the ability to include Machine learning and have the system adapt to these down the line .

CATEGORY	INDIVIDUAL ACCURACY Current Video	OVERALL ACCURACY Current Level	TIME TAKEN	SCORE
test	100 %	47 %	00:00:57	100 %



ID	Video Name	Accuracy (Percentage)	Time Taken	Analyze
1	B42	100 %	00:00:08	View Details
2	B42	100 %	00:00:02	View Details
3	B43	100 %	00:00:03	View Details

Virtual Aviation Training spaces



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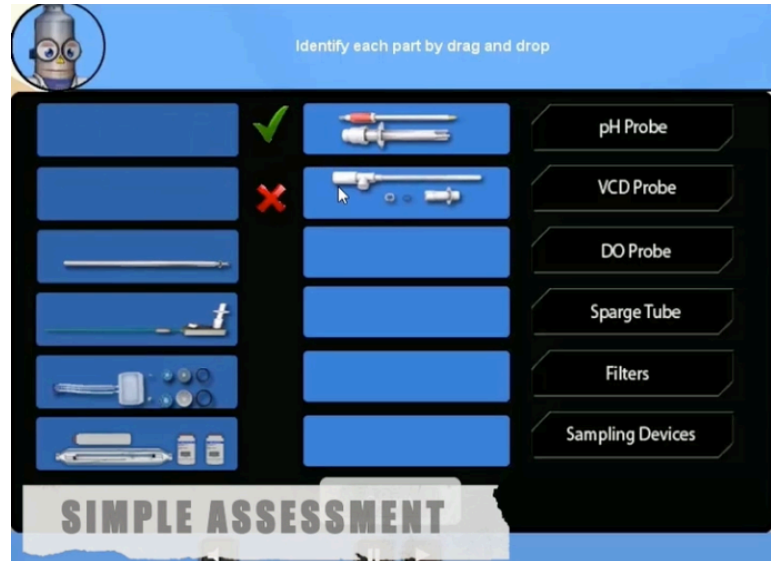
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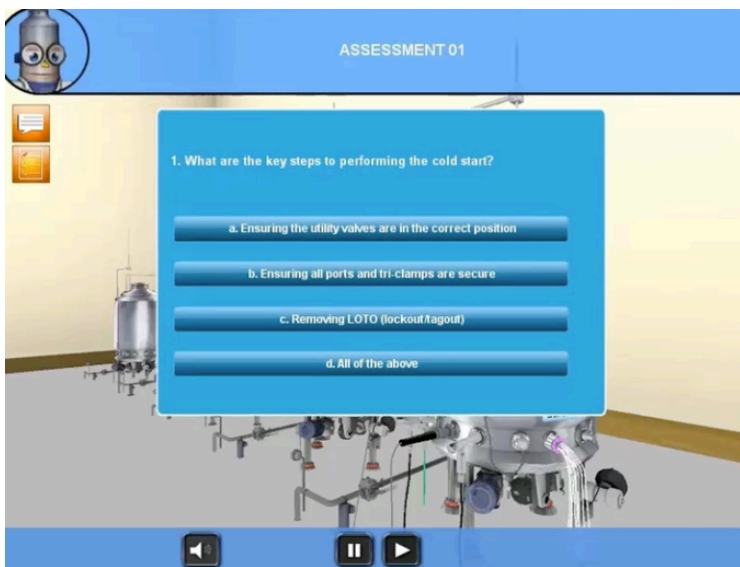
6. Standard Assessments

- Simple Standard Assessments to check understanding and content knowledge are included as

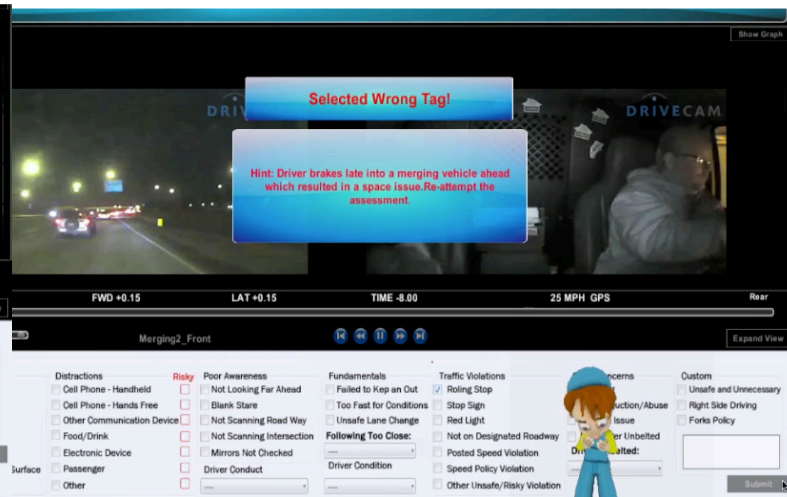


seen from 00:39 - 00:42

- Multiple choice questions can also be included similarly as needed. Showcased at 00:59 of video [link](#). or at 01:31 in the [Driver Analyst Assessment Tool](#).



Driver Training
Assessments & Big Data



Driver Training
Assessments & Big Data

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7. Summative Data tracking & assessments

- Summative Assessments based on a **variety of criteria and scoring factors** pre-determined by the Customers dictate whether users pass or fail the assessments .
- It **Certifies completion** with minimum required scores or percentages.
- It also enables **Badging, Gamification and Intrinsic & Extrinsic rewards** for ensuring challenge , motivation and continuing engagement.
- Tracking achievements across multiple modules encourages ongoing learning and assessment.

CHAPTERS	NO OF ATTEMPTS	PERFORMANCE
Identify each part of the bioreactor	1	Excellent
Assessment 01	1+1+1	Excellent
PH probe preparation	1	Excellent
Visual inspection	1	Excellent
Assesment 02	3+1+1	Average
Assesment 03	3+1+1	Average

Highest Score in each assessment will receive a badge. Click on Close Button to move to next Assessment.

Congratulations! Your score is 100 You are qualified for highest score badge for test. Your position in test is 1.

Your Total Badge Count in test is 2

Top players in test.

- 1) robert mathew
- 2) Anon Chandran
- 3) jay m.

Score: 88%	Time Taken	Accuracy	Total Explored/Opportunities Explored/Area of Opportunities	Top S
Outcome	0:00	0%	0-0-1	
Custom	0:00	0%	0-0-1	
Event Trigger	0:29	60%	3-3-5	
Traffic Violations	0:39	50%	2-1-1	
Distractions	0:31	50%	2-1-2	
Fundamentals	0:6	0%	1-0-1	
Poor Awareness	0:29	100%	3-3-3	
Driver Condition	0:57	50%	1-1-2	
Driver Conduct	0:57	100%	1-1-1	
Average	0:23	46%		

Driver Training
Assessments & Big Data

Certificate of
ACHIEVEMENT

Awarded to
Siva Prasad

Awarded for successful completion in
" Assessment-1 " of WNS-Lytx Assessment

Given this 14 day of May in the year 2015

Signed _____

Designed and created by
Aten Inc (www.ateninc.com)

Driver Training
Assessments & Big Data

Assessment Name	No of badges received	Details
Assessment-1	7	View Details
Assessment-2	1	View Details
Assessment-6	0	View Details

Assessment Name	Details
Assessment-1	View Details
Assessment-2	View Details
Assessment-3	View Details
Assessment-4	View Details

Detailed report of the player

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