

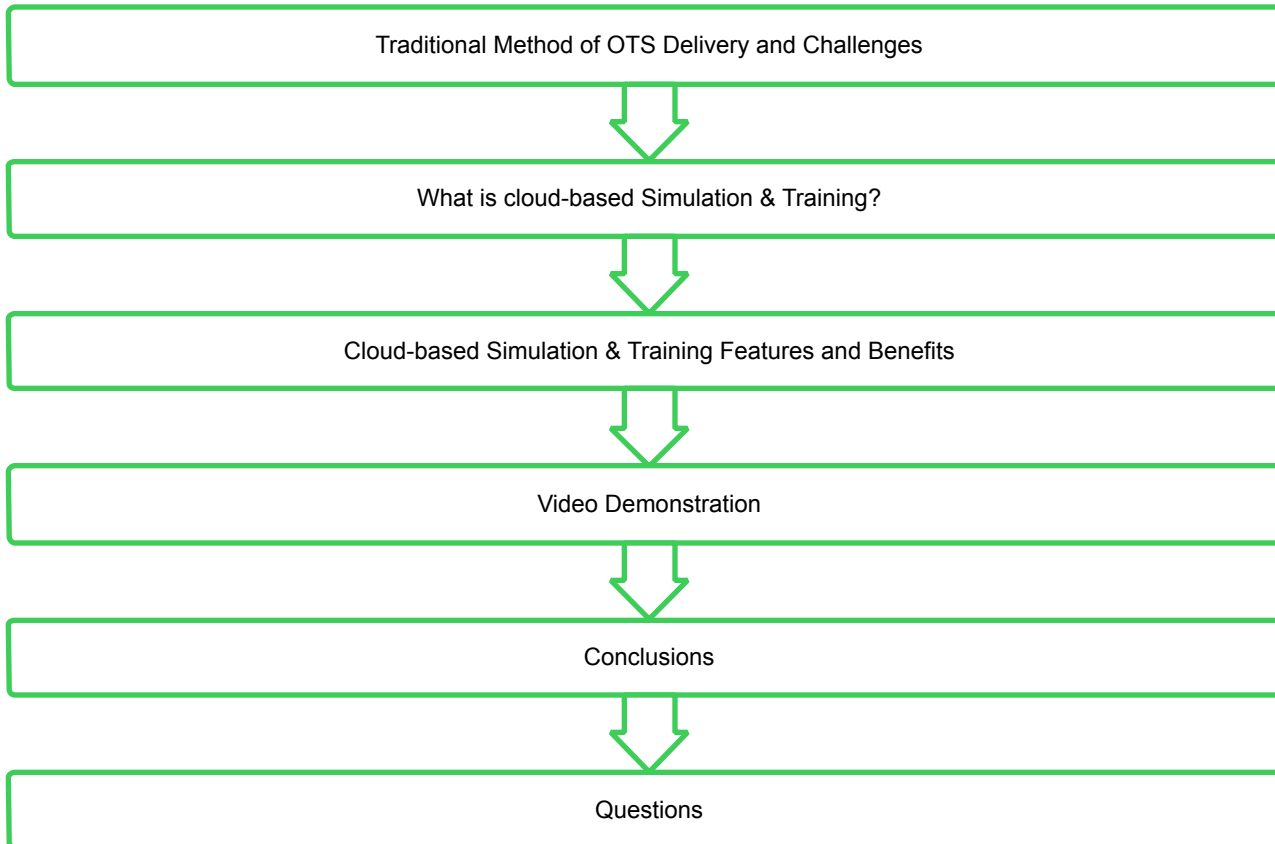
SCS Power Plant Simulation Conference

January 16, 2017

Software as a Service: Cloud-based Simulation and Training

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Agenda

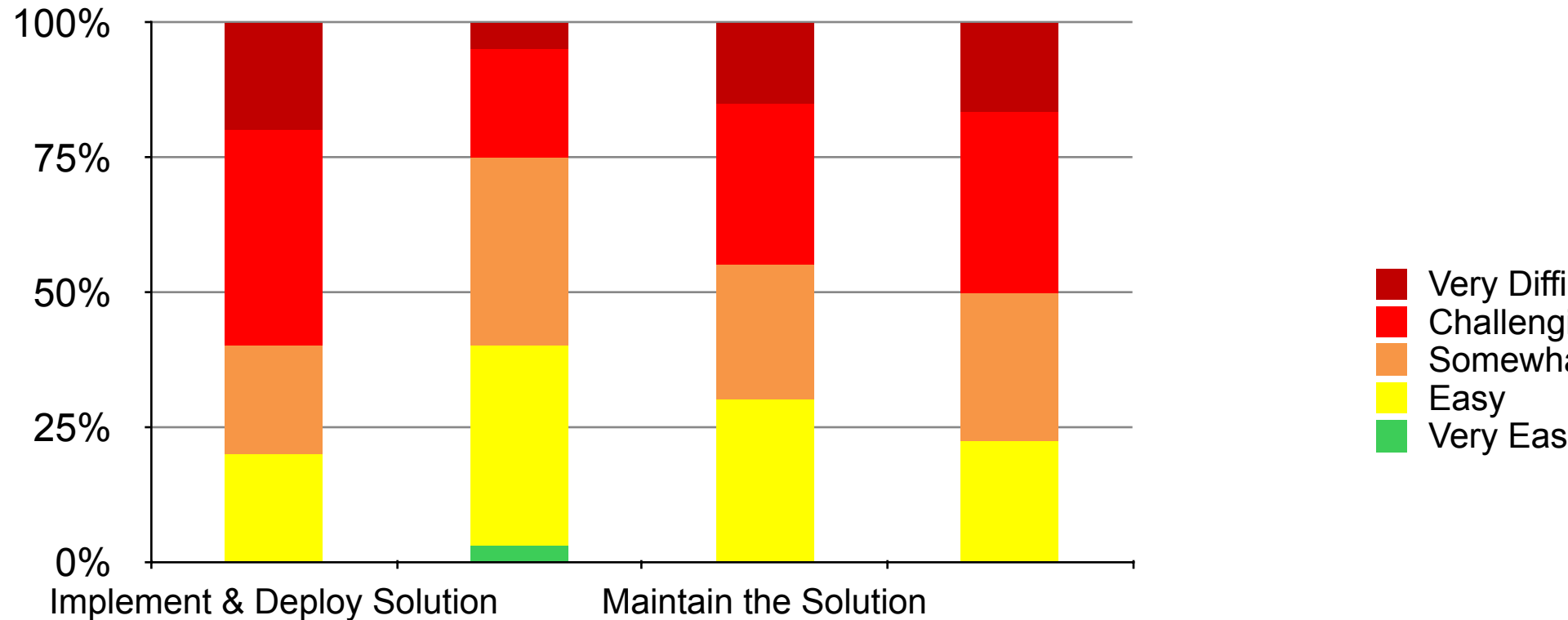


Traditional Method of OTS Delivery & Challenges

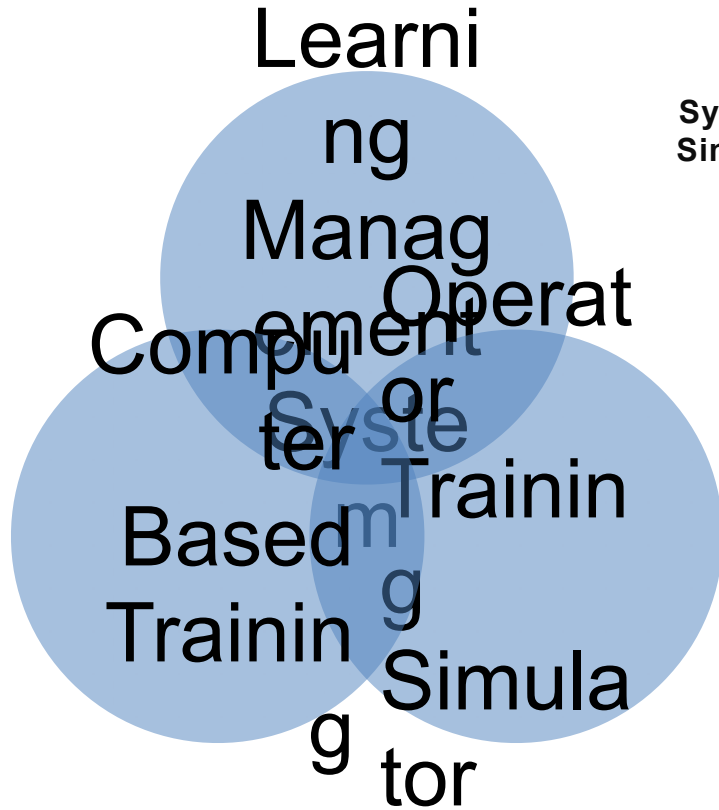


- Delivered and set-up on site
- Multiple servers with jungle of wires
- Limited number of users at given point in time
- Maintenance requires software/hardware updates, financial investment, and time

How Challenging is it to Implement & Maintain your High Fidelity OTS?



What is Cloud-Based Simulation and Training?



Learning Management System backed by Simulation Models

Access anytime, anywhere

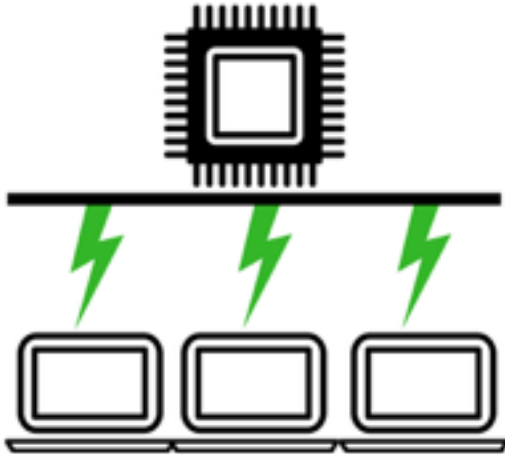


Alternative Options for Financial Investment

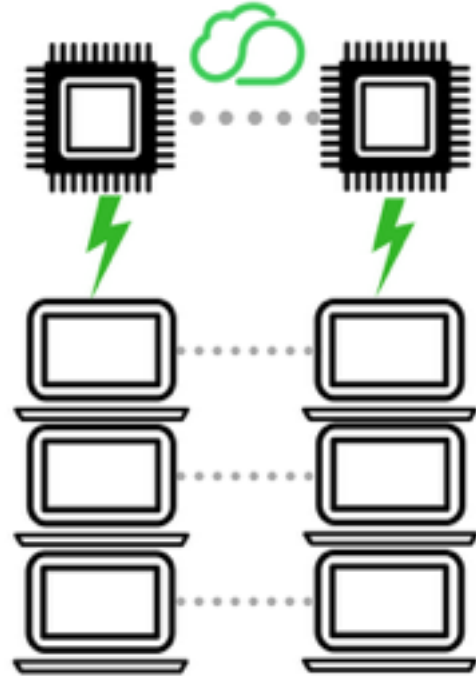
Access on demand with no headaches around IT or System Maintenance

Beyond Virtualization


VM Farm



Simulation & Training Online



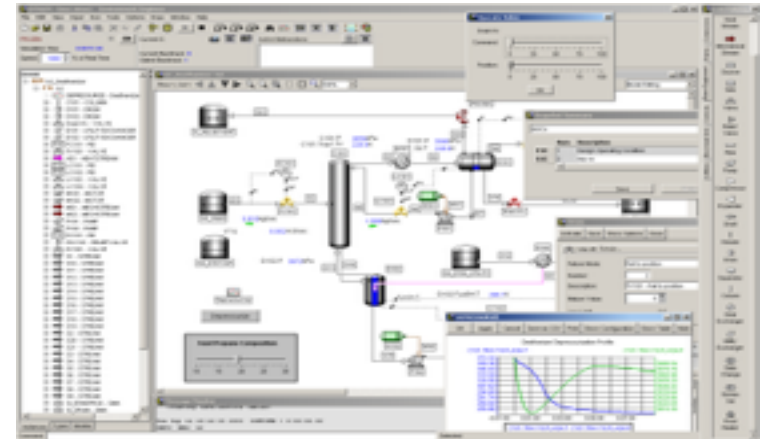
Benefit: Advanced Learning Management System Integration

 Exercises assigned to you:

| PURGE | TURBINE ROLL | CONTROLS | FURNACE |
|---|--|---------------------------------------|----------------------------------|
| BOILER PURGE PURGE AND INITIAL FIRE | TURBINE INITIALIZATION, SOAK, ROLL UP TO SYNC SPEED | Feedforward Control | Safety Troubleshooting |
| 1-1.5 hours | 1-1.5 hours | 1-1.5 hours | 1-1.5 hours |
| Assigned by: John Adams | Assigned by: John Adams | Assigned by: John Adams | Assigned by: John Adams |
| Generic Drum Projects | Generic Drum Projects | Controls & Instrumentation | Forced Draft Furnace |
| Prerequisites: None | Prerequisites: None | Prerequisites: None | Prerequisites: None |
| No previous attempts | No previous attempts | No previous attempts | No previous attempts |
| 80% Coursework | 80% Coursework | 80% Coursework | 80% Coursework |
| 40% Simulator Training | 40% Simulator Training | 40% Simulator Training | 40% Simulator Training |
| LAUNCH | LAUNCH | LAUNCH | LAUNCH |

Users access the materials through the Learning Management System. Once the training begins, the trainees will be given a Cloud-deployed HMI

A Cloud-deployed simulation model will be launched on-demand “behind the scenes.” The Instructor will have access to both HMI and Simulation Model



Ensures the trainee is exposed to rigorous high-fidelity simulations, regardless of learning model requirements

Benefit: Ease of Access

Only Requirement: Internet Connection

Staff from different locations can collaborate on training material and system operation

No limitation to how many users can be trained at a time

Corporate vs. Cloud



Benefit: Financial Investment Options

Capital Expenditure



Purchase assets

- Equipment
- Property

Lump sum

Accounted for over number of years as asset depreciates

Operating Expenditure



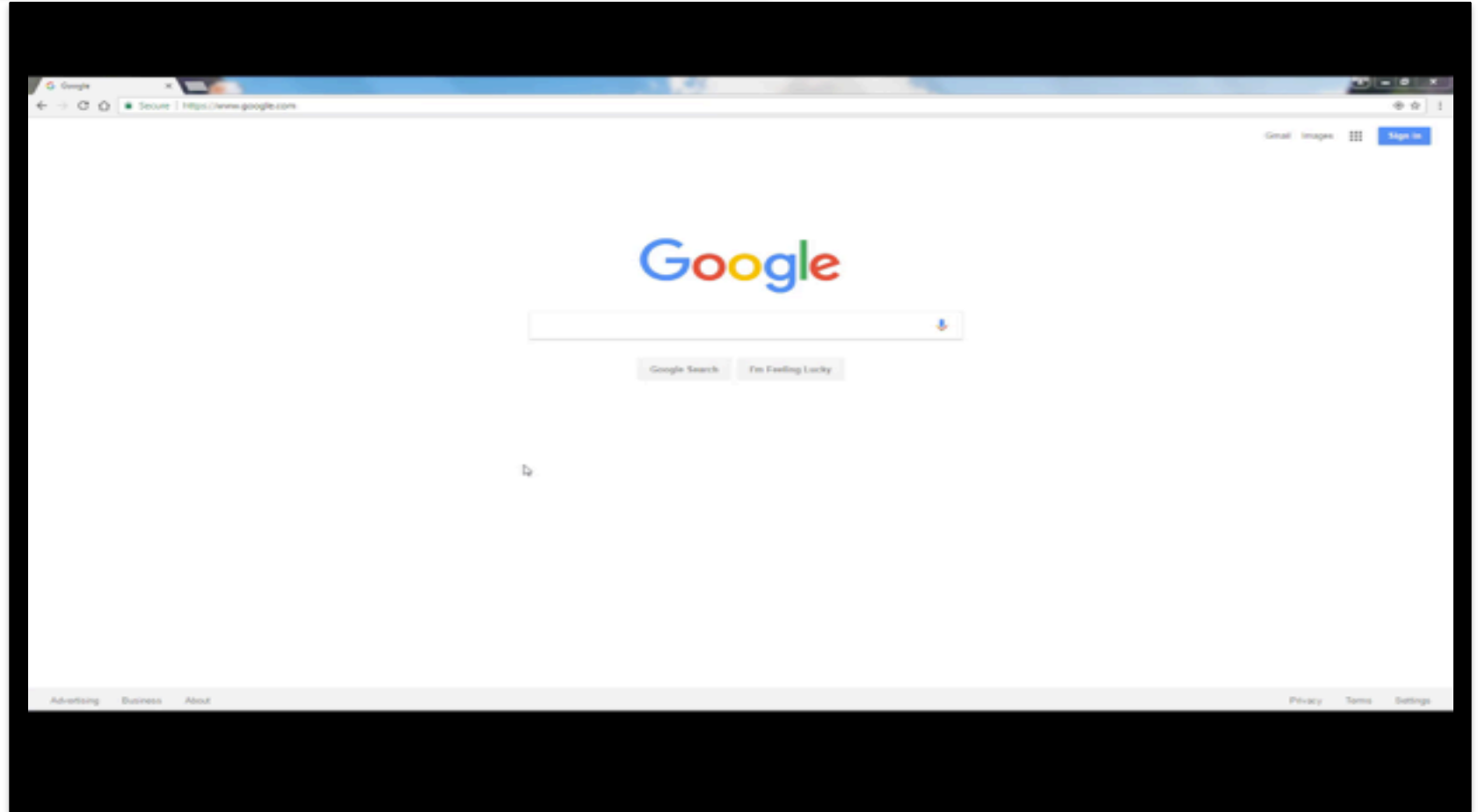
- Ongoing costs to run a business
 - Wages
 - Utilities
- Paid throughout the year
- Accounted for each month/year

Benefit: Maintenance



- Elimination of wires, servers, and bulky hardware
- Software updates can be done in the background
- Reduces manual fixes and updates to the system
- Troubleshooting & Roll-backs

Video Demonstration



Conclusions

Training Simulators have traditionally added a great deal of value by increasing the competency of operators

Operator Training Simulators can be complex in their set-up and sometimes challenging to maintain

Today's computing paradigms open up new channels to eliminate IT challenges

Cloud-based simulation and training is a unique platform that can make OTS maintenance much easier AND increase collaboration within a company with easily accessible training materials

THANK YOU!

QUESTIONS?