DIGITAL SOLUTIONS

Synergi Pipeline Simulator Trainer

Operating Safely and Efficiently

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Introduction

- Chris Summers
  - Senior Pipeline Consultant
  - Have been working with the Synergi Pipeline Simulator Trainer product for 23+ years

Operator Training System (OTS)

- At its core, an Operator Training System (OTS) is designed to prepare operators for normal and abnormal operating situations.
- The most obvious situation, a leak, can have significant costs for a company that include can:
  - Loss of capital in the form of lawsuits, clean up, and damages
  - Minor loss of capital in the form of product lost
  - Loss or reputation within the community
- A proper OTS will minimize all of these costs by allowing operators to provide familiarity with a broad range of situations, as well as provide less "tangible" effects, such as reduced stress or more confidence, both for managers in the staff, and as operators in his/her abilities.

Abnormal Operations

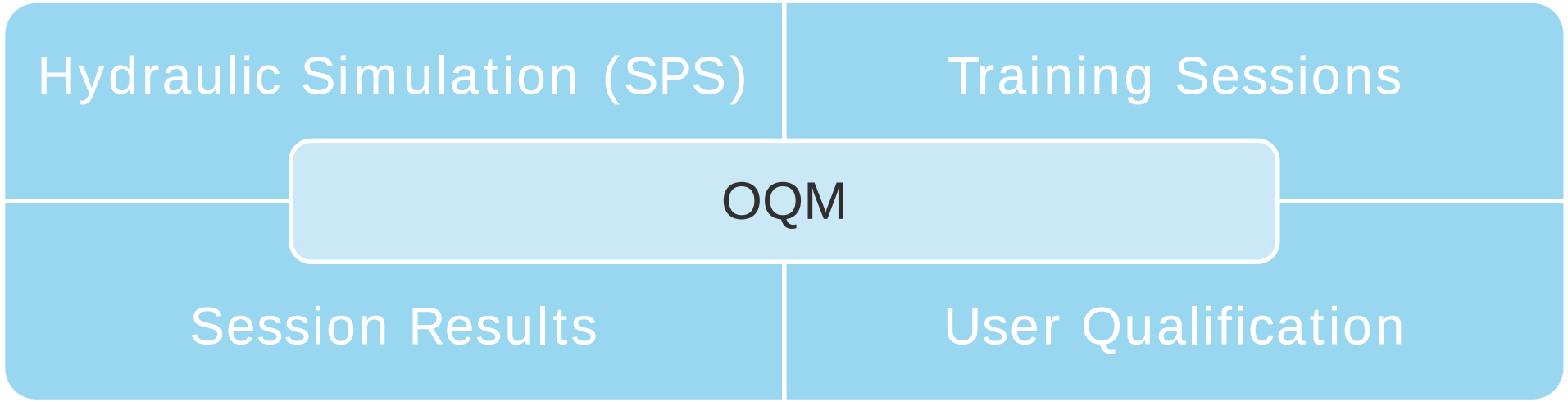
- Leak
- Valve Failure
- Regulator Failure
- Instrument Failure
- Communications Failure

Normal Operations

- Batching operations
- Start-up of the line
- Responding to unexpected demands (power plant loads)
- Dealing with line outage (out of service and looped lines)

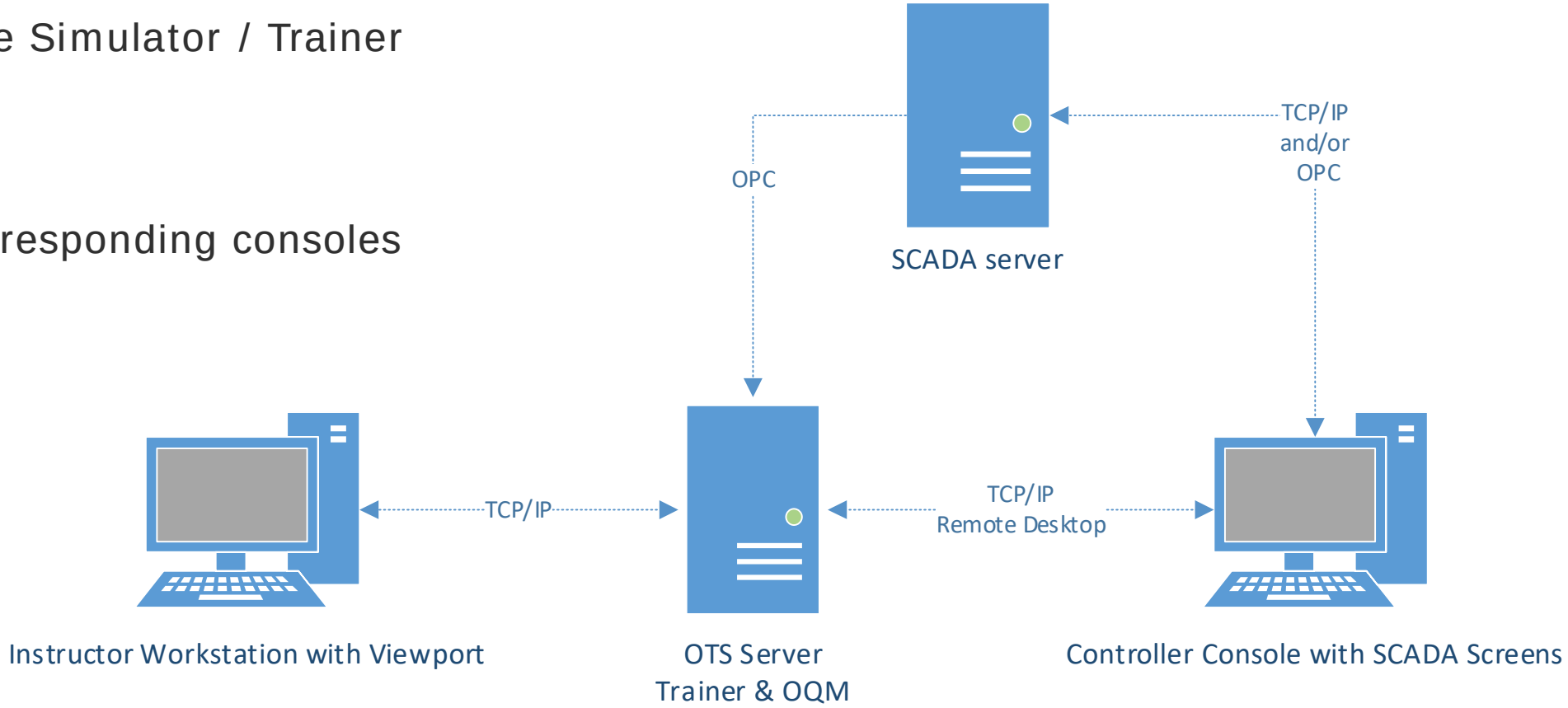
DNV GL Training Package

- Realistic Hydraulic Engine (SPS)
- Session Organization (OQM)
- Customized Training Scenarios



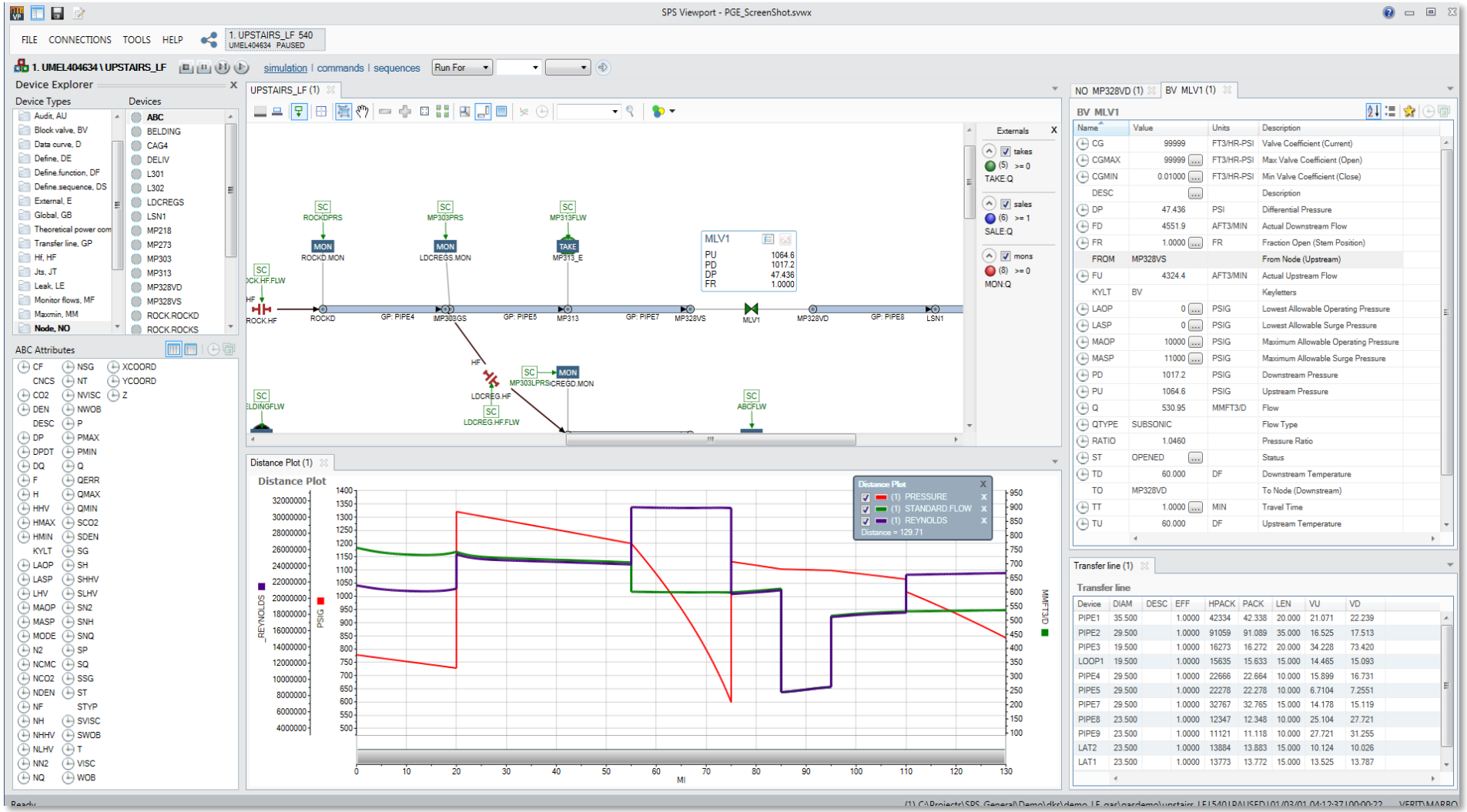
Typical Infrastructure

- Components
  - Synergi Pipeline Simulator / Trainer
  - Viewport
  - StOPC
  - SCADA and corresponding consoles
  - OQM



Viewport

- Model View
- Watch Windows
- Device tables
- Time plots
- Distance plots
- Batch bars
- Reports
- Layers

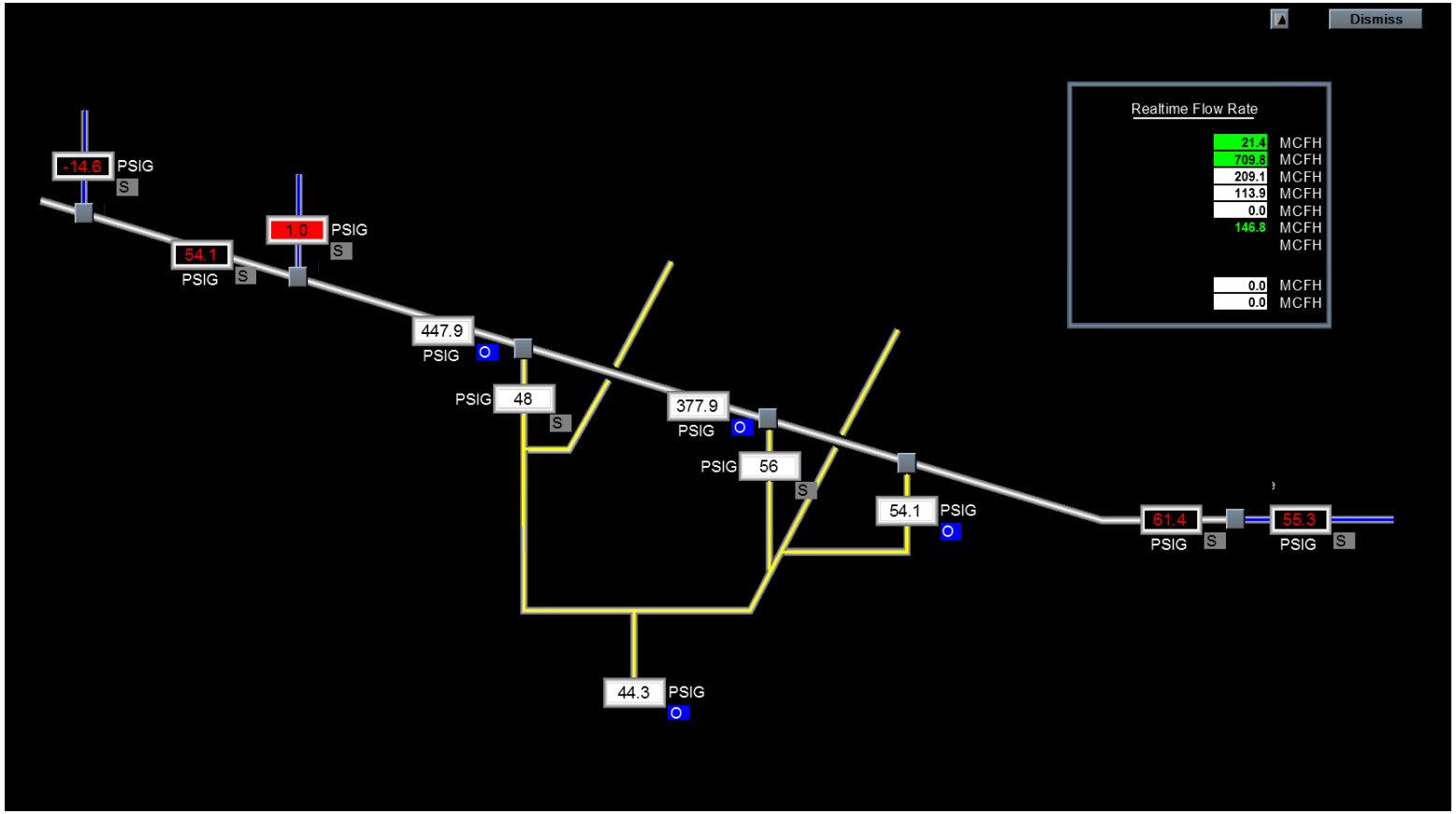


Realistic Representation of Pipeline

- Provides the operators with the experience of how actual events would appear on a pipeline system they are familiar with.
- Allows operators to become better prepared for new assets before being fully commissioned.
- Provides the opportunity to compare/contrast similar data symptoms:
  - Leak
  - Compressor/Pump Station Failure
  - Stuck Regulator
  - Instrumentation Error(s)

SCADA Interfaced

- Instant familiarity for the operators
- Connects to ancillary systems
- Relatively easy port of any SCADA screen updates in the future



Broad Scope

- Normal Operations
- Abnormal Operations
- Simple Scenarios
- Advanced Scenarios

Expandability

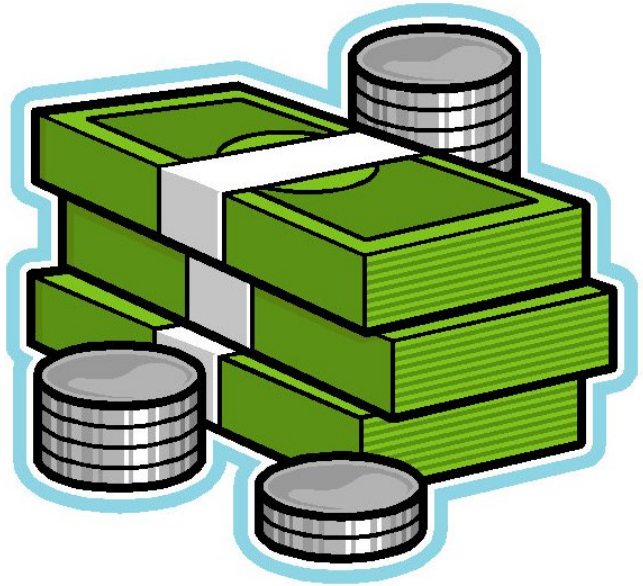
- Can always add new facilities
- Can always expand on existing scenarios
- Can always add new scenarios
- Always keep the training system fresh

Evaluator Participation

- Evaluator participation allows for elements that are not typically contained within a simulator. This keeps the operator engaged.
- In the case of the evaluator/trainer, this person can serve multiple purposes:
  - Conversations:
    - Phone calls with customers
    - Contacting station personnel
  - Discussing procedural responses that have nothing to do with a computer interface (documentation/reporting)
  - Combining simple scenarios into a single more complex scenario (interactive scenarios, where the instructor is adding additional issues to make the operator triage the issues)

Controller Buy-In

- One of the key elements to any training system will be the participation of all personnel involved.
- Operators are typically sceptical of spending time on something that does not directly reflect on what they work with on a given day
  - Generic Systems don't reflect on operator experience
  - Low fidelity models don't provide the proper responses for operator input, thus drawing into question the results as a whole



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Commitment to Maintain

- A key element to the longevity of a training system will be continued interest in the system even after initial implementation.
- Maintenance factors:
  - Update facilities as they change
  - Add new pipelines
  - Modify fluid properties
  - Add new scenarios or expand on existing scenarios

Shared Capabilities

- High fidelity models can be used in other areas.
- Take subsections of a training model to perform:
  - surge studies
  - Capacity management
- This translates to efficiency across the company.
- Note, each model is designed for certain results, and as such, minor modifications may be necessary to accomplish the end goal, but a training simulator can provide the initial model to facilitate an efficient result.

Business Impact

Initial Comfort:

- Realistic Pipeline Representation
- SCADA Interfaced

Familiarity with situations:

- Broad Scope
- Expandability
- Evaluator Participation

Sustainability:

- Operator Buy-In
- Commitment to Maintain

Thank you

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