

# IE 1.01- Interactive 3D Factory Model for Delivery Quality Analysis

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## Company Background

### HID Global

- Leading provider of trusted identity solutions
- Part of ASSA ABLOY Global Technologies
- Headquarters in Austin, Texas
- Operates worldwide across secure identity markets

### Used in:

Corporate facilities | Government | Healthcare | Education

### Focus:

Secure identity solutions including access control, credentials, and tracking systems



## Problem Statement

HID's fulfillment production lacks a real-time, interactive 3D visualization tool, limiting visibility into process flow, human interaction, and equipment behavior during delivery quality (DQ) events.

### Impact:

- Difficult to identify root causes of DQ issues
- Limited training and communication tools
- Inefficient process improvement analysis

## DMAIC

- **Define:** Identify DQ issues and project scope within fulfillment operations
- **Measure:** Collect layouts, station data, and process flow paths
- **Analyze:** Identify failure point and interaction gaps
- **Improve:** Develop interactive 3D model and simulate DQ scenarios
- **Control:** Deliver reusable tool for training, analysis, and continuous improvement



## Information

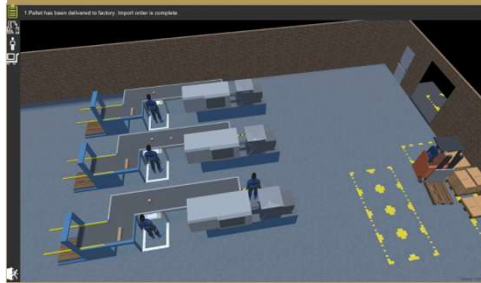
### 3D Interactive Factory Model

- Digital recreation of HID fulfillment floor
- Simulates order flow from start to shipping
- Visualizes process interactions and DQ events

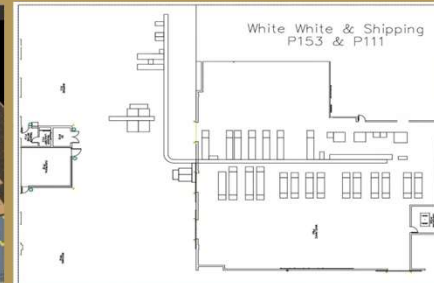
### User Capabilities

- Navigate factory in real-time 3D
- Click equipment to view function and role
- Pause and analyze process flow
- Replay scenarios for training and improvement

### Prototype Mockup



### CAD Drawn Facility Layout



## SIPOC

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### Suppliers

- Fulfillment Operation (Readers/ Credentials/ Shipping)
- Quality (DQ event owners, investigation team)
- Industrial / Process Engineering
- Facilities / Maintenance
- IT / CAD Support (file access, drawing exports)
- Equipment Documentation Sources (OEM manuals, station specs)

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### Inputs

- Factory layout files (DWG/ PDFs)
- Station list + equipment names
- High-level process flow overview (Readers, Credentials, Shipping)
- Product routing paths
- Machinery specifications (function, role in process)
- Photos / videos of workstations
- DQ event case examples
- Software licenses & approvals

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### Process

- Define visualization scope & facility boundaries
- Collect and clean layout files
- Recreate factory floor in 3D (stations, equipment, pathways)
- Map visual order flow
- Add interactive elements (clickable machines with function details)
- Build order walkthrough mode (play, pause, explore capability)
- Develop DQ event recreation mode (highlight issue location & trace path)

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### Outputs

- Interactive 3D factory model (baseline fulfillment visualization)
- Clickable equipment with descriptions
- Visual order-flow walkthrough
- DQ event visual trace capability
- Editable project file for future updates
- User guide & final presentation package

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### Customers

- HID Fulfillment Leaders (Ops Managers, Supervisors)
- Quality / Delivery Quality
- Process / Industrial Engineering
- Training Teams
- Continuous Improvement Teams

## Software Selection

### Unity (Primary Development Platform)

- Real-time 3D engine used to build interactive factory model
- Import layouts from AutoCAD (.DWG) and factory floor plans
- Scan and import real machines/equipment to accurately recreate the factory environment
- Apply custom scripting (C#) to enable machine interaction
- Clickable equipment displays: Machine function | Role in process flow | Associated DQ risks/events
- Simulate full order flow through fulfillment process
- Create event-based scenarios (DQ failures, delays, misroutes)
- Support pause, replay, and guided walkthrough functionality



## Future Expansion

- Integration with HID Oracle system
- Real-time data visualization
- AR/VR training capabilities
- Live production tracking

## Group Photo

