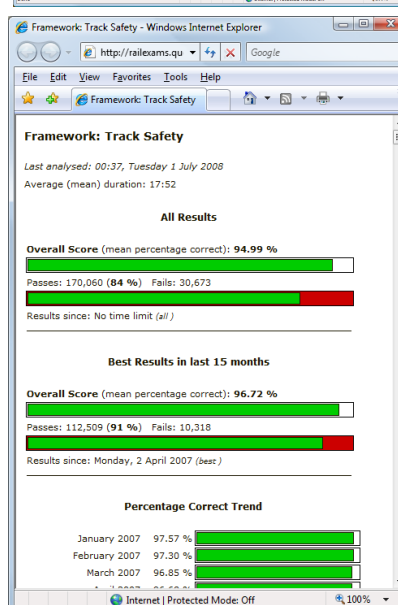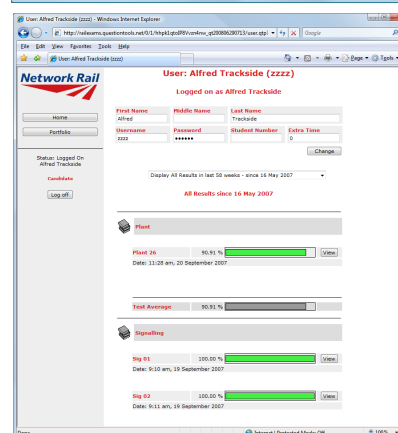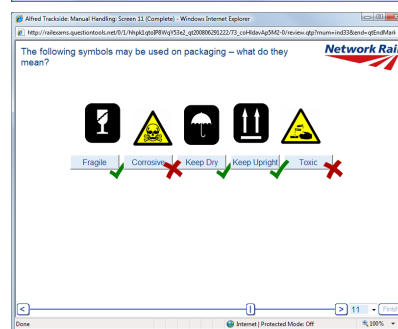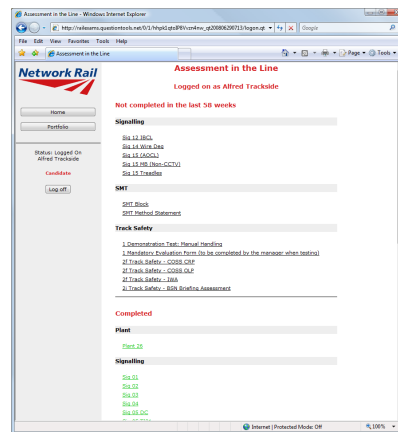# Assessment in the Line

- **412,000 exams delivered in 18 months.**

- **4.2 million questions answered, with every response stored and available for review or analysis.**

- **21,000+ users with unique profiles so each user sees only exams relevant to them.**

- **24,000 exams taken every month.**

- **¼ million question responses collected every 20 working days.**

- **100% system uptime since launch.**

- **Personalized display show each candidate urgent exams for competencies that are about to expire.**

- **332 different competency exams, with all 931 exam versions available for review within these frameworks:**

  1. **Track Safety**
  2. **DCCR**
  3. **DIST**
  4. **OLE**
  5. **OTP**
  6. **Plant**
  7. **Signaling**
  8. **SMT**
  9. **Track Engineering**

- **Objective testing using questions validated by experts.**

- **All performance data ready for inspection at any time.**

- **24/7 testing, to fit around shifts and work patterns.**

- **Immediate results for candidates and managers.**

- **Test timing, provided for each candidate to facilitate planning of test sessions.**

- **Management information about current performance, including:**

  1. **snapshots**
  2. **trend analysis**
  3. **depot by depot**
  4. **individual performance**
  5. **question analysis**

Overview

The Assessment in the Line system delivers more than 24,000 exams to 21,000 Network Rail trackside staff every month. In other words, a quarter of a million questions are displayed and answered every 20 working days.
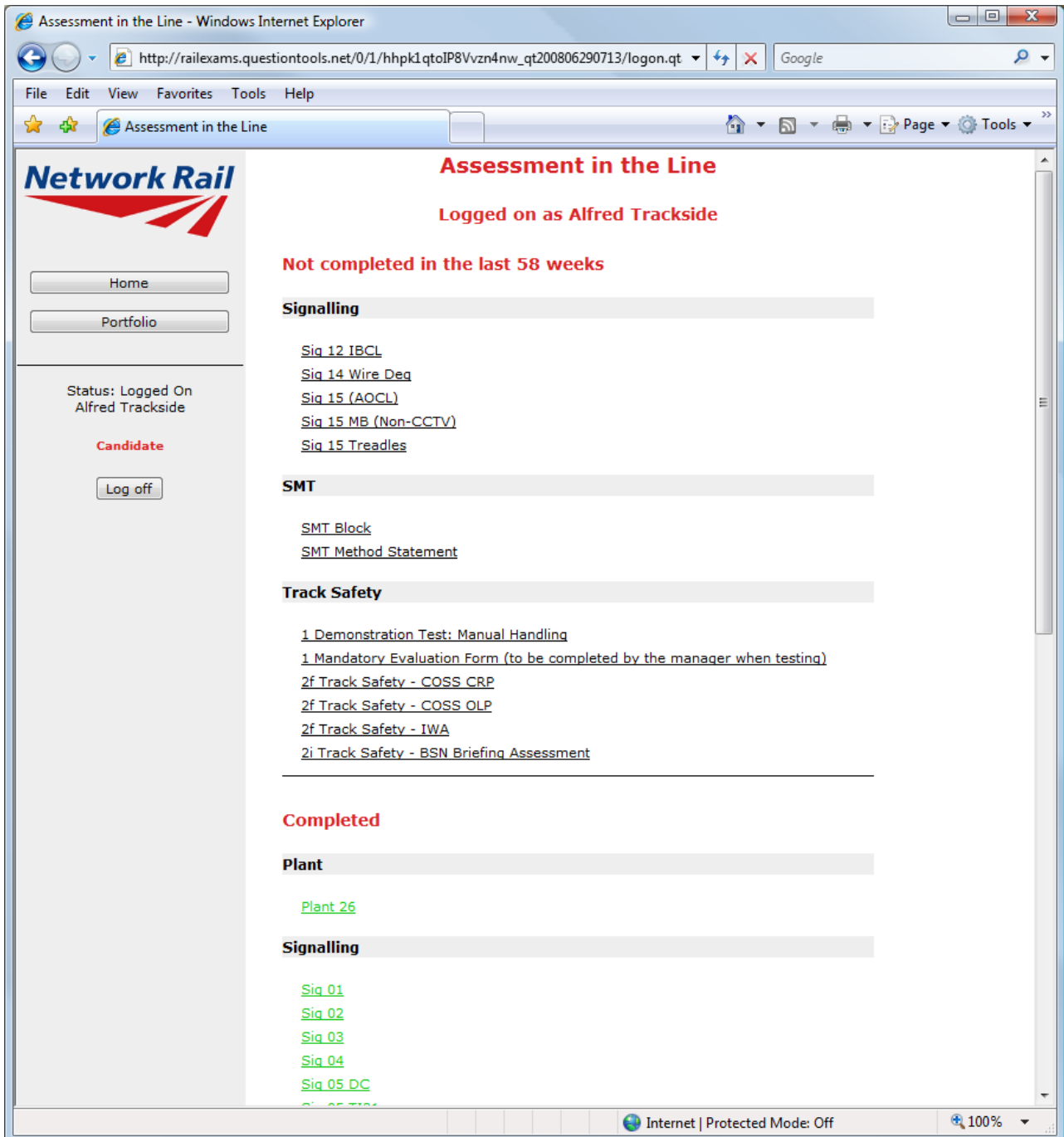
There are more than 330 different exams available, covering frameworks such as Track Safety, through to Signaling, Track Engineering, Plant and others. When candidates log in they see only the exams they are supposed to take, with the outstanding exams listed at the top.

Every candidate has an online portfolio displaying results.
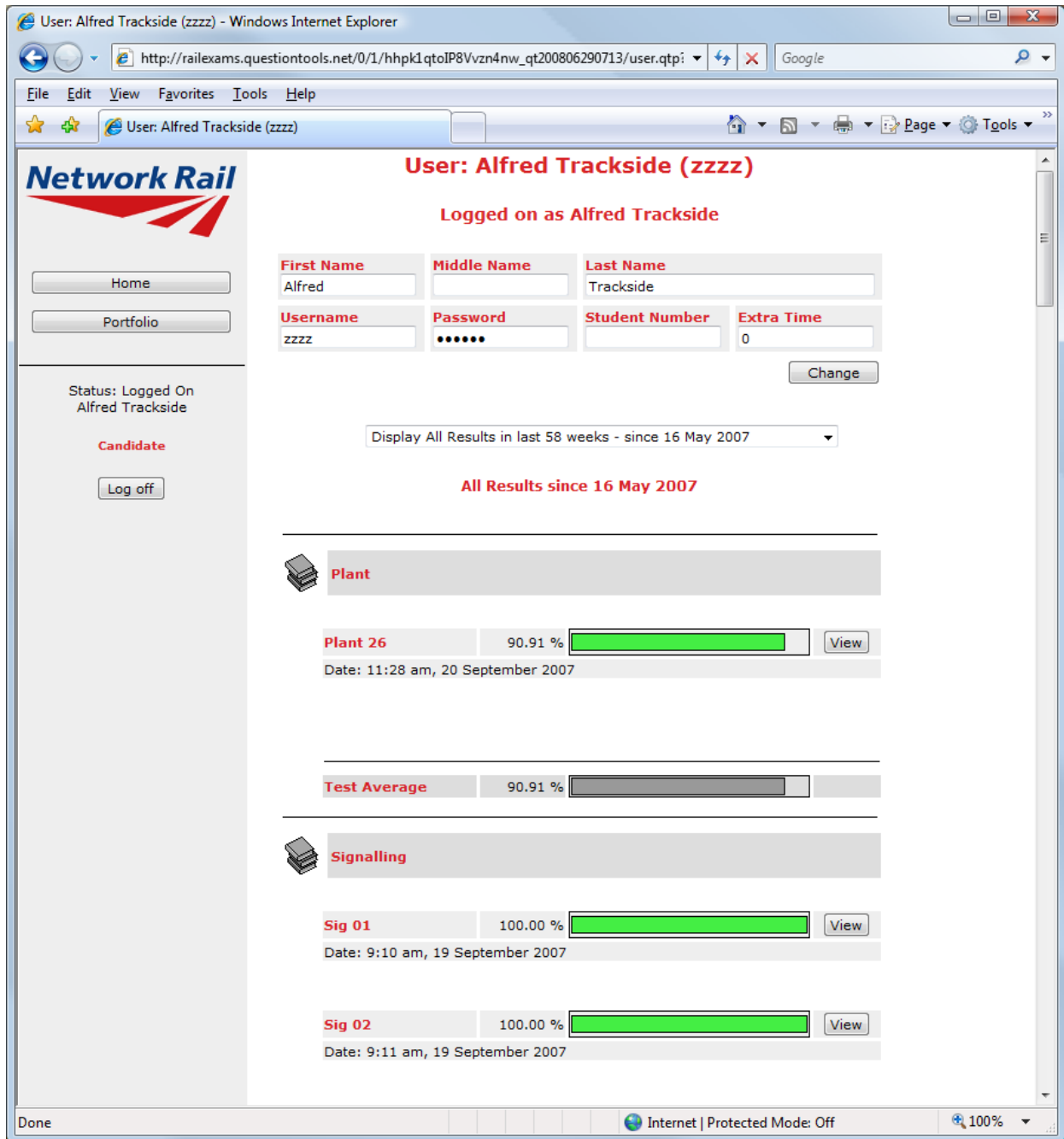
This portfolio is available 24 hours a day, every day of the year.

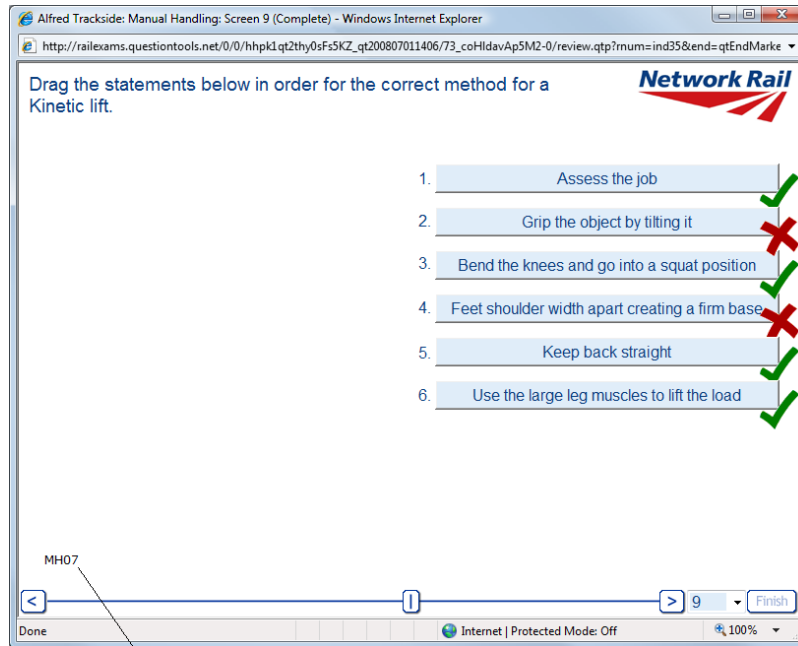The system has proved very reliable. Uptime has been 100%, with either the central or mirror servers always available. The central server has been unavailable for a total of just five hours over an 18-month period.

Assessors can open a candidate's exam to step through it a screen at a time and look at marked answers.

Every one of the 3,500 questions on the system has a unique identification number which allows any issues raised regarding a question or a candidate's answer to be reliably addressed.

The questions in an exam are selected at random, and presented in random order, so that each candidate gets a different examination. Some mandatory questions are always shown, and candidates have to get all of the mandatory questions correct in order to pass the examination.

If candidates accidentally close the web browser then they can simply log on, restart the exam, and they will be put back to exactly where in the exam before — their answers are not lost. Candidates can even transfer computers half-way through an exam if needed.

If candidates score within a certain range, then they are presented with the questions where they got less than full marks again.

A full PDF-based report can also be produced, and this lists each exam, the result, and any questions where the candidate did not get full marks.
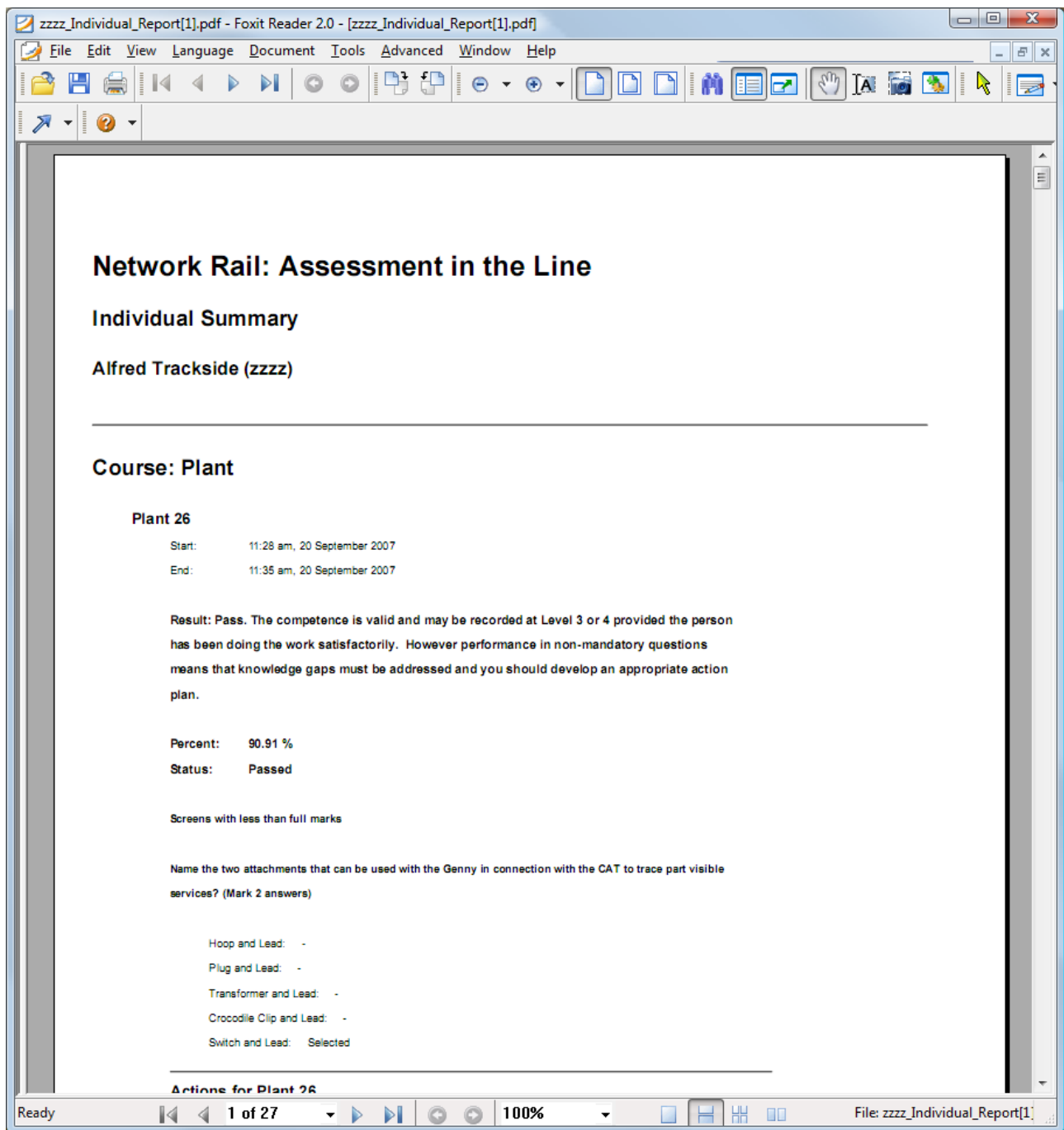
The report also provides managers with the options they have available given a fail result, such as mentorship or retraining.

Most exams (about 70%) are taken when an assessor visits a depot. Candidates take exams using laptops connected to an assessor's master laptop. The results are later transferred from the assessor's master laptop to the central server.

Central Server

Synchronization

Assessor's Master Laptop
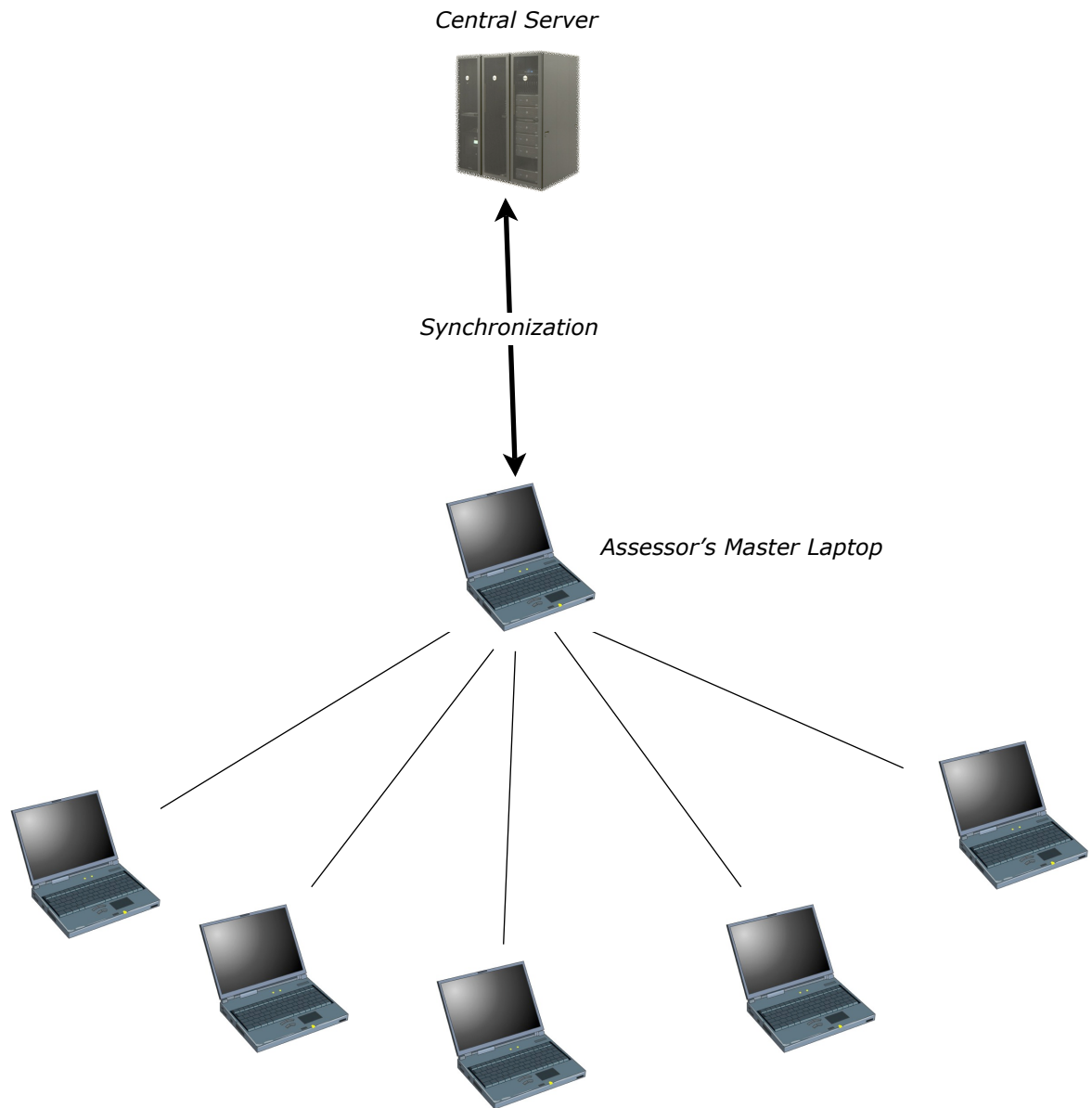
The synchronization process not only transfers exam results, but also automatically updates the assessor's laptop with the latest versions of exams. The AitL system retains all versions of exams, so that the version a candidate took is the one that is seen when reviewing an individual result.

If a candidate misses an exam, then she or he can always catch up using the central server — all that is needed is a web browser and an internet connection.

To start an exam on the central server a manager has to enter his or her username and password as well, to ensure that candidates cannot take exams without supervision.
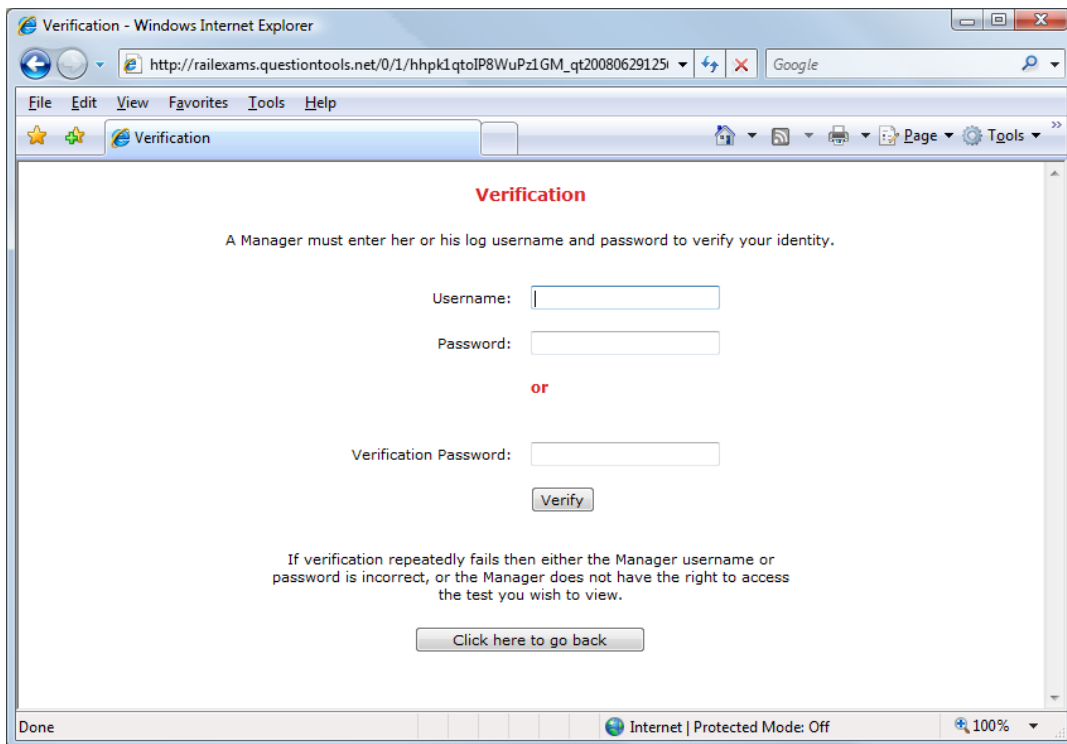
Managers can also generate Verification Passwords. These are temporary passwords that can be given to a candidate, and expire after 90 minutes. They avoid the problem of managers having to repeatedly enter their username and password for each exam.

Failed exams cannot be taken within 48 hours, and candidates can only start within this period with the explicit permission of a manager or assessor.
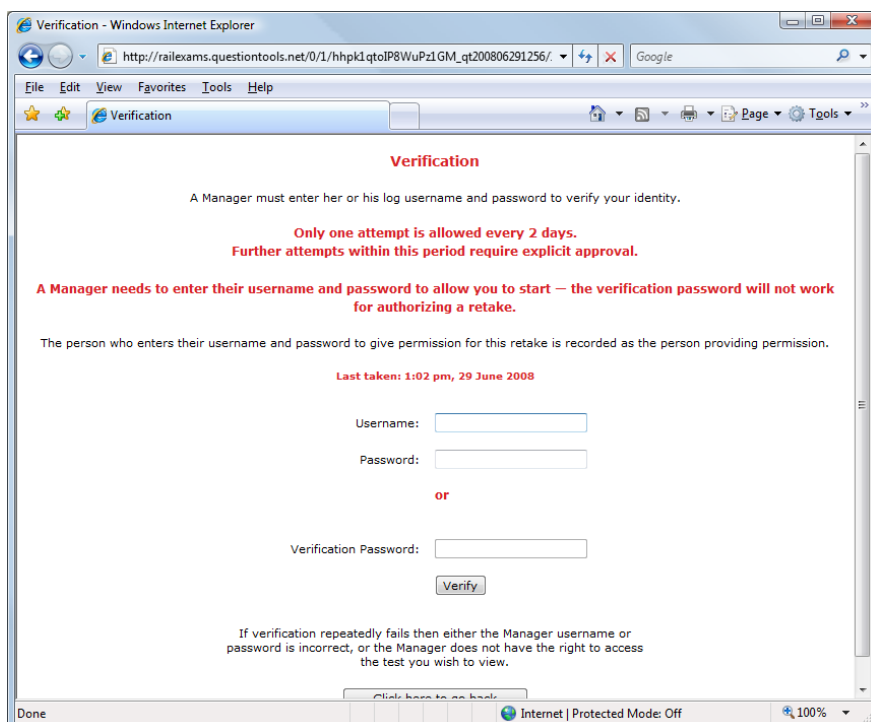
The exams candidates are permitted to take are determined on the HR Management System, which exports data to the Question Tools Assessment in the Line system every night.

However, a candidate's exam profile can be amended quickly and easily by a manager or assessor using the interface the Question Tools software provides in case something has been missed.
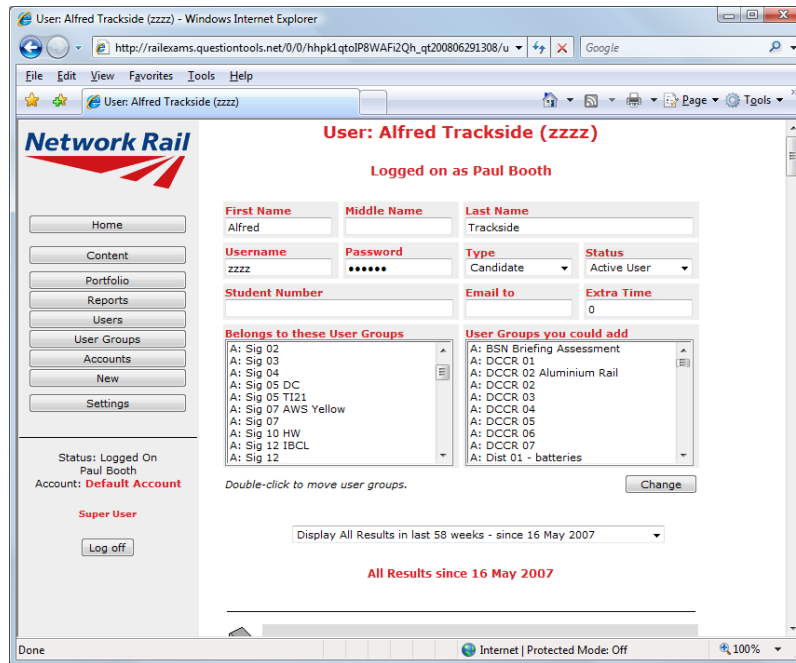
The Question Tools system provides a report for key staff in Network Rail that allows them to see how the competency codes candidates are given link to the exams that are made available to them, and nightly email updates list the results of data transfers.
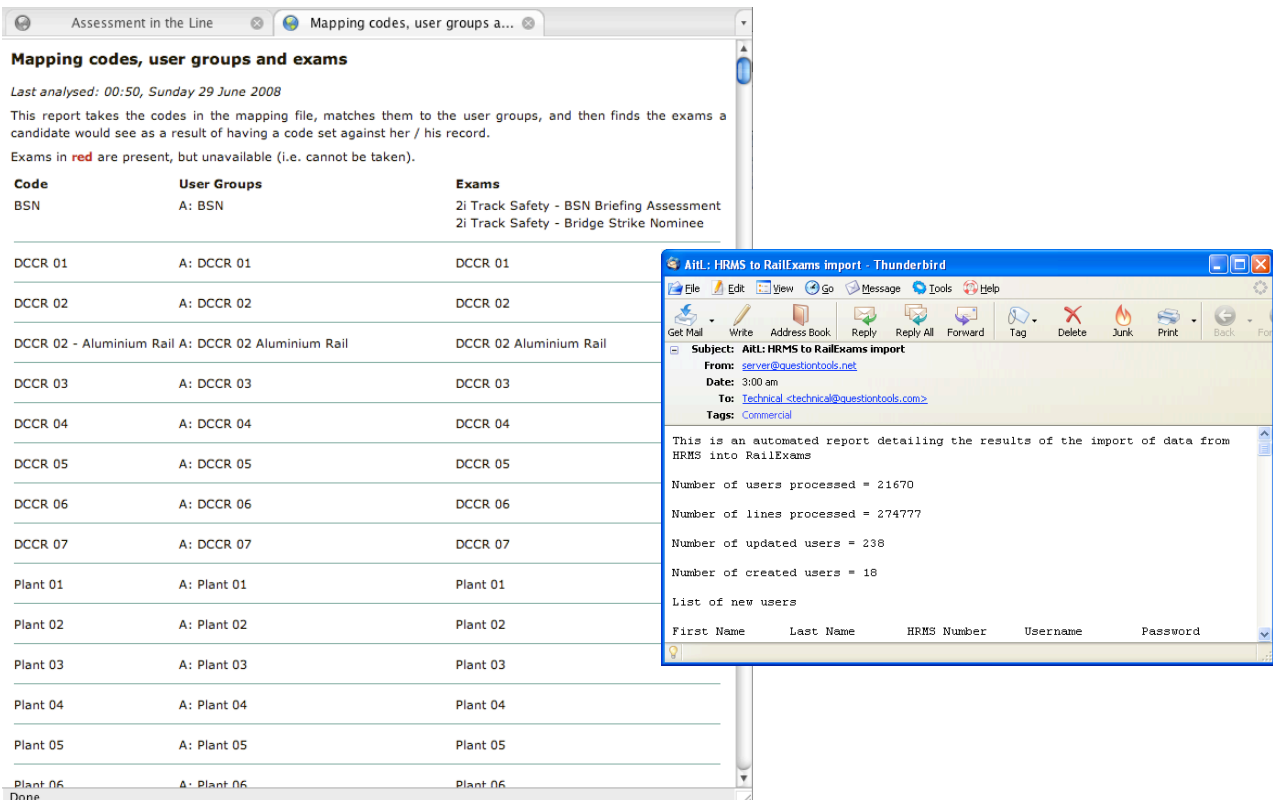
The Assessment in the Line system also provides an area-by area report that lists the outstanding exams for each person, together with the time the person is expected to need to complete all exams.

Alfred Trackside (ts889)

2f Track Safety - IWA (22:29)

MC/CC Core Module (61:03)

RMMM Module 1 - Group 01 (6:54)

RMMM Module 1 - Group 02 (6:22)

RMMM Module 1 - Group 03 (1:24)

RMMM Module 1 - Group 04 (2:49)

RMMM Module 1 - Group 05 (1:19)

RMMM Module 1 - Group 06 (1:25)

RMMM Module 1 - Group 07 (0:25)

RMMM Module 1 - Group 08 (1:25)

RMMM Module 1 - Group 09 (3:56)

RMMM Module 1 - Group 10 (3:00)

RRV Module 1 - Generic (19:19)

Timed needed for all exams = 2 hours, 11 minutes

Management Information

Every one of the 330+ different exams has a management summary.
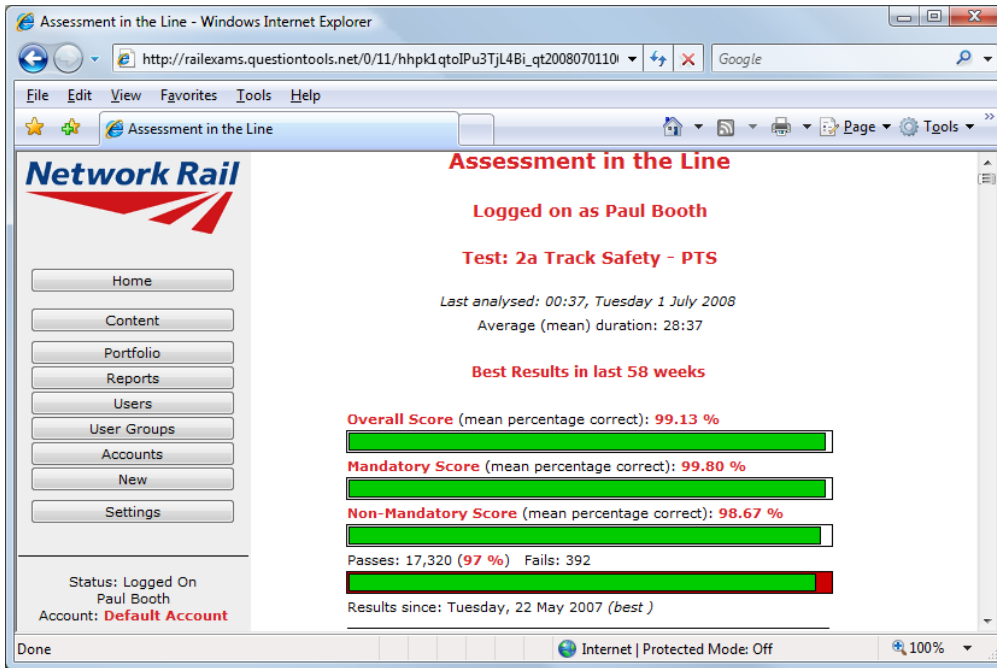
The summary also shows the trend over time, in both percentage correct, as well as passes and fails.
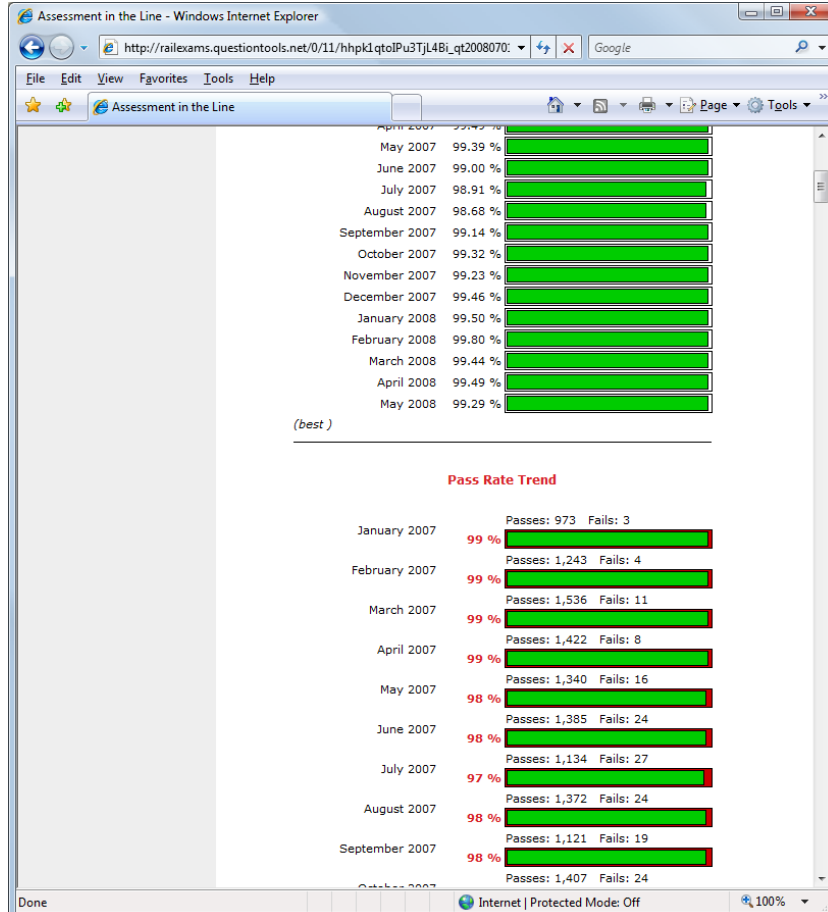
As the Assessment in the Line system keeps the results from different versions of an exam together, it also provides a trend analysis for each exam version.
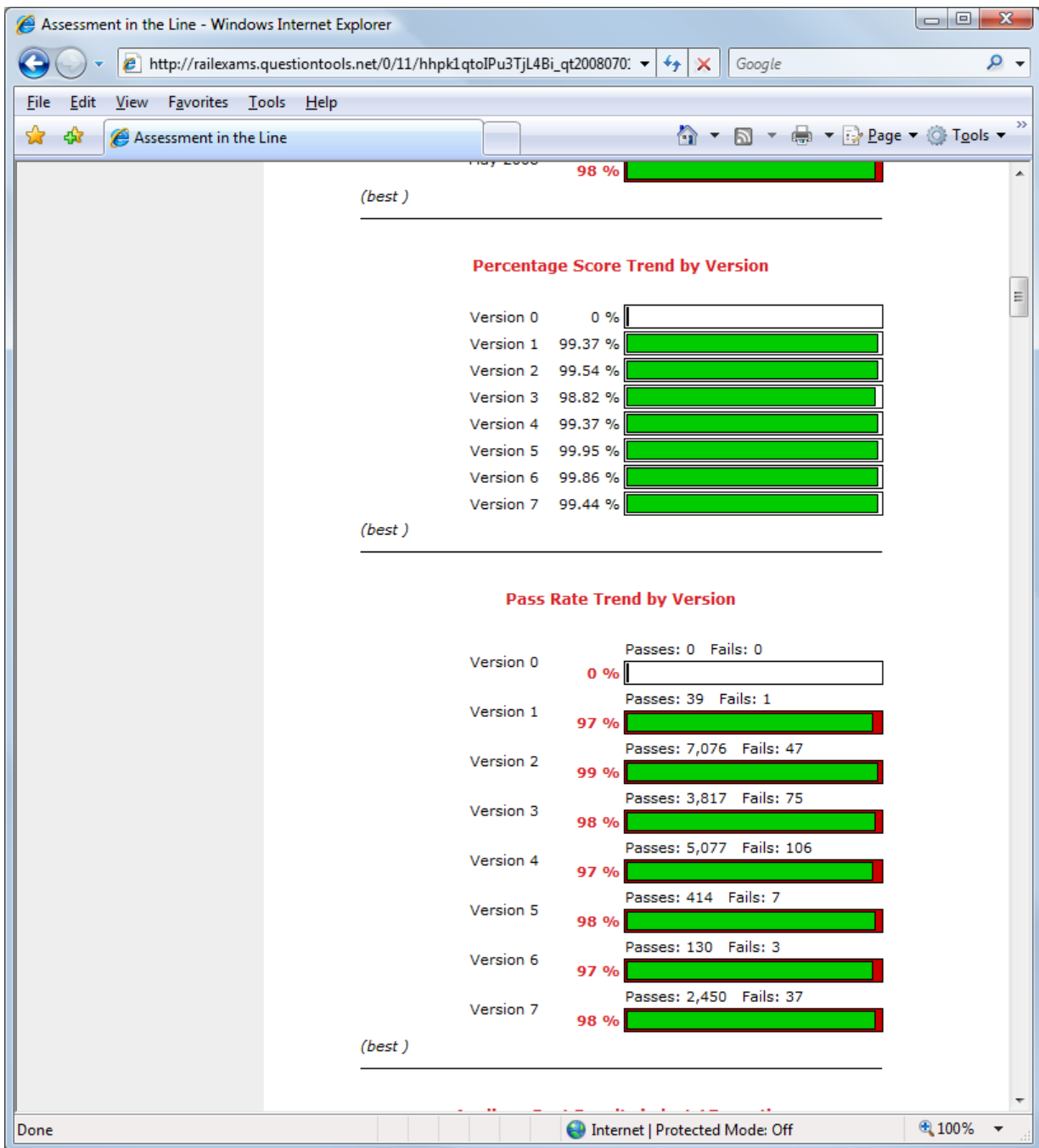
The management summary for each of the 330 exams also provides a break down for each area.

Frameworks

The frameworks, such as Track Safety, Track Engineering, Signaling, all have their own summaries, and these include trend analysis, and a summary for each geographical area.

Left window

Framework: Track Safety — Windows Internet Explorer

http://railexams.qu

Framework: Track Safety

Framework: Track Safety

Last analysed: 00:37, Tuesday 1 July 2008

Average (mean) duration: 17:52

All Results

Overall Score (mean percentage correct): **94.99 %**

Passes: 170,060 (**84 %**)   Fails: 30,673

Results since: No time limit *(all)*

Best Results in last 15 months

Overall Score (mean percentage correct): **96.72 %**

Passes: 112,509 (**91 %**)   Fails: 10,318

Results since: Monday, 2 April 2007 *(best)*

Percentage Correct Trend

January 2007	97.57 %
February 2007	97.30 %
March 2007	96.85 %
April 2007	96.68 %
May 2007	96.91 %
June 2007	96.66 %
July 2007	96.37 %
August 2007	96.26 %
September 2007	96.50 %
October 2007	96.60 %
November 2007	96.60 %
December 2007	97.35 %
January 2008	97.29 %
February 2008	97.63 %
March 2008	97.32 %
April 2008	97.42 %

Internet | Protected Mode: Off   100%

Right window

Framework: Track Safety — Windows Internet Explorer

http://railexams.qu

Framework: Track Safety

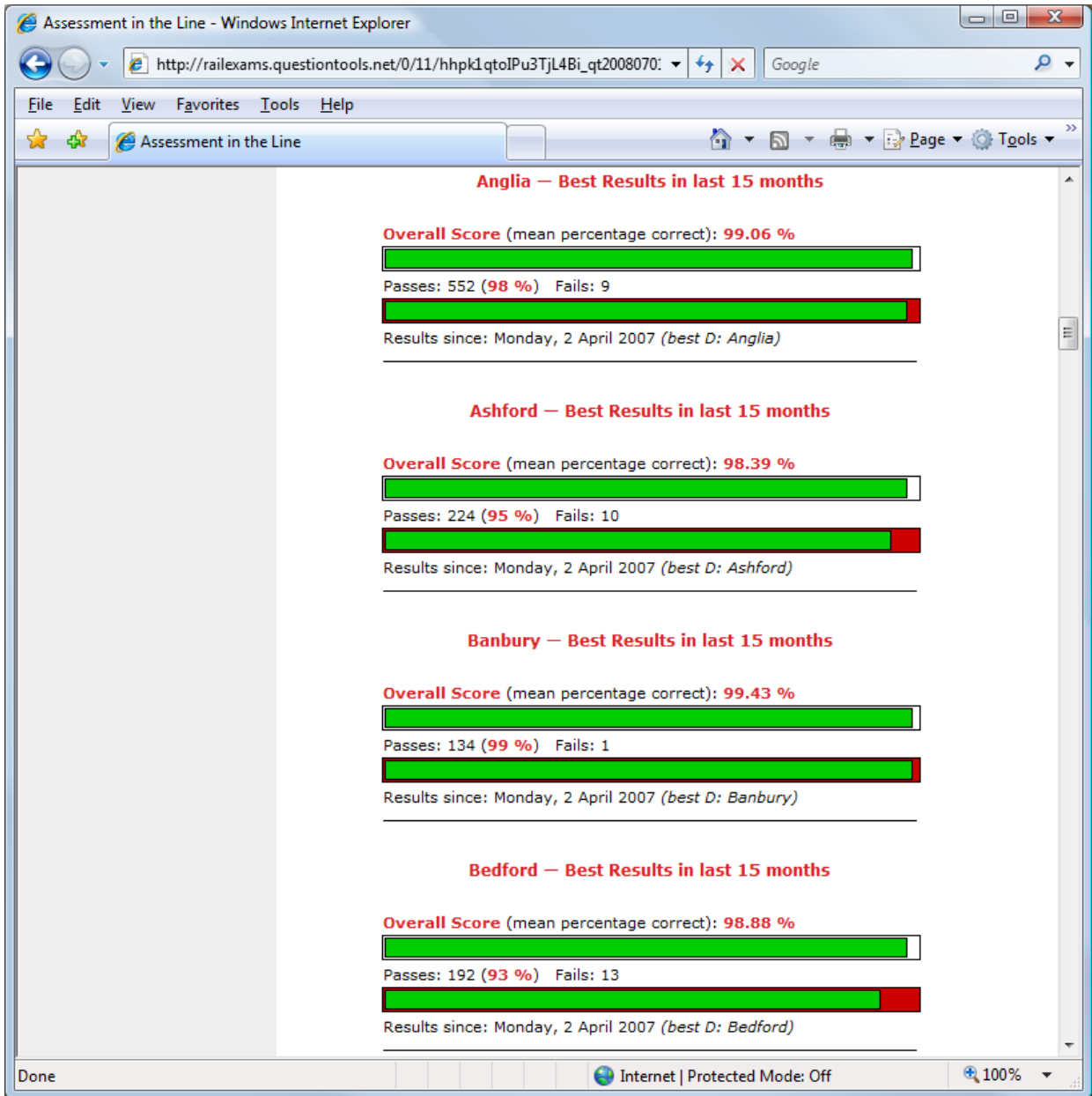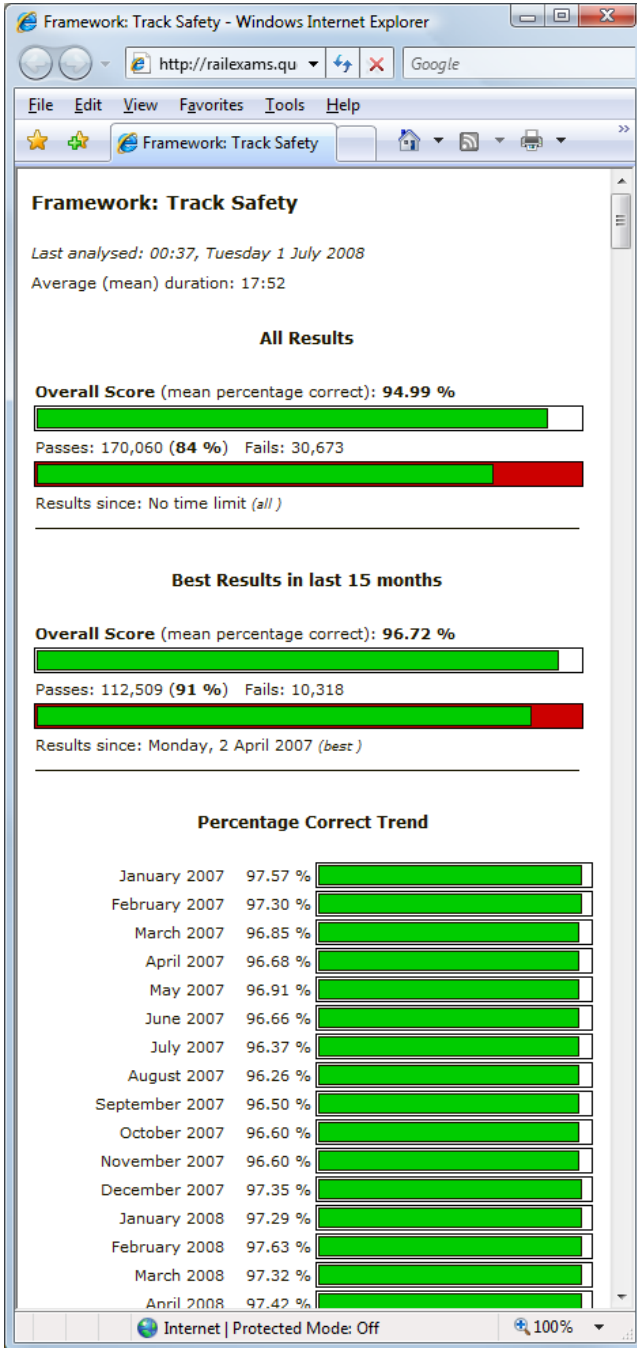|		
April 2007	92 %	
May 2007	93 %	Passes: 7,482 Fails: 558
June 2007	92 %	Passes: 8,258 Fails: 646
July 2007	91 %	Passes: 7,061 Fails: 630
August 2007	90 %	Passes: 8,351 Fails: 840
September 2007	91 %	Passes: 6,808 Fails: 669
October 2007	90 %	Passes: 8,141 Fails: 835
November 2007	90 %	Passes: 8,316 Fails: 837
December 2007	93 %	Passes: 3,330 Fails: 224
January 2008	90 %	Passes: 7,040 Fails: 746
February 2008	92 %	Passes: 5,723 Fails: 465
March 2008	90 %	Passes: 4,320 Fails: 431
April 2008	91 %	Passes: 6,121 Fails: 561
May 2008	91 %	Passes: 4,433 Fails: 405

(best)

Anglia — Best Results in last 15 months

Overall Score (mean percentage correct): **95.65 %**

Passes: 3,931 (**89 %**)   Fails: 451

Results since: Monday, 2 April 2007 *(best D: Anglia)*

Ashford — Best Results in last 15 months

Overall Score (mean percentage correct): 96.26 %

Internet | Protected Mode: Off   100%

13

Management reports also includes simple summary information...

Database Information

Last analysed: 00:58, Tuesday 1 July 2008

Number of exams delivered: **412,704**

Number of questions answered: **4,212,637**

Number of different exams available: **332**

Number of candidates: **25,688**

Number of managers: **3,561**
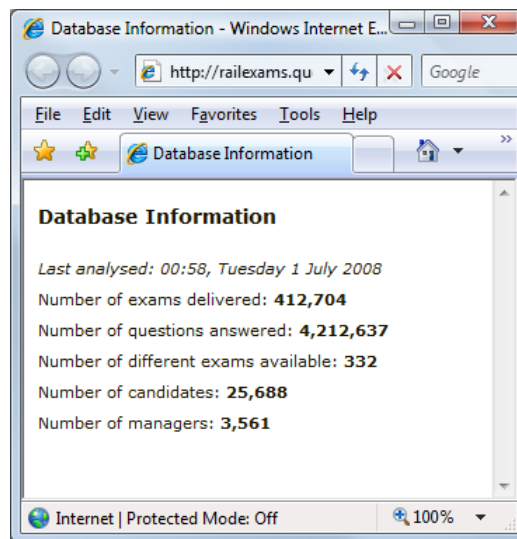
...as well as reports on how frequently the assessors are synchronizing their master laptops.

Assessment in the Line

Logged on as Paul Booth

Synchronization Analysis

Synchronization_Analysis_200711_report.html

Synchronization_Analysis_200712_report.html

Synchronization_Analysis_200801_report.html

Synchronization_Analysis_200802_report.html

Synchronization_Analysis_200803_report.html

Synchronization_Analysis_200804_report.html

Synchronization_Analysis_200805_report.html

Synchronization_Analysis_200806_report.html

Home
Content
Portfolio
Reports
Users
User Groups
Accounts
New
Settings

Status: Logged On
Paul Booth
Account: **Default Account**

Super User

Log off

Registered to:
Network Rail

Powered by
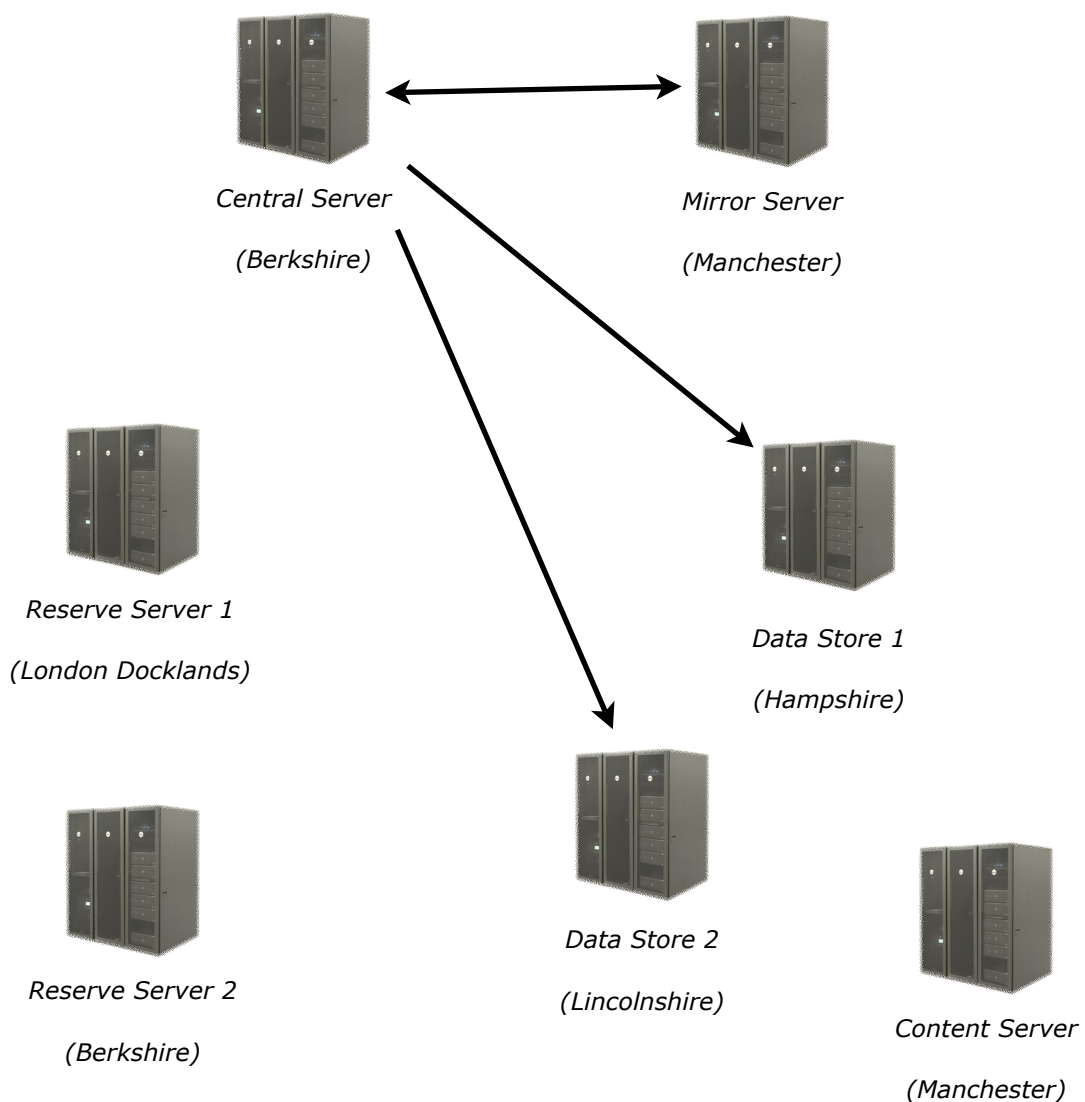Question Tools
NetElan Version 3.0.21
0.001 seconds

Behind the scenes

A total of seven servers comprise the central service. Candidates can take exams using the central or mirror servers, both of which update each other within a minute of any change or new result. Whole backups are taken every night and stored on two remote servers. In addition, backups are periodically copied to two off-line data stores.

All servers are monitored automatically, with technical staff receiving alerts within 90 seconds of any problem. The reserve servers play no active part in the system, but are there in case of a major failure with any of the other servers (such as a board failure or fire).

The content server provides a secure web site to a very small number of experts who have access to all exam versions in a format that allows them to check correct answers.

Central Server

(Berkshire)

Mirror Server

(Manchester)

Reserve Server 1

(London Docklands)

Data Store 1

(Hampshire)

Reserve Server 2

(Berkshire)

Data Store 2

(Lincolnshire)

Content Server

(Manchester)

The central server has only been off-line twice in 18 months (for a total of 5 hours), due to power failures at the data centre. This is an availability of 99.98% for the central server. As the mirror server has always been available as an alternative, the service as a whole has an up time of 100%.

Checking the content

The content server provides a small number of people with special access to exams. In the exams they see every question is displayed in order (unlike the exams the candidates see that are displayed in random order, with just a random selection of the total number of questions in the exam).
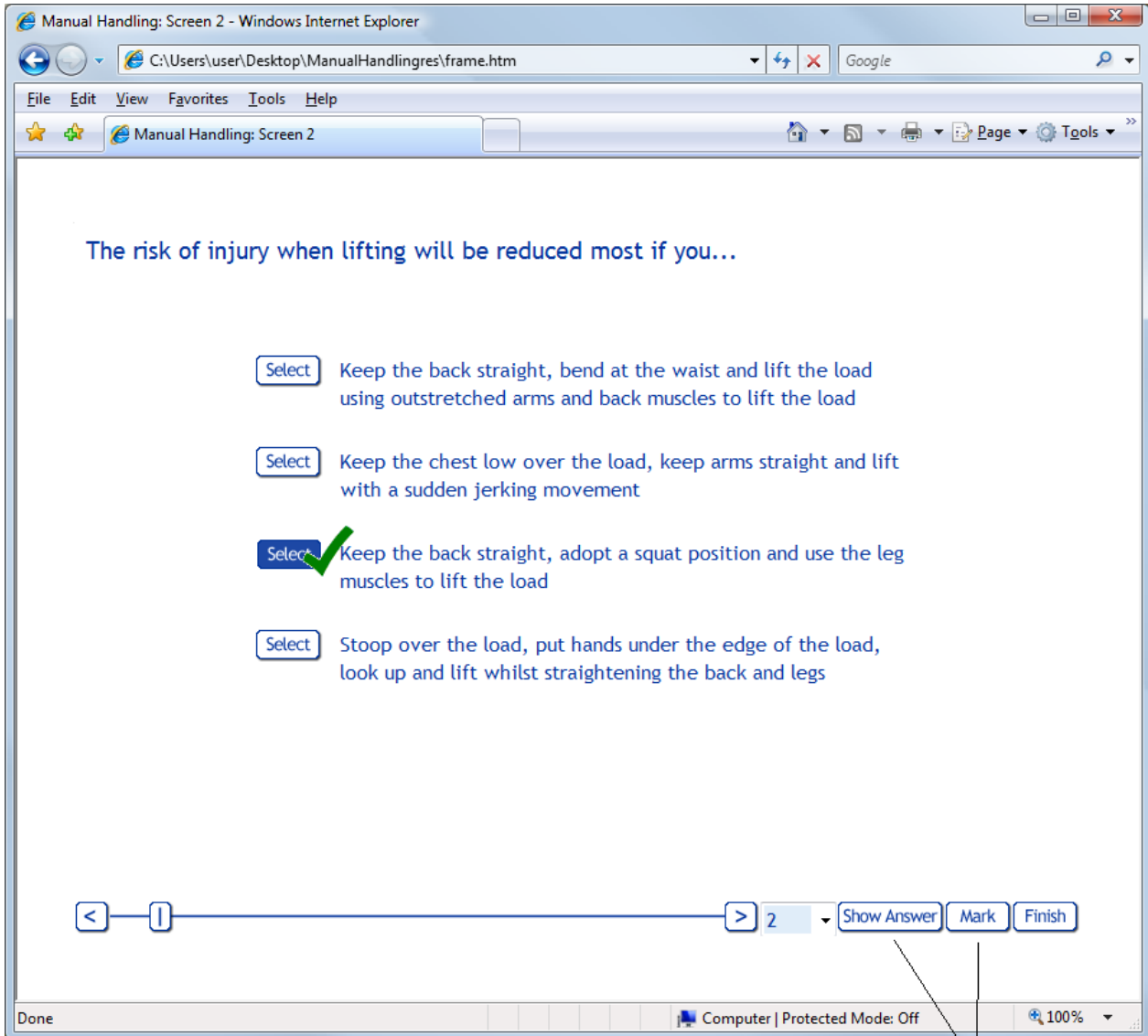

In addition, the content server provides exams with the correct answers already completed, together with Cheat and Mark buttons that allow an expert to thoroughly test a question.

There is also a question analysis to help the experts work out which questions are causing the most difficulty, and which options are most commonly selected.
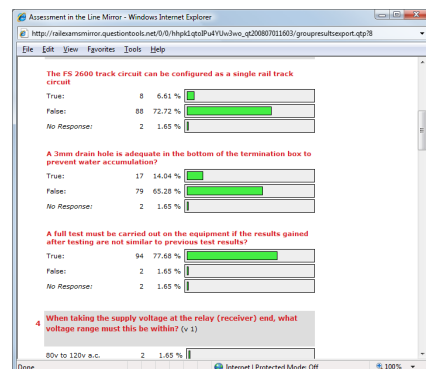
Editing

Questions are edited using Question Tools Editor, a drag-and-drop state-of-the art tool that allows questions to be quickly assembled and tested.
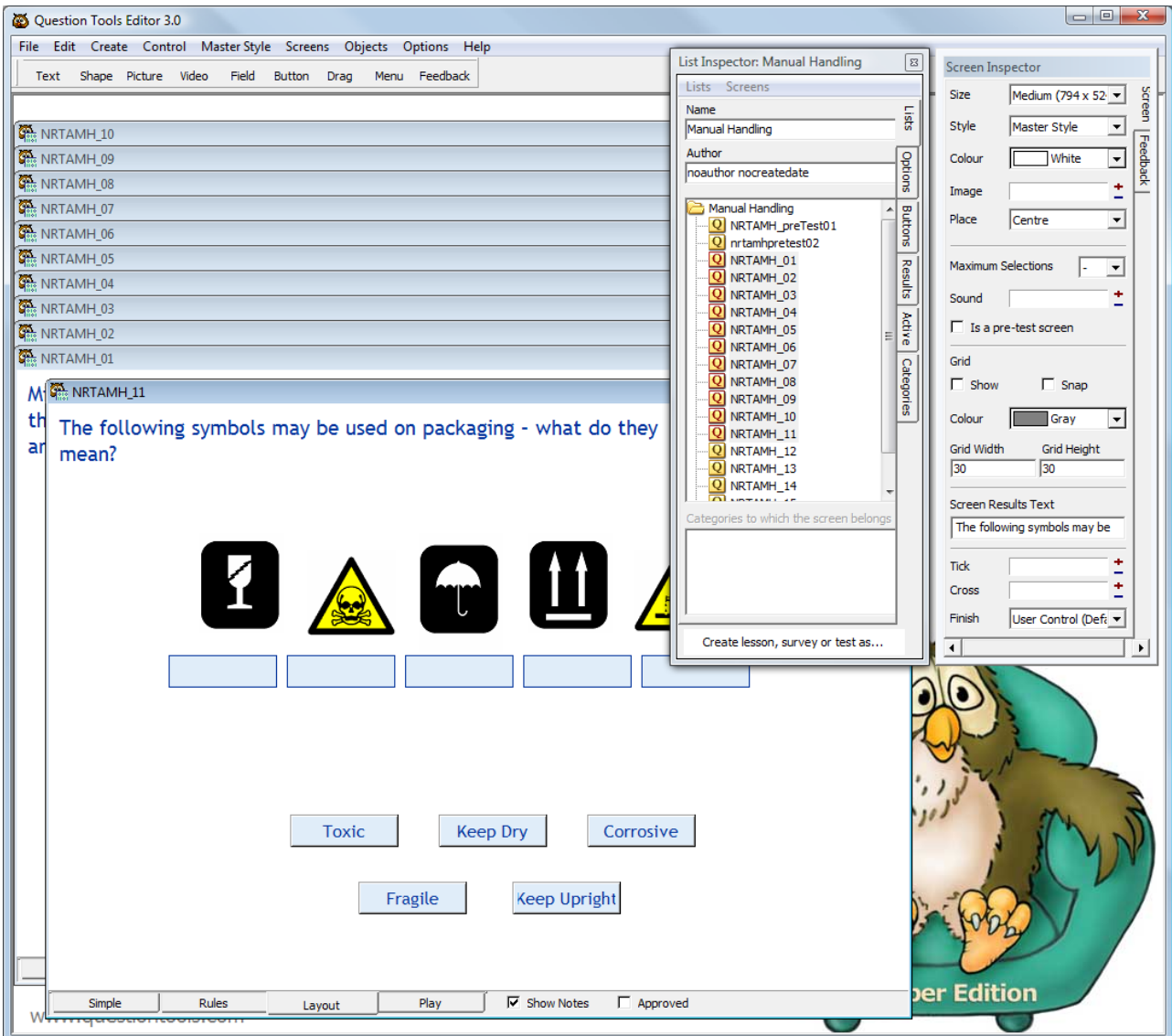
Editor provides multiple undo, spell-checking, styles, screen capture, animation, and has recently been picked out by several experts for a book on best-practice.