Kestrel Fact Sheets Index

Fact Sheet number	Topic	Version
Kestrel Fact Sheet 1	Background and overview	20.5.2
Kestrel Fact Sheet 2	Description of the standard modules	20.6
Kestrel Fact Sheet 3	Licence structure and inclusions	20.6
Kestrel Fact Sheet 4	Case studies	18.10
Kestrel Fact Sheet 5	Technical summary	18.10
Kestrel Fact Sheet 6	Frequently asked questions	20.6
Kestrel Fact Sheet 7	Typical risks and issues	18.10.1

Note

The Kestrel Fact Sheets assume some prior knowledge of the topic and therefore not all jargon is explained. If you need any further explanation or have any questions, please get in touch: info@theuic.com

Kestrel Fact Sheet 1
Background and overview

Purpose of the Fact Sheet

To explain what Kestrel is, some of its key principles and features.

Background

Kestrel is a software system that has been developed by the UIC to meet the diverse needs of operators and Commissioners/Authorities in understanding, improving and reporting the reliability and performance of train, light rail, tram, bus and ferry operations.

We have a diverse range of clients, examples to illustrate Kestrel's flexibility being:

- Caledonian Sleeper, Scotland
- Rail Operations Group (specialist UK-based train operator)
- ScotRail
- Transport for London (Crossrail)
- Yarra Trams, Melbourne

There are more details of clients and the features of their versions of Kestrel in Fact Sheet 4.

Kestrel is uniquely flexible. It is a modular system incorporating an out-of-the-box set of tried-and-tested features. Each version is customised for the client by mode, timetable structure and Performance Regime. The start-up set includes Dashboards, reporting and analytical functionality based on our many years' experience in data analysis and assisting organisations to improve their operational performance.

The database can be adapted for any and multiple data sources. As well as this, data from different modes (e.g. heavy rail, bus or light rail) can be easily connected enabling analysis across and between modes to reflect the customer experience of the network rather than the stand-alone performance of individual components.

Why does Kestrel exist?

- Reliability and punctuality are the number one driver of customer satisfaction.
  An affordable/accessible/integrated/frequent service that is reliable and punctual drives customer satisfaction which in turn drives patronage.
- Operational Performance Regimes (and associated reporting requirements) are becoming more complex and changing more frequently
- What works and what doesn't work as far as performance improvement is concerned is well known and built in to Kestrel
- In order to improve, data is needed to point the way
- Kestrel is designed with easy-to-use functionality for both occasional and regular, general and specialist users. This means that instead of having one Performance Team, all managers across the organisation (or multiple organisations) that have an impact on operational performance are directly involved in its improvement.

What is Kestrel's pedigree?

Kestrel is of the finest pedigree. UIC colleagues have been working on operational performance systems since the late 1980s and the UIC has been providing Kestrel's predecessors since 1999. The first version of Kestrel was implemented at the Docklands Light Railway in London in 2009. Kestrel is more than software, it is the accumulation of decades of operational performance improvement knowledge and know-how.

What Andrew Haines, Chief Executive of Network Rail, said

At the risk of blowing our own trumpet (other brass instruments are available), here is an extract from the March 2020 edition of Modern Railways reporting on The Golden Whistles, an annual event held in the UK 'to promote best practice and celebrate excellence in railway operation':

A Silver Whistle was presented to Network Rail and ScotRail teams from north of the border who worked on a new methodology to highlight specific trains causing most issues in 2018. Working with supplier Kestrel, innovative analysis was undertaken to show which trains were the trigger trains and caused a ripple effect across the network. This prompted 30 small interventions which have led to the highlighted trains seeing their knock-on delay reduced by one-third and their Public Measure improve by 14%. Network Rail Chief Executive Andrew Haines called the paper 'the best argued paper I have seen since returning to the rail industry'.

Some high-level lessons about the importance of analysis can be drawn from this example:

- Kestrel isn't a magic bullet - effort needs to be put into analysis
- The analyses carried out in this example are standard features in Kestrel's Analytical Tools
- Improving performance often doesn't require major investment, just a bit of effort to carry out the analysis, which will then point the way to specific, often small, interventions
- The UIC is always happy to help our clients with complex analyses

System objectives

The primary purpose of Kestrel is to provide organisation-wide information in order to understand and improve operational performance by:

- Maximising the efficiency of the collection, display and analysis of the performance reporting process including speed and accuracy
- Making this data available to the entire organisation as appropriate and specifically those directly involved in performance reporting and improvement
- Providing senior managers with concise strategic information so that improvements can be prioritised, investment decisions validated and resources concentrated where they are most needed
- Automating the production of data required for reporting purposes (both internal and external) and therefore reducing the reporting workload
- Reducing dependency on the Performance Team for the production of performance data
- Statistically validating that improvement is being made

The scope of the system can be widened to include (for example) capacity management, customer satisfaction and action tracking.

System principles

- All performance data and reports in one place - the one source of the truth
- The overall purpose is to provide insight that allows improvement in operational performance
- All routine tasks, in particular performance reporting, automated
- Easy to use for both regular and occasional users, in particular Kestrel is designed not only with data and performance specialists in mind but also busy front-line managers with limited time and basic systems and/or data analysis skills
- Easy to use analytical functions
- Easy access by multiple users potentially from a number of different organisations for a variety of purposes
- Can be used in the office, at home or out-and-about
- Data 'pushed down' to the level of Responsible Manager
- As close to real-time as possible
- High-level strategic data sits alongside the ability to drill down into the detail
- Statistically robust with graphs that are easy to interpret and analyse
- Easy to implement
- Minimum training requirements

System functionality

- Ability to analyse punctuality (e.g. delays), reliability (e.g. cancellations and part-cancellations) and incidents (e.g. operational incident, points failure) data by:
  - Location
  - Cause/root cause
  - Responsible Manager
  - Route
  - Service group, geographic area, depot
  - Individual service
  - Diagram/block
  - Time of day, day of the week
- Quick and easy Pareto Analysis, e.g. top 10 worst performing services
- Ability to analyse time gained/lost en-route
- Ability to analyse frequency of service, headways and dwell times
- Attribution of delays and incidents:
  - To incidents
  - To root cause
  - To Responsible Manager
- Knock-on Delay Analysis
- Automatic report production:
  - Daily, weekly, monthly, annually
  - Ability to add commentary
  - Ability to customise for mode/organisation/mandatory reporting as required
- Linkage to improvement plans
- Statistical Process Control Module available

Standard modules

- Dashboards
- Reports
- Enquiries
- Analytical Tools
- Attribution

These are described in Kestrel Fact Sheet 2.

Additional functionality

- Capacity management (formation against plan, passenger counts)
- Contract management including financial calculations
- Logging including the ability to link incidents
- Incident management
- Action tracker
- Mobile inputs (from smart phones and tablet devices)
- Customer feedback capture
- Statistical Process Control - easy and automatic addition of Control Limits to time-related data

System development

Kestrel is not a static system. Instead it develops as user experience grows and requirements change. Our approach to system development and licence structure ensures rapid implementation of Version 1 with all essential functionality. After that we work closely with users to introduce small scale enhancements on an ongoing basis with major releases adding additional functionality and modules as required.

Using Kestrel to improve performance

- Kestrel has statistically sound but easy to understand data display, e.g. Run Charts, Histograms, Pareto Charts
- It is easy to see (for example) worst performing services
- There is straightforward identification of areas requiring attention
- Kestrel encourages Responsible Managers to deal with the delays caused by their areas
- We can provide advice on and training in how to go about improvement

The end game: What does successful implementation/adoption of Kestrel look like?

(1) Organisation-wide use, not just a few performance people
How do we know?
Monitoring and reporting of user activity (managerial roles, especially on the front-line) and what functionality they are using.

(2) Better understanding of the issues that contribute to poor performance
How do we know?
Implementation of a sophisticated codification of attribution, and then measurement of the proportion of delays and incidents that are correctly allocated to root cause on first attempt.

(3) A variety of analyses are being carried out, in particular good graphs are being used
How do we know?
Reporting and compliance are of reducing importance, understanding and insight are of increasing importance.

(4) The organisation has a prioritised list of projects to improve operational performance at a variety of levels
How do we know?
We can ask to see the list.

(5) The list of projects has been identified and prioritised using high-level data analysis and each project has a measureable improvement objective
How do we know?
We can ask to see the data.

(6) Improved reliability and punctuality at service, route and network levels
How do we know?
Statistical validation instead of reporting a 0.01% different as an improvement.

(7) Reduction in the number of incidents
How do we know?
We count the number of incidents, the number of affected services and total delay minutes (including knock-on) attributed to each incident.

(8) Customer satisfaction improves
How do we know?
Customer Survey Results always improve shortly after operational performance improves.

(9) Elimination of ad-hoc performance reports in other formats - Excel, Access, Tableau, Business Objects, QlikView, etc. - and adoption of one single source of the truth
How do we know?
All operational performance data comes from Kestrel. Rogue, home made reports and spreadsheets, reliant on the knowledge of a few individuals are no more.

(10) Diversification away from 'just' operational performance
How do we know?
Integration of operational performance data with different datasets such as defects, service quality inspections, safety, patronage, energy efficiency etc.

(11) The operational performance data produced by Kestrel is common currency throughout the organisation
How do we know?
Looking and listening for the following:

- Kestrel data being used to drive the structure and agenda of daily performance meetings
- Reduction in the blame game between departments and a collaborative approach taken to improvement
- Meaningful high-level discussion about operational performance at Executive Team level and not just rubber stamping of reports with arbitrary target setting

Kestrel Fact Sheet 2
Description of the standard modules

Purpose of the Fact Sheet

To explain what is contained in each of Kestrel's modules and also give potential clients an idea of what they will receive as standard.

Standard modules

The standard modules in Kestrel are:

- Dashboards
- Reports
- Enquiries
- Analytical Tools
- Attribution

Dashboards Module

The Dashboards Module provides a high-level 'at a glance' performance overview. This is the first thing a user sees when logging on. This module is always customised for the specific requirements of an organisation but we have strong recommendations as to current best practice. Typically each Dashboard contains Run Charts and Pareto Charts with (deliberately) limited filters/drill-down functionality. The Dashboards default to customer experience with the ability to filter to exclude (for example) contractually exempt figures.

Reports Module

The purpose of the Reports Module is to convey information about performance to specific groups and individuals in an easy-to-understand format that will help them identify trends and know when to take action to control their processes. Reports generally contain high-level, summarised data. Reports show how the whole operation and specific aspects of it are performing.

The Reports Module:

(1) Automates the production of existing regular reports (e.g. organisational performance KPIs, Board performance reports)
(2) Has a variety of standard reports
(3) Allows users to set up their own personal reports library

Reports can be set up so they are produced at set intervals and e-mailed automatically to selected recipients.

Enquiries Module

The Enquiries Module allows users to interrogate the data in Kestrel for the purposes of investigation and analysis using a wide variety of breakdowns, e.g. by day, by time, by route, by location, by fleet type and so on. This is achieved by a menu-driven structure of filters and drill-down options. The main data display tools used in the Enquiries Module are Run Charts and Pareto Charts. The Enquiries Module should encourage everyday users such as front-line managers to be curious about what is driving their results by drilling down, looking for patterns and testing hypotheses.

Analytical Tools Module

The Analytical Tools Module allows specific performance-related analyses to be carried out such as time lost/gained en-route. Although straightforward to use, the analytical tools are aimed at a more specialist audience than enquiries, such as Performance Analysts and Timetable Planners.

Attribution Module

Accurate attribution is essential in understanding the root causes of delays and cancellations and allows analyses to be carried out for the purposes of improvement. The Attribution Module allocates delays and incidents to the appropriate Responsible Manager who can then review, investigate, accept or refer each. This allows each Responsible Manager to understand the contribution their own area of responsibility is making to performance results.

Version 1 and beyond

Version 1 of Kestrel always includes our standard features, a minimum of four dashboards, six reports, three enquiries and seven analytical tools. This is more than enough to get any organisation started on the road to improvement of operational performance. These are available off-the-shelf allowing for very rapid implementation if required.

Additional features and functionality can be added to either Version 1 or later versions as required by the client and the timescales necessary.

Kestrel Fact Sheet 3
Licence structure and inclusions

Purpose of the Fact Sheet

To outline what is typically included in our service to Kestrel clients and how the Licence Fees are structured.

Licence Fee principles

The factors in determining price are:

(1) Complexity of scope - initial and ongoing development
(2) Number and complexity of data sources
(3) Minimum Licence Term
(4) Whether or not Software as a Service is required
(5) Whether access is required by partner or multiple organisations

There are two components:

(1) Monthly Licence Fee - the shorter the Minimum Licence Term, the higher this is
(2) Initial Development Fee - the longer the Minimum Licence Term, the lower this is

We can adapt the proportion to suit a client's expenditure profile if required, i.e. increase the Initial Development Fee and reduce the Monthly Licence Fee to make best use of immediate capital expenditure or vice versa.

Fixed means fixed

We offer a fixed Monthly Licence Fee with extensive inclusions so clients have budgetary certainty. We pride ourselves that, except where there has been a major change of scope, we never charge for any variations.

Typical inclusions in the Monthly Licence Fee

(1) Scoping, development, testing, installation
(2) Licensing of the product
(3) An unlimited number of users, potentially from multiple organisations
(4) Full user support
(5) Provision of the full suite of standard Kestrel Dashboards, Reports, Enquiries and Analytical Tools including the ongoing addition of new and improved tools as a result of better practice from elsewhere
(6) Ongoing development beyond Version 1 as required
(7) Ongoing enhancements within the agreed scope of the system
(8) Changes required as a result of changes to your specifications and requirements (excluding major changes that require re-scoping of the system or exceed the support hours available)
(9) Regular meetings
(10) Improvements we at the UIC have identified through working with other clients
(11) Initial training for key users (Kestrel is designed for minimum training requirements)
(12) Reporting as required against SLAs and other key metrics

Kestrel Fact Sheet 4
Case studies

The purpose of this Fact Sheet

We have developed a number of very different versions of Kestrel for a variety of clients across different modes, operations and locations. Given Kestrel is custom built for each client, the nature of the functionality varies immensely. The purpose of this Fact Sheet is to give you some idea of the flexibility of Kestrel and spark ideas about what you might want your version to do.

We also asked colleagues what their favourite feature of each version is.

Client and brief description	Kestrel functionality
Caledonian Sleeper, Scotland A franchised train operator providing overnight services between Scotland and London.	Currently operator only version with joint access planned for Delivery Partners, principally Alstom and GBRf. Given the unique nature of this franchise with trains running overnight and therefore across 2 days and portion working - two departures become five arrivals and vice versa, a customised solution was required. **Our favourite features** Azhar: This version of Kestrel incorporates service quality functionality such as train cleanliness which Caledonian Sleeper is required to report to Transport Scotland. Jon: This is a locomotive-hauled service requiring frequent re-marshalling of coaching stock. We have developed a Train Formation Configurator so that people on the day are aware of what the formation is and any changes to plan. Rebecca: The Attribution module is always popular when I demonstrate it for Australian clients as it automates a lot of manual work, and provides invaluable data for improvement projects.
Docklands Light Railway, London A fully automated, driverless system.	Joint access by the operator and Transport for London. What makes this version of Kestrel unique is that DLR operates an interval as opposed to a timetable-based service. **Our favourite features** Richard: This is pure trivia but I like the fact that this version incorporates station escalator availability. Azhar: It was interesting developing the functionality to measure service intervals rather than the more usual actual versus timetable.

Northern, UK A franchised train operator in the North of England.	Operator only version. This version of Kestrel reports and analyses capacity as opposed to performance, i.e. train composition and number of seats. **Our favourite features** Azhar: We are currently developing a Fuel Efficiency Module which is brand new to Kestrel. Jon: This isn't about Kestrel itself but the Northern franchise has been using this software since 2007. Richard: I like the fact that Northern not only attribute causes of delays and cancellations but also of mis-formations. Rebecca: The number of seats available on services is something I'd like to help implement for clients here in Australia.
ScotRail, Scotland Scotland's franchised train operator.	Operator only version. This version of Kestrel reports and analyses capacity as opposed to performance, i.e. train composition and number of seats. ScotRail has a number of obligations to Transport Scotland which Kestrel provides reporting for. **Our favourite features** Azhar: ScotRail operates a very diverse fleet so it was interesting developing the functionality to enable this reporting.
TransLink, Queensland, Australia TransLink is a Division of the Queensland Government Department of Transport and Main Roads and is responsible for public transport across the State.	Multi-modal version incorporating heavy rail, ferry and multiple bus operators. Operators are both public and private sector. Reports and analyses reliability and punctuality against the various different Operational Performance Regimes in place with the operators. **Our favourite features** Darnis: The Histograms of arrivals and departures in the ferry Dashboards are particularly interesting. Rebecca: The Top 20 Worst Performing Trains combined with Specific Train Analysis provides an easy way to knock off 'repeat offenders' and improve performance. Richard: Connectional Analysis between modes allows sensible management of the customer experience. There's no point running a bus on time if all the passengers miss it because the train they are on is late.

Transport for London (Crossrail) Crossrail will link services to the west and east of London via a new tunnel.	The key requirement for this version of Kestrel above and beyond the usual functionality will be to merge two completely different data sources - traditional data from the existing network and new data from the tunnel section. **Our favourite features** Jon: This provides us with the opportunity to see what new features can be developed as a result of a completely different data source.
Yarra Trams, Melbourne, Australia Yarra Trams operates the world's largest tram network from eight depots.	Operator only version. Reports and analyses reliability and punctuality against the Operational Performance Regime in place with Public Transport Victoria. **Our favourite features** Rebecca: Yarra Trams won a 7 year franchise extension in 2017 and it was particularly rewarding developing new functionality for the Enhanced Operational Performance Regime.

Kestrel Fact Sheet 5
Technical Summary

1. Purpose of this Fact Sheet

The purpose of this Fact Sheet is to provide technical information regarding the implementation and operation of Kestrel. It contains information for IT people so they can determine how best to prepare for installation and ensure that all hardware, software and interfaces are appropriately specified and configured to give end-users of the system an acceptable level of service, and to ensure that the UIC is able to install and maintain the system.

This document provides high-level design and configuration details along with hardware and software requirements.

2. Design and development principles

2.1 System development methodology

Our aim is to deliver a working version of Kestrel in the fastest possible time that can be put to use immediately and progressively enhanced to provide a wider range of functionality.

Version 1 includes many standard features, in particular Dashboards, Reports, Enquiries and Analytical Tools (see Kestrel Fact Sheet 2). We also prioritise any critical functionality required by the client.

2.2 A look back over previous versions

The science of improving operational performance remains the same as it was when the UIC was established in 1992. Technology and the ability to gather and analyse data however has transformed.

The predecessors of today's Kestrel began in DOS. More recently we have used Oracle and then migrated to SQL. In-house hosting used to be the norm and it is now becoming the exception. Kestrel began life as a Winforms application and now, we have recently moved to an ASP.Net Core MVC web application.

Our policy is to adopt new technology, not as it becomes available, but as soon as it is proven to be reliable and we are certain that we are competent. We don't use our clients for experiments. Once we are sure new technology and software works we will migrate our existing clients on to it as part of our ongoing service to them.

2.3 Current system language

We have recently upgraded our platform to ASP.Net Core MVC using C#. We use Razor pages to display content.

To minimise the requirement for client software installation and maintenance, Kestrel uses ASP.Net and Internet Information Services (IIS) to deliver content to client browsers. Chrome and Internet Explorer/Edge are the recommended browsers, however Kestrel can be optimised to work on any browser. This method lends itself to frequent incremental version deployment.

A Kestrel Service will run continuously in the background which processes scheduled tasks such as importing files, sending out scheduled reports and other routine processes.

2.4 Access

Kestrel is optimised for accessibility, and is mobile ready so that users can access the product away from the office.

Kestrel can be modified to use a number of authentication processes, including Single Sign-on and Active Directory.

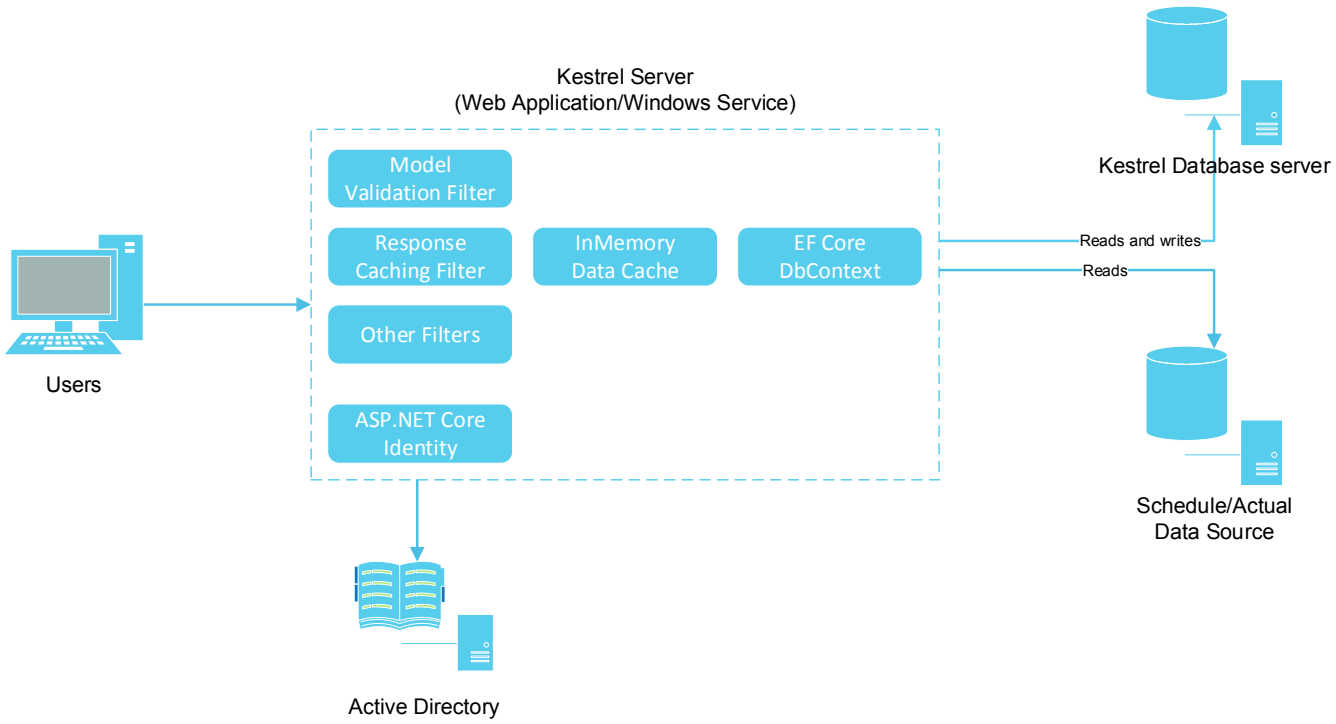
2.5 Modularisation and versioning

Kestrel comprises a number of modules that can be included, excluded or customised according to the client's requirements. The primary 'workhorse' modules are Dashboards, Reports, Enquiries, Analytical Tools and Attribution.

We implement new features incrementally rather than through a series of major releases. The advantage of this approach is that clients do not have to wait for the next major version to be completed before requested features are incorporated into Kestrel. This will be done, in liaison with the client to an agreed priority order. We have been working in this way for many years so have a robust testing and migration process that can be integrated into a client's Change Advisory Board (CAB) process (or similar).

These new features are delivered as an inclusion in the Monthly License Fee.

3. System architecture



4. Server configuration, hardware and software requirements

4.1 Option 1 - Software as a Service

Our recommendation is to take advantage of our ability to provide Kestrel as Software as a Service (SaaS). We can host the product and take care of maintenance and upgrades with minimal interruption to users. In Australia our software is hosted by Rackspace at their Sydney Data Centre. We chose Rackspace as a provider in 2016 following an extensive evaluation process and trials with a number of providers. In the UK our software is hosted by both UK Servers and Extraordinary Managed Services. This allows us an extra level of resilience should there be any serious failure. It is worth noting that we have had no outages in either Australia or the UK since introducing our hosted solution.

4.2 Option 2 - Client server

A number of our clients still prefer to host Kestrel on their own infrastructure and we have extensive experience in a wide variety of environments. Our recommendations are as follows:

(1) 16-core processor, 2GHz or greater (more/faster is better)
(2) 64GB RAM or above
(3) 1TB SSD in an appropriate RAID configuration (e.g. 200GB for C:\ for OS and Kestrel application and service, and 800GB for database and file storage)

It is usual that the Kestrel Web Application and Windows Service sit on the same server with the database on a separate one, although this is not an absolute requirement.

We strongly recommend that Kestrel is not run on a virtual machine as this introduces the risk of performance degradation due to interference from other applications outside of our control. In particular Kestrel has peaks of processing workload, the most notable being imports following close of service and generation of daily reports which are often time sensitive.

Therefore we recommend a dedicated pair of servers as the solution.

We also recommend the use of at least three hard drives, one each for:

(1) C drive (which may also contain the web application, or it may be on an additional drive)
(2) SQL Data file (*.mdf)
(3) SQL Log file (*.ldf)

4.3 Recommended software specification

(1) Operating System: Microsoft Windows Server 2012 R2 or later
(2) Microsoft IIS Version 7.5 or later
(3) Microsoft .NET Core 2.1 or later
(4) Microsoft SQL Server 2014 Enterprise or later
(5) MS Office readers on the web server

4.4 Configuration settings

No customised configuration settings are necessary during the installation of the required software. Standard installations are sufficient.

4.5 Back-up and recovery

With SaaS, back-up and recovery is carried out by our hosting provider and we produce a Disaster Recovery Procedure, customised for each client.

For in-house hosting, responsibility for back-up and recovery of the server and database rests with the client (with our assistance as required).

5. Data storage

The primary data storage for Kestrel is a single database.

Kestrel can import data from a variety of sources. If data is placed in a file location to which Kestrel is granted access, Kestrel can consume it and then delete the files regularly. Kestrel can also connect directly to other databases to import data.

Temporary files are stored in a file location of the client's choosing and Kestrel is able to manage and delete these. Examples of temporary files produced by Kestrel include MS Word, MS Excel or Acrobat documents, typically reports, charts or data tables.

6. Number of users and peak load

There is no limit to the number of users and this is defined in the Licence Agreement.

The typical number of users logged-in at any one time is dependent on the size of the organisation and how embedded the use of Kestrel has become but is rarely above 40.

7. Interfaces with other systems

Kestrel will rely upon output from other systems within the client's network (or externally).

The web server and database server must be exclusively used by Kestrel to avoid interference by other users and programs.

Kestrel can not be used as a Data Warehouse, but we are able to export the data in Kestrel to the Data Warehouse of the client's choosing.

Here are some examples of existing interfaces:

(1) Active Directory
(2) AVM (Automatic Vehicle Monitoring)
(3) Business Objects
(4) Cubic (Go Card)
(5) Flat file imports and exports (CSV, XLS)
(6) Genius
(7) HASTUS
(8) Maximo
(9) ODM (Operational Decision Making - IBM)
(10) SAP
(11) SQL Server databases
(12) Tableau
(13) TRUST
(14) ViziRail
(15) VoyagerPlan

8. Installation and updates

8.1 Client server - Installation and update process

We are able to remotely install and update Kestrel using the following steps:

(1) Create Kestrel application directories
(2) Copy compiled code and webpages into the directories
(3) Modify web.config with correct SQL Server connection string and access methods
(4) Create website in IIS for Kestrel application
(5) Configure application pool identity and website
(6) Test application is up-and-running and can connect to the database

The client will need to create service accounts for Kestrel to use prior to installation. These accounts will be used to access the database and Active Directory, and to run the IIS application pool and windows services.

The above arrangement is our preferred option by far as we have complete control and it minimises workload for the client. However as an alternative we can provide installation packages for your in-house people to install.

8.2 Client server - UIC access

We prefer remote administrative access to the Kestrel server in order to install new and updated modules and to perform routine maintenance. We will need to connect to the server's standard Windows GUI with sufficient privileges to carry out these tasks.

8.3 SaaS

If SaaS is a client's chosen solution, we will perform installations and updates at a time convenient for the client.

9. User access

9.1 List of users

The list of users able to access Kestrel is ideally controlled by the client via their Active Directory, to which Kestrel is integrated for authentication purposes.

At a minimum, there needs to be an ordinary user profile plus an Admin user profile set up for Kestrel to work.

9.2 User access

Client computers on the same network as the server will require Chrome, Internet Explorer version 9.0 or later or a compatible browser.

Computers that are not on the same network as the Kestrel server will need similar access via a browser or remote desktop connection. The client determines the appropriate method of access.

Older versions of Kestrel are progressively being optimised for mobile phone access. New versions will have this from the outset.

Provision may need to be made to allow access for external users (e.g. partner organisations). The client determines how best to accomplish this.

9.3 User operating environment requirements

(1) Windows XP or later
(2) Internet Explorer 9 or above, or Chrome 38 or above (or other compatible browsers)
(3) Microsoft Office 2003 or later (to open Kestrel-generated documents in Word or Excel)
(4) PDF reading software (to open Kestrel-generated documents in PDF format)
(5) Access to the server via the internet/VPN

10. Security and reliability

10.1 Server/database security

Responsibility for security of the Kestrel server and database lies with the client, or with the UIC if SaaS is chosen.

The database is located within the client's network, and will only be accessed directly from the Kestrel application. Aside from Kestrel user names and passwords, which are encrypted, no sensitive data is held in the database. Encryption of other data may be introduced later if and when the need arises.

In order for an individual to access Kestrel, they must either have access to the server directly, or to the Kestrel application via a web browser. Access to Kestrel via a web browser requires either Active Directory authentication, or a Kestrel login account which can be created in the Admin Module of Kestrel. Kestrel login accounts must only be created for and given to individuals who should have access to Kestrel and only with the correct privileges. Access to the server itself must be restricted to authorised personnel, including the UIC, for maintenance and installation purposes.

The data and log files of the database should be placed in separate drives.

10.2 Regular monitoring

It is recommended that the Windows Service that Kestrel uses be continually monitored to ensure it is always running. The log-in page is suitable to use as a test page for monitoring.

This monitoring is the responsibility of client unless SaaS has been chosen.

10.3 Uptime

It is usual for Kestrel to achieve 100% uptime apart from the occasional planned outage for updates.

11. Support and maintenance

Our service to you includes:

(1) Regular performance tuning to the Kestrel database, e.g. re-indexing

(2) Creating database backups for escrow

(3) Installing Kestrel web application and Kestrel Windows Service

(4) Deploying updates to the Kestrel web application, Windows Service and database

(5) Investigating bugs and providing fixes

(6) Assisting with cleaning up the Kestrel server by deleting old files

For in-house servers, the client is responsible for monitoring server performance, repairing issues caused by other users on the server, software updates, Windows updates, creation and maintenance of database user accounts, creation and maintenance of Active Directory user accounts, virus and firewall protection, mail server troubleshooting, monitoring of disk space, or hardware maintenance.

Should a restart be required, we will work with the client to restart the Kestrel Windows Service and the SQL Server.

Kestrel Fact Sheet 6
Frequently asked questions

Purpose of the Fact Sheet

There are some questions we are asked frequently - so they must be important to our clients. Therefore we decided to document our model answers. We are always happy to visit existing and potential clients to explore these or other questions you might have.

Do you have any examples of where Kestrel is in use elsewhere?

See Kestrel Fact Sheet 4.

What problems or issues have your other clients encountered when implementing Kestrel?

These can be many and varied but there are some common themes. See Kestrel Fact Sheet 7.

Wouldn't we be better off using a larger supplier?

The reasons for asking this question are normally driven by two concerns - the risk of a small business going bust and the frequently held opinion that large suppliers know more. We'll take each of these in turn.

The UIC has been in business in the UK since 1992 and Australia since 1999. We have survived major clients going bankrupt and defaulting on their debts, wild swings in currencies, the Global Financial Crisis, changes of government policy, colleagues leaving and a whole lot more. That's because, as an organisational improvement consultancy, we practice what we preach. We strategise, plan and have contingencies in place. If the worst ever did happen, we always place your software in Escrow and have processes in place for regular back-up of your data.

As a small business, we don't have the problems of a large silo-ed supplier. We don't split our activities between sales, development and support. Our clients know the people who develop their systems, support them and give advice. Additionally our Systems Consultants, as well as being experienced in all stages of software design, development, testing and support, are also specialists in operational performance improvement - so we have a deep understanding of, not only the software, but operations and how to improve reliability and punctuality.

We also pride ourselves on our long-term relationships with our clients (both individuals and organisations), some of which go back many years. Because we are small we have time to get to know you and for you to get to know us.

Wouldn't we be better off developing something in-house?

It is not unusual to hear this said by a prospective client. Philosophically the UIC leans towards insourcing rather than outsourcing - our approach to training internal Facilitators rather than generating more work for ourselves is an example of this.

Our experience however tells us that:

- Most IT departments have great technical skills but little or no knowledge of operations, performance regimes or improvement - and also an IT career path tends to be in IT in different industries rather than just transport. This means that the Performance Team has to spend a lot of time explaining their requirements. This takes time and is an iterative process - requiring even more time. We know what we are doing in all of these areas and will just get on with it. Version 1 of Kestrel comes complete with numerous tried-and-tested Reports, Analytical Tools and Enquiries so, even if you don't know what you want, you will have something to use while you get going.

- Until fairly recently organisations that built their own solutions mainly used Excel and Access. We know because one client turned off more than 500 separate databases when they switched on Kestrel. Currently the trend is to use generic Business Intelligence software. The two disadvantages of this are:

  (1) Many of the people you want to be using the system, in particular Front-line Managers, don't have the necessary data skills to tease information out of the data. Kestrel is easy and intuitive to use.

  (2) The knowledge of how the solution is set up tends to rest in the brain of the one person that wrote it. We have seen entire cottage industries of spreadsheets and reports fall over following the departure, promotion or sickness of one or two key individuals.

Do you add new functionality to Kestrel yourselves?

Yes, if we come up with a new idea for one client and it works, we will (providing we aren't sharing any confidential information or intellectual property) add it to your version of Kestrel as well.

How can you achieve your promised delivery schedules - they seem very tight?

Put simply, we know what we are doing because we've done this many times before. Our timescales include testing and installation to a test environment (but not User Acceptance Testing as that is outside of our direct control). We also make the client aware of common issues that might cause a delay so that they can take steps to mitigate against them.

What is your support offer?

See Kestrel Fact Sheet 3.

Can you provide Software as a Service?

Yes, we can and have good experience of this. In Australia we use Rackspace who have a data centre in Sydney. In the UK we use both UK Servers and Extraordinary Managed Services. All our hosting suppliers are ISO27001 compliant.

Alternatively we can install Kestrel on your infrastructure if you prefer.

Do you really not charge for variations? Are there any exceptions?

No we don't. This is because in previous existences UIC colleagues have sat on the other side of the table and been stung by their suppliers. And we didn't like it. We believe that our clients should have certainty of costs and, as a supplier, we should know what we're doing.

But there are exceptions. If a client specifically requests some new functionality that is outside the scope of Kestrel or the support services we provide, we will provide a quote for the enhancement. This can be by one-off fee or increase to the Monthly Licence Fee going forward - it's the clients choice as to which they prefer, we can quote for either or both.

A good example of this is Kestrel for Northern. We developed a Fuel Efficiency Module which was new functionality well outside of existing scope and the client opted to pay a one-off fee.

What are your typical SLAs?

We have a standard Kestrel Licence Agreement which contains all the SLAs you would expect for a system like Kestrel. We are happy to review your SLA requirements should you have organisational standards. We are happy to report against SLAs monthly if you require this.

What platform and software does Kestrel use and how do you keep up-to-date?

See Kestrel Fact Sheet 5.

Do we have access to the data in Kestrel?

The data is yours. While we do not endorse Kestrel being used as a Data Warehouse, we are able to provide extracts or exports of all or any data at a frequency and date range to be determined by you, to the Data Warehouse or location of your choice.

How do you mitigate typical IT risks?

We have addressed some specific risks in Kestrel Fact Sheet 7.

Can Kestrel be accessed by mobile phone or tablet?

Yes, as long as your own IT protocols allow it. Kestrel can be optimised to run on any device, as it is now developed in ASP.Net Core which is device agnostic. We make sure Kestrel is mobile-ready during development.

Kestrel Fact Sheet 7
Typical risks and issues

Purpose of this Fact Sheet

Ultimately the implementation of Kestrel always goes well but over the years we have encountered some occasional and some frequently occurring issues. The purpose of this Fact Sheet is to list these so that existing and potential clients can evaluate whether or not they are likely to encounter them and seek our advice where appropriate. None of these are a disaster but some can certainly cause problems and delays.

The risks and issues can be grouped into the following themes:

- Organisational
- Approach to improvement
- Technical
- Procurement

Organisational

(1) Lack of understanding about any or all of the following at a senior, middle and/or junior level in the organisation:
- (a) Why operational performance is important (it is the number one driver of customer satisfaction)
- (b) What the real levels of operational performance are (as experienced by the customer)
- (c) Whether things are getting better or worse
- (d) The main causes of delays and cancellations

(2) More interest in meeting the target than understanding any of the above and improving as a result

(3) Over-simplistic and uninformative Dashboards

(4) Overly complicated visualisations that are impossible to interpret

(5) A lack of appropriate improvement skills across the organisation

(6) Endless amounts of data, no useful management information

Approach to improvement

(1) No Performance Manager or Performance Team
(or they are present but in name only and busy doing other things)
There are a number of must-have roles if you're serious about improvement

(2) No Performance Improvement Process
i.e. no process for identifying and steering performance improvement projects

(3) A preference for tables and clever graphs over the four tried-and-tested data display tools (we've deliberately not said what the four are)

(4) Inability to analyse resulting in not knowing what the data is telling you

(5) No link between data and improvement (i.e. through analysis). A preference instead for pursuing pet theories and quick fixes (with no measureable impact on performance as a result)

(6) Much more effort goes into mitigation and reporting than improvement

(7) A lack of improvement and data skills in the Performance Team

(8) A lack of operational knowledge in the Performance Team

(9) The misconception that it's the Performance Team's job to improve performance rather than the whole organisation

Technical

(1) Not involving the right IT people early enough in the project

(2) Not understanding the data sources available or finding out who knows what about them

(3) Not starting work on the provision of the data sources early enough

(4) Other suppliers being obstructive (and/or expensive) in their provision of data sources or interfaces

(5) "We love our Data Warehouse and the software that comes with it and everything must be done through that"

(6) "I can do that" (in Tableau, Business Objects or similar)

(7) The organisation is already committed to a Big Data/Business Intelligence project or solution and operational performance is lost or delayed in the generality of this

(8) Over-specification of functionality rather than letting us use our experience and do the hard work for you

(9) A lack of operational, performance and improvement knowledge and skills in the IT team

(10) Delays due to the perfect data source becoming available 'soon'.
We have never worked with an organisation that doesn't already have enough suitable data to keep it busy improving for the next 5 years.

(11) Getting hung up on the next big technology thing rather than using what is already available and making some improvements that the customers will notice

(12) Thinking Kestrel is an IT project when actually it's all about improving performance

Procurement

(1) The procurement process can drag on for months, sometimes years, while the customers continue to suffer poor service

(2) There are plenty of suppliers who can provide IT systems but not many who have the triumvirate of expertise in operational performance, organisational improvement and IT

(3) Applying large-scale (multi-million $/£) procurement and compliance processes to something that is actually quite straightforward and small-scale with low reputational risk. The risks of providing a poor service to customers are far greater.

(4) There are plenty of 'can do anything' systems available. Given operational performance is the number one driver of customer satisfaction, it is worth procuring something specialist.

Note

If any of these sting a bit when you read them, take note!