Workforce deployment systems

Software requirements specification

July 2019

NHS England and NHS Improvement

Contents

Introduction

This software requirements specification (SRS) is a guide to the functionality that is essential (or ‘core’) for trusts to use digital tools for successful rostering and job planning.

In the e-job planning and e-rostering marketplace, there are already suppliers with a multitude of systems, currently engaged in supplying NHS trusts with a service or are about to enter the marketplace.

This document does not design or re-design those systems but highlights the functionality and behaviours required from the different systems.

Purpose

This guide will:

- inform NHS trusts of the key functionality required when procuring e-job planning, e-rostering or junior doctor systems
- inform software suppliers of the functionality required by NHS users of the systems above.

The intended audiences are: HR directors, IT department heads, clinical and non-clinical heads of department, software developers, software system suppliers and users of e-digital tools.

Scope

It covers:

- e-rostering system software requirements
- e-job planning system software requirements
- junior doctors’ module requirements
- core interfaces
- core functionality
- add-on modules.

Glossary

Definitions, acronyms and abbreviations - taken as far as possible from NHS Data Dictionary.

AHPs	allied health professionals
The 'System'	refers to the overall system functionality and not to an individual component or application
Core functionality	essential minimum functionality required by trusts
Add-on functionality	extra value-added functionality required to achieve higher levels of attainment
Module	a component part of the system
'COTS' products	Commercially off the shelf (COTS) products ready made and available, not bespoke products
Auto gen roster	roster auto generated by the rostering system using the preferences for staff and shift patterns
API	Application programming interface – the means by which systems communicate with each other

References

E-rostering the clinical workforce: levels of attainment and meaningful use standards (November 2018) https://improvement.nhs.uk/resources/levels-attainment-and-meaningful-use-standards-e-rostering-and-e-job-planning/

E-job planning the clinical workforce: levels of attainment and meaningful use standards November 2018 https://improvement.nhs.uk/resources/levels-attainment-and-meaningful-use-standards-e-rostering-and-e-job-planning/

Workforce deployment systems – the rationale

The Carter review identified the potential for considerable savings across the NHS through better management of the planning, deployment and use of clinical staff. By reducing the variation in staff planning and deployment, through the best practice use of digital tools such as e-job planning and e-rostering, trusts will be able to optimise their clinical workforce deployment and reduce their dependency on bank and agency staff.

This guide to software requirements specification (SRS) will enable trusts to identify the key functionality of the product(s) that should be provided when procuring digital tools and to enable them to optimise their meaningful use of the software.

The introduction of ‘meaningful use standards’ will help to guide trusts through the levels of attainment and to develop and enhance their use of the digital tools.

As trusts progress through the levels of attainment, better informed use of the digital tools will enable greater and more significant savings in cost, efficiency and productivity.

Core and value added functionality

The guide describes concepts such as ‘core’ and ‘value added’ functionality and takes a modular approach to the overall system. This means the core functionality could be achieved by using one or more software components (modules), communicating with each other and passing data between the modules in an integrated and interoperable fashion.

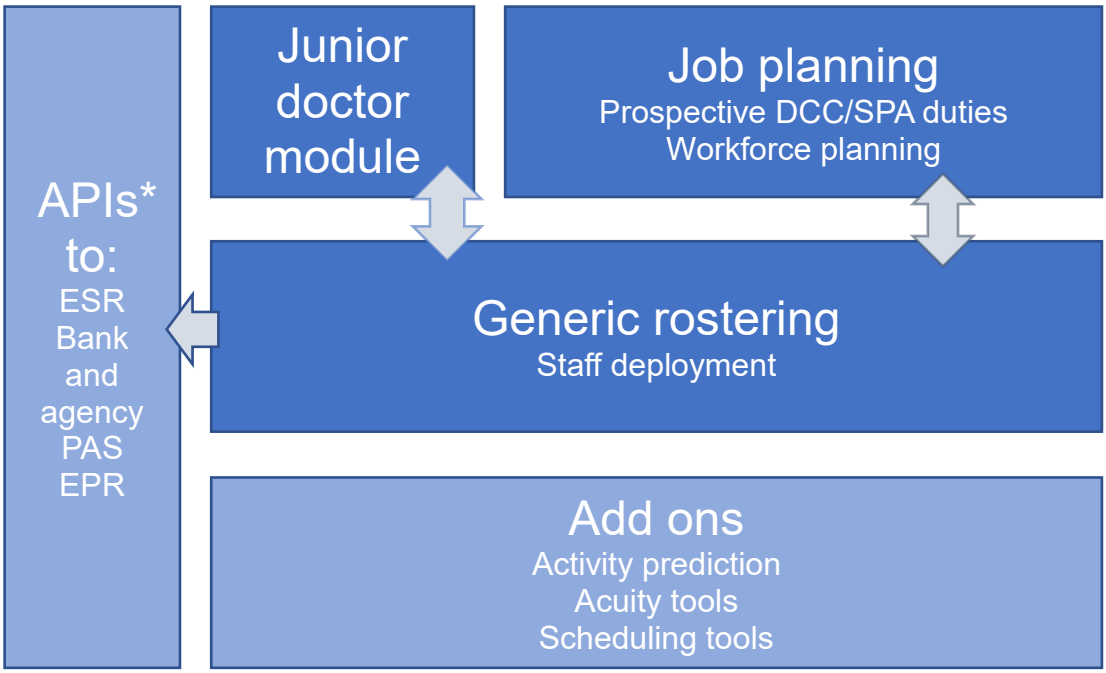
This does not mean the software has to be provided as a single application or as a single system by a single supplier.

In this document, ‘system’ refers to the overall system and not necessarily to an individual component or individual system.

‘Core’ functionality refers to the minimum functionality that all trusts should have to be able to realise the (minimum) benefit from the digital software tools.

All trusts should aim to have the core functionality included in the following diagram.

Figure 1: Core functionality for benefit from the digital software tools



Note:

EPR: electronic patient record
ESR: electronic staff record
PAS: patient administration system

E-rostering

E-rostering ensures staff are appropriately allocated to provide high quality and efficient health services. The e-rostering system should enable the trust to roster all members of the clinical workforce (nurses, doctors, pharmacists and allied health professionals), across acute, community, ambulance, mental health and specialist acute care settings.

Effective e-rostering takes into account factors such as patient needs, staff needs, organisational needs, the workforce and skills required to deliver services, and workforce availability. Trusts are responsible for striking the right balance between patient safety, cost and efficiency: used in the right way, e-rostering can help achieve this.

E-job planning

By documenting and digitalising professional activity in e-job plans, trusts can better understand their workforce capacity.

A job plan is a prospective, professional agreement describing duties, responsibilities, accountabilities and objectives. It sets out how an employee's working time is spent on specified direct clinical care (DCC) and on specified supporting professional activities (SPA). A comprehensive job plan will show the timetabling of scheduled activities and define the number of flexibly timetabled, annualised activities. This enables monitoring of an individual employee's outputs, particularly when combined with e-rostering.

For some employees, a job plan is a contractual requirement. For most of the workforce it is considered best practice to have a job plan, even when not contractually required.

Junior doctor module

The doctor in training contract (2016) sets out the terms and conditions of junior doctor employment, which includes requirements in terms of working hours, working conditions and pay, among other things. Trusts are required to meet these terms and conditions of employment using appropriate electronic systems.

'Add on' modules provide the extra functionality and added value needed to achieve the higher levels of attainment (levels 3 and 4). The advanced functionality includes acuity tools, productivity tools and demand and capacity planning tools.

Core interfaces

E-rostering, e-job planning and the junior doctor module are the core or essential interfaces the system as a whole needs to be able to interact with.

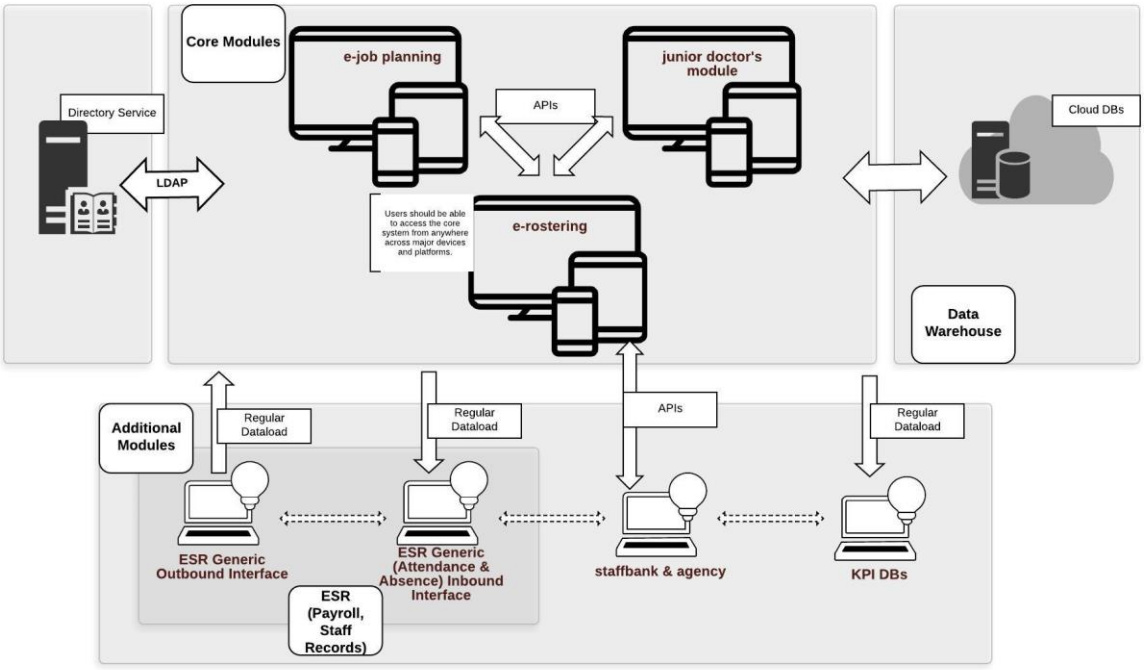
It is assumed that all trusts either have an e-rostering system in place or intend to procure one in the near future. Where a trust does not have an e-rostering system but only an e-job planning system, the same core interfaces would need to be applied to the e-job planning system.

The e-rostering system will act as the hub for interfacing with core interfaces to other systems:

- ESR – payroll and employee records
- bank and agency systems
- other suppliers' systems/components
- cloud storage system
- local network
- local identity service provider.

Below is a high-level overview of the core interfaces the trust system must have:

Figure 2: Core interfaces for high level interoperability



E-rostering system - core interfaces

The e-rostering system must interface with the following systems or components through using open application programming interfaces (APIs).

E-job planning system

The e-rostering system must be able to interface (using Rest APIs) with the e-job planning system and receive data from the e-job planning system which can then be incorporated into the staff roster.

Junior doctor module

The junior doctor module must be able to interface (using Rest APIs) with the e-rostering system.

ESR system

The e-rostering system must be able to receive data from the ESR system and automatically update staff details in the e-rostering system. It must also be able to send updates to the ESR system.

The ESR system already provides the following interfaces to trusts via routinely send/receive data loads:

- ESR Generic Attendance Inbound Interface
- ESR Generic Absence Inbound Interface
- ESR Generic Outbound Interface

Suppliers wishing to interface with the ESR system should contact the ESR team directly to discuss requirements on esr.interfaces@nhs.net

Cloud storage

The e-rostering system must be able to store and retrieve data from cloud storage.

We note that while there may currently be a mixed economy, including some systems that store data ‘on premise’ on a local storage system, the intention is that these will be become completely cloud based over time. The advice to trusts is to move to cloud-based systems.

Staff bank and agency system

The e-rostering system must be able to send and receive data from a staff bank and agency system via e-rostering APIs.

External supplier software

The system must be able to interact in an interoperable manner with an external (suppliers) system and send data to and receive data from the system.

Local network

The system must be able to access the local network/internet and interact with any applications housed on it.

Trust identity provider

The system must be able to authenticate the users against local identity provider service.

E-job planning: core interfaces

Where there is an e-rostering system, then the e-job planning system must interface with the following systems:

The e-rostering system

Must be able to interface with the e-job planning system and receive data from the e-job planning system which can then be incorporated into the staff roster.

Cloud storage

The e-rostering system must be able to store and retrieve data from cloud storage.

Local network

The system must be able to access the local network/internet and interact with any applications housed on it.

Trust identity provider

The system must be able to authenticate the users against local identity provider service/

Where there is not an e-rostering system, the e-job planning system must have the same interfaces as the e-rostering system.

Junior doctor module: core functionality

This functionality should be available either as a stand-alone module/component, integrated with the e-rostering system or part of the e-rostering functionality.

Interoperability, common data standard and other interfaces

It is a fundamental requirement that all systems and components use a common, open data standard, that is vendor neutral and can be accessed by all suppliers to pass data around the system as whole.

The Secretary of State for Health has set out his vision[1] for the future of the NHS with all IT systems working together, seamlessly and interoperably for the benefit of the NHS.

All IT suppliers will be expected to meet this vision, through open standards and open APIs.

All systems will be expected to be able to transfer data across interfaces as necessary, in a safe and secure manner.

Trusts should be able to swap components of the overall system, in and out as they choose, according to the functionality provided by suppliers.

The common data standard is currently being defined and agreed in consultation with all suppliers and vendors. This data standard will include a technical integration specification. We plan to complete the draft data standard by end of 2019.

User access

Users will be able to access the e-rostering and e-job planning systems via online access (eg laptop and computer) and will also be able to access the e-rostering system via mobile devices (eg mobile phone and tablet).

[1] www.gov.uk/government/publications/the-future-of-healthcare-our-vision-for-digital-data-and-technology-in-health-and-care)

Users will be expected to interact with the system via a user friendly and intuitive graphical user interface (GUI) and using a mouse.

Hardware interfaces

These are not specified in this document but suppliers would be expected to specify the minimum hardware requirements for their systems, for example: operating system, internal memory, processing speed, etc.

Software interfaces

The e-rostering system will communicate with other components of the system through open APIs and a common data standard for messaging.

All e-rostering and e-job planning components/systems must use the same data standard to ensure complete interoperability and transparency of data flow.

Each software supplier will maintain their own APIs and adhere to the common data standard.

Operations

All software suppliers need to provide details of the various modes of operation and details of logon/off procedures to use the software.

They also need to provide details of all backups, synchronisation and other activity that may cause the system to become unavailable to users.

For the e-rostering and the e-job planning systems, the user must be able to use the system as:

- an administrator
- a manager
- a clinician/other staff members

Appendices: System functional core requirements

See the E-rostering page on our Improvement Hub for the following appendices with details of each of the system functional core requirements, please refer to:

- Appendix A: E-rostering requirements specification
- Appendix B: E-job planning requirements specification
- Appendix C: Junior doctor module requirements specification

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 Publication code: IT 06/19