The Patient-centred Oncology Information System – Automating your Oncology Workflow For Optimal Patient Care

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Abstract

Radiation therapy has become among the safest and most effective methods for treating cancer. Technology continues to play a critical role in managing and supporting advanced treatment techniques and ensuring safer practice. For clinicians, the ability to tailor the technology to meet their specific oncology workflows is a challenge. This article discusses how, by being able to automate clinical workflow in the electronic medical record (EMR), not only delivers greater department efficiency but can help support better outcomes through optimising patient care, before, during and after treatment.

As cancer care becomes increasingly sophisticated and complex, the information, image data and steps that comprise a single patient's healthcare journey has grown dramatically. The Oncology Information System (OIS) has evolved over the last decade as a tool to centralise the patient's electronic medical record (EMR) in one easily accessible place and to manage the treatment process from referral to treatment and beyond.

However centres' also want customisation, flexibility and greater automation in their software systems, to link other applications and services and maximise efficiency in the department while delivering personalised care for patients.

The Challenge

New technology advancements, better knowledge and closer collaboration with caregivers on the front line has enabled leading oncology information systems (OIS) providers like Elekta to deliver a level of customisation through a flexible user interface. This enables users to tailor workspace panes and screens to their specific roles and responsibilities and, by utilising assessments, care plans and Quality Checklists (QCL's) within the OIS, has enabled clinicians to streamline the patient workflow throughout treatment. But heavy reliance on manual interactions still remain – for example, notifying the dosimetrist to create the treatment plan, requesting repeat scans, ordering additional lab tests or assigning a task to a staff member.

Oncology software vendors are challenged by how much flexibility and customisation they can allow users without creating an unwieldy problem of software maintenance. To bring more advanced customisation to users means giving clinics more control of the software to shape the way their OIS behaves, the data it collects and how it collects it.

At Elekta, its integrated Quality Checklists have become the key to allowing more opportunities for adapting its OIS software to suit the needs of a clinic.

Elekta's new Workflow Manager Technology is one of the first tools to achieve advanced customisation and automation through its OIS – MOSAIQ®. A core part of the Workflow Manager technology is IQ Scripts™, a scripting tool which gives the ability to create or adapt rules-based logic to support, improve and automate clinical and administrative processes in a single clinic or across multiple sites. By creating scripts which automatically execute a QCL when a previous QCL is completed, it can remove some of those manual tasks and improve efficiency in the department. For example, generate a warning message based on observation data or table items on order approval, Launch an assessment based on order approval or QCL completion.

For clinicians, IQ Scripts means that they can change the behaviour of the OIS and develop specific clinical pathways for a particular diagnosis and match plans to a specific disease, and, freeing up time from the software means more time for patients (see *Figure 1* and *2*).

Clinical Example
How Can Process Automation Speed-up Workflow Steps Between Contouring, Treatment Planning and MOSAIQ Reducing Human Intervention?

Solution 1: The user manually assigns Tasks in each step in the treatment workflow – (labour intensive)
Solution 2: Use a combination of orders and quality check lists to manage the tasks (activities) for patients assigned to care plans in radiation oncology – (multiple workflow steps).

Solution 3: Create IQ Scripts™ to automate actions and prompt activities to be completed based on defined parameters – (minimal workflow steps through automation).

One Cancer centre taking the lead in customising their OIS in the UK is St James Hospital, Leeds.

The St James's Institute of Oncology is a purpose-built state-of-the-art oncology centre and uses MOSAIQ to manage all aspects of their Radiation oncology treatment including external beam radiotherapy, brachytherapy, stereotactic radio surgery and therapeutic nuclear medicine. MOSAIQ is also the primary data source for treatment verification, scheduling and capturing of Healthcare Resource Group (HRG) codes; used for costing and reporting. Leeds also utilises MOSAIQ's eBooking via assessment forms and QCL which forms a large part of daily use of MOSAIQ in the clinic.

In July 2010, Leeds successfully completed a project to provide electronic radiotherapy referral pathways using MOSAIQ. Originally a 23 step workflow paper process, this was reduced to 12 steps through using MOSAIQ. Now with the workflow manager technology and MOSAIQ IQ Scripts™, this has been reduced to four steps through greater automation.

Peter Enever, Advanced Practitioner of Radiotherapy at Leeds explained, "The old paper process was extremely protracted and complex and involved too many people and processes. It also crossed many different staff groups with lots of handover points leading to potential for errors. With MOSAIQ, we have made a major step forward. The improvement in this new process is evident in the major reduction in the number of workflow steps that reduced the referral pathway from up to seven days – to a maximum of 24 hours. IQ Scripts has taken this workflow a step further automating many tasks and processes such as removal of patient selection (doctors no longer need to select the correct patients the item will be on their QCL as a prompt) which is a major safety feature and has reduced a 12-step process to just four. Fewer steps means less errors and that can only be a good thing for us and the patients."

Conclusion

Peter Enever said, "The underlying technology of MOSAIQ IQ Scripts enables us to customise MOSAIQ to suit our needs and create and add protocols to support the complete treatment workflow and patient safety. In the future, IQ Scripts can be used to automate a multitude of tasks such as appropriate allocation of staff time based on staff skill mix and intelligent booking – reducing patient wait times by booking appointments with defined parameters using IQ Scripts. This tool has pushed the boundaries of workflow automation and we are excited about the next phase of its development at Leeds."

St James Hospital, Leeds, UK Facts

- MOSAIQ (v.2.4)
- Is one of the first centres in UK to acquire Elekta's new Agility beam shaping innovation
- 12 Elekta Linacs, 10 clinical, two research
- volumetric-modulated arc therapy (VMAT), intensity-modulated radiation therapy (IMRT)

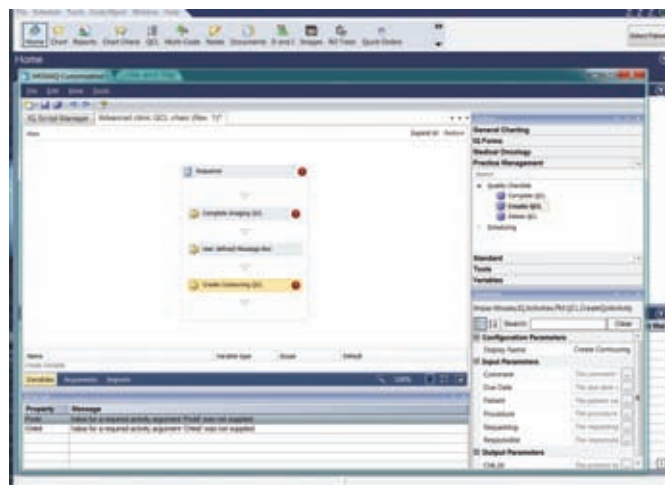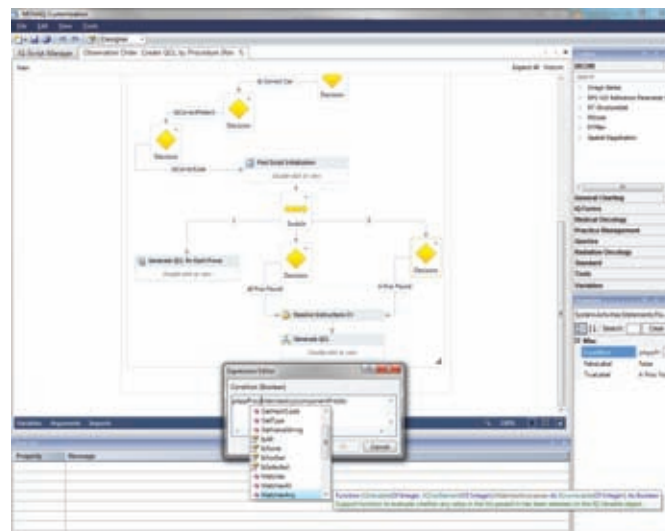**Figure 1: Customising a Clinical Workflow with IQ Scripts**

Figure 2: Using Scripting Tools to Automate Key Processes in the Clinic

About MOSAIQ

Leveraging more than 20 years of leadership and expertise, MOSAIQ OIS continues to set the standard for comprehensive patient charting, connectivity and usability across radiation oncology, particle therapy and medical oncology disciplines in a single system.

More than 2,100 global customers count on Elekta software to help them provide the safest and most efficient treatments in the fight against cancer.

From its multiple safety features to industry-leading practice management capabilities, MOSAIQ is the tool of choice to manage cutting-edge treatment centres.

Find out more about MOSAIQ at *www.elekta.com/MOSAIQ* ∎