SAFER HOSPITALS, SAFER WARDS: 
A SUPPLIER RESPONSE
Who are TPP?

TPP are a Leeds-based SME who have been delivering clinical systems to the NHS for 15 years. In 1997, we developed a clinical IT system to share patient data between a group of GP practices, an out of hours service and a hospital diabetes service.

From the outset, SystmOne was created to deliver a ‘one patient, one record’ model, aiming to integrate records across primary, secondary and social care.

SystmOne, is now used by 200,000 NHS staff across England and hosts electronic records for more than 30 million NHS patients.

Over 5,000 services now use the various SystmOne modules, including the well established GP product and the newer, fully comprehensive solution for acute trusts.
Earlier this year, TPP published a response to the NHS Information Strategy, reaffirming our commitment to work with the NHS in achieving their information goals. Our full response can be viewed here http://tinyurl.com/tp pinfostrategy.

Following the publication of the ‘Safer Hospitals, Safer Wards’ strategy, TPP wants to highlight the issues secondary care is facing and how IT suppliers like us might be able to help.

In this document we summarise what we think safety really means to NHS hospitals and how this latest strategy may improve things for patients who have to visit them. We’ll also outline the approaches NHS trusts could take in implementing new technology and show that through our flexible deployment approach, a trust may be able to use the technology fund to choose the best deployment route for them.

We also show our support for the implementation of national standards, like the NHS number as the primary identifier, and demonstrate what we’ve achieved in these areas so far.

Finally, we encourage the introduction of a digital maturity index for the NHS and demonstrate how trusts may be able to use IT to gain greater digital maturity.

The aim of this document is to show our support for the initiatives outlined by NHS England but also to highlight what we might be able to offer the NHS.

In summary, we make three open offers to the NHS:

1. To provide our ‘EPR Core’ record viewer product to every trust in England for free.
2. To provide access to affordable, complex e-prescribing systems.
3. To offer free interoperability services to encourage data flow between us and other IT suppliers.
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What will ‘Safer Hospitals, Safer Wards’ mean for the NHS?

The publication of ‘Safer Hospitals, Safer Wards’ has come at a very appropriate time. Following the publication of the Information Strategy last year, NHS trusts now seek guidance to apply the changes that are required.

So what makes a safer ward in a hospital? Safety in a hospital is about having information about the patient and having information flowing between clinicians and carers. Safer wards are also about providing standardised care and ensuring there’s no variation in the services being offered. Additionally, safer wards should be well equipped to spot problems before they happen, allowing inefficient services to be stopped before issues develop.

The importance of information flow, data quality and patient engagement has been reinforced over and over again over the last year. The NHS now need to move onto the phase of planning projects, ensuring clinical buy-in and securing vital funds.

As a supplier, we acknowledge that there is no ‘one size fits all’ strategy. Each organisation’s approach to achieving integrated digital care records (IDCRs) will be different, depending on their requirements and resources available.

We now want to reaffirm our commitment to working with organisations on the delivery of integrated care. TPP’s move into the acute sector means we’re well placed to recognise the volume of work that still needs to be done in comparison to primary care. However we are confident that with a combination of flexible suppliers, engaged NHS staff and the £260m tech fund, progress will be made.

TPP believe that most of the technology needed to transform the NHS already exists. The ‘Safer Hospitals’ technology strategy will provide the impetus and the inspiration to put theory into practice.

Any major IT project now must deliver:

- **An increase in efficiency and a decrease in waste**
- **An increase in safety and a reduction in risk**
- **Better data quality and improved flow of patient information**
- **Support for the transformation of care delivery**

All of these factors will ultimately create improved outcomes for patients and result in better, safer care.

In the wake of the Francis Inquiry, CQC investigation and several whistle-blowing scandals, now is the time the NHS needs to reiterate its belief in transparency.

Open procurement methods and IT projects that have to prove their benefit to patients, can only be a positive thing. As an SME we have experienced difficulty with an unbalanced and overly complex procurement system. In the future, we commit to being part of an ongoing conversation to alter and improve the NHS IT procurement process.

If successful, ‘Safer Hospitals, Safer Wards’ will provide the drive to really make the vision set out in the Information Strategy a reality. Ensuring hospitals have the technology to make them safer will then provide the basis for system transformation, allowing the NHS to alter the way we commission services and deliver care.
How TPP’s approach fits with the strategy

Implementation Pattern Descriptions

In the 15 years we’ve been working with the NHS, we have continued to diversify our offering to be completely flexible, whether we’re integrated with a data repository or providing one element of functionality for a hospital. Historically, TPP may have been solely seen as a provider of a single system solution but we are now increasingly confident that our software can meet all of the scenarios outlined by NHS England.

In our supplier response to the information strategy, published in April, we outlined 3 ways in which we currently offer integrated record solutions to the NHS. They were titled:

1. Point to point interoperability (Click through)
2. Central infrastructure
3. Single system (single shared application)

Point to point interoperability (Click through)

In some areas of the country the technology landscape is divided between only a handful of suppliers (often rival companies competing for the same market). This has resulted in silos of data which are held in each system and means that the flow of information is extremely limited.

The clear solution is to create individual direct interfaces between systems, facilitating the flow of information for the benefit of clinicians, commissioners and patients. Some indirect interfaces have already been put in place to ensure data can flow between systems. However, the standards suggested by NHS England, encouraging direct integration between all suppliers would be a further step in providing an improved flow of information.

We believe this type of implementation does have issues as both the output from each system, and the messaging type used for communication, needs to be the same. However it has great benefits in terms of reducing costs for the NHS and reducing the amount of disruption for staff who are used to existing systems.
Central Infrastructure (Repository Approach)

This model could make use of existing NHS infrastructure and improve linkages. To do this a standard messaging solution to an accepted central point will need to be developed in association with the NHS. This will allow all clinical systems to share patient data horizontally and vertically through the healthcare economy.

In an environment of multiple or disparate systems on a local (or national) level, a central infrastructure approach may be taken. Some NHS communities have already attempted to create central repositories or data storage solutions, with varying levels of success. Development of a core centralised infrastructure (to sit between the many systems) will facilitate sharing of information across all services.

This solution would create links between all services caring for the patient and allow data to be accessed and distributed as it is requested.

This means that patient data is available in real time from multiple sources and at the point of care.

*Variations on this central infrastructure implementation include central repositories for documents or a registry repository so that queries can be made across several indexed databases. TPP has the technology to adapt to suit any of the implementation models described by NHS England.*

Single System (Single Shared Application)

Previous attempts to create a national single system landscape have not been realised, prompting a move to more localised healthcare. In some of these local communities, a single system approach to connected health and social care has worked – from a care, organisational and financial perspective. Particularly on a primary care level, organisations have now increasingly begun to make decisions that will see all of their services moving to the same system. For both Clinical Commissioning Groups (CCGs) and entire health economies, the benefits of a single system are highlighted again and again. Not only can the record be shared securely without the concern of data linkage (allowing patients to visit multiple services across a geographical area) resources can also be shared – creating efficiencies right across communities.

*The benefit of a single system approach is that the use of NHS Number as the primary identifier avoids the risk of duplicate records.*

The information strategy response includes a selection of case studies where each solution has been used, view it here [http://tinyurl.com/tppinfostrategy].
The ‘Safer Hospitals’ strategy outlines numerous suggestions for the smoother implementation of IDCRs. Several of these suggestions have been part of TPP’s strategy for many years and our experience in these areas will help organisations when they plan for their own deployments.

### Specific functionality

#### NHS Number

SystmOne was always developed to incorporate use of the NHS number as a standard patient identifier.

We currently have over 26 million unique NHS numbers on our database. Because we’ve always been centrally hosted, the NHS number was the easiest way to ensure we had no duplicate records on the system. It’s also the best way of tracking patients as they move between services, always ensuring that clinicians are entering data into the right shared record.

#### Scalability

The ‘Safer Hospitals’ strategy limits access to the technology fund to those who can prove their solution to be scalable. National standards will help prevent solutions from becoming too localised however there is also the need for suppliers to have the resources and the experience to deploy at a large scale.

The very nature of the way SystmOne is developed (with new functionality added every month) means it needs to have a robust infrastructure. We have spent more than a decade testing and improving our technology to make sure it can perform regardless of the size of the project. Testing with the Department of Health several years ago showed we have the capability to look after patient records for the entire country.

#### Patient access

TPP have offered SystmOnline services for over 4 years. The web-based service allows patients to book appointments, order prescriptions, ask their clinician questions and, more recently, view their complete, integrated record.

We recognise the importance of ensuring patients are engaged with their own healthcare and have recently developed an integration with patient facing software, VitruCare. For more information on that integration visit www.tpp-uk.com/latest-news-stories.

#### SNOMED CT standards

TPP has always written software in the latest version of Read codes, CTV3. Despite this, we have been working closely with the UK Terminology Centre, watching the development of SNOMED CT.

As a result, TPP now has a flexible, interoperable platform that allows for easy translation of coding types. For example, we’re able to send GP2GP and SCR messages in the standardised SNOMED formats.

#### Sharing & the SCR

In any major IT deployment it is imperative that the fundamentals of data protection, data audit and access controls are maintained. The recently published Caldicott 2 principles give guidance in the importance of information sharing but each organisation will need to have a data protection policy and localised sharing agreements, before beginning a project.

Sharing information through cloud technology has been at the heart of TPP’s ethos since its creation in 1997. SystmOne’s use of Role Based Access Control and a strict patient consent model means patients govern which organisations have access to their record.

#### Application Programming Interfaces (APIs)

APIs are the building blocks of providing integrated technology. The roles within the NHS are so varied that it is impossible for clinicians to do their whole role using just one piece of technology. APIs allow different systems to integrate seamlessly to benefit clinicians. Our API allows many different companies to link to SystmOne in a standardised, structured format.

We currently offer more than 100 integrations free to the NHS.

#### Flexible clinician coding

NHS England specifies the desire to develop a market of open source solutions in order to reduce costs and encourage collaboration between trusts. Although there are some successful open source projects on the market, a scalable solution that can be managed at relatively low cost is yet to be developed.

We believe clinical leadership, and some elements of ‘coding4health’ can be incorporated within existing solutions - allowing for flexibility and system configuration in a supported and fully managed environment.

For more than a decade, TPP have provided NHS clinicians with a safe open framework to write their own part of SystmOne. To date, more than three million screens have been created by doctors and nurses in the UK.
The SystmOne e-prescribing solution

The SystmOne e-prescribing module can be installed alongside other systems in an integrated approach. Just like an entire integrated EPR, e-prescribing functionality can be implemented ward by ward or in stages of complexity. By far the most complicated part of an EPR project, electronic prescribing can also be the most beneficial.

E-prescribing may be mapped against a digital maturity model, indicating that simpler elements of functionality would result in a lower level of maturity whereas more complex prescribing functions would result in the top levels.

A matrix of SystmOne e-prescribing:

<table>
<thead>
<tr>
<th>Prescribing</th>
<th>Medicines Management</th>
<th>Administration</th>
<th>Decision Support</th>
<th>Inter-operability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standalone system for one area or specialty.</td>
<td>Formulary management. Controlled by access rights.</td>
<td>Scheduling of medicines for administration. All administrations are scheduled for nursing staff.</td>
<td>Formulary support.</td>
<td>Standalone system.</td>
</tr>
<tr>
<td>Inpatient and discharge prescribing for the majority of patients.</td>
<td>Checking and supply verification.</td>
<td>Recording of medicines administration.</td>
<td>Access to reference information.</td>
<td>Access to pathology results. We can receive path results into SystmOne which can be viewed by other providers.</td>
</tr>
<tr>
<td>Specialist prescribing for complex areas e.g. pediatrics, chemotherapy, critical care. We will integrate with other suppliers to provide this functionality through our open API.</td>
<td>Documentation of ADR, clinical interventions, medication error reporting. All queries are stored in the record.</td>
<td>Audit/reporting on omitted/delayed doses.</td>
<td>Order sets and order sentences. Dose calculators: Regimes and pathways to make sure correct meds given. Dose calculations on ‘read map’.</td>
<td>More complex eDischarge summary information indicating changes, enabling monitoring.</td>
</tr>
<tr>
<td>Prescribing in all clinical areas. We integrate with other suppliers to provide this functionality for specific wards.</td>
<td>Medicines reconciliation. Full access to primary care information in shared record - can capture all admission meds.</td>
<td>Complex scheduling.</td>
<td>Support for guideline/policy compliance e.g. NICE, CQUIN</td>
<td>Integration with other systems e.g. pathology.</td>
</tr>
<tr>
<td>Links to and integration of patient monitoring, infusion devices. Integration with a third party to be discussed.</td>
<td>Integration with inventory management systems. We will integrate with other suppliers to provide this functionality.</td>
<td>Automatic links to additional patient information e.g. pathology results within administration pathways. We integrate with third parties for this functionality.</td>
<td>More complex decision support rules development (e.g. MLM modules) focusing on individual patient characteristics. We integrate with third parties for this functionality.</td>
<td>Advanced reporting, feeds to national registries. We integrate with third parties for this functionality.</td>
</tr>
<tr>
<td>Integration with automated dispensing machines. We have developed an integration with ARK robots in primary care.</td>
<td>Use of barcodes to support patient, medication and dose checks.</td>
<td>Detailed patient level reporting.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

● Functionalities included in SystmOne
A flexible approach to deployment

One of the key aspects of a SystmOne deployment is TPP’s ability and willingness to build and configure a product specific to a trust’s needs. This is only possible if the deployment team are able to access the key administrative and clinical staff during system demonstrations and scoping, so they can ensure they have captured all development requests.

Prior to going live with SystmOne, TPP will visit the relevant organisation where necessary. TPP will shadow and observe the day-to-day functions of clinical and administrative staff to initially scope the project.

Any business processes currently used by the organisation will be analysed to see whether any development work is required for the system to fit the need of the end users. Subsequently, TPP will conduct regular telephone conversations throughout the implementation to regularly review the project.

We ensure that the customer has full visibility of the product by organising demonstrations and hands-on sessions during the delivery phase of the project. Feedback is collected from these sessions and this ensures that the user has full input into the product.

The deployment team will work closely with the project manager to ensure that all developments are signed off as completed and that the product delivered matches the trust’s expectations.

A MODULAR DESIGN

For an interoperable deployment approach, TPP has developed a modular design for the acute sector. This approach allows trusts to either deploy individual items of functionality that can integrate with their existing technology or simply deploy each item in stages, building to a complete single system model.

For the modular approach to be effective, TPP works to internationally approved standards and messaging types. This means each trust can use the approach that best suits them, rather than having to develop bespoke integration tools.

We integrate systems via ADT feeds using standard HL7 messaging and build communication tools via DTS messaging and NHS mail.

The flexible way that SystmOne works allows trusts to either deploy a ‘technology stack’ that is a ‘fully functional, single, end to end integrated system’ or a stack that is a ‘patchwork quilt of individual, functionally rich modules, stitched together to allow data transfer. This is described in the ‘Safer Hospitals’ strategy as a choice of ‘single solution’ or ‘best of breed’.
Clinical engagement

We fully recognise the importance of the recommendation following the Francis Inquiry that "systems must be designed by healthcare professionals in partnership with patient groups." SystmOne has always been developed by clinicians, for clinicians. Our close relationship with our national user groups, along with pilot organisations, means that each piece of new functionality is thoroughly tested and developed before it goes live.

In all circumstances, (but particularly when using functionality such as prescribing) it will be necessary to work with a lead clinician who will ensure that they are happy with the product. We have an in-house clinical safety lead that will ensure any clinical hazards are captured and are fully mitigated prior to the project going live.

Prior to the start of a project, we will meet with the clinical lead of the project (preferably the Chief Clinical Information Officer) to understand the clinical objectives – how will this IT project make the organisation clinically safer and the pathway better for the patient? These conversations with the CCIO will then shape the remainder of the project.

A typical deployment schedule

 Kick off meeting
Here we emphasise the need to shadow and talk to end users. We need to be able to scope the full picture of integrating care, how the project is now and how the service wants to work after go live.

We also emphasise the importance of a daily or weekly call, which ever is best for the organisation, to make sure the project is on track.

 Welcome pack completed

 Discuss integration of existing systems

 Discuss data migration requirements and timescales

 Shadowing at the unit and system analysis
We send our system analysts out to each organisation to shadow exactly what staff are doing. This means we will follow each staff member, ask questions about what they are doing and ensure that each process can be replicated without paper. We’ll also start identifying ‘Super Users’ at each organisation who will be the key point of contact and the facilitator for staff training.

 Training planning meeting

 Technical site readiness and smartcard activities
Here we ensure that the organisation is technically ready to go-live. We also ensure that the local registration authority has enabled smartcards for all users.

 Training

 Unit set up & configuration

 Data migration

 Project go live

 Post Go Live Support
The Clinical Digital Maturity Index

At TPP we already aim to achieve international models of benchmarking and encourage our organisations to include this in their projects. We have also visited those organisations that are ranked highly in terms of integrated care, for example those hospitals who have achieved a 6 or 7 on the HIMSS European Adoption Model.

For a benchmarking model to work in the NHS, it needs to take into account the aim of achieving IDCRs by 2018. An organisation must not reach a higher level of digital maturity just through the implementation of technology, it must demonstrate considerable benefits for patients, clinicians and the NHS.

The highest level of digital maturity will see not only safe and secure data flow but also complete integrated care records and a virtually paperless state. A flexible digital maturity model should also work alongside the IT solution so that organisations can deploy their technology whilst moving up the maturity levels.

Ultimately, organisations with the highest level of digital maturity would have a fully integrated Electronic Patient Record (EPR). This can be described as a centralised view of patient information that has the capability for data entry, for running accurate decision support and the functionality for data extracts for analytic and research benefits.

To be able to achieve the higher levels of digital maturity, a flexible, phased approach to IT deployment needs to be in place.

Additional points towards achieving digital maturity could be given for clinical buy-in however we believe each project must have clinical buy-in from the start to be effective.

First steps would be to implement a centralised view of information, collected from various systems within a hospital. To achieve this, TPP offers a free ‘EPR Core’ product to every trust in the country.

In the medium term the hospital would be able to accept data feeds from other care services, leading to a longitudinal view of the patient’s journey. This view would be editable by clinicians caring for the patient in hospital. Next, communication feeds would be established, allowing different clinicians to communicate with each other about a patient’s care.

Later stages would see the introduction of decision support tools, e-prescribing across all wards and the deployment of resource scheduling and integrated care pathways. TPP offers complex e-prescribing systems to all trusts for a one-off set price.
What can TPP offer the NHS?

**EPR Core free to all acute trusts**

TPP have developed a new ‘EPR Core’ module to allow trusts to meet the NHS e-records vision, available to all trusts, licence free.

EPR Core allows hospital trusts to access patient records from across the country. The solution will allow trusts to become paper-lite and securely share patient data – irrespective of where that data is held.

Using EPR Core, trusts can create a complete journey of care between primary and secondary care. The module will allow trusts to instantly access any patient record, based on patient consent. As SystmOne interfaces with other GP software suppliers, trusts using ‘EPR Core’ will be able to view patient data held in other systems.

Clinicians will also be able to enter data into the patient record, including consultations. ‘EPR Core’ can then output this data to other care providers – enabling health economies to become truly connected. Trusts will be able to use EPR Core alongside an existing hospital Patient Administration System (PAS) via Admission, Discharge & Transfer (ADT) messages.

**Complex e-prescribing to all hospitals**

In order to ‘go digital’ by 2018, every hospital in England will need to implement an e-prescribing system. For e-prescribing functionality to be beneficial, it needs to offer complete integration with all wards within a hospital and incorporate all aspects of the traditional prescribing process on paper. As already explained, our e-prescribing system integrates with any existing PAS via ADT feeds so there’s no need to change your entire system.

As we believe we offer the most comprehensive e-prescribing functionality on the UK market, we’re offering to install it in hospitals for an affordable licence fee of just £120,000 a year.

**Free interoperability services**

We’ve always believed that the NHS shouldn’t have to pay twice for data, that’s why we’ll make a commitment to sharing our data to those that need it, for free. We’ll send and receive HL7 messages (as the primary or subsidiary system) to ensure interoperability with any other clinical system. We’re already working on direct integrations with Adastra, Rio and we’re offering access to our data for no extra charge.
TPP are engaging with NHS England, the HSCIC, the medical colleges and the wider NHS about how the ’Safer Hospitals’ strategy can be practically implemented. We will also be monitoring the feedback from the recently published NHS ’Call to Action’ document.

If you’re an NHS trust...

...and you’re interested in applying for the fund, you need to act now. The deadline for the submission of ‘expression of interest’ forms is Wednesday 31st July. To complete the form, you’ll need to find out from your chosen supplier if they have the proven capability and capacity to deliver your project. If you’d like to find out how the solutions we offer may help you, then get in touch. We treat each NHS trust differently so we’d always welcome a conversation about your requirements. We are currently working closely with several trusts on their applications from the NHS Technology Fund. We have a range of sample business cases that might be useful so just give the account team a call on 0113 20 500 83.

If you’d just like to know more...

...then we are happy to talk. Our offers to the NHS are always changing. We’d love to discuss new and innovative ways that we might be able to improve NHS services, so if you would like to suggest an idea to us, or you would just like to ask a question about this document, you can contact us in these ways:

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