e-SAP Implementation Guide

electronic

Single

Assessment

Process

Framework for Multi-Agency Environments

fame

Promoting the Independence of Vulnerable Older People

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Introduction

Purpose of Document

The purpose of this document is to support implementers wishing to deliver an electronic Single Assessment Process (e-SAP) solution. It does this by drawing on the experience gained and lessons learned during two pilot projects, which took place in Surrey and the Wirral.

This document does not seek to impose a technical e-SAP solution. Instead, it attempts to provide broad and high-level guidelines for the implementation of an electronic SAP system. It is, therefore, relevant to anyone wishing to implement e-SAP whether they wish to purchase a package solution or build their own.

Who Should Read this Document?

This document is aimed at people in organisations who are considering the implementation of an e-SAP system. The intended audience is listed in Table 1.

IT Project Manager	Responsible for the overall implementation of an e-SAP solution, including the selection of an assessment tool and the decision of whether to build or buy an off-the-shelf e-SAP solution.
User Business Manager	Operationally responsible for the business area that is adopting an e-SAP solution. Also responsible for selection of an assessment tool and the decision of whether to build or buy an off-the-shelf e-SAP solution.
User Project Manager	Responsible for the user adoption of an e-SAP solution. This includes the day-to-day management of user involvement with the implementation process, selection of an assessment tool and input into the 'buy or build' decision.
IT Development Manager	Responsible for the technical implementation of an e-SAP solution, including the day-to-day management of the development stream.
Software Architect	Responsible for the software architecture and design of an e-SAP solution.

Business Analyst	Responsible for the analysis of the 'as is' and 'to be' business processes.

Table 1- Intended Audience

Broadly speaking, this document has been broken down into a number of sections that cover a business case, requirements, functional and non-functional aspects of an e-SAP solution. As such, there are sections that will be more applicable to some users than to others. Also, since some sections apply to a solution that implements e-SAP, they may not be applicable to an off-the-shelf solution. As an aid to readers of this document, Table 2 suggests the most appropriate sections to read; based on the type of reader and whether an off-the-shelf solution is being adopted.

Suggested Reading Order	IT Project Manager	User Business Manager	User Project Manager	IT Development Manager	Software Architect	Business Analyst	off-the-shelf solution	Bespoke solution
Introduction	✓	✓	✓	✓	✓	✓	✓	✓
Business Case	✓	✓	✓	✓			✓	✓
Case Studies	✓	✓	✓	✓	✓	✓	✓	✓
Requirements	✓	✓	✓	✓	✓	✓	✓	✓
Functional Considerations								
Users	✓	✓	✓	✓	✓	✓		✓
Assessments	✓	✓	✓	✓	✓	✓		✓
System Architecture				✓	✓			✓
Object Model				✓	✓	✓		✓
Core Workflows	✓	✓	✓	✓	✓	✓	✓	✓
External Interactions			✓	✓	✓	✓		✓
Non-Functional Considerations								
Security	✓	✓	✓	✓	✓	✓	✓	✓
Access	✓	✓	✓	✓	✓	✓	✓	✓
Versioning				✓	✓		✓	✓
Identity				✓	✓		✓	✓
Usage Scenarios			✓	✓	✓	✓	✓	✓
User Interface			✓	✓	✓	✓	✓	✓
Performance				✓	✓		✓	✓
Service Level Agreements	✓	✓	✓	✓	✓	✓	✓	✓
NHSNet Access	✓			✓	✓		✓	✓
Auditing	✓	✓	✓	✓	✓	✓	✓	✓

Implementation Considerations	✓	✓		✓	✓		✓	✓
Information Sharing Protocol	✓	✓	✓	✓	✓	✓	✓	✓

Table 2 - Suggested Reading Sequence

Background

The Single Assessment Process (SAP) is a work stream within the Framework for Multi-Agency Environments (FAME) project that aims to Promote Independence or Vulnerable Older People (PIVOP). FAME is a program of work funded by the Office of the Deputy Prime Minister (ODPM), to pilot multi-agency environment working. Within FAME, two projects were appointed to pilot the Single Assessment Process stream. Each pilot took place in different parts of the country and comprised a representative set of partners:

- Woking Area
    - Woking Borough Council
    - Surrey County Council
    - Surrey Heath and Woking Area PCT
    - Ashford and St Peter's Hospital Trust
    - North Surrey PCT
    - CIBER UK (technology partner)
- Wirral area
    - Metropolitan Borough of Wirral
    - Age Concern Wirral
    - Bebington and West Wirral PCT
    - Birkenhead and Wallasey PCT
    - Cheshire and Wirral Partnership NHS trust
    - Wirral Hospital NHS Trust
    - Liquid Logic (technology partner)

More information on FAME is available at www.Fame-UK.org.

Single Assessment Process Solutions

The e-SAP solutions are, essentially, eForm (electronic form) based implementations of accredited SAP assessment tools that allow joint working between partners. More formally, the FAME SAP pilots aimed to:

- Develop and implement a Single Assessment Process.
- Improve the processes and provide electronic solutions for joint working between multi agency partners by:
    - Supporting the joint collection sharing and exchange of relevant and timely information about older people.
    - Support the delivery of integrated services within the home or other appropriate care settings.
    - Promoting greater efficiency by eliminating unnecessary duplication and hence making better use of resources.
    - Providing shared learning both nationally.

More about SAP can be found at:

http://www.dh.gov.uk/PolicyAndGuidance/HealthAndSocialCareTopics/SocialCare/SingleAssessmentProcess/fs/en

Business Case

Implementation of the FAME project strand gives other health, social care and housing service providers a cost effective solution to further develop their services to older people. This includes the development of a working electronic solution for a Single Assessment Process.

The business case for the development and implementation of solutions to improve services to older people draws on the experience of the strand partners. The SAP is what underpins the service improvements and the rationale for adopting this approach is covered in detail.

Woking Borough Council (Woking) and Wirral Metropolitan Borough Council (the Wirral) were selected by the ODPM to lead the two projects in partnership with their respective health and social care service providers.

PIVOP has provided an ODPM funded product to implement a working e-SAP solution using Department of Health (DoH) accredited SAP tools. In line with the National Service Framework (NSF) for Older People, the project has developed the business processes and workflows that improve the way older people are jointly assessed for their health and social care needs.

The project strand involved the two authorities delivering their own solutions using different technology partners, i.e. CIBER UK for the Wirral and Liquid Logic for Woking.

The key reasons for splitting the strand in this way were to:

- Assess the effect different local government and health structures, i.e. unitary - Woking and two-tier – the Wirral might have on the development and implementation of the proposed solutions.
- Enable the development of vendor neutral solutions that could be replicated by other health, social care and housing partner organisations.

The project has delivered the following core products:

- A working operational electronic solution.
- An Information Sharing Protocol.
- A software solution that utilises accredited SAP tools. It also combines the Fair Access to Care (FACS) requirements of Social Care.
- Application Programming Interfaces with the Anite 'SWIFT' and Vision 'In Practice' systems to provide electronic two-way information exchange in a secure environment.
- Process maps and workflow definitions.
- Technical requirement specification.

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The solutions enable other care and housing providers to cost effectively develop and implement a SAP by capitalising on the investment already made in PIVOP by the ODPM.

Governance

The strand partners identified the importance of strong governance of both the project and its continued operation, once it has been integrated into service provision. Consequently there must be:

- An accountable body in terms of both delivery of the project and subsequently the delivery of services.
- A legal entity that is empowered to contract with the other public sector partners and private sector suppliers. This might include the formation of a public/private partnership.
- A means to manage joint budgets for which a legal and political framework id needed. For example this could involve the adoption of a care trust.

A generic governance structure illustrating how the above requirements could be accommodated is illustrated in Figure 1.

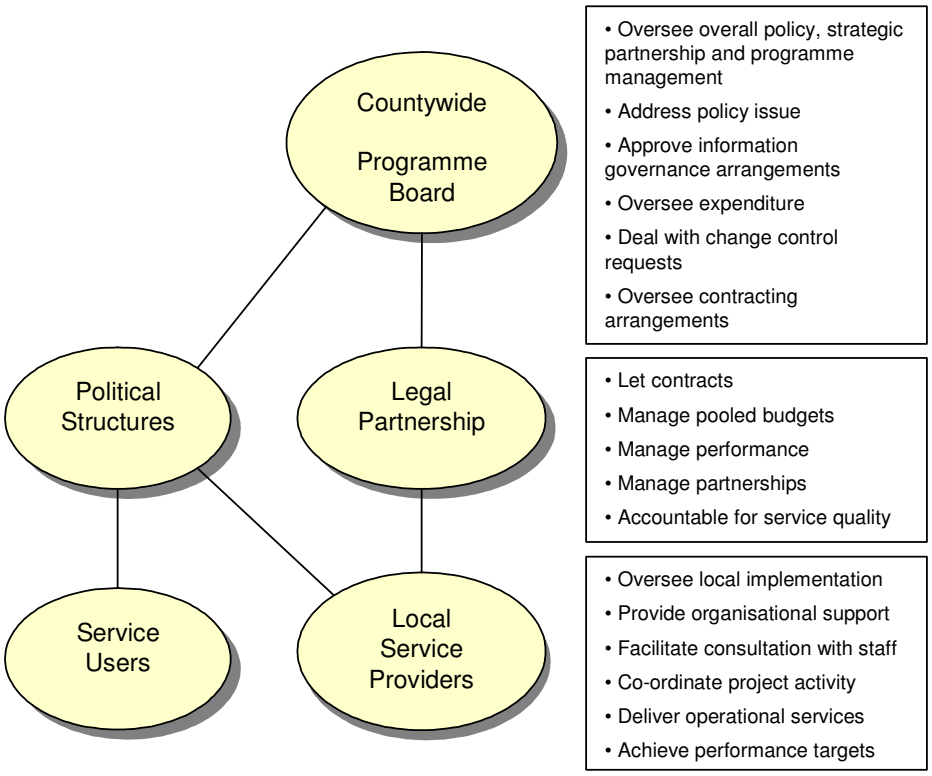

Figure 1 - Governance

Strategic Aims

From the beginning the PIVOP Project Board and individual Steering Groups were mindful of the need to develop a solution that would support the existing strategic aims of both the health and social care organisations. Namely:

- National Service Framework for older people
- Promoting Independence
- Supporting People
- Person Centred Care
- Information Sharing in a secure environment
- Working in partnership to develop core standards
- Service transformations
- Policy and Productivity – Best Value, capacity building
- E-government Service Priority Areas

A further consideration was the growth in the population of older people in relation to:

- Demographic and social change
- Changes in service user expectations
- Increased demands on service providers

Business Requirement

Identifying the Requirements

In identifying their business requirements, the strand partners drew up a 'long list' of what products and services there are currently or could potentially be to support the concept of ***'Promoting the Independence of Vulnerable Older People***'. These included:

- Delayed transfers of care
- Unplanned hospital admissions
- Reimbursement
- Falls prevention
- Strokes prevention
- Integrated community equipment store

- Single Assessment Process

An evaluation using the following six criteria was undertaken to identify the service area that the project should address:

- Are their other projects addressing this service area?
- Are their national targets addressing this service area?
- Does it address e-government priority outcomes and service transformation?
- What is the level of change needed to implement the service in relation to structure, systems, working practices and organisational culture?
- What service area would benefit the most service providers?
- What service area would benefits the most service users?

Two important elements in the selection of the preferred service area were:

- Optimising the time and resources available to the project
- Evaluating what would be of universal benefit to other care providers taking into account what their own strategic priorities for older people's services were likely to be. A synopsis of the results is set out in Table 3.

Service Area	**Other Projects/ National targets** **e-Gov priorities/ service transformation**	**Level of change required**	**Benefits – service provider**	**Benefit – service users**
Delayed transfers of care	-No national project other than FAME -Addresses NSF Targets -Not e-gov priority/ limited effect on service transformation	Cross organisational change required and need to re-address care provision	Operational and financial benefits. Requires long term investment. Should reduce unplanned admissions or delayed transfer of care	Responsive to needs should result in older person being placed in most appropriate care setting
Reimburse ment	-Mainstream service development underway. -National targets for implementation prescribed -Not e-gov priority/ limited effect on	Government requirement being implemented. Requires significant process change and system development although there has been some relaxation of targets	Potential for operational and financial benefits by reducing inappropriate bed occupancy	Should result in the older person being transferred to a more appropriate care setting more quickly

	service transformation			
Falls prevention	-Pilots being conducted -Addresses NSF target -Not e-gov priority/ limited effect on service transformation	Significant change process – operational procedures and specialist deployment	Operational/ financial benefits should reduce inappropriate bed occupancy. Potential links to Telecare	Older person should be able to be placed in most appropriate care setting, with more likelihood of them being able to live at home
Strokes prevention	-Pilots being conducted -Addresses NSF target -Not e-gov priority/ limited effect on service transformation	Significant change process – operational procedures and specialist deployment	Operational/ financial benefits should reduce inappropriate bed occupancy. Potential links to Telecare	Older person should be able to be placed in most appropriate care setting, with more likelihood of them being able to live at home
Integrated community equipment store	-National developments -Addresses NSF targets -Not e-gov priority/ limited effect on service transformation	Requires a significant amount of interagency process and system change	Benefits n/k - requires significant investment in terms of staff and funding	May speed up the time it takes to install adaptations, technology (Telecare)
Single Assessment Process	-National priority -Addresses NSF targets -Addresses e-gov priority outcomes could support service transformation	Minimum impact on individual organisational structures and working practices	Gives all service providers a shared single view of the older person's needs	Should provide a more coordinated service. Older person will only have to give information once

Table 3 - Benefits

The strand partners experience may well be relevant to other care providers who are considering their service priorities. In terms of this the solutions needed to provide a:

- Single view of the service user
- Service that is generic to the majority of older peoples services
- Framework for sharing information in a secure environment
- Process and framework that could be applied to other service areas, e.g. children, mental health and adults

Implementation of PIVOP provides:

- A number of products that can improve the business processes and systems both internally and externally for the delivery of more coordinated services

- A reference point for other health and social care communities wishing to develop and implement cost effective services to older people, in particular the adoption of a Single Assessment Process (SAP)

Evaluation Results

In evaluating the 'long list', the project partners identified that without one shared or single view of the service user it would be difficult to make significant progress in any of these service areas. As a result they agreed there was a business requirement to develop and implement process and systems to support a SAP.

Agreement to focus project resources on the Single Assessment Process (SAP) was based on the following:

- Addresses NSF targets
- Supports health, social care and housing providers
- Provides the means to coordinate services
- Addresses 'Supporting People' Strategies
- Benefits service users
- SAP has the potential to support other service areas, e.g. children and mental health.
- Optimises the use of project resources
- Has the potential to facilitate incremental organisational change
- Supports service transformation within the overall e-government modernisation agenda
- Improves service delivery

Although not part of the evaluation, a further consideration was how the electronic SAP could support service delivery via call centres and in this regard, links to CRM systems. The solution has been set up to enable a caller agent to access current information and from this, be able to update records, provide services/information and make referrals at the first point of contact.

The partners felt that although the other service areas being assessed were important they:

- Did not benefit as many service providers and users

- Required a high degree of organisational or cultural change that may not have been acceptable and in any event could not have been delivered within the scope of the project
- Were being addressed by other national projects

Deployment in Different Care Settings

When other housing and care providers are identifying their business requirements they may wish to consider how the solutions they implement are deployed in their own health, social care and housing setting. This is particularly relevant for smaller district authorities operating within a two-tier local government structure.

The Wirral delivers both discretionary and statutory services to older people in conjunction with the County Councils social service provision and NHS. The business processes and workflows between these key service providers were mapped to identify the current degree of synergy between them and the extent to which the different political structures affected this.

Woking has coterminous boundaries with its health partners, including the Strategic Health Authority and delivers all social care provision. Conversely the Wirral is one of eleven district/borough authorities that work in conjunction with the Surrey County Council's five Adult and Community Care areas. These areas are closely aligned with Surrey's five PCTs.

Most health related workflow/transactions were between the County Council and Health Services. As a result of the project, the Wirral is now handling enquiries directly from its health partners that may otherwise have come via Social Services.

Strategic and Operational Relationships

There was a need for the partners to consider their strategic and operational relationships with regard to their:

- Strategic and operational priorities
- Approach to the project
- Resources
- Understanding of the purpose and outcomes of the project
- Values and culture
- Understanding of the 'language' used by different agencies

Both projects involved their respective Strategic Health Authorities (SHA) from the beginning. Although the relationship was good, the SHA were primarily concerned with the development of the National Programme for

Information Technology (NPfIT) and the appointment of the NHS Local Service Providers (LSP).

Health Services, including the Strategic Health Authorities are maintaining strong support for the project. They are of the view that the process of implementing the SAP is valuable learning in itself, particularly in terms of service integration and generic information sharing between health and social care providers.

An emerging view from the NHS in particular is that SAP is starting to underpin the whole ethos of Health and Social Care partnerships, and increasingly housing, in generic information sharing.

There is increasing recognition that FAME can provide the NHS partners with a proven interim solution and support the migration to the core solution being implemented by the LSP in 2008. This situation is more relevant to the Wirral because the LSP for the southern cluster has not been contracted to deliver an interim e-SAP solution whereas the LSP for the northwest cluster has.

Synergy between the partners to maintain the momentum of the project has to be very strong. In the case of PIVOP this included leadership from the top, coupled with early involvement of the Local Authority elected members, PCT Executive Board and Professional Executive Committee. The different political structures (i.e. unitary and two tier) had no adverse effect the project.

In the case of the Wirral planning and implementing the ICT systems did require a good relationship between its own and the SCC ICT service partners. A learning point that came out of this was to start this process as early as possible to ensure resources are appropriately allocated.

A further consideration in relation to ICT concerned connectivity to NHS Net and the requirement for application programming interfaces (API) to SWIFT and Vision In-Practice. Again a longer lead-time for their development and implementation is advised.

Benefits

Central to the process is its ability to give the partners a shared view of the service user and in so doing avoid duplication of effort and a more focused and comprehensive assessment. Other key benefits include:

Service Providers

- Immediate electronic access to more accurate, comprehensive and up to date information about the service user
- Easy and intuitive to use
- Improved workflow
- Referrals, actions and copying for information is all supported in the system ensuring a controlled workflow between teams

- The system alerts if information cannot be delivered within the desired timeframe and messages cannot go astray
- Assessments completed more quickly enabling a faster more coordinated response to service users
- A more structured assessment process
- Other practitioners' assessments are useful to social care staff since they follow the same structure and layout
- The system enforces that social care only information such as FACS assessment can only be seen by social care staff
- The system enforces consent to not forward information that the older person does not want shared
- Better resource utilisation through reduced duplication in time spent completing and updating assessments

Service Users

- Not having to repeatedly give the same information to different service providers
- Receiving assessments that are more person centred
- Having a named care coordinator where the needs, and resulting assessment process, are complex
- Taking ownership of a person held record, summarising key pieces of information relating to the assessment process
- Receiving a more cohesive and responsive service from different service providers
- Knowing that the service provider has more information about their overall care needs
- Knowing that the service provider has the ability to immediately share and act on their care needs (with their consent)
- Having the opportunity to give a more comprehensive explanation of their health, care and housing needs to service providers

Other Service Areas

In addition, the e-SAP infrastructure and technology has the potential to facilitate and support other service areas. These could include children (ISA), other adults, mental health and community safety.

Resources

The total staffing for the project across the partnership, including roles and responsibilities are set out in Table 4.

This is broken down between the dedicated project management, excluding the technology partners, and other service managers and practitioners called upon as required from mainstream services.

Key Roles and/or responsibilities

It was considered very important to engage mainstream service managers and practitioners in the project for the following reasons:

- They bring a range of operational expertise and skills from across the partnership
- Their involvement gives them an understanding and ownership of the project
- It helped further strengthen the relationships between the partners

Key Roles and/or responsibilities	**Total Estimated staff days**	**Breakdown of staff days**
Project Manager ***As per Prince 2 methodologies***	275	
○ Stakeholder/partnership management ○ Budgetary control ○ Product dissemination ○ Manage project documentation ○ Manage meeting documentation ○ Contract negotiation ○ Attend national project boards ○ Chair local steering group ○ Ensure delivery of project		Not broken down at this level
Project Support Officer	**50**	

○ Maintain project documentation ○ Produce meeting minutes, actions etc ○ Follow up actions ○ Arrange meeting times, venues and requirements ○ Take meeting notes/minutes		Not broken down at this level
County Council Operational Social Care Staff, inc. training Called on as required not seconded, to provide expertise and experience	**84**	
○ Advisory Officers – input to workshops ○ Care Managers – input to workshops ○ Supervisors social care – Representation on local Steering Group and local tasking of staff ○ Occupational therapists social care – input to workshops ○ County SAP lead officer – representation on Steering Group and input to business processes ○ ICT managers and staff – installation and configuration of hardware and software, including connectivity to NHS		10 10 15 4 15 30
Key Roles and/or responsibilities	**Total Estimated staff days**	**Breakdown of staff days**
NHS Operational Staff – Health Care, inc. training ***Called on as required not seconded, to provide expertise and experience***	**70**	
○ District nurses – input to workshops ○ Nursing manager – representation on local Steering Group, local tasking of staff ○ Community rehabilitation team – input to workshops ○ General Practitioners – representation on Steering Group and input to business processes ○ ICT Manager and staff – NHS connectivity and local configuration of hardware and software		15 15 15 10 15
Woking Borough Council inc. training ***Called on as required not seconded, to provide expertise***	**51**	

and experience		
○ Home link manager and staff		10
○ Community services manager and staff		10
○ Care centre manager and staff		10
○ Housing manager and staff		6
○ ICT manager and staff		10
○ Administrative staff		5
Total	**530 staff days**	

Table 4 - Resources

The time given by the service managers and practitioners was carefully managed to ensure they were used to best effect. In this way they were not diverted from their mainstream responsibilities for longer than necessary.

Case Studies

Part of the justification process for SAP required the partners of the two pilot projects to describe related case studies. These help place SAP in context and provide good background reading, before reading the Requirements section.

The following cases studies comprise two from Surrey and one from the Wirral.

Case Study 1 – from Surrey

Mrs X, an elderly lady living in her own home, had been unknown to local health and social care providers and had been coping well without support from others. Her family visited infrequently as they lived a distance away.

Following an acute episode, she spent three weeks in a London hospital. At the time of discharge one referral was made to the District Nurse team for wound dressing. No other information was given.

During the District Nurses first home visit it became apparent that Mrs X had other needs. During her hospital stay she had lost confidence and did not seem to be able to care for her self adequately. Her family lived too far away to provide the level of support she needed on a daily basis and because previously she had lived very independently there was no established network of support for her. There were also issues around her mobility within the home. A contact assessment and part of an overview assessment were completed.

A referral was made to the Community Rehabilitation team for early intervention, as the situation was unlikely to hold for more than a couple of days and readmission to a local hospital was likely. Acting on the information contained in the contact and overview assessments, the OT's home visit established the need for a raised toilet seat, and other bathroom aids. Also, it was also determined in the overview assessment that although they could improve Mrs. X's functionality there was going to be a need for on going care support to maintain Mrs X in her own home.

A referral was made to a Care Manger. This practitioner was able to see the intervention that had already taken place, had up to date information and the views of two other professionals when she visited Mrs X. The overview assessment was completed and because of the details already known a shorter home visit than would previously have been the case took place. Home care services were introduced immediately to complement the work that the community rehabilitation team were undertaking and the hospital admission was prevented.

All three professionals now involved were fully informed about each other's role and had access to up to date information about the service user to assist on going care and support.

Early intervention negated the need for hospital admission.

Case Study 2 – from Surrey

Mrs M collapsed whilst on her weekly visit to the Post Office. An ambulance was called and Mrs M was taken to the A&E department of the local hospital. It was 4.00pm on a Friday afternoon when she was admitted and because Mrs M was semi conscious she was unable to give any information about herself. The ambulance crew were able to provide her name and address from her pension book.

During Friday evening a ward nurse looked up e-SAP to see if Mrs M had been assessed previously. Two weeks previously she had been referred to the Social Care team by a day centre Manager using a contact assessment. The Manager had noticed that Mrs M was not coping very well, and had mentioned that she kept forgetting to take 'her pills'. Her personal care was not to its usual standard and other users of the centre had complained that she had an unpleasant odour.

An overview assessment had been carried out but services had not yet started to support Mrs M. However the overview assessment noted her medication and from that information the casualty staff were able to make a diagnosis and give medication to correct Mrs M's condition.

Contact was made with the family and Mrs M was discharged on the Saturday morning and a referral made to the district nursing team to call at her home on Monday to ensure that she had taken her medication and to set up arrangements so that it was taken regularly.

Mrs M had only one night in hospital. Without the e-SAP Mrs M's treatment could not have started until the GP could have been contacted on the Monday. By this time she may have deteriorated further and this could have led to a lengthy hospital stay during which time there would have been a further loss of independence.

The up to date information contained in e-SAP enabled the saving of at least two nights in hospital.

Case Study 3 – from the Wirral

A 74-year-old man, living in sheltered accommodation, was admitted to Arrowe Park Hospital with "confusion". Earlier, neighbours had expressed concern to the Warden about the man. This case presented with many physical elements but they were not the cause of the admission.

The man was referred to the Liaison Psychiatry Older Persons Team for assessment as concerns had been raised on the ward regarding his ability to live alone at home. The medical notes made several references to "Dementia".

It transpired that this man had been seen 4 weeks earlier by a social worker in the community older people's team and his assessment was recorded electronically as part of the FAME project. That overview assessment had established that the man was coping independently and was not in need of support. It did not reveal any cognitive impairment but did identify an element of depression in that the man was lonely and did not have a positive outlook on life.

Liaison psychiatry, as participants in FAME, was able to access the assessment and was thus able to eliminate any long-term causes of the confusion and disregard dementia. The assessment by Liaison Psychiatry was instead able to concentrate on other possible factors that could have caused the "confusion" such as depression. When the admission data was reviewed it became apparent that the man had commenced Tramodol for pain relief 2 weeks earlier and his decline in cognitive function appeared to have started at this point.

The Tramodol was stopped and the cognitive symptoms resolved. Depressive features remained the same but did not warrant follow up by community based mental health services or the need for antidepressant therapy.

The man was discharged home and followed up by his GP. The likelihood is that his stay in hospital would have been longer without the opportunity FAME afforded liaison psychiatry to see his earlier assessment. Nor should the possibility be discounted that he might have lost his independence altogether. The risk of opportunistic infection and of further depression and demotivation, and the potential significant threat to his independence arising from these and other factors was considerably lessened as a result of the opportunity afforded by FAME.

Timely and up to date information enabled speedy diagnosis and negated the need for a hospital stay.

Requirements

The requirements for any individual e-SAP system will vary. However, a certain amount of detail is sufficiently general, so as to be applicable to most implementations.

Business Requirements

The business requirements are shown here as a hierarchy (see Figure 2 and Figure 3), which have been categorised into eight general areas. The intention is that these requirements can either be used as a basis for local requirements or be used as 'sanity' checks with existing requirements.

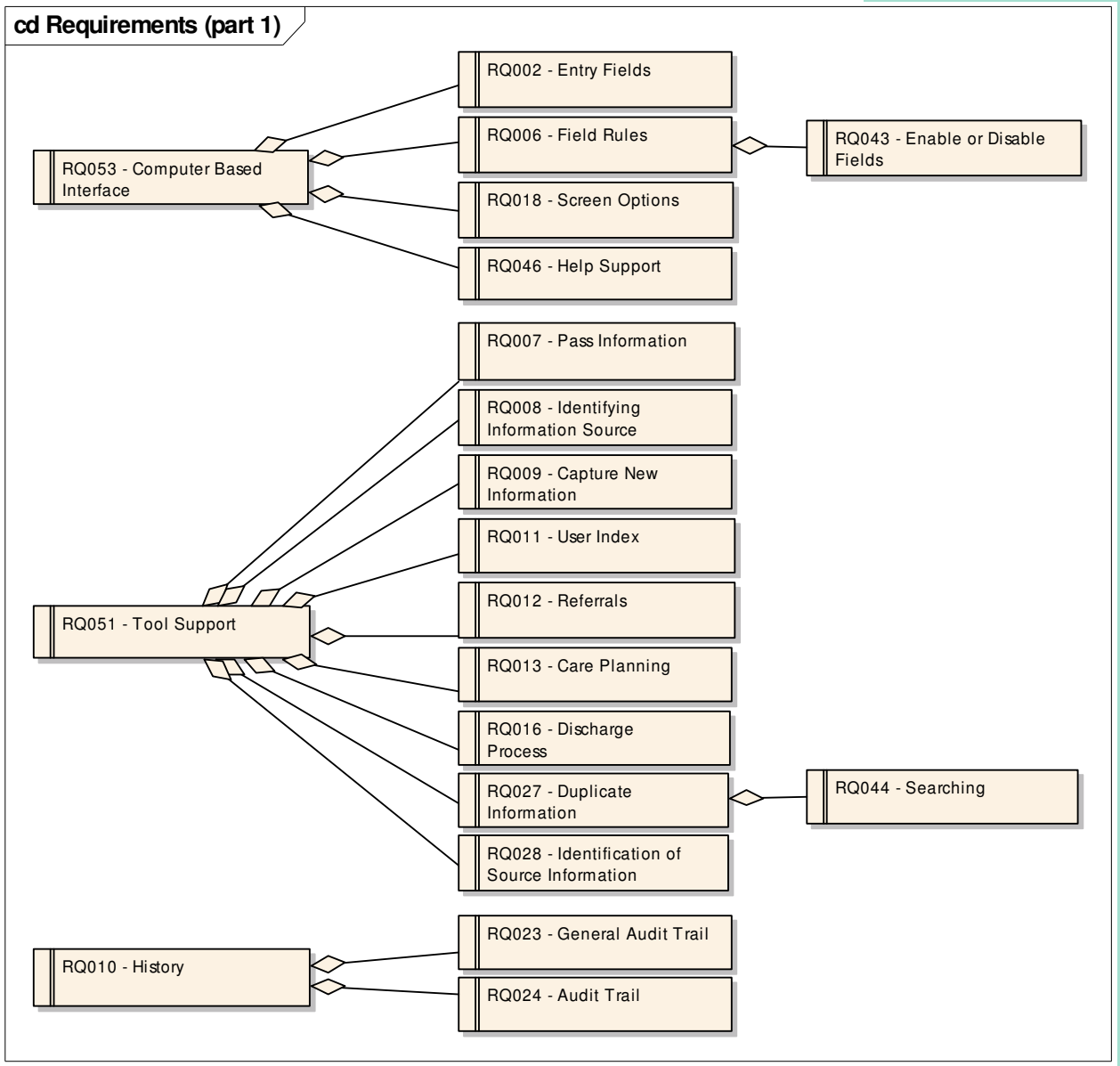

Figure 2 – Requirements (part 1)

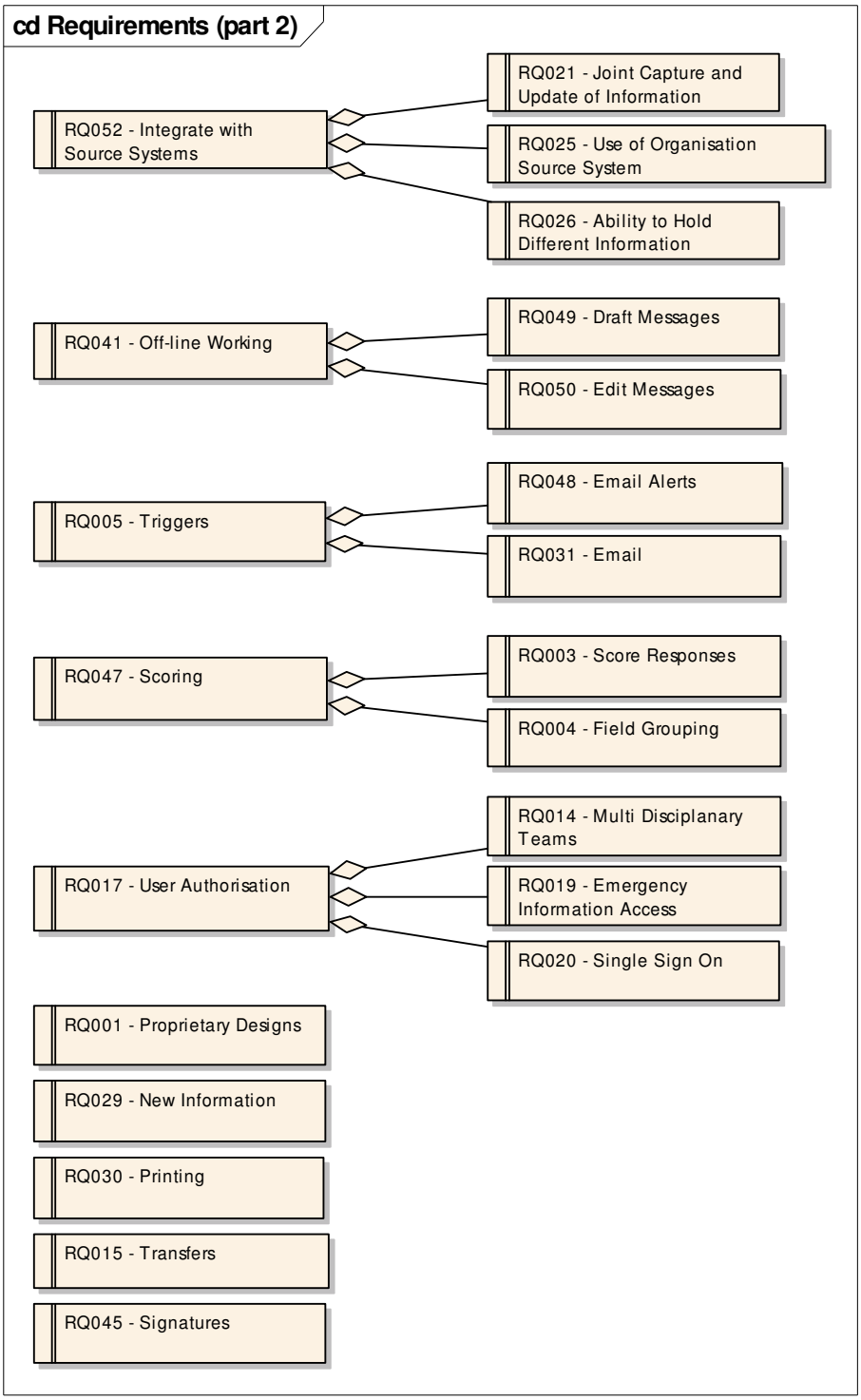

Figure 3 – Requirements (part 2)

The requirements are described, in more detail, in Table 5.

It should be noted that from the point-of-view of requirements, it is helpful to define them in terms of accessing a single source of data. Hence, some of the requirements below make reference to the Central Data Repository (CDR), which is a notional repository in which all assessment related data is stored.

Requirement	Description
RQ001 - Proprietary Designs	Use proprietary assessment designs as well as locally developed and tailored designs.
RQ002 - Entry Fields	Allow entry of data into an assessment by using GUI controls such as pick lists, dates, free text and numeric fields.
RQ003 - Score Responses	Be able to score responses to questions if necessary.
RQ004 - Field Grouping	Group different fields and sum responses.
RQ005 - Triggers	Trigger actions based on a response or group of responses. For example, send communications to appropriate care professionals as to the need for further assessments and referrals.
RQ006 - Field Rules	Contain rules to prompt or skip further questions or sections depending on the answer to a question or section.
RQ007 - Pass Information	Pass information between assessments either in its entirety or in summary form.
RQ008 - Identifying Information Source	Make use of existing information, from other systems, fully identifying the source of that information.
RQ009 - Capture New Information	The ability to capture new information by manual entry by the assessor; identifying the source.
RQ010 - History	Maintain a history of changes to the assessment including who made the change.

RQ011 - User Index	The ability to support a merged single service user index. This information should be captured as part of the e-SAP form and allow users to be uniquely identified.
RQ012 - Referrals	The ability to handle referrals – both the initiation and receipt of referrals.
RQ013 - Care Planning	Information about support for care planning should be captured as part of the e-SAP form.
RQ014 - Multi Disciplinary Teams	Support for multi disciplinary teams, including the ability for care professionals to be in more than one team, directorate or organisation. This requirement implies that users of e-SAP can "log in" to the electronic version of e-SAP using different user names and that different privileges be assigned to those users.
RQ015 - Transfers	Support for transfers between care professional teams/wards and processes.
RQ016 - Discharge Process	Support discharges process by being able to initiate an assessment. .
RQ017 - User Authorisation	Users should only be able to carry out functions and update or process data from the CDR that are appropriate to their job role/ user id and access category in relation to the business process.
RQ018 - Screen Options	The screens/menus/forms presented to any user should contain choices and options, which are appropriate to them in accordance with their user category and role. Options used by other access categories should neither be accessible to them, nor presented on screen.
RQ019 - Emergency Information Access	In a life and death situation and during critical incidents, there may be a need for a professional to take the decision that they need to see more information than their job role access entitles them to see, if they believe this is in the interests

	of the service user. For example, emergency access may be justified if there is risk of significant harm to themselves or others, or some legal reasons for disclosure.
RQ020 - Single Sign On	A single sign on may be required to integrate with existing infrastructure.
RQ021 - Joint Capture and Update of Information	The Central Data Repository (CDR) will need to support joint capture and update of information for source systems. The CDR will need to contain rules associated with the data item, role and organisation of the user to allow the data to be inserted/created or updated in the source system or systems. For example, a Social Worker changing a contact address in the CDR may allow the data to be written back to the Social Services system and the local PCT system, but not the GP system. The single assessment process for older people should not be responsible for data integrity across systems. The referral data is sent to the handling agency (this may include changed address data). If the agency requires the referral information they will get the latest address.
RQ022 - Rule Support	The writing of information to source systems will need to take account of the rules and logic of the source system. Not all of the source systems will have an API. The CDR will therefore need to take account of the rules in source systems. If the data is not valid for the source system there needs to be a process in place to alert the user of this. This requirement implies that the external interfaces to the source systems will need to conform to the business rules of the source systems.
RQ023 - General Audit Trail	An audit trail of all user activity will be needed, indicating who accessed and/or updated what and when. It may also be the case that an audit trail may need to be referred to in conjunction with a source system audit trail.
RQ024 - Audit Trail	This requirement relates to the general audit trail. It may also be necessary to maintain a separate audit trail of CDR and e-SAP implementation

	configurations. This would allow checks to be made that ensure changes are properly authorised in conjunction with the front-line user audits.
RQ025 - Use of Organisation Source System	Care professionals involved in SAP are likely, at least in the short term, to be using their organisation's source system for service users seen in other care groups. In order to maintain the validity of the data and avoid duplicate data entry the data will need to be read and written between the CDR and source systems in real time. This requirement relates to requirement RQ021 and deals with the movement of data between e-SAP and the source systems.
RQ026 - Ability to Hold Different Information	It is possible for different organisations to hold different information on the service user – for example, address could be different because systems use different gazetteers, or totally different because one address is incorrect or because the addresses serve different purposes. Rules are required to handle the reading and writing of data where source systems show different versions of the same data or where the same data items hold different purposes. This requirement is linked to RQ021 and is a function of the external system interface.
RQ027 - Duplicate Information	It is possible for duplicate information to exist across source systems that cannot be readily matched. For example, if service user matching was based on NHS Number and a service user existed on more than one system, but did not have an NHS Number, it would be possible to create duplicate records in the CDR. The CDR will, therefore, need to contain facilities for the handling and cleaning of duplicate data.
RQ028 - Identification of Source Information	In order for the care professional to make judgements on the degree of relevance or reliability of the information, the source of the information needs to be identified. This will include contextual information such as the name and role of the person who recorded the data, and the date.

RQ029 - New Information	There will be information required by e-SAP that does not exist in any source system. This data will need to be held in the CDR. This requirement implies that e-SAP will need its own data source that, as a minimum, contains data that is not stored anywhere else.
RQ030 - Printing	It may be necessary to produce printouts or extracts of information from the CDR, via the e-SAP application – for example, the production of letters, submitting case notes or to hand to someone.
RQ031 - Email	In defining the rules for some processes, an action may be to forward an e-mail to an individual. It might be helpful to be able to do this from within the e-SAP application automatically, using the e-mail system applicable to the front-line worker.
RQ032 - Secure Messaging	Service users must be confident that the information they provide to care professionals is handled in a secure and confidential manner. This access may well need to be over ridden in an emergency situation. For example, risk of significant harm to themselves or others, or some legal reasons to disclose.
RQ033 - Training Packages	Training packages will be required that are tailored to the various SAP processes and that can be used for the IT element of an e-SAP implementation.
RQ034 - Responsive System	The system may be required to provide real time support to care professionals involved in e-SAP. A responsive system is, therefore, required, providing support to the care professionals in the locations they deliver care. Performance will be judged on the ability to provide adequate support to the care process.
RQ035 - Minimal Impact on Other Systems	Implementation or installation of e-SAP may have an effect on the performance of existing systems. It may, therefore, be desirable that the required level of performance is achieved in such a manner that it does not lead to performance degradation for other users of existing systems or

	networks.
RQ036 - 24 By 7 Support	Depending on the criticality of the system, it may be required to provide support to the care processes on a 24 hour a day, seven days a week basis. As such, the e-SAP may need in built resilience; effective backup and recovery procedures and help desk support to reduce the risk and impact of the CDR, interfaces and e-SAP being unavailable.
RQ037 - Availability	The availability of source systems may be necessary to providing effective support to the care processes. It may be important, that if a source system becomes unavailable, there are mechanisms to alert the care professional and update the CDR and source systems.
RQ038 - Process Change	It is inevitable that there will be changes to processes and, therefore, the e-SAP configuration. The local configuration of e-SAP must be able to easily change and adapt its configuration as business processes evolve; preferably, without reference to the system supplier.
RQ039 - Changes to Data Structure	With changes to the process it is also likely that there will be changes to the underlying dataset and CDR database. The local configuration of the CDR must be able to easily change and adapt as the core CDR dataset changes. The supplier must be able to implement changes to the core database in a timely manner. This requirement is related to RQ038 and, as such, needs to be bounded so that it is clear how much of the process can be easily changed.
RQ040 - Change in Interface	A change in the dataset or in a source system or the addition of a new source system may necessitate a change in the interface between the CDR and source system. The local configuration of the system interfaces must be able to easily change and adapt, without reference to the system supplier. Standard interfaces can be used. It is the responsibility of the source system to populate the agreed interfaces appropriately.

	This requirement implies that a defined interface is imposed between e-SAP and the Source Systems. Changes to the interface will most likely occur when modifications are made to the e-SAP forms.
RQ041 - Off-line Working	Implies the ability to download messages to store on a local storage device, and then to subsequently synchronise this data when on-line.
RQ042 - Save Messages	The ability to save a message to send to others where they can see the data and print it out.
RQ043 - Enable or Disable Fields	The ability to disable fields, based on a value entered in other fields. For example, questions like “Do you smoke? (Y/N)”, “How many a week? (xx/week)” may require the second question to remains disables until the first question is answered “Y”.
RQ044 - Searching	To take data and match records based on field values and probability. For example, NHS Number is known, otherwise Surname and date of birth, otherwise manually match and write back result for future automatic matching.
RQ045 - Signatures	To be able to capture and send a signature with a form. This may require the addition of PC tablet or other such technology.
RQ046 - Help Support	Various types of help might be required. For example, the ability to call up general help from e-SAP or to bring up context sensitive help, based on the value of previously entered fields.
RQ047 - Scoring	To take answers and score them, in order to provide an action plan.
RQ048 - Email Alerts	Ability to send email alerts for escalation purposes.
RQ049 - Draft Messages	The ability to save assessments in draft form and complete them later. Entering information into an assessment may be done in several stages by the same assessor, and require them to save it

	whilst they are working on it.
RQ050 - Edit Messages	To open a previous assessment, make changes and send on as a new message. This requirement can be interpreted as either the ability to append information to existing assessments or the ability to create a new assessment, based on values from an earlier assessment.
RQ051 - Tool Support	The solution must implement a certified SAP tool – that is, it must support a Single Assessment Process and allow assessors to enter assessment information into a form via a computer interface.
RQ052 - Integrate with Source Systems	e-SAP will need to move data between itself and other external systems (known as Source Systems).
RQ053 - Computer Based Interface	The solution should support the entry of data into a computer interface, such as a Web browser.

Table 5 – Requirements

It should be emphasised that the above requirements are derived from the pilot projects and should, as such, be treated only as a general guide.

Use Case Model

A Use Case Model describes the proposed functionality of a system. A use case represents a discrete unit of interaction between a user (human or machine) and the system. A use case is a single unit of meaningful work; for example, creating an assessment, modifying an assessment are all use cases.

Each use case has a description, which describes the functionality that will be built in the proposed system. A use case may 'include' another use case 's functionality or 'extend' another use case with its own behaviour.

Use Cases are typically related to 'actors'. An actor is a human or machine entity that interacts with the system to perform meaningful work.

Use cases are, where possible, technology neutral.

The Use Case Model described in this section expands on the requirements to present a more coherent, user oriented, view of a SAP system.

Each use case is given a level and a scope. The meanings of these are given below:

Scope:	
System (white box)	A system use case that has the computer system (SAP implementation) as its scope. The "white box" indicates that something of its internal workings is revealed.
Component	Is at a lower level and refers to a component or subsystem.
Level:	
User Goal	Corresponds to the "elementary business process" and defines the goal(s) of the primary actors - in this case the assessor and assessee.
Subfunction Goal	Represent the goals that are required to carry out the user goals.

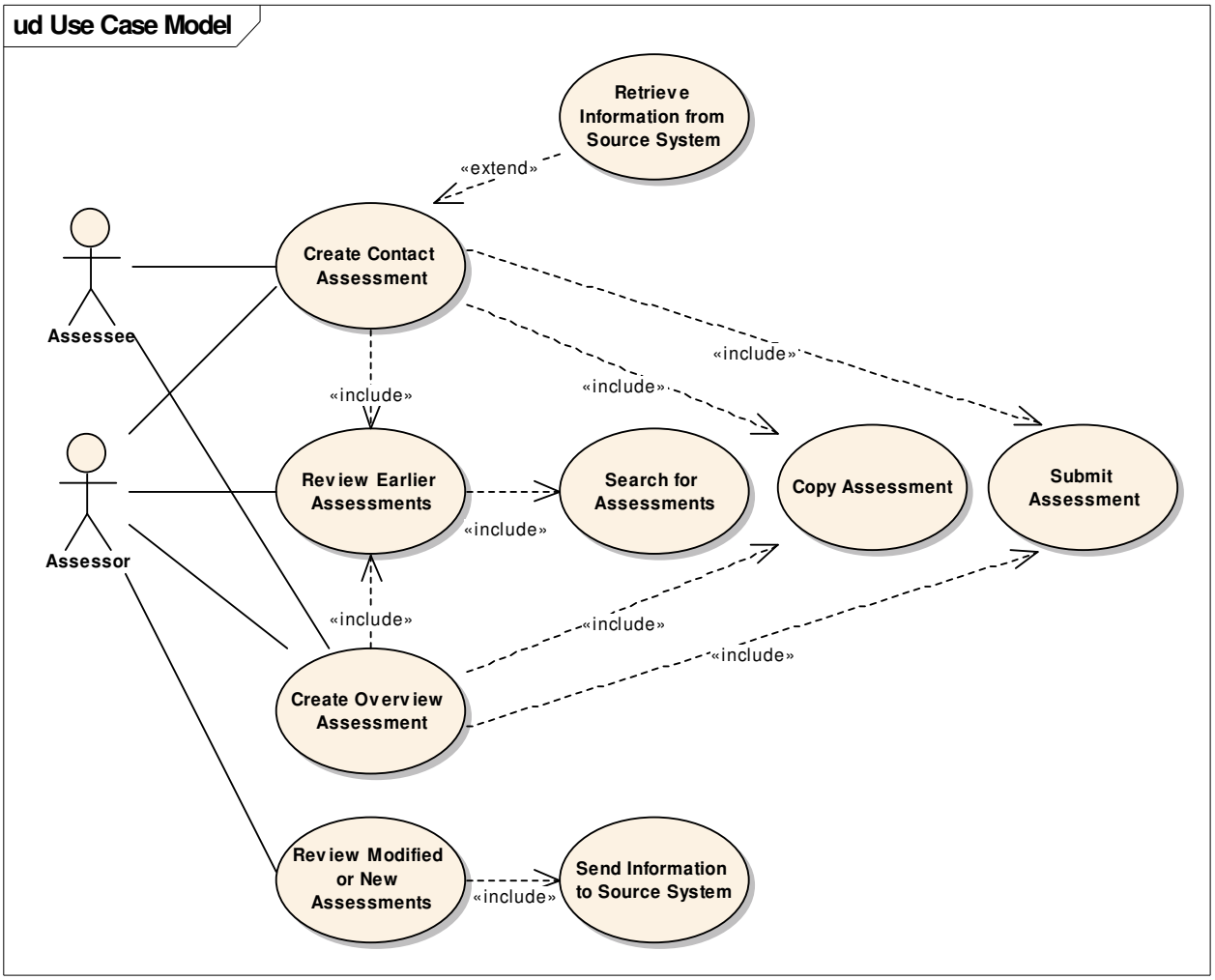

Figure 4 – Use Case Model

Figure 4 shows how the use cases relate to the actors and to one another.

For example, *Create Contact Assessment* is related to the assessee and the assessor. It also includes the ability to *Submit Assessment* and to *Copy Assessment*. It has a User Goal level, which means that is an elementary business process.

Create Contact Assessment

A Contact Assessment collects basic personnel information about an assessee. Contact assessments are done before an overview assessment.

Constraints

- *Mandatory Pre-condition.* Assessor is currently reviewing earlier assessments.

Scenarios

Main Success Scenario {Basic Path}.

1. This use case starts when the assessor decides to create a Contact Assessment.
2. Assessor reviews earlier assessments - Review Earlier Assessments.
3. Assessor selects assessment on which to base new Contact Assessment.
4. e-SAP populates new Contact Assessment with information from earlier Contact Assessment - Copy Assessment.
5. Assessor fills in the new Contact Assessment, overwriting fields where necessary.
6. Assessee consents to the use of information held on the form.
7. Assessor identifies the Partners to which the form should be distributed.
8. Assessor submits Contact Assessment - Submit Assessment.

3a. e-SAP is unable to find Assessee {Extension}.

3a1. Use case continues at the next step.

4a. No existing information about Assessee {Extension}.

4a1. Contact Assessment is populated with information from the Source System - Retrieve Information From Source System.

6a. Assessee does not give consent {Extension}.

8a. e-SAP is unable to submit Contact Assessment {Extension}.

8a1. Contact Assessment is stored until it becomes possible to submit assessment.

Tagged Values

- Level = User Goal.
- Primary Actors = Assessor, Assessee.
- Scope = System (white-box).

Create Overview Assessment

An Overview Assessment must be performed after a Contact Assessment. This, in effect, means that the two assessments can be done together by one assessor or done as two assessments by two different assessors.

Scenarios

Main Success Scenario {Basic Path}.

1. This use case starts when the assessor decides to do an Overview Assessment.
2. Assessor reviews earlier assessments - Review Earlier Assessments.
3. Assessor selects an earlier Contact Assessment on which to base new Overview Assessment.
4. Assessor selects an earlier Overview Assessment on which to base new Overview Assessment.
5. e-SAP populates new Overview Assessment with information from earlier Contact and Overview Assessments - Copy Assessment.
6. Assessor fills in the new Overview Assessment, overwriting fields where necessary.
7. Assessee consents to the use of information held on the form.

8. Assessor identifies the Partners to which the form should be distributed.

9. Assessor submits Overview Assessment - Submit Assessment.

3a. e-SAP is unable to find earlier Contact Assessment {Extension}.

4a1. Use case continues at the next step.

4a. e-SAP is unable to find earlier Overview Assessment {Extension}.

4a1. Use case continues at the next step.

5a. Not all the information is available {Extension}.

5a1. e-SAP populates as much information as is available.

7a. Assessee does not give consent {Extension}.

9a. e-SAP is unable to submit Contact Assessment {Extension}.

8a1. Contact Assessment is stored until it becomes possible to submit assessment.

Tagged Values

- Level = User Goal.
- Primary Actors = Assessor, Assessee.
- Scope = System (white-box).

Copy Assessment

When creating an assessment a new assessment can be based on an earlier one. This means that the assessor does not have to re-enter previously captured data.

Constraints

- *Mandatory Pre-condition*. A previous assessment must have been specified.

Scenarios

Main Success Scenario {Basic Path}.

1. This use case starts when the user opts to copy information from a previous assessment.
2. System determines which assessments (contact or overview) can be copied by the user.
3. User identifies the assessments they want copied.
4. System creates new assessment.
5. System copies entries from previous assessment into new assessment.

Tagged Values

- Level = Subfunction.
- Primary Actors = Assessor.
- Scope = System (white box).

Submit Assessment

Once the assessor has completed an assessment it must be submitted. This allows the assessment to be directed to the appropriate people, who need to see and act upon the results of the assessment. The assessment also needs to be stored for future reference.

Constraints

- *Mandatory Pre-condition*. The assessment form is valid and has been filled in correctly.

Scenarios

Main Success Scenario {Basic Path}.

1. This use case starts when the user decides to submit an assessment form.
2. System persists a copy of the assessment.
3. System sends assessment to identified recipients.
4. System sends assessment to source systems - Send Information to Source System.
5. System informs recipients of the availability of assessment.

3a. Filtering is used to Identify Recipients {Extension}.

3a1. System extracts fields from the assessment and uses business logic to determine who the recipients should be.

4a. No Automatic Update of Source Systems {Extension}.

4a1. Proceed to step 5.

Tagged Values

- Level = Subfunction.
- Primary Actors = Assessor.
- Scope = System (white box).

Retrieve Information from Source System

Integration with external source systems can require that information be extracted from them in order to populate part of an assessment form. This use case describes a scenario where information is retrieved from a source system.

Scenarios

Main Success Scenario {Basic Path}.

1. This use case starts when the System (SAP) requests information from the User's source system.
2. System indicates to the source system the type of information required.
3. Source System sends information to the System.
4. System translates from source system to own internal format.

Tagged Values

- Level = Subfunction.
- Primary Actors = Assessor.
- Scope = Component.

Review Earlier Assessments

Sometimes it may be necessary for the assessor to review information held in e-SAP about a particular assessee. This scenario makes the assumption that the assessor enters e-SAP via their source system. In doing so, information is made available to e-SAP from the source system so that e-SAP can find information about the assessee, with minimal intervention from the assessor.

Constraints

- *Mandatory Pre-condition*. User is using local source

system.

Scenarios

Main Success Scenario {Basic Path}.

1. This use case starts when the assessor decides to review earlier assessments of the assessee they are currently viewing in their source system.
2. Assessor selects option to enter e-SAP system.
3. Source System sends information about the assessee to e-SAP.
4. e-SAP finds earlier assessments and presents a list of available assessments to the assessor. The information presented to the assessor includes only information that the assessor is allowed to see - Search for Assessments.
5. Assessor selects the assessment that they are interested in.
6. e-SAP presents the assessment to the assessor.
7. The use case ends when the assessor finishes reviewing the assessment.

4a. More than one Assessee found {Extension}.

4a1. e-SAP presents a list of identified assessees to the assessor.

4a2. Assessor identifies the assessee they are interested in.

4a3. e-SAP presents list of assessments to assessor.

4-6a. Only one assessment found {Extension}.

4-6a1. e-SAP presents assessment to assessor.

Tagged Values

- Level = User Goal.
- Primary Actors = Assessor, Assessee.
- Scope = System (white-box).

Review Modified or New Assessments

Once an assessor has submitted an assessment it is sent to other interested assessors according to predefined business rules. On receipt of a new or modified assessment an assessor must be made aware of it and then deal with it.

This scenario assumes that the assessor has been made aware of a new or modified assessment, the details of which are then sent to the assessor's source system.

Constraints

- *Mandatory Pre-condition.* A new or updated assessment is made available.

Scenarios

Main Success Scenario {Basic Path}.

1. This use case starts when an assessor becomes aware of a new or modified assessment that may concern them.
2. e-SAP presents new or modified assessments to the assessor.
3. Assessor identifies the assessment that they are interested in viewing.
4. e-SAP retrieves the assessment and presents it to the assessor, taking care to only present information that the assessor is allowed to see.
5. Assessor decides to update source system.
6. e-SAP passes information to source system.

2a. Source System is Automatically Updated {Alternate}.

2a1. If the source system is updated automatically by e-SAP then no intervention is required by the assessor to retrieve that information. The source system, therefore, presents a list of assessments to the assessor.

3a. Source System Instigates the Retrieval {Alternate}.

3a1. If the source system keeps track of new and updated assessments then it is likely that it will instigate the retrieval of the assessment information - Search for Assessments.

5-6a. Assessor does not wish to update Source System {Extension}.

5-6a1. Use case ends.

Tagged Values

- Level = User Goal.
- Primary Actors = Assessor, Assessee.
- Scope = System (white-box).

Send Information to Source System

Integration with external source systems can require that information be sent to them in order to update or add completely new information. This use case describes a scenario where information is sent to a source system.

Scenarios

Main Success Scenario {Basic Path}.

1. This use case starts when the System (SAP) sends information to the user's source system.
2. System translates from own format to user's source system information format.
3. System sends translated information to user's source system.

Tagged Values

- Level = Subfunction.
- Primary Actors = Assessor.
- Scope = Component.

Search for Assessments

It will sometimes be necessary to search for earlier assessments so that, for example, information can be copied to a new assessment.

Scenarios

Main Success Scenario {Basic Path}.

1. This use case starts when the user initiates an assessment form search.

2. System retrieves search criteria from source system - Retrieve Information from Source System.

3. System searches saved copies of assessment forms, based on the supplied search criteria.

4. System returns summary search results to the user.

2a. User Enters Search Criteria {Extension}.

2a1. It may not be possible to derive the search criteria from the source system, in which case the user must enter the search criteria by hand.

4a. No Matches Found {Extension}.

4a1. User is informed that no matches were found.

4b. A Single Match Found {Extension}.

4b1. System returns full details of assessment to User. In doing so the System my need to take into account the access permissions of the user who instigated the search, returning only the information the User is allowed to see.

Tagged Values

- Level = Subfunction.
- Primary Actors = Assessor.
- Scope = Component.

Assessment Tool

A SAP implementation must be based on an assessment tool – that is, a specification of the fields and domains that define the single assessment process. Several assessment tools are currently available (http://www.dh.gov.uk/assetRoot/04/08/06/36/04080636.PDF) and it may be necessary to select one for local needs.

Assessment tools are typically marketed as a specification and an optional software package, which implements the assessment tool. There may also be other implementations of the assessment tool, like those developed in the pilot projects that need to be considered when developing an e-SAP system. Choosing an assessment tool may, therefore, involve implementing an assessment tool specification or purchasing an off the shelf package.

Selecting an assessment tool requires that it meet certain criteria that satisfy the needs of the agencies who will be using it.

Criteria	Comments
Accreditation Status	These are assessment tools that have been formally accredited by the Department of Health and have been approved for the single assessment process. It should be noted that accreditation status means that the assessment tool meets certain standards. It may not meet specific local requirements.
Usability	Assessment tools need user buy in. The users' need to feel confident that it meets their needs and will be usable under working conditions. A tool implementer also needs to feel confident that the tool will work well with a computer interface. Conversely, it may also be necessary to use the tool in its paper-based form.
Vendor Commitment	This is a subjective evaluation criterion but implementing and using e-SAP is a long-term commitment for all those concerned, especially for the vendors of assessment tools.
Vendor Support	Leading on from commitment, the vendor should be able to demonstrate their ability to maintain the assessment tool over a period of time. It is likely that the specification of the assessment will change over time and that upgrades will be required.

	The vendor should also show willingness to incorporate change requests from users.
Price	Pricing options vary and will represent a central part of any evaluation. The best option will, however, depend on local circumstances.
Flexibility	An assessment tool should be flexible enough to cope with local requirements.
Extensibility	Local requirements might dictate that small changes are made to the assessment tool. Ideally, the tool/vendor should be able to embrace such changes. In other words, the tool should not be too rigid.

Table 6 - Assessment Tool Evaluation Criteria

Functional Considerations

This section discusses the functional characteristics of a SAP implementation. In effect, the functional considerations are presented as a high level design by addressing the following areas:

- The types of user who can be expected to use e-SAP.
- The types of assessment supported by e-SAP.
- A generic e-SAP system architecture that is assumed throughout this document.
- An object model of SAP that defines the basic entities that typically occurs in a SAP implementation.
- The core workflows of e-SAP that define a generic set of workflows that can be found in an e-SAP system.
- The external interfaces of e-SAP that defines the boundaries of a SAP implementation.

These are described, in more detail, in the following sections.

Users

Various parties (people or organisations) take on different roles with respect to an assessment. Generally, this means that a party is either doing an assessment, is the subject of an assessment or is referenced on an assessment.

The core roles are discussed in the following sections.

Assessee

The assessee is the older person being assessed as part of the Single Assessment Process. An assessee is the subject of the assessment and gives consent for information to be made available to other people or organisations.

Assessor

An assessor is a person, such as a GP or social services worker, who fills in all or part of an assessment. An assessor is responsible for interviewing the assessee and then submitting the assessment to other interested parties. An assessor may also be the recipient of actions, resulting from an earlier assessment.

Practitioner

A practitioner is a person who works for an organisation, which provides care services. Care Managers, doctors and dentists are examples of practitioners.

It should be noted that the roles of assessor and practitioner are, to some extent, interchangeable. For example, a doctor could be referenced on an assessment as a practitioner and may take on the role of assessor on another assessment. However, on any assessment there will be at least one person who has the role of assessor, which is distinct from other people with the role of practitioner.

Assessments

The different types of assessment can be viewed as building upon each other (see Figure 5); whereby, the view of the whole person is derived from the sum of the constituent contact, overview and specialist assessments.

Figure 5 - Assessment Types

This section defines the types of assessment supported by SAP. Three types of assessment are defined here, although only the Contact Assessment and Overview Assessment have been implemented.

Contact Assessment

The Contact Assessment is a brief form designed to determine need for specialist referral or intervention for use. It can also be used in acute hospital contexts as a first step towards involvement of discharge co-ordination teams. The Contact Assessment is most likely to be used in those contexts where the need for comprehensive health and social assessment is not known e.g. In brief primary care consultations, or for example may be used as the basis of the over 75 health check.

The Overview Assessment

An Overview Assessment may be undertaken either by the same practitioner who has conducted the Contact assessment; or by a practitioner who has received a referral via a Contact assessment. In the former case the presenting problem/concern will already have been identified and simple reference to the Contact assessment may suffice e.g. 'See Contact Assessment'. In the latter case the practitioner may want to confirm the findings of the Contact assessment, to check whether anything has changed and to use this introduction to the assessment as a natural means of moving into the Overview assessment process.

In effect, an Overview Assessment is a superset of an overview assessment. Whether it is represented this way depends on the particular SAP implementation.

Single Assessment Summary

At the time of writing, the Single Assessment Summary (SAS) awaits NCRS and the National Spine standards. Currently, therefore, the Single Assessment Summary is out of scope for FAME. The intention of the Single Assessment Summary is to be a means by which case information on an individual older person is stored and shared, subject to consent and confidentiality, among health and social care professionals. It draws on information collected during the assessment process but also covers care-planning information including support and services that are being provided.

System Architecture

In order to discuss a SAP system it is necessary to present a theoretical system architecture. To this end, a high level view of a generic SAP system architecture is presented here. It is assumed throughout the remainder of this document that a typical SAP system will look something like the system depicted here.

The following diagram comprises a department and an organisation. The use of these names and the number shown here is arbitrary. They are, however, intended to represent organisational groupings of people who contribute, in some way, to the assessment process.

An e-SAP system represents the hardware and software topology on which e-SAP runs. The implementation can, as shown here, run on a network of machines and databases or be centralised onto a single server machine and database.

The following sections describe, in more detail, the component parts of the diagram.

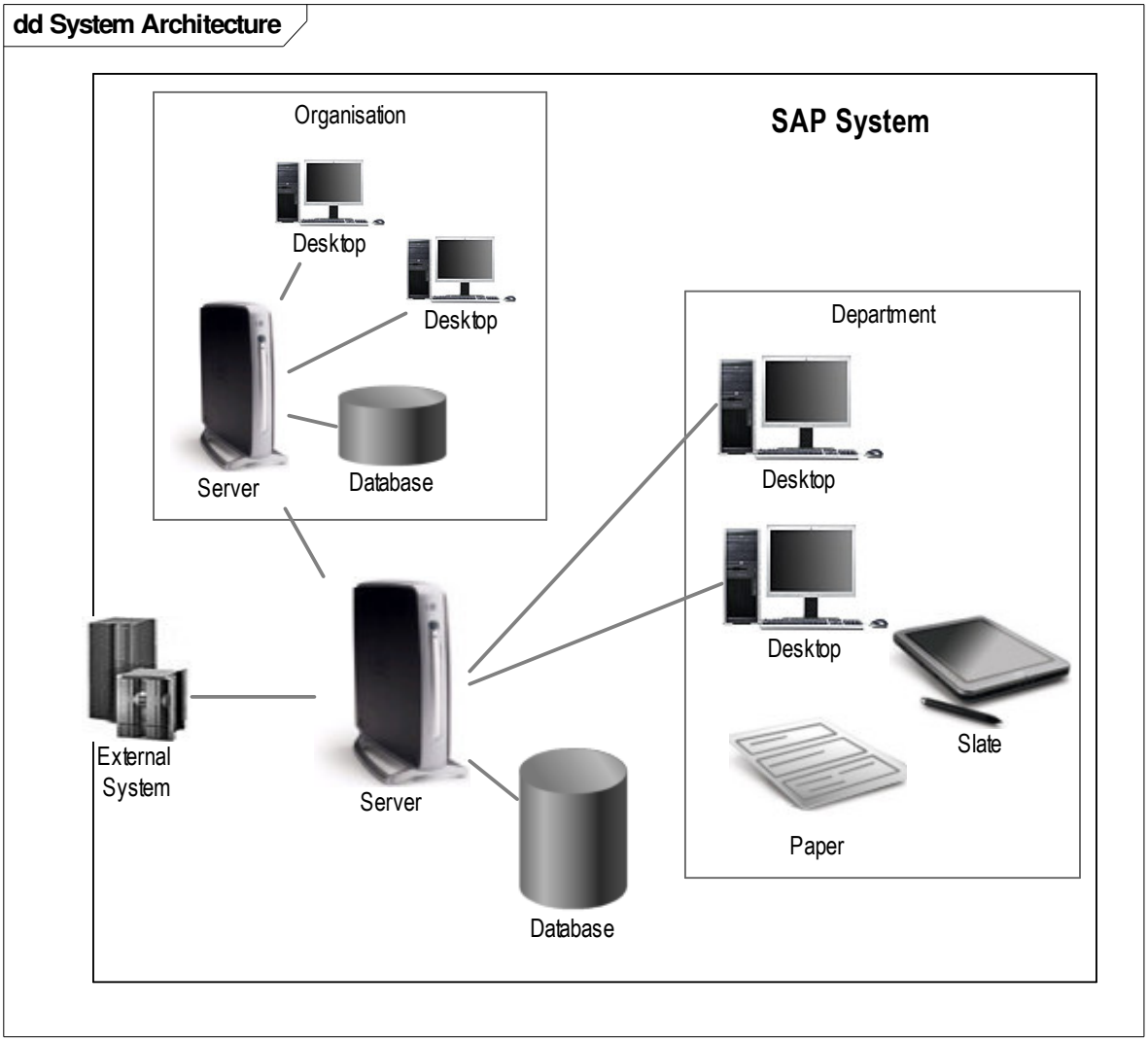

Figure 6 – System Architecture

Database

It is likely that e-SAP will contain several databases. Some will contain source information such as details on people and others will act as a repository for the assessments.

A user may not be aware of the existence of multiple databases but may perceive the system as containing a single Central Data Repository (CDR), in which all assessment information is stored. No matter how the data is physically stored, it is essential that the system maintain a consistent view of the assessment history for assessee's.

External System

External systems exist on the periphery of an e-SAP system. The nature of the data exchange between an e-SAP system and its external systems will depend on the information that the external system shares with SAP.

As an example, Anite Swift can accommodate most of the assessment data, along with additional information about assessees and practitioners. The Woking SAP implementation uses SAP as a source of basic personnel information (BPI) for assessees and practitioners, and updates Swift with a subset of information from the assessments.

Server

Depending on the size of a SAP implementation, there may be one or more server nodes, networked together, that house all or part of e-SAP.

Desktop

Desktops are shown in this diagram to represent input devices that would typically be available in an office environment. Users of e-SAP are able to use these devices to interact with the user interface of e-SAP.

Slate

A slate represents a portable input device, such as a laptop or tablet computer. Being portable in nature, they cannot be guaranteed to be constantly connected to the main network. This allows them to be either disconnected or remotely connected for periods of time.

Paper

Even though this document describes a computerised SAP implementation, allowances must also be made for paper-based entry. This allows for occasions when users do not have access to an electronic input device.

Example System Architectures

To further illustrate e-SAP system architectures, this section describes the architectures of the two pilot projects. They serve as interesting examples because, although the requirements for the two projects were similar, the resulting system architectures are different.

The underlying reasons for the differences can be summarised as follows:

- Different local circumstances
- Different technology partners

Local circumstances are, perhaps, the key driver in determining the system architecture. For example, the architecture has to take into account different external systems, user expectations and IT infrastructures.

Technology partners also have an impact on the system architecture but must provide a solution that is compatible with local circumstances. In each case, the technology partners came up with different solutions to meet local requirements. This also resulted in the selection of different assessment tools.

Both systems comprise the fundamental elements of an e-SAP system:

- Common view of an assessee.
- Multiple means of accessing and updating assessment information.
- Links to external systems that share some of the assessment information.

The Wirral e-SAP System Architecture

Figure 8 shows the system architecture of the Wirral's e-SAP implementation.

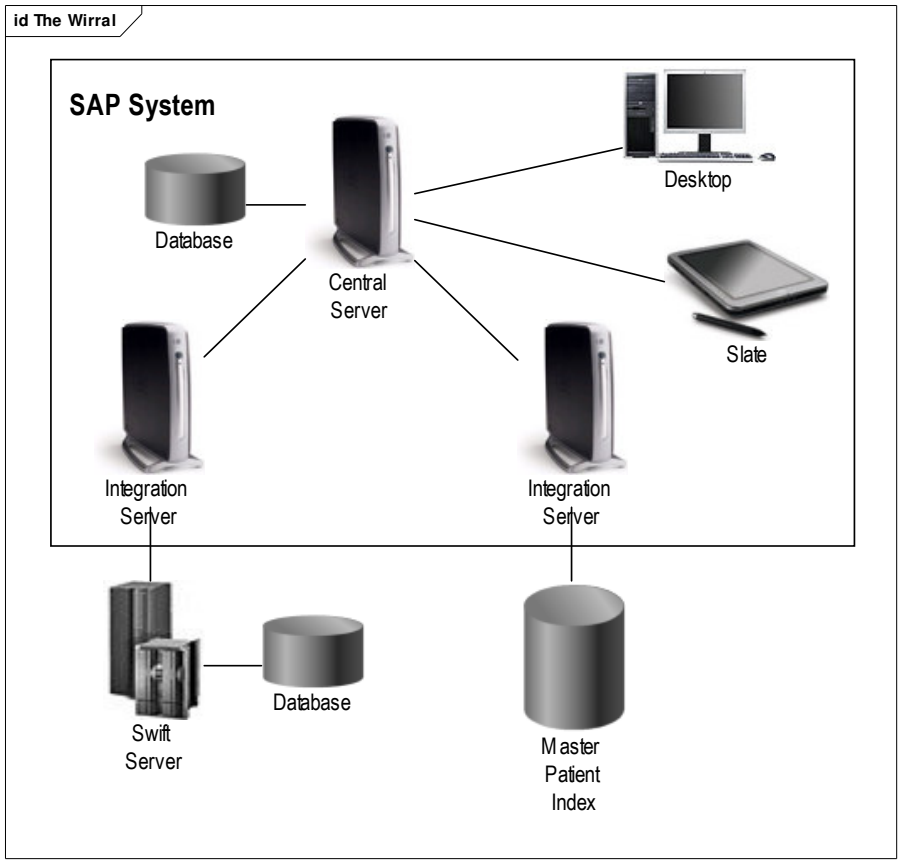

Figure 7 - The Wirral e-SAP Architecture

This system comprises a central server that provides client access to the service users, via desktop machines and slates. A central database is also maintained and contains the assessment information.

The central server accesses external systems via two integration servers. This provides access to Swift and the Master Patient Index; allowing information to passed between e-SAP and the external systems.

Woking e-SAP System Architecture

Figure 8 shows the system architecture for the Woking area e-SAP implementation.

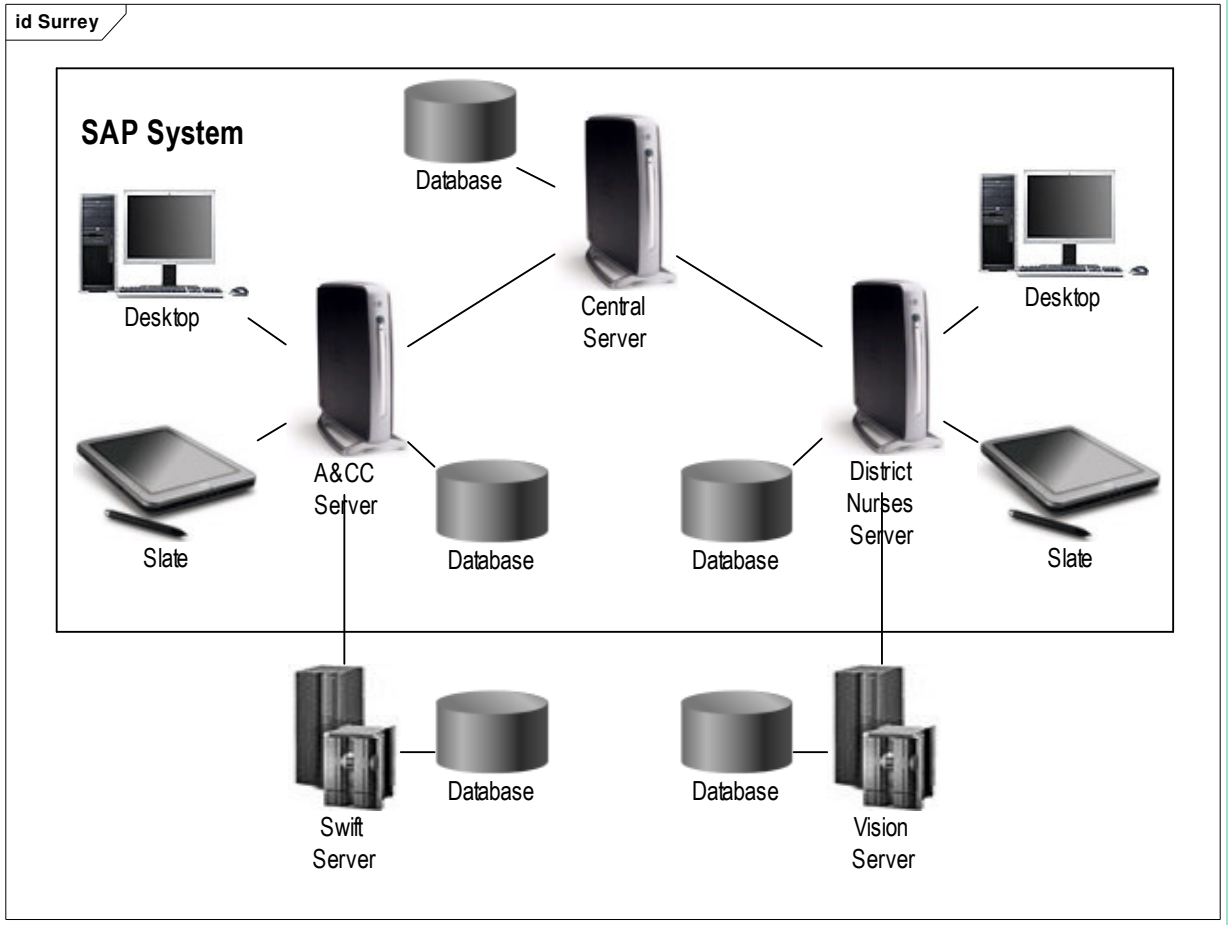

Figure 8 - Woking e-SAP Architecture

This e-SAP implementation has a central repository of assessment information attached to the central server. Client access for service users is provided by two distributed servers (A&CC and District Nurses[1]); each with their own local data store.

The two distributed servers are department oriented and provide access to external systems that are used by those departments. Information is exchanged between e-SAP and the external systems and cross-references between the systems are maintained in the central e-SAP repository.

[1] Although called *District Nurses Server* in the above diagram for illustration purposes, this server also serves other user types.

Object Model

The object model described in this section identifies the key objects that comprise an e-SAP system. In general, the objects identified here are high-level representations. For example, *Assessment* is identified, rather than specific types of assessment like Contact Assessment and Overview Assessment. Different SAP implementations will, inevitably, build their own objects, but many of the objects will be specialisations of those mentioned here.

For readability purposes, the following sections make the distinction between those objects that are party related and those that are assessment related.

All class diagrams use standard UML 2.0 notation (http://www.uml.org/).

Party

The concept of *Party* is central to SAP. An assessment can potentially refer to many types of *Party* and, indeed, cannot exist without an *Assessee* and *Assessor*.

The following class diagram shows the party related objects that typically comprise a SAP system. *Person* and *Organisation* have been identified as two concrete types of *Party* that are related in some way to an assessment. *Assessor*, *Assessee* and *Practitioner* have been identified as types of role relationships that a Person (and possibly an Organisation) can have with an assessment. For example, a *Person* could have an *Assessor* relationship with an assessment, and a *Practitioner* relationship with another assessment.

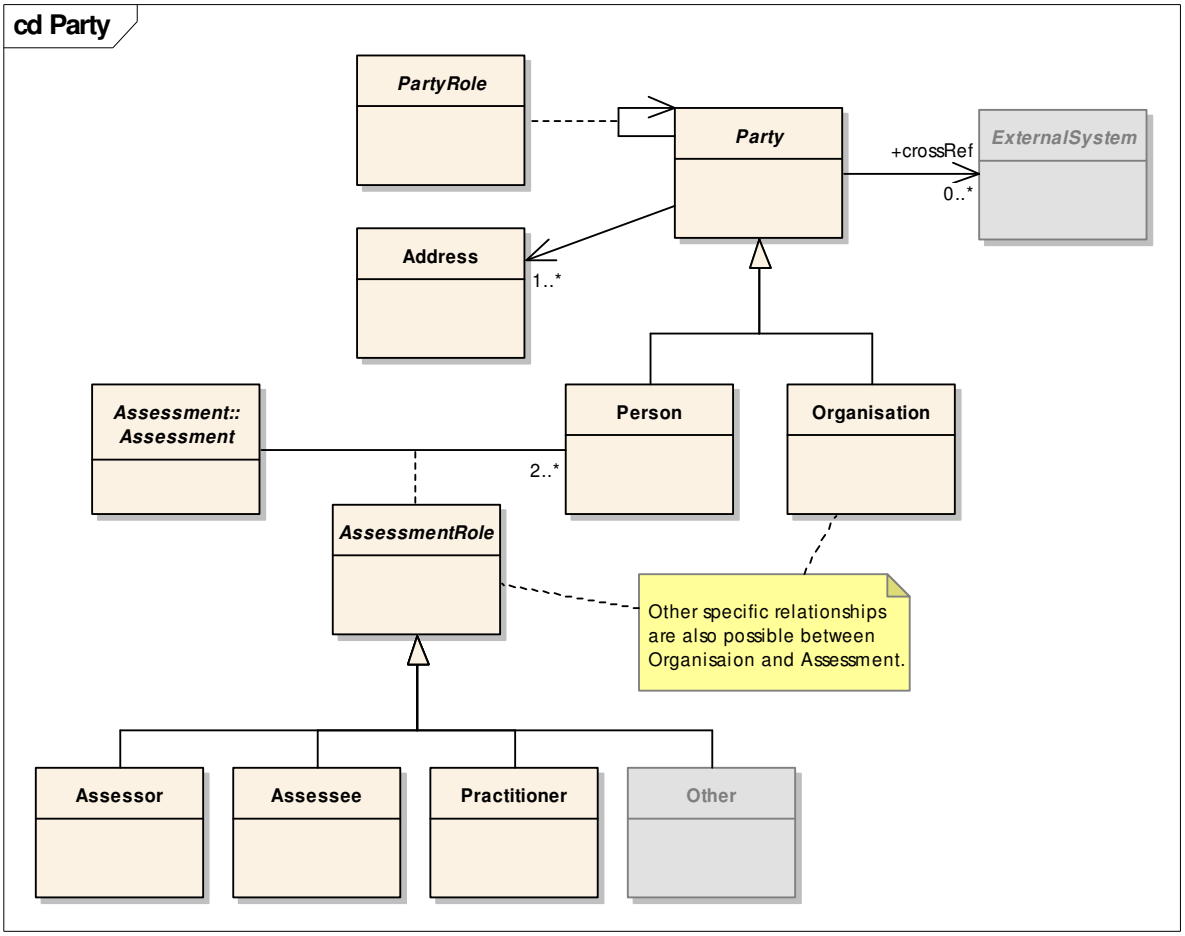

Figure 9 – Party

Party

A *Party* represents the abstract concept of a party - that is, an entity that has an address and, possibly, associations with other parties. Concrete examples of parties are Persons and Organisations.

Address

A fundamental characteristic of a Party is that it has one or more addresses. Examples of addresses used in SAP are: home address, contact address and work address.

PartyRole

A *PartyRole* defines the nature of a role relationship between two parties. For example, a SAP relationship might be between a person and the organisation they work for, or an assessee might be registered with a doctor's surgery.

Person

A *Person* object represents any person who appears on an assessment. Typically, an assessment will contain references to a number of different people, including: the assessee, assessor and a number of practitioners.

Organisation

Represents any organisation that may appear on an assessment or an organisation to which a person may be related. An organisation could, for example, be department like Social Services or a GP surgery. Organisations can also be related to other organisations allowing a Social Services department to be represented as being part of borough council.

AssessmentRole

AssessmentRole defines the nature of a role relationship between a *Person* and an *Assessment*. Typical SAP relationships of this type are assessor, assessee and practitioner.

As a minimum there must be at least an Assessor and Assessee role relationship between *Assessment* and *Person*.

It should be noted that there are other possible role relationships between Organisation and Assessment. However, these relationships are not as well defined in SAP.

Assessor

Assessor defines an assessor role relationship between a person and an assessment. There must be at least one Assessor relationship between *Assessment* and *Person*.

Assessee

Assessee defines an assessee role relationship between a person and an assessment. There must be at least one Assessee relationship between Assessment and Person.

Practitioner

Practitioner defines a practitioner role relationship between a person and an assessment. Within the context of a SAP assessment form, people such as dentists and doctors typically represent practitioners.

Other

Other assessment role relationships are also possible. However, only the most significant ones are discussed in this document.

ExternalSystem

An e-SAP system will typically work in conjunction with other systems. These may, for example, be departmental systems or national systems.

The *ExternalSystem* class shown here represents an external system that supports cross-references to parties and assessments. The precise nature of the cross-reference will depend on agreeing a shared identity between the external system and e-SAP system.

Assessment

The objects in this section define the generic structure of a SAP assessment. This structure can, in general, be applied to any of the SAP assessments.

The following class diagram shows assessment related objects. An *Assessment* can be made up of one or more *Domain* objects, which can be made up of one or more *Question* objects. An assessment can also comprise *AccessRule*, *Action* and *Consent* objects. *AccessRule* and *Consent* objects can also apply to *Domain* and *Question* objects.

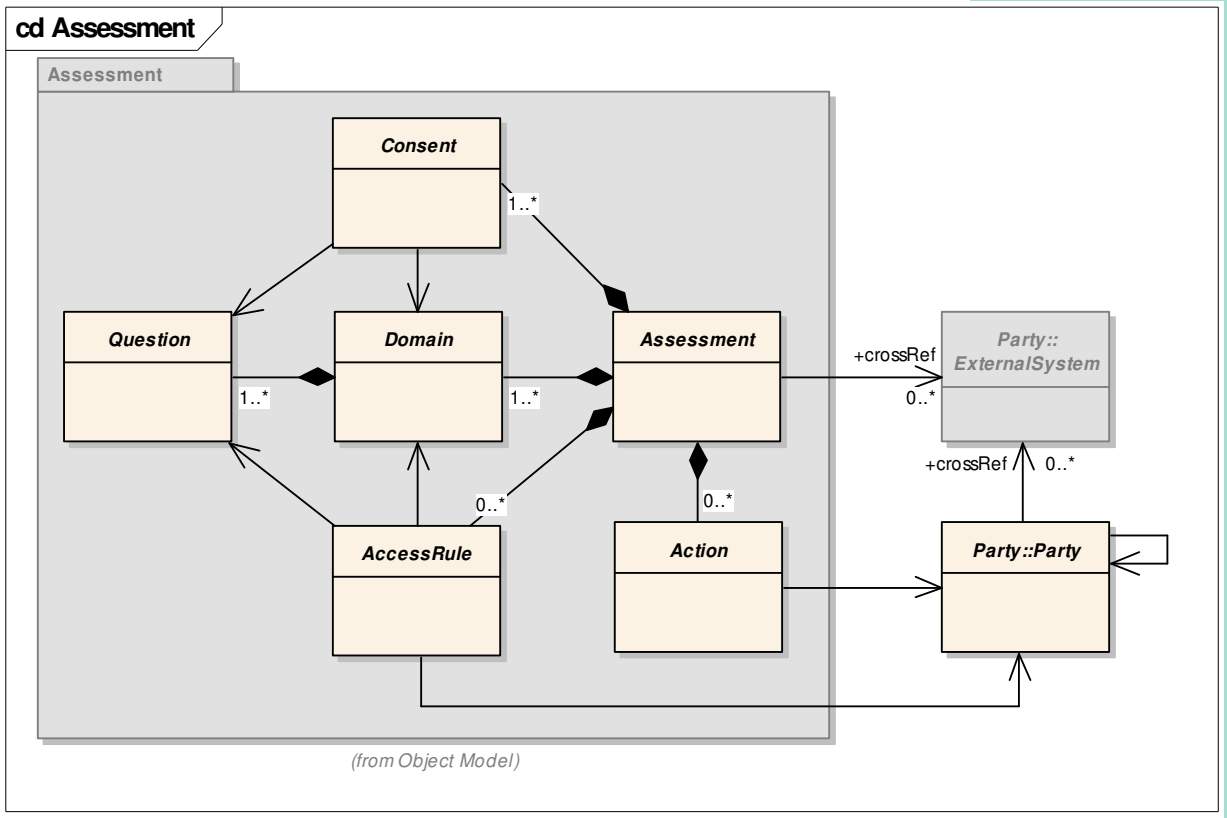

Figure 10 – Assessment

Assessment

An assessment is the core artefact within SAP for collecting information about a person, to support the process of determining their care needs.

There can be different types of assessment, including: Contact Assessment, Overview Assessment and an Assessment Summary. These assessments form the basis of the assessment process and can be added to by people involved in the assessment.

Domain

A *Domain* object represents a group of related questions that determine the assessee's needs in a particular area. An assessment will contain one or more domains, each comprising a number of questions.

Question

Each domain within an assessment comprises a number of questions. Each question serves to build up a profile of the assessee.

AccessRule

An *AccessRule* defines the domains and questions that a party has access to, within a given type of assessment.

Action

Action defines an action to be taken by a care organisation. Types of actions include:

- Overview assessment.
- Specialist assessment.
- Referral.
- Provision of information.
- An intervention.

Consent

This object can be used to apply constraint rules to domains and questions within an assessment. Information held on an assessment can only be made available to those who have the appropriate consent.

Core Workflows

This section defines the core SAP workflows. Each workflow is illustrated as a UML 2.0 Activity Diagram (http://www.uml.org/) that shows the activities that comprise the SAP process and, where appropriate, the information flow.

SAP

This workflow represents the entire SAP process. It's shown at a very high level as involving the roles: external system, assessee/assessor, data store and practitioner. In many respects an assessor and practitioner are interchangeable because a practitioner can take on the role of assessor.

The following Activity Diagram is a high level view of the single assessment process. In order to give some idea of the responsibilities involved the activities have been divided into partitions.

Initially, information may be sourced from an external system or the assessor may choose to start an assessment from scratch. The assessment then takes place between an assessor and assessee. Once completed, the assessment will be saved in a data store, viewed by one or more other parties and (possibly) saved back to an external system.

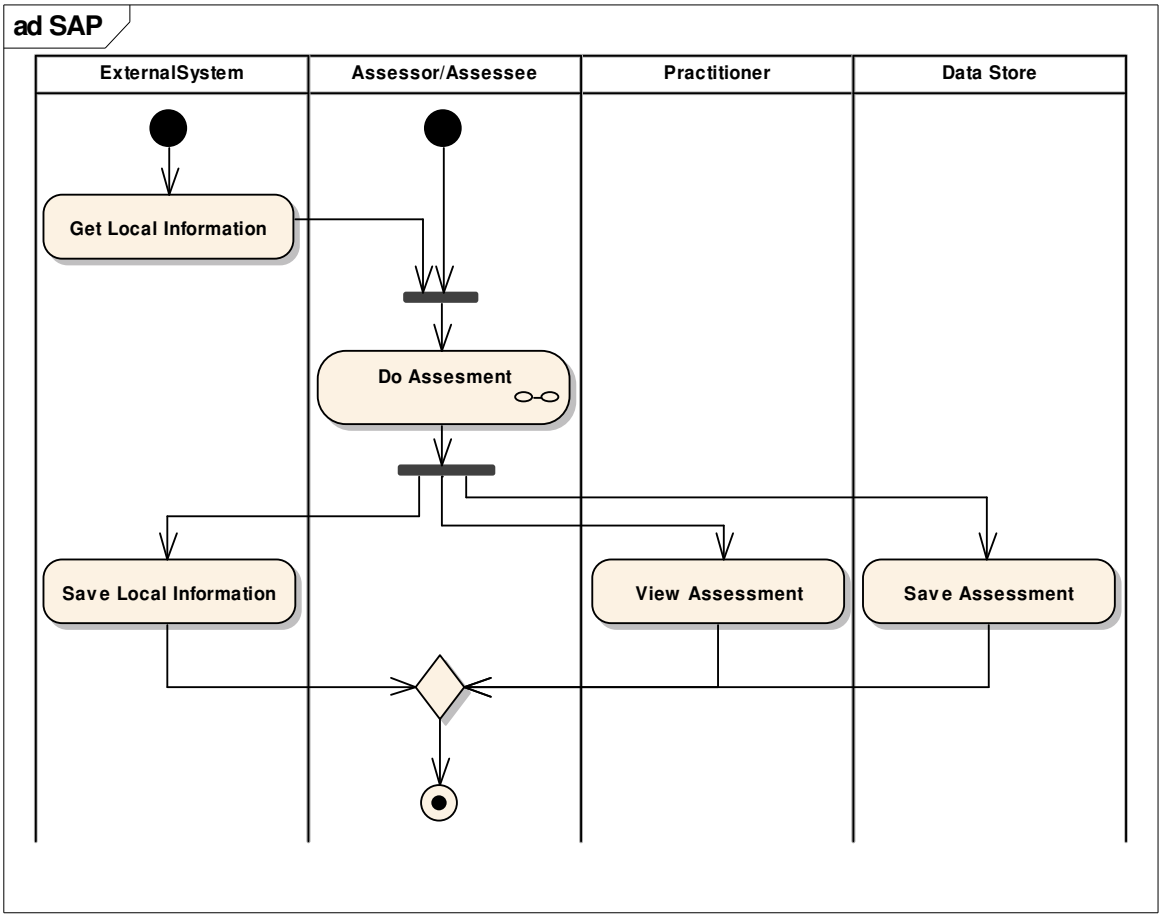

Figure 11 – SAP

Get Local Information

Some of the information on which an assessment is based may, optionally, be derived from an external source system. Typically, this information will be used to pre-populate the assessment form; ensuring that the information is consistent with local systems.

Do Assessment

The central part of the SAP workflow is the "Do Assessment" activity. This is where an assessor records information about an assessee and then sends the assessment to other interested parties.

See the Do Assessment section for more details.

Save Local Information

In order to synchronise SAP with other local source systems it may be necessary to transfer all or part of the information derived from the assessment in those systems.

This activity completes a “round-trip”, whereby assessments are seeded with information from local source systems and then the same source systems are updated with information from the assessment.

View Assessment

A practitioner may view a received assessment. Alternatively, receiving an assessment may imply that the practitioner deal with an action relating to the assessment. This will, for example, be the case for a referral.

Save Assessment

Assessments can be made available in a number of different ways. If, as is shown here, a practitioner receives an assessment then that assessment is available only to them. In order to make assessments more widely available, subject to access and security restrictions, then the assessment should be saved to a data store (also referred to in the Requirements as the Central Data Repository).

Do Assessment

This workflow represents the act of "doing" an assessment - that is, an assessor questions an assessee and enters information into an assessment. Once the assessment is over, the assessor "submits" it to the SAP system.

The following diagram (Figure 12) illustrates the core "Do Assessment" workflow. The assessor firstly searches for the assessee in either the local SAP system or an external system. If the assessee is known then it may be possible to base the new assessment on an earlier one. Alternatively, a new assessment can be created, possibly based on BPI from a local source system.

Figure 12 also shows the flow of data through the system. It can be seen, for example, that the *Add New Person* activity passes *person* data to the *Create New Assessment* activity. The *Create New Assessment* activity then passes *assessment* data to the *Update Assessment* activity.

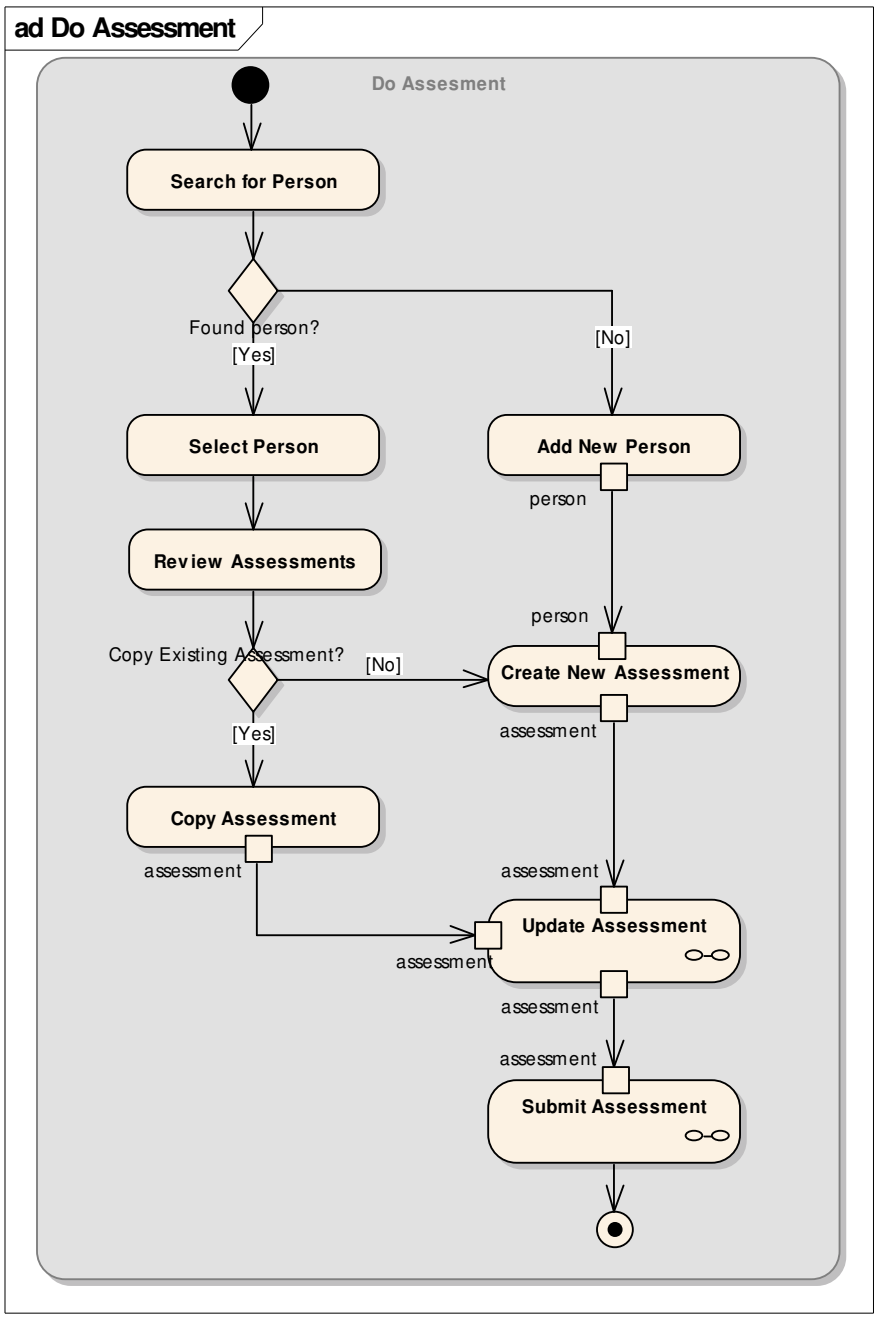

Figure 12 – Do Assessment

Search for Person

SAP starts with identifying the assessee. The search may take place within the e-SAP system or within one or more external systems.

Select Person

Depending on the result of the search it may be necessary to select the correct assessee from a set of possible matches, which would be the case if the person could not be uniquely identified.

Review Assessments

It is possible that the identified person has other associated assessments, in which case the assessor may wish to base the new assessment on an earlier one.

Copy Assessment

If the assessor wishes to base the assessment on an earlier assessment then details from the earlier assessment should be copied to the new one.

When creating a copy of an existing assessment the assessor will need to specify the type of assessment to be created. For example, the assessor may wish to create a Contact Assessment that is based on an earlier Overview Assessment.

Add New Person

If the person does not exist in the system then a new one should be added and given a system identity.

It is possible at this stage that the person details will have to be synchronised with external systems. The exact nature of the synchronisation will depend on the requirements of the external system.

Create New Assessment

Creating a new assessment implies that either the assessee has not been assessed before or the assessor does not wish to base the assessment on an earlier version.

If not basing the assessment on an earlier version then it may be possible to seed the new assessment with Basic Personal Information (BPI), derived from the person details.

When creating a new assessment the assessor will need to specify the type of assessment to be created.

Update Assessment

Having created an assessment of the appropriate type the assessor fills in some or all of the assessment, based on answers from the assessee.

Submit Assessment

Having completed an assessment the assessor must then make the assessment available to other interested parties.

The distribution list of the assessment will depend on:

- Any further actions/referrals arising from the assessment.
- Any restrictions placed on the information held in the assessment.
- Any standard distribution list associated with the assessment.

Update Assessment

The workflows shown here assume that the assessor will update an existing assessment that is either a copy of an earlier assessment or has been created anew.

Logically, an assessment can be broken down into a number of different sections or domains. Although this document assumes that the assessment can be updated in any order there may be valid reasons for updating it in a predefined order.

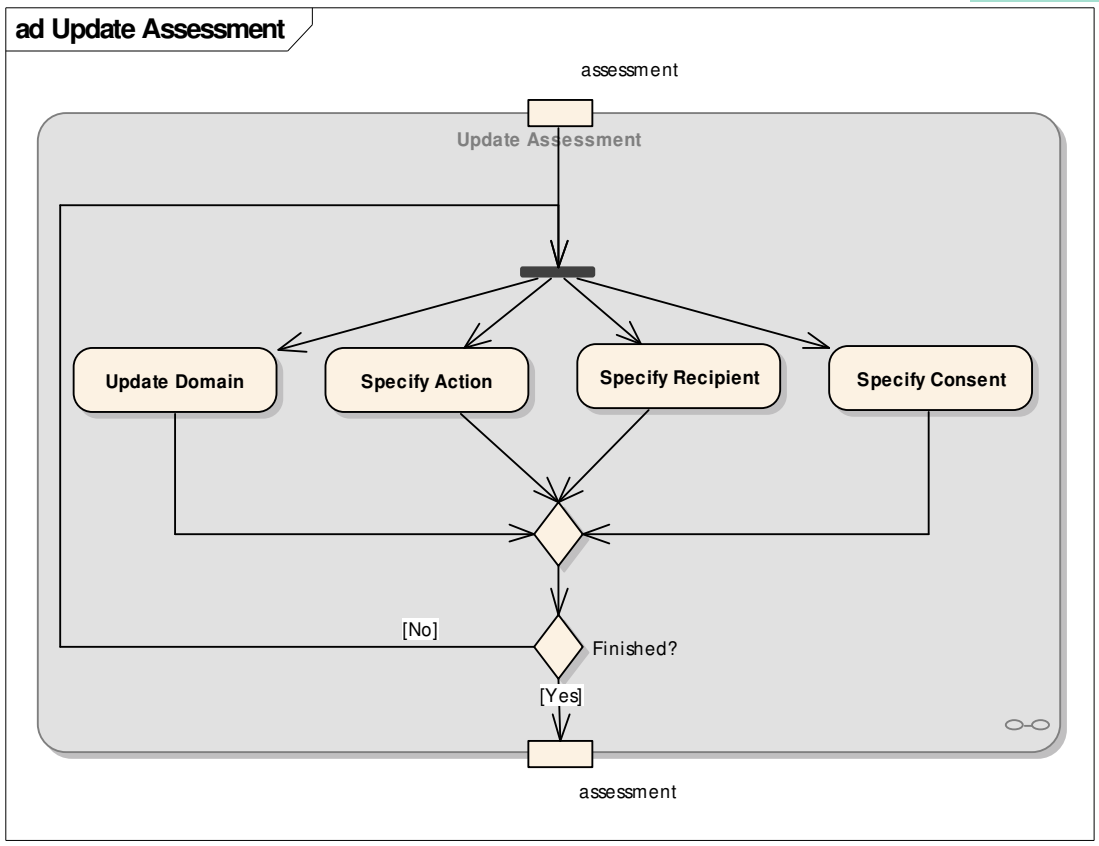

Figure 13 – Update Assessment

Specify Action

This action allows an assessor to specify an action to be associated with an assessment. Examples of actions are: create Overview Assessment and a referral.

Specify Consent

In order to share information on the assessment form, the assessee must first give consent. This, effectively, means that different parts of the form may be assigned different levels of consent.

Specify Recipient

This action allows an assessor to construct a distribution list for the assessment.

It should be noted that a distribution list could also be implied from the actions that have been specified and from a default distribution list associated with the assessment.

Update Domain

This action allows the assessor to update different domains within the assessment.

Submit Assessment

In order to submit an assessment the assessment must be in a valid state. This implies, for example, that all mandatory fields have been properly filled in and that all other entered data is valid.

The process of electronically sending an assessment depends on identifying a list of people or organisations to which the assessment should be sent. Having identified a list of people or organisations it may then be necessary to restrict the information being sent to them.

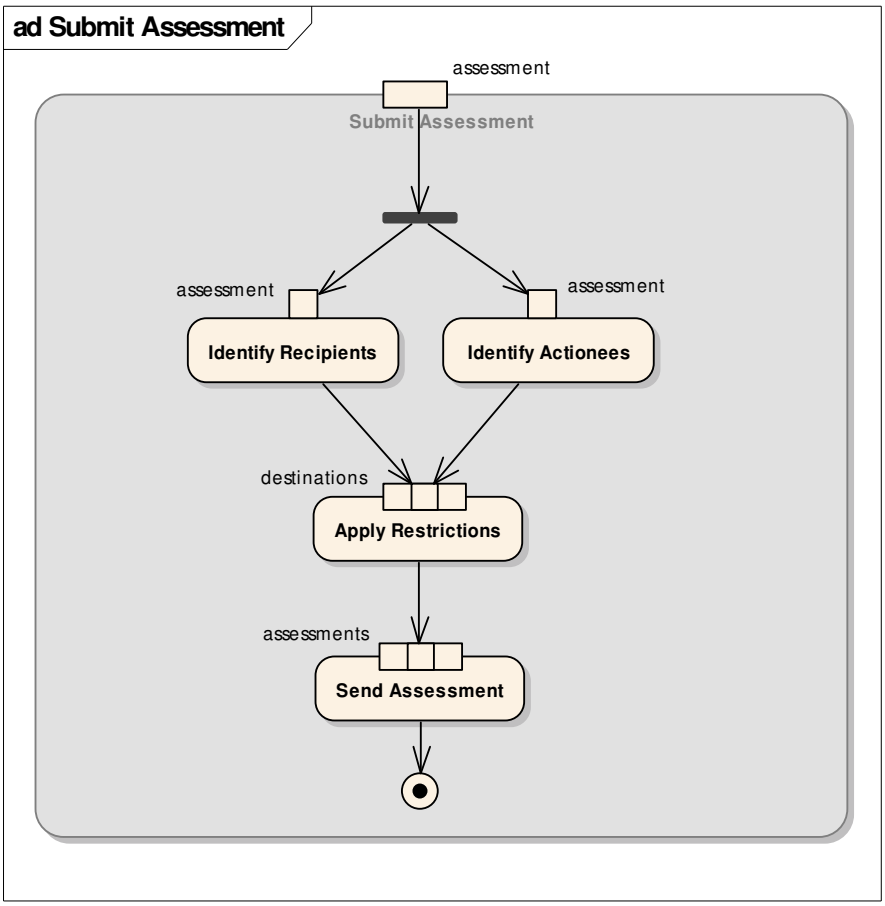

Figure 14 – Submit Assessment

Identify Actionees

A number of actions may be associated with an assessment. These actions will, in general, require an assessment to be sent to the person or organisation associated with the action.

This step identifies the actionees, based on the actions associated with the assessment, and constructs a corresponding distribution list.

Identify Recipients

A number of recipients can be associated with an assessment. These may be identified when filling in the assessment or may, for example, be associated with a particular type of assessment.

This action constructs a distribution list based on recipient information contained in or associated with the assessment.

Apply Restrictions

There are two main types of restriction that can be applied to an assessment. These are consent restrictions and authorisation (to access information) restrictions. Depending on the nature of the restrictions, parties on the distribution lists may be sent subsets of the assessment.

This activity takes distribution lists as input and applies restrictions to assessments that are sent to parties on the distribution lists.

Send Assessment

This action sends assessments to the parties on the distribution list for the assessment.

External Interactions

An e-SAP system will need to integrate with other external systems that may either provide information for e-SAP or need to be updated with information from e-SAP.

The type of information flowing between the systems will tend to vary according to the organisation the service user belongs to. One common theme is person related information. This may be information on the assessee, assessor or other related practitioners. It may also be necessary to pass assessment information between systems. Anite's Swift application, for example, can store its own assessments.

Table 7 discusses some of the issues that may need to be taken into account when integrating with external systems.

Cross-references	Passing information between systems implies a need for some degree of data synchronisation. This will only be possible if cross-references are maintained between systems. It may, therefore, be necessary for an e-SAP system to maintain its own cross-

	references.
Data completeness	It is possible for a source system to provide either limited or incomplete information. This may impact the effectiveness of the data stored in the system.
Data representation	External systems may represent data in a different way from e-SAP. This will require data transformations to be defined between the two systems.
Data mappings	An external system may support different data values than e-SAP. These may be values that are unknown to the other system or the same meaning apportioned to different values. Under such circumstances, data mappings will need to be defined between the two systems.
Suppliers	Integrating with external systems may require gaining access to the published API of the external system. As a consequence, this may also require the purchase of extra software or services from the suppliers of the external system. In cases where no published API exists, it may be necessary to acquire further cooperation from the suppliers.
Identity	See the Identity section.
Performance	Performance of the external system may need to be considered. If, for example, real-time access is required to a part of e-SAP that depends on an external system, then the performance of the external system will need to match that required by e-SAP. Alternatively, the speed of an external system may dictate a batch interface to e-SAP.

Table 7 - External Integration

Non-Functional Considerations

This section covers the non-functional aspects of a SAP implementation.

Security

In this context, security refers to the integrity and protection of data in a SAP implementation. Assessment data should be secure at all stages of the assessment process.

Implementation of security will be specific to local circumstances. Table 8 summarises some high level aspects of security that may impact an e-SAP system.

Type of Security	Comments
Persistent data security	Wherever data is stored it should be made secure. Users who are not entitled to access the data should not have access to it. Issues can occur if entire assessments are moved to organisations that should not have access to all the data on an assessment. This situation can occur in a distributed set up that physically moves assessments between agencies. Even though e-SAP might limit access to the data, it may not inhibit all the data being moved to a given site or data store.
Network security	When data is moved over a network it should secured. This is particularly true over a public network and may also be necessary within a local network.
Process security	Assessment data should be secure at all phases of the assessment process. This means that data should be secure at local and remote sites and when being exchanged with external systems. It should also be secure if detached from the main e-SAP network; as might be the case if assessments are done offline.

Table 8 - Security

More about the issues relating to security can be found in Information Sharing Protocol section.

Access

An e-SAP system will need to support different groups of users. These are people or organisations that have legitimate access to the information held in assessments. However, it is likely that different types of user or organisation will only be given access to certain parts of an assessment. From a practical point-of-view, this means that it might be necessary to either hide parts of an assessment from certain users or to exclude information they are not permitted to see.

In order to be manageable, the granularity of access permissions should not be at too lower level. Defining restrictions at the field level, for instance, is likely to be very flexible but difficult to maintain.

Table 9 is an example of the access restrictions applied to the Woking project. In this case, access permissions are applied to organisations at the domain level. It can be seen, for example, that SCC Adult and Community care have access to all domains whereas Woking Community Meals have access to relatively few domains.

	Assessment Domains																	
Contact Assessment	✓	✓	✓	✓	✓													
Overview Assessment	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Organisation	Background	Household Details + Formal Care	Who's Involved	Needs	Contact Actions	Assessment Details	Physical well-being	Health screening	Psychological well-being	Medication	Activities of daily living	Social Weekly Activities	Social Relationships	Social Circumstances	Carers	Risk factors	FACS	Further Actions	Overview Consent
SCC Adult and Community Care	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SHAW PCT West Byfleet District Nurses	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
SHAW PCT Gen Practice	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
SHAW PCT Parishes Bridge Practice	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
NS PCT Community Rehabilitation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
Woking CommunitySupport	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
ASPT St.Peters Hospital	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
Woking Homelink	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓		✓		✓		✓	✓
Woking Home Support	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓		✓		✓		✓	✓
Woking Community Meals	✓	✓	✓	✓	✓													✓	✓

Table 9 - Example Access Restrictions

In the case of the Woking project, domain level access permissions were seen as being more manageable than field level access permissions.

Aside from the requirement to tailor access according to the type of user, the assessee must also give consent for their information to be made available. If consent is not given then further restrictions must be placed on the data the users can see.

Versioning

Over a period of time it is likely that changes will be made to the assessment tool that underpins the implementation. Under such circumstances it will be necessary to consider how multiple versions of the same assessment should be supported. The degree to which this represents an issue depends on the nature of the implementation and the environment in which it resides.

In a closed central system it may be possible to upgrade all assessments to the latest version; thereby, avoiding having to maintain multiple versions. In a more loosely coupled and disparate system it may not be possible to perform a batch update of all assessments. This leads to a solution that is able to cope with multiple versions of the same assessment. The implication of this is that, over a period of time, assessments may include extra fields or may have whole sections removed or redesigned.

Taking a longer-term view, assessments will need to be available over a considerable amount of time – possibly, tens of years. Over such periods of time the versioning issue becomes an issue of data access – that is, the data must be readily accessible to new SAP implementations.

Identity

Identity applies to assessments and to parties that are referenced within assessments. For example, assessments may contain references to the following types of people or organisations:

- Older person being assessed.
- Assessor.
- One or more practitioners.
- Other involved parties.

Within a multi-agency environment, assessments, organisations and people will, generally, need to be uniquely identified, so that they can be cross-referenced with other internal or external systems.

Using a specific example from the Woking project, the assessments can contain references to an assessee and a number of practitioners. Each of these, along with the individual assessments, is given a unique identification. The identifications are cross-referenced with Social Services and GP systems, which have their own representations of the people involved.

System	Identification			
	Assessment	Assessee	Assessor	Practitioners
Assessment	✓	✓		✓
Social Services	✓	✓	✓	✓
GP System		✓		✓

Table 10 - Identification Cross-reference

Table 10 summarises the references that are maintained by the systems. It can be seen that, in this scenario, there was no requirement for the assessment to maintain a unique identity for the assessor and that the GP system does not maintain references to the assessment or assessor. All other identities can be cross-referenced via the assessment.

Data Protection

Information about data protection can be found in the Information Sharing Protocol section of this document.

Usage Scenarios

At a basic level of functionality, an e-SAP system should be able to collect assessment information about older people and ensure that the information is made available to those that need to see it. The way in which this realised will depend, to some extent, on the nature of the environment in which the e-SAP system runs. For example, the supporting environment may allow data to be dispersed or it may require data to be stored in a central database. However, from a usage point-of-view the scenarios and environmental constraints will be very similar.

Various usage scenarios are discussed in the following sections.

Data Entry

Doing an assessment requires that an assessor, like a social worker or district nurse, will visit the assessee; meaning that the assessor may not have direct access to their computer network. If this is the case, then the assessor has a number of options, which are discussed in Table 11:

Data Entry Method	Comments
Maintain a remote connection	This requires that a dialup link be maintained with the assessor's e-SAP network for the duration of the interview. Advantages of this approach are that assessment data can be made available immediately and that source data can be searched immediately. Disadvantages of this approach are that procedures may not permit the use of a dialup link (e.g. mobile phone), the line speed may be prohibitively slow and that it may not be possible to maintain a remote connection for the duration of the interview.
Work offline	This option requires that no connection is maintained with the assessor's computer network and that assessments are periodically synchronised with the main e-SAP system. The main advantage of this approach is that no remote link is required, which mitigates the disadvantages of remote working. Working offline may, therefore, be seen as being more reliable than remote working. The main disadvantage of this approach is that it lacks the immediate accessibility of the remote approach. Another disadvantage might be the need for some extra work for the assessor when data is synchronised with the e-SAP system.
Do a paper-based assessment	In part, this represents the traditional approach for collecting assessment data. However, an extra step is required to manually enter the data into the computerised system. The advantages of this approach are that it is known approach that doesn't have the technical constraints of the other approaches. The main disadvantage of this approach is it requires data to be re-entered and, as such, can be more error prone and time

	consuming.

Table 11 - Methods of Data Entry

In practice, it is likely that any computerised approach will need a combination of, at least, two of the above approaches. For example, the preferred choice might be to work offline but it might also be necessary to make provision for paper-based assessments.

Choice of Data Entry Device

Irrespective of how data is accessed, the type of input device also has to be considered. Types of input device are discussed in Table 12.

Data Entry Device	Comments
Paper forms	This represents the traditional approach and will be readily understood by the assessor. Furthermore, it is likely not to be intimidating (compared to other devices) to the assessee.
Desktop computer	This type of device is only practical if the assessee goes to the assessor, which may be appropriate in a doctor's surgery where the assessee might be expected visit.
Laptop computer	Laptop computers could be viewed as a good compromise that are portable and allow the assessor to key in data away from the office. However, it has been noted that the screen on such devices can act as a barrier between the assessor and the assessee.
Slate/Tablet computers	These are handwriting recognition devices that allow the assessor to enter data using a "pen". Because they lack the keyboard and screen combination of the laptop computer (some may have detachable keyboards), they do not set up a physical barrier between the assessor and assessee. Tablet computers may be seen as the most expensive option and may also require extra training – there is often a required knack to make effective use of the handwriting recognition.

Voice input	Voice input has been included here for completeness. It is not generally thought that the technology is sufficiently well advanced in this area and that ambient noise can cause problems.

Table 12 - Data Entry Devices

User Interface

Although the reasons for selecting any particular type of user interface may have nothing to do with e-SAP, there are some aspects of e-SAP that may influence the decision. Indeed, the nature of e-SAP can impose certain constraints and limitations on the selection of user interface. These are discussed in Table 13.

Interface	Comments
Web-based	e-SAP can, in practice, be used either in the office or away from the office. In an office environment or via a broadband connection, the e-SAP system will have access to a network. Using a Web-based interface is, therefore, practical. Away from the office, with access to a dial-up line, use of a Web-based interface becomes less practical because of the unpredictable speed and potential unreliability. If no remote connection is available then it is not, generally, possible to use a Web browser interface[2].
Rich client	The arguments fore and against rich clients are largely covered by their maintenance implications; as compared to Web-based solutions. In an e-SAP environment, there may be certain advantages to a rich client because of the potential need to work disconnected from the main SAP network.

[2] The Woking solution does, in fact, use a remote Web-based solution that allows a browser to operate detached from the main network. This, however, can be considered to be a hybrid solution.

Paper form	It is likely that paper-based input will be required to support one of the above formats.

Table 13 - User Interface

The implication of supporting both computer and paper entry is that the interfaces presented to the user may be entirely different, which leads to the requirement to train users to use two different user interfaces. This can be mitigated by adopting the same user interface but inevitably means that the lowest common presentational denominator is adopted.

Performance

It is difficult to be specific about the performance of e-SAP, because it is very much dependent on local circumstances. However, it is possible to highlight some general areas of importance in an e-SAP system.

Much of the user interaction with e-SAP is real-time – that is, the user will expect immediate or near immediate responses. This is especially true if an assessor is filling in an assessment, whilst interviewing an assessee. In other words, the assessment implementation should not get in the way of the assessment.

Although the levels of performance may point towards the implementation of a rich client, it should be noted that much of the data entry activity will take place on single forms; requiring minimal interaction with backend systems.

Aside from user interaction, the performance of the supporting infrastructure must also be considered. Depending on the type of architecture employed, parts of the architecture may be required to move information (assessments) between different parts of the e-SAP system. Typically, the performance of data movement is subject to network bandwidth capabilities and reliability of the network links.

Service Level Agreements

The aim of service levels within a SAP implementation is to ensure that information is delivered where it is needed, reliably and in a timely manner.

SLAs are related to performance in that they represent a measure of response and reliability within the e-SAP system. In order to be seen to perform within user expectations e-SAP must adhere to specific service levels. SAP specific service levels are discussed in Table 14.

Service Level	Comments
Assessment submission	This represents the time it takes to interactively enter information into an assessment and then make it available to

	other interested parties.
Assessment delivery	Having submitted an assessment, it must be delivered to the recipients within a reasonable amount of time.
Actions	Assessments may have associated actions, like referrals, that require follow-on input (actions) from other involved parties. These must take place in a given time period.
External suppliers	A SAP implementation may interact or depend upon other external systems. It is essential that these systems meet specific SLAs.
Reporting	Reporting may be *ad-hoc* or periodic. In either case, the reports should be delivered within certain service levels.

Table 14 - Service Level Agreements

Although the types of SLA discussed in Table 14 may not impact a local e-SAP implementation or fall outside the boundary of what is considered to be the SAP system, it is important to consider them.

NHSNet Access

NHSNet requires special mention because it is likely that an e-SAP system will require access to it. Gaining access to NHSNet requires permission and the ability to demonstrate that the proposed connectivity meets all NHS requirements. Further details can be found at the following link:

http://www.nhsia.nhs.uk/nhsnet/pages/connecting/thirdparties/process_intro.asp

Auditing

Auditing is mandatory for most aspects of the SAP. This, in effect, means that online records need to be kept of every access and update of assessment data within the system.

In a distributed system it must be possible to reconcile audit records from different parts of the system. In a central system, where there is only one logical database, audit reporting can be based on a single source.

Depending on the type and sensitivity of the data being transferred between e-SAP and its associated external systems, it may be necessary to produce audit reporting that encompasses both systems. This will, however, only be possible if cross-references are maintained, so that associated audit records can be reconciled.

Implementation Considerations

This section addresses issues that may affect the implementation of an e-SAP system. Central to this is the implementation process that is adopted and the key business processes and workflows. Also, organisational change and transformation is discussed.

Implementation Process

The Department of Health set out guidance for how the single assessment process, described in the National Service Framework (NSF) for Older People, should be locally implemented (http://www.dh.gov.uk/assetRoot/04/07/93/12/04079312.PDF).

This section provides feedback to the 12 steps outlined in the guidance, by commenting on them and indicating how they were addressed in the Surrey project (see Table 15).

12 Steps	How Addressed	Comments
Agree purpose and outcomes	Consultation with SHA and local health and social care managers to define and agree strategic and operational requirements. Purpose and outcomes set out in PID	Health partners had concerns with respect to the impact of NpfIT. A computerized system should be able to manage the information flow and processes of the Single Assessment Process. This, in effect, means that assessment information is readily available to those who have the necessary authority and consent to view the information. Outcomes may not only be within the e-SAP system but may also impact other external systems that may currently be in place.
Agree shared values	The partners largely focused on the quality of service and the desire to improve this using a more coordinated approach. Part of this was addressed through the Information Sharing Protocol (ISP) to establish an agreed approach to consent and how information should be shared	This was not fully articulated in terms of a joint approach. In any event, partners had similar values enshrined in their own policies. Shared values have a major impact on the integration of e-SAP with other systems. In order to "speak the right language" it is critical to establish the mappings between the various systems. It should also be remembered that the mappings may not be static, but may change over

		time.
Agree terminology	The terminology and 'language' used was addressed in the joint workshops and latterly during training, in terms of the application and completion of the tool by the different partners. This is supported electronically through the use of 'drop down' menus	In general, the terminology will be self-evident, although there may be a need to ensure that completion of the tool is standardised. Terminology and priorities will differ between organizations and care processes. Being a core process, e-SAP needs to be consistent in this respect.
Map care processes	This was initially undertaken through the workshops to establish the business processes. The processes were then mapped to the physical implementation.	The mapping will enable the partners to make internal changes to their processes although this is not essential to the project. e-SAP is part of and should, therefore, fit in with local processes. The processes described in this document are high-level definitions of the main e-SAP processes. As such, an implementation of those processes would be expected to integrate with other local processes. In other words, e-SAP should not be viewed as being a standalone system.
Estimate the types and numbers of older people needing assessment	This was calculated on the number of likely service users within the project area that call on any of the partner services, based on an age threshold of 65+ or an adult with complex needs	The agreement reached was not to complete a record except where there were multiple needs and only to do so as users sought housing, care or treatment services. This forms part of a system sizing exercise and would give some idea of the amount of data that is going to be generated over time.
Agree the stages of assessment and care management	The Surrey project concentrated on the contact and overview assessments. It did not try to introduce the specialist or summary assessments as these were outside the scope.	The intention was for the SAP to inform the care plan although at this stage it would be handled separately
Agree the link between medical diagnosis and	An assessment will follow a diagnosis where more than one service is involved. This includes internal and external	The SAP does not include the specialist assessment but it can help to inform it

assessment	referrals to other services	
Agree the domains and sub-domains of assessment	These are defined within the accredited overview assessment tool	The accredited tool agreed by the partner's addresses this particular area. Defining domains is particularly important when considering access and consent. When defining an access/consent strategy it is vital to make it manageable, which means arriving at a level of granularity that makes sense. Domains can be a convenient level in this respect.
Agree assessment approaches, tools and scales	Accredited tool has addressed this.	More development was needed in respect of the specialist assessments. Choice of assessment tool depends on its ability to support the agreed processes and underlying domain and data structures. It also depends on more subjective criteria, like usability in the field and acceptance by users.
Agree joint working arrangements	The workflow and information sharing were defined and agreed in the workshops	More development around change processes and service integration is needed. The project has laid the foundations for this work.
Agree a single assessment summary	Not yet completed. Will be developed as and when a wider County roll out is agreed	The Single Assessment Summary (SAS) can be thought of as an interchange format between SAP implementations. At the time of writing, the standard has not been finalized. The two pilot implementations have arrived at their own internal representations, which could be used as a basis for the SAS.
Implement a joint staff development strategy	Wider awareness training of SAP outside of the project has been undertaken. Training in the use of the SAP tool formed part of the project	Very mixed level of knowledge about SAP amongst practitioners. Carers' issues are still not fully addressed. Part of a development strategy will involve training and specific working practices relevant to an

		electronic SAP implementation.

Table 15- DoH 12 Steps

In the light of experience, the list of 12 steps can be added to, so that additional aspects of a SAP implementation can be more fully covered. Table 16 lists three additional steps.

Additional Step	Comments
Agree infrastructural support	It is necessary to determine what level of infrastructural support will be available for an e-SAP system. This will be a key factor in constraining the effectiveness of any SAP implementation.
Establish boundaries	Implementing a single assessment process will pervade other local processes and procedures. Establishing clear boundaries between e-SAP and the systems it interacts with will help define e-SAP in the context of an organisation.
Agree access and consent strategies	The ability to protect and maintain the integrity of information is fundamental to e-SAP and should underpin any implementation. The manner in which this is done should be agreed between all involved parties.

Table 16 - Additional Steps

The additional steps address some of the practical issues of implementing e-SAP. e-SAP software will probably need to reside in more than one location and require the cooperation of one than one IT department to operate. It will also need to fit in with local deployment and infrastructural standards. Access to external information sources will also be required and it's important, at this point, to fix boundaries between e-SAP and external systems. Failure to do so will lead to scope creep and unclear interface definitions.

Access and consent policies will pervade the entire SAP implementation and will also impact or be impacted by external systems. In order to proceed with implementation, a clear access and consent policy is, therefore, required.

Key Business Processes and Workflow

Adoption of e-SAP will impact an organisations business processes and workflows. The extent of the impact will, however, depend on local circumstances and the closeness of the new SAP processes to those already in place.

This section focuses on the pilot implementations and considers how they have been affected by the adoption of e-SAP.

Each organisations 'as is' workflows and business processes were mapped along with an audit of current forms for collecting and referring service user information.

The mapping exercise gave the partners a 'helicopter' view to help service practitioners identify gaps and overlaps in their respective services. This included referrals to other care providers.

From this the 'to be' processes were mapped by the service practitioners. The following are the key benefits resulting from the adoption of the 'to be' processes:

- A variety of forms used for collecting service user information have been consolidated into one form, i.e. the SAP tool.
- The district nurses have consolidated their care plan into the process
- The way information about service users is accessed and shared has improved
- The quality and accuracy of the information about service users has improved
- It has eliminated duplication in completing and updating information on service users
- The overall time taken to complete a service user record has been reduced
- The workflow within and between the respective partner organisations is better targeted

Organisational Change and Business Transformation

Following on from business process change, adoption of e-SAP may also result in organisational change and transformation. This section considers this aspect of e-SAP, with respect to the pilot organisations.

Although the process mapping identified ways to improve service delivery, the project did not require, nor was it ever intended to impose any significant organisational changes or business transformations.

The project was more concerned with enabling rather than imposing such changes, leaving it to the partners to determine their own needs. In some cases it was simply a case of retaining and improving existing processes.

For example, the service practitioners telephoned each other quite regularly about particular problems and needs of service users. Although the new system enabled information to be exchanged electronically the partners felt it was important to maintain a level of human contact.

The areas that still have to be addressed are those of accountability and sustainability of the service. Pivotal to this is the identification of a lead partner who can act as the legal entity and retain ownership of the service on behalf of the partners.

Information Sharing Protocol

This ISP is a strategic and operational agreement between the participating partner organisations/agencies. It governs and regulates the way person identifiable information (PII) collected from service users is shared and processed by health, housing and social care providers in both 'hard' copy' and 'soft copy' form.

Single Assessment Process

The ISP governs a Single Assessment Process (SAP) to provide a single point of information for all the participating partners using a prescribed SAP tool to collect:

- Basic personal information (BPI)
- Contact Assessment
- Specialist Assessment
- Summary Assessment

Objectives

The objectives of the ISP are to ensure the participating organisations comply with the legal and other government agency regulations for sharing PII.

Rationale for the ISP

Health, housing and social care organisations separately collect and record identical or similar PII about the same service users. Allowing the sharing of PII by participating organisations should help to address this by reducing the time wasted on duplication of effort and as a result improve the quality of service provision.

Using and Processing PII

The ISP lists what PII will be used for. This includes:

- To facilitate its processing and sharing
- Assuring & continually improving the quality of care & treatment

PII will also be used for statistical analysis and performance measurement, mostly in aggregated form so that it is not person identifiable.

Consent

Service users' subject of a SAP will be requested, at the first point of contact, to give consent for their PII to be shared where it is necessary for their support, care and treatment. The consent will be in writing in a prescribed format. Should they elect to change the terms of their original

consent; for example, they wish to restrict with whom their PII is shared, then a new consent form will be completed.

Consent must be:

- Capable of being freely given without any pressure or undue influence being exerted on the individual
- Specific to the purpose for which it was obtained. Consent for one purpose cannot be used for another.
- Capable of being freely withdrawn at anytime with mechanisms in place for dealing with this
- Updated where the service users circumstances change

Security Policies, Procedures and Access

To comply with the ISP the participating partners must have in place their own individual policies and procedures to control electronic access.

Electronic access controls will apply to each organisation whereby their staff that are involved in the single assessment process will be properly authorised by their organisation in that they are:

- Known to their own organisation (log in profile)
- Known to have access by the other participating partners
- Uniquely identifiable by their own organisations systems
- Have generic access in accordance with their joint team activities to other systems

Breaches of the ISP

Staff who are managing and processing service user PII are bound by a duty of confidentiality, normally through their contract of employment and in some cases the terms of their professional body membership.

All staff required to comply with the ISP will be trained to do so before they start using the procedures.

Any breach resulting from a weakness or malfunction of the technology will be dealt with immediately. A judgement will have to be made whether to suspend the use of the system until such time as the problem has been rectified.

Governance and Management of the ISP

An Inter-agency Standing Committee (ISC) made up of members of the Steering Group will be established to manage the use and maintenance of this ISP and ensure its compliance by the participating organisations.

It will comprise of representatives from the participating partners. The ISC is responsible for:

- Ensuring the ISP is amended and updated as necessary
- Monitoring compliance with the ISP

The Caldicott Guardians and other staff responsible for data protection, Human Rights and Freedom of Information will support line managers and staff delivering the service.

Compliance with Legislation and Other Guidelines

To protect the rights of individuals who are subject of a SAP the participating partners will comply with the following legislation:

- Human Rights Act 1998
- Freedom of Information Act 2000
- Data Protection Act 1998

Compliance with other legislation and statutory requirements is set out in the ISP.

PII related to housing, health and social care cannot be used for any other purposes other than that that is prescribed in this ISP; for example, law enforcement.

Compliance with the Data Protection Act

In compliance with the Data Protection Act 1998 (DPA) the ownership and sharing of PII will be governed and regulated by this ISP. It will be collected and shared with participating partners that need it to complete a SAP for a service user and will be individually assessed on a case-by-case basis.

Compliance with other guidelines/requirements, including 'Caldicott'

The NHS Executive has issued Caldicott Guardian Guidelines:

- HSC1999/012 to all Trusts and Health Authorities in January 1999.
- GP/PCG guidelines were issued in March 2000 (available on the NHS Caldicott web site under Management Audits & Improvement Plans section called 'Guidance for Primary Care Groups).
- Social Services guidance

Service users with special needs must be given the same rights (e.g. to refuse information to be used for 'extra' purposes) the same as all other individuals.

Glossary

A&CC	Adults and Community Care
Granularity	Technical term that refers to a level of detail. For example, access permissions could be defined at the domain level or question level.
AO	Advisory Officer – first line Social Care worker who conducts initial A&CC assessments.
API	Application Programming Interface. The preferred mechanism for sending and receiving data from a computer application.
ASP	Ashford and St Peter's Hospital Trust - one of the Acute Trusts in Surrey.
Assessee	The older person being assessed as part of the Single Assessment Process. An assessee is the subject of the assessment and gives consent for information to be made available to other people or organisations
Assessor	A service user or practitioner who performs the assessment with the assessee.
BPI	Basic Personal Information.
CAT	Common Assessment Tool
CDR	Central Data Repository – notional data source mentioned in the requirements. Also known as Clinical Data Repository, but not used as such in this document.
Contact Assessment	Initial assessment.
CRM	Customer Resource Management
Domain	Refers to different sections within an assessment form.
DPA	Data Protection Act.
eForm	Electron form. e-SAP uses eForms extensively.
e-GIF	e-Government Interoperability Framework. The government's technical policies and specifications for achieving interoperability and information systems coherence across the public sector. The e-GIF defines the essential pre-requisites for joined-

	up and web enabled government. It is a cornerstone policy in the overall e-Government strategy.
e-SAP	Electronic system for the Single Assessment Process.
EMIS	EMIS is a Primary Care System (PCS). See http://www.emis-online.com.
ERDIP	Pre-FAME Department of Health initiative to share information between multiple agencies.
FAME	Framework for Multi-Agency Environments. The framework will be nationally applicable, omni-service and technology independent, and will improve the provision of services through effective and appropriate information sharing between local authorities, local authority service providers and other government agencies. Public sector organisations will have access to relevant and timely information; information quality will be improved by the avoidance of duplication; the framework will be adaptable and scaleable allowing it to be applied to a range of service situations; and it will exploit emerging technologies to drive down costs and increase efficiency. www.fame-uk.org
FACS	Fair Access to Care Services
GP	General Practitioner
GUI	Graphical User Interface
ICT	Information and Communication Technology
In Practice	A Primary Care system supplier. Their GP-based computer system is called Vision. www.inps.co.uk
ISC	Inter-agency Standard Committee
ISP	Information Sharing Protocol
IT	Information Technology
LSP	Local Service Providers.
MDT	Multi-Disciplinary Team
MoW	Meals on Wheels
NCRS	NHS Care Records Services
NHS	National Health Service
NHSNet	NHSnet is a secure wide area network developed exclusively for the NHS and available from two

	service providers: BT and Cable & Wireless. It is the national, centrally managed directory and email service, which is available to all 1.2 million NHS staff in England.
NPfIT	National Programme for Information Technology.
NSF	National Service Framework. A set of care standards for older people that applies whether the person lives at home, in residential care or is being cared for in hospital. It aims to provide better health and social care services for older people, i.e. high quality care and treatment regardless of age.
OBS	Output based specification - ERDIP deliverable defining information and process requirements.
ODPM	Office of the Deputy Prime Minister - Government department, which is funding the FAME, project.
Party	Used as an abstract term to denote an entity that has an address and a role relationship with other parties. Person and organisation are concrete examples of party.
PAS	Patient Administration System - used by local hospitals.
PCG	Primary Care Group
PCS	Primary Care System.
PCT	Primary Care Trust
PII	Person Identifiable Information
PIVOP	Promoting the Independence of Vulnerable Older People
Practitioner	A person who is, in some way, professionally involved with an assessment.
RAP	Resident Assessment Protocols - structured assessment to help determine whether problem areas require further action. Also sometimes, Referral, Assessment, Package of Care; the steps in providing care services.
SA&CC	Surrey Adults and Community Care. Surrey's Social Care provision involved in the FAME project.
SAP	Single Assessment Process.
SAS	Single Assessment Summary

SCC	Surrey County Council – responsible for Social Services in Surrey.
Service User	Denotes a user of the SAP service. Assessors and practitioners are both types of service user.
SHA	Strategic Health Authority
SHAW	Surrey Heath and Woking area Primary Care Trust
SLA	Service Level Agreement
Source System	External system such as Swift or Vision. Represents a potential source or SAP data.
Swift	Social Services source system provided by Anite.
SWOP	Specialist Worker for Older People. A District Nurse focusing on preventative nursing for older people.
UML	Unified Modelling Language. A standard modelling language that is used throughout this document. UML defines several different types of diagram. This document makes use of Activity Diagrams, Class Diagrams and Deployment Diagrams. The current version of UML is 2.0.
Vision	In Practice's GP System.
WAPCT	Woking Area Primary Care Trust - one of the PCTs in Surrey. Now obsolete term since this was merged into SHAW PCT during the project.