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1. Executive Summary

The aim of the review is to achieve clarity about what is needed to meet the requirements of the new ambulance trusts, both now, and over the next ten years. This report has been commissioned by the DH to assist the new ambulance trusts in England in discharging their responsibilities, by:

- Setting out a minimum technical and operational specification for ambulance trust control rooms
- Assessing the costs, benefits and effectiveness of potential models
- Thus identifying for the ambulance trusts a number of generic control room models to consider locally, taking into account their current arrangements.

1.1 Main Conclusions

- Trust control rooms made up of both emergency and non-emergency services form a critical component in the provision of unscheduled care. Historically seen as an ‘edge’ organisation, the role of the control room needs to be firmly positioned at the heart of the Ambulance Service, and acknowledged by the NHS in general.

- The emerging models that best met the agreed evaluation criteria are trust-based hubs. These are defined as a small number of multiple sites that have a fully integrated, workload balanced, call delivery plan, and are supported by common operational systems.

- They will operate with the support of skilled and dedicated staff that use the common set of systems and processes, and supported by a trust-based supporting infrastructure that includes management information and workforce planning staff and logistics support functions that enable call takers, dispatchers and supervisors to focus on their core activities.

- The trust-based operation should work to a set of common principles and standards, which should be monitored and supported by an overarching corollary organisation that monitors and advises on standards.
• A diverse range of processes, terms and conditions of service, systems and configurations, means there is significant activity required over the next five to ten years to getting the organisations aligned to good practices, driving performance improvement, and to continue to build on the relationship in place with primary care organisations.

• During this period of bedding in, attempts to outsource, or place service provisions in a shared services environment, will introduce service delivery and implementation risk.

• Business continuity and service resilience are recognised as critical aspects of a services operating model.
  ♦ Not all trusts have complete business continuity plans (BCPs) for their control room operations, albeit, if not, then generally they are work in progress
  ♦ Control room fallback arrangements, although in place, are rarely tested
  ♦ Some control rooms fall back to significantly lower levels of technology than are available in the primary control room, which, if required for any length of time, would significantly lower performance
  ♦ Trusts’ BCPs and control room resilience need to be developed with the larger trust (post trust reconfiguration) in mind, and the NISCC recommendations should be followed through as part of the ongoing service planning process.

• The key criteria for model selection have been clinical safety as well responsiveness to local needs.

• Inbound call handling works better at scale, and is not dependant on location of triage or dispatch, and must work within a performance management framework that is ‘queue aware’ and has provision for effective workload balancing.

• Dispatch is heavily dependent on specialist training, and needs to closely align to responders and, therefore, is best affected by dispatchers managing ‘fleets’ and numbers of responder resources.
• Category C (CAT C) and triage advice roles will be pivotal in delivering the services vision going forward and this will be a growth area – supporting front line crews and responders, patients with non life threatening situations, and call taking resources to optimise contact and expectation management.

• To mitigate the risks associated with growth, potential collaborative working with other NHS organisations will be a key consideration, but only if there is measurable added value and benefits to patients, and suitable incentives for both organisations to adopt this approach.

• Patient Transport Services (PTS), and other similar commercial services provided by the Ambulance trusts, can use control assets, but they are outside the core control room operational process flows, and their co-locationing will be dependent on the political, local and commercial priorities for each trust. This positioning will also affect the level of investment the trust will budget for it, with regards to business continuity and risk management, estates and property tenures.

• The role of emerging urgent operations centres will grow, and a key decision is required on their models – are they to be more aligned to local partners, or can they be seen as stand-alone ‘business centres’?

• One size does not fit all trusts, and each generic model needs to be scrutinised and evaluated by each trust.

1.2 Recommendations

• The needs of the English ambulance trusts would be best served by adopting a small number of multiple sites (a minimum of two) that are trust-based, and each should comply with the minimum standards stated within this report. Therefore, there is no single recommended operational configuration, but a series of options to consider.

• Each NHS ambulance trust should initiate a review of current local models of operation, and consider the future demand for service and other local requirements in detailed planning.
• The DH should continue to work with trusts through its regular reporting schedule on the implementation and achievements of call connect standards. These standards should be taken into consideration when trusts develop their local detailed operating models. This will have an impact on the roles of the staff undertaking the current tasks associated with call taking, triage and mobilisation.

• The ASA, working closely with the DH to consider the benefits of compiling, and keeping up-to-date, a National Control Room User Requirements specification that trusts can utilise in future procurements. Such a specification will need to take account of all computer-assisted dispatch (CAD) interfaces with telephony/Radio/ICCS/mobile data/external IT systems, and, in many ways, will provide trusts with a CAD Roadmap.

• Competition should be maintained between CAD suppliers for future competitive procurements by trusts. However, best practice CAD functionality could be centrally maintained, rather than at each individual trust. This could also be extended to inform CAD supplier User Groups.

• Technology procurement decisions should allow significant weighting for commonality of systems (CAD, ACD/telephony, etc.) between control rooms - whatever model is chosen. This is to keep available a long-term goal of ‘Virtualisation’, whereby multiple control room locations form a single ‘Virtual’ Control Room. This affords the benefits of flexibility of operational roles (call-taking/dispatching, etc.) giving trusts the ability to easily modify control rooms to meet operational needs and strategies now (for the newly reconfigured trusts) and in the future.

• Trusts should conduct as part of the detailed business case for new models, a detailed baseline study of the people, processes and technology aspects of the control rooms. This will form a baseline from which to measure benefit realisation, and enable quick wins to be identified and implemented as part of the buy-in process.

• Senior operations management from the trust’s control room environments should actively engage with contact centre industry bodies, such as the CCA and CCMA, to actively promote awareness of the changes within the service, as well as share learning and knowledge with peers across the industry, one which continues to grow at a phenomenal rate.
• Business Continuity and Service Resilience:

♦ Trusts should ensure that their BCPs in relation to control rooms (people, process and technology) are fit-for-purpose (for the newly re-configured trust), are maintained, and tested at least annually.

♦ Trusts should make use of the guidance given by the NISCC in its ‘Telecommunications Resilience’ and ‘Protecting Data Centres’ Good Practice Guides.
2. Background

2.1 The Role of the New Ambulance Service Trusts

The review of English ambulance services, Taking Healthcare to the Patient: Transforming NHS Ambulance Services, recommended organisational changes to create fewer, larger, ambulance trusts. On 01 July 2006, the number of ambulance trusts in England and Wales was reduced from 31 to 12. The 12 ambulance trusts operate currently 32 main control rooms and seven fallback (contingency) sites.

Their primary role is the management and deployment of an emergency response to 999 and doctors’ urgent calls, as well as non-emergency patient transport services.

Although the future of UK Fire Service control rooms is under current review, it has been announced that the FiReControl project has recommended a resilient and integrated system of nine nationally networked control centres. These will replace the 46 separate control rooms operated by the Fire and Rescue Authorities in England. This is an important strategic development for the emergency services in the UK, and lessons learnt from the implementation will be of value to the English ambulance trusts as they transform their own services.

In addition to emergency control functions, it is envisaged that there will be an enhanced role for control rooms in future. The ambulance trusts are naturally concentrating on the improvements needed in the speed, quality and capability of call handling. However, they are also seeking to extend the range of services offered to provide a holistic approach to all patient delivery in their areas. This is manifested in such duties and initiatives as:

- Resolving calls over the telephone through advice and triage provision
- Co-ordination of mobile health resources
- Provision of clinical advice and assessment
- Greater integration with other providers of urgent care services
- Patient Transport Service (PTS)
- Call handling for health and social care agencies
- Clinical advice provided by a variety of healthcare professionals
Clinical support to field unit staff across different organisations

Call handling and clinical triage for a range of providers including those in the independent and voluntary sectors

Operation of NHS capacity management and other operational systems, e.g. bed availability, monitoring patient flows, donor organs

Provision of health information.

Not every trust performs all these activities; many are not supplied on a 24/7 basis, or necessarily through the existing control room infrastructure.

The growth of these initiatives means that ambulance trusts are progressively moving from the traditional role of transportation and emergency response (acute care, resuscitation and trauma) to becoming the mobile health resource for the whole NHS – generally aligned to the geographic partner healthcare organisations and PCTs.

2.2 Objectives

The aim of the review is to achieve clarity about what is needed to meet the requirements of the new ambulance trusts, both now, and over the next 10 years. This report has been commissioned by the DH to assist the new ambulance trusts in England in discharging their responsibilities by:

- Setting out a minimum technical and operational specification for ambulance trust control rooms
- Assessing the costs, benefits and effectiveness of potential models
- Thus identifying for the ambulance trusts a number of generic control room models to consider locally, taking into account their current arrangements.
2.3 Considerations

In determining the recommendations on the optimum size and necessary resilience, arrangements for control rooms the following factors have been specified for consideration (not listed in any order of priority):

- The need to comply with the requirements and responsibilities of ambulance trusts under the Civil Contingencies Act

- The changing functions of control rooms, and the operational implications of these, e.g. provision of clinical assessment and advice, and helping patients to access new care pathways

- The clinical safety and integrated governance implications of the various models and operational arrangements

- The implications of Connecting for Health and the ambulance radio programme

- Legal constraints that may exist, e.g. whether trusts need to go out to competition for new CAD systems, or could they extend one of the existing contracts that the proposed new trusts have inherited, when considering time and cost impacts

- The impact of the changes to ambulance trust configuration and of implementing Taking Healthcare to the Patient on control rooms, and the technology required to support the trusts in doing so

- To consider the lessons learnt following the regionalisation of fire control rooms (Firelink project) to nine regional control centres

- The future strategic direction of NHS Direct and inter-relationship with ambulance trusts now and in the future

- To consider the report by the National Infrastructure Security Co-ordination Centre following the survey of ambulance service control centres in May 2006. (Report can be provided if required)

- Cost

- Experiences from other countries, including the report ‘The Future Provision of Ambulance Communications in New Zealand’ (see Appendix E)
• The recently published report by Sir David Varney on Public Sector Transformation.

2.4 Site Visits

The following ambulance trusts were asked to make resources available to support the review team, including site visits:

• North West
• South Central
• East Midlands
• London.

2.5 Scope

Consider either co-locating control rooms, or integrating systems to allow, wherever possible, seamless call transfer with other public sector organisations, where appropriate, for example, with an NHS Direct call centre or primary care GP call handling provider.

However, the review should take into account the challenges facing ambulance trusts in this respect, and consider them when making any recommendations.

2.6 Exclusion from Scope

The review was not asked to address issues around the training and education of control room staff.

The review was not asked to address the delivery of key performance requirements.

The review did not extend to other functions, such as head office and support services physical size and location of the hubs.
2.7 Key Criteria

The review was asked to consider the following key criteria in developing technical and operational specifications:

- Clinical safety and governance
- Efficiency of operation
- Organisational development requirements
- Service delivery requirements, including provision of effective resilience over the large geographic areas of the proposed new trusts
- Integration with NHS, social care and other agencies
- Support of patient choice and appropriateness of care provision
- Complexity of maintaining continuity of service during any re-organisation of services within a proposed new trust.
2.8 Specified Outcomes

Recommendations on the areas outlined below.

- Minimum technical and operational specification for control rooms for the proposed new ambulance trusts, reflecting the changing requirements of, and service provision by, ambulance trusts as set out in Section 2.
- Generic control room models.
- Optimum size and necessary resilience arrangements for control rooms.
- Potential areas of cost implications.
- Disaster recovery and resilience arrangements.
- New and emerging technologies.
- Transition and implementation costs, e.g. cost impact of dual system running and training in the new system.
- Facilities and estate management issues.
- Impact on business continuity.
- Cost impact of Connecting for Health, the ambulance radio programme and N3.
- Best value.

Analysis included the following areas:

- Ability to meet the varied requirements of the changed environment
- Lessons learned by review of current NHS best practice, other domestic and international emergency services’ control room reviews
- Qualitative impact on service delivery, organisational development, and barriers to implementation and other associated issues and opportunities
- Cost, in terms of savings available, capital and revenue, cost-benefit and cost-effectiveness.
2.9 Methodology

2.9.1 Methodology Introduction

The methodology used for the review and the development of the models was conducted in two phases:

♦ Strategic Framing – establishing the baseline of facts and understanding the strategic context

♦ Model Definitions and appraisal – developing and testing the models for appropriateness to the trusts.

The team delivered the project by undertaking a number of workshops and observations sessions, as well as market intelligence gathering from both emergency services and similar industry sectors. Finally, a questionnaire was developed and issued to the four core trusts involved in the project, and to the wider trusts, for completion, which allowed some level of analysis to be undertaken. The approach also included meetings and conversations with external organisations, such as the National Infrastructure Security Coordination Centre (NISCC), MIS major CAD suppliers, partner agencies, as well as independent Operational Research consultants, ORH. Although a structured approach was taken, the project was not scoped as a detailed options appraisal, but was able to build strong market-based evidence, allowing a more rapid learning process from organisations that have already undergone a transformation process.

The objective was to develop a series or ‘menu’ of operating models that will then allow the trusts to undertake their own tests, detailed business cases and appraisals. The team was organised to address the success criteria identified by the DH within its invitation to tender National Review of Ambulance Control Centres in England – Service Specification but also, and more importantly, the key recommendations developed as part of the Bradley Report, Taking Healthcare to the Patient. The project’s two distinct phases are discussed below.
2.9.2 Strategic Framing

The project team began by assessing the conclusions of the recent Ambulance Services review, to ensure we were fully conversant with its implications across the trust’s functional call handling and dispatch area. This was achieved through a series of workshops with operational and senior staff within each of the four core trusts in scope, and accompanied site visits.

This ‘baseline’ of the current situation allowed the project team to understand the scale of potential change, establish any good practices, and fully appreciate, from the staff’s perspective, the issues and barriers to effective call handling and dispatch within the trusts. This then allowed the team to hone and develop inputs to the model and option definition.

A questionnaire was issued to solicit stakeholder views from the wider trusts outside of our initial scope. The questions covered information capture about volumetrics, technology and business continuity. The response rates were initially disappointing; there was, in general, a lack of completeness of the questionnaire responses, in particular call volumetric information.

This has meant that many of the conclusions drawn have been based on expert knowledge and views on best practice to supplement any analysis of the data from the questionnaire. However, the fact that the project team was able to visit and observe operations, and to have access to a series of international case studies, has meant that the lack of completeness of the data collection did not adversely affect the development of the models.

Both within the questionnaire, and through our workshops, we have solicited the views of stakeholders on:

♦ The business continuity provision required, compared to current situation
♦ Any additional services or functionality envisaged
♦ Any preferred changes to the existing service that could be incorporated into the new model development
♦ Systems and solutions.
The appraisal criteria had been provided by the DH to Mason Communications (Mason) as part of its brief. This phase of the project allowed Mason to test their validity with both the operational staff (a bottom-up view, summarised in tables 3.1 to 3.4), as well as a top down view from Programme Board and senior management. Some important issues were raised and discussed. Within the workshops the representatives were asked to rank the list of criteria. This was then discussed in open forum.

The discussions within the group were steered by the fundamental question about what does each trust see as its core service. In addition to the criteria, the initial long list of high-level models were tested against the 70 recommendations of the ambulance review to assure alignment, or at least identify if there were potential gaps and misalignment between the models and the vision for the English ambulance trusts moving forward.

This phase ended with a series of views on the ‘as is’ current situation within the trusts, and a view as to the direction and best practices being deployed both within the service and within a wider field of services. The process undertaken also provided insight into existing best practice frameworks available to the trusts to allow them to start a more detailed appraisal of their options as part of next steps.

The questionnaire is provided as Appendix F.

### 2.9.3 Definition of Models and Associated Options Appraisal

This second sub-stage provided the creative framework within which the models have been developed. This has provided, through a series of workshops, and expert opinion, three distinct areas for model development:

- Initial brainstorming
- Refinement and initial challenge
- Checkpoint and work up details and assure alignment.

These meetings were held with the Chief Executives and senior representatives of the various trusts, and a number of scenarios (models) were reviewed and discussed and assessed for alignment to the vision for change in the ambulance review.
A long list of models (which focused on numbers of sites initially) was developed. Some of the models were included for information as they were non viable as evaluated by other organisations (the Single National centre for example). However, for completeness these had been included. The long list was reduced to a short list for evaluation. The next stage was to consider the range of operating models that could be staffed within these models. For example, the consolidations of all call taking and the separation of dispatch. This was then consolidated with the technical appraisal, and in the context of the latest ambulance radio programme ARP plan.

The final set of workshops undertaken had been used to assure buy-in to the potential models, as interpretation of the models may vary across stakeholders, and to ensure correct terminology and language appropriate to the ambulance trust was in place. The initial draft report was shared with key members of the Programme Board to ensure best fit to the overarching objectives prior to issue.

It is important to recognise that the generic models were developed through a combination of robust analysis of available data, where possible, access to best practices and globally sourced case studies, and informed by the team’s knowledge and experience, as well as the trusts’ own thinking. The impact across the people, process and technology dimensions was considered as part of the ‘as is’ work during the previous phase of the project.

Finally, an option appraisal process was undertaken to look at risks and benefits and, if possible, real costs. The risk analysis process identified and scored risks using a combination of probability and impact.
3. Current Situation

3.1 Introduction

During the initial phase of the project, Mason held a series of workshops with each of the four nominated trusts. This section summarises the key conclusions and discussions at the workshops. It also includes the key issues as seen within the trusts. The section begins by discussing the generic changes and considerations each trust is grappling with from a national perspective. The remaining part of this section then summarises the workshop discussions at each trust into a generic set of issues common to most, or all, the trusts. This includes a view on the PTS and the CAT C /Triage desks provided within the control rooms at each trust. Finally, to place these comments in to context, we have provided a brief overview of each of the four trusts.

On 01 July 2006, the number of ambulance trusts was reduced from 31 to 12. A change to improve strategic capacity within the ambulance trusts, and aimed at increasing front-line resources available to patients.

3.2 National Context – People

In addition to the process of re-configuration, two other separate key initiatives have been run in parallel: the Call Connect initiative, and the Agenda for Change (A4C). Both are supporting transformation within the service. An overnight transformation was never expected within the ambulance service; however, as part of the trust’s plans to deliver against call connect targets, a number of projects and work streams have been developed within the trusts. There are fundamental questions being raised of the systems and processes that, as a legacy of the old trusts, will have to change to enable the ambulance services’ vision as stated within the ambulance review.

Nationally we have seen a varied range of job titles and roles being defined within the control environment. Although services are designed around local needs, having a high level of consistency across the different operations (both within the trusts and between trusts) means minimising role ambiguity, and so provides greater opportunities to implement nationally driven initiatives (ARP for example) as well being a critical success factor when considering more collaborative working and mutual aid during periods of high demand. This will also be a significant factor when planning and mobilising for business continuity in the case of large-scale civil emergencies.
All trusts appear to have a lack of effective tactical workforce planning in place that truly matches demand to staffing levels. The workforce planning functions that do exist are fragmented, and not integrated with either the other controls within trusts, or co-ordinated with ambulance crews’ own rosters.

The investments being made seem to be in purchasing workforce management tools, rather than focusing on root causes of demand management and instilling a performance management framework. This will become more important as new ways of working and new services and skills will change with the changing call and contact profiles. We observed a number of shift models all with their own strengths and weaknesses. Eight, ten and twelve-hour shift patterns are being trialled across a number of trusts.

One trust (West Midlands) has seen dramatic improvement in performance through implementing new shift patterns and demarking the roles to reduce role ambiguity, as well as meeting demand needs more fully. In Mason’s opinion, the control room at West Midlands Ambulance Service represents much current best practice across people and processes, whilst having made little change to applications and technology.

Another trust (East Midlands) has also seen significant improvement in performance through implementing new dispatch reconfiguration, by ‘sectoring’ traditional geographic boundaries and allocating a fixed number of responder/vehicles to each dispatcher. This trust has also demarked the roles to reduce role ambiguity, as well as meeting demand needs more fully; performance on Cat A has dramatically improved. This performance improvement is a direct consequence of both meeting demand needs, as well as a concerted effort to instil a leadership culture within the control room.

The critical success factors identified at this trust included the injection of a strong performance-led management team, with strong leadership and problem-solving skills, and one that was not afraid to challenge the incumbent processes and working practices. Another significant factor that contributed to the success was ensuring staff worked in an environment that was conducive to performance improvement. This relatively low investment in the working environment has generated significant returns in terms of performance and motivation levels.
Another significant lesson learnt from the West Midlands operation is the focus on providing appropriate operational support (ICT, supervisory and responder support), which has enabled non-productive time (for call handlers and dispatchers) to be removed, thereby creating a working environment that nurtures performance improvement. The turnaround in performance warrants acknowledgement for both the impact it has had on the service and staff, as well as the rate with which it was achieved.

The trusts, however, do need to ensure that budgetary provision is made for the gradual transition in operating models. Without this investment, the performance gains realised within the trusts will not be sustainable over a longer period of time. This means dedicated resources will be required to undertake work stream activities under the auspices of a formal programme of work.

Generally speaking, the staff have very high expectations for career progression and wider opportunities around clinical-based training. In the context of control rooms and call handling, staff development will be critical in maintaining and improving standards as the trusts begin placing more emphasis on urgent care, whilst improving emergency care.

3.3 National Context – Processes

Local initiatives within the various trusts visited have already led to a number of interesting developments within the control room environments, including the provisioning of dedicated urgent care centre (UCC) operations, which can be suitably configured to provide a portfolio of services aligned to local and trust-wide patient needs.

There are differing views on the design of such centres. One thought is that the UCC can operate within a true contact centre configuration, can be centralised and, through business-led, risk-assessed business continuity plans, can benefit from spare capacity at other trust sites, or by the use of private sector capacity/space/spare capacity at other trust sites. This optimises call handling and standardised practices, is easier to manage, and provides for enhanced supervision, but does not necessarily promote local solutions and may be perceived as reducing local knowledge.
Another model that can be considered viable is the location of the UCCs in a devolved manner, working closely with local PCTs and care providers. This has the advantage of being ‘tailored for local needs’, can provide a level of continuity through exploiting remote and flexible working methods, such as co location and use of virtual networks and secure virtual private networks (VPNs), but has the disadvantages of a lack of corporacy and consistent standards, and requires a greater number of options for Airwave and ARP needs.

A level of caution was apparent about launching initiatives such as UCCs whilst the ‘core’ service regarding emergency care was still in need of improvement. However, this is not a statement of whether it should be done or not, but rather the method of implementation and consultation prior to launch.

This brings with it a refocus on understanding the distinct remits and potential demarcations, hand off and escalations between the emergency service and urgent care universes, both intra-ambulance trust, as well as with established partners such as NHS Direct.

Nationally, also, we have seen differing levels of local engagement through the contribution that services such as PTS makes to the trusts’ revenue streams. Each trust needs to place a relative weighting into how much of its available floor space is to be dedicated to these ‘added value and emerging services’ compared to the emergency/A&E services, which are seen as core to a control room. The models developed within this report have taken into consideration this key decision.

Finally, the availability of vehicles and, indeed, first responders has a direct impact on the performance targets associated with call connect, and suggests to the review team that an end-to-end perspective on both performance target setting, as well as workforce planning and resourcing, is required.

This also means that the impact on standby points (the predetermined geographic locations to which non-deployed ambulance response units are positioned prior to call out), and the likely increase in ‘stand downs’ of responders, will have an impact on the performance of the operation, as well as require a greater level of co-ordination and communication skills to be developed in staff.

There is a recognition that ambulance turnaround times affect call connect targets; this must not be allowed to adversely impact on CAT B calls, as CAT A calls may well weight the allocation and mobilisation strategies against them moving forward.
3.4 National Context – Technology

The wide range of CAD systems that are in place is discussed in Appendix B; there is a significant opportunity to consolidate and to drive commonality across the trusts. Recent changes at Northeast Ambulance Trust, with regard to new systems, have had a major impact on performance. The lessons learnt from this need to be shared with all the trusts as they consider new functionality and ways of working.

Business continuity and disaster recovery are discussed in Appendix D of the report; however, all four trusts have got in place differing degrees of disaster recovery and back-up sites. However, they have not been tested, and the robustness of the set-ups has not been challenged.

3.5 National Context – Patient Transport Service

Patient Transport Services (PTS) is an important operational service provided by the ambulance trusts. Doctors, dentists and midwives can book non-emergency transport for patients. This service is for people unable to travel by public transport to, and from, hospital for appointments at out patient clinics, day surgery units and day centres. This transport is provided, and should, ideally, be based on the clinical need of the individual.

Non-emergency ambulance transport is supported by a dedicated control function, which is either co-located within the A&E/emergency control room (ECR) or forms a separate operation within the trusts. Some trusts use a common set of vehicles to provide this service alongside emergency vehicles (subject to appropriate prioritisation). The commercial aspects of these specific contracts can contribute significantly to the revenues of the various trusts.

PTS contracts set out locally agreed performance standards, e.g. timeliness of arrival at hospital. The targets, therefore, vary across the country and form part of the contractual terms in place. The PTS service is developing into multichannel-accessed services, as many trusts offer online booking as part of their portfolio of resources. These resources are typically deployed during normal office hours, or slightly extended hours of operation (8am to 6pm, but not necessarily 24/7); however, this pattern is set to change as part of the trusts’ responsiveness to patient needs. Outside core hours of operation, the desks are sometimes deployed for GP call handling services, staffed by paramedics, nurses and doctors.
The general view is that PTS operations can be operated through the best practices of modern day contact centres. The service has the potential to support the emergency and urgent contact handling of the trusts, subject to local service design strategies, to address patient choice and social exclusion drivers. For example, if more clients are able to use the online booking facilities, this frees up resources to undertake critical patient liaison and health promotion, as well as provide a more responsive management of patient care activities (for example, working more closely with the voluntary sector) and greater access to services for the less mobile members of society. This could also provide opportunities for career development of PTS staff into the emergency and urgent transport side of the trusts’ operations.

3.6 National Context – CAT C Calls and Triage

A critical role that is developing is the clinical adviser/CAT C desk adviser. This role will be a conduit, and a catalyst for change. It will need to interface with and influence initial emergency call handling processes whilst also providing advice and co-ordination roles with mobile care providers and responders. Where and how this role fits into the new world is still being debated and could be positioned within ECRs or within the UCC models. The reality will be that this pivotal role will need to increase, and its growth will be driven largely by the individual trusts’ priorities for migration to alternative care pathways and the differing needs of the EOC (emergency operations) and UCC/UOC (non-emergency contact handling) environments. The likely demand profiles for these calls is yet to be fully determined and, therefore, the service delivery model for this critical function will need to evolve, to mitigate the risk associated with the situation; active consideration should be made of the use of partnering strategies to assure service delivery.

3.7 General Issues and Concerns within the Trusts

The trusts are currently working through a comprehensive list of work streams to deliver benefit, and mitigate many of the issues discussed at the workshops as part of their agreed action plans for call connect targets. These initiatives vary in depth and scale.

Many are focused around technology change; however, some common themes emerged, which included organisational restructure to optimise the working between the EOC and UOC, and the design of common processes and policies to optimise patient care.
Through the series of workshops, staff and middle management were encouraged to provide suitable levels of feedback on the current situation within each trust, and also some of the key initiatives in place to mitigate the issues. These have been summarised below:

Career Progression

♦ As a result of the constant change, and worrying about job loss, people feel that the ambulance service is not giving them the opportunity to explore new opportunities.

♦ In some cases there is only one grade level for the Call Taker and Dispatch functions; you have to step out of this function, and into another function, if you wish to progress your career.

♦ Formal and consistent structures should exist to support career progression.

Lack of Recognition within NHS

♦ As a result of the above point, ambulance service staff feel alienated from the rest of the NHS, as they receive no support from the NHS partners.

♦ NHS partners do not see the ambulance service as being part of the NHS service. Instead, they view the ambulance service as a service that moves patients.

Emergency Care

♦ There continues to be discussion as to who should control the resources – GP call handling, or A&E aligned staff, and should they be merged to provide complete care?

Control Room Activity Volumes (Capacity)

♦ Call volumes are different within the various counties, and are growing with little, or no, workload balancing and mutual aid, except for overflow-based solutions, which are, by definition, not proactively managed.

♦ There should be division of labour around sizing, especially as the Dispatch function is growing.

♦ Call handling is to be looked at from a trust perspective, and not from a county perspective, which could feasibly mean changing the geographical areas that the control rooms cover.
Other Work – GP call handling and Patient Transport System

♦ There needs to be some measurement to know what is required, and an operating model for these services.

Educating Public Relations

♦ The role of ambulance communications leads is recognised as difficult. It is important that they fully understand how the control rooms operate, so that they can, in turn, manage partner, public and patient expectations.

♦ Un-merging a division and re-integrating it into another trust is too much to deal with, and would be a significant risk to service continuity and delivery.

Training

♦ To be standardised across the trust, as currently inconsistent.

♦ Needs a face lift, for the current recruitment package to enable head hunting and to attract more staff?

♦ There are no dedicated resources within the direct domain of the control room, and on-job coaching is not programmed in.

♦ Shift allowance does not accommodate for the receiving, or giving, of training.

♦ Backfills are not factored into the training programme.

Retention

♦ Due to poor expectations, retention is not high, as staff are not managed properly.

♦ Lack of motivation, especially for current staff, as there is no career progression.

♦ Exit interviews not being held, so no feedback from staff that have resigned.

♦ Poor environment to work in.

Staffing Levels and Rota

♦ Inconsistent, as under-staffed for demand.
Too Many Working Practices

♦ There is no defined role within the trust to standardise policies across the trusts in many instances.

♦ There is a need to harmonise and consolidate staff on new changes; in some instances there is no confidence in the Standby locations, and there is no common Standby plan in place in some trusts.

♦ Lack of planning for implementing policies, hence, no migration plan put in place.

♦ Duplication of work across the trust for policies, e.g. Coroners work differently in each of the areas within the trust.

Communication

♦ Lack of communication between the control room and the ambulance crew.

Technology

♦ CAD Interlinking: many have plans to have this changed, and all recognise that this is a pre-requisite for integration of services.

♦ Too many disjointed processes.

♦ Cross-border differences: there are cross-border differences in procedures and processes, e.g. hospital transfers are done differently.

♦ Urgent care triage system procedures: services are different, and are evolving, and no trust-wide use of these resources (each site has dedicated CAT C or triage skills that are typically reactive, rather than proactive).

♦ Technology equalisation: there are differences of technology in the various control rooms.

Business Continuity and Resilience:

♦ Not all trusts have complete BCPs for their control room operations, albeit, if not, then generally they are work in progress.

♦ Control room fallback arrangements, although in place, are rarely tested.

♦ Some control rooms fall back to significantly lower levels of technology than are available in the primary control room, which, if required for any length of time, would significantly lower performance.

♦ Trusts’ BCPs and control room resilience need to be developed with the larger trust (post-trust reconfiguration) in mind.
3.8  East Midlands Ambulance Service (EMAS)

East Midlands provides A&E and non-emergency PTS to the resident population in the counties of Derbyshire, Nottinghamshire, Leicestershire and Rutland and, more recently, this has grown to include Northamptonshire and Lincolnshire.

The control operations are based out of two sites: one in Nottinghamshire, and one in Lincolnshire. There is a redundant empty site in Derbyshire for the purposes of business continuity.

The Northamptonshire service is provided through a service level agreement in place with South Central Ambulance Trust, and operates from Deanshanger in Buckinghamshire.

EMAS has had a significant success in providing PTS services under contracts. This forms nearly 20% of the trust’s revenue, and so the commercial imperative is significant. This will mean that any new model for this trust will not afford any risk to the existing contracts in place.

We have summarised below the roles within each of the control rooms, excluding the management level.

3.8.1  Nottinghamshire

- Generic EMDs (emergency medical dispatchers) as call takers
- Dedicated Dispatch desks for each of the trusts’ counties. Each having dedicated dispatch call takers (in and outbound), controllers, radio operators and FRV [first responder vehicle desk]
- An urgents desk controller and nurse desk is co-located within the room.

3.8.2  Lincolnshire

The Lincolnshire operation is similar, but grouped by North, West and East ‘divisions’. This room includes:

- EMD call takers
- Dispatchers
- Dispatch assistant
- Nurse triage
- CAT C assistants.
3.8.3 **Northamptonshire**

- EMD controllers (multi-skilled for call taking, dispatch and control)
- Call takers
- Clinical adviser (PSIAM desk).

3.8.4 **Workshop Feedback**

The feedback from the staff is that they want a more integrated service, and recognise the need to standardise working practices so as to support each other moving forward. However, clinical safety and resilience were by far the most important considerations. Table 3.1 shows a summary of the relative weightings they placed on the critical evaluation criteria.

<table>
<thead>
<tr>
<th>Key Criteria</th>
<th>Ranking¹ – 1, 2, 3</th>
<th>Number of Attendees</th>
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</tr>
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<td>Service Delivery</td>
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<td>11</td>
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<td>Integration with Partners (NHS + Others)</td>
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<tr>
<td>Support Patient Choice</td>
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<td>5</td>
</tr>
<tr>
<td>Change and Migration</td>
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<td>6</td>
</tr>
<tr>
<td>Change and Migration</td>
<td>1</td>
<td>11</td>
</tr>
</tbody>
</table>

Table 3.1: East Midlands Workshop Ranking of Key Criteria

3.8.5 **Technology**

Initially, a combination of the control centres of the former East Midlands, Lincolnshire and Northamptonshire (part of Two Shires) service areas, but, since trust reconfiguration, Northamptonshire service area has been controlled from the old Two Shires control room in Deanshanger under a service agreement with South Central Ambulance Trust. Therefore, only two physical control rooms remain under the auspices of EMAS.

¹ Ranking: 1 highest, 3 lowest
The technology within the three sites is diverse, as all three use different CAD systems, with East Midlands and Lincolnshire using MIS C3 (their latest product) and Visicad, respectively. Call taking technology differs as well, with East Midlands and Lincolnshire using a Meridien PABX and Vivista ICCS, respectively.

Commonality is achieved through all three sites using AMPDS. However, versions 11.1 and 11.2 are used (across the three sites) and TAS triage is only used at two sites.

From the workshop with EMAS there were differing opinions of the CAD user interfaces, and usefulness of the mapping, which was identified as being an issue for Lincolnshire (who use Visicad).

Resilience was also identified as not being ideal for East Midlands and Lincolnshire, although mechanisms were in place (fallback to police control in Lincolnshire and a cold standby control room for East Midlands).

3.9 North West Ambulance Service (NWAS)

The North West Ambulance Service NHS Trust was established on 01 July 2006, following the merger of ambulance services in Greater Manchester, Cumbria, Merseyside, Cheshire and Lancashire.

Some significant changes are planned within the trust: the formation of a new UCC and a new dispatch centre, and current consultation regarding the Cumbria control room and its future within the trust.

New systems are integrated, and there is a common CAD. Migration to a new Advanced Medical Priority Dispatch System (AMPDS version of software) is also being carried out. The new UCC requires a new triage system, which is currently being planned.
The operational structure of the various control rooms within NWAS is summarised below.

3.9.1 Greater Manchester

- EMD call takers
- Geography-based EMD (Emergency medical dispatchers)
- Dispatch support (crew liaison)
- RRV (Rapid Response Vehicles) specialist desk
- Radio
- Emergency care practitioners and health control desk (hospital liaison).

3.9.2 Mersey and Cheshire

- EMD call takers
- Geography-based EMDs (RRV included)
- Radio
- Triage and HD (High Dependency).

3.9.3 Lancashire

- EMD call takers
- Geography-based EMDs
- RRV specialist desk
- Radio
- EMD PTS control.

3.9.4 Cumbria

- EMD call takers
- EMDs
- Radio.
3.9.5 Workshop Feedback

Table 3.2 demonstrates the views and weightings expressed by the trust representatives with regard to evaluating any change to the operations moving forward.

<table>
<thead>
<tr>
<th>Key Criteria</th>
<th>Ranking – 1, 2, 3</th>
<th>Number of Attendees</th>
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<td>Clinical Safety and Governance</td>
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<tr>
<td>Opportunities for Improvement of Operation</td>
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<tr>
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<td>Organisational Development Requirements</td>
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<td></td>
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<td>4</td>
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<tr>
<td></td>
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</tr>
<tr>
<td>Integrating NHS and other agencies</td>
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<td>7</td>
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<td></td>
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<tr>
<td>Support of Patient Choice and Care Provision</td>
<td>2</td>
<td>4</td>
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<td></td>
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<td>Change Management and Continuity</td>
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<td>8</td>
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<td></td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 3.2: North West Workshop Ranking of Key Criteria

3.9.6 Technology

The current NWAS control rooms are based on the four service areas of Mersey region, Greater Manchester, Lancashire and Cumbria, a total of four independent regions, each serviced by a main control centre and limited fallback technology.

Some degree of commonality of technology exists between the four control centres’ CAD systems, which have all been provided by MIS, albeit three are their older Alert2000 product, with just Cumbria using the new generation C3 system.
Telephony systems are provided in the two largest service areas of Greater Manchester and Mersey Region through Nortel Meridian PABXs, which both include Nortel’s Symposium ACD, while the two smallest service areas of Cumbria and Lancashire just use Siemens PABXs, with no ACD.

All four control centres have the AMPDS product installed, with plans to upgrade to the latest version (11.3) being discussed at trust level in order to try and centralise the training requirements (one half-day per operator is required to continue operator accreditation).

Each service area has a number of what can be considered ‘Best Practice’ functions, a sample of which is as follows:

- Greater Manchester – MIS delivered real-time through intranet portal
- Mersey Region – use of incident route finding to locate nearest resource
- Lancashire – use of e-PRF and ECG transmission (albeit it is understood that these are not integrated)
- Cumbria – functionality contained within the C3 product.

3.10 South Central Ambulance Service (SCAS)

The South Central Ambulance Service NHS Trust came into being following the merger of the four ambulance trusts covering the counties of Hampshire, Berkshire, Oxfordshire and Buckinghamshire. The trust provides, under a managed service contract with EMAS, the call handling and dispatch for Northamptonshire through the operation at Deanshanger in Buckinghamshire (at the former ‘Two Shires’ HQ); this site is co-located with the Buckinghamshire ambulance requirements.

There are some significant changes planned at SCAS and, therefore, some concerns regarding job losses and methods of working. New technologies being introduced, which include ACD technologies for automated call distribution, rather than the current ICCS implementation (where calls are selected by the call takers), appear to be welcomed.

Although systems appear stable, new CAD systems are being considered, and new call locationing systems are required to speed up mobilisations against call connect targets. All the control rooms within the trusts had been described as old and requiring updating.
There was uncertainty raised as a result of some significant developments, including AMPDS and Pathways implementations, and CAT C desk processes – are these to be proactive call intervention, or continue to be call back driven processes?

The SCAS is currently actively looking at the locations and size of the control rooms, and this is being further escalated with recent property issues (Hampshire site being sold for redevelopment, and the proposed closure of the Deanshanger site).

The control operations within SCAS is summarised below:

3.10.1 Oxford

♦ Call handlers
♦ Intermediate desk for non-CAT A
♦ EOCM
♦ Dispatcher.

3.10.2 Berkshire

♦ Call takers within message handling team (not linked to Emergency team) and handling GP calls
♦ Incident control room
♦ Medical solutions (private medical insurance service) co-located and staffed by doctors
♦ New CAT C desk
♦ Dispatchers (East and West Berkshire)
♦ Call takers
♦ Healthcare practitioner.

3.10.3 Buckinghamshire

♦ Call taker
♦ Multi-skilled dispatch (including RRV)
♦ Radio
♦ PSIAM desk (co-resourcing for Northamptonshire).
3.10.4 Hampshire

- Call takers
- CAT C desk (nurse backed up by Control Duty Manager)
- Flexible radio operator
- Dispatch (East and West co-located with shared radio op)
- PTS and intermediate desks
- PTS radio (co-located with PTS dispatch)
- Clinical supervision
- PTS/GP call handling desks (more than 50% of floor space).

3.10.5 Workshop Feedback

Table 3.3 shows the rankings that trust representatives placed against the proposed evaluation criteria for any changes to the operating model.

<table>
<thead>
<tr>
<th>Key Criteria</th>
<th>Ranking – 1, 2, 3</th>
<th>Number of Attendees</th>
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<td>Clinical Safety and Governance</td>
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<td>Change Mgt and Continuity</td>
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<td>8</td>
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<td></td>
<td>2</td>
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</tr>
</tbody>
</table>

Table 3.3: South Central Workshop Ranking of Key Criteria
3.10.6 Technology

Consisting of the three control rooms in Berkshire, Hampshire and Oxford, along with Buckinghamshire being served by the Deanshanger control centre that also serves Northamptonshire.

CAD technology is diverse across the four control centres, consisting of two different MIS products from Fortek, which has already been superseded by a product not implemented in any other current English ambulance trust.

Telephony PABXs are just as diverse, with ACD untried, albeit currently being installed in Hampshire.

There are also two quite different MPDS systems in use, AMPDS-dominant in three, but the CBD product in use in Berkshire. It is also of interest here to note that the Cleric CAD (in use in Buckinghamshire) has recently been installed in North East Ambulance Service, integrated with the NHS Pathways MPDS system, as a national Pilot.

3.11 London Ambulance Service (LAS)

Frequently cited as the world’s largest free at the point delivery ambulance service, LAS operates a single ECR supporting A&E calls. The centre is referred to as the EOC, and is located in the Waterloo area in central London, with a hot standby site in Bow, East London.

The service has also recently launched a control room for urgent care calls (UCC/UOC). It is pursuing a strategy that will allow it to transport fewer patients to A&E by providing a wider range of care options. The control rooms (EOC and UOC/UCC), therefore, will become more integrated in their approach to servicing patient needs.

This co-located centre (but not integrated with the EOC in terms of people and processes) provides: urgent care crew deployment, patient transport services and the emergency bed service.
More recently, the clinical telephone advice teams providing CAT C support have been amalgamated within the UOC and provide callback-driven contacts that have been assigned through the EOC as non-emergencies. This service is expected to continue growing in response to the changes the ambulance service implements as part of its strategy of ‘taking healthcare to the patient’. LAS has initiated a number of changes to the operating model with a view to improve performance against the national standards for call connect. These include reducing red calls (CAT A) through clinical challenge, and downgrading if it is clinically safe to do so. This challenge extends to discussions with GPs on GP urgent calls.

The trust is reconsidering its workforce planning status quo. It is trialling new 10-hour shifts, and is considering the sizing requirements for both call takers and dispatchers. It is also considering the automation of fast response units.

Technology changes include new gazetteer, and greater systems integration of incident management systems into the EOC. Finally, the CAD system is being integrated with other emergency services to enable an integrated approach to incident management.

The organisation recognises that it needs to further develop its business continuity plans, and test these to ensure compliance to all relevant standards.

The control operations within LAS are summarised below:

- Call takers for all emergency calls
- Geography-based dispatch teams, with dedicated allocators, and radio teams
- Specialist desks for helicopter and fast response (e.g. motorbikes) vehicles
- Administrators (loggers) manual forms updates.

Separate UOC, which provides:

- GP urgents
- Clinical CAT C advisers
- PTS
- Doctor - clinical support.
3.11.1 Workshop Feedback

Table 3.4 shows the trusts representatives rankings against the proposed evaluation criteria for any changes to the operating model.

<table>
<thead>
<tr>
<th>Key Criteria</th>
<th>Ranking – 1, 2, 3</th>
<th>Number of Attendees</th>
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</table>

Table 3.4: London Workshop Ranking of Key Criteria

3.11.2 Technology

The major control centre is located in Lambeth HQ, used along with a backup control centre in Bow.

The CAD technology (CTAK) was developed by LAS itself in the early 1990s, and LAS recognises that it needs replacement; hence, it has initiated its CAD2010 project. There are multiple other systems in use within LAS that currently work stand-alone, but would benefit from integration with any new CAD system, something that LAS is understood to be advocating within its CAD2010 project.

Best Practice currently within LAS relates to its ability to electronically interface with the Metropolitan Police Service’s (MPS) CAD scheme. An MPS call taker can create an incident requiring ambulance attendance within the MPS CAD, which is then automatically created in the LAS CTAK for dispatch. One downside of this process, however, is that MPS call takers are
not accredited, nor do they have the ability to use the AMPDS process providing a Chief Complaint code.

3.12 Conclusions

- There is a diverse mix of technologies, job roles and descriptions, and working processes in place across the trusts

- There are examples of good practice within the trusts; the trusts have failed to exploit lessons learnt from these examples and to apply thinking into how these practices could work in their own context

- There is widespread acceptance that, through interactive dialogue with staff in the control rooms, new ways of working, and a drive for consistency within each trust, would manifest benefits and improved operational efficiency

- Clinical safety and governance is seen as the most important evaluation factor when considering new models, and there are differing political drivers affecting the configuration of control rooms, these (notwithstanding resilience issues) include:
  - Co-location of UOC (non-emergency contact handling) with EOC (emergency operations)
  - Co-location of UOC with partners and proximity to PCTs, etc.
  - Stand-alone UOC operations with only escalation paths from EOC into it for CAT C and clinical advice.
4. Generic Model Options

As mentioned in Section 2.9.3, generic models were developed through a combination of robust analysis of available data, where possible, access to best practices and globally sourced case studies, and informed by the team’s knowledge and experience as well as the trusts’ own thinking.

Initially, a long list of models was developed which was then reduced to a short list for evaluation. The next stage was to consider the range of operating models that could be staffed within these models. This was then consolidated with the technical appraisal and in the context of the latest ambulance radio programme plan.

4.1 ECR Functions

Although each may involve complex procedures and processes, their ECR functionality may be split into three core skills:

- Inbound call handling
- Triage
- Dispatch.

Given reasonable scale, each of these activities on a shift basis can be, and generally is, a separate skill group ideally operated under the supervision of a dedicated shift leader.

All other control room functions (for example PTS) aimed at providing a wider healthcare service to the community are in essence co-located services and do not form a direct or substantial part of these three core functions. The sharing of physical assets, such as accommodation and technology, does not of itself bring the processes closer. Although, of course, the use of shared personnel can provide a wider sharing of experience and increase career opportunities.

4.1.1 Inbound Call Handling

Inbound call handling is typically fed from:

a) 999 call routing

b) GP ‘urgents’ (999 calls from GPs made on behalf of patients)

c) Other services (Police, NHS D, etc.)
It should be noted that, at present, GP ‘urgents’ are generally treated as separate flows of work within the inbound call handling systems, and can be accorded a lower priority response if the circumstances appear to warrant it.

The performance requirements for responding to patients whose GP calls 999 on their behalf (known as ‘GP urgents’) should be the same as for other 999 calls – with effect from April 2007.

All the inbound processes are automated from the desktop and co-location with triage and dispatch functions, though shared assets are common, but not essential.

As seen in commercial call centres, help desks and large centralised despatch offices (such as London Ambulance Service and the RAC), economies of scale can come from grouping larger demand flows and staffing to the – predictable – delivery profile. Table 4.1 demonstrates that for 100 calls of the same length (answered to the same service level) a single site would require eleven staff, two sites would require 14 staff, and four sites would require 16 staff. AHT is the abbreviation for average handling time (in seconds) and ASA is the abbreviation for average speed of answer (in seconds). These economies of scale need to be balanced with meeting local needs.

<table>
<thead>
<tr>
<th>Calls</th>
<th>Period (s)</th>
<th>Service Level</th>
<th>ASA (s)</th>
<th>AHT (s)</th>
<th>Agents</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>3600</td>
<td>90%</td>
<td>20</td>
<td>240</td>
<td>11</td>
</tr>
<tr>
<td>50</td>
<td>3600</td>
<td>90%</td>
<td>20</td>
<td>240</td>
<td>7</td>
</tr>
<tr>
<td>25</td>
<td>3600</td>
<td>90%</td>
<td>20</td>
<td>240</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 4.1: Data Demonstration of Call Answering Staff Requirements

Discrete CADs in the current control room prevent grouping, and the efficiency that this brings.

Relations with other emergency services (in particular the police) are highly localised and inefficiencies can be identified when multi-agency responses are required.

No evidence was cited regarding local knowledge being a restricting factor in grouping call handling, theoretically up to a single national queue.
4.1.2 Secondary Triage

There is no common specification for triage services across England. Triage is typically worked for limited hours in the 24-hour cycle. Staffing is found in different ways by the trusts, e.g. variously involving NHS Direct, nurses, GPs and paramedics.

If call handling were grouped into larger flows (e.g. linked control rooms or larger control room catchment areas) then there would be the opportunity to maintain a constant flow of work to a parallel triage service.

Depending on location, triage services could, theoretically, be provided by PCTs or NHS Direct - if not by the local ambulance trust. The important thing is the service, not the provider.

We feel that new control room design must address this issue, particularly in light of Taking Healthcare to the Patient: Transforming NHS Ambulance Services, recommendation 44:

“SHAs and ambulance services should examine how clinical resource can be fully utilised in other ways – for example in call handling, working in GP practices or in Walk-in Centres, or taking diagnostic services to the patient.”

We note that the provision of triage services co-located with small ECRs is unlikely to be an economic use of resource. That means that to provide triage cover, either the duties are carried out remotely from the call handlers – disadvantages – or the use of fewer, larger, call handling centres.

4.1.3 Dispatch

Dispatch is heavily dependent on specialist training, and is closely managed in real time. Dispatchers across the country seem to manage similar amounts of complexity for their live resources per shift.

Core dispatch tasks are: allocation of responding resource, radio communication, crew break management/oversight, standby planning, and urgent fleet movements. There are different ways of sharing peak workload by assistance for radio, call logging, air ambulance, rapid response, community responders, cycles, etc.
The control room ‘floor managers’ are observed to be continually overseeing dispatchers’ activities. The impression is frequently given that they make, or double-check, the majority of decisions. However, operational liaison and practices vary across the country. Best practice may include:

♦ Having an operational manager in the dispatch area through the day

♦ The use of standby locations and hospital release policies varies to such an extent that it is obvious that historic working practices are challenging resource turn around times.

4.1.4 Remaining Activities

Other activities take advantage of the investment in call handling assets and workforce availability. In effect, these are asset sharing with the core control room, but are not essential to the traditional emergency control functions that have typically determined the size of the resource base. Services such as GP call handling cover can be a significant operation within trust control room environments. The skills and resources within such a service include CAT C/triage nurses, generic call-takers and specialist support staff. These resources are available to the core ECR functions and provide a backstop in many cases. Such functions noted on visits include:

♦ PTS
♦ Bed management
♦ NHS Direct
♦ GP cover/calling
♦ Private medical insurers’ advice lines.
4.2  Types of ECR Operating Model

Three groups of control room model have been identified below. The models can be considered in terms of control rooms forming a national network for call handling and dispatch functions. Although it is fully accepted that the operational responsibility at present largely lies with each ambulance trust this need not be the case, e.g. the shared resource at Deanshanger, although a temporary measure, has proven that trusts are able to work together supported by appropriate service level agreements.

Taking the principle that each trust must be responsible for delivery of its service but that this can be discharged through contract, the three groups are outlined below.

- **Micro sites** – where a small, discrete, area is served by its own control room, e.g. Oxford. By definition micro sites are stand-alone units and are not networked together.

- **National hubs** – where a large part (or even all) of the country is served by a control room that is networked with sister site(s) to provide national coverage irrespective of ambulance trust borders.

- **Trust hubs** – Where an ambulance trust is served by typically two, or more, larger control rooms that, potentially, are linked to other sites to provide a robust, albeit potentially localised, network. Trust hubs would have a significant degree of systems integration to load balance activities at peak demand.

4.2.1  Urgent Care Centres

UCCs – the name varies nationally – provide PTS, Bed Bureau and other services. Coupled with the growing demand for CAT C Call clinical assistance and secondary triage services there is an opportunity for ambulance trusts to either set up discrete units that are located strategically in close proximity to other NHS partner operations, or maintain these services co-located with ECRs. However, it should be noted that there is no physical reason for co-location arising out of the operational process in emergency call handling or dispatch.
Smaller ECR operations will become increasingly isolated and, on a unit cost basis, more expensive to operate. Having dedicated CAT C desks within these smaller operations is not efficient based on the current working practices. As the growth predicted for CAT C calls begins to take effect, locating CAT C desks within larger ECRs, or within UCCs, will provide greater resilience and improved productivity.

There is a perceived benefit, outside of documented process, for co-locating ECRs with UCCs, in so much as closer physical contact is possible (not withstanding AMPDS) for direct consultation of clinicians by call handling and dispatch personnel. A suitably flexible location and footprint would allow all operational requirements to scale up or down and utilise floor space based on demand.

There is also an equally strong perceived benefit, outside of documented process, for organising UCCs to closely align with the physical boundaries of PCTs and other partner organisations.

If co-located or in proximity, this may also allow for closer working relationships with the local mobile responders. Trusts should also invest in considering the value that remote working initiatives can have in enabling this more locally aligned partnership model (not to mention its impact on business continuity). Mobile technology, robust telephony and access to vital information sources are the key enablers in this situation.

*In our view, none of these co-location benefits overrides the process that must be followed, and there is no single ‘solution’ to the choice of location. It should depend on the usual range of factors in a balanced business case (e.g. location of current workforce, recruitment areas, life expectancy of historic assets, terms of occupancy of premises, etc.).*
4.3 ECR Operating Models to be Considered

Regarding the three groups discussed in Section 4.2, it should be noted that micro sites are essentially the status quo; national hubs are regional models where large single sites exist for each trust and are linked to other trust’s sites (similar to the models proposed for FiReControl, these must be linked to maintain resilience). Finally, trust hubs are operations of fully networked and resilient hubs within trust boundaries, with a minimum of two sites, which enable a resilient model that is aligned to local needs. Within these three groups, there appear to be 14 options that reflect the theoretical way forward.

<table>
<thead>
<tr>
<th>ECR Option</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Do nothing</td>
<td>Micro-sites</td>
</tr>
<tr>
<td>2 Minimal investment with minor change and replacement of like for like</td>
<td>Micro-sites</td>
</tr>
<tr>
<td>3 Progressive replacement of micro sites with state of art equipment</td>
<td>Micro-sites</td>
</tr>
<tr>
<td>4 Single national hub</td>
<td>National</td>
</tr>
<tr>
<td>5 Two independent bi-national approx same size for mutual fallback</td>
<td>National</td>
</tr>
<tr>
<td>6 Regional hubs</td>
<td>National</td>
</tr>
<tr>
<td>7 Regional hubs networked for load-balancing calls</td>
<td>National</td>
</tr>
<tr>
<td>8 A trust hub</td>
<td>Trust hub</td>
</tr>
<tr>
<td>9 Trust hubs networked for load-balancing calls</td>
<td>Trust hub</td>
</tr>
<tr>
<td>10 Two (or more) independent sites per trust large enough for mutual fallback</td>
<td>Trust hub</td>
</tr>
<tr>
<td>11 Two (or more) sites per trust: e.g. paired for call handling</td>
<td>Trust hub</td>
</tr>
<tr>
<td>12 Two (or more) sites per trust: e.g. all call handling at one site</td>
<td>Trust hub</td>
</tr>
<tr>
<td>13 Two (or more) sites per trust for dispatchers, call handling at one trust and one other trust site</td>
<td>Trust hub</td>
</tr>
<tr>
<td>14 Two (or more) main sites per trust plus a local dispatch site for rural area</td>
<td>Trust hub</td>
</tr>
</tbody>
</table>

Table 4.2: Table of ECR Options
4.4 Conclusions

Three groups of control room model have been identified for consideration.

It is important to consider the next level of operating model detail, to establish how the relationship between the emergency operations and urgent/PTS non-emergency operations is likely to change over the next few years as this will affect the size and make up of the control room environments.
5. **First Tests of Models**

In this section we examine each of the theoretical control room models. In testing the theoretical options we are mindful of the two requirements specified below:

- The relevant summary recommendation in Appendix D of *Taking Healthcare to the Patient: Transforming NHS Ambulance Services* (see bibliography in Appendix J).

- A risk evaluation against the eight criteria suggested by the DH brief (see Section 5.2).

### 5.1 Tests Against Summary Recommendations

Sections 5.1.1, 5.1.2, and 5.1.3 outline the three summary recommendations, and the extent to which each of the model groups (micro sites, national hubs and trust hubs) meets these recommendations.

#### 5.1.1 Call Handling Considerations

“Ambulance services should improve the speed and quality of their call handling, provide significantly more clinical advice to callers, and work in a more integrated way with partner organisations to ensure consistent telephone services for patients who need urgent care.”

It is self evident from the non-linear call arrival patterns (described by Erlang C and other industry probability functions to assess resourcing requirements and forecasting) that the larger the call handling group, the more calls can be handled with the same number of call handlers. Therefore, any national network solution for call handling will always be theoretically superior to localised solutions. It certainly means that individual centres consume more resource than linked and overflow call queues.

Non-urgent calls, and contingency plans, should be developed in conjunction with partners and this, therefore, argues that control rooms should be closely aligned to the catchment areas of their partner authorities. This approach favours the trust hub set of models.
Taking these factors together leads to a preference for a single call-handling queue covering the whole of each of the larger trust areas. Small trust areas may consider a call queue partnership with a neighbouring trust.

### 5.1.2 Supporting Increased Mobile Healthcare and Increased Primary Care and Diagnostics

“Ambulance services should provide and coordinate an increasing range of mobile healthcare for patients who need urgent care.”

“Ambulance services should provide an increasing range of other services, e.g. in primary care, diagnostics and health promotion.”

The provision of additional services from the control room perspective also argues in favour of larger scale operations. Smaller control rooms are unable to economically occupy triage and other specialist personnel.

### 5.1.3 Productivity Measures

“Improve efficiency and effectiveness.”

In addition to the sizing criteria arising from call handling there are also scale of operation issues arising in other aspects of the control room.

Across the country the workload of dispatchers is clearly affected by volume of activity by time of day, and day of the week. Typically, workload is balanced with the provision of assistance at the desk (e.g. radio operators), or by the removal of duties to other specialist support/dispatch personnel at peak times (e.g. fast response teams and paramedics).

Larger units are, quite simply, better able to effectively share such workloads at peak hours. It should be noted that this is governed by the practical limit on the extent to which any given individual can adequately learn and maintain specialist knowledge of multiple tasks. We note that in the larger current control rooms (e.g. London, Manchester, East Midlands and the West Midlands) there are practical limits to the number of dispatcher posts for which staff can be trained. We also note that many controllers learn the geography for the operational areas ‘on the job’, despite not being local residents.
5.2 Risk Evaluation

This section examines each of the operating models discussed in Section 4 in more detail. We evaluated each of the main options in terms of the DH’s eight nominated criteria:

1. Clinical safety and governance
2. Business continuity, disaster recovery and resilience
3. Opportunities for improvement of operation
4. Organisational development requirements
5. Service delivery requirements
6. Integration the NHS and other agencies
7. Support of patient choice and care provision
8. Change management and continuity

It became clear that, although there are many sub-options, the three main options naturally group together in this evaluation.

Figure 5.1: Risk Evaluation Pictogram, Showing Impact and Likelihood of Risk
It can be seen that we assess significant risk in ‘do nothing’ and minimal change options. This is because the current network fails to fully address the requirements of the new trusts.

We also find that, although there are obvious benefits in the establishment of national hubs, (for example set up costs, operational management costs and economies of scale), they represent a larger risk (based on the evaluation criteria) in term of both ‘likelihood’ and ‘impact’ than networked control rooms, based on trust boundaries.
5.3 Establishing the Viable Models

Based on the above first-level analysis, we conclude that:

- There is a need to address the risks inherent in the current arrangements

- The creation of a national centre, or national trusts, while theoretically possible, would not meet the needs of the service, and contains not insignificant risks. A national hub risks concentrating trust assets at a single site, providing no resilience (without a suitable back up site). In addition, very large sites can suffer from recruitment and retention issues, as experienced at NHS24. This model is only totally efficient if links to the local communities are broken.

- Balancing efficiency (size of operation) with locally aligned solutions optimises the solution and de-risks the likely adoption of change.

- Alignment of fewer re-specified and upgraded control rooms with the new individual trust boundaries is most likely to meet the future needs of the service. This equates to the formulation of trust hubs.

We, therefore, take forward the second half of the 14 options from Table 4.2 for more detailed consideration. These have the advantage of scale, and resilience for emergency planning and operational disruption.

<table>
<thead>
<tr>
<th>ECR Option</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>A trust hub</td>
</tr>
<tr>
<td>9</td>
<td>Trust hubs networked for load-balancing calls</td>
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<td>14</td>
<td>Two (or more) main sites per trust plus a local dispatch site for rural area</td>
</tr>
</tbody>
</table>

Figure 5.2: Revised Table of ECR Models for Evaluation
5.4 Other Evidence Influencing Choice of Control Room Model

This section looks at the FiReControl project and the Varney report on public sector reform, to draw out the relevant lessons for the future of ambulance service control rooms.

5.4.1 The Fire and Rescue Service in England – FiReControl Project

The initial specification for this review included a request to understand the implications of the FiReControl programme. The FiReControl project provides valuable lessons for the implementation of a new emergency services control room strategy. The findings from this process are reviewed in this section, and are assessed in the light of the proposed ambulance service models.

In April 2001, independent consultants, Mott MacDonald, commissioned by the Government on behalf of the Fire and Rescue Services, published a report entitled *The Future of Fire Service Control Rooms and Communications in England and Wales* (April 2000). The conclusions within the report included the statement that “maximum efficiency could be achieved from a reduction in the number of fire service control rooms from 49 to nine regional controls by means of fire-fire amalgamation. However, balancing efficiency and economy with a realistic and achievable outcome, rationalisation to 21 control rooms”.

Following the terrorist attacks of 11 September 2001, the Office of the Deputy Prime Minister (ODPM) commissioned a review of this report to “verify, amend, and update the recommendations and proposed implementation plan”, as set out in the first report.

The second report (published 2003) recommended that the Government initiate a national strategy to reduce the number of fire service control rooms in England to nine regional control centres.

The independent review of the fire service and Government policy as set out in the white paper, *Our Fire and Rescue Service* (June 2003), led to the initiation of the FiReControl project in early 2004 to deliver this reduction to nine regional control centres (RCCs).
Current overall project timescales (as taken from the FiReControl website ‘Project Overview’) are for the first two RCCs to go live in 2008, with the remaining RCCs coming on line between then and the end of 2009.

As a project, therefore, the overall timescale even from publishing the second report (end 2003) to all the RCCs going live (end of 2009) is six years. Were this timetable to be used for the newly reconfigured ambulance trusts from completion of this report, trusts would only benefit from new control rooms in approximately 2011/2012.

Recent examples of the ‘backlash’ to the changes to the service include the building work that has started on the controversial call centre in Wolverhampton for Warwickshire's emergency fire calls. The regional control centre is to replace Warwickshire's fire control room in Leamington. The foundations have now been laid for the new centre, nearly 40 miles away on Wolverhampton Business Park, and it is expected to open in 2009.

*The models recommended for the FiReControl Programme are not considered as a viable way forward, as the newly enlarged trusts need much quicker consolidation of the ‘old’ service-area-based control rooms if they are to realise the benefits reconfiguration can bring. In the longer term, however, such a model as the one being rolled out by the FiReControl project may become viable.*

5.4.2 The Varney Report: Service Transformation

Since 1997, the Government has undertaken a comprehensive programme of public service reform. The focus has been on raising the standards of service. Sir David Varney’s report of December 2006 makes some recommendations that may affect the future operating models of the ambulance service.

The review builds on the reports published by Sir Peter Gershon and Sir Michael Lyons in 2004, which address efficiency within public services. The focus of these earlier reports was benchmarking performance across departments and joining up back-office functions. The focus of the Varney report is on integrating front-line service delivery.

The Varney report confirms the critical success factors that are essential to deliver citizen and business-focused services and suggests that:
♦ Every level involved must be behind the change – top-down leadership, overall

♦ Governance, a team with shared vision and bottom-up staff input must all be aligned

♦ Service delivery must be organised around the citizen or business – not the needs of the organisation

♦ Delivery chains must be viewed as end-to-end processes, not as a series of silo processes

♦ Efficiency and effectiveness should decide function and design; and for ongoing success and sustainability, it is essential to design in flexibility, and adapt services in light of practical experience, changing customer insight and regular benchmarking.

These are all laudable, and the report also states a series of interesting insights and benchmarks. It includes case studies that describe forward-thinking public sector organisations. The key recommendations made within the report will need to be actively considered for the impact they may have on the ambulance service.

*The full implications and opportunities of this framework need to be considered by the DH and the ambulance service.*

5.5 Conclusions

From the analysis in this section it seems likely that a Trust based model would work best in terms of a future control room strategy for the ambulance service. The creation of a national centre, or regional operations, while theoretically possible (hence, the inclusion of these options in the initial appraisal), would not meet the stated needs of the service, and contains not insignificant risks to local expectations of service.

Aligning a smaller number of re-specified and upgraded control rooms within the new individual trust boundaries is most likely to meet the future needs of the service because

There are also specific issues that should be considered, which are outlined below.

Section 5.2 shows that there is a need to address the risks inherent in the current arrangements used by the ambulance service.
Lessons learnt from recent FiReControl Programme of change suggests timescales for change need to be aligned to the propensity of the organisation to adopt new working practices. This is an important factor when considering the formal reporting timescales for Call Connect standards to the DH.

The Varney report provides an excellent set of principles for improved service delivery. The DH needs to consider the range of conclusions and recommendations in the context of the ambulance service, as it is not completely clear how the general recommendations would apply to a control room environment.

The ambulance service has an opportunity to demonstrate examples of best practice and best value from within its own operations. It can use the excellent work being undertaken today to provide a justification for wider changes to the working practices and configurations of the trusts, acknowledging the valuable contribution control room environments make to the provisioning of unscheduled care.
6. **Detailed Evaluation of Viable Models**

6.1 **Determining the Models**

Combined with the historic infrastructure legacy and different specific needs it may well be that each trust must establish a slightly different operating model. There is no inherent merit in symmetry. It is the operational KPIs and not the desire for all areas to have the same solution that is important in considering the efficacy of any solution.

We take the view that each ambulance trust must first establish the strategy for future location and size of their ECRs – which support the core underlying operations. Then the requirement for UCCs can be considered, which may need higher staffing levels. By adopting this approach the advantages of co-location can be considered in tandem with the geographic and other (weighted) factors to align with partner organisations.

6.2 **Key Criteria**

In evaluating the key model types of ECR, each is discussed in light of Sections 4 and 5 in particular. Trusts wishing to evaluate business options are advised to test viable options against the four criteria outlined below.

1. Ability to adapt to the varied **requirements of the changed environment**

2. **Lessons learned from reviews** of current NHS best practice, other domestic and international emergency services’ control room reviews

3. **Qualitative impact** on service delivery, impact on organisational development, barriers to implementation and other associated issues and opportunities

4. **Cost** in terms of savings available, capital and revenue, cost-benefit and cost-effectiveness.

In Section 5.3 we narrowed the 14 possible options down to seven. These were all examples of the trust hub model, but are now further sub-divided, according to size and complexity. As illustrated in Figure 6.1, model type A refers to 'simple' trust hub options, and model type B refers to a separate sub-section of trust hub models: multiple site hubs.
<table>
<thead>
<tr>
<th>Option</th>
<th>Model Type</th>
<th>Sub-option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trust hub</td>
<td>A</td>
<td>8</td>
</tr>
<tr>
<td>Trust hub networked for load balancing calls</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Two (or more) independent sites per trust large enough for mutual fallback</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Two (or more) sites per trust: paired for call handling</td>
<td>B</td>
<td>11</td>
</tr>
<tr>
<td>Two (or more) sites per trust: all call handling at one site</td>
<td></td>
<td>12</td>
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<tr>
<td>Two (or more) main sites per trust plus a local dispatch site for rural area</td>
<td></td>
<td>14</td>
</tr>
</tbody>
</table>

Figure 6.1: ECR Options by Model Type

6.3 Model Type A – ‘Simple’ Trust Hub

Creating a single site for all functions is the ‘Greenfield’ option. It provides all the advantages of scale. This option also provides the opportunity to establish in locations where the long-term availability of affordable labour may reasonably be assumed.

6.3.1 Criteria 1: Ability to Adapt to Requirements for the Changed Environment

A single site is by nature less resilient. However, control rooms servicing smaller population might naturally be ‘paired’ with neighbouring trust facilities, and shared back-up and contingency plans developed. Such a paired model would give greater resilience and emergency response scope to a trust.

The greatest call handling resilience would come from making, and rehearsing, disaster recovery and contingency planning with the other suitable principal trust hubs in the UK. This is an economic and practical alternative to maintain standby sites. The overwhelming and inescapable disadvantage of standby sites is that the workers do not work there.

For trusts where existing premises are limited, or life expired, and/or recruitment and retention in existing sites is problematic, then the creation of new purpose-built trust hubs is recommended.
6.3.2 Criteria 2: Lessons Learned from Reviews

Dedicated purpose-built facilities are the normal way forward when faced with an ageing asset base. There are clear parallels with the centralised approach for the FiReControl project and the three national fire and ambulance sites developed in Ireland. There are also clear parallels in the UK roadside recovery dispatch room arrangements.

The current arrangements in London Waterloo and in the West Midlands approximately corresponded to this operational model in regard to size of the operations. Albeit, the detailed set-up and back-up procedures are different from those we envisage.

6.3.3 Criteria 3: Qualitative Impact

The service delivery impact from a trust hub is potentially large. For ECR functions the creation of a purpose built facility with sufficient numbers of personnel and communications links provides an operational floor that can become the centre of all contingency planning arrangements within the trust.

All non-ECR tasks can be aligned to a significant resource, so that cover can be maintained during low-demand periods.

There are also significant organisational development benefits. Once the transition is complete the new centre of employment will offer career progression inside the centre (ultimately, of course, no front-line pyramid organisational structure can contain the ambition of all staff).

6.3.4 Criteria 4: Cost

There is no effective way to evaluate the NPV (net present value) for a Greenfield solution without assumptions based on specific cases. However, it is clear that:

♦ The operational costs from a single site for processing queues should always be greater than from multiple sites
♦ With an appropriate choice of CAD, any given trust could optimise its networking potential to avoid the cost of back-up facilities
♦ Experience from call and back-office processing centre investments in the UK telecoms and financial services sectors suggests that the lifetime cost of locating in an area with suitable labour markets should outweigh short-term cost of capital investment criteria.
6.4 Model Type B – Multiple Sites in the Trust Area

This option again provides the opportunity to establish in locations where the long-term availability of affordable labour may reasonably be assumed.

The division of a trust’s control rooms into two (or more) sites also allows for alignment with multiple partner healthcare organisations.

A pair of sites can be, by design, more technically resilient. However, as currently prevalent in the network, control rooms servicing smaller populations paired with neighbours are rarely close enough together to move labour. The movement of work in smaller units is only successful if the systems are integrated and there is capacity to undertake the work. Overall, a paired model would give greater resilience and emergency response scope to a trust. This, also, allows co-location with ARP site – although this may not be regarded as overly important.

For trusts where existing premises are limited, or life expired, and/or recruitment and retention in existing sites is problematic, then the creation of new purpose-built trust hubs is recommended.

6.4.1 Criteria 1: Ability to Adapt to Requirements of the Changed Environment

Creating a pair (or more) of independent sites for all functions is, in evaluation terms, a smaller version of the ‘Greenfield’ option. However, efficiency can be gained by linking the call handling queues. This provides all the advantages of scale for this work. Multiple sites will still require increased shift-based administration, supervisory and management requirement. When built as new they will also require a larger floor plate than for a single site.

Alternatively, creating a single site for a trust, with responsibility for all call handling, is an option that may be particularly attractive to a trust with existing surplus assets in a stable labour market. The resilience of such arrangements must be taken into account, and such an option is unlikely to evaluate more favourably than a more balanced approach as in the option to shared call handling across multiple sites with a single call queue.

However, as noted previously, there are efficiency gains from single queue approaches.
Note, in such an arrangement the satellite unit need not necessarily be required to operate on a 24-hour basis.

Creating a pair (or more) of sites for any combination of functions need not necessarily be performed by the owning trust. There is no logical reason why services should not be ‘outsourced’ when this makes economic sense, and a neighbouring trust may, logically be thought of as an outsourcer. Other NHS partners – specifically regarding CAT C calls but also during periods of a major incident. This option may be particularly attractive to the smallest trusts.

6.4.2 Criteria 2: Lessons Learned from Reviews

Dedicated purpose-built facilities are the normal way forward when faced with an ageing asset base. However, for smaller sites the options of refurbishment are increased. The maintenance of historic sites also avoids transition of the workforce but can often make it much harder to change established working patterns.

The proposed current arrangements in the North West approximately corresponded to this operational model.

6.4.3 Criteria 3: Qualitative Impact

Service delivery impact for smaller units is always a challenge. At peak times resource may be operated at high levels of efficiency. However, the smaller base inevitably means that duties must be combined or transferred if they are to be performed economically at periods of low demand.

A small asset base for ECR also means that the provision of ancillary and developmental services may have to be spread across multiple locations.
6.4.4 Criteria 4: Cost

There is no effective way to evaluate the NPV (Net present value) for any given solution without assumptions based on specific cases. However, it is clear that:

♦ The operational costs from a single site for processing queues will be lower than from multiple sites (if one ignores historic investment in existing infrastructure)

♦ The maintenance of current properties may be desirable

♦ Smaller units pose less of a recruitment risk in a given market.

6.5 Multiplicity and Variations for Consideration

Each of the trust-based models recommended have variations for consideration. It is clear that there is no single model and operational configuration for all the trusts. Three variations appear to provide the best potential fit to the mix of requirements identified by the four trusts involved in the model development. They also represent both the ECR and UCC operational needs.

Variation 1 – Dispersed call taking and centralisation of remaining functions

Variation 2 – Dispersed emergency functions and centralisation

Variation 3 – Virtualised multiple sites with all functions

Variation 3A – Virtualised multiple sites, and centralisation of some functions.

Each is relevant to different trusts and has advantages and disadvantages and will be influenced by strategic direction and local politics. The ambulance trusts need to evaluate each variation of the trust-based models in light of their own local circumstances.

The common aspects of all of these models include:

- Call distribution based on workload-balanced call routing plans

- Demand-led resourcing patterns
• Commonality of CAD and operational systems and central workforce and management information provisioning

• Flexibility of desking environment

• Fully resilient back-up plans that allow reuse of desking.

Diagrammatically, the three variations are described in more detail in Appendix H, but a short description is provided below.

6.5.1 Variation 1 – Dispersed Call Taking and Centralisation of Remaining Services

As a minimum, two or three sites of identical configuration, which mirror one another to provide telephony functions (999 emergency and urgent). One of these sites to potentially contain a fall back Dispatch facility.

However, infrastructure is implemented which allows virtualisation and economy of scale, and erosion of geographical boundaries.

All other functions are centralised to allow economies of scale (CAT C) or commercial flexibility (PTS, GP call handling) and flexibility in scaling up and down depending on commercial contract wins.

Centralised functions can be situated on an additional specialist support site, or co-located with one of the emergency sites. CAT C desk ‘pivots’ under SLAs to support emergency call needs, but will need to have capability to grow. The CAT C desks could be:

♦ Centralised across trusts to maximise utilisation of these resources

♦ Partnered with other NHS functions.
6.5.2 Variation 2 – Dispersed Emergency Functions and Centralisation of all Others

As a minimum, two or three sites are created of identical configuration, which mirror one another to provide full emergency functions (emergency call takers and dispatchers). However, infrastructure is implemented which allows virtualisation and economy of scale, and erosion of geographical boundaries

Other non-emergency functions are centralised to allow economies of scale (CAT C) or commercial flexibility (PTS, GP call handling). The centralised functions can be situated on an additional specialist support site, or co-located with one of the emergency sites. CAT C desk ‘ pivots’ under SLAs to support emergency call needs, but will need to have capability to grow and as growth maybe rapid, consideration could be made to partner with other NHS functions. If required, GP urges are included within the ECRs to ensure some scale and to provide better supervisor-to-staff ratios.

6.5.3 Variation 3 – Virtualised Multiple Sites for all Functions

Two or three sites of identical configuration for all EOC and UCC functions, however, infrastructure is implemented which allows virtualisation and economy of scale, and erosion of geographical boundaries. Commercial functions, PTS and GP call handling can still be locally aligned to clients and NHS partners through strategic positioning of the sites.

This variation can also be aligned to current divisional organisations or geography, where own-area calls are prioritised, or can be completely virtualised (usually a decision on the migration planning).

Multi-skilling can be deployed across telephony functions of emergency calls, urges, and PTS if required and offers career progression if best practices are followed.

This variation is similar to current models, except for the addition of network and operational integration, and call distribution to allow workload balancing and deliver virtualised economies of scale. Evenly sized sites allows more flexible use of floor space as needs across functions fluctuates.
Locally distributed dispatch still optimises local knowledge; though cover for the other sites would be required. However, this can be afforded by ensuring a level of secondment and rotation as well ‘sectoring’ the dispatch functions (as in East Midlands).

Subtle variations could be in place as part of the migration to this model, for instance a mutual arrangement with another trust to spread the impact during migration could be negotiated and this would provide better resilience.

PTS and GP call handling could be centralised, either on a separate more flexible commercially suitable premises, or on a single site, rather than being spread out. The business continuity planning for this would be a commercially-driven decision as the fall-back plan could be securing seats within another NHS partner or indeed a private sector bureau where NHS ambulance trust desks are made available for the trust’s staff during an emergency.

As previously stated, in order to gain a higher utilisation of CAT C resource, the function could be centralised:

- Across the trust
- Across a number of trusts, to maximise utilisation of these resources
- Or partnered with other NHS functions.

### 6.5.4 Variation 3A – Virtualised Multiple Sites for all Functions and Separate Centralised Site

The same circumstances as Variation 3 but with two or three mirrored sites contain emergency, urgents and CAT C calls, as well as dispatch. A further site (site 3 or 4) contains these services and a centralised commercial hub, containing PTS, GP call handling as well CAT C. This commercial site requires flexible accommodation, with frequent lease breaks, and, potentially local additional accommodation, as contracts fluctuate over the next five years.
6.6 Conclusions

A small number of multiple sites would best meet the needs of the majority of trusts. Each should comply with the minimum standards stated within this report.

The future role of the CAT C desk, and its emerging relationship with both the GP call handling and urgents services, as well with emergency call taking, will require detailed planning and mobilisation.

As the ‘new and emerging services’ are to be developed, any model evaluated must consider the potential change to demand profiles over the next few years and, therefore, migration strategies will need to be weighted high in the business case development process.
7. Conclusions and Recommendations

7.1 Overall Summary

7.1.1 Overview

This report has been commissioned by the Department of Health (DH) to assist the new ambulance trusts in England in discharging their responsibilities by:

♦ Setting out a minimum technical and operational specification for ambulance trust control rooms.

♦ Assessing, where possible, the costs, benefits and effectiveness of potential models.

♦ Thus identifying for the ambulance trusts a number of generic control room models to consider locally, taking into account their current arrangements.

♦ The scope of the review was limited to the control room environments of the trust organisations; however, consideration has been made for the potential of the control rooms working in closer partnership with third party organisations (NHS Direct for example).

♦ The review was not intended as a means to assess current performance of the individual ambulance trusts.

♦ The scope of the review was based on the premise that the English ambulance trusts would maintain control of the core operations.

The project provided the model development process and information gathering exercise to:

♦ De-risk the design of the local solutions (the next steps for the trusts)

♦ Ensure the services defined meet individual trusts’ needs

♦ Understand the issues of the support functions to help with change.

In addition to emergency control functions, it is envisaged that there will be changes to the services provided by the Ambulance Service to meet the future needs of the Patient. The service is naturally concentrating on the improvements needed in the speed, quality and capability of call handling. However, the service is also seeking to extend the range of services offered to provide a holistic approach to all patient delivery in their areas. This is manifested in such duties and initiatives as:
Resolving calls over the telephone by enhanced triage services

Co-ordination of mobile health resources

 Provision of enhanced clinical advice and assessment

 Greater integration with other providers of urgent care services

 Patient transport service (PTS)

 Call handling for health and social care agencies

 Clinical advice provided by a variety of healthcare professionals

 Clinical support to field unit staff across different organisations

 Call handling and clinical triage for a range of providers, including those in the independent and voluntary sectors

 Operation of NHS capacity management, and other operational systems, e.g. bed availability, monitoring patient flows, donor organs

 Provision of health information.

The growth of these initiatives means that ambulance trusts are progressively moving from the traditional role of transportation and emergency response (acute care, resuscitation and trauma) to becoming the mobile health resource for the whole NHS – generally aligned to the geography of partner healthcare organisations and primary care trusts.

7.1.2 The Approach Taken

The methodology used to conduct the study involved workshop participation from both senior executives and operational staff within each of the four core trusts in scope, to ensure all levels of stakeholder involvement were assured. The process began by establishing current operational issues and concerns whilst in parallel, the implications of strategic reports such as Taking Healthcare to the Patient and the Varney Report regarding service transformation were considered as part of the testing process.

The national Ambulance Radio Programme (ARP) to implement the Airwave radio system in all trusts, was also taken into consideration, but was not used as a determining factor. Indeed, the outcome of this report is to feed into the NARP, to validate many of the assumptions on the operating models that had been made to date.
The study drew heavily on case studies and experiences from the private and public sector, as well as other emergency services. This allowed conclusions to be drawn on critical success factors and lessons learnt. An underlying principle was that the control rooms remain within the domain and boundaries of the trusts geography.

The process also included the preparation and dissemination of a questionnaire to capture some baseline information from all the trusts. This process was never seen as a critical path activity, and the low rate of return of completed questionnaires, as well as the completeness of the forms, meant that little empirical value could be placed on the data.

The scope of this project did not extend to making recommendations on the physical size and location of the ‘hubs’ and individual trusts will need to consider this as next steps and to establish, using the guidelines on best practices (included within this report) to develop business continuity, sizing and space requirements, as well as ensuring appropriate proximity to a suitably skilled workforce.

### 7.2 Strategic Conclusions

Utilising key evaluation criteria, agreed with the trusts, the development of the models included the high-level testing of the proposition that ECR functionality, if it is to deliver against exacting performance targets, may be split into three core skills:

- Inbound call handling
- Triage
- Dispatch.

Other control room functions, aimed at providing a wider healthcare services to the community, are, in essence, co-located services and do not form a direct or substantial part of these three core functions. The sharing of physical assets, such as offices and technology, does not of itself bring the processes closer. Although, of course, the use of shared personnel can provide a wider sharing of experience and increase career opportunities.
The strategic conclusions drawn as a result of this review are that:

- Trust control rooms made up of both Emergency and non-Emergency Services form a critical component in the provision of unscheduled care. Historically seen as an ‘edge’ organisation, the role of the control room needs to be firmly positioned at the heart of the ambulance service and acknowledged by the NHS in general.

- A diverse range of processes, terms and conditions of service, systems and configurations, means there is significant activity required over the next 5 to 10 years to getting the organisations aligned to good practices, driving performance improvement and to continue to build on the relationship in place with primary care organisations. During this period of bedding in, attempts to outsource or place service provisions in a shared services environment will introduce service delivery and implementation risk.

- Business continuity and service resilience is recognised as a critical aspect of services operating model:
  
  i. Not all trusts have complete Business Continuity Plans (BCP) for their control room operations, albeit if not then generally they are work in progress
  
  ii. Control room fallback arrangements, although in place, are rarely tested
  
  iii. Some control rooms fall back to significantly lower levels of technology than are available in the primary control room, which if required for any length of time would significantly lower performance
  
  iv. Trusts’ BCPs and control room resilience need to be developed with the larger trust (post trust reconfiguration) in mind and the NISCC recommendations should be followed through as part of the ongoing service planning process.

- Public reaction to rationalisation of emergency services has been seen, in some cases, as a cynical attempt to drive cost savings, causing significant reaction from all stakeholders, The key criteria for model selection has been clinical safety as well responsiveness to local needs.

- Inbound call handling works better at scale and is not dependant on location of Triage or Dispatch and must work within a performance management framework that is ‘queue aware’ and has provision for effective workload balancing.
• Dispatch is heavily dependent on specialist training and needs to closely align to responders and, therefore, is best affected by dispatchers managing ‘fleets’ and numbers of responder resources.

• CAT C and triage advice roles will be pivotal in delivering the services vision going forward and this will be a growth area – supporting front line crews and responders, patients with non life threatening situations, and call taking resources to optimise contact and expectation management.

• To mitigate the risks associated with growth (or decline), potential collaborative working with organisations such as NHS Direct will be a key consideration, but only if there is measurable added value and benefits to patients and suitable incentives for both organisations to adopt this approach.

• Patient transport services (PTS) and other services can use control assets but they are outside the core control room operational process flows and their co-locationing will be dependent on the political, local and commercial priorities for each trust. However, PTS and GP call handling resources should be leveraged to provide suitable support roles- vital during any transition periods.

• The role of emerging urgent operations centres will grow, and a key decision is required on their models – are they to be more aligned to local partners or can they be seen as stand-alone ‘business centres’.

• The best overall solution for the trust within the ‘menu’ of models involves the consolidation of sites to a minimum of two resilient sites per trust over an agreed period of time that have a fully integrated workload balanced call delivery plan.

• They will operate with the support of skilled and dedicated staff that use a common set of systems and processes, and supported by a trust-based support infrastructure that includes management information and workforce planning staff and logistics support functions that are able to enable call takers, dispatchers and supervisors to focus on their core activities.

• The trust-based operation should work to a set of common principles and standards, which should be monitored and supported by an overarching corollary organisation.
• The final locations for these control rooms needs to be identified and this will be impacted on by the strategic direction of each trust; for example, should the control rooms be co-located with divisional HQ functions, should they be co-located with NHS partners or a combination of any of these.

• One size does not fit all. Each trust must review its own area and evaluate models in light of local circumstances, and formulate detailed options appraisals and business cases by applying this framework.

• There is no magic bullet model that fits all trusts and the detailed configuration of staff between EOC and UOC operations will need to flex as the ambulance service vision is realised.

• Technology within control rooms is becoming dated, and in some cases difficult to support; however, trusts do understand this and are working on using the re-configuration as a means to update their systems.

• The roll-out of the ARP solution will provide better support for virtualisation of operations within trusts.

• Major re-configurations and transformations fail because of the human and change management processes.

• There are a number of best practice guidelines in place that can allow the trusts to begin formulating their own operating model designs.

• Core information and baselines do not exist in many trusts. To improve performance requires a culture change, not just in operations, but also in the use and exploitation of management information. This is a pre-requisite of any new operating model or it will fail to deliver real improvements and benefits.
7.3 **The Immediate Next Steps**

Each trust should begin the detailed evaluation of the generic models offered, confirming either current plans already in train (as is the case), or being the development of a feasibility study and business case. This should be detailed enough to establish numbers, locations and spacing requirements through the development of a detailed ‘target operating model’. This should begin by undertaking a thorough baselining exercise on the control rooms, people, process and technology, as well as a review of the provisioning and exploitation of real time, operational management information.

There should be a gap analysis undertaken as part of the business case development process on the business continuity and resilience guidelines stated by NISCC, and the recommendations made by this organisation.

There are excellent examples of trust control rooms demonstrating performance improvement through adopting a performance management and ‘service delivery’ focused good practices. Trusts’ representatives from operations and support and management functions should be learning from each other as well exploiting the experience and insight from professional contact centre and customer management bodies, such as the CCA and CCMA.

A transformation programme board should be tasked with putting a formal process in place to determine objectives and to oversee delivery of milestones.

The wider implications of the Varney report need to be actively considered by the Department of Health.
7.4 Recommendations

a) The needs of the English ambulance trusts would be best served by adopting a small number of multiple sites (a minimum of two) that are trust-based and each should comply with the minimum standards stated within this report.

b) Each NHS ambulance trust should initiate a review of current local models of operation and consider the future demand for service and other local requirements in detailed planning.

c) The DH should continue to work with trusts through its regular reporting schedule on the implementation and achievement of call connect standards. These standards should be taken into consideration when trusts develop their local detailed operating models. This will have an impact on the roles of the staff undertaking the current tasks associated with call taking, triage and mobilisation.

d) Sustained national communications should be designed and maintained to educate and inform the public of the value and definition of an emergency call. This should also be an opportunity to consider reviewing the definitions of what is deemed an emergency call and what is an urgent call. This should be then developed into a public communication.

e) The ASA, working closely with the DH to consider the benefits of compiling, and keeping up-to-date, a National Control Room User Requirements specification that trusts can utilise in future procurements. Such a specification will need to take account of all computer-assisted dispatch (CAD) interfaces with telephony/radio/ICCS/mobile data/external IT systems, and in many ways will provide trusts with a CAD Roadmap.

f) Competition should be maintained between CAD suppliers for future competitive procurements by trusts. However, best practice CAD functionality could be centrally maintained, rather than at each individual trust. This could also be extended to inform CAD supplier User Groups.
g) Technology procurement decisions should allow significant weighting for commonality of systems (CAD, ACD/telephony, etc.) between control rooms – whatever model is chosen. This is to keep available a long-term goal of ‘Virtualisation’, whereby multiple control room locations form a single ‘Virtual’ Control Room. This affords the benefits of flexibility of operational roles (call-taking/dispatching, etc.), giving trusts the ability to easily modify control rooms to meet operational needs and strategies now (for the newly reconfigured trusts) and in the future.

h) Trusts should conduct as part of the detailed business case for new models, a thorough baseline study of the people, processes and technology aspects of the control rooms. This will form a baseline from which to measure benefit realisation and enable quick wins to be identified and implemented as part of the buy-in process.

i) Senior operations management from the trust’s control room environments should actively engage with contact centre industry bodies such as the CCA and CCMA to actively promote awareness of the changes within the service as well as share learning and knowledge with peers across the industry, one which continues to grow at a phenomenal rate.

j) Business Continuity and Service Resilience:
   (i) Trusts should ensure that their Business Continuity Plans in relation to control rooms (people, process and technology) are fit-for-purpose (for the newly re-configured trust), are maintained and tested at least annually.

   (ii) Trusts should make use of the guidance given by the NISCC in its ‘Telecommunications Resilience’ and ‘Protecting Data Centres’ Good Practice Guides.
Appendix A: Contributors

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MIS Emergency Systems, computer-assisted dispatch (CAD) supplier to ambulance trusts
AssetCo, computer-assisted dispatch (CAD) supplier to ambulance trusts
Appendix B: Considerations of Current Situation

This annex concentrates purely on the technology and day-to-day operational considerations of current ambulance control rooms, and takes a view of the potential future ambulance control room environments. To achieve this aim, an idealised technology environment will be considered, irrespective of model, number of control rooms or number of staff. This has then been put into context against the current situation for this study’s chosen four trusts.

This section will also provide a commentary regarding the issues affecting a trust’s ability to get from the current situation to the possible future ideal, especially in relation to choice of operational model as described elsewhere in this document.

B.1 Idealised Control Room Technology Model

The following list describes the major technology elements that should be found (in full or in part) within a trust’s ECR(s):

B.1.2 Command and Control (C&C) System

Alternatively known as computer-assisted dispatch (CAD) or Mobilising System, the main elements of which are considered to be:

♦ Incident creation and location verification display, which can be used via a mapping, or Geographical Information System
♦ Resource allocation (the most appropriate crew/vehicle)
♦ Management of vehicle standby arrangements (possibly via a system status plan)
♦ Form dispatch message/instructions (generally sent via the mobile data system)
♦ Provide medical support information (sourced from the Medical Priority Dispatch System) to the caller
♦ Monitor status and location of resources (as updated by the mobile data system from vehicle-generated status and location information)
♦ Monitor crew/vehicle availability
♦ Maintain a complete log of events
♦ Provide incident records, statistics and information for management purposes.
B.1.2 **Telephony Control**
Generally considered as a handset connected to the trust’s telephony, or, in some cases, trusts may utilise an Integrated Communications Control System (ICCS).

B.1.3 **Radio Control**
Similar to the telephony type handset or turret, possibly enhanced into a radio dispatcher terminal (RDT), or maybe even a standard mobile radio-type terminal. Alternatively, some trusts utilise an ICCS.

B.1.4 **ICCS**
This can be considered as a single interface to both the telephony PABX and wide area radio scheme through presentation to an operator on a single screen display (generally touch screen). There are examples where trusts only use the ICCS to replace either telephony, or radio control.

B.1.5 **Voice Recording System**
To record control room telephony calls and radio voice communications.

B.1.6 **Interfaces**
Interfaces will be required within the systems outlined below:

- Incoming 999 telephone lines – to include Computer Telephony Integration (CTI) for provision of Caller Line Identity (CLI i.e. calling phone number) and Mobile Cell Identifier (location of a mobile phone call).

- Automatic Call Distribution – for routing of all incoming calls to the most appropriate control room resource (including skills-based routing). This can either be considered as a function of the overall telephony PABX, or part of the ICCS.

- Other telephony – internal (trust’s PABX) and external (public switched telephone network) lines.

- Trust’s wide-area radio scheme.

- Mobile data system – in-vehicle allowing electronic presentation of an incidents mobilising message (patient details, address, chief complaint code and related information), along with feedback to the CAD system of Automatic Vehicle Location (AVL) and Status (e.g. en-route, at incident).
♦ Medical Priority Dispatch System (MPDS) – as this forms an integral part of the call-taking process it is most effective when integrated with the CAD system allowing electronic presentation of a Chief Complaint Code to the mobile data system.

♦ Electronic Patient Record Form (e-PRF) – completed for each patient to inform the destination hospital, this could be considered integrated as part of a mobile data system, although may also be stand-alone.

♦ Patient Telemetry (e.g. patient ECG) – real-time transmission to destination hospital, again this could be considered part of a mobile data system although may also be stand-alone.

♦ Management Information System (MIS) – provision of overall performance and other statistics for trust analysis.

♦ Other trust-based or national data sources, e.g. postcode database, gazetteer (address records), patient care record, Enhanced Information Service for Emergency Calls (EISEC) for provision of caller address information.

B.2 Current Use of Technology

Figure B.1 below describes the existing situation for the technology contained in the control centres for each of the four trusts, as taken from the trust questionnaire responses (red italics show additions to this from other information available to Mason):
Figure B.1: Trust Control Centre Current Technology
B.2.1 Computer-assisted Dispatch

There are a number of CAD system suppliers currently being used within the ambulance trusts in the UK, including MIS Emergency Systems (C3 and Alert2000), Cleric Computer Services (Respond), Tritech (Visicad), Steria (Storm), and Fortek (Medic), along with two systems developed by London (CTAK) and West Midlands Ambulance Services (in house system), the latter in more than just its own trust.

Recent years have identified movements away from the older systems and in particular the in-house developed systems as trusts move to commercially available CAD solutions. London Ambulance intends to replace the ageing CTAK, and West Midlands has given notice to trusts of its intention to stop supporting its own in-house developed system.

The least used commercial suppliers appear to be Fortek, whose Medic product is only installed in one trust and is ageing. This study has not been able to confirm whether there is an upgrade available, and Steria whose STORM product is used within the police/fire/ambulance tri-service control room in Wiltshire, but in no other ambulance trusts.

This leaves MIS, Tritech and Cleric as the main suppliers and all three appear to be committed to this market with its inherent need for software/systems development and support.

In discussion with various CAD suppliers, there is an awareness of the necessity for products to be sized for the newly re-configured trusts, and already have the ability to ‘virtualise’ – provide a commonality of systems and a single view of the dispatch queues between control rooms (being partially achieved in Scottish Ambulance Service). Their roadmap appears to be concentrating on making benefits from the use of latest Microsoft Server technology (which assists virtualisation) along with provision of external XML interfaces.

It must be noted here, however, that today’s critical need for a CAD system within all ambulance trusts also requires suppliers to be absolutely certain of the resilience of their product. This is particularly important when considering that a CAD software product will rely upon third-party operating systems and databases (generally Microsoft), and will need to interface with other
commercial products, such as Graphical Information Systems (GIS) and mobile data systems. With the CAD software at the heart of the overall solution, the CAD supplier cannot, therefore, be at technology’s cutting edge as the risks of failure are too high. A balance is, therefore, required between new and emerging technology and a highly resilient and well-tested solution.

CAD suppliers have also developed resource-efficient propositions including an information feed to hospital bed management systems to allow an ambulance to know where there are beds available, which then reduces the turnaround time at hospital.

Equally, hospitals are fed information from the CAD to show what vehicles/patients to expect.

The ability of systems to exploit the historic data incumbent within the systems to allow dispatchers to locate the best stand-by locations, and to monitor individual resource economy/efficiency not just in terms of time, but also operational performance to the trust, e.g. a £350k A&E ambulance sitting around at a hospital is not efficient.

**B.2.2 Mobile Data Systems**

All areas within the four trusts (except Cumbria and London) use either the Terrafix or Thorcom mobile data systems. Generally these systems are interfaced with the trust’s CAD system allowing automatic dispatch to the vehicle, along with transmission of Automatic Vehicle Location and Status back to the CAD.

Each supplier’s system operates to the same general technology basis, however, it must be noted that presentation in-vehicle can vary from the older ‘button box’ technology through to in effect ruggedised version of laptops with greater intelligence and interfaces to other systems such as Satellite Navigation.

Although the two suppliers’ systems operate to generally the same principles, it should be noted that the presentation differences often result in differing training requirements, which across a newly merged trust should not be underestimated.
B.2.2 Other Technology

There are a variety of other systems used within trusts during an incident, some of which directly impact on control centre staff, but most can currently be considered as stand-alone, not integrated for instance with central CAD or Management Information Systems (MIS). Examples include:

- Electronic Patient Record Form (e-PRF)
- ECG transmission (to hospitals) – variety of solutions
- PSIAM
- PROMIS
- Trust intranet.

B.3 New and Emerging

Irrespective of the operational model/number of control rooms within a trust area, technology is currently available, and in use, to allow the concept of a trust-wide ‘virtual’ control centre. This concept is based on the operational needs of an ambulance trust’s emergency control centre (see Section 4), in essence the requirements for call taking and dispatch, without dictating the number of physical sites needed to deliver such operations. The scale could be from a single control centre to multiple control centres across the trust, and hence the concept allows this review to consider all the model groups as presented earlier as technically viable.

The technical solution for this ‘virtual’ control centre concept, were a trust to decide to completely re-procure its control centre technology, would be available through relatively straightforward output-based specification procurement. However, as trusts may not be in such a position, at least in the short term, careful attention must be taken should they wish to implement the concept.

Examples of technology enabling this concept include:

- Voice and data convergence and the use of voice over IP (VoIP) technology
- Wide area voice and data networks
- ‘Virtual’ CAD systems
- Automatic call distribution (ACD for telephony) solutions across multiple sites.
Should multiple trusts look to such a procurement, then it is suggested that it would be more efficient for the DH to take a central lead in producing output-based user requirements specifications, in this case based around CAD technology. CAD has inherent interfaces to telephony, radio, mobile data, management information and external databases among others, which provide the basis for most control room operations.

Extensible Mark-up Language (XML) will allow trusts to share data with trusted external partner organisations. It is available now, but is regarded as a longer-term technology solution for integration with external systems such as those being developed under the Connecting for Health project (including the National Care Record).

A current example is in use in the Scottish Ambulance Service which uses an XML-developed protocol to communicate with its patient air transport company, based in the South of England, for transport between Scottish islands and the mainland. Care is, however, needed to ensure that operationally the right information is being transferred based on operational need rather than availability of data. Projects initiated, therefore, need precise goals based on operational needs and benefits, along with strong leadership to remove scope creep.

### B.4 Idealised Operational Model

This sub-section consolidates our findings, views and opinions on the nominated trusts based on visits to the control rooms and discussions with members of staff and management, reviews of international case studies as well previous analysis assignments undertaken by Mason in ECRs.

The operational observations provide further anecdotal evidence for the need to consider new operating models driven by best, or at least better, practices. The final part of this section consolidates these findings and opinions with currently understood best practices. Appendix C discusses the minimum requirements for control rooms in detail and includes the ‘must haves’ with regard to best practice guidelines. These have been sourced from public sector published guides (specifically the COI and HMIC) and from extensive knowledge of private sector best practices from our own knowledge base within Mason.
Finally, we have considered *The Future Provision of Ambulance Communications in New Zealand* report and recommendations by Fitch & Associates Europe Ltd, in addition to other international cases studies and reviews. Because of its importance to the DH we have addressed best practice regarding disaster recovery and continuity in a separate, dedicated section of this study.

During our visits to control rooms as part of this project we were impressed by the dedication and commitment of the staff. The professionalism and dedication could not be challenged. Most staff indicated that they could see room for improvement and more importantly, acknowledged that change was inevitable as patient care should be of the utmost priority. The specific three core ‘must have’ functions within a control room environment are:

- Call taking and prioritisation
- Mobilisation and dispatch
- CAT C clinical advice/triage.

### B.4.1 Call Taking and Prioritisation

Call handling is a very straightforward and scripted process, which is audited. Consequently, a high degree of control is possible over the call handling behaviours. The ability to manage call expectations and provide empathy towards callers is balanced against the rapidity of response and ability to identify the chief complaint.

The focus now required is to optimise the location identification part of the call and to automate call connect. Therefore new performance management strategies need to be adopted to drive this behaviour. Any future operating model will fail to deliver against overall targets if there is no measure of success for the individual other than how busy they are or how many calls they have taken (a frequently stated measure of status), and if there is no visibility of team, or shift performance.

The following activities (better practice as opposed to best practice) have been identified and should be considered by each trust for implementation by control room management if not already within the plans for call connect.
♦ Make address identification a KPI, and supplement with a renewed focus on AHT (average handling times).

♦ Through coaching, target address identification, and location questions and scripts, encourage consistency through call control and assertiveness techniques.

♦ Change current measurement processes to allow confirmation (not the initial taking) of address and telephone number after identification of chief complaint to be a key measure. This will reduce and speed up any stand downs.

♦ Clarify whether the address should be confirmed before or after details of the incident are provided.

♦ Get first-line details in order to dispatch teams as soon as possible, before enquiring about age and how the injury or illness occurred.

♦ Clarify whether names of patients and caller need to be in full – do the crews need this information immediately or can it be addressed later in the process?

♦ Determine the right pacing of the call – build as an observational element into supervision as well optimise wall board and performance information availability to instil a queue aware culture within the control room.

♦ Automate call distribution and call connect.

♦ Alarm triggers should be activated when call time thresholds are about to be breached. Addresses not located after 10 seconds should trigger an alarm at the supervisor desk.

♦ Develop a contact access strategy that acknowledges and segments calls and, therefore, allows more effective call delivery and routing strategies to be developed.

♦ Employ staff to forecast demand and use workforce planning tools, and integrate this function with control room supervision and management to support the development of a performance management framework.

♦ This will also support the development of more realistic occupancy rates for call takers that are than translated to demand-led rostering processes.

B.4.2 Mobilisation and Dispatch

There are no consistent performance measures for this critical role within the control room environment. Historically, also the processes are based around custom and practice. A best practice guide should be developed to support
training and development. It is generally felt that there is an art to mobilising, as it is too complicated to judge by a strict set of rules:

- Relationship balancing – as the mobiliser has limited authority – this needs to be changed if a positive impact on front-line crews is to be affected
- Trying to meet parallel service levels of attendance on scene and transport to A&E.

Best practice components that need to be developed so as to enable knowledge sharing and cross-skilling (either by geography, number/type of vehicle, or categorisation of calls) should include:

- Techniques
- Tips and hints
- Known geographic anomalies (rural and urban).
- Decision making/thinking priorities
- Strategies for optimising availability after lunch breaks
- Consideration of automated dispatching.

The main categorisation observed by the Mason teams in control rooms was a divisional/geography-based split, with further demarcation for rapid response and non-A&E ambulances. But examples within the trusts themselves exist that demonstrate that the management of a ‘universal queue’ of vehicle mobilisation for all emergency and GP ‘urgents’, if supported by suitable systems and support staff, can provide a more responsive service. This has been seen at North East Ambulance Trust and West Midlands Ambulance Trust.

Universal queues should be optimised: ‘sectoring’ which means the dispatch desks with universal queues handling a finite number of between 20 and 30 vehicles for each dispatcher for a particular sector provides immediate productivity gains and allows for a more focused operation. Trials within East Midlands Ambulance Trust have shown immediate improvement in performance.
B.4.3 CAT C and Triage

The prime concern of this service is patient care. The skilled resources used to provide this service have visibility of the current call queues, active calls and the CAD. They have the authority to stand down responders and are a fundamental component in delivering the longer-term vision for the ambulance service.

The CAT C desk staff will become, over time, patient advocates and also will require greater liaison and negotiation skills. They are positioned well within the current trust control room environments to advise and inform call takers and in Mason’s opinion become a catalyst for change for the future as they can influence and affect call-handling activities (proactive intervention of calls), dispatch (stand downs and escalations) and ambulance crews (off-site advice and expectation management).

This situation, however, implies inherent risks in demand forecasting for these services, the physical location of these resources and the tools used to provide the secondary triage. The classic approach to mitigating these risks is to build in partnership with third parties under formal service level agreements with stated outcomes and benefits. This will be particularly important during the maturing stage of this service development.

The way that this service will be measured will be highly dependent on the overarching patient care strategy of the trusts, as currently the added value this service brings to the trusts is its ability to stand down responder vehicles. From a patient’s perspective, it is able to provide clinical advice rapidly and consistently and will in itself become a referral agency, and so communication and persuasion skills will need to be further developed. It also provides a longer-term career progression path for call takers. Measures need to be designed to promote such behaviours.

The current provision of this service across the trusts varies considerably (some trusts have desks that are ‘allocated’ CAT C through the AMPDS process and thereby make ‘outbound’ calls to the patients within agreed SLAs. Others proactively interject on inbound calls and intervene to take over from call takers. This service should cover the busiest hours, and should be considered to function until midnight, or early morning. This may then also provide an
opportunity to enable stand down of responder vehicles during periods of low availability.

Our experience of NHS Direct and NHS24 has shown that on occasions an average of 13% of this call-back time is spent calling the patient, dealing with situations where there is no response, and waiting for the patient. This is the detrimental efficiency impact of call-back operations.

Good practice examples included West Midlands Ambulance NHS Trust, which has a dedicated CAT C desk that also provided proactive inbound call interventions, taking over the inbound calls from call takers through the combined use of MPDS and clinical judgement criteria. This frees up call taker resources to take the next call, potentially avoids dispatch of Cat A and B ambulances and responders, as well as enabling an excellent customer experience as the caller is handled in real time and does not require a call-back. From an operational efficiency perspective, this reduces significantly the inherent inefficiencies associated with call-backs.

B.4.4 Remote Workers and Remote Working

The ambulance service is going through a period of transformation as it develops from being a series of organisations centred on silo services, to one that puts the patient care pathways at the centre of its organisation and is works in a co-ordinated way with its NHS partners. The challenge is how to change the way in which services are delivered within budgetary constraints while maintaining and ultimately improving existing services. Community responder schemes and optimising communications with field staff are recognised as initiatives that will continue to grow.

The introduction of mobile and flexible working support initiatives is seen as one of the key enablers to achieving this transformation. The ambulance service must look to these innovative ways of working to support flexible working, business continuity, and increasing access to responder resources.

This will allow resources to deliver more localised services to patients, offer a more flexible working arrangement, utilise office space more efficiently and reduce unnecessary dispatch of vehicles.
The implication of these initiatives to the control room environment will be a wider and more diverse ‘customer’ base; the role of the CAT C staff will be more advisory not just to call takers and the end patient but also to responders and qualified intermediaries. This may result in increased volumes of inbound and outbound contacts and a greater dependency on real-time information sharing.

Finally, with the potential upheaval in consolidating sites and increased hours of operation (GP call handling services, for example), more innovative ways of communicating with staff will be required. The remote working phenomena could also contribute to the trusts’ business continuity plans.

The trusts should develop a strategy and framework to support mobile and flexible working. This must be fully supported by new technologies and comprehensive training and adoption programmes. Experience from research has shown that efficiency and productivity gains follow through very rapidly.

### B.4.5 Support Services and Functions

Through analysis within a number of control room environments and conclusions drawn from case study material as well reviews of West Midlands NHS Ambulance Trust, Mason suggests that a significant determinant to consistently achieving published targets lies outside the control room environment. For example, either the number of additional staff under a front-loaded model needs to increase or the availability of existing responders needs to increase to meet the call demands.

This requires greater communication and liaison with crews and A&E departments. In dialogue with various trust and DH executives, a consensus of opinion emerged that further efficiency improvements could be made within the control room environments. However, concern was felt across the board that simply focusing on the control rooms to achieve improvement was counter-productive as the full end-to-end process needs to be considered including the involvement of the stakeholders that drive much of the demand (GPs, A&E departments, etc.) as well as the responders.

This is a key requirement if call connect and many of the ambulance review recommendations are to be realised. Typically the root causes of potential call handling inefficiency were due to the occurrence of a flat-shift structure and a
failure to match resources to demand. Workforce planning and management information provisioning appears to be historic and not a dynamic real-time function fully integrated and supporting the control rooms.

By reshaping, a more responsive workforce management function to forecast call volumes and schedule staff rosters, would enable detailed and accurate planning for staff allocation. Matching resources to demand is the key to improving call handling performance, this core capability is required regardless of the number of sites and the configuration of the staff.

Some examples of rapid performance improvement within the control rooms has been observed and has largely been achieved in general through the implementation of a few simple changes which focus on removing non-productive elements of call taker and dispatch staff time so as to allow them to focus on ‘core’ activities: This has manifested itself in different ways within different trusts, as outlined below.

♦ Dedicated staff have been able to undertake the roles within the control room, reducing role ambiguity and allowing focus.

♦ Within these roles, dedicated teams that have coaches and supervisors that encourage multi-skilling and knowledge sharing (particularly relevant to dispatch) Creation of a new support and operations liaison role; there is a certain amount of administration work that the dispatchers conduct, such as logging crews on, calling other emergency services, answering the staff lines, collating timings for completed jobs. These tasks could be completed by a less qualified Administrator and free up Dispatchers to conduct their core roles

♦ Deploy coaching rather than traditional supervisory practices and offering potential career progression opportunities to staff

♦ Remove non-core activities (as defined by each trust) that distract call takers and dispatchers and provide this service through support or operational staff.

♦ Provide a responsive ICT support function that works to deliver support to agreed service levels

♦ Providing real time and relevant performance data to all, which allows a ‘queue aware’ service culture within the room to be fostered

♦ Having professional call handling skills at a management level; with a good awareness of methods and skills gleaned from private sector and commercial call centre operations. This, when complemented by skilled dispatchers with good local knowledge and a honed logistics
management capability, allowed the control operation to work in an integrated manner

♦ Provide demand-led rostering and staffing levels across the end to end service delivery (call takers, through dispatch and into ambulance frontline crews)

♦ Design measures and KPIs, and instigate partner dialogue to remove ‘blockages’. For example measurement targets on identifying/confirming address, and stand down rates and turnaround times within hospitals

♦ Enable, through the above initiatives the following behaviours within the service: decrease time to mobilise and increase vehicle/responder availability.

B.5 Conclusions

• Technologies exist today that will support improved integration of operations within trusts.

• There is a perceived benefit in considering greater degrees of remote and flexible working, utilising this method of working, however, requires greater management effort and requires suitable investment in training and technology.

• Operational processes and the hearts and minds of staff are the real challenges to change, this also means that formal performance management and workforce planning initiatives as well as examples of best practice cannot easily be deployed effectively across trusts at the moment.

• The role of the CAT C desk will be pivotal in addressing the ambulance service vision, and its role as adviser to crews and care providers must be balanced with its role of supporting stand-downs and re-categorisation of calls.

• The call handling operation must be sized for true demand rather than be based on the availability and supply of staff.

• Dispatch functions are hampered by the availability of crews and best results are achieved with high levels of liaison and communications between staff.

• The need to have clearly demarked roles and functions should be further supported by appropriate ‘support functions’ that can take away distractions to call takers and dispatchers and thereby improve productivity of these core roles.
There is no real basis to understand best practice in dispatch functions. The performance impact of either consolidating all vehicle deployment so controllers manage the complete queue of responder vehicles or evaluate fragmenting the function by known criteria (either by division, geography, number or type of vehicle, categorisation of calls) should be evaluated.
Appendix C: Minimum Control Room Requirements

C.1 Introduction

This section provides a checklist for trusts to consider when re-designing their control room environments for the future. It begins by stating the minimum control room requirements and then considers best practices and examples from other organisations that have developed similar minimum requirements. Specifics on business continuity are discussed within Appendix D of this report.

This section is not intended to be a definitive operating model or a blueprint, but aims to provide trusts with a list of mandatory critical success factors when embarking on a virtualisation of operations, and, therefore, a first-stage checkpoint for trusts when undertaking the detail planning for their control rooms moving forward.

The minimal requirements have been formulated on the basis of the following core services for the emergency and urgent care control rooms and aim at facilitating migration to greater co-operative working through greater integration with other providers of urgent care services. These core services include:

Emergency rooms:

- Resolving calls over the telephone through advice and triage provision
- Co-ordination of mobile health resources
- Provision of clinical advice and assessment.

Urgent care and advice:

- Patient Transport Service (PTS)
- Call handling for health and social care agencies
- Clinical advice provided by a variety of healthcare professionals
- Clinical support to field unit staff across different organisations
- Call handling and clinical triage for a range of providers including those in the independent and voluntary sectors
• Operation of NHS capacity management and other operational systems, e.g. bed availability, monitoring patient flows, donor organs

• Provision of health information.

C.2 Minimum Requirements for English Ambulance Trusts

C.2.1 Introduction

The minimum requirements stated within this section are derived from best practice implementation of ‘virtualised’ operations in the private sector. This is based on the assertion that the recommended menu of operating model options is focused around a solution which is made up of multiple sites within individual trusts.

The characteristics of these types of operations require certain elements to be in place (shown in Table C.1 below). However, the critical elements that must be in place are discussed briefly below.

C.2.2 A Contact Management Strategy

A Customer contact strategy should be in place for both urgent and emergency contact management. The strategy will be informed by, and linked to, the overall ambulance service vision, strategy and objectives for English ambulance trusts. Similarly, the strategy is to be informed by external customer research that demonstrates what citizens, other stakeholder partners and customers want and expect from the ambulance trust.

The strategy will express the aspirations for how patients, stakeholders and customers are to be treated in both quantitative and qualitative terms. This will inform both the functional requirements needed to deliver the strategy, as well as the softer (e.g. cultural and behavioural) requirements.

The strategy is to be measurable and should spell out in tangible terms the provisioning required to deliver the detailed operating model.

Success evaluation criteria should be developed that allow trusts to evaluate options for their ‘fit’ to wider objectives (e.g. strategic fit, launch performance, patient care service optimisation, and risk limitation).
C.2.3 Performance Management Information

The key human resource management process used to link intended performance with actual application by individuals is the performance management system. This system will need to be designed to:

♦ Provide clarity of ‘tasking’ – clear performance objectives

♦ Set up managers as coaches who ‘entrust’ their people with the right amount of freedom and challenge to draw out optimum performance

♦ Link back to ambulance services service strategy and objectives as well as performance standard both current and future so that training and development needs are planned and provided for, and performance improvement is achieved

♦ Capture these elements in tangible records for planning and reporting purposes, and for supporting remuneration and reward decisions

♦ Develop a set of Key Performance Indicators across all roles in the Control Centre, and should be:
  
  o Consistent across all the teams in the department
  o Linked directly to the Control Centre’s performance, and allow for Team and Individual measurement
  o Understandable and bought into by Management, Dispatchers and Call Handlers.

This may require investment in systems or resource to produce and maintain.

C.2.4 Motivated and Empowered People

A successful control room model for a given trust must have an appropriate demand-led establishment of suitably trained, motivated and empowered staff undertaking clearly demarked roles, with streamlined and well documented processes that are underpinned by fit-for-purpose, integrated technology.

The staff must be working within a culture that acknowledges the contribution of the control room staff, both internally, and within the wider NHS and partner domain, in the execution of patient care provision.

The staff and supervisors will be working in a safe environment, which is accessible and resilient, and with a layout that encourages team building, performance improvement and communication, and complies with current workspace layout guidelines.
The staff will be encouraged to provide input in the continuous improvement of the service, and will have an appropriately designed incentive scheme that facilitates performance and personal development. This will mean that better resource planning will be required to enable staff to participate in job enriching activities and receive team building, supervision, coaching and training. All these elements – (referred to as shrinkages in the contact centre industry) in call handling or mobilisation activities must be taken into consideration during scheduling of staff and sizing for demand.

**C.2.5 Streamlined Processes and Procedures**

The control room environments within the trusts will operate under a common and uniform best practice-based set of processes for their functions, without losing the vitality and flexibility that is so important to innovation and continuous improvement.

Any significant variations in management styles, specific procedures and practices, physical layout and configuration, and cultural norms would have to be driven by the operational needs of its stakeholders and customers. Each control room will have a strong and effective leader, but will have a consistent reporting responsibility to a dedicated senior contact management officer.

Processes and activities that are not core to the control roles should be extracted from the roles and assigned to a suitable support team. This will include liaison and operations support to handle contacts from ambulance crews and GPs and other healthcare stakeholders.

Processes will be defined for the forecasting of demand and the continuous review of resourcing requirements across the control room environments and co-ordinated with workforce planning and rostering of ambulance crews and other responder resources. The overarching central team will provide reporting on performance and forecast demand and supply a centralised scheduling of resources. The team will monitor call distribution and routing plans as well as contact management information of all contacts and channels. The function will be skilled in the use of fit-for-purpose workforce planning tools and techniques.

Processes will be measured, each measure spans both internally and externally focused KPIs.
C.2.6  Fit for Purpose and Resilient Systems and Technology

k) A successful control room model for a given trust will demonstrate fit-for-purpose technology, including resilience (including the use of other trust-based or national data sources, e.g. postcode database, gazetteer, patient care record, Enhanced Information Service for Emergency Calls (EISEC) for provision of caller address information, etc.) for back-up operation in:

- Incoming telephony performance with voice recording
- Clinical advice and Triage services.
- Command and Control (C&C) systems
- Computer-assisted dispatch
- Incident creation and location verification
- Resource allocation (the most appropriate crew / vehicle)
- Management of vehicle standby arrangements (possibly via a system status plan)
- Event logs, etc.

l) Incoming telephone lines for all services should include Caller Line Identity or Mobile Cell Identifier

m) All vehicle dispatch should be based on mobile data systems

n) The Electronic Patient Record Form (e-PRF) should be considered for integration as part of a mobile data system

o) Patient Telemetry (e.g. patient ECG) – real-time transmission to destination hospital, should be considered part of a mobile data system

p) Clinical and triage systems must be fit for the purpose intended; this may include prioritisation for dispatch purposes or for CAT C and clinical advice and diagnostics

q) Comply with all current NISCC recommendations for business continuity, data security, and resilience and disaster recovery.
C.2.7  Workplace

Call Centres and Control Rooms are driven to meet KPIs, both qualitative and quantitative. The physical environment in which individuals work impacts upon bottom-line KPIs, and the workplace environment must be aligned to the following objectives:

♦ Place human resource considerations at the heart of the design
♦ Create an environment that meets regulatory requirements
♦ Create an environment that incorporates best working practice within the design
♦ Create an environment that is based on the theme of ‘change’. In that that the environment within the call centre can be changed quickly to influence the psychology of the people within it using, *inter alia*, lighting, sounds and imagery
♦ Create a working environment that facilitates the delivery of KPIs
♦ Create a working environment that can adapt to the needs of the individual working within it
♦ Create an environment that facilitates a philosophy of team working.

The workplace and location must provide the following ancillary areas to support the efficient operation within the control room:

♦ Offices for Management
♦ Kitchens and / or Cafes
♦ Locker Rooms
♦ Rest Room/Oasis
♦ PABX, Machine and Systems Data rooms
♦ Emergency Back-up Generators
♦ Training and Coach environment
♦ Major Incident Room.
C.2.8 **A Transformation Team**

A suitably skilled and experienced team will be in place to plan and deliver a change management programme, which will include work relating to HR management, internal communications management, organisational design, industrial relations management and staff recruitment.

The organisational models of many trusts will begin to change from April 2007 onwards; after the roll-out programme is completed, the new organisational model has to be in place. However, for the change management to be effective and supportive of the organisation's objectives, it must conduct pre-emptive work in advance of the roll-out, to ensure the smooth transition to the new organisation state, but also to ensure the continuity of service during the roll-out period.

The change management team will be required to deliver the following (high level scope):

- Define Change Management Strategy, based on defined processes for new organisational model
- Assemble change management team
- Confirm ‘as is’ model and ‘to-be’ model
- Conduct gap analysis, taking into resource levels, skill sets, ways of working, i.e. agenda for change implications and performance culture
- Scope and develop culture change programme
- Define role descriptions, skills profiles and competency measures
- Resource and training needs programme
- Train and develop change agents within the control rooms
- Investigate mechanisms for redeployment
- Develop a strategy for maintenance of the existing service structure for an agreed period until handover to new operations is complete
- Recruitment and transition of staff from the old structure to the new model
♦ Planning for additional staff to manage the initial peak while the old model is still fully operational and the new model is ramping up
♦ Implementation of the new organisational model
♦ Support the management of the transition from the existing model to the new model to ensure continuity of service during this period through the change management programme
♦ Manage the trust human resources and industrial relations considerations together with the trust HR team and UNISON
♦ Change management for the above activities to ensure people are committed to the journey (stakeholder involvement, benefits communications, etc.).
### C.2.9 A Framework for Virtualisation

The minimum requirements stated above have some critical success factors associated with them. These have been summarised in Table C.1 below, for ease of reading they have been referenced back to the sub sections above.

<table>
<thead>
<tr>
<th>Critical Success Factors</th>
<th>Reference</th>
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<tbody>
<tr>
<td>Intelligent Call Routing and Management</td>
<td>Systems and Technology</td>
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<tr>
<td>Central Resource Management aligned to demand forecasts</td>
<td>Systems and Technology</td>
</tr>
<tr>
<td>Real-time trusted MI that Provides a Trust-wide View</td>
<td>Performance Management</td>
</tr>
<tr>
<td>Seamless Call Transfers - Voice and Data</td>
<td>Systems and Technology</td>
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<tr>
<td>Single View of Incident and Response and patient</td>
<td>Performance management</td>
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<tr>
<td>Common Identification and Validation of Chief Complaint</td>
<td>Systems and Technology</td>
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<tr>
<td>Common Desktop- honed for efficient location identification</td>
<td>Systems and Technology</td>
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<tr>
<td>Common Core Patient details View</td>
<td>Systems and Technology</td>
</tr>
<tr>
<td>Common Data Gathering and Maintenance Protocols</td>
<td>Systems and Technology</td>
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<tr>
<td>Common Performance Management processes</td>
<td>Performance management</td>
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<tr>
<td>Standardised Core Operational Processes</td>
<td>Processes and Working Practices</td>
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<tr>
<td>Efficient and Effective Call Hand-off Processes</td>
<td>Processes and Working Practices</td>
</tr>
<tr>
<td>Efficient &amp; Effective Post Call Processes / Hand-offs</td>
<td>Processes and Working Practices</td>
</tr>
<tr>
<td>Optimised First &amp; Second Call Resolution</td>
<td>Processes and Working Practices</td>
</tr>
</tbody>
</table>
Critical Success Factors | Reference
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Common Core KPIs and Operational Quality Measures | Performance Management

Common SLAs for Control Room and with other agencies and documented variations for localised service requirements | Performance Management

Common Supervisory and Management Functionality | Performance Management

Common, but unique, Call Structures, e.g. for Urgents and Cat A, etc. | Processes and Working Practices

Common HR Policy and Practices and Job Descriptions in line with Agenda for Change | Organisation and People

Common Recruitment, Retention, and Training Practices that recognise local labour conditions | Organisation and People

Clear Central Direction and Governance as well as Change Management capability | Organisation and People

Central (Trust) Procurement and within agreed Ambulance Service wide frameworks | Systems and Technology

Co-ordinated Disaster Recovery and Continuity Plans in place | Business Continuity and Resilience

Common CAD System Support Capability / Standards | Systems and Technology

Common MPDS and Triage/clinical advice | Systems and Technology

Design in all Areas Emphasises Seamless Customer Experience and actively consider multi-channel servicing | Performance Management

| Table C.1: Best Practice Characteristics |

C.3 Applying Existing Best Practice to the Ambulance Trusts

A number of best practice guides are available within the public sector. We have identified two key documents, which include insight and recommendations that are
significant to the ambulance trusts when considering performance improvement, and model re-designs. Both documents have not been replicated within this report, but are available from the Central Office for Information (COI) and Her Majesty’s Inspectorate of Constabulary’s (HMIC) websites.

Both documents referenced above provide a framework within which public sector organisations can plan and develop improvements in contact management. In Open all Hours, HMIC’s thematic inspection of public reassurance (2001), it was emphasised that contact management was as important as crime detection and investigation and challenged forces to deliver a service where “callers will be answered promptly by a trained and knowledgeable operator who, with the appropriate information technology (IT) support, will be able to resolve their call at the first point of contact”. However, following a baseline review, it was clear that the vision stated was not being delivered. A framework and support service was required to support the transformation.

Equally, many Government contact centres have taken great steps to increase their efficiency. However, the differing levels of maturity within the public sector of its contact centres have meant that the effectiveness of such services still required further focus. The COI better practice guide was designed to enable organisations to plan better services to encourage positive outcomes to interactions. It suggests that it is incumbent on public sector contact management agencies to recognise the cost of a poor communication and the value of a good dialogue with the citizen, understanding the end-to-end citizen experience, interacting across multiple touch points, and how it affects the attitudinal and behavioural changes required in the staff delivering the service.

**C.4 A Summary of the HMIC Best Practice Framework**

The contents of this framework comprise a list of statements that together set out the standards that should be expected of a high-performing police contact centre. The standards are listed under the eight business drivers accepted as key elements of good performance. However, they are presented as an amalgam of those areas that are measurable.

The framework provides for a simple assessment matrix (not replicated in this report) to allow users to establish their own baseline. It takes each of the standards from the enlarged National Call Handling Standards (NCHS), and sets out a range of descriptions that reflect degrees of performance against the standard. The descriptions are allocated scores (between two and eight points) to reflect the performance levels
achieved. They are designed to allow a consistency of assessment, whether carried out internally (as a self-assessment), or externally.

The matrix has been designed with police forces in mind, but on analysis is generic enough to be used by other emergency services from a call handling perspective. A similar framework is being developed for the dispatch phase of a contact, in order that they can make a self-assessment of their progress against the NCHS, as well as representing a core tool within any focused or detailed inspection of their contact management facility or function. The police force has a corollary organisation and governance body to further develop the standards and assessment framework and identify any relevant weighting of those standards or drivers that need to occur before grading forces’ performance. This is a function that would be of benefit to the ambulance trusts.

The standards, listed under the eight business drivers, have been annotated in italics, with commentary relevant to the ambulance trusts, and are:

**C.4.1 Putting the Customer First**

- Identifying, through consultation and analysis, the different customer groupings relevant to contact management – this is relevant to the ambulance trusts as it will need to differentiate customers and the nature of contacts as services such as PTS, and urgent operations centres increase in volume.
- Ensuring a process is in place to regularly consult customers and using the results to improve services. Placing customer feedback at the centre of organisational thinking and planning – this will be a pre-requisite if greater integration is required with third-party agencies and providers.
- Monitoring complaints and positive feedback to resolve repeat problems and identify best practice – the removal of inappropriate, or self-inflicted, calls has huge ramifications to the trusts, assurance of service delivery is the key benefit in monitoring such feedback.
- Keeping them informed with relevant and timely information in relation to reported incidents or enquiries – ambulance services in Seattle publish ETAs on the web for call outs, taking a ‘UPS or Fedex’ approach to customer updates may be extreme, but increasing pressure on trusts to hit targets will inevitably mean great public scrutiny of performance – this is a means of proactively managing such situation.
- Providing customers with regular information on services provided and standards to better manage demand and customer expectations – lessons learnt from the implementation of the Single non-emergency number (SNEN) within police forces highlight the importance of customer management and suggest that communications with and management of expectations of citizens and stakeholder partners will
increase in importance as trusts ramp up urgents and CAT C type contacts.

♦ Recognising the important part played by staff in determining the customer experience – callers to ambulance trusts may be in a state of distress, call takers have a difficult balance to maintain between speed and quality.

♦ Ensuring timely and appropriate response to all forms of contact media so that no group or individual is unfairly disadvantaged in gaining access to the service – public access and social exclusion are high on the agenda for the public sector, cultural diversity of callers needs to be acknowledged and considered during the call handling process.

C.4.2 Getting the Business Culture Right

♦ Recognising contact management as a core element of operational service delivery that supports organisational objectives with proactive leadership and support at chief officer and departmental levels – a critical success factor for any change, recognition of the control room staffs contribution to the emergency and urgent care processes must be acknowledged and communicated across the NHS as a whole. This will enable take-up of new ways of working and provided morale and motivational boosts.

♦ Communicating organisational objectives and the contact centre strategy to all employees – any new operating model will need clearly defined ‘contact strategies’ to be in place, this will be increasingly importance when considering the dual functions of emergency and urgent operations centres moving forward.

♦ Recognising and rewarding achievements and performance that support a high-quality service rather than simply creating a target-driven culture – moving toward outcome based KPIs, rather than simply focusing on input based measures, is a trend in the industry; taking a balanced score card view on the operations can provide a vehicle for a performance management framework.

♦ Having a process to regularly consult, engage and survey employees using results to improve service delivery; and putting a mechanism in place to foster and encourage corporacy and co-ordination between contact centre and other policing functions – this secures buy-in to new working practices, and change in general.

C.4.3 Developing Effective Strategy and Organisational Structure

♦ Developing a call handling strategy incorporating a demand management strategy to meet both business and customer needs – a service wide issue that is apparent is the inappropriate resourcing levels within control rooms, not mapped to demand and not co-ordinated with enabling organisations such as the ambulance crews, demand profiles will be changing over time, greater opportunity to
support GP call handling GP services, growth in CAT C calls will all change the dynamics of the services.

♦ Having policies, procedures and a programme of action to deliver the strategy, together with an analysis and evaluation process to measure success, and a process in place to communicate the strategy to the force and external stakeholders – assuring care pathways and a focus on outcomes will mean a fresh look on the measures and KPIs for the trusts, with a greater level of virtualisation common policies that are aligned to local stakeholder needs will be a challenge to trusts moving forward.

♦ Empowering employees to participate in service delivery and decision-making processes – a key transformation and buy-in critical success factor.

♦ Putting in place business continuity and disaster recovery plans, which will be regularly reviewed and tested – as the NISCC report suggests, this is not as robust as it should be and with a rationalisation of sites in the future, this is of top priority.

♦ Forecasting demand and business planning to inform budget setting – under the auspices of a performance management framework it is incumbent on trusts to undertake more proactive real time analysis of demand and to develop flexible working strategies for the future.

C.4.4 Investing in ‘People’ Development

♦ Creating a human resource strategy, which recognises the needs of contact centre operations – the agenda for change is addressing this point, and the trusts must acknowledge that good workforce planning is linked to effective demand management supported by effective recruitment.

♦ Having an effective and legally compliant recruitment policy – each trust in defining the final locations of their new operations must consider the local skilled labour market, the commercial contact centre world is slowly recognising the need to develop retention strategies, however, making the roles attractive to new recruits will be key.

♦ Ensuring that the right number of skilled staff and supervisors are working at the right time – workforce planning and performance management are the two key areas of focus for operational improvement. A more proactive workforce planning function is required within the trusts to enable this.

♦ Forecasting employees’ career progression and developmental needs – the agenda for change recognises this requirement and if part of a retention strategy will provide for high morale and performance optimisation.
♦ Putting in place personal performance development plans for all staff – as above and supports the view that employee empowerment through PPDs is key to delivering raised satisfaction levels.

♦ Carrying out exit interviews to understand why staff leave and to use the information to improve conditions – any focus on performance management must be supported by intelligence of why people are leaving.

C.4.5 Ensuring Continuing Professional and Skills Development

♦ Having in place a training strategy that is linked to a costed HR strategy and planned training designed around training needs to deliver cost-effective training – cost-effective training programmes are required to deliver a professional, end-to-end service. This training extends to supervisors and managers also. A training plan that exploits self-learning opportunities, and delivered during quiet periods for example, forms an opportunity for improvement. However, the resourcing models for the service must reflect this ‘downtime’ when scheduling and rostering staff.

♦ Providing staff at all levels with relevant and specific training to meet individual personal development and organisational goals – cost-effective training programmes are required to deliver a professional, end-to-end service. This training extends to supervisors and managers.

♦ Ensuring that mentoring and tutoring support exists for new and existing staff – to support development and the embedding of new working practices, many modern contact handling operations deploy coaches and mentors, this key role supplements training delivery and when undertaken as part of a performance management framework can demonstrate rapid improvements in targeted areas of operation.

♦ Supporting employees at all levels in achieving industry standard qualifications – various qualifications from NVQ through to CMS and DMS exist for ‘contact centre management’. Cohorts on such courses are able to understand the latest strategies and plans in place to improve contact handling. This also demonstrates commitment on the part of the trusts to the development of their staff.

C.4.6 Investing in Good Location and Facilities

♦ Ensuring that workplaces are well designed, provide areas for refreshments, meetings, etc. and meet health and safety requirements for all equipment, including furniture – a key consideration for all trusts moving forward; locations must match operational needs and must be fully resilient in terms of contingency planning. Good workplace design must be actively considered as a strategic method by which performance can be improved, and must comply with all relevant health and safety legislation.
C.4.7 Making the Most of Contact Centre Technology

♦ Having appropriate technology matched to, and driven by, strategic and business requirements, integrated into current systems to assist in reducing delays and duplications, making it user-friendly for staff and customers, and adding value to the customer experience – any virtualisation of services must incorporate suitable telephony infrastructure that support dynamic call routing, common systems and processes need to be designed and implemented to optimise the contact events and to assure seamless transfers and work escalations.

♦ Having a range of communication channels available to those seeking to contact the force tailored to meet both customer and organisational needs – within the ambulance service this will become of greater importance for non emergency contact handling, allowing citizens and stakeholders to self-help to bookings and follow ups as well as improving access to services. This will provide the service with opportunities to leverage latent capacity, and channel resources to support ambulance crews and emergency services.

♦ Ensuring timely, accurate and relevant information and intelligence is available to call handlers at the point of interaction with the caller to aid decision-making, grading and call resolution – with the advent of automated call distribution, exacting performance targets, and personal development plans control rooms will need to ensure staff are ‘queue aware and empowered to make a difference - this is a common best practice way to instil ownership and improve performance’.

C.4.8 Making Best Use of Management Information

♦ Having a performance management framework that uses timely and accurate quantitative and quality assurance information to inform management in the decision-making process and deliver continuous improvement – as demonstrated at trusts such as West Midlands Ambulance Service, having real-time and accurate data on service, volumes and performance is critical if a performance management culture is to be implemented.

♦ Regularly reviewing contact centre services and processes – a culture of continuous improvement is required to hone and develop the service. This requires process challenge, management information and understanding root causes of failure. Control rooms need to be managed in real time and any changes required would need to be substantiated by evidence for change.

C.5 Fitch and Associates Best Practice Benchmark Criteria

Fitch and Associates’ report, ‘The future provision of ambulance communications in New Zealand’, published in August 2001, identifies 25 benchmarks to actively consider when evaluating the effectiveness and efficiency of an ambulance service. Mason’s own views on the benchmarking are totally aligned with these. The 25 benchmark points (a minimum requirement) are listed below.
1. Public access through a single number, preferably enhanced 111 (i.e., caller line identification, number and address)

2. Single Public Safety Answering Point exists for the system

3. Effective connection between PSAP and dispatch points, with minimal handoffs required

4. EMS (Emergency Medical Services) leadership has full functional control over both its dispatch and field operations assets, and the IT resources required to rapidly implement changes

5. Operational changes can be implemented rapidly, and communications staff are responsive to the EMS systems mission and functions

6. There is a smooth integration of first response, air, ground and hospital services

7. Radio linkages between dispatch, field units and medical facilities provide adequate coverage and facilitate communications

8. Certified personnel provide pre-arrival instructions and priority dispatching (EMD) and this function is medically supervised

9. MPDS compliance targets are met

10. Compliance is routinely and externally monitored, with meaningful feedback to staff, and non-performers are not allowed to continue in mission critical positions

11. Hot standby backup is available from other centres, for CAD, radio, AVL, mapping and paging

12. Disaster recovery plans are exercised at scheduled intervals, in real time, and lessons are incorporated into standard operating procedures

13. Critical and environmental systems must be protected by generator backup and adequate uninterruptible power supply

14. Buildings must have adequate space for day-to-day operations, with additional space for backup and disaster responsibilities
15. Technology supports interface between 111, dispatching and administrative processes

16. Automatic Vehicle Location (AVL) is available, with adjustable polling and basic data transmission/reception capabilities, on a channel independent of voice

17. Mapping system integrates with AVL, CAD and CLI and is consistent with field staff maps and gazetteers

18. Alphanumeric paging is available, interfaced with CAD, to transmit address and nature of call, response code, cross streets, map page and grids

19. Minimum qualifications for all communications personnel include EMS field experience

20. An adequate supply of fully qualified replacement personnel is available

21. Staffing is varied by hour of day and day of week to call demand. Dispatch shifts do not exceed 12 hours in length

22. Data are collected which allow key service elements to be analysed

23. Operational and clinical data guide the decision making process. A structured performance/quality improvement (QI) system exists

24. Unit Hour Utilisation is measured, and hours are deployed to achieve efficiency and effectiveness

25. Defined communications processing times are met.

C.6 Ambulance Radio Programme (ARP)

A contract was signed by the DH in July 2005, for the implementation of the Ambulance Radio Programme, which is to use O2’s Airwave Service to provide mobile radio communications to ambulance services in England. The contract includes the provision of radio terminals and dispatch equipment (ICCS), and the integration of legacy data applications to make use of the new radio bearer.

The exact details of the technical solution per newly re-configured trust are still being agreed; however, O2’s solution is likely to be based on two points of presence (POPs) per trust, to include relevant ICCS server equipment in what can generally be
considered as two ‘data centres’ (per trust). This does not preclude trusts using more than two control rooms, as further operational equipment can be replaced remotely to these two POPs, with Airwave providing the wide area network connectivity.

Operationally, this gives trusts the opportunity to revise their models as, in effect, radio dispatchers can be located wherever the trust wants. However, it will be more cost effective to use the two POP data centres as two ‘main’ hubs (i.e. site for the majority of control room staff), thereby limiting the number of control room staff needing remote access. The technical solution, therefore, has the ability to meet the models envisaged within this review.

C.7 Conclusions

- There are a number of best practice guidelines in place that can allow the trusts to begin formulating their own operating model designs.

- A transformation team is required, staffed by dedicated, competent work stream managers. The operating models need to be designed top-down and informed bottom-up by baseline information of current people, process and technology issues.

- Commonality systems and processes (based on best practices) are fundamental components in the development of virtualised trust hubs.
Appendix D: Business Continuity and Service Resilience Implications

Ensuring continued operation of ambulance service control centres in times of technology failure, civil emergency, or disturbance must be considered as ‘mission critical’. Service resilience in terms of a trust’s control centres must, therefore, be considered to ensure continuity under all circumstances.

This section provides advice and good practice guidance to trusts from recent authorities in the field.

D.1 NISCC Survey of the Ambulance Service 2006

This report by the National Infrastructure Security Co-ordination Centre (NISCC), as part of its responsibility to examine the critical national infrastructure of the emergency services, was completed in July 2006, and surveyed 26 ambulance trusts (whose responses were received in January 2006). Its key findings were:

- The average trust is responsible for approximately 1.9 million people, and operates 111 ambulance or car response units, as well as motorbikes and helicopters.

- An effective emergency response is highly reliant upon computer-assisted dispatch system (CAD), in-vehicle telematics (GPS), and voice communication. The average number of IT staff was just six, although the two largest trusts had teams of 25 and 27.

- Although a variety of mobile and fixed line telecommunication service providers were used, one significant point of failure across all trusts was their use of the NHS national data network.

- A variety of vendor hardware and operating systems was found in trust CAD systems, vehicle consoles and GPS systems, although in each area there were clearly leading vendors.

- All trusts reported having an information security policy, and all but two (92%) had a board level individual with responsibility for information assurance issues. A significant majority (72%) of trusts had achieved, or were seeking to be, BS7799 compliant. A high proportion (81%) had commissioned an external IT assessment, through either an IT health check or a penetration test.
Its key areas of concern were:

- Only 68% of trusts had installed any form of anti-virus software on their CAD systems, a number only on the clients.

- Ambulance trusts currently have no central centre to which to report significant incidents, physical or electronic, that impact their systems (e.g. hacking incident), thus the risks faced by trusts cannot be assessed.

- Only 16 trusts (62%) reported having a business continuity plan, three (12%) had one in development, and another had a ‘partial’ plan.

- Eight of the 26 respondents failed to answer the question as to what options existed if their primary site became non-operational. Seven believed their alternative arrangements could support 100% of call traffic, five 50–99%, and five being able to handle 20–40% of calls. One trust relied upon the communications infrastructure of a neighbouring trust or the local police.

Its recommendations were:

- Recommendation 1: trusts comply with the ISO 27001 information security standard.

- Recommendation 2: trusts commission regular external health reviews or tests using accredited CESG IT Health Check Service Providers (known as CHECK) approved organisations.

- Recommendation 3: in the absence of a DH incident body, trusts are strongly encouraged to report incidents to the Unified Incident Reporting and Alert Scheme at the National Infrastructure Security Co-ordination Centre (UNIRAS-NISCC).

- Recommendation 4: trusts should install anti-virus software as a matter of priority on central CAD systems and vehicle terminals.

- Recommendation 5: trusts subscribe to receive NISCC technical alerts and good practice guides.

- Recommendation 6: trusts produce and maintain business continuity plans as a matter of priority.

- Recommendation 7: trusts review the communications resilience for key sites.
D.2 NISCC Telecommunications Resilience Good Practice Guide

Originally published in May 2004, but updated to version 2.0 in March 2006, the aim of this good practice guide is to present recommendations as how to provide the appropriate level of resilience for an organisation’s business critical telecommunications systems.

Its key recommendations are:

- Identify those communications systems that are deemed mission critical, and which carry a high risk to the business if they are disrupted
- Wherever possible, separate out the high risk services from those that only carry a medium or low risk to the business if disrupted
- Understand the architectural options for ‘separacy’ and diversity-based services, e.g. what does ‘end-to-end separacy’ actually mean?
- Recognise that high availability and high resilience services will cost more than standard services, and do not use cost as the main criterion when procuring these services.

The simple message delivered in the Guide is:

- Know your communications system requirements
- Talk to your provider
- Focus on the services required, not the technology
- Provide the required level of resilience
- Expect to pay for it.

D.3 NISCC Protecting Data Centres Good Practice Guide

Published in September 2005, this document is “…both a guide for the establishment of an effective and sufficient protection regime, and a reference for appropriate compliance standards that need to be considered if involved with protecting a Data Centre”. In the new environment, with larger fewer trusts serving greater population and geographic areas, the technology required for effective and efficient control centres should follow such data centre good practice.
The guide covers the areas of critical business operations, and how to risk assess threats and weaknesses, then goes on to discuss protection mechanisms to develop a protection regime covering not only site and building protection, but also information systems protection.

The final outcome is to provide a good practice ‘Protecting Data Centres’ checklist that covers the following:

- Business Purpose and Corporate Governance
- Risk Assessment – risk, threat, hazard, vulnerabilities and weaknesses, risk management
- Developing a Protective Security Regime – developing a security policy, roles and responsibilities, asset management, human resources, business continuity
- Site and Building(s) Protection – environment, site protection, building structure protection, staff and visitor access, protection of utilities
- Information Systems Protection – the data hall, communications, day-to-day working, information system acquisition, development and maintenance.

**D.4 Better Practice Guidance for Government Contact Centres**

Published by the Central Office for Information (COI), the 2nd edition of the Data Centres Good Practice Guide, Figure D.1 below, summarises a number of basic standards expected for business resilience – written for call centres, rather than ECRs or ancillary ambulance healthcare telephone services. Therefore, it may be considered that these standards should be met, or exceeded.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Measure taken</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failure of main internal telephone switch (i.e. server or ACD)</td>
<td>Have stand-by server available (operate two servers), with information about service requirements pre-programmed</td>
<td>Within 10 minutes of problem identification</td>
</tr>
<tr>
<td>Contact centre site power failure</td>
<td>Where possible, use site standby generators to re-establish power. If not available, set up message on network detailing problem and resolution time</td>
<td>Within 2 hours</td>
</tr>
<tr>
<td>Emergency evacuation of contact centre (unplanned, i.e. due to serious incident)</td>
<td>Where possible, switch contact centre services to an alternative site. Alternatively, play out message informing citizens that contact centre is closed, and the period it will be closed for</td>
<td>Within 1 hour</td>
</tr>
<tr>
<td>Problem</td>
<td>Measure taken</td>
<td>Timing</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Failure of PC network</td>
<td>Contact centre staff to handle requests, capturing data by hand, to be re-inputted once PC network re-established</td>
<td>Immediately – data input within 24 hours</td>
</tr>
<tr>
<td>More contacts received than forecast</td>
<td>Depending on volume of contacts, increase staff numbers to handle additional calls. Use IVR to handle requests over and above volumes which can be handled by agents; utilise additional site or agents from another service</td>
<td>Within 3 hours</td>
</tr>
</tbody>
</table>

**Figure D.1: Summary of COI Standards**

### D.5 Conclusions

- A number of best practice standards exist from within the public sector; many have a significant relevance to the ambulance service.

- The NISCC provides a framework within which all trusts should operate, as it removes the guesswork from assuring service resilience, allows for easier compliancy checking, and provides a check list for change.
Appendix E: Points of Interest from Other Organisations

E.1 Scottish Ambulance Service – A Service Having Undergone Major Change

The Scottish Ambulance Service serves all of Scotland (population of over 5 million), and is a special health board funded directly by the health department of the Scottish Executive. It serves two main functions - the provision of an accident and emergency service to respond to 999 calls, and the non-Emergency Service, which performs the role of taking patients to, and from, their hospital appointments. The service has the only publicly funded ‘Air Wing’ in the U.K, operated under contract by Gama Aviation. The fleet consists of two Eurocopter EC-135 helicopters, and two Beech King Air 200c fixed wing aircraft, which provide emergency response and transfers of patients to, and from, remote areas of Scotland.

The service employs 3192 staff, of which 155 are in management and administration, and 12 are board members.

The A&E service operates 452 specially equipped ambulances that are dispatched from Emergency Medical Dispatch Centres (EMDC). Patients are categorised, so that those who have the most need receive the fastest response. As soon as a call comes into the EMDC, the call taker will establish the location of the patient, immediately dispatch an A&E vehicle, and then ask the caller a series of questions to establish the severity of the patient’s condition. If the patient does not require an emergency ambulance, the vehicle and crew will be stood down, and the appropriate care recommended to the caller, for example NHS 24.

In April 2002, the Scottish Ambulance Service opened the first Emergency Medical Dispatch Centre (EMDC) in Edinburgh. This was followed, a year later, by the opening of Inverness EMDC and, finally, in April 2004, Paisley became the third and final EMDC that makes up the National control structure. Additionally, the Control Centre in Dundee was also configured as a Disaster Recovery site, able to take over the workload of any of the three Operation Centres.

The three EMDCs replace the previous eight Operation Centres, which was part of a rationalisation programme Scottish Ambulance undertook to improve their response times to patients. This was achieved through the implementation of new technology and work-practices and the rationalising of existing processes and facilities.
E.2 Thames Valley Police – Separating Emergency and Non Emergency Contact Handling

Thames Valley Police is one of the largest Home Office police services in England, and the largest non-metropolitan one, covering 2,200 square miles of Berkshire, Buckinghamshire and Oxfordshire, and patrolling 196 miles of motorway - the largest stretch of motorway in Britain. The force serves a population of 2.1 million, plus the six million visitors who come every year in search of history, royalty, and a day at the races. The force employs over 6,000 staff, including 4,189 police officers.

The headquarters of Thames Valley Police is at Kidlington, Oxfordshire. The force is covered by three control rooms with the one in Abingdon covering Oxfordshire and Berkshire West, one in Milton Keynes covering Milton Keynes, Buckinghamshire and Berkshire East, and one within the headquarters building covering motorway policing.

Sulhamstead House in Sulhamstead is the Thames Valley Police training college, which also houses the Thames Valley Police Museum.

There are also several Traffic Departments (Roads Policing) bases at strategic locations around the force at Abingdon, Bicester, Taplow, Amersham, Aylesbury, Milton Keynes, Three Mile Cross and Chieveley.

The two ‘PEC’s (Police Enquiry Centres) were formed in 2003, in addition to the closure of local control rooms, to support the newly formed control rooms in Abingdon and Milton Keynes. They are located in Windsor Police Station, and in a business park near to the Force Headquarters in Kidlington. The PECs take reports of crime and also deal with non-emergency general enquiry calls from members of the public. This reduces the amount of paperwork being dealt with by officers, and improves their call

Source Information:

http://en.wikipedia.org/wiki/Scottish_Ambulance_Service

http://www.scottishambulance.com/

Scottish Ambulance Service – EMDC Review, Staff Rostering and Demand Forecasting Process (Mason Communications 2006)

Scottish Ambulance Service – Radio Reconfiguration project (Mason Communications 2004)
handling. As of April 2004, the PECs are handling on average about 20,000 public calls per week, and also take the overflow of 999 calls from the control rooms.

‘Service delivery first’ is at the heart of Thames Valley Police’s strategic objectives for the coming three years. Just like the Agenda For Change programme for the English Ambulance, the force has embarked on an ambitious programme ‘Challenge and Change’, which will put neighbourhood policing at the heart of everything it does, and will provide a more effective response to issues in local communities. By 2008, neighbourhood policing will have been rolled out throughout, and the local people will know who their neighbourhood officers are, and how to contact them.

The force also wants to improve the way in which it responds when members of the public contact it, whether it is an emergency, or a non-urgent matter. The force runs a number of projects within the ‘Access to Services’ programme, aimed at improving call handling, particularly of non-emergency calls.

Similar to the English Ambulance, the programme also includes projects, which will help officers access information more easily, to help them do their jobs more effectively. For example, they are implementing a new radio system, Airwave, and working on plans to provide officers with mobile data.

A unique project specific to Thames Valley Police, however, but also part of the programme, is the development of the ‘Single Non Emergency Number – 0845 8 505 505’. Two new police enquiry centres were developed for this number to answer all non-emergency calls from across the force and record crimes.

Launched on 01 January 2004, the number now accounts for more than 41 per cent of all calls into the PECs, an average of around 1,500 calls a day. The in-queue messaging system, designed to notify callers how long it will take until their call is answered, minimises repeat attempts to get through to the force’s police enquiry centres (PECs).

Calls using the single number are now answered by an auto attendant, which allows people to choose one of three options, so calls are put through to the person with the correct skills to either report a crime, dial an extension or be put through to the switchboard for general enquiries.

Callers can now expect one of two messages depending on the expected waiting time. One message advises callers that their call will be answered within two minutes. The
other message explains that call volumes are high, but stresses that they hold on rather than ring back, which will mean they will return to the back of the queue.

However, if a member of the public is facing an emergency, they will still need to call 999.

Source Information:


http://www.thamesvalley.police.uk/

E.3 RAC – Technology to Support Effective Dispatch and Location Strategy

The RAC operates a UK-wide network of roadside assistance to members/subscribers whose vehicles break down at the roadside.

In 2001, the RAC recognised a need to use Mobile Technology to improve its customer service, and determined to implement a new, computerised, command and control system. This replaced an older system, CARS (computer-aided rescue system) that had served it well for 13 years. The systems needed to be replaced with a more sophisticated, web-based, command and control system, to manage its roadside assistance operations and improve customer service.

The I/CAD Intelligent Computer Assisted Dispatch solution from Intergraph Public Safety was implemented in 2002. It automates the RAC’s dispatch process for its 1,500 patrols, using digital map-based screens to help decision-making. This enables guided call handling that allows operators to diagnose customer breakdown problems more accurately for its seven millions members, who generate more than four million calls for assistance a year at the rate of up to 2,500 calls an hour.

The solution is integrated with the principal operational IT systems, the RAC’s membership administration system, and the RAC’s mobile data network in the RAC. It has received a degree of public recognition for excellence by the receipt of a number of competitive awards.

The RAC has stated the benefits of their new solution as:

- The new system will handle and manage all incidents, including calls for assistance, the dispatching and management of patrols, and management of contracted-out roadside resources. The system will interface with the RAC’s mobile data network, which is used to transmit incident details to the patrol at roadside - and will receive GPS information from the patrol vehicle to help track the patrol’s exact location, which is key to deployment decision-making.
• The system will provide the RAC with IPS’s latest computerised mapping and geographic information software, which receives real-time status information from all mobile patrols, and uses the information to allocate the most appropriate patrol or contractor to each incident. The solution will enable the RAC to keep the customer informed of their breakdown and identify the stage of each process would benefit from being part of a worldwide user group, which is a forum for roadside assistance organisations to identify and develop new ways of improving the roadside service.

Source Info:
• http://www.vnunet.com/computing/features/2072332/rac-road-test-mobility

E.4 Yorkshire Water – Transformation of Mission Critical Dispatch and Improved Service Levels

During the 1990s, Yorkshire Water was facing harsh price reviews. This was due to the threat of imminent competition, increasing customer expectations, and a 1995 UK-wide drought that drove customer perception of the company to an all-time low. As a result, Yorkshire Water made a commitment to turn the situation around, and to strive to become the best water company in the UK. The company realised the difficulty in delivering the desired service objectives without changing the way it operated. Yorkshire Water’s paper-based and voice-dispatched communications systems lacked the ability to provide field technicians with up-to-the-minute customer information. At the time, work group queue managers did not have the lead-time to plan and allocate the right resources for repair work, monitor the completion of the tasks, or provide feedback to customers on the status of their tasks.

To meet both its operating efficiency, and customer service strategic objectives, Yorkshire Water had to fully re-engineer its business processes to be customer-centric, which could only be accomplished with true end-to-end integration.

Yorkshire Water’s Advantex solution interfaces with several SAP™ Utilities™ modules, which had also been chosen in connection with Yorkshire Water’s change programme. Field technicians use ruggedised laptops with a built-in radio modem to receive and send completed orders over the GPRS network. Work group queue managers have visibility into the field operations, and order status information can be automatically relayed to call takers, who, in turn, can provide reliable, up-to-the-minute information to customers.
With Advantex, Yorkshire Water was able to meet its main objectives for implementing a workforce management system, including reduced travel time, automated operations to plan resources more effectively, and visibility into operational work to enable Yorkshire Water to provide feedback to customers on the status of their orders in real time.

Advantex also allows for significant planning of resources to improve operational efficiencies, including a balanced workload and shifting a large percentage of the reactive work to planned work.

Today, Yorkshire Water delivers significant business benefits through the efficient management of approximately 600 of its mobile workers who are engaged in clean and waste water management. Its solution gave it the opportunity to realise major operational efficiencies, and, more importantly, deliver enhanced service to its customers. It has gone from being the bottom-ranked water utility in the UK to No. 1.


Just some of the customer service achievements Yorkshire Water has accomplished as a result are:

- Appointments met within 2 hrs – 99%
- Customer call-back commitments met within 30 minutes – 98%
- Calls closed on contact (including billing calls) – greater than 80%
- Unnecessary field jobs – greater than 40% reduction
- Written complaints – 40% reduction
- Operational customer contacts - 20% reduction
- Repeat calls from customers – greater than 10% reduction.

### E.5 Fire Department of New York (FDNY) – Innovative Use of First Responders and Partners

The New York City Fire Department (aka the Fire Department of New York, FDNY) has the responsibility for protecting the citizens and property of New York City’s five
boroughs from fires and fire hazards, as well as providing first response to biological, chemical and radioactive hazards. The FDNY is the largest municipal Fire Department in the United States, with 11,400 personnel.

In addition to fire fighting, rescue and Hazmat (Hazardous materials), FDNY stations ambulances throughout the city and supplies paramedics and EMTs. Together with ambulances run by certain participating hospitals and private companies, it is known as the FDNY EMS Command. The FDNY EMS answer approximately 3,500 calls a day (c.1.3 million a year).

Although EMS is controlled and dispatched by the Fire Department, approximately half of the emergency 911\(^2\) ambulances in the system are provided by the non-profit hospitals in New York City. Although some hospitals have provided emergency ambulances for over 125 years, since the 1990s, dozens of hospitals have joined the 911 systems, with many subcontracting actual ambulance operations to private ambulance providers.

All of the FDNY EMS Command members are also trained to the Hazmat Awareness level. Some EMS units are trained to the Hazmat Technician level, allowing them to provide emergency medical care and decontamination in a hazardous environment, in addition to their normal 911.

There are three main ways to notify the central offices (dispatch) of an incident within the city:

- The most common is a telephone alarm, or report via telephone
- Second most common, but most often malicious false alarms, the ERS (Emergency Reporting System) alarm. This type is sent via a pull box on the street, and replaced the earlier BARS system
- The third way is to report a verbal alarm via a walk in to the communications office, or by reporting it to a unit in the field.

When a member of the public dials 911, they speak with an NYPD call taker, who assigns the call to where it needs to go based on the information provided.

- If it is police related, it is transferred to another NYPD dispatcher

\(^2\) 911 is the US emergency call number telephone number, similar to the UK 999 concept)
- If it is on a bridge, or in a port, or other body of water, the Port Authority of NY and NJ is notified

- If it is a fire, hazmat (hazardous material), or rescue incident, the FDNY gets it. The FDNY also answers a few EMS calls; all others go to the FDNY EMS central office.

The initial call to the FDNY communications office is usually taken by the *Alarm Receipt Dispatcher* (ARD), who speaks with the caller in order to determine the nature of the emergency. The ARD enters the information into the Starfire computer system, which gives a recommended response based on the information provided. This information is then transferred to the *Decision Dispatcher* (DD) who decides what units will be assigned to the incident.

When the Decision Dispatcher has made a decision, the information is transferred to the supervisor, who checks the information to make any changes. The information is also passed to the *voice alarm dispatcher* who announces the call over the voice alarm to the units in the station, and to the *radio in/radio out dispatchers* who transmit the call via radio to the units (the radio in dispatcher inputs information into the CAD while the radio out dispatcher talks to the unit).

The claim is made that the entire process, from initial notification until a unit is dispatched, takes approximately 25-30 seconds.

Emergency care is provided at three distinct levels:

- Certified First Responder engine companies, staffed by fire fighters providing first aid, CPR, and defibrillation Emergency Medical Technicians-level (EMT) ambulances, whose two EMTs provide first aid, defibrillation, and limited medication administration Paramedic ambulances, whose two paramedics provide critical care.

- Each level of response is divided into overlapping grids, with the closest FDNY first responder engine company responding to life-threatening emergencies, and the appropriate level of ambulance responding.

Source Info:

E.6 City of Chicago – Systems Improvements to Provide Fast Call Taking and Dispatch

The Office of Emergency Management & Communications (OEMC) manages and operates the City’s public safety communications systems that coordinate the response of Police, Fire and Emergency Medical Services (EMS) resources to 911 calls. The OEMC claims to operate a world-class voice and data radio system, giving police and fire personnel, on the street, valuable information to help them respond quickly to emergency situations.

The OEMC’s Emergency Management Team acts as the coordinator for the City’s efforts to develop, plan, analyse, implement and maintain programs for disaster mitigation, preparedness, response and recovery. The Emergency Management Team is also responsible for directing the activities of City departments and other agencies at disaster scenes.

In Chicago, 911 is the connection to Police, Fire and Emergency Medical Services. The call takers and dispatchers at the 911 Centre are highly trained, dedicated professionals, who staff the Centre 24 hours a day, 7 days a week.

The system claims to deliver:

- Fastest call Connection Time in the World, with an average 1.2 second call connection time
- Automated Map Display - If a 911 call originates from a landline, the phone number and location of the 911 call, including building map and vital information of the surrounding area, appear on the call taker's map screen
- Internal Secure Communications Network (ISCN) - A fibre optic communications backbone connects 210 police and fire facilities, and enables the City to integrate police, fire and EMS subsystems into a single system
- Computer-assisted Dispatch - This system enables dispatch personnel to display stored or current information, such as incident location, available field resources and connections to external city, state and federal databases
- Voice and Data Radio Network - A fast, secure communications system allows portable and mobile data terminals to be used by emergency response personnel
- Call Processing - The 911 system can process 3,000 calls per hour, and can handle more than 6 million calls annually
• Language Interpretation Service - This service can interpret over 140 languages and dialects.

Chicago’s 911 call takers assigned to Police Dispatch Operations answer calls for the service. Call takers ask critical questions to determine the nature of the emergency. The call takers gather key details to provide accurate and specific information to the emergency responders. If the request is for fire, medical, or rescue-related service, the call will be transferred to a Fire Dispatch Operations call taker.

All Fire Dispatch Operations personnel are licensed emergency medical technicians and certified emergency medical dispatchers, and utilise a state-certified protocol system designed and implemented by the Chicago Fire Department. By answering key questions, callers receive the appropriate level of care they requested.

Once a call taker receives all the necessary information, the call is forwarded to a dispatcher who will assign the call to a police beat car, fire engine or ambulance. The call taker may continue to ask additional questions and relay this information electronically to emergency personnel.

Source Info:
http://egov.cityofchicago.org/city/webportal/home.do

E.7 Seattle Fire Department – Using Technology to Manage Caller Expectations

The Seattle Fire Department is the largest Metropolitan fire department in the Pacific Northwest. It is also a part of Medic One. (Medic One refers to the emergency medical service programme (paramedics/EMTs) in Seattle, Washington). It provides fire suppression and emergency medical services to a culturally diverse population.

As part of their programme of public accountability, it is noteworthy that as a WWW service it is possible to monitor selected real time performance data for fire dispatch incidents online.

The largest division within the Seattle Fire Department is the Operations Division, which is responsible for emergency medical services, fire suppression, mitigation of disasters, and rescue activities. Specialised units within the Operations Division include: the Hazardous Materials Response Team, Dive Team, Confined Space Rescue, Heavy Rescue, and Marine Fire Response Teams.

http://www2.seattle.gov/fire/realTime911
The Medic One programme directly provides the City of Seattle with Advanced Life Support activities that, in the past, could only be performed by licensed physicians. The Department responds to approximately 28,000 Basic Life Support (BLS) alarms and 25,000 Advanced Life Support (ALS) alarms per year. In addition to these alarms, the Paramedics respond on all working fires, hazardous materials, and rescue responses.

Source Info:
http://www.seattle.gov/fire/
http://www2.seattle.gov/fire/realTime911/

E.8 New Zealand Ambulance Service – Options Appraisal and Re-configuration of Services

St John provides ambulance services for approximately 85% of New Zealand’s population. Each year, 700 paid, and 2200 volunteer, St John Ambulance Officers care for, and save, the lives of thousands of New Zealanders and visitors to the country.

The operations are spread over five Regions (Northern, Midland, Central, Northern (SI), and Southern). There has been a growth in the number of first responder units, which has been well received by rural and remote communities.

St John has continued to consolidate, and reorganised on a functional basis in 2001. Previously having eight 111 receiving centres, and leaving the five regional entities and governance structure unchanged, following the recommendations of the Fitch report which said that New Zealand should develop three linked ambulance communication centres (two in the North and one in the South), with on-line, immediate, total back-up capabilities, to provide its emergency call receipt, processing, registry and dispatch.

The result of the appraisal was that the five centres option scored highest on aggregation of criteria. This was followed in scoring, very closely, by the two centres on the North Island and one on the South Island option, which scored highest on pure benefit. When outline financial appraisal results were added, two centres on the North Island, and one on the South Island (three sites) was found to produce significantly better value for money than the other options. The recommendations also concluded that the siting of the operations should be within Ambulance sites, and that the operation and governance should be maintained by control room operations, as opposed to jointly with other emergency services or outsourcers.

Also, the model would support a high degree of rural and remote support requirements through the alignment of a network of first responders.
The core services of the New Zealand Ambulance function operating within this scope include:

- Coordination of response and clinical/operational consultation to ambulance crews (UKs CAT C/Triage desks)
- Managing resource deployment (logistics and support functions)
- Dispatching the most appropriate resource (dispatch desk – all vehicles)
- Pre-arrival support to callers (call takers or liaison staff)
- Navigational support to ambulance officers (mobilisers, and dispatch desk control staff).

These are similar to English ambulance trusts. The recommended models were seen to mitigate similar issues found within English trusts. For example, relationships between crews, even between divisions within the same trust and in the same organisation, are complicated by system and process incompatibility. System incompatibility is best exemplified in the wide range of computer-assisted dispatch (CAD) systems in use. Within the New Zealand operation suitable steps had not been taken to ensure interoperability in the event of critical failure of one of the existing centres. The identification and dissemination of best practice was not apparent either.

The recommended option was arrived at through options appraisal, which weighted various criteria. The significant benefits of the recommended option included improved communications linkages between dispatch, responders and partners (A&E dept, etc.) medical facilities was considered to offer the critical mass to support the systems required. Interestingly, this option was considered to be the top performer on Clinical Effectiveness, felt to have the critical mass necessary to support consistent delivery of AMPDS compliance and suitable levels of resilience. However, it was acknowledged that the transformation required would be ineffective without a concerted effort to change the working culture of the operation and to enable a ‘best practice’ across the organisation.

Sources:
www.stjohn.org.nz
# Appendix F: Questionnaire

<table>
<thead>
<tr>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>2</td>
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<tr>
<td>3</td>
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<td>20</td>
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<tr>
<td>21</td>
</tr>
<tr>
<td>22</td>
</tr>
</tbody>
</table>

**Example - Call Taker (CT)**

<table>
<thead>
<tr>
<th>Role</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Role 1</td>
<td></td>
</tr>
<tr>
<td>Role 2</td>
<td></td>
</tr>
<tr>
<td>Role 3</td>
<td></td>
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<tr>
<td>Role 4</td>
<td></td>
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<tr>
<td>Role 5</td>
<td></td>
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<tr>
<td>Role 6</td>
<td></td>
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<tr>
<td>Role 7</td>
<td></td>
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<tr>
<td>Role 8</td>
<td></td>
</tr>
<tr>
<td>Role 9</td>
<td></td>
</tr>
<tr>
<td>Role 10</td>
<td></td>
</tr>
<tr>
<td>Role 11</td>
<td></td>
</tr>
</tbody>
</table>

Please insert more rows as needed
<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of staff within Control Rooms that are NOT directly employed by Ambulance Trust</td>
<td></td>
</tr>
<tr>
<td>Is there a common uniform policy at each site? Y or N</td>
<td></td>
</tr>
<tr>
<td>Number of Trainers per WTE supporting the control room</td>
<td></td>
</tr>
<tr>
<td>Induction time for call takers (in weeks)</td>
<td></td>
</tr>
<tr>
<td>Induction time for dispatch and controllers (in weeks)</td>
<td></td>
</tr>
<tr>
<td>What is the frequency of refresher training (off call/off site)?</td>
<td></td>
</tr>
<tr>
<td>Please list other dedicated support staff linked to the Control Room by roles</td>
<td></td>
</tr>
<tr>
<td>What is the average recruitment lead time for call takers (in weeks)?</td>
<td></td>
</tr>
<tr>
<td>What is the average recruitment lead time for controllers (in weeks)?</td>
<td></td>
</tr>
<tr>
<td>Are the call takers single skilled or fully multi-tasked for control also? (S or M)</td>
<td></td>
</tr>
<tr>
<td>Are dispatchers required to answer telephones during busy periods?</td>
<td></td>
</tr>
<tr>
<td>Do Radio and controllers staff multi-task?</td>
<td></td>
</tr>
<tr>
<td>Do call takers and Controllers get involved in managing day-to-day operational issues?</td>
<td></td>
</tr>
<tr>
<td>Are staff assimilated into the agenda for change terms and conditions?</td>
<td></td>
</tr>
<tr>
<td>Please state which control rooms have any technical interfacing (direct CAD and Telephony) with third parties (e.g. the Police and Fire, NHSD)</td>
<td></td>
</tr>
<tr>
<td>Does your control room deploy an air ambulance service and how many?</td>
<td></td>
</tr>
<tr>
<td>Does the Control Room have documented Disaster Recovery Plan and resilience for processes and technology?</td>
<td></td>
</tr>
<tr>
<td>Contact volumes Time series required for the period 1st October 2004 to 1st October 2006 by week please can you provide:</td>
<td></td>
</tr>
<tr>
<td>Calls Answered</td>
<td></td>
</tr>
<tr>
<td>Calls Offered</td>
<td></td>
</tr>
<tr>
<td>Incidents responded to</td>
<td></td>
</tr>
<tr>
<td>Percentage year on year change to these</td>
<td></td>
</tr>
<tr>
<td>The call volumes split by category</td>
<td></td>
</tr>
<tr>
<td>CAT A</td>
<td></td>
</tr>
<tr>
<td>CAT B</td>
<td></td>
</tr>
<tr>
<td>CAT C</td>
<td></td>
</tr>
<tr>
<td>Number of Administrative/HQ calls GP call handling/switchboard/PTS, urgent (non 999)</td>
<td></td>
</tr>
<tr>
<td>Average Handling times if available for each of the above in seconds</td>
<td></td>
</tr>
<tr>
<td>CAT A</td>
<td></td>
</tr>
<tr>
<td>CAT B</td>
<td></td>
</tr>
<tr>
<td>CAT C</td>
<td></td>
</tr>
<tr>
<td>PTS, urgent (non 999)</td>
<td></td>
</tr>
<tr>
<td>Published and publicly stated attainment of the national service standards by control room</td>
<td></td>
</tr>
<tr>
<td>CAT A within 8 minutes</td>
<td></td>
</tr>
<tr>
<td>CAT A within 14 minutes</td>
<td></td>
</tr>
<tr>
<td>CAT B</td>
<td></td>
</tr>
<tr>
<td>CAT C</td>
<td></td>
</tr>
<tr>
<td>Urgents</td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>Capital: for next three years planned</td>
</tr>
<tr>
<td>51</td>
<td>Revenue: Staff</td>
</tr>
<tr>
<td></td>
<td>Revenue: Management</td>
</tr>
<tr>
<td></td>
<td>Revenue: Telecommunications and Technology</td>
</tr>
<tr>
<td></td>
<td>Revenue: Property</td>
</tr>
<tr>
<td></td>
<td>Revenue: specific proposals for PFI</td>
</tr>
<tr>
<td></td>
<td>others</td>
</tr>
<tr>
<td>52</td>
<td>If the control room operate an ICCS environment - what product and</td>
</tr>
<tr>
<td></td>
<td>version is used?</td>
</tr>
<tr>
<td>53</td>
<td>What is the CAD product and version used?</td>
</tr>
<tr>
<td>54</td>
<td>What is the ACD product and version used (else leave blank)?</td>
</tr>
<tr>
<td>55</td>
<td>What is the voice recording system and version used?</td>
</tr>
<tr>
<td>56</td>
<td>What is the medical priority dispatch system being used and what</td>
</tr>
<tr>
<td></td>
<td>version?</td>
</tr>
<tr>
<td>57</td>
<td>ICCS environment: what is the age of the equipment?</td>
</tr>
<tr>
<td>58</td>
<td>CAD product used: what is the age of the equipment and system?</td>
</tr>
<tr>
<td>59</td>
<td>ACD product used what is the age of the equipment?</td>
</tr>
<tr>
<td>60</td>
<td>Voice recording system used: what is the age of the equipment?</td>
</tr>
<tr>
<td>61</td>
<td>Clinical priority system: what is the age of the system?</td>
</tr>
<tr>
<td>62</td>
<td>Mobile data systems used</td>
</tr>
<tr>
<td>63</td>
<td>Electronic Patient Record Form is it being used?</td>
</tr>
<tr>
<td>64</td>
<td>ECG transmission used</td>
</tr>
<tr>
<td>65</td>
<td>Any other systems used - please provide a list (e.g. Workforce planning,</td>
</tr>
<tr>
<td></td>
<td>management information reporting, etc.)</td>
</tr>
<tr>
<td>66</td>
<td>Please Provide Annual Cost of maintenance of:</td>
</tr>
<tr>
<td></td>
<td>ICCS environment:</td>
</tr>
<tr>
<td></td>
<td>CAD product used:</td>
</tr>
<tr>
<td></td>
<td>ACD product used</td>
</tr>
<tr>
<td></td>
<td>Voice recording system used:</td>
</tr>
<tr>
<td></td>
<td>Clinical priority system:</td>
</tr>
<tr>
<td></td>
<td>Mobile data systems used</td>
</tr>
<tr>
<td></td>
<td>Electronic Patient Record Form</td>
</tr>
<tr>
<td></td>
<td>ECG transmission used</td>
</tr>
<tr>
<td>67</td>
<td>Please Provide Annual Cost of Support of:</td>
</tr>
<tr>
<td></td>
<td>ICCS environment:</td>
</tr>
<tr>
<td></td>
<td>CAD product used:</td>
</tr>
<tr>
<td></td>
<td>ACD product used</td>
</tr>
<tr>
<td></td>
<td>Voice recording system used:</td>
</tr>
<tr>
<td></td>
<td>Clinical priority system:</td>
</tr>
<tr>
<td></td>
<td>Mobile data systems used</td>
</tr>
<tr>
<td></td>
<td>Electronic Patient Record Form</td>
</tr>
<tr>
<td></td>
<td>ECG transmission used</td>
</tr>
</tbody>
</table>
Appendix G: Industry Benchmarks

Ambulance trusts, in assessing their requirements, and establishing KPIs, will wish to be aware of operational standards achieved by comparable organisations. There are no published benchmarks for control rooms in the UK. However, there are strong parallels with the call centre industry, and a sample of relevant data is given below.

<table>
<thead>
<tr>
<th></th>
<th>Analysys Mason Group</th>
<th>Babel 2006</th>
<th>Merchants 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average seats in contact centre</td>
<td></td>
<td></td>
<td>255</td>
</tr>
<tr>
<td>Average New Agent Salary</td>
<td>£14,500</td>
<td>£14,092</td>
<td></td>
</tr>
<tr>
<td>Team Leader</td>
<td></td>
<td>£21,008</td>
<td></td>
</tr>
<tr>
<td>% of agent time Productive</td>
<td>80%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact Centre Manager Salary</td>
<td></td>
<td>£33,172</td>
<td></td>
</tr>
<tr>
<td>Attrition</td>
<td>23%</td>
<td>23%</td>
<td>23%</td>
</tr>
<tr>
<td>Contact Centres having trouble with attrition</td>
<td></td>
<td>43%</td>
<td></td>
</tr>
<tr>
<td>Unauthorised absence</td>
<td>8%</td>
<td>5.8%</td>
<td></td>
</tr>
<tr>
<td>Contact centres using recruitment agencies</td>
<td></td>
<td>91%</td>
<td></td>
</tr>
<tr>
<td>Problems recruiting the right staff</td>
<td></td>
<td>57%</td>
<td></td>
</tr>
<tr>
<td>Agents with previous contact centre experience</td>
<td></td>
<td>40%</td>
<td></td>
</tr>
<tr>
<td>Induction course length</td>
<td>17 days</td>
<td>13 days</td>
<td>21 days</td>
</tr>
<tr>
<td>Hard Skills training</td>
<td></td>
<td>56%</td>
<td></td>
</tr>
<tr>
<td>Soft Skills training</td>
<td></td>
<td>44%</td>
<td></td>
</tr>
<tr>
<td>Annual ongoing training</td>
<td>7 days</td>
<td>15 days per year</td>
<td></td>
</tr>
<tr>
<td>External trainers</td>
<td>12%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agent to team leader ratio</td>
<td>1:12</td>
<td>10.8%</td>
<td>1:15</td>
</tr>
<tr>
<td>Coaches to agent ratio</td>
<td>1:35</td>
<td>1:46</td>
<td></td>
</tr>
<tr>
<td>Area (m2) per agent workstation</td>
<td>10</td>
<td>4.2</td>
<td></td>
</tr>
<tr>
<td>Call Time</td>
<td>220 Seconds</td>
<td>59.6%</td>
<td>240 seconds</td>
</tr>
<tr>
<td>Wrap-Up</td>
<td>40 seconds</td>
<td>15.9%</td>
<td>6 minutes</td>
</tr>
<tr>
<td>Admin</td>
<td></td>
<td>11.9%</td>
<td></td>
</tr>
<tr>
<td>Idle</td>
<td>12.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Call Abandon rate</td>
<td>6%</td>
<td>5.3%</td>
<td>13%</td>
</tr>
<tr>
<td>Average time to call abandon</td>
<td>74 seconds</td>
<td>65 seconds</td>
<td></td>
</tr>
<tr>
<td>Average speed to answer</td>
<td>37 seconds</td>
<td>22.3 seconds</td>
<td>28 seconds*</td>
</tr>
<tr>
<td>First Call resolution</td>
<td>71%</td>
<td>79.6%</td>
<td>70%</td>
</tr>
<tr>
<td>Current use of IP</td>
<td>19%</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td>Repeat calls</td>
<td>11%</td>
<td></td>
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</tr>
<tr>
<td>Using CTI</td>
<td></td>
<td>30%</td>
<td></td>
</tr>
<tr>
<td>Using Freephone incoming</td>
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<td>25%</td>
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</tr>
<tr>
<td>Scripting</td>
<td></td>
<td>53%</td>
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</tr>
<tr>
<td>Call recording</td>
<td></td>
<td>86%</td>
<td></td>
</tr>
<tr>
<td>Full time employed</td>
<td></td>
<td>77%</td>
<td>76%</td>
</tr>
<tr>
<td>Part time employed</td>
<td></td>
<td>23%</td>
<td></td>
</tr>
<tr>
<td>Permanent staff</td>
<td></td>
<td>88%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Analysys Mason Group</td>
<td>Babel 2006</td>
<td>Merchants 2005</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>----------------------</td>
<td>------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Temporary staff</td>
<td>12%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using workforce management solution</td>
<td>51%</td>
<td>63%</td>
<td></td>
</tr>
<tr>
<td>Using IVR</td>
<td>43%</td>
<td>68%</td>
<td></td>
</tr>
<tr>
<td>Not using IVR</td>
<td>77%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actual interactions by email</td>
<td>3.9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ideal interactions by email</td>
<td>23%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating budget on Agent Salaries</td>
<td>60%</td>
<td>60.3%</td>
<td></td>
</tr>
<tr>
<td>Operating budget on Other salaries</td>
<td></td>
<td>13.6%</td>
<td></td>
</tr>
<tr>
<td>Operating budget on IT</td>
<td>10%</td>
<td>6.5%</td>
<td></td>
</tr>
<tr>
<td>Complaint to call ratio</td>
<td>0.02%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating budget on Rent</td>
<td>6.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other including telecoms, utilities etc</td>
<td></td>
<td>13.4%</td>
<td></td>
</tr>
</tbody>
</table>

- Best practice is 90% of inbound calls answered within 10 seconds
- Please note, detailed activity work breakdown analysis has been undertaken at North East Ambulance and South Central Ambulance Trusts, Scottish Ambulance Services and NHS24, as well as within a number of Police Control room environments by Mason Communications. This data can be referenced by speaking to the Chief Executives of each of the organisations mentioned.
Appendix H: Diagrammatic Representation of the Variations in Control Room Models

Variation 1 – Dispersed Call Taking & Centralisation

Variation 2 – Dispersed Emergency Functions & Centralisation

Variation 3 – Virtualised Multiple Sites for all functions

*Variation 3A, where commercial operations have their own site (which also incorporates emergency control rooms requirements)*
## Appendix I: Glossary of Terms Used

<table>
<thead>
<tr>
<th>Term</th>
<th>Gloss</th>
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</thead>
<tbody>
<tr>
<td>ACD</td>
<td>Automatic call distribution</td>
</tr>
<tr>
<td>AHT</td>
<td>Average handling time</td>
</tr>
<tr>
<td>AMPDS</td>
<td>Advanced Medical Priority Dispatch System</td>
</tr>
<tr>
<td>ARP</td>
<td>Ambulance Radio Programme</td>
</tr>
<tr>
<td>ASA</td>
<td>Average speed of answer</td>
</tr>
<tr>
<td>BCP</td>
<td>Business continuity plan</td>
</tr>
<tr>
<td>CAD</td>
<td>Computer-assisted dispatch</td>
</tr>
<tr>
<td>CAT A/B/C</td>
<td>Category A, B or C</td>
</tr>
<tr>
<td>CCA</td>
<td>Call Centre Association</td>
</tr>
<tr>
<td>CCMA</td>
<td>Call Centre Management Association</td>
</tr>
<tr>
<td>ECR</td>
<td>Emergency control room</td>
</tr>
<tr>
<td>EMD</td>
<td>Emergency medical dispatcher</td>
</tr>
<tr>
<td>EOC</td>
<td>Emergency operations</td>
</tr>
<tr>
<td>EO CM</td>
<td>Emergency operations centre management</td>
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<tr>
<td>LAS</td>
<td>London Ambulance Service</td>
</tr>
<tr>
<td>MIS</td>
<td>Management information system</td>
</tr>
<tr>
<td>NISCC</td>
<td>National Infrastructure Security Co-ordination Centre</td>
</tr>
<tr>
<td>NWAS</td>
<td>North West Ambulance Service</td>
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<tr>
<td>OOH</td>
<td>GP call handling formally referred to as Out-of-hours (calls)</td>
</tr>
<tr>
<td>PABX</td>
<td>Private automatic branch exchange</td>
</tr>
<tr>
<td>PCT</td>
<td>Primary care trust</td>
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<tr>
<td>PSIAM</td>
<td>Priority Solutions triage software</td>
</tr>
<tr>
<td>PTS</td>
<td>Patient transport service</td>
</tr>
<tr>
<td>RDT</td>
<td>Radio dispatcher terminal</td>
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<tr>
<td>RRV</td>
<td>Rapid response vehicle</td>
</tr>
<tr>
<td>SCAS</td>
<td>South Central Ambulance Service</td>
</tr>
<tr>
<td>UCC</td>
<td>Urgent care centre</td>
</tr>
<tr>
<td>UOC</td>
<td>Urgent operations centre</td>
</tr>
<tr>
<td>VPN</td>
<td>Virtual private network</td>
</tr>
</tbody>
</table>
Appendix J: Bibliography


COI: Better practice guidance for Government contact centres. 2nd Edition


