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SERVICE



CAD 2010 PHASE 2 PROJECT

BUSINESS OPTIONS

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1. PURPOSE

The purpose of this product is to set out the high-level LAS business options for a new CAD environment, in the light of the research conducted during this stage and the nature of the requirements. To analyse those business options and recommend the most suitable option for tabling before the LAS Trust Board and to set out a high-level approach for implementation of a solution.

2. SCALE & COMPLEXITY

The perception gained at the start of this project, from discussion across all levels of the workforce, was that the LAS needs for a new CAD environment could probably be satisfied by a single procurement process. Expectations appeared to anticipate that the procurement process would probably select a core CAD product from a recognised supplier of ambulance CAD systems, with an appreciation that this would require a non-excessive amount of bespoke configuration or ancillary software coding in order to meet the specific needs of the LAS.

The user requirement capture process undertaken during this stage reveals a need for a solution that is of a far greater scale and complexity than this and one which, in order to reduce risk and maintain control, will likely need to be implemented as a rolling timetable of phased delivery. During the work of this preparatory stage of the project it has become clear that the scale of operation within the LAS is second to no other UK ambulance service.

3. BUSINESS OPTIONS

This report considers the options available to the LAS in the light of the scale and complexity of the requirements revealed during the requirement capture process.

3.1. LISTED OPTIONS

1. **Do Nothing:** Discontinue the current CAD 2010 Phase 2 Project.
2. **Do Minimum:** Only minimal changes beyond the Phase 1 Project.
3. **Further Develop Existing CAD:** Further development of the existing CAD systems (as per option 1 listed within "CAD – The Way Forward" paper).
4. **LAS In-house Development:** The LAS engage suitable resources to undertake a completely new in-house development (as per option 2 listed within "CAD – The Way Forward" paper).
5. **LAS In-house Progressive Development:** A hybrid of options 3 & 4 where the LAS engage suitable resources in-house to build progressively around the existing CAD system in a way designed to facilitate a gradual migration to a new environment.
6. **Simplify Requirement to Meet COTS Product:** Limit and simplify requirements to enable the procurement of a commercially available product (known as a 'Commercial Off The Shelf' - COTS - product), combined with the development of bespoke interfaces (as per option 4 listed within "CAD – The Way Forward" paper).
7. **Commercial Procurement:** Commercial procurement(s) for a newly developed solution(s) to meet specific requirements of the LAS (as per option 3 listed within "CAD – The Way Forward" paper), with either:

- a) A prime supplier to design, develop and implement all necessary integration and bespoke interfaces
 - b) A third-party integrator to design, develop and implement all necessary integration and bespoke interfaces
 - c) The LAS engage suitable resources to design, develop and implement all necessary integration and bespoke interfaces in-house.
8. **Provision by Third Party:** The provision of a CAD system by a third party (e.g. the MPS) (as per option 5 listed within "CAD – The Way Forward" paper).

3.2. ANALYSED OPTIONS

3.2.1. Do Nothing

This option means exactly what it says, "Do nothing", close the current CAD 2010 Phase 2 Project and accept the system that emerges from the current Phase 1 Project as the ultimate solution to sustain the LAS into the next decade.

Selecting this option will fail to deliver any of the desired outcomes aspired to by the LAS directors and senior managers. It will fail to provide a distributed IT solution providing control room flexibility, increased resilience, greater access to corporate data, improved efficiency and the opportunity for improved services. With increased demand for emergency services, a broadening and expanding terrorist threat, obligations under the Civil Contingencies Act 2004 and growing expectations for the LAS to exploit alternative care pathways and support 'out of hours work', selecting this option will leave the LAS seriously underperforming.

This option will result in such a serious underperformance that it would be likely that the LAS would be forced to take urgent remedial action or face the transfer of its responsibilities to another organisation. In reality, therefore, this does not represent a true option but a postponement of the inevitable, a postponement on top of the well understood delays of recent years to address these issues and a postponement that will close the current initiative, losing knowledge and momentum, simply to resurrect it again in an even greater rush in the future.

This option does not appear to be best suited to the needs of the Trust but will be taken forward to analysis for comparator purposes

3.2.2. Do Minimum

This option is only a little different than that at section 3.2.1, above. This option considers making only the minimal of changes beyond those that are delivered by the current Phase 1 Project.

The basis of this option is to consider the result of current research undertaken within the market place and via other ambulance services which implies that the existing systems of the LAS (accepting the lack of 'Windows' style screen views and functions) is nearly as good as the currently available alternatives. The option, therefore, is challenging the premise that the LAS should or can do very much at all.

It is totally appropriate to make the challenge to ensure, at a very early stage, that the significant investment required to provide a new CAD environment has a sound and realistic basis.

The challenge has two factors, the 'should' and the 'can'. The 'should' is addressed in section 3.2.1, above and is a persuasive argument. The 'can' is a question that

cannot yet be fully answered. There is nothing to suggest that, in general, the requirements are unrealistic; nor that they refer to technology that is not yet developed or not proven. This seems far more a question of whether the LAS can sufficiently inspire appropriate parts of industry, provide the necessary funding, establish a sufficiently skilled and resourced Project Team and embrace the challenge of a business change project of this scale. The former of these questions must be addressed through a professional, purposeful and structured engagement with the potential supply base. The latter of these questions is in the hands of the LAS and the Trust Board and their combination addresses the issue of 'can' the LAS do very much at all.

Given the answers above to the 'should', then logic would seem to suggest that the 'can' has to be considered as more of a 'must'.

This option does not appear to be best suited to the needs of the Trust

3.2.3. Further Develop Existing CAD

This option is, more or less, an extension of the existing Phase 1 Project, whether by extension or redefinition of that project or as a new project. It would be expected to include development of 'Windows' style screen views and functions (known currently as Windows CTAK) and build a Project Team of sufficient size and skill to add functionality, structure, documentation etc. to the existing core systems to address the requirements now catalogued, or at least the bulk of them.

In any 'upgrading' project, such as is suggested in this option, there comes a point on the scale of change when the effort required to reengineer and enhance what already exists outweighs the effort required to start again from the beginning. The risk of unintentionally designing-in serious flaws to the logic or functionality also increases; this is partly because the developments focus on specific areas rather than starting from a global view. It is also because the developments necessarily continue to utilise the same, old, basic architecture and structures without exploiting new opportunities.

The existing CAD system is now nearly 10 years old and was not developed with a long-term future upgrade path. It does not have sound data architectures but, over the years, has been stretched, squeezed and expanded, by a single expert resource, to accommodate all manner of changes and it is now virtually undocumented. Everything suggests that the current system is very firmly at the point where major change, in preference to starting again, is a false economy and represents disproportionate risk.

It is also the case that the current system does not have the basic structures to exploit opportunities and sustain growth into the next decade. It is unlikely to directly support delivery of an architecture providing the flexibility and resilience of multiple control rooms or corporate access to corporate data. And it may therefore represent a further falseness of economy in that it is likely to be a short-term fix rather than a longer-term solution.

This option does not appear to be best suited to the needs of the Trust

3.2.4. LAS In-house Development

This option is quite separate to the Phase 1 Project and requires the recruitment of a comprehensive and suitably skilled team to design and develop a completely new CAD environment, using an industry standard database management system, suitable and commonly supportable software language(s), recognised best practice architectures, techniques and standards. The Team would develop all the software

for the core call taking and control functions of the Emergency Operations Centre, Urgent Operations Centre, Gold Control and other remote controls, and they would develop all required interfaces with other internal (LAS) and external systems. Wherever appropriate they would make use of separately procured software applications and products for specialist facilities (e.g. mapping, MDT, demand prediction, etc.) and would use standard LAS routes for the procurement of hardware, furniture, specialist or other services or products.

This option will allow the LAS total control over what is done, how it is done and in what order it is done. It will also allow adaptation or expansion of requirements as development progresses, the ad hoc inclusion of additional requirements and the opportunity for development staff to work closely with users to ensure actual requirements are directly tailored to operational practicality. Through this route the Project Team will develop a detailed understanding of the software, architecture and interfaces placing them in an excellent position to supply the post implementation IM&T support team to maintain the system and support its further development.

These aspects present significant advantages but many will require determined control to ensure that they do not become disadvantages which could reintroduce many of the deficiencies and frustrations of recent years.

It is difficult to compare the actual cost of such an option with that of a commercial procurement at this stage as so many variables and unknowns are involved. Clearly a lot of staff will be needed for most of the development lifecycle and that volume of staff will need the additional overhead of a management structure of commensurate scale. They will also need suitable accommodation, furniture and other working facilities, all of which would be invisible costs in respect of a commercial procurement.

The size of LAS development team necessary is difficult to assess and would require careful research. It is quite likely that the size of team and the spread of skills needed would be on a par with the LAS acquiring a small software house. A large recruitment process will be needed, followed by several months of team building, organisational and project familiarisation before the team became a cohesive and productive unit.

An internal LAS team would obviously not incur the addition cost of a profit margin required by commercial companies. But that profit margin, and the whole concept of engaging with the private sector, must be put into realistic context. Without such reasonable engagement with profit making companies of the private sector, the LAS would have to be responsible for the provision, supply and development of absolutely everything it uses from teabags to telephone; paper to PCs. In fact the LAS is a supplier of services not a supplier of products and so it would have to produce everything it used.

The reason that the LAS produces nothing is, fundamentally, because such production is not included within the statement of 'Purpose of the LAS'. Neither is the LAS in the business of software development. It could decide to become so in order to undertake this development and, in doing so, it could place itself in a strong position to supply ambulance CAD systems to the larger Ambulance Trusts that are envisaged for the future.

Alternatively the LAS could leave such activities to companies whose purpose is the development and supply of software or IT solutions, who are very experienced at it, have a large and varied workforce already trained and available to provide it; a large infrastructure able to support those people and the resultant solution; and who are closely involved with research, advances and other developments in the broader software industry.

Further more, an LAS in-house development team may become progressively detached from the advances in the industrial application of technology and could become subject to LAS internal resourcing pressures. The result could limit, obstruct or constrain the opportunities for the LAS in the future, slipping back towards the problems of the past and preventing the flexibility and agility that underpins so many of the areas of requirements for a new CAD environment.

Undertaking a project for a new CAD environment is a huge undertaking. Increasing that undertaking by including an in-house development of this order may become of such a scale and priority for such a large part of the organisation that it challenges the primary purpose of the LAS to the detriment of patient care.

Whilst this option may appear to have potential short-term financial savings it is hard to find a valid argument for recommending it, and to do so would appear to be contrary to the best practices being adopted across the public and private sectors alike of focusing resources on the delivery of core services in support of strategic objectives and buying-in services required beyond that from those whose purpose is their provision.

This option does not appear to be best suited to the needs of the Trust but will be taken forward to analysis for comparator purposes

3.2.5. LAS In-house Progressive Development

This is a hybrid of the options at sections 3.2.3 (Further Develop Existing CAD), 3.2.4 (LAS In-house Development) and 3.2.7 (Commercial Procurement). It leans into the outline of a technical solution which could form part of an innovative solution offered by commercial suppliers under the option at section 3.2.7 (Commercial Procurement), in fact, a demonstration of a potential commercial opportunity of this nature has already been viewed by the Project Team.

This option is based around the concept of a software layer known by the generic name of 'middleware', so called because, architecturally, it 'plugs' in between the desktop PC of the control room operator and the machine(s) running the software of the application(s) used by the control room. In this position the middleware interprets the commands received from the operator's machine and presents them, in a standard and useable format, to the machines running the application(s).

Thus far in the description, the only difference from the current environment is that the link between the machines of the operator and the application(s) is 'plugged' together rather than 'hardwired'. To continue the analogy, like anything that is 'plugged' together, it can be 'unplugged' and, given the proper 'sockets', other things could be 'plugged' in, 'unplugged' or changed very much easier than if they were all individually 'hardwired' and thus they can share the applications, data stores and core software processes that access them. It is a little bit like choosing whether to have an electrician wire all the desk lamps directly into the mains or fit them all with plugs and provide a four-gang socket.

The essence of this model is that it provides flexibility and choice, it reduces the reliance on any one product, supplier, application or resource; it minimises the scale of operational interruption that some implementations would cause; and it provides the opportunity for operators to be able to use different routes into the same application/data store or to use different applications/data stores, entirely transparently.

Such a model could allow, for example, the development of 'Windows' style screen views and functions for use with the current CTAK application, which could be

progressively implemented across the operator positions, one by one, subject to sufficient training, experience and support. It could then allow for the development/procurement of an entirely new core CAD application, with advanced functionality to meet the new requirements, which could share or be synchronised with that of the existing CTAK application and could, again allow for a controlled and progressive implementation across the user community, limiting the scale of the implementation task, user interruption and risk. Other applications and/or functionality to meet more specialist areas of requirement can be added subsequently and in a similar controlled and progressive fashion.

This approach might make it more viable to bring the currently aspired development of a 'Windows CTAK' into this project or much more closely aligned to meet joint requirements.

The option considered within this approach is based on the predominant use of LAS resources for the initial (at least) software development which will result in significant knowledge and experience residing in-house to provide post-implementation support. Thereafter considerable flexibility and choice exists regarding subsequent developments to deliver other requirements. Option 8 includes the consideration of this approach from a largely commercial perspective.

This approach will require an initial, large investment in resources and time to develop the middleware; its link into the existing CTAK data store; and the 'Windows' style screen views and functions to interact with the middleware. Thereafter a choice exists about whether to develop a new CAD application in-house or through commercial procurement.

This approach could be one considered by an in-house development described at section 3.2.4 but it would incur the additional costs of the middleware development.

The option under consideration within this section is therefore an in-house variant of that at section 3.2.7(c) (Commercial Procurement) but with the conscious and declared intent that it will have the additional overhead of a middleware layer, developed in-house. This would provide the LAS with an excellent base of knowledge and experience from which to design, develop, implement and support all necessary subsequent integration and bespoke interfaces.

Many of the issues, advantages and disadvantages, raised under the option at section 3.2.4 (LAS In-house Development) will also be applicable here. A large team of developers will need to be recruited to supplement the Project Team, together with a management structure commensurate with the numbers required and the diversity of the skills set concerned. As with section 3.2.4 it will be difficult to accurately assess costs without undertaking more detailed research.

However the development of middleware and 'Windows' style screen views etc. is still a very large undertaking. Many commercial products already exist that could provide, at the very least, a sound basis from which to develop a bespoke middleware solution. They represent a scale of man-years of effort and hard-won experience that the LAS will not achieve in the relatively short period of this project. Again this raises the question of whether software development and provision of IT solutions is, or should be, the purpose of the LAS or whether the LAS should leave such activities to companies that have that purpose and also have the knowledge, experience, infrastructure and support to excel at its provision.

Fundamentally for the same reasons as in section 3.2.4, it is hard to find a valid argument for recommending this option.

This option does not appear to be best suited to the needs of the Trust

3.2.6. Simplify Requirement to Meet COTS Product

This is not an option that seeks to meet business needs based upon strategic drivers and the requirements of business users to address those drivers; but it is an option that seeks to select, as a solution, the best available fit within the existing market place and then adapt the business processes to meet with the provided solution. The potential gain of benefit must therefore be subject to careful scrutiny.

This option does not consider the potential for existing suppliers to assess the gap between their current offering and the requirements of the LAS in order that they could then make proposals for undertaking bespoke developments to address the deficiency, as this opportunity is inherent with the option at section 3.2.7 (Commercial Procurement).

While the inclusion of this option may cause surprise in some quarters, it is right that its viability should be offered the same attention as the alternatives.

The work to capture and catalogue the user requirements during this stage has revealed the true scale and complexity of the requirements and of the resultant implementation. The Project Board are already well aware that a solution to meet most of those requirements will not be quick, simple or cheap. The LAS is not under any obligation to procure a solution that meets the whim of every user; or the most expensive, grandiose or advanced solution. The LAS is required to fulfil its strategic objectives and to seek the best value for money when considering renewal of its CAD environment and the benefits this will provide.

The validity of any requirement has not been left to the whim of an operational user. A complex analysis has been undertaken to define the strategic problems with the existing system, as perceived through interviews with LAS directors and senior managers. From these problems a definitive list of desired outcomes for a new CAD environment has been established and those outcomes have been mapped to the problems. The path of each desired outcome has been mapped, via interim benefits, to ultimate business benefits and those have been aligned to the basic drivers and reasons for seeking to implement change to the current CAD environment within the LAS. This work has been reviewed and signed-off by the Project Board. (Product No. FS 2.1 Problems with Existing Facilities & FS 2.2 Drivers and Other Reasons for Change). Every requirement will be validated against this analysis; those that do not address a recognised problem and support a desired outcome (and thereby cannot be shown to provide benefit) will be rejected from this initiative. Those that are valid will be prioritised according to the scale of benefit they offer by virtue of the number of problems and desired outcomes they address.

During the work of this preparatory stage of the project it has become clear that the scale of operation within the LAS is second to no other UK ambulance service. It is also clear that to support the aspirations of the LAS and the demands that will be placed on it into the next decade will require a significant jump in the IT support to control room services. The report following initial research with suppliers of ambulance CAD systems to the UK market and, subsequently, with some of their customers, is not encouraging and further heightened the awareness of the Project Team to the scale and complexity of the challenges facing the LAS. Whilst it was clear that some products offered parts of the LAS requirement, individually they would only provide limited areas of advantage over the current LAS CAD environment but would result in a very high risk of losing essential and potentially extensive areas of current capabilities.

Procurement of an un-enhanced ambulance CAD system from the suppliers researched to date therefore represents a retrograde step and very expensive way of

making the current problems even worse, with the potentially enormous risk to patient care across London. There is no evidence to suggest that immediately suitable COTS products are likely to be more readily available from other suppliers but, in any case, the opportunity for them to shine forth exists within the option at section 3.2.7 (Commercial Procurement). No satisfactory argument can be presented to support this option.

This option does not appear to be best suited to the needs of the Trust

3.2.7. Commercial Procurement

This section considers the option for the commercial procurement of software solutions to meet the defined and agreed needs of the LAS. It introduces three sub-options to accommodate the issues of integration.

Without doubt, this option will be the most expensive, in terms of immediate financial commitment. However, this project is specifically not about saving money. It is about spending money in the most cost effective way to address the very real current and future needs of the LAS in a way that is realistically within the capacity of the LAS to manage safely and a way that represents a considered and balanced approach to the sharing of risk with the commercial sector.

This option will effectively 'outsource' the complex and specialist areas of work associated with software writing allowing the Project Management Team to focus on the core 'business change' areas of the project which, in themselves, represent massive challenges. It will require consistent, clear, firm, proactive but diplomatic and effective engagement with third party suppliers to forge close working relationships at Project Management, Project Board and LAS Executive levels, following a cohesive approach, driven from the Project Board, and underpinned by the conduit of the enabling contracts.

This option provides the LAS with a unique opportunity to run a competition to determine the most suitable supplier(s) to meet all expressed needs of the LAS. If the LAS commits sufficient resources to designing and running that competition, it should result in the formation of the best possible partnerships, to provide the best overall set of solutions that collectively represent the best possible value for money and, thereby, enable the LAS to provide the residents and visitors of London with the best possible ambulance service.

Therefore, subject to thoughtful wording of the Invitation(s) to Tender (ITT), preceded by detailed and effective engagement with, and advice from, the potential supplier base, this option will provoke innovative ideas, opportunities and solutions to enable the LAS to fully exploit the knowledge, skills, experience and other facilities available within the commercial market to offer the best opportunity for procuring the most appropriate technologies to meet the current and future business needs of the LAS.

Whilst the research to date with the UK ambulance CAD market was not encouraging, this route will enable the suppliers of COTS ambulance CAD systems within and beyond the UK (including, for example, the USA) to consider the suitability and adaptability of their product and the overall capability of their company to meet the future needs of UK Ambulance Services. It will also open up opportunities to suppliers with knowledge, skills, capacity and experience outside this narrow specialist market to the potential mutual advantage of the UK Ambulance Service and to their company.

This option will also enable the LAS, through the tendering processes, to explore a full range of opportunities for the provision of maintenance and support of the

solutions, from in-house provision to fully managed services, and will include consideration of suitable upgrade paths.

A commercial procurement offers three sub-options for the design, development, implementation and support of all necessary integration and bespoke interfaces, as follows:

- a) Tender for the (prime) supplier of the core CAD software to provide these services.
- b) Tender separately for the provision of these services and exclude the (prime) supplier of the core CAD software from tendering. Thus spreading risk across more than one supplier.
- c) LAS to recruit appropriate number of suitably qualified resources to undertake this work in-house and conduct individual procurements for any short-term additional or specialist resources required.

Many of the reasons against other considered options add weight to arguments in favour of this option; therefore this section should not be read in isolation. This option offers a sound investment. It follows recognised best practice, balances risk with opportunity and organisational capability. It provides the most realistic chance of delivering the scale and complexity of the LAS requirements in a controlled and sustainable fashion. This option is the one most likely to deliver best value for money throughout the whole life of the solution and it has the best chance of delivering a successful outcome.

This therefore appears to be the option best suited to the needs for the provision of a new CAD environment for the LAS. The sub-options, described above, provide the shortlist of detailed options which will be subject to more detailed analysis during preparation of the business case for the first phase of the proposed rolling timetable of implementation.

Notwithstanding the fact that this appears to be the best suited option at this stage, it still represents a massive challenge for the LAS and the Trust should fully understand that the successful delivery of the complete solution will not be quick, it will not be simple and it will not be cheap.

This option appears to be best suited to the needs of the Trust and will be taken forward to analysis

3.2.8. Provision by Third Party

This option is included for completeness as it was listed within the Trust Board paper "CAD – The Way Forward" submitted in February 2005.

There has not been any offer or approach made to the LAS which underpins this option, it is just a suggestion that such an opportunity may exist and, if it did, it may be worthy of some consideration.

Now that the project has determined the requirements for a new CAD environment and the true scale and complexity of those requirements is known, the likelihood of being able to adopt and adequately adapt the system used by another emergency services organisation, is remote. If such adaptation were realistic it seems surprising that the opportunity has not already been exploited by a commercial supplier and come readily to the attention of this project during the Initial Market Research already conducted (Product No. FS 2.2).

None-the-less, the project has made arrangements to meet with representatives of the Metropolitan Police Service to discuss their existing and planned call taking,

command and control systems. Should they present a realistic opportunity then this will be given further consideration as a 'short listed' option, together with those described within section 3.2.7 (Commercial Procurement).

This option does not appear to be best suited to the needs of the

3.3. OPTIONS CARRIED FORWARD TO ANALYSIS

1. **Do Nothing:** Discontinue the current CAD 2010 Phase 2 Project.
4. **LAS In-house Development:** The LAS engage suitable resources to undertake a completely new in-house development (as per option 2 listed within "CAD – The Way Forward" paper).
7. **Commercial Procurement:** Commercial procurement(s) for a newly developed solution(s) to meet specific requirements of the LAS (as per option 3 listed within "CAD – The Way Forward" paper), with either:
 - a) A prime supplier to design, develop and implement all necessary integration and bespoke interfaces
 - b) A third-party integrator to design, develop and implement all necessary integration and bespoke interfaces
 - c) The LAS engage suitable resources to design, develop and implement all necessary integration and bespoke interfaces in-house.

4. IMPLEMENTATION

4.1. PHYSICAL IMPLEMENTATION

Many of the options, including that which appears best suited to the Trust, will require significant facilities into which the solutions can be initially implemented. This includes;

- Connecting and configuring new server and client hardware
- Installing and configuring server and client software
- Conducting extensive (probably exhaustive) structured user testing
- Conducting 'bulk training'
- Parallel running of 'old' and 'new' IT systems throughout a controlled and progressive increased loading of the 'new' systems until predetermined confidence levels are achieved.

At this stage it is too early to determine the exact facilities needed or the duration of that need but a rough guess suggests that an uninterrupted period in the order of 12 months will be required.

The Project Board have considered the following three options for initial implementation:

1. Parallel use of the Bow Fall Back Control (FBC) alongside other operational demands.
2. Exclusive use of the Bow FBC – relinquishing the fallback facilities for the duration.
3. Include within the scope of this project the establishment of a third control room in which to conduct the implementation activities.

The Project Board have rejected option 1 & 2, predominantly due to the unacceptable

risk to the LAS posed by both of these options. The Project Board selected option 3 (provision of a third control room to be included within the scope of this project) but, in order to prevent the diversion of the project from its principal purpose, they wished the project scope to clearly exclude the provision of any further control rooms (this in no way undermines the requirement for a distributed architecture providing the capability to establish control rooms at multiple sites which is in line with one of the long-term aims of the Trust).

The Project Board have agreed option 3 – ‘Establish a third control room within scope of this project’

This option requires the selection, refurbishment, and equipping of separate premises which will add another order of magnitude to the already massive challenges faced by the LAS.

4.2. MODE OF IMPLEMENTATION

The Project Board have considered whether the implementation of the solution(s) should be a ‘big bang’; in other words, implement the complete solution in a single, massive operation; or through a phased and modular approach.

The Project Board recognised that the CAD system is the mission critical LAS system. They also recognised the scale of change that will be involved by implementing the requirements of the scale and complexity now revealed and the consequent enormity of the risk to which the LAS will be exposed should implementation be undertaken as a single massive operation.

The Project Board also noted:

- The Office of Government Commerce (OGC) best practice guidelines which advise against single, large-scale implementation.
- The Cabinet IT Action (NAO/OGC Common Causes of Project Failure) which identify lack of sufficient attention to breaking development and implementation into manageable chunks, as a cause of failure.
- The Lessons Learnt from the ‘Page Report’ following the implementation of the LAS CAD system in October 1992.

Having considered all these points, the Project Board agreed that implementation should be through a phased and modular approach.

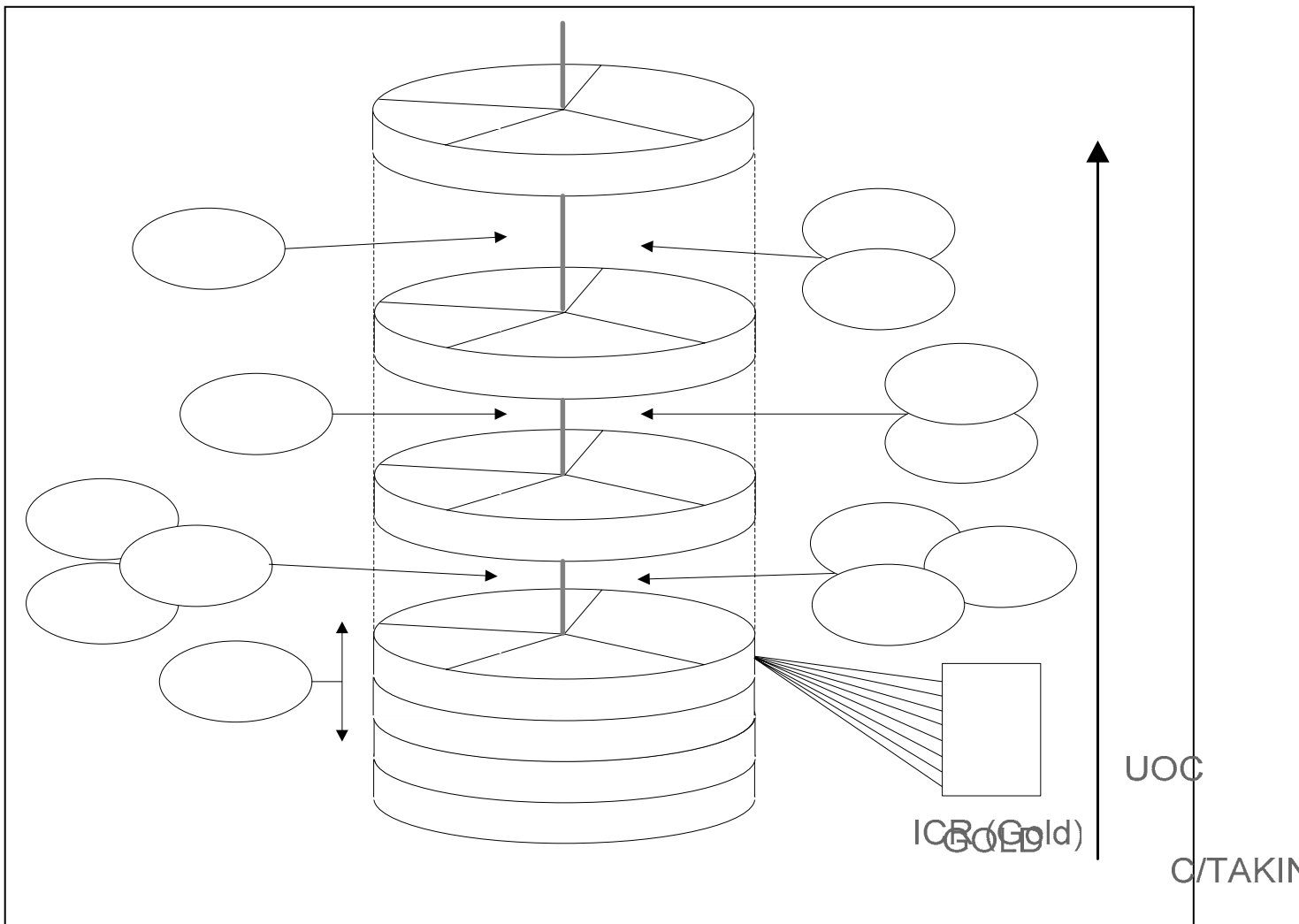
The Project Board have agreed to a phased and modular approach to implementation

There is little doubt that the first implementation will be the largest and will include fully commissioning the 3rd control room. The new CAD environment will bring together into a single (physical or virtual) control room environment the four elements of Call Taking, Emergency Operations Centre (EOC), Urgent Operations Centre (UOC) and Gold Control. It will involve the design and development of the highest priority requirements for the core CAD system, with particular focus on ensuring that no existing capability is unintentionally omitted. It will include the preparation and full refurbishment of a third control room, followed by Installation and testing of all new computer and communications hardware/systems which will be followed by extensive structured testing of the software, all interfaces and the initial ‘bulk’ training (however, further training facilities may be required once more progress has been made and attention is given to the training needs).

The diagram below illustrates this phased and modular approach as a ‘stack’ being built from the bottom up. Within the diagram ‘balloons’ are used to represent potential

modules and these are grouped to illustrate how they could be selected as tranches to fill a spare 'slice' of the 'stack'. This does not seek to define the actual approach, order or grouping of modules, nor does it seek to set the number of implementations of 'core CAD' software to three. It is purely a representation of the approach, in the context of this project and, as such, it provides a visual indication of the scale and complexity of business change that the organisation is considering embarking upon.

Diagram 1: Representation of a Phased & Modular Approach to Implementation



Vehicle
Telemetry

UOC