London Ambulance Service

System Failure

1992

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  – Aims:
    • Improve efficiency
    • Control resources efficiently
    • Decrease personnel requirements

• The system failed:
  – The system could not cope with the load placed on it by normal use;
  – The response to emergency calls was several hours;
  – Ambulance communications failed and ambulances were lost from the system.
1. Need Discovered – Early 1980’s
3. Project Put to tender - 7 February 1991
4. Contractor decided – August 1991
6. System Integration - October 1992
London Ambulance Service

- Largest Ambulance Service in the world
- Around 4,000 staff at over 70 stations
- Carries over 5,000 patients every day.
- Receives 2,000-2,500 calls each day
  - Only 1,300 to 1,600 are emergency calls
- Area covers 620 miles

LAS
Manual System

• Call taking
  – Recorded on form
  – Location identified on map
  – Form sent to central collection point

• Resource identification
  – Form Collected – duplicates removed
  – Passed onto region assigned resource allocator
  – Resource allocator decides on crew to be mobilised
  – Form updated – passed to dispatcher

• Resource mobilisation
  – Dispatcher contacts ambulance station
  – Or passed onto radio operator if ambulance is already mobile

• Whole process meant to take < 3 minutes
Computer Aided Dispatch

• Existing systems dismissed as inadequate and impossible to modify to meet LAS’s needs
  – Intended functionality was more than manual system could cope with.

• Desired system:
  – To consist of Computer Aided Dispatch; Computer map display; Automatic Vehicle Location System (AVLS);
  – Must integrate with existing Mobile Data Terminals and the Radio Interface System.

• Success dependent upon:
  – Near 100% accuracy and reliability of technology;
  – Absolute cooperation from all parties including CAC staff and ambulance crews.
Diagram 3.1
LAS Communications

*Taken from Report of the Inquiry Into The London Ambulance Service*
What Went Wrong?

• When the system was adopted several issues arose from its first use:
  – Ambulance locations were incorrect or not shown
  – Call taking created exceptions which created a greater work load
  – Ambulance response time became unacceptable

• Many reports have been produced on what went wrong:
  – From its conception to its integration the project management and process were doomed to fail.
• How it was done
  – The project was put out to tender.
  – Report by Arthur Andersen
    • Suggested budget of £1.5 Million and time-frame for development & testing 19 months, longer if a consortium was given project.
    • Report was mostly ignored
      – Cheapest bidder chosen
      – Consortium given strict deadline of 6 months development
        » Significantly less than the 19 months set as industry standard
• A consortium consisting of Apricot, Systems Options and Datatrak given the project
  – Their proposal of £937k was £700k cheaper than next bidder
    • No questions were asked as to this figure.
  – Systems Options were to develop the CAD software
    • Previous experience of emergency service systems was limited to an administrative system
    • No experience of high integrity systems
  – There was no official designation of who were to manage the project.
System Design

- System requirements:
  - Need for 100% reliability
    - System was never 100% reliable.
    - Strict deadline meant testing was unacceptable.
    - Fail safe measures never tested.
  - Must be able to cope with unexpected events/data
    - System never expected incomplete information
      - Exceptions when this occurred took up vital computation time
    - Exceptions were not prioritised and took up vital processing
  - Efficiency is key to system
    - System could not cope with volume of traffic
    - Never tested to full capacity
      - Failed to achieve suitable level of performance for normal work load
Must be able to de-duplicate calls
  • System failed to identify duplicate calls
  • More traffic within the system caused:
    – resource allocation issues
    – Processing performance diminution

Communication of information is vital
  • Communication channels expected to be 100% reliable by system
    – Passed back incomplete information which system failed to handle correctly
  • Poor interface between Ambulance crew, MDTs & the system

Must be easy to use for staff
  • Staff were used to old system and had to be trained to use new system
System Implementation

• Problems:
  – Time-frame too short
    • Developers saw deadlines as rigid
      – Rush to complete software liable to generate problems
    • Testing time was inadequate for critical system
    • Development team had doubts on feasibility of system
      – They did not reflect their feelings onto management
System Integration

• Problems:
  – Adoption too soon
    • Users not ready
      – Changed control room layout confusing to staff
      – Complete change from original system without significant training
      – Two groups of users:
        » Separate training left users unsure of each other's roles
  • System not ready
    – Backup server not tested properly.
    – Inadequate full load testing
    – Data transmission problems
  – Staff
    • Opposed to new system
      – Unwilling to learn/use new system
      – Lack of trust in new system
    • Not consulted over the new system
      – Development missed out on meeting staff needs.
      – Limited involvement in testing therefore testing of typical use not fulfilled
Project Management

• Problems:
  – Break down in relationship between staff and management following new initiatives introduced
    • Lack of trust in any new system.
    • Little communication between management and staff meant issues were unresolved
  – Contractor
    • Board of management were misled into the lead contractors ability and pass experience of emergency service systems
    • High risk by management in offering project to small software house company with little experience of high integrity systems.
  – Project management throughout the development and implementation process was inadequate and at times ambiguous.
    • A major systems integration project such as CAD requires full time, professional, experienced project management. This was lacking;
  – Scale of change and speed of change were too aggressive for the circumstances
– Poorly defined Management structure
  • No party took ownership from start
    – Systems Options assumed to be responsible
    – Became too busy and London Ambulance Service management took over
  • Executive Directors took control of minor problems
    – Should have been left to lower level management
  • Evaluation team:
    – Systems Manager – Ambulance crewman with many years experience: No IT knowledge
      » Replaced by IT expert – too late
    – Analyst – Contractor with 5 years experience with LAS
  • Structure inflexible from structure before project lead to problems in communication
Lack of defined communication channels

- Concerns Raised at meetings never followed up
- Staff unable to reflect issues on to management
- Development team issues unresolved due to strict deadlines
Assignment To Integration

What Should Have Been Done?

• Assignment
  – The project should have been assigned to a consortium or company with prior experience
  – Lowest cost should not have been deciding factor
  – More attention should have been made on Anderson report.

• Implementation
  – Timetable should have been better calculated
  – Testing should not have been passed by
  – Independent testing should have been carried out
  – Development teams concerns should have been raised earlier

• Integration
  – Training should have been more focused
  – Mixed training (i.e. users from all parts of process) should have been carried out
    • Highlight the role of different teams so user knows the whole system
  – User issues never addressed.
  – Backup should have been tested
  – Manual fallback system should have been in place.
• Project Management
  – Management and staff issues prior to the new system development should have been resolved to gain staff’s trust and support
  – Communication channels should have been setup between staff and management.
    • Staff delegate to raise concerns of staff
  – Better definition of project ownership
    • LAS should not have to own project as they have little experience of system development
  – Project management should have outlined to development teams that deadlines were not strict in the interest of better system
  – Formal recording of concerns should have been used
    • Concerns should be followed up.
    • Delegation of ownership of concern to member of management would ensure concern is addressed
    • Problems not given thorough analysis.
Project Management

What Should Have Been Done?

- Project should have been split into phases instead of a single process
  - Ensure that each phase is complete before next is begun
  - Creates quality assurance at each stage
  - Clearly defined structure more likely to achieve system targets.

- An IT manager should be appointed to sit on LAS board
  - It is their role to coordinate between LAS board and the system development contractor
  - Experience in IT is essential to allow good project management and communication between non IT board members and the project team.
  - Separate Executive Directors from the project team to restrict interference.

- A report should have been commissioned to be completed before adoption which could have outlined the problems before they occurred.
LAS Board failed to follow PRINCE Project Management method

- Projects in Controlled Environments
- Shows Corporate and Project Management separation.

Management had little/no training over the years to prepare them for such a project.
- Ambiguity over project management
- High Integrity system projects should have full-time professional management.
Summary

- Project was doomed from the start:
  - Assignment of project to contractor was riddled with issues
  - Development of the project was too aggressive and quick for the circumstances
  - Integration of the system was unstructured and completed too soon.
- Management Problems
  - Management was unstructured
  - Too ambiguous at every level
  - Communication channels were unclear
- Many issues could have been avoided through better project management.
- Questions.
References

• A Comedy of Errors: the London Ambulance Service case study – Anthony Finkelstein
• Overview of LAS Failure – Ian Sommerville
• CAD Failure LAS – ambulance.freeuk
• Software failure: management failure – Stephen Flowers