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21 October, 1996

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Dear Angus

Chess Independent Technology Audit - Final Report

Please find attached the final Technology Audit Report for CHESSE. As requested, this final report summarises the learning experiences gained from the CHESSE project from which other projects may benefit.

As agreed, the earlier approach to performing a CHESSE Market Participant Survey will be refined. I will discuss the results of this refinement in the next day or so to get your approval to proceed.

Yours sincerely



W.J.S. Chalkley
Management Group - PA

**ASX SETTLEMENT AND TRANSFER
CORPORATION PTY LTD (ASTC)**

**CHES Independent Technology
Audit
Final Report**

October 1996

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1. Introduction

Since July 1992 PA Consulting Group has been retained by ASTC as the Independent Technology Auditor for Phases 1&2 of the CHES project . During this period a series of quarterly project audits have been performed to support funding claims from ASTC to the Attorney Generals Department (latterly, the Treasury).

Quarterly audits have been based around the PA Framework Best Practice Project Management principles and have commented on performance aspects of the CHES project compared with Best Practice. This would include where appropriate recommendations for improvement action.

Each audit report has then been appended to the SIDA claim for review by Attorney Generals Department. There have been periodic meetings between PA and Attorney General staff during the conduct of the assignment

The quarterly reports have then been progressively merged with the CHES Project Technology Audit report to provide a history of project conduct against Best Practice for the duration of the CHES project.

CHES phase 2 has now been completed and implemented thus concluding the project .

The purpose of this report is to summarise the learning experiences gained during the life of the CHES project from which subsequent projects will benefit .

The report is set out in the same format as the CHES Project Technology Audit report and summarises experiences for each of the Framework Principles.

A summary of the learning experiences follows and this is supported by further detail in the body of the report.

2 Structure and Summary Learning Experiences

PA's Framework for Best Practice project management of IT and other projects and programmes defines fifteen essential core, support, assessment and management techniques.

Learning experiences gained throughout the CHES project have been described against each module accordingly and are summarised below.

2.1 Summary Learning Experience

- CHES benefited from a well defined scope and overcame the "no single owner" issue
- Work Breakdown Structure activity was rigorous resulting in a comprehensive schedule which was well maintained
- Cost Management process and reporting met best practice criteria
- Resource Management covered a wide range of diverse resource types. Projects like CHES should give serious consideration to engaging third party specialists where such skills are not core to the organisation. Demand for User Support resources should not be underestimated
- CHES benefited from comprehensive Change Control to limit Phase 1 and 2 changes to the essentials. Interfaces with third party software will be subject to change and formal re-accreditation should be considered
- Industry standard approaches to Estimating were employed. Post Implementation Review activity should be used to validate estimate techniques
- CHES Quality Assurance processes were of a high order
- The discipline of Configuration Management will benefit all technically complex projects

- CHESS recognised the threats to the project posed by external issues and managed these risks well. Risk Assessment and Management was an ongoing activity throughout the life of the project
- Project Evaluation is a simple, powerful process to progressively refine and approve a project stage by stage. CHESS had progressed through these earlier stages to become a development/implementation project
- Post Implementation Review has yet to be performed and is strongly recommended
- Organisation of the CHESS project was appropriate to its task
- Industry Communication was a vital aspect of CHESS, and contributed to its success
- Procurement of Technology for CHESS was well performed, and contributed to its success
- Procurement of Technology for CHESS was well executed. Fault fixing was on occasion tardy and would benefit from development of appropriate service level agreements at the outset.

3 Audit Coverage

The topics covered are:

- Core Project Management Issues:
 - management of project scope
 - work breakdown structure
 - schedule management
 - cost management
 - resource management
- Project Support Issues:
 - change control
 - estimating
 - quality management
 - configuration management
- Assessment Issues:
 - risk assessment and management
 - project evaluation
 - post implementation review

- Other Management Issues:
 - organisation
 - communication
 - procurement and contracting.

4 Core Project Management Issues

The following aspects are covered in each of the subsequent subsections

Management of Project Scope

Work Breakdown Structure

Schedule Management

Cost Management

Resource Management

4.1 Management of Project Scope

4.1.1 Purpose

To define, agree and manage the requirements for, and scope of, the project.

4.1.2 Form and Approach

The current, agreed scope must always be reflected in an up to date document. A one or two page statement covering:

- definition of clear boundaries for the project and specification of exclusions
- major deliverables and milestones
- management constraints, such as critical business dates, expenditure etc
- business objectives of the project
- key roles and responsibilities.

4.1.3 Measures of Adherence to Best Practice

- user acceptance of responsibility for ownership and management of project scope
- maintenance of an acceptable balance between the product, the time for delivery and the estimated cost
- clear definition of boundaries for the project
- unambiguous specification of exclusions
- acceptance of the need to manage changes in the scope to optimise benefits.

4.1.4 CHESSE Scope Statement

Refer:

| | |
|--|-----------|
| "CHESS Development Plan and Budget" | May 1992 |
| "CHESS - The Business Case" | May 1991 |
| "CHESS - An overview" | May 1992 |
| "CHESS - Broker Impact Report" | May 1992 |
| "CHESS - Institutional Investor and Custodian Impact Report" | July 1992 |
| "CHESS - Issuer and Registry Impact Report" | July 1992 |

4.1.5 Summary Findings

CHESS has enjoyed and benefited from a well defined project scope.

Major deliverables and milestones were adequately and clearly defined for the duration of each phase of the project.

Since its inception, the project has recognised that there is no single owner of CHESS. This has obvious implications for the notion of single point accountability. None the less, this was overcome by appointing senior single point responsibility within the project to manage the various project exposures arising from having no single owner. This is referenced again under Risk Assessment and Management.

4.2 Work Breakdown Structure

4.2.1 Purpose

To provide a disciplined and systematic identification and breakdown of all work and deliverables that contribute to the project.

4.2.2 Form and Approach

A systematic breakdown of the work into manageable work elements, each of which has a clearly defined deliverable.

Format is hierarchical or inverted tree.

The top level represents the parent objective. Children represent phases, activities and tasks.

4.2.3 Measures of Adherence to Best Practice

- completeness of WBS coverage of the total project
- extent to which planning, including cost, schedule and resource plans, is based on the WBS
- single point responsibility for each element of the WBS
- application of a mechanism for controlling changes to the WBS
- compatibility of the WBS with the project organisation and procurement plan.

4.2.4 CHESS Work Breakdown Structure

Refer:

| | |
|---|----------------|
| "CHESS Development Plan and Budget" | 5 May 1992 |
| "Development Schedule and Task Definitions" | 19 August 1991 |

4.2.5 Summary Findings

Work Breakdown Structure activity was quite rigorous resulting in initially appropriate levels of detail for Phases 1 and 2.

The resulting schedule was maintained using PC based project management tools to construct, maintain and report upon relevant aspects of project control.

On the auditor's advice, the levels of detail were progressively decomposed to give lower level task definition and subsequently improved status reporting. Ideally tasks should be decomposed to a duration level of one to two weeks.

On the auditor's advice, lower level tasks were then allocated to specific or generic resources to demonstrate single point task responsibility.

Ideally each task should produce a tangible deliverable as the basis for assessing task completion.

Maintaining the Work Breakdown and translating this into a maintainable schedule was the responsibility of Project Control and Administration. This proved to be a most effective role within the project.

4.3 Schedule Management

4.3.1 Purpose

To ensure that the project is completed on time and that key intermediate milestones are achieved.

4.3.2 Form and Approach

Tasks in the schedule should correspond to the bottom levels of the WBS.

All interdependencies should be determined and presented in GANTT format. May be supplemented or augmented with PERT chart, to confirm all dependencies.

Management summary charts should be maintained.

Individuals should receive detailed schedules of their own tasks and/or task lists.

4.3.3 Measures of Adherence to Best Practice

- extent to which plans are realistic and useable. Large projects should use a hierarchy of schedules, none of which should be greater than 250 tasks
- accuracy, clarity and currency of reports in reflecting true progress
- discipline in adhering to key dates
- diligence and consistency of management of forecast effort versus actual time remaining

- promptness and visibility of action to correct actual and forecast slippages.

4.3.4 CHES Schedule Management

Refer:

| | |
|--|------------------|
| "Development Schedule and Task Definitions" | 19 August 1992 |
| "CHES Development Framework" | August 1992 |
| "Report to Attorney-General's Department for the three month period ending 31 July 1992" | 4 September 1992 |

4.3.5 Summary Findings

The comprehensive nature of the Work Breakdown Structure in turn produced a comprehensive schedule which was effectively maintained by Project Control and Administration.

Ideally, this function - often referred to as Project Office - has a proactive role in driving weekly progress reporting. This occurs via regular and automatic prompting by the control system of task status. In turn, this feedback loop maintains schedule status and subsequently overall status. While Project Control and Administration attempted to introduce this mechanism, it did not gain the full support that it should in order to be completely effective.

The schedule was maintained to illustrate and monitor Requirements, Issues, Problems (RIP)/Risk containment actions.

A feature of the project schedule control system which was not exploited was its ability to develop a Critical Path. This is a particularly useful feature to illustrate which tasks are on the Critical Path.

4.4 Cost Management

4.4.1 Purpose

To ensure that the project is completed within budget, that intermediate cost targets are achieved, that departmental budgets are met and that the organisation's financial procedures are followed.

4.4.3 Form and Approach

All project costs should be:

- forecast and planned
- authorised before being incurred
- controlled whilst being incurred
- recorded for analysis
- linked with operating budgets
- linked with financial accounting

4.4.3 Measures of Adherence to Best Practice

- existence of a detailed control estimate before starting each stage
- regularity of review of overall estimate and predicted benefits
- firmness of action taken to control potential overruns.

4.4.4 CHESS Cost Management

Refer:

"CHESS Development Plan and Budget"

5 May 1992

Section 8 - "Estimated Project Expenditure"

Section 9 - "Proposed Expenditure Report"

4.4.5 Summary Findings

The approach to, and format of, reporting and controlling project expenditure met best practice criteria

Reporting actual vs. budget figures quarter-to-date was incorporated and improved the quality of control and reporting in project expenditure

Travel costs in hindsight were underestimated and the overrun accommodated from project contingency

Implementation support was underestimated and will be an important aspect of any future ASTC/ASX project. Experience with CHESS should prove very useful in planning and budgeting for this component of future projects

Ideally projects should ensure that where project plans are rebaselined, the project expenditure budget is reviewed to reflect revised plans.

4.5 Resource Management

4.5.1 Purpose

To provide the correct resources, in the necessary quantity and at the required time, to be able to complete the project within schedule and cost targets.

4.5.2 Form and Approach

When a schedule has been developed the required resources should be set out, showing:

- the person or skill, or other type of resource
- when they are required to become available (taking account of training, induction or acquisition time)
- for how long the resource will be required
- the proposed source of the person or other resource: internal department, external agency, recruitment etc. In the case of other resources, the supplier, etc.

4.5.3 Measures of Adherence to Best Practice

- correlation of resource plan to activities contained in the project schedule
- completeness of resource planning, including equipment and facilities
- optimisation of resource usage, to minimise peaks and troughs
- frequency and regularity of review of resource usage against forecast and appropriate update of forecasts.

4.5.4 CHES Resource Management

Refer:

"CHES Development Plan and Budget" 5 May 1992

Section 7. - "Peak Project Staff Requirements"

Appendix A - "CHES System Development Estimates"

Appendix B - "Environment Development Estimates"

Appendix C - "Estimates of Phase 1 and Phase 2 Composite Activities"

"CHES Development Framework" August 1992 Version 2

"Development Schedule and Task Definitions" 19 August 1992

4.5.5 Summary Findings

Resources include people, premises, computing equipment, training, networks, software products, magnetic media, material and other consumables. It was suggested and agreed to use generic resource types where specific individuals could not be identified.

Projects need to maintain a watchful eye on resourcing of activities which involve third parties, their decisions and regulatory matters. This is an aspect of any project which is the most difficult to resource given the degree of uncertainty which surrounds third party activities and outcomes.

Preliminary estimates of technology needs at the outset are essential and will be refined to specific componentry as the project progresses. This is often the only pragmatic way to plan for such resources in both budgetary and capacity senses. As detailed design stages are complete, so detailed sizing of processing capability will be completed. This will cover development, testing, production and fall back facilities.

Increasingly in large complex projects specialist expertise is provided by third parties, eg. Legal and Regulatory. In planning such projects, organisations should focus on their core capabilities, resource those accordingly from within and procure other specialist skills from outside. The results of this approach then must be budgeted accordingly, and those third parties' performance monitored as if they were in-house resources.

Performance simulation under load conditions are vital aspects of resource management and should be encouraged to occur as early as practical in the Systems Development Life Cycle. Such simulation should also be repeated as changes to scope and subsequently design specifications are implemented.

Projects of the nature of CHES require resourcing of the core CHES team, but also of participant teams. In planning major project events, it is important to recognise the resource constraints that participants usually face and build in some contingency accordingly to accommodate slippage.

Never underestimate the demand for User Support resources when implementing a project as complex and radical as CHES.

Anticipate and resource accordingly for the documentation and handover of commissioned systems to Production Support.

5. Project Support Issues

The following aspects are covered in each of the subsequent subsections:

Change Control

Estimating

Quality Management

Configuration Management

5.1 Change Control

5.1.1 Purpose

To manage and control the recording, assessment, approval and implementation of changes.

5.1.2 Form and Approach

The process should cover:

- development of standard change control documentation
- guidelines for assessing the impact of change
- definition of roles and responsibilities
- procedures for approval.

It should be applied consistently throughout the project by:

- logging receipt of all requests
- conducting preliminary screening
- managing the assessment process
- submitting for approval to the Steering Committee
- amending the project plan for accepted changes
- maintaining a record of all requests.

5.1.3 Measures of Adherence to Best Practice

- acceptance and ease of use of the change control system
- provision for a fast track procedure for urgent changes
- restriction of application of change control to deliverables which have been agreed and baselined
- assessment of time, cost and scope impact before proceeding with a change
- management of implementation of authorised changes to minimise disruption.

5.1.4 CHES Change Control

Refer:

"CHES Development Framework" August 1992 Version 2 Section 2.2

5.1.5 Summary Findings

CHESS enjoyed a comprehensive change Control process and used this to limit changes in Phases 1 & 2 to those considered to be essential.

Accreditation of interfaces to third party (participant) software which interacts with CHESS was a critical aspect of both Phase 1 and Phase 2 implementation. Having been accredited such interfaces will change from time-to-time as a result of changes initiated by CHESS and agreed with the industry generally. Assessing the extent of such changes and the need for re-accreditation of interfaces is a complex matter requiring careful consideration. The resulting policy has wide ranging implications:

- it will apply for the life of CHESS
- it has significant resource implications which should not be underestimated.

CHESS is an industry-wide system with high availability/performance standards. There is always the risk that an interface to participant/supplier software could cause CHESS services to fail. Rigorous re-accreditation criteria will reduce the risk of such occurrences.

5.2 Estimating

5.2.1 Purpose

To provide an accurate description of resource, time and cost requirements to perform specific tasks.

5.2.2 Form and Approach

An effective estimating system is multi-staged:

- before project scoping, estimates for major components by comparison with similar projects (the "estimating base")
- after scoping, estimates for hardware and software costs, using parametric methods. Still fairly imprecise
- after requirements definition, aggregation of estimates for detailed project tasks
- when the design is complete, establishment of fixed budget, based on specific costs of each development activity.

All stages should allow for contingencies, whose magnitude is dependent on the accuracy of the estimate and the level of risk anticipated.

5.2.3 Measures of Adherence to Best Practice

- understanding of the issues and definition of the work
- reliability and relevance of historical estimating base
- extent and completeness of documentation of assumptions
- involvement of the people responsible for doing the work in estimating the effort, time and cost.

5.2.4 CHESS Estimating

Refer:

"CHESS Development Plan and Budget"

5 May 1992

5.2.5 Summary Findings

The estimating method employed for assessing the scale of system development is a widely adopted industry standard.

There was plenty of complex systems development experience in the CHESS team which added a further level of confidence to these estimates and the capacity planning approach taken for configuration sizing and performance simulation.

The Post Implementation Review process should be used as a basis for revisiting original system development estimates in the light of actual resource usage. This will provide powerful validation of the estimating method and also add to the body of experience related to software development estimating within ASX.

Similar comparison should also be undertaken to validate the accuracy of capacity planning and performance simulation with live production experience.

5.3 Quality Management

5.3.1 Purpose

To define, implement and monitor the methods, systems and procedures necessary to guarantee that the project deliverables are developed and completed to the required standard.

5.3.2 Form and Approach

There are two aspects to quality management:

- Quality Assurance (doing the job right first time), which depends upon establishing all necessary standards and procedures, eg:
 - specification standards
 - coding
 - design standards
 - annotation
 - database design
 - documentation
 - program structure
 - test plans
 - validation
 - formats and protocols

- Quality Control (ensuring the job is done right the first time), which involves checking that standards and procedures are followed. This should be delegated to team leaders, who should monitor and sign off all items of work presented for approval by their team members.

5.3.3 Measures of Adherence to Best Practice

- acceptance of all project team members of responsibility for quality
- incorporation of quality from the start, rather than as an afterthought
- comprehensiveness of quality control (application to all aspects of the work)
- acceptance of quality assurance as a formal reflection of good practice, not an irrelevant procedural burden.

5.3.4 CHESS Quality Management

Refer:

"CHESS Development Framework" August 1992 Version 2

5.3.5 Summary Findings

Quality Assurance processes - the basis for ensuring quality is engineered - in from the outset and not bolted on as an afterthought - in CHESS were of a high order.

Systems development is a notoriously difficult discipline in which to apply quality standards. CHESS is to be commended for its application of quality principles.

5.4 Configuration Management

5.4.1 Purpose

To define and control the elements of a system throughout the project life cycle.

5.4.2 Form and Approach

Effective configuration management must accurately record:

- the status of the individual components that make up the system: documentation, software and hardware
- the build status of each of the releases of the system: development, test and live.

This requires formal procedures to:

- identify the components of the system which will be maintained as individual configuration items
- allocate responsibilities for the tasks involved
- record the status of nominated items
- physically maintain the configuration items
- provide information on configurations to the project team.

5.4.3 Measures of Adherence to Best Practice

- early establishment of clear and comprehensive configuration plans
- quality of documentation and team understanding of the links with change control
- appropriateness of the complexity and formality of the configuration methodology to the scale of the project.

5.4.4 CHES Configuration Management

Refer:

"CHES Development Framework" August 1992 Version 2

5.4.5 Summary Findings

A project such as CHES has a critical dependence upon third party participants' ability to interact with the system in order that the Transfer and Settlement services occur. These services are now entirely electronic and rely upon a degree of technical compatibility with the Central CHES System.

Configuration Management - a comprehensive list of system componentry and associated version numbers/release levels - is an important aspect of testing and implementation strategy. This will ensure that all parties know what they are required to provide in terms of technology and software to allow successful CHES interaction.

All IT projects face this problem, and will benefit from the disciplines associated with Configuration Management.

6. Assessment Issues

The following aspects are covered in each the subsequent subsections:

Risk Assessment and Management

Project Evaluation

Post Implementation Review

6.1 Risk Assessment and Management

6.1.1 Purpose

To identify, assess and manage possible risks to the success of the project in meeting its cost, time and scope targets.

6.1.2 Form and Approach

All risks should be identified and each risk should then be evaluated in terms of its likelihood of occurrence and the impact if it does occur.

Actions should then be identified to reduce the likelihood of occurrence or reduce the impact or both and the risk re-evaluated. These actions should then be included in the schedule to ensure that they are carried out.

6.1.3 Measures of Adherence to Best Practice

- promptness of identification of risks

- consistency of monitoring and reassessment throughout the project
- extent to which contingency plans and risk reduction actions are realistically defined and incorporated into the schedule and risk management plan
- degree of emphasis on threats where the risk is highest and the impact greatest (ie cost/benefit optimisation in risk management).

6.1.4 CHES Risk Assessment and Management

Refer:

"CHES Development Plan and Budget" 5 May 1992 Section 2

6.1.5 Summary Findings

Risk Assessment and Management is an ongoing activity within any project. It was reassuring to observe the periodic Risk Assessment and Management activity which occurred throughout the life of the CHES project.

Risks were prioritised and containment action quantified before being included within the schedule.

Perceived Risks which were outside of CHES' ability to manage or control were identified. This was largely in the area of Legislation and Regulation and participant readiness. Having recognised such risks, a senior project resource was tasked with closely monitoring and reporting their status in order that appropriate escalation action be taken when needed.

CHES was unusual in that such a broad range of external issues:

- Legislation

- Regulation
- Participant readiness
- Industry rules

each had the potential to derail the project.

The project should be commended in the way they were able to manage their way through these matters to achieve a successful outcome.

6.2 Project Evaluation

6.2.1 Purpose

To assess the viability of project options, to obtain commitment from the business to a chosen option and to reconfirm at regular intervals.

6.2.2 Form and Approach

Criteria for evaluation will cover:

- management issues, such as costs, benefits and the strategic importance of the project (the business case)
- technical aspects, for instance conformance to standard architectures and fit within the organisation's existing systems.

Evaluation should be repeated at milestone points to ensure that what is being done still meets the criteria set. If changes to business needs alter the criteria project evaluation identifies what aspects of the project need to change to satisfy the new requirements.

6.2.3 Measures of Adherence to Best Practice

- degree of involvement of both user (business) and technical managers in the evaluation
- incorporation of evaluation as a formal project stage
- extent of re-evaluation of risks, costs and benefits, at each stage
- acceptance of consideration of the "do nothing" option as the base case
- frequency and regularity of re-evaluation.

6.2.4 CHESS Project Evaluation

Refer:

"CHESS: The Business Case" 31 May 1991

All Impact Reports

"CHESS Development Framework" August 1992 Version 2

6.2.5 Summary Findings

CHESS experienced a long gestation period before it became a development project and received its SIDA funding.

As such, the usual application of Project Evaluation techniques was largely irrelevant. The technique is, however, particularly applicable to projects in their formative stages and should be encouraged. As a device, Project Evaluation is a simple but powerful process to progressively refine and approve project viability stage by stage, prior to application development.

6.3 Post Implementation Review

6.3.1 Purpose

To establish whether a project:

- delivered the predicted benefits
- was executed in the most effective manner
- provided an adequate technical solution.

6.3.2 Form and Approach

The review is carried out after the completion of the project implementation phase. It is in two stages:

- immediately on completion, focusing on:
 - how well the project was executed
 - the effectiveness of the development methods
 - what went wrong and how it can be improved
 - what went well and should be more widely practised
- six to twelve months later, focusing on:
 - experience of operating the system
 - delivery of benefits.

The review should preferably be a formal process, carried out by someone independent of the project team. The objective is to learn lessons, not search for the guilty.

6.3.3 Measures of Adherence to Best Practice

- experience and independence of review team, including both users and technical representatives
- timeliness of establishment of review criteria
- willingness to learn from the review
- avoidance of witch hunts.

6.3.4 CHES Post Implementation Review

Not relevant. Will be assessed at the appropriate time.

6.3.5 Summary Findings

A Post Implementation Review has yet to be conducted for CHES. PA recommends that it be performed within 6 months of the full cutover to CHES Phase 2 and should focus upon:

- realisation of business benefits
- learning points from the CHES implementation experience
- identification and prioritisation of enhancements

7. Other Management Issues

The following aspects are covered in each of the subsequent subsections:

Organisation

Communication

Procurement and Contracting

7.1 Organisation

7.1.1 Purpose

To define, establish and maintain the organisation structure necessary to achieve the objectives of the project and to obtain the right people to execute the project.

7.1.2 Form and Approach

In general, the organisation structure needs to be built around the work breakdown structure. This implies:

- single point of accountability:
 - project manager accountable to the Steering Committee
 - one person responsible for each task
 - person responsible for task reports progress to one person only

- explicit definition of the position, reporting and control of external contractors
- evolution of the organisation through the project life cycle.

7.1.3 Measures of Adherence to Best Practice

- compatibility of the project organisation with the work breakdown structure
- clarity of definition of roles and responsibilities, including contractors
- ability of the organisation to evolve to match the particular life cycle stage of the project.

7.1.4 CHESS Organisation

Refer:

"CHESS Development Framework" August 1992 Version 2

7.1.5 Summary Findings

Organisation of the CHESS project has been appropriate to its task. Yet it has been flexible enough to enable periodic change as needs/emphasis has shifted during the life of the project.

In particular aspects of the organisation structure such as:

- User services
- Legal and Regulatory
- Testing and accreditation

demonstrated the benefits of single point accountability particularly in Risk Management and Containment.

7.2 Communication

7.2.1 Purpose

To establish and operate communication mechanisms to achieve the objectives of the project by informing and obtaining the positive contribution of the right people at all times.

7.2.2 Form and Approach

- one meeting, one purpose; no meeting conducted without an agenda
- action items and decisions should be minuted
 - responsibility for minutes allocated to one person
 - timeframe for publishing minutes explicitly stated
- management committee meetings should:
 - vary frequency according to level of project activity
 - address summary information, not detailed data
 - focus on key issues, not trivia
- non-involvement in system development does not imply lack of interest in the outcome. The ultimate owners and users of the system must also be kept informed, in language they can understand, of progress and milestones which will impact them.

7.2.3 Measures of Adherence to Best Practice

- clarity, relevance and timeliness of communications
- adequacy of feedback mechanisms and responsiveness to requests for information
- control of meetings to achieve focused, action oriented outcomes.

7.2.4 CHESS Communications

Refer:

All Impact reports
Periodic reports to ASTC Board
"Report to Attorney-General's Department for the three month period ending 31 July 1992".

7.2.5 Summary Findings

Industry communication has been a vital aspect of CHESS and has been one of the other activities underpinning its success.

This is a further illustration of the ways in which a project-like CHESS - where there is no single user - can maintain open dialogue with diverse and vocal interest groups.

Communication supported by an appropriate Project Organisation Structure is the key.

7.3 Procurement and Contracting

7.3.1 Purpose

To ensure that services and goods obtained from external suppliers meet the cost, time and scope requirements of the project.

7.3.2 Form and Approach

Suppliers and contractors become, effectively, part of the project team. Contract work remains the responsibility of the project team, even though much of the power to control the associated work directly can be lost. Tenders should define the work required, the schedules and the control requirements very tightly. Control requirements should cover such areas as:

- quality management
- plans
- progress reporting
- rights of audit and inspection.

7.3.3 Measures of Adherence to Best Practice

- degree of fit of contract areas of work with the work breakdown and avoidance of crossing boundaries of responsibility
- appropriateness of the form of contract to the type of service or goods
- rigour of investigation of bidders
- application of formal evaluation techniques
- inclusion of realistic provision for reporting, monitoring and control to all orders and contracts.

7.3.4 CHESS Procurement and Contracting

Not really an issue at this stage. Will be addressed as acquisition of computer hardware and other equipment is scheduled. It should be noted that DEC is the agreed supplier of computer hardware, so management of competitive tenders will not be an issue.

7.3.5 Summary Findings

The project successfully negotiated with its technology supplier to hold prices for a period of 2 years to eliminate potential exposure to currency fluctuations.

There were recurrent faults with a Digital Equipment (DEC) microwave/Co-ax transceiver and DEC supplied disk shadowing software. While the problems which this created were manageable and the faults were eventually cleared, it took too long for DEC to effect a solution.

The performance of the supplier in resolving these problems did not demonstrate the urgency of the matter in spite of the supplier' claims. The nature of CHESs-type application invariably push technology and software beyond normal boundaries in terms of throughput and resilience - itself a risk. However, it may be prudent in future to negotiate some form of Service Level Agreement with associated penalties as a basis for lifting Supplier support performance.

Framework advocates that any third party supplier to a project should be managed as if they were direct project resources. In this sense, reports of claimed progress should be substantiated with evidence in turn supported by Work Breakdown, Estimating, Resourcing and Scheduling processes.

It was quite clear from the outset that the management of participant development initiatives was not a CHESs responsibility.

It was not until Phase 2 that participants started to appreciate that they were responsible for managing their service supplier.

With hindsight, arrangements should have been made earlier in the project for participants to effectively manage and monitor the performance of their service suppliers.