

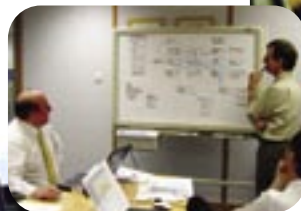


**SEQUOIA** SMART SOLUTIONS



SEQUOIA DESIGNS WORLD-CLASS COMMERCIAL,  
BUSINESS AND TECHNICAL SOLUTIONS FOR SMARTCARD  
AUTOMATED FARE COLLECTION SYSTEMS.

SEQUOIA SMART SOLUTIONS





## PROFILE

Sequoia Smart Solutions is a highly focused transit Automated Fare Collection (AFC) advisor with particular expertise in the application of smartcard technology and in the design of regional multiple application payment, clearing and settlement systems.

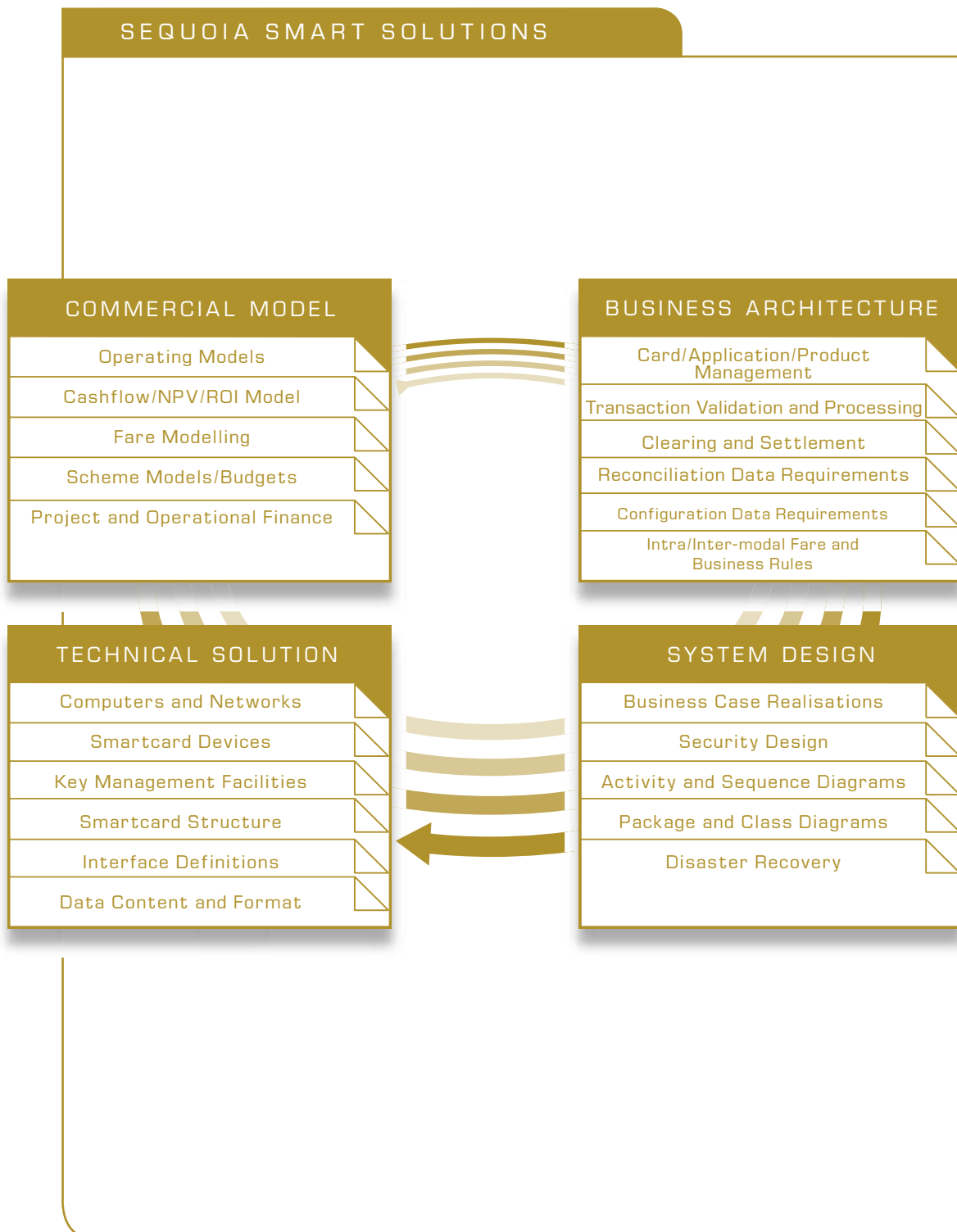
Sequoia provides to clients a comprehensive range of commercial, technical and management advisory services which facilitates the development of cost-effective, convenient, seamless and platform-independent regional transit AFC smartcard systems. Sequoia's independent design approach ensures that customers receive a solution that best suits their requirements and budget.

The group's core competencies range from concept to operation and include feasibility analysis, project tender and specification, management, solution design, development, integration, test, deployment and operational advisory.

Sequoia people have extensive hands-on experience and background in the AFC industry, underscored by the fact that they, either individually or collectively, have been instrumental in the tender and/or design and development of most major AFC systems globally since the mid-nineties, including Berlin, Denmark, Dublin, Hong Kong, Manchester, Perth, Rome, San Francisco, Seattle, Singapore and Sydney.

This combination of skills and experience is exceptional in the AFC industry and represents in excess of 40 man-years of contemporary experience at major sites around the world.

SEQUOIA'S UNIQUE COMBINATION OF SKILLS,  
 EXPERIENCE AND METHODOLOGY GENERATES  
 A UNIFIED DELIVERY PROCESS.





## THE SEQUOIA INTEGRATED APPROACH

With Sequoia's knowledge spanning an integrated set of models across the commercial, business and technical development infrastructures, and with the experience to operate as both subject matter experts on the span of AFC issues, and project life-cycle advisors, Sequoia is able to advise expertly at any stage of a project and add significant value.

Whether a client needs to extract a commercial or social outcome from an existing technical infrastructure, or wants to establish a technical framework to deliver a commercial and social outcome, Sequoia has the expertise to ensure a successful and cost-effective result.

The integrated process employed by Sequoia provides operators with an improved NPV and ROI on the overall project delivery model. Furthermore, by allowing the operator to contribute to, and retain ownership of the project's interoperable design, Sequoia provides a technical solution which facilitates freedom of choice in components (both software and hardware) for the life of the project and operations.

This collaborative approach gives operators all commercial, business and system alternatives at the beginning of the project and the opportunity to make fully-informed operational and strategic decisions. Sequoia's overriding focus is on maximising the Operator's return on investment on the Smartcard Automated Fare Collection infrastructure.

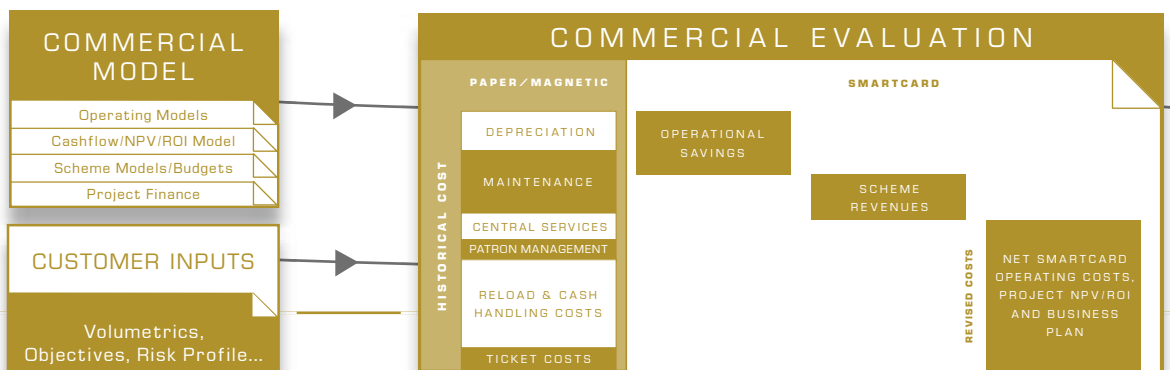
SEQUOIA'S PRIME COMMERCIAL FOCUS IS ON  
 MAXIMISING OPERATOR ROI ON SMARTCARD  
 AUTOMATED FARE COLLECTION INFRASTRUCTURE.

COMMERCIAL MODEL

**The Sequoia principals have in depth experience with:**

- Smartcards in AFC business case evaluation and validation,
- Optimisation of operational structures and best-practice reporting systems,
- Development of commercial schemes to extract value from the smartcard AFC infrastructure,
- Fare Modelling,
- Scheme operational management support,
- Construction of public/private partnerships, with detailed operational scenario experience in smartcard bureaux and in the efficient allocation of service contracts between the public and private sectors.

Importantly, Sequoia can numerically illustrate and forecast the impact that a smartcard AFC system will have on an operator's capital and operational cost base, and can then continue to monitor and control the forecast as the design evolves, thus ensuring a full audit trail of costing proposals.





## BUSINESS ARCHITECTURE

Sequoia Principals have been at the forefront of developing the business models that enable and support AFC commercial schemes.

**Sequoia is intimately familiar with the required and usually complex business relationships between:**

- Scheme regulatory bodies
- Transaction Acquirers
- Reload Acquirers
- Merchant Acquirers
- Card Issuers
- Application Issuers
- Product Issuers
- Service Providers and
- the Cardholder

**and is skilled in identifying their functionality requirements, including:**

- Card Management
- Application Management
- Product Management
- Clearing and Settlement
- Reconciliation
- Dispute Management (Claims)
- Transaction Processing
- External Interface requirements
- Configuration Data
- Action List management
- Intra/Inter-modal fares

Sequoia has developed a set of ‘core’ requirements documents which have been specifically designed to facilitate customisation by any scheme to meet its local regulations, requirements and business rules. These templates provide an integrated, consistent and comprehensive coverage of core functionality from Issuer, through reconciliation between scheme participants, to Operator reporting and smartcard device configuration, operation and management, all within an appropriate security regime.

This documentation set significantly decreases the time and risk associated with the preparation of a full-scheme documentation set, to be issued either as tender documentation, or to provide to a supplier to facilitate a build of the required system solution.





## SYSTEM DESIGN

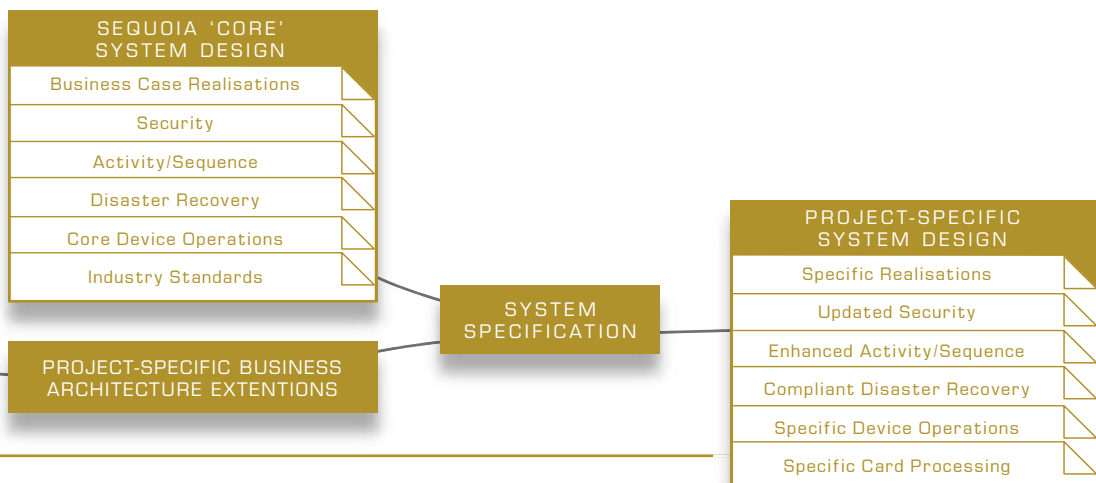
Sequoia's expertise is system-wide and multi-dimensional; encompassing both the software design realisation of business requirements as well as the definition of the infrastructure needed to achieve the solution – from major back-office elements such as the Card Issuer system, right down to the definition of the data format of the smartcard, and all tiers in between.

### Design elements include:

- **System Architecture:** Package and Class Design, Activity and Sequence Design
- **Security:** Strategy, Policies, Risk Management, Key Management, SAM Management, Access Control & Audit
- **Fare-Collection Devices:** Configuration, Business Rules, Operation, Transaction Delivery
- **The Smartcard:** Data and Security
- **Backup & Restore**
- **Disaster Recovery**

### Sequoia's significant hands-on experience facilitates the management of the integration of the system solution, including provision of:

- Design Authority
- Development Co-ordination
- Software Test and Certification
- System Configuration and Configuration Control
- System Growth Strategy and Implementation
- Obsolescence Planning and Management
- RAMP Continuity





AT THE CORE OF SEQUOIA'S EXPERTISE IS ITS EXTENSIVE SMARTCARD AFC SYSTEMS AND TECHNICAL EXPERIENCE; FROM THE SMARTCARD TO BACK-OFFICE, FROM CONCEPT TO OPERATION.

## TECHNICAL SOLUTION

Through hands-on experience in the design and development of electronic transaction processing systems, Sequoia's technical coverage is comprehensive and reliable in the essential elements of the system solution, including:

### Technical Architecture:

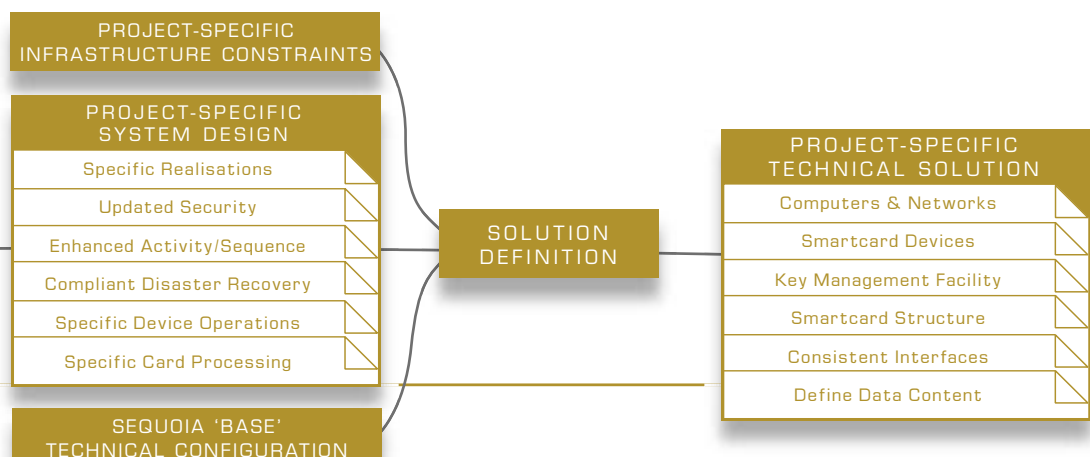
- Computers and Networks
- Station and Depot Computers
- Smartcard Devices
- Security facilities

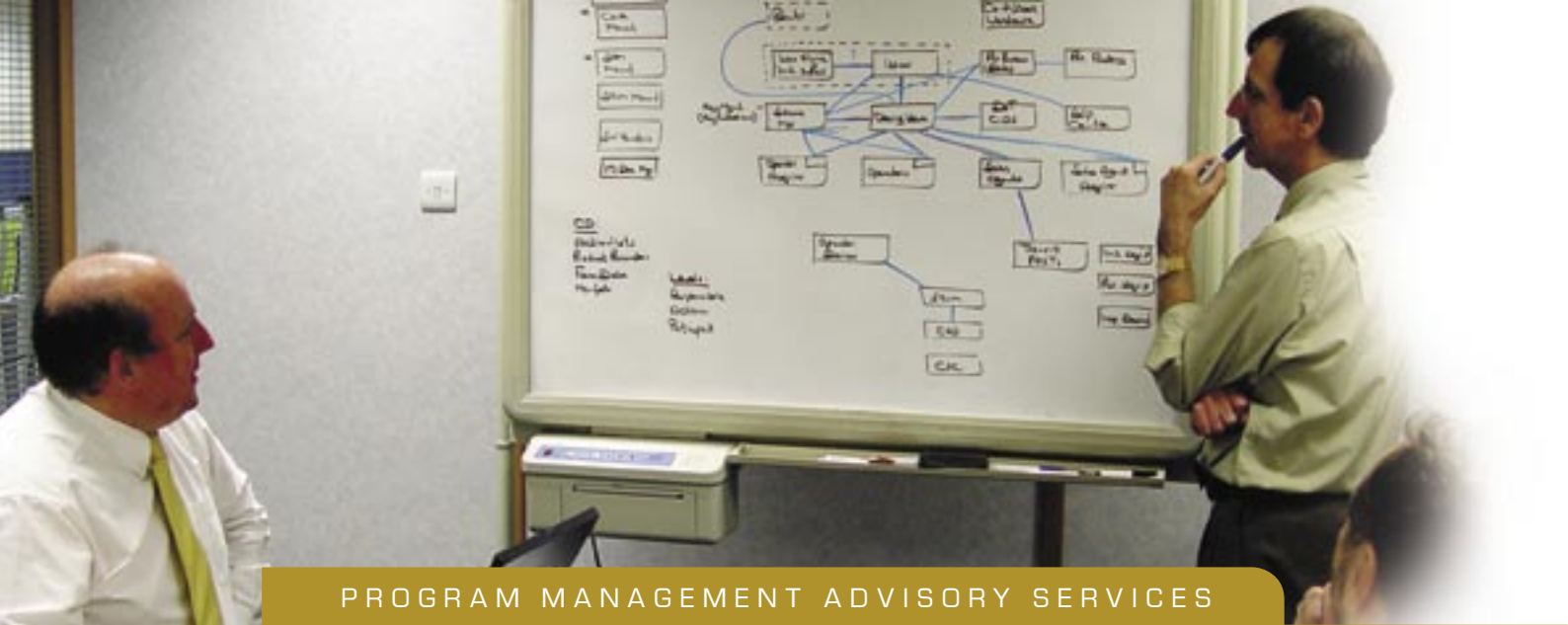
### Data Management:

- Databases
- Management Screens
- Configuration and Transaction data

### Smartcard:

- Data Design, Interface, and Operational safeguards



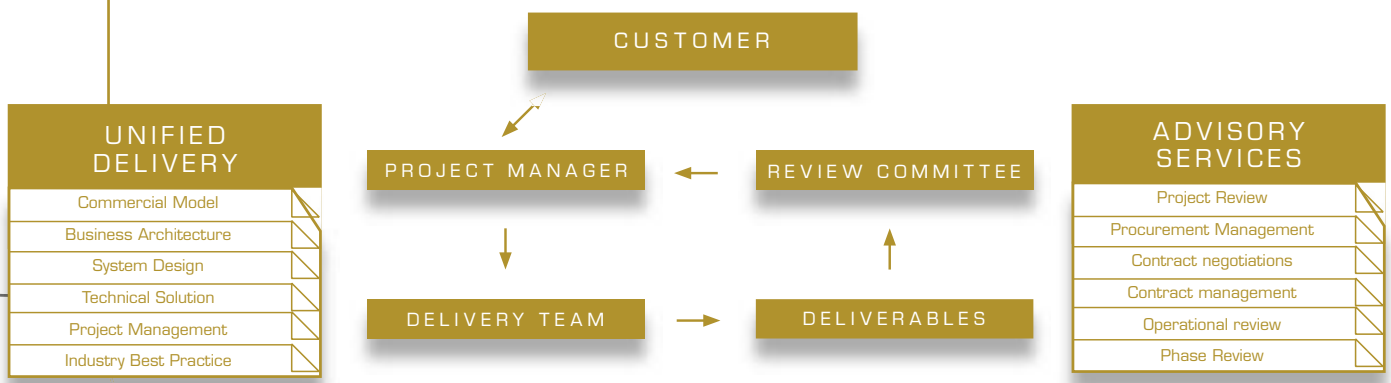


## PROGRAM MANAGEMENT ADVISORY SERVICES

Sequoia believes that successful AFC solutions are underpinned by a combination of the selective application of key program skills, specific industry experience and leading edge knowledge of developments in the industry. The strong relationships within Sequoia ensure that client Project Managers are kept up to date with all facets of a solution delivery.

### Specific Sequoia project management services include:

- Evaluation and definition of processes and services, and management of the process
- Contractual and commercial management services
- Contractor/developer evaluation, selection, management and review services
- Progress audit services
- Technical audit services
- Program management services

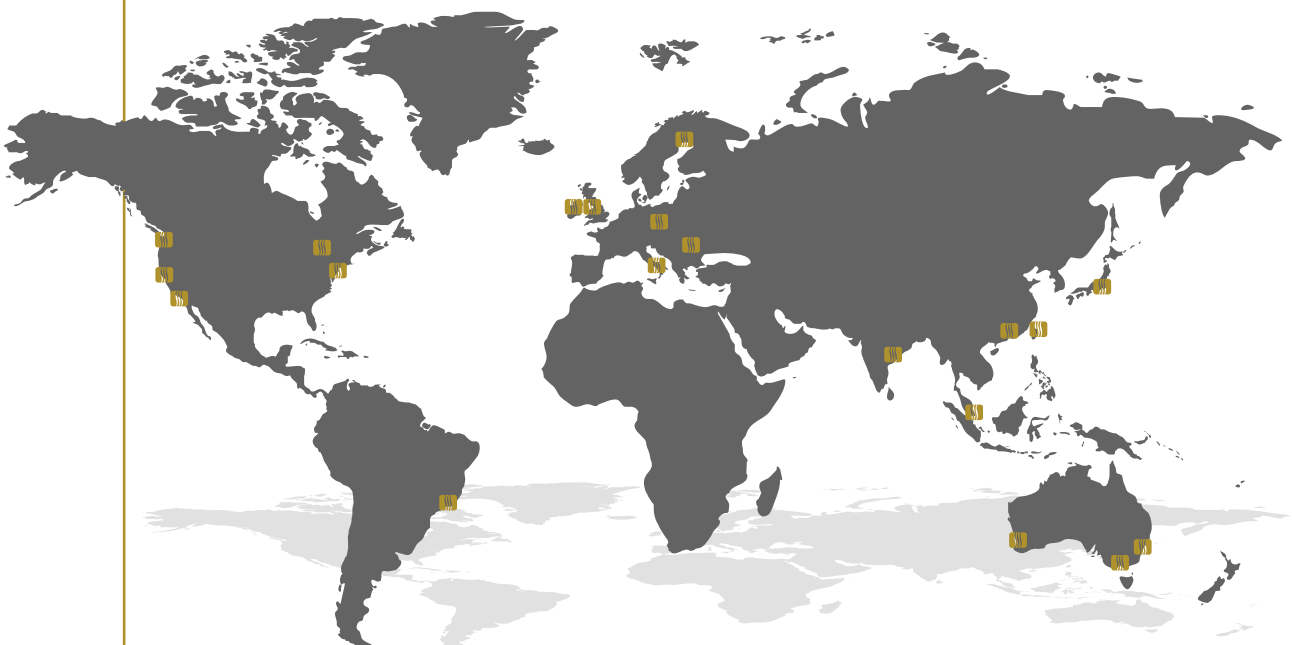


SEQUOIA PEOPLE HAVE MANAGED MANY OF THE WORLD'S MAJOR TRANSIT SMARTCARD DEVELOPMENTS. THE RESULT: EXPERIENCE, CAPABILITY, INTEGRITY, DELIVERY.

## OUR EXPERIENCE

Emanating from Sequoia's methodology are both the deployment of solutions and the provision of advice by experienced professionals. Sequoia people (principals and associates) have been responsible for the overall tendering, contract negotiation, analysis, design, development, testing and commissioning of many of the key smartcard AFC projects operating throughout the world today.

And whilst Sequoia's methodology is process-oriented, resulting in the delivery of well-integrated solutions based upon unique expertise and hard-won experience, it is Sequoia's people who provide the defining character of the company; forming a pro-active and balanced resource group to whom the customer can turn for guidance, advice, and ultimately, the provision of a world-class solution to the AFC problem.





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