

The Client

Santa Casa da Misericórdia de Lisboa (SCML) was established in 1498 and is the largest social assistance organisation to the poor and homeless in Portugal, holding a monopoly on national lotteries and lotto games, whilst also being a significant property owner.

The System

- 6 applications that manage all the institution's social assistance activities;
- Developed continually since early 1970s;
- Approximately 90 FMS screens and 85 online COBOL programs (business and presentation logic mixed);
- 130 batch programs, producing over 90 reports including check prints, receipts and reports for SAP;
- 185 VMS scripts used to define the batch processes sequence and screens routing;
- Data model based on sequential and indexed files (160);
- Client also had a separate Oracle Forms application which was undergoing a migration through ATX using Forms2Net.

The Challenge

30 years of continual development had left a very heterogeneous system following different coding patterns. FMS technology, like 3270 technology, imposes a design restriction whereby presentation logic is mixed with business logic. Furthermore, the longevity of the system and its inherent technology also allowed various bad coding practices, including:

- Same copybook used to hold different data structures;
- Different copybooks used to hold same information;
- Shared data structures used in multiple programs, each with different definitions;
- Data format errors in reports.

The project had to be completed within six months to avoid paying the renewal of emulator licence fees. Furthermore, the migration also had to take place simultaneously to the Oracle Forms application migration.

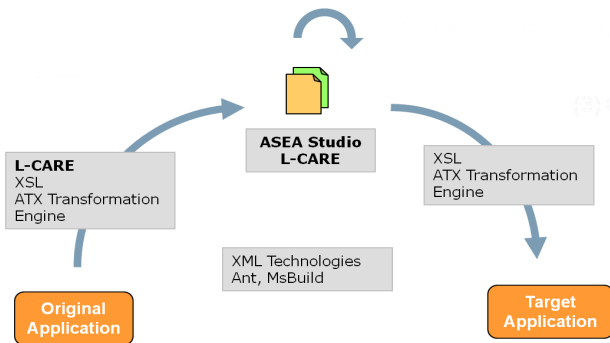
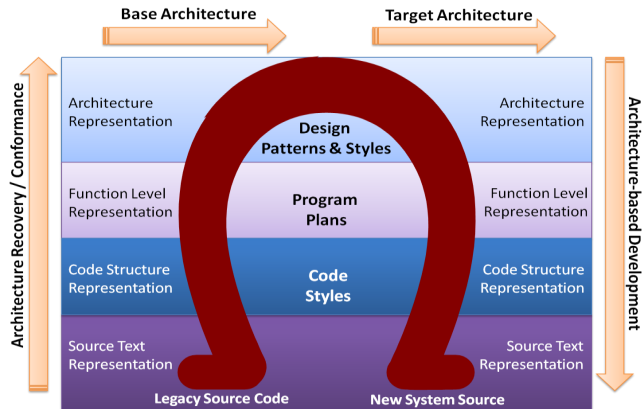
The client required a single target architecture and platform for both projects to ensure consistency between systems. ATX had to adapt code generators to address the MVC architecture output by Forms2Net.

The client also required ATX to perform a data migration and conversion (EBCDIC to ASCII) that could be used throughout the project since data was changing daily.

Methodology

ATX followed an internal migration reference model, based on the Horseshoe Model from the Software Engineering Institute. It involves performing design recovery on the source application to achieve an internal meta

This meta model is then mapped to lower level specifications and then source code using ATX code generators. This facilitates a language-independent reengineering methodology.



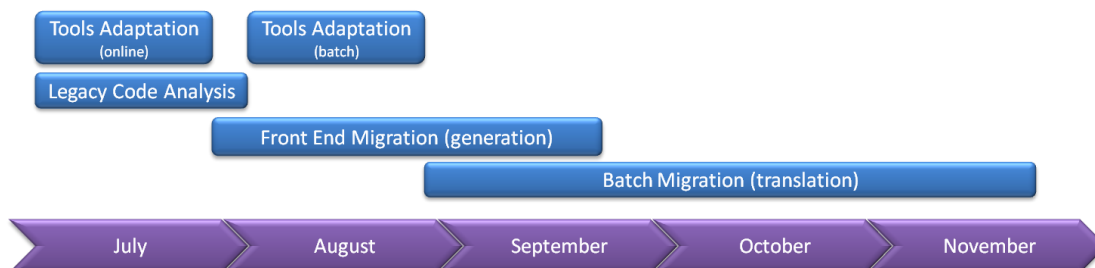
Tool Support

ATX's migration and reengineering strategy is tool-supported to ensure a fast, efficient transformation from source to target. Our L-CARE environment performs design recovery to extract the application meta model. Then, the application of custom code generators to the meta model results in the target application. The code generators were customized for this particular project. This method also allows for the introduction of new requirements at the meta model stage, should the client wish.

The combination of tool support and an intermediate meta model means that ATX supports a variety of source languages such as COBOL and Oracle Forms, and a variety of output languages, such as Java and .NET.

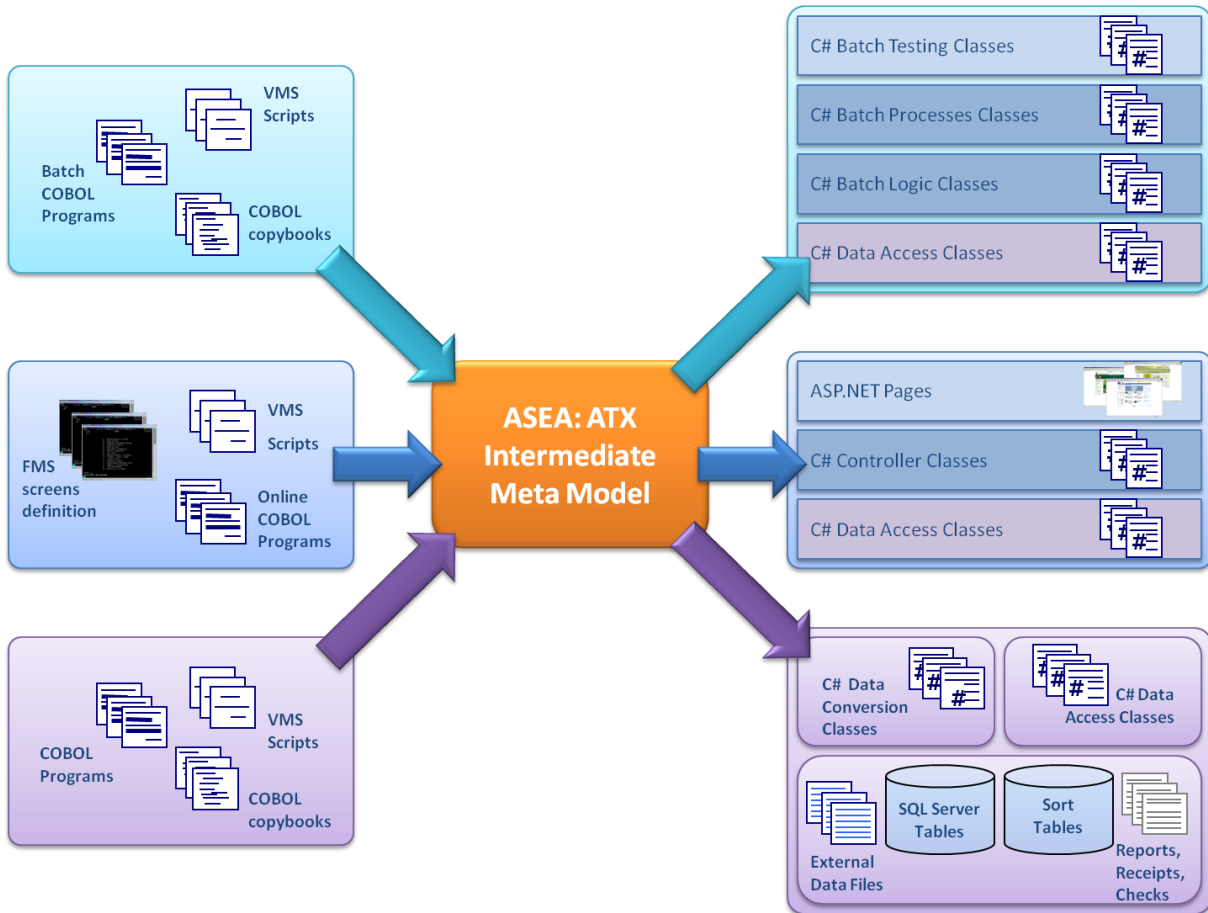
Project Timeline

The project involved a tool adaptation team and a migration expert team. Tool adaptation took 3 weeks (3 people part time). Front End migration took 13 weeks (4 people), including 10 weeks for testing. Batch migration took 3 months (4 people). Data migration and conversion took 3 weeks.



Migration Strategy

The diagram below describes the overall migration strategy from COBOL to .NET.



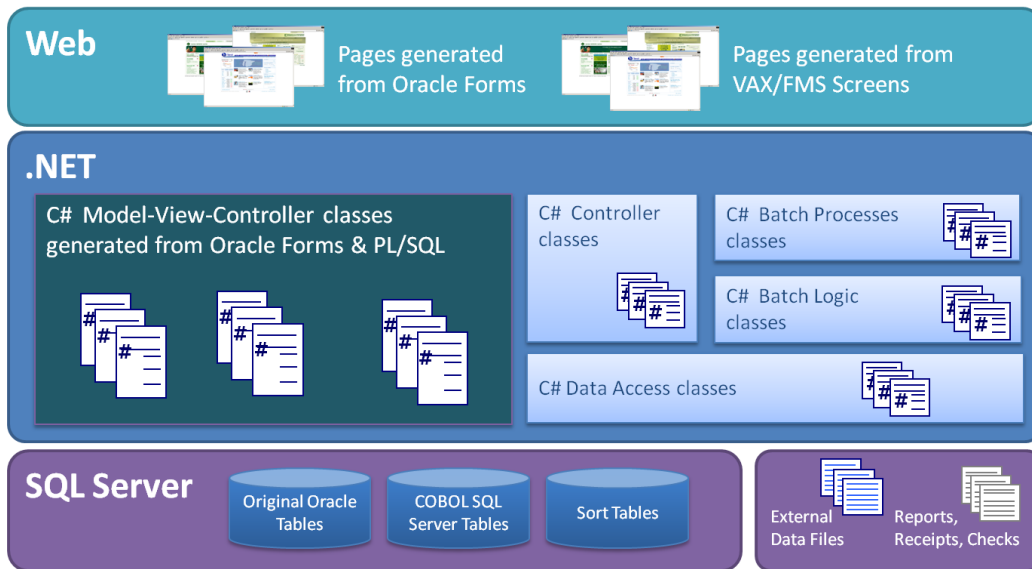
Data Layer Migration

All data in the original system was based on sequential and index files. Through automatic scanning and analysis of the source code, the data persistence structure and characteristics were captured, and afterwards each element was categorized according to the new components, including SQL tables and reports. From these activities it was possible to generate DDL scripts for the final model.

Additionally, in order to isolate the code that directly handles database access, an independent library of C# classes was automatically generated.

Final Architecture

The diagram below shows the architecture of the migrated COBOL application, together with the architecture of the migrated Oracle Forms application. The consolidation of two systems into one was a choice made by SCML to reduce maintenance costs and promote integration. In order to keep end-user training costs down, the client also added a requirement to keep the actual FMS layout familiar to their users. Forms2Net generated solutions maintain the same look and feel from the Oracle Forms application as far as possible.



The Result

The migration was successfully performed by ATX in a reduced project time span. The result for SCML was a fully working .NET application with no further need for a mainframe environment. The client was primarily involved in analysis and requirements, with intervention in the actual migration process only to confirm ATX's interpretation of ambiguous issues, such as validating obsolete code or unnecessary modules.

ATX performed unit and integration tests on the migrated application prior to delivery. The client performed acceptance tests after delivery to ensure for themselves that the migrated application had equivalent functionality to the original.

The successful migration away from SCML's COBOL application will lead to cost savings through non-renewal of VAX/VMS emulation licences. Furthermore, SCML was able to homogenise their systems into a common architecture in .NET. End users required minimal training on the new application as the views followed closely those of the original application.

ATX provide ongoing support for the client by arrangement, but SCML do not make any further use of proprietary technology licensed by ATX.

Pre-Migration

DGIP 18-JUN-08

PREDIOS URBANOS

- 1 - Novos
- 2 - Alterações
- 3 - Visualização
- 4 - Ecran Anterior
- 5 - Saída

Opção: 0

D.A.S. Subsídios Mensais

Alteração

N. 18901 Nome: CECILIA MADEIRA ARAUJO Conc.: /19
Dt.Nasc: 1927/11/05 Natural: 11-06-16-GRACA Tipo Doc: BI
Sexo: F - LISBOA Cód. Doc: 6014545
Morada: LG DA GRACA 132 2 ESQ C.Postal: 1100-LISBOA

Serviço: 2120000000-DIRECÇÃO DE ACÇÃO SOCIAL LOCAL SUL Proble 1º-1011-INSUFICIENCIA DE COBERTUR
Processo: 5301411 Validade: 7/2008 mas 2º-1412-OUTROS
Técnica: 402-MARIA ALEXANDRA BASTOS VIEIRA

Finali- 031 - 50.00 Eur-IDOSOS EM SITUACAO DE CARENCIA
dades 000 - 0.00 Eur-
(Subsidio) 000 - 0.00 Eur-

Banco: 35-CAIXA GERAL DE DEPOSITOS
Balcao: 0698-LG.D.JOAO DA CAMARA Documento Tipo: BI
Procurador: 1-NATALIA MENDES BARATA CARDOSO REIS Cód: 1081973
Morada: LARGO GRACA 132 2 ESQ Guardar? (S/N):
Cod.Postal: 1100-LISBOA Seguinte <RET> Anterior <BS> Ajuda <PF2> Terminar <PF4> Códigos <F20>

DGIP

PRÉDIOS URBANOS

2. AS MORADAS

VISUALIZAÇÃO

PRÉDIO: 0
CÓDIGO: 0

MORADA

OK.

TERMINAR <PF4> HELP <PF2> ANTERIOR <BCK>

Post-Migration

The screenshots show the migrated web application interface. The main page features the logo 'SANTA CASA' and the tagline 'Misericórdia de Lisboa. Por boas causas.' Below this, there is a navigation menu and a section for 'Utilentes de Equipamentos' with a search form. Another screenshot shows a 'Display de Prédios e Rendas de Casa' page with a table of property data and a search form for 'Prédio' and 'Morada'.

Ánulo	Tip.	Pa.	Ord.	Tip.	Nome	Ord.	Mês	Valor	Valor	
								Urb.	Renda	
1201	1	2	1	1	PRÉDIO GRD IMPOR EDIFC LDA	1	1983	6	854,00	
1221	1	2	1	1	REDAZINHOS ACT ESTORFAS	22	4	1970	2008	241,70
2201	1	1	1	1	ANK C.P. PAREDELA ANDARA	7	2	1969	2	129,20
2211	1	1	1	1	M ISABEL CHAVES B E CUNHA	21	3	1969	2	142,30
2221	1	1	1	1	JOSE CASTELO MARANA	21	3	1969	2	142,30
Total do Prédio						63	6	6	6	160,67

ATX Technologies Ltd provides innovative and powerful solutions as well as a comprehensive set of services for companies and organizations that wish to modernize their software applications or improve their development process and software infrastructure. Our mission is to help our clients survive and grow in the turbulent markets of today by relying on IT systems that are agile in responding to business and technological changes, and can maximise efficiency across organisational structures.

Our mother company - ATX Software SA - has been in operation since 1996, when a team of young graduates decided to channel their creativity to the development of cutting-edge software engineering tools. During this period, we have built a wide portfolio of clients in the public and private sectors, both nationally and internationally, who have been using our services and solutions (often in more than one occasion) with improved results in cost effectiveness, productivity, quality and performance.

One of the main keys to our success is the degree of technological innovation and specialization that we have achieved. Our investment in R&D has been paramount for developing technology that is both cost effective and highly innovative. The fact that we have been full partners of several European research projects and networks has allowed us to remain at the cutting edge end of IT and be competitive in what is a very fierce market.

Our partnership with the University of Leicester (initially sponsored by the European Commission) has given us the opportunity to engage with - and recruit from - a highly qualified pool of people. We take pride in having put together a flexible, multinational team of top professionals, which has allowed us to adjust to - and cope with - different project scales and market needs.

These factors are key to our ability to deliver the highest possible return to our customers and we are committed to developing and expanding them further.

For more information, please go to www.atxtechnologies.co.uk.

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