



Prepared for the eGovernment Unit

DG Information Society and Media

European Commission

eGovernment
*Interoperability at Local
and Regional Level*



Good Practice Case

e-Enabled Child Benefit Service in Ireland

Case Study

30 September 2005

	<p>Case study prepared by Ralf Cimander and Herbert Kubicek (ifib, Germany), in co-operation with Larry Cashman and Paddy Doherty from Client Identity Services and Ger Coughlan, Reach; all from Ireland.</p>
<p>eGovernment Unit DG Information Society and Media European Commission</p>	 <p>CERTH The Centre for Research and Technology Hellas</p>

Table of contents

1.	e-Enabled Child Benefit Service in Ireland	2
1.1	Case Summary	2
1.2	Problem addressed	3
1.2.1	Specific Problem	3
1.2.2	General Background	5
1.2.3	Policy context and strategy	6
1.3	Solution	7
1.3.1	Specific Objectives	7
1.3.2	Implementation	10
	- Workflow description	10
	- Resources	14
1.4	Features making it a candidate for good practice exchange	19
1.4.1	Impact	19
1.4.2	Relevance of the case for other administrations that could learn from the experience	21
1.4.3	Transferability	22
1.5	Results	23
1.6	Learning points and conclusions	24
1.7	References and links	28
	Annex 1: Assessment Questionnaire for the MODINIS Case Descriptions	29

1. e-Enabled Child Benefit Service in Ireland

1.1 Case Summary

The Irish child benefit service is the first eGovernment development in Ireland that e-enables life event data to the benefit of both, customers and the public service providers. Child benefit in Ireland is paid to children under the age of 16 or, if aged between 16 and 19 years, the child must be in full time education or training or be physically/mentally dependant on the parents. Child benefit is currently being paid for more than one million children, with more than 62,000 claims for new births and a variable number of claims by new residents every year.

The child benefit service is part of a wider Irish programme to e-enable life-event data more generally. The foundation of this programme is the development of the "Public Service Broker" (PSB) which is currently under way with the view to fully leveraging the potential of eGovernment concerning the use of life-event data.

The relevant developments made in the child benefit sector include a major re-organisation and development of the back-end child benefit system and, most significantly, developments in the civil registration process in Ireland that support automatic and proactive triggering of the initiation of the child benefit claim after the birth of a child.

The fundamental objectives in relation to the child benefit service and the PSB in general are:

- the introduction of a modern civil registration service,
- electronically sharing life event data between agencies via the Inter-Agency-Messaging Service (IAMS)
- automatic allocation, by the DSFA (the child benefit agency), of a Personal Public Service Number (PPSN) to a child on receipt of electronic notification of the birth,
- automated processing of child benefit claims following allocation of the PPSN,
- delivery of integrated and e-enabled services for customers,
- re-engineering of back-office and legacy systems.

From the perspective of child benefit services in Ireland, the combined goal of the three related initiatives - redesign of the child benefit (CB) system, modernisation of civil registration (GRO) and inter-agency linkage and messaging system (IAMS) - was to e-enable the process of initiation of child benefit claims. This required back-office and IT system developments in both the child benefit and civil registration services, as well as the development and implementation of a conduit for electronic notification of birth registrations from the civil registration service to the child benefit service. In relation to this overall goal, the specific objectives were to:

- automatically and proactively initiate the process of claiming for child benefit for all new births in Ireland,
- eliminate the need for customers to submit a physical birth certificate when making a claim for child benefit for a new baby.

Considering the overall goals, specific objectives and organisation of the service delivery, the service is characterised by several sequential interdependencies. This means that the output of former processes is used for the following processes. I.e. interoperability is required between several stages of the service provision (e.g. hospital, civil registration, child benefit section). This requirement is met in Ireland by the employment of a communication structure allowing involved agencies to communicate with each other usually via standardised workflows.

1.2 Problem addressed

1.2.1 Specific Problem

Until the process of e-enabling life event data began, both the civil registration and child benefit processes required manual intervention at most stages of the process, either by staff or by customers. I.e. the customer had to apply for child benefit by completing and signing a paper application form. This form was available to customers at the respective offices, on the internet and was given to the mothers in the maternity hospitals. The customer had to attach an original version of the baby's birth certificate to the application. This birth certificate had to be obtained from the Registrar's Office in the area where the baby was registered. On receipt of the application, the responsible officer at the Department for Social and Family Affairs (DSFA) first checked if it was completed properly and that the birth certificate was attached. If further information/documentation was required, a request letter was written to the customer. If the application was complete and correct, the claim was registered by the officer on the department's Central Records System (CRS) and entered in the child benefit (CB) system the following day. Once awarded, the claim was then passed to the clearance section for payment. Once the payment was awarded a Personal Public Service Number (PPSN) was allocated to the baby by the system overnight. A payment letter was then issued to the mother.

Following this procedure, the main challenges faced by the e-enablement of child benefit in Ireland were the need

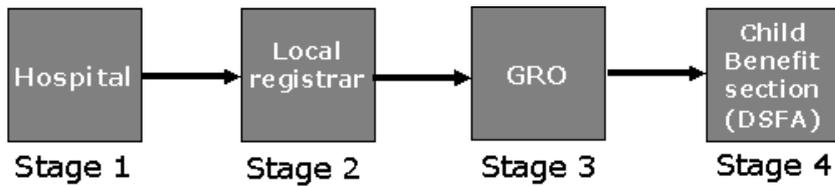
- to satisfy the needs of parents for fast, high quality services and information about their child allowance/benefit entitlements and situation,
- to ensure a high level of integration and interoperability between the involved agencies, i.e. the maternity hospitals, the local registrars and the different departments responsible for civil registration, child benefit and statistics,
- for effective user authentication in order both to match data across various actors and users as well as to ensure protection of potentially sensitive data.

So, the specific requirement concerning interoperability in the child benefit service was to achieve interoperability between different stages of the supply chain (maternity hospitals, civil registration, child benefit section, and statistics).

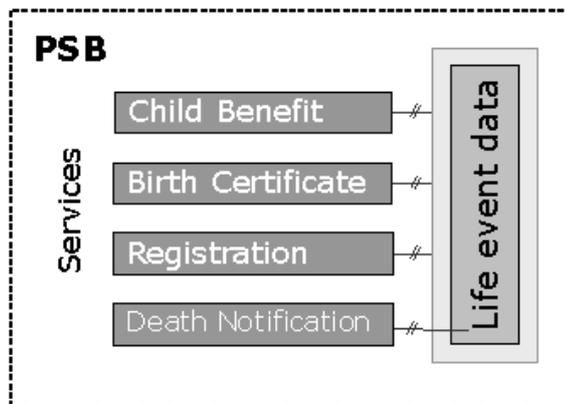
Specific problems addressed:

- Satisfy specific needs of customers concerning service entitlement and information
- To ensure high level integration and interoperability among involved parties
- Effective user authentication in order both to match data across various actors and users and to ensure data protection of sensitive data

IOP requirement 1:
IOP between different stages of a supply chain producing the child benefit services and others



And, with regard to the e-enablement of public services in general via the Public Service Broker, interoperability between different services referring to the same customer and resorting to common data had and still has to be achieved in addition.



A main objective of the child benefit service is to serve the customers in a pro-active manner, i.e. the focus was on the service re-organisation in the back-office to back-office processes.

To meet the interoperability requirements, a communication model using standardised workflows among the back-offices of the involved departments and agencies has been employed. This communication model is characterised by sequential interdependencies, i.e. the following processes use the output of former processes in order to provide the service. In case of the child benefit service, the output of the hospital as the first agency is the input for the civil registration process whose output in turn is the input for the child benefit section etc. To ensure almost automatic service operation, coordinated workflow harmonisation among the involved agencies had to take place.

IOP requirement 2:
IOP between different services referring to the same customer and resorting to common data in case of the public service broker

Service delivery model:
IOP among back-offices

Basic organisational model employed:
Bi- and multi lateral communication via involved agencies using standardised workflows

1.2.2 General Background

Child benefit in Ireland is a payment made to parents in respect of the child or children they care for. The child benefit service enables the pro-active triggering of the initiation of the child benefit claim after the birth of a child and will be provided as a result of the electronic cooperation mainly among the local civil registration, the general register office and the child benefit section of the DSFA. Several separate and linked back-offices are involved in the process of enabling the pro-active child benefit service. These include

- The hospitals where the babies are born. Hospitals provide the opportunity to notify the local registration offices of the births. By May 2005, there are 17 maternity hospitals in Ireland. 5 of these have the registrar on site in the hospital.
- The local Registrar's Offices who take care of the immediate registration. There are 53 registration offices in Ireland; all are connected to the on-line system.
- The General Register Office (GRO) where the babies are to be registered. The GRO as well as the local Registrar's Offices are in charge of the civil registration service and belong to the Department of Health and Children.
- The Central Records System (CRS) at the Department of Social and Family Affairs (DSFA) where a Personal Public Service Number (PPSN) and a Public Service Identity is created.
- The Central Statistics Office where the birth statistics are maintained, and
- The child benefit Section of the Department of Social and Family Affairs (DSFA) where the child benefit claim is finally created.

Included in the development and provision of the service is also the 'Reach' agency. Reach is a cross-departmental agency established by Government to improve the quality of service to customers of the Irish Public Service. In addition, Reach develops and deploys the Public Services Broker (PSB) which is to help agencies to achieve this aim. The PSB is an integrated set of technologies, processes, systems and procedures that will provide a single point of access to all public services. Moreover, this Broker will provide appropriate and secure multi-level access for both clients and public agencies to a common repository of relevant client information.

Service:

*Child benefit service
incl. civil registration
service*

Types and level of agencies involved:

- *Maternity hospitals*
- *Local Registrars Office*
- *General Register Office*
- *Central Records System at the Department for Social and Family Affairs (DSFA)*
- *Central Statistics Office*
- *Child benefit section at the DSFA*
- *Not content related: Reach, the government initiative acting as Public Service Broker*

1.2.3 Policy context and strategy

Three inter-linked developments have been central in enabling the automatic/pro-active child benefit service.

Firstly, on the side of the Department of Social and Family Affairs (DSFA), the Service Delivery Modernisation Project (SMD) was started. This project involves

- the introduction of new technology,
- the redesign of business processes,
- the introduction of a new organisational multi-functional team-based structure, and
- the reform of legislation (Social Welfare Act).

The Social Welfare Act was enacted in 2002 and permits the electronic allocation of the Personal Public Service Number and the Public Service Identifier to each new registered baby, which is required for the identification throughout the process. In addition, the act allows the automation of different types of child benefit claims as well as the automation of the overall process.

The first phase of the SDM Project was the implementation of a new system for child benefit and a parallel programme of organisational change by end of 2002. As part of the SDM initiative, the child benefit system was redesigned within the new overall Expressive Naked Object Architecture (NOA) framework that was adopted by DSFA. The NOA-based IT system is a flexible, agile and responsive platform upon which applications are build to meet business needs. Apart from improvements in the existing service provision from both, client and service provider perspectives, the measures under the SDM provided the capability to receive birth notifications electronically from the civil registration service.

Secondly, with the Civil Registration Modernisation programme, also a major modernisation initiative was underway in the Irish civil registration service and processes. This system is responsible for registration of major life events – births, deaths, marriages, etc. The modernisation included digitisation of records and computerisation of the registration process and of certificate production.

Thirdly, Reach developed the inter-agency messaging service (IAMS) that provides the channel for exchange of data, such as electronic notification of birth, death and marriage registrations between agencies. In parallel with the development of IAMS, Reach set up the Reach Interoperability Guidelines (RIG) which represent the interoperability framework in Ireland. Moreover, the Key Principles of an Interoperability Architecture, set up by the EPAN eGovernment working group were published under the Irish presidency of the European Union in 2004.

Framework conditions:

- *Service Delivery Modernisation Project (SDM) in the Department for Social and Family Affairs incl. the introduction of new technology, the redesign of business processes, the introduction of a new organisational multi-functional team-based structure and the reform of legislation*
- *Parallel Programme of organisational change*
- *Naked Object Architecture framework within the SDM*
- *Modernisation programme in the Civil Registration field*

Legal framework:

- *Social Welfare Act 2002 (permits automation of claim by allocation of personal identifier to newly registered births.*

Interoperability Framework:

- *Reach set up interoperability Guidelines (RIG) representing the Irish interoperability framework*

1.3 Solution

1.3.1 Specific Objectives

The specific case of e-enablement of the child benefit service is part of a wider programme to e-enable Life Event Data in Ireland more generally. The fundamental objectives in relation to this are:

- Electronically sharing life event data between agencies.
- Automatic allocation, by the DSFA, of a Personal Public Service Number (PPSN) to a child on receipt of electronic notification of a birth.
- Automated processing of child benefit claims following allocation of the PPSN.

From the perspective of child benefit services in Ireland, the combined goal of the three related initiatives - redesign of the child benefit (CB) system, modernisation of civil registration (GRO) and inter-agency linkage and messaging (IAMS) - was to e-enable the process of initiation of child benefit claims. This required back-office and IT system developments in both the child benefit and the civil registration services, as well as the development and implementation of a conduit for electronic notification of birth registrations from the civil registration service to the child benefit service.

In relation to this overall goal, the specific objectives were to:

- Automatically and proactively initiate the process of claiming for child benefit for all new births in Ireland.
- Eliminate the need for customers to submit a physical birth certificate when making a claim for child benefit for a new born baby.

Each of the three agencies involved also had more specific objectives, related to their core businesses, in respect of the back-office re-organisations and/or IT system developments that contribute to the new e-enabled child benefit service. These are briefly outlined below:

Department of Social and Family Affairs (DSFA)

Client Identity Services:

Client Identity Services (CIS) is responsible for the issue and management of the PPS Number. The specific objectives of CIS were to

- utilise the GRO birth registration data to allocate the child's PPS Number and Public Service Identity (PSI) in a secure and prompt manner,
- securely link the child's PSI to the PSI of the parents to facilitate future payment of claims and entitlements,

Objectives to be achieved in general:

- *Sharing of life event data among agencies*
- *Automatic allocation of a Personal Public Service Number to new born children*
- *Pro-active and automated processing of child benefit claims*
- *Elimination of submission of a birth certificate when claiming for child benefit*

- advise the child's parents of the PPS Number in a prompt manner and to facilitate the use of the number as the unique identifier for the provision of integrated Government Services.

Service Delivery Modernisation:

The overall objectives of the redesign of the child benefit system were to replace a legacy system operational since 1983 with an IT-system based on a Naked Object Architecture (NOA) introduced by the DSFA. The aim was to exploit the new functionality and opportunities for organisational agility offered by this new architecture. Specific objectives of the new child benefit system were to

- maximise/facilitate the full use of the functionality of the new NOA system,
- utilise the DSFA's central database as the repository of customer data,
- facilitate more efficient work processes, e.g. "One and done" claim set up, decision and payment in one transaction by one officer,
- significantly reduce claim processing times,
- enable personalised correspondence with customers,
- enable secure certification of entitlement using officer's digital signature (PKI),
- provide online audit check facilities.

Civil Registration service (GRO)

The overall objectives of the modernisation and redesign of the civil registration (GRO) services were to improve customer service through

- provision of an enhanced customer service by allowing for the registration of events and the production of certificates in the customer's district of choice rather than in the specific district in which the event occurred,
- reducing the reliance on paper certificates for Government services purposes through the electronic sharing of life event data,
- using life event data to provide seamless integration of services across Government agencies (e.g. in the case of child benefit claims),
- enact a new body of legislation to underpin the modernised civil registration service and process.

Specific objectives - DSFA:

- *Utilisation of registration data and prompt and secure allocation of PPSN and PSI*
- *Linkage of child's PSI to PSI of parents*
- *Use of PPSN as unique identifier for the provision of integrated Government services*
- *Replace legacy system by NOA based IT system*
- *Usage of DSFA database as central repository of customer data*
- *Secure certification of entitlement using officer's dig. signature*

Specific objectives - GRO:

- *Registration of events and production of certificates in the district of customers choice*
- *Reducing reliance of paper through electronic data sharing*
- *Use of life event data for seamless service integration*

Reach (inter-agency linkage and data sharing)

The IAMS was developed by Reach as an interim solution to enable inter-agency linkage and data sharing whilst awaiting the availability of the Public Service Broker (PSB). The ultimate objectives of the Public Service Broker are to

- develop and implement the technological infrastructure for eGovernment in Ireland,
- reduce/eliminate the need for repeated requests for personal information and repeated form-filling by customers,
- simplify the access to services and information by allowing self-service over the Internet,
- enable integrated delivery of public services to the customer through a single access point, a "virtual" one-stop-shop.

The specific IAMS objectives were to

- broker the exchange of customer-related information between agencies in accordance with standards developed by Reach,
- identify architectural and interoperability issues in the context of the Public Services Broker (PSB),
- ensure technological compatibility with the PSB,
- demonstrate the integrative potential of a "hub-architecture" for information-sharing/data exchange and ultimately, service delivery across the Irish public sector.
- develop data and messaging standards,
- identify the business issues that could arise in the future between Reach and other agencies,
- harvest the life event information being exchanged in order to provide future PSB services,
- foster communication and trustfulness between participating agencies and Reach.

Specific objectives - Reach:

- *Development and implementation of technological infrastructure for eGovernment in Ireland*
- *Provision of integrated services by electronic data sharing and providing one-stop-government*
- *Brokering customer-related information between agencies*
- *Development and use of standards*
- *Employment of a hub-architecture for information-sharing and integrative service provision*

1.3.2 Implementation

Workflow description

Usually, the process of application for child benefit in Ireland starts with the birth of the baby. Births are registered in a two-stage process. First, a Birth Registration Form is completed by the designated person in the maternity hospital or by a doctor/midwife in the case of a home birth. This is forwarded to the local Office of the Registrar. Five of the 17 maternity hospitals in Ireland have the registration office on site and three of them (larger maternity hospitals in Dublin) have already linked their Patient Administration Systems to the GRO system to automate this aspect of the notification of births.

Within three months after the birth, the parent(s) or another qualified informant (e.g. a designated member of the staff of the hospital) have to register the birth in person at the office of the registrar at the place of the birth. This is necessary in order to check if the details of registration are correct, e.g. names(s) spelled correctly and to sign the registration. Since many births are registered by the Occupier of the hospital in which the birth takes place, it is the responsibility of parents to ensure that the information recorded in the Birth Register with respect of their child is correct and accurate. In any event, it is anticipated that the majority of births will be registered before the mother leaves the hospital. The hospitals with the registrar on site therefore offer a convenient registration process for the parents. In case of the three hospitals which already linked their Patient Administration System via the on-site-registrar office to the GRO, the registration by the parent(s) could in principle take place at whatever registration office is convenient for them (independently of locality of birth). However, due to a pending minor change in the Civil Registration Act (expected to take place by end of 2005), the registration has still to take place at the responsible Registrars' office of the locality where the birth took place. Nevertheless it is already possible to apply for a birth certificate at any local office of the Registrar, as certificates can be printed off locally.

Details of the registration at the local Registrars' Offices are entered into the system of the General Register Office (GRO) in Dublin. This is done online from the local offices over the government's VPN (Virtual Private Network). The registration service at the GRO integrates the data into the central registry and notifies (via IAMS or via the "Integration Broker (DISC)" inside the DSFA - see below at the end of this chapter) the Central Record System (CRS). On receipt of the birth registration details, the CRS automatically assigns a PPSN and sets up the Public Services Identity Data Set (PSI) which serves for the identification of the applicant (child)

Legal framework:

Reform of Civil Registration Act:

- *Civil Registration Act allows application for birth certificates at whatever registrar office is convenient for them*
- *Pending change in the Civil Registration Act will allow registration at whatever registration office the parents like, independently of the place of birth.*

throughout the process. It also links the child with the parent(s) - the birth registration includes the parent(s) PPSN where it is provided as part of the registration process. The child's PPSN is forwarded by post to the parents and via IAMS / DISC to the GRO where it becomes part of the civil registration record as well as to the child benefit system where the child benefit claim will be created.

Under certain circumstances parents (or others) may indicate that they do not want to receive any communication from official sources in respect of the birth of the child (e.g. in case of stillbirths). In these circumstances the birth registration record is marked as 'sensitive' by the GRO system. On receipt of 'sensitive' records CRS will allocate the PPSN for the child but will not enter into any correspondence with the parent(s) and will not notify the child benefit system of the birth.

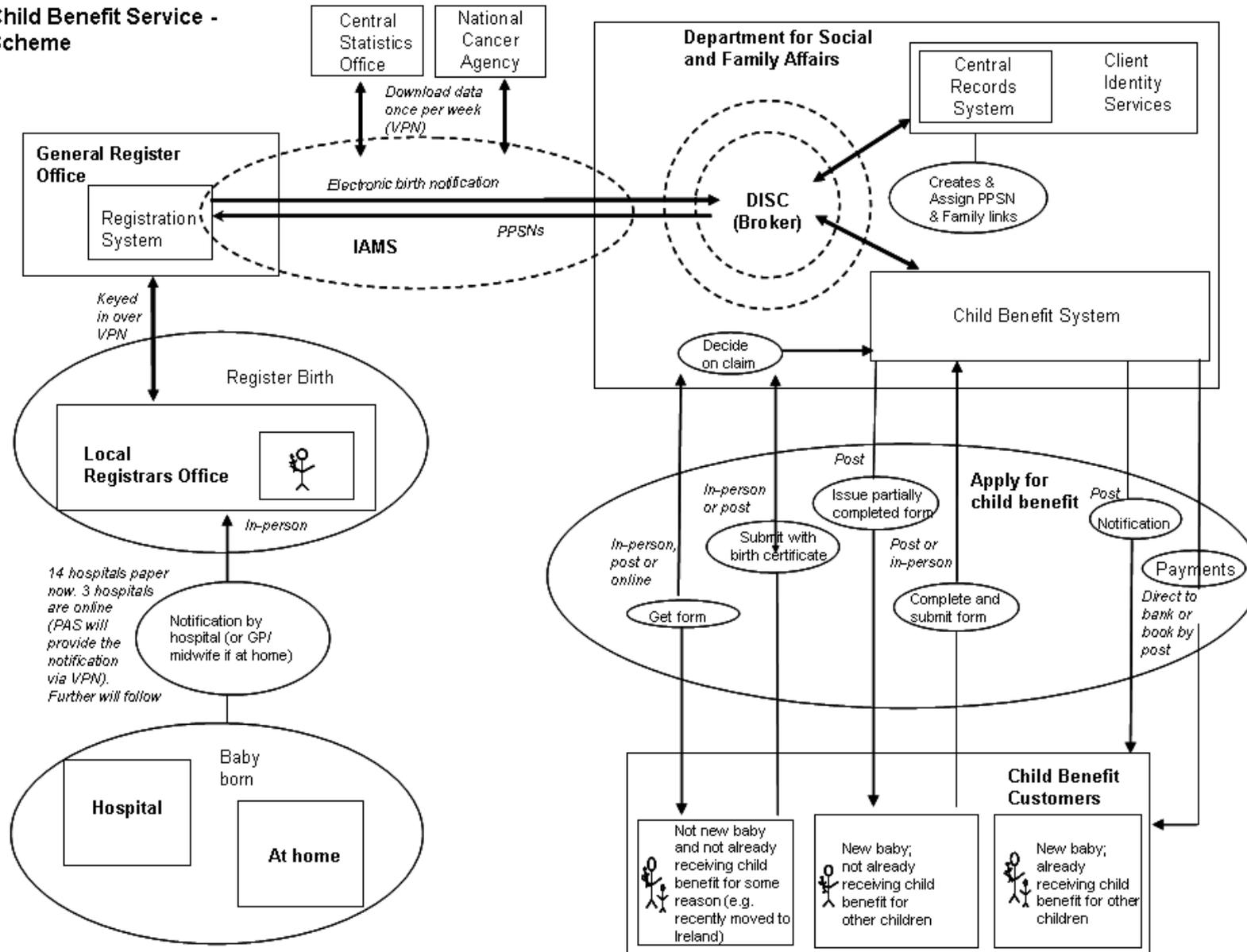
What happens in the child benefit service on receipt of the baby's PPSN depends on whether it is a first claim for child benefit by the parent (usually when the new baby is the first child) or the parent have claimed benefit already for another child (usually when the new baby is a second or subsequent child). If it is a first application then the child benefit system automatically sends a partially completed child benefit application form to the parent. If the parents have already claimed child benefit for another child then the system automatically arranges for child benefit payments for the new baby to commence. Physical birth certificates are not required in either case and completion of the application form is only required in the case of a first claim.

The IAMS service is an intermediate stage towards the ultimate development of a major eGovernment enabling service – the Public Service Broker. The IAMS presently provides the electronic birth notification for the DSFA child benefit processes. The eventual complete Public Service Broker will provide an online repository of relevant client information that will be accessible in different ways by both customers and the many different public agencies that need access to different views of the data. As mentioned above the PSB will be equipped step by step; it already provides access to information on public services, identity management and customer account facilities.

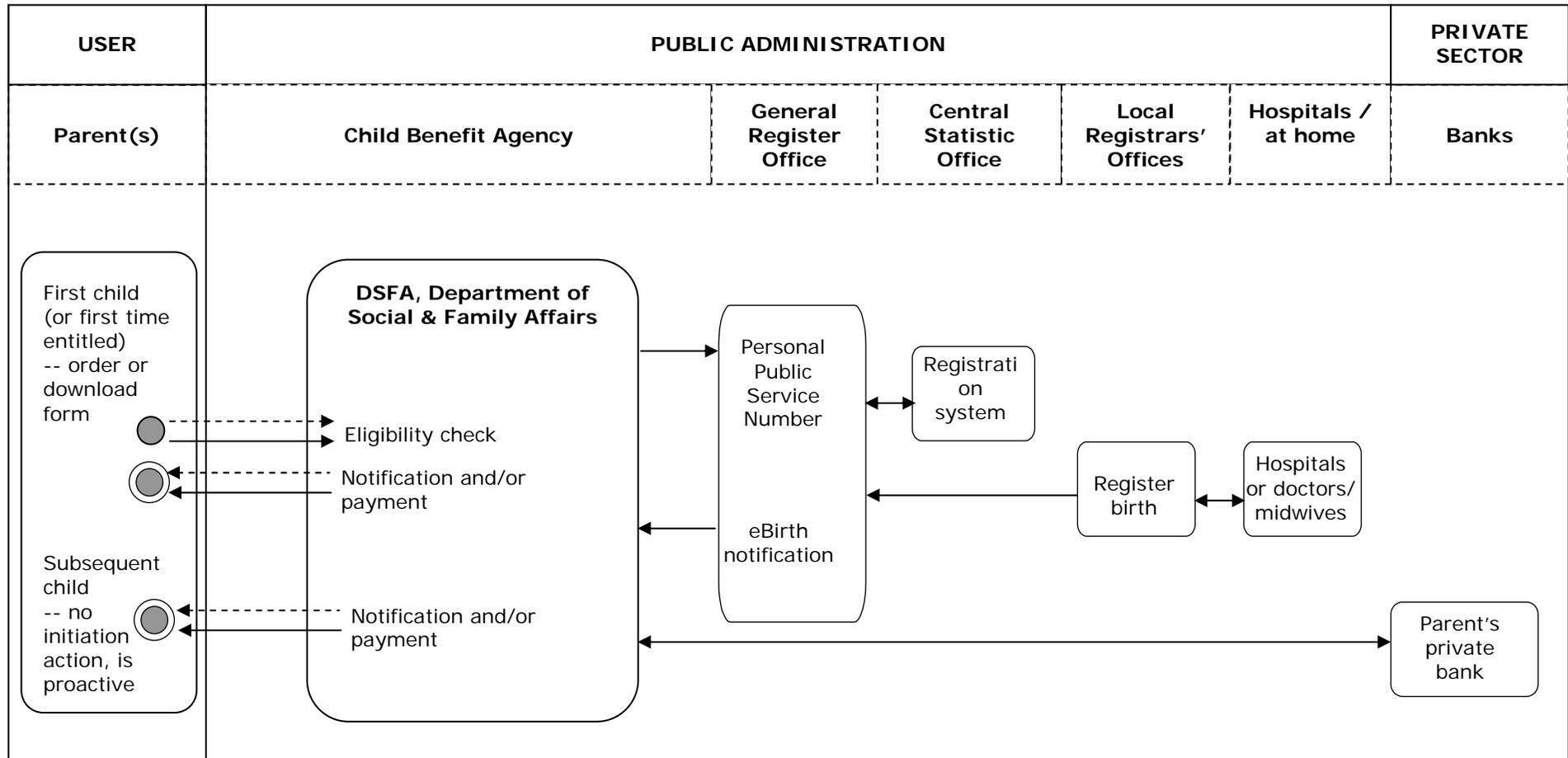
Warranty of security and privacy:

- *Data security is warranted by the IAMS technology.*
- *Privacy: Every child gets a Personal Public Service Number and Public Service Identifier with which the person can be identified by the system. However, in case parents do not want to receive further pro-active information by the agencies after birth they don't have to and their case can be handled as sensitive*

Child Benefit Service - Scheme



Workflow of Child Benefit service in Ireland



Resources

Key elements enabling the electronic pro-active child benefit, based on technical solutions, are

- the IAMS architecture for the data exchange between agencies,
- the Naked Objective Architecture (NOA) for modelling business processes, and
- the Departmental Integrated Services Connector (DISC) as Integration Broker inside the DSFA.

IAMS architecture:

IAMS in the child benefit service enables the interoperable connection of the two main responsible departments – the Department of Health and Children (which is in charge of the local Registrars' Offices and the GRO) and the Department of Social and Family Affairs. I.e. IAMS links the birth registration process (GRO) and the child benefit process (DSFA) and facilitates the exchange of life event data. Data on births are electronically forwarded from the GRO, which is the central repository for records relating to births, deaths and marriages, to the DSFA every 15 minutes. After reception by the DSFA and the assignment of the PPSN and associated data (PSI) the registration data are sent back to the GRO via IAMS for inclusion in the child's civil registration record. The registration data is also made available online to the Central Statistics Office (CSO) and the National Cancer Agency. Both get a weekly batch file of all birth registration data. The registration data is used there for demographics/planning and health tracking.

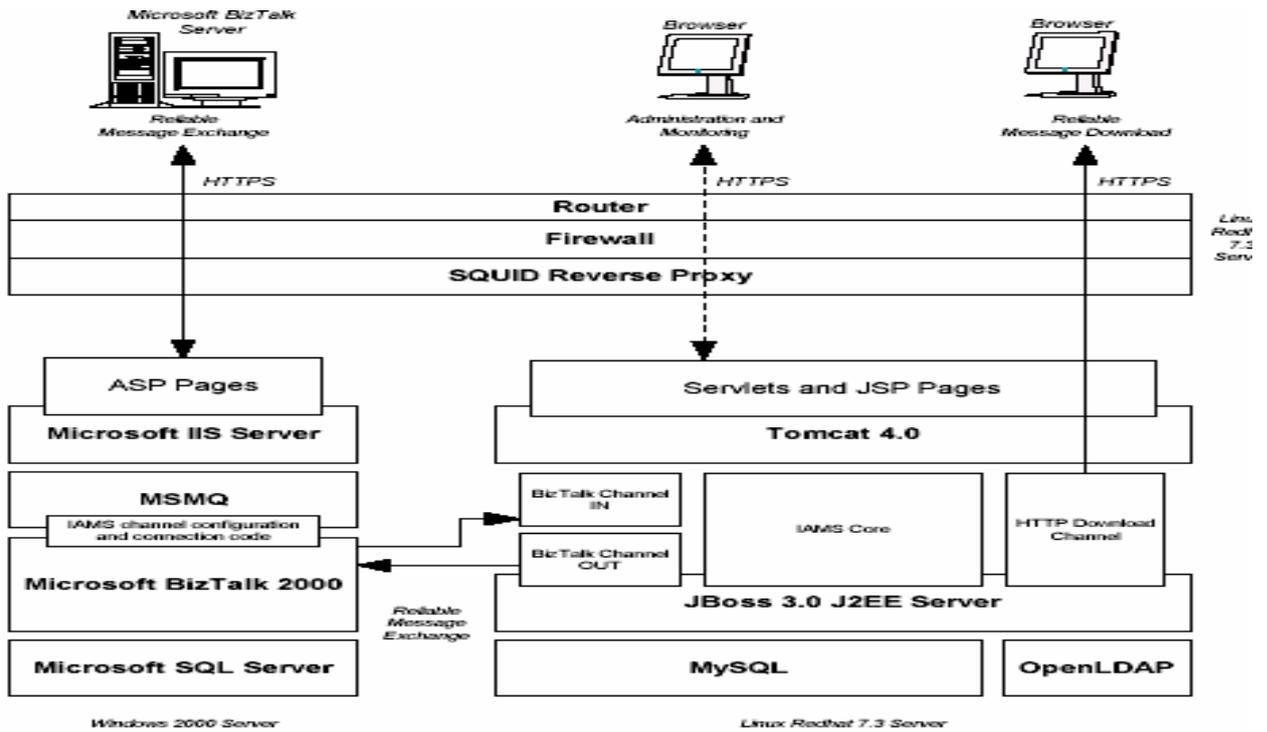
The IAMS is an implementation of a Service-Oriented Architecture (SOA) built around open standards-based reliable messaging and web technologies. (A SOA is made up of components and interconnections that emphasize interoperability and location transparency.) As the IAMS is based on a XML Messaging Hub Architecture, individual agencies interact with the IAMS by sending and receiving XML messages, and the IAMS provides guaranteed "once and only once delivery" of those messages.

The core components of the IAMS are (see also diagram):

- PropelX – XML pipeline processing engine
- JBOSS – J2EE Application Server
- Tomcat – java servlet container
- MYSQL – opensource database
- OpenLDAP – opensource directory server
- BizTalk as a reliable messaging solution between GRO and CIS

Supporting infrastructure employed:

- *Inter-Agency-Messaging Service IAMS providing data exchange between agencies and acting as an intermediate stage towards a Public Service Broker*
- *Departmental Integrated Services Connector (DISC) as Integration Broker inside the DSFA*
- *Use of standardised workflows among agencies and within the main responsible department*
- *Personal Public Service Number and enclosed Identity data set as commonly used identifier throughout the process by involved agencies as a key element providing interoperability*



Significant elements of the architecture are the IAMS envelope which ensures the accurate and secure routing and delivery of Inter-agency messages with customer-related information. All message payloads delivered via the IAM Service must be encapsulated in the IAMS envelope. Data and message standards have been developed to facilitate the bilateral and multilateral exchange of messages within the IAM Service. These standards have to be adopted by all entities communicating via the IAM Service. The data standards provide a common framework for all communicating entities and will facilitate future interoperability and integration strategies.

In line with the development of data standards, the development of the IAMS has mandated the creation of a number of standard data models. These models cover such things as name, address etc. The process of producing these data models, and the development of the associated standard, is forming the structure of the Public Services Broker.

Naked Object Architecture (NOA)

The Naked Object Architecture implements a Business Object Model of DSFA wherein everything relating to the business is represented by an "object" (e.g. customer). A class definition identifies the information associated with it (e.g. name, address) along with the functions and operations that apply to it (e.g. adding a new case for a customer).

Users interact directly with these core business objects. DSFA believes that this approach not only results in a more natural user interface, but also is critical for the achievement of the micro-level agility referred to above. Further information on Naked Objects can be found at www.nakedobjects.org.

DSFA has implemented the Naked Object Architecture in a modern, multi-tiered client/server architecture, which achieves the clean separation of the front-end, business logic and data layers. The architecture is implemented on a Windows 2000 platform through a standard browser, using Java applets at the front end, COM+ components (written in Visual Basic) in the middle tier, and Microsoft SQL Server in the data tier.

The user interface is implemented at the user's computer. Business objects, with their attributes and methods, are presented to the user through a standard web browser (currently Microsoft's Internet Explorer with Java2 plug-in), using Java2 applets. The web server is Microsoft's Internet Information Server (IIS) version 5 running on a 2-node Windows 2000 Network Load Balanced Cluster.

The browser communicates with the web server by sending XML text strings across HTTP. An Active Server Page (ASP) script on the web server channels XML between the user's browser and the COM+ objects in the Business Logic Layer.

Departmental Integrated Services Connector (DISC)

The Departmental Integrated Services Connector (DISC) was developed as a separate project from the NOA. Rather than implement a point solution to fit the immediate requirements, DSFA recognised that this was the first in a series of message-based interactions between systems both outside and within DSFA. As a result it was decided to develop an internal 'Integration Broker' (DISC) to mediate the messages passing between the systems.

The technical solution for DISC is a tiered XML-based message broker which adopts and extends many concepts developed by Reach during their development of the Inter-Agency Messaging System. The main tiers are:

- Secure Networking: External, using the Government VPN.
- Reliable Messaging: Ensuring that messages are transmitted and received reliably.
- Message Processing: The processing and transformation of messages
- Connector Bus: Facilitating connections to various diverse systems and services.

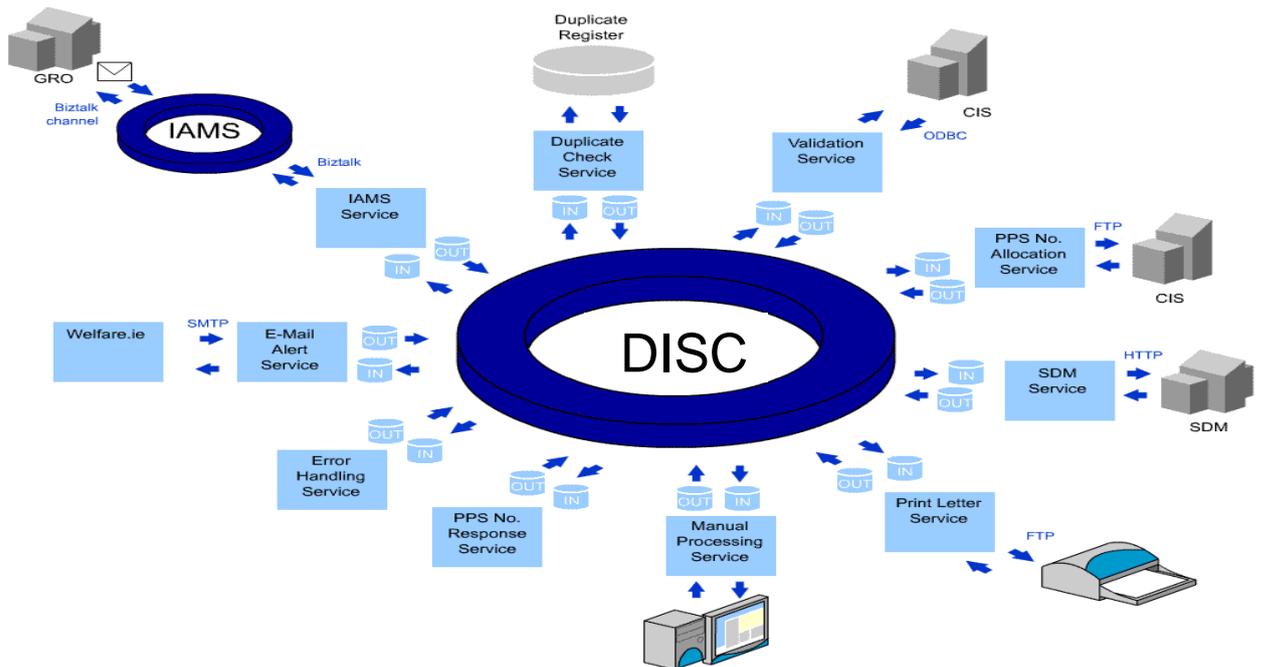
The solution was built using a combination of products from Propylon, Microsoft and a number of Open Source packages. The O/S platform is predominantly MS Windows 2000 Server.

Case capitalises mainly on following layers of IOP:

- *Technical (Government VPN)*
- *Syntactic (XML)*
- *Semantic (PPSN for identification throughout public services and the life event model)*
- *With regard to the organisational collaboration, the NOA, the legal changes and the process re-engineering (DISC) the organisational IOP is also central*

Key Services provided by DISC (see also diagram below):

- PPS Number Allocation Service: The solution integrates with the legacy CIS environment to request allocation of a PPS Number.
- PPS Number Response Service: The solution provides a response to GRO including the PPS Number.
- IAMS & SDM Service: These services facilitate communication with the external systems over multiple channels (Biztalk/SOAP, HTTP).
- Customer Notification Service: This service facilitates the printing of the letter to the parent or guardian of the child notifying them of their PPS Number.
- Exception Handling Service: This service facilitates the manual processing by CIS business staff of any exception messages.
- Email Service: This service facilitates the communication of any messages to DSFA staff via an SMTP interface to DSFA's internal mail backbone.



Awareness and Marketing

Big efforts had and still have to be invested in the involvement of the relevant organisations to enable the pro-active service provision. Besides the central authorities (GRO and DSFA), the local Registrars' Offices and more complex, the different maternity hospitals had to be convinced to take part and to support the service re-organisation. This is difficult since the hospitals are not committed to use the online system and the Registration Offices are not committed to receive online birth-notifications from hospitals. Therefore, extensive consultation processes were and still have to be invested in modernising by making these sub-systems more efficient. In addition, trainings were and are still necessary to enable the willing agencies to make and keep their staff skilled to use the system.

To do so, the project was overseen by a Project Board made up of members from DSFA and the Department of Finance. Project managers of the Organisational Change programme were responsible for the following teams:

Change Management team (5 team members supported by Price Waterhouse Cooper consultants, now IBM)

Training Team (comprised 4 members of the SDM data Clean-up and Change Management Teams) - over 90 staff members were trained for the new child benefit system.

Awareness and Marketing:

- *extensive consultation processes to convince local registrars and hospitals to use the online system*
- *Set-up of a project board to adopt the Organisational Change programme within the involved agencies incl. staff trainings and user testing*

1.4 Features making it a candidate for good practice exchange

1.4.1 Impact

In Ireland, about 62,000 children are born per year. 60% of them benefit from the fully automatic and pro-active child benefit system since they are born in Ireland and are not the first born child of their parents. The parents of 40% of new born babies have to complete and submit an already partially filled-in application form, if the baby is their first born child, and the parents of 20,000 of the applicants have to submit an application form together with a birth certificate since they are not born in Ireland and none of their siblings already receive child Benefits. Started as a pilot in the Cork area of Ireland in the end of 2003, the pro-active child benefit service is fully rolled out in Ireland since February 2005; thus the service provision covers the whole country.

The General Register Office benefits from the fact that it is no longer necessary to issue birth certificates for more than 62,000 children. This figure will increase as data sharing is expanded across the public service in Ireland. For example, there is still a requirement for physical birth certificates for many other public service purposes like the passport application. Each of the about 200,000 applications for a new passport currently requires a birth certificate. An innovation in this regard concerns the fourteen different security features incorporated in its paper and printing process (anti-scanning/photocopying, toner lock, etc.).

In addition, the new GRO system provides further benefits for both clients and the service provider like the possibility to get a birth certificate at the most convenient (e.g. the nearest) Registrar's Office and the faster retrieval of event data and certificate production for new and historical records – 5 minutes now compared to 20 minutes previously. Depending on the celerity of the hospital, a new born child can be registered on the same day but at least within three days, compared to about 19 days before the electronic registration process was employed. Once the registration data is in the GRO data base, the PPSN will be assigned immediately and the child benefit claim will be paid within a maximum of two weeks starting from the day of birth. The traditional proceeding took about 76 days for the assignment of the PPSN and additional three months for the first payment of the child benefit.

The allocation of the PPSN as part of the birth registration process and consequent updating of the civil registration record will allow for the future linking of life events and the production of life event certificates using this unique personal identifier.

One might assume that the automatic allocation of the PPS Number might bear hitches with regard to privacy. However, the Data

Outreach:

- Full national roll-out since February 2005
- 60 % of all new born children in Ireland benefit from the pro-active child benefit claim.
- 40 % only have to complete a partially filled-in application

Benefits:

- 62,000 birth certificates less for child benefit claim
- In future more reductions possible when expanded to other services e.g. 200,000 birth certificates less for passport application
- Cut to 5 minutes per issuing a certificate from 20 minutes before
- Reduction of postage costs for registration service
- Elimination of transcription errors
- More timely receipt of better quality registration data

Performance:

- Birth registrations within 3 days maximum
- Payment of child benefit within two weeks after birth

Identity Management:

- Identification by PPSN / PSI throughout the child benefit service
- Identification by PPSN / PSI also used for other services

Protection Commissioner didn't see a conflict if data are handled properly. So it was necessary to legislate for the automatic allocation of PPS Numbers to children. It was also necessary to legislate for the automatic payment of a child benefit claim on foot of automated "application" and without an actual decision by an administrative officer.

The CSO receives life event data electronically in respect of all registered events. This reduces postage costs for the registration service, eliminate transcription errors and ensure more timely receipt of better quality registration data. In the future it will also be possible to carry out more rigorous statistical analysis of registration data, e.g. trend analysis, year on year comparisons by region, local district etc.

As the Service Delivery Modernisation Programme (SDM) is rolled out in the whole DSFA, other departmental services in addition to the child benefit service can also be supported by access to electronic notification of other life events from GRO. E.g. the GRO is currently working in partnership with Reach and DSFA to develop the death registrations service that will communicate in a timely manner the details via the IAMS for relevant government agencies. This process has been implemented and is called DEPS – Death Event Notification Service. This process is similar to that for the birth data – all death registration data are forwarded from GRO to CIS via IAMS. CIS verify, or find, the PPS Number for the cases and same is returned to IAMS from where it is published to various agencies. At present, 20 agencies are subscribing to this service. CIS updates its central records system automatically on foot of this death information. This will be useful for various reasons, for example, timely cessation of public pensions and reducing overpayments to General Practitioners because of lack of updating of patient registers. Further upcoming services based on this procedure will be - among others - the notification of widows' pension claims and bereavement grants.

Also in the longer term, the GRO technical architecture/software solution has been designed to enable the development of an Internet solution providing online access by the public, genealogists, and emigrants etc. to registration data for both family research purposes and certificate requests. It is expected that this will have a significant impact on the service and will generate large volumes of business.

Privacy:

- *Legislation of automatic allocation of personal identifier to registration data*
- *Legalisation of automatic payment of child benefit claim without human intervention*

Benefits for Statistics Office (CSO):

- *More timely receipt of data*
- *Better data quality*
- *No transcription errors*
- *Reduced postage costs*

Transfer within department to other services:

- *Realisation of the Death Notification Service in a similar manner*
- *Further services will be provided based on same process structure*
- *Usage of infrastructure (IAMS, DISC) by other services and agencies*
- *Availability of life event data for other services and agencies*

Further future plans:

- *Access to data for public, genealogists, emigrants, etc. by Internet planned*

1.4.2 Relevance of the case for other administrations that could learn from the experience

The e-enabled child benefit service is the first example in Ireland of e-enabling life events data for the benefit of both customers and the public service providers. Moreover, the service is provided pro-actively which means that most of the parents don't have to apply for child benefit but they will be provided with the service without their own initiative.

One key success factor enabling the electronic pro-active child benefit based on the technical solutions is the IAMS architecture for the data exchange between agencies which allows for the connectivity among the agencies involved in the service provision. This includes the IAMS envelope which contains the respective information to be exchanged and which provides the following functionality:

- message routing information,
- message audit information,
- authentication information and validation,
- message error details.

Employing open standards-based reliable messaging and web technologies, IAMS is an implementation of a Service-Oriented Architecture (SOA). Presumably it is the first implementation of an SOA that facilitates integration and interoperability between government agencies (see diagram "IAMS" in chapter 2.2)

The developed data and message standards within IAMS guarantee the full connectivity and interoperability among the involved agencies.

Similar to this, with the Departmental Integrated Services Connector (DISC) an Integration Broker inside the DSFA has been developed. This broker facilitates the data exchange inside the DSFA and connects the parties involved in the service provision (see diagram "DISC" in chapter 2.2). Certainly, this connecting and interoperable infrastructure is not only used for the child benefit claim but rather for the other tasks and services within the DSFA.

A main feature provided via the DISC is the Client Identity Service relational database which is responsible for the automatic allocation of the PPSN and at the same time provides the repository for the Public Service Identity data set to be used internally by the DSFA and in the future also by other agencies for their public services.

Another main feature is the platform where the child benefit service is provided. This platform is based on a Naked Object Architecture (NOA) and will support the delivery of further scheme systems in future. I.e. the department expects to significantly increase its organisational agility in terms of its ability to cope with change both at macro and micro levels, e.g. its ability to adopt new schemes in accordance with government policy and its ability to change and

Supporting infrastructure employed:

- *Inter-Agency-Messaging Service IAMS providing data exchange between agencies and acting as an intermediate stage towards a Public Service Broker*
- *Departmental Integrated Services Connector (DISC) as Integration Broker inside the responsible department (DSFA)*

Innovativeness:

- *SOA facilitates interoperability between government agencies*
- *NOA as scheme for further services*

Innovativeness:

- *pro-active service delivery without the need for application in most of the cases*
- *Automatic allocation of a commonly used Public Service Identifier which is used also by other services and other agencies*

adapt existing schemes and applications. Organisational agility includes strategic, technical and operational agility.

With the Public Service Broker (PSB) a major initiative is currently under development with a view to fully leveraging the potential of eGovernment in this regard. The PSB is an integrated set of standards, shared services, and capabilities designed as the framework for transforming the delivery of services to the public and include a single mechanism for access to public services.

1.4.3 Transferability

The use of an asynchronous, loosely coupled messaging architecture allows cooperation among agencies that are at widely differing levels of automation and uses of technology. I.e. with IAMS the agencies could use their different platforms but fully participate in the interoperable service provision. Moreover, agency boundaries are respected by this loosely coupled approach. The same can be considered inside the DSFA; via the DISC the DSFA-parties could communicate though different pre-requisites with regard to technology and process flows.

All in all, the child benefit service has proved to be transferable in a number of fronts:

- Technical IOP - This project prototyped use of a Government VPN for inter-agency traffic and proved interoperability between Government systems based on diverse technical platforms.
- Semantic IOP - Envelope and message formats and associated XML standards are being used in the implementation of the Public Services Broker. The PPS Number has been firmly established as the key to accessing public services. The 'life event' model for service delivery was proven and tested and is being extended to other events (e.g. Death, Marriage)
- Organisational IOP - An organisational collaboration framework (people, networks, protocols, business procedures etc.) has been developed and proven and experiences are being re-used on new projects (DEVS / DEPS, PSI, PSB etc.).

The Reach agency, responsible actor in the overall development of the eGovernment services in Ireland developed interoperability guidelines (RIG). These guidelines address the technology part of interoperability taken in mind that only human to human agreement can provide true interoperability but technology can support this aim. The guidelines and other valuable documentation concerning the PSB are available for everybody on their website (www.reach.ie).

Innovativeness:

- *Development of a Public Service Broker which facilitates service integration and access to information and services*

Transferability:

- *Loosely coupled message architecture allows cooperation among agencies independent from levels of automation and use of technology*

Transferability:

- **Technical IOP:** *Use of Government VPN for inter-agency traffic*
- *IAMS envelope and message formats and associated XML standards are key enabler of **semantic IOP** and are used inside the Public Service Broker*
- **Semantic IOP:** *Personal Public Service Number as key for accessing public services*
- **Semantic IOP:** *Proven life-event model for service delivery which is already extended to other services*
- **Organisational IOP:** *Value proved organisational collaboration network which is already used for other services*

Transferability:

- *Interoperability Guidelines and general documentation to be used by others*

1.5 Results

The development and implementation of the new civil registration processes/procedures and computer systems and the linking of these to the systems in the DSFA is radically transforming the way business is carried out both within the civil registration service and within DSFA. From the customer's point of view, certificates will no longer be required for certain services and, when required, can be acquired much more quickly and conveniently.

In relation to child benefit, the nation-wide rollout of the new civil registration computer system means that most parents will no longer be obliged to get physical copies of birth certificates and submit these to the DSFA in order to apply for child benefit. The work of deciding officers in the DSFA will also be much reduced with the new system as authentication of life events is automatically provided through the link with the GRO.

In the case of a first child/claim, a partially filled-out form will be issued automatically to the parent (40% of the cases / 25,000 claims). This will reduce the amount of form-filling required as well as encouraging uptake of this service entitlement. In the case of subsequent children/claims there will be no need for form filling at all as commencement of payments will be automatic (60% of the cases / 37,000 claims).

The next stage of the development of the child benefit service will involve linking the larger maternity hospitals into the system, thereby eliminating the manual completion of paper forms. So far, three of the larger maternity hospitals in Dublin have already linked their Patient Administration System (PAS) to the GRO. Further maternity hospitals will follow.

Also, as mentioned earlier, it will presumably be possible by end of 2005 to register births in the most convenient location rather than in the district in which the birth took place. During the registration process itself data capture is of better quality because of greater involvement of parents/next of kin and in-built validations in the computer application. An innovative aspect of this part of the process is the use of electronic pads to capture and store, as part of the registration record, the customer's signature.

The child benefit service is only the first service of the Public Service Broker, further services and auxiliary services like PKI are already integrated based on the same infrastructure that has been proven and tested during the development and implementation of the child benefit service. Further services will follow.

Benefits:

- *Faster processing of claims*
- *Reduced workload on both sides by more qualitative work processes at the same time*
- *Reduced certificate production*

Performance:

- *The child benefit claim of ca. 37,000 children each year will be carried out automatically without need for application by parents. This equals 60% of all births in Ireland.*
- *To the other 40%, a partially filled-in application form will be sent pro-actively*

Impact:

The development of the pro-active child benefit service was a kind of test bed and "paved" the way for other services which will be combined in the Public Service Broker using same architecture and infrastructure

1.6 Learning points and conclusions

The sharing of life event data is fundamental to the design, development and delivery of integrated services for citizens. In Ireland the first example of the delivery of such integrated services is the automatic processing of child benefit claims by DSFA on receipt of electronic birth registrations. Although still at a relatively early stage, this e-enabling of life events data has already had significant impact and many Government Agencies are now keen to either receive civil registration data electronically or to be provided with online access. The following are critical success factors and lessons from the experience to date.

Project governance

Where multiple projects are involved they must be planned and developed in a co-ordinated and agreed manner, that is, strong project governance is required. The co-ordinating groups set up as part of the modernisation programme met on a regular basis to ensure that issues were identified and resolved on a timely basis and that the various projects were developed in an agreed manner. In this way it was possible to maintain clear ownership of each of the main developments whilst ensuring effective co-ordination and progress towards common goals.

Project teams

Where cross-departmental projects are being set up, there must be a common vision across all involved parties and the roles and responsibilities of all parties should be set out and agreed at the outset and a structure put in place to resolve issues and difficulties. To do so, a cross project co-ordination group was established and issue-specific teams were set up to ensure that developments progressed in a co-ordinated fashion. Under this hierarchy, the roles and responsibilities of all parties were defined and clarity was achieved with regard to the above mentioned ownership issues. Also structures were put in place to resolve issues across department boundaries. While this will not eliminate hiccups along the way, it will ensure that the proper mechanisms are in place to resolve them.

Working for the "greater good"

There is the need to work both towards a deliverable within the own organisation while working towards a final deliverable in conjunction with other departments/agencies. This can lead to conflict and often requires decisions for the "greater good" rather than for the good of one single area of the project. All areas involved in cross agency projects need to be able to "bend" when necessary with an eye on the final deliverable rather than their own.

Critical success factors for IOP:

- *Need for strong project governance with regular project meetings with solving issues on a timely basis*
- *Common vision across involved parties*
- *Set up of issue-specific teams ensuring co-ordinated progress*
- *Set up of issue-specific teams ensuring co-ordinated progress*
- *Set up of a structure to resolve cross-departmental issues*
- *Common agreement*
- *Working towards a deliverable in the own organisation which works towards a final deliverable with other departments/agencies*
- *Prioritisation of the "greater good" of the overall project objective against possible goods of included single projects*
- *Involved parties need to be able to "bend" with regard to the final deliverable*

Business requirements should be the driver

At an early stage, the decision was taken that the business requirements would drive the technology project rather than the other way round. This ensured that the business requirements would take precedence and that the most appropriate technology would be used to implement them.

Change Management

All of the component projects in this initiative gave high priority to change management issues as well as to technical matters. This included extensive consultation with all relevant parties, development of communication strategies and training. Attention to these aspects was viewed as central to the success of the initiative.

Multi-agency projects have longer lead times

Management of multiple projects needs experienced project managers and considerable co-ordination effort. The teams found that it takes longer to develop and test systems as the number of agencies involved increases.

Ownership

A key issue that arose for the IAMS project was "ownership". The issue was, at what point did transferred data become the responsibility of the receiving agency and how would system failures etc. be dealt with. While eGovernment is intended to present an integrated, borderless view of Government to the customer, government departments still have to work within their own political, legal and accountability frameworks.

Legislation

In areas such as civil registration, early identification of any new legislation required is essential to ensure that it can be enacted in time.

Project sponsorship

Project sponsorship at high levels is a warrantor for the success of the project. The e-Enabling of the child benefit service was achieved by project sponsorship at a high level in each of the partner departments / agencies

Project organisation

Differing priorities, differing resource levels and timeframes for development could cause difficulties in the overall project progress and have to be overcome. This means the organisational tasks incl. the communication model among the parties used in order to provide services, the essential legal changes as well as the difficulties in technical and semantic IOP and others have to be

Critical success factors for IOP:

- *Business requirements should be the driver*

- *Development of communication strategies between all partners*
- *Extensive consultation with all relevant parties*

- *Clear ownership of the developments*

- *Early enactment of any new legislation*

- *Project sponsorship at high level*

- *Differing priorities, differing resource levels and timeframes for development among involved parties have to be overcome*

agreed and met by a certain organisation structure. In case of the child benefit service, the requirement for inter-agency co-operation was formally recognised, allowed for in project plans and delivery timescales and explicitly managed through inter-agency group meetings which sought consensus on all issues.

All members of the inter-agency team had clearly defined roles but also understood the needs of the overall project as well as the needs of their own specific area. All obstacles were approached in this manner and solutions agreed accordingly.

Any issues arising were dealt with by Issue-Specific Teams which then reported their results to the inter-agency group. This stopped the inter-agency team being diverted down side-roads and allowed them to focus on the main deliverable and adhere to the set project timeframe.

Risks for early adopters

Early adopters of the IAMS system perceived themselves to be at greater risk in terms of initial investment versus likely returns as they were concerned that they would bear the burden of the development costs.

Standards

It is important that data and other technical standards are set and agreed early in the development process. This is particularly vital where inter-dependent developments are taking place simultaneously in different organisations. One organisation should be mandated to "own" the standards and ensure that they are adhered to. In this initiative, Reach were mandated to agree, set and own the data, envelope and XML message standards and this proved very successful in the development and implementation of the various strands/projects involved.

Single Vendor Technology

Single vendor technology was seen as an advantage as opposed to multiple best of breed products. In the GRO case, strong vendor support was received throughout the development making it cheaper, easier and faster to resolve issues.

Collaborative testing

Prior to the launch of the service especially when the service is delivered cross-departmentally or several parties are involved, collaborative testing processes are needed to test the system 'end to end'. A time-frame and resources have to be provided to carry out full service provision testing.

Critical success factors for IOP:

- *Governance and consensus across the cross departmental/ agency divide*

- *All parties prioritising and working for the end deliverable*

- *Early setting and agreement on standards*
- *One organisation should be responsible for the management of standards and that the involved parties adhere to them*

- *Use of single vendor technology to economise the service development and simplify support*

- *Collaborative testing of system end-to-end before going live*

Parallel running

The opportunity for parallel running of manual and electronic systems in a "live" environment should be taken prior to full implementation to test system functionality, validate process/procedures, training programme, user and customer acceptance. In the GRO case, for example, a four week period of parallel running was carried out and gave invaluable feedback on issues that could then be resolved before going live. This proved invaluable and raised a number of issues that were resolved prior to implementation.

Encryption/Error Handling

In relation to agency to agency communication and data sharing, encryption processing and error handling proved to be a more complex task than originally envisaged and was more difficult to do than the actual application development. It is important that sufficient time and resources be assigned to each to ensure successful development and implementation.

Managing scope creep

As is commonly found in these kinds of projects, requirements changed during the development and user testing phases. Accordingly, "scope creep" needed to be managed very carefully to minimise impact on the "go-live" date. In the GRO case, for example, a change control process was put in place whereby all changes had to be approved by the Programme Management Group. A clear distinction had to be made at various stages between changes that were deemed essential and those that were deemed "nice to have".

Technical connectivity

Across departments or even across administration units lack of connectivity could exist based on differing IT systems. Moreover, old technology within these administration units has to co-exist and be connective with new systems.

Collaboration semantics

The agreement of data content of XML schemes and the data interpretation across different agencies and different services plays a key role. Each agency uses its own scheme and data structure based on historical use in order to provide public services. The agencies have to come to a common agreement which means that they have to effect a compromise even if they have to accept changes in their basic data bases. So negotiations e.g. about the interpretation of what is a name, what is an address etc. have to take place and commonly agreed.

Critical success factors for IOP:

- *Parallel running of manual and electronic system to test system functionality*

- *Sufficient time and resources for encryption and error handling have to be provided*

- *Managing scope creep by conducting change control processes to minimise impact on overall schedule*

- *Solutions for lack of technical connectivity due to different IT systems used among involved parties and due to old technology that has to co-exist with new technology have to be found*

- *Cross department/ agency agreement on data content and data interpretation has to be found*

Data Conversion

The capture, clean-up, migration and conversion of historical data can be a major task. In the case of GRO, for example, this took up more time and resources than originally envisaged. This was mainly due to the fact that the data was originally indexed to support paper based retrieval and the data format was not consistent across all years. Ideally, more time should have been given to analysing the paper-based data prior to the commencement of the electronic data capture process.

Resources for data clean up

There was also a major data clean-up project in DSFA as the information on the stand alone legacy child benefit system and the data on the Departments Central Records System (CRS) had to be aligned. With over 1.1 million children on 125,000 claims this was no easy task. It was also necessary to allocate PPS Numbers to numerous children and claimants as the child benefit system previously used a different identifier. This task proved to be bigger than was originally scoped and it took up considerable time and resources as it has to be complete in order to facilitate the migration of the child benefit data to the new system. Without this data clean-up the project could not have been completed.

Critical success factors for IOP:

- *Sufficient time and resources for data conversion and data clean up have to be provided*

1.7 References and links

Websites (all URL's worked out on the last visit on 04.08.2005):

- www.oasis.gov.ie – Online Access to Services, Information and Support - the Irish Public Service Portal
- www.irlgov.ie - the Ireland State portal
- www.reach.ie/iams - Reach agency (set up by Government to improve the quality of service to customers of the Irish Public Service which serves as Public Service Broker. Several information to eGovernment in Ireland are available there e.g. legislation and the PPS Number, the eGovernment programme, Reach Interoperability Guidelines (RIG).
- www.basis.ie Business Access to State Information Service – the Irish Public Service Portal for businesses
- www.groireland.ie – General Registration Office

Annex 1: Assessment Questionnaire for the MODINIS Case Descriptions

In order to ensure the case descriptions meet the information needs of stakeholders in interoperability at the local and regional level, we ask you to complete this short assessment questionnaire. Your feedback will be used to improve the next version of the present case and will also be taken into consideration when writing up more cases to be described in the course of the project.

Case being reviewed:

1.) Information content

a) Completeness of description

1	----- ----- ----- -----	5
only few relevant aspects		all relevant aspects

b) Detail of description

1	3	5	3	1
----- ----- ----- -----				
too general		right level		too many details

2.) Length of description

1	3	5	3	1
----- ----- ----- -----				
too short		right length		too long

3.) Structure / headings

1	----- ----- ----- -----	5
unclear		clear

Prepared by:

Ralf Cimander and Herbert Kubicek
Institut für Informationsmanagement Bremen GmbH (ifib)
Am Fallturm 1, D-28359 Bremen, Germany

www.ifib.de

Tel.: (+49 421) 218 26 74, Fax: (+49 421) 218 48 94, email: info@ifib.de

<http://www.ifib.de/egov-interopability>

European Institute of Public Administration (EIPA)

Center for Research and Technology Hellas / Institute of Informatics and Telematics
(CERTH/ITI)

]

Prepared for:

European Commission
Information Society and Media Directorate-General
eGovernment Unit

Tel (32-2) 299 02 45

Fax (32-2) 299 41 14

E-mail EC-egovernment-research@cec.eu.int

Website europa.eu.int/egovernment_research