

# Using SSM in Systems Integration

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## From Systems Development to Systems integration

The messy problems are quite likely to surface at the interfaces between systems, functions, organisations.

In implementing information systems (for example in hospitals, NHS, local government, multinational pharmaceuticals), the significant problems emerge at the interfaces of the systems.

Often the interfaces are a important theme in the implementation of a of-the-shelf package.

In the implementation of ERP packages, the focus is one the replacement of a set of different systems with one uniform IT system.

**System integration focuses on the**

Development of interfaces.

Rationalisation of data from disparate systems to support data transfer

Creation of organisation wide data models which subsume any local data models

## Systems Integration Requires:

An understanding of why disparate and non-integrated systems exist;

An explanation of why data is manually transferred between systems;

Discussion of historical reasons for particular configurations of systems and particular information flow;

An understanding of interactions at the organisational level between the groups, departments and organisations that support the IT systems and carry out the purposeful activity.

In viewing systems integration as a technical problem concerning data rationalisation and the imposing (almost) of an-organisation wide information system key organisational issues get over looked.

## System Integration Problems occur in :

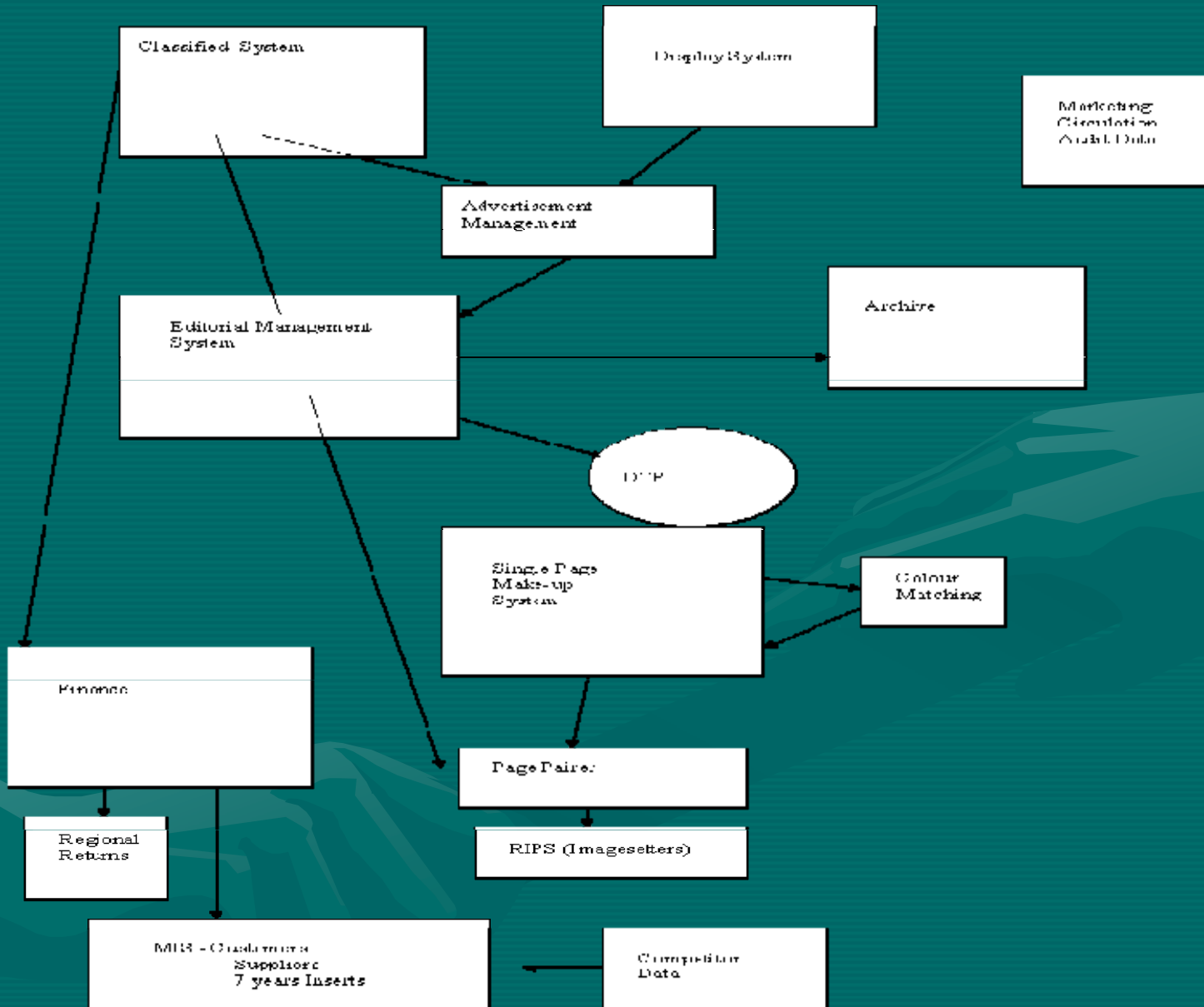
Health Service

Finance Sector

Newspapers

Local Government

*System integration problems arise from clashes between different groups with different purposeful activity, different social and cultural attributes, and different histories.*



## **Newspaper Case Study (1997)**

Systems within a system.

Several root definitions, different CATWOEs.

## **Local Education Authority (2001)**

Inside the Information and Statistics Team a number of disparate information systems were in use.

Across departments, groups and schools system integration issues were evident.

## SSM and System Boundaries

*SSM studies have perhaps been limited to closely defined limited system within organisations (Office management, hotel management, for example) where the boundary is easily defined. Even NHS contracting has a fairly well defined, non-porous boundary. Such systems may be almost parochial. Perhaps we should consider the effect of dynamic or porous system boundaries, particularly resulting from globalisation. How will SSM tackle large system problems mediated by the Internet?*

## Local Education Authority Forecasting (2001)

Information and Statistics Department (I&S)

Uses statistical returns from schools, together with demographic data and other inputs to generate forecasts of pupil numbers for the next year.

Critical to the schools, since the forecast determined the budget.

## Process

Root definition.

Rich picture.

CATWOE to explore a number of ideas, then from interviews and discussion generating a rich picture.

Review of statistical Methods

Review of Information Flows

Issues Catalogue

Conceptual Model

## Recommendations

Reorganising as a service function with service level agreements,

Rationalising the IT systems,

Revising and simplifying the statistical methods

Appointing a Statistics Service Manager

## Root Definition

*a system to accurately predict the number of pupils in individual local authority schools over the short term, such that accurate budgets can be allocated to schools resulting in a minimising of retrospective funding allocations or clawback. It is also a system to accurately predict the number of pupils in individual schools over the long term to enable both the school and the LEA plan its provision of educational resources for individual schools in the medium to long term. It is also a system to accurately predict the number of pupils in total across all schools within the authority, in order to determine the demand for educational resources over the short and long term.*

## Customers

*Local Authority Finance Section*

*Development and Review Section*

*Schools*

*Local Authority Treasurer's Department*

*DfEE*

Non-homogenous customer populations.

Different groupings in different systems

Competing goals and needs

## Actors

*Diversity of actors and locations of forecasting activity*

*I&S team, Development and review*

Customers in service provision, carrying out part of the transformation.

Lack of clarity about roles and responsibilities.

## World view

*Forecasting seen as a financial system*

Different worldview for different systems

Clash at interfaces

## Transformation

*Raw statistics transformed into forecasts using statistical expertise and tacit understanding.*

Tailored transformations depending on interface.

## Ownership

*Chief education officer*

*Schools*

*Parents*

*Tax payers*

Joint ownership across interfaces.

Problems of ownership of data /systems within a systems integration exercise.

## Environment

*Public sector*

*Constantly changing government demands for information.*

*At the time PLASC replacing Form 7*

*Demographics*

*Changing organisational structures*

*Volatility of the interface*

*Openness to environmental effect*

Issue No.	Description	Source	Comments	Action
1	Schools don't have a good understanding of 4+ rules and point of transfer of pupil to nursery.	Finance	Need for clearer advice to schools? Information sheet? (See 6).	I & S Team to liaise with Admissions to ensure schools fully understand the rules.
2	Live birth data contains addresses and postcodes. This may be a problem in terms of data protection.	Area Health Authority (AHA)	Note AHA could provide data in different format, and include other attributes such as mother's religion.	Consider alternatives to current arrangements before AHA remove the current supply of data on live births.
3	Forecast 95 will need substantial alteration to cope with PLASC which works at pupil level.	IT Services	Problem may not be so great. Need to understand exact needs of Forecast 95 from Form 7 and hence from PLASC.	IT Service perception that Forecast 95 will need changes may be incorrect since the PLASC data process will bypass Forecast 95.
4	Schools have difficulty with nursery school allocations because they have to be reconstructed in Form 7 and are not simple brought over from SIMS.	EDISS	Problem results in queries with both the I & S Team and Finance. The I & S Team end up checking individual pupil records on the Pupil Database.	Queries should come to one place e.g. the I & S Team? Clear Form 7 nursery guidelines should be prepared.
5	Development and Review have a clearly identified need for local and global forecasts, which are based on assumptions other than the most probable outcomes.	Dev & Rev	Examples are forecasts that provide for maximum (optimistic) and minimum (pessimistic) numbers. This is to identify the range of possible outcomes, which the LEA should consider.	Develop a role for someone to produce these forecasts for Dev & Rev based on their specific needs.

## SSM at the Interface

How do we use SSM to explore boundary issues?

Root Definition, Conceptual Model for every system?

Need to focus on system issues at the interface?

## SSM at the Interface

Hotspots

Points of contention

Points of consensus

Conceptual gaps

Aligned and non-aligned interests

Attracting forces

Repelling forces

Cross-interface perception and interpretation of purposeful activity

Communication strategies and themes.