Business Activity Modelling

- Business Activities
- Business Events, Threads and Rules
- The Business Activity Model
- Direct Business Activity Modelling
- System Events
- Resource Flow Diagrams
- Functional Decomposition
- Work Practice Modelling
- eBusiness Considerations
- Hierarchical Task Modelling
- Task Scenarios
- User Catalogue
Business Activity Modelling

- The technique provides a pictorial representation of the business which helps tease out the requirements, focus on the areas of concern, put the system into perspective, inform the clients of what is possible and what is in the realm of ‘science fiction’, while never alienating them in any way.
- When used properly, Business Activity Modelling can increase user participation and encourage users to build a sense of ownership for the future system.
Business Activity Modelling

Types of Activity

- Plan
- Enable
- Do

Monitor

- Expectations
- Performance
- Data

Control

- Proposed
- Changes

Feedback

Expectations
Business Activity Modelling

- Business Events
- Business Threads
- Activities
- Tasks
Business Activity Modelling

Business Events

Business Events Trigger the Activities of one Business Thread
Business Activity Modeling

Activities

- An Activity is a self contained action that usually is achieved in one sitting
An Activity can be broken-up into tasks. The tasks involved in completing an activity may vary according to different conditions. When an activity is complicated, we may analyse the activity by breaking it into tasks and then reconstructing these tasks.
A business activity

Arrange
Despatch Details
The phrase describing the activity should contain a verb which shows what happens from the business point of view. Thus ‘Despatch Details’ won’t do since it is verbless.
• In typical pictorial fashion we can display all the business activities on a large enough page. We can then link those activities with arrows indicating associations which show, in some loose form, which activities have to precede which.
For example, the following activities regarding a single customer order are evident in our case study: a Despatch Clerk receives a customer order through the Sales and Marketing Department, arranges the despatch details by checking the stock files to allocate the appropriate stock to be given to the customer and forwards details of the despatch contents to the Despatch Supervisor who, in turn assembles the goods for despatch.
Business Activity Modeling

ZigZag Example

- Receive Customer Order
- Assemble Goods for Despatch
- Forward Despatch Contents
- Arrange Despatch Details
After interviews, observation, brainstorming sessions, workshops and the like we can usually draw up a Business Activity Model directly. Alternatively we may use

- Resource Flow Diagrams
- Functional Decomposition

To help us draw Business Activity Models…
A Resource Flow Diagram consists of two symbols:

- Resource Flows
- Resource Stores
Deliveries from suppliers arrive at the Loading Bay, then, when accepted, move to the Goods In Delivery Dock from where they move to the Depot Storage Zone as stock.

It now remains for us to note the activities that take place before and after the goods are placed somewhere: As goods arrive they are 'checked'. If the goods are okay they become accepted and are temporarily 'placed' in the Goods In Delivery Dock waiting for a permanent spot in the depot. Once a spot is 'allocated' they are 'removed' and 'stored' in the Depot proper.
Another approach to Business Activity Modelling favoured by business analysts is the one that uses Functional Decomposition. Functional Decomposition starts from an organisational chart and drills down to the activities of each department or sub-section.

If we look at the ZigZag organisation chart and focus our attention on the Warehousing side for a moment we can ask questions about the activities of the three sub-sections of Goods Receiving, Stock Keeping and Dispatch.
Business Activity Modelling

Functional Decomposition

ZigZag

Warehousing
- Goods Receiving
- Stock Keeping
- Despatch

Purchasing
- Supplier and Product Info
- Purchase Order Placement

Sales & Marketing
- Marketing
- Customer Sales
- Customer Relations

Administration
- Accounts
- Secretarial
- Computer Services
Business Activity Modelling

Functional Decomposition Identifies Departmental Communications

Warehousing

Goods Receiving
- Place Delivery in Delivery Dock
- Check Delivery
- Remove Delivery from Delivery Dock

Stock Keeping
- Produce Stock Report
- Set Up Delivery Schedule
- Arrange Delivery
- Allocate Stock Locations
- Update Stock Levels
- Produce Stock Storage Report
If we were minded to perform some further business analysis we would use our figure to ask questions such as:

- Can we have the allocation of locations done by the Goods Receiving department?
- Can we do the allocation of locations before we place the delivery in the delivery dock?
- Can we first store the goods in the depot and then record where these goods were stored?
Work Practice Modelling

- While the BAM defines the business activities in terms of what and when, the WPM specifies who will carry out each activity, where, how and maybe why.
- The products of Work Practice Modelling include the User Catalogue, Task Models, Task Scenarios, and User Roles.
### Work Practice Modelling

#### The Despatch Clerk

<table>
<thead>
<tr>
<th>Activity</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receive customer order</td>
<td>Sales and Marketing forward customer orders to the depot. Two copies of each customer order are filed.</td>
</tr>
<tr>
<td>Arrange despatch details</td>
<td>The Despatch Clerk checks the stock files and allocates the stock to be given to the customer</td>
</tr>
<tr>
<td>Forward despatch details</td>
<td>The Despatch Clerk gives the despatch details to the Despatch Supervisor</td>
</tr>
<tr>
<td>Assemble goods for despatch</td>
<td>The Despatch Supervisor arranges for the physical assembly of the customer’s order and the return of the annotated customer order back to the Despatch Clerk</td>
</tr>
<tr>
<td>Despatch goods</td>
<td>The fulfilled customer’s order is despatched with a despatch note to the Customer</td>
</tr>
</tbody>
</table>
Work Practice Modeling

- Work Practice Modelling entails the allocation of responsibilities to humans. To do so successfully, experience is needed plus the full backing of the affected organisation.
Hierarchical Task Modeling

- A task model describes the human activities that take place as a response to a business event. The BAM, which is after all just a network of activities, provides the starting point of activity identification. Each activity may then be broken down into smaller tasks which have to be performed to complete the activity. These tasks can be arranged in a hierarchy using a Hierarchical Task Model (HTM).
Hierarchical Task Modeling

Arrange Delivery

- plan (30): 33 or 33,36

Check Available Time Slots

- plan (33): 332, 334 or 332,334, 336

- Record Preferred Date
- List Available Time Slots
- Pick Slots

Set Up Delivery

- plan (36): 362 or 362, 366

- Type Delivery Line Info
- Accept Delivery Line
One way of understanding and controlling the tasks involved in the successful completion of an activity is to provide concrete examples of real life situations which describe from beginning to end the actions needed to complete the activity.
Hierarchical Task Modeling

Task Scenarios

- Each business activity is influenced by certain happenings and conditions to which users of the system have to react in order to complete the activity. Each set of such conditions represents a task scenario for the activity. For example, each different plan of the HTM represents a Task Scenario.
Task Scenarios are very helpful in validating Task Models. Usually, the task scenarios precede and drive the creation of the Task Model, but, as with all other diagrammatic tools of system analysis, the tables are soon turned and the Task Model generates ideas for Task Scenarios which can be validated with the users.
Hierarchical Task Modeling

- Hierarchical Task Modelling originated in the 50’s when sociologists were trying to dissect peoples’ jobs in order to analyse them fully. The dissection of jobs into separate tasks led to a better understanding of these jobs and provided, almost as a side-product, tighter job descriptions and clearer training manuals. Their use in a computing environment will hopefully lead to similar benefits.
The User Catalogue

- Users take a central role within SSADM and so the identification of relevant users is quite an important task. Creating a User Catalogue is a formal way of documenting the job titles and the business activities of each user or jobholder. In essence, the User Catalogue is a summary of the Work Practice Model, arranged by job title.

- The User Catalogue will later be used to help define the outward appearance of the new system (or at least its interface with users), but to start with its main purpose is to support the identification of users in the current environment.
<table>
<thead>
<tr>
<th>Job Title</th>
<th>Responsibility (Job Activities)</th>
</tr>
</thead>
</table>
| **Purchase Order Clerk** | *Placing of Purchase Orders* (Record proposed purchase orders; Find appropriate suppliers; Receive products’ availability; Suggest substitute product; Confirm purchase order; List available stock)  
*Matching Supplier Invoices* (Receive supplier invoice; Check invoice; Forward matched invoice) |
| **Despatch Supervisor** | *Despatching of Customer Orders* (Assemble goods for despatch; Despatch goods)                                                                                   |
Relationships Between BAM Products
An Example from eCommerce

- One of the main reasons the ZigZag Board of Directors decided to investigate the development of a new system is the advent of e-commerce. The Board wishes to take advantage of e-commerce to reach retail customers directly. It also wishes to investigate whether the World Wide Web would be a convenient platform to be used by their purchasers who roam the world to communicate their findings.
An Example from eCommerce

- When it comes to customers using the Internet to communicate their orders the only real difference is that the input of the order is now to be performed by the customer directly, thus relieving the onus from the ZigZag employee who currently does the input.

- Such a situation, where the work is shifted from the company to the customer, is just another example in a long standing shift that manifests itself more clearly in supermarkets where the customer does much of the work we traditionally associate with a shopkeeper.
An Example from eCommerce

- The actual information to be stored as a result of expanding into e-commerce is very similar to that which we would have stored in any case.
- What changes are the users of the system, which now have to encompass bona-fide customers, and the activities that have to be added due to the expansion into retailing.
- There will also be a job shift since now web-designers will need to be employed to maintain the new site. We therefore note that B2C e-commerce only affects the User Organisation and the External Design.
An Example from eCommerce

- With no effect on data, we see that Business Activity Modelling and Work Practice Modelling can deal with the transition to e-commerce quite effectively.
- Currently the typical ZigZag customer is a shop that buys wholesale from ZigZag.
- This wholesale customer sends orders to Sales and Marketing who forward them to the depot where the Despatch Clerk is responsible for arranging the despatch details and updating the stock levels.
An Example from eCommerce

- If we wish to allow retail customers direct access to our system we need to first understand the buying activities from their point of view.
- Only by understanding the customer’s buying experience will we be able to design a system to accommodate them.
- Up to now we have been performing Business Activity Modelling from the point of view of the business.
- With the advent of business-to-customer e-commerce we need to also study the activities from the point of view of the customer and to see how the two activity models interact.
An Example from eCommerce

- To order goods from ZigZag a customer will have to search for goods, place them in a shopping basket, arrange for payment and then forward the order to ZigZag. We can represent these activities quite easily.
An Example from eCommerce

- We now turn our attention to the activities from ZigZag’s point of view.
- While ZigZag was dealing with wholesale customers, despatches were fairly big and relatively infrequent.
- With the decision to add retailing to the business we anticipate many smaller despatches.
- Each retail customer order will be for just a few CDs that will need packing and pricing.
An Example from eCommerce

- Since the packs will be smaller than the ones that ZigZag is used to, we expect these packs to be placed in a Despatch Dock where they will be assembled once a day (or more at peak periods) for posting.
- ZigZag will also need to produce packing lists and despatch reports to be able to tackle an increased number of returns.
ZigZag expects to continue despatching wholesale orders using their own vans but expect to use the post to despatch retail orders.

Each retail customer order will incur a delivery charge and every effort will be made to despatch the whole customer order in one go.

We can represent the activities for handling retail orders quite easily.
An Example from eCommerce

- Receive Customer Order
- Arrange Despatch Details
- Assemble Goods for Despatch
- Price & Charge Customer Order
- Produce Customer Delivery Note
- Pack Customer Order
- Assemble Packs for Despatch
- Place Pack in Despatch Dock
- Update Delivery Report
- Post Retail Goods
An Example from eCommerce

- When the goods leave ZigZag they arrive at the customer’s address where they are received, checked and, if found wanting, returned.
- We can combine the two activity models in one diagram to study how the two activity sets interact with each other.
By expanding the area of study to acknowledge the customer as a new user of the system, we immediately spot from our figure that we expect the user to search for goods but we have not yet identified a corresponding activity of adding goods on the browser for the customer to find.

This realisation immediately raises the question of who is responsible for providing the future website with product information.
Questioning of the ZigZag staff reveals that Sales and Marketing are currently responsible for providing sales brochures and price lists for the wholesale trade.

It therefore stands to reason that Sales and Marketing should also be responsible for maintaining the future website.
The above arguments show two things:

a) the power of Business Activity Modelling to identify communication and responsibility gaps within departments,

and b) the need for the IT department of a company to transcend traditional departments in an attempt to integrate as many cross-company operations as possible.
An Example from eCommerce

- Using the new information system to move from wholesale to retail causes a few upheavals on work practices too.
- Firstly, the customer has to be studied as a new user, in the same way that e-banks had to study their customers before designing online banking systems.
- Secondly, ZigZag has to acknowledge the need to add web-designers to their list of employees.
- Thirdly, the hustle and bustle in the warehouse will increase with many more pickers needed to accommodate the anticipated increase in the number of transactions that will have to take place.
The System Development Template

- Decision Structure
  - Investigation
  - Specification
  - Construction
- User Organisation
- Policies and Procedures
The System Development Template

Decision Structure

Investigation

Specification
- Conceptual Model
- Internal design
- External Design

Construction

User Organisation

Policies and Procedures
The Place of Business Activity Modeling

Investigation

- Conceptual Model
- Internal design

BAM

Decision Structure

External Design

Construction

- Conceptual Model
- Internal design

Speciation

- Conceptual Model
- Internal design

Policies and Procedures

- Conceptual Model
- Internal design

User Organisation

- Conceptual Model
- Internal design

RD

WPM