1.1.1 Importance

The factors labelled D_j^m are things that either happen or don't happen eg "does the recipient reply?" and C_k^m known measurements eg "to how many users does the recipient forward it?" Their values are not going to be readjusted in the light of the success or otherwise of the prediction of relevance values for incoming TransMails – only the *weightings* given to them will be adjusted using the linear regression model as above.

> The importance factors I_g^m and I_l^m are different, because they are not clearly ascertainable numbers but are (estimated) parameters constructed within the model itself. Here the values of these factors are affected by the TransMail traffic that has occurred. For example the importance of a user is affected by the receipt of Transmails from other users – his/her importance perturbs or is shared by the importance of the other users. This interactive process must be taken into account before the importance can be fed into the equations (1) or (2) in a search. Similar arguments will apply for other importance factors, so we will assume that we can focus on one such importance factor, say the user importance factor.

There is, for user i, some true global value I_{gi}^{Ω} to which ideally the system should converge. In practice, of course this will never be static (importances are constantly changing), but as an idealisation it applies. Initially a starting value of I_{gi}^0 will be set globally, based on judgements of levels of responsibility within the organisation. The ideal is that starting from I_{gi}^0 the system will converge to a value near to I_{gi}^{Ω} over time.

<u>Factors which can affect global importances over time</u>:

(1) **<u>TransMails received:</u>** Receipt of an email from a more important sender increases the importance of recipient – dependent on how many others receive the same email. "Shared importance" therefore depends on $^rI_i/C_i$ where C_i is the number of recipients of the i th TransMail. The effects depend both on the number of TransMails and the average of the shared importances
The factor affecting the global importance at time k of a user is given by:

$$f(\sum_{i=1}^{m} {}^rI_i^{k-1} / C_i ; \frac{1}{m}\sum_{i=1}^{m} {}^rI_i^{k-1} / C_i)$$

(summed across the m senders in time k-1 to k)

(2) **<u>Results of TransMails sent</u>**: A user whose emails are never opened or forwarded will decrease in importance, whereas one whose emails are usually read becomes more important [this may also stop people sending unnecessary TransMails!]. If those of greater importance read and deal with TransMails this can also increase the user's importance – unless it is always the same recipient (as would be the case of a PA TransMailing his/her boss regularly).
Again the effect is a function of both the number and average importance of the recipients and the results. Importance sharing of those who opened and read the TransMail is a function also of the time spent with it open, relative to the length of the TransMail itself:

where t_i is time spent and L_i a function of its length (obviously an important one-line TransMail can be read in twenty seconds) giving an "attention ratio" of t_i/L_i

For those who read it, there is also an effect depending on whether they:

(i) replied to it
(ii) deleted it without reply (this could have a negative effect)
(iii) stored it
(iv) forwarded it.

This can be indicated by an A representing action:

$$f(\sum_{i=1}^{m} {}^{r}I_i^{k-1}(A); \frac{1}{m}\sum_{i=1}^{m} {}^{r}I_i^{k-1}(A))$$

This will be countered by a negative effect on importance of recipients who either deleted (del) it or stored it without reading it (no).

$$- f(\sum_{i=1}^{m} {}^{no}I_i^{k-1}; \frac{1}{m}\sum_{i=1}^{m} {}^{no}I_i^{k-1}; \sum_{i=1}^{m} {}^{del}I_i^{k-1}; \frac{1}{m}\sum_{i=1}^{m} {}^{del}I_i^{k-1})$$

(3) <u>Relevance Rankings:</u> If recipients give received TransMails a high relevance score (when asked on the sample basis), then this will increase the importance of the sender.

If relevance reported by recipient is $R^r(T_i)$ for a transmail from the user, then the importance is affected by a function of the average of the n such reports made during the time period k-1 to k, ie: :

$$f(\frac{1}{n}\sum_{i=1}^{n} f'({}^{r}I_i^{k-1}; R^r(T_i)))$$

This also allows feedback to the system to ensure that it converges to some kind of "realistic" estimates. Direct feedback on "importance" may be very difficult to build in because most people will be likely to have a better idea of importance *to them* than global importance. Some kind of periodic review eg from HR (at least dealing with in-house relative importances) could be built in however.

A global importance formula will readjust the global importance in time k from that of k-1 using these various functions:. The value α indicates how fast the global importance should change over time.

EXHIBIT 2055

metadata slip sheet

BegDoc	REV0001066
BegAttach	REV0001066
File Name	Importance 1.1.1.doc
LastCreateOn	9/18/2004 11:48 AM
LastModifiedDate	9/18/2004 11:51 AM
Custodian	Marston, Paul
Author	Marston
SortDate	9/18/2004 11:51 AM
Office-Revision Number	4
Last Saved By	Marston
Exhibit No	