

# The Flower Model for multidisciplinary teamwork on a new product-market combination – in this case E-mail-on-TV.

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The project was executed at Philips Sound and Vision's TV Lab, Eindhoven, The Netherlands

## ABSTRACT

A multidisciplinary team at Philips Sound and Vision's TV Lab developed an E-mail-on-TV functionality. Their objective is to offer the benefits of E-mail to people in their living environment without having to use a PC. Developing such a product-market combination requires working on the product-side and on the market-side in parallel. In order to guide that process the team developed and applied the Flower Model. This model is a framework to create synergy between the disciplines within the team, and to integrate the findings of early consumer research into the development process. The article describes the successive steps of the process, and how the Flower Model helped to work as a team and to develop and test product-market combinations.

## Keywords

Product-market combination, multidisciplinary teamwork, user interface demo, early consumer research, E-mail, TV.

## INTRODUCTION

Philips Sound and Vision wants to offer TV sets with interactivity and telecommunication capabilities to reinforce their position in the market for consumer electronics. New product development of Philips Sound and Vision's TV Lab is often driven by new technology, but this time they wanted to experiment with a multidisciplinary team that focuses on end-user and marketing aspects. Therefore the TV Lab installed the Multimedia Team to develop ideas for new product-market combinations. Between November 1995 and June 1996 the team consisted of six post-master students representing hardware and software engineering, human factors, business administration, and industrial design engineering (the author) of Eindhoven and Delft Universities of Technology. This article describes how the Multimedia Team developed 'easy-to-use E-mail integrated into a TV set', or in short: HelloTV (preliminary name).

To achieve a short time-to-market the team combined the technologies of two running projects at Philips: a project that puts a telephone and modem in a TV set (with a remote control for input of short texts), and a project with an on-line service for E-mail. This choice yields a performance penalty: HelloTV can only use text and simple graphics (like Teletext) and occupies the telephone line during use.

## THE FLOWER MODEL AND CONSUMER RESEARCH

HelloTV is a new product-market combination that offers the benefits of E-mail to people who do not want the hassle of using a PC in the domestic environment.

The team aimed to make HelloTV easier to use than regular PC based E-mail in order to fit the rather passive way in which people use their TV sets. HelloTV can be made easier to use by leaving out some functionality of regular E-mail that is difficult-to-use. For example users of HelloTV cannot use 'attachments' or configure the modem. A carefully reduced functionality will make HelloTV different from regular PC based E-mail 'with a TV as a monitor'.

The team tried to reduce the risk of putting the wrong product on the wrong market by carrying out consumer research. This research is difficult because respondents of a likely target group have little or no experience with the product, and therefore cannot be asked directly what they think of it. But they can talk about their telephones, answering machines and mail – things they use daily.

## The Flower Model

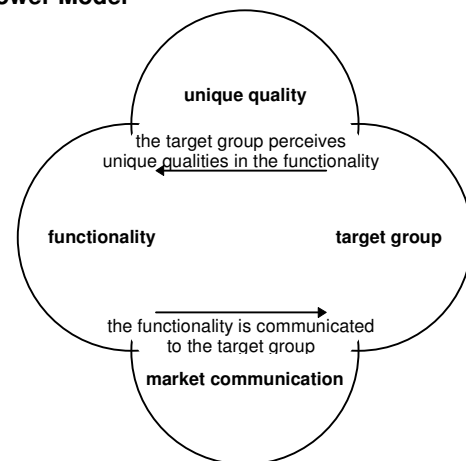


Figure 1. The Flower Model

The team members want to work from their different disciplines on the product side and the market side of HelloTV in parallel, and want to conduct early consumer research to steer the development. But different disciplines don't automatically create synergy, and results of consumer research often conflict with technical limitations. To solve these problems, the Flower Model (Figure 1) was developed and applied as a framework to guide the process.

The model integrates four issues of the product-market combination:

- functionality: apparent in user interface and performance
- target group: defined by demographic variables and current usage of telecommunication devices
- unique quality: user benefits and drawbacks compared to other telecommunication devices (like a Unique Selling Proposition, but unique quality can also be a drawback)
- market communication: positioning and promotion that support and sell the product or service

The framework resembles the approach of Clark and Fujimoto [2] who pursue ‘product integrity’ by defining a concept right from the start from a customer’s perspective (what the product does, whom the product serves, what the product is, and what the product means to customers). The Flower Model was applied slightly differently: it starts with a definition of functionality and proposals for the target group, unique quality and market communication, and then adds more detail during the process.

**Development Process and Consumer Research**

The process that the team executed is a mixture of development and consumer research: Step 1 Formulating an initial concept, Step 2 First concept test with ‘average consumers’, Step 3 Expert interviews to refine the proposals, Step 4 Creating a demo of the user interface, Step 5 Concept testing sessions with respondents from proposed target groups, and finally formulating product-market combinations (Figure 2).

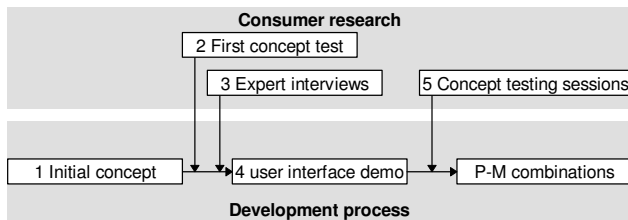


Figure 2. Development process and consumer research

**STEP 1 INITIAL CONCEPT**

The process starts with assumptions for three petals of the Flower Model (Figure 3). The functionality and target group are defined as “easy-to-use E-mail in a TV set” for “people who are interested in the benefits of E-mail”.

The unique qualities are difficult to define; it is not yet known to which devices people will compare HelloTV, and which unique qualities they will perceive. Here are some options to be tested (marked with question marks):

- Compared to the telephone and answering machine, HelloTV is text instead of speech. When you don’t want to or cannot directly converse with the other person, it is a user benefit to conveniently read and write messages.
- Compared to a postcard HelloTV is faster, but has no graphics. HelloTV is fast as a telefax, but has no graphics.

- Compared to E-mail-on-PC HelloTV is easier-to-use, better fitting the domestic environment, and cheaper to purchase (compared to buying a PC, not only a modem).

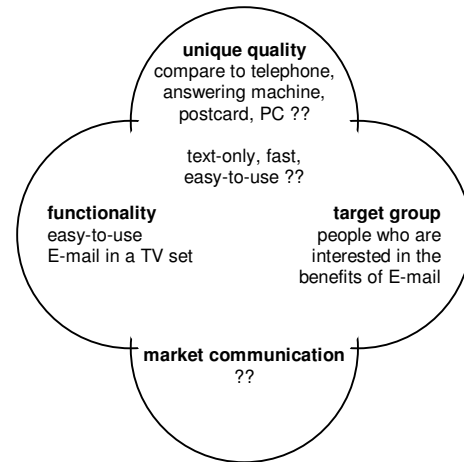


Figure 3. Initial proposal

**STEP 2 FIRST CONCEPT TEST**

The first concept test aimed to get ‘rough’ first reactions from possible consumers. The concept was discussed with 34 visitors at a public household fair (Huishoudbeurs ‘96). The respondents were told: “Suppose that you have a TV set on which you can receive and send text messages. If someone sends you a message you can read it on the TV screen. You can type a message with the remote control and send it with one button push.” (Not mentioning “E-mail” or “Internet”). Then they were asked: “Which people will use this? And for what purposes?” This way of questioning was used because direct questions like “What do you think of this?” may prompt socially acceptable answers. Also notes were made of the respondent’s sex, age, education, occupation and usage of telecommunication devices.

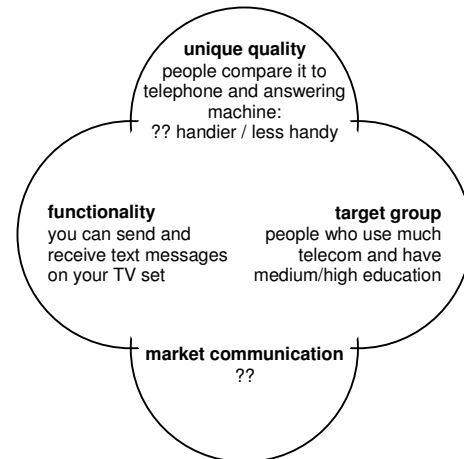


Figure 4. Results of first concept test

**Results**

Most respondents spontaneously compared the practical use of HelloTV to a telephone and answering machine, but some say it’s handier while others say it’s less handy. The

respondents who used many telecommunication devices (telefax, pager, PC) and had a medium or high education were better able to identify target groups (sometimes themselves) and user benefits for HelloTV. Therefore they seem to be an appropriate target group (Figure 4).

### Teamwork

The test was conducted by two team members of different disciplines, and discussed by all team members. This helped the team members to think more about end-users and their opinions (even if the results are not clear-cut).

### STEP 3 EXPERT INTERVIEWS

For evaluation of concepts De Bont and Schoormans [1] suggest to ask experts on behalf of the consumers. Therefore two researchers (Universiteit van Amsterdam) and one publicist/editor (De Groene Amsterdammer) were interviewed about the role of telecommunication in daily life, and two Philips sales managers were interviewed about the practicality of selling consumer electronics (Figure 5).

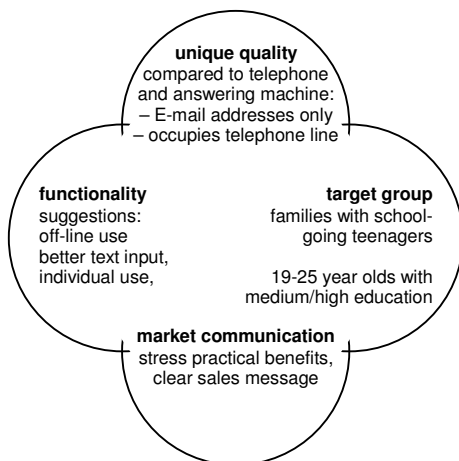


Figure 5. Results of expert interviews

### Results

The experts on daily life proposed to target HelloTV at:

- Families with teenagers, who know E-mail from school, but don't have E-mail at home; the parents buy it because they expect it's good for their children's future.
- 19-25 year olds with medium or high education, who know E-mail from work or education, but don't have E-mail at home; they buy it to use for social purposes.

They expected that people will compare HelloTV to the telephone and answering machine and see two main drawbacks. E-mail addresses are not widely spread among the target group's acquaintances, and E-mail addresses are not put into convenient directories like telephone numbers. And HelloTV occupies the telephone line 'unexpectedly' during a session. Obviously the telephone occupies the line during a call, but that's perceived as natural and not a disadvantage. This on-line character was their main critique and they suggested to enable off-line reading and writing. They also suggested a PC-like keyboard for text input. They

expected tension between personal E-mail use and social TV-watching and suggested to enable individual use (private mail boxes, passwords).

They suggested to highlight the practical benefits of HelloTV in market communication, and not to associate it with the Internet: "When you associate HelloTV with the Internet, you scare away people who have negative feelings towards the Internet. And people with positive feelings towards the Internet will prefer a PC over HelloTV."

The sales managers stressed the need for a clear sales message that poses a solution to a need that people identify with. For example they suggested: "Children use PC and telecommunication at school. With HelloTV they can practice at home and they need it for their future."

### Teamwork

The expert interviews were entirely transcribed, and issued to all team members to involve them in interpreting the results and drawing conclusions as a team. Some issues were already discussed within the team, but experts who put them into a scientific or commercial context added more weight in the scale.

### STEP 4 USER INTERFACE DEMO

The next step is to create a demo of a user interface that presents HelloTV as easy-to-use and that can be used in the concept testing sessions. Underneath are design guidelines that were formulated and applied to achieve ease-of-use.

#### Increase Ease-of-use, Leave Out Some Functionality

Understanding the pay-off between functionality and ease-of-use makes it attractive to leave out functionality that 'would also be nice'. An example of applying this rule is that in any situation the user can choose from no more than five options, presented as coloured buttons and activated by corresponding buttons on the remote control (Figure 6).



Figure 6. Limited functionality with more ease-of-use

#### Let's Make Things Tangible

Resemblance to tangible objects makes learning easier and using more comfortable. An example of applying this rule is that E-mail messages are presented as sheets of coloured paper. Incoming messages fly into the screen and unfold, and outgoing messages fold-up and fly off the screen with an appropriate sound (Figure 7).



Figure 7. Messages resemble tangible sheets of paper

The team developed a demo of the user interface that can be presented on a TV set together with a story ('scenario') of someone coming home, reading her new messages, replying to one message, and re-reading an important message.

### STEP 5 CONCEPT TESTING SESSIONS

People of the two proposed target groups are invited to test the concept of HelloTV in order to find out to which telecommunication devices they compare HelloTV and which unique qualities they perceive. De Bont and Schoormans [1] recommend to invite natural groups for a more natural discussion and evaluation. Therefore the families came as two parents with two children, and the people of 19-25 years old came in groups of four friends.

Each session started with a discussion on 'all these new technologies and telecommunication that are talked about recently' to make the participants feel comfortable and cooperative, followed by a presentation of the demo and scenario and a quick and emotional reaction to it. Then followed a discussion on possible unique qualities (text-only, fast, easy-to-use, E-mail addresses only, occupies the telephone line) in comparison to various telecommunication devices, and an informal chat afterwards (last but not least).

### Results

Most participants compared HelloTV to the telephone or answering machine and didn't see immediate advantages of HelloTV. They preferred speaking and listening to typing and reading. Most participants understood that people you want to correspond with must have an E-mail address, but interestingly didn't know anyone with one. Many participants found it difficult to understand the practical implications of 'on-line' (TV on/off/stand-by, telephone line occupied/unused). It even took some explanation (in the informal chat afterwards) about Internet and E-mail technology before all understood this .

### Proposals for Product-Market Combinations

It is recommended that market communication stresses examples in which text-only is advantageous over speech, and explains 'how it works' so that people understand what they can and cannot do with it practically (without technical details, maybe with a user interface metaphor of a postman getting and bringing mail while the user is on-line).

Because the reactions of the target groups differ slightly, two different product-market combinations are formulated.

### Product-Market Combination 'Families'

The families dislike answering machine and like HelloTV because it makes you "accessible in an unobtrusive way; you can read and write messages when you want to". They see HelloTV as additional to telephone and answering machine and hope that it offers cost benefits: "Quick E-mails instead of long telephone calls" (Figure 8).

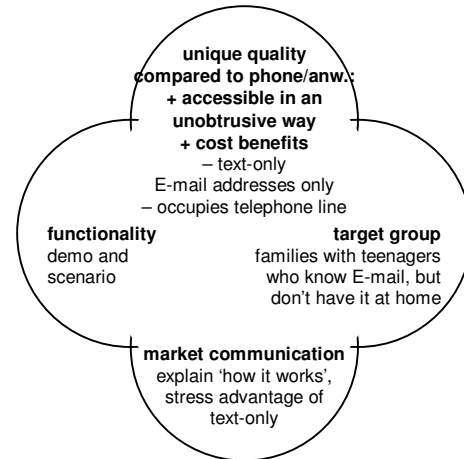


Figure 8. Product-market combination 'families'

### Product-Market Combination 'People 19-25 Years Old'

Most 19-25 years olds use a PC at home and find HelloTV superfluous: "If I want E-mail, I buy a modem." They state that you can only use HelloTV for "uninteresting, non-urgent messages, because interesting, urgent messages you do by telephone or answering machine." They assess that HelloTV will be easier to use than a PC. They state that marketing campaigns like the ones for pagers may make them enthusiastic for 'fun' messaging. (Figure 9).

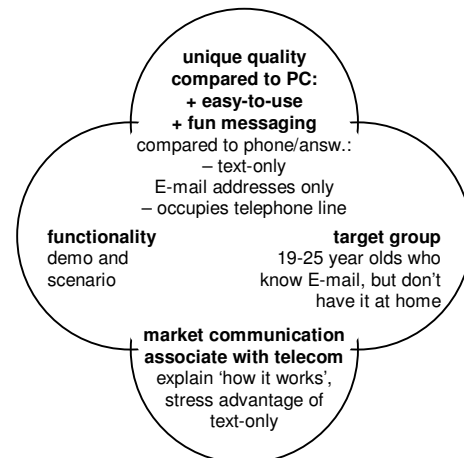


Figure 9. Product-market combination '19-25 years olds'

### LESSONS LEARNED

The Flower model helped to create synergy between the different disciplines within the team, and to integrate

findings from early consumer research in the development process.

A drawback of the Flower model is that it does not clarify how exactly you balance conflicting information and when exactly you must make decisions. For example the 'on-line or off-line' issue was badly dealt with. The initial concept was on-line, but experts suggested off-line usage. During the concept testing sessions an on-line functionality was presented, which the participants did not understand. This irresolute behaviour of the team may be caused by the conflict between 'uncertain' information about consumers' wishes and 'certain' information on technology. In such a situation it seems attractive to give more weight to the 'certain' information on technology. But at the end of the day it is the consumers who make or break a product – that is really certain. Therefore an improvement of the Flower Model may be to be able to add extra weight on some information, even if the information is relatively uncertain.

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