

1 ePacks

A hierarchical set of intelligent pallets – **ePacks** – is proposed as a key enabler of physical distribution of **ePurchased** goods. **ePacks** replace packaging, supporting the environment of the delivered goods from creation to final use, but providing several key advantages:

- Quality monitoring, loss prevention and tamper proofing throughout the supply chain
- 100% reuse (not merely recycling) with complete elimination of packaging and consequential waste
- Greater efficiency and effectiveness in distribution and use
- Innovative and attractive services to customers
- Opportunities to extend retail brand loyalties by extending the supply chain to homes and workplaces

2 Domestic ePurchasing

Physical goods purchased via electronic channels, such as the WWW, cannot be delivered via the channel, yet the channel encourages an expectation of rapid or immediate gratification. This makes attractive a distribution system that enables the very rapid delivery of some classes of goods and extends the range of products that can sensibly be **ePurchased**.

In the home and other eating environments, an **ePack** set would consist of

- **ePortionpacks** contain a deliverable portion of the product, and are the equivalent of the can or bottle (for drinks), the tin (for beans, vegetables, meat or fruit), the jar (for jam, pate or caviar) or the packet (for pasta, crisps or biscuits). They differ from traditional returnable containers in that they embed intelligent identifiers. The identifiers allow automatic picking of individual **ePortionpacks** for distribution and automatic sorting for reuse upon return, **ePortionpack's** intelligence would be sufficient to communicate with the containing **ePack**; detect tampering (sealed by a source certificate in the same way as **internet** downloads), and if necessary to monitor the quality of the environment in which it is stored. (Providing, for example, assurance that 20 year old 1st Cru wine has not been subject to temperature extremes). **ePortionpacks** may also need human readable labels to enable someone to choose the product they want from a set of mixed **ePortionpacks**.

An elegant extension of the **ePortionpack** is to include cooking instructions within the identifier. At its simplest, this need be little more than a bar code (like **VideoPlus** codes), but could also have much bigger messages. An intelligent microwave or conventional oven can then follow these instructions with precision,

and convert the contents of an **eCookpack** into a perfect **eMeal** in little more time than it takes to walk from the **eCouch** to the **eKitchen**¹.

- **eShelfs** are to contain a number of **ePortionpacks**, and would be the basic unit of transport to and from the consumption location. They would be of standard sizes and capability to suit: ambient temperature storage (kitchen food shelves); chilled storage (refrigerators); deep frozen storage; or other **specialised** storage (perhaps for wine). **eShelf** intelligence would be enough to: identify the removal of any full **ePortionpack** (much like the automatic mini-bars found in some hotel rooms) ; identify the return of an empty **ePortionpack** (for return and reuse); identify the destination during any transport; and communicate the identifiers and status of contained **ePortionpacks** to the next **ePack** up the hierarchy. **eShelfs** may include mechanisms to allow selective ejection of **ePortionpacks**.
- **eLarders** are to contain and manage **eShelfs** and to support the **eDialogue** necessary for people to identify and choose from among the products available. Different styles and sizes of **eLarders** would suit domestic, commercial or communal use. A likely first market for **eLarders** and **eCookpacks** would be in pub and canteen catering. An **eLarder** integrated into a home, apartment or service space can include **eShelf** reception and despatch directly to public spaces to enable unattended deliveries, (The identifiers within the **eShelf** intelligence would be enough to authenticate and prove a delivery).

eLarders may be owned and operated by a retailer, who would take responsibility for ensuring that it was appropriately stocked. Since most household purchases are habit-based, retailers could use their knowledge of past consumption to optimise the stocking of the **eShelfs**, ensuring constant fresh supplies of the usual staples and experimenting with various impulse purchase products (perhaps to coincide with planned advertising). Since **eShelfs** are designed to be returned, they can be returned with **ePortionpacks** that are still full and **sellable** elsewhere. If the local **eLarder** does not have a product, it will be able to get it within a delivery cycle (which, depending upon location, could be as short as a few hours). Clearly, being the owner of an **eLarder** in a home or a business would encourage very powerful brand loyalties.

- **eTransits** are to contain and carry **eShelfs** to and from **eLarders**. Distribution of standard **eShelfs** within a limited area using an appropriately sized van is vastly more efficient and effective than a similar distribution in shopping bags and cars.
- **ePickcentres** are to stock **eShelfs** with **ePortionpacks**. They are very similar in concept to supermarkets, but with the picking being to fulfil the orders of the **eLarders**. The picking can (but need not) be automated.
- **eSortcentres** are to receive back **eShelfs** with their load of (normally) empty **ePortionpacks**, **eCookpacks**, and sort them for despatch back to the nearest factory that has a use for them. Reuse enables much greater value to be embedded in the **ePortionpacks** and the **eSortcentre** may pay for the returned **ePortionpacks** and **eShelfs**.

¹ A fanciful further extension, needing an **eGrill**, is to have the butcher embed the identifier that decides how rare your steak is to be.

eCommerce will place much greater emphasis on the product as it is presented over the eChannel. This will relieve the physical product packaging of much of the burden of visual attraction that it currently has to carry. Physical products will no longer be seen in direct visual comparison with their competitors. They will no longer have to shout their virtues from a supermarket shelf, but do the shouting electronically from their web-site. Thus ePortionpacks can be much less diverse in shape (and colour) than current packaging, and thus be handled more efficiently in the distribution chain.

3 e Jigs

Brown and white goods (hi-fi, TV, PCs, washing machines, refrigerators, cookers, ovens, microwaves) are a class of products that will increasingly be sold over eChannels. For such products, ePacks can begin their role as eJigs within the factory, supporting the assembly of the product, and protecting it from creation storage and transport to its eventual working place.

This will be increasingly required by regulation, as waste aware governments legislate about “ownership” of the packaging, and require its manufacturer to be responsible for its disposal.

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