

**Project M3I – Market-Managed Multi-service Internet – aims to design, implement and trial a next-generation system that will enable Internet resource management through market forces, specifically by enabling differential charging for multiple levels of service.**

The capabilities created by M3I will increase the value of Internet services to customers through greater choice over price and quality, and reduced congestion.

For the network provider, flexibility will be improved, management complexity reduced and hence revenues will increase.

Price-based resource management pushes intelligence and hence complexity to the edges of the network, ensuring the same scalability and simplicity of the current Internet.

A trial system will be designed and experimented with. It will enable ISPs to explore sophisticated charging options and business models with their customers. **Measurable improvements for end users** are:

- the **ability to instantaneously increase quality of service (QoS)** by accepting different charging rates;
- more **effective competition** in a differentiated services market;
- **real-time feedback** and validation of charges.

**Measurable improvements for ISPs** using our system are:

- the **ability to change tariffs and easily communicate them** to the end users within seconds;
- the **ability to hold current QoS in the presence of bad congestion effects** by communicating price changes in real-time to customers;
- the **ability to charge differentially for applications requiring differing QoS levels**, or multicast.

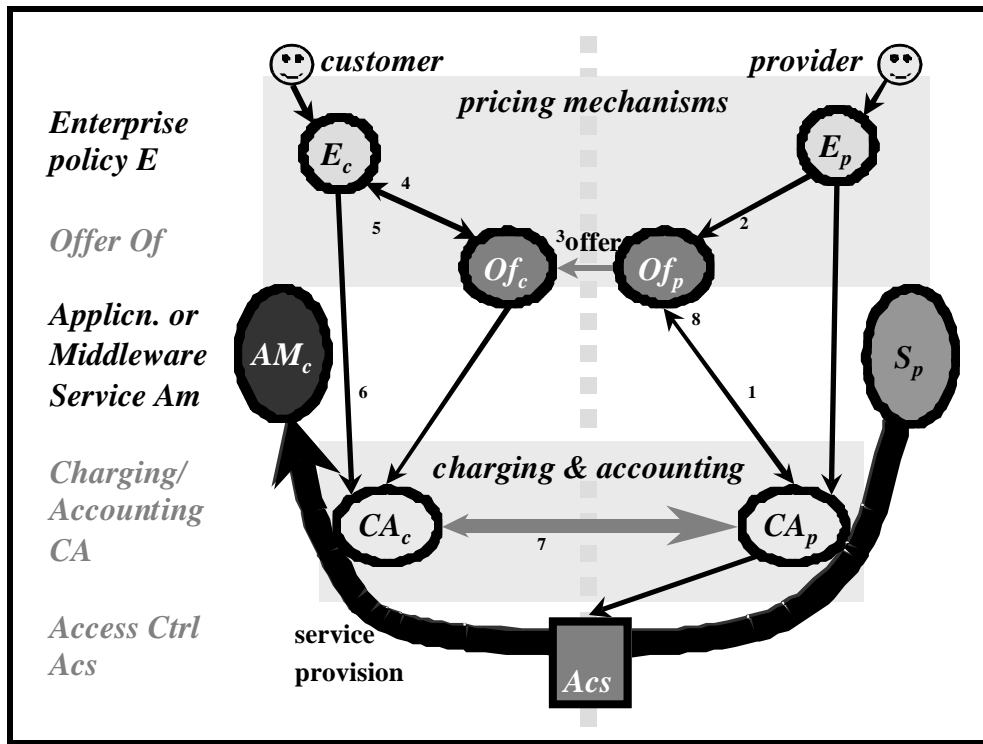
Using the above platform, we will show to what extent:

- the demand for Internet services, including various QoS levels can be managed effectively through a pricing mechanism;
- customers can flexibly access both high and low quality services, depending on their particular application needs, instead of being limited to a single best-effort service as in the current Internet;
- end users in corporate organisations can exercise similar choice, but constrained by the policy of the party that is paying;
- ISPs can recover the costs of new services, such as voice and video, that are currently provided by different infrastructures, and hence increase social efficiency by exploiting economies of multiplexing and scale, which in turn will also provide for increased network revenue;
- simple and scalable extensions to current technology can provide the correct incentives for the economically efficient and uncongested operation of the Internet.

Analysis will be performed to show the global stability, fairness and profitability of differential charging and the efficient operation and management of the network, both at the transport and service level.

**M3I is RTD Project No 11429 under the European Union's Fifth Framework Programme. The project is expected to start on 1 January 2000 and run for two years.**

A good technical architecture highlights the main separations of concerns in a system and therefore leads to well-structured technical work-packages by minimising inter-dependencies. We show our initial architecture concept below



Architecture for market managing Internet services

The immediate difference from traditional communications billing architectures is that the customer processes are included on the left of the figure as a mirror image of the provider's on the right. This is because the reaction of the customer's systems is as important as the control of the provider. Also, the customer has an interest in real-time feedback of their account status and in validating that charges are justified.

**The Participants in the Project with their Roles are:**

**Hewlett-Packard Ltd, Bristol, GB:** Project Coordinator; overall responsible for running the project; responsible for Prototype System Integration.

**BT, GB:** Project Technical Authority; overall responsible for System Technical Architecture; responsible for "Price Reaction" - linking charging to User/Applications

**Athens University of Economics and Business, GR:** overall responsible for Modelling, with specific responsibility for ISP Business modelling.

**Eidgenössische Technische Hochschule Zürich, CH:** overall responsible for Charging and Accounting System; responsible for ISP Cost Modelling

**Darmstadt University of Technology, DE:** overall responsible for Pricing Mechanisms; responsible for network layer technology and its inter-operation with charging systems to support sophisticated business models

**Telenor, Oslo N:** overall responsible for "Requirements and Validation", with specific responsibility for Requirements and for "Trials and Experiments".

For further information, please contact the project manager, [sandy\\_johnstone@hp.com](mailto:sandy_johnstone@hp.com)