At the core of the system is a hybrid multi-engine embedded MT system: essentially an EBMT system with a "translation memory" (TM) extracted from corpora of doctor–patient interviews, supplemented with a simple rule-based MT (RBMT) system and a word-by-word lexical look-up facility. It will have a highly flexible interface: a simple set-up like in a chat-room, where each user types at a keyboard with the results shown on a split-screen is not practical when one of the users may not be a regular computer user.

The system in this mode has two users: the doctor and the patient, with significantly different profiles of computing experience. Accordingly, the user-interfaces will be quite different for the two users, while necessarily being integrated. Whereas the doctor can be expected to use the keyboard and mouse, and be comfortable with a sophisticated GUI, the patient's interface presents a number of problems.

Obviously, in the long-term we would want to consider speech input and output for both the doctor's and patient's interfaces. In the short term, and given the current state-of-the-art, text-based interfaces are proposed.

It should also be remembered that some patients will not need to use the system for every part of the interview, their English being sufficient for some interactions. In addition to the "Consultation mode", we will simultaneously develop a "Reception mode" with an interactive FAQ/help system and a "History mode" involving a computer-aided patient interview system.

In the following sections, we give some more details about the design features of the different modes of the proposed system.

3.1 Multi-engine MT system

MT has now proved itself viable under conditions of restricted input and interactive use. Particularly effective is an architecture which tries various strategies in parallel and then tries to reconcile the results. This is the "multi-engine" approach seen in the PANGLOSS and DIPLOMAT systems [19]. The engines that our system will use will be an EBMT/TM system, a rule-based transfer system, and a simple lexical look-up system; it is to be expected that the input from the doctor will usually go through the EBMT system, while the patient's input, being more varied, may more often be translated by RBMT or on a word-by-word basis. In the proposed scenario, it is an example of an "embedded" MT system [20].

EBMT is akin to case-based reasoning (CBR) [21] in that new translations are composed on the basis of past translations, as provided by the "example base" of utterances taken from a corpus of doctor–patient interviews, manually translated into the target language. This method gives a very high quality of translation when the input can be matched against an appropriate example. The match does not have to be exact: as in CBR, a partial match can lead to a successful outcome.

RBMT and word-by-word translation methods tend to result in more stilted translations, closely following the syntax of the source language. In our scenario, this is more likely to be used for translating the patient's replies into English: thus the burden of understanding a less polished translation will normally fall on the doctor, who will gain experience of the system with use, and – on the evidence of early users of less sophisticated MT systems [22] – will quickly get used to its quirky style.

The notion of "restricted input" relates to the widely accepted notion of "sublanguage"-based approaches to MT [23], especially inasmuch as a corpus can help to define the sublanguage [24].

The experience of the DIPLOMAT project is especially relevant to this proposal, since their system was developed specifically with rapid development of new language pairs for use in a dialogue situation between an experienced user and a naïve interviewee who may have little experience of computers, and may not even be literate. Versions of DIPLOMAT have been developed for English–Croatian and English–Haitian Creole, for use in the field to allow English-speaking soldiers on peace-keeping missions to interview local residents [25]. An additional feature of DIPLOMAT is the use of speech-recognition and synthesis front and back ends, and the extensive use of on-screen

19. Frederking et al. (1994, 1997)

20. Van Ess-Dykema et al. (2000)
21. See Somers and Collins (2003)
22. cf. Church and Hovy (1993)
23. Kittredge and Lehrberger (1982)
24. cf. Deville and Herbigniaux (1995), McEnery and Wilson (1996:147ff), Sekine (1997)
25. See also www.avt-actii.lmowego.com/