Fraser Shein, President and CEO, Quillsoft Ltd.

May 29th, 2007   7 comments

The Company and The Technology

Quillsoft products are unique in that they act in a subtle partnership with users – providing support but drawing forth reasoning and existing abilities from users as they shape their work with great independence and agency.

WordQ writing software, the primary product, combines word prediction with speech feedback. This on-demand tool can be used to support persons who have difficulty with all aspects of writing for a variety of reasons, including having a learning disability, learning a new language, or just being a young or novice writer! Fraser explains, *"The basic concept behind it is word **cueing**. That's where 'WordQ' comes from. The cues provided by the software are really designed to take advantage of the skills of the student while allowing them to compensate for the problems that they have. The cues are, first of all visual… being able to see words suggested that they might want to use. If they have trouble reading those suggestions, as often might be the case, they can hear the words by stepping through the list. By seeing the whole word and hearing it spoken out, they will be able to distinguish the desired word form much better. As the student writes, ongoing speech feedback provides cues to help the student self-detect errors."*

Meet Fraser Shein

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SpeakQ is a plug-in that adds speech recognition to the mix. A novel aspect of the product is that training does not require users to read well and no tutor is needed. The system 'tells' the user what to say so that the system can build speech files. Further, SpeakQ adds speech-enabled word prediction. A phrase can be spoken, then typed information can be inserted at any point and the word prediction facility combines both inputs to develop recommendations – *"You're essentially priming word prediction with speech,"* as Fraser explains.

Unique Aspects Of The Company

Intertwined design decisions and history make Quillsoft truly unique. First of all, there is sheer experience: Fraser has been in the AT field for 28 years. He works as a full-time research scientist for the Bloorview Kids Rehab Center connected with the University of Toronto – a clinical setting supporting children with disabilities and special needs.

Fraser initially worked on computer access systems for kids with physical disabilities. The earnings on products with such limited market were not enough to sustain continuing research and development, so he developed a model to sell new products to a larger market to help sustain others. Fraser explains, *"We set up a private company with myself as primary owner and Bloorview Kids Rehab as a co-owner. We set it up such that royalties from product sales would go back to Bloorview for further research and development to maintain and subsidize the other products."* Bloorview and Quillsoft are very closely connected, offering special advantages. As a private company, Quillsoft can seek grants Bloorview cannot, and it can serve as an industry partner to offer in-kind matches of cash and research and development hours to support Bloorview's important projects. Likewise, Bloorview, as a public entity, is able to seek funding opportunities and initiate projects for which Quillsoft does not qualify. Fraser sums up: *"Our aim was really to generate wealth in terms of supporting R & D – with this model we can really reach out to a lot more kids."*

On Design

The design credo of Quillsoft is one Fraser credits to the advice of teachers and users: *"Our whole design philosophy is simplicity… make it as simple as possible, then when we've done that – make it simpler."* He continues, *"That's what teachers demand for use in the classroom – they don't have time to learn a complex product, they want the student to concentrate on the process of writing and not the use of the product itself, they should master the computer operation very quickly."*

Fraser speaks vehemently about not trying to create a product that does everything, but a product that fits natural human patterns and needs. Regarding SpeakQ, he illustrates, *"With conventional speech recognition, if you can't read the training text, you can't train. If you can't train, you can't use! With our product, what you can do is speak and write and that is **it**! Other products claim that you can dictate 150 or 200 words a minute, but if you had a 1500-word essay due in 15 minutes, could you use that product to do it? No! When you generate novel text, you can't dictate at such a high rate. Our system really works at the level of someone who is generating novel text in its original format."*

Fraser clarifies, though, that *"Behind the simplicity is an incredible amount of sophisticated technology and background*

research. We hide it so the user doesn't have to deal with that or see it."

On Collaboration

Fraser says, *"Collaboration is absolutely essential – between researchers, developers, clinicians, educators and other companies. We realize we can't do it alone and our products don't stand alone – they're just one of many that people might use."* Quillsoft places an emphasis on industry collaboration, and constantly demonstrates how its products can be used in tandem with other educational applications – and formal agreements with other companies are in the works. Fraser hints that exciting new products and collaborations will be coming from Quillsoft: *"Our next generation product will be very interesting and have perhaps 10 to 100 times the market potential than our current working products."* Quillsoft also received assistance through the Ontario Rehabilitation Research Consortium (ORTC), a Canadian project supporting university research and technological transfer through supported business start-ups. See also the profile on [Dave Bevers of Sight Enhancement Systems](), which is connected to ORTC.

Policy, Legislation, and Standards

As with many companies, Fraser says standards and legislative requirements have not yet impacted the company greatly, but that *"research to support what we do is always at the forefront."* He is especially keen to encourage third-party research on his and other products to create unbiased, credible reviews.

At present, Quillsoft is researching a project in which WordQ has been loaded on computers in a large Canadian school district of 35,000 students. The technology is being framed to all students as just one more useful computer tool – not a special education tool. Data obtained, Fraser believes, will help to illustrate how powerful the technology is for all students: *"We're really aiming at 100% of the school market. We see every single school as potentially using our software."*

Knowing Users And User Requirements

To get the right start for Quillsoft, Fraser and his colleagues did the unimaginable: *"We took a two-year break in designing software and examined everything in the marketplace. We talked to many clinicians, teachers and educators to identify what would really make a good product."* Fraser examined research literature and brought in an educational consultant who echoed the philosophy of simplicity. A year was spent developing a prototype, then another with field-testing and modifications. Fraser learned to emphasize proven *"benefits to the user"* over mere *"functions and utilities."* He has little patience with checklists of features on product boxes.

Changing Perspectives

Beyond functioning as a technical tool, Fraser indicates that software can create new social dynamics and relations. He indicates that by allowing students to work with software that is extremely simple to operate, dependencies – as well as frustrations – are dramatically reduced. *"Less screaming in the house"* is an effect parents often report when they start their kids on Quillsoft products. Their children are offered greater creative ability and motivation through the technology and parents are interfering less. Kids just ask for help when it is needed.

Etceteras

As a long-term observer of the market and technological transfer, Fraser advises that most developers are not going far enough with initial preparation and testing: *"People think when they've produced a prototype that they've done all the work. They've probably only done 5% of the work! To take it to a market-ready level takes a huge amount of work past prototyping. With the support of the ORTC, and working with Bloorview, we've been able to take the very basic ideas and the prototypes to a much further level – to get them to market-ready and then get them to market very quickly when they are complete."* He continues, *"After having our product seeded in the field for about a year with beta testers, we started selling and were profitable basically from day one!"*