

Connected diagnostics

The world of personal healthcare is changing fast and, while we are beginning to recognise that we are ever more accountable for our own wellbeing, the tools available to us are still in their infancy.

One area of great interest to us here at Cambridge Consultants is personal diagnostics and its application in the emerging connected health market. In developing a home health hub, our vision has been to create a system that brings laboratory diagnostics performance into the home, and which would allow a number of conditions to be monitored and diagnosed. At the core of our vision has been the user. By providing the user with the tools to monitor their condition, we believe that we can enhance the quality of their life.

The home health hub is designed to be flexible, enabling a wide range of analytes to be measured, from glucose to cardiac markers. At its centre is a proprietary high-sensitivity assay platform that can be readily adapted to suit a range of requirements, but which can be read by the same reader. Cambridge Consultants has already successfully developed the Vena platform for the next generation of Continua-compliant healthcare devices. Building on this heritage, we can enable the home health hub to wirelessly connect to everything from bathroom scales to blood pressure monitors and inhalers. Not only can we track health trends and allow for more complex analysis of data, we can also start to consider compliance.

As the tools to manage our healthcare emerge, we are taking the first small steps towards a better future.

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GSM for everyone

It is no coincidence that mobile ownership globally (3.86bn, according to the GSM Association) equates almost exactly with the number of people who live on more than two dollars per day. Research suggests that access to mobile services helps people become more economically active, thereby increasing their earning potential and lifting them out of poverty. Reaching the next billion people means developing infrastructure and handsets that can deliver services at a cost the developing world can bear.

Because mobile phones are the highest volume electronic products in the world, it is already possible to build them at very low cost. Given that a single-chip GSM phone is already a possibility, the cost is likely to decrease even further. But infrastructure is a different problem. Traditionally, mobile networks are characterised by expensive infrastructure and low-cost handsets. But using the same model for the developing world won't work. For the 'next billion' to become a reality, the infrastructure cost needs to be exceptionally low too.

What is needed are ultra low-cost base-stations, designed to provide good performance at low capacity, and which are able to use low-cost backhaul and local power sources.

The Centaur GSM PHY reference design provides good range performance (with the right radio) at the lowest price points, enabling a new class of low-cost base-stations to be built that require minimum energy to run and which can provide excellent service over large pockets around villages or in towns. This is essential if the next billion users are to get access to the same core services the developed world takes for granted.

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