



DESIGN & DEVELOPMENT SERVICES

A CASE STUDY

Datatek Applications offers hardware/software design and development services that arm early stage companies with a valuable competitive advantage in a business environment

THE FUTURE IS HERE

where time-to-market is of utmost importance while resources are often limited. Datatek's proven results-based development methodology and experienced engineering team has earned a solid reputation in the telecommunications industry as a provider of high-quality contract design services. Recently, Datatek assisted Integral Access, Inc. to reach an aggressive product introduction milestone crucial to that company's ability to capture additional market share in a competitive industry. This brief story details how the two companies worked together synergistically to achieve a successful product realization.

SOME BACKGROUND

Integral Access develops and markets multi-service IP-based access systems that enable competitive carriers to offer differentiated services and combine voice/data on new generation packet-based networks as well as over traditional circuit switched infrastructures. The Company's PurePacket™ access network platform allows carriers to cost effectively deliver multiple services—including voice, video, broadband data and VPNs—to small/medium sized businesses and residential customers over a single copper, DSL, T1/E1 line, or fiber optic link.

When the Integral Access team began work on the development of its central-office multi-service access product, PurePacketNode, the requirement for a speedy time to market was heavily driven by customer need. The idea of aggressive recruiting and assimilation of new staff to the company's technology and processes prompted Integral Access' top management to seek an alternative approach. Therefore, Datatek Applications was sought out because of its expertise in the development of real-time embedded systems and its experience in delivering telecommunications products in a shortened interval.

A PLAN FOR JOINT DEVELOPMENT

Integral Access outsourced to Datatek the development of ISDN and ADSL access interface modules—two sub-systems required for the products' initial release. Both companies agreed that to make the most productive use of each company's respective resources and expertise Integral Access would design the hardware for the ADSL module while Datatek produced the associated software. Datatek was to provide *both* hardware and software for the ISDN device. Datatek's experience with protocol translation, packet switching and inter-working functions in particular matched well for the project needs.



Datatek's experience with complete product and systems development solutions—concept through implementation, production, certification and support—enabled the quick assembly of appropriately sized hardware and software teams. Datatek's senior engineers for both interface modules

Datatek's engineers have extensive experience debugging complex real-time systems (20 to 30 years at the most senior level).

performed evaluation of high-level requirements and initial design plans. The initial investigation and discussions quickly led to formal agreements on work schedules and critical-path inter-company dependencies—hardware/software deliverables. Subsequently, development began at Datatek's New Jersey facility.

DEVELOPMENT CHALLENGES

Complex leading-edge development projects typically require educated assumptions about development unknowns. These assumptions, while based on the best understanding at the time, sometimes turn out to be inaccurate. Prompt recognition and decisive corrective action by management then becomes crucial to minimize impact on progress. This reality was part of the development cycle for this joint team.

In one such instance, vendor-provided driver software for a critical integrated circuit device was deemed incompatible with the operating system being used for the processor on the ADSL module. Management at both companies quickly agreed that Datatek would assign an additional software engineer to the task of implementing the needed device driver. In another case a need to change an integrated circuit being used for ADSL



functionality impacted software development work. Hardware design of the ISDN module was similarly impacted when components and layout rules needed modification, but recovery was quick due to excellent communication between managers at both companies. Decisive action resulted in minimal impact to the project schedule.

PROJECT COMPLETION AND RESULTS

Integration of hardware and software for both modules began five months following the inception of development. The system-integration phase of these complex products was not without difficulty—experience and teamwork were most crucial at this time. Datatek's engineers have extensive experience debugging complex real-time systems (20 to 30 years at the most senior level). They were able to help pinpoint root causes of problems in core system components and those localized to the ADSL and ISDN applications. To accelerate the final integration phase, a team of Datatek software engineers worked on-site at Integral Access, prior to the imminent, first customer delivery. With integration testing essentially complete, Datatek staff joined members of the Integral Access team for acceptance testing at the first customer site in Germany. All previous efforts leading to this point made for a flawless and successful acceptance phase.

Datatek's design services aided Integral Access in the delivery of an important new product to the customer on time and with high quality. Datatek Applications was happy to be a part of the Integral Access PurePacket Multi-Service Access Solution—a complete access network solution that includes customer premise equipment, central office aggregation devices, and an operations management system for network control and services management

According to Jack Cicon, Integral Access' CEO, "we wouldn't have met critical milestones without Datatek's help. Their ability to hit the ground running and adapt to our development structure made all the difference. I recommend them to anyone."

721 Route 202-206 South
Bridgewater, NJ 08807
www.datatekcorp.com
Email: sales@datatekcorp.com
Fax: 908.218.1736
Telephone: 908.218.0500

