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AORTA

Introducing Enabling Solutions R&D

I'm excited to welcome you to the first issue of AORTA, Luminant's monthly Research & Development (R&D) newsletter. As you read this issue, you may be wondering why Luminant is investing in R&D. On the other hand, you may be wondering why we have waited this long to get started. Hopefully, I can answer this.

The main driver behind our decision to allocate personnel, time and money to R&D is our clients. As the market has changed over the last year, our clients are less inclined to have us learn on their dime. There is also more competition for services, and consequently, our clients are asking for us to bring something extra to the table. R&D is a great way for us to do this.

By having an R&D function, we hope to find new and inventive ways to bring our learnings to the client. We want to show the market that we experiment on our site so that we can better implement on the client's site. Very few of our competitors do this. Over time, as our market becomes even more mainstream, this is one factor that will differentiate us.

Chetan Sharma will be leading our Enabling Solutions R&D practice. Chetan is a highly experienced Principal Specialist. He has a strong background in technology R&D and has been perhaps the most prolific contributor to the overall Luminant base of knowledge in the wireless arena. I have asked Chetan to expand his focus to go beyond wireless. He has solicited input from many of our sales and delivery leaders to find out what you (our clients and our people) want us to research. While we will not be able to investigate every new technology, we hope that our efforts will shed light on the technologies that will most impact our clients in the coming years.

To help broaden our horizons, you will notice that this edition has contributors from inside and outside of Luminant. We believe this is the best way to leverage the power of the internal and external Luminant knowledge network. This is something we would like to continue. If you would like to contribute to any of our subsequent issues, please contact Chetan and he will get you in the queue.

Again, I hope you are as excited as I am by this new venture and the person who will be leading us into the future, Chetan Sharma. I look forward to learning from Chetan and his team.

Scott Williamson
VP Enabling Solutions

Inside this issue:

Always On Real-Time Access

What greater topic to discuss than AORTA itself – Always On Real-Time Access. The term "AORTA" in the computing context was coined by master technology and business trend-predictor Mark Anderson a few years back. The basic idea is that computing devices will always be "connected" and have "access" to "real-time" information. The devices can be disparate – from laptops to TV to cell phones and everything in between. And this information is not only static but also dynamic. Dynamic information extends to much more than what we are accustomed to today for e.g. data-mined rich information that can today take hours to obtain and analyze being available literally at our fingertips. If you think about it, "information" is the basic building block of any civilization/revolution.

Information needs to be delivered at the "speed of thought"

Centuries ago, it was the printing press that spread knowledge and started the revolution. To get information from point A to point B, there often are multiple steps. For e.g. a few decades back, if you were looking for a nice Italian restaurant in a new neighborhood, you probably would have to just roam around in the area to find one or find a friend who might be able to recommend something. After that, yellow pages (directories) became popular; they helped in narrowing down the list but were not something you want to carry in your wallet. In came Internet, and it further shortened the amount it took to get to the information, a few clicks here and there and you had your information. However, you almost never had access to the information when you needed it the most – lost and wandering in an alien city.

Well, wireless and web met, got married at first sight, and thus started an incredible revolution. After the short honeymoon was over, the two industries have been working hard at making the AORTA dream possible. Today, you could potentially get the information you need on your wireless web enabled phone in any decent city, BUT coverage needs to be there and you still have plow through 15 steps to find it. Is it quicker than calling a help-line? In most of the cases, probably not.

So, what's missing? "Context-Sensitivity" – meaning, if Tom is looking for Food, Information databases should consider the fact that it's close to midnight in the middle-of-no-where and Tom is speeding at 80 m/hr to escape those pesky flying bullets, so the system needs to figure that out in a matter of seconds and present Tom with the Top 3 (with the first one being directions to the nearest police station) choices available under the circumstances. If the system gives 50 different options and 20 layers of menu-items, it's not information, it's garbage.

Information is what is fine-tuned for the user based on the user's preferences, context, and usage device. The key is for Tom to get to the information in minimum number of steps and without delay. You see where I am going with this.

Information needs to be delivered (and of course processed) at the "speed of thought" (with due apologies to billg).

Above was a simple consumer application, but what if the same demands were placed on enterprise data which is harder to process, is all over the place, and most of the times, we can't make sense of it anyway.

So, what do we see as key ingredients of an AORTA ecosystem – data mining of bits and bytes to convert them into information, effective transcoding techniques to deliver information to appropriate situation, agents at client, network, and servers, and the infrastructure technologies to make it all happen. Let's review them one at a time.

Pop Quiz:

Q. What's the most valuable asset that AOL has besides Steve Case and that Amazon has besides Jeff Bezos?

A. It's the consumer-profile-and-preference database of millions of users.

Microsoft's Stinger Platform: Which device do you want to reboot today?

AOL and Amazon track every single move you make on their sites. They collect the data, study it, memorize it, and use it. They know that Texans like blue background on Monday mornings while New Yorkers prefer black on Sunday nights. The point is – they learn the trends and user behavior and use the "information" to customize user experience and sell more. And this was just for one channel – the Internet. Imagine the complexity and challenge when you are accessing AOL via mobile devices, AOL TV, Voice, Airport Kiosks, Gameboys, Plane-seat terminals, automobile PC, etc. I think having a good strategy and infrastructure-base to support multi-channel users and user devices is absolutely critical to the future of net-based solutions.

Continued on Page 3

Transcoding or "transformation of content" is in its infancy today. If you look at any major wireless web service today, esp. in US, there are two basic flaws: separate content database for each device type (Yahoo! currently has over 7 version of their content – ouch!) and content adaptation based on device features and user preferences is minimal or non-existent. AT&T's web content appears the same way on Mitsubishi T250 (8 line display) and Ericsson R280LX (4 line display). That's clumsy. Also, these interfaces are not adaptive based on my interaction-history. Why not? Because they don't have a way to do data mining, yet! And that's just one-channel, add voice, broadband to it and it gets more complicated. With time, transcoding tools and services will improve.

Have you ever wondered what your computing devices are doing at night or when you are not near them? Probably not, because they typically do nothing. Isn't that such a waste of the enormous computing power at-hand? What if there were programmable software agents with each device that could gather information, be your personal secretary, negotiate, transact on your behalf, and utilize this idle time amongst other periods to do useful stuff. On the server side, we already have some advanced interactive alerts capability from products like Xalerts from Categoric Software. These alerts can work closely with your enterprise solutions (or consumer solutions for that matter) to alert or escalate of situations or events as needed to the devices you have on the networks you use.

In our restaurant case study, wouldn't it be convenient (in your car) if you just say "Can you find some nice Italian restaurants in the area?" and boom! I get the top 3 choices to make reservations from along with discount coupons and info on friends who might be in the area, etc. OR push no more than two buttons to get the info on a cell-phone. Humans for most part have a set behavior pattern like swinging by the nearby Starbucks in the morning to order a tall latte. Your timing to the shop might fluctuate, but your order probably won't. These behaviors can be learned by both your vendor as well as software agent, so the next time you begin to open your mouth to order something, your agent will go, "Are you having the usual Mr. Hopkins?" and all you say is "uhmm, Yes", and rest is taken care off – ordering, payments, update of balance, caffeine intake table for the day, etc. You of course will have to walk out of the car and pick-up your order. But no waiting in lines and fiddling for change while you try to wake up. A company called Ontain is actually developing such solutions for retailers and has several trials going on – including one with Starbucks. So, you see technology's role is to help eliminate "information transaction steps" and make the interaction fun, short, and sweet.

Paper Phone—Carry in your wallet
Full Article @ http://www.latimes.com/business/cutting/ttimes/20010308/t000020343.html

The other night I was at a dinner meeting with Rich Tong – Cofounder of Ignition Corporation – the powerful VC firm which focuses exclusively on the wireless Internet market. He jokingly offered a reward for finding a way to get onto the wireless web on his phone. His point was – it's painfully difficult. Compare this to Japanese iMode devices – there is a button marked "i" – hit that and you are connected.

"Always On" is easy with dedicated electrons – LAN, Cable, Broadband, Fiber but if we are to live in a communications-everywhere world, we should be able to communicate everywhere – walking in a mall, sitting on an airplane, driving a car, on a fishing boat etc., and we should be able to access any pertinent information we desire. Its richness and detail is only restricted by the end-device. With 2.5G wireless technology GPRS (General Packet Radio Service), we have moved a step closer to an "always on" world. There are other technology developments such as voice-based access and wireless LAN, which are aiding the process. Similarly, enhancements in the iTV world (WebTV, UtlimateTV, CommerceTV, RespondTV, etc.) are very exciting. Possibilities are endless.

Often times, we have to login to get to information. Even that step can be eliminated by effective use of biometric authentication and verification. AORTA devices are already being rapidly prototyped and field-tested.

In upcoming issues, we will be discussing the issues and technologies that are driving our AORTA ecosystem.

I am very interested in hearing about what's on your mind. Please send your questions, opinions, observations, ideas for future issues. Your email might be included in this newsletter, unless you indicate otherwise.

My thanks to John and to everyone who contributed to this issue.

Your comments are always welcome.

Thanks,

Chetan Sharma

How to empower your business with Enterprise Alerting?

- John Virden

Enterprise alerting is enabling a business transformation. By "reducing time to know and respond," it becomes an indispensable part of an organization's technology infrastructure. Enterprise alerting notifies people of critical information and events and empowers them to capitalize on opportunities and respond to situations before they become problems. The results are real-time decisions that improve operational efficiency across the enterprise as well as enhanced speed, productivity, collaboration and customer loyalty.

The best enterprise alerting will allow a business to:

- Detect Critical Events Across the Enterprise
- Conduct Business Anytime, Anywhere
- Handle Dynamic Events
- Respond Immediately
- Empower Individuals
- Measure Performance

Not all enterprise alerting technology is created equal, however. Solutions that claim to provide it should be tested against the following 10 key requirements. In order to deliver the highest level of business benefits, enterprise alerting must:

"We are on the verge of entering Phase Two of the intelligent Web: machine-to-machine communications"

Tim Berners-Lee
W3C

1. **Be independent of any specific application.** Organizations run multiple applications today, and these will increase and change in the future. It must be able to support all of today's applications, and be future-proofed for those to come.
2. **Be independent of any specific database.** It must be able to work against any corporate database, today and in the future.
3. **Not be restricted by any single standard or technology**. It must support any of the standards that may be in use within and external to the enterprise. For example, this means supporting multiple e-mail standards as well as standards such as XML, HTML, etc.
4. **Support visual methods for rapid building and management of alerts.** The nature of alert building and management is very dynamic, which demands the ability to rapidly build, deploy and manage the alerts generated. Only visual modeling capabilities support this requirement.
5. **Be scalable and robust, and run across multiple platforms.** It must be able to run 24/7 and provide support for the large number of notifications being distributed to many thousands of recipients. In today's business environment, support needs to be provided for Windows NT and multiple UNIX server platforms.
6. **Enable interaction**. It is not sufficient to be able to just deliver real-time alerts to individuals and groups. The recipients must also be able to respond to the notification and enable action(s) to be taken to resolve the issue immediately.
7. **Support complex alerting capabilities (such as non-replication and escalation).** Alerting is not a simple process, and systems that do not provide the complex logic functions to properly manage and control the alerting process will not provide enterprise-level capabilities.
8. **Support multi-channel output mechanisms for alerts.** Recipients of alerts must be able to receive the output on the device most appropriate at any given time. Just supporting e-mail output is not sufficient in today's mobile world. Other mechanisms such as SMS, WAP, Fax, HTML and XML are also critical.
9. **Not be restricted to database query-initiated alerts.** Critical events are not detected only by polling databases, but also by receiving triggered initiation, by listening to specific inbound e-mails or SMS messages and, most importantly of all, by inter-application communication via APIs.
10. **Allow recipients some degree of personal control.** Recipients need to be able to have some control over which alerts they receive, the parameters that trigger those alerts, and how they receive them.

"According to our figures, there were 5 new Internet users every second of last year"

NUA Analysis
"A Billion Customers, Anyone?"
by Kathy Foley

By making sure the alerting technology you implement is truly enterprise-strength, you can empower your business to proactively manage the entire value chain (goods, money, time and people), prevent disruptions to the business, and personalize customer interactions, transactions, and service.

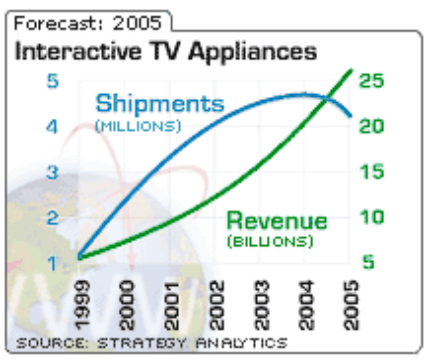
John Virden is Vice President of North American and Asia Pacific Operations for Categoric Software, a first mover in alerting infrastructure technology for the multi-channel enterprise. He is also a member of renowned Blue Angels.

Working Off the grid: An Architecture for Computing On Unreliable Wireless Networks
- Colin Hendricks

Wireless computing networks have been hyped as panaceas that will revolutionize modern life. Marketers have told you your cell phone will warn you that your flights are late or an important customer has just placed a large order, and your PDA will show you a video conference call. From device makers like Palm to wireless network providers like Sprint PCS and AT&T, every player in the market is promising that wireless computing will change your business and your life.

Clearly, wireless technologies offer huge opportunities to revolutionize business. But those of us intending to realize those opportunities today must remain cognizant of their limitations.

Want to read the entire white paper? Please go to ***http://www.luminant.com/images/workingoffthegrid.pdf***



Stat Focus

Have an interesting stat or quote to share!, please send me the info.

ethermail

Some Observations

1. This may be a bold observation but I believe WAP is going to fade away and the real action in the wireless space is going to be in the development of thick client cached applications for enterprises (not consumers) built on architectures like Vaultus and @hand.

2. Another thing that's becoming clear is that the network carriers have paid way too much for 3g licenses. Some will go bankrupt and others will consolidate and the rollout of 3g networks will be delayed for years.

Colin Hendricks
Sr. Manager, Houston

Colin,

Mobile Communications International (MCI) magazine recently did a whole issue on "Is WAP on Fire or burnt out?" My take on WAP in a few words is that it will have its place in the world for the next 1-2 years as a solution but won't be taking over the world as once thought. I think lousy marketing and poor applications did it for WAP. There are some nice enhancements that WAP Forum is working on – graphics, multi-modal browsing, security etc., which I hope see the day of light soon.

"We're facing a situation where an industry is heading for bankruptcy before even a 3G call is made,"

Hans Geyer
Intel vice president and general manager speaking to delegates at GSM World in Cannes

2.5G should be sufficient for most of the interesting applications and services in the near term. (Based on most of the industry insiders I have talked to, first phase of 2.5G won't deliver anymore than 20kbps—reliably, also it alone won't be the savior to WAP— as forecasted by the industry, good applications will.) US carriers are hopelessly living in pre-historic age. And having multiple standards doesn't help either. On top of that, with the bubble bursting in the recent past, telecom capital spending is down something like 40%, so I think you are right in predicting delay in 3G rollout worldwide (except Japan), although Sprint and AT&T are aggressively talking about their plans to implement 3G starting late this year. I talked to Susan Cheney—VP and GM at Sprint in January about 3G and she was pretty upbeat about the forecast and mass adoption. I don't think that will happen before 2003. (why?, find the answers in the next issue)

We will be closely following both WAP and 3G in the future issues.

I am trying to look at Voice Apps from Consumer/User point of view and System Integrators point of view

Consumers
What types of apps/content will be accepted? What will work and what won't?

Are Text to Speech engines output good enough for reading emails etc. What would be the Advertising model?

Developers
1) How well developed the technology is. How realistic is Natural Language Understanding?
2) What kind of things are possible and what is not.
3) Is VoiceXML the only solution that's available?
4) How ready are the current systems to take the additional voice channels. What are the alternative approaches to scale systems to make sure that caller gets service.

Eswar Eluri
Sr. Specialist, Seattle

Eswar,

Let's take one question at a time:

- Types of applications that make sense for voice (under its current incarnation)
  Information retrieval
  - News, sports, weather, traffic, stock quotes.
  Customer Care
  - CRM, Inquires, Order tracking and status, Appointment scheduling
  Travel Support and Location Services
  - In-vehicle, 411/511, Location based information, weather alerts, airport delays
  Sales force automation
  - Lead tracking, field services applications
  Transactions
  - Financial: banking, stock trading.
  Telephone services
  - "Virtual storefront" , voice routing, Personal voice dialing.
  Intranet
  - Inventory, ordering, HR services, portals
  Unification
  - Personal portals & agents, merged/unified messaging.

- Applications/Services for which voice is NOT suited for are the ones, which are visually-oriented, have complex navigation, extensive content, noisy environment, requires extensive user input and privacy environment.

- Revenue Model – For Portals like TellMe, the advertising model is sort of working (they insert ads in between dialogues every now-and-then), but as you know, gone are the days where businesses were built just on advertising models. It can be part of the revenue model but not *the model.*

- Regarding text-to-speech engines for emails, the technology exists, however the bigger problem is a reasonable pricing model. Remember General Magic came out with the voice solution about 3-4 years back but it didn't catch traction because of unsupportable pricing models. I haven't tried out the hottest player in this segment yet. (Etrieve – funded by Ignition). Maybe someone can comment on how AOL Voice access is working out.

- VoiceXML in of itself is not completely there (with 1.0 spec). That's why folks like Tellme, BeVocal, IBM, and others have their own extensions to VxML. With extensions, pretty good solutions can be built. Tellme and BeVocal consumer portal is based on VoiceXML, which are by far one of the best implementations out there. NLU solutions are still in their infancy. It will probably take another 12 months before we see good integration of NLU with Voice.

Book Recommendation

Bold Science: Seven Scientists Who Are Changing Our World – Ted Anton

Once I started reading this book, just couldn't put it down. Fascinating read into the worlds of 7 scientists from different backgrounds and area of expertise. Inspiring and fun to read.

- If you look at the member list of VoiceXML Forum, you will notice one key absentee – Microsoft. They are promoting their own speech technology. There are some other speech implementations – notably from Conversa, Speechworks, and Nuance and others – but none is a standard – often a key requirement for any implementation to capture market share. In May 2000, the W3C Voice Browser Working Group officially accepted the VoiceXML 1.0 spec as the basis for a forthcoming official W3C speech markup language standard.

- Scalability – that's of course one of the key issues to comprehend for any robust large-scale solution. In addition to caching, network optimization, multi-threaded servers, load balancing, voice solutions require intelligent grammar compilation and architecture so that there is no single point of failure. It's hard to find published studies on performance, we will have to learn most of it on our own.

Rumor Mill

A class on voice enablement coming to a conference room near you