



AgileTV Update

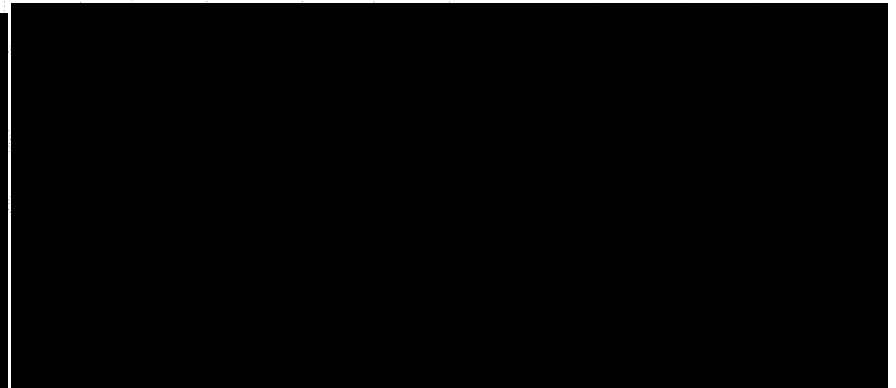
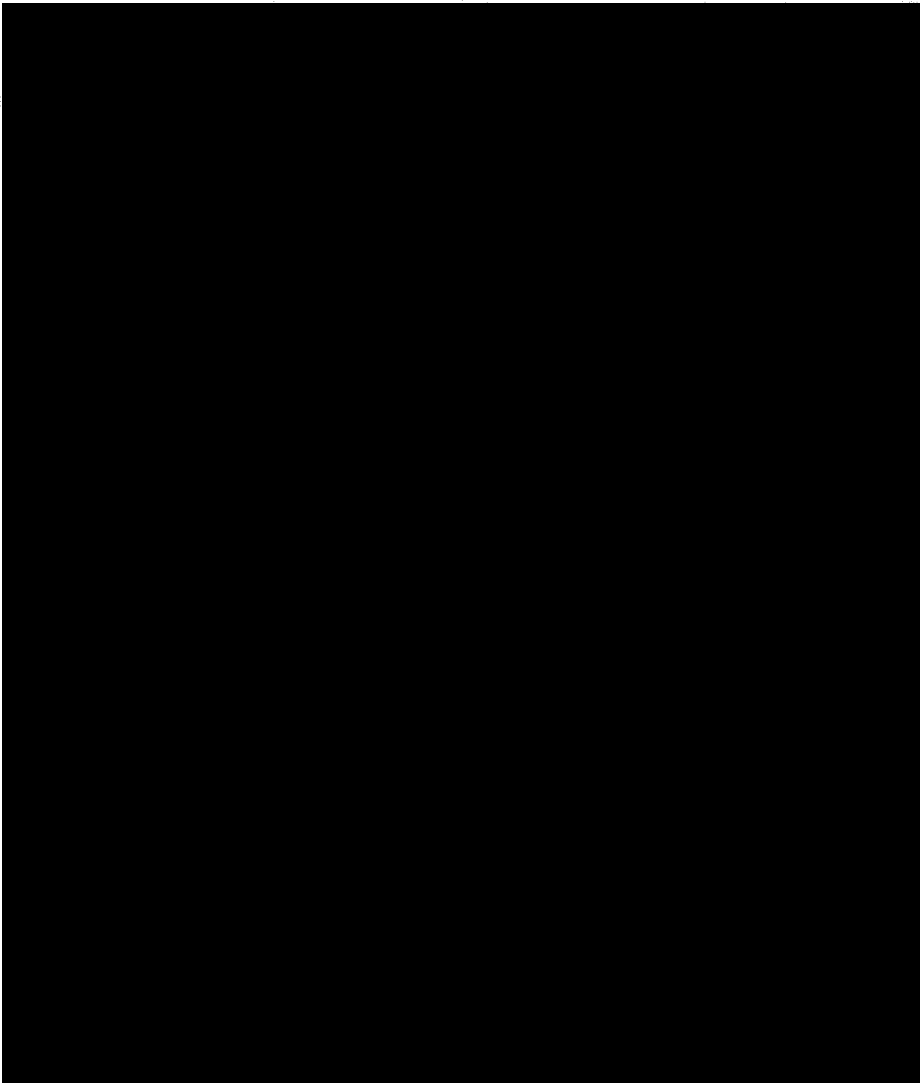
February 18, 2004

Comcast Proprietary and Confidential

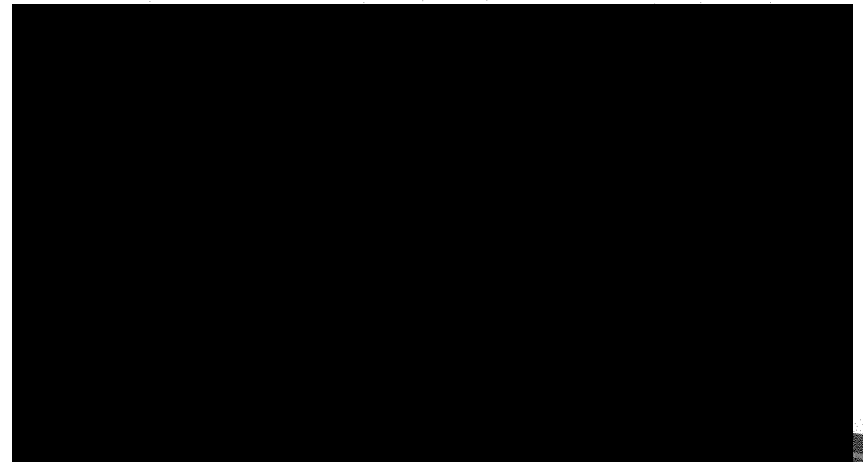


Voice Reco Scored Respectably in Recent Marketing Study

Hence we're doing a trial.



- Hard to determine interest in AgileTV programming guide "scan" vs. voice recognition



CORPORATE UPDATE



AgileTV License and Development Agreement

Structured for maximum Comcast flexibility

[REDACTED]

- **No further funding commitments; Comcast can walk at any time**

[REDACTED]

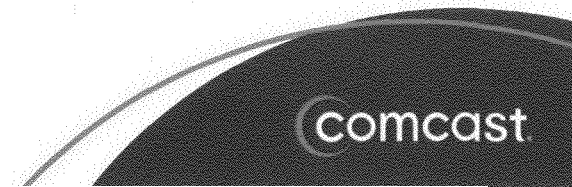
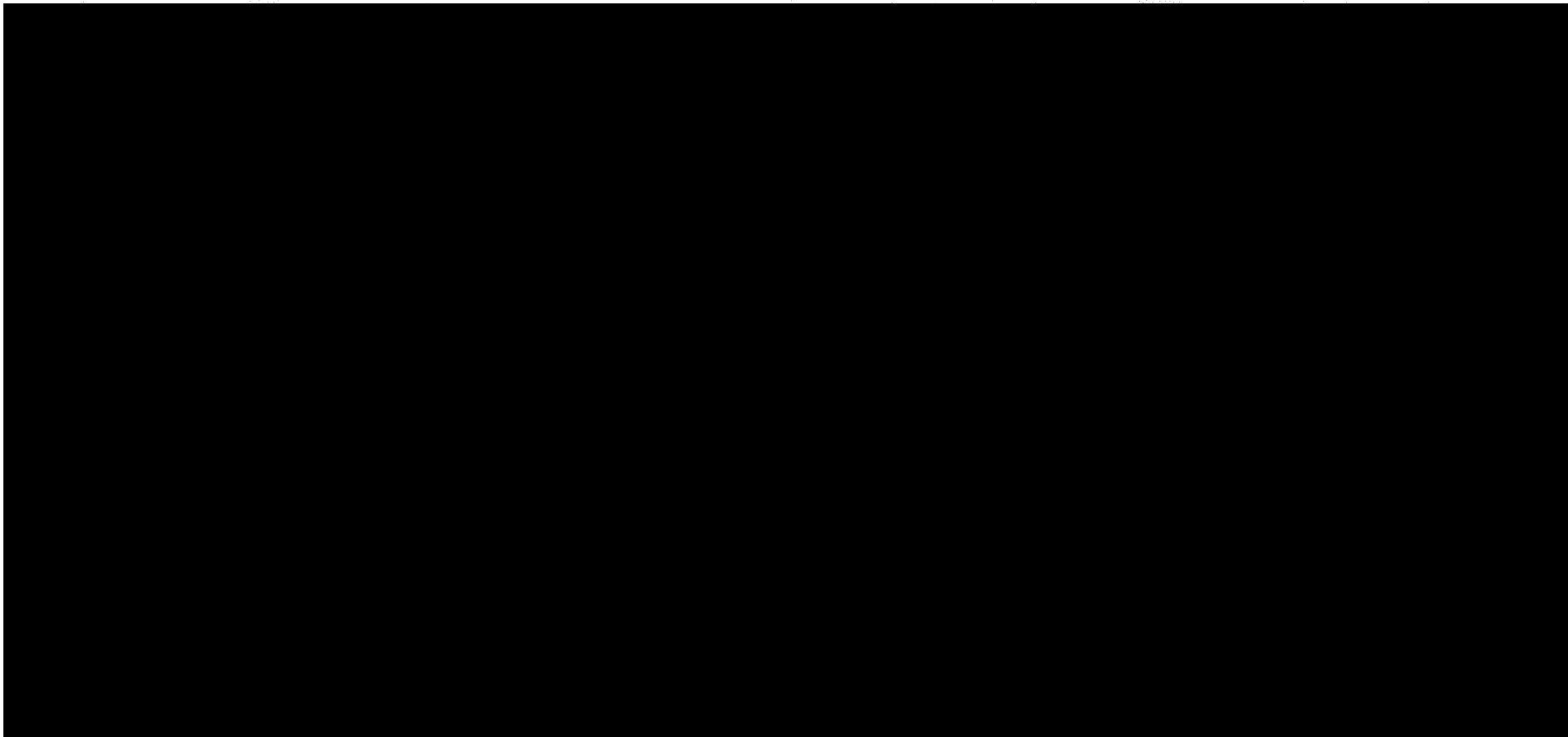
- **Rationale is to keep AgileTV alive while refining our VR strategy**
- **Next step is to negotiate a SoW to develop a VR solution**

[REDACTED]

[REDACTED]

Simultaneous AgileTV Funding

The additional investors are critical, but Chris Larson has a history of backstopping AgileTV



Status of Legal Documentation with AgileTV

Funding documentation currently represents the long pole

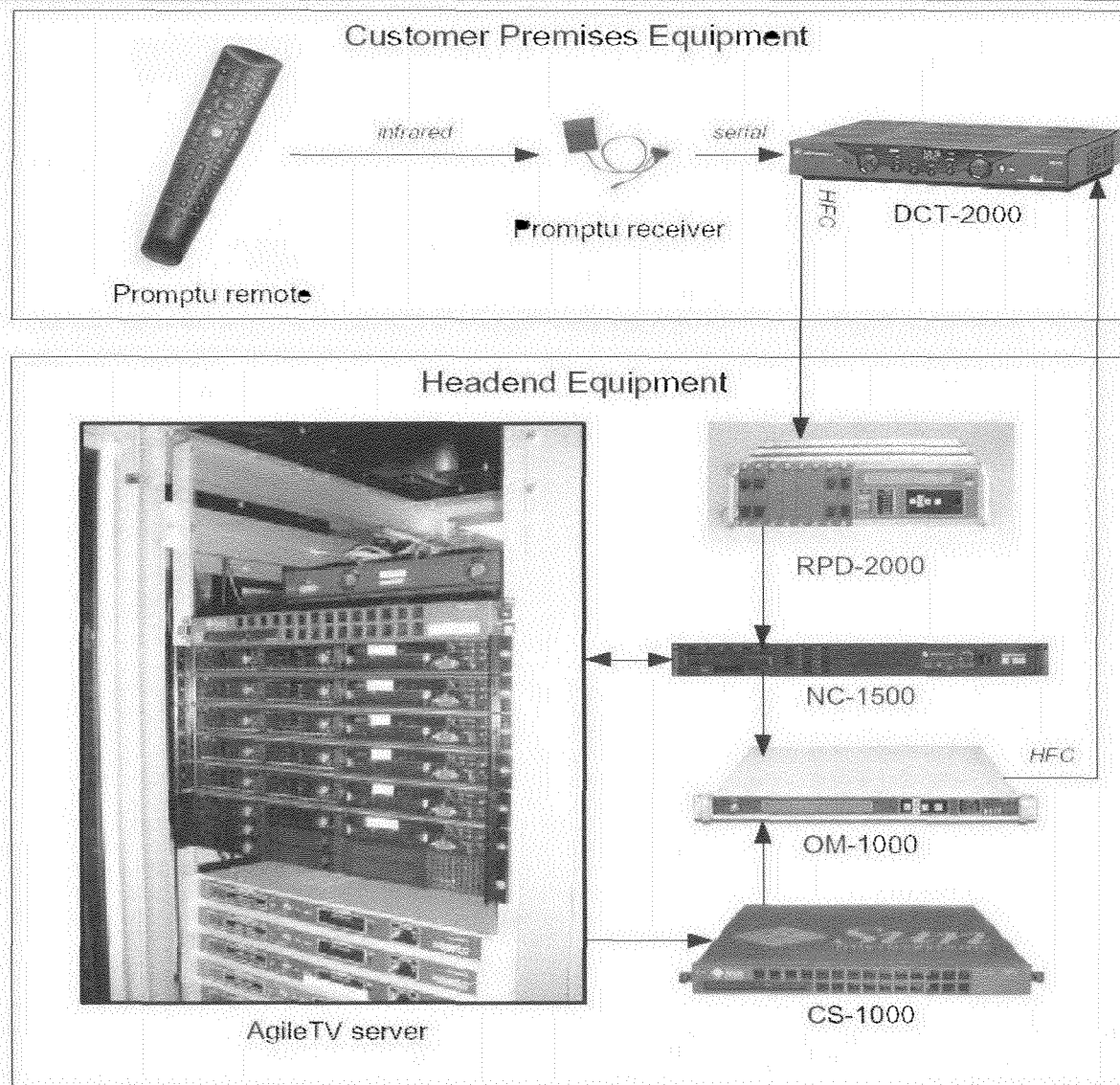
License and Development Agreement	Trial Documents	Funding Documents
Document Contains: <ul style="list-style-type: none">• IP licensing rights, options, etc.• Development program parameters<ul style="list-style-type: none">– Detail to be provided in a statement of work	Document Contains: <ul style="list-style-type: none">• Trial parameters• Information sharing rights	Document Contains: <div></div>
Status: <ul style="list-style-type: none">• Negotiation and documentation substantially completed• Four remaining modest issues to iron out	Status: <ul style="list-style-type: none">• First draft to be sent any day now• Have positioned that there's not much movement available to AgileTV on these terms	Status: <ul style="list-style-type: none">• Docs were substantially complete until AgileTV landed a new investor, Valence Capital• Expect 3–4 weeks to closing

All documents to be executed simultaneously, which could cause a delay in the trial due to the funding documents.



TECHNICAL OVERVIEW

AgileTV Architecture



AgileTV HD RPD Development Status

- **AgileTV is currently developing a High-Density Return Path Demodulator (RPD)**
 - Potential to increase upstream bandwidth in a Motorola digital network by an order of magnitude
 - Potential to reduce head-end equipment space for RPDs substantially
- **Proof of concept HD-RPD due out 4/27/2005**
- **AgileTV is looking for help from Comcast to aid in development**
 - They would like a production site to install an RPD “sniffer” for research
 - They would like help in defining ultimate product requirements



Timeline of NMD Technical Activity

- **August, 2003**
 - NMD begins development with AgileTV toward conducting a technical trial
- **April 15, 2004**
 - After extensive lab testing in both National Engineering and at the Eastern Division, AgileTV server is installed in Willow Grove System running VoiceGuide 1.0 (no VOD, no carousel)
 - AgileTV installed in six Comcast Employees' homes
- **August 31, 2004**
 - AgileTV VoiceGuide 2.0 installed in Willow Grove after being Acadia Certified
 - Major feature added was voice-enabled VOD
- **November 18, 2004**
 - AgileTV VoiceGuide 2.1 (aka version 07.30) conditionally released from Acadia (two critical bugs found). This version is loaded in Willow Grove to continue testing
 - Major features added were the data carousel and actor/actress searches
- **December 2004**
 - Technical trial participants increased to 44
- **February 2, 2005**
 - Voiceguide version 07.38 released from Acadia and loaded in Willow Grove
 - Version 07.38 fixed the bugs found in 07.30

Motorola Traffic Analysis Required for Trial

- As Part of the trial effort, analysis is needed of the network traffic implications of adding an interactive service like AgileTV to our existing cable plants
- Only Motorola can evaluate thoroughly and precisely analyze traffic
- NMD has engaged them already during lab trials, but have not brought them in to do analysis of the production head-end in Willow Grove
- ***Note that this traffic analysis will be relevant for any interactive service, not just voice recognition or AgileTV***



NMD Trial Handoff

- New Media Development has completed the Technical trial, and is now ready to transition to Marketing Trial
 - Comcast Marketing has been ramping up over the past couple of months to begin the trial operations
 - ^{Program Manager} ~~engineering lead~~ is needed to take over technical operations during the Marketing Trial

TRIAL UPDATE



Marketing Trial Primes

- **Comcast**

- Responsible for conducting trial including product delivery (HE support of system), marketing, research activities and all customer contact. Primes include:

- [REDACTED] Project Management & Marketing

- TBD – Corporate Technical Support & vendor interface

- Willow Grove – Local support of software/hardware at HE and market operations

- **AgileTV**

- Product delivery including software, CPE and technical documentation. Also issue resolution, usage & technical data and status reports. Primes include:

- [REDACTED] – VP of Marketing

- [REDACTED] – CTO & project management

- **Time Warner**

- Observing trial and supporting cost of marketing research with Comcast. Primes include:

- [REDACTED] SVP of New Product Management

- VP of New Product Management



Marketing Trial Goals

- **The primary objective of this trial is to determine the customer response to this type of voice recognition service including, but not limited to the following:**
 - Accuracy of the service
 - Technical stability of the service
 - Use of voice control versus guide (button press)
 - Overall product satisfaction (satisfaction with UI vs. voice control)
 - Perceived value of the Promptu product and impact to customer satisfaction with Comcast & Digital Cable service
 - Willingness to pay for service (standalone, bundled w/other services)
 - Customer profile (existing services, demographics) and migration impact (pay adds or downgrades)
 - Impact to ON DEMAND usage
 - Impact to churn
 - Operational impact including service calls & call center impact
 - Installation satisfaction (self-install vs. technician install)
 - Effectiveness of marketing tactic
 - Customer desired product improvements



Project Challenges

Guide Impact

- The Promptu product uses a different guide and customers will lose their settings (parental controls, favorites etc.) when we provision them to the Promptu UI

Voice Recognition Accuracy

- Voice recognition is not perfect – initial accuracy for trial estimated to be 90%
 - Immediate on-screen feedback lets the subscriber know the status of request
 - Accuracy has not been raised as an issue in the technical trial
 - Accuracy may be lower for young children with higher pitched voices and lower manual dexterity. Women and people who speak with a strong accent may also experience lower accuracy

Set-top Box and UI Limitations

- Works on the DCT2000 only presently – does not work on Motorola's 2500 or advanced set-top boxes
- The DCT2000 must have a serial port, which is effectively unknown on a per-household basis
- Does not allow PPV purchases (e.g. events, adult, Disney films)
- This services does not recognize Spanish language and there is not an option in the UI to set up for a second language audio feed

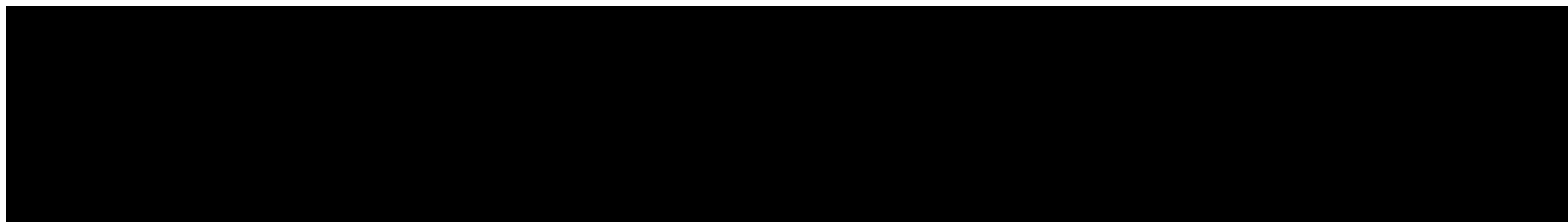
Plasma and Tivo Issues

- A plasma screen's IR radiation could interfere with and potentially block the AgileTV remote control
- Cannot be used with TIVO, as both a TIVO box and the AgileTV remote control dongle require a serial port. May be guide confusion with TIVO users that rely on the TIVO UI



Project Timeline – Critical Dependencies

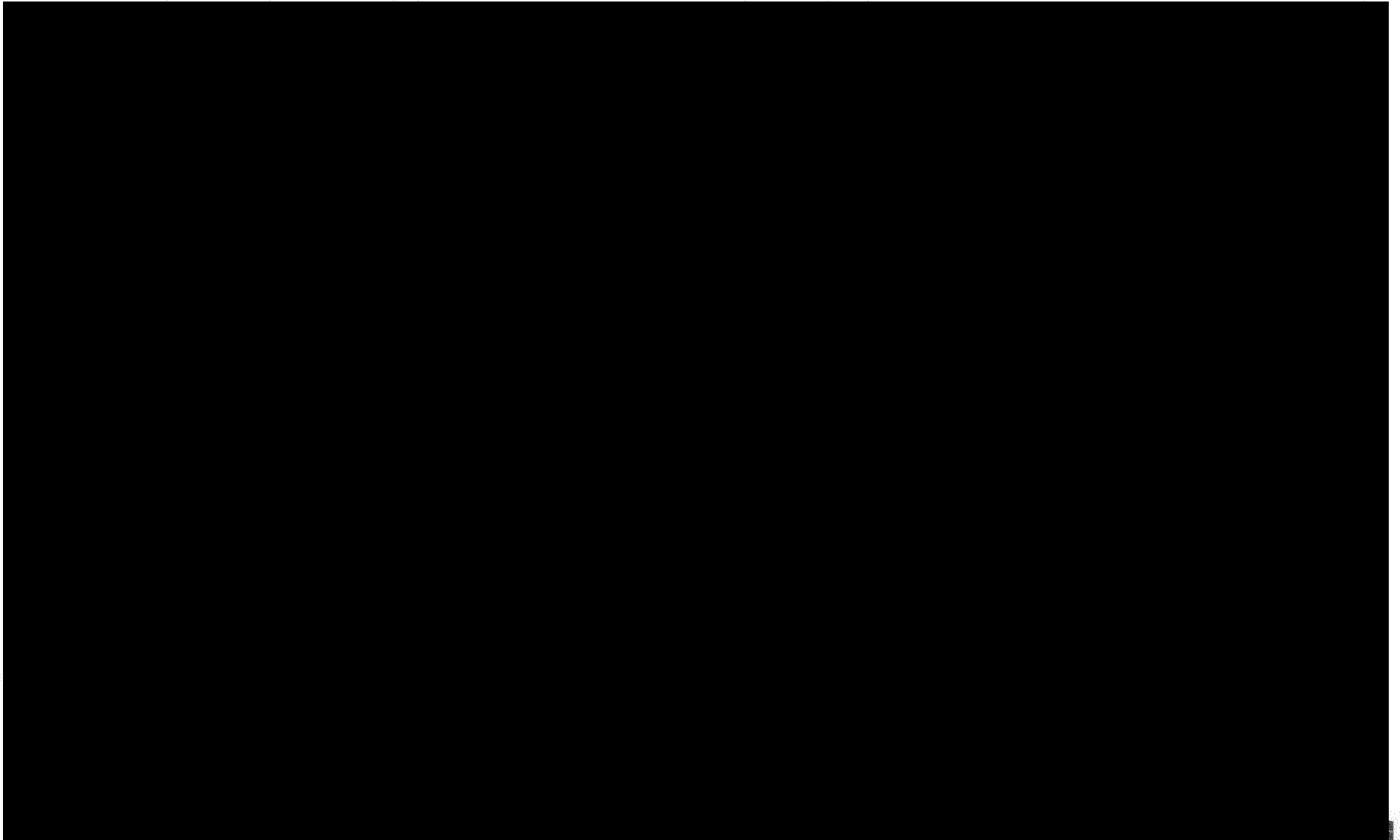
- Current launch date is March 9th, but there are several critical dependencies and potential issues that could cause that date to delay including:



- Marketing Trial Legal Agreement and accompanying SOW including review by Corporate technical team must be completed in the next several days to meet launch date



Marketing and Research Schedule



Delivery/Fulfillment Process

Self-Install

- Will be offered to qualifying customers (DCT2K w/serial port as a self-install via mail (Fulfillment Center)

Payment Center

- Payment Center pick-ups and subsequent self-install offered to both existing Digital customers and Analog customers (upgrading to Digital and picking up D2K and Promptu CPE)

Technician Install

- Technician install for DCT swap-outs and customer request



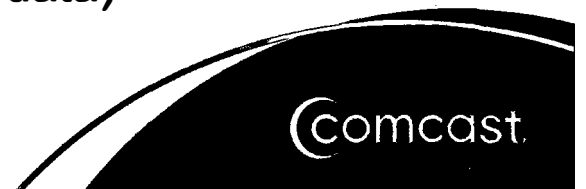
Research Initiatives

Technical Trial – Research w/ Employees

- Trial surveys with employee testers during technical trial period
- Exit survey with employee testers as they transition from technical trial to marketing trial support
- “Town Hall” with employee testers to be scheduled a few weeks after launch

Marketing Trial – Research w/ Customers

- Quantitative survey of all customers beginning one month after installation
- One-on-one usability research – product evaluations and improvements by reviewing product with consumers
- Focus group with CAEs (in lieu of detailed call tracking data)



Metrics

Goal is to compile weekly or bi-weekly reports with the following data shared with all parties:

- **Marketing**

- Total number of deployed Promptu customers (Comcast)
- Product sales by tactic where possible (Comcast)
- Total number of active Promptu boxes (AgileTV)
- # of ON DEMAND buys during period – both voice and button buys, separate and aggregated (AgileTV)

- **Product Usage (AgileTV)**

- Average recognition accuracy
- Average number of voice commands per active box per day
- Voice command distribution over time
- Utterance distribution by category (Scan, find, channel name, channel number, program name, time navigation, mode navigation)
- Top ten voice command categories (Scan, channel names, channel numbers, find title, find actor, find adult title)

- **Operations (Comcast)**

- # of truck rolls to support product
- Customer calls w/ questions and/or issues related to Promptu
- # of Promptu installs performed by technician, # self-install via fulfillment center and # self-installs from payment center pick-up

- **Promptu System (AgileTV)**

- Stability (cause, number, and duration of unscheduled outages)
- Bandwidth usage, i.e. downstream per path, upstream per path)

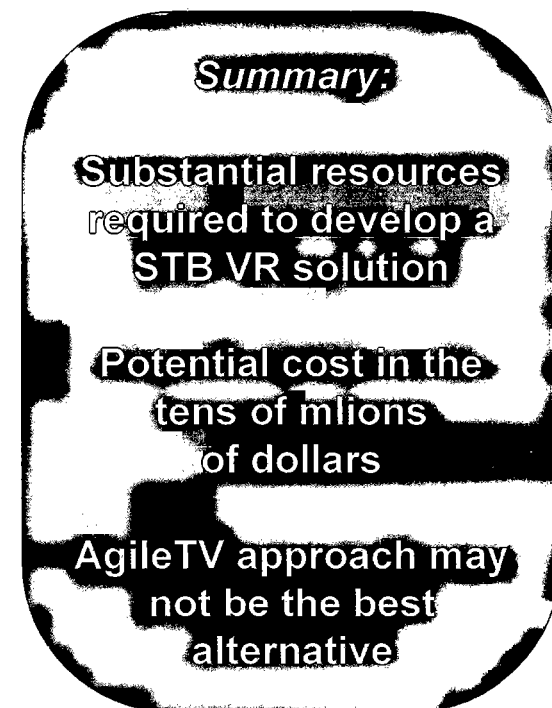


DEVELOPMENT CONSIDERATIONS



AgileTV is Not Currently a Deployable Solution

- **AgileTV is built around the Motorola DCT2000**
 - Closed, proprietary architecture
 - Challenges scaling Aloha for upstream voice utterances
 - Substantial reengineering to change any system component
- **Ongoing development requirements before deployment**
 - GuideWorks, Foundation, Moxi integration
 - Integration with other MOT, SA, Moxi set-top boxes
 - DSG support, pay-per-view integration, etc.
- **Substantial cross-platform integration challenges**
 - Would need to be reengineered to work with VoIP Tellme trial
 - Tellme also being considered for customer support apps



AgileTV's Business Model is Not Economic

- AgileTV estimates 6% headend cost decline based on cost reduction and improved software
- Comcast acquires standard headend servers directly (Dell, IBM, HP, etc)

- Seven software packages included
- Also includes return path receiver (still under development), which helps scale Aloha for VR
- Moving to DSG does not impact their business model, but will probably reduce overall costs of deploying their system

The Comcast logo, featuring the word "comcast" in a white, lowercase, sans-serif font, positioned within a dark, curved shape that resembles a stylized arc or a portion of a globe.

Key Considerations in Developing a VR Architecture

Consumer

Response / Interest

- **Consumers have been unreceptive to VR in the past**
 - E.g. Windows, Tellme, cellphone voice dialing, automobile VR
- **Human factors considerations, marketing research and trials are critical, especially if we count on VR to be a churn-reduction tool (i.e. \$0 revenue)**

Support Aloha or

Move Right to DSG?

- **Supporting Aloha pushes us closer to AgileTV closed architecture**
- **With DSG, opportunity to support standard voice protocols (G.711) for easier cross-platform VR integration (e.g. with Tellme)**

What Remote Control?

- **AgileTV uses a customized universal IR remote with a microphone**
- **If we are supporting VR, do we want something more provocative**
- **For example, could offer a WiFi remote with enhanced functionality**

Level of Cross-Platform

VR Support?

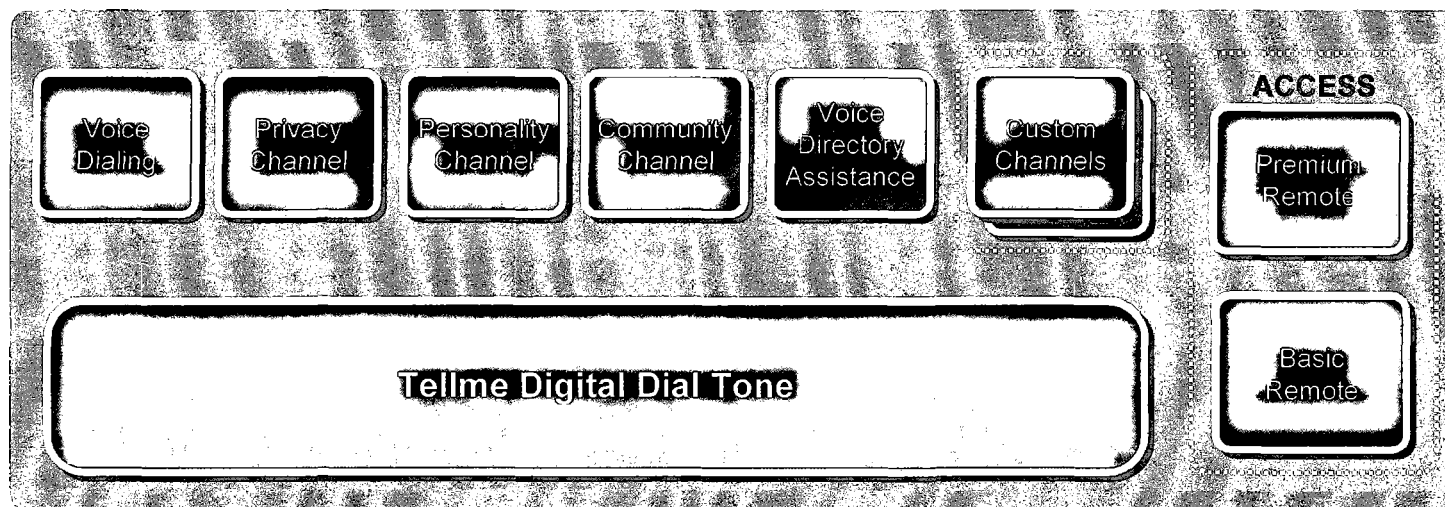
- **It makes sense to have one voice interface to all Comcast services**
- **Supporting multiple voice VR services represents added complexity**

IP Protection

- **VR industry has deep and complex IP history**
- **Probably want a strong vendor to lean on for IP protection**

Comcast is Pursuing an Early 2005 Tellme VoIP Trial

Comcast and Tellme are negotiating feature-sets, costs and timelines now



Tellme®

Potential Vendor-Partners for VR Development



Role: Prime contractor

Rationale: Leader in voice recognition across many platforms, a leading system integrator for development and deployment, substantial IP position in VR

Status: Preliminary conversations underway. Next step is technical discussions to frame project

VR Customers: Honda, SprintPCS

Alternate Vendors: Microsoft, system integrators (e.g. Accenture)



Role: VR app dev/engine, cross-platform apps

Rationale: Leader in innovating and scaling service provider voice recognition applications

Status: VoIP trial planned in early 2005. Evaluating for customer support. Prelim. STB technical discussions

Customers: American Airlines, Fidelity, AT&T Wireless, Toll Free Directory, Verizon

Alternate Vendors: BeVocal, HeyAnita, Nuance, ScanSoft, etc.



AGILETV

Role: Cable integration

Rationale: Only vendor that has focused on VR over cable plant, has more knowledge than anyone else

Status: Trial in progress, investment in progress

Customers: No revenue generating customers to date

Alternate Vendors: None



Role: Market study, human factors, remote control design, etc.

Rationale: Leader in consumer product development and innovation

Status: Preliminary proposal for VR remote project, visiting Comcast on 11/10

Customers: Apple, Microsoft, P&G, Tivo, Vodafone

Alternate Vendors: Frog

Comcast

