I hadn't realized the org had changed – I think it's a good move to have you as the manger and Mike as a big contributor.

Please spend some time with Toutonghi and the people at WebTV thinking about this stuff.

I see my role as:

a) Making sure the scenarios we are going after in the home are very clear. I want to market to know if they want to do a digital home for audio distribution, picture frames, refrigerator screen, video monitoring, offices that share files, one Internet link, a service for backing up data and getting service off site, home control –- that Microsoft with its partners has a CLEAR story for EXACTLY how you do these things where you walk into the right outlet and they have the information from us. These scenarios should be simple for people and clear. Right now no one knows how to use a PC to help with these things and "appliances" are the easiest thing to get. One element of this is picking exactly which wirless approach should be used for video and audio and control distribution in the home. One element of this is having a range of "screen" with various capabilities that WindowsTerminalServer can connect up to.

b) Making sure the various teams involved in this work together. I want WebTV, Xbox, Windows, and your group to have a common view of this stuff and who is doing what.

c) Making sure we are building a PLATFORM asset that will endure even as other people do point features and that this platform ties into our general tools approach. I am not sure that focusing on CE gives us this but I will take a hard look. I wonder if we shouldn't just get focused on a Windows machine and how its role can be easy. That is the ONLY long term win. The story around WindowsCE just doesn't cover most of the scenarios I want us to lead on and we need to get going on those pieces.

I will know this thing is in good shape when someone is telling me what the wireless network is and telling me to go get Samsung or someone like that to do the passive screens, cameras, speakers etc.. that connect up to it.

If there are disagreements between you and these other groups lets catch them early and have a fireside chat to discuss the various points of view so that we don't end up with wasted resource. Steve is counting on me to work with Craig and you and others to make our investment here clear.

Right now I don't think we have this. I think the HomeGateway could get away from us because of things like MHP and OSGI and we have to get the pieces pulled together.

I don't want to meet until Craig is back but I do want to you to really know what all these people think.

-----Original Message-----

Bill,

In the future I'll send you regular updates with our status and strategy issues. We're at a critical point, balancing strategy with near term product tactics, and we'll greatly appreciate more frequent reality checks with you.

I'll schedule a face to face meeting with Craig, Jon, and you for mid-September, after Craig returns from sabbatical.   If you want a 1:1 update meeting sooner, let me know.

Here's a partial status update.

Bottom line: We ARE getting the strategy and a solution plan pulled together. We're finding pretty good initial

1

support as we coordinate key stakeholders across the company. During your product reviews, please keep helping us by related teams to "work with CHBU".

CHBU Org Update: About 3 weeks ago Mike Paull and I swapped management roles for the Connected Home team. Mike's a great hardware engineer and one of Microsoft's best technology ambassadors with Japanese companies. With Mike reporting to me, he's able to focus on our Connected Home hardware strategy, delivery of PLC, and key third party hardware design wins, including design wins with low cost display manufactures As the Connected Home GM, I've got Rich Hasha and John Elsbree at my right hand for Architecture and SW Dev Management, Charlie Kindel as GPM, and Mike Paull driving Hardware Strategy and HW Dev.

Status of Platform Strategy: We can go deeper into specific issues and give you additional status on any points. We'd very much appreciate your comments on any of the points below.. A challenging dialog will help us pull together solid vision and architecture documents by the end of September.

0. Validate the platform strategy with rich scenario-based planning. - Underway with participation across the company. We're telling cross company stakeholders that we're coordinating a series of Experience Review Meetings with you and we need their fully engaged participation, in their business space, to define complete scenarios with well defined Microsoft technology value points. We'll schedule the first experience review meeting with you for early October, to cover either Video or Music.

1. Apply the .NET architecture to gateway services - Rich Hasha is driving the .NET discussions for us and has been getting in synch with Toutonghi, Rudder, and the other .NET drivers.

2. Apply the UPnP architecture to home devices and extend UPnP to sub IP devices with SCP. - We've been working very closely with the UPnP/Whistler, and Windows CE groups on their (different) UPnP API sets. We have reviewed their plans and given them feedback, some of which they have incorporated. Unfortunately, the end result is that each platform will have a completely API set. Because we will be dual-hosted on Whistler and Windows CE, we have signed up to build a common layer on top of each platform. We find our current situation workable, but not optimal.

3. Deliver a gateway software platform and application framework to enable key "edge applications".
The edge gateway device will become a strategic point of control and host environment for key service and application code. Code that doesn't run on the edge (code running on PCs, media servers, or other client devices) will be able to use the services exposed from the edge device Our long term strategy is to create an "open" platform on the edge for arbitrary edge applications. The key enabler for an "open" edge platform is the URT. Prior to the availability of URT, our near term strategy is to demonstrate, with our own applications, the advantages of a Microsoft application environment for the edge device. In order to achieve and demonstrate important reliability requirements for a gateway, we'll limit the "openness" of the edge device, in the near term, to host only trusted and thoroughly tested code from Microsoft and a few partners. We believe this approach is necessary to deliver on important reliability requirements prior to a v2.0 solution based on URT.

We're making good progress on two user level gateway applications - the Home Network Center and the Home Control Center. Both applications are built using our gateway applications framework and will use our UI distribution service to project a relevant UI to any networked device.

For our near term UI distribution solution, the Gateway UI Distribution Service will take XML-formatted data and transform it into HTML. A content scaling engine will customize the HTML according to the display capabilities of each individual device on the home network to create an appropriate application experience for each device. Each client device will be running a web browser to display the content it receives from the Gateway/Server. We're investigating two paths to strengthen our initial UI Distribution Service and add more Microsoft unique value. First we're investigating how we can use the work done by the AUI team in MS Research. The AUI solution is a similar but more generic solution to the UI distribution problem. The other possibility we're investigating is a Terminal Server model requinng the client device on the network to run a light weight Terminal Server Client. Simon Meacham is a lead SDE on our team investigating the terminal server approach.

4. Define and ensure delivery of appropriate host devices for our residential gateway software platform.
Our gateway platform architecture is flexible enough to allow multiple gateway implementations, with feature sets expansion to include A/V distribution or storage. In the near term we'll ensure we can deliver a affordable entry level appliance device to host basic gateway services, without an emphasis on multimedia distribution. We're talking with the WebTV team about how they can and should use our platform to create higher end entertainment oriented gateway and server devices. Our platform exploits the PC as a center of user interaction and as a host for non-critical application and service code. We can also target a dedicated PC as a good device to reliably

host the complete gateway platform. As we plan our initial device form factors and feature sets we believe we need to demonstrate that our gateway platform can balance price, performance, and features, even in entry level configurations, and be a superior solution to non-Microsoft solutions.

5. Evangelize third parties to build devices and services that exploit our home network platform. Our focus is with a few key OEM design wins and we're making great progress with GE, MEW, and Siemens. Our short term strategy is to get several key complementary devices to support our 1.0 launch at Christmas next year. Most of expected devices next year (lighting systems and controlled appliances) will use the Home Control Center service we're developing.

We're also creating a business plan, in cooperation with GE, to target the new construction marketplace a set of solutions based on Microsoft's connected home architecture.

6. Communicate clear network media choices for home networks.
For data networking: we endorse HPnA over existing phone lines. We'll build HPnA into our gateway device. We're pretty confident that 802.11b is the near term wireless data winner and we're planning an expansion option to add 802.11b in the gateway. We're taking a "wait and see" approach to the possibility that a high speed PLC standard might come from the HomePlug initiative. We endorse 10/100 wired Ethernet as the near term wired solution at home and the gateway includes upstream and downstream Ethernet.
For control networking: we'll deliver the winning PLC standard, integrated with the SCP protocol. Control over RF still tbd.
For short length cable replacement: Bluetooth
For multimedia networking: tbd on all media, we'll listen and support the direction we get from Jawad's team.

Status of our Platform Solution:
Our long term gateway software platform will build on URT. We need URT for distribution and execution of arbitrary service code on our edge devices. We see URT as a critical path for us to offer an open, reliable, managed platform with support for arbitrary third party code.

We have a pre-URT v1.0 platform planned for next fall. The 1.0 platform won't deliver on all elements of our platform strategy, but we think it's a valuable step forward. Without URT we can't deliver open and reliable support for arbitrary third party code on the gateway. Instead, the v1.0 platform will host edge applications from Microsoft and 1-2 carefully selected partners. Even without the open platform advantages of the URT version, we'll demonstrate how a Microsoft gateway enables a network operator (MSN as the proof) to offer premium connected home services and we'll demonstrate how application code running on the edge of the home network can enable a superior user experience to non-Microsoft gateway solutions.

As a launch strategy, we think it makes sense to partner with MSN to distribute the v1.0 gateway next fall as part of an MSN Connected Home service. Our 1.0 gateway platform, combined with other Microsoft and third party products, including ultimate TV, and a Whistler PC version of our gateway applications (Home Network Center and Home Control Center), provide be a good foundation for a broad MS/MSN Connected Home marketing initiative. By shipping the 1.0 platform we'll establish meaningful market leadership, drive progress with device partners, and begin serving real customers so we can learn what's important and valuable to consumers from a gateway service business.

In parallel we'll promote our gateway architecture as a solution for other network and service operators. But, to really succeed with network operators we'll need the v2.0 URT version of the platform to support broader third party service and application requirements. Without URT, application support and reliability don't scale.

Our 1.0 solution is built on Win32 for deployment on Windows CE or a Whistler/NT device. On a Whistler/NT device, we'll use the core networking components in Whistler and add our gateway components including the UPnP to SCP bridge, UI Distribution Service, Rules/Notification Service, Remote Access and Replication Service, Gateway Application Framework, and two gateway user services - Home Network Center and Home Control Center. For a Windows CE, the Windows CE OS team is porting the networking components to CE Some of the network component work is being done in the context of their next release (DougFir). The CHBU team is taking the DougFir networking components and adding them CE version we're using Cedar. We'll use much the same gateway application code on both CE and NT.

Today, we believe Windows CE is the best OS choice for a mass market, entry level residential gateway appliance, because of the hardware cost difference between building a basic CE based gateway vs. an NT based gateway. We also believe that the cost to build NT-based devices will drop significantly over time. As we move forward with a v2.0 gateway solution, we'll reevaluate our support for CE. When NT devices become cheap

enough to build, we look forward to switching over to NT. We also expect our v2.0 solution will add features that may only be available for NT, like URT and terminal server.

-kevin

I know you are driving us to look into the market here and come up with clear plans.

People who want to do digital homes want us to give them a crisp answer for all the scenarios - buy the peripherhals from the following people, use the following server, use the following wireless network.

WE really need to pull this together.

I look forward to having Craig back to help us pull together our connected home strategy working with Jon.

I got a chance to meet with Mike Toutonghi yesterday. His vision of what we should do matches with mine about 90%.

The key element is creating a HOME SERVER that is a platform and a solution both. The platform has to make it easy to log event and filter those events. The platform has to encourage third parties to offer services. The basic applications that come with it need to include the ability to connect up to PDAs and to larger Passive screen and to camera and to distribute photos/videos/music in the house. It also has to include making it easy to connect all the PCs in the house and to have one gateway out to the world We will compete with simple router type solutions.

We need to make it easy to take any PC and add a piece of software or a special box designed to be a home server and install it and get a lot of things from it. There may be some optional elements of the box related to AV type things.

We have to move pretty quickly on this by aligning the work WebTV is doing and the work that Mike Paull is doing with what Mike has been thinking. Mike wants to architect the platform leveraging the URT which seems fine to me. Mike said he has met with Rich Hasha and that their thinking is largely aligned which is good since Rich did a lot of good work on this in the home project he did for me. Mike said he has talked to the WebTV people and that their plans were likely to include a NT based box as a home server as part of the strategy. We need all these things pulled together - we are only going to do one Home Server. It doesn't mean we have to change the org at all but we have to use the architecture document to understand who is doing which piece and how they relate back to our .NET services.

We need to define which platform pieces from the rest of the company this home server platform depends on and get these groups doing the extras that run on top of that.

We need to have third parties doing the focused peripherals with the right branding - the various screens (for the frig, for the living room - all connected with WTS). Some of the pieces like the phone piece are a bit trickier.

Its not clear to me whether the WinCE gateway that we can put out next year is worth doing or not. The top priority is having all the pieces to have the SERVER in 2002.

One element we are counting on the Windows Networking group to make clear is what wireless strategy we back. We will support everything but we need to pick one wireless approach that can be used worldwide and this is isochronous and really get behind it. That plus AC power plus some phone wire thing is enough for us

4

to move forward.

By the end of September I am asking Craig to make sure we have a vision document and an architecture document for this.