Notes compiled by Monica Marlo M-G

MAHALO NUI LOA to Digital Alchemy for space and hospitality! :)

(See DevCamp site for particpants' full names and links: http://www.ardevcamp.org/wiki/index.php?title=ARDevVancouver)

Damon - Organizer of the group, Does outreach with open standards consortium.
Sean -Civil Engineer, Monica's husband and CAD developer
Monica - Immedgineer (self), (aka: virtual & augmented spaces instructional designer.)
Michael works with 3D spatial Database technology. ETL- company Safe Software- taking data from one format and pushing out into additional formats
Amanda just graduated from film school and did her final project in AR. Graduated from the digital design program
Stuart- started as an artist, does video instillation on buildings with projections- back in school @ Film School in Digital Design
Chris - Digital Alchemy (Maia, SoftImage, Nuke, Combustion)

Damon reports Unity 3D is the main platform that he found at GDC. By and large game developers were working in Unity.

Dave Elchoness- CEO of Iris- creator of "TagWhat" is the first presenter. been in public for less than a month. TagWhat gives each user, individual or company or organization, the entire world as a global canvas upon which they can place geo-located tags, consisting of text, multimedia. It can be seen both online and via mobile augmented reality. Tags are interactive and also include actions- one can comment on the tags, and start a discussion based inside the ar tag, but also can incorporate actions the mobile will recognize like email, call, launch a website.

On the home page- all of the home pages placed by the user appear; they pop randomly around the globe- people are attaching text, simple messages, links to videos, real estate listings, links to newspapers, etc. whatever it is they want to communicate through. These AR tags appear geolocationally in their device around you as if you are inside looking at this map from above. Kind of looks like a social network. As I follow people in the system their tags become a part of my world, just as when they follow me, their tags become a part of my world. You can see individuals in the system (individuals show up as different colors. Tags are geo-aware, and once I find a tag in my mobile browser, I can comment on this- so this initiates a discussion of what has been tagged. (Note: Very handy for geo-located class!) You can leave a mobile coupon, or reviews, etc. I'm thinking of all the ways instructors wish they could take someone to a place and leave information about what they teach.

Typical things like profile, find friends from other social networks and invite other friends. Shared global experience with others. Private messages are possible. Channels are important, they represent branded content that would be delivered into the system (could brands be used to

present course or instructor data?) What they are looking to do is incorporate data into their system so that people can share it online or in mobile spaces. FourSquare selected for example brings up FourSquare locations. Easy to drop a tag on the map and then fill in information about it.

Travel is another use- if traveling to other places, you can go to a map location and look for all of the TagWhat data that is available. This creates a location based experience.

The mobile side- Every square inch of the globe is chock full of history information commerce, etc. In the education context so much can be done with a system like this.

Q: What is the range of when you displayed the located information? Example, If I go to Vancouver, I flip up the mobile browser and use it, what is the drop off rate distance wise ?

Range and Filtering-- Right now you can go from 50 or 100 feet to 10 miles in your mobile device. In some places (Like NYC) 10 miles is too much, but in a rural location it may be just right, the user chooses. On the mobile side, when you use the app you see tags that have been left by others, involving text, URLs, email addresses, etc. These tags are interactive, and there are comments inside so you can be drawn into a conversation if you choose to be. There is also a map view, and a list view, which gives you distance from location feedback.

Ineract and create- you click on a tag and you get all these different options- if a tag has been given metadata by the user (URL, images, video link, etc.) - Every tag is open to comments.

(Is it possible to keep comments restricted to sub groups of users?) It is possible to use a private or public accounts. Could use private accounts unilaterally so that those individuals are the only ones that can see it. Works a lot like Twitter. Its a neat way to organize information in a system. Also have a for your eyes only tag- it can be sent to an individual alone.

Lots of innovations coming over the next weeks and months- people are pretty excited about the platform. The AR is important, but its not the main event in a system like this. Its a critical feature and will become even more important over time. Its one of several world views that are just options for the future. Mobile ticketing company, IBM, Realtors, Travel professionals, Museums that want to place their exhibits in context. National public housing museum in Chicago- it doesn't happen in a place, it happens around the US< so those exhibits are being placed around the country so that people walking by can enjoy them, while also people who want to view it online at the museum they can use it there too.

Your account in TagWhat can be accessed via URL, which gives access to your TagWhat map., This might include any kind of content you can push to users.

There are plans to add video- the only constraint is that we're a small group and are prioritizing what has to be built in. The other thing that may not be as obvious is also important is audio.

Annotating things with a recording rather than having to type things out- there's a use case for that as well. Also working on potentially the most powerful element- a push notification - so that you can become spatially aware of when someone in your list has left a tag in that space. This will alert you of the fact that you can interact with someone you are following. (Think of this in context of games.)

Right now when you join TagWhat, its kind of a lonely place In order to create a community you have to find people and follow them. Looking to add a public stream so that when you turn on tagWhat, you get a public stream.

Virtual goods store, may be able to sell virtual objects through a store. Maybe item is attached to some other kind of data (Treasure hunting to learn!) There is a commercial element - do we go with a 3D good or a 2D good really well done, but its not quite 3D- why? Seen a lot of 3D in the phone and its OK but its not quite phenomenal yet. It will be fairly soon, but might go to 2D before 3D, but commitment would be that 2D would be exceptional. History and background is in modeling and developing. Just don't know if it will be 2D or 3D.

Augmented Reality event in San Jose next week! Please set up an account and invite some friends into the system. Always contact Chris with ideas- they are brand new and really need feedback for the system.

Damon Hernandez: How the existing standards for web 3D are being used. (Showing some examples) The current ISO Standard for real time interactive 3D is X3d, the next version of VRML, it's a 3D format- think of it like WoW, GoogleEarth, etc, you want to put Maia content online- there are ISO Standards for that- mainl used by the geospatial community, industrial prototyping- in the states all medical records now have to go electronic.

DCC tools

Best BUy Ad. (Built in Collada- a defacto standard that everyone in the gaming induustry is - format .dae, came out of Sony, used by Google Earth, does have a lot of support, mainly seeing it as a way to create assets and have different people work on them in a game like environ. The difference being theres a lot more that x3D supports (runtime environment)

The line on a Football field showing first downs = augmented reality.

Many formats are meshing into the Open Metaverse- Stephenson's Snowcrash talks of an immersive virtual reality web, and Gibson before him. .How 3D interactive 3D can be used in the real world environment. Example- real time sensor data collection and visualization.

climateactionmap.org started to help citites put up climate initiatves and policies coming from 2D google background. Blends 3D technologies to help understand how things will effect the real world (Wind farm for example)

Exit Reality- you can bring VRML, Collada or X3D info, give it a URL, and then it works directly through the browsser. It will also take any 2D website, lay it down and pop up into a 3D space- it has the same kind of editing tools you can use meshes drag and drop from your desktop and then use in world tools to. You can use an FLV as a texture- Steve Guidnow, VRML scenes- Plugin based, rather than client. .

Green Tech spaces- Showing people how to be more energy efficient- they realized if they show in a built environment in context its easier to understand. Understanding how a lightbulb works s easier if you just click on a lightbul and get info (What about just pointing toward a lightbulb I say? :))

GeoSherpa- interior layout design to help people understand calculated energy use in choices of remodeling (kitchen appliances for example_) Constructivismm ESL,

MedX3D working group- working closely with standards org for med visualization Diacom- so when you go in for a scan, they put these into volumetric rendering Dr. Michael Arritow- patient awareness, works down at San Mateo medical center- they have a large hispanic population. so the ability to show procedures to ENNL.

Outreach & Curriculum Development (Initiatives Damon works with on MedX3D) - San Mateo website gives a great example of open standards 3D on a medical website- to show interoperability of assets, he took the same mesh and used it with a marker on his wrist to show (unortunately marker recognition currently needs high contrast) This iteration shows static info returned but the next step is

Working group- Mixed Reality Musems- how to use these techs to engage a younger audience? SF Moma for example is working on image recognition thing. A lot of the focus is on the social media like TagWhat- there's not a lot of people going after , but museums are really needing to take more of their collection, and they understand that not everyone can come to their museum, so they want to maximize their collections and the exposure they get.

Star wars (real time strategy AR blend) it was spatially aware, look this up!

GDC in SF- the drop off rate for having to install a plug in is 80 percent. And that's gamer.(Note: does this include churn rate for download then never return?)

Lively- Google's virtual world six months after opening closed and then MyLively came out it was totally the same thing. It was an interesting time- Anshe Chung and SL's digital gold rush

was happening, VC's were investing in projects that there were a lot of options for people at the time.

Fraunhofer Institute in Germany- Web3D- They developed MP3 - now working on x3 DOM- (Generic web based 3D network) See Web ED Augmented reality page. Uses WEbGL to get hardware accelerated graphics- Uses X3 DOM to use just Flash for a 3D overlay. Firefox Minefield and Google Chromuim, More info found at X3DOM.org, (Doing really cool stuff with mixed reality!) Archeo Guide geo located ruins and then gave you a GPS device so you could see it from the direction you were approaching. (unlike billboard effect of TagWhat for example.)

Digital asteroid is a 3D wiki Bruce Damier- Wrote Piejet hoet- how do they create a 3D wiki? To put this up so that educators can use this content so that we as educators dont have to script or model so that when we use these models they are enhanced with metadata that will work in context. (Example- x3D Earth) AIRPA

Fan based work- Chichen Itza - interactive environment so you could see the way when the sun came up the shadows cast in a virtual space. Also the catacombs scanning being shown through AR or VR and then mapped these textures. Look up Roman Catacombs and 3D Laser scan for more info.
Nava lost graduate school- flight simulators, VSim used to develop soft skills (intercultural diplomacy).

Powers of 10 (Video) An interative app developed separately to teach DNA double helix- a 2D billboard that sjows 3D video

"Nothing has made me want to learn to model more than seeing myself 3D scanned" - (:) Note: the importance of identity and avatars.)

Planet9 Studios- does digital cities in virtual worlds. 21 layer globe that tiles that uses USGS data sets (sattelite imagery, NASA's blue marble, open street map for example) Then in about layer 17 you can load in 3D data of structures, topigraphic info, etc. (9 layer) X3DEarth (LOD's as you zoom in and out) are the layers that are being discussed. YOu can load your own tile sets- a group of students that are big Lord of the Rings fans are overlaying Middle Earth data on the physical world for example (neat!).

Q: To what extent are we already mapping underground structures?

Autodesk digital Cities Initiative- Here in Vanvouver BC for example they use it for a big fireworks show to project where it will be best viewable, ergo where needed public safety services will be (Neat!) Vancouver has a model of the city, textured, totally realistic, used for simulations/scenario visualization.

Trying to id open source stacks of software solutions to offer better camera tracking for example.
There are lots of AR enthusiasts, but not many AR Developers- there aren't that many people picking it up yet, and if you have any AS knowledge, etc. it's not that difficult! There are a lot of tutorials online to be able to develop this.

FLARToolkit- (From ARDev MUG)

(Using Skype) and shared desktop feature for distance presentations

AR Stack: Why all this Shift Matters - Sid Gabriel
AR Dev Mob

Major projects- Meetup groups- direct developer outreach to engage dev'rs Andriod on platforms not phones, And Hackathons develping AR apps,

alt.os.liberated-

Hackathons and Developer Challenges are what he sets up- See a lot of dev'rs and what they deal with on getting things done on a short timeline.

What is Open Development?
Open development NO NDA's , Clear Lic. MIT is best
Open Dev house accessible to beginners and students LAB journal = Blog (Comments enabled)

Why? Repourposing, crowd sourcing,,everyone at the same bleeding edge, dev'rs brought up to speed, "I know Kung Fu". Documentation is easily available. You can almost get a "Matrixy" effect - immediate knowledge acquisition abvailable only in open dev.

How to make money? Choose robust biz model, develop for the ecosystem,be aware of clustered market needs.

ARStack- Important Languages: HTML and Javascript, Java, Objective C, processing.org, Actionscript (HTML 5 is exclusive of any language- plugin structures to provide an open-ness, (iDevices don't have them but **don't throw away prior work!** It's inefficient.)

Important projects- openCV, SURF, ASSURF, ZXing, Colorstalk, Awetastic, Sixth sense (will we ever see source?) (SURF- Speed of Robust Features)
(Note- these are areas Sid thinks Open development is lively and robust, this is just his view of working with Hackathons) COlorStalk is a stack that tracks color and allows for visual sample.
ASSurf= Unfortunate name, Adobe's brand police spanking result.

Awetastic came out of Hackathon in April- does color tracking w. synch of camera and projector- proto system of info on wall that is interactive.

(TED talk on Sixth Sense- would like for it to be open source, this was almost a year ago)

ARSTack - looks a lot like 2.0 pre-rails; disintermediation will happen, important that it's open.

James Alliban, (Augmatic) Eugene Zatayepkin (ActionScript SURF library) , Zac White, Chris Haseman (many more) a few names to follow on AR open world projects.

Persistence. It always comes down to persistence. (Vision, internet connection, tenacity, same same. ;))

ARQanoid - Java skills port.

ARQERA ARDevMob, Android or alt. os.liberated.
(Slides will be put online at the end of the day)

"AR will eventually save the world, one Hoff at a time" - Sid shows beautifying the world via a Hasselhoff head overlay that recognizes head shapes, asks random people at the airport to participate. FunnY!

Note to self- What exists to create sound dampening for Skype presenters in a public space?Need cone of silence! :)

Peter Captane (sp?) multitouch using FLAR and Qmarkers, distance for pressure and orientation and tilt for different touch elements- what needs to happen to where we have multitouch- that needs to be married to the SURF library- need to just use the native multiouch operators inside of FLASH. Hasn't been done as a contract, but as soon as he does Sid will put it out in the field. Anyone could take those three projects and stick them together to make them work as a new framework pretty easily (just takes time and impetus)

Hackathon ARDevMob - 3rd weekend in July- Wii (alternative interfaces) Will be at Parisoma in SF.

ARNewsroom.com - Your source for augmented reality news.

First ARDevCamp- 12.5. 2009

EarthMine - collects 3D photogram data, insanely accuracy, down to CM accuracy-

MaximSP- alternative dev environment to ARToolkit- look for YouTube video using ziploc bag, water and ink.

lunch break*

Monica Marlo M-G : Augmented Reality and Immersive Education - Looking at augmented reality for application in higher education. Currently works in virtual spaces, coordinator of the Oregon Community Colleges in Second Life island. Develops 2D web, 3D virtual spaces (modeling, UV, coding, etc.) Sees much labor going into bringing authenticity that exists by default into virtual spaces. .. this can have it's use, but wonders if there isn't a better way in going the other direction- bringing virtual and augmented content out into the physical world? Using the right tool for the right context and purpose in education is a passion!

Like Damon, focuses on constructivism, also contemplates connectivist pedagogies when approaching emergent technologies. Is excited about the future of HTML5 and what it may mean for data visualization and interoperability. Comes from a Flash/ AS background as far back as Futuresplash, but sees that this plugin has run it's course, now in a sunset phase (though hopes to extend work already generated in Flash to future ported tech. environments). x3DOM and its App stack is likely a future path toward using 3D visualization in learning spaces tech.

Immersive and engaging learning experiences that align objectives and assessment by doing for competency proof is an over arching goal. Aligning this with personalized learning environments and lifelong learning portfolios so that objectives are found in subject areas that each individual learner finds engaging- allowing as much flexibility as possible for those who have large range of interest fluctuation- believes this is possible, but not currently valued by the technologies we use to perpetuate a "factory" model of education. Products of experience can be tracked to show level of competence and improvement over time- this too is beyond the individualization we currently use, but begin to value.

Augmented reality can help us learn to value failure and its rightful place in learning by helping failure to be seen in a different light. Stuck within our own failures we may become mentally rigid, but with the right feedback we can be encouraged to view our experiences through a different lens. We don't always have a mentor or angel on our shoulder to help us see beyond or own rigidity- technology in a number of ways (community, sage, data interface, etc.) can help us overcome this limitation.

Shows demo of MXRCorp WizCubes, which is targeted to a young audience. two six sided cubes with image recognition markers are programmed to interact when the right image is displayed on each face of the cube at the same time. Brought this from Immersive Education Initiative, Boston Summit, where Aaron Walsh handed these out very graciously, asking for this technology to be shared, experienced, sparking new possible innovation fires. (Thank you Aaron! You ROCK!! :))

Dave Aarondash- The Virtual Factory- Just started 3 weeks ago at this project- first full time week this past week. Already having name as a contributor is an honor. Quite a lot of work done before he got there.

FXPAL Fuji Xerox Palo Alto R& D Lab located in silicon valley- research expertise- multimedia systems.

Virtual Factory is a mashup of things- for one, there are as you can see iphone, iPad and iPod apps that are attached to the system. Multiverse for example on mobile devices. HD cameras are placed about the facility mounted all over the place that the phone and stand alone app can have access to.

Located Pier 17 in SF, Chocolate Factory- TCHO facility makes chocolate from beans in the same facility. Virtual Factory- integrating 2D & 3D information- sensors attached to almost everything in there. Two parts to the laboratory, mixers and heaters and a light and camera and so forth, and they monitor that stuff when they are creating/testing new flavors. Can't test it over the net yet, but they can control the entire process virtually via remote objects. There are sensors on all of the heavy machinery, no apps to work on that because its expensive, but the flavor lab has smaller machines we've played with.

Target audience- 6 types of users (overseers, workers, tour guides, outreach, interested constituents not able to get there.) Collaborative aspect helps people work together remotely as if they are there; camera monitoring and sensor monitoring allows for QC and inspection, touring, etc. 3D environment is not yet integrated with HD video; right now its canned video that gets displayed, but eventually want to incorporate real video into the scene.

View of current 3D system shown- various machines represented. Blue and green red dots hanging in space give feedback about machine or process. WonderWare (Uses PLC- Portable logic controllers) is an industry standard for monitoring equipment- hooks to a DB to update the 3D scene, so the actual state can be reflected in the 3D model from physical world data.

Data spot sensor displays are being shown in augmented form in the virtual environment, but data from the actual item in the physical world is building that view. this can help with monitoring and troubleshooting.

The iPhone is used as a controller. There is a live video feed from the flavor lab, and bttons on the app control the machinery. The app can also display various states of the equipment in the physical factory, and also allows for visual monitoring of the environment via remote controlled camera. This is now in daily use at TCHO Chocolate Factory.

FXPAL/TCHO Project has gotten some press.

KIRA Institute - Check into this project

ARMedia for 3DS Max - Does this do animation?

3DVIA - Another way of building AR a tool that publishes to the web. Really nice fidelity of graphics. Online access to models.

.3ds .obj

Monchichi Sony Game- Brings back childhood memories, but *my*

AutoDesk Design Center in San Francisco- Check it out when you are down there!

Demos- Flash AR

ISMAR (Graz) - Conference on Mixed Realities- Look at what's cutting edge on Augmented Reality. (Try to present here)

Nokia released their point and find (whatever they called it) gave presentation at Virtual Worlds SIG. The street that runs out in front of Stanford wa augmented., For super accurate location ID they have to switch from geocode and over to image identification. Using dots that are reference spots words were attributed to the places where you could move from one grid space to another. Accuracy was very high!

X3DOM.ORG <-- xml for describing 3d models. pro and con- it's open standard. Once you put something here, it is easily cut and paste copied. (NTS- this for me & education is good!)

hasn't dived into it a lot, but hasn't spent a lot of time- using Flash for the camera, and having it talk to a marker. Need to use a WebGL enabled browser (Chromium or FireFox Dev. Versions).

For now, the current geometry has to go into the HTML, so right now that mesh which makes it too easy to cut and paste into other documents.

HTML< Javascripts

Matrix- TransformID This is where the scene is built- within these tags. The matrix..transform tag, everything in between is what its id'ing and puttin gwith the marker. - -IN this example, there are two spheres- one is the globe, and one is a layer of clouds.

Flash is primarily being used here to talk to the camera. Do we know if HTML5 has any way to directly contact a camera? The assumption is "no" so far, but can/will be developed.

You define here the geometry- (tools for working with X3D- non standard (older format .wrl) there are conversion tools to go from VRML to x3D code. VividE studio is an authoring environment that can import KML, KMZ, Collada, 3DS; When using international outreach the tool that VivatySTudio allows students to quickly.

Start by going to Google 3D Warehouse, grab any collada model you can find. Bring it in to Vivaty Studio. It allows artists to create 3D interactivity quickly and move assets to developers further on down the line more rapidly.

Single camera scene export is best from Vivaty Studio. This is a quick and dirty way to get something DCC tool into an open standard.

Yumetech.com has a X3D quick Reference Guide.

Instant Reality Player (Fraunhofer's player- commercial, requires license for exploration) is used for this first example

Two different ways to do AR- Marker or Image Recognition (Instant Vision: Fun, once you figure it out.)

You can build environments that are highly interacive that will bec ompliant across all the browsers; but each one has its own affordances, shaders, motion, etc. Their player has extensions for AR on it. (Generic extensions will work across the board, but custom extensions don't work outside of the proprietary player)

You can change the marker by changing the ones and zeroes in the bottom of the file. Any variation of white squares in a 16x grid will work.

(If you were using Flash you could call function and have it write the X3D data written inline at runtime)