



LazyTown

ADRIAN PENNINGTON reports on a unique production, shot in Iceland on a Thomson Viper with live HD keying

Whether or not Cbeebies is part of your regular TV diet, LazyTown is unlikely to escape your consciousness for long. In the same way that Sesame Street or Teletubbies captured a far broader than intended audience, LazyTown has become a pre-school phenomenon with global appeal.

Originating as a book in 1991 to help promote health and nutrition for children, the idea exploded into a multi-faceted concept, the backbone of which is a syndicated TV show. By selling to 99 countries in eight months since August 2004 it has become the fastest growing kids programme in history.

Its success is in large part driven by a sophisticated and bespoke tapeless workflow which films uncompressed HD images of puppetry and live action mixed with real time CGI composites – all timed to meet television deadlines.

The first 34 x 24 minute series is currently being aired on Nickelodeon in the US; BBC2, CBBC and Cbeebies in the UK; and Germany's Super RTL among others supported by a wealth of marketing and merchandising material. It's the brainchild of 42 year old former Icelandic Olympic champion Magnus Scheving, a newcomer to television who nonetheless knew exactly what he wanted: total creative control and no compromise on quality. For example Scheving wanted to produce in his native country (its isolated 300,000 population making it the "perfect test market" he says) despite its very limited production infrastructure. Iceland produces around four features per year, sustains three TV channels mainly with acquired programming and is an occasional base for commercials and film location shoots (Die Another Day, Tomb Raider and Batman Begins have generated a small freelance crewing business). The nearest film lab is in London.

"We considered film but the prospect of sending overnights by plane wasn't realistic," says executive producer Raymond Le Gué. The logical step was HD. Unaware – and by Scheving's own admission unconcerned – about any technical limits in processing HD



images Scheving engaged US facility Hypercube to custom-design a 5067sqft studio and production complex on an industrial park in Reykavik suburb Garbadaer. Central to the implementation was one of the first production models of Grass Valley's Viper.

HD VFX

The production shot full resolution 10 bit RGB 4:4:4 at 24p (1920x1080, 23.976fps) combined with live keying from an Ultimatte HD engine. Aside from live keying the production was conventional. Clips were stored on disc, edited offline before finishing, conform and output to tape. Yet the throughput of each episode's GBs of data combined with a schedule that called for five day shoots, up to 30 daily set-ups and eight week episode turnarounds was causing severe problems.

"It was taking up to 24 hours to conform the EDL with 400-600 uncompressed HD VFX shots per show," says Le Gué. "Then if Magnus wanted to change even one frame of the output we had to re-conform. The pipeline was very shaky. We had the quality but we were pushing way beyond capacity in terms of throughput. We had no flexibility."

Although the first series met its deadline it was touch and go. Moreover the 130 technicians, many of whom were Icelandic, were learning the systems in a live environment and mistakes were being made. According to technical manager Gunnar Kristján Steinarrsson, "When an editor moves from a local station to editing tapeless on a SAN there are huge workflow issues in terms of educating people away from their previous mindset into having a more flexible use of the technology."

Le Gué, a virtual set pioneer who helped create virtual set system Scenario-XR and produced 2000 hours of virtual set programming for Endemol, joined LazyTown half way through series one tasked with solving the bottlenecks for season two's set of 18 episodes.

Keeping the Viper and the Ultimatte keyer were straightforward decisions. "It was taking 20 minutes to swap between the virtual and the hard sets so to cut that down we acquired a second Viper," says Le Gué. "The challenge was to enable Magnus to take creative decisions on the fly and then to manage the throughput of the DPX files while keeping to schedule. What we've done, I believe, is unprecedented in terms of integrating film craft processes with television discipline."

A parallel workflow was introduced in which the Viper's dual 4:4:4 streams are sent to an MCR-type room adjacent to the set. One feeds an Avid Adrenaline, compressed into Avid DNxHD for immediate logging and editing before recording onto a 15Tb Unity and further offline editing.

The other, identical, stream is ingested to a DVS Clipster (with 30Tb) maintained as DPX files from which the Alpha channel is extracted for keying of foregrounds and backgrounds. Rushes are backed-up on HDCAMSR. The composites are worked on as DPX files by the VFX department before being brought together for conform and finish on a DS Nitris.

"Pre-editing is one way of limiting the amount of material

we're processing," says post production supervisor Paul Boots. "Every 10Mb frame we trim and don't store is vital." A rough cut is available by the end of the week's shoot.

LazyTown has a 11:1 shooting ratio ("an extreme luxury" says Le Gué) with all footage stored as raw files on a 40 Tb Xyratex server "in case Magnus wants to use a stunt we shot and rejected for series one episode 24," he notes.

The live keying not only accommodates on set interactivity, it means there's less need to adjust shots in post. The camera head and crane are motion controlled with each axis encoded so the movement (focal length, tilt and camera height) are matched exactly to the backgrounds. "Whenever the camera and background's match the animatic we accept the shot and send the data to the VFX department," says Ultimatte operator Richard Welnowski. "We've written some code which splits the metadata into chunks so we can manage it more efficiently," adds Boots.

Real time On Set Comps

The thousands of elements comprising the show's virtual backgrounds were created in Maya, formatted in Motion Builder and stored on Render Blades. When Scheving wants to swap out a graphic such as add a church, recolour the sky or reposition a tree, the production can call up the file and re-key it within minutes.

"When we started, the virtual set operator was part of the VFX department," Le Gué adds. "Now he's a part of the camera team. What we're doing is real time VFX but in practice he's a virtual camera op."

Thanks to the real time on set comps director of photography Tómas Örn Tómasson is able to see how his lighting (6K and 12K Arri HMIs) would combine with that of the virtual world.

"Since we don't shoot in Filmstream the latitude is similar to



Part of the 5067sqft studio and production complex in Reykavik. INSET: Sportacus (aka Magnus) in front of the Viper and green screen(ers) at work





Magnus Sheving, LazyTown's creator, main character, writer and director: "I know I am demanding of my team, I won't accept that something is 'not technically possible'. I will push them and the machine."

SD," he says. "If we clipped something it was gone, so the exposure had to be exactly right. As I got the feel of it we were able to add more contrast without blowing the details."

Colour correction isn't standardised but tuned on an AVID DS Nitris. "The amount of image content is so huge and different that you can't set the Viper up to accommodate it," says Le Gué. "Colour correction is fairly simple because it's a primary colour palette," explains Welnowski. "We adjust the contrast and brightness a little in post and tweak the gamma. The main thing is to ensure LazyTown's signature pink, blue and yellow colours stand out."

With a complete set of Zeiss DigiPrimes at his disposal Tómasson shot the hard sets with an aperture of f1.8 to f2 1/3 then shot the greenscreen set-ups at f4 to f5.6 generally with a gain of -3. "The settings were really neutral so we could do whatever we wanted afterwards," he says.

"There's a myth that you should overexpose greenscreen by 2/3 to 1 stop and underexpose bluescreen by 1/3 to 2/3 of a stop," he explains. "The confusion is created because people mix spot reading with incident reading. When shooting on a screen no matter what colour it's crucial to measure the shooting exposure with an incident meter."

Tómasson says he shoots primarily at a 90-degree shutter angle to make sharper edges, which he felt was appropriate to the fast-paced action-oriented style, and frames 4x3 protected. "The most difficult task is to come up with a usable and beautiful

frame where I had humans interacting with half-body puppets, and keep continuity in the height between them throughout the show," he says.

Perhaps the key problem, and one not shied away from by any members of the production, is Sheving himself. Not only is he the show's creator, he is its main writer, actor and director. In practical terms he has final cut on every creative decision. According to Le Gué, "Magnus wants to do it now, immediately and not in any other way. He's like a child who has no pre-knowledge of what is possible, only that he wants it. He drives us crazy but it's rewarding."

The mix of full resolution and compressed HD; the necessity for speed and the demands for on the fly changes have created massive headaches. Even now, toward the end of series two and with \$42 million spent, not all of the issues have been solved. A 10 second lag swapping between edit and record in the MCR on the Adrenaline is one 'unforeseen' hitch creating knock-on delays on set. "We need solutions today for technology which is 18 months away only because of the whim of one man," says Le Gué.

For Sheving, LazyTown is a rehearsal for grander feature film or games projects (of LazyTown and other original property). Quentin Tarantino visited and was reportedly impressed. "I know I am demanding of my team," Sheving admits. "I won't accept that something is 'not technically possible'. I will push them and the machine."

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