Bill Pope, ASC, on shooting the latest adventures of the *Men in Black*

**MIB³**

Big Screen Effects for the Small Screen
ARRI VFX creates feature film quality effects for primetime TV dramas

*Downton Abbey*
Nigel Willoughby, BSC, discusses season three of the hit period drama

**ALEXA Plus 4:3**
The new ALEXA model and shooting anamorphic
VisionARRI would like to thank the following contributors:
Susanne Bieger, Mark Hope-Jones, Ingo Klingepon, Will Loyd-Holmes, Judith Patty, Angela Raedwisch, Andrea Rosenwirth, Michelle Smith, Art Trice, Sabine Welte

Front Cover Image: © 2012 Columbia Pictures Industries, Inc. All rights reserved.

4 MEN IN BLACK 3
Bill Pope, ASC, reflects on shooting the third Men in Black instalment with film and digital

6 ALEXA PLUS 4:3 FOR ANAMORPHIC
New ALEXA model completes a perfect anamorphic line-up

8 GUARDIANS
Adrian Cranage discusses working with the ALEXA and new ALEXA M on Til Schweiger’s action drama

11 LATEST ON LENSES
Two new lightweight zooms extend the Alura Zoom family

12 BLOCKBUSTER TV CALLS ON ARRI VFX FOR VISUAL EFFECTS
The VFX specialists at ARRI Film & TV create big screen effects for primetime TV dramas

16 DOWNTON ABBEY
Nigel Willoughby, BSC, on taking season three of the hit TV drama into the glamorous 1920s with ALEXA

18 SAMS IM GLÜCK
ARRI Film & TV carry out extensive VFX work on family fantasy movie

22 ALEXA TODAY
A round-up of the latest ALEXA developments

24 ALEXA TOMORROW
A road map of software updates to come in 2012

26 LUDWIG II IN ARRIRAW
ARRI Film & TV discuss the on-set workflow and postproduction for a historical portrait of King Lugwig II

29 WEB TOOLS ON THE MOVE
ARRI web applications provide information via iPads, iPhones and other mobile devices

30 INTO THE FUTURE WITH THE ARRI LAB
ARRI Film & TV’s Martin Schwertführer talks about the future direction of the ARRI Lab

34 NEWS FROM AROUND THE WORLD

38 PRODUCTION UPDATE
Since Sony Studios required MIB 3 to be 3D, the team extensively tested different rigs and capture formats. The verdict: 35 mm on ARRICAMs with special scenes shot ARRI ALEXA and post conversion for 3D. Camera, lighting and grip equipment was supplied by ARRI CSC based out of Secaucus. Said Pope, “We projected the final tests side-by-side and decided film converted was the better choice – not just visually, but in terms of the filmmaking process. You can get closer to the actor, you can clear up their eye-lines better. We wanted to move fast and not have actors sit around. Every test we did with 3D cameras took forever and there were glitches. The conversions now are so sophisticated. You are able to have the same control that I see no reason to actually shoot native (3D).”

Filming on 35 mm motivated the need to properly display the footage during the shoot. Enter the ARRI HD-I5 high definition video tap. “That was key for me,” said Pope whose credits include the Matrix Trilogy and Scott Pilgrim vs. the World.
“I’m also a big fan of grain. It draws you into a motion picture. I’m discovering what these tools do, what they mean in terms of image quality and drawing audiences in or holding audiences out. There’s room for every one of these tools…”

“I’ve also felt for years that the lack of an HD tap on film cameras is one of the things that led people to jump to digital, largely because the NTSC image on the set (from film cameras) looks terrible compared to the HD image on set. Directors, producers and actors felt they were looking at an inferior image, which was due to the tap, not the camera. After a year of tests with HD cameras, we were used to looking at HD monitors; so it was especially important on this movie to use an HD tap.”

MIB 3 takes place in present day and in 1969. For Pope and Sonnenfeld, the two time periods did not require dramatically different shooting styles. “Once you’ve changed everything in the frame to 1969 with costumes, art direction, etcetera, you don’t have to do a whole lot to it to make it look different. The colors were swirlily and wild. There were more reds and bright colors in the 1969 scenes. We didn’t want to show off photographically because it would have drawn the audience out of the movie. We decided to be subtle and stay with the characters.”

As audiences have come to enjoy, the scale and scope of the Men in Black movies has always been epic yet quirky. From amazing creature design and makeup, to scenes atop the Apollo 11 shuttle, the filmmakers relied heavily on in-camera, CGI and greenscreen work. One of the most challenging sequences mixed exteriors in Florida and Long Island with massive greenscreen sets. “It was extremely complicated technically to match the interiors to the exterior and the fight sequences running up and down the gantry of Cape Canaveral. We had to turn foggy day into bright sunlight to match other days and make it all seem like it took place over a five-minute period of time, when it was actually shot over a month.”

Another action-packed sequence involved our two heroes chasing the villain Boris from Queens to Manhattan on monopods. The night sequence required second unit to shoot background throughout the city, while first unit shot the actors on stage. “There were huge swathes of night lighting. I offered [second unit] the choice of ALEXA to save a little lighting and make it easier on them. They jumped at the chance. Of all the digital cameras I have worked with, I prefer the ALEXA. Each camera has their strength, but so far I’ve been quite a fan of the ALEXA,” said the DP.

With all this action taking place, it is an intimate night scene when the agents pause from their pursuit that speaks to Pope. “I prefer emotion to action, so I’m looking forward to seeing that one on screen. It is a dramatic scene for a comedy, so it was important to see the actors’ faces and the environment they were in.”

These scenes were also captured with ALEXA to showcase the East River, Brooklyn and Manhattan bridges in the background. “It was an enormous area to light. We shot at 1600 ASA on the ALEXA, so that was a big help. It cut our lighting budget by a quarter. Everybody was happy,” he described. “I love the look of ALEXA because it is very filmic – minus the grain. It’s beyond film in the sense that it has a higher latitude. The net effect of that is, skin looks really creamy. Always a goal of theatrical motion pictures is to make people look as good as possible. The ALEXA is a leg up on that whole look, so it’s very helpful.”

Pope’s appreciation of ALEXA does not lower his regard for celluloid. He prefers to select from a palette with options, which was demonstrated in how MIB 3 was made. “I’m also a big fan of grain. It draws you into a motion picture. I’m discovering what these tools do, what they mean in terms of image quality and drawing audiences in or holding audiences out. There’s room for every one of these tools. I think it’s an interesting time.”

An Tran
ALEXA PLUS 4:3
for anamorphic

True CinemaScope® with the ALEXA family of cameras

Shooting with anamorphic lenses for 2.39:1 widescreen distribution, a process often referred to as CinemaScope (trademark 20th Century Fox), results in unique images that have long been appreciated by cinematographers, directors and the viewing public alike. The fundamentals of the process apply to digital acquisition in exactly the same way as they always have done to film, so long as one has a sensor that is about the same size and shape as a film frame, and a viewfinder that can de-squeeze the compressed image. The ALEXA system ticks both of these boxes.
In April at NAB 2012 ARRI announced the ALEXA Plus 4:3, a new ALEXA model that has similar functionality to the ALEXA Plus but features a 4:3 Super 35 sensor, the ability to switch from 16:9 sensor mode to 4:3 sensor mode, and built-in licenses for high speed shooting, DNxHD recording and anamorphic de-squeeze.

The ALEXA Plus 4:3 joins the ALEXA Studio and ALEXA M, which already have 4:3 sensors, rounding out a line-up that now represents the perfect solution for anamorphic productions. The Studio might typically function as an A-camera, the Plus 4:3 as a B-camera and the M as a compact, versatile C-camera.

Anamorphic lenses squeeze the image by a factor of two, thus projecting a 1.195:1 aspect ratio image onto the sensor. When using sensors that are natively 16:9 or even wider, it is necessary to crop the sides, resulting in a much smaller used sensor area and a different angle of view for the lens.

With the ALEXA 4:3 cameras, the full area of the sensor is used and a much higher image quality retained. The 4:3 sensor area also allows for more vertical repositioning in post, a feature that is appreciated by those shooting (and posting) commercials. In addition, the unique optical characteristics of anamorphic lenses – the magic at the heart of anamorphic cinematography – are rendered faithfully and fully in the digital image.
Production of Til Schweiger’s Guardians got underway in late January 2012. It is the first action drama from the co-author, lead actor, producer and director whose comedies (*Keinohrhasen*, *Zweiohrküken* and *Kokowääh*) broke records at the German box office. Schweiger plays Max Fischer, a former soldier who served in Afghanistan as a member of an elite German military unit. Upon his return he joins a special police unit and finds himself in charge of protecting Nina, a 15-year-old orphan and the only witness to a brutal murder. Nina is played by Luna Schweiger, who takes the female lead opposite her father, just as she did in *Phantomschmerz*.

The film was produced by Schweiger and Tom Zickler under their Barefoot Films banner; ARRI Rental Berlin provided the camera equipment for the 45-day shoot, which took place in and around Berlin and Brighton. VisionARRI spoke to cinematographer Adrian Cranage about shooting with the ALEXA and new ALEXA M because Guardians marks Schweiger’s first foray not only into a different genre, but also into the world of digital film production.

According to the DP, the ARRI ALEXA delivered a stunning performance, proving to be robust and reliable during complex action sequences and impressing with its unmatched light sensitivity during night shoots and its incredible high speed function. Meanwhile the compact ALEXA M guaranteed ALEXA quality when filming in the most constricted spaces.

**Robust and reliable**

During action scenes, which by their nature are expensive and time consuming, camera equipment must function properly once the director says ‘action.’ Guardians includes five extensive action sequences, during which the ALEXA was put to the test. Cranage recalls one scene in particular in which a paramilitary unit storms a compromised safe house. The main character, Max, fights off the attackers but loses two of his partners in the blaze of gunfire. This sequence was meticulously planned and choreographed with the help of an expert from a special forces unit and a total of 40 people were on set during the scene. The special effects team spent two days preparing the set, placing squibs (small charges that simulate bullet hits) and timing the gunshots and explosions. During lengthy rehearsals actors, stuntmen and the special effects team blocked the entire sequence and conducted several run-throughs. On the actual day of shooting the team captured the action twice without gunfire and explosions before ‘going hot.’ Since the safe house was to be completely destroyed during the actual take, it was absolutely crucial that nothing went wrong. Rebuilding the set and additional special effects preparations were, for budgetary and timing reasons, out of the question.

The complex arrangement was shot with five ALEXAs. Four, with different angles and lenses (Master Primes), were pointing at the paramilitary attackers. “One ALEXA was for the wide shot, two for close-ups and one was on the ground,” says Cranage. Another ALEXA, as well as six Canon EOS 600D and a Phantom Gold, captured other parts of the action and grabbed inserts – such as the explosion of the squibs. “The ALEXAs were subjected to water, dust and...
debris,” explains Cranage, “We really put these cameras to the test.” The ALEXAs were up to the challenge and delivered results the DP called “fantastic.”

The lightweight and compact ALEXA M was used when filming took place in constricted spaces. In various car scenes, for example, the camera had to be set up inside the vehicle in places too small for a regular ALEXA. The M was also used within the set of a house – one of only two studio setups; the rest of the film was shot on location. Cranage recalls a scene in which Nina, hiding from pursuers, watches them through latticework. The hiding place was so small that there wasn’t room for the young actress and the ALEXA. Yet the ALEXA M was the perfect fit.

**Shooting night exteriors**

Reading the script, Cranage recalls he was surprised by how many night exteriors were called for. “Out of 45 days of shooting, 18 were night exteriors,” he explains. And the locations were vast. In the past a great deal of time and money would have gone into lighting such enormous night locations, but that has changed thanks to the ALEXA. This became obvious when filming the night car scenes. Cranage was worried about one in particular, because the location was a long section of a wide street in the heart of Berlin. To light the location was, despite the film’s sizable budget, out of the question. During preproduction the DP discovered, to his great relief, that with the ALEXA he could shoot the scene almost exclusively with available light, simply because of the camera’s extremely light sensitive image sensor. The car was put on a low loader, while two actors sat inside, and the scene was shot with three ALEXAs. “We had seven 2K street lights in the shot, which we replaced with our lamps and we helped out a bit during the close-ups,” says Cranage, “but other than that, we shot with available light. The result was incredible; there was no need for Hollywood style lighting with a crane and backlights.” The production briefly considered shooting the night car scenes in the studio in front of a greenscreen because the temperatures had dropped below -15°C during February and one particular scene called for a broken car window. Yet the greenscreen idea was discarded immediately because the look of the film would have suffered. “The available light coming from the Kebab shops and pubs lining the streets gave the image not only that special Berlin flare, but also a unique texture that you simply can’t create in the studio,” explains Cranage.

When filming a scene in the trunk of a car, the only light source for ALEXA was a glow stick. In the trunk were two actors, hiding from their pursuers. One wall had been removed for the camera and the inside of the trunk was lit with a military-grade glow stick. Cranage credits DP Eduard Grau with the glow stick idea, who used this ‘trick’ shooting the film Buried. The light coming from the glow stick was more than sufficient for ALEXA, which again stood out thanks to its light sensitivity. Guardians was shot entirely at EI 800, with lenses from the Master Prime series.

**ADRIAN CRANAGE**

“IT’S AN INCREDIBLE EXPERIENCE WHEN YOU CAN SWITCH FROM 24 FPS TO 48 FPS TO 96 FPS IN A MATTER OF SECONDS.”

**SHOOTING A SCENE:** Adrian Cranage at the viewfinder of an ALEXA (center), behind him is Lars Richter (1st AC) and at the viewfinder of the camera on the ground is Erik Steingrüber (gaffer)
In another scene, a car barely visible to the eye drives through a desolate rural landscape at night; only the headlights can be seen. “It was pitch dark when we shot that; I barely saw anything,” recalls Cranage, who captured the image using only available light as it would have exceeded their budget to light such a scene. The DP notes that the night exteriors were “the most incredible experience for me” and adds that on cold nights, the electronic eyepiece of the ALEXA was a real blessing as it was always warm and therefore never fogged up. This helped ensure that neither the cast nor the crew had to spend more time than necessary out in the bitter cold.

High speed feature
Another ALEXA feature that was frequently used when filming Guardians was the camera’s high speed function. “It’s an incredible experience when you can switch from 24 fps to 48 fps to 96 fps in a matter of seconds,” raves Cranage. “To be able to quickly adjust the shutter speed was great for us, because we had a lot of gunfire in the film and had decided early on to create it in-camera rather than in post.” During extensive testing, the DP and his team figured out the ‘magic number,’ as he says with a wink, a combination that actually captures the muzzle flashes in 9 out of 10 cases. And so the experienced camera team, knowing the required shutter speed when a gun was in the shot, quickly and effortlessly made the necessary changes.

The high speed function was also used in a safe house sequence, when six paramilitary attackers force their way into the building. This action scene took up five of the ten shooting days scheduled for that set. It was shot at 60 fps up to 100 fps and the shutter speed was changed several times. “You just press a button,” says the DP. Cranage was also impressed by the on-set monitoring and grading capabilities. “We were able to look at the footage right away and in slow motion,” he recalls. “Til Schweiger got to look at the footage from all the ALEXAs. We had four 17” monitors and even the instant playback included the on-set grading. The material we were viewing already had the look that we had decided on during preproduction.”

Digital recording technology is ideal for the way Schweiger prefers to work, as he edits his films while shooting. During a press conference in March, he presented 26 minutes of the film. “And he’s not showing a rough cut,” says Cranage. The footage has already been graded by Das Kombinat/ARRI Film & TV Services Berlin, where the digital dailies were created, and is quite close to what the finished film will look like. These early versions include sound and music, as well as effects. The short turnaround times of workflows for digital recording technologies significantly expedited this process. The impressive quality of the images at such an early stage is owed to the ALEXA camera system and its extremely light sensitive image sensor, as well as to the on-set grading capabilities and the high quality digital dailies.

“I think the decision to go with ARRI products and services from ARRI Rental Berlin was the best decision we could have made,” concludes Cranage. The film’s co-producer, Warner Bros. Pictures Germany, will release Guardians theatrically on September 27, 2012.

Suzanne Bieger
ARRI is unique in offering filmmakers a modern range of matched, high-performance prime, zoom and specialty cinematography optics. A particular strength is the wide end of the range, where ARRI offers unparalleled lenses such as the Ultra Prime 8R/T2.8. This lens, along with the rest of the Ultra Prime series and also the prestigious Master Prime range, is the result of an on-going collaboration with Carl Zeiss that has brought about some of the most high-performing and user-friendly cine lenses ever manufactured.

In recent years ARRI has developed a collaborative partnership with another world-renowned optics company – Fujinon. The ARRI/FUJINON Alura Zooms have been developed to accompany the ARRI ALEXA digital camera system; they are optimized for digital sensors, but also work perfectly on film. Initially launching with two studio zooms, the 18-80/T2.6 and 45-250/T2.6, the Alura Zoom family now includes two new lightweight zooms, the 15.5-45/T2.8 and 30-80/T2.8.

The new Alura Zooms offer the same exceptional optical quality as the studio zooms but are lightweight and mobile, making them ideal for handheld, Steadicam, 3D and action photography, and their compatibility with the ARRI Lens Data System allows valuable metadata to be utilized both on set and in post.
Blockbuster TV calls on ARRI VFX for visual effects

München 72 is the first primetime television drama about the dramatic events surrounding the 1972 Olympic Games to be told from a German perspective. They were supposed to be the Games of hope and reconciliation, presenting a new, open-minded, tolerant Germany to the rest of the world. But the attack on the Olympic village by Palestinian terrorists, who took eleven Israeli athletes hostage, ended the dream of a carefree Olympics in just one night.

In early summer of 2011 Hans Kornacher, VFX Supervisor of this teamWorx production and Computer Science and Media Professor at the Cologne University for Applied Sciences, approached ARRI Film & TV, Munich with the VFX breakdowns for München 72. Everyone at ARRI was thrilled. “We’ve always wanted to work with teamWorx because here in Germany they are synonymous with high-end TV movies that are generally very VFX driven,” explains Trimborn. “This TV drama about an historic event from Germany’s not-so-distant past called for the highest quality and absolute realism.”

The fact that ARRI VFX had previously worked on action sequences involving gunfire and helicopters on feature films such as The Baader Meinhof Complex (2008) seemed to tip the scale in ARRI’s favor during the bidding process. In fact, Trimborn and his team of specialists convinced the responsible parties at teamWorx with references and sample shots.

“For München 72 we planned and executed 100 VFX shots,” reports VFX Producer Katja Müller, who, after reading the screenplay, budgeted the project and was in charge of planning and scheduling. The list of complex visual effects created at ARRI VFX include digitally dramatized gun battles, several monitor inserts of historical news footage, reflections of the surroundings in windows, as well as particles and small fragments whirled through the air by the rotor blades of helicopters. However, the main challenge facing ARRI’s VFX team was to recreate a Boeing 727 passenger plane and Bell UH-1 helicopters as 3D models true to scale on the computer.

Dominik Trimborn is convinced that “the effects shots ARRI created for München 72 could easily have been shown on the big screen. That’s how good the quality is.” The Head of ARRI VFX even insists that today there is barely a discernible difference between the effects for high-end TV productions and theatrical releases. “The standards we had during the days of analog television are obsolete. And HD is pretty close to 2K.”
During pre-production it became clear that the flight sequences in the film had to be computer generated because it would have been too costly to bring a Boeing or an operational helicopter to the set,” explains Head of 3D Michael Koch, who was also present on set during filming. “The required hyperrealistic look of these aircraft was one of the reasons why we wanted to work on the project,” adds Trimborn. “Those are the kinds of creative challenges that interest us and when we succeed, they’re the sample shots that we can use as references when bidding for future projects.”

A Bell UH-1 helicopter from the German border patrol served as the texture sample for the 3D model. “It had been grounded and was only used for reenactments,” explains Koch. Work on the 3D models commenced early on and took eight weeks to complete.

Particularly challenging was the transition from the actual helicopter sitting on the ground surrounded by the actors to the shadow of the digital version flying away. “It was tricky to hide that cut,” says Trimborn, “but we succeeded, even in the close-ups.”

In August 2011 the film, which included numerous night scenes, was shot on the ALEXA in ProRes 4444 (DP Gero Steffen) under the direction of Dror Zahavi.

Kornacher and the responsible parties from teamWorks were impressed with the final results, which were completed by the end of the year. Trimborn points out that “there were hardly any requests for changes. Apparently, they didn’t expect such a high standard.” ARRI’s VFX team is especially proud of the fact that a prestigious customer like teamWorx didn’t bring their VFX work to them as part of an overall package deal with ARRI, but approached them directly, a sign that ARRI VFX is considered a reputable VFX house.

München 72, a highly anticipated television event, first aired on March 19 2012, on ZDF.
The race to the moon

Another major television production also completed with the help of ARRI’s VFX department is Deckname Luna. Commissioned by the German public broadcaster ZDF and directed by Ute Wieland, the 120-minute, two-part miniseries was produced by ndF: neue deutsche Filmgesellschaft.

“Content wise the project is a continuation of the successful three-part miniseries Die Rebellin, which was completed in 2009, also with the support of ARRI VFX. The story revolved around the years immediately after the war, at the beginning of the German ‘Wirtschaftswunder’,” recalls ARRI Creative Director Jürgen Schopper. “Deckname Luna focuses on the Cold War in the ’60s, especially the arms race and the rocket science research surrounding the bid to be the first country to set foot on the moon.”

In Deckname Luna the protagonist (Anna Maria Mühe), the grandchild of a Soviet rocket scientist of German decent (Götz George) who fled the USSR, gets entangled in a West German-East German espionage affair surrounding the fuel supply based on the old V2 rockets.

“Thanks to our longstanding relationship and successful collaboration with the director, Ute Wieland, ARRI VFX was brought on board even before the screenplay was finished,” recalls Schopper. “We were able to get involved in the conceptual phase, sketch out ideas and help design the look of the production in crucial places.”

The idea to recall the historical times using stock footage and inserting the lead actress “just as we’d done on Almany – Willkommen in Deutschland (2011),” proved to be particularly productive and exciting, says Schopper. “We were able to show examples of how we’ve done this in the past, which made the production team realize how well it could work. They then came up with a concept that used this effect even more than was originally intended. It became a design element. The fact that this type of effect, still mostly associated with feature films, can now also be effectively used in high-end television productions is for most production companies still an idea that requires some getting used to. But that’s exactly where we are called upon to inform people otherwise.”
At the very beginning of Deckname Luna there is a parachute sequence involving the female protagonist. It retains the look of 16 mm film by using footage from a GDR air show. Another scene using archival footage shows the lead actress in Munich during the Schwabinger Uprising in June of 1962. To give the image depth the ARRI effects specialists inserted a bus that passes her and is perspective correct.

The visualization of two rocket launches turned out to be highly involved; daylight shots with a long trajectory without a cut. “After extensive research the scene was created as a 3D CG animation,” says ARRI VFX Supervisor Stefan Tischner. “We had to ensure that every detail was historically correct – the launch pad, the tower, the way the holding clamps disengage, the ice particles coming off the rocket and the smoke and particle clouds coming from the engines.”

“There were about 120 of these type of effects shots in this TV movie, including set extensions that turned a Berlin gravel quarry into the wintery Siberian Tundra, complete with simulated snowfall. Retouching tasks also involved removing a number of details that were historically inaccurate, a job that has to be done on most historical films,” adds ARRI VFX Producer Nina Knott.

When giving TV VFX shots the intended emphasis it is important to keep in mind that one is working on a smaller canvas. This becomes apparent in a dialogue scene between two characters, who are standing at a window during a moonlit night when they see a shooting star. “In a feature film this shooting star would have been too dramatic an effect. It would have looked more like a comet,” explains Schopper, with a smile. “However, on the small screen you have to make sure that the audience even notices the effect.”

Deckname Luna was shot on the ALEXA (DP Peter Przybyslki) between August and November of 2011 in various locations, including Hamburg, Berlin, Munich, Rostock, Stettin and Augsburg. Part one has been completed and approved. Part two will be finished in early June. ARRI Munich is also in charge of editing and grading the TV production.

Expanding ARRI’s VFX capabilities

Full CG elements, such as animations involving airplanes, helicopters or rocket launches, used to be too costly for TV budgets. “Now, we’ve become so efficient at creating VFX that we can, with a good team, finish the work in a very short time and at prices that make VFX interesting and affordable for TV productions,” stresses Trimborn.

ARRI’s VFX capabilities have recently been significantly expanded. “At our facilities in Berlin, Cologne and Munich we have a total of 30 people working in the VFX departments. In particular Berlin, with Manfred Büttner as VFX Supervisor, is starting to make a name for itself, and we set up shop in Cologne to increase our presence in the TV market,” says Trimborn. ARRI’s VFX departments have access to a database developed in-house that can be accessed from all ARRI locations to ensure that everyone is on the same page. “We can budget, organize and work on jobs, or parts there of, everywhere. We have created a workflow and a pipeline that allows us to outsource a project to any one of our locations at any time to avoid bottlenecks. In other words, we have created the flexibility to run all facilities at full capacity.”

“We also have a growing network of freelancers at our disposal that includes people who can work on very specialized assignments,” adds Schopper. “For example, for the rocket launch in Deckname Luna we had a particle specialist who was able to create the engine exhaust believably.”

One of the main concerns of the effects specialists continues to be that they are brought onto projects too late in the game. “There are so many films now in which VFX play an important role. Ideally, we as a department need to be a bigger part of the equation and be involved, just like the camera and editing departments, early on in the planning stages,” Trimborn points out. “This does not affect the customer’s budget since we don’t charge for consultations during the planning stages.”

Ingo Klingspon
VisionARRI: Season one had a fairly warm look, which was replaced by a cooler look for the war years in season two. What was your approach this time around?

Nigel Willoughby: Well, I shot the season two Christmas special at 3200 K and it was meant to be quite cool looking, although I think that got graded out a little. At the beginning of this new series it’s still winter, so I started it off with the same coolness and then gradually upped the color temperature as we went along. It’s one of the things I really like about the ALEXA: the ability to change color temperature on set and see what you’re getting immediately – it’s a fabulous little tool and useful on this job because there just isn’t the time to apply LUTs.

VA: Has the lighting approach to the various spaces at Highclere become fairly standardized after three seasons?

NW: The approach has slightly changed from season two. I don’t have a balloon in the main hall anymore, I use a big 18K soft – all the lighting is much softer now. We have an 18K coming through the big window and everything else inside is literally lit as per the scene, off the floor. We do still have a balloon in the dining room for the night scenes because experience dictates that that’s the best way to go. I’ve shot one or two scenes in the library with available light, thanks again to the wonders of the ALEXA. I did that purely because on most scenes we’re up against the clock and I figured I’d try it out to see what happened, and of course the camera coped very well.

VA: So you relied purely on available light for an interior location scene?

NW: There were literally no fixtures on set – just daylight. It was a fairly overcast day so the light wasn’t going to change; I felt confident that I wouldn’t have to control it during the couple of hours it was going to take to shoot the scene, so we had a few bits of poly on set for bounce and that was it. I might not have risked that before, without the ALEXA, but I did and it worked.

VA: Overall, were you content that ALEXA was the right camera system for the job?

NW: To be honest there is no other camera that comes close to the ALEXA and I just hope it’s setting a benchmark for all future generations. There are many things I like about it, but in particular the menu system is so versatile – very easy to understand and quick to apply. It’s film friendly; I’m kind of a film guy who’s come over to high def and the ALEXA has made that transition quite inspiring, I have to say.

VA: On film shoots you’ve often used a large number of different film stocks. Did you try different EI ratings with ALEXA, as DP Gavin Struthers did for season two, or did you stick to EI 800 and filter accordingly?
N W: I’m afraid I’m one of those naughty people like Gavin who still treats it like film. I know the argument for shooting at 800, but I hate putting NDs and IRNDs on the front of lenses because they often come out with different color temperatures. I just prefer to treat it as if it was film and I know that I’m within the parameters, so like Gavin I change it. I quite often shoot exteriors at 160, night exteriors at about 500 and interiors at up to 1000. Some colorists don’t like it, but I know what results I can get and it works very well like that for me.

VA: You’re recording ProRes 444 to the on-board SxS PRO cards; what is your dailies workflow?

N W: Rec 709 is applied to the rushes, which provides a consistency that I can double check and reference when I’m grading. My rushes are put on a hard drive so I’ve got them on hand at all times; I carry the whole show around with me and my DIT has been grading various rushes for me on a daily basis, just to see what we are getting and where we can go with it.

VA: Do you take a different approach to camerawork for the contrasting worlds of upstairs and downstairs?

N W: We’ve resorted to handheld downstairs throughout and a more-or-less static or slow tracking approach upstairs, which is similar to what was done on the first series. That said, due to the nature of the storylines we are introducing some handheld upstairs as well, although I can’t give too much away! We’ve also continued to use the Steadicam upstairs a lot and we’ve even been doing quite a bit downstairs this year.

VA: Were you operating a camera yourself?

N W: On this one, no I haven’t. I’ve reluctantly had to give it up, again because of the timescales, the nature of the shooting and the fact that I’m doing the whole series so I don’t have a break. I’ve found myself preferring to be at the monitor so that I can spend more time fine tuning the lighting with Phil Brookes, the gaffer, but I have two very good operators on board. We often have two cameras running at once, which is another reason for me to be at the monitor.

Mark Hope-Jones
ARRI Media Services brings popular children’s character back to the big screen

Sams im Glück is the third film adaptation, following Sams (2001) and Sams in Gefahr (2003), from the popular series of children’s books about a creature with red hair and a pig’s nose that can grant wishes. This latest instalment was produced by Collina Filmproduktion, the screenplay was co-written by producer Ulrich Limmer and author of the original books, Paul Maar. Also playing a major role in the film’s production was the ARRI Media Services group: ARRI Productions (B.A. Productions) co-produced, ARRI Film & TV was in charge of postproduction and ARRI Rental provided the camera, lighting and grip equipment.

In charge of creating 250 effects shots was ARRI’s VFX Creative Director Jürgen Schopper. “There are two aspects that make Sams im Glück so remarkable,” reflects Schopper. “One is the trust that Ulrich Limmer and Collina Filmproduktion placed in our competence and the other is the newly streamlined collaboration between the various departments of ARRI Media Services that make us all the more efficient when tackling large assignments, even in difficult situations under time pressure – as was the case with this film,” he continues. “We were able to provide input long before shooting commenced, even before the project was being submitted for funding. It’s a privilege we have at ARRI VFX earned after numerous collaborations with Collina; a privilege that ensures the best possible working conditions.”

The previous two Sams instalments were directed by Ben Verbong. This time Peter Gersina took the helm after proving his talent for exciting children’s films with Tiger Team – Der Berg der 1000 Drachen (2010). DP Gerhard Schirlo (Wickie the Viking, 2009 and The Whore, 2010) is “not only an excellent cinematographer but is experienced with VFX,” Schopper points out. “From the start we had a great rapport with him.”

The film was shot between August and October of 2011 on the ARRI ALEXA (4444 Log C) with a ratio of 2.35:1. “Ulli Limmer insisted on the scope format,” says Schopper. “Shooting digitally means you see an actual image, not a video playback that’s qualitatively not on par with what the camera is recording,” says VFX Supervisor David Laubsch. “You can grab the signal, show it on the monitor and watch the scene in the same quality that the editor and colorist are later going to see it in. On a good monitor you can judge the focus and decide whether the take is good or not. There’s more transparency working this way,” Laubsch states.
“And the collaboration between the editing room, the online department, the color grading and the VFX team has become much easier on a digital shoot.”

Postproduction was completely in the hands of ARRI Film & TV and involved digital dailies (Munich), the DI, visual effects, title design, sound (Re-Recording: Tschangis Chahrokh) and TV postproduction, as well as generating the digital cinema package and analog print copies.

One of the highlights of the film is that Sams im Glück fans will, for the first time, be taken to the land of the Samse, Sams’ people, where they live and where baby Samse hatch from eggs. “Most of the special effects involved shots set in this fantasy world, where things occur that can’t be captured in camera. That’s why there are more effects shots than in the previous two installments,” explains Schopper.

Samse in the fog

Initially, the intention was to build Samsland entirely in the studio (Production Designer: Jana Karen-Brey) to avoid set extension. “However, the first results showed that visually it would be more pleasing to create extra depth,” recalls Schopper. “Originally, there were only plans for one wide shot at the very beginning but we ended up extending nearly all the scenes and in the end, about one third of the effects shots for Samsland were set extensions.”

“MOST OF THE SPECIAL EFFECTS INVOLVED SHOTS SET IN THIS FANTASY WORLD, WHERE THINGS OCCUR THAT CAN’T BE CAPTURED IN CAMERA. THAT’S WHY THERE ARE MORE EFFECTS SHOTS THAN IN THE PREVIOUS TWO INSTALLMENTS.”

The initial studio sets had a yellow, heavily textured ‘flokati’ look and included oversized baby-blue eggs, with everything shrouded in a light fog. “We even had flokati-covered irons and lamps,” says Laubsch. “We continued this aesthetic to create depth and added, using matte paintings, little stars and pink clouds in front of the distant mountain range that you can see in the background. This was probably the most difficult task for the VFX operators because it involved rotoscoping and the masks had to be defined, sometimes frame by frame, in order to create a proper separation between foreground and background. That was a rather involved undertaking.”

▲ AN EXPLODING ROOF was created digitally, then virtual smoke, dust, debris and animated flying umbrellas added
“During color grading (Lead Color Grader Traudl Nicholson, DI Producer Andreas Mummert), we had long discussions about the look of Samsland, which also affected VFX,” says Schopper. “Luckily, the DI department is two doors down and we could easily find out what was happening to the images.”

Samsland can be reached only through a spiral-shaped wormhole, which was created entirely as a CG animation. Another highlight of the Samsland scenes are those that include baby Sams. Also played by Sams actress Christine Urspruch, who was digitally shrunk to child size. Baby Sams sits in an eggshell, sucking on a pacifier and making insolent remarks, which solicit exasperated sighs from the gathered Sams community.

**Historic preservation done digitally**

The second major VFX challenge on this project involved the quaint historic center of Bamberg, the location for a heart-stopping stunt scene. The character Mr. Taschenbier, who is mutating into a Sams, hijacks a city bus and drives it at breakneck speed on two wheels through the narrow streets of the town. To recreate this adrenaline-packed sequence on the computer, each shot was filmed twice with a motion control camera to capture every setup with and without the bus. Meanwhile, a 3D model of the bus had been created at ARRI and the rotoscoped images of the driving bus (complete with the reflections of the city on its surface) were projected onto the model in 3D to create the texture. Then the bus was digitally tilted onto two wheels and transferred into the background plate.

“At first we thought this effect would prove to be more complicated than it was. But everything went quite smoothly, just the way we like it,” recalls Laubsch. “This wasn’t really 3D. It was more like a 2½D solution because we lifted the texture from the filmed material,” adds VFX Producer Nina Knott. “The difficulty when inserting 3D material into live action scenes is to make it look ‘real’. The beauty of using that method was that the light and reflections of the surroundings were correct. All we had to do was tilt the bus. Otherwise the scene blended perfectly into the background.”

In conclusion, Schopper says: “During this action sequence we also had to take into consideration that we were making a children’s film and not a Die Hard sequel. It couldn’t be too adrenaline fueled. We needed to find a balance between funny and realistic.”

Within the story Mr. Taschenbier can often be found in the attic fine-tuning his fully automated umbrella production machine, which he hopes will afford him financial independence. However, the venture is doomed to fail. The machine goes into overdrive, blows the roof right off the house and drops umbrellas all over the neighborhood. “For this scene we built the entire roof as an interactive model on the computer (3D model with 3ds max, compositing on Nuke) before we blew it up, virtually adding the smoke, dust and debris,” explains Head of 3D, Michael Koch.

Completing the 250 effects shots involved a number of other tasks for ARRI’s VFX team: inserting storm clouds, making Sams disappear in a number of shots, creating set extensions of buildings, lots of transformation effects (particle animation) of Mr. Taschenbier turning into a Sams, several roof sequences involving actors that were shot in front of a greenscreen, digital matte paintings of Bamberg by night (HDR-panorama shots of Bamberg at three different exposure levels), Sams’ digital tears, a number of wire removals (safety ropes on the roof), speed ups and a number of retouching assignments.
Over the course of three months, from January through March of 2012, these VFX shots were created by a team of ten ARRI specialists. “It was nice to collaborate so closely with the editor (Kai Schroeter). And it was great to have such a long layout phase to give the client an idea of what the end result would look like, they could then make editing decisions based on that. Once the effects were completed we got feedback from the editor to fine-tune the edit,” says Schopper. “Getting feedback on the VFX from the editor is ideal because it allows you to improve the end product. Ulli Limmer and his production company gave us a lot of leeway. When he liked our suggestions he was even willing to recut the shot.”

The production even invested in elaborate title animation. The people in charge liked Matthias Brauner’s concept design for the title sequence, which combined large 3D animated letters with live action shots of Sams standing in front of a stage curtain. They even signed off on one extra day of shooting with Christine Urspruch in front of a greenscreen at the Plaza Media studio. In the title sequence Sams is trying to stop a total of seven titles from entering the frame. The letters exact revenge in a number of funny ways. Creating the title sequence (After Effects, Cinema4D, keyed live action scenes, compositing on Nuke) took about a month. “The title design,” says Schopper, “sets the tone of the entire film. At the end the curtain drops to the floor revealing the first image of the film.”

Universum film distributed Sams im Glück, which opened in German theaters on March 29, 2012. ■

Ingo Klingspon
A round-up of the latest ALEXA developments

A number of new ALEXA cameras, capabilities and documents have become available in 2012 that combine to make the ALEXA family of cameras the most versatile digital camera system yet.

ALEXA STUDIO
ARRI ended 2011 by proudly shipping the first ALEXA Studios, and has been building and shipping many more Studios since then. Operators are happy about the optical viewfinder, while cinematographers and directors alike appreciate the 4:3 sensor, which allows the best use of anamorphic lenses for widescreen projects. Upcoming ALEXA Studio movies include Skyfall, shot by Roger Deakins, ASC, BSC and Rush, shot by Anthony Dod Mantle, DFF, BSC, ASC.

DNxHD
Software Update Packet (SUP) 6.0 was released in February 2012, enabling DNxHD recording through a license key that can be activated by ARRI’s rental facilities. In addition, there were a number of new features, including color bars, new user button abilities (de-squeeze on/off and Auto White Balance) and new icons in the electronic viewfinder and on MON OUT to indicate an ARRI Look File being active. Smooth Mode is also now indicated in the electronic viewfinder.

DNxHD further increases the amazing flexibility of ALEXA cameras, which feel at home in any production environment. ALEXA cameras are unique in that they are not tied to one proprietary recording format, but support four different output formats, each with various flavors (for example five ProRes codecs with different compression ratios). Thus any production need can be met, from high-end feature film to soap opera.

ALEXA OUTPUT FORMATS

- **ARRIRAW**
  external recorder required
- **HD-SDI video**
  external recorder required
- **Apple QuickTime/ProRes files**
  internal recording to SxS PRO cards
- **Avid MXF/DNxHD files**
  internal recording to SxS PRO cards
ALEXA M

In May ARRI started shipping the ALEXA M, which shines with its ability to fit into places a regular ALEXA could not go. ALEXA M is the ideal camera for 3D rigs, helicopter shots, underwater rigs, car interiors, action photography, Steadicam and handheld.

“...and very well on a Steadicam, but the setup that really showed its benefits was the car. With the M we suddenly had a lot of space in the car, which made rigging easier, especially with the cage that surrounds the camera – you can put it wherever you want. Essentially the M allows elegant solutions in difficult situations and enables new perspectives with no sacrifice in quality. You could use other small cameras for these kinds of shots, but none of them offer this level of quality. You can trust the M because it is an ALEXA; when I take this camera into the fight I know I will win!"

Tom Faehrmann, DP and ALEXA M test shooter
A road map of software updates to come in 2012
The new features planned for 2012 are designed to improve ALEXA’s already stellar overall image quality with new Debayer algorithms; to make better image quality available for less money with exciting new recording formats; and to offer a number of features requested by users. These features will be delivered in the form of Software Update Packets (SUPs) throughout 2012, though exact details and dates may alter as the year unfolds.

SOFTWARE UPDATE PACKET (SUP) 6.1 Q2 2012
SUP 6.1 consolidates various updates for different ALEXA models into one SUP for all ALEXA cameras. It reduces the amount of time it takes to switch from 16:9 to 4:3 mode on ALEXA Studio, ALEXA M and ALEXA Plus 4:3 to around one minute, and allows for the creation of a Lens Data Archive lens profile with the ALEXA Studio, ALEXA Plus and ALEXA Plus 4:3. SUP 6.1 also adds extra status information to the Lens Data Display for Focus Pullers, allows the display of a large camera unit letter on MON OUT and provides an icon for Peaking in the electronic viewfinder and on MON OUT.

SOFTWARE UPDATE PACKET (SUP) 7.0 Q3 2012
SUP 7.0 provides a number of features that will enhance image quality and improve feature film production onto in-camera SxS PRO cards. The current Regular Speed Debayer algorithm inside ALEXA will be replaced with a new algorithm that provides even cleaner, sharper-looking images than ALEXA does today, especially on high contrast edges and in areas with fine detail. The new Regular Speed Debayer algorithm applies to all HD-SDI outputs, as well as ProRes and DNxHD images in Regular Speed mode (0.75 to 60 fps). At the same time the High Speed Debayer algorithm (for 60 to 120 fps) will be replaced with an even better version.

Two exciting new recording options are enabled by SUP 7.0. The first is ProRes 4:3, which facilitates the shooting of anamorphic feature films onto in-camera SxS PRO cards. It will work with all ALEXA cameras that are 4:3 capable (ALEXA Studio, ALEXA M and ALEXA Plus 4:3). On spherical lens shoots, ProRes 4:3 gives extra room for vertical repositioning in post, while on ARRIRAW shoots it provides the option for an extra in-camera backup. ProRes 4:3 records 2048 x 1536 pixels into a QuickTime/ProRes file, supports all ProRes codecs, and works from 0.75 to 48 fps.
THE LCC ARRI LOOK FILE

Low Contrast Curve (LCC) is a regular ARRI Look File that is designed for those who do not want to shoot in Log C, but want a bit more dynamic range than given in the ALEXA standard Rec 709 setting. The LCC contains a custom tone map curve for a video image with lower contrast than the standard Rec 709 output. This means the image can be viewed on a regular Rec 709 monitor without additional LUTs, but at the same time it holds more dynamic range information than Rec 709; highlight definition and some black detail that would be lost in the typical Rec 709 tone mapping can still be accessed. Not using Log C encoding means that there is no need for a Log C-to-Video dailies conversion. For a final image, the footage only needs minor color correction adjustments to restore a visually appealing contrast.

The second new recording option, ProRes 2K is great for shooting feature films onto in-camera SxS PRO cards without rescaling, as would be needed with ProRes HD. ProRes 2K provides a high quality 2048 x 1152 ProRes file that is ideal for feature film productions; it will initially only be available for Regular Speed (0.75 to 60 fps).

In addition, SUP 7.0 includes the LCC (Low Contrast Curve) ARRI Look File in each ALEXA by default and simplifies how the Studio’s MIRROR PARK button works.

SOFTWARE UPDATE PACKET 8.0 Q4 2012

SUP 8.0 will add the DNxHD 444 (10 bit 4:4:4) codec, providing high quality in-camera DNxHD mastering, while ProRes 2K recording will be possible from 60 to 120 fps. Three frequently requested features will be implemented in SUP 8.0: vertical image mirroring allows quick low mode Steadicam shots by flipping the Steadicam upside down; a new post trigger for all ProRes recording modes makes capturing that elusive moment easier for nature photographers; and card spanning will automatically switch from one SxS PRO card to the next when the first one is filled.

Compatibility with the Cooke/i system implemented with SUP 8.0 lets ALEXAs collect lens metadata from Cooke and Angenieux lenses, making ALEXA the only camera that automatically records an enormous amount of user, camera and lens metadata into all output formats. Meanwhile compatibility with the ARRI Ultrasonic Distance Measure (UDM-1) and the Cinematography Electronics Cine Tape Measure will make assistants’ lives easier.

User interface improvements made by SUP 8.0 include a new user button option for Studio MIRROR PARK, a countdown for the switch from Regular to High Speed mode and metadata in DPX frame grabs for the ARRI Look Creator. The ALEXA Studio will automatically park the mirror shutter in VIEW mode when powered down, so the next time it is taken out of the case the cinematographer can immediately look through the optical viewfinder, even before power is available.
Forty years ago Luchino Visconti made *Ludwig*, a film about the tragic life of the famous Bavarian king that ended abruptly with a mysterious accident. Now, the directing team of Marie Noëlle and Peter Sehr take a new look at King Ludwig II from the house of Wittelsbach, including the historical myth that has sprung up around his persona. The big budget German Austrian production from Bavaria Pictures GmbH and DOR Film (German distributor: Warner Bros.) relied on state-of-the-art digital technology and is the first German feature film shot in the ARRIRAW format.

VisionARRI spoke to Sascha El Gendi, Digital Imaging Technician (DIT); Harald Schernthaner, ARRI Head of Postproduction; Michael Hackl, Operations & Technology Manager at ARRI Film & TV, as well as ARRI VFX Supervisor Abraham Schneider about the on-set workflow and postproduction of this lavish period film.

**VisionARRI: What led to the decision to record Ludwig II using ARRIRAW?**

*Sascha El Gendi:* In the spring of 2011 DP Christian Berger (*The White Ribbon*, 2009) was still planning to shoot Ludwig II on 35 mm film, but the producers preferred to record digitally. The DP wanted to ensure that the images were of the highest possible quality and so the decision was made to shoot ARRIRAW. After a number of tests it was also decided to entrust ARRI with the film’s postproduction.

**VisionARRI: Was ARRI VFX involved during preproduction?**

*Abraham Schneider:* We came on board early on. I myself went to set a couple of times but Sascha El Gendi prepared the scenes involving VFX extremely well,

ARRI Media Services provides on-set support and handles the postproduction for a period film of epic proportions.

© Daniel Mayer/Warner Bros.
including the camera data. That’s not always the case.

Harald Schernthaner: We developed an on-set concept with Sascha and ARRI Rental, sort of the light version of on-set recording in ARRIRAW. This was perfect proof of our ARRI Media Services concept.

SEG: The goal was to keep things small and manageable. When you’re shooting on a boat or in a forest at the border to Slovakia anything you can’t carry is out of the question. Plus, access to power is limited and the equipment had to run on batteries.

VA: How many cameras were on set?

SEG: We had two ALEXA Plus cameras from ARRI Rental and two Codex recorders. Initially, the second ALEXA was intended to serve only as a backup but we ended up working with both cameras all the time.

VA: When did physical production commence?

SEG: On July 26, but we had one day of shooting prior to that, on July 1. We had filmed the exteriors of Neuschwanstein Castle [Bavaria, Germany] because they were going to put up scaffolding to complete some repair work. Between those dates we did more tests and wrapped in late November.

VA: The ALEXA generates the ARRIRAW format without compressing or encrypting. How much data accrued each day?

SEG: No less than 600 gigabytes and sometimes up to 1.5 terabytes. Ten times as much as with ProRes. But the shooting ratio on Ludwig II was relatively low, approximately 60 minutes per day. On ProRes jobs it’s often 120 to 150 minutes. A regular feature film shot with two cameras in ProRes 4444 accumulates around 350 gigabytes per day.

VA: Do such large data quantities create problems in the dailies workflow?

MH: The limiting factor in postproduction is mainly the running time. For ARRI Film & TV there is no big difference between the quality control of 100 minutes ARRIRAW data or 100 minutes ProRes data. Of course the rendering of ARRIRAW files takes longer. In order to achieve a similar performance for an ARRIRAW project as for a ProRes project, we work with a high speed LTO roboter system, and we apply our OSD (On Set Dailies) system for quality control, dailies grading and rendering.

VA: How did the captured information get to ARRI?

SEG: First, we conducted quality and security tests on set, which involved several steps. The ARRIRAW data was recorded onto a Codex recorder, turning the uncompressed signal into a logarithmical image 4:2:2, which was then displayed on a monitor, allowing us to respond immediately to focus issues or other image flaws. Onto this monitor signal I placed the standard photometric ARRI LUT and did a pregrade on set.

VA: For the people involved, including the camera crew, the ARRIRAW workflow was new. Were they anxious?

SEG: In the beginning everybody wanted to check everything, and preferably twice. But after the first few weeks the people in charge felt reassured and became more at ease because things were working out just fine. That’s due to a great workflow. We even stopped sending the data to ARRI every day. Instead we waited for a few days worth of material to accumulate. At one point, about three weeks into the shoot, the production manager, Ralf Zimmermann, came to me and said: “We are somewhere outside of Vienna and I can actually go to my hotel room every night without having to worry about the images being in focus or the van delivering the negative getting into an accident.” Everything went incredibly well. We didn’t lose a single take.

VA: How did the captured information get to ARRI?

SEG: First, we conducted quality and security tests on set, which involved several steps. The ARRIRAW data was recorded onto a Codex recorder, turning the uncompressed signal into a logarithmical image 4:2:2, which was then displayed on a monitor, allowing us to respond immediately to focus issues or other image flaws. Onto this monitor signal I placed the standard photometric ARRI LUT and did a pregrade on set. Another quality control involved the original camera data. Using FrameCycler DDS from IRIDAS we were able to play the ARRIRAW files in real time to check their quality. Then the data was saved onto the production’s RAID hard drive and a check-sum was generated with help of the ARRI Copy Tool. That’s when another copy of the data backup went to ARRI.

“The DP wanted to ensure that the images were of the highest possible quality and so the decision was made to shoot ARRIRAW.”
MH: Once ARRI received the RAID hard drive we saved the original camera data onto the ARRI Storage Area Network. Then the check-sums were verified once more to ensure that none of the data had been lost in the transfer. The data was then automatically backed up on LTO tapes and the check-sums verified again. Simultaneously, our Colorist Manuela Jesse viewed the original camera data on a proven monitor and completed the dailies grading according to the parameters the DP Christian Berger had requested. Finally, she had to generate a qualified written QC report. During recording the sound had been linked to the image data with a timecode so that we could easily and quickly synchronize it with the image when working on the dailies. Afterwards, the dailies were rendered (AVID MXF-Files) for the editing room (Editor Hans Funck, Editor’s Assistant Andschana Eschenbach) and for the internet via ARRI Webgate. Due to this efficient workflow both the editorial and all authorized ARRI Webgate clients were able to view the dailies within a couple of hours.

VA: How exactly is the ARRIRAW signal converted into the final image?

MH: In order to view an ARRIRAW image it needs to be de-mosaiced first. Therefore, we use certified ARRIRAW Bayer de-mosaicing tools. First they read the metadata in the header information that lists the settings used on set. Metadata, which the ALEXA records, contains all the important parameters of the shot: white point, ASA rating, etc. The ALEXA Plus also stores all the lens-related information: aperture and zoom settings. The lens data is particularly important for the VFX team.

The ARRI Dailies System reads the header information and gives you a logarithmical image (Log C). Applying the same Lookup Tables used on set, we can look at the exact same image in the same color space as the DIT did on his calibrated monitor on location.

On the set of Ludwig II, a small live grading tool set was used (LinkColor from Framewright). It allows you to do a primary color correction, ideal for quick on-set live grading purposes. These settings were handed over to ARRI as a still frame and in the form of a color decision list which served as a primary reference proposal.

The collaboration between post facility and the DIT on location was perfect and so we were able to prove a consistent look workflow between set and postproduction. To achieve this, you need to fix a clear workflow in advance and you also need to have the perfect technical environment and responsible staff.

HS: The great advantage of ARRIRAW recording is that the image resolution of an ARRIRAW file is 3K. This means that you can work in 3K and, later on, the client can decide whether they want to output in 2K or do an up-res to 4K, which means the image is of an even higher quality.

AS: Especially for the VFX team, which prefers to work in 3K, ARRIRAW delivers the ideal image. Although we don’t work with the raw data, we do convert to DPX and we do use the original 3K resolution even when the color grading or the finishing is done in 2K. To go from 3K to 2K is no problem.

MH: As soon as edited sequences get logged we receive the EDLs from the editing room. We process the EDLs with our database tool, MetaLab, and create a restore and de-mosaicing XML, which we feed into our LTO robotics. It automatically pulls the parts used in the edit from the raw material on the LTO tapes. During playback, the ARRIRAW data may be directly converted to 3K or 2K DPX files.

For VFX this is done without adjusting the sharpness. In compositing it’s easier to create a key on a green screen that isn’t sharp to get better results around the edges. The sharpness is rendered later using the VFX tool Nuke. We can run the restore and de-mosaicing process simultaneously, which saves time and storage capacity. The ARRIRAW image is only briefly stored on an interim server. Only the DPX version goes onto the expensive high capacity storage solution – the DDN from SGI.

VA: What’s up next in postproduction?

HS: Color grading in the Di Lustre Suite. It is scheduled for June with ARRI Lead Colorist Traudl Nicholson. The final grading can work off the dailies, or start from scratch.

For us it’s secondary what recorder or even what camera system was used on a project. Most important is to work closely with Rental and the DIT, especially on such a demanding shoot as this one because he’s the crucial link to us. He oversees the recording, checks the camera and is responsible for the data management. That’s why, for us, the DIT is the most important person on the set next to the DP.

Ingo Klingspon
ALEXA POCKET GUIDE

The ALEXA Pocket Guide is a web application that is accessible over the internet with any piece of hardware that has an internet browser, which means that to use it you don’t have to install anything onto your mobile device.

In addition, you can ‘cache’ the web app to your iOS device (iPhone or iPad) to use it even when you’re not online, so people shooting in a remote desert or rainforest will still be able to use the web app on their iOS device, even though they don’t have internet access. Usage on other types of device requires an internet connection.

ALEXA Pocket Guide WebApp: www.arri.com/alexa/apg

PHOTOMETRIC CALCULATOR

The ARRI Photometric Calculator is a useful tool that facilitates the calculation of photometric data for different configurations of ARRI lampheads. It can be used to quickly answer questions such as:

- If I have the ARRISUN 40/25 at a distance of 10 m with a 4K lamp, how bright will it be with a spot lens? When I use a 100 ASA film stock at a shutter angle of 172.8°, filming at 24 fps, what should my lens aperture be? What would the difference be if I used a narrow flood lens, or a 2.5K bulb?

Essentially, the Photometric Calculator is a database of hundreds of different lamphead / bulb / lens / focus combinations, with an integrated calculator that gives you the photometric data for the distance you desire. It is designed to be used with a smart phone (iPhone or Android) or iPad, as well as with a laptop / PC, so you can use it when you’re in the field or in the office figuring out a lighting plan. With this web tool you can determine:

- The lens aperture of your camera
- Whether you’d need a different lamphead lens or perhaps a second lamphead to achieve a certain level of brightness
- Whether a lamphead is suitable for your desired application before you rent it

For each of the many configurations of ARRI lampheads you can view not only the bare photometric values, but also the light distribution as a graph. The tool also links you directly back to the product’s webpage in case you need more information about the light itself.

Photometric Calculator web tool: calc.arri.de/calculator
VisionARRI: The imminent end of analog postproduction seems to be the prevailing topic in the business. Will the ARRI Lab soon be an historic landmark?

Martin Schwertführer: Not at all. The lab has undergone massive changes in the last year. In terms of negative processing the volume has decreased dramatically. That's mostly due to the success of the ARRI ALEXA camera system, which is good or bad depending on how you look at it.

What is good for the ALEXA has certainly had adverse effects on the lab.

That said, the ARRI Lab began early on to prepare for the transition to the digital era and has since become a respected partner for digital postproduction here and abroad. In other words, we are now mostly preparing digital releases for movie theaters. We have been offering these services for the last three years but the volume was so low that it wasn’t worth mentioning.

In an increasingly digital age questions have been raised about the future of film. ARRI has recently made a pledge to support film-based systems for the next ten years at the very least and believes that the co-existence of film and digital formats means more creative choices for creative people. How does this affect the ARRI lab and for how much longer will analog postproduction be sustainable from a business point of view? Some surprising answers from Martin Schwertführer, head of the ARRI Lab.

Into the Future with the ARRI Lab
“OUR TASK IS TO WORK ON MOVING IMAGES. POSTPRODUCTION IS OUR CORE BUSINESS, NO MATTER WHAT SHAPE OR FORM.”

VA: We’re talking about the Digital Cinema Package (DCP)?

MS: Exactly. We are now generating large quantities of DCPs. There has been a steep increase in the last three years. In that sense it was a good thing that the analog sector of ARRI Lab wasn’t large. The transition therefore was easy for us. And we knew one thing: if we were going to switch to digital we’d have to do it right and be prepared for large quantities. In the meantime, we have capacities that other labs can only dream of. Even Technicolor and Deluxe have admitted that we are very well positioned. Even Technicolor and Deluxe have admitted that we are very well positioned. This also means that we’ve been able to compensate for the sharp decline in negative processing that we experienced in terms of revenue with the DCPs. This sector is growing quickly and will replace the need to generate a large number of 35 mm release prints, which existed in the analog world.

VA: Printing was, up until a few years ago, a lucrative business.

MS: We are still quite active on the analog market when it comes to printing. That might change by next year as digitalization continues to progress. Right now about 50 percent of German movie theaters are digital. A threshold will probably be reached when 75 to 80 percent or more of theaters have switched and distributors will no longer order analog copies.

What’s tragic about the current development is that many of the labs had to realize that they are too dependent on the 35 mm market. They have not only suffered losses on the negative processing side of the business, but also on the printing side, which was their mainstay. As a result many facilities are downsizing or closing. This has consequences for the market, even though there’s still a demand for analog postproduction. In the end, however, digitalization is the only option.

ARRI and the ARRI Lab have taken a clear position here. We will remain in the analog market as long as 35 mm, 16 mm, as well as 65 mm film stock are being produced by suppliers and will continue to provide services for these formats. We are able to do so because we’ve become less and less reliant on the analog side of the business in terms of volume.

Our task is to work on moving images. Postproduction is our core business, no matter what shape or form. Analog film is just one of many formats. We look at the bigger picture, which includes accepting that some areas are less lucrative than others but have to be maintained to continue to fulfill our mission.

In the long term, negative processing and postproduction will probably no longer take place in the lab. They’ll be handled by other ARRI Film & TV departments where digital data is collected and processed.

We will fill this gap by generating digital copies, by being service-oriented in our dealings with distributors and by maintaining close contact with our customers, as well as offering to manage and store the DCP encryption (KDM). In other words, by offering a large range of services that guarantee the survival of the lab.”
VA: Are there areas that will be indispensable for the ARRI lab even in the future?

MS: We will definitely continue to offer printing and scanning because we work with archives and service the libraries of TV stations. The way TV series used to be scanned no longer meets the standards of today’s market. As a result, pretty much everything has to be scanned again in high-definition so that the program can potentially be aired again – this falls into the domain of the ARRISCAN technologies developed by ARRI. What we’ve done in the past for 35 mm film we are now doing for 16 mm as well. In the new format the old material is much more suited to additional postproduction work, such as retouching, additional color grading and HD mastering, than it was before.

We are also focusing on the restoration and preservation of old films, making them suitable for Blu-ray or HD releases. For that purpose we brought back old techniques, such as tinting, coloring in chemical baths or the Desmet method, that disappeared from the market a long time ago along with the associated know-how. We are now scanning the material and are trying to emulate digitally what used to be done chemically. In the process we learned how to use color in all density and contrast levels without altering the image to recreate the look that was originally intended.

VA: Is the experience gained in the digital realm from working with Lookup Tables informing the analog realm?

MS: Very much so and we need new Lookup Tables because certain techniques that were used in the past, such as toning or hand coloring each frame using certain colors and contrasts, no longer work with the technology we have today.

Scans and the density curve are based on our expectations for the look of an image, not on how they were supposed to look back then. We have to make adjustments. We have to rethink these things in order to find an appropriate solution for dealing with historical footage.

We do have the knowhow to scan and restore nitro stock, even when it arrives in terrible condition. We’ve even addressed mold issues and offer solutions for film material that shows mold growth. Special chemical baths containing fungicidal substances have been developed. They not only stop the mold growth, but also remove any existing growth. It’s worth the effort because when you’re scanning the material there’s less need for retouching.

In this context it’s worth mentioning the Wet Gate, a scanning technology ARRI developed and continues to improve, to process severely scratched material so that there’s little or no need for retouching and the focus rests on image stabilization and density fluctuations.

The issue of archiving is interesting because various philosophies are influencing the discussion. Some people want to show the material the way it used to be and only correct processing mistakes and repair damage. They want to keep the density fluctuations because back then there was no synchronization mechanism during developing. Others want to make the image as clean and beautiful as possible using the technologies available in 2012. We, of course, honor the customer’s wishes. This is really a discussion about viewing habits, which change fundamentally from one generation to the next.

We continue to work on 16 mm in color and in B&W. We still service TV movies and feature films shot on 16 mm. Also, many museums and artists shoot their projects on 16 mm and later show them as part of exhibits or at art openings. We are very proud to continue to offer 65 mm processing and we are able to scan 65 mm negatives, for example, to make the data available for VFX work.

VA: What competition are you facing in the archiving market?

MS: The competition is international. In the case of prestige projects the price ultimately seals the deal during bidding, although it’s not necessarily the best criterion for archives to base their decisions on.
Even abroad more and more people seem to agree that not only the price but also the quality and the longevity of the product should play a role.

**VA:** Archives are forced into digitalization. What’s your take on that?

**MS:** Archives won’t be able to store everything on film forever. That’s something we discuss with our customers. ARRI organizes an annual symposium in early summer that brings archiving experts to Munich from all over Europe, as well as the Near and Far East. It also attracts service providers offering retouching software or storage systems. At the moment there are still a lot of unanswered questions in this area. Most archivists are shocked when they convert feet into bytes and realize how many servers and how much storage capacity they will need. They quickly end up in the high petabyte range. Plus there’s the expiration date issue of electronic data carriers. What’s missing at the moment is the experience that has accumulated on the analog side over the years. You can still copy a film reel that’s been kept in a can for ten or twenty years. That’s not the case in the digital domain. Digital files have to be copied every two years. Test calculations have to be made to ensure that everything is still complete. But – at the moment – that’s all still incredibly expensive. The day will come when digitalization will be required because it’s more than obvious that traditional analog film postproduction is rapidly declining worldwide. It is financially no longer self-sustainable. To operate a lab only for a few museum clients simply isn’t feasible.

**VA:** What are the most pertinent issues for you at the moment?

**MS:** With regards to DCPs, we’re an active player outside of Germany as well. It will be crucial over the next couple of years to tackle the coming challenges effectively. There’s a dynamic here that’s much stronger than any other in the film industry. The parameters change every couple of years. DCPs on hard drives and the logistics they involve are no longer an issue. Now it’s about distribution via satellite or fiber optic networks. The ARRI lab is actively involved in all the areas that ten years ago no one was even thinking about. And we are because we want to bring the moving images which our customers entrust us with during postproduction to the big and the small screen. The ARRI Lab continues to reinvent itself every day because we want to be there for our customers.

**VA:** How has the recent grouping together of various ARRI companies under the umbrella ARRI Media Services facilitated your work at the lab?

**MS:** We are now communicating much more extensively interdepartmentally and shouldering the challenges facing us in certain areas together. The departments and their unique knowledge bases are growing closer together. There’s a regular continuous exchange on all matters. We discuss projects and address them constructively without departmental biases. We are searching for new approaches to existing problems as a team. And important information, for example, for colleagues in world sales gets passed on much more quickly. In the past this exchange didn’t occur on this scale. That has changed and is already showing positive results.

Ingo Klingsporn
An innovative concept in production support: ARRI Media Services

At Berlinale 2012, the 62nd Berlin International Film Festival, ARRI Media Services was introduced as an innovative concept in comprehensive production support for the film, television, advertising and multimedia industry.

The shift from analog to digital recording methods has revolutionized the production landscape faster than ever before. This development created opportunities but also challenges for the decision makers at production companies. It has become crucial to plan the entire workflow ahead of time, which means more information and support in regards to format and system decisions, even during the preproduction stage.

From the very beginning ARRI has played a key role during this transition and is therefore able to offer customers cutting-edge production support from start to finish. The company’s newly formed service alliance, ARRI Media Services, brings together related expertise for the benefit of the film production process. The biggest advantage for customers is that the new alliance can draw on the comprehensive know-how of ARRI, the leading technology and service provider in the film business. The goal is to find optimal solutions to technological challenges as early as the planning stages in order to ensure the greatest possible amount of creative freedom for clients. Lower costs, improved quality and a significant risk reduction are additional advantages.

ARRI Media Services was created as a single point of contact to provide the entire range of required services from a single source. The ARRI Media Services concept unites four areas of expertise: The ARRI Rental Group and ARRI Film & TV provide comprehensive production support, including project planning, equipment rental, on-set services, postproduction and archiving. In addition, ARRI Productions and ARRI Worldsales offer cooperation models in the form of co-production partnerships for customers and handle worldwide sales.

This unique full service package can be adjusted – hassle-free and as needed – to suit the specific needs of productions. The customer will benefit from new synergies and advantages regardless of whether the services are offered individually, in the form of a customized package or as a start-to-finish deal.

ARRI MEDIA SERVICES
The best support your vision can get
Digital imaging specialists join ARRI Rental companies in the US and UK

The widespread adoption of the ARRI ALEXA camera system has seen both ARRI CSC in the United States and ARRI Media in the UK expand their digital support teams, ensuring that customers working with the latest technology do so with the best support.

ARRI CSC has appointed Chris MacKarell as Digital Workflow Supervisor. In his role, MacKarell will be responsible for the creation and support of effective on-set digital workflow products and services for the ARRI CSC digital imaging departments in New Jersey and Florida and, for Illumination Dynamics, in Charlotte, North Carolina.

MacKarell’s extensive experience in digital media spans fifteen years in the post sector. Starting out as Manager Media Illusion Support for Avid Technology Inc. he then worked for NBC Peacock Productions as Senior Avid Finishing Editor. In 2010 he joined Deluxe, where he managed special projects, rolled out infrastructure improvements and new workflow designs. In his latest position as Senior Engineer/Workflow Architect for Technicolor he designed, tested and implemented project-specific workflows.

Says Simon Broad, President of ARRI CSC: "The addition of Chris to our outstanding team will ensure that his skills and experience enhance the customer service for which ARRI CSC is renowned."

ARRI Media has appointed Mario Radinovic to the new post of Digital Workflow Specialist. Radinovic will support ARRI Media’s digital team and assist customers with the many questions that arise in relation to digital workflow options.

Radinovic has an MSc in Cinematography and Postproduction from the University of Greenwich and 10 years experience in shooting and postproduction. For the last two years Radinovic worked for Apple, where he was involved in software training, servicing and advising on network solutions.

"The appointment of Mario underlines ARRI Media’s ongoing commitment to customer service," comments Russell Allen, Director of Operations at ARRI Media. "With more and more productions recording digitally it is essential that we have the appropriate support in place to provide our customers with the right advice and guidance."

ARRI Media
Mario Radinovic
Digital Workflow Specialist
Tel: +44 1895 457 100
Email: mario@arrimedia.com

ARRI Rental Vienna broadens its portfolio to include postproduction services

As of April 16, 2012 ARRI Austria Cine und Videogeräte GmbH in Vienna now offers customers the following postproduction services for their images:

- Digital dailies, including data backup
- Online/offline editing
- VFX and title design
- Color grading
- Master and release prints

For more information please contact:
ARRI Austria Cine und Videogeräte GmbH
Andreas Buchschachner
Tel: +43 189 201 07 18
Email: rental@arri.at
Moritz Hemminger joins ARRI Worldsales as Director of Acquisition & Sales

ARRI has strengthened its international licensing division, bringing on board Moritz Hemminger as of April 1, 2012. He joins in the capacity of Director of Acquisitions & Sales of ARRI Worldsales. Hemminger grew up in the United States and Germany, and holds a degree in Production and Media Business from Munich’s prestigious HFF film school. Later he studied at the UCLA School of Theatre, Film and Television, with a focus on producing American independent films, and completed a development internship at New Regency Productions in Los Angeles. While still in film school, he worked on several feature films, including Soloalbum (2002) and Sophie Scholl – The Final Days (2005), as an assistant to the producer. In 2007 Hemminger produced The Call of the Geckos under his own KinoVision HK banner before joining Munich-based Telepool GmbH, where he served in the capacity of Theatrical Sales Manager, World Sales. VisionARRI sat down with the new Director of Acquisitions & Sales and Antonio Exacoustos, Head of ARRI Worldsales, to discuss their plans for the near future.

VisionARRI: What is the mandate for the new management team at ARRI Worldsales?

Antonio Exacoustos: At the beginning of the year ARRI Media Services was formed to offer ARRI customers the entire range of ARRI services from one central source. Within this newly created network ARRI Productions and ARRI Worldsales offer cooperation models in the form of co-production deals potentially tied to world sales. With this new concept we intend to step up ARRI Worldsales’ activities over the next couple of years.

Moritz Hemminger: ARRI is an international player, having made a name for itself with its technology and services. That’s why I see great potential in the areas of co-productions and world sales. We intend to acquire commercially viable projects in the early stages so that we can not only offer the customer a co-production arrangement, but also the handling of world sales of their property. In addition, there is the possibility of providing additional services bundled under the ARRI Media Services umbrella. Therefore, one of our tasks will be to function as a link between productions, taking into consideration their specific needs and the technological possibilities that the various departments within the ARRI network have to offer. Having said that, selected prestige or art house projects will also be an integral part of our portfolio. After all, ARRI has been quite successful in the past in collaborating with European independent films on the festival circuit.

VA: Which, in your opinion, will be the most interesting markets in the coming years?

MH: Growing markets such as China. There the film industry is going through astonishing changes. One look at the Chinese box office numbers says it all. Movie theaters are shooting up all across the country. It’s an exciting market with a growing licensing potential. The same is true for Brazil, which has a thriving economy that exceeds all expectations. If you want to succeed in these markets and in other parts of the world like the Middle East, you have to build an English-speaking portfolio.

AE: There are so many international markets and festivals for film that you have to focus on the essential ones. We are targeting feature film markets such as EFM in Berlin, the Marche du Film in Cannes and the American Film Market in Los Angeles, as well as TV markets such as MIPI. If we have suitable films then we will also attend festivals such as Venice, Toronto and San Sebastian.

MH: The strategy of ARRI Worldsales is to provide customer-oriented service and to develop the best possible sales strategy for each individual film of our small but highly selective line-up.
ARRI Rental Cologne moves to new facilities

In February 2012, ARRI Rental Cologne moved into new premises with ARRI Film & TV Cologne on the Bilderstöckchen industrial park. Together, the companies now offer a comprehensive range of services from under one roof, including project planning, equipment rental, postproduction and production support.

Reflecting on the relocation, Branch Manager Stefan Martini comments: “When the opportunity to move within the same industrial complex presented itself, we took advantage immediately. It means we are now housed in the same building as our sister company, ARRI Film & TV Cologne, and can provide the entire range of ARRI knowhow to our customers from a single location. Our combined knowledge will allow us to offer technical solutions and comprehensive advice that greatly surpasses simply supplying technology.” The rapid change from analog to digital recording technology and the resulting wealth of technological possibilities makes competent advice all the more important. Even during the early project development phase it is crucial to carefully consider all format and system options before making a decision, to determine the workflow and to discuss the budgetary ramifications of such decisions.

“The larger premises made it possible to expand the camera, lighting and dolly grip rental division. In doing so, our facilities have been modernized and internal processes streamlined in order to provide our customers the best possible service,” adds Martini. “The move also enabled us to bring our new partner Klaus Daubenberger and his company gripdepot on board.” Daubenberger, a specialist in remote heads and camera cranes with international experience, perfectly completes ARRI Rental’s portfolio in Cologne.

As well as the traditional equipment rental aspects of the business, ARRI Rental Cologne, in close collaboration with ARRI Film & TV, specializes in providing complex solutions for 2D/3D formats and in offering production-related services for all major digital recording formats. Recently, ARRI Rental Cologne has supported ARD’s TV series Verbotene Liebe and the Dutch-German feature film Oben ist es still (original title Boven is het stil). Both were shot on the ARRI ALEXA.

ARRI Rental and ARRI Film & TV are part of the group of ARRI companies that have been brought together under the newly created umbrella of ARRI Media Services, an innovative alliance combining four of ARRI’s core competencies. The ARRI Rental Group and ARRI Film & TV offer comprehensive project support and services, including project planning, equipment rental, on-set services, postproduction and archiving. In addition, ARRI Productions and ARRI Worldsales offer customers cooperation models in the form of co-production partnerships and the handling of worldwide sales.

In conclusion, Martini says, “The move to new facilities, the partnership with Klaus Daubenberger and the close working relationship within the ARRI Media Services group enables us to better serve our customers, both now and in the future.”

ARRI Rental Deutschland GmbH
Cologne Branch
Heinrich-Pesch-Strasse 7
D-50739 Cologne
Tel: +49 (0)221 170 67 24
Email: smartini@arri.de
www.arri-rental.com
ARRI RENTAL

<table>
<thead>
<tr>
<th>Title</th>
<th>Production Company</th>
<th>Director</th>
<th>DoP/Lighting Director</th>
<th>Gaffer</th>
<th>Equipment</th>
<th>Serviced by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Les Miserables</td>
<td>Barricade Productions</td>
<td>Tom Hooper</td>
<td>Danny Cohen BSC</td>
<td>Paul McGeaghlan</td>
<td>Will Kendall</td>
<td></td>
</tr>
<tr>
<td>Captain Phillips</td>
<td>Waveland Pictures</td>
<td>Paul Greengrass</td>
<td>Barry Ackroyd BSC</td>
<td>Harry Wiggins</td>
<td>Chris Morley</td>
<td></td>
</tr>
<tr>
<td>Closed</td>
<td>Belmont Productions</td>
<td>John Crowley</td>
<td>Adriano Goldman</td>
<td>Andy Long</td>
<td>Liam McGill</td>
<td></td>
</tr>
<tr>
<td>Da Vinci’s Demons</td>
<td>Tonto Films &amp; Television</td>
<td>David S. Goyer</td>
<td>Julian Court</td>
<td>Brandon Evans</td>
<td>Peter Chester</td>
<td></td>
</tr>
<tr>
<td>Last Days on Mars</td>
<td>Mars Movie</td>
<td>Ruairi Robinson</td>
<td>Robbie Ryan BSC</td>
<td>Andy Cole</td>
<td>Paul Cronin</td>
<td></td>
</tr>
<tr>
<td>The Double</td>
<td>Alcove Productions</td>
<td>Richard Ayode</td>
<td>Erik Wilson</td>
<td>Andy Lowe</td>
<td>Chris Stones</td>
<td></td>
</tr>
<tr>
<td>Bomb</td>
<td>ABP Films</td>
<td>Sally Potter</td>
<td>Robbie Ryan BSC</td>
<td>Andy Cole</td>
<td>Paul Cronin</td>
<td></td>
</tr>
<tr>
<td>Silent Witness</td>
<td>BBC Television</td>
<td>Anthony Byrne</td>
<td>John Conroy</td>
<td>Alex Scott</td>
<td>Steve Casey</td>
<td></td>
</tr>
<tr>
<td>Mr Selfridge</td>
<td>ITV Studios</td>
<td>Jon Jones</td>
<td>Gavin Finney BSC</td>
<td>Stewart King</td>
<td>Russell Tann</td>
<td></td>
</tr>
<tr>
<td>Friday Night Dinner</td>
<td>Big Talk Productions</td>
<td>Martin Dennis</td>
<td>Pete Rowe</td>
<td>Martin Taylor</td>
<td>Chris Knowles</td>
<td></td>
</tr>
<tr>
<td>Threesome</td>
<td>Big Talk Productions</td>
<td>Ian Fitzgibbon</td>
<td>Pete Rowe</td>
<td>Julian Horner</td>
<td>Fritz Henry</td>
<td></td>
</tr>
<tr>
<td>Julius Cesar</td>
<td>Illuminations</td>
<td>Gregory Doran</td>
<td>Steve Laws</td>
<td>Nick Rankin</td>
<td>Paul Murphy</td>
<td></td>
</tr>
<tr>
<td>Call the Midwife (Season 2)</td>
<td>CTM Productions</td>
<td>Philippa Low thorpe</td>
<td>Chris Seager BSC</td>
<td>Mark Funnell</td>
<td>Steve Anthony</td>
<td></td>
</tr>
<tr>
<td>Henry IV</td>
<td>Shakespear Productions</td>
<td>Richard Eyre</td>
<td>Ben Smithard BSC</td>
<td>Tom Gates</td>
<td>Phil Hurst</td>
<td></td>
</tr>
<tr>
<td>The Bletchley Circle</td>
<td>World Productions</td>
<td>Andy De Emmony</td>
<td>John Pardue</td>
<td>Jim Bebe</td>
<td>Billy Gamble</td>
<td></td>
</tr>
<tr>
<td>Hebburn</td>
<td>Channel X North</td>
<td>Christine Geron</td>
<td>John Daly BSC</td>
<td>Tony Wilcox</td>
<td>Lee Martin</td>
<td></td>
</tr>
</tbody>
</table>

ARRI LIGHTING RENTAL

<table>
<thead>
<tr>
<th>Title</th>
<th>Production Company</th>
<th>Director</th>
<th>DoP/Lighting Director</th>
<th>Gaffer</th>
<th>Equipment</th>
<th>Serviced by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Girls</td>
<td>HBO</td>
<td>Tim Ives</td>
<td>David Skutch</td>
<td>ARRI ALEXA, Lighting, Grip</td>
<td>ARRI CSC NJ</td>
<td></td>
</tr>
<tr>
<td>Low Life aka Untitled James Gray</td>
<td>Kingsgate Films</td>
<td>Darius Khondji ASC, AFC</td>
<td></td>
<td>ARRICAM Studio &amp; Lite 3-perforation, HD-IVS</td>
<td>ARRI CSC NJ</td>
<td></td>
</tr>
<tr>
<td>The Voice</td>
<td>Mark Burnett Productions</td>
<td>Oscar Dominguez</td>
<td>Sam Barker</td>
<td>Conventional &amp; Automated Lighting</td>
<td>Illumination Dynamics CA</td>
<td></td>
</tr>
<tr>
<td>All Is Lost</td>
<td>All Is Lost Productions</td>
<td>Frank DeMarco</td>
<td>Radium Cheung</td>
<td>Lighting</td>
<td>Illumination Dynamics CA</td>
<td></td>
</tr>
<tr>
<td>Shelter</td>
<td>Warner Bros.</td>
<td>Paul M. Sommers</td>
<td>Tommy Sullivan</td>
<td>ARRI ALEXA, Camera Support</td>
<td>Illumination Dynamics NC</td>
<td></td>
</tr>
</tbody>
</table>

ARRI CSC

<table>
<thead>
<tr>
<th>Title</th>
<th>Production Company</th>
<th>DoP/Lighting Director</th>
<th>Gaffer</th>
<th>Equipment</th>
<th>Serviced by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burn Notice</td>
<td>Fox</td>
<td>Bart Tau</td>
<td>Fred Valentine</td>
<td>ARRI ALEXA</td>
<td>ARRI CSC FL</td>
</tr>
<tr>
<td>Glades</td>
<td>Fox</td>
<td>Jamie Reynoso</td>
<td>Arnold Pouch</td>
<td>ARRI ALEXA</td>
<td>ARRI CSC FL</td>
</tr>
<tr>
<td>Spring Breakers</td>
<td>Spring Breakers LLC</td>
<td>Benoit Debbie</td>
<td>Mark Manthey</td>
<td>ARRICAM Lite</td>
<td>ARRI CSC FL</td>
</tr>
<tr>
<td>The Secret Life of Walter Mitty</td>
<td>20th Century Fox</td>
<td>Stuart Dryburgh ASC</td>
<td>Bill O’Leary</td>
<td>ARRICAM</td>
<td>ARRI CSC NJ</td>
</tr>
<tr>
<td>Dead Man Down</td>
<td>DMD Prod.</td>
<td>Paul Cameron ASC</td>
<td>Ken Shibata</td>
<td>ARRI ALEXA, Codex Recorders, Lighting, Grip</td>
<td>ARRI CSC NJ</td>
</tr>
<tr>
<td>Girls</td>
<td>HBO</td>
<td>Tim Ives</td>
<td>David Skutch</td>
<td>ARRI ALEXA, Lighting, Grip</td>
<td>ARRI CSC NJ</td>
</tr>
<tr>
<td>Low Life aka Untitled James Gray</td>
<td>Kingsgate Films</td>
<td>Darius Khondji ASC, AFC</td>
<td></td>
<td>ARRICAM Studio &amp; Lite 3-perforation, HD-IVS</td>
<td>ARRI CSC NJ</td>
</tr>
<tr>
<td>The Voice</td>
<td>Mark Burnett Productions</td>
<td>Oscar Dominguez</td>
<td>Sam Barker</td>
<td>Conventional &amp; Automated Lighting</td>
<td>Illumination Dynamics CA</td>
</tr>
<tr>
<td>All Is Lost</td>
<td>All Is Lost Productions</td>
<td>Frank DeMarco</td>
<td>Radium Cheung</td>
<td>Lighting</td>
<td>Illumination Dynamics CA</td>
</tr>
<tr>
<td>Shelter</td>
<td>Warner Bros.</td>
<td>Paul M. Sommers</td>
<td>Tommy Sullivan</td>
<td>ARRI ALEXA, Camera Support</td>
<td>Illumination Dynamics NC</td>
</tr>
</tbody>
</table>
### ARRI FILM & TV - POST PRODUCTION SERVICES - COMMERCIALS

<table>
<thead>
<tr>
<th>Client</th>
<th>Title</th>
<th>Agency</th>
<th>Production</th>
<th>Director</th>
<th>DoP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nikon</td>
<td>Nikon One</td>
<td>JungvonMatt / Spree</td>
<td>Sterntag</td>
<td>Pete Riski</td>
<td>Jean-Noel Mustonen</td>
</tr>
<tr>
<td>Hornbach</td>
<td>Alles für’s Projekt</td>
<td>Heimat</td>
<td>trigger happy production</td>
<td>Stan Smestad</td>
<td>Frank Griebe</td>
</tr>
<tr>
<td>Actimel</td>
<td>Vogelscheuche</td>
<td>Y&amp;R</td>
<td>e+p commercial</td>
<td>Richard de Aragues</td>
<td>Grant Appleton</td>
</tr>
<tr>
<td>Schweppes</td>
<td>Faces</td>
<td>Interone</td>
<td>Neue Sentimental Film HH</td>
<td>Olaf van Gerwen</td>
<td>Joachim Berc</td>
</tr>
<tr>
<td>McDonald’s</td>
<td>Mein Burger</td>
<td>Heye &amp; Partner</td>
<td>e+p commercial</td>
<td>Jan Bonny</td>
<td>Nikolai von Graevenitz</td>
</tr>
<tr>
<td>A.T.U.</td>
<td>Battle</td>
<td>Heimat</td>
<td>Big Fish</td>
<td>Chris Turner</td>
<td>Stuart Graham</td>
</tr>
<tr>
<td>Fracade</td>
<td>Molkerei</td>
<td>FJR</td>
<td>Mr. Bob Film</td>
<td>Laurentius Emmelmann</td>
<td>Tommy Wildner</td>
</tr>
<tr>
<td>Omira MinusL</td>
<td>Yoghurt &amp; Milch</td>
<td>kainz_werbeagentur Made in Munich</td>
<td>Mark v. Seydlitz</td>
<td>Britta Mangold</td>
<td></td>
</tr>
<tr>
<td>Bruno Banani</td>
<td>Dangerous Man</td>
<td>Dorland</td>
<td>Bakery Films</td>
<td>Stephan Hadjam</td>
<td>Ekkehardt Pollock</td>
</tr>
<tr>
<td>McDonald’s</td>
<td>Monopoly</td>
<td>Heye &amp; Partner</td>
<td>Markenfilm HH</td>
<td>Marion Zozin</td>
<td>Holger Diener</td>
</tr>
</tbody>
</table>

### ARRI MEDIA

<table>
<thead>
<tr>
<th>Title</th>
<th>Production Company</th>
<th>Director</th>
<th>DoP</th>
<th>Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>About Time</td>
<td>Inheritance Pictures</td>
<td>Richard Curtis</td>
<td>John Gulersarian</td>
<td>ARRI ALEXA, Grip</td>
</tr>
<tr>
<td>Call the Midwife (Season 2)</td>
<td>CTM Productions</td>
<td>Philippa Lawthorpe</td>
<td>Chris Seagar bsc</td>
<td>ARRIFLEX D-2 5</td>
</tr>
<tr>
<td>Game of Thrones (Season 3)</td>
<td>Fire &amp; Blood Productions</td>
<td>Sandy Johnson</td>
<td>Rob Kitzmann</td>
<td>ARRI ALEXA</td>
</tr>
<tr>
<td>Mr Selfridge (Season 3)</td>
<td>ITV Studios</td>
<td>Jon Jones</td>
<td>Gavin Finney bsc</td>
<td>ARRI ALEXA, Alura Zoons, Grip</td>
</tr>
<tr>
<td>Downton Abbey (Season 3)</td>
<td>Carnival Film &amp; Television</td>
<td>David Evans</td>
<td>Nigel Willoughby bsc</td>
<td>ARRI ALEXA</td>
</tr>
<tr>
<td>Captain Phillips</td>
<td>Waveland Pictures</td>
<td>Paul Greengrass</td>
<td>Barry Ackroyd bsc</td>
<td>ARRICAM Lite &amp; ARRIFLEX 235 3-perforation</td>
</tr>
<tr>
<td>Les Miserables</td>
<td>Barricade Productions</td>
<td>Tom Hooper</td>
<td>Danny Cohen bsc</td>
<td>ARRICAM Studio &amp; Lite 3-perforation, Master Primes, Grip</td>
</tr>
<tr>
<td>The Bletchley Circle</td>
<td>World Productions</td>
<td>Andy De Emmony</td>
<td>John Pardue</td>
<td>ARRI ALEXA, Grip</td>
</tr>
<tr>
<td>Skyfall</td>
<td>B23</td>
<td>Sam Mendes</td>
<td>Roger Deakins bsc, ASC</td>
<td>ARRI ALEXA Studio &amp; ARRI ALEXA, Codex Recorders, Ultra Primes, Master Primes, Grip</td>
</tr>
<tr>
<td>Rush</td>
<td>Rush Films</td>
<td>Ron Howard</td>
<td>Anthony Dod Mantle DFF, bsc, ASC</td>
<td>ARRI ALEXA Studio &amp; ARRI ALEXA, Codex Recorders, Grip, Cranes</td>
</tr>
<tr>
<td>Hummingbird</td>
<td>HB Pictures</td>
<td>Steven Knight</td>
<td>Chris Menges bsc, ASC</td>
<td>ARRI ALEXA &amp; ARRI ALEXA M, Master Primes, Grip</td>
</tr>
<tr>
<td>Blood</td>
<td>Conviction Film Productions</td>
<td>Nick Murphy</td>
<td>George Richmond</td>
<td>ARRICAM Lite 3-perforation, Master Primes, Alura Zoons</td>
</tr>
<tr>
<td>Byzantium</td>
<td>Number 9 Films</td>
<td>Neil Jordan</td>
<td>Sean Bobbitt bsc</td>
<td>ARRI ALEXA, Codex Recorders</td>
</tr>
</tbody>
</table>
THE PERFECT PARTNERSHIP:
ALEXA & THE ARRI RENTAL GROUP

Combine ALEXA with the ARRI Rental Group’s unrivalled knowledge and experience in supplying high-end cameras and you’ve got the perfect partnership.

With the addition of the ALEXA Studio, ALEXA M and ALEXA Plus 4:3, the ARRI Rental Group’s family of ALEXA cameras has grown into a complete production system that can accommodate all styles of filmmaking.

Whichever of the ALEXA cameras or many ALEXA output options best suits your production, we can offer unrivalled service and support.

www.arri.com