

# Matrox Odyssey Xpro

## Camera Interface Application Note

**DALSA CA-D6 (DS-4x-300K262)**

**February 2, 2007**

*Basics about the  
camera*

*Mode of operations as  
per Matrox Imaging (in  
parentheses as per  
camera manufacturer)*

*Basics about the  
interface modes*

### Camera Descriptions

- Effective Resolution:  $532 \times 516 \times 8\text{-bit}$  @ up to 262 fps.
- LVDS digital video output (Quad tap).
- Progressive scan.
- External sync.
- External exposure control.
- 25 MHz pixel clock rate.

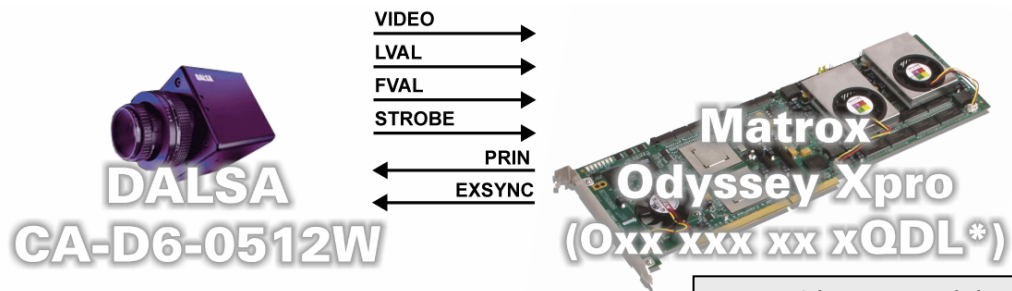
### Interface Modes

- Continuous (Free Running)
- Asynchronous reset (User Controlled EXSYNC and PRIN)

### Camera Interface Briefs

#### Mode 1: Continuous

- $532 \times 516 \times 8\text{-bit}$  @ 262 fps.
- LVDS digital video (Quad tap).
- Progressive scan.
- Matrox Odyssey Xpro sending TIMER1 (EXSYNC) and TIMER2 (PRIN) signals to camera.
- Matrox Odyssey Xpro receiving HSYBC (LVAL), VSYNC (FVAL), PIXEL CLOCK (STROBE) and video signals from camera.
- DCF: [CAD6\\_532x516\\_8bitCon.DCF](#)



\*Matrox Odyssey Xpro main board  
with LVDS frame grabber module

#### Mode 2: Pseudo-continuous

- $532 \times 516 \times 8\text{-bit}$ .
- LVDS digital video (Quad tap).
- Progressive scan.
- Matrox Odyssey Xpro sending periodic TIMER1 (EXSYNC) and TIMER2 (PRIN) signals to camera.
- Matrox Odyssey Xpro receiving HSYBC (LVAL), VSYNC (FVAL), PIXEL CLOCK (STROBE) and video signals from camera.
- DCF: [CAD6\\_532x516\\_8bitPcon.DCF](#)

Continued...

# Matrox Odyssey Xpro

## Camera Interface Application Note

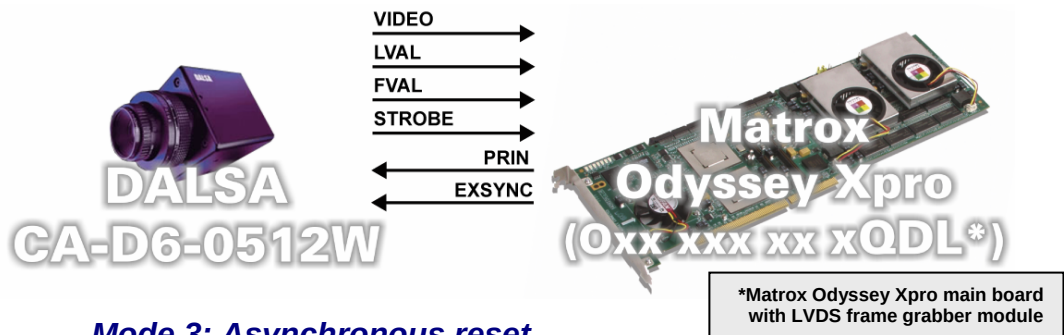
DALSA CA-D6 (DS-4x-300K262)

February 2, 2007

Basics about the  
interface modes

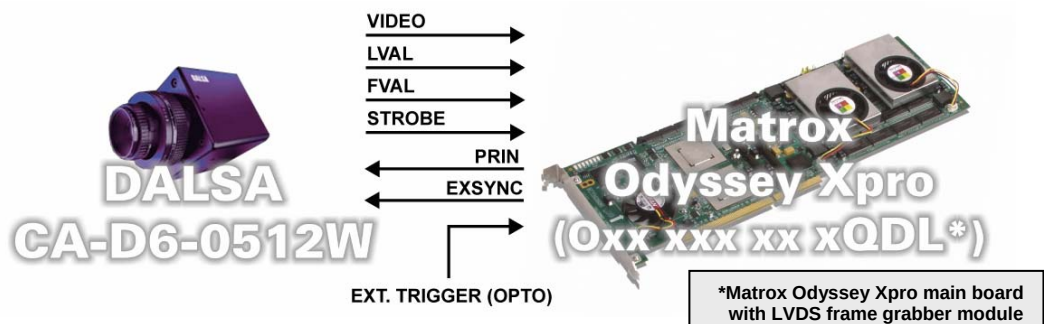
### Camera Interface Briefs (continued)

#### Mode 2: Pseudo-continuous



#### Mode 3: Asynchronous reset

- $532 \times 516 \times 8$ -bit.
- LVDS digital video (Quad tap).
- Progressive scan.
- Matrox Odyssey Xpro receiving external OPTO trigger signal.
- Matrox Odyssey Xpro sending TIMER1 (EXSYNC) and TIMER2 (PRIN) signals to camera.
- Matrox Odyssey Xpro receiving HSYNC (LVAL), VSYNC (FVAL), PIXEL CLOCK (STROBE) and video signals from camera.
- DCF: [CAD6\\_532x516\\_8bitAsync.DCF](#)



Specifics about the  
interface modes

### Camera Interface Details

#### Mode 1: Continuous

- **Frame Rate:** Matrox Odyssey Xpro receives the continuous video from the camera at 262 frames per second.
- **Exposure time:** Exposure time is fixed and set to the maximum (equal to one frame time). Refer to the camera manual for more information.

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## Camera Interface Application Note

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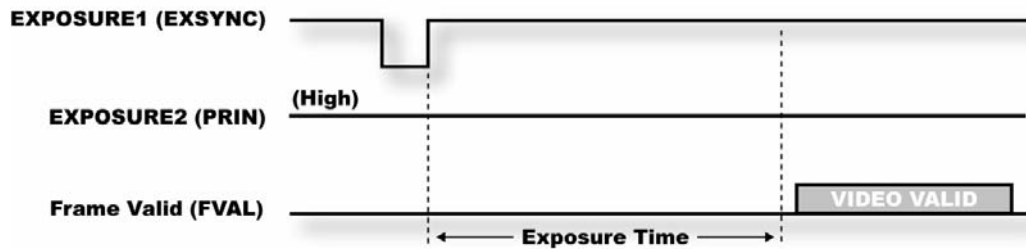
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Specifics about the  
interface modes

### Camera Interface Details

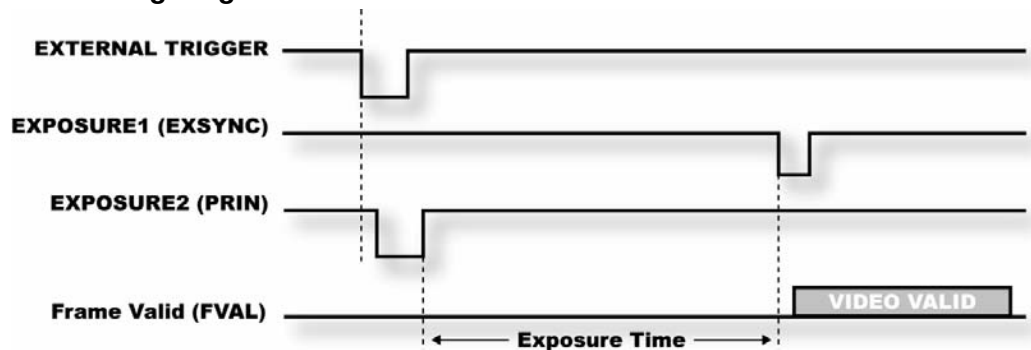
#### Mode 2: Pseudo-continuous

- **Frame Rate:** The frame rate is determined by the frequency of the periodic TIMER1 (EXSYNC) signal.
- **Exposure time:** Exposure time is fixed and set to the maximum (equal to one frame time). Refer to the camera manual for more information.
- **Timing diagram:**



#### Mode 3: Asynchronous Reset

- **Frame rate:** The frame rate is determined by the frequency of the external trigger signal.
- **Exposure time:** The time between the rising edges of the EXPOSURE2 (PRIN) and EXPOSURE1 (EXSYNC) signals equals the exposure time. The exposure time can be modified in the DCF using Matrox Intellicam, with the ONL imCamControl() or imDigControl() function, or with the MIL MdigControl() function. Refer to the respective manual for more information.
- **Timing diagram:**



# Matrox Odyssey Xpro

## Camera Interface Application Note

**DALSA CA-D6 (DS-4x-300K262)**

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*Cabling details for  
the interface modes*

### Cabling Requirements

#### *Modes 1 and 2: Continuous/Pseudo-continuous*

- **Cable:** DBHD100-TO-OPEN (open ended) cable required for video, synchronization and control signals.
- **DB50F connector:** The 50-pin female connector (DB50F) on this camera model is configured with an uncommon pin number pattern of 1-3-2, 4-6-5, etc. Refer to the camera manual for additional information.
- **Connection:** Connections between the 50-pin connector (**OS1/OS2**) of the camera, a jumper connector and the 100-pin connector (**CH0**) of the Matrox Odyssey Xpro LVDS grab module are as follows:

| DALSTAR DS-4x-300K262<br>(50-pin connector- OS1) |          |              |   | Odyssey Xpro LVDS grab module<br>(100-pin connector – CH0) |         |
|--------------------------------------------------|----------|--------------|---|------------------------------------------------------------|---------|
| Pin name                                         | Pin no.* | Jumper Pin** |   | Pin name                                                   | Pin no. |
| OS1D7 (MSB)                                      | 21       | 24           | → | P0_LVDS_DATA_IN_7+                                         | 15      |
| OS1D7B                                           | 22       | 08           | → | P0_LVDS_DATA_IN_7-                                         | 16      |
| OS1D6                                            | 23       | 41           | → | P0_LVDS_DATA_IN_6+                                         | 13      |
| OS1D6B                                           | 24       | 25           | → | P0_LVDS_DATA_IN_6-                                         | 14      |
| OS1D5                                            | 25       | 09           | → | P0_LVDS_DATA_IN_5+                                         | 11      |
| OS1D5B                                           | 26       | 42           | → | P0_LVDS_DATA_IN_5-                                         | 12      |
| OS1D4                                            | 27       | 26           | → | P0_LVDS_DATA_IN_4+                                         | 09      |
| OS1D4B                                           | 28       | 10           | → | P0_LVDS_DATA_IN_4-                                         | 10      |
| OS1D3                                            | 29       | 43           | → | P0_LVDS_DATA_IN_3+                                         | 07      |
| OS1D3B                                           | 30       | 27           | → | P0_LVDS_DATA_IN_3-                                         | 08      |
| OS1D2                                            | 31       | 11           | → | P0_LVDS_DATA_IN_2+                                         | 05      |
| OS1D2B                                           | 32       | 44           | → | P0_LVDS_DATA_IN_2-                                         | 06      |
| OS1D1                                            | 33       | 28           | → | P0_LVDS_DATA_IN_1+                                         | 03      |
| OS1D1B                                           | 34       | 12           | → | P0_LVDS_DATA_IN_1-                                         | 04      |
| OS1D0                                            | 35       | 45           | → | P0_LVDS_DATA_IN_0+                                         | 01      |
| OS1D0B                                           | 36       | 29           | → | P0_LVDS_DATA_IN_0-                                         | 02      |
| DALSTAR DS-4X-300K262<br>(50-pin connector- OS2) |          |              |   | Odyssey Xpro LVDS grab module<br>(100-pin connector – CH0) |         |
| Pin name                                         | Pin no.* | Jumper Pin** |   | Pin name                                                   | Pin no. |
| OS2D7 (MSB)                                      | 01       | 01           | → | P0_LVDS_DATA_IN_15+                                        | 31      |
| OS2D7B                                           | 02       | 34           | → | P0_LVDS_DATA_IN_15-                                        | 32      |
| OS2D6                                            | 03       | 18           | → | P0_LVDS_DATA_IN_14+                                        | 29      |
| OS2D6B                                           | 04       | 02           | → | P0_LVDS_DATA_IN_14-                                        | 30      |
| OS2D5                                            | 05       | 35           | → | P0_LVDS_DATA_IN_13+                                        | 27      |
| OS2D5B                                           | 06       | 19           | → | P0_LVDS_DATA_IN_13-                                        | 28      |
| OS2D4                                            | 07       | 03           | → | P0_LVDS_DATA_IN_12+                                        | 25      |
| OS2D4B                                           | 08       | 36           | → | P0_LVDS_DATA_IN_12-                                        | 26      |
| OS2D3                                            | 09       | 20           | → | P0_LVDS_DATA_IN_11+                                        | 23      |
| OS2D3B                                           | 10       | 04           | → | P0_LVDS_DATA_IN_11-                                        | 24      |

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\* DALSA Crimp Label \*\* Connector Solder Label

# Matrox Odyssey Xpro

## Camera Interface Application Note

**DALSA CA-D6 (DS-4x-300K262)**

**February 2, 2007**

*Cabling details for  
the interface modes*

### Cabling Requirements (continued)

#### Modes 1 and 2: Continuous/Pseudo-continuous

**DALSTAR DS-4X-300K262**  
(50-pin connector- OS2)

**Odyssey Xpro LVDS grab module**  
(100-pin connector – CH0)

| <i>Pin name</i> | <i>Pin no.*</i> | <i>Jumper Pin **</i> |   | <i>Pin name</i>          | <i>Pin no.</i> |
|-----------------|-----------------|----------------------|---|--------------------------|----------------|
| OS2D2           | 11              | 37                   | → | P0_LVDS_DATA_IN_10+      | 21             |
| OS2D2B          | 12              | 21                   | → | P0_LVDS_DATA_IN_10-      | 22             |
| OS2D1           | 13              | 05                   | → | P0_LVDS_DATA_IN_9+       | 19             |
| OS2D1B          | 14              | 38                   | → | P0_LVDS_DATA_IN_9-       | 20             |
| OS2D0           | 15              | 22                   | → | P0_LVDS_DATA_IN_8+       | 17             |
| OS2D0B          | 16              | 06                   | → | P0_LVDS_DATA_IN_8-       | 18             |
| STROBE          | 37              | 13                   | → | P0_LVDS_CLK_IN+          | 39             |
| STROBEB         | 38              | 46                   | → | P0_LVDS_CLK_IN-          | 40             |
| FVAL            | 17              | 39                   | → | P0_LVDS_AUX(VSYNC)_IN_0+ | 35             |
| FVALB           | 18              | 23                   | → | P0_LVDS_AUX(VSYNC)_IN_0- | 36             |
| LVAL            | 39              | 30                   | → | P0_LVDS_HSYNC_IN+        | 33             |
| LVALB           | 40              | 14                   | → | P0_LVDS_HSYNC_IN-        | 34             |

- **Connection:** Connections between the 50-pin connector (**OS3/OS4**) of the camera, a jumper connector and the 100-pin connector (**CH1**) of the Matrox Odyssey Xpro LVDS grab module are as follows:

**DALSTAR DS-4X-300K262**  
(50-pin connector- OS2)

**Odyssey Xpro LVDS grab module**  
(100-pin connector – CH1)

| <i>Pin name</i> | <i>Pin no.*</i> | <i>Jumper Pin **</i> |   | <i>Pin name</i>    | <i>Pin no.</i> |
|-----------------|-----------------|----------------------|---|--------------------|----------------|
| OS3D7<br>(MSB)  | 21              | 24                   | → | P1_LVDS_DATA_IN_7+ | 65             |
| OS3D7B          | 22              | 08                   | → | P1_LVDS_DATA_IN_7- | 66             |
| OS3D6           | 23              | 41                   | → | P1_LVDS_DATA_IN_6+ | 63             |
| OS3D6B          | 24              | 25                   | → | P1_LVDS_DATA_IN_6- | 64             |
| OS3D5           | 25              | 09                   | → | P1_LVDS_DATA_IN_5+ | 61             |
| OS3D5B          | 26              | 42                   | → | P1_LVDS_DATA_IN_5- | 62             |
| OS3D4           | 27              | 26                   | → | P1_LVDS_DATA_IN_4+ | 59             |
| OS3D4B          | 28              | 10                   | → | P1_LVDS_DATA_IN_4- | 60             |
| OS3D3           | 29              | 43                   | → | P1_LVDS_DATA_IN_3+ | 57             |
| OS3D3B          | 30              | 27                   | → | P1_LVDS_DATA_IN_3- | 58             |
| OS3D2           | 31              | 11                   | → | P1_LVDS_DATA_IN_2+ | 55             |
| OS3D2B          | 32              | 44                   | → | P1_LVDS_DATA_IN_2- | 56             |
| OS3D1           | 33              | 28                   | → | P1_LVDS_DATA_IN_1+ | 53             |
| OS3D1B          | 34              | 12                   | → | P1_LVDS_DATA_IN_1- | 54             |
| OS3D0           | 35              | 45                   | → | P1_LVDS_DATA_IN_0+ | 51             |
| OS3D0B          | 36              | 29                   | → | P1_LVDS_DATA_IN_0- | 52             |

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\* DALSA Crimp Label \*\* Connector Solder Label

# Matrox Odyssey Xpro

## Camera Interface Application Note

**DALSA CA-D6 (DS-4x-300K262)**

**February 2, 2007**

*Cabling details for the  
interface modes*

### Cabling Requirements (continued)

#### Modes 1 and 2: Continuous/Pseudo-continuous

**DALSTAR DS-4X-300K262**  
(50-pin connector- OS4)

**Odyssey Xpro LVDS grab module**  
(100-pin connector – CH1)

| <i>Pin name</i> | <i>Pin no.*</i> | <i>Jumper Pin**</i> |   | <i>Pin name</i>     | <i>Pin no.</i> |
|-----------------|-----------------|---------------------|---|---------------------|----------------|
| OS4D7 (MSB)     | 01              | 01                  | → | P1_LVDS_DATA_IN_15+ | 81             |
| OS4D7B          | 02              | 34                  | → | P1_LVDS_DATA_IN_15- | 82             |
| OS4D6           | 03              | 18                  | → | P1_LVDS_DATA_IN_14+ | 79             |
| OS4D6B          | 04              | 02                  | → | P1_LVDS_DATA_IN_14- | 80             |
| OS4D5           | 05              | 35                  | → | P1_LVDS_DATA_IN_13+ | 77             |
| OS4D5B          | 06              | 19                  | → | P1_LVDS_DATA_IN_13- | 78             |
| OS4D4           | 07              | 03                  | → | P1_LVDS_DATA_IN_12+ | 75             |
| OS4D4B          | 08              | 36                  | → | P1_LVDS_DATA_IN_12- | 76             |
| OS4D3           | 09              | 20                  | → | P1_LVDS_DATA_IN_11+ | 73             |
| OS4D3B          | 10              | 04                  | → | P1_LVDS_DATA_IN_11- | 74             |
| OS4D2           | 11              | 37                  | → | P1_LVDS_DATA_IN_10+ | 71             |
| OS4D2B          | 12              | 21                  | → | P1_LVDS_DATA_IN_10- | 72             |
| OS4D1           | 13              | 05                  | → | P1_LVDS_DATA_IN_9+  | 69             |
| OS4D1B          | 14              | 38                  | → | P1_LVDS_DATA_IN_9-  | 70             |
| OS4D0           | 15              | 22                  | → | P1_LVDS_DATA_IN_8+  | 67             |
| OS4D0B          | 16              | 06                  | → | P1_LVDS_DATA_IN_8-  | 68             |

- **Connection:** Connections between the DB-15F (control) connector on the rear panel of the camera and the 100-pin Digital Interface connector (**CH0**) of Matrox Odyssey Xpro LVDS grab module are as follows:

**DALSTAR DS-4X-300K262**  
(DB15 female connector)

**Odyssey Xpro LVDS grab module**  
(100-pin connector – CH0)

| <i>Pin name</i> | <i>Pin no.*</i> |   | <i>Pin name</i>              | <i>Pin no.</i> |
|-----------------|-----------------|---|------------------------------|----------------|
| EXSYNC          | 12              | ← | P0_LVDS/TTL_AUX(EXP)_OUT_3+  | 45             |
| EXSYNC B        | 04              | ← | P0_LVDS/TTL_AUX(EXP)_OUT_3 - | 46             |
| PRIN            | 05              | ← | P0_LVDS/TTL_AUX(EXP)_OUT_4+  | 47             |
| PRINB           | 13              | ← | P0_LVDS_AUX(EXP)_OUT_4-      | 48             |

- **Power:** Connections between the DB-15F (power) connector on the rear panel of the camera and the power supply are as follows:

**DALSTAR DS-4X-300K262**  
(15-pin power connector)

**POWER SUPPLY**  
(VISION1)

| <i>Pin name</i> | <i>Pin no.*</i> |   | <i>Pin name</i> | <i>Pin no.</i> |
|-----------------|-----------------|---|-----------------|----------------|
| DGND            | 01              | → | GND             | 04             |
| +5V DIGITAL     | 02              | → | +5V             | 03             |
| -5V DIGITAL     | 04              | → | -5V             | 06             |
| +15V            | 06              | → | +15V            | 09             |
| +15V            | 07              | → | +15V            | 09             |
| AGND            | 08              | → | GND             | 05             |

Continued...

\* DALSA Crimp Label \*\* Connector Solder Label

# Matrox Odyssey Xpro

## Camera Interface Application Note

**DALSA CA-D6 (DS-4x-300K262)**

**February 2, 2007**

*Cabling details for the  
interface modes*

### ***Cabling Requirements (Continued)***

#### ***Modes 1 and 2: Continuous/Pseudo-continuous***

- **Power:** Connections between the DB-15F (power) connector on the rear panel of the camera and the power supply are as follows:

| DALSTAR DS-4X-300K262<br>(15-pin power connector) |                 | POWER SUPPLY<br>(VISION1) |                |
|---------------------------------------------------|-----------------|---------------------------|----------------|
| <i>Pin name</i>                                   | <i>Pin no.*</i> | <i>Pin name</i>           | <i>Pin no.</i> |
| +5V DIGITAL                                       | 09              | →                         | +5V 03         |
| DGND                                              | 10              | →                         | GND 07         |
| -15V                                              | 12              | →                         | -15V 01        |
| -5V ANALOG                                        | 13              | →                         | -5V 06         |
| AGND                                              | 14              | →                         | GND 07         |
| +5V ANALOG                                        | 15              | →                         | +5V 03         |

\* DALSA Crimp Label

**NOTE:** it is very important that all the GROUNDS of the camera be connected together to the POWER SUPPLY GROUND, and to the GROUND of the Matrox Genesis. Do not use the cable shield as a ground; instead always use the ground pin of the power supply.

#### ***Mode 3: Asynchronous reset***

- **Cable:** DBHD100-TO-OPEN (open ended) cable required for video, synchronization and control signals.
- **External Trigger:** External OPTO trigger source should be connected to the 9-pin External Auxiliary I/O connector of Matrox Odyssey Xpro LVDS grab module (pin 7 and pin 2, P3\_OPTO\_AUX(TRIG)\_IN\_0+ and P3\_OPTO\_AUX(TRIG)\_IN\_0- respectively).
- **Connection:** All other connections are as in Mode 1: *Continuous*

The DCFs mentioned in this application note are also attached (embedded) to this PDF file – use the Adobe Reader's View File Attachment to access the DCF files. The information furnished by Matrox Electronics System, Ltd. is believed to be accurate and reliable. Please verify all interface connections with camera documentation or manual. Contact your local sales representative or Matrox Sales office or Matrox Imaging Applications at 514-822-6061 for assistance. © Matrox Electronic Systems Ltd, 2007-2011.

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