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*
* 2009-10-04, guwi17: modified and extended to meet uBLAS' needs
*/
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/* Boehm, May 13, 1994 9:50 am PDT */
/***

WeakPointer and CleanUp

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L. Peter Deutsch
ghost@aladdin.com

*/
/*
* regcomp and regexec -- regsub and regerror are elsewhere
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*** hoptoad!gnu, on 27 Dec 1986, to add \< and \> for word-matching
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*** THIS IS AN ALTERED VERSION. It was altered by James A. Woods,

*** ames!jaw, on 19 June 1987, to quash a regcomp() redundancy.

*** THIS IS AN ALTERED VERSION. It was altered by Christopher Seiwald

*** seiwald@vix.com, on 28 August 1993, for use in jam. Regmagic.h

*** was moved into regexp.h, and the include of regexp.h now uses "'s

*** to avoid conflicting with the system regexp.h. Const, bless its

*** soul, was removed so it can compile everywhere. The declaration

*** of strchr() was in conflict on AIX, so it was removed (as it is

*** happily defined in string.h).

*** THIS IS AN ALTERED VERSION. It was altered by Christopher Seiwald

*** seiwald@perforce.com, on 20 January 2000, to use function prototypes.

*

* Beware that some of this code is subtly aware of the way operator precedence

* is structured in regular expressions. Serious changes in regular-expression

* syntax might require a total rethink.

*/

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1.4 glib 2.27.1

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all the source code for all modules it contains, plus any associated
interface definition files, plus the scripts used to control compilation
and installation of the library.

 Activities other than copying, distribution and modification are not
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running a program using the Library is not restricted, and output from
such a program is covered only if its contents constitute a work based
on the Library (independent of the use of the Library in a tool for
writing it). Whether that is true depends on what the Library does
and what the program that uses the Library does.

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  d) If a facility in the modified Library refers to a function or a
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  the facility, other than as an argument passed when the facility
  is invoked, then you must make a good faith effort to ensure that,
  in the event an application does not supply such function or
  table, the facility still operates, and performs whatever part of
  its purpose remains meaningful.

  (For example, a function in a library to compute square roots has

a purpose that is entirely well-defined independent of the
application. Therefore, Subsection 2d requires that any
application-supplied function or table used by this function must
be optional: if the application does not supply it, the square
root function must still compute square roots.)

These requirements apply to the modified work as a whole. If
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Thus, it is not the intent of this section to claim rights or contest
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In addition, mere aggregation of another work not based on the Library
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 This option is useful when you wish to copy part of the code of
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 4. You may copy and distribute the Library (or a portion or
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it with the complete corresponding machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a

medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by

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copyright notice for the Library among them, as well as a reference
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   changes were used in the work (which must be distributed under
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   with the Library, with the complete machine-readable "work that
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   materials or that you have already sent this user a copy.

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Library" must include any data and utility programs needed for
reproducing the executable from it. However, as a special exception,
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components (compiler, kernel, and so on) of the operating system on
which the executable runs, unless that component itself accompanies
the executable.

 It may happen that this requirement contradicts the license
restrictions of other proprietary libraries that do not normally
accompany the operating system. Such a contradiction means you cannot
use both them and the Library together in an executable that you
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 <signature of Ty Coon>, 1 April 1990
 Ty Coon, President of Vice

That's all there is to it!
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End

1.5 gstreamer 0.10.35.1

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a textual and legal sense, the linked executable is a combined work, a
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 Because of this blurred distinction, using the ordinary General
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 A "library" means a collection of software functions and/or data
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"Source code" for a work means the preferred form of the work for
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 Activities other than copying, distribution and modification are not
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(For example, a function in a library to compute square roots has
a purpose that is entirely well-defined independent of the
application. Therefore, Subsection 2d requires that any
application-supplied function or table used by this function must
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These requirements apply to the modified work as a whole. If
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 This option is useful when you wish to copy part of the code of
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must be distributed under the terms of Sections 1 and 2 above on a
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 If distribution of object code is made by offering access to copy
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 If such an object file uses only numerical parameters, data
structure layouts and accessors, and small macros and small inline
functions (ten lines or less in length), then the use of the object
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work. (Executables containing this object code plus portions of the
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 Otherwise, if the work is a derivative of the Library, you may
distribute the object code for the work under the terms of Section 6.
Any executables containing that work also fall under Section 6,
whether or not they are linked directly with the Library itself.

 6. As an exception to the Sections above, you may also compile or
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END OF TERMS AND CONDITIONS

Appendix: How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest
possible use to the public, we recommend making it free software that
everyone can redistribute and change. You can do so by permitting
redistribution under these terms (or, alternatively, under the terms of the
ordinary General Public License).

To apply these terms, attach the following notices to the library. It is
safest to attach them to the start of each source file to most effectively
convey the exclusion of warranty; and each file should have at least the
"copyright" line and a pointer to where the full notice is found.

    <one line to give the library's name and a brief idea of what it does.>
    Copyright (C) <year> <name of author>

    This library is free software; you can redistribute it and/or
    modify it under the terms of the GNU Library General Public
    License as published by the Free Software Foundation; either

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Library General Public License for more details.

You should have received a copy of the GNU Library General Public
License along with this library; if not, write to the Free
Software Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
<sect1 id="chapter-legal">
 <title id="title-legal">GStreamer Legal Issues</title>
 <para>
This part of the FAQ is based on a series of questions we asked the FSF
to understand how the GPL works and how patents affects the GPL. These
questions were answered by the <ulink url="http://www.fsf.org/">
FSF lawyers</ulink>, so we view them as the
final interpretation on how the GPL and LGPL interact with patents in our
opinion. This consultancy was paid for by
<ulink url="http://www.fluendo.com/">Fluendo</ulink>
in order to obtain clear and quotable answers. These answers were certified
by the FSF lawyer team and verified by FSF lawyer and law professor Eben Moglen.
 </para>

<qandaset defaultlabel="qanda">

  <qandaentry>
   <question id="legal-distribute-three">
     <para>
Can someone distribute the combination of
<itemizedlist>
 <listitem><para>GStreamer, the LGPL library</para></listitem>
 <listitem><para>MyPlayer, a GPL playback application</para></listitem>
 <listitem><para>The binary-only Sorenson decoder</para></listitem>

</itemizedlist>
together in one distribution/operating system ? If not, what
needs to be changed to make this possible ?
      </para>
    </question>

    <answer>
      <para>
This would be a problem, because the GStreamer and MyPlayer licenses would
forbid it. In order to link GStreamer to MyPlayer, you need to use section
3 of the LGPL to convert GStreamer to GPL. The GPL version of GStreamer
forbids linking to the Sorenson decoder. Anyway, the MyPlayer GPL
license forbids this.
      </para>

      <para>
If the authors of MyPlayer want to permit this, we have an
exception for them: the controlled interface exception from the FAQ.
The idea of this is that you can't get around the GPL just by including
a LGPL bit in the middle.
      </para>

      <para>
Note: MyPlayer is a completely fictituous application at the time of writing.
      </para>

    </answer>
  </qandaentry>

  <qandaentry>
    <question id="legal-binary-plugin">
      <para>
Suppose Apple wants to write a binary-only proprietary
plugin for GStreamer to decode Sorenson video, which will be shipped
stand-alone, not part of a package like in the question above.
Can Apple distribute this binary-only plugin ?
      </para>
    </question>

    <answer>
      <para>
Yes, modulo certain reverse engineering requirements in section 6 of
the LGPL.
      </para>
    </answer>
  </qandaentry>

  <qandaentry>

```
<question id="legal-gpl-program">
  <para>
If a program released under the GPL uses a library that
is LGPL, and this library can dlopen plug-ins at runtime, what are the
requirements for the license of the plug-in ?
  </para>
</question>

<answer>
  <para>
You may not distribute the plug-in with the GPL application.
Distributing the plug-in alone, with the knowledge that it will be used
primarily by GPL software is a bit of an edge case.  We will not advise you
that it would be safe to do so, but we also will not advise you that it
would be absolutely forbidden.
  </para>
</answer>
</qandaentry>

<qandaentry>
  <question id="legal-safe-countries">
    <para>
Can someone in a country that does not have software patents distribute
code covered by US patents under the GPL to people in, for example, Norway ?
If he/she visits the US, can he/she be arrested ?
    </para>
  </question>

  <answer>
    <para>
Yes, he can.
No,  there are no criminal penalties for patent infringement in the US.
    </para>
  </answer>
</qandaentry>

<qandaentry>
  <question id="legal-unsafe-countries">
    <para>
Can someone from the US distribute software covered by
US patents under the GPL to people in Norway ? To people in the US ?
    </para>
  </question>

  <answer>
    <para>
This might infringe some patents, but the GPL would not forbid it
absent some actual restriction, such as a court judgement or agreement.
```

The US government is empowered to refuse importation of patent
infringing devices, including software.
        </para>
      </answer>
   </qandaentry>

   <qandaentry>
      <question id="legal-gpl-library-patents">
        <para>
There are a lot of GPL- or LGPL-licensed libraries that
handle media codecs which have patents. Take mad, an mp3 decoding library,
as an example. It is licensed under the GPL. In countries where patents
are valid, does this invalidate the GPL license for this project ?
        </para>
      </question>

      <answer>
        <para>
The mere existence of a patent which might read on the program does not
change anything. However, if a court judgement or other agreement
prevents you from distributing libmad under GPL terms, you can not
distribute it at all.
        </para>

        <para>
The GPL and LGPL say (sections 7 and 11):
<quote>If you cannot distribute so as to satisfy simultaneously your
obligations under this License and any other pertinent obligations, then
as a consequence you may not distribute the Library at all.</quote>
        </para>
      </answer>
   </qandaentry>

   <qandaentry>
      <question id="legal-gpl-court-judgment">
        <para>
So let's say there is a court judgement. Does this mean that the GPL license is
invalid for the project everywhere, or only in the countries where it conflicts
with the applicable patents ?
        </para>
      </question>

      <answer>
        <para>
The GPL operates on a per-action, not per-program basis. That is, if
you are in a country which has software patents, and a court tells you
that you cannot distribute (say) libmad in source code form, then you
cannot distribute libmad at all. This doesn't affect anyone else.

```
                </para>
              </answer>
            </qandaentry>


            <qandaentry>
              <question id="legal-gpl-and-binary">
                <para>
Patented decoding can be implemented in GStreamer either by
having a binary-only plugin do the decoding, or by writing a plugin
(with any applicable license) that links to a binary-only library.
Does this affect the licensing issues involved in regards to GPL/LGPL?
                </para>
              </question>


              <answer>
                <para>
No.
                </para>
              </answer>
            </qandaentry>


            <qandaentry>
              <question id="legal-gpl-patent-distribution">
                <para>
Is it correct that you cannot distribute the GPL mad library to
decode mp3's, *even* in the case where you have obtained a valid license
for decoding mp3 ?
                </para>
              </question>


              <answer>
                <para>
The only GPL-compatible patent licenses are those which are open to
all parties posessing copies of GPL software which practices the
teachings of the patent.
                </para>


                <para>
If you take a license which doesn't allow others to distribute
original or modified versions of libmad practicing the same patent
claims as the version you distribute, then you may not distribute at
all.
                </para>
              </answer>
            </qandaentry>
          </qandaset>
        </sect1>
```

```
/* GStreamer
* Copyright (C) <1999> Erik Walthinsen <omega@cse.ogi.edu>
*
* This library is free software; you can redistribute it and/or
* modify it under the terms of the GNU Library General Public
* License as published by the Free Software Foundation; either
* version 2 of the License, or (at your option) any later version.
*
* This library is distributed in the hope that it will be useful,
* but WITHOUT ANY WARRANTY; without even the implied warranty of
* MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.  See the GNU
* Library General Public License for more details.
*
* You should have received a copy of the GNU Library General Public
* License along with this library; if not, write to the
* Free Software Foundation, Inc., 59 Temple Place - Suite 330,
* Boston, MA 02111-1307, USA.
*/
/* GStreamer
* Copyright (C) 1999,2000 Erik Walthinsen <omega@cse.ogi.edu>
*                2000 Wim Taymans <wtay@chello.be>
*
* gstpadtemplate.c: Templates for pad creation
*
* This library is free software; you can redistribute it and/or
* modify it under the terms of the GNU Library General Public
* License as published by the Free Software Foundation; either
* version 2 of the License, or (at your option) any later version.
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* but WITHOUT ANY WARRANTY; without even the implied warranty of
* MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.  See the GNU
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*
* You should have received a copy of the GNU Library General Public
* License along with this library; if not, write to the
* Free Software Foundation, Inc., 59 Temple Place - Suite 330,
* Boston, MA 02111-1307, USA.
*/

/**
* SECTION:gstpadtemplate
* @short_description: Describe the media type of a pad.
* @see_also: #GstPad, #GstElementFactory
*
* Padtemplates describe the possible media types a pad or an elementfactory can
* handle. This allows for both inspection of handled types before loading the
* element plugin as well as identifying pads on elements that are not yet
```

```
* created (request or sometimes pads).
*
* Pad and PadTemplates have #GstCaps attached to it to describe the media type
* they are capable of dealing with. gst_pad_template_get_caps() or
* GST_PAD_TEMPLATE_CAPS() are used to get the caps of a padtemplate. It's not
* possible to modify the caps of a padtemplate after creation.
*
* PadTemplates have a #GstPadPresence property which identifies the lifetime
* of the pad and that can be retrieved with GST_PAD_TEMPLATE_PRESENCE(). Also
* the direction of the pad can be retrieved from the #GstPadTemplate with
* GST_PAD_TEMPLATE_DIRECTION().
*
* The GST_PAD_TEMPLATE_NAME_TEMPLATE () is important for GST_PAD_REQUEST pads
* because it has to be used as the name in the gst_element_get_request_pad()
* call to instantiate a pad from this template.
*
* Padtemplates can be created with gst_pad_template_new() or with
* gst_static_pad_template_get (), which creates a #GstPadTemplate from a
* #GstStaticPadTemplate that can be filled with the
* convenient GST_STATIC_PAD_TEMPLATE() macro.
*
* A padtemplate can be used to create a pad (see gst_pad_new_from_template()
* or gst_pad_new_from_static_template ()) or to add to an element class
* (see gst_element_class_add_pad_template ()).
*
* The following code example shows the code to create a pad from a padtemplate.
* <example>
* <title>Create a pad from a padtemplate</title>
*   <programlisting>
*   GstStaticPadTemplate my_template =
*   GST_STATIC_PAD_TEMPLATE (
*     "sink",          // the name of the pad
*     GST_PAD_SINK,    // the direction of the pad
*     GST_PAD_ALWAYS,  // when this pad will be present
*     GST_STATIC_CAPS (       // the capabilities of the padtemplate
*       "audio/x-raw-int, "
*         "channels = (int) [ 1, 6 ]"
*     )
*   );
*   void
*   my_method (void)
*   {
*     GstPad *pad;
*     pad = gst_pad_new_from_static_template (&amp;my_template, "sink");
*     ...
*   }
*   </programlisting>
* </example>
```

```
*
* The following example shows you how to add the padtemplate to an
* element class, this is usually done in the base_init of the class:
* <informalexample>
*   <programlisting>
*   static void
*   my_element_base_init (gpointer g_class)
*   {
*     GstElementClass *gstelement_class = GST_ELEMENT_CLASS (g_class);
*
*     gst_element_class_add_pad_template (gstelement_class,
*         gst_static_pad_template_get (&amp;my_template));
*   }
*   </programlisting>
* </informalexample>
*
* Last reviewed on 2006-02-14 (0.10.3)
*/

#include "gst_private.h"

#include "gstpad.h"
#include "gstpadtemplate.h"
#include "gstenumtypes.h"
#include "gstmarshal.h"
#include "gstutils.h"
#include "gstinfo.h"
#include "gsterror.h"
#include "gstvalue.h"

#define GST_CAT_DEFAULT GST_CAT_PADS

enum
{
 PROP_NAME_TEMPLATE = 1,
 PROP_DIRECTION,
 PROP_PRESENCE,
 PROP_CAPS
};

enum
{
 TEMPL_PAD_CREATED,
 /* FILL ME */
 LAST_SIGNAL
};

static GstObject *parent_class = NULL;
```

```
static guint gst_pad_template_signals[LAST_SIGNAL] = { 0 };

static void gst_pad_template_dispose (GObject * object);
static void gst_pad_template_set_property (GObject * object, guint prop_id,
   const GValue * value, GParamSpec * pspec);
static void gst_pad_template_get_property (GObject * object, guint prop_id,
   GValue * value, GParamSpec * pspec);


G_DEFINE_TYPE (GstPadTemplate, gst_pad_template, GST_TYPE_OBJECT);

static void
gst_pad_template_class_init (GstPadTemplateClass * klass)
{
 GObjectClass *gobject_class;
 GstObjectClass *gstobject_class;

 gobject_class = (GObjectClass *) klass;
 gstobject_class = (GstObjectClass *) klass;

 parent_class = g_type_class_peek_parent (klass);

 /**
  * GstPadTemplate::pad-created:
  * @pad_template: the object which received the signal.
  * @pad: the pad that was created.
  *
  * This signal is fired when an element creates a pad from this template.
  */
 gst_pad_template_signals[TEMPL_PAD_CREATED] =
    g_signal_new ("pad-created", G_TYPE_FROM_CLASS (klass), G_SIGNAL_RUN_LAST,
    G_STRUCT_OFFSET (GstPadTemplateClass, pad_created),
    NULL, NULL, gst_marshal_VOID__OBJECT, G_TYPE_NONE, 1, GST_TYPE_PAD);

 gobject_class->dispose = gst_pad_template_dispose;

 gobject_class->get_property = gst_pad_template_get_property;
 gobject_class->set_property = gst_pad_template_set_property;

 /**
  * GstPadTemplate:name-template
  *
  * The name template of the pad template.
  *
  * Since: 0.10.21
  */
 g_object_class_install_property (gobject_class, PROP_NAME_TEMPLATE,
    g_param_spec_string ("name-template", "Name template",
       "The name template of the pad template", NULL,
```

```
        G_PARAM_READWRITE | G_PARAM_CONSTRUCT_ONLY | G_PARAM_STATIC_STRINGS));

  /**
   * GstPadTemplate:direction
   *
   * The direction of the pad described by the pad template.
   *
   * Since: 0.10.21
   */
  g_object_class_install_property (gobject_class, PROP_DIRECTION,
      g_param_spec_enum ("direction", "Direction",
          "The direction of the pad described by the pad template",
          GST_TYPE_PAD_DIRECTION, GST_PAD_UNKNOWN,
          G_PARAM_READWRITE | G_PARAM_CONSTRUCT_ONLY | G_PARAM_STATIC_STRINGS));

  /**
   * GstPadTemplate:presence
   *
   * When the pad described by the pad template will become available.
   *
   * Since: 0.10.21
   */
  g_object_class_install_property (gobject_class, PROP_PRESENCE,
      g_param_spec_enum ("presence", "Presence",
          "When the pad described by the pad template will become available",
          GST_TYPE_PAD_PRESENCE, GST_PAD_ALWAYS,
          G_PARAM_READWRITE | G_PARAM_CONSTRUCT_ONLY | G_PARAM_STATIC_STRINGS));

  /**
   * GstPadTemplate:caps
   *
   * The capabilities of the pad described by the pad template.
   *
   * Since: 0.10.21
   */
  g_object_class_install_property (gobject_class, PROP_CAPS,
      g_param_spec_boxed ("caps", "Caps",
          "The capabilities of the pad described by the pad template",
          GST_TYPE_CAPS,
          G_PARAM_READWRITE | G_PARAM_CONSTRUCT_ONLY | G_PARAM_STATIC_STRINGS));

  gstobject_class->path_string_separator = "*";
}

static void
gst_pad_template_init (GstPadTemplate * templ)
{
  /* FIXME 0.11: Does anybody remember why this is here? If not, let's
```

```
 * change it for 0.11 and let gst_element_class_add_pad_template() for
 * example ref/sink the pad templates.
 */
/* We ensure that the pad template we're creating has a sunken reference.
 * Inconsistencies in pad templates being floating or sunken has caused
 * problems in the past with leaks, etc.
 *
 * For consistency, then, we only produce them  with sunken references
 * owned by the creator of the object
 */
if (GST_OBJECT_IS_FLOATING (templ)) {
  gst_object_ref_sink (templ);
}
}

static void
gst_pad_template_dispose (GObject * object)
{
GstPadTemplate *templ = GST_PAD_TEMPLATE (object);

  g_free (GST_PAD_TEMPLATE_NAME_TEMPLATE (templ));
if (GST_PAD_TEMPLATE_CAPS (templ)) {
  gst_caps_unref (GST_PAD_TEMPLATE_CAPS (templ));
}

  G_OBJECT_CLASS (parent_class)->dispose (object);
}

/* ALWAYS padtemplates cannot have conversion specifications (like src_%d),
* since it doesn't make sense.
* SOMETIMES padtemplates can do whatever they want, they are provided by the
* element.
* REQUEST padtemplates can be reverse-parsed (the user asks for 'sink1', the
* 'sink%d' template is automatically selected), so we need to restrict their
* naming.
*/
static gboolean
name_is_valid (const gchar * name, GstPadPresence presence)
{
const gchar *str;

if (presence == GST_PAD_ALWAYS) {
  if (strchr (name, '%')) {
    g_warning ("invalid name template %s: conversion specifications are not"
       " allowed for GST_PAD_ALWAYS padtemplates", name);
    return FALSE;
  }
} else if (presence == GST_PAD_REQUEST) {
```

```
    if ((str = strchr (name, '%')) && strchr (str + 1, '%')) {
      g_warning ("invalid name template %s: only one conversion specification"
          " allowed in GST_PAD_REQUEST padtemplate", name);
      return FALSE;
    }
    if (str && (*(str + 1) != 's' && *(str + 1) != 'd' && *(str + 1) != 'u')) {
      g_warning ("invalid name template %s: conversion specification must be of"
          " type '%%d', '%%u' or '%%s' for GST_PAD_REQUEST padtemplate", name);
      return FALSE;
    }
    if (str && (*(str + 2) != '\0')) {
      g_warning ("invalid name template %s: conversion specification must"
          " appear at the end of the GST_PAD_REQUEST padtemplate name", name);
      return FALSE;
    }
  }

  return TRUE;
}

GType
gst_static_pad_template_get_type (void)
{
  static GType staticpadtemplate_type = 0;

  if (G_UNLIKELY (staticpadtemplate_type == 0)) {
    staticpadtemplate_type =
        g_pointer_type_register_static ("GstStaticPadTemplate");
  }
  return staticpadtemplate_type;
}

/**
 * gst_static_pad_template_get:
 * @pad_template: the static pad template
 *
 * Converts a #GstStaticPadTemplate into a #GstPadTemplate.
 *
 * Returns: (transfer full): a new #GstPadTemplate.
 */
/* FIXME0.11: rename to gst_pad_template_new_from_static_pad_template() */
GstPadTemplate *
gst_static_pad_template_get (GstStaticPadTemplate * pad_template)
{
  GstPadTemplate *new;
  GstCaps *caps;

  if (!name_is_valid (pad_template->name_template, pad_template->presence))
```

```
  return NULL;

caps = gst_static_caps_get (&pad_template->static_caps);

new = g_object_new (gst_pad_template_get_type (),
    "name", pad_template->name_template,
    "name-template", pad_template->name_template,
    "direction", pad_template->direction,
    "presence", pad_template->presence, "caps", caps, NULL);

gst_caps_unref (caps);

return new;
}

/**
* gst_pad_template_new:
* @name_template: the name template.
* @direction: the #GstPadDirection of the template.
* @presence: the #GstPadPresence of the pad.
* @caps: (transfer full): a #GstCaps set for the template. The caps are
*    taken ownership of.
*
* Creates a new pad template with a name according to the given template
* and with the given arguments. This functions takes ownership of the provided
* caps, so be sure to not use them afterwards.
*
* Returns: (transfer full): a new #GstPadTemplate.
*/
GstPadTemplate *
gst_pad_template_new (const gchar * name_template,
  GstPadDirection direction, GstPadPresence presence, GstCaps * caps)
{
GstPadTemplate *new;

g_return_val_if_fail (name_template != NULL, NULL);
g_return_val_if_fail (caps != NULL, NULL);
g_return_val_if_fail (direction == GST_PAD_SRC
    || direction == GST_PAD_SINK, NULL);
g_return_val_if_fail (presence == GST_PAD_ALWAYS
    || presence == GST_PAD_SOMETIMES || presence == GST_PAD_REQUEST, NULL);

if (!name_is_valid (name_template, presence)) {
 gst_caps_unref (caps);
 return NULL;
}

new = g_object_new (gst_pad_template_get_type (),
```

```
    "name", name_template, "name-template", name_template,
    "direction", direction, "presence", presence, "caps", caps, NULL);

 gst_caps_unref (caps);

 return new;
}

/**
* gst_static_pad_template_get_caps:
* @templ: a #GstStaticPadTemplate to get capabilities of.
*
* Gets the capabilities of the static pad template.
*
* Returns: (transfer full): the #GstCaps of the static pad template.
* Unref after usage. Since the core holds an additional
* ref to the returned caps, use gst_caps_make_writable()
* on the returned caps to modify it.
*/
GstCaps *
gst_static_pad_template_get_caps (GstStaticPadTemplate * templ)
{
 g_return_val_if_fail (templ, NULL);

 return (GstCaps *) gst_static_caps_get (&templ->static_caps);
}

/**
* gst_pad_template_get_caps:
* @templ: a #GstPadTemplate to get capabilities of.
*
* Gets the capabilities of the pad template.
*
* Returns: (transfer none): the #GstCaps of the pad template. If you need to
*    keep a reference to the caps, take a ref (see gst_caps_ref ()).
*/
GstCaps *
gst_pad_template_get_caps (GstPadTemplate * templ)
{
 g_return_val_if_fail (GST_IS_PAD_TEMPLATE (templ), NULL);

 return GST_PAD_TEMPLATE_CAPS (templ);
}

/**
* gst_pad_template_pad_created:
* @templ: a #GstPadTemplate that has been created
* @pad:   the #GstPad that created it
```

```
*
* Emit the pad-created signal for this template when created by this pad.
*/
void
gst_pad_template_pad_created (GstPadTemplate * templ, GstPad * pad)
{
 g_signal_emit (templ, gst_pad_template_signals[TEMPL_PAD_CREATED], 0, pad);
}


static void
gst_pad_template_set_property (GObject * object, guint prop_id,
   const GValue * value, GParamSpec * pspec)
{
 /* these properties are all construct-only */
 switch (prop_id) {
  case PROP_NAME_TEMPLATE:
   GST_PAD_TEMPLATE_NAME_TEMPLATE (object) = g_value_dup_string (value);
   break;
  case PROP_DIRECTION:
   GST_PAD_TEMPLATE_DIRECTION (object) =
      (GstPadDirection) g_value_get_enum (value);
   break;
  case PROP_PRESENCE:
   GST_PAD_TEMPLATE_PRESENCE (object) =
      (GstPadPresence) g_value_get_enum (value);
   break;
  case PROP_CAPS:
   /* allow caps == NULL for backwards compatibility (ie. g_object_new()
    * called without any of the new properties) (FIXME 0.11) */
   if (g_value_get_boxed (value) != NULL) {
    GST_PAD_TEMPLATE_CAPS (object) =
       gst_caps_copy (g_value_get_boxed (value));
   }
   break;
  default:
   G_OBJECT_WARN_INVALID_PROPERTY_ID (object, prop_id, pspec);
   break;
 }
}


static void
gst_pad_template_get_property (GObject * object, guint prop_id, GValue * value,
   GParamSpec * pspec)
{
 /* these properties are all construct-only */
 switch (prop_id) {
  case PROP_NAME_TEMPLATE:
   g_value_set_string (value, GST_PAD_TEMPLATE_NAME_TEMPLATE (object));
```

```
    break;
  case PROP_DIRECTION:
    g_value_set_enum (value, GST_PAD_TEMPLATE_DIRECTION (object));
    break;
  case PROP_PRESENCE:
    g_value_set_enum (value, GST_PAD_TEMPLATE_PRESENCE (object));
    break;
  case PROP_CAPS:
    g_value_set_boxed (value, GST_PAD_TEMPLATE_CAPS (object));
    break;
  default:
    G_OBJECT_WARN_INVALID_PROPERTY_ID (object, prop_id, pspec);
    break;
 }
}
/* GStreamer
* Copyright (C) 1999,2000 Erik Walthinsen <omega@cse.ogi.edu>
*             2000 Wim Taymans <wim.taymans@chello.be>
*
* gstpadtemplate.h: Header for GstPadTemplate object
*
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* License as published by the Free Software Foundation; either
* version 2 of the License, or (at your option) any later version.
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* License along with this library; if not, write to the
* Free Software Foundation, Inc., 59 Temple Place - Suite 330,
* Boston, MA 02111-1307, USA.
*/


#ifndef __GST_PAD_TEMPLATE_H__
#define __GST_PAD_TEMPLATE_H__

#include <gst/gstconfig.h>

#include <gst/gstobject.h>
#include <gst/gstbuffer.h>
#include <gst/gstcaps.h>
#include <gst/gstevent.h>
#include <gst/gstquery.h>
```

```c
#include <gst/gsttask.h>

G_BEGIN_DECLS

/* FIXME: this awful circular dependency need to be resolved properly (see pad.h) */
/*typedef struct _GstPadTemplate GstPadTemplate; */
typedef struct _GstPadTemplateClass GstPadTemplateClass;
typedef struct _GstStaticPadTemplate GstStaticPadTemplate;

#define GST_TYPE_STATIC_PAD_TEMPLATE (gst_static_pad_template_get_type ())

#define GST_TYPE_PAD_TEMPLATE  (gst_pad_template_get_type ())
#define GST_PAD_TEMPLATE(obj)  (G_TYPE_CHECK_INSTANCE_CAST ((obj),
GST_TYPE_PAD_TEMPLATE,GstPadTemplate))
#define GST_PAD_TEMPLATE_CLASS(klass) (G_TYPE_CHECK_CLASS_CAST ((klass),
GST_TYPE_PAD_TEMPLATE,GstPadTemplateClass))
#define GST_IS_PAD_TEMPLATE(obj) (G_TYPE_CHECK_INSTANCE_TYPE ((obj),
GST_TYPE_PAD_TEMPLATE))
#define GST_IS_PAD_TEMPLATE_CLASS(klass) (G_TYPE_CHECK_CLASS_TYPE ((klass),
GST_TYPE_PAD_TEMPLATE))

/**
* GstPadPresence:
* @GST_PAD_ALWAYS: the pad is always available
* @GST_PAD_SOMETIMES: the pad will become available depending on the media stream
* @GST_PAD_REQUEST: the pad is only available on request with
*  gst_element_get_request_pad().
*
* Indicates when this pad will become available.
*/
typedef enum {
 GST_PAD_ALWAYS,
 GST_PAD_SOMETIMES,
 GST_PAD_REQUEST
} GstPadPresence;

/**
* GST_PAD_TEMPLATE_NAME_TEMPLATE:
* @templ: the template to query
*
* Get the nametemplate of the padtemplate.
*/
#define GST_PAD_TEMPLATE_NAME_TEMPLATE(templ) (((GstPadTemplate *)(templ))->name_template)

/**
* GST_PAD_TEMPLATE_DIRECTION:
* @templ: the template to query
*
```

```
* Get the #GstPadDirection of the padtemplate.
*/
#define GST_PAD_TEMPLATE_DIRECTION(templ) (((GstPadTemplate *)(templ))->direction)


/**
* GST_PAD_TEMPLATE_PRESENCE:
* @templ: the template to query
*
* Get the #GstPadPresence of the padtemplate.
*/
#define GST_PAD_TEMPLATE_PRESENCE(templ) (((GstPadTemplate *)(templ))->presence)


/**
* GST_PAD_TEMPLATE_CAPS:
* @templ: the template to query
*
* Get a handle to the padtemplate #GstCaps
*/
#define GST_PAD_TEMPLATE_CAPS(templ)  (((GstPadTemplate *)(templ))->caps)


/**
* GstPadTemplateFlags:
* @GST_PAD_TEMPLATE_FIXED: the padtemplate has no variable properties
* @GST_PAD_TEMPLATE_FLAG_LAST: first flag that can be used by subclasses.
*
* Flags for the padtemplate
*/
typedef enum {
 /* FIXME0.11: this is not used and the purpose is unclear */
 GST_PAD_TEMPLATE_FIXED      = (GST_OBJECT_FLAG_LAST << 0),
 /* padding */
 GST_PAD_TEMPLATE_FLAG_LAST   = (GST_OBJECT_FLAG_LAST << 4)
} GstPadTemplateFlags;


/**
* GST_PAD_TEMPLATE_IS_FIXED:
* @templ: the template to query
*
* Check if the properties of the padtemplate are fixed
*/
#define GST_PAD_TEMPLATE_IS_FIXED(templ) (GST_OBJECT_FLAG_IS_SET(templ,
GST_PAD_TEMPLATE_FIXED))


/**
* GstPadTemplate:
*
* The padtemplate object.
*/
```

```
struct _GstPadTemplate {
GstObject    object;

 gchar          *name_template;
 GstPadDirection  direction;
 GstPadPresence   presence;
 GstCaps   *caps;

 gpointer _gst_reserved[GST_PADDING];
};

struct _GstPadTemplateClass {
 GstObjectClass   parent_class;

 /* signal callbacks */
 void (*pad_created) (GstPadTemplate *templ, GstPad *pad);

 gpointer _gst_reserved[GST_PADDING];
};

/**
* GstStaticPadTemplate:
* @name_template: the name of the template
* @direction: the direction of the template
* @presence: the presence of the template
* @static_caps: the caps of the template.
*
* Structure describing the #GstStaticPadTemplate.
*/
struct _GstStaticPadTemplate {
 const gchar     *name_template;
 GstPadDirection  direction;
 GstPadPresence   presence;
 GstStaticCaps    static_caps;
};

/**
* GST_STATIC_PAD_TEMPLATE:
* @padname: the name template of the pad
* @dir: the GstPadDirection of the pad
* @pres: the GstPadPresence of the pad
* @caps: the GstStaticCaps of the pad
*
* Convenience macro to fill the values of a GstStaticPadTemplate
* structure.
*/
#define GST_STATIC_PAD_TEMPLATE(padname, dir, pres, caps) \
{ \
```

```
  /* name_template */   padname, \
  /* direction */       dir, \
  /* presence */        pres, \
  /* caps */            caps \
}


/* templates and factories */
GType   gst_pad_template_get_type  (void);
GType   gst_static_pad_template_get_type (void);


GstPadTemplate*  gst_pad_template_new   (const gchar *name_template,
       GstPadDirection direction, GstPadPresence presence,
       GstCaps *caps) G_GNUC_MALLOC;


GstPadTemplate * gst_static_pad_template_get        (GstStaticPadTemplate *pad_template);
GstCaps*  gst_static_pad_template_get_caps (GstStaticPadTemplate *templ);
GstCaps*  gst_pad_template_get_caps  (GstPadTemplate *templ);


void            gst_pad_template_pad_created        (GstPadTemplate * templ, GstPad * pad);


G_END_DECLS


#endif /* __GST_PAD_TEMPLATE_H__ */
/*
* Check: a unit test framework for C
* Copyright (C) 2001,2002 Arien Malec
*
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* modify it under the terms of the GNU Lesser General Public
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*
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* You should have received a copy of the GNU Lesser General Public
* License along with this library; if not, write to the
* Free Software Foundation, Inc., 59 Temple Place - Suite 330,
* Boston, MA 02111-1307, USA.
*/


#ifndef CHECK_IMPL_H
#define CHECK_IMPL_H


/* This header should be included by any module that needs
```

```
  to know the implementation details of the check structures
   Include stdio.h & list.h before this header
*/

typedef struct TF {
 TFun fn;
 int loop_start;
 int loop_end;
 const char *name;
 int signal;
 unsigned char allowed_exit_value;
} TF;

struct Suite {
 const char *name;
 List *tclst; /* List of test cases */
};

typedef struct Fixture
{
 int ischecked;
 SFun fun;
} Fixture;

struct TCase {
 const char *name;
 int timeout;
 List *tflst; /* list of test functions */
 List *unch_sflst;
 List *unch_tflst;
 List *ch_sflst;
 List *ch_tflst;
};

typedef struct TestStats {
 int n_checked;
 int n_failed;
 int n_errors;
} TestStats;

struct TestResult {
 enum test_result rtype;     /* Type of result */
 enum ck_result_ctx ctx;     /* When the result occurred */
 char *file;   /* File where the test occured */
 int line;      /* Line number where the test occurred */
 int iter;      /* The iteration value for looping tests */
 const char *tcname; /* Test case that generated the result */
 const char *tname;  /* Test that generated the result */
```

```
 char *msg;    /* Failure message */
};

TestResult *tr_create(void);
void tr_reset(TestResult *tr);

enum cl_event {
 CLINITLOG_SR,
 CLENDLOG_SR,
 CLSTART_SR,
 CLSTART_S,
 CLEND_SR,
 CLEND_S,
 CLSTART_T, /* A test case is about to run */
 CLEND_T
};

typedef void (*LFun) (SRunner *, FILE*, enum print_output,
      void *, enum cl_event);

typedef struct Log {
 FILE *lfile;
 LFun lfun;
 int close;
 enum print_output mode;
} Log;

struct SRunner {
 List *slst; /* List of Suite objects */
 TestStats *stats; /* Run statistics */
 List *resultlst; /* List of unit test results */
 const char *log_fname; /* name of log file */
 const char *xml_fname; /* name of xml output file */
 List *loglst; /* list of Log objects */
 enum fork_status fstat; /* controls if suites are forked or not
      NOTE: Don't use this value directly,
      instead use srunner_fork_status */
};


void set_fork_status(enum fork_status fstat);
enum fork_status cur_fork_status (void);

#endif /* CHECK_IMPL_H */
/* GStreamer
 * Copyright (C) 1999,2000 Erik Walthinsen <omega@cse.ogi.edu>
 *            2000 Wim Taymans <wtay@chello.be>
 *            2005 Wim Taymans <wim@fluendo.com>
```

```
*           2005 David Schleef <ds@schleef.org>
*
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*
* You should have received a copy of the GNU Library General Public
* License along with this library; if not, write to the
* Free Software Foundation, Inc., 59 Temple Place - Suite 330,
* Boston, MA 02111-1307, USA.
*/
/**
* SECTION:element-capsfilter
*
* The element does not modify data as such, but can enforce limitations on the
* data format.
*
* <refsect2>
* <title>Example launch line</title>
* |[
* gst-launch videotestsrc ! video/x-raw-gray ! ffmpegcolorspace ! autovideosink
* ]| Limits acceptable video from videotestsrc to be grayscale.
* </refsect2>
*/

#ifdef HAVE_CONFIG_H
#include "config.h"
#endif

#include "../../gst/gst-i18n-lib.h"
#include "gstcapsfilter.h"

enum
{
 PROP_0,
 PROP_FILTER_CAPS
};


static GstStaticPadTemplate sinktemplate = GST_STATIC_PAD_TEMPLATE ("sink",
  GST_PAD_SINK,
  GST_PAD_ALWAYS,
```

```
      GST_STATIC_CAPS_ANY);

static GstStaticPadTemplate srctemplate = GST_STATIC_PAD_TEMPLATE ("src",
   GST_PAD_SRC,
   GST_PAD_ALWAYS,
   GST_STATIC_CAPS_ANY);


GST_DEBUG_CATEGORY_STATIC (gst_capsfilter_debug);
#define GST_CAT_DEFAULT gst_capsfilter_debug

#define _do_init(bla) \
   GST_DEBUG_CATEGORY_INIT (gst_capsfilter_debug, "capsfilter", 0, \
   "capsfilter element");

GST_BOILERPLATE_FULL (GstCapsFilter, gst_capsfilter, GstBaseTransform,
   GST_TYPE_BASE_TRANSFORM, _do_init);


static void gst_capsfilter_set_property (GObject * object, guint prop_id,
   const GValue * value, GParamSpec * pspec);
static void gst_capsfilter_get_property (GObject * object, guint prop_id,
   GValue * value, GParamSpec * pspec);
static void gst_capsfilter_dispose (GObject * object);

static GstCaps *gst_capsfilter_transform_caps (GstBaseTransform * base,
   GstPadDirection direction, GstCaps * caps);
static gboolean gst_capsfilter_accept_caps (GstBaseTransform * base,
   GstPadDirection direction, GstCaps * caps);
static GstFlowReturn gst_capsfilter_transform_ip (GstBaseTransform * base,
   GstBuffer * buf);
static GstFlowReturn gst_capsfilter_prepare_buf (GstBaseTransform * trans,
   GstBuffer * input, gint size, GstCaps * caps, GstBuffer ** buf);

static void
gst_capsfilter_base_init (gpointer g_class)
{
 GstElementClass *gstelement_class = GST_ELEMENT_CLASS (g_class);

 gst_element_class_set_details_simple (gstelement_class,
    "CapsFilter",
    "Generic",
    "Pass data without modification, limiting formats",
    "David Schleef <ds@schleef.org>");
 gst_element_class_add_pad_template (gstelement_class,
    gst_static_pad_template_get (&srctemplate));
 gst_element_class_add_pad_template (gstelement_class,
    gst_static_pad_template_get (&sinktemplate));
```

```c
}

static void
gst_capsfilter_class_init (GstCapsFilterClass * klass)
{
 GObjectClass *gobject_class;
 GstBaseTransformClass *trans_class;

 gobject_class = G_OBJECT_CLASS (klass);
 gobject_class->set_property = gst_capsfilter_set_property;
 gobject_class->get_property = gst_capsfilter_get_property;
 gobject_class->dispose = gst_capsfilter_dispose;

 g_object_class_install_property (gobject_class, PROP_FILTER_CAPS,
    g_param_spec_boxed ("caps", _("Filter caps"),
      _("Restrict the possible allowed capabilities (NULL means ANY). "
        "Setting this property takes a reference to the supplied GstCaps "
        "object."), GST_TYPE_CAPS,
      G_PARAM_READWRITE | G_PARAM_STATIC_STRINGS));

 trans_class = GST_BASE_TRANSFORM_CLASS (klass);
 trans_class->transform_caps =
    GST_DEBUG_FUNCPTR (gst_capsfilter_transform_caps);
 trans_class->transform_ip = GST_DEBUG_FUNCPTR (gst_capsfilter_transform_ip);
 trans_class->accept_caps = GST_DEBUG_FUNCPTR (gst_capsfilter_accept_caps);
 trans_class->prepare_output_buffer =
    GST_DEBUG_FUNCPTR (gst_capsfilter_prepare_buf);
}

static void
gst_capsfilter_init (GstCapsFilter * filter, GstCapsFilterClass * g_class)
{
 GstBaseTransform *trans = GST_BASE_TRANSFORM (filter);
 gst_base_transform_set_gap_aware (trans, TRUE);
 filter->filter_caps = gst_caps_new_any ();
}

static gboolean
copy_func (GQuark field_id, const GValue * value, GstStructure * dest)
{
 gst_structure_id_set_value (dest, field_id, value);

 return TRUE;
}

static void
gst_capsfilter_set_property (GObject * object, guint prop_id,
   const GValue * value, GParamSpec * pspec)
```

```
{
  GstCapsFilter *capsfilter = GST_CAPSFILTER (object);

  switch (prop_id) {
    case PROP_FILTER_CAPS:{
      GstCaps *new_caps;
      GstCaps *old_caps, *suggest, *nego;
      const GstCaps *new_caps_val = gst_value_get_caps (value);

      if (new_caps_val == NULL) {
        new_caps = gst_caps_new_any ();
      } else {
        new_caps = (GstCaps *) new_caps_val;
        gst_caps_ref (new_caps);
      }

      GST_OBJECT_LOCK (capsfilter);
      old_caps = capsfilter->filter_caps;
      capsfilter->filter_caps = new_caps;
      GST_OBJECT_UNLOCK (capsfilter);

      gst_caps_unref (old_caps);

      GST_DEBUG_OBJECT (capsfilter, "set new caps %" GST_PTR_FORMAT, new_caps);

      /* filter the currently negotiated format against the new caps */
      GST_OBJECT_LOCK (GST_BASE_TRANSFORM_SINK_PAD (object));
      nego = GST_PAD_CAPS (GST_BASE_TRANSFORM_SINK_PAD (object));
      if (nego) {
        GST_DEBUG_OBJECT (capsfilter, "we had negotiated caps %" GST_PTR_FORMAT,
            nego);

        if (G_UNLIKELY (gst_caps_is_any (new_caps))) {
          GST_DEBUG_OBJECT (capsfilter, "not settings any suggestion");

          suggest = NULL;
        } else {
          GstStructure *s1, *s2;

          /* first check if the name is the same */
          s1 = gst_caps_get_structure (nego, 0);
          s2 = gst_caps_get_structure (new_caps, 0);

          if (gst_structure_get_name_id (s1) == gst_structure_get_name_id (s2)) {
            /* same name, copy all fields from the new caps into the previously
             * negotiated caps */
            suggest = gst_caps_copy (nego);
            s1 = gst_caps_get_structure (suggest, 0);
```

```
        gst_structure_foreach (s2, (GstStructureForeachFunc) copy_func, s1);
        GST_DEBUG_OBJECT (capsfilter, "copied structure fields");
      } else {
        GST_DEBUG_OBJECT (capsfilter, "different structure names");
        /* different names, we can only suggest the complete caps */
        suggest = gst_caps_copy (new_caps);
      }
    }
  } else {
    GST_DEBUG_OBJECT (capsfilter, "no negotiated caps");
    /* Suggest the new caps, we can't just rely on _get_caps as this may
     * already be called at this point even though no buffer has been
     * pushed yet */
    suggest = gst_caps_copy (new_caps);
  }
  GST_OBJECT_UNLOCK (GST_BASE_TRANSFORM_SINK_PAD (object));

  GST_DEBUG_OBJECT (capsfilter, "suggesting new caps %" GST_PTR_FORMAT,
      suggest);
  gst_base_transform_suggest (GST_BASE_TRANSFORM (object), suggest, 0);
  if (suggest)
    gst_caps_unref (suggest);

  break;
  }
  default:
    G_OBJECT_WARN_INVALID_PROPERTY_ID (object, prop_id, pspec);
    break;
 }
}

static void
gst_capsfilter_get_property (GObject * object, guint prop_id, GValue * value,
  GParamSpec * pspec)
{
 GstCapsFilter *capsfilter = GST_CAPSFILTER (object);

 switch (prop_id) {
  case PROP_FILTER_CAPS:
    GST_OBJECT_LOCK (capsfilter);
    gst_value_set_caps (value, capsfilter->filter_caps);
    GST_OBJECT_UNLOCK (capsfilter);
    break;
  default:
    G_OBJECT_WARN_INVALID_PROPERTY_ID (object, prop_id, pspec);
    break;
 }
}
```

```c
static void
gst_capsfilter_dispose (GObject * object)
{
  GstCapsFilter *filter = GST_CAPSFILTER (object);

  gst_caps_replace (&filter->filter_caps, NULL);

  G_OBJECT_CLASS (parent_class)->dispose (object);
}

static GstCaps *
gst_capsfilter_transform_caps (GstBaseTransform * base,
    GstPadDirection direction, GstCaps * caps)
{
  GstCapsFilter *capsfilter = GST_CAPSFILTER (base);
  GstCaps *ret, *filter_caps;

  GST_OBJECT_LOCK (capsfilter);
  filter_caps = gst_caps_ref (capsfilter->filter_caps);
  GST_OBJECT_UNLOCK (capsfilter);

  ret = gst_caps_intersect (caps, filter_caps);
  GST_DEBUG_OBJECT (capsfilter, "input:     %" GST_PTR_FORMAT, caps);
  GST_DEBUG_OBJECT (capsfilter, "filter:    %" GST_PTR_FORMAT, filter_caps);
  GST_DEBUG_OBJECT (capsfilter, "intersect: %" GST_PTR_FORMAT, ret);

  gst_caps_unref (filter_caps);

  return ret;
}

static gboolean
gst_capsfilter_accept_caps (GstBaseTransform * base,
    GstPadDirection direction, GstCaps * caps)
{
  GstCapsFilter *capsfilter = GST_CAPSFILTER (base);
  GstCaps *filter_caps;
  gboolean ret;

  GST_OBJECT_LOCK (capsfilter);
  filter_caps = gst_caps_ref (capsfilter->filter_caps);
  GST_OBJECT_UNLOCK (capsfilter);

  ret = gst_caps_can_intersect (caps, filter_caps);
  GST_DEBUG_OBJECT (capsfilter, "can intersect: %d", ret);
  if (ret) {
    /* if we can intersect, see if the other end also accepts */
```

```
  if (direction == GST_PAD_SRC)
    ret = gst_pad_peer_accept_caps (GST_BASE_TRANSFORM_SINK_PAD (base), caps);
  else
    ret = gst_pad_peer_accept_caps (GST_BASE_TRANSFORM_SRC_PAD (base), caps);
  GST_DEBUG_OBJECT (capsfilter, "peer accept: %d", ret);
 }

 gst_caps_unref (filter_caps);

 return ret;
}

static GstFlowReturn
gst_capsfilter_transform_ip (GstBaseTransform * base, GstBuffer * buf)
{
 /* No actual work here. It's all done in the prepare output buffer
  * func. */
 return GST_FLOW_OK;
}

/* Output buffer preparation... if the buffer has no caps, and
 * our allowed output caps is fixed, then give the caps to the
 * buffer.
 * This ensures that outgoing buffers have caps if we can, so
 * that pipelines like:
 *   gst-launch filesrc location=rawsamples.raw !
 *      audio/x-raw-int,width=16,depth=16,rate=48000,channels=2,
 *      endianness=4321,signed='(boolean)'true ! alsasink
 * will work.
 */
static GstFlowReturn
gst_capsfilter_prepare_buf (GstBaseTransform * trans, GstBuffer * input,
    gint size, GstCaps * caps, GstBuffer ** buf)
{
 GstFlowReturn ret = GST_FLOW_OK;

 if (GST_BUFFER_CAPS (input) != NULL) {
   /* Output buffer already has caps */
   GST_LOG_OBJECT (trans, "Input buffer already has caps (implicitly fixed)");
   /* FIXME : Move this behaviour to basetransform. The given caps are the ones
    * of the source pad, therefore our outgoing buffers should always have
    * those caps. */
   if (GST_BUFFER_CAPS (input) != caps) {
     /* caps are different, make a metadata writable output buffer to set
      * caps */
     if (gst_buffer_is_metadata_writable (input)) {
       /* input is writable, just set caps and use this as the output */
       *buf = input;
```

```
      gst_buffer_set_caps (*buf, caps);
      gst_buffer_ref (input);
    } else {
      GST_DEBUG_OBJECT (trans, "Creating sub-buffer and setting caps");
       *buf = gst_buffer_create_sub (input, 0, GST_BUFFER_SIZE (input));
      gst_buffer_set_caps (*buf, caps);
    }
  } else {
    /* caps are right, just use a ref of the input as the outbuf */
    *buf = input;
    gst_buffer_ref (input);
  }
} else {
  /* Buffer has no caps. See if the output pad only supports fixed caps */
  GstCaps *out_caps;

  out_caps = GST_PAD_CAPS (trans->srcpad);

  if (out_caps != NULL) {
    gst_caps_ref (out_caps);
  } else {
    out_caps = gst_pad_get_allowed_caps (trans->srcpad);
    g_return_val_if_fail (out_caps != NULL, GST_FLOW_ERROR);
  }

  out_caps = gst_caps_make_writable (out_caps);
  gst_caps_do_simplify (out_caps);

  if (gst_caps_is_fixed (out_caps) && !gst_caps_is_empty (out_caps)) {
    GST_DEBUG_OBJECT (trans, "Have fixed output caps %"
        GST_PTR_FORMAT " to apply to buffer with no caps", out_caps);
    if (gst_buffer_is_metadata_writable (input)) {
      gst_buffer_ref (input);
      *buf = input;
    } else {
      GST_DEBUG_OBJECT (trans, "Creating sub-buffer and setting caps");
      *buf = gst_buffer_create_sub (input, 0, GST_BUFFER_SIZE (input));
    }
    GST_BUFFER_CAPS (*buf) = out_caps;

    if (GST_PAD_CAPS (trans->srcpad) == NULL)
      gst_pad_set_caps (trans->srcpad, out_caps);
  } else {
    gchar *caps_str = gst_caps_to_string (out_caps);

    GST_DEBUG_OBJECT (trans, "Cannot choose caps. Have unfixed output caps %"
        GST_PTR_FORMAT, out_caps);
    gst_caps_unref (out_caps);
```

```
    ret = GST_FLOW_ERROR;
    GST_ELEMENT_ERROR (trans, STREAM, FORMAT,
       ("Filter caps do not completely specify the output format"),
       ("Output caps are unfixed: %s", caps_str));
    g_free (caps_str);
  }
 }

 return ret;
}
/* GStreamer
* Copyright (C) 1999,2000 Erik Walthinsen <omega@cse.ogi.edu>
*               2000 Wim Taymans <wtay@chello.be>
*
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* Boston, MA 02111-1307, USA.
*/



#ifndef __GST_CAPSFILTER_H__
#define __GST_CAPSFILTER_H__



#include <gst/gst.h>
#include <gst/base/gstbasetransform.h>

G_BEGIN_DECLS

#define GST_TYPE_CAPSFILTER \
 (gst_capsfilter_get_type())
#define GST_CAPSFILTER(obj) \
 (G_TYPE_CHECK_INSTANCE_CAST((obj),GST_TYPE_CAPSFILTER,GstCapsFilter))
#define GST_CAPSFILTER_CLASS(klass) \
```

```
 (G_TYPE_CHECK_CLASS_CAST((klass),GST_TYPE_CAPSFILTER,GstCapsFilterClass))
#define GST_IS_CAPSFILTER(obj) \
 (G_TYPE_CHECK_INSTANCE_TYPE((obj),GST_TYPE_CAPSFILTER))
#define GST_IS_CAPSFILTER_CLASS(klass) \
 (G_TYPE_CHECK_CLASS_TYPE((klass),GST_TYPE_CAPSFILTER))


typedef struct _GstCapsFilter GstCapsFilter;
typedef struct _GstCapsFilterClass GstCapsFilterClass;


/**
* GstCapsFilter:
*
* The opaque #GstCapsFilter data structure.
*/
struct _GstCapsFilter {
 GstBaseTransform trans;

 GstCaps *filter_caps;
};

struct _GstCapsFilterClass {
 GstBaseTransformClass trans_class;
};

GType gst_capsfilter_get_type (void);

G_END_DECLS

#endif /* __GST_CAPSFILTER_H__ */
```

1.6 gstreamer-plugins-bad 0.10.22.1

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its purpose remains meaningful.

(For example, a function in a library to compute square roots has
a purpose that is entirely well-defined independent of the
application. Therefore, Subsection 2d requires that any
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derivative work of the Library even though the source code is not.
Whether this is true is especially significant if the work can be
linked without the Library, or if the work is itself a library. The
threshold for this to be true is not precisely defined by law.

 If such an object file uses only numerical parameters, data
structure layouts and accessors, and small macros and small inline
functions (ten lines or less in length), then the use of the object
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convey the exclusion of warranty; and each file should have at least the
"copyright" line and a pointer to where the full notice is found.

  <one line to give the library's name and a brief idea of what it does.>
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  Software Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

 Yoyodyne, Inc., hereby disclaims all copyright interest in the
 library `Frob' (a library for tweaking knobs) written by James Random Hacker.

 <signature of Ty Coon>, 1 April 1990
 Ty Coon, President of Vice

That's all there is to it!
/* GStreamer
 * Copyright (C) <1999> Erik Walthinsen <omega@cse.ogi.edu>
 *
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* Boston, MA 02111-1307, USA.
*/

Disclaimer: The GStreamer team makes a real effort to make sure that
the information in this file is as up-to-date and accurate as possible.
However, this file may contain errors and omissions. Some dependant
libraries change their licensing from version-to-version and some of
the libraries listed here as LGPL were under the GPL license in
older releases. Distributions which include GStreamer are responsible
for ensuring that plugins are used in accordance with licensing terms
and other laws.

GStreamer is developed under the terms of the LGPL (see LICENSE file for details).
Some of our plugins however rely on libraries which are available under other
licenses. This means that if you are using an application which has a non-GPL
compatible license, for instance a closed-source application with GStreamer
you have to make sure not to use GPL linked or derived plugins. When using
GPL linked plugins GStreamer is for all practical reasons under the GPL itself.

The plugins which use a GPL library are as follows:

a52dec   liba52   (http://liba52.sourceforge.net/)
aasink   aalib   (http://sourceforge.net/projects/aa-project/)
cdparanoia   libcdparanoia   (http://www.xiph.org/paranoia/)
dtsdec   libdts   (http://www.videolan.org/dtsdec.html)
dvdnavsrc   libdvdnav   (http://dvd.sourceforge.net/)
dxr3   (http://dxr3.sourceforge.net/)
icecastsend   libshout   (http://www.icecast.org)
mad   libmad   (http://www.mars.org/home/rob/proj/mpeg/)
mpeg2dec   libmpeg2   (http://libmpeg2.sourceforge.net/)
mpeg2enc   libmpeg2enc   (http://mjpeg.sourceforge.net/)
mplex   libmplex   (http://mjpeg.sourceforge.net/)
siddec   libsidplay 1.36 (http://www.geocities.com/SiliconValley/Lakes/5147/sidplay/,
                                http://sourceforge.net/projects/sidplay2/)
trm   libmusicbrainz (http://www.musicbrainz.org/)
xine   libxine   (http://xinehq.de/)
xvid   libxvidcore   (http://www.xvid.org/)

Plugins derived from GPL code are as follows:

dvdreadsrc   libdvdread   (http://www.dtek.chalmers.se/groups/dvd/)

monoscope   None   (Algorithm by Ralph Loader, Joerg Walter,
                    Richard Boulton, and Andy Lo A Foe)

rtjpeg   None   (Erik Walthinsen's algorithm)

rtp   None   (http://www.linphone.org/ortp/)

synaesthesia   (http://www.logarithmic.net/pfh/synaesthesia)

system_encode   None   (Algorithm by Chrisoph Moar, Wim Tayman's and
                    Erik Walthinsen)

vbidec   None   (Algorithm by Billy Biggs, Doug Bell,
                    Erik Walthinsen and David I. Lehn)

Plugins which use a LGPL library are as follows:

alsa   alsa   (http://alsa-project.org/)

artsdsink   aRts   (http://arts-project.org/)

cacasink   libcaca   (http://sam.zoy.org/projects/libcaca/)

colorspacelcs   libcolorspace

dvdec   libdv   (http://libdv.sourceforge.net/)

esdmon,esdsink libesd   (ftp.gnome.org/pub/GNOME/stable/sources/esound/)

faac   libfaac   (http://www.audiocoding.com/modules/mydownloads/)

fameenc   libfame   (http://fame.sourceforge.net/)

ffmpeg   ffmpeg   (http://ffmpeg.sourceforge.net/)

gdkpixbuf   GTK+   (http://www.gtk.org/)

gnomevfs   gnome-vfs   (ftp.gnome.org//pub/GNOME/stable/sources/gnome-vfs/)

gst_arts   aRts   (http://arts-project.org/)

gst1394   libraw1394   (http://www.linux1394.org/)

gstaf   libaudiofile   (http://www.68k.org/~michael/audiofile/)

gstsf   libsndfile   (http://www.mega-nerd.com/libsndfile/)

hermescolorspace Hermes   (http://www.clanlib.org/hermes/)

kio   KDE   (http://www.kde.org/)

ladspa   (http://www.ladspa.org/)

lame   libmp3lame   (http://lame.sourceforge.net/)

libvisual   libvisual   (http://libvisual.sourceforge.net/)

matroska   (http://www.matroska.org/)

mikmod   libmikmod   (http://mikmod.raphnet.net/)

ossaudio   (http://www.opensound.com/)

qcamsrc

rfbenc   librfb

sdlvideosink   libsdl   (http://www.libsdl.org/)

shout2send   libshout2   (http://www.icecast.org)

smoothwave

swfdec   (http://swfdec.sourceforge.net/)

tarkin   (http://svn.xiph.org/trunk/tarkin/)

textoverlay   pango   (http://www.pango.org/)

dirac   (http://www.bbc.co.uk/rd/projects/dirac/)

effectv (Our ports was relicensed)(http://effectv.sourceforge.net/)

musepack   (http://www.musepack.net/)

kate   libtiger   (http://libtiger.googlecode.com/)
                    Optional, only for the tiger element

Plugins which use a BSD covered library are as follows:

ogg   libogg/libvorbis (http://www.xiph.org/ogg/vorbis/)
vorbis   libogg/libvorbis (http://www.xiph.org/ogg/vorbis/)
gsttheora   libtheora   (http://www.theora.org/)
speex   (http://www.speex.org/)
flac   libFLAC   (http://flac.sourceforge.net/)
kate   libkate   (http://libkate.googlecode.com/)

Plugins based on libraries with other free licenses:

ximagesink   libXv
xvimagesink   libXv
- license: MIT X11 / X Consortium license

gsm   libgsm
- license   MIT license http://kbs.cs.tu-berlin.de/~jutta/toast.html

festival   (http://www.cstr.ed.ac.uk/projects/festival/)
- license: http://www.cstr.ed.ac.uk/projects/festival/freecopyright.shtml

jpeg   (http://www.ijg.org/)
- license: IJG license

nas   (http://radscan.com/nas.html)
- license: NAS license

snapshot   libpng   (http://www.libpng.org/pub/png/)
- license: PNG license

mngdec/mngenc libmng   (http://gjuyn.xs4all.nl/libmng)
- license   PNG license

Plugins using non-free libraries:
divxdec, divxenc   (http://www.divx.com/)
osxaudio   (http://www.apple.com/macosx/)
sunaudiosink   (http://www.sun.com/)

Unsure:

faad   libfaad   (http://www.audiocoding.com/)
faad's license depends on its major version :
 - for FAAD1 : it is LGPL
 - for FAAD2 : it is GPL
look at these pages for more information on licenses :
http://www.audiocoding.com/modules/wiki/?page=FAAD2
http://www.audiocoding.com/modules/wiki/?page=FAAC

by default, GStreamer faad plugin would compile against FAAD2 if available.

it falls back to FAAD1 if not.

```
/* GStreamer
 * Copyright (C) <1999> Erik Walthinsen <omega@cse.ogi.edu>
 * Copyright (C) 2003,2004 David A. Schleef <ds@schleef.org>
 *
 * This library is free software; you can redistribute it and/or
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 * version 2 of the License, or (at your option) any later version.
 *
 * This library is distributed in the hope that it will be useful,
 * but WITHOUT ANY WARRANTY; without even the implied warranty of
 * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.  See the GNU
 * Library General Public License for more details.
 *
 * You should have received a copy of the GNU Library General Public
 * License along with this library; if not, write to the
 * Free Software Foundation, Inc., 59 Temple Place - Suite 330,
 * Boston, MA 02111-1307, USA.
 */
/* Element-Checklist-Version: 5 */


#ifdef HAVE_CONFIG_H
#include "config.h"
#endif
#include <string.h>
#include <math.h>

/*#define DEBUG_ENABLED */
#include "gstaudioresample.h"
#include <gst/audio/audio.h>

GST_DEBUG_CATEGORY_STATIC (audioresample_debug);
#define GST_CAT_DEFAULT audioresample_debug

/* Audioresample signals and args */
enum
{
 /* FILL ME */
 LAST_SIGNAL
};

enum
{
 ARG_0,
```

```
  ARG_FILTERLEN
};

#define SUPPORTED_CAPS \
 GST_STATIC_CAPS (\
   "audio/x-raw-int, " \
     "rate = (int) [ 1, MAX ], " \
     "channels = (int) [ 1, MAX ], " \
     "endianness = (int) BYTE_ORDER, " \
     "width = (int) 16, " \
     "depth = (int) 16, " \
     "signed = (boolean) true"
#if 0
   /* disabled because it segfaults */
 "audio/x-raw-float, "
   "rate = (int) [ 1, MAX ], "
   "channels = (int) [ 1, MAX ], "
   "endianness = (int) BYTE_ORDER, " "width = (int) 32"
#endif
   )

   static GstStaticPadTemplate gst_audioresample_sink_template =
       GST_STATIC_PAD_TEMPLATE ("sink",
       GST_PAD_SINK, GST_PAD_ALWAYS, SUPPORTED_CAPS);

   static GstStaticPadTemplate gst_audioresample_src_template =
       GST_STATIC_PAD_TEMPLATE ("src",
       GST_PAD_SRC, GST_PAD_ALWAYS, SUPPORTED_CAPS);

   static void gst_audioresample_base_init (gpointer g_class);
   static void gst_audioresample_class_init (AudioresampleClass * klass);
   static void gst_audioresample_init (Audioresample * audioresample);
   static void gst_audioresample_dispose (GObject * object);

   static void gst_audioresample_chain (GstPad * pad, GstData * _data);

   static void gst_audioresample_set_property (GObject * object,
       guint prop_id, const GValue * value, GParamSpec * pspec);
   static void gst_audioresample_get_property (GObject * object,
       guint prop_id, GValue * value, GParamSpec * pspec);

   static GstElementClass *parent_class = NULL;

/*static guint gst_audioresample_signals[LAST_SIGNAL] = { 0 }; */

   GType audioresample_get_type (void)
   {
     static GType audioresample_type = 0;
```

```
    if (!audioresample_type)
    {
      static const GTypeInfo audioresample_info = {
      sizeof (AudioresampleClass),
          gst_audioresample_base_init,
          NULL,
          (GClassInitFunc) gst_audioresample_class_init,
          NULL,
          NULL,
          sizeof (Audioresample), 0,
          (GInstanceInitFunc) gst_audioresample_init,};

      audioresample_type =
          g_type_register_static (GST_TYPE_ELEMENT, "Audioresample",
          &audioresample_info, 0);
    }
    return audioresample_type;
  }

static void gst_audioresample_base_init (gpointer g_class)
{
 GstElementClass *gstelement_class = GST_ELEMENT_CLASS (g_class);

 gst_element_class_add_pad_template (gstelement_class,
    gst_static_pad_template_get (&gst_audioresample_src_template));
 gst_element_class_add_pad_template (gstelement_class,
    gst_static_pad_template_get (&gst_audioresample_sink_template));

 gst_element_class_set_details_simple (gstelement_class, "Audio scaler",
    "Filter/Converter/Audio",
    "Resample audio", "David Schleef <ds@schleef.org>");
}

static void gst_audioresample_class_init (AudioresampleClass * klass)
{
 GObjectClass *gobject_class;
 GstElementClass *gstelement_class;

 gobject_class = (GObjectClass *) klass;
 gstelement_class = (GstElementClass *) klass;

 gobject_class->set_property = gst_audioresample_set_property;
 gobject_class->get_property = gst_audioresample_get_property;
 gobject_class->dispose = gst_audioresample_dispose;

 g_object_class_install_property (G_OBJECT_CLASS (klass), ARG_FILTERLEN,
    g_param_spec_int ("filter-length", "filter_length", "filter_length",
```

```
      0, G_MAXINT, 16,
      G_PARAM_READWRITE | G_PARAM_CONSTRUCT | G_PARAM_STATIC_STRINGS));

 parent_class = g_type_class_peek_parent (klass);

 GST_DEBUG_CATEGORY_INIT (audioresample_debug, "audioresample", 0,
   "audioresample element");
}

static void gst_audioresample_expand_caps (GstCaps * caps)
{
 gint i;

 for (i = 0; i < gst_caps_get_size (caps); i++) {
   GstStructure *structure = gst_caps_get_structure (caps, i);
   const GValue *value;

   value = gst_structure_get_value (structure, "rate");
   if (value == NULL) {
     GST_ERROR ("caps structure doesn't have required rate field");
     return;
   }

   gst_structure_set (structure, "rate", GST_TYPE_INT_RANGE, 1, G_MAXINT, 0);
 }
}

static GstCaps *gst_audioresample_getcaps (GstPad * pad)
{
 Audioresample *audioresample;
 GstCaps *caps;
 GstPad *otherpad;

 audioresample = GST_AUDIORESAMPLE (gst_pad_get_parent (pad));

 otherpad = (pad == audioresample->srcpad) ? audioresample->sinkpad :
   audioresample->srcpad;
 caps = gst_pad_get_allowed_caps (otherpad);

 gst_audioresample_expand_caps (caps);

 return caps;
}

static GstCaps *gst_audioresample_fixate (GstPad * pad, const GstCaps * caps)
{
 Audioresample *audioresample;
 GstPad *otherpad;
```

```
  int rate;
  GstCaps *copy;
  GstStructure *structure;

    audioresample = GST_AUDIORESAMPLE (gst_pad_get_parent (pad));

  if (pad == audioresample->srcpad) {
    otherpad = audioresample->sinkpad;
    rate = audioresample->i_rate;
  } else
  {
    otherpad = audioresample->srcpad;
    rate = audioresample->o_rate;
  }
  if (!GST_PAD_IS_NEGOTIATING (otherpad))
    return NULL;
  if (gst_caps_get_size (caps) > 1)
    return NULL;

  copy = gst_caps_copy (caps);
  structure = gst_caps_get_structure (copy, 0);
  if (rate) {
    if (gst_structure_fixate_field_nearest_int (structure, "rate", rate)) {
      return copy;
    }
  }
  gst_caps_free (copy);
  return NULL;
}

static GstPadLinkReturn gst_audioresample_link (GstPad * pad,
    const GstCaps * caps)
{
  Audioresample *audioresample;
  GstStructure *structure;
  int rate;
  int channels;
  gboolean ret;
  GstPad *otherpad;

    audioresample = GST_AUDIORESAMPLE (gst_pad_get_parent (pad));

    otherpad = (pad == audioresample->srcpad) ? audioresample->sinkpad :
      audioresample->srcpad;

    structure = gst_caps_get_structure (caps, 0);
    ret = gst_structure_get_int (structure, "rate", &rate);
    ret &= gst_structure_get_int (structure, "channels", &channels);
```

```
if (!ret)
{
  return GST_PAD_LINK_REFUSED;
}

if (gst_pad_is_negotiated (otherpad))
{
  GstCaps *othercaps = gst_caps_copy (caps);
  int otherrate;
  GstPadLinkReturn linkret;

  if (pad == audioresample->srcpad) {
    otherrate = audioresample->i_rate;
  } else {
    otherrate = audioresample->o_rate;
  }
  gst_caps_set_simple (othercaps, "rate", G_TYPE_INT, otherrate, NULL);
  linkret = gst_pad_try_set_caps (otherpad, othercaps);
  if (GST_PAD_LINK_FAILED (linkret)) {
    return GST_PAD_LINK_REFUSED;
  }

}

audioresample->channels = channels;
resample_set_n_channels (audioresample->resample, audioresample->channels);
if (pad == audioresample->srcpad) {
  audioresample->o_rate = rate;
  resample_set_output_rate (audioresample->resample, audioresample->o_rate);
  GST_DEBUG ("set o_rate to %d", rate);
} else {
  audioresample->i_rate = rate;
  resample_set_input_rate (audioresample->resample, audioresample->i_rate);
  GST_DEBUG ("set i_rate to %d", rate);
}

return GST_PAD_LINK_OK;
}

static void gst_audioresample_init (Audioresample * audioresample)
{
  ResampleState *r;

  audioresample->sinkpad =
    gst_pad_new_from_static_template (&gst_audioresample_sink_template,
    "sink");
  gst_element_add_pad (GST_ELEMENT (audioresample), audioresample->sinkpad);
  gst_pad_set_chain_function (audioresample->sinkpad, gst_audioresample_chain);
```

```
gst_pad_set_link_function (audioresample->sinkpad, gst_audioresample_link);
gst_pad_set_getcaps_function (audioresample->sinkpad,
    gst_audioresample_getcaps);
gst_pad_set_fixate_function (audioresample->sinkpad,
    gst_audioresample_fixate);

audioresample->srcpad =
    gst_pad_new_from_static_template (&gst_audioresample_src_template, "src");

gst_element_add_pad (GST_ELEMENT (audioresample), audioresample->srcpad);
gst_pad_set_link_function (audioresample->srcpad, gst_audioresample_link);
gst_pad_set_getcaps_function (audioresample->srcpad,
    gst_audioresample_getcaps);
gst_pad_set_fixate_function (audioresample->srcpad, gst_audioresample_fixate);

r = resample_new ();
audioresample->resample = r;

resample_set_filter_length (r, 64);
resample_set_format (r, RESAMPLE_FORMAT_S16);
}

static void gst_audioresample_dispose (GObject * object)
{
 Audioresample *audioresample = GST_AUDIORESAMPLE (object);

 if (audioresample->resample) {
   resample_free (audioresample->resample);
 }

 G_OBJECT_CLASS (parent_class)->dispose (object);
}

static void gst_audioresample_chain (GstPad * pad, GstData * _data)
{
 GstBuffer *buf = GST_BUFFER (_data);
 Audioresample *audioresample;
 ResampleState *r;
 guchar *data;
 gulong size;
 int outsize;
 GstBuffer *outbuf;

 g_return_if_fail (pad != NULL);
 g_return_if_fail (GST_IS_PAD (pad));
 g_return_if_fail (buf != NULL);

 audioresample = GST_AUDIORESAMPLE (gst_pad_get_parent (pad));
```

```
if (!GST_IS_BUFFER (_data)) {
  gst_pad_push (audioresample->srcpad, _data);
  return;
}

if (audioresample->passthru) {
  gst_pad_push (audioresample->srcpad, GST_DATA (buf));
  return;
}

r = audioresample->resample;

data = GST_BUFFER_DATA (buf);
size = GST_BUFFER_SIZE (buf);

GST_DEBUG ("got buffer of %ld bytes", size);

resample_add_input_data (r, data, size, (ResampleCallback) gst_data_unref,
    buf);

outsize = resample_get_output_size (r);
/* FIXME this is audioresample being dumb.  dunno why */
if (outsize == 0) {
  GST_ERROR ("overriding outbuf size");
  outsize = size;
}
outbuf = gst_buffer_new_and_alloc (outsize);

outsize = resample_get_output_data (r, GST_BUFFER_DATA (outbuf), outsize);
GST_BUFFER_SIZE (outbuf) = outsize;

GST_BUFFER_TIMESTAMP (outbuf) =
    audioresample->offset * GST_SECOND / audioresample->o_rate;
audioresample->offset += outsize / sizeof (gint16) / audioresample->channels;

gst_pad_push (audioresample->srcpad, GST_DATA (outbuf));
}

static void
  gst_audioresample_set_property (GObject * object, guint prop_id,
  const GValue * value, GParamSpec * pspec)
{
Audioresample *audioresample;

  g_return_if_fail (GST_IS_AUDIORESAMPLE (object));
  audioresample = GST_AUDIORESAMPLE (object);
```

```
switch (prop_id) {
  case ARG_FILTERLEN:
    audioresample->filter_length = g_value_get_int (value);
    GST_DEBUG_OBJECT (GST_ELEMENT (audioresample), "new filter length %d\n",
      audioresample->filter_length);
    resample_set_filter_length (audioresample->resample,
      audioresample->filter_length);
    break;
    default:G_OBJECT_WARN_INVALID_PROPERTY_ID (object, prop_id, pspec);
    break;
 }
}

static void
  gst_audioresample_get_property (GObject * object, guint prop_id,
  GValue * value, GParamSpec * pspec)
{
 Audioresample *audioresample;

 g_return_if_fail (GST_IS_AUDIORESAMPLE (object));
 audioresample = GST_AUDIORESAMPLE (object);

 switch (prop_id) {
  case ARG_FILTERLEN:
    g_value_set_int (value, audioresample->filter_length);
    break;
  default:
    G_OBJECT_WARN_INVALID_PROPERTY_ID (object, prop_id, pspec);
    break;
 }
}


static gboolean plugin_init (GstPlugin * plugin)
{
 resample_init ();

 if (!gst_element_register (plugin, "audioresample", GST_RANK_PRIMARY,
      GST_TYPE_AUDIORESAMPLE)) {
  return FALSE;
 }

 return TRUE;
}

GST_PLUGIN_DEFINE (GST_VERSION_MAJOR,
  GST_VERSION_MINOR,
  "audioresample",
```

"Resamples audio", plugin_init, VERSION, "LGPL", GST_PACKAGE_NAME,
  GST_PACKAGE_ORIGIN)
/* GStreamer
* Copyright (C) <1999> Erik Walthinsen <omega@cse.ogi.edu>
*
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* License along with this library; if not, write to the
* Free Software Foundation, Inc., 59 Temple Place - Suite 330,
* Boston, MA 02111-1307, USA.
*/

#ifndef __AUDIORESAMPLE_H__
#define __AUDIORESAMPLE_H__

#include <gst/gst.h>

#include <audioresample/resample.h>

G_BEGIN_DECLS

#define GST_TYPE_AUDIORESAMPLE \
 (audioresample_get_type())
#define GST_AUDIORESAMPLE(obj) \
 (G_TYPE_CHECK_INSTANCE_CAST((obj),GST_TYPE_AUDIORESAMPLE,Audioresample))
#define GST_AUDIORESAMPLE_CLASS(klass) \
 (G_TYPE_CHECK_CLASS_CAST((klass),GST_TYPE_AUDIORESAMPLE,AudioresampleClass))
#define GST_IS_AUDIORESAMPLE(obj) \
 (G_TYPE_CHECK_INSTANCE_TYPE((obj),GST_TYPE_AUDIORESAMPLE))
#define GST_IS_AUDIORESAMPLE_CLASS(klass) \
 (G_TYPE_CHECK_CLASS_TYPE((klass),GST_TYPE_AUDIORESAMPLE))

typedef struct _Audioresample Audioresample;
typedef struct _AudioresampleClass AudioresampleClass;

```
struct _Audioresample {
 GstElement element;

 GstPad *sinkpad,*srcpad;

 gboolean passthru;

 gint64 offset;
 int channels;

 int i_rate;
 int o_rate;
 int filter_length;

 ResampleState * resample;
};

struct _AudioresampleClass {
 GstElementClass parent_class;
};

GType gst_audioresample_get_type(void);


G_END_DECLS


#endif /* __AUDIORESAMPLE_H__ */
/* GStreamer
 * Copyright (C) <1999> Erik Walthinsen <omega@cse.ogi.edu>
 * Copyright (C) <2003> David Schleef <ds@schleef.org>
 *
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 * License along with this library; if not, write to the
 * Free Software Foundation, Inc., 59 Temple Place - Suite 330,
 * Boston, MA 02111-1307, USA.
 */
```

```c
/*
 * This file was (probably) generated from
 * gstvideotemplate.c,v 1.18 2005/11/14 02:13:34 thomasvs Exp
 * and
 * $Id: make_filter,v 1.8 2004/04/19 22:51:57 ds Exp $
 */

#ifdef HAVE_CONFIG_H
#include "config.h"
#endif

#include <gst/gst.h>
#include <gst/base/gstbasetransform.h>
#include <gst/video/video.h>
#include <string.h>
#include <cog/cog.h>
#include <math.h>
#include <cog/cogvirtframe.h>

#define GST_TYPE_COGDOWNSAMPLE \
 (gst_cogdownsample_get_type())
#define GST_COGDOWNSAMPLE(obj) \
 (G_TYPE_CHECK_INSTANCE_CAST((obj),GST_TYPE_COGDOWNSAMPLE,GstCogdownsample))
#define GST_COGDOWNSAMPLE_CLASS(klass) \
 (G_TYPE_CHECK_CLASS_CAST((klass),GST_TYPE_COGDOWNSAMPLE,GstCogdownsampleClass))
#define GST_IS_COGDOWNSAMPLE(obj) \
 (G_TYPE_CHECK_INSTANCE_TYPE((obj),GST_TYPE_COGDOWNSAMPLE))
#define GST_IS_COGDOWNSAMPLE_CLASS(obj) \
 (G_TYPE_CHECK_CLASS_TYPE((klass),GST_TYPE_COGDOWNSAMPLE))

typedef struct _GstCogdownsample GstCogdownsample;
typedef struct _GstCogdownsampleClass GstCogdownsampleClass;

struct _GstCogdownsample
{
 GstBaseTransform base_transform;

};

struct _GstCogdownsampleClass
{
 GstBaseTransformClass parent_class;

};

GType gst_cogdownsample_get_type (void);

enum
```

```
{
 ARG_0
};

static void gst_cogdownsample_base_init (gpointer g_class);
static void gst_cogdownsample_class_init (gpointer g_class,
   gpointer class_data);
static void gst_cogdownsample_init (GTypeInstance * instance, gpointer g_class);

static void gst_cogdownsample_set_property (GObject * object, guint prop_id,
   const GValue * value, GParamSpec * pspec);
static void gst_cogdownsample_get_property (GObject * object, guint prop_id,
   GValue * value, GParamSpec * pspec);

static GstCaps *gst_cogdownsample_transform_caps (GstBaseTransform *
   base_transform, GstPadDirection direction, GstCaps * caps);
static GstFlowReturn gst_cogdownsample_transform (GstBaseTransform *
   base_transform, GstBuffer * inbuf, GstBuffer * outbuf);
static gboolean gst_cogdownsample_get_unit_size (GstBaseTransform *
   base_transform, GstCaps * caps, guint * size);

static GstStaticPadTemplate gst_cogdownsample_sink_template =
GST_STATIC_PAD_TEMPLATE ("sink",
  GST_PAD_SINK,
  GST_PAD_ALWAYS,
  GST_STATIC_CAPS (GST_VIDEO_CAPS_YUV ("{ I420, YV12, YUY2, UYVY, AYUV }"))
  );

static GstStaticPadTemplate gst_cogdownsample_src_template =
GST_STATIC_PAD_TEMPLATE ("src",
  GST_PAD_SRC,
  GST_PAD_ALWAYS,
  GST_STATIC_CAPS (GST_VIDEO_CAPS_YUV ("{ I420, YV12, YUY2, UYVY, AYUV }"))
  );

GType
gst_cogdownsample_get_type (void)
{
 static GType compress_type = 0;

 if (!compress_type) {
  static const GTypeInfo compress_info = {
    sizeof (GstCogdownsampleClass),
    gst_cogdownsample_base_init,
    NULL,
    gst_cogdownsample_class_init,
    NULL,
    NULL,
```

```
      sizeof (GstCogdownsample),
    0,
    gst_cogdownsample_init,
  };

  compress_type = g_type_register_static (GST_TYPE_BASE_TRANSFORM,
    "GstCogdownsample", &compress_info, 0);
}
return compress_type;
}



static void
gst_cogdownsample_base_init (gpointer g_class)
{

 GstElementClass *element_class = GST_ELEMENT_CLASS (g_class);

 gst_element_class_add_pad_template (element_class,
    gst_static_pad_template_get (&gst_cogdownsample_src_template));
 gst_element_class_add_pad_template (element_class,
    gst_static_pad_template_get (&gst_cogdownsample_sink_template));

 gst_element_class_set_details_simple (element_class,
    "Scale down video by factor of 2", "Filter/Effect/Video",
    "Scales down video by a factor of 2", "David Schleef <ds@schleef.org>");
}

static void
gst_cogdownsample_class_init (gpointer g_class, gpointer class_data)
{
 GObjectClass *gobject_class;
 GstBaseTransformClass *base_transform_class;

 gobject_class = G_OBJECT_CLASS (g_class);
 base_transform_class = GST_BASE_TRANSFORM_CLASS (g_class);

 gobject_class->set_property = gst_cogdownsample_set_property;
 gobject_class->get_property = gst_cogdownsample_get_property;

 base_transform_class->transform = gst_cogdownsample_transform;
 base_transform_class->transform_caps = gst_cogdownsample_transform_caps;
 base_transform_class->get_unit_size = gst_cogdownsample_get_unit_size;
}

static void
gst_cogdownsample_init (GTypeInstance * instance, gpointer g_class)
{
```

```c
  GST_DEBUG ("gst_cogdownsample_init");
}

static void
gst_cogdownsample_set_property (GObject * object, guint prop_id,
    const GValue * value, GParamSpec * pspec)
{
  GstCogdownsample *src;

  g_return_if_fail (GST_IS_COGDOWNSAMPLE (object));
  src = GST_COGDOWNSAMPLE (object);

  GST_DEBUG ("gst_cogdownsample_set_property");
  switch (prop_id) {
    default:
      break;
  }
}

static void
gst_cogdownsample_get_property (GObject * object, guint prop_id, GValue * value,
    GParamSpec * pspec)
{
  GstCogdownsample *src;

  g_return_if_fail (GST_IS_COGDOWNSAMPLE (object));
  src = GST_COGDOWNSAMPLE (object);

  switch (prop_id) {
    default:
      G_OBJECT_WARN_INVALID_PROPERTY_ID (object, prop_id, pspec);
      break;
  }
}

static void
transform_value (GValue * dest, const GValue * src, GstPadDirection dir)
{
  g_value_init (dest, G_VALUE_TYPE (src));

  if (G_VALUE_HOLDS_INT (src)) {
    int x;

    x = g_value_get_int (src);
    if (dir == GST_PAD_SINK) {
      g_value_set_int (dest, x / 2);
    } else {
```

```c
      g_value_set_int (dest, x * 2);
    }
  } else if (GST_VALUE_HOLDS_INT_RANGE (src)) {
    int min, max;

    min = gst_value_get_int_range_min (src);
    max = gst_value_get_int_range_max (src);

    if (dir == GST_PAD_SINK) {
      min = (min + 1) / 2;
      if (max == G_MAXINT) {
        max = G_MAXINT / 2;
      } else {
        max = (max + 1) / 2;
      }
    } else {
      if (max > G_MAXINT / 2) {
        max = G_MAXINT;
      } else {
        max = max * 2;
      }
      if (min > G_MAXINT / 2) {
        min = G_MAXINT;
      } else {
        min = min * 2;
      }
    }
    gst_value_set_int_range (dest, min, max);
  } else {
    /* FIXME */
    g_warning ("case not handled");
    g_value_set_int (dest, 100);
  }
}

static GstCaps *
gst_cogdownsample_transform_caps (GstBaseTransform * base_transform,
    GstPadDirection direction, GstCaps * caps)
{
  int i;
  GstStructure *structure;
  GValue new_value = { 0 };
  const GValue *value;

  caps = gst_caps_copy (caps);

  for (i = 0; i < gst_caps_get_size (caps); i++) {
    structure = gst_caps_get_structure (caps, i);
```

```
  value = gst_structure_get_value (structure, "width");
  transform_value (&new_value, value, direction);
  gst_structure_set_value (structure, "width", &new_value);
  g_value_unset (&new_value);

  value = gst_structure_get_value (structure, "height");
  transform_value (&new_value, value, direction);
  gst_structure_set_value (structure, "height", &new_value);
  g_value_unset (&new_value);
}

return caps;
}

static gboolean
gst_cogdownsample_get_unit_size (GstBaseTransform * base_transform,
    GstCaps * caps, guint * size)
{
int width, height;
uint32_t format;

  gst_structure_get_fourcc (gst_caps_get_structure (caps, 0),
      "format", &format);
  gst_structure_get_int (gst_caps_get_structure (caps, 0), "width", &width);
  gst_structure_get_int (gst_caps_get_structure (caps, 0), "height", &height);

switch (format) {
  case GST_MAKE_FOURCC ('I', '4', '2', '0'):
  case GST_MAKE_FOURCC ('Y', 'V', '1', '2'):
    *size = width * height * 3 / 2;
    break;
  case GST_MAKE_FOURCC ('Y', 'U', 'Y', '2'):
  case GST_MAKE_FOURCC ('U', 'Y', 'V', 'Y'):
    *size = width * height * 2;
    break;
  case GST_MAKE_FOURCC ('A', 'Y', 'U', 'V'):
    *size = width * height * 4;
    break;
  default:
    g_assert_not_reached ();
}

return TRUE;
}

static GstFlowReturn
gst_cogdownsample_transform (GstBaseTransform * base_transform,
```

```
    GstBuffer * inbuf, GstBuffer * outbuf)
{
 GstCogdownsample *compress;
 CogFrame *outframe;
 int width, height;
 uint32_t format;
 CogFrame *frame;

 g_return_val_if_fail (GST_IS_COGDOWNSAMPLE (base_transform), GST_FLOW_ERROR);
 compress = GST_COGDOWNSAMPLE (base_transform);

 gst_structure_get_fourcc (gst_caps_get_structure (inbuf->caps, 0),
    "format", &format);
 gst_structure_get_int (gst_caps_get_structure (inbuf->caps, 0),
    "width", &width);
 gst_structure_get_int (gst_caps_get_structure (inbuf->caps, 0),
    "height", &height);

 switch (format) {
   case GST_MAKE_FOURCC ('I', '4', '2', '0'):
    frame = cog_frame_new_from_data_I420 (GST_BUFFER_DATA (inbuf),
       width, height);
    outframe = cog_frame_new_from_data_I420 (GST_BUFFER_DATA (outbuf),
       width / 2, height / 2);
    break;
   case GST_MAKE_FOURCC ('Y', 'V', '1', '2'):
    frame = cog_frame_new_from_data_YV12 (GST_BUFFER_DATA (inbuf),
       width, height);
    outframe = cog_frame_new_from_data_YV12 (GST_BUFFER_DATA (outbuf),
       width / 2, height / 2);
    break;
   case GST_MAKE_FOURCC ('Y', 'U', 'Y', '2'):
    frame = cog_frame_new_from_data_YUY2 (GST_BUFFER_DATA (inbuf),
       width, height);
    outframe = cog_frame_new_from_data_YUY2 (GST_BUFFER_DATA (outbuf),
       width / 2, height / 2);
    break;
   case GST_MAKE_FOURCC ('U', 'Y', 'V', 'Y'):
    frame = cog_frame_new_from_data_UYVY (GST_BUFFER_DATA (inbuf),
       width, height);
    outframe = cog_frame_new_from_data_UYVY (GST_BUFFER_DATA (outbuf),
       width / 2, height / 2);
    break;
   case GST_MAKE_FOURCC ('A', 'Y', 'U', 'V'):
    frame = cog_frame_new_from_data_AYUV (GST_BUFFER_DATA (inbuf),
       width, height);
    outframe = cog_frame_new_from_data_AYUV (GST_BUFFER_DATA (outbuf),
       width / 2, height / 2);
```

```
      break;
    default:
      g_assert_not_reached ();
      return GST_FLOW_ERROR;
  }

  frame = cog_virt_frame_new_unpack (frame);
  frame = cog_virt_frame_new_horiz_downsample (frame, 3);
  frame = cog_virt_frame_new_vert_downsample (frame, 2);

  switch (format) {
    case GST_MAKE_FOURCC ('Y', 'U', 'Y', '2'):
      frame = cog_virt_frame_new_pack_YUY2 (frame);
      break;
    case GST_MAKE_FOURCC ('U', 'Y', 'V', 'Y'):
      frame = cog_virt_frame_new_pack_UYVY (frame);
      break;
    case GST_MAKE_FOURCC ('A', 'Y', 'U', 'V'):
      frame = cog_virt_frame_new_pack_AYUV (frame);
      break;
    default:
      break;
  }

  cog_virt_frame_render (frame, outframe);
  cog_frame_unref (frame);
  cog_frame_unref (outframe);

  return GST_FLOW_OK;
}
/* GStreamer mplex (mjpegtools) wrapper
 * (c) 2003 Ronald Bultje <rbultje@ronald.bitfreak.net>
 * (c) 2008 Mark Nauwelaerts <mnauw@users.sourceforge.net>
 *
 * gstmplex.cc: gstreamer mplex wrapper
 *
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 * Boston, MA 02111-1307, USA.
 */

/**
 * SECTION:element-mplex
 * @see_also: mpeg2enc
 *
 * This element is an audio/video multiplexer for MPEG-1/2 video streams
 * and (un)compressed audio streams such as AC3, MPEG layer I/II/III.
 * It is based on the <ulink url="http://mjpeg.sourceforge.net/">mjpegtools</ulink> library.
 * Documentation on creating MPEG videos in general can be found in the
 * <ulink url="https://sourceforge.net/docman/display_doc.php?docid=3456&group_id=5776">MJPEG
Howto</ulink>
 * and the man-page of the mplex tool documents the properties of this element,
 * which are shared with the mplex tool.
 *
 * <refsect2>
 * <title>Example pipeline</title>
 * |[
 * gst-launch -v videotestsrc num-buffers=1000 ! mpeg2enc ! mplex ! filesink location=videotestsrc.mpg
 * ]| This example pipeline will encode a test video source to an
 * MPEG1 elementary stream and multiplexes this to an MPEG system stream.
 * <para>
 * If several streams are being multiplexed, there should (as usual) be
 * a queue in each stream, and due to mplex' buffering the capacities of these
 * may have to be set to a few times the default settings to prevent the
 * pipeline stalling.
 * </para>
 * </refsect2>
 */

#ifdef HAVE_CONFIG_H
#include "config.h"
#endif

#include <string.h>

#include "gstmplex.hh"
#include "gstmplexoutputstream.hh"
#include "gstmplexibitstream.hh"
#include "gstmplexjob.hh"

GST_DEBUG_CATEGORY (mplex_debug);

static GstStaticPadTemplate src_templ = GST_STATIC_PAD_TEMPLATE ("src",
  GST_PAD_SRC,
  GST_PAD_ALWAYS,
```

```
  GST_STATIC_CAPS ("video/mpeg, systemstream = (boolean) true ")
  );


static GstStaticPadTemplate video_sink_templ =
GST_STATIC_PAD_TEMPLATE ("video_%d",
  GST_PAD_SINK,
  GST_PAD_REQUEST,
  GST_STATIC_CAPS ("video/mpeg, "
    "mpegversion = (int) { 1, 2 }, "
    "systemstream = (boolean) false, "
    "width = (int) [ 16, 4096 ], "
    "height = (int) [ 16, 4096 ], framerate = (fraction) [ 0, MAX ]")
  );


#define COMMON_AUDIO_CAPS \
 "channels = (int) [ 1, 8 ], " \
 "rate = (int) [ 8000, 96000 ]"


static GstStaticPadTemplate audio_sink_templ =
  GST_STATIC_PAD_TEMPLATE ("audio_%d",
  GST_PAD_SINK,
  GST_PAD_REQUEST,
  GST_STATIC_CAPS ("audio/mpeg, "
    "mpegversion = (int) 1, "
    "layer = (int) [ 1, 3 ], "
    COMMON_AUDIO_CAPS "; "
    "audio/x-ac3, "
    COMMON_AUDIO_CAPS "; "
    "audio/x-dts; "
    "audio/x-raw-int, "
    "endianness = (int) BIG_ENDIAN, "
    "signed = (boolean) TRUE, "
    "width = (int) { 16, 20, 24 }, "
    "depth = (int) { 16, 20, 24 }, "
    "rate = (int) { 48000, 96000 }, " "channels = (int) [ 1, 6 ]")
  );


/* FIXME: subtitles */


static void gst_mplex_finalize (GObject * object);
static void gst_mplex_reset (GstMplex * mplex);
static void gst_mplex_loop (GstMplex * mplex);
static GstPad *gst_mplex_request_new_pad (GstElement * element,
  GstPadTemplate * templ, const gchar * name);
static void gst_mplex_release_pad (GstElement * element, GstPad * pad);
static gboolean gst_mplex_src_activate_push (GstPad * pad, gboolean active);
static GstStateChangeReturn gst_mplex_change_state (GstElement * element,
  GstStateChange transition);
```

```
static void gst_mplex_get_property (GObject * object,
   guint prop_id, GValue * value, GParamSpec * pspec);
static void gst_mplex_set_property (GObject * object,
   guint prop_id, const GValue * value, GParamSpec * pspec);


GST_BOILERPLATE (GstMplex, gst_mplex, GstElement, GST_TYPE_ELEMENT);


static void
gst_mplex_base_init (gpointer klass)
{
 GstElementClass *element_class = GST_ELEMENT_CLASS (klass);

 gst_element_class_set_details_simple (element_class,
    "mplex video multiplexer", "Codec/Muxer",
    "High-quality MPEG/DVD/SVCD/VCD video/audio multiplexer",
    "Andrew Stevens <andrew.stevens@nexgo.de>\n"
    "Ronald Bultje <rbultje@ronald.bitfreak.net>\n"
    "Mark Nauwelaerts <mnauw@users.sourceforge.net>");

 gst_element_class_add_pad_template (element_class,
    gst_static_pad_template_get (&src_templ));
 gst_element_class_add_pad_template (element_class,
    gst_static_pad_template_get (&video_sink_templ));
 gst_element_class_add_pad_template (element_class,
    gst_static_pad_template_get (&audio_sink_templ));
}

static void
gst_mplex_class_init (GstMplexClass * klass)
{
 GObjectClass *object_class = G_OBJECT_CLASS (klass);
 GstElementClass *element_class = GST_ELEMENT_CLASS (klass);

 GST_DEBUG_CATEGORY_INIT (mplex_debug, "mplex", 0, "MPEG video/audio muxer");

 object_class->set_property = gst_mplex_set_property;
 object_class->get_property = gst_mplex_get_property;

 /* register properties */
 GstMplexJob::initProperties (object_class);

 object_class->finalize = GST_DEBUG_FUNCPTR (gst_mplex_finalize);

 element_class->change_state = GST_DEBUG_FUNCPTR (gst_mplex_change_state);
 element_class->request_new_pad =
    GST_DEBUG_FUNCPTR (gst_mplex_request_new_pad);
 element_class->release_pad = GST_DEBUG_FUNCPTR (gst_mplex_release_pad);
```

```
}

static void
gst_mplex_finalize (GObject * object)
{
  GstMplex *mplex = GST_MPLEX (object);
  GSList *walk;

  /* release all pads */
  walk = mplex->pads;
  while (walk) {
    GstMplexPad *mpad = (GstMplexPad *) walk->data;

    gst_object_unref (mpad->pad);
    mpad->pad = NULL;
    walk = walk->next;
  }

  /* clean up what's left of them */
  gst_mplex_reset (mplex);

  /* ... and of the rest */
  delete mplex->job;

  g_mutex_free (mplex->tlock);

  G_OBJECT_CLASS (parent_class)->finalize (object);
}

static void
gst_mplex_init (GstMplex * mplex, GstMplexClass * g_class)
{
  GstElement *element = GST_ELEMENT (mplex);
  GstElementClass *element_class = GST_ELEMENT_CLASS (g_class);

  mplex->srcpad =
      gst_pad_new_from_template (gst_element_class_get_pad_template
      (element_class, "src"), "src");
  gst_element_add_pad (element, mplex->srcpad);
  gst_pad_use_fixed_caps (mplex->srcpad);
  gst_pad_set_activatepush_function (mplex->srcpad,
      GST_DEBUG_FUNCPTR (gst_mplex_src_activate_push));

  mplex->job = new GstMplexJob ();
  mplex->num_apads = 0;
  mplex->num_vpads = 0;

  mplex->tlock = g_mutex_new ();
```

```
 gst_mplex_reset (mplex);
}

static void
gst_mplex_reset (GstMplex * mplex)
{
 GSList *walk;
 GSList *nlist = NULL;

 mplex->eos = FALSE;
 mplex->srcresult = GST_FLOW_CUSTOM_SUCCESS;

 /* reset existing streams */
 walk = mplex->pads;
 while (walk != NULL) {
  GstMplexPad *mpad;

  mpad = (GstMplexPad *) walk->data;

  mpad->needed = 0;
  mpad->eos = FALSE;
  gst_adapter_clear (mpad->adapter);
  if (mpad->bs) {
   delete mpad->bs;

   mpad->bs = NULL;
  }

  if (!mpad->pad) {
   g_cond_free (mpad->cond);
   g_object_unref (mpad->adapter);
   g_free (mpad);
  } else
   nlist = g_slist_append (nlist, mpad);

  walk = walk->next;
 }

 g_slist_free (mplex->pads);
 mplex->pads = nlist;

 /* clear mplex stuff */
 /* clean up stream settings */
 while (!mplex->job->streams.empty ()) {
  delete mplex->job->streams.back ();

  mplex->job->streams.pop_back ();
```

```
  }
  while (!mplex->job->video_param.empty ()) {
    delete mplex->job->video_param.back ();

    mplex->job->video_param.pop_back ();
  }
  while (!mplex->job->lpcm_param.empty ()) {
    delete mplex->job->lpcm_param.back ();

    mplex->job->lpcm_param.pop_back ();
  }
  mplex->job->audio_tracks = 0;
  mplex->job->video_tracks = 0;
  mplex->job->lpcm_tracks = 0;
}

static gboolean
gst_mplex_setcaps (GstPad * pad, GstCaps * caps)
{
  GstMplex *mplex;
  const gchar *mime;
  GstStructure *structure;
  StreamKind type;
  JobStream *jobstream;
  GstMplexIBitStream *inputstream;
  GstMplexPad *mpad;
  GstCaps *othercaps;
  gboolean ret = TRUE;

  mplex = GST_MPLEX (GST_PAD_PARENT (pad));

  /* does not go well to negotiate when started */
  if (mplex->srcresult != GST_FLOW_CUSTOM_SUCCESS)
    goto refuse_renegotiation;

  /* since muxer does not really check much ... */
  othercaps = gst_caps_intersect (caps, gst_pad_get_pad_template_caps (pad));
  if (othercaps)
    gst_caps_unref (othercaps);
  else
    goto refuse_caps;

  /* set the fixed template caps on the srcpad, should accept without objection */
  othercaps = gst_caps_copy (gst_pad_get_pad_template_caps (mplex->srcpad));
  ret = gst_pad_set_caps (mplex->srcpad, othercaps);
  gst_caps_unref (othercaps);
  if (!ret)
    goto refuse_caps;
```

```
structure = gst_caps_get_structure (caps, 0);
mime = gst_structure_get_name (structure);

if (!strcmp (mime, "video/mpeg")) {   /* video */
  VideoParams *params;

  type = MPEG_VIDEO;
  if (mplex->job->bufsize)
    params = VideoParams::Checked (mplex->job->bufsize);
  else
    params = VideoParams::Default (mplex->job->mux_format);
  /* set standard values if forced by the selected profile */
  if (params->Force (mplex->job->mux_format))
    GST_WARNING_OBJECT (mplex,
        "overriding non-standard option due to selected profile");

  mplex->job->video_param.push_back (params);
  mplex->job->video_tracks++;
} else {                  /* audio */
  if (!strcmp (mime, "audio/mpeg")) {
    type = MPEG_AUDIO;
  } else if (!strcmp (mime, "audio/x-ac3")) {
    type = AC3_AUDIO;
  } else if (!strcmp (mime, "audio/x-dts")) {
    type = DTS_AUDIO;
  } else if (!strcmp (mime, "audio/x-raw-int")) {
    LpcmParams *params;
    gint bits, chans, rate;
    gboolean result = TRUE;

    type = LPCM_AUDIO;

    /* set LPCM params */
    result &= gst_structure_get_int (structure, "depth", &bits);
    result &= gst_structure_get_int (structure, "rate", &rate);
    result &= gst_structure_get_int (structure, "channels", &chans);
    if (!result)
      goto refuse_caps;

    params = LpcmParams::Checked (rate, chans, bits);

    mplex->job->lpcm_param.push_back (params);
    mplex->job->lpcm_tracks++;
  } else
    goto refuse_caps;

  mplex->job->audio_tracks++;
```

```c
  }

  mpad = (GstMplexPad *) gst_pad_get_element_private (pad);
  g_return_val_if_fail (mpad, FALSE);
  inputstream = new GstMplexIBitStream (mpad);
  mpad->bs = inputstream;
  jobstream = new JobStream (inputstream, type);
  mplex->job->streams.push_back (jobstream);

  return TRUE;

refuse_caps:
  {
    GST_WARNING_OBJECT (mplex, "refused caps %" GST_PTR_FORMAT, caps);

    /* undo if we were a bit too fast/confident */
    if (GST_PAD_CAPS (mplex->srcpad))
      gst_pad_set_caps (mplex->srcpad, NULL);

    return FALSE;
  }
refuse_renegotiation:
  {
    GST_WARNING_OBJECT (mplex, "already started; "
        "refused (re)negotiation (to %" GST_PTR_FORMAT ")", caps);

    return FALSE;
  }
}

static void
gst_mplex_loop (GstMplex * mplex)
{
  GstMplexOutputStream *out = NULL;
  Multiplexor *mux = NULL;
  GSList *walk;

  /* do not try to resume muxing after it finished
   * this can be relevant mainly/only in case of forced state change */
  if (mplex->eos)
    goto eos;

  /* inform downstream about what's coming */
  gst_pad_push_event (mplex->srcpad, gst_event_new_new_segment (FALSE, 1.0,
        GST_FORMAT_BYTES, 0, -1, 0));

  /* hm (!) each inputstream really needs an initial read
   * so that all is internally in the proper state */
```

```
  walk = mplex->pads;
 while (walk != NULL) {
  GstMplexPad *mpad;

  mpad = (GstMplexPad *) walk->data;
  mpad->bs->ReadBuffer ();

  walk = walk->next;
 }

 /* create new multiplexer with inputs/output */
 out = new GstMplexOutputStream (mplex, mplex->srcpad);
#if GST_MJPEGTOOLS_API >= 10900
 mux = new Multiplexor (*mplex->job, *out, NULL);
#else
 mux = new Multiplexor (*mplex->job, *out);
#endif

 if (mux) {
  mux->Multiplex ();
  delete mux;
  delete out;

  /* if not well and truly eos, something strange happened  */
  if (!mplex->eos) {
   GST_ERROR_OBJECT (mplex, "muxing task ended without being eos");
    /* notify there is no point in collecting any more */
   GST_MPLEX_MUTEX_LOCK (mplex);
   mplex->srcresult = GST_FLOW_ERROR;
   GST_MPLEX_SIGNAL_ALL (mplex);
   GST_MPLEX_MUTEX_UNLOCK (mplex);
  } else
    goto eos;
 } else {
  GST_WARNING_OBJECT (mplex, "failed to create Multiplexor");
 }

 /* fall-through */
done:
 {
  /* no need to run wildly, stopped elsewhere, e.g. state change */
  GST_DEBUG_OBJECT (mplex, "pausing muxing task");
  gst_pad_pause_task (mplex->srcpad);

  return;
 }
eos:
 {
```

```c
    GST_DEBUG_OBJECT (mplex, "encoding task reached eos");
    goto done;
  }
}

static gboolean
gst_mplex_sink_event (GstPad * sinkpad, GstEvent * event)
{
 GstMplex *mplex;
 GstMplexPad *mpad;
 gboolean result = TRUE;

 mplex = (GstMplex *) (GST_PAD_PARENT (sinkpad));
 mpad = (GstMplexPad *) gst_pad_get_element_private (sinkpad);
 g_return_val_if_fail (mpad, FALSE);

 switch (GST_EVENT_TYPE (event)) {
   case GST_EVENT_FLUSH_START:
     /* forward event */
     gst_pad_event_default (sinkpad, event);

     /* now unblock the chain function */
     GST_MPLEX_MUTEX_LOCK (mplex);
     mplex->srcresult = GST_FLOW_WRONG_STATE;
     GST_MPLEX_SIGNAL (mplex, mpad);
     GST_MPLEX_MUTEX_UNLOCK (mplex);
     /* no way to pause/restart loop task */
     goto done;
   case GST_EVENT_FLUSH_STOP:
     /* forward event */
     gst_pad_event_default (sinkpad, event);

     /* clear state and resume */
     GST_MPLEX_MUTEX_LOCK (mplex);
     gst_adapter_clear (mpad->adapter);
     mplex->srcresult = GST_FLOW_OK;
     GST_MPLEX_MUTEX_UNLOCK (mplex);
     goto done;
   case GST_EVENT_NEWSEGMENT:
     /* eat segments; we make our own (byte)stream */
     gst_event_unref (event);
     goto done;
   case GST_EVENT_EOS:
     /* inform this pad that it can stop now */
     GST_MPLEX_MUTEX_LOCK (mplex);
     mpad->eos = TRUE;
     GST_MPLEX_SIGNAL (mplex, mpad);
     GST_MPLEX_MUTEX_UNLOCK (mplex);
```

```c
    /* eat this event for now, task will send eos when finished */
    gst_event_unref (event);
    goto done;
  default:
    /* for a serialized event, wait until earlier data is gone,
     * though this is no guarantee as to when task is done with it.
     * Only wait if loop has been started already */
    if (GST_EVENT_IS_SERIALIZED (event)) {
      GST_MPLEX_MUTEX_LOCK (mplex);
      while (mplex->srcresult == GST_FLOW_OK && !mpad->needed)
        GST_MPLEX_WAIT (mplex, mpad);
      GST_MPLEX_MUTEX_UNLOCK (mplex);
    }
    break;
  }

  result = gst_pad_event_default (sinkpad, event);

done:
  return result;
}

/* starts task if conditions are right for it
 * must be called with mutex_lock held */
static void
gst_mplex_start_task (GstMplex * mplex)
{
  /* start task to create multiplexor and start muxing */
  if (G_UNLIKELY (mplex->srcresult == GST_FLOW_CUSTOM_SUCCESS)
      && mplex->job->video_tracks == mplex->num_vpads
      && mplex->job->audio_tracks == mplex->num_apads) {
    gst_pad_start_task (mplex->srcpad, (GstTaskFunction) gst_mplex_loop, mplex);
    mplex->srcresult = GST_FLOW_OK;
  }
}

static GstFlowReturn
gst_mplex_chain (GstPad * sinkpad, GstBuffer * buffer)
{
  GstMplex *mplex;
  GstMplexPad *mpad;

  mplex = (GstMplex *) (GST_PAD_PARENT (sinkpad));
  mpad = (GstMplexPad *) gst_pad_get_element_private (sinkpad);
  g_return_val_if_fail (mpad, GST_FLOW_ERROR);

  /* check if pad were properly negotiated and set up */
```

```c
  if (G_UNLIKELY (!mpad->bs)) {
    GST_ELEMENT_ERROR (mplex, CORE, NEGOTIATION, (NULL),
        ("input pad has not been set up prior to chain function"));
    return GST_FLOW_NOT_NEGOTIATED;
  }

  GST_MPLEX_MUTEX_LOCK (mplex);

  gst_mplex_start_task (mplex);

  if (G_UNLIKELY (mpad->eos))
    goto eos;

  if (G_UNLIKELY (mplex->srcresult != GST_FLOW_OK))
    goto ignore;

  gst_adapter_push (mpad->adapter, buffer);
  buffer = NULL;
  while (gst_adapter_available (mpad->adapter) >= mpad->needed) {
    GST_MPLEX_SIGNAL (mplex, mpad);
    GST_MPLEX_WAIT (mplex, mpad);
    /* may have become flushing or in error */
    if (G_UNLIKELY (mplex->srcresult != GST_FLOW_OK))
      goto ignore;
    /* or been removed */
    if (G_UNLIKELY (mpad->eos))
      goto eos;
  }

  GST_MPLEX_MUTEX_UNLOCK (mplex);

  return GST_FLOW_OK;

/* special cases */
eos:
  {
    GST_DEBUG_OBJECT (mplex, "ignoring buffer at end-of-stream");
    GST_MPLEX_MUTEX_UNLOCK (mplex);

    gst_buffer_unref (buffer);
    return GST_FLOW_UNEXPECTED;
  }
ignore:
  {
    GstFlowReturn ret = mplex->srcresult;

    GST_DEBUG_OBJECT (mplex, "ignoring buffer because src task encountered %s",
        gst_flow_get_name (ret));
```

```
      GST_MPLEX_MUTEX_UNLOCK (mplex);

    if (buffer)
      gst_buffer_unref (buffer);
    return ret;
  }
}

static GstPad *
gst_mplex_request_new_pad (GstElement * element,
    GstPadTemplate * templ, const gchar * name)
{
  GstElementClass *klass = GST_ELEMENT_GET_CLASS (element);
  GstMplex *mplex = GST_MPLEX (element);
  gchar *padname;
  GstPad *newpad;
  GstMplexPad *mpad;

  if (templ == gst_element_class_get_pad_template (klass, "audio_%d")) {
    GST_DEBUG_OBJECT (mplex, "request pad audio %d", mplex->num_apads);
    padname = g_strdup_printf ("audio_%d", mplex->num_apads++);
  } else if (templ == gst_element_class_get_pad_template (klass, "video_%d")) {
    GST_DEBUG_OBJECT (mplex, "request pad video %d", mplex->num_vpads);
    padname = g_strdup_printf ("video_%d", mplex->num_vpads++);
  } else {
    GST_WARNING_OBJECT (mplex, "This is not our template!");
    return NULL;
  }

  newpad = gst_pad_new_from_template (templ, padname);
  g_free (padname);

  mpad = g_new0 (GstMplexPad, 1);
  mpad->adapter = gst_adapter_new ();
  mpad->cond = g_cond_new ();
  gst_object_ref (newpad);
  mpad->pad = newpad;

  gst_pad_set_setcaps_function (newpad, GST_DEBUG_FUNCPTR (gst_mplex_setcaps));
  gst_pad_set_chain_function (newpad, GST_DEBUG_FUNCPTR (gst_mplex_chain));
  gst_pad_set_event_function (newpad, GST_DEBUG_FUNCPTR (gst_mplex_sink_event));
  gst_pad_set_element_private (newpad, mpad);
  gst_element_add_pad (element, newpad);
  mplex->pads = g_slist_append (mplex->pads, mpad);

  return newpad;
}
```

```
static void
gst_mplex_release_pad (GstElement * element, GstPad * pad)
{
 GstMplex *mplex = GST_MPLEX (element);
 GstMplexPad *mpad;

 g_return_if_fail (pad);
 mpad = (GstMplexPad *) gst_pad_get_element_private (pad);
 g_return_if_fail (mpad);

 if (gst_element_remove_pad (element, pad)) {
  gchar *padname;

  GST_MPLEX_MUTEX_LOCK (mplex);
  mpad->eos = TRUE;
  gst_object_unref (mpad->pad);
  mpad->pad = NULL;
  /* wake up if waiting on this pad */
  GST_MPLEX_SIGNAL (mplex, mpad);

  padname = gst_object_get_name (GST_OBJECT (pad));
  if (strstr (padname, "audio")) {
   mplex->num_apads--;
  } else {
   mplex->num_vpads--;
  }
  g_free (padname);

  /* may now be up to us to get things going */
  gst_mplex_start_task (mplex);
  GST_MPLEX_MUTEX_UNLOCK (mplex);
 }
}

static void
gst_mplex_get_property (GObject * object,
  guint prop_id, GValue * value, GParamSpec * pspec)
{
 GST_MPLEX (object)->job->getProperty (prop_id, value);
}

static void
gst_mplex_set_property (GObject * object,
  guint prop_id, const GValue * value, GParamSpec * pspec)
{
 GST_MPLEX (object)->job->setProperty (prop_id, value);
}
```

```
static gboolean
gst_mplex_src_activate_push (GstPad * pad, gboolean active)
{
 gboolean result = TRUE;
 GstMplex *mplex;

 mplex = GST_MPLEX (GST_PAD_PARENT (pad));

 if (active) {
   /* chain will start task once all streams have been setup */
 } else {
   /* end the muxing loop by forcing eos and unblock chains */
   GST_MPLEX_MUTEX_LOCK (mplex);
   mplex->eos = TRUE;
   mplex->srcresult = GST_FLOW_WRONG_STATE;
   GST_MPLEX_SIGNAL_ALL (mplex);
   GST_MPLEX_MUTEX_UNLOCK (mplex);

   /* muxing loop should have ended now and can be joined */
   result = gst_pad_stop_task (pad);
 }

 return result;
}

static GstStateChangeReturn
gst_mplex_change_state (GstElement * element, GstStateChange transition)
{
 GstMplex *mplex = GST_MPLEX (element);
 GstStateChangeReturn ret;

 switch (transition) {
   case GST_STATE_CHANGE_NULL_TO_READY:
     break;
   case GST_STATE_CHANGE_READY_TO_PAUSED:
     break;
   case GST_STATE_CHANGE_PAUSED_TO_PLAYING:
     break;
   default:
     break;
 }

 ret = GST_ELEMENT_CLASS (parent_class)->change_state (element, transition);
 if (ret == GST_STATE_CHANGE_FAILURE)
   goto done;

 switch (transition) {
   case GST_STATE_CHANGE_PAUSED_TO_READY:
```

```c
    gst_mplex_reset (mplex);
    break;
  default:
    break;
 }

done:
 return ret;
}

#ifndef GST_DISABLE_GST_DEBUG

static mjpeg_log_handler_t old_handler = NULL;

/* note that this will affect all mjpegtools elements/threads */
static void
gst_mplex_log_callback (log_level_t level, const char *message)
{
 GstDebugLevel gst_level;

#if GST_MJPEGTOOLS_API >= 10900
 static const gint mjpeg_log_error = mjpeg_loglev_t ("error");
 static const gint mjpeg_log_warn = mjpeg_loglev_t ("warn");
 static const gint mjpeg_log_info = mjpeg_loglev_t ("info");
 static const gint mjpeg_log_debug = mjpeg_loglev_t ("debug");
#else
 static const gint mjpeg_log_error = LOG_ERROR;
 static const gint mjpeg_log_warn = LOG_WARN;
 static const gint mjpeg_log_info = LOG_INFO;
 static const gint mjpeg_log_debug = LOG_DEBUG;
#endif

 if (level == mjpeg_log_error) {
  gst_level = GST_LEVEL_ERROR;
 } else if (level == mjpeg_log_warn) {
  gst_level = GST_LEVEL_WARNING;
 } else if (level == mjpeg_log_info) {
  gst_level = GST_LEVEL_INFO;
 } else if (level == mjpeg_log_debug) {
  gst_level = GST_LEVEL_DEBUG;
 } else {
  gst_level = GST_LEVEL_INFO;
 }

 /* message could have a % in it, do not segfault in such case */
 gst_debug_log (mplex_debug, gst_level, "", "", 0, NULL, "%s", message);

 /* chain up to the old handler;
```

```
  * this could actually be a handler from another mjpegtools based
  * gstreamer element; in which case messages can come out double or from
  * the wrong element ... */
 old_handler (level, message);
}
#endif

static gboolean
plugin_init (GstPlugin * plugin)
{
#ifndef GST_DISABLE_GST_DEBUG
 old_handler = mjpeg_log_set_handler (gst_mplex_log_callback);
 g_assert (old_handler != NULL);
#endif
 /* in any case, we do not want default handler output */
 mjpeg_default_handler_verbosity (0);

 return gst_element_register (plugin, "mplex", GST_RANK_NONE, GST_TYPE_MPLEX);
}

GST_PLUGIN_DEFINE (GST_VERSION_MAJOR,
  GST_VERSION_MINOR,
  "mplex",
  "High-quality MPEG/DVD/SVCD/VCD video/audio multiplexer",
  plugin_init, VERSION, "GPL", GST_PACKAGE_NAME, GST_PACKAGE_ORIGIN)
/* GStreamer mplex (mjpegtools) wrapper
 * (c) 2003 Ronald Bultje <rbultje@ronald.bitfreak.net>
 *
 * gstmplex.hh: gstreamer mplex wrapper
 *
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 * Boston, MA 02111-1307, USA.
 */

#ifndef __GST_MPLEX_H__
#define __GST_MPLEX_H__
```

```
#include <gst/gst.h>
#include <gst/base/gstadapter.h>
#include <multiplexor.hpp>
#include "gstmplexibitstream.hh"
#include "gstmplexjob.hh"

G_BEGIN_DECLS

#define GST_TYPE_MPLEX \
 (gst_mplex_get_type ())
#define GST_MPLEX(obj) \
 (G_TYPE_CHECK_INSTANCE_CAST ((obj), GST_TYPE_MPLEX, GstMplex))
#define GST_MPLEX_CLASS(klass) \
 (G_TYPE_CHECK_CLASS_CAST ((klass), GST_TYPE_MPLEX, GstMplex))
#define GST_IS_MPLEX(obj) \
 (G_TYPE_CHECK_INSTANCE_TYPE ((obj), GST_TYPE_MPLEX))
#define GST_IS_MPLEX_CLASS(obj) \
 (G_TYPE_CHECK_CLASS_TYPE ((klass), GST_TYPE_MPLEX))

GST_DEBUG_CATEGORY_EXTERN (mplex_debug);
#define GST_CAT_DEFAULT mplex_debug

#define GST_MPLEX_MUTEX_LOCK(m) G_STMT_START {                    \
 GST_LOG_OBJECT (m, "locking tlock from thread %p", g_thread_self ()); \
 g_mutex_lock ((m)->tlock);                            \
 GST_LOG_OBJECT (m, "locked tlock from thread %p", g_thread_self ()); \
} G_STMT_END

#define GST_MPLEX_MUTEX_UNLOCK(m) G_STMT_START {                  \
 GST_LOG_OBJECT (m, "unlocking tlock from thread %p", g_thread_self ()); \
 g_mutex_unlock ((m)->tlock);                          \
} G_STMT_END

#define GST_MPLEX_WAIT(m, p) G_STMT_START {                  \
 GST_LOG_OBJECT (m, "thread %p waiting", g_thread_self ());      \
 g_cond_wait ((p)->cond, (m)->tlock);                  \
} G_STMT_END

#define GST_MPLEX_SIGNAL(m, p) G_STMT_START {                 \
 GST_LOG_OBJECT (m, "signalling from thread %p", g_thread_self ());   \
 g_cond_signal ((p)->cond);                        \
} G_STMT_END

#define GST_MPLEX_SIGNAL_ALL(m) G_STMT_START {                \
 GST_LOG_OBJECT (m, "signalling all from thread %p", g_thread_self ());  \
 GSList *walk = m->pads;                            \
 while (walk) {                                \
```

```
    GST_MPLEX_SIGNAL (m, (GstMplexPad *) walk->data);                    \
    walk = walk->next;                                           \
  }                                                       \
} G_STMT_END

typedef struct _GstMplexPad
{
 /* associated pad */
 GstPad *pad;
 /* with mplex TLOCK */
 /* adapter collecting buffers for this pad */
 GstAdapter *adapter;
 /* no more to expect on this pad */
 gboolean eos;
 /* signals counterpart thread to have a look */
 GCond *cond;
 /* amount needed by mplex on this stream */
 guint needed;
 /* bitstream for this pad */
 GstMplexIBitStream *bs;
} GstMplexPad;

typedef struct _GstMplex {
 GstElement parent;

 /* pads */
 GSList *pads;
 GstPad *srcpad;
 guint num_apads, num_vpads;

 /* options wrapper */
 GstMplexJob *job;

 /* lock for syncing */
 GMutex *tlock;
 /* with TLOCK */
 /* muxer writer generated eos */
 gboolean eos;
 /* flowreturn obtained by muxer task */
 GstFlowReturn srcresult;
} GstMplex;

typedef struct _GstMplexClass {
 GstElementClass parent;
} GstMplexClass;

GType   gst_mplex_get_type   (void);
```

G_END_DECLS

#endif /* __GST_MPLEX_H__ */
/* GStreamer mplex (mjpegtools) wrapper
* (c) 2003 Ronald Bultje <rbultje@ronald.bitfreak.net>
* (c) 2008 Mark Nauwelaerts <mnauw@users.sourceforge.net>
*
* gstmplexibitstream.hh: gstreamer/mplex input bitstream wrapper
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* Boston, MA 02111-1307, USA.
*/

#ifdef HAVE_CONFIG_H
#include "config.h"
#endif

#include <string.h>

#include "gstmplex.hh"
#include "gstmplexibitstream.hh"

/*
* Class init/exit functions.
*/

GstMplexIBitStream::GstMplexIBitStream (GstMplexPad * _data, guint buf_size):
IBitStream ()
{
 mpad = _data;
 mplex = GST_MPLEX (GST_PAD_PARENT (mpad->pad));
 eos = FALSE;

 SetBufSize (buf_size);
 eobs = false;
 byteidx = 0;

```
}

/*
 * Read data.
 */

size_t
  GstMplexIBitStream::ReadStreamBytes (uint8_t * buf, size_t size =
  BUFFER_SIZE)
{
 guint8 *data;

 GST_MPLEX_MUTEX_LOCK (mplex);

 GST_DEBUG_OBJECT (mplex, "needing %d bytes", (guint) size);

 while (gst_adapter_available (mpad->adapter) < size
    && !mplex->eos && !mpad->eos) {
  mpad->needed = size;
  GST_MPLEX_SIGNAL (mplex, mpad);
  GST_MPLEX_WAIT (mplex, mpad);
 }

 mpad->needed = 0;
 size = MIN (size, gst_adapter_available (mpad->adapter));
 if (size) {
  data = gst_adapter_take (mpad->adapter, size);
  memcpy (buf, data, size);
  g_free (data);
 }

 GST_MPLEX_MUTEX_UNLOCK (mplex);

 return size;
}

/*
 * Are we at EOS?
 */

bool GstMplexIBitStream::EndOfStream (void)
{
 return eos;
}

bool GstMplexIBitStream::ReadBuffer ()
{
 return ReadIntoBuffer (BUFFER_SIZE);
```

```
}
/* GStreamer mplex (mjpegtools) wrapper
 * (c) 2003 Ronald Bultje <rbultje@ronald.bitfreak.net>
 * (c) 2008 Mark Nauwelaerts <mnauw@users.sourceforge.net>
 *
 * gstmplexibitstream.hh: gstreamer/mplex input bitstream wrapper
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 * Boston, MA 02111-1307, USA.
 */

#ifndef __GST_MPLEXIBITSTREAM_H__
#define __GST_MPLEXIBITSTREAM_H__

#include <gst/gst.h>
#include <mjpeg_types.h>
#include <bits.hpp>

#include "gstmplex.hh"

/* forward declaration; break circular referencing */
typedef struct _GstMplex GstMplex;
typedef struct _GstMplexPad GstMplexPad;

class GstMplexIBitStream : public IBitStream {
public:
 GstMplexIBitStream (GstMplexPad *pad, guint buf_size = BUFFER_SIZE);
 bool ReadBuffer ();

protected:
 /* read data */
 size_t ReadStreamBytes (uint8_t *buf, size_t number);

 /* are we at EOS? */
 bool EndOfStream (void);
```

```
private:
 GstMplex *mplex;
 GstMplexPad *mpad;
 gboolean eos;
};

#endif /* __GST_MPLEXIBITSTREAM_H__ */
/* GStreamer mplex (mjpegtools) wrapper
* (c) 2003 Ronald Bultje <rbultje@ronald.bitfreak.net>
*
* gstmplexjob.hh: gstreamer/mplex multiplex-job wrapper
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* Boston, MA 02111-1307, USA.
*/

#ifdef HAVE_CONFIG_H
#include "config.h"
#endif

#include "gstmplexjob.hh"


enum
{
 ARG_0,
 ARG_FORMAT,
 ARG_MUX_BITRATE,
 ARG_VBR,
 ARG_SYSTEM_HEADERS,
 ARG_SPLIT_SEQUENCE,
 ARG_SEGMENT_SIZE,
 ARG_PACKETS_PER_PACK,
 ARG_SECTOR_SIZE,
 ARG_BUFSIZE
    /* FILL ME */
```

```
};

/*
 * Property enumeration types.
 */

#define GST_TYPE_MPLEX_FORMAT \
 (gst_mplex_format_get_type ())

static GType
gst_mplex_format_get_type (void)
{
 static GType mplex_format_type = 0;

 if (!mplex_format_type) {
   static const GEnumValue mplex_formats[] = {
     {0, "Generic MPEG-1", "0"},
     {1, "Standard VCD", "1"},
     {2, "User VCD", "2"},
     {3, "Generic MPEG-2", "3"},
     {4, "Standard SVCD", "4"},
     {5, "User SVCD", "5"},
     {6, "VCD Stills sequences", "6"},
     {7, "SVCD Stills sequences", "7"},
     {8, "DVD MPEG-2 for dvdauthor", "8"},
     {9, "DVD MPEG-2", "9"},
     {0, NULL, NULL},
   };

   mplex_format_type =
      g_enum_register_static ("GstMplexFormat", mplex_formats);
 }

 return mplex_format_type;
}

/*
 * Class init functions.
 */

GstMplexJob::GstMplexJob (void):
MultiplexJob ()
{
 /* blabla */
 bufsize = 0;
}

/*
```

```
* GObject properties.
*/

void
GstMplexJob::initProperties (GObjectClass * klass)
{
 /* encoding profile */
 g_object_class_install_property (klass, ARG_FORMAT,
    g_param_spec_enum ("format", "Format", "Encoding profile format",
      GST_TYPE_MPLEX_FORMAT, 0,
      (GParamFlags) (G_PARAM_READWRITE | G_PARAM_STATIC_STRINGS)));

 /* total stream datarate. Normally, this shouldn't be needed, but
  * some DVD/VCD/SVCD players really need strict values to handle
  * the created files correctly. */
 g_object_class_install_property (klass, ARG_MUX_BITRATE,
    g_param_spec_int ("mux-bitrate", "Mux. bitrate",
      "Bitrate of output stream in kbps (0 = autodetect)",
      0, 15 * 1024, 0,
      (GParamFlags) (G_PARAM_READWRITE | G_PARAM_STATIC_STRINGS)));

 /* override decode buffer size otherwise determined by format */
 g_object_class_install_property (klass, ARG_BUFSIZE,
    g_param_spec_int ("bufsize", "Decoder buf. size",
      "Target decoders video buffer size (kB) "
      "[default determined by format if not explicitly set]",
      20, 4000, 46,
      (GParamFlags) (G_PARAM_READWRITE | G_PARAM_STATIC_STRINGS)));

 /* some boolean stuff for headers */
 g_object_class_install_property (klass, ARG_VBR,
    g_param_spec_boolean ("vbr", "VBR",
      "Whether the input video stream is variable bitrate",
      FALSE,
      (GParamFlags) (G_PARAM_READWRITE | G_PARAM_STATIC_STRINGS)));
 g_object_class_install_property (klass, ARG_SYSTEM_HEADERS,
    g_param_spec_boolean ("system-headers", "System headers",
      "Create system header in every pack for generic formats",
      FALSE,
      (GParamFlags) (G_PARAM_READWRITE | G_PARAM_STATIC_STRINGS)));
#if 0                    /* not supported */
 g_object_class_install_property (klass, ARG_SPLIT_SEQUENCE,
    g_param_spec_boolean ("split-sequence", "Split sequence",
      "Simply split a sequence across files "
      "(rather than building run-out/run-in)",
      FALSE,
      (GParamFlags) (G_PARAM_READWRITE | G_PARAM_STATIC_STRINGS)));
```

```
   /* size of a segment */
 g_object_class_install_property (klass, ARG_SEGMENT_SIZE,
    g_param_spec_int ("max-segment-size", "Max. segment size",
       "Max. size per segment/file in MB (0 = unlimited)",
       0, 10 * 1024, 0,
       (GParamFlags) (G_PARAM_READWRITE | G_PARAM_STATIC_STRINGS)));
#endif

   /* packets per pack (generic formats) */
 g_object_class_install_property (klass, ARG_PACKETS_PER_PACK,
    g_param_spec_int ("packets-per-pack", "Packets per pack",
       "Number of packets per pack for generic formats",
       1, 100, 1,
       (GParamFlags) (G_PARAM_READWRITE | G_PARAM_STATIC_STRINGS)));

   /* size of one sector */
 g_object_class_install_property (klass, ARG_SECTOR_SIZE,
    g_param_spec_int ("sector-size", "Sector size",
       "Specify sector size in bytes for generic formats",
       256, 16384, 2048,
       (GParamFlags) (G_PARAM_READWRITE | G_PARAM_STATIC_STRINGS)));
}

/*
* set/get gobject properties.
*/

void
GstMplexJob::getProperty (guint prop_id, GValue * value)
{
 switch (prop_id) {
  case ARG_FORMAT:
   g_value_set_enum (value, mux_format);
   break;
  case ARG_MUX_BITRATE:
   /* convert from bytes back to bits */
   g_value_set_int (value, (data_rate * 8) / 1000);
   break;
  case ARG_VBR:
   g_value_set_boolean (value, VBR);
   break;
  case ARG_SYSTEM_HEADERS:
   g_value_set_boolean (value, always_system_headers);
   break;
  case ARG_SPLIT_SEQUENCE:
   g_value_set_boolean (value, multifile_segment);
   break;
  case ARG_SEGMENT_SIZE:
```

```
    g_value_set_int (value, max_segment_size);
    break;
  case ARG_PACKETS_PER_PACK:
    g_value_set_int (value, packets_per_pack);
    break;
  case ARG_SECTOR_SIZE:
    g_value_set_int (value, sector_size);
    break;
  case ARG_BUFSIZE:
    g_value_set_int (value, bufsize);
    break;
  default:
    break;
 }
}

void
GstMplexJob::setProperty (guint prop_id, const GValue * value)
{
 switch (prop_id) {
  case ARG_FORMAT:
    mux_format = g_value_get_enum (value);
    break;
  case ARG_MUX_BITRATE:
    /* data_rate expects bytes (don't ask me why the property itself is
     * in bits, I'm just staying compatible to mjpegtools options), and
     * rounded up to 50-bytes. */
    data_rate = ((g_value_get_int (value) * 1000 / 8 + 49) / 50) * 50;
    break;
  case ARG_VBR:
    VBR = g_value_get_boolean (value);
    break;
  case ARG_SYSTEM_HEADERS:
    always_system_headers = g_value_get_boolean (value);
    break;
  case ARG_SPLIT_SEQUENCE:
    multifile_segment = g_value_get_boolean (value);
    break;
  case ARG_SEGMENT_SIZE:
    max_segment_size = g_value_get_int (value);
    break;
  case ARG_PACKETS_PER_PACK:
    packets_per_pack = g_value_get_int (value);
    break;
  case ARG_SECTOR_SIZE:
    sector_size = g_value_get_int (value);
    break;
  case ARG_BUFSIZE:
```

```
      bufsize = g_value_get_int (value);
      break;
    default:
      break;
  }
}
```
/* GStreamer mplex (mjpegtools) wrapper

 * (c) 2003 Ronald Bultje <rbultje@ronald.bitfreak.net>

 *

 * gstmplexjob.hh: gstreamer/mplex multiplex-job wrapper

 *

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 */

```
#ifndef __GST_MPLEXJOB_H__
#define __GST_MPLEXJOB_H__

#include <glib-object.h>
#include <interact.hpp>

class GstMplexJob : public MultiplexJob {
public:
 GstMplexJob (void);

 /* gobject properties */
 static void initProperties (GObjectClass *klass);

 /* set/get gobject properties */
 void getProperty (guint        prop_id,
    GValue      *value);
 void setProperty (guint        prop_id,
    const GValue *value);

 int bufsize;
};
```

```
#endif /* __GST_MPLEXJOB_H__ */
/* GStreamer mplex (mjpegtools) wrapper
* (c) 2003 Ronald Bultje <rbultje@ronald.bitfreak.net>
* (c) 2008 Mark Nauwelaerts <mnauw@users.sourceforge.net>
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* gstmplexoutputstream.hh: gstreamer/mplex output stream wrapper
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*/

#ifdef HAVE_CONFIG_H
#include "config.h"
#endif

#include <string.h>

#include "gstmplex.hh"
#include "gstmplexoutputstream.hh"

/*
* Class init functions.
*/

GstMplexOutputStream::GstMplexOutputStream (GstMplex * _element, GstPad * _pad):
OutputStream ()
{
 mplex = _element;
 pad = _pad;
 size = 0;
}

/*
* Open/close. Basically 'no-op's (close() sets EOS).
*
```

```
* Open (): -1 means failure, 0 means success.
*/

int
GstMplexOutputStream::Open (void)
{
 return 0;
}

void
GstMplexOutputStream::Close (void)
{
 GST_MPLEX_MUTEX_LOCK (mplex);
 GST_DEBUG_OBJECT (mplex, "closing stream and sending eos");
 gst_pad_push_event (pad, gst_event_new_eos ());
 /* notify chain there is no more need to supply buffers */
 mplex->eos = TRUE;
 GST_MPLEX_SIGNAL_ALL (mplex);
 GST_MPLEX_MUTEX_UNLOCK (mplex);
}

/*
* Get size of current segment.
*/

#if GST_MJPEGTOOLS_API >= 10900
uint64_t
GstMplexOutputStream::SegmentSize (void)
#else
off_t
GstMplexOutputStream::SegmentSize (void)
#endif
{
 return size;
}

/*
* Next segment; not really supported.
*/

void
GstMplexOutputStream::NextSegment (void)
{
 size = 0;

 GST_WARNING_OBJECT (mplex, "multiple file output is not supported");
 /* FIXME: no such filesink behaviour to be expected */
}
```

```
/*
* Write data.
*/

void
GstMplexOutputStream::Write (guint8 * data, guint len)
{
 GstBuffer *buf;

 buf = gst_buffer_new_and_alloc (len);
 memcpy (GST_BUFFER_DATA (buf), data, len);

 size += len;
 GST_MPLEX_MUTEX_LOCK (mplex);
 gst_buffer_set_caps (buf, GST_PAD_CAPS (pad));
 mplex->srcresult = gst_pad_push (pad, buf);
 GST_MPLEX_MUTEX_UNLOCK (mplex);
}
/* GStreamer mplex (mjpegtools) wrapper
* (c) 2003 Ronald Bultje <rbultje@ronald.bitfreak.net>
* (c) 2008 Mark Nauwelaerts <mnauw@users.sourceforge.net>
*
* gstmplexoutputstream.hh: gstreamer/mplex output stream wrapper
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*/

#ifndef __GST_MPLEXOUTPUTSTREAM_H__
#define __GST_MPLEXOUTPUTSTREAM_H__

#include <gst/gst.h>
#include <mjpeg_types.h>
#include <outputstrm.hpp>
```

```
#include "gstmplex.hh"

class GstMplexOutputStream : public OutputStream {
public:
 GstMplexOutputStream (GstMplex *element, GstPad *pad);


 /* open/close. Basically 'no-op's (close() sets EOS). */
 int  Open  (void);
 void Close (void);


 /* get size of current segment */
#if GST_MJPEGTOOLS_API >= 10900
 uint64_t SegmentSize (void);
#else
 off_t SegmentSize (void);
#endif


 /* next segment */
 void NextSegment (void);


 /* write data */
 void Write (guint8 *data, guint len);


private:
 GstMplex *mplex;
 GstPad *pad;
 guint64 size;
};


#endif /* __GST_MPLEXOUTPUTSTREAM_H__ */
```

1.7 gstreamer-plugins-base 0.10.35.1

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The plugins which use a GPL library are as follows:

a52dec   liba52   (http://liba52.sourceforge.net/)
aasink   aalib   (http://sourceforge.net/projects/aa-project/)
cdparanoia   libcdparanoia   (http://www.xiph.org/paranoia/)
dtsdec   libdts   (http://www.videolan.org/dtsdec.html)
dvdnavsrc   libdvdnav   (http://dvd.sourceforge.net/)
dxr3   (http://dxr3.sourceforge.net/)
icecastsend   libshout   (http://www.icecast.org)
mad   libmad   (http://www.mars.org/home/rob/proj/mpeg/)
mpeg2dec   libmpeg2   (http://libmpeg2.sourceforge.net/)
mpeg2enc   libmpeg2enc   (http://mjpeg.sourceforge.net/)
mplex   libmplex   (http://mjpeg.sourceforge.net/)
siddec   libsidplay 1.36 (http://www.geocities.com/SiliconValley/Lakes/5147/sidplay/,
                                 http://sourceforge.net/projects/sidplay2/)
trm   libmusicbrainz (http://www.musicbrainz.org/)
xine   libxine   (http://xinehq.de/)
xvid   libxvidcore   (http://www.xvid.org/)

Plugins derived from GPL code are as follows:

dvdreadsrc   libdvdread   (http://www.dtek.chalmers.se/groups/dvd/)

jack   libjack   (http://jackit.sourceforge.net/)

Note libjack is LGPL, but plugin is GPL.

monoscope   None   (Algorithm by Ralph Loader, Joerg Walter,

Richard Boulton, and Andy Lo A Foe)

rtjpeg   None   (Erik Walthinsen's algorithm)

rtp   None   (http://www.linphone.org/ortp/)

synaesthesia   (http://www.logarithmic.net/pfh/synaesthesia)

system_encode   None   (Algorithm by Chrisoph Moar, Wim Tayman's and

Erik Walthinsen)

vbidec   None   (Algorithm by Billy Biggs, Doug Bell,

Erik Walthinsen and David I. Lehn)

Plugins which use a LGPL library are as follows:

alsa   alsa   (http://alsa-project.org/)

artsdsink   aRts   (http://arts-project.org/)

cacasink   libcaca   (http://sam.zoy.org/projects/libcaca/)

colorspacelcs   libcolorspace

dvdec   libdv   (http://libdv.sourceforge.net/)

esdmon,esdsink   libesd   (ftp.gnome.org/pub/GNOME/stable/sources/esound/)

faac   libfaac   (http://www.audiocoding.com/modules/mydownloads/)

fameenc   libfame   (http://fame.sourceforge.net/)

ffmpeg   ffmpeg   (http://ffmpeg.sourceforge.net/)

gdkpixbuf   GTK+   (http://www.gtk.org/)

gnomevfs   gnome-vfs   (ftp.gnome.org//pub/GNOME/stable/sources/gnome-vfs/)

gst_arts   aRts   (http://arts-project.org/)

gst1394   libraw1394   (http://www.linux1394.org/)

gstaf   libaudiofile   (http://www.68k.org/~michael/audiofile/)

gstsf   libsndfile   (http://www.mega-nerd.com/libsndfile/)

hermescolorspace Hermes   (http://www.clanlib.org/hermes/)

kio   KDE   (http://www.kde.org/)

ladspa   (http://www.ladspa.org/)

lame   libmp3lame   (http://lame.sourceforge.net/)

libvisual   libvisual   (http://libvisual.sourceforge.net/)

matroska   (http://www.matroska.org/)

mikmod   libmikmod   (http://mikmod.raphnet.net/)

ossaudio   (http://www.opensound.com/)

qcamsrc

rfbenc   librfb

sdlvideosink   libsdl   (http://www.libsdl.org/)

shout2send   libshout2   (http://www.icecast.org)

smoothwave

swfdec   (http://swfdec.sourceforge.net/)

tarkin   (http://svn.xiph.org/trunk/tarkin/)

textoverlay   pango   (http://www.pango.org/)

dirac   (http://www.bbc.co.uk/rd/projects/dirac/)

effectv (Our ports was relicensed)(http://effectv.sourceforge.net/)

musepack   (http://www.musepack.net/)

Plugins which use a BSD covered library are as follows:

ogg   libogg/libvorbis (http://www.xiph.org/ogg/vorbis/)
vorbis   libogg/libvorbis (http://www.xiph.org/ogg/vorbis/)
gsttheora   libtheora   (http://www.theora.org/)
speex   (http://www.speex.org/)
flac   libFLAC   (http://flac.sourceforge.net/)

Plugins based on libraries with other free licenses:

ximagesink   libXv
xvimagesink   libXv
- license: MIT X11 / X Consortium license

gsm   libgsm
- license   MIT license http://kbs.cs.tu-berlin.de/~jutta/toast.html

festival   (http://www.cstr.ed.ac.uk/projects/festival/)
- license: http://www.cstr.ed.ac.uk/projects/festival/freecopyright.shtml

jpeg   (http://www.ijg.org/)
- license: IJG license

nas   (http://radscan.com/nas.html)
- license: NAS license

snapshot   libpng   (http://www.libpng.org/pub/png/)
- license: PNG license

mngdec/mngenc libmng   (http://gjuyn.xs4all.nl/libmng)
- license   PNG license

Plugins using non-free libraries:
divxdec, divxenc   (http://www.divx.com/)
osxaudio   (http://www.apple.com/macosx/)
sunaudiosink   (http://www.sun.com/)

Unsure:

faad   libfaad   (http://www.audiocoding.com/)
faad's license depends on its major version :
 - for FAAD1 : it is LGPL
 - for FAAD2 : it is GPL
look at these pages for more information on licenses :
http://www.audiocoding.com/modules/wiki/?page=FAAD2
http://www.audiocoding.com/modules/wiki/?page=FAAC

by default, GStreamer faad plugin would compile against FAAD2 if available.
it falls back to FAAD1 if not.

1.8 gstreamer-plugins-good 0.10.30.1
1.8.1 Available under license :

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Version 2.1, February 1999

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to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the
Library. A suitable mechanism is one that (1) uses at run time a
copy of the library already present on the user's computer system,
rather than copying library functions into the executable, and (2)
will operate properly with a modified version of the library, if
the user installs one, as long as the modified version is
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<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
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*/
This is a demuxer supporting a subset of the Quicktime video container
format developed by Apple. Apple and others have some patents on
some features of the Quicktime container format in regards to technologies
such as QuicktimeVR and RTP hinting. Due to that be aware that if ever

such features are added to this demuxer it would need to be moved to the
-ugly module or those features need to come as add-in functionality stored in
another module.

As the plugin is as of today's date (19th of June 2007) it does not
violate any software patents we know of.
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for ensuring that plugins are used in accordance with licensing terms
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Some of our plugins however rely on libraries which are available under other
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you have to make sure not to use GPL linked or derived plugins. When using
GPL linked plugins GStreamer is for all practical reasons under the GPL itself.

The plugins which use a GPL library are as follows:

a52dec   liba52   (http://liba52.sourceforge.net/)
aasink   aalib   (http://sourceforge.net/projects/aa-project/)

cdparanoia   libcdparanoia   (http://www.xiph.org/paranoia/)
dtsdec   libdts   (http://www.videolan.org/dtsdec.html)
dvdnavsrc   libdvdnav   (http://dvd.sourceforge.net/)
dxr3   (http://dxr3.sourceforge.net/)
icecastsend   libshout   (http://www.icecast.org)
mad   libmad   (http://www.mars.org/home/rob/proj/mpeg/)
mpeg2dec   libmpeg2   (http://libmpeg2.sourceforge.net/)
mpeg2enc   libmpeg2enc   (http://mjpeg.sourceforge.net/)
mplex   libmplex   (http://mjpeg.sourceforge.net/)
siddec   libsidplay 1.36 (http://www.geocities.com/SiliconValley/Lakes/5147/sidplay/,
                                http://sourceforge.net/projects/sidplay2/)
trm   libmusicbrainz (http://www.musicbrainz.org/)
xine   libxine   (http://xinehq.de/)
xvid   libxvidcore   (http://www.xvid.org/)

Plugins derived from GPL code are as follows:

dvdreadsrc   libdvdread   (http://www.dtek.chalmers.se/groups/dvd/)
jack   libjack   (http://jackit.sourceforge.net/)
                                Note libjack is LGPL, but plugin is GPL.
monoscope   None   (Algorithm by Ralph Loader, Joerg Walter,
                                Richard Boulton, and Andy Lo A Foe)
rtjpeg   None   (Erik Walthinsen's algorithm)
rtp   None   (http://www.linphone.org/ortp/)
synaesthesia   (http://www.logarithmic.net/pfh/synaesthesia)
system_encode   None   (Algorithm by Chrisoph Moar, Wim Tayman's and
                                Erik Walthinsen)
vbidec   None   (Algorithm by Billy Biggs, Doug Bell,
                                Erik Walthinsen and David I. Lehn)

Plugins which use a LGPL library are as follows:

alsa   alsa   (http://alsa-project.org/)
artsdsink   aRts   (http://arts-project.org/)
cacasink   libcaca   (http://sam.zoy.org/projects/libcaca/)
colorspacelcs   libcolorspace
dvdec   libdv   (http://libdv.sourceforge.net/)
esdmon,esdsink libesd   (ftp.gnome.org/pub/GNOME/stable/sources/esound/)
faac   libfaac   (http://www.audiocoding.com/modules/mydownloads/)
fameenc   libfame   (http://fame.sourceforge.net/)
ffmpeg   ffmpeg   (http://ffmpeg.sourceforge.net/)
gdkpixbuf   GTK+   (http://www.gtk.org/)
gnomevfs   gnome-vfs   (ftp.gnome.org//pub/GNOME/stable/sources/gnome-vfs/)
gst_arts   aRts   (http://arts-project.org/)
gst1394   libraw1394   (http://www.linux1394.org/)
gstaf   libaudiofile   (http://www.68k.org/~michael/audiofile/)
gstsf   libsndfile   (http://www.mega-nerd.com/libsndfile/)
hermescolorspace Hermes   (http://www.clanlib.org/hermes/)

kio   KDE   (http://www.kde.org/)
ladspa   (http://www.ladspa.org/)
lame   libmp3lame   (http://lame.sourceforge.net/)
libvisual   libvisual   (http://libvisual.sourceforge.net/)
matroska   (http://www.matroska.org/)
mikmod   libmikmod   (http://mikmod.raphnet.net/)
ossaudio   (http://www.opensound.com/)
qcamsrc
rfbenc   librfb
sdlvideosink libsdl   (http://www.libsdl.org/)
shout2send   libshout2   (http://www.icecast.org)
smoothwave
swfdec   (http://swfdec.sourceforge.net/)
tarkin   (http://svn.xiph.org/trunk/tarkin/)
textoverlay pango   (http://www.pango.org/)
dirac   (http://www.bbc.co.uk/rd/projects/dirac/)
effectv (Our ports was relicensed)(http://effectv.sourceforge.net/)
musepack   (http://www.musepack.net/)

Plugins which use a BSD covered library are as follows:

ogg   libogg/libvorbis (http://www.xiph.org/ogg/vorbis/)
vorbis   libogg/libvorbis (http://www.xiph.org/ogg/vorbis/)
gsttheora   libtheora   (http://www.theora.org/)
speex   (http://www.speex.org/)
flac   libFLAC   (http://flac.sourceforge.net/)

Plugins based on libraries with other free licenses:

ximagesink   libXv
xvimagesink libXv
- license: MIT X11 / X Consortium license

gsm   libgsm
- license   MIT license http://kbs.cs.tu-berlin.de/~jutta/toast.html

festival   (http://www.cstr.ed.ac.uk/projects/festival/)
- license: http://www.cstr.ed.ac.uk/projects/festival/freecopyright.shtml

jpeg   (http://www.ijg.org/)
- license: IJG license

nas   (http://radscan.com/nas.html)
- license: NAS license

snapshot   libpng   (http://www.libpng.org/pub/png/)
- license: PNG license

mngdec/mngenc libmng   (http://gjuyn.xs4all.nl/libmng)
- license   PNG license

Plugins using non-free libraries:
divxdec, divxenc   (http://www.divx.com/)
osxaudio   (http://www.apple.com/macosx/)
sunaudiosink   (http://www.sun.com/)

Unsure:

faad   libfaad   (http://www.audiocoding.com/)
faad's license depends on its major version :
 - for FAAD1 : it is LGPL
 - for FAAD2 : it is GPL
look at these pages for more information on licenses :
http://www.audiocoding.com/modules/wiki/?page=FAAD2
http://www.audiocoding.com/modules/wiki/?page=FAAC

by default, GStreamer faad plugin would compile against FAAD2 if available.
it falls back to FAAD1 if not.
/*
* GStreamer
* Copyright (C) 2007 Sebastian Drge <slomo@circular-chaos.org>
* Copyright (C) 2006 Stefan Kost <ensonic@users.sf.net>
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* Free Software Foundation, Inc., 59 Temple Place - Suite 330,
* Boston, MA 02111-1307, USA.
*/

/**
* SECTION:element-audioamplify
*
* Amplifies an audio stream by a given factor and allows the selection of different clipping modes.
* The difference between the clipping modes is best evaluated by testing.
*
* <refsect2>

```
* <title>Example launch line</title>
* |[
* gst-launch audiotestsrc wave=saw ! audioamplify amplification=1.5 ! alsasink
* gst-launch filesrc location="melo1.ogg" ! oggdemux ! vorbisdec ! audioconvert ! audioamplify amplification=1.5
method=wrap-negative ! alsasink
* gst-launch audiotestsrc wave=saw ! audioconvert ! audioamplify amplification=1.5 method=wrap-positive !
audioconvert ! alsasink
* ]|
* </refsect2>
*/

#ifdef HAVE_CONFIG_H
#include "config.h"
#endif

#include <gst/gst.h>
#include <gst/base/gstbasetransform.h>
#include <gst/audio/audio.h>
#include <gst/audio/gstaudiofilter.h>
#include <gst/controller/gstcontroller.h>

#include "audioamplify.h"

#define GST_CAT_DEFAULT gst_audio_amplify_debug
GST_DEBUG_CATEGORY_STATIC (GST_CAT_DEFAULT);

/* Filter signals and args */
enum
{
 /* FILL ME */
 LAST_SIGNAL
};

enum
{
 PROP_0,
 PROP_AMPLIFICATION,
 PROP_CLIPPING_METHOD
};

enum
{
 METHOD_CLIP = 0,
 METHOD_WRAP_NEGATIVE,
 METHOD_WRAP_POSITIVE,
 METHOD_NOCLIP,
 NUM_METHODS
};
```

```
#define GST_TYPE_AUDIO_AMPLIFY_CLIPPING_METHOD (gst_audio_amplify_clipping_method_get_type
())
static GType
gst_audio_amplify_clipping_method_get_type (void)
{
 static GType gtype = 0;

 if (gtype == 0) {
   static const GEnumValue values[] = {
     {METHOD_CLIP, "Normal clipping (default)", "clip"},
     {METHOD_WRAP_NEGATIVE,
         "Push overdriven values back from the opposite side",
       "wrap-negative"},
     {METHOD_WRAP_POSITIVE, "Push overdriven values back from the same side",
       "wrap-positive"},
     {METHOD_NOCLIP, "No clipping", "none"},
     {0, NULL, NULL}
   };

   /* FIXME 0.11: rename to GstAudioAmplifyClippingMethod */
   gtype = g_enum_register_static ("GstAudioPanoramaClippingMethod", values);
 }
 return gtype;
}

#define ALLOWED_CAPS                              \
  "audio/x-raw-int,"                              \
  " depth=(int)8,"                                \
  " width=(int)8,"                                \
  " endianness=(int)BYTE_ORDER,"                  \
  " signed=(bool)TRUE,"                           \
  " rate=(int)[1,MAX],"                           \
  " channels=(int)[1,MAX]; "                      \
  "audio/x-raw-int,"                              \
  " depth=(int)16,"                               \
  " width=(int)16,"                               \
  " endianness=(int)BYTE_ORDER,"                  \
  " signed=(bool)TRUE,"                           \
  " rate=(int)[1,MAX],"                           \
  " channels=(int)[1,MAX]; "                      \
  "audio/x-raw-int,"                              \
  " depth=(int)32,"                               \
  " width=(int)32,"                               \
  " endianness=(int)BYTE_ORDER,"                  \
  " signed=(bool)TRUE,"                           \
  " rate=(int)[1,MAX],"                           \
  " channels=(int)[1,MAX]; "                      \
```

```
    "audio/x-raw-float,"                                    \
    " width=(int){32,64},"                                  \
    " endianness=(int)BYTE_ORDER,"                          \
    " rate=(int)[1,MAX],"                                   \
    " channels=(int)[1,MAX]"

#define DEBUG_INIT(bla) \
  GST_DEBUG_CATEGORY_INIT (gst_audio_amplify_debug, "audioamplify", 0, "audioamplify element");

GST_BOILERPLATE_FULL (GstAudioAmplify, gst_audio_amplify, GstAudioFilter,
    GST_TYPE_AUDIO_FILTER, DEBUG_INIT);

static gboolean gst_audio_amplify_set_process_function (GstAudioAmplify *
    filter, gint clipping, gint format, gint width);
static void gst_audio_amplify_set_property (GObject * object, guint prop_id,
    const GValue * value, GParamSpec * pspec);
static void gst_audio_amplify_get_property (GObject * object, guint prop_id,
    GValue * value, GParamSpec * pspec);

static gboolean gst_audio_amplify_setup (GstAudioFilter * filter,
    GstRingBufferSpec * format);
static GstFlowReturn gst_audio_amplify_transform_ip (GstBaseTransform * base,
    GstBuffer * buf);

#define MIN_gint8 G_MININT8
#define MAX_gint8 G_MAXINT8
#define MIN_gint16 G_MININT16
#define MAX_gint16 G_MAXINT16
#define MIN_gint32 G_MININT32
#define MAX_gint32 G_MAXINT32

#define MAKE_INT_FUNCS(type,largetype)                          \
static void                                                     \
gst_audio_amplify_transform_##type##_clip (GstAudioAmplify * filter,      \
    void * data, guint num_samples)                            \
{                                                              \
  type *d = data;                                              \
                                                               \
  while (num_samples--) {                                      \
    largetype val = *d * filter->amplification;                \
    *d++ = CLAMP (val, MIN_##type, MAX_##type);                \
  }                                                            \
}                                                              \
static void                                                    \
gst_audio_amplify_transform_##type##_wrap_negative (GstAudioAmplify * filter, \
    void * data, guint num_samples)                            \
{                                                              \
  type *d = data;                                              \
```

```
                                                           \
      while (num_samples--) {                               \
        largetype val = *d * filter->amplification;           \
        if (val > MAX_##type)                                 \
          val = MIN_##type + (val - MIN_##type) % ((largetype) MAX_##type + 1 -  \
              MIN_##type);                                      \
        else if (val < MIN_##type)                            \
          val = MAX_##type - (MAX_##type - val) % ((largetype) MAX_##type + 1 -  \
              MIN_##type);                                      \
        *d++ = val;                                           \
      }                                                       \
    }                                                         \
    static void                                               \
    gst_audio_amplify_transform_##type##_wrap_positive (GstAudioAmplify * filter, \
        void * data, guint num_samples)                       \
    {                                                         \
      type *d = data;                                         \
                                                              \
      while (num_samples--) {                                 \
        largetype val = *d * filter->amplification;           \
        do {                                                  \
          if (val > MAX_##type)                               \
            val = MAX_##type - (val - MAX_##type);            \
          else if (val < MIN_##type)                          \
            val = MIN_##type + (MIN_##type - val);            \
          else                                                \
            break;                                            \
        } while (1);                                          \
        *d++ = val;                                           \
      }                                                       \
    }                                                         \
    static void                                               \
    gst_audio_amplify_transform_##type##_noclip (GstAudioAmplify * filter,     \
        void * data, guint num_samples)                       \
    {                                                         \
      type *d = data;                                         \
                                                              \
      while (num_samples--)                                   \
        *d++ *= filter->amplification;                        \
    }

    #define MAKE_FLOAT_FUNCS(type)                            \
    static void                                               \
    gst_audio_amplify_transform_##type##_clip (GstAudioAmplify * filter,       \
        void * data, guint num_samples)                       \
    {                                                         \
      type *d = data;                                         \
                                                              \
```

```
  while (num_samples--) {                                    \
    type val = *d* filter->amplification;                    \
    *d++ = CLAMP (val, -1.0, +1.0);                          \
  }                                                          \
}                                                            \
static void                                                  \
gst_audio_amplify_transform_##type##_wrap_negative (GstAudioAmplify *      \
    filter, void * data, guint num_samples)                  \
{                                                            \
  type *d = data;                                            \
                                                             \
  while (num_samples--) {                                    \
    type val = *d * filter->amplification;                   \
    do {                                                     \
      if (val > 1.0)                                         \
        val = -1.0 + (val - 1.0);                            \
      else if (val < -1.0)                                   \
        val = 1.0 - (1.0 - val);                             \
      else                                                   \
        break;                                               \
    } while (1);                                             \
    *d++ = val;                                              \
  }                                                          \
}                                                            \
static void                                                  \
gst_audio_amplify_transform_##type##_wrap_positive (GstAudioAmplify * filter, \
    void * data, guint num_samples)                          \
{                                                            \
  type *d = data;                                            \
                                                             \
  while (num_samples--) {                                    \
    type val = *d* filter->amplification;                    \
    do {                                                     \
      if (val > 1.0)                                         \
        val = 1.0 - (val - 1.0);                             \
      else if (val < -1.0)                                   \
        val = -1.0 + (-1.0 - val);                           \
      else                                                   \
        break;                                               \
    } while (1);                                             \
    *d++ = val;                                              \
  }                                                          \
}                                                            \
static void                                                  \
gst_audio_amplify_transform_##type##_noclip (GstAudioAmplify * filter,      \
    void * data, guint num_samples)                          \
{                                                            \
  type *d = data;                                            \
```

```
                                                          \
  while (num_samples--)                                   \
    *d++ *= filter->amplification;                        \
}

/* *INDENT-OFF* */
MAKE_INT_FUNCS (gint8,gint)
MAKE_INT_FUNCS (gint16,gint)
MAKE_INT_FUNCS (gint32,gint64)
MAKE_FLOAT_FUNCS (gfloat)
MAKE_FLOAT_FUNCS (gdouble)
/* *INDENT-ON* */

/* GObject vmethod implementations */

static void
gst_audio_amplify_base_init (gpointer klass)
{
  GstElementClass *element_class = GST_ELEMENT_CLASS (klass);
  GstCaps *caps;

  gst_element_class_set_details_simple (element_class, "Audio amplifier",
      "Filter/Effect/Audio",
      "Amplifies an audio stream by a given factor",
      "Sebastian Drge <slomo@circular-chaos.org>");

  caps = gst_caps_from_string (ALLOWED_CAPS);
  gst_audio_filter_class_add_pad_templates (GST_AUDIO_FILTER_CLASS (klass),
      caps);
  gst_caps_unref (caps);
}

static void
gst_audio_amplify_class_init (GstAudioAmplifyClass * klass)
{
  GObjectClass *gobject_class;

  gobject_class = (GObjectClass *) klass;
  gobject_class->set_property = gst_audio_amplify_set_property;
  gobject_class->get_property = gst_audio_amplify_get_property;

  g_object_class_install_property (gobject_class, PROP_AMPLIFICATION,
      g_param_spec_float ("amplification", "Amplification",
          "Factor of amplification", -G_MAXFLOAT, G_MAXFLOAT,
          1.0,
          G_PARAM_READWRITE | GST_PARAM_CONTROLLABLE | G_PARAM_STATIC_STRINGS));

  /**
```

```
 * GstAudioAmplify:clipping-method
 *
 * Clipping method: clip mode set values higher than the maximum to the
 * maximum. The wrap-negative mode pushes those values back from the
 * opposite side, wrap-positive pushes them back from the same side.
 *
 **/
g_object_class_install_property (gobject_class, PROP_CLIPPING_METHOD,
   g_param_spec_enum ("clipping-method", "Clipping method",
      "Selects how to handle values higher than the maximum",
      GST_TYPE_AUDIO_AMPLIFY_CLIPPING_METHOD, METHOD_CLIP,
      G_PARAM_READWRITE | G_PARAM_STATIC_STRINGS));

GST_AUDIO_FILTER_CLASS (klass)->setup =
   GST_DEBUG_FUNCPTR (gst_audio_amplify_setup);
GST_BASE_TRANSFORM_CLASS (klass)->transform_ip =
   GST_DEBUG_FUNCPTR (gst_audio_amplify_transform_ip);
}

static void
gst_audio_amplify_init (GstAudioAmplify * filter, GstAudioAmplifyClass * klass)
{
 filter->amplification = 1.0;
 gst_audio_amplify_set_process_function (filter, METHOD_CLIP,
    GST_BUFTYPE_LINEAR, 16);
 gst_base_transform_set_in_place (GST_BASE_TRANSFORM (filter), TRUE);
 gst_base_transform_set_gap_aware (GST_BASE_TRANSFORM (filter), TRUE);
}

static GstAudioAmplifyProcessFunc
gst_audio_amplify_process_function (gint clipping, gint format, gint width)
{
 static const struct process
 {
  gint format;
  gint width;
  gint clipping;
  GstAudioAmplifyProcessFunc func;
 } process[] = {
  {
  GST_BUFTYPE_FLOAT, 32, METHOD_CLIP,
     gst_audio_amplify_transform_gfloat_clip}, {
  GST_BUFTYPE_FLOAT, 32, METHOD_WRAP_NEGATIVE,
     gst_audio_amplify_transform_gfloat_wrap_negative}, {
  GST_BUFTYPE_FLOAT, 32, METHOD_WRAP_POSITIVE,
     gst_audio_amplify_transform_gfloat_wrap_positive}, {
  GST_BUFTYPE_FLOAT, 32, METHOD_NOCLIP,
     gst_audio_amplify_transform_gfloat_noclip}, {
```

```
      GST_BUFTYPE_FLOAT, 64, METHOD_CLIP,
          gst_audio_amplify_transform_gdouble_clip}, {
      GST_BUFTYPE_FLOAT, 64, METHOD_WRAP_NEGATIVE,
          gst_audio_amplify_transform_gdouble_wrap_negative}, {
      GST_BUFTYPE_FLOAT, 64, METHOD_WRAP_POSITIVE,
          gst_audio_amplify_transform_gdouble_wrap_positive}, {
      GST_BUFTYPE_FLOAT, 64, METHOD_NOCLIP,
          gst_audio_amplify_transform_gdouble_noclip}, {
      GST_BUFTYPE_LINEAR, 8, METHOD_CLIP, gst_audio_amplify_transform_gint8_clip}, {
      GST_BUFTYPE_LINEAR, 8, METHOD_WRAP_NEGATIVE,
          gst_audio_amplify_transform_gint8_wrap_negative}, {
      GST_BUFTYPE_LINEAR, 8, METHOD_WRAP_POSITIVE,
          gst_audio_amplify_transform_gint8_wrap_positive}, {
      GST_BUFTYPE_LINEAR, 8, METHOD_NOCLIP,
          gst_audio_amplify_transform_gint8_noclip}, {
      GST_BUFTYPE_LINEAR, 16, METHOD_CLIP,
          gst_audio_amplify_transform_gint16_clip}, {
      GST_BUFTYPE_LINEAR, 16, METHOD_WRAP_NEGATIVE,
          gst_audio_amplify_transform_gint16_wrap_negative}, {
      GST_BUFTYPE_LINEAR, 16, METHOD_WRAP_POSITIVE,
          gst_audio_amplify_transform_gint16_wrap_positive}, {
      GST_BUFTYPE_LINEAR, 16, METHOD_NOCLIP,
          gst_audio_amplify_transform_gint16_noclip}, {
      GST_BUFTYPE_LINEAR, 32, METHOD_CLIP,
          gst_audio_amplify_transform_gint32_clip}, {
      GST_BUFTYPE_LINEAR, 32, METHOD_WRAP_NEGATIVE,
          gst_audio_amplify_transform_gint32_wrap_negative}, {
      GST_BUFTYPE_LINEAR, 32, METHOD_WRAP_POSITIVE,
          gst_audio_amplify_transform_gint32_wrap_positive}, {
      GST_BUFTYPE_LINEAR, 32, METHOD_NOCLIP,
          gst_audio_amplify_transform_gint32_noclip}, {
      0, 0, 0, NULL}
    };
    const struct process *p;

    for (p = process; p->func; p++)
      if (p->format == format && p->width == width && p->clipping == clipping)
        return p->func;
    return NULL;
    }

    static gboolean
    gst_audio_amplify_set_process_function (GstAudioAmplify * filter, gint
      clipping_method, gint format, gint width)
    {
    GstAudioAmplifyProcessFunc process;

    /* set processing function */
```

```c
process = gst_audio_amplify_process_function (clipping_method, format, width);
if (!process) {
  GST_DEBUG ("wrong format");
  return FALSE;
}

filter->process = process;
filter->clipping_method = clipping_method;
filter->format = format;
filter->width = width;

return TRUE;
}

static void
gst_audio_amplify_set_property (GObject * object, guint prop_id,
    const GValue * value, GParamSpec * pspec)
{
  GstAudioAmplify *filter = GST_AUDIO_AMPLIFY (object);

  switch (prop_id) {
    case PROP_AMPLIFICATION:
      filter->amplification = g_value_get_float (value);
      gst_base_transform_set_passthrough (GST_BASE_TRANSFORM (filter),
          filter->amplification == 1.0);
      break;
    case PROP_CLIPPING_METHOD:
      gst_audio_amplify_set_process_function (filter, g_value_get_enum (value),
          filter->format, filter->width);
      break;
    default:
      G_OBJECT_WARN_INVALID_PROPERTY_ID (object, prop_id, pspec);
      break;
  }
}

static void
gst_audio_amplify_get_property (GObject * object, guint prop_id,
    GValue * value, GParamSpec * pspec)
{
  GstAudioAmplify *filter = GST_AUDIO_AMPLIFY (object);

  switch (prop_id) {
    case PROP_AMPLIFICATION:
      g_value_set_float (value, filter->amplification);
      break;
    case PROP_CLIPPING_METHOD:
```

```
      g_value_set_enum (value, filter->clipping_method);
      break;
    default:
      G_OBJECT_WARN_INVALID_PROPERTY_ID (object, prop_id, pspec);
      break;
  }
}


/* GstAudioFilter vmethod implementations */
static gboolean
gst_audio_amplify_setup (GstAudioFilter * base, GstRingBufferSpec * format)
{
 GstAudioAmplify *filter = GST_AUDIO_AMPLIFY (base);

 return gst_audio_amplify_set_process_function (filter,
      filter->clipping_method, format->type, format->width);
}


/* GstBaseTransform vmethod implementations */
static GstFlowReturn
gst_audio_amplify_transform_ip (GstBaseTransform * base, GstBuffer * buf)
{
 GstAudioAmplify *filter = GST_AUDIO_AMPLIFY (base);
 guint num_samples;
 GstClockTime timestamp, stream_time;

 timestamp = GST_BUFFER_TIMESTAMP (buf);
 stream_time =
      gst_segment_to_stream_time (&base->segment, GST_FORMAT_TIME, timestamp);

 GST_DEBUG_OBJECT (filter, "sync to %" GST_TIME_FORMAT,
      GST_TIME_ARGS (timestamp));

 if (GST_CLOCK_TIME_IS_VALID (stream_time))
    gst_object_sync_values (G_OBJECT (filter), stream_time);

 num_samples =
      GST_BUFFER_SIZE (buf) / (GST_AUDIO_FILTER (filter)->format.width / 8);

 if (gst_base_transform_is_passthrough (base) ||
      G_UNLIKELY (GST_BUFFER_FLAG_IS_SET (buf, GST_BUFFER_FLAG_GAP)))
    return GST_FLOW_OK;

 filter->process (filter, GST_BUFFER_DATA (buf), num_samples);

 return GST_FLOW_OK;
}
```

```
/*
 * GStreamer
 * Copyright (C) 2007 Sebastian Drge <slomo@circular-chaos.org>
 * Copyright (C) 2006 Stefan Kost <ensonic@users.sf.net>
 *
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 * Free Software Foundation, Inc., 59 Temple Place - Suite 330,
 * Boston, MA 02111-1307, USA.
 */

#ifndef __GST_AUDIO_AMPLIFY_H__
#define __GST_AUDIO_AMPLIFY_H__

#include <gst/gst.h>
#include <gst/base/gstbasetransform.h>
#include <gst/audio/audio.h>
#include <gst/audio/gstaudiofilter.h>

G_BEGIN_DECLS
#define GST_TYPE_AUDIO_AMPLIFY          (gst_audio_amplify_get_type())
#define GST_AUDIO_AMPLIFY(obj)
(G_TYPE_CHECK_INSTANCE_CAST((obj),GST_TYPE_AUDIO_AMPLIFY,GstAudioAmplify))
#define GST_IS_AUDIO_AMPLIFY(obj)
(G_TYPE_CHECK_INSTANCE_TYPE((obj),GST_TYPE_AUDIO_AMPLIFY))
#define GST_AUDIO_AMPLIFY_CLASS(klass)   (G_TYPE_CHECK_CLASS_CAST((klass)
,GST_TYPE_AUDIO_AMPLIFY,GstAudioAmplifyClass))
#define GST_IS_AUDIO_AMPLIFY_CLASS(klass) (G_TYPE_CHECK_CLASS_TYPE((klass)
,GST_TYPE_AUDIO_AMPLIFY))
#define GST_AUDIO_AMPLIFY_GET_CLASS(obj)  (G_TYPE_INSTANCE_GET_CLASS((obj)
,GST_TYPE_AUDIO_AMPLIFY,GstAudioAmplifyClass))
typedef struct _GstAudioAmplify GstAudioAmplify;
typedef struct _GstAudioAmplifyClass GstAudioAmplifyClass;

typedef void (*GstAudioAmplifyProcessFunc) (GstAudioAmplify *, void *, guint);

struct _GstAudioAmplify
{
```

```
    GstAudioFilter audiofilter;

    gfloat amplification;

    /* < private > */
    GstAudioAmplifyProcessFunc process;
    gint clipping_method;
    gint format;
    gint width;
};

    struct _GstAudioAmplifyClass
    {
     GstAudioFilterClass parent;
    };

    GType gst_audio_amplify_get_type (void);

    G_END_DECLS
    #endif /* __GST_AUDIO_AMPLIFY_H__ */
```

1.9 JSON Spirit 4.04

1.9.1 Available under license :

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1.10 json-c 0.12

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1.11 json-c/test-driver 0.12

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```
#! /bin/sh
# test-driver - basic testsuite driver script.

scriptversion=2012-06-27.10; # UTC

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# This file is maintained in Automake, please report
# bugs to <bug-automake@gnu.org> or send patches to
# <automake-patches@gnu.org>.

# Make unconditional expansion of undefined variables an error.  This
# helps a lot in preventing typo-related bugs.
```

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1.17 OpenSSL patch to 0.9.8 branch to add RFC5649 (key wrap with pad) 1.0

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1.18 opus 1.1

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1.19 protobuf 2.3.0

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1.20 zlib 1.2.8

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