



***QUESTION-HOW:
FORTH's participation***

Evangelos Markatos, Ph.D.

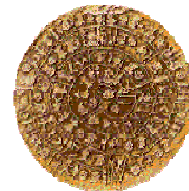
W3C Office in Greece

markatos@ics.forth.gr

<http://www.ics.forth.gr/~markatos>

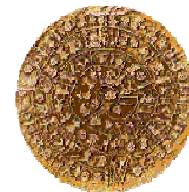
Institute of Computer Science (ICS)

**Foundation for Research and Technology –
Hellas (FORTH)**



FORTH's contribution

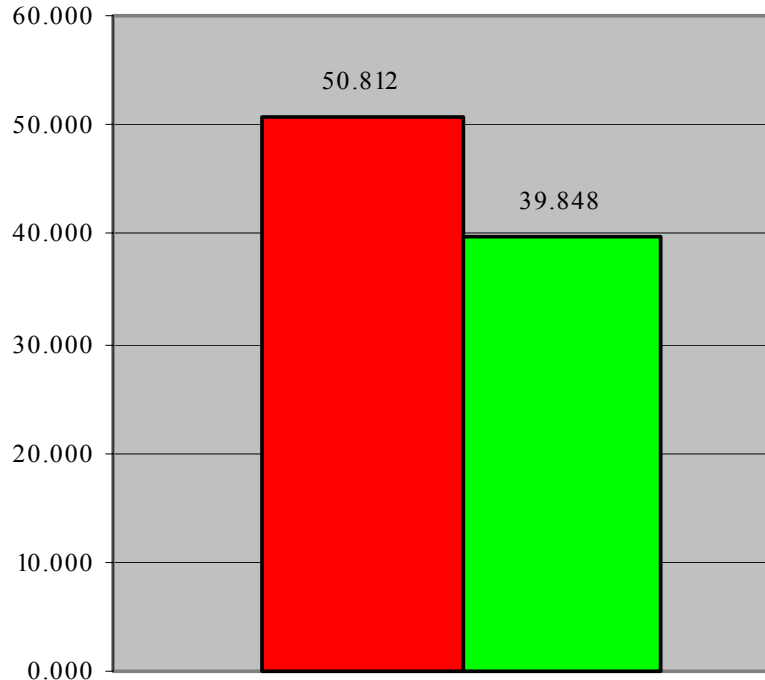
- **WP1: RDF Suite**
- **WP2: CC/PP Apache module**
- **WP6: Participation in WP6**
 - European events
 - ✓ e.g. semantic web tour



In Summary

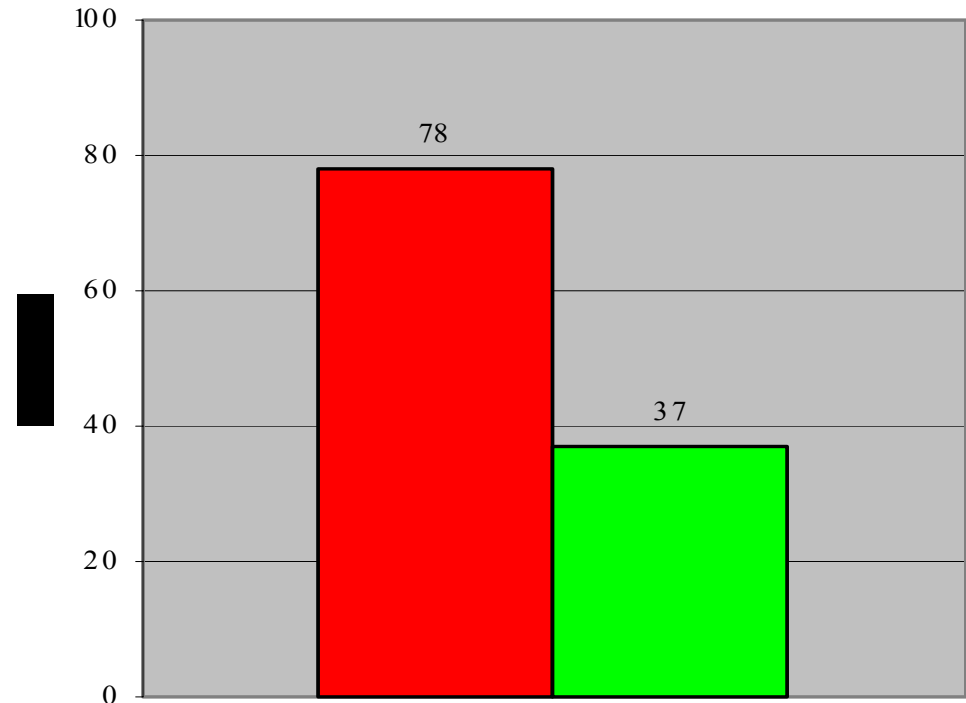
- **VRP Performance Improvement**
 - Validating RDF Parser
- **Full Support of XML Schema Datatypes**
- **Support of the latest RDF/XML Syntax Spec.**
- **Additional VRP Statistics**
- **SVG Representation of VRP output**

VRP Performance Improvement



Used Memory

~ 20 % less memory ¹

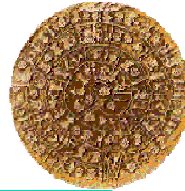


CPU Time

~ 50 % less time ¹

¹ Measured with a 5.8 MB RDF/XML file using IRE 1/4.

Full Support of XML Schema Datatypes



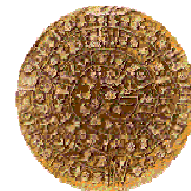
Full XML Schema (Part 2) Datatype support for validating domain and range declarations for properties by integrating the Sun™ XML Datatypes Library¹

using the namespace:

<http://www.w3.org/2001/XMLSchema-datatypes.xsd#>

1

<http://www.sun.com/software/xml/developers/xsdlib/>

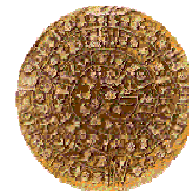


Support the latest RDF/XML Syntax Specification (Revised)¹

- **Support of XML Base.**
- **Statements - rdf:bagID and rdf:ID.**
- **Literals are stored with language (xml:lang) and datatype² (rdf:datatype) specification.**
- **Support of rdf:nodeID.**
- **Support of Lists (rdf:parseType="Collection", rdf:first, rdf:rest, rdf:nil).**

¹ <http://www.w3.org/TR/2002/WD-rdf-syntax-grammar-20021108>

² **Not used for datatype validation!**



Additional VRP Statistics

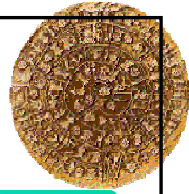
- **Instance Distribution**
i.e., how many classes have x instances
- **Ancestor and descendants distribution both for classes and properties**
 - **Direct**
 - **Recursive**i.e., how many classes/properties have x ancestors/descendants

SVG Representation of VRP output



- **VRP graph output can be saved in Scalable Vector Graphics (SVG) format**
- **Describes two-dimensional graphics in XML**
- **SVG drawings can be dynamic and interactive**

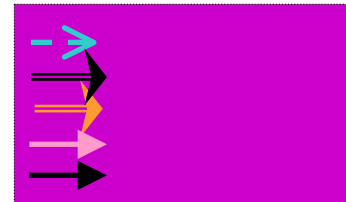
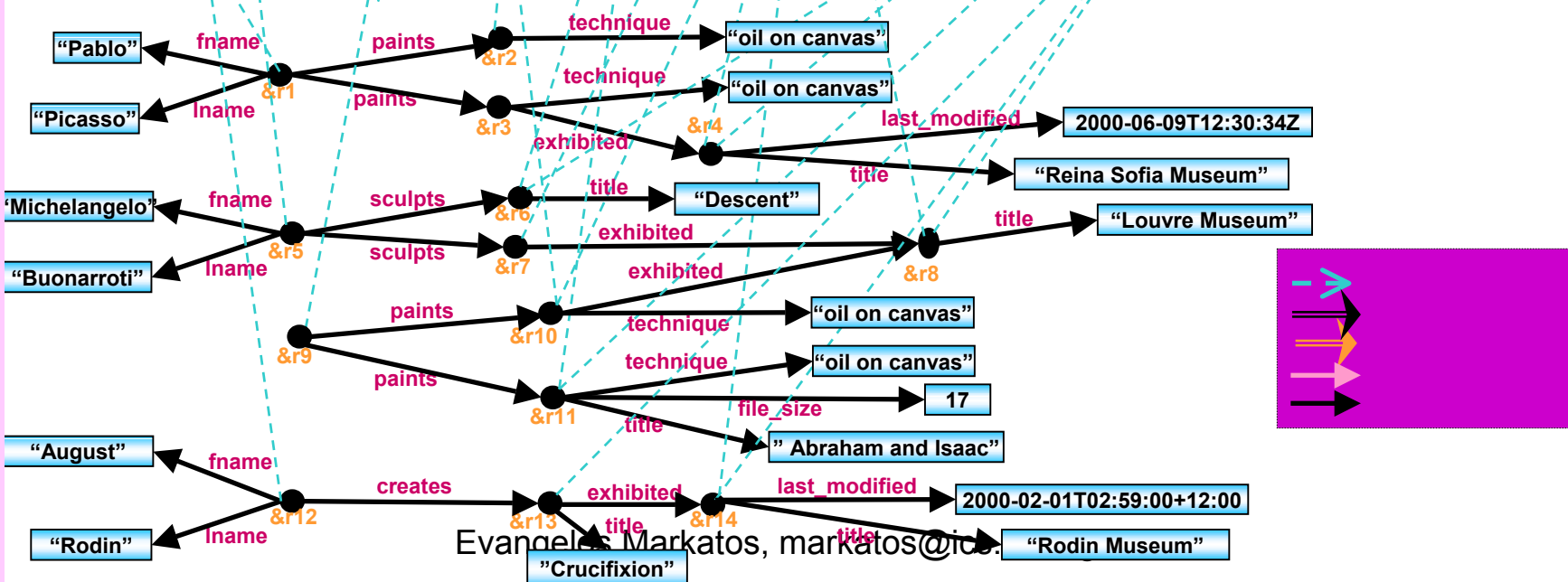
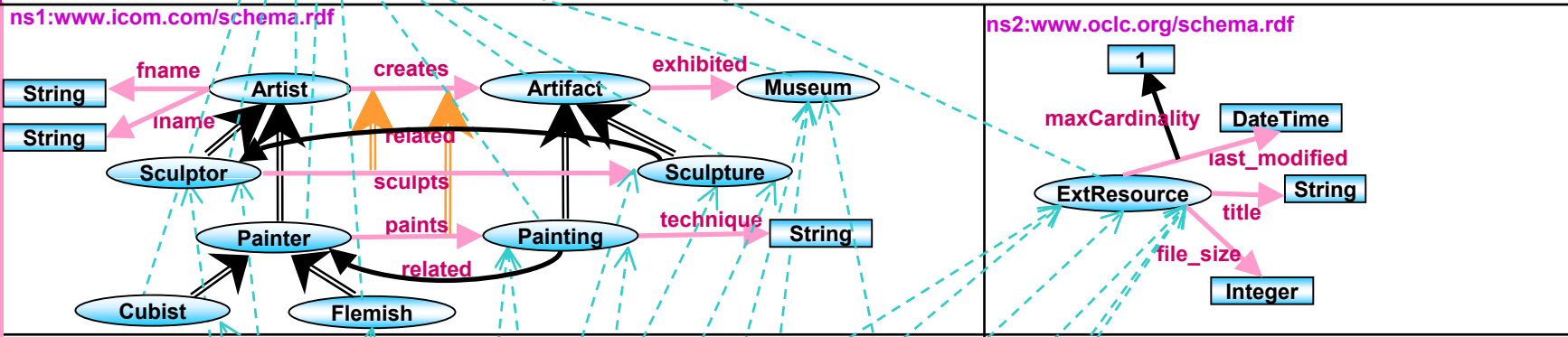
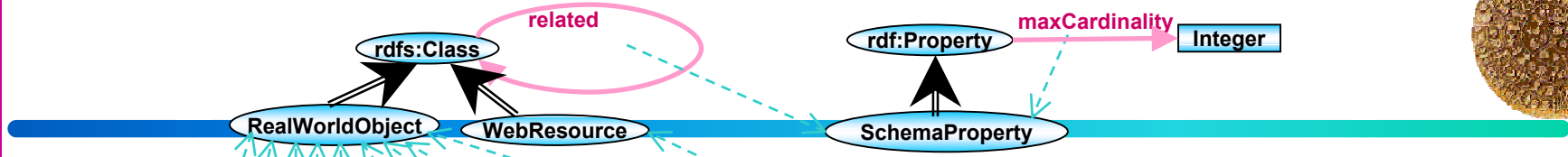
RDF Graph Example



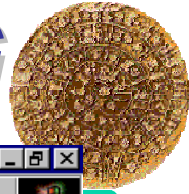
MetaSchemas

Schemas

Resource Descriptions



Display a Metaclass using SVG



D:\tmp_local_users\alexaki\Rdf_vrp_141102\src\gr\forth\ics\vrp\vrp\gui\output.svg - Microsoft Internet Explorer

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Address D:\RDF\svg\output.svg

Classes | **Properties**

All Classes:

- ▶ rdfs:Resource
 - ext1:ExtResource
- ▶ ext2:Artifact
 - ext2:Painting
 - ext2:Sculpture
- ▶ ext2:Artist
 - ext2:Museum
- ▶ rdf:Property
 - rdf:Statement
- xmls:boolean
- xmls:dateTime
- xmls:integer
- xmls:string
- ▶ rdfs:Class
 - ext3:RealWorldObject
 - ext3:WebResource
- ▶ rdfs:ConstraintResource
- ▶ rdfs:Container
- rdfs:Literal

Class Instances

ext2:Artifact	ext2:Cubist	ext2:Museum	ext2:Painting	ext2:Sculpture
ext2:Artist	ext2:Flemish	ext2:Painter	ext2:Sculptor	

Ⓜ:D:\tmp_local_users\alexaki\RDF_examples\culture_without_thesaurus\culture_data.rdf#; ext3="file:D:\tmp_local_users\alexaki\RDF_examples\cult

Display a Class using SVG



D:\tmp_local_users\alexaki\Rdf_vrp_141102\src\gr\forth\ics\vrp\vrp\gui\output.svg - Microsoft Internet Explorer

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Address D:\RDF\svg\output.svg

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 - ▶ ext2:Museum
- ▶ rdf:Property
- rdf:Statement
- xmls:boolean
- xmls:dateTime
- xmls:integer
- xmls:string
- ▶ rdfs:Class
 - ext3:RealWorldObject
 - ext3:WebResource
- ▶ rdfs:ConstraintResource
- ▶ rdfs:Container
- rdfs:Literal

Namespaces: rdf="http://www.w3.org/1999/02/22-rdf-



Display a Property using SVG

D:\tmp_local_users\alexaki\Rdf_vrp_141102\src\gr\forth\ics\vrp\vrpGUI\output.svg - Microsoft Internet Explorer

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Address: D:\RDF\svg\output.svg

Classes | **Properties**

All Properties:

- ext1:file_size
- ext1:last_modified
- ext1:title
- ▶ ext2:creates
- ext2:paints
- ext2:sculpts
- ext2:exhibited
- ext2:first_name
- ext2:last_name
- ext2:technique
- ext2:yesorno
- ext3:maxCardinality
- ext3:related
- rdf:object
- rdf:predicate
- rdf:subject
- rdf:type
- rdf:value
- rdfs:comment
- rdfs:domain
- rdfs:label
- rdfs:range
- ▶ rdfs:seeAlso
- rdfs:subClassOf
- rdfs:subPropertyOf

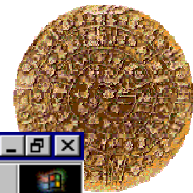
ext2:creates (rdf.Property)			
Domain		Range	
ext2:Artist	ext2:Flemish	ext2:Artifact	
ext2:Cubist	ext2:Painter	ext2:Painting	
ext2:Sculptor		ext2:Sculpture	

rdfs:subPropertyOf

ext2:paints
ext2:sculpts

schema.rdf#"; ext1="file:D:\tmp_local_users\alexaki\RDF_examples\culture_without_thesaurus\admin.rdf#"; xmlns="http://www.w3.org/1999/XMLSchema

Display a Resource using SVG



D:\tmp_local_users\alexaki\rdf_vrp_141102\src\gr\forth\ics\vrp\vrp\gui\output.svg - Microsoft Internet Explorer

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Address D:\RDF\svg\output.svg Go Links

Classes Properties

All Classes:

- ▶ rdfs:Resource
 - ext1:ExtResource
- ▶ ext2:Artifact
 - ext2:Painting
 - ext2:Sculpture
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- ext2:Museum
- ▶ rdf:Property
 - rdf:Statement
- xmls:boolean
- xmls:dateTime
- xmls:integer
- xmls:string
- ▶ rdfs:Class
 - ext3:RealWorldObject
 - ext3:WebResource
- ▶ rdfs:ConstraintResource
- ▶ rdfs:Container
- rdfs:Literal

```

graph TD
    Picasso[www.culture.net/picasso132] -.-|rdf:type| Cubist(ext2:Cubist)
    Picasso -- ext2:paints --> Guernica[http://www.museum.es/guernica.jpg]
    Picasso -- ext2:paints --> Woman[http://www.museum.es/woman.qti]
    
```

www.culture.net/picasso132
ext2.last_name = Picasso
ext2.first_name = Pablo

http://www.museum.es/guernica.jpg

http://www.museum.es/woman.qti

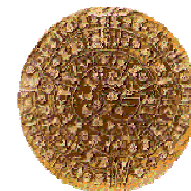
Without thesaurus\admin.rdf#; xmls="http://www.w3.org/1999/XMLSchema-datatypes#"; rdfs="http://www.w3.org/2000/01/rdf-schema#";

Unrecognized DOCTYPE declaration. Image might not display correctly.

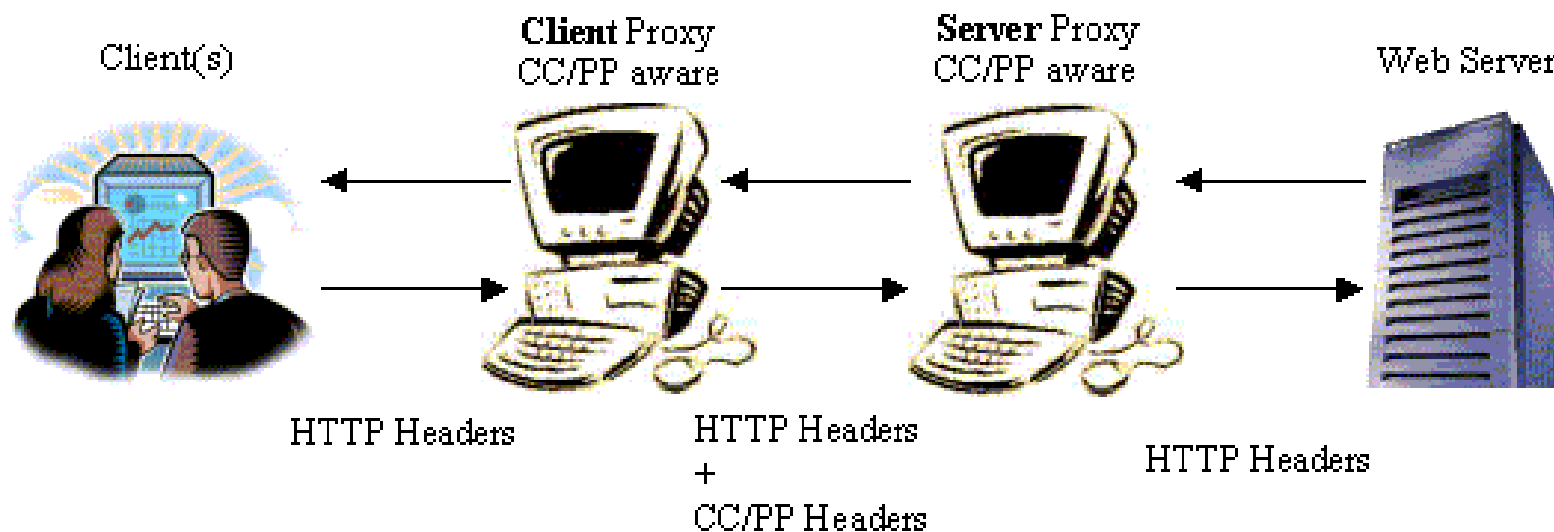
My Computer

WP2: CC/PP – content adaptation





WP2: CC/PP





WP2: CC/PP work

- **Completed the Apache 1.3.x server module**
- **Completed the Apache 1.3.x proxy module**
- **CC/PP header parsing**
- **Completed prelim. content adaptation**
 - Images (gif files) (ImageMagik Lib)
 - MP3 audio files
 - MPEG video files (FFmpeg lib - needs more work)

WP1: CC/PP

The module has been published

http://www.ics.forth.gr/carv/w3c_qh.html



The screenshot shows a Microsoft Internet Explorer browser window displaying the website for the CC/PP Apache module. The browser's address bar shows the URL http://www.ics.forth.gr/carv/w3c_qh.html. The website has a green header with the text "Computer Architecture and VLSI Systems Laboratory". The main content area is titled "Installation Instructions of the CC/PP Apache module". On the left side, there is a navigation menu with links for "About CARV", "People", "Packet Switch Architecture", "Advanced Computing Systems", "News", "Publications", and "Contact Info". The main text describes the module, its compatibility with Apache Server versions 1.3.22 and 1.3.x, and the platforms used for development (RedHat Linux 6.2 and Mandrake Linux 8.2). It lists the external libraries used for transcoding: FFmpeg and ImageMagick. The module can be downloaded from [mod_ccpp.c](#). The installation instructions are as follows:

- Download the **mod_ccpp.c** module and files **cp_ffmpeg.c** and **cp_images.c** used for the transcoding
- Download FFmpeg and ImageMagick libraries (the ImageMagick library is already contained in the Redhat and Mandrake distributions, otherwise install both of them)
- Store the module and the other files (**cp_ffmpeg.c** & **cp_images.c**) under the **src/modules/extra/** directory of the source tree of the Apache software.



WP1: CC/PP

Demo page is available





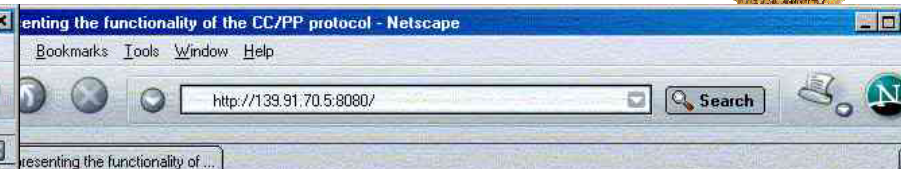
Examples of transcoding



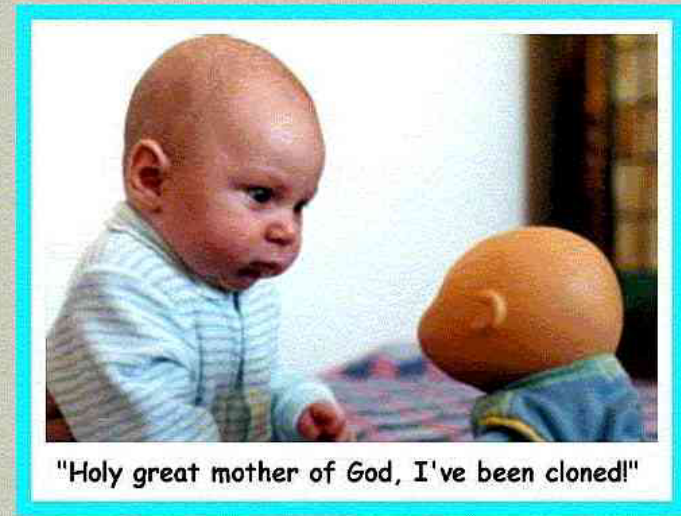
The original size of the image is:



The new size after transcoding is:



The original size of the image is:



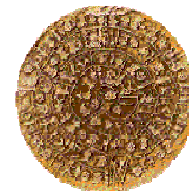
The new size after transcoding is:





Video Transcoding





Future CC/PP work

- **Port to Apache 2.0**
 - 2.0 is based on multithreaded code
 - Works for MP3/gif
 - Needs work for MPEG videos
 - Performance evaluation



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