ABC
Compression
Technology

Boris Aronshtam

VDP Tech, Inc.

Founder: *Boris Aronshtam*

- Graduated Latvian State University with M.S. in Theoretical Physics (Quantum Mechanics)
- 18 years of experience in printing
- Brought numerous advanced technologies for Adobe, Canon, Bull, Ricoh, Splash, EFI, Creo
- Strong expertise in RIP technology and break-through performance enhancements

- 10 years with Adobe Systems. Responsible for Printing Architecture
- 2 Years with Splash. Responsible for Compression and Rendering Technology (Acquired by EFI).
- 4 years with EFI. Manager of VDP (Variable Data Printing) group. Sped up RIP system 20X. Responsible for all the aspects of VDP in the company.

- Founded VDP Tech in 2004 to help companies in creating high-speed compression & rendering architectures

Advantages and Limitations of Existing Compression Approaches

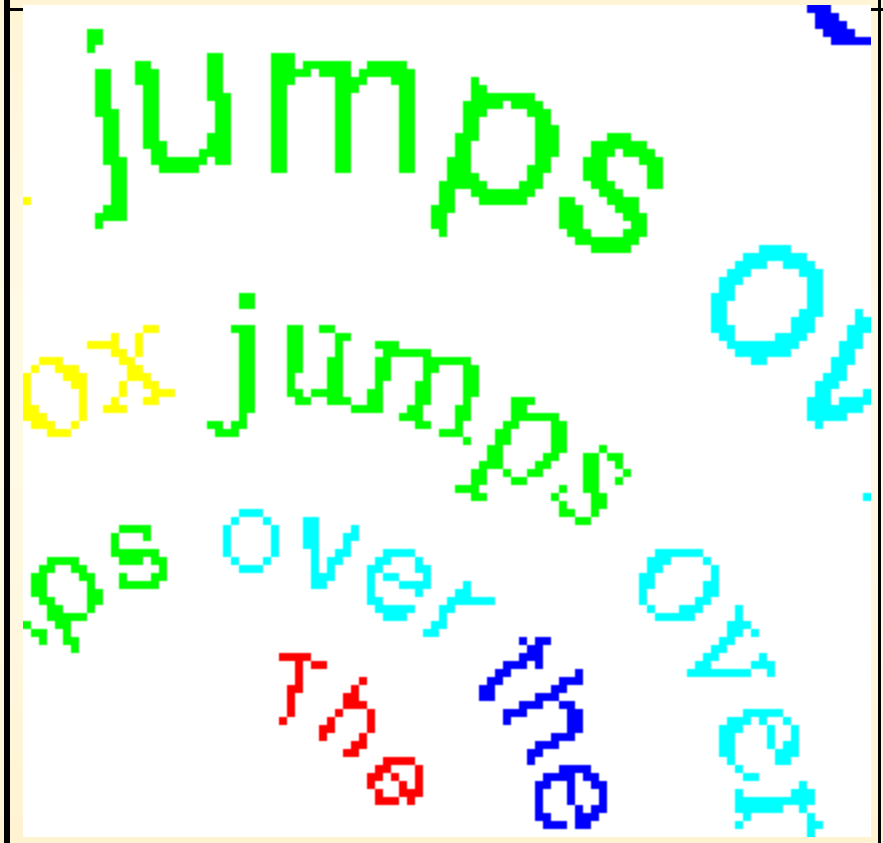
Lossless Compression (RLE, LZW, ZIP, RAR, etc.)

- Suitable for Simple (non-antialiased) Text and Simple Graphics
- Fails to compress Images, Antialiased Text and Complex Graphics
- Slow Compression/Decompression Speed (*except RLE*)

JPEG – Lossy Image Compression Champion

- Suitable for Images Only
- Unacceptable quality for Text and Graphics
- Slow Compression and Decompression Speed

JPEG: Unacceptable Quality on Text and Graphics

Original	JPEG (*Highest Quality*)
	

The Most Common Compression Practice

- Use different compression schemes for different graphical objects at generation/scanning time
- Merge objects at rendering/printing time

Problems

- Computer intense to analyze image regions (segmentation)
- Unreliable: significant visual errors if the wrong compression scheme is chosen
- Noticeable errors between compression boundaries.
- Complex merge is required. Slow rendering/merge speed. Achieving guaranteed speeds above 30 PPM requires special merging hardware

What is ABC Technology?

- ABC - Adaptable Block Coding
- Revolutionary compression & rendering technology
- Maintains very high-quality at very high-speed at low cost
- Simple architecture

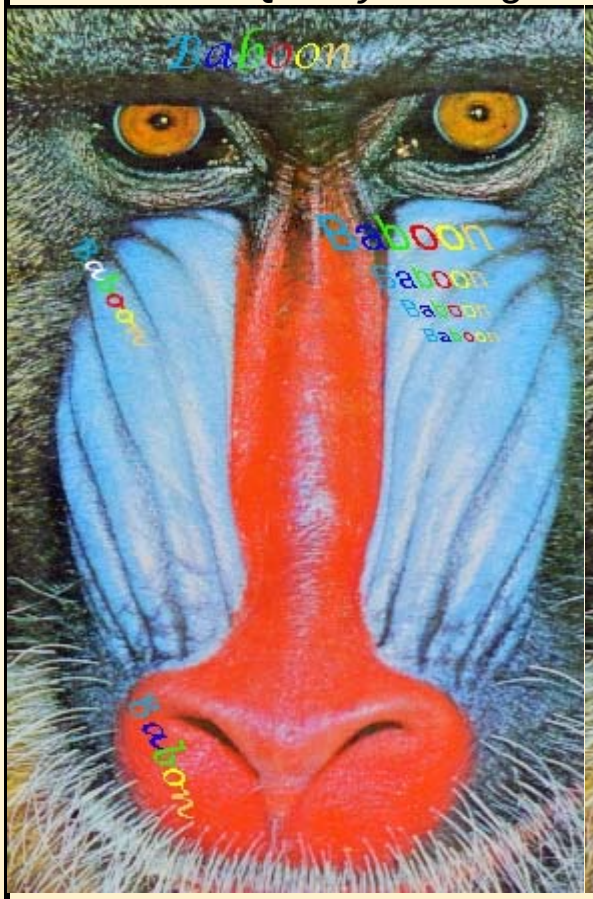
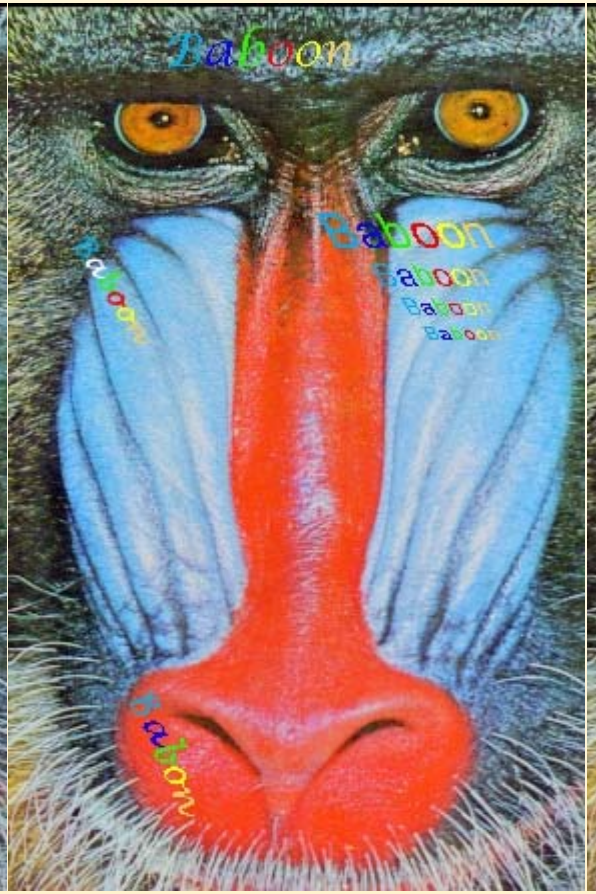
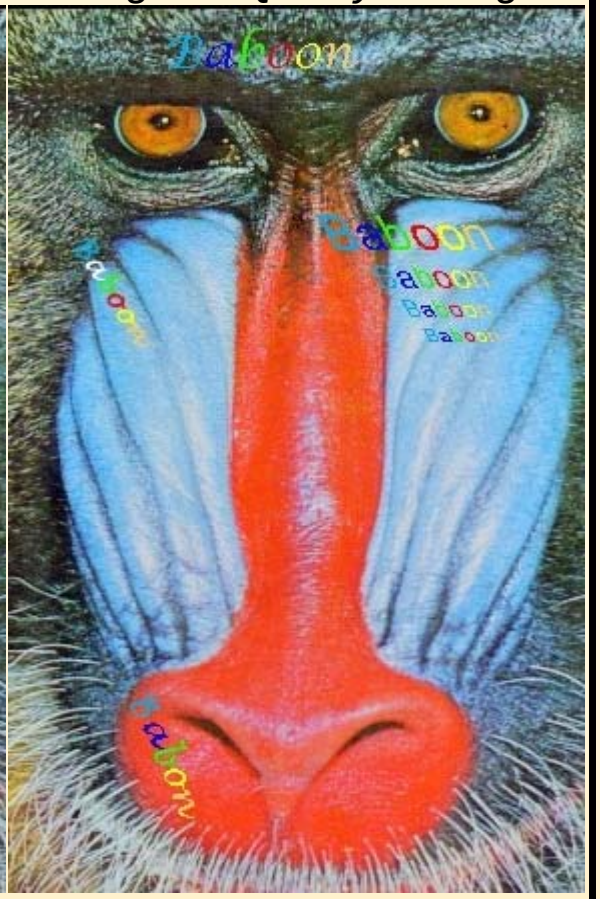
Main Goals of ABC

- Achieving highest possible processing speed
- Excellent quality on mixed text, graphics, and images content
- Simple to implement both in software and in hardware
- Efficient post-processing operations

ABC Main Features

- "One size fits all" approach.
- Simple to implement both in software and in hardware
- Excellent quality for all graphical objects:
  - Text, barcodes, and similar objects are perfectly preserved
  - Contours, sharp edges, and similar objects are nearly lossless
  - Antialiased text is preserved nearly lossless
  - Smooth shades are perfectly preserved
  - JPEG-like quality for scanned images
- Speed Champion:
  - Compression speed is 2X-4X faster than JPEG.
  - Decompression speed is ~10X faster than JPEG
- Extremely efficient post-processing. No decompression is needed to:
  - Create thumbnails
  - Rotate images 90 and 180 degrees
  - Recompress images to higher ratios
  - Perform color correction
- Printer-Friendly:
  - Color balance is perfectly preserved
  - Edges are perfectly preserved

Quality Comparison

ABC	Original	JPEG
Medium Quality Setting		*Highest Quality Setting*
		

Quality Comparison (zoomed 4:1)

ABC

Medium Quality Setting

Original

JPEG

Highest Quality Setting

Algorithm Complexity Details

- Integer only operations
- 16-bit integers are sufficient
- High-quality mode requires (per pixel) ~8 additions, ~1 integer division, and ~8 comparison operations
- Requires less than 10KB of working storage

Summary

- ABC is a unique compression and rendering technology dedicated for achieving the highest-quality rendering at highest-speeds at the lowest-cost

- Saves on hardware costs
- Saves on development costs
- Saves on shortest time to market

- Enabling technology for multitude of products

Business Offering

- ABC is owned 100% by VDP Tech
- Completely packaged product to go
- ABC codec written in simple C++
- Available for Licensing Today
- We will help you to succeed