

Press Release June 10, 2015

## Patent Granted for New Multiple Gray-level Digital Press Capabilities

ScaleAbilities LLC of Sharon, Massachusetts, is pleased to announce an innovative screening and compensation method, designed specifically for multiple gray-level digital printers and presses. As described in the just issued US Patent #9,053,410, Multiple Phase Screening (MPS) provides both higher print quality, as well as more robust compensation for those digital inkjet print heads having greyscale or "variable dot" capability.

Specifically, compared to alternatives, MPS claims the following advantages:

- Multiple increase in the number of screened tone levels, for smoother blends.
- Lower visible screening noise, for more photographic quality.
- Elimination of flat tone contour artifacts, which are visually jarring.
- Easier and more accurate compensation for special papers and difficult print conditions

According to inventor and CEO Mitch Bogart, the system provides printer manufacturers these additional flexibilities:

- MPS eliminates the design constraint requiring gray-levels to be equally spaced.
- MPS is applicable for printers having any number of gray-levels.
- MPS works with virtually every method of half-toning, especially non-dithered, non-correlated ones, practically required for stable sequential ink printing.

Bogart describes the system as a "divide-and-conquer" approach. The printable tone range is first divided into sections, which are separately compensated and screened, before being re-combined for multi-bit output. Tone range sections are also shifted based on print measurements, providing accurate linearization. Finally, the tone range sections are also given adjustable overlapping. This eliminates "dead zone" artifacts, while also producing compensation less sensitive to changes.

Though initially intended for production digital inkjet presses, MPS can also enhance specialty printing such as textile, direct-to-garment, wide-format, and ceramic printing.

Printing historian and pundit Professor Frank Romano recently referred to Bogart and his innovations in this video:

<http://whattheythink.com/video/73451-frank-multi-drop-approach-high-quality-inkjet-imagery/>

ScaleAbilities welcomes licensing inquiries from both rip and printer manufacturers. Licenses come with sample code for both error diffusion and threshold array screening and include both CPU and GPU program examples.

Further explanations (1Mb) and whitepaper (140Mb) downloads are available at:

<https://www.dropbox.com/sh/5qxdw0ta9ao0sjh/AABiGZAUBup-kEdbfXAX1oS2a?dl=0>

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