# ALSTON&BIRD LLP

WWW.ALSTON.COM



# Intellectual Property ADVISORY •

#### MAY 20, 2013

CLS Bank Int'l v. Alice Corporation Provides Little Guidance from Federal Circuit on § 101 Eligibility of Method, Computer Readable Medium and Computer System Patents

#### Who Should Read This Advisory:

- Entities that own, control or apply for patents directed to software; processes; business methods; and systems, apparatuses and computer readable media for performing the same.
- Entities that currently or plan in the future to make, use or sell products or services that include or employ software, processes or business methods.
- In-house counsel and other practitioners who like to keep abreast of important developments in intellectual property law and busy professionals that do not have time to read and digest a 135-page opinion.

## Why You Need to Know About This Advisory:

- The Federal Circuit has struggled to apply the Supreme Court precedent regarding patent subject matter eligibility established in the recent cases. This precedent has been applied somewhat inconsistently at the Federal Circuit, and the resulting uncertainty has made it difficult for practitioners to provide clear advice regarding the standard for subject matter eligibility for methods, computer readable media and corresponding systems. The decision to hear CLS Bank Int'l v. Alice Corporation as an en banc proceeding indicated a desire by the Federal Circuit to clarify past decisions and to provide a uniform standard for the subject matter eligibility of methods and processes.
- Although the Federal Circuit was unable to come to an agreement on a standard for determining subject matter eligibility, the opinion provides substantial insight into where each judge on the panel stands regarding this subject, providing some guidance as to how these judges might find when presiding over an appeal.
- The continued inability of the Federal Circuit to derive a uniform standard from past precedent highlights the need for clear instruction from Congress or the Supreme Court.

This advisory is published by Alston & Bird LLP to provide a summary of significant developments to our clients and friends. It is intended to be informational and does not constitute legal advice regarding any specific situation. This material may also be considered attorney advertising under court rules of certain jurisdictions.

<sup>&</sup>lt;sup>1</sup> Bilski v. Kappos, 561 U.S. \_\_\_\_ 130 S. Ct. 3218 (2010) and Mayo Collaborative Services v. Prometheus Laboratories, 566 U.S. \_\_\_\_ 132 S. Ct. 1289.

#### **Executive Summary:**

Practitioners have been awaiting the decision in *CLS Bank Int'l v. Alice Corp*. in hopes that the Court of Appeals for the Federal Circuit (CAFC) would clarify whether claims drawn to computer-implemented subject matter are statutory subject matter under 35 U.S.C. § 101. Unfortunately, the en banc decision in *CLS Bank Int'l v. Alice Corp*. does little to provide clarity to these issues and, instead, highlights the fractured nature of the court on this subject.

The resulting per curiam decision illustrates the lack of agreement between the judges on this subject. In this regard, the decision contains five separate opinions and an "additional reflections" section from Chief Judge Rader. Notwithstanding this lack of agreement, seven judges of the 10-judge panel agreed that the method and computer readable medium claims were nonstatutory. Moreover, the court was equally divided on the subject matter eligibility of the system claims, and so the decision of the U.S. District Court that had found the system claims to also lack subject matter eligibility was affirmed. Although a majority of the court agreed that the method and computer readable medium claims were nonstatutory, a majority of the court was unable to agree as to either a reason why the claims were nonstatutory or a test that should be applied to determine whether claims drawn to computer-implemented subject matter satisfy the statutory requirements of 35 U.S.C. § 101 moving forward.

The wide disagreement between the CAFC judges as to the statutory nature of claims drawn to computer-implemented subject matter does little to clarify underlying issues. Indeed, practitioners who draft claims for computer-implemented subject matter were given little guidance as to the preferred manner to frame the method and computer readable medium with the exception of the overarching and somewhat nebulous goal of insuring that the claims are not drawn to an "abstract idea." Moreover, most, if not all, of the risks brought about by the uncertainty associated with the statutory nature of claims drawn to computer-implemented subject matter remain for those associated with parties who litigate, license or otherwise evaluate the thousands of issued patents that include claims drawn to computer-implemented subject matter decisions. However, since the en banc decision did not find that any of the claims were directed to statutory subject matter, it is conceivable that district courts may more frequently determine claims drawn to computer-implemented subject matter to be nonstatutory with the outcome on appeal seemingly depending heavily on which CAFC judges comprise the particular panel.

## **Background on § 101 Subject Matter Eligibility:**

35 U.S.C. § 101 sets forth guidelines for the types of inventions that are eligible for patent protection. The statute broadly enumerates four classes, processes, machines, compositions of matter and articles of manufacture. However, in an effort to limit the preemption of natural laws and concepts, the courts have recognized exceptions to § 101 for the patentability of laws of nature, natural phenomena and abstract ideas.<sup>2</sup> Over time, the courts have further refined these exceptions due to advances in technology that blur the lines between awareness of an abstract idea, law of nature or natural phenomena, and an application thereof.<sup>3</sup> The courts have had an especially difficult time identifying the distinction between an abstract idea and an application thereof with respect to implementation of methods using computers. It is believed that one of the goals of the Federal Circuit when taking *CLS Bank Int'l* as an en banc hearing was to develop a uniform standard to delineate the line between a conceptual, abstract idea and an application of the idea with respect to computer-implemented methods.

<sup>&</sup>lt;sup>2</sup> O'Reilly v. Morse, 56 U.S. 62.

<sup>&</sup>lt;sup>3</sup> Mayo, see above; Bilski, see above; Diamond v. Chakrabarty, 447 U.S. 303, 308; 206 U.S.P.Q. 193, \_\_\_\_ (1980).

#### **Case Background:**

CLS Bank Int'l v. Alice Corp. was an appeal involving claims drawn to a method, system and computer readable medium for managing risks during financial transactions. At issue was whether the claims satisfied the subject matter eligibility requirement of 35 U.S.C. § 101. More particularly, the appeal focused upon whether the claims represent an "abstract idea" that, in turn, is a judicially created exception to the broad definition of subject matter conferred in 35 U.S.C. § 101. CLS Bank filed suit against Alice seeking a declaratory judgment of noninfringement, invalidity and unenforceability of U.S. Patents 5,970,479, 6,912,510, 7149,720 and 7,725,375, owned by Alice. Following limited discovery, CLS Bank moved for summary judgment that the claims were directed to ineligible subject matter. Although the district court did not conduct claim construction before considering the § 101 issue, the parties stipulated that the claims should be interpreted to require a computer including at least "a processor and memory" in order to assume a construction of terms favorable to the patentee for the purpose of evaluating the summary judgment motion.

The district court granted summary judgment in favor of CLS Bank, holding each of the asserted method claims nonstatutory as directed to "an abstract idea of employing an intermediary to facilitate simultaneous exchange of obligations in order to minimize risk." CLS Bank, 768 F. Supp. 2d at 243. The district court also held similar claims directed to a computer readable medium and system nonstatutory as directed to "the same abstract concept despite the fact they nominally recite a different category of invention." *Id.* at 255. Alice appealed to the Federal Circuit, and the Federal Circuit agreed to hear the case en banc.

#### **Analysis of the Federal Circuit Decision:**

#### **The Per Curiam Opinion**

As an initial matter, it is worth noting that the precedential impact of this case should prove to be relatively small. The only agreement that a majority of the panel could reach is provided via a two-paragraph per curiam opinion, which states that the method and computer readable media claims are not directed to eligible subject matter. The per curiam opinion further states that an equally divided court affirms the district court's holding that the system claims are not directed to eligible subject matter due to the "hung jury" at the Federal Circuit.

However, although the precedential portion of the opinion offers little insight, an analysis of the concurring and dissenting opinions is useful for understanding the various positions of the individual judges.

#### Judge Lourie's Concurrence

Judge Alan Lourie's opinion is joined by Judges Timothy Dyk, Sharon Prost, Jimmie Reyna and Evan Wallach. Judge Lourie suggests a two-step process for determining patent eligibility. The first step is to determine whether the claimed invention fits within one of the four statutory classes of § 101. After determining that the claimed invention satisfies one of the four classes, the claim should be evaluated to determine the underlying "abstract idea" and then whether the claim adds "significantly more" to the abstract idea. Once the underlying abstract idea has been identified, the next step of Judge Lourie's analysis is to determine whether the claim contains additional substantive limitations that "narrow, confine, or otherwise tie down the claim so that, in practical terms, it does not cover the full abstract

LeRoy v. Tatham, "A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right." Le Roy v. Tatham, 55 U.S. 156, 175 (1852) and Diamond, 447 U.S. 303, 308 (1980). "Likewise, Einstein could not patent his celebrated law that E=mc2; nor could Newton have patented the law of gravity."

<sup>&</sup>lt;sup>5</sup> CLS Bank Int'l v. Alice Corp., Slip Op., Page 33.

idea itself." This evaluation should "represent more than a trivial appendix to the underlying abstract idea." Judge Lourie cites to the Supreme Court decision in *Mayo*, stating that the qualities that render patentable subject matter distinct from an abstract idea should not be "routine" or "conventional," but that this analysis is separate and distinct from the novelty and non-obviousness analysis required for patentability under §§ 102 and 103.8

Judge Lourie goes on to apply this analysis to the claims at issue. He would find that the claimed invention draws on the abstract idea of "reducing settlement risk by effecting trades through a third-party intermediary force," because the idea is "a 'disembodied' concept, a basic building block of human ingenuity, untethered from any real-world application."

Further, Judge Lourie would reject the argument that adding a recitation of computer hardware to a claim is sufficient to remove the claim from the realm of an abstract idea, as such limitations, at least in the instant case, fail to add "significantly more" to the claim, citing the Supreme Court in *Mayo*.

Regarding the computer readable medium claims, Judge Lourie states that the language in the claim preamble regarding the computer readable storage medium amounts to mere "drafting formalities" and thus the claim is actually "not truly drawn to a specific computer readable medium, rather than to the underlying method of reducing settlement risk using a third-party intermediary." Judge Lourie states that the claims are not directed to "specific types of computers or computer components, but computers that have routinely been adapted by software consisting of abstract ideas." Judge Lourie thus indicates that some level of the state of the prior art should be employed when performing an analysis for subject matter eligibility, by noting that something that is "routinely" adapted cannot function as a basis for establishing subject matter eligibility under his analysis.

Similarly to the computer readable medium claims, Judge Lourie would also reject the system claims on the grounds that "none of the recited hardware offers a meaningful limitation beyond generally linking the use of the method to a particular technological environment." <sup>12</sup>

#### Chief Judge Rader's Concurrence-in-Part, Dissent-in-Part

Chief Judge Randall Rader writes a concurring-in-part and dissenting-in-part opinion agreeing with the Lourie opinion regarding the subject matter eligibility of the method and computer readable medium claims, but dissenting regarding the subject matter eligibility of the system claims. Chief Judge Rader also disagrees with Judge Lourie's analysis process for determining that the method and computer readable medium claims are not patent-eligible, though he would arrive at the same result. Judges Richard Linn, Kathleen O'Malley and Kimberly Moore join Judge Rader for the dissent regarding the system claims, while only Judge Moore joins the Chief Judge regarding concurrence regarding the method and computer readable medium claims.

<sup>&</sup>lt;sup>6</sup> Slip Op., Page 26.

<sup>&</sup>lt;sup>7</sup> Slip Op., Page 27.

<sup>&</sup>lt;sup>8</sup> Slip Op., Page 28.

<sup>&</sup>lt;sup>9</sup> Slip Op., Page 33.

<sup>&</sup>lt;sup>10</sup> Slip Op., Page 37.

<sup>&</sup>lt;sup>11</sup> Slip. Op., Page 37.

<sup>12</sup> Slip Op., Page 42.

Chief Judge Rader criticizes Judge Lourie's analysis of what has "become routine" when considering whether subject matter is patent-eligible. The Chief Judge notes that employing the state-of-the-art in 2013 to determine whether a particular portion of a patent claim was "routine" is improper since technological considerations for patents are otherwise generally applied as of the filing date.<sup>13</sup>

The system claims were directed to a system for employing the method claims involving several specific hardware devices acting in concert with one another. These claims included a computer system having a communication controller, a first-party device, a data storage unit, a computer and a second-party device. Chief Judge Rader states that to "label this system claim as an 'abstract concept' wrenches all meaning from those words, and turns a narrow exception into one, which may swallow the expansive rule (and with it much of the investment and innovation in software)."<sup>14</sup> Chief Judge Rader and Judge Moore would find the method and computer readable medium claims unpatentable, but they reject Judge Lourie's suggestion to separate the claim into an "abstract idea" and "limitations on the abstract idea" and instead suggest evaluating the claim as a whole. Chief Judge Rader would find the method claims ineligible subject matter, but only because the claims "as a whole" are directed to using an escrow to avoid risk, despite their invocation of a computer.

#### **Judge Moore's Dissent-in-Part**

Judge Moore writes a dissent-in-part in which Judges Rader, Linn and O'Malley join. In this dissent, Judge Moore argues that the expansion of the abstract idea exception is causing a "free fall" in the patent system, resulting in the enforceability of hundreds of thousands of patents being called into question. Judge Moore suggests that the machine or transformation test, while not dispositive, should be employed as a useful tool for determining subject matter eligibility, and that the system claims at issue are clearly tied to such a machine.

Judge Moore further argues that the Lourie Opinion improperly applies the "inventive concept" language of *Mayo* by improperly and arbitrarily stripping away limitations of the claim.

Finally, Judge Moore argues that the Lourie Opinion imbues subject matter eligibility with an improper "time-dependency." Judge Moore states that "a system claim that passes § 101 when the patent issues could later magically transform into an abstract idea simply because certain computer hardware elements no longer seem inventive." <sup>17</sup>

Regarding the system claims in particular, Judge Moore argues that a system claim for "a structurally defined machine is more than a method claim rewritten in system form," and that "[a] claim to a computer running particular software is still a claim to a computer." <sup>18</sup>

Judge Moore further states that Judge Lourie's opinion improperly conflates subject matter eligibility analysis with the §§ 102 and 103 novelty and non-obviousness requirements.<sup>19</sup> She states that, if the claims espoused a known

<sup>13</sup> Slip Op., Page 65.

<sup>&</sup>lt;sup>14</sup> Slip Op., Page 79.

<sup>15</sup> Slip Op., Page 89.

<sup>&</sup>lt;sup>16</sup> Slip Op., Page 90.

<sup>&</sup>lt;sup>17</sup> Slip Op., Page 93.

<sup>&</sup>lt;sup>18</sup> Slip Op., Page 96.

<sup>&</sup>lt;sup>19</sup> Slip Op., Pages 101-102.

idea, then they should fail as being obvious in view of the known idea and a general purpose computer.<sup>20</sup> If the claim is directed to a machine that is not sufficiently detailed, the claim should fail under the provisions of § 112.21

#### Judge Newman's Concurrence-in-Part, Dissent-in-Part

Judge Pauline Newman writes a dissent-in-part, stating that the instant decision does little to clear the waters on the patent eligibility of computer-implemented methods. In her dissent, she urges a return to the original statute, with subject matter eligibility turning solely upon whether the invention fits within one of the four classes, with §§ 102, 103 and 112 employed to prevent the issue of patents with unduly broad claims.

Judge Newman sets forth several principles that she believes should guide the court:

- § 101 should be held as an inclusive statement of patent-eligible subject matter;
- the form of a claim should not control § 101 subject matter eligibility; and
- the experimental use of patented information is not barred.

In particular, Judge Newman is concerned with the belief that the use of patented technology in an experimental or test environment constitutes infringement. She believes that this belief contributes to an erroneous concern over the preemptive effects of patents, and that reiterating this exception to infringement would eliminate most of the concern over preemption of abstract ideas. She states that the judicially created exceptions to patentability have been unnecessarily expanded due to this concern and should be revisited. However, the Federal Circuit and Supreme Court have narrowly construed the experimental use exception in the past,<sup>22</sup> and thus it appears that Judge Newman would urge a reconsideration of these past decisions. Effectively, Judge Newman suggests a short-circuiting of the entire "preemption" analysis by limiting the effect issued patents may have on further technological development.

#### The Linn and O'Malley Dissent

Judges Linn and O'Malley write a dissent, arguing that the analyses of Judges Rader and Lourie are flawed in that the decision is divorced from the record to which they are bound. This dissent argues that the majority has construed the claims overly broadly, and inconsistently with the record at trial. As such, Judges Linn and O'Malley would employ a narrower construction.

At trial, both parties stipulated that the steps of method claim required the use of computers to electronically perform the transactions. Therefore, Judges Linn and O'Malley state that, if the system claims are patentable as argued by Judge Rader in his opinion, then the method claims should necessarily be patentable for the same reasons.

The dissent further argues Judge Lourie errs in construing the claims himself, interpreting them broadly and limiting his analysis to what he considers "the fundamental concept wrapped up in the claim." The dissent argues that Judge Lourie starts with this "straw-man" claim construction, and then faults this construction for lacking substantive limitations that narrow, confine or otherwise tie down the claim.

<sup>&</sup>lt;sup>20</sup> Slip Op., Page 101.

<sup>&</sup>lt;sup>21</sup> Slip Op., Page 102.

<sup>&</sup>lt;sup>22</sup> Madey v. Duke University, 307 F.3d 1351, 1362 (Fed. Cir. 2002) and Merck KGaA v. Integra Lifesciences I, Ltd., 545 U.S. 193 (2005).

#### Chief Judge Rader's "Additional Reflections"

In these reflections, the Chief Judge opines on the state of § 101 jurisprudence, including the evolving understanding of the abstract idea exception over the last 25 years. Judge Rader acknowledges that the case law since Benson,<sup>23</sup> Flook,<sup>24</sup> and Diehr<sup>25</sup> has resulted in an "abstract idea" exception to §101 that is extremely difficult to consistently apply. As a remedy to this, the Chief Judge urges a return to the original statute, which provides that "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor" (emphasis added).

#### **Conclusions:**

Unfortunately, as Judge Newman points out in her dissent-in-part, the efforts of the Federal Circuit to clarify the test for subject matter eligibility of computer-related patents have failed. The collective opinions fail to articulate a clear test that practitioners may employ to determine subject matter eligibility, and the opinion is likely not to have much precedential impact.

However, this case provides important insights into the current landscape of § 101 jurisprudence at the Federal Circuit. There is at least some agreement among the judges of the panel that claims directed to mere computer implementations of financial transactions may be suspect from a subject matter eligibility standpoint. It is conceivable that district court judges will be more ready to find similar claims to not be drawn to eligible subject matter, though decisions at the appeal level may turn heavily on which particular judges are empaneled to hear the appeal. A patentee with a subject matter eligibility question before a panel that includes any two of Judges Linn, O'Malley, Moore, Newman or possibly Chief Judge Rader should feel far more confident about their prospects than when faced with a panel that includes two of Judges Lourie, Dyk, Prost, Reyna or Wallach.

If nothing else, this opinion highlights the further need for guidance from either Congress or the Supreme Court regarding the issue of subject matter eligibility. With AMP v. Myriad Genetics currently before the Supreme Court, the Court will hopefully elect to provide some additional guidance in their upcoming opinion to assist the Federal Circuit in moving beyond the instant impasse.

For the patent practitioner, little has changed with respect to the prosecution of computer implemented methods, other than perhaps an increased level of uncertainty as to how the matter will eventually be resolved. As always, practitioners should make sure to draft a thorough specification and set of claims to establish possible contingency positions depending upon how the subject matter eligibility question is eventually resolved. Practitioners should ensure adequate support is provided in their specification to claim apparatuses and devices that implement the method, and at least some claim sets should include a clear recitation of computer hardware, in the event the Rader/Linn/O'Malley/Moore interpretation eventually wins out. For the time being though, practitioners will have to continue to wait and see what, if any, further guidance is provided from Congress or the Supreme Court.

This advisory was written by Guy Gosnell and James Carroll.

<sup>&</sup>lt;sup>23</sup> 409 U.S. 63.

<sup>&</sup>lt;sup>24</sup> 437 U.S. 584.

<sup>&</sup>lt;sup>25</sup> 450 U.S. 175.

If you would like to receive future *Intellectual Property Advisories* electronically, please forward your contact information to **ip.advisory@alston.com**. Be sure to put "subscribe" in the subject line.

If you have any questions or wish to discuss further, please contact any of the following members of Alston & Bird's Intellectual Property Group:

Wesley Cameron Achey wes.achey@alston.com 404.881.4930

Blas P. Arroyo blas.arroyo@alston.com 704.444.1012

William M. Atkinson william.atkinson@alston.com 704.444.1026

Timothy J. Balts tim.balts@alston.com 704.444.1185

Ross R. Barton ross.barton@alston.com 704 444 1287

David H. Ben-Meir david.ben-meir@alston.com 213.576.1076

Philippe Bennett philippe.bennett@alston.com 212.210.9559

Kirk T. Bradley kirk.bradley@alston.com 704.444.1030

Keith E. Broyles keith.broyles@alston.com 404.881.7558

Rachel M. Capoccia rachel.capoccia@alston.com 213.576.1037

Romy L. Celli romy.celli@alston.com 650.838.2011

Natalie C. Clayton natalie.clayton@alston.com 212.210.9573 Michael S. Connor mike.connor@alston.com 704.444.1022

Jason W. Cook jason.cook@alston.com 214.922.3407

Jason P. Cooper jason.cooper@alston.com 404.881.4831

Jeffrey A. Cooper jeff.cooper@alston.com 404.881.7892

John W. Cox, Ph.D. john.cox@alston.com 404 881 7333

Sean P. DeBruine sean.debruine@alston.com 650.838.2121

Brian C. Ellsworth brian.ellsworth@alston.com 704.444.1265

Patrick J. Flinn patrick.flinn@alston.com 404.881.7920

Christopher J. Gegg chris.gegg@alston.com 704 444 1024

Joseph J. Gleason joe.gleason@alston.com 404.881.4966

Jon M. Gordon jonathan.gordon@alston.com 213.576.1165

Guy R. Gosnell guy.gosnell@alston.com 704.444.1029 Gregory T. Gronholm greg.gronholm@alston.com 404.881.7968

Jim A. Harvey jim.harvey@alston.com 404.881.7328

John D. Haynes john.haynes@alston.com 404.881.7737

Steven D. Hemminger steve.hemminger@alston.com 650.838.2029

Donald M. Hill, Jr. donald.hill@alston.com 704 444 1006

Yitai Hu yitai.hu@alston.com 650.838.2020

Louis A. Karasik lou.karasik@alston.com 213.576.1148

David C. Keating david.keating@alston.com 404.881.7355

S.H. Michael Kim michael.kim@alston.com 650.838.2100

Ryan W. Koppelman ryan.koppelman@alston.com 404.881.7742

Robert L. Lee bob.lee@alston.com 404.881.7635

Joe Liebeschuetz, Ph.D. joe.liebeschuetz@alston.com 650.838.2038

Jitty Malik, Ph.D. jitty.malik@alston.com 704.444.1115

Michael D. McCoy mike.mccoy@alston.com 704.444.1011

Todd S. McClelland todd.mcclelland@alston.com 404.881.4789

Richard M. McDermott rick.mcdermott@alston.com 704 444 1045

George Douglas Medlock, Jr. george.medlock@alston.com 404 881 7765

Deepro R. Mukerjee deepro.mukerjee@alston.com 212.210.9501

Michael J. Newton mike.newton@alston.com 214.922.3423

Shane Nichols shane.nichols@alston.com 404.881.4540

Thomas J. Parker thomas.parker@alston.com 212.210.9529

Scott J. Pivnick scott.pivnick@alston.com 202.239.3634

S. Benjamin Pleune ben.pleune@alston.com 704.444.1098

Elizabeth H. Rader elizabeth.rader@alston.com 650.838.2008 Bruce J. Rose bruce.rose@alston.com 704.444.1036

David M. Saravitz, Ph.D. david.saravitz@alston.com 919.862.2217

Frank G. Smith frank.smith@alston.com 404.881.7240

W. Murray Spruill, Ph.D. murray.spruill@alston.com 919.862.2202

M. Scott Stevens scott.stevens@alston.com

Dave J. Stewart david.stewart@alston.com 404.881.7952

R. Flynt Strean flynt.strean@alston.com 704.444.1430

George M. Taulbee george.taulbee@alston.com 704.444.1023

David S. Teske david.teske@alston.com 404 881 7935

Kevin C. Trock kevin.trock@alston.com 650.838.2004

Jamie D. Underwood jamie.underwood@alston.com 202.239.3706

Katherine M. Wallace katherine.wallace@alston.com 404.881.4706

# ALSTON&BIRD ILLP

WWW.ALSTON.COM

© ALSTON & BIRD LLP 2013

ATLANTA: One Atlantic Center ■ 1201 West Peachtree Street ■ Atlanta, Georgia, USA, 30309-3424 ■ 404.881.7000 ■ Fax: 404.881.7777

BRUSSELS: Level 20 Bastion Tower ■ Place du Champ de Mars ■ B-1050 Brussels, BE ■ +32 2 550 3700 ■ Fax: +32 2 550 3719

CHARLOTTE: Bank of America Plaza ■ 101 South Tryon Street ■ Suite 4000 ■ Charlotte, North Carolina, USA, 28280-4000 ■ 704.444.1000 ■ Fax: 704.444.1111

DALLAS: 2828 North Harwood Street ■ 18th Floor ■ Dallas, Texas, USA, 75201 ■ 214.922.3400 ■ Fax: 214.922.3899

LOS ANGELES: 333 South Hope Street ■ 16th Floor ■ Los Angeles, California, USA, 90071-3004 ■ 213.576.1000 ■ Fax: 213-576-1100

NEW YORK: 90 Park Avenue ■ 15th Floor ■ New York, New York, USA, 10016-1387 ■ 212.210.9400 ■ Fax: 212.210.9444

RESEARCH TRIANGLE: 4721 Emperor Blvd. ■ Suite 400 ■ Durham, North Carolina, USA, 27703-85802 ■ 919.862.2200 ■ Fax: 919.862.2260

SILICON VALLEY: 275 Middlefield Road ■ Suite 150 ■ Menlo Park, California, USA, 94025-4004 ■ 650-838-2000 ■ Fax: 650.838.2001

WASHINGTON, DC: The Atlantic Building ■ 950 F Street, NW ■ Washington, DC, USA, 20004-1404 ■ 202.756.3300 ■ Fax: 805.497.8804