



UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

Mail Stop 4561

June 8, 2009

Tarek A. Sherif
Chief Executive Officer
Medidata Solutions, Inc.
79 Fifth Avenue, 8th Floor
New York, NY 10003

**Re: Medidata Solutions, Inc.
Amendment No. 3 to Registration Statement on Form S-1
Filed June 3, 2009
File No. 333-156935**

Dear Mr. Sherif:

We have reviewed your filing and have the following comments.

Amendment No. 3 to Registration Statement on Form S-1

Management's Discussion and Analysis of Financial Condition and Results of Operations

Critical Accounting Policies

Stock-Based Compensation

Significant Factors, Assumptions and Methodologies Used in Determining the Fair Value of our Capital Stock, page 46

1. You indicate that between March 31, 2009 and May 31, 2009 you granted stock options with exercise prices ranging from \$15.70 to \$20.58 per share. Please revise your disclosure to indicate that these options were granted during the twelve months ended March 31, 2009 and subsequently through May 31, 2009.
2. Your disclosure on page 49 indicates that the valuation performed at March 31, 2009 resulted in a fair value of \$15.43 per common share. However, your disclosure on page 48 indicates the valuation at March 31, 2009 resulted in an estimated fair value per common share of \$15.70. Please revise your disclosure to resolve this discrepancy.

Executive Compensation

Compensation Discussion and Analysis

2009 Plan Awards at IPO, page 91

3. Your compensation discussion and analysis should provide an expanded analysis of how you arrived at and why you paid each particular level of compensation. In particular, we note minimal discussion and analysis of how the Committee determined specific equity awards to be granted pursuant to the 2009 Long-Term Incentive Plan. Although we do note your general discussion of Committee considerations in determining stock option grants, there is no discussion of Committee considerations for determining grants of restricted stock. We would expect to see a more focused discussion that provides substantive analysis and insight into how the Committee made actual payout determinations for both stock option and restricted stock grants. Refer to Instruction 2 to Item 402(b) and paragraphs (b)(1)(iii) and (v) of Item 402 of Regulation S-K. You should provide complete discussions of the specific factors considered by the Committee in ultimately approving this and other forms of compensation, including the reasons why the Committee believes that the amounts paid to each named executive officer are appropriate in light of the various items it considered in making specific compensation decisions.

Principal and Selling Stockholders, page 98

4. We note that you have added a selling shareholder component to your offering in this amendment. For all selling shareholders that are legal entities, please identify in the registration statement the natural person or persons who exercise sole or shared voting and/or dispositive powers over the securities offered for resale. We note that you have not provided the natural person or persons who exercise sole or shared voting and/or dispositive powers over the securities offered for resale by Stonehenge Capital Fund New York, LLC, GlobalNet Partners LP and Silicon Alley Ventures, LP.
5. Please clarify whether any of the selling stockholders are broker-dealers or affiliates of a broker-dealer. For selling shareholders that are affiliates of a broker-dealer, please disclose whether the sellers purchased the shares in the ordinary course of business and whether, at the time of the purchase of the securities to be resold, the sellers had any agreements or understandings, directly or indirectly, with any person to distribute the securities.

* * *

As appropriate, please amend your filing in response to these comments. Your responsive amendments should also include marked copies of the amended filing that conform with the provisions of Rule 310 of Regulation S-T. Marked copies such as those in HTML format that show changes within paragraphs help us to expedite our review.

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Medidata Solutions, Inc.
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Please furnish a cover letter with your amendment that keys your response to our comments and provide any requested information. Detailed cover letters greatly facilitate our review. Please understand that we may have additional comments after reviewing your amendment and responses to our comments.

If you have questions or comments on the financial statements and related matters, please contact Jennifer Fugaro, Staff Accountant, at (202) 551-3482 or, if you require additional assistance, you may contact Mark Shannon, Staff Accountant, at (202) 551-3299. Please contact Michael F. Johnson, Staff Attorney, at (202) 551-3477 with any other questions. If you require further assistance, you may contact me at (202) 551-3735 for additional assistance.

Sincerely,

Barbara C. Jacobs
Assistant Director

cc: Via Facsimile (212) 318-3400
Warren J. Nimetz, Esq.
Fulbright & Jaworski L.L.P.