

Mail Stop 4561

February 20, 2009

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

**Re: Medidata Solutions, Inc.
Registration Statement on Form S-1
Filed January 26, 2009
File No. 333-156935**

Dear Mr. Sherif:

We have reviewed your filings and have the following comments. Where indicated, we think you should revise your documents in response to these comments. If you disagree, we will consider your explanation as to why our comment is inapplicable or a revision is unnecessary. Please be as detailed as necessary in your explanation. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure. After reviewing this information, we may raise additional comments.

Please understand that the purpose of our review process is to assist you in your compliance with the applicable disclosure requirements and to enhance the overall disclosure in your filings. We look forward to working with you in these respects. We welcome any questions you may have about our comments or any other aspect of our review. Feel free to call us at the telephone numbers listed at the end of this letter.

Form S-1 Registration Statement filed January 26, 2009

General

1. Please file updated financial statements pursuant to Rule 3-12 of Regulation S-X.

2. We will process your filing without price ranges. Since the price range triggers a number of disclosure matters, we will need sufficient time to process the filing when it is included. Please understand that its effect on disclosure throughout the document may cause us to raise issues on areas not previously commented upon.

Inside Front Cover Page

3. In the paragraph titled "Industry and Market Data," you state that you do not "make any representation as to the accuracy of such information." Revise to eliminate language that suggests that you are not responsible for the statements you make in the prospectus, including information you gathered from third parties and republish. More clearly describe the basis of your belief that the statements attributed to others are accurate and concisely explain how your evaluations of the accuracy of those statements varied from independent verification, which was not performed.
4. The inside front cover should contain only the information permitted by Item 2 of Form S-1 and Item 502 of Regulation S-K. Please relocate the last three paragraphs in this section.

Prospectus Summary

The Offering, page 4

5. We note that upon the closing of your offering, all of your preferred stock will automatically convert into common stock and that the holders of your senior preferred stock will be entitled to payment of all accumulated accrued dividends on such senior preferred stock in cash, or at the election of the holders of at least 66% of your outstanding Series D preferred stock, into shares of your common stock at the initial public offering price. Please clarify the ratio for the conversion of the preferred shares into common.

Risk Factors, page 8

6. Please consider revising risk factors that could apply to any issuer or any offering. See Item 503(c) of Regulation S-K. A number of your risk factors do not appear specific to Medidata, its industry or this offering.

"The loss of one or more major customers could materially and adversely affect our business, results of operations or financial condition," page 9

7. We note that for the nine months ended September 30, 2008, Johnson & Johnson and AstraZeneca, accounted for approximately 14% and 11% of your total revenues, respectively. Please provide a materially complete description these relationships in the Business section, advise why you are not substantially dependent upon the relationships with these customer for purposes of Item 601(b)(10) of Regulation S-K.

Use of Proceeds, page 23

8. You indicate that you expect to use a portion of your net proceeds for “possible acquisitions” and that you “have not entered into any binding commitments or agreements with respect to future acquisitions.” Clarify whether there are any current plans, proposals or arrangements regarding acquisitions of other businesses. Where the registrant indicates that the proceeds from the offering may, or will, be used to finance acquisitions of other businesses, the status of any negotiations with respect to an acquisition, and a brief description of such business, should be included to the extent that the registrant reasonably determines that public disclosure of such information would not jeopardize the acquisition. Please advise or revise your filing. Refer to Instruction 6 to Item 504 of Regulation S-K.

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

Overview, page 39

9. Consider expanding your “Overview” to include a discussion of the material risks, events, commitments and uncertainties facing Medidata and how management is dealing with these issues. Refer to Release No. 33-8350.

Internal Controls over Financial Reporting, page 42

10. You disclose that management identified material weaknesses in internal control over financial reporting as of December 31, 2006 and 2007 and that you have taken measures to remediate these weaknesses. Please revise your disclosure to provide an estimated timetable for remediation, to disclose any associated material costs, and to describe in greater detail the nature of your material weakness in revenue recognition. As part of your response, please explain to us the specific errors that occurred in your recognition of revenue.

Critical Accounting Policies

Stock-Based Compensation, page 43

11. Please revise to discuss the significant factors considered, assumptions made, and methodologies used as well as consideration given to alternative factors, methodologies, and assumptions in the valuation of your common stock performed by FSCG at various dates. Additionally, discuss each significant factor contributing to the difference between the estimated IPO price and the fair value determined at each valuation date. The discussion should describe significant intervening events within the company and changes in assumptions as well as weighting and selection of valuation methodologies employed that explain the changes in the fair value of your common stock up to the filing of the registration statement.

12. Please tell us your proposed IPO price, when you first initiated discussions with underwriters and when the underwriters first communicated their estimated price range and amount for your stock.

Liquidity and Capital Resources, page 55

13. We note that during 2009 you expect to make approximately \$10 million in capital expenditures to support the expected growth of your business. However, please tell us what consideration you gave to identifying any known trends or any known demands, commitments, events or uncertainties that will result in or that are reasonably likely to result in your liquidity increasing or decreasing in any material way. See Item 303(a)(1) of Regulation S-K.
14. Please revise this section to cover all the periods required by Item 303(a) of Regulation S-K.

Cash Flows, page 55

15. We note your discussion of cash flows addresses the nine months ended September 30, 2008 and the fiscal year ended December 31, 2007. Revise your cash flow discussion to address all of the periods presented in your registration statement. See Item 303(a) of Regulation S-K.

Preferred Stock, page 58

16. We note from your disclosures on page F-38 that, at any time on or after May 27, 2009, the holders of your Series D preferred stock may elect to have all of the then-outstanding shares of Senior Preferred Stock redeemed for cash. In addition, we note the Series B and C preferred stock holders may redeem their stock for cash if the Series D holders elect to exercise their redemption right. Please tell us what consideration you gave to discussing the possible redemption of your preferred stock in your liquidity and capital resources disclosures.

Business, page 61

17. Please supplementally provide to us documentation supporting the following statements, appropriately marked to highlight the sections relied upon and cross-referenced to your prospectus:
 - “We are a leading global provider of hosted clinical development solutions ...”
 - “[T]he pharmaceutical industry is responsible for the development and marketing of drug therapies that generated approximately \$712 billion in global pharmaceutical sales in 2007, representing a compound annual growth rate of approximately 6% over the previous five years.”

- “Based on data from EvaluatePharma, we estimate that global research and development expenses in the pharmaceutical industry exceeded \$120 billion in 2008.”
- “Clinical development has historically comprised one of the largest components of the pharmaceutical industry’s research and development expenditures.”
- “Out of an aggregate \$120 billion global research and development budget, approximately 2,000 pharmaceutical, biotechnology, medical device companies and academic research institutions conducted an estimated 10,000 clinical trials in 2007.”
- “EDC technology ... has become widely accepted across the industry.”

Management

Compensation Committee Interlocks and Insider Participation, page 78

18. We note that Mr. Kurtz is a member of your compensation committee and that during your fiscal year 2008 he was a director of Torrey Pines, which company purchased approximately \$326,000 of application and professional services from you. Under your Compensation Committee Interlocks and Insider Participation section you should identify each person who served as a member of your compensation committee and had any relationship requiring disclosure under any paragraph of Item 404 of Regulation S-K. Further, the disclosure required by Item 404 should accompany such identification. Refer to Item 407(e)(4)(i)(c) of Regulation S-K.

Executive Compensation, page 79

19. We note the blank spaces throughout your executive compensation section. Please include this disclosure in an amendment as soon as practicable. Note that we may have additional comments once you have provided this disclosure.

Compensation Discussion and Analysis, page 79

20. Your compensation discussion and analysis should provide an expanded analysis of how you arrived at and why you paid each particular level of compensation for 2008. For example, we note minimal discussion and analysis of how the Committee determines specific annual cash bonuses and long-term equity awards to the extent that any were paid/awarded. We would expect to see a focused discussion that provides substantive analysis and insight into how the Committee made actual payout determinations for the fiscal year for which compensation is being reported. Refer to paragraphs (b)(1)(iii) and (v) of Item 402 of Regulation S-K.
21. Please provide clear disclosure that addresses how each compensation component and your decisions regarding these elements fit into your overall compensation objectives and their

impact regarding other elements. See Item 402(b)(1)(vi) of Regulation S-K. Clarify whether you review each element of compensation independently or whether you consider each element collectively with the other elements of your compensation program when establishing the various forms and levels of compensation. In doing so, please provide sufficient quantitative or qualitative disclosure as appropriate of the analyses underlying the Committee's decision to make specific compensation awards and how decisions regarding one type of award motivate the Committee to award or consider other forms of compensation. Explain and place in context how you considered each element of compensation and why determinations with respect to one element may or may not have influenced the Committee's decisions with respect to other allocated or contemplated awards.

22. Please expand your discussion to provide additional analysis of the effect of individual performance on annual cash bonuses to the extent that any were paid. Your discussion should quantify what amount of actual bonus compensation was determined by individual performance, on the one hand, and company performance, on the other. Further, you should disclose the elements of individual performance, both quantitative and qualitative, and specific contributions the Committee considered in its evaluation. See Item 402(b)(2)(vii) of Regulation S-K.
23. You should disclose the bonus compensation payable based upon the achievement (or non-achievement) of the performance targets you identify. For example, if applicable, you should discuss the bonus compensation payable in the event only 75% of the targeted revenues and adjusted EBITDA are achieved. If you are relying on Instruction 4 to Item 402(b) to omit these target levels, you should provide us with your competitive harm analysis.
24. We note your use of comparative benchmark data provided by Pearl Meyer & Partners to increase salaries to within the "target percentile range." Please clarify what consideration you gave to disclosing the actual percentiles for fiscal 2008 compensation and each benchmarked element of compensation. Disclosure in this regard should include a discussion of where you target each element of compensation against the comparator companies and where actual payments fall within targeted parameters.

Potential Payments upon Termination of Employment or a Change of Control, page 88

25. Please describe and explain how the appropriate payment and benefit levels are determined under the various circumstances that trigger payments or provision of benefits under the employment agreements. See paragraphs (b)(1)(v) and (j)(3) of Item 402 of Regulation S-K. Also, in the compensation discussion and analysis, discuss how these arrangements fit into your overall compensation objectives and affect the decisions you made regarding other compensation elements and the rationale for decisions made in connection with these arrangements.

Certain Relationships and Related Transactions

Stock Repurchases, page 92

26. We note that you entered into an agreement with certain of your executive officers and directors pursuant to which you repurchased shares of your common stock. This agreement should be filed as an exhibit to your registration statement. Refer to Item 601(b)(10)(ii)(A).

Description of Capital Stock, page 94

27. Please revise the statement that the description of your capital stock in the prospectus “does not purport to be complete and is subject to, and qualified in its entirety by reference to, the terms of our fourth amended and restated certificate of incorporation and amended and restated bylaws.” The description of securities in the prospectus should be materially complete and you should avoid language suggesting otherwise.

Consolidated Financial Statements of Medidata Solutions Inc. and Subsidiaries for the Years Ended December 31, 2005, 2006 and 2007

Notes to Consolidated Financial Statements

Note 2. Summary of Significant Accounting Policies

Revenue Recognition

Application Services, page F-27

28. We note that for multiple study arrangements where the customer has the contractual right to take possession of the software at any time during the hosting period without significant penalty and it is feasible for the customer to either run the software on its own hardware or contract with another unrelated party to host the software, you recognize revenue in accordance with SOP 97-2. Please revise your disclosure to clarify why you recognize these revenues ratably over the term of the arrangement.
29. We note revenue from application service arrangements is recognized ratably over the term of the arrangement, which may or may not include optional renewal periods. Please clarify for us whether you recognize revenue over the initial term of the arrangement or over a term that includes optional renewal periods.

Professional Services, page F-28

30. Please clarify for us whether or not you consider entity-specific objective evidence to be equivalent to vendor-specific objective evidence.

Note 4. Debt and Related Party Transactions, page F-34

31. We note your disclosure on page 92 that in October 2007 you repurchased an aggregate of 496,811 shares of your common stock at a price of \$12.077 per share. Please tell us why you do not appear to have disclosed this transaction in the footnotes to your financial statements pursuant to paragraph 2 of SFAS 57.

Note 5. Preferred Stock, page F-35

32. We note that the holders of your Series B, C and D preferred stock will be entitled to receive cumulative dividends if, among other things, there is an automatic conversion of any Senior Preferred Stock upon a "Qualified Public Offering" of your securities. We also note that "Qualified Public Offering" is defined as a public offering covering common stock listed for trading on either the New York Stock Exchange or the NASDAQ National Market. As the NASDAQ National Market was reclassified into the NASDAQ Global Market effective July 1, 2006, we presume the holders of your Series B, C and D preferred stock will be entitled to receive cumulative dividends if your shares are listed for trading on the NASDAQ Global Market, the market on which you have indicated you intend to apply to have your securities listed.

Note 8. Income Taxes, page F-61

33. Please tell us how you considered the disclosure requirements of paragraph 21(e) of FIN 48.

Item 15. Recent Sales of Unregistered Securities, page II-3

34. We note that you issued 864,440 shares of common stock to the 75 former stockholders of Fast Track. We also note that between 2006 and 2009 you granted options to purchase shares of common stock to directors, employees and consultants, and issued and sold unregistered shares of common stock pursuant to option exercises. Please amend your filing to include all the information required to be disclosed pursuant to Item 701(d) of Regulation S-K. We do note that you state that you relied upon Rule 701 and/or Section 4(2) of the Securities Act; however, with respect to the 4(2) issuances, you should state briefly whether the purchasers were accredited or sophisticated and, if the latter, the information afforded to them.

Exhibit Index

35. Please file the certificates of designation for your Series A, B, C and D preferred stock and the lease agreements for your hosting facility and corporate headquarters.

* * * * *

As appropriate, please amend your registration statement in response to these comments. Your responsive amendment should also include a marked copy of the amended filing that

conforms 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. Please furnish a cover letter with your amendment that keys your responses to our comments and provides 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.

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes all information required under the Securities Act of 1933 and that they have provided all information investors require for an informed investment decision. Since the company and its management are in possession of all facts relating to a company's disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

Notwithstanding our comments, in the event the company requests acceleration of the effective date of the pending registration statement, it should furnish a letter, at the time of such request, acknowledging that:

- should the Commission or the staff, acting pursuant to delegated authority, declare the filing effective, it does not foreclose the Commission from taking any action with respect to the filing;
- the action of the Commission or the staff, acting pursuant to delegated authority, in declaring the filing effective, does not relieve the company from its full responsibility for the adequacy and accuracy of the disclosure in the filing; and
- the company may not assert staff comments and the declaration of effectiveness as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

In addition, please be advised that the Division of Enforcement has access to all information you provide to the staff of the Division of Corporation Finance in connection with our review of your filing or in response to our comments on your filing.

We will consider a written request for acceleration of the effective date of the registration statement as confirmation of the fact that those requesting acceleration are aware of their respective responsibilities under the Securities Act of 1933 and the Securities Exchange Act of 1934 as they relate to the proposed public offering of the securities specified in the above registration statement. We will act on the request and, pursuant to delegated authority, grant acceleration of the effective date.

We direct your attention to Rules 460 and 461 regarding requesting acceleration of a registration statement. Please allow adequate time after the filing of any amendment for further review before submitting a request for acceleration. Please provide this request at least two business days in advance of the requested effective date.

Tarek A. Sherif
Medidata Solutions, Inc.
February 20, 2009
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If you have questions or comments on the financial statements and related matters, please contact Jennifer Fugario, 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.