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

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Amendment No. 1 to  
**FORM F-1**  
REGISTRATION STATEMENT  
UNDER  
THE SECURITIES ACT OF 1933

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**ADVANCED ACCELERATOR APPLICATIONS S.A.**

(Exact name of Registrant as specified in its charter)

Not Applicable

(Translation of Registrant's name into English)

**FRANCE**  
(State or Other Jurisdiction of  
Incorporation or Organization)

**2834**  
(Primary Standard Industrial  
Classification Code Number)

**NOT APPLICABLE**  
(I.R.S. Employer  
Identification Number)

20 rue Diesel  
01630 Saint Genis Pouilly, France  
+33 (0) 4 50 99 30 70

(Address, including Zip Code, and Telephone Number, including Area Code, of Registrant's Principal Executive Offices)

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CCS Global Solutions, Inc.  
530 Seventh Avenue, Suite 909  
New York, New York 10019  
(800-300-5067)

(Name, Address, including Zip Code, and Telephone Number, including Area Code, of Agent For Service)

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*Copies to:*

**John G. Crowley, Esq.**  
**Davis Polk & Wardwell LLP**  
450 Lexington Avenue  
New York, NY 10017

**Jacques Naquet-Radiguet, Esq.**  
**Davis Polk & Wardwell LLP**  
121 Avenue des Champs-Élysées  
75008 Paris, France

**James A. Lebovitz, Esq.**  
**Dechert LLP**  
2929 Arch Street  
Philadelphia, PA 19104

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**Approximate date of commencement of proposed sale to the public:** As soon as practicable after the effective date of this registration statement.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.  \_\_\_\_\_

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.  \_\_\_\_\_

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.  \_\_\_\_\_

The Registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this registration statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933, as amended, or until the registration statement shall become effective on such date as the Commission, acting pursuant to such Section 8(a), may determine.

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The sole purpose of this Amendment No. 1 to the Registration Statement on Form F-1 (File No. 333-213806) of Advanced Accelerator Applications S.A. (the “Company”) is to amend the exhibit index and to file exhibits 5.1 and 8.2. Accordingly, this Amendment No. 1 consists only of the facing page, this explanatory note, Part II, including the signature page and the exhibit index, and the exhibits filed herewith. This Amendment No. 1 does not contain a copy of the prospectus that was included in the Company’s Registration Statement on Form F-1 filed with the U.S. Securities and Exchange Commission on September 26, 2016 and is not intended to amend or delete any part of the prospectus.

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**PART II**  
**INFORMATION NOT REQUIRED IN THE PROSPECTUS**

**Item 6. Indemnification of Directors and Officers**

Under French law, provisions of by-laws that limit the liability of directors are prohibited. However, French law allows sociétés anonymes to contract for and maintain liability insurance against civil liabilities incurred by any of their directors and officers involved in a third-party action, provided that they acted in good faith and within their capacities as directors or officers of the Company. Criminal liability cannot be indemnified under French law, whether directly by the Company or through liability insurance.

We maintain liability insurance for our directors and officers, including insurance against liability under the Securities Act of 1933, as amended, and we may enter into agreements with our directors and executive officers to provide contractual indemnification. With certain exceptions and subject to limitations on indemnification under French law, these agreements provide for indemnification for damages and expenses including, among other things, attorneys' fees, judgments, fines and settlement amounts incurred by any of these individuals in any action or proceeding arising out of his or her actions in that capacity. We believe that this insurance and these agreements are necessary to attract and maintain qualified directors and executive officers.

These agreements may discourage shareholders from bringing a lawsuit against our directors and executive officers for breach of their fiduciary duty. These provisions also may have the effect of reducing the likelihood of derivative litigation against directors and executive officers, even though such an action, if successful, might otherwise benefit us and our shareholders. Furthermore, a shareholder's investment may be adversely affected to the extent we pay the costs of settlement and damage awards against directors and officers pursuant to these insurance agreements.

Certain of our non-employee directors may, through their relationships with their employers or partnerships, be insured against certain liabilities in their capacity as members of our board of directors.

In any underwriting agreement we enter into in connection with the sale of ADSs being registered hereby, the underwriters will agree to indemnify, under certain conditions, us, our directors, our officers and persons who control us within the meaning of the Securities Act against certain liabilities.

**Item 7. Recent Sales of Unregistered Securities**

Set forth below is information regarding share capital (including free shares) issued by us since January 1, 2011. None of the below described transactions involved any underwriters, underwriting discounts or commissions, or any public offering in the United States.

Since January 1, 2013, we issued an aggregate of 25,550,908 ordinary shares in connection with various capital increases. Of these ordinary shares, we issued 1,267,500 ordinary shares to our employees under our Free Share Plans in exchange for services rendered or to be rendered.

The following 535,857 shares were issued at the prices shown below in connection with acquisitions of companies or their assets, or payments made in shares to former owners or employees of acquired companies:

<b>Date</b>	<b>Number of Ordinary Shares Issued</b>	<b>Price per Ordinary Share (in Euros)</b>
02/2014	294,743	5.0
03/2014	241,114	2.5*
<b>Total Ordinary Shares</b>	<b>535,857</b>	

\* Price per share as part of the Atrius acquisition, determined according to market price at the time of acquisition in February 2010.

In addition, the following shares were sold to investors at date and prices indicated below:

<b>Date</b>	<b>Number of Ordinary Shares Issued</b>	<b>Price per Ordinary Share (in Euros)</b>
04/2013	963,086	5.0
02/2014	8,212,295	5.0
15/2015	1,459,660	6.1
06/2015	2,330,110	6.1
<b>Total Ordinary Shares</b>	<b>12,965,151</b>	

None of the foregoing transactions involved any underwriters, underwriting discounts or commissions, or any public offering. The offers, sales and issuances of the securities described in the preceding two paragraphs were exempt from registration either (a) under Section 4(2) of the Securities Act in that the transactions were between an issuer and sophisticated investors and did not involve any public offering within the meaning of Section 4(2) or (b) under Regulation S promulgated under the Securities Act in that offers, sales and issuances were not made to persons in the United States and no directed selling efforts were made in the United States. All recipients had adequate access, through their relationships with us, to information about us. The sales of these securities were made without any general solicitation or advertising.

#### **Item 8. Exhibits**

(a) Exhibits:

See the Exhibit Index beginning on page II-6 of this registration statement.

(b) Financial Statement Schedules:

None.

#### **Item 9. Undertakings**

The undersigned hereby undertakes:

(a) The undersigned registrant hereby undertakes to provide to the underwriter at the closing specified in the underwriting agreements, certificates in such denominations and registered in such names as required by the underwriter to permit prompt delivery to each purchaser.

(b) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the SEC such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer, or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question of whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

(c) The undersigned registrant hereby undertakes that:

(1) For purposes of determining any liability under the Securities Act of 1933, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by the Registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective.

(2) For the purpose of determining any liability under the Securities Act of 1933, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

**SIGNATURES**

Pursuant to the requirements of the Securities Act of 1933, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form F-1 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, on October 3, 2016.

**ADVANCED ACCELERATOR APPLICATIONS S.A.**

By: /s/ Stefano Buono  
Name: Stefano Buono  
Title: Chief Executive Officer

Pursuant to the requirements of the Securities Act of 1933, as amended, this registration statement has been signed by the following persons on October 3, 2016 in the capacities indicated:

Name	Title
/s/ Stefano Buono Stefano Buono	Chief Executive Officer and Director (principal executive officer)
/s/ Heinz Mäusli Heinz Mäusli	Chief Financial Officer (principal financial officer and principal accounting officer)
* Claudio Costamagna	Chairman of the Board
* François Nader	Director
* Kapil Dhingra	Director
* Steve Gannon	Director
Yvonne Greenstreet	Director
* Christian Merle	Director
* Leopoldo Zambelletti	Director
/s/ Edward A. Sturchio Edward A. Sturchio	Authorized Representative in the United States
* By /s/ Stefano Buono Stefano Buono Attorney-in-Fact	

## EXHIBIT INDEX

(a) The following documents are filed as part of this registration statement:

- 1.1 Form of Underwriting Agreement.\*
- 3.1 English translation of Articles of Association (incorporated herein by reference to Exhibit 1.1 to the Company's Annual Report on Form 20-F for the year ended December 31, 2015 (File No. 001-36298) filed with the SEC on April 15, 2015).
- 4.1 Form of Deposit Agreement among Advanced Accelerator Applications S.A., The Bank of New York Mellon, as depositary, and owners and holders of American Depositary Shares (incorporated by reference to our Registration Statement on Form F-6 (File No. 333-201502) filed with the SEC on January 14, 2016).
- 4.2 Form of American Depositary Receipt (included in Exhibit 4.1).
- 4.3 Form of Shareholders' Agreement (incorporated herein by reference to Exhibit 4.3 to the Company's Registration Statement on Form F-1 (File No. 333-207223) filed with the SEC on October 1, 2015).
- 4.4 Share Purchase Agreement, dated February 14, 2014, among Advanced Accelerator Applications S.A., Imaging Equipment (Holdings) Limited, Nicholas Stevens, Helen Ruth Stevens, Prabhjeevan Singh Virk, Victor Griffin and Richard Huggins (incorporated herein by reference to Exhibit 3.1 to the Company's Registration Statement on Form F-1 (File No. 333-207223) filed with the SEC on October 1, 2015).
- 5.1 Opinion of Davis Polk & Wardwell LLP, counsel to Advanced Accelerator Applications S.A., as to the validity of the ADSs.
- 8.1 Opinion of Orrick, Herrington & Sutcliffe (Europe) LLP, French tax counsel to Advanced Accelerator Applications S.A., as to French tax matters.\*
- 8.2 Opinion of Davis Polk & Wardwell LLP, U.S. tax counsel to Advanced Accelerator Applications S.A., as to U.S. tax matters.
- 10.1 Share Purchase Agreement, dated February 14, 2014, among Advanced Accelerator Applications S.A., Imaging Equipment (Holdings) Limited, Nicholas Stevens, Helen Ruth Stevens, Prabhjeevan Singh Virk, Victor Griffin and Richard Huggins (incorporated herein by reference to Exhibit 3.1 to the Company's Registration Statement on Form F-1 (File No. 333-207223) filed with the SEC on October 1, 2015).
- 10.2 Sale and Purchase Agreement, dated May 20, 2010, by and among Advanced Accelerator Applications S.A., BioSynthema Inc., and certain shareholders of BioSynthema Inc. listed in Schedule 1 thereto (incorporated herein by reference to Exhibit 10.2 to the Company's Registration Statement on Form F-1 (File No. 333-207223) filed with the SEC on October 1, 2015).†
- 10.3 License Agreement, dated October 10, 2007, by and between Mallinckrodt Inc. and BioSynthema Inc. (incorporated herein by reference to Exhibit 10.3 to the Company's Registration Statement on Form F 1 (File No. 333-207223) filed with the SEC on October 1, 2015).†
- 10.4 Know How and Trademark License Agreement, dated January 14, 2009, between Advanced Accelerator Applications S.A. and IASON GmbH (incorporated herein by reference to Exhibit 10.4 to the Company's Registration Statement on Form F 1 (File No. 333-207223) filed with the SEC on October 1, 2015).†
- 10.5 License Agreement, dated June 12, 2007 (incorporated herein by reference to Exhibit 10.5 to the Company's Registration Statement on Form F 1 (File No. 333-207223) filed with the SEC on October 1, 2015).†
- 10.6 Service Agreement, dated April 3, 2012, between Advanced Accelerator Applications S.A. and Pierrel Research Italy S.p.A (incorporated herein by reference to Exhibit 10.6 to the Company's Registration Statement on Form F-1 (File No. 333-207223) filed with the SEC on October 1, 2015).

- 10.7 Unanimous Shareholders Agreement dated March 27, 2014, among Advanced Accelerator Applications Canada Inc., 4549694 Canada Inc., 7329563 Canada Inc. and Atreus Pharmaceuticals Corporation (incorporated herein by reference to Exhibit 10.7 to the Company's Registration Statement on Form F-1 (File No. 333-207223) filed with the SEC on October 1, 2015).†
- 10.8 Share Purchase Agreement dated December 18, 2014 between 7329563 Canada Inc. and Advanced Accelerator Applications S.A. (incorporated herein by reference to Exhibit 10.8 to the Company's Registration Statement on Form F-1 (File No. 333-207223) filed with the SEC on October 1, 2015).†
- 10.9 Agreement on Special Compensation Allowance by and between Advanced Accelerator Applications S.A. and Claudio Costamagna dated January 19, 2015 (incorporated herein by reference to Exhibit 1.1 to the Company's Amendment No. 1 to Registration Statement on Form F-1 (File No. 333-207223) filed with the SEC on November 2, 2015).
- 10.10 License Agreement, dated June 16, 2015 between Advanced Accelerator Applications International and Fujifilm RI Pharma Co., Ltd. (incorporated herein by reference to Exhibit 10.10 to the Company's Registration Statement on Form F-1 (File No. 333-207223) filed with the SEC on October 1, 2015).†
- 10.11 Advanced Accelerator Applications S.A. 2015 Stock Option Plan (incorporated herein by reference to Exhibit 10.11 to the Company's Registration Statement on Form F-1 (File No. 333-207223) filed with the SEC on October 1, 2015).
- 10.12 Advanced Accelerator Applications S.A. 2016 Warrant Plan (incorporated herein by reference to Exhibit 99.1 to the Company's Registration Statement on Form S-8 (File No. 333-213733) filed with the SEC on September 21, 2016).
- 10.13 Advanced Accelerator Applications S.A. 2013 Free Share Plan (incorporated herein by reference to Exhibit 99.3 to the Company's Registration Statement on Form S-8 (File No. 333-213733) filed with the SEC on September 21, 2016).
- 10.14 Advanced Accelerator Applications S.A. 2010 Free Share Plan (incorporated herein by reference to Exhibit 99.4 to the Company's Registration Statement on Form S-8 (File No. 333-213733) filed with the SEC on September 21, 2016).
- 21.1 List of Subsidiaries (incorporated herein by reference to Exhibit 21.1 to the Company's Registration Statement on Form F-1 (File No. 333-207223) filed with the SEC on October 1, 2015).
- 23.1 Consent of KPMG SA.\*
- 23.2 Consent of Davis Polk & Wardwell LLP, counsel to Advanced Accelerator Applications S.A. (included in Exhibit 5.1).
- 23.3 Consent of Orrick, Herrington & Sutcliffe (Europe) LLP, French tax counsel to Advanced Accelerator Applications S.A. (included in Exhibit 8.1).\*
- 23.4 Consent of Davis Polk & Wardwell LLP, U.S. tax counsel to Advanced Accelerator Applications S.A. (included in Exhibit 8.2).

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† Confidential treatment requested as to portions of the exhibit. Confidential materials omitted and filed separately with the Securities and Exchange Commission.

\* Previously filed.



New York  
Menlo Park  
Washington DC  
São Paulo  
Londres

Paris  
Madrid  
Tokyo  
Pékin  
Hong Kong

Davis Polk & Wardwell LLP  
121, avenue des Champs-Élysées  
75008 Paris

01 56 59 36 00 tél  
01 56 59 37 00 fax

Toque N° J020

**OPINION OF DAVIS POLK & WARDWELL LLP**

October 3, 2016

Advanced Accelerator Applications  
20, rue Diesel  
01630 Saint-Genis-Pouilly

Ladies and Gentlemen,

Advanced Accelerator Applications, a company incorporated under the laws of the Republic of France as a *société anonyme*, having its registered office at 20, rue Diesel, 01630 Saint-Genis-Pouilly, registered with the Trade and Companies Registry of Bourg-en-Bresse under number 441 417 110 (the “**Company**”), has filed with the Securities and Exchange Commission a Registration Statement on Form F-1 (the “**Registration Statement**”) for the purpose of registering under the Securities Act of 1933, as amended (the “**Securities Act**”), shares of its common stock, par value €0.10 per share (the “**Securities**”), including additional shares subject to the underwriters’ over-allotment option, each described in the Registration Statement.

We, as your counsel, have examined originals or copies of such documents, corporate records, certificates of public officials and other instruments as we have deemed necessary or advisable for the purpose of rendering this opinion.

In rendering the opinion expressed herein, we have, without independent inquiry or investigation, assumed that (i) all documents submitted to us as originals are authentic and complete, (ii) all documents submitted to us as copies conform to authentic, complete originals, (iii) all signatures on all documents that we reviewed are genuine, (iv) all natural persons executing documents had and have the legal capacity to do so, (v) all statements in certificates of public officials and officers of the Company that we reviewed were and are accurate and (vi) all representations made by the Company as to matters of fact in the documents that we reviewed were and are accurate.

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Based upon the foregoing, we advise you that, in our opinion, when the price at which the Securities to be sold has been approved by the Board of Directors of the Company in accordance with the resolutions of the Company's shareholders adopted at the meeting of September 26, 2016 and when the Securities have been issued and delivered against payment therefor in accordance with the terms of the Underwriting Agreement, the Securities will be validly issued, fully paid and non-assessable.

We are members of the Paris Bar and the foregoing opinion is limited to the laws of France as in effect on the date hereof as currently construed by the French courts, and does not express any opinion concerning any other law.

We hereby consent to the filing of this opinion as an exhibit to the Registration Statement and further consent to the reference to our name under the caption "Legal Matters" in the Registration Statement. In giving this consent, we do not admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act.

Very truly yours,

/s/ Davis Polk & Wardwell LLP

Davis Polk & Wardwell LLP

New York  
Menlo Park  
Washington DC  
São Paulo  
London

Paris  
Madrid  
Tokyo  
Beijing  
Hong Kong



Davis Polk & Wardwell LLP      212 450 4000 tel  
450 Lexington Avenue      212 701 5800 fax  
New York, NY 10017

October 3, 2016

Advanced Accelerator Applications  
20, rue Diesel  
01630 Saint-Genis-Pouilly

Ladies and Gentlemen:

We are acting as United States counsel to Advanced Accelerator Applications S.A., a *société anonyme* organized under the laws of the Republic of France (the “**Company**”) in connection with the preparation of the Registration Statement on Form F-1 (the “**Registration Statement**”) and the related Prospectus (the “**Prospectus**”) filed with the United States Securities and Exchange Commission (File No. 333-213806) by the Company for the purpose of registering under the United States Securities Act of 1933 (the “**Act**”) of the Company’s American Depositary Shares (“**ADSs**”). Each ADS represents two ordinary shares, nominal value €0.10 per share, of the Company.

We, as your counsel, have examined originals or copies of such documents, corporate records, certificates of public officials and other instruments as we have deemed necessary or advisable for the purpose of rendering this opinion.

We hereby confirm our opinion set forth under the caption “Taxation—U.S. Federal Income Tax Considerations for U.S. Holders” in the Prospectus.

We are members of the Bar of the State of New York and the foregoing opinion is limited to the laws of the State of New York and the federal laws of the United States.

We hereby consent to the use of our name under the captions “Taxation—U.S. Federal Income Tax Considerations for U.S. Holders” and “Legal Matters” in the Prospectus included in the Registration Statement and to the filing, as an exhibit to the Registration Statement, of this letter. In giving this consent we do not admit that we come within the category of persons whose consent is required under Section 7 of the Act.

Very truly yours,

/s/ Davis Polk & Wardwell LLP

Davis Polk & Wardwell LLP

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