

**Thermo Fisher Scientific Inc / Gatan
Response to Notice of Possible Remedies**

1. Summary

- 1.1 In this paper, Thermo Fisher responds to the CMA's Notice of Possible Remedies ("NPR") with a remedy proposal that addresses the CMA's provisional substantial lessening of competition ("SLC") findings and also maintains the important customer benefits. These include reduced costs and prices, better customer service, broader customer choice and expansion [REDACTED].
- 1.2 For the avoidance of doubt, Thermo Fisher considers that the Provisional Findings ("PFs") contain important errors that undermine the SLC findings. Thermo Fisher is making a separate submission in response to the PFs. The CMA ought to consider Thermo Fisher's representations on these points before deciding whether there is an SLC that requires a remedy. These representations are also relevant when assessing the appropriateness and proportionality of any proposed remedy.
- 1.3 As discussed further below, Thermo Fisher's comprehensive remedy package comprises:
- (i) A divestment: Thermo Fisher will commit to divest its Falcon 3 DD camera ([REDACTED - *reference to future generation DD camera*]) to a suitable third party purchaser. The divestment will be in the form of a technology licence. The proposed divestment will remove any potential SLC in DD cameras by providing for the entry of a new competitor to replace any pre-Merger competition between the Parties. The remedies package will result in intensified competition in the merchant market since the purchaser would be expected to compete in the merchant market for DD cameras, whilst in the counterfactual world Falcon is only sold to Thermo Fisher TEM customers. [REDACTED - *reference to future generation DD camera*]. The divestment will also address any remaining concerns with respect to a potential SLC in filters. It will do so by (i) creating an independent DD camera supplier for competing life science filters, and (ii) Thermo Fisher committing to provide interoperability information to enable third party filters to be used on Thermo Fisher TEMs.
 - (ii) A vertical remedy package: Thermo Fisher will commit to: (i) guarantee JEOL, Hitachi and any new entrant TEM manufacturer access to Gatan peripherals on competitive terms (including new products); (ii) ensure that Digital Micrograph remains accessible to third parties; and (iii) strengthen the firewall commitments contained in the JEOL/Hitachi supply agreements.
- 1.4 Thermo Fisher also proposes various compliance mechanisms to address any concerns that Thermo Fisher might be incentivised to breach any of its commitments including: (i) the appointment of a monitoring trustee (assisted by a TEM industry expert); and (ii) making a fast-track dispute resolution mechanism open to third parties.
- 1.5 While Thermo Fisher rejects the provisional SLC findings, its remedies package will ensure that any potential SLCs are eliminated and that the important relevant customer

benefits (“**RCBs**”) are maintained. In contrast, a prohibition, or any divestment involving Gatan assets, would involve a loss of all RCBs and would therefore be unnecessary and disproportionate.

1.6 In this paper:

- (i) Section A outlines the relevant benefits to be included in the RCB assessment;
- (ii) Section B summarises Thermo Fisher’s remedy proposal;
- (iii) Section C assesses the other remedies mentioned in the NPR; and
- (iv) Section D summarises the legal framework for assessing remedies.

Section A: Relevant Customer Benefits

2. Relevant Customer Benefits Arising from Merger

Summary

- 2.1 The Merger will result in a number of benefits that should be taken into account by the CMA as:
- (i) Rivalry-enhancing efficiencies that are sufficient to ensure that no SLC arises in the first place; and/or
 - (ii) RCBs that should be taken into account when assessing potential remedies for any remaining SLC.
- 2.2 The PFs wrongly conclude that the efficiencies arising from the Merger are not 'rivalry-enhancing' efficiencies. The PFs contain a number of significant errors in this assessment which are addressed in detail in Thermo Fisher's response to the PFs and in the Compass Lexecon paper annexed thereto. They also ignore [REDACTED].
- 2.3 In any event, each of the efficiencies put forward by Thermo Fisher constitutes an RCB within the definition set out in section 30(1) Enterprise Act 2002, is merger-specific and will accrue within a reasonable period of time.
- 2.4 In the sections below we describe the RCBs that would be lost if the CMA were to impose specific remedy packages. The analysis shows that:
- (i) Thermo Fisher's proposed remedy solves any SLC (assuming the SLC assessments in the PFs to be correct) and maintains all RCBs; and
 - (ii) Prohibition (or the divestment of the Gatan business) would result in the loss of all RCBs.

2.5 This outcome is demonstrated by Table 2.1 below:

**Table 2.1
Impact of Possible Remedies on RCBs**

RCB (✓ = retained) (X = lost)	No remedy¹	Thermo Fisher Remedy Proposal (Divestment² and Vertical Remedies³)	Divestment of Gatan Camera/Filter⁴	Prohibition⁵
EDM	✓	✓	X	X
Better integration and lower TCO	✓	✓	X	X
Improved maintenance and support	✓	✓	X	X
Product repositioning and greater choice	✓	✓	X	X
Sales expansion	✓	✓	X	X

2.6 The RCBs should be taken into account by the CMA in both (i) its assessment of the costs of the possible remedies in order to identify the least costly option; and (ii) its assessment of whether the costs of possible remedies would be disproportionate to the SLC identified and the adverse effects arising from it. While the RCBs are discussed herein as distinct categories, they are interrelated – for example, better integration, service and choice are factors in making TEMs more affordable and attractive and thus in driving expanded sales.

Elimination of double marginalisation (“EDM”)

2.7 Gatan currently sells peripherals to Thermo Fisher with [REDACTED]. Post-Merger, Thermo Fisher will acquire these products at cost.⁶

2.8 The PFs suggest that Thermo Fisher does not have the incentive to pass on price reductions as a result of EDM due to the lack of downstream competition. This conclusion is inconsistent with accepted economic theory that even a monopolist will be likely to have

¹ See paragraph 2.38 above.

² See paragraph 3.38 below.

³ See paragraph 4.14 below.

⁴ See paragraph 6.2 below.

⁵ See paragraph 5.3 below.

⁶ NPR, paragraph 50(a).

an incentive to pass on a significant proportion of cost reductions if this would result in increased sales. This point seems to be accepted by the CMA.⁷

- 2.9 Furthermore, Thermo Fisher's revised business plan⁸ [REDACTED].
- 2.10 The PFs imply [REDACTED].
- 2.11 The PFs suggest that [REDACTED].⁹ [REDACTED].¹⁰ [REDACTED]¹¹
- 2.12 The PFs also suggest that [REDACTED],¹² Thermo Fisher will not have an incentive to pass on cost reductions. This conclusion is inconsistent with the customer feedback received by the CMA and collected in the Parties' own survey, which shows that many potential customers regard the high cost of TEM systems as the primary inhibitor to acquiring a cryo-TEM:
- (i) [REDACTED];¹³
 - (ii) [REDACTED];¹⁴ and
 - (iii) [REDACTED].¹⁵
- 2.13 Moreover, the proposed divestment of Thermo Fisher's Falcon DD cameras will provide further incentives for Thermo Fisher to pass on the cost reductions on Gatan peripherals since the divestment will stimulate new downstream competition in TEM systems including DD cameras and filter/DD camera combinations.

Better integration of peripherals, and reductions in the total costs of ownership ("TCO")

- 2.14 Greater integration would enable Thermo Fisher to produce easier-to-use products and reduce TCO for Gatan filter users and Thermo Fisher DD camera customers.¹⁶

⁷ PFs, paragraph 13.17.

⁸ [REDACTED].

⁹ [REDACTED].

¹⁰ [REDACTED].

¹¹ [REDACTED].

¹² PFs, paragraph 13.25(b).

¹³ Compass Lexecon's Introduction to Interview Summaries submitted on 3 April 2019, question 8.8.

¹⁴ *Ibid.*, question 8.9.

¹⁵ *Ibid.*, question 8.11.

¹⁶ NPR, paragraph 50(b).

- 2.15 Thermo Fisher's [REDACTED].
- 2.16 The CMA recognises in its PFs that some customers value greater automation of the TEM system and closer integration of the peripherals with the TEM column,¹⁷ and that Thermo Fisher's internal documents provide evidence that its strategic rationale for the Merger is [REDACTED].¹⁸
- 2.17 The PFs do not accept that these efficiencies are rivalrous on the basis that competitors would not be able to replicate these advantages. This objection is incorrect (since rivals need not respond like for like) but in any case is not relevant for the RCB analysis (as the RCBs do not need to be rivalrous).
- 2.18 The PFs also suggest that these efficiencies may not be passed onto customers in the form of lower prices. This is unlikely for several reasons:¹⁹
- (i) [REDACTED];
 - (ii) [REDACTED]; and
 - (iii) The response of rivals would ensure pass-through of quality benefits.
- 2.19 In addition, as explained in the Rebuttal of the Working Paper on Efficiencies, [REDACTED].²⁰ The likelihood of this being passed on is addressed above in relation to EDM.
- 2.20 The PFs state that some of the claimed integration efficiencies could arise without the Merger.²¹ However, none of the claimed efficiencies which involve the better integration of Gatan peripherals with Thermo Fisher TEMs can do so since the Gatan peripherals are complementary to (or, in the view of the PFs, differentiated – even “highly” differentiated – from) those of Thermo Fisher. [REDACTED].

Improved maintenance and support

- 2.21 Customers will benefit from Thermo Fisher's extensive and faster maintenance and service support.²²
- 2.22 The Merger will bring together Gatan's and Thermo Fisher's maintenance expertise, allowing for a single team to provide one stop shop servicing for both the TEM and Gatan

¹⁷ PFs, paragraph 13.35.

¹⁸ PFs, paragraph 13.36.

¹⁹ Compass Lexecon's Efficiencies and Customer Benefits paper submitted on 20 February 2019, paragraphs 6.27-6.30.

²⁰ Rebuttal of Working Paper on Efficiencies submitted on 31 March 2019, paragraph 5.13.

²¹ PFs, paragraph 13.40.

²² NPR, paragraph 50(c).

peripherals. This benefit in the form of higher quality and more timely service will arise within a [REDACTED] of the Merger.

- 2.23 The PFs agree that improved maintenance and support will be a benefit for Gatan's customers and that an integrated service and maintenance offering will be valuable to end-customers generally.²³
- 2.24 The PFs suggest these benefits would not be Merger-specific since Gatan could improve the quality of its servicing absent the Merger.²⁴ As is clear from the PFs, the relevant counterfactual adopted by the CMA is the pre-Merger market conditions.²⁵ Absent market changes which can be clearly evidenced in the Parties' plans, the relevant counterfactual is the quality and extent of Gatan's maintenance services pre-Merger. For the purposes of its assessment, the CMA cannot assume that Gatan is likely materially to increase the scale of its maintenance organisation absent the Merger. There is no evidence identified by the CMA which suggests that the scale of Gatan's servicing operation is likely to be increased absent the Merger. The CMA has not therefore applied the right counterfactual in its assessment of this efficiency. The scale of Gatan's maintenance services is constrained by the scale of its business. Since there is no reason to think that the scale of Gatan's business will change materially in the counterfactual world, there is no reason for the CMA to assume that there will be any material improvement in the quality of its maintenance services absent the Merger.
- 2.25 Moreover as explained in Thermo Fisher's efficiencies submissions,²⁶ one stop shop maintenance is dependent on the Merger. Gatan will not give Thermo Fisher access to its source code without the Merger. [REDACTED].²⁷
- 2.26 The PFs do not accept that these efficiencies are rivalrous since competitors would not be able to replicate these advantages.²⁸ However, rivals need not respond to efficiencies like for like and in any case this objection is not relevant for the RCB analysis (as RCBs are not required to be rivalry-enhancing).

Product repositioning and greater choice

- 2.27 Thermo Fisher will have incentives to reposition Gatan and Thermo Fisher peripherals, which will improve the variety of products available to customers.²⁹

²³ PFs, paragraph 13.44.

²⁴ PFs, paragraph 13.46.

²⁵ PFs, paragraph 6.8.

²⁶ Compass Lexecon's Efficiencies and Customer Benefits paper submitted on 20 February 2019, paragraphs 6.19-6.25, Rebuttal of Working Paper on Efficiencies submitted on 31 March 2019, paragraphs 7.11-7.15.

²⁷ See further the Rebuttal of the Working Paper on Efficiencies submitted on 31 March 2019, paragraph 7.15.

²⁸ PFs, paragraph 13.45.

²⁹ NPR, paragraph 50(d).

- 2.28 Thermo Fisher will be able to supply a portfolio of peripherals suited to different applications and distinct market segments, [REDACTED]. This benefit in the form of greater choice of goods will materialise within a [REDACTED] of the Merger.
- 2.29 The PFs suggest [REDACTED].³⁰ [REDACTED]. This product is therefore likely to benefit many customers.

Sales expansion

- 2.30 Thermo Fisher will be able offer cheaper and more accessible microscopes, which could increase the use of TEMs in both material and life science.³¹
- 2.31 By making their TEM systems cheaper to buy and operate, Thermo Fisher will be able to sell more high-quality microscopes, in particular to customers who would not, absent the Merger, be able to afford such products. This benefit in the form of greater choice of goods and higher quality products at lower prices will materialise within a [REDACTED] of the Merger.
- 2.32 The PFs suggest that insufficient evidence has been provided to substantiate Thermo Fisher's claim that the Merger will give rise to sales expansion.
- 2.33 However, Thermo Fisher's contemporaneous deal documents evidence that the deal is [REDACTED]. For example, the documents refer to the intention to [REDACTED]³² [REDACTED].
- 2.34 The PFs indicate that [REDACTED]:
- (i) [REDACTED];³³ and
 - (ii) [REDACTED].³⁴
- 2.35 The PFs also challenge [REDACTED].³⁵
- 2.36 Thermo Fisher notes the PFs' comments on the Parties' customer surveys. Despite the criticisms levied by the PFs,³⁶ it remains the case, as accepted by the CMA, that

³⁰ [REDACTED].

³¹ NPR, paragraph 50(e).

³² [REDACTED].

³³ [REDACTED].

³⁴ [REDACTED].

³⁵ PFs, paragraphs 13.22, 13.23, 13.53.

³⁶ PFs, paragraph 13.60 on sales expansion: "*the Parties' customer survey provides [REDACTED] regarding sales expansion*".

[REDACTED].³⁷ The PFs also acknowledge that [REDACTED].³⁸ In addition, the PFs state that the [REDACTED],³⁹ [REDACTED].⁴⁰ The PFs are therefore citing counterfactual evidence and not factual evidence and the correct interpretation is the opposite. The survey therefore provides robust evidence that there are customers in the UK who are interested in buying cryo-EMs especially if their costs of acquisition and ownership are to fall – this is an intuitive outcome.

- 2.37 The CMA chose not to itself investigate whether new customers are interested in buying TEMs and whether greater integration and lower costs are likely to lead to a sales expansion. As a result the CMA should give considerable weight to a robust survey conducted through an independent third party and in accordance with the CMA's guidance.

Conclusion on RCBs

- 2.38 The RCBs that will result from the Merger are therefore substantial in scale and should be taken into account by the CMA when assessing potential remedies to address any remaining SLC. [REDACTED].⁴¹ In the Parties' view, the CMA would be justified in clearing the Merger on the basis that the substantial RCBs outweigh any SLCs identified.
- 2.39 If the CMA were to prohibit the Merger or to require a divestment of the Gatan filter and/or DD camera products in order to address the SLCs, this would result in the loss of all the RCBs. Thermo Fisher considers that the costs of such remedies (including the loss of [REDACTED]) would be unduly significant. Even if all of the SLC assessments in the PFs were correct, the loss of these RCBs would be disproportionate to the horizontal and vertical SLCs identified by the PFs.

³⁷ PFs, paragraph 13.60.

³⁸ PFs, paragraph 13.61.

³⁹ PFs, paragraph 13.60.

⁴⁰ Parties' Customer Survey Questionnaire, paragraph 8.6.

⁴¹ [REDACTED].

Section B: Thermo Fisher Remedy Proposal

Thermo Fisher proposes a divestment and vertical remedy. This comprehensive remedy package addresses each SLC posited in the PFs and maintains the Merger RCBs.

3. Thermo Fisher Divestment Remedy

Overview of divestment

- 3.1 Thermo Fisher will divest its Falcon 3 DD camera ([REDACTED - *reference to future generation DD camera*]) to a suitable purchaser. This will create a strong new player in DD cameras and facilitate further competition in filters. The divestment will be largely in the form of a technology licence. The CMA Merger Remedies Guidelines recognise that an exclusive, irrevocable, and royalty free technology licence “*will effectively be treated by the CMA as structural in form and subject to similar consideration and evaluation as an asset divestiture*”.⁴²
- 3.2 The divestment package will include:⁴³
- (i) A perpetual, royalty-free, irrevocable, non-transferable⁴⁴ licence of all Thermo Fisher’s current IP (including knowhow) needed to design, manufacture, sell and use Thermo Fisher’s Falcon 3 camera;
 - (ii) A perpetual, royalty-free, irrevocable software licence of all Thermo Fisher’s current Falcon 3 firmware and server software needed to design, manufacture, sell and use Thermo Fisher’s Falcon 3 camera;
 - (iii) A transfer of the Falcon brand name;⁴⁵
 - (iv) Contracts with Thermo Fisher’s existing supply chain to secure the inputs needed to make the Falcon 3 camera. [REDACTED]; and
 - (v) [REDACTED - *reference to future generation DD camera*].
- 3.3 The purchaser will have complete freedom to independently pursue further development of the Falcon 3 [REDACTED - *reference to future generation DD camera*] cameras.
- 3.4 The technology licences will be structured as follows:
- (i) [REDACTED].
 - (ii) [REDACTED - *reference to future generation DD camera*].

⁴² Merger Remedies guidelines, 13 December 2018, paragraph 6.2.

⁴³ [REDACTED].

⁴⁴ Except for customer use licences.

⁴⁵ Thermo Fisher will have a licence back of the brand for two years to allow for sale of existing inventory.

(iii) [REDACTED - *reference to future generation DD camera*].

- 3.5 Thermo Fisher will also commit to the purchaser that, if Falcon is in future integrated into a filter module (e.g. with the CEOS filter), Thermo Fisher will provide the purchaser and its filter partner with the interoperability information required for that filter module to be used on Thermo Fisher TEM systems. This will present a market opportunity that is not currently available to third party filter suppliers.
- 3.6 [REDACTED]. The supply agreement will provide the purchaser with a guaranteed minimum volume of sales on which to develop a viable business plan to compete in this market and fund sufficient R&D investment to complete next generation product development. Thermo Fisher is committing to a minimum volume of Falcon 3 cameras for the next 3 years to allow the purchaser to develop the reputation and credibility to be a long term independent supplier of DD cameras.
- 3.7 Thermo Fisher will commit to the following minimum purchase requirements from the purchaser:

Table 3.1
Proposed Thermo Fisher Falcon 3 Minimum Purchase Obligations

	Units	Approximate Revenue
2020	[REDACTED]	[REDACTED]
2021	[REDACTED]	[REDACTED]
2022	[REDACTED]	[REDACTED]

- 3.8 The minimum volume of sales in the first year is equivalent to [REDACTED] of Gatan standalone DD cameras sales in 2018, making the purchaser a substantial supplier of DD cameras. The purchaser will also have the opportunity to grow its sales to Thermo Fisher and to makes sales to others (including other TEM manufacturers and end users).
- 3.9 Thermo Fisher will not commit to specific minimum purchase obligations for [REDACTED - *reference to future generation DD camera*]
- 3.10 While Falcon 3 currently only operates with Thermo Fisher TEMs, the software work needed for Falcon 3 to interoperate with non-Thermo Fisher TEM systems is simple and could be completed by the purchaser within [REDACTED] of the divestment completion.
- 3.11 The purchaser will be in a position immediately to become an important supplier of DD cameras. In 2018, Falcon 3 accounted for [REDACTED - *reference to future generation DD camera*]% of all standalone DD cameras supplied globally (excluding filters) by value. With the assets provided by the package, the purchaser will be able to:
- (i) Supply Falcon 3 (and successor products) to Thermo Fisher;
 - (ii) Supply Falcon 3 (and successor products) directly to Thermo Fisher end users in the aftermarket;

- (iii) Supply Falcon 3 (and successor products) to other TEM manufacturers e.g. JEOL/Hitachi;
 - (iv) Supply Falcon 3 (and successor products) directly to end users of JEOL/Hitachi TEM systems in the aftermarket;
 - (v) Innovate and develop future versions of Falcon 3 [REDACTED - *reference to future generation DD camera*] and supply these to all of the above; and
 - (vi) Work with other companies on collaborations, which could include other TEM system/peripheral combinations e.g. working with CEOS on providing a DD camera for CEOS' life science filter.
- 3.12 The purchaser is expected to generate significant sales beyond the proposed minimum purchase requirements, as is illustrated in Table 3.2 below:

Table 3.2
Illustrative Purchaser Revenue Model (USDm)⁴⁶

	2020	2021	2022	2023	2024
Revenue	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Package contains all necessary assets

- 3.13 The divestment package contains all assets that will be necessary for a suitable purchaser to compete effectively.

Effectiveness

- 3.14 There is no material implementation risk with this proposal – it is straightforward. The divestment will be able to be completed quickly and the purchaser will be in a position to procure Falcon 3 products [REDACTED].
- 3.15 The purchaser will own the Falcon brand and have the benefit of the goodwill associated with this highly successful camera. The remedy will be effective in the long term – the proposed technology licence is perpetual and irrevocable.

Divestment removes any SLC in DD cameras

- 3.16 As outlined in Thermo Fisher's response to the PFs, there is no reasonable basis for finding an SLC in respect of DD cameras. But even taking into account the concerns identified by the CMA, the divestment removes any SLC.

⁴⁶ The revenue forecast includes sales to Thermo Fisher and other TEM manufacturers as well as sales to end users in the aftermarket.

- 3.17 First, as regards the Thermo Fisher TEM aftermarket, a customer will be able to choose between (i) Falcon cameras from the purchaser; and (ii) Gatan (or Falcon) cameras from Thermo Fisher.
- 3.18 Second, as regards Thermo Fisher TEM system purchases, a customer will be able to choose between (i) Falcon cameras and (ii) Gatan cameras from Thermo Fisher.
- 3.19 Therefore, to the extent the CMA considers that there was competition between the Falcon and Gatan DD cameras pre-Merger, that competition is replicated for each type of purchase. The remedy therefore restores and indeed improves on any pre-Merger competition. This is true whether one considers price competition or more dynamic competition in quality and innovation. [REDACTED - *reference to future generation DD camera*].
- 3.20 Moreover, the remedy will result in more choice for customers than exists pre-Merger for customers of competitor TEM systems. Today, a customer wishing to buy a JEOL TEM system can only choose between a Gatan and Direct Electron DD camera. As a result of the remedy, that customer will have increased choices and be able to choose a Falcon DD camera.

Composition Risk

- 3.21 Although the CMA has a preference for the sale of an existing business which can compete on a standalone basis (as distinct from a divestiture of assets), the CMA guidelines accept that an effective divestment can be achieved - for example - by way of the divestment of assets such as IP rights. In this case it is not possible for the Parties to divest a standalone business, since most Falcon sales are made as part of a TEM system sale – the sales and support function for the Falcon cannot be separated from the sales and support function of the much larger global Thermo Fisher TEM business.
- 3.22 Thermo Fisher recognises that the CMA will wish to discuss with potential purchasers whether the package of assets identified is sufficient for the purposes of the remedy. Thermo Fisher has identified a number of potential purchasers which have the requisite expertise to be able to exploit the licensed technology – for two examples see paragraphs 3.26 - 3.31 below.
- 3.23 As regards items not included in the divestment:
- (i) No manufacturing assets are included because [REDACTED].
 - (ii) No R&D personnel are included because each of the potential purchasers will have the ability to innovate using its own R&D personnel or together with third party specialists in the field. It is expected that, like Thermo Fisher does today,

any purchaser would be able to partner with third party specialists to assist its R&D;⁴⁷

- (iii) No sales personnel are included because the suitable purchaser will have the ability to sell using its own personnel. In the near term, [REDACTED]. Given there are a small number of additional key customers, there is no need for a purchaser to have a large sales team to compete effectively.⁴⁸ Any purchaser will be able to piggyback on the marketing efforts of TEM suppliers, who wish to offer their customers a choice of DD cameras that have been approved for use with their TEMs. [REDACTED]; and
- (iv) No service personnel are included because the suitable purchaser will have the ability to service using its own personnel independently (or be able to build this capacity quickly as its business grows) or through agreements with TEM manufacturers.⁴⁹ To the extent required, Thermo Fisher would provide its service capability to all customers using Falcon on Thermo Fisher TEM systems – these are likely to comprise the bulk of the purchasers' customers. If the purchaser requires any additional support Thermo Fisher would commit to:
 - (a) [REDACTED]; and
 - (b) [REDACTED].

Divestment to a suitable purchaser

3.24 Thermo Fisher recognises that the divestment package must be sold to a purchaser with expertise and knowledge in the electron microscopy sector. The purchaser must have the capacity to develop and innovate on the basis of the Falcon 3 [REDACTED - *reference to future generation DD camera*] technology.

3.25 Given the high quality of the assets and the opportunity presented, Thermo Fisher expects that there would be significant interest in acquiring the divestment package. [REDACTED].⁵⁰ [REDACTED] Thermo Fisher expects interest from a range of potential purchasers.

[REDACTED]

⁴⁷ For example (i) [REDACTED] which either manufacture the DD image sensors themselves or in close collaboration with wafer foundries; (ii) [REDACTED] which manufacture the mechanics and cooling components; and (iii) firms such as [REDACTED] which manufacture high-speed read-out and signal processing electronics.

⁴⁸ Thermo Fisher does not employ sales personnel dedicated to the Falcon.

⁴⁹ As above.

⁵⁰ CMA Remedies Guidance, paragraphs 5.20 to 5.27.

3.26 [REDACTED].⁵¹ [REDACTED]⁵²

3.27 [REDACTED].⁵³ [REDACTED].

3.28 [REDACTED]:

(i) [REDACTED].

(ii) [REDACTED].⁵⁴ [REDACTED].⁵⁵

(iii) [REDACTED].

(iv) [REDACTED].

[REDACTED]

3.29 [REDACTED]⁵⁶ [REDACTED].⁵⁷

3.30 [REDACTED].⁵⁸ [REDACTED].⁵⁹

3.31 [REDACTED]:

(i) [REDACTED].

(ii) [REDACTED]⁶⁰ [REDACTED]⁶¹ [REDACTED].

⁵¹ [REDACTED].

⁵² [REDACTED].

⁵³ [REDACTED].

⁵⁴ [REDACTED].

⁵⁵ [REDACTED].

⁵⁶ [REDACTED].

⁵⁷ [REDACTED].

⁵⁸ [REDACTED].

⁵⁹ [REDACTED].

⁶⁰ [REDACTED].

⁶¹ [REDACTED].

(iii) [REDACTED].⁶² [REDACTED].⁶³ [REDACTED].⁶⁴ [REDACTED].

(iv) [REDACTED].⁶⁵ [REDACTED]⁶⁶

Divestment removes any SLC in filters

3.32 As outlined in Thermo Fisher’s response to the PFs, the provisional finding of an SLC in respect of filters is seriously flawed. The SLC finding ignores key evidence, relies on a high degree of speculation and takes an asymmetric approach to assessing [REDACTED] and potential entry by CEOS.

3.33 Even if there is a remaining SLC in respect of filters, the divestment remedy removes this or at least substantially mitigates the SLC:

3.34 As regards material science:

(i) [REDACTED]. [REDACTED] Third party evidence also supports CEOS as a credible competitive constraint in filters: [REDACTED]⁶⁷ [REDACTED]⁶⁸

(ii) Hitachi also has an existing filter suitable for material science and is therefore much better-placed with regard to material science filters than Thermo Fisher.

3.35 As regards life science:

(i) Thermo Fisher’s key competitor (JEOL) already has a life science filter on the market that has produced world record-breaking results – such results were obtained in Tokyo on its Cryo-ARM TEM with its in-column filter, using a cold field electron gun (“**cold FEG**”), which is an innovative electron source that operates at room temperature, providing less energy spread and high brightness than traditional FEGs.⁶⁹

(ii) The key shortcoming identified by the CMA in respect of [REDACTED] is lack of access to a DD camera – noting that as [REDACTED] is incorporating a GI

⁶² [REDACTED].

⁶³ [REDACTED].

⁶⁴ [REDACTED].

⁶⁵ [REDACTED].

⁶⁶ [REDACTED].

⁶⁷ [REDACTED].

⁶⁸ [REDACTED].

⁶⁹ On 7 February 2019, Takayuki Kato tweeted that: “*Atomic resolution CryoEM’ is no longer reserved for Titan Krios. Cold-FEG has made a breakthrough! The full dataset reached 1.55 Å (120,295 particles from 840 movies). The highest resolution by SPA as far as we know. JEOL CRYO ARM is a strong competitor against Titan Krios now.*”

camera into its material science filter, “[REDACTED]⁷⁰ [REDACTED]⁷¹ Indeed, [REDACTED].

- (iii) The PFs also identified a concern that [REDACTED]⁷² [REDACTED]⁷³ [REDACTED]⁷⁴

3.36 Furthermore, Thermo Fisher’s commitment to provide interoperability information to any filter module that incorporates the Falcon camera represents a very important market opportunity for third party filter suppliers. This means that if the Falcon purchaser partners with e.g. CEOS on filters, they can sell those filters for use on Thermo Fisher TEM systems. The Thermo Fisher TEM systems represent a large customer base that is not currently open to third parties like CEOS. The remedy is therefore a huge opportunity for such suppliers to grow their businesses.

3.37 The divestment therefore removes any grounds for an SLC finding in respect of filters.

Divestment remedy maintains RCBs

3.38 The divestment remedy is an effective solution that removes any SLCs in DD cameras and filters while preserving all of the RCBs:

- (i) **EDM:** RCB retained. Thermo Fisher will acquire Gatan peripherals at cost.⁷⁵
- (ii) **Integration and lower TCO:** RCB retained. [REDACTED].
- (iii) **Improved maintenance and support:** RCB retained. [REDACTED].
- (iv) **Product repositioning and greater choice:** RCB retained:
 - (a) [REDACTED];
 - (b) [REDACTED]; and
 - (c) [REDACTED].
- (v) **Sales expansion:** RCB retained.⁷⁶ [REDACTED].

⁷⁰ [REDACTED].

⁷¹ [REDACTED].

⁷² [REDACTED].

⁷³ [REDACTED].

⁷⁴ [REDACTED].

⁷⁵ [REDACTED].

⁷⁶ [REDACTED].

3.39 The divestment remedy therefore allows for in effect all the RCBs to be retained and creates very few, if any, additional costs for consumers.

4. Thermo Fisher Vertical Remedy

4.1 Thermo Fisher proposes a vertical remedy that deals with (i) access to Gatan peripherals; (ii) compatibility with Digital Micrograph software; and (iii) firewalls.

4.2 Each of the obligations below would be valid for at least 5 years from closing. Given the rate of innovation and entry, Thermo Fisher considers 5 years is adequate. However, for completeness, Thermo Fisher would extend these obligations for up to 10 years if there continued to be a sufficient volume of purchases to justify the costs of the monitoring.⁷⁷

Overview of Remedy

Access to Gatan peripherals

4.3 **JEOL/Hitachi:** The current JEOL/Hitachi supply agreements will be strengthened with the following commitments:

- (i) Monitoring and enforcement:
 - (a) A CMA-approved monitor will monitor Thermo Fisher's compliance with all contract terms;
 - (b) The monitor will be empowered to rule on any disputes under a fast-track dispute resolution process.⁷⁸ In addition, the monitor will determine how and by whom the costs of the dispute resolution process are to be paid.⁷⁹ If a party wishes to appeal a ruling by the monitor, there will be recourse to a fast-track arbitration procedure;
 - (c) Thermo Fisher will commit to follow the monitor's/arbitrator's rulings on any dispute;
 - (d) The monitor will also prepare a report on compliance every 12 months;
 - (e) The monitor will have the right to appoint an independent TEM industry expert to assist and advise the monitor in discharging its duties; and

⁷⁷ Thermo Fisher proposes that if, after the initial five year period, the value of third party purchases of Gatan DD cameras, GI cameras and filters (combined) in a given year dropped to less than 25% of the 2018 value, the commitments would terminate three months after the end of that year.

⁷⁸ A similar dispute resolution mechanism was used by the CMA in [Mastercard/Vocalink](#) where in addition to "monitoring the ongoing compliance of the Parties with the UILs, the Monitoring Trustee role includes a function to act as an independent arbiter, and dispute resolution mechanism" (see paragraph 126 of the CMA's [decision](#) on acceptance of the UILs).

⁷⁹ *Ibid.*, see paragraph 6.5(e) of the final UILs.

- (f) Thermo Fisher will provide the monitor with all information and assistance (including access to confidential documents) as may be reasonably required by the monitor in order to carry out its mandate effectively.
- (ii) New products: as regards access to new products, if the terms of supply of new products cannot be resolved through good faith negotiation as required by the JEOL and Hitachi contracts, the monitor will be empowered to determine the terms of supply under the above-referenced dispute resolution procedure. The monitor (or arbitrator) will make its determination by reference to the factors set out in the JEOL and Hitachi contracts and, in respect of prices, by reference to historic Gatan margins on predecessor products;
- (iii) Hitachi: Thermo Fisher will commit that, to the extent Hitachi would get better terms/access if the JEOL contract applied to Hitachi, Thermo Fisher will ensure Hitachi is offered those better terms/access;
- (iv) Price decreases: Thermo Fisher will commit that the JEOL and Hitachi prices will be decreased if either JEOL or Hitachi (as the case may be) is able to show that the decreased price would be reasonable to reflect a reduction in costs or a reduction in prevailing market prices; and
- (v) Life science filters: Thermo Fisher will commit to treat the JEOL/Hitachi contracts as including current and future Gatan life science filters. [REDACTED].

4.4 **New entrants:** Thermo Fisher will also commit to provide any new entrant TEM manufacturers with access to current and future Gatan DD cameras, GI cameras and filters. This access will be:

- (i) At a reasonable price to be negotiated in good faith;⁸⁰
- (ii) As regards other terms, on terms equivalent to the [REDACTED]; and
- (iii) The monitoring and enforcement provisions at paragraph 4.3 above will also apply and the monitor will be empowered to determine terms of supply in the event of a dispute.

Firewalls

4.5 **JEOL/Hitachi:** The current [REDACTED] in the JEOL/Hitachi contracts will be strengthened by Thermo Fisher committing to:

- (i) Give the monitor the monitoring and enforcement powers as above;

⁸⁰ In [Macquarie/National Grid](#), a subsidiary of Macquarie was obliged to *inter alia* offer an amendment to existing agreements to customers and – where a customer requested a change to an existing agreement – to enter into good faith negotiations with the customer relating to the requested change.

- (ii) Apply the [REDACTED] in the JEOL contract to the Hitachi contract to the extent that they will result in a greater level of protection for confidential information; and
- (iii) Strengthen the [REDACTED] by treating the words [REDACTED] as deleted. Thermo Fisher will commit that people in the [REDACTED] would only provide confidential third party information to the Thermo Fisher TEM business if either the monitor or the relevant third party owner of the information consented to the information being shared for a specific legitimate purpose.⁸¹ For the avoidance of doubt, any confidential information obtained while these obligations are in force (i.e. for five years from the commencement date) will remain confidential and will not be disclosed to the Thermo Fisher TEM business at any stage thereafter.

4.6 **New Entrants:** Thermo Fisher will also commit to apply the [REDACTED] to any new TEM entrant that purchases Gatan DD cameras, GI cameras or filters.

Application software

4.7 The NPR suggests a remedy for Digital Micrograph that is not clearly related to any theory of harm developed in the PFs. This is unsatisfactory and makes it impossible for Thermo Fisher to comment on the remedy in a fully informed way. However, in the interests of reaching a resolution, Thermo Fisher will commit to:

- (i) Provide TEM manufacturers and TEM peripheral manufacturers whose devices currently require compatibility with Digital Micrograph with ongoing access to the information necessary to allow their devices to continue to achieve the same level of compatibility with Digital Micrograph (both current and older versions);
- (ii) Ensure that future versions of Digital Micrograph will maintain backward compatibility with third party devices that currently interoperate with the software; and
- (iii) Apply the monitoring and enforcement provisions set out in paragraph 4.3 above.

Remedy effectively removes any vertical SLC

4.8 The remedy is a comprehensive solution to any vertical SLC.

Access to Gatan peripherals

4.9 The remedy ensures that:

- (i) The JEOL/Hitachi contracts are strengthened to ensure JEOL and Hitachi can access Gatan products and services on competitive terms – including for new products;

⁸¹ [REDACTED]. Aggregated financial and performance data necessary for producing financial reports and performance management reports would still be provided to Thermo Fisher as necessary.

- (ii) The additional monitoring and enforcement provisions remove any concerns around subtle or undetected discrimination; and
 - (iii) The access commitment also entitles new entrant TEM manufacturers to access Gatan peripherals on competitive terms.
- 4.10 The remedy package also directly addresses the issues raised in paragraph 33 of the NPR:
- (i) Innovation/efficiency: the horizontal remedy package safeguards ongoing innovation competition in both DD cameras and filters. This issue does not need to be addressed by the vertical remedy as it is already addressed through the horizontal remedies;
 - (ii) Complexity: this is addressed by (a) basing the remedy on the existing contracts negotiated with JEOL and Hitachi – which gives assurance that the terms are appropriate to the industry;⁸² and (b) giving the monitor access to an independent TEM industry expert when monitoring compliance and resolving disputes;⁸³
 - (iii) Access to new products/services: the existing JEOL/Hitachi contracts cover access to any new Gatan products/services. The PFs' concern that this access was subject to "*good faith negotiation*" between Thermo Fisher and JEOL/Hitachi is addressed by conferring the monitor (and expert) with the power to monitor and enforce the remedies to ensure that Thermo Fisher is complying with its obligation to provide reasonable access to new products;⁸⁴ and
 - (iv) Detection of breach: the monitor (assisted by the expert) will have extensive monitoring powers and will be required to produce a compliance report every 12 months. Furthermore, there will be a fast-track arbitration mechanism entitling third parties to a quick decision from the monitor in event of dispute. There is no realistic prospect of breaches going undetected.

⁸² In [Mastercard/Vocalink](#), the relevant UILs were implemented *inter alia* through amendments to an existing supply agreement between Link and VocaLink.

⁸³ Enabling monitoring trustees access to industry experts is common. See for example [ASL/Arianespace](#) where the monitoring trustee had to consult with the European Space Agency (ESA) "*on any technical aspect covered by the present Commitments*" as the "*ESA may especially provide to the Monitoring Trustee all the expertise necessary to assess the compliance of the Parties with the Commitments...*" (see paragraph 35).

⁸⁴ See for example: [Discovery/Scripps](#) which required that any new channels or new "*Linked Services*" (future service, functionality or feature offered to distributors) must be offered to the affected third party distributors. As part of the access remedy in [Worldline/Equens/PaySquare](#), third parties were provided access to Poseidon licensing agreements on FRAND terms, including new modules and upgrades. In respect of the additional module fees, the remedy stated that existing NSP customers would be charged a fee based on a public price list and the fees agreed with NSP customers willing to add new modules.

Firewall

- 4.11 The remedy removes any possible SLC by ensuring that the firewall obligations are further strengthened and by providing for rigorous monitoring and enforcement.⁸⁵
- 4.12 The remedy package also directly addresses the questions in paragraph 41 of the NPR:
- (i) Integration undermining effectiveness of firewall: the firewall prevents the Gatan staff supporting JEOL/Hitachi from giving information to the Thermo Fisher TEM business. The remainder of the Gatan team can work with Thermo Fisher and ensure that all the integration benefits of the deal are achieved; and
 - (ii) Incentives to breach firewall: this is addressed by the rigorous monitoring and enforcement provisions:
 - (a) Sharing third party information can only occur when necessary and requires the prior consent of the customer or the monitor; and
 - (b) Any incentive to breach the firewall will be undermined by strong compliance provisions: (i) compliance reports would be submitted to the monitor every 12 months; and (ii) any suspected breaches can be reported by third parties to the monitor (see above).

Application software

- 4.13 The NPR raises this remedy without identifying any relevant associated theory of harm. However, the proposed remedy directly addresses any conceivable harm as Thermo Fisher will continue to offer the same licences as Gatan does today to its customers.⁸⁶

Vertical remedy retains RCBs

- 4.14 The vertical remedy is a comprehensive and effective solution that removes any SLC on access and confidentiality whilst preserving all RCBs:
- (i) **EDM**: RCB retained;
 - (ii) **Integration and lower TCO**: RCB retained. [REDACTED];
 - (iii) **Improved maintenance and support**: RCB retained. [REDACTED];
 - (iv) **Product repositioning and greater choice**: RCB retained. [REDACTED]; and

⁸⁵ Firewall remedies have been successfully implemented in a number of cases before the European Commission such as [Broadcom/Brocade](#) and [Airbus/Safran JV](#).

⁸⁶ In [Worldline/Equens/PaySquare](#), Worldline committed to grant third party network service providers in Germany with the right to *inter alia* install and use its software (Poseidon) for internal business use within the limit of the authorised license volume level.

(v) **Sales expansion:** RCB retained. [REDACTED].

4.15 The vertical remedy therefore allows all RCBs to be retained and triggers limited new costs.

Section C: No Appropriate Alternative Remedies

5. Prohibition is not appropriate

- 5.1 Prohibition is not the only comprehensively effective solution to address the SLCs provisionally found by the CMA. Thermo Fisher's remedy proposal described above is a sufficient package that removes any horizontal SLCs whilst preserving the RCBs.
- 5.2 Even if the CMA found prohibition to be the only comprehensively effective solution, this option would not be a proportionate or "*reasonable and practicable*" (under section 36(3) Enterprise Act 2002) solution. In addition, as demonstrated above, the RCBs identified are significant in scale and nature, and the CMA should take into account the RCBs that would be lost as a result of a remedy in its proportionality analysis as relevant costs of the remedy.
- 5.3 All RCBs would be lost if the Merger were to be prohibited. Prohibition would therefore be a disproportionate remedy even if there were to be no alternative remedy option.

6. Divestment of Gatan camera/filter is not appropriate⁸⁷

- 6.1 The divestment of Gatan cameras or filters is not the only comprehensively effective solution to address the SLCs provisionally found by the CMA. Thermo Fisher's remedy proposal described above is a sufficient package that removes any horizontal SLCs whilst preserving the RCBs.
- 6.2 Even if the CMA found the divestment of Gatan cameras and filters to be a comprehensively effective solution, it would be disproportionate as it would result in the loss of all of the RCBs identified:⁸⁸
- (i) **EDM:** RCB lost. Thermo Fisher will not acquire Gatan peripherals at cost;
 - (ii) **Integration and lower TCO:** RCB lost. [REDACTED];
 - (iii) **Improved maintenance and support:** RCB lost. [REDACTED];
 - (iv) **Product repositioning and greater choice:** RCB lost:
 - (a) [REDACTED];
 - (b) [REDACTED]; and

⁸⁷ In [Dräger Medical AG & Co/KGaA and Hillenbrand Industries, Inc.](#), the Competition Commission opted not to impose a structural remedy on the parties for various reasons, including "*doubts over practicability arose from the overseas location of the parties and their manufacturing facilities*" (see paragraph 10.43). See also [Imerys Minerals Limited/Goonvean Limited](#), where the Competition Commission accepted the parties' arguments that "*the merger might result in significant cost synergies for Imerys, and that to the extent that any efficiencies existed, these would be eliminated if full divestiture were required*" (see paragraph 9.114).

⁸⁸ Indeed, requiring a Gatan divestment would fundamentally undermine the deal rationale [REDACTED].

(c) [REDACTED].

(v) **Sales expansion:** RCB lost:

(a) [REDACTED]; and

(b) [REDACTED]:

(i) [REDACTED]; and

(ii) [REDACTED].

Section D: Legal Framework

7. Legal Background

7.1 If the CMA finds an SLC, it must determine whether - and what - action should be taken for the purpose of remedying, mitigating or preventing the SLC (section 36(2) Enterprise Act 2002).

7.2 Section 36(3) EA 2002 requires the CMA to “*have regard to the need to achieve as comprehensive a solution as is reasonable and practicable to the substantial lessening of competition and any adverse effects arising from it*”.

7.3 The CMA Merger Remedies Guidance⁸⁹ clarifies in paragraph 3.6 that:

*“Having decided which of the remedy options would be **effective** in addressing the SLC and resulting adverse effects, the CMA will then consider the costs of those remedies. In order to be **reasonable and proportionate**, the CMA will seek to select the least costly remedy, or package of remedies, of those remedy options that it considers will be effective. If the CMA is choosing between two remedies which it considers will be equally effective, it will select the remedy that imposes the **least cost or is least restrictive**. The CMA will seek to ensure that **no remedy is disproportionate** in relation to the SLC and its adverse effects.”*
[emphasis added]

7.4 In determining the appropriate course of action, the CMA may also “*have regard to the effect of any action on any relevant customer benefits*” (section 36(4) Enterprise Act 2002). For benefits to be categorised as RCBs, they must:

- (i) Fall within the scope of the definition in section 30(1) EA 2002;⁹⁰
- (ii) Accrue within a reasonable period; and
- (iii) Be merger-specific.

7.5 RCBs that will be lost as a result of a particular remedy “*may be considered to be a relevant cost of the remedy*” (paragraph 3.10 of the Merger Remedies Guidance).

7.6 The loss of significant RCBs could be disproportionate. As a result:

- (i) RCBs could be substantial such that the CMA decides no remedy is appropriate;⁹¹ or

⁸⁹ CMA87 Merger Remedies dated 13 December 2018.

⁹⁰ RCBs are benefits to relevant customers in the form of “*lower prices, higher quality or greater choice of goods or services in any market in the United Kingdom*” or “*greater innovation in relation to such goods or services*”.

⁹¹ In [CMFT/UHSM](#), the CMA found that the merger may be expected to give rise to an SLC and that prohibiting the merger was the only practicable and effective remedy. However, prohibition would have resulted in the loss of substantial

- (ii) RCBs could be sufficiently significant such that the CMA decide a less onerous remedy is appropriate.⁹²
- 7.7 If there is no fully effective, proportionate remedy, the CMA may select the most effective, least costly, proportionate remedy (even if only partially effective) or decide that no remedy should be required.
- 7.8 The CMA therefore needs to answer the following questions in relation to each proposed remedy:
- (i) Will the remedy be effective in addressing the SLC and its adverse effects?
 - (ii) If there is a choice of equally effective remedies, which is the least costly and least restrictive option in order to be reasonable and proportionate?
 - (iii) Is the remedy practicable?
 - (iv) Is the remedy disproportionate in relation to the SLC and its adverse effects?
- 7.9 Thermo Fisher's proposed remedy is effective and practicable. It also maintains the merger RCBs. As a result, the CMA ought to reject alternatives (i.e. prohibition or Gatan divestment) which would incur additional costs for customers in the form of lost RCBs.

RCBs. When balanced against the nature of the SLC, it was clear that the RCBs would likely be more significant. The CMA therefore concluded that it would be disproportionate to prohibit the merger and cleared the transaction.

⁹² In [Macquarie UK broadcast Ventures Limited/National Grid Wireless Group](#), the CMA (then the Competition Commission) concluded that a package of behavioural remedies had a high probability of being effective in addressing the adverse effects of the merger and would pass back to customers a significant proportion of the RCBs in lieu of the loss of future competition.