



Amendment No. 2 to AGREEMENT

No. 65221/ESO/15/67001/JSC

**For the design, construction and commissioning
of the MORFEO (previously MAORY) Instrument
on the European Extremely Large Telescope (ELT)**

BETWEEN

the **European Organisation for Astronomical Research in the Southern Hemisphere**, hereafter referred to as “**ESO**”, having its Headquarters at Karl-Schwarzschild-Straße 2, 85748 Garching bei München (Germany), represented by its Director General, Xavier Barcons,

on the one hand,

AND

The Istituto Nazionale di Astrofisica (INAF) having its Headquarters at Viale del Parco Mellini 84; 00136 Roma, Italy , hereafter referred to as the “**Institute**”, represented by its President Prof. Dr. Marco Tavani, on behalf of the “**MORFEO Consortium**”, consisting of the Partners as mentioned below,

on the other hand.

The Consortium consists of the following Consortium Partners:

- Istituto Nazionale di Astrofisica, Viale del Parco Mellini 84, 00136 Roma, Italy
- Institut National des Sciences de l'Univers du Centre National de la Recherche Scientifique - INSU/CNRS, 3, rue Michel-Ange, F-75794 Paris Cedex 16 France, acting on behalf of the Institut de Planétologie et d'Astrophysique de Grenoble (IPAG), B.P. 53, F-38041 Grenoble Cedex 9 France
- National University of Galway (NUIG), School of Physics, University Road, H91 TK33, Galway, Ireland
- NRC Herzberg Astronomy and Astrophysics, 5071 West Saanich Road, V9E2E7 Victoria, BC, Canada

This Amendment is raised, to rename the Consortium, now called MORFEO Consortium (prev. MAORY Consortium), and replace wherever mentioned in this agreement “MAORY” by



“MORFEO”. Further it includes updates to the Consortium Member list, and additional financial contributions.

ESO and the Institute, on behalf of the Consortium, (hereinafter individually referred to as a “party” and collectively as the “parties”) agree as follows:

ARTICLE 1. SCOPE OF THE AGREEMENT

ESO entrusts to the Consortium and the Institute on behalf of the Consortium agrees to perform the

Design, construction and commissioning of the MORFEO Instrument for the European Extremely Large Telescope (ELT)

in accordance with the following documents, listed in the order of precedence, in complement to the *General Conditions of ESO Contracts, Munich, December 2014* (hereinafter referred to as “General Conditions of ESO Contracts”):

- 1.1 The Articles of the present Agreement (in complement to the “General Conditions of ESO Contracts, Munich, December 2014”, available on http://www.eso.org/public/industry/cp/docs/gen-conditions/GCEC_Munich_Dec_2014.pdf);
- 1.2 The Statement of Work, Doc. ref. ESO-257875, Issue 1, dated 22/10/2015 (Annex 1);
- 1.3 The Technical Specifications, Doc. ref. ESO-254311, Issue 1, dated 10/11/2015 (Annex 2);
- 1.4 Policy for guaranteed time of observations (Annex 3);
- 1.5 The planning in 2015 Euros for Third party supplies and project expenses, accompanied by the Consortium’s procurement plan (Annex 4); Amendment No. 2: 2022 updated Annex 4, Third party supplies and project expenses;
- 1.6 The MORFEO Consortium Memorandum of Understanding (Referenced Document 1), not attached but known to both parties;

ARTICLE 2. PRICE - PAYMENTS

- 2.1. A period of Guaranteed Time Observation (GTO) with the European Extremely Large (E-ELT) telescope will be granted by ESO to the Institute on behalf of the Consortium in accordance with the provisions of Article 8, in return for the construction and commissioning of the instrument subject to this Agreement. A GTO return will also be made for an agreed cash contribution for Third Party Supplies.

2.2.

ESO cash contribution to Third Party Supplies (maximum)		18,500,000 EUR
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2.2.a Amendment No. 2

Funding Item	New / Updated / Amendment	ESO contribution Amount in EUR (2015 e.c.)	ESO contribution Amount in EUR (incl. indexation up to July '22 e.c.)	Consortium contribution Amount in EUR (July '22)	Description	GTO applicable (342k Member States / 683k Non-MS (2022 e.c.))
ORIGINAL COST:						65 (for Cons. FTE)
ESO cash contribution to Third party Supplies (maximum)	as original	18.500.000	19.557.169,55		ESO cash contribution	
Total		18.500.000	19.557.169,55			
AMENDMENT COST UPDATE:						
ADDITIONAL CONTRIBUTIONS:						
Consortium cash contribution (for GTO)	new			8.710.000	Consortium contribution, additional cost	24 (eligible for GTO)
Consortium cash contribution	new			2.000.000	Consortium contribution, additional cost, non-GTO	0
ESO additional cash contribution	new	1.619.433	2.000.000		ESO cash contribution	
Consortium contribution 2nd Def. Mirror	new			5.590.000	Consortium contribution	16 (eligible for GTO)
TOTAL Amendment	Total sum	1.619.433	2.000.000	16.300.000		40
Grand Total		20.119.433	21.557.170	16.300.000		105
Consortium provision for contingency (Art. 2.2.b)	new			contingency up to 6 400 000	Consortium provision	see Article 2.2.b

2.2.b Amendment No. 2

The Consortium undertakes to provide a contingency for the MORFEO project up to 20% of the total project contributions, ie 6.4 MEUR, if and when such funds are needed. If contingency funds are used, ESO agrees to discuss GTO compensation in good faith and on the understanding that on the eligibility for GTO ESO standard rules of the GTO policy will apply, specifically that ESO Council approval will be required.

The second Deformable Mirror is contributed (5.59 MEUR) by the Consortium, and will be provided to the MORFEO Instrument, on the basis of an unlimited, unrestricted rental agreement between ESO and the Consortium.

2.2.c. Third party supplies and connected costs shall be paid by ESO on a planned expenses basis upon presentation of the corresponding request by the Consortium and invoices according to Annex 4 (scheme for Third party supplies and procurement plan). Third party costs include in particular commercial procurements and expenses such as consortium travel, instrument shipping and insurance. Third party costs are in 2015



euros and will be indexed for inflation, with the Eurostat Domestic Producer EU 27 prices index (<http://ec.europa.eu/eurostat/web/products-datasets/-/teis070>).

In the following cases the Consortium shall seek ESO's concurrence to agree to place a Contract or a Purchase Order:

- a) For procurements which were not included/planned in the Annex 4 (third party supplies funding scheme), or which deviate from the value included in the Annex 4 (except if the deviation is a reduction in the price of the supplies);
 - b) For procurements which exceed 300,000 EUR (in words: three hundred thousand Euros);
 - c) For Amendments to existing Contracts or Purchase Orders.
- 2.3. Supplies for the use of ESO are exempt from customs duty. With regard to taxes and levies, there are special arrangements for ESO and the Consortium is required to become conversant with such arrangements. Accordingly prices shall be quoted net and free of tax. Where VAT is applicable, these taxes shall be shown clearly on the invoice. Save in respect of possible exemption from VAT arising from the special fiscal conditions which apply to ESO, the Consortium shall in no way be released from its obligation to pay any taxes which may normally be due.
- 2.4. The placement of Contracts or Purchase Orders shall be in accordance with the standard rules and regulations of each organization acting on behalf of the Consortium and shall follow best practices, including the use of procurement and contract specialists during all phases of the procurement, as appropriate.
- 2.5. For procurements expected to exceed 300,000 EUR ESO may require, and the Consortium shall grant, to review the tender documentation (resume of the outcome) and request any accompanying information necessary to review the selection of the sub-contracted supplier/provider.
- 2.6. Annex 4 (scheme for Third party supplies and procurement plan) specifies the planned third party costs and relevant expenses by the Consortium, which the Consortium can present for being funded by ESO.
- 2.7. Any changes and updates to the Annex 4 shall be mutually agreed and approved by the responsible persons of the project (as identified in Art. 16.1 and 16.2), provided that such changes and updates do not affect the total ESO cash contribution.

ARTICLE 3. ESO CONTRIBUTION UNDER THE AGREEMENT

- 3.1. ESO will provide to the Consortium deliverables and services as specified in the Statement of Work (Annex 1).
- 3.2. The deliverables provided by ESO shall remain the property of ESO according to the conditions outlined in Article 20 and shall be used solely for the execution of the Agreement and for no other purpose, unless prior approval in writing has been given by ESO.



ARTICLE 4. SCHEDULE AND MILESTONES

The activities to be performed under the Agreement shall start at T_0 and shall be completed within 114 months (9.5 years), in accordance with the following key milestones:

Milestone Number	Phases – Key milestones	Due time
1	Kick Off Meeting (KOM)	$T_0 = 02 \text{ Feb } 2016$
2	Preliminary Design Review (PDR)	$T_0 + 24 \text{ months}$
3	Final Design Review (FDR)	$T_0 + 42 \text{ months}$
4	Preliminary Acceptance Europe (PAE)	$T_0 + 96 \text{ months}$
5	Provisional Acceptance Chile (PAC)	$T_0 + 114 \text{ months}$
6	Final Acceptance (end of Guarantee period)	$T_0 + 138 \text{ months}$

Changes to milestone dates (except milestone 4 PAE) may be agreed between the consortium and ESO without penalties. See Article 9.

Transport and insurance of the MORFEO Instrument and related items (including all special handling devices and tools) from the Consortium's premises to the E-ELT Observatory (CL) shall be under the Consortium's responsibility and accounted within the cost of Third Party Supplies (i.e. delivery DAP ESO premises in Chile, Incoterms® 2010). The Consortium shall perform these obligations according to this Article and to the instructions provided in the Statement of Work (Annex 1).

ARTICLE 5. PROVISIONAL ACCEPTANCE

The provisions of paragraph 15 of the *General Conditions of ESO Contracts* are complemented as follows:

- 5.1. Provisional Acceptance Chile shall be granted by ESO after evaluation against the requirements of this Agreement and its Annexes. To that effect, the Principal Investigator shall submit to ESO a Request for Provisional Acceptance, using the relevant Forms (Form 1).



- 5.2. Provisional Acceptance Chile shall take place at ESO's premises on the E-ELT site (Chile).

A Certificate of Provisional Acceptance (see Form 2) shall be drawn up by ESO and shall be provided to the Principal Investigator on behalf of the Consortium.

- 5.3. Each Institute deliverable (including the main item MORFEO Instrument and all its constitutive parts, materials and equipment) specified in the Agreement and its Annexes shall become the property of ESO and shall be transferred into the risk of ESO upon the granting of the respective Provisional Acceptance Chile.

- 5.4. ESO acquires conditional ownership at the time of payment/re-imburement of the components of the Instrument, in the case the Consortium should not be able to complete the Agreement, so that in such cases ESO reserves the property rights of supplies for which it has paid.

ARTICLE 6. FINAL ACCEPTANCE

The provisions of paragraph 17.1 of the *General Conditions of ESO Contracts* are complemented as follows:

Final Acceptance shall be granted with effect from the expiry of the Guarantee Period, provided that the Institute has fulfilled all its obligations for this purpose. To that effect, the Principal Investigator shall submit to ESO a Request for Final Acceptance, using the template provided as Form 3.

A copy of the Certificate of Final Acceptance, using the template provided as Form 4, will be submitted to the Principal Investigator to grant the Final Acceptance.

ARTICLE 7. GUARANTEE

- 7.1. The Guarantee Period shall be two years from the date of Provisional Acceptance Chile.

- 7.2. Paragraph 16.2 of the *General Conditions of ESO Contracts* is complemented as follows:

The Consortium shall be responsible for all repairs, adjustments and/or modifications of the delivered MORFEO Instrument during the Guarantee Period, which are necessary in order to comply with the specified technical requirements. The Consortium shall replace the components which failed during normal operation or need to be replaced due to modification.

However, subject to prior authorization given by the PI, ESO personnel may carry out minor repairs, adjustments and/or modifications where ESO considers that it is in a position to efficiently perform them (e.g. if the necessary parts are available in Chile and adequate and precise instructions are provided by the Consortium). In such a case the responsibility will not be shifted from the Consortium to ESO.

If the Institute fails to comply with its Guarantee obligations, ESO may, after serving due notice, take the necessary action in the Institute's stead and at its expense.



7.3. Paragraph 16.6 of the *General Conditions of ESO Contracts* is complemented as follows:

In any of the cases where the Consortium has to carry out the repair, adjustment and/or modification, ESO will organize and bear the cost of:

- the travel within Chile, between Santiago and the site and
- the board and lodging in ESO premises in Chile,

of the relevant Consortium's personnel.

The Consortium shall not be responsible for costs resulting from deterioration attributable to ESO by reason of negligence, inadequate supervision or maintenance, or mishandling.

Except as provided for in the last paragraph of the above Article 7.2, the Consortium shall not be held liable if components have been replaced, modified or repaired by ESO without the Consortium's written consent.

ARTICLE 8. GUARANTEED TIME OBSERVATIONS

ESO shall grant the Consortium GTO quantified in 65 nights of ELT Observing time in return for construction and commissioning of the instrument. Amendment No 2: additional nights of GTO will be awarded to the Consortium in return for the cash contribution as specified in Article 2.2.a and 2.2.b. The applicable policy for GTO, approved by the ESO Council, is defined in the attached document E-ELT GTO Policy, included as Annex 3.

GTO observations requiring specific modes of the instrument or telescope can only be scheduled once those modes have been successfully commissioned.

ARTICLE 9. NON COMPLIANCE

The provisions of paragraph 25 of the *General Conditions of ESO Contracts*, are replaced by the following:

In case the Consortium/institute - for reasons which are solely attributable to the Consortium and where no delays on the project side (from ESO) are contributing to incurred delays - does not comply with the agreed date of Preliminary Acceptance Europe (PAE) a Penalty for late delivery shall be applied as follows: For every 180 days of delay in Preliminary Acceptance Europe (see Article 4) a reduction of the GTO of up to 3 observing nights shall be applicable. No penalties shall be applied if delays are due to factors outside the control of the consortium, including delays in definition of ELT interfaces by ESO, deliveries by ESO of key components, or completion of the telescope.

If the commissioned instrument does not comply with the applicable and agreed Technical Specifications, or with the schedule for reasons attributable to the Consortium, the parties shall enter into a negotiation to discuss in good faith the impact of the non-compliance(s) and the GTO amount detailed in Article 8 may then be decreased accordingly.



Any reduction of GTO proposed by ESO, must be reviewed and approved by ESO Council following negotiations in good faith between ESO and the Consortium.

ARTICLE 10. TERMINATION

Paragraph 12.2 of the *General Conditions of ESO Contracts*, is complemented as follows:

Both, ESO (following a relevant council decision) and the Consortium may at any time, by registered letter, terminate the Agreement in whole or in part. In the event that one of the parties enforces this provision, the parties will agree in good faith a reasonable amount of GTO as compensation to the Institute's FTEs and agree on re-imbursement of reasonable incurred costs, expenditures, liabilities and effort incurred by it in the performance of its obligations under the Contract up to the moment of termination. Resulting changes to the GTO will be implemented according to the Policy for guaranteed time of observations (Annex 3). It is clear and understood that, in such case the parties will agree on which other ESO instruments the GTO will be granted.

ARTICLE 11. INTELLECTUAL PROPERTY

The provisions of Chapter V (Intellectual Property Rights) of the *General Conditions of ESO Contracts* are complemented as follows:

11.1. Paragraph 23.1 of the *General Conditions of ESO Contracts*, is amended as follows:

Newly developed data, information and knowledge:

The data, information and knowledge developed newly under or in consequence of the Agreement will be owned by the party that developed it. The Consortium Partners agree, that ESO is hereby granted an irrevocable, non-commercial, and unvarying license, free of any charge, to use, copy and disseminate any such data, information and knowledge supplied by the Consortium or a Consortium Partner in satisfaction of the requirements of the Agreement, for its own requirements in the field of scientific research and its application.

ESO is entitled to transfer the above data to third parties working for ESO in the Member States of the Organisation. The above-mentioned third parties have the right, to use the data in question free of charge, and allow the data in question to be used, free of charge, by third parties for this purpose.

All rights and obligations as defined in this Article shall remain fully valid and applicable for all legal successors or assignees of the Consortium Partner owning the relevant data, information and knowledge. The Consortium Partners are obliged to include the rights and obligations as defined above in any contract or agreement of transfer or further licensing of the data, information and knowledge to any third party, including the provision that those third parties shall be required to bind their respective successors in the same way.



11.2. Paragraph 23.2 of the *General Conditions of ESO Contracts* is replaced as follows:

The rights and obligations as described in Article 23.1 shall be applicable to any intellectual property title that a Consortium Partner decides to take out regarding the newly developed data, information and knowledge owned by it.

11.3 Paragraph 23.5 of the *General Conditions of ESO Contracts* is amended as follows:

The parties to the Agreement are encouraged to make publicly available the results of their research. Before either party submits a paper or abstract for publication or otherwise intends to publicly disclose information about confidential or proprietary/patentable matter, the other party shall be provided 30 days to review the proposed publication or disclosure to assure that proprietary/confidential information is protected.

The publication or other disclosure shall be delayed for up to 90 additional days upon written request by any party as necessary to preserve patent or other intellectual property right. If any objection with regard to the value of confidentiality or other commercial interests is raised by any party against a project-related publication, the parties will make all efforts to find a mutually acceptable solution within three months after the objection was raised, by making appropriate text modifications in the document.

ARTICLE 12. LIABILITY - INSURANCE

12.1. With regard to paragraph 28.3 of the *General Conditions of ESO Contracts*, it is agreed that the Consortium will either be self-insured and therefore no external insurance evidence will be requested, or will take out cover for the relevant risk with appropriate insurance policies.

12.2. Between delivery of the Instrument to the ESO E-ELT site in Chile and the Provisional Acceptance, the Instrument will be covered by the applicable ESO All-Risk Insurance, at ESO's cost. The declared value of the Instrument shall be agreed upon between ESO and the Institute Principal Investigator before any transport and shipment of the instrument is initiated.

Should such agreement not be reached, the declared value of the Instrument shall be defined by ESO on the basis of an appropriate value as estimated by ESO and the Institute Principal Investigator.

12.3 Given Article 13.1 of this agreement, with regard to paragraph 28.1 of the *General Conditions of ESO Contracts*, it is agreed that the Consortium is not subject to the mentioned indemnities (loss and damage) as required by paragraph 28.1., except gross negligence or willful misconduct. This provision refers to the indemnification as of paragraph 28.1. General Conditions, but does not affect the Consortium's contractual obligations to develop, deliver and commission the instrument.



ARTICLE 13. IMPORT & EXPORT

- 13.1 In accordance with Article 8 of the *Protocol on the Privileges and Immunities of the European Organisation for Astronomical Research in the Southern Hemisphere* and according to Article IV of the *Agreement between the Government of Chile and ESO for the Purpose of Establishing an Astronomical Observatory in Chile*, with reference to section 10 of the Agreement between the Government of Chile and CEPAL Regulating Conditions for the Operation, in Chile, of the Headquarters of the Commission, goods and materials intended for use in connection with the official activities of ESO, whether imported or exported by ESO, shall be exempt from all prohibitions and restrictions on import or export within the ESO Member States and Chile. Shipments in the name of ESO shall be announced accordingly to ESO so that the logistics responsible persons of ESO can provide guidance for the customs broking interactions as far as required.
- 13.2 For export controlled or classified items, it shall be the responsibility of the entity that procures the item from a third party under export control rules or that provides it to ESO, to obtain from the relevant authorities(s) in a timely manner any required export license for the use of ESO, and where needed for the Consortium members, on ESO's premises in Germany, Chile and where needed, at the premises of the Consortium members.

ARTICLE 14. CONSORTIUM MEMORANDUM OF UNDERSTANDING

The MORFEO Instrument Consortium Memorandum of Understanding concluded among all the Consortium Members defines their rights and obligations in their internal relationship during the execution of the Agreement.

ARTICLE 15. E-ELT DOCUMENTATION / INTERFACE

ESO will provide the Institute with all relevant information and documentation regarding interfaces. It is clear and understood that part of this documentation can also be provided by a third party and that ESO will share the details to its best knowledge with the Consortium *as is*.

ARTICLE 16. MANAGEMENT OF THE AGREEMENT, REPRESENTATION AND ADDRESSES FOR CORRESPONDENCE

In accordance with paragraph 4 of the *General Conditions of ESO Contracts* the accredited representatives for the duration of the Agreement are:

- 16.1. FOR ESO:

ESO Project Manager (Managerial and Technical Matters):

Patrick Caillier

European Organisation for Astronomical Research in the Southern Hemisphere, ESO

Karl-Schwarzschild-Strasse 2



85748 Garching bei München, Germany

Phone: +49.89.32.00.6407

E-mail: patrick.caillier@eso.org

ESO Project Scientist

Dr. Elena Valenti

ESO, as above

Phone: +49.89.32.00. 6120

E-mail: evalenti@eso.org

Contractual Matters

Johannes Schimpelsberger

ESO, as above

Phone: +49.89.32.00.6381

E-mail: jschimpe@eso.org

16.2. FOR THE INSTITUTE on behalf of the Consortium:

Principal Investigator:

Dr. Paolo Ciliegi

INAF Osservatorio di Astrofisica e Scienza dello Spazio di Bologna

Via Gobetti 93/3

40129 Bologna, Italy

Phone: +39.051.6357.312

E-mail: paolo.ciliegi@inaf.it

Contractual Matters

Dr. Raffaella Riondino

INAF Headquarters

Viale del Parco Mellini 84

00136 Rome, Italy

Phone: +39.06.35533.237

E-mail: raffaella.riondino@inaf.it



The Principal Investigator shall act in the name and on behalf of the Institute and the Consortium and any document sent and/or signed by him under the Agreement shall bind the Institute on behalf of the Consortium.

A change of any of the above accredited representatives may occur during the Agreement duration. In such a case the parties shall inform each other accordingly in writing.

ARTICLE 17. LANGUAGE

Any communication and correspondence between ESO and the Institute shall be in the English language.

ARTICLE 18. GENERAL CONDITIONS OF ESO CONTRACTS

- 18.1. Except if and in so far they have been complemented under the above agreement Articles, the *General Conditions of ESO Contracts* (available on http://www.eso.org/public/industry/cp/docs/gen-conditions/GCEC_Munich_Dec_2014.pdf) shall apply to this Agreement.
- 18.2. Wherever in any of the documents mentioned in Article 1 above the terms “Contract” and “Contractor” are used, those shall be understood respectively as “Agreement” and “Institute/Consortium” under the present Agreement. Furthermore, any reference to “Provisional Acceptance” shall be understood as “Provisional Acceptance Chile”.

ARTICLE 19. CONFIDENTIALITY

Each party agrees and confirms to use any Confidential Information, whether written or verbal, passed on to him by the other party solely for the purpose for which it was released to him and to make no other use thereof; each party moreover agrees and confirms to treat it in the strictest confidence and to take all reasonable security precautions in the safekeeping of the Confidential Information, applying no lesser security measures to it than to its own Confidential Information. The parties, where it is strictly necessary for the performance of the Agreement, may disclose Confidential Information to such employees and/or third parties who are committed by law and/or by the provisions of their contract to observe similar confidentiality with regard to business matters.

Each party recognizes that the receipt of these documents and/or information from the other party does not constitute a prior use by him in terms of patent law(s), and he, therefore, shall not make their receipt a reason for claiming a prior use right to any patent applications which may be filed later by the disclosing party.

The above disclosure and use limitations shall not extend to Confidential Information when and as far as this is or has become public knowledge, or has already been lawfully in the possession of the receiving party before the Confidential Information was passed on to him by the disclosing party or as far as such Confidential Information is lawfully acquired by him from third parties.

The above obligations shall remain in full force and effect after termination or cancellation of



the Agreement, unless otherwise notified in writing by the disclosing party.

Confidential Information shall be defined as any and all information of a commercial, technical or financial nature which is not generally available to the public and which is disclosed by one party to the other for the performance of the Agreement including, without limitation, data, know-how, secret formulae, processes, designs, photographs, drawings, specifications, patentable information and software programs, regardless of form, format or media and whether communicated or obtained through meetings, documents, correspondence or inspection of a tangible item and which can be reasonably deemed to be confidential.

The above provisions shall not limit the possibilities of academic research activities and their publications, always provided for, that due diligence is applied with respect to sensitive data and information. Reference is also made to Article 11 above.

ARTICLE 20. ITEMS MADE AVAILABLE BY ESO

Any Equipment, material, computer software, database, technical document, imagery or information made available to the Consortium by ESO for the performance of the Agreement shall remain the property of ESO and shall be returned to ESO, including any copies thereof, upon completion of their use, and at the latest immediately after execution of the Agreement or the date of its termination.

The Consortium shall be responsible for the safe keeping, maintenance, storage, transport and, as appropriate, insurance for an appropriate value of all such items and shall use them exclusively for the performance of his obligations under the Agreement.

These items are made available by ESO in their existing conditions and without any express or implied warranty. The Consortium shall check any items and notify ESO within two weeks after receipt of any such item about any defects or unfitness, failing which the item shall be deemed to have been made available to the Consortium without any defects and fit for the purpose for which it was made available to the Institute.

The Consortium shall take all necessary measures to make known and protect the ownership of ESO of such items, including clearly marking them as ESO property.

If such items have been purchased by the Consortium for and on behalf of ESO, it shall take all necessary measures and, in particular, retain all documents required to prove ESO's ownership (including the provision of ESO labeling and item numbers).

ARTICLE 21. CHANGES – AMENDMENTS FOLLOWING PDR

21.1 Recognizing the difficulty in defining the relevant instrument interfaces, the corresponding available funds, and practical instrument capabilities early in the E-ELT project, ESO undertakes to review the agreed scope of work, schedule and allocated instrument funds following the Preliminary Design Review. For the entire contract duration, in particular it is recognized that instrument cost increases due to interface changes, which are required by ESO in course of the construction of the ELT, or because of delays of the E-ELT project, can be considered in respect to the total instrument funding and included in the relevant instrument cost. The implementation of



any changes in instrument scope or funding will require mutually agreed and signed Amendments to this agreement. Relevant changes to the GTO, shall be mutually discussed and agreed and would require approval by Council.

The provisions above apply also in the case, that at any time during the project, it becomes clear that the agreed funding in section 2.2 needs to be reviewed, to complete the instrument as specified in the Technical Specifications. ESO and the Consortium will negotiate, in good faith, to resolve the problem by either raising extra funds, reducing the scope of deliverables or taking other appropriate steps. However, the current agreement does not bind in advance either ESO or the Consortium to supply the extra funds required.

- 21.2 Where ESO has made recommendations and the Consortium have modified their designs, technical specification or scope of work based on these recommendations, the Consortium shall not be liable for the consequences the recommendations may have on the performance, completion date, price of the Contract, guarantee and other aspects as relevant, provided ESO insisted and was notified by the Consortium, that such consequences are likely to happen.

ARTICLE 22. FUNDING PROCESS - CHANGES/UPDATES

- 22.1 The expenses of the Consortium, from the Kick off meeting (KOM) milestone up to the granting of the Final Design Review (FDR), shall be identified in Annex 4 for the funding of these planned expenses by ESO. For the purposes of this Agreement, the expenses to be funded by ESO after the Final Design review shall be documented as an expected expenditure profile (as estimated), also to be included in Annex 4. After the granting of the Final Design Review milestone, the expenses shall be reviewed and finalized in an update to Annex 4 in mutual agreement between the responsible persons of the project (as identified in Art. 16.1 and 16.2).

Given Article 2.7. any changes and updates to the Annex 4 are possible and need to be agreed and approved by the responsible persons as of Art. 16.1 and the Consortium's PI (Principal Investigator, Art. 16.2), however it is agreed that such changes cannot affect the total ESO cash contribution identified in Article 2.

- 22.2. The Consortium shall request the payments as identified in Annex 4, to be provided by ESO. To allow planning and cash flow and ensure availability of funding on ESO's side, the Consortium shall provide a request, corresponding to Annex 4, for Payment confirmation to ESO at least 6 months in advance of the planned payment dates. The Consortium, subsequent to the placement of an order/contract, shall provide to ESO the cash-out plan. ESO will make the payment a maximum of 3 months in advance of the actual expenditures of the Consortium.



ARTICLE 23. DISPUTES

In case of dispute arising from the Agreement, the parties agree to enter into negotiations with the aim of reaching an amicable settlement.

Failing such an amicable settlement, the parties shall resort to arbitration in accordance with the provisions of paragraph 29 of the *General Conditions of ESO Contracts*.

LIST OF ATTACHMENTS:

ANNEX 1: MAORY Statement of Work, Doc. ref. ESO-257875, Issue 1, dated 22/10/2015;

ANNEX 2: MAORY Technical Specifications, Doc. ref. ESO-254311, Issue 1, dated 10/11/2015;

ANNEX 3: Policy for Guaranteed time of Observations;

ANNEX 4: The planning in 2015 Euros for Third party supplies and project expenses, accompanied by the Consortium's procurement plan (Annex 4); Amendment No. 2: 2022 updated Annex 4;

Forms:

- *Form 1: Request for Provisional Acceptance,*
- *Form 2: Certificate of Provisional Acceptance,*
- *Form 3: Request for Final Acceptance,*
- *Form 4: Certificate of Final Acceptance.*



Done at Garching, on

European Organisation for Astronomical Research in the Southern Hemisphere – ESO:

.....

Xavier Barcons,
Director General ESO

Done in, on

for Istituto Nazionale di Astrofisica (on behalf of the MORFEO Instrument Consortium)

.....

Prof. Dr. Marco Tavani, President of INAF, signature



Annex 4 / Third party costs and project expenses Funding scheme

>Third party costs / investments: Payment confirmation by ESO, Payment by ESO as of No. 1-16

>Project expenses (infrastructure, travel etc): re-imburement by ESO on presentation of financ. statements

1 Planned/ Payment Milestone No.	2 Items	3 Planned	4 Timing	5 Request
	Description	Amount	Invoice date	Date of request of confirmation
MS "KICK OFF MEETING"	Milestone KOM	Planned in EUR	Planned for the 1st Phase	
Payment No. 1 (2016)	Project expenses + Investments	220.731,35 EUR	T ₀	T ₀
Payment No. 2 (2016/17)	Project expenses + Investments	197.731,35 EUR	T ₀ +12	T ₀ +6
Payment No. 3 (2017/18)	Investments	1.715.445,00 EUR	T ₀ +24	T ₀ +18
Payment No. 4 (2017/18)	Investments	5.865.675,00 EUR	T ₀ +24	T ₀ +18
Payment No. 5 (2017/18)	Investments	4.038.500,00 EUR	T ₀ +24	T ₀ +18
Payment No. 6 (2017/18)	Project expenses	188.047,30 EUR	T ₀ +24	T ₀ +18
Payment No. 7 (2018/19)	Project expenses	57.446,70 EUR	T ₀ +36	T ₀ +30
Payment No. 8 (2019)	Investments	2.803.623,60 EUR	T ₀ +42 TBC (money transfer to IPAG)	T ₀ +36
Payment No. 9 (2019)	Investments	2.457.000,00 EUR	T ₀ +42	T ₀ +36



Payment No. 10 (2019)	Project expenses	130.600,60 EUR	T ₀ +42	T ₀ +36
MS "FINAL DESIGN REVIEW"	Milestone FDR	Planned in EUR	Estimate - Planned for the 2nd Phase (for review after FDR)	
Payment No. 11 (2019/20)	Project expenses	57.446,70 EUR	T ₀ +48	T ₀ +42
Payment No. 12 (2020/21)	Project expenses	57.446,70 EUR	T ₀ +60	T ₀ +54
Payment No. 13 (2021/22)	Project expenses	162.244,50 EUR	T ₀ +72	T ₀ +66
Payment No. 14 (2022/23)	Investments	212.760,00 EUR	T ₀ +84	T ₀ +78
Payment No. 15 (2024)	Project expenses	166.000,00 EUR	T ₀ +102	T ₀ +96
Payment No. 16 (2024)	Project expenses + Investments	169.301,20 EUR	T ₀ +103	T ₀ +97
TOTAL corresponding to Art. 2.2 ESO cash contribution*		18.500.000,00 EUR		

The above payment plan has an assumed cost of 1.755.000,00 EUR (updated with Amendment No 2: 1,410,000 EUR) for ESO deliverables (currently identified as "Adaptive Optics Wave-Front-Sensor camera detector", as per Annex 1 section 3.7.1). This cost is included in the total instrument budget, respectively in the sum of Payment no. 9.



AMENDMENT No 2:

Updated ANNEX 4:

Accounting Period	PO Submit Invoice to ESO	Budget Spend Profiles ESO*				Budget Total to be invoiced from ESO (incl. indexation up to July 2022)	Annual Budget to be Invoiced from ESO	Budget Spend Profiles Consortium**			Annual Budget from the Consortium	GRAND TOTAL (incl. indexation up to July 2022)
		ESO - Direct (2015 e.c.)	ESO - Hardware Deliverable (2015 e.c.)	ESO - Total (2015 e.c.)	ESO - Total (incl. indexation up to July 2022)***			Consortium contribution INAF	Consortium contribution NRC	TOTAL		
2015-Q4	01. Apr 15	€ -	€ -	€ -	€ -	€ -	€ -	€ 0,00	€ 0,00	€ 0,00		€ 0,00
2016-Q1	01. Jul 15	€ 220.731,35	€ -	€ 220.731,35	€ 220.731,35	€ 220.731,35		€ 0,00	€ 0,00	€ 0,00		€ 220.731,35
2016-Q2	01. Oct 15	€ -	€ -	€ -	€ -	€ -		€ 0,00	€ 0,00	€ 0,00		€ 0,00
2016-Q3	01. Jan 16	€ -	€ -	€ -	€ -	€ -		€ 0,00	€ 0,00	€ 0,00		€ 0,00
2016-Q4	01. Apr 16	€ -	€ -	€ -	€ -	€ -	€ 220.731,35	€ 0,00	€ 0,00	€ 0,00		€ 0,00
2017-Q1	01. Jul 16	€ 197.731,35	€ -	€ 197.731,35	€ 199.115,47	€ 199.115,47		€ 0,00	€ 0,00	€ 0,00		€ 199.115,47
2017-Q2	01. Oct 16	€ -	€ -	€ -	€ -	€ -		€ 0,00	€ 0,00	€ 0,00		€ 0,00
2017-Q3	01. Jan 17	€ -	€ -	€ -	€ -	€ -		€ 0,00	€ 0,00	€ 0,00		€ 0,00
2017-Q4	01. Apr 17	€ -	€ -	€ -	€ -	€ -	€ 199.115,47	€ 0,00	€ 0,00	€ 0,00		€ 0,00
2018-Q1	01. Jul 17	€ 11.807.667,30	€ -	€ 11.807.667,30	€ 12.209.127,99	€ 12.209.127,99		€ 0,00	€ 0,00	€ 0,00		€ 12.209.127,99
2018-Q2	01. Oct 17	€ -	€ -	€ -	€ -	€ -		€ 0,00	€ 0,00	€ 0,00		€ 0,00
2018-Q3	01. Jan 18	€ -	€ -	€ -	€ -	€ -		€ 0,00	€ 0,00	€ 0,00		€ 0,00
2018-Q4	01. Apr 18	€ -	€ -	€ -	€ -	€ -	€ 12.209.127,99	€ 0,00	€ 0,00	€ 0,00		€ 0,00
2019-Q1	01. Jul 18	€ 57.446,70	€ -	€ 57.446,70	€ 61.008,40	€ 61.008,40		€ 0,00	€ 0,00	€ 0,00		€ 61.008,40
2019-Q2	01. Oct 18	€ -	€ -	€ -	€ -	€ -		€ 0,00	€ 0,00	€ 0,00		€ 0,00
2019-Q3	01. Jan 19	€ 3.981.224,20	€ 1.410.000,00	€ 5.391.224,20	€ 5.725.480,10	€ 4.228.060,10		€ 0,00	€ 0,00	€ 0,00		€ 5.725.480,10
2019-Q4	01. Apr 19	€ -	€ -	€ -	€ -	€ -	€ 4.289.068,50	€ 0,00	€ 0,00	€ 0,00		€ 0,00
2020-Q1	01. Jul 19	€ 57.446,70	€ -	€ 57.446,70	€ 63.593,50	€ 63.593,50		€ 0,00	€ 0,00	€ 0,00		€ 63.593,50
2020-Q2	01. Oct 19	€ -	€ -	€ -	€ -	€ -		€ 0,00	€ 0,00	€ 0,00		€ 0,00
2020-Q3	01. Jan 20	€ -	€ -	€ -	€ -	€ -		€ 0,00	€ 0,00	€ 0,00		€ 0,00
2020-Q4	01. Apr 20	€ -	€ -	€ -	€ -	€ -	€ 63.593,50	€ 0,00	€ 0,00	€ 0,00		€ 0,00
2021-Q1	01. Jul 20	€ 57.446,70	€ -	€ 57.446,70	€ 66.408,39	€ 66.408,39		€ 0,00	€ 0,00	€ 0,00		€ 66.408,39
2021-Q2	01. Oct 20	€ -	€ -	€ -	€ -	€ -		€ 0,00	€ 0,00	€ 0,00		€ 0,00
2021-Q3	01. Jan 21	€ -	€ -	€ -	€ -	€ -		€ 0,00	€ 0,00	€ 0,00		€ 0,00
2021-Q4	01. Apr 21	€ -	€ -	€ -	€ -	€ -	€ 66.408,39	€ 0,00	€ 0,00	€ 0,00		€ 0,00
2022-Q1	01. Jul 21	€ 162.244,50	€ -	€ 162.244,50	€ 201.669,91	€ 201.669,91		€ 0,00	€ 0,00	€ 0,00		€ 201.669,91
2022-Q2	01. Oct 21	€ -	€ -	€ -	€ -	€ -		€ 0,00	€ 0,00	€ 0,00		€ 0,00
2022-Q3	01. Jan 22	€ -	€ -	€ -	€ -	€ -		€ 0,00	€ 0,00	€ 0,00		€ 0,00
2022-Q4	01. Apr 22	€ -	€ -	€ -	€ -	€ -	€ 201.669,91	€ 0,00	€ 0,00	€ 0,00		€ 0,00
2023-Q1	01. Jul 22	€ 212.760,00	€ -	€ 212.760,00	€ 314.459,28	€ 314.459,28		€ 46.900,00	€ 0,00	€ 46.900,00		€ 361.359,28
2023-Q2	01. Oct 22	€ -	€ -	€ -	€ -	€ -		€ 290.000,00	€ 0,00	€ 290.000,00		€ 290.000,00
2023-Q3	01. Jan 23	€ -	€ -	€ -	€ -	€ -		€ 93.800,00	€ 0,00	€ 93.800,00		€ 93.800,00
2023-Q4	01. Apr 23	€ -	€ -	€ -	€ -	€ -	€ 314.459,28	€ 93.800,00	€ 0,00	€ 93.800,00	€ 524.500,00	€ 93.800,00
2024-Q1	01. Jul 23	€ -	€ -	€ -	€ -	€ -		€ 0,00	€ 0,00	€ 0,00		€ 0,00
2024-Q2	01. Oct 23	€ -	€ -	€ -	€ -	€ -		€ 3.798.600,00	€ 1.025.000,00	€ 4.823.600,00		€ 4.823.600,00
2024-Q3	01. Jan 24	€ 335.301,20	€ -	€ 335.301,20	€ 495.575,17	€ 495.575,17		€ 0,00	€ 0,00	€ 0,00		€ 495.575,17
2024-Q4	01. Apr 24	€ -	€ -	€ -	€ -	€ -	€ 495.575,17	€ 0,00	€ 0,00	€ 0,00	€ 4.823.600,00	€ 0,00
2025-Q1	01. Jul 24	€ -	€ -	€ -	€ -	€ -		€ 1.581.200,00	€ 0,00	€ 1.581.200,00		€ 1.581.200,00
2025-Q2	01. Oct 24	€ -	€ -	€ -	€ -	€ -		€ 0,00	€ 0,00	€ 0,00		€ 0,00
2025-Q3	01. Jan 25	€ -	€ -	€ -	€ -	€ -		€ 1.606.500,00	€ 0,00	€ 1.606.500,00		€ 1.606.500,00
2025-Q4	01. Apr 25	€ -	€ -	€ -	€ -	€ -	€ -	€ 1.606.500,00	€ 0,00	€ 1.606.500,00	€ 4.794.200,00	€ 1.606.500,00
2026-Q1	01. Jul 25	€ -	€ -	€ -	€ -	€ -		€ 1.461.400,00	€ 0,00	€ 1.461.400,00		€ 1.461.400,00
2026-Q2	01. Oct 25	€ -	€ -	€ -	€ -	€ -		€ 800.000,00	€ 0,00	€ 800.000,00		€ 800.000,00
2026-Q3	01. Jan 26	€ -	€ -	€ -	€ -	€ -		€ 944.200,00	€ 0,00	€ 944.200,00		€ 944.200,00
2026-Q4	01. Apr 26	€ -	€ -	€ -	€ -	€ -	€ -	€ 0,00	€ 0,00	€ 0,00	€ 3.205.600,00	€ 0,00
2027-Q1	01. Jul 26	€ 1.619.433,20	€ -	€ 1.619.433,20	€ 2.000.000,00	€ 2.000.000,00		€ 0,00	€ 0,00	€ 0,00		€ 2.000.000,00
2027-Q2	01. Oct 26	€ -	€ -	€ -	€ -	€ -		€ 1.621.400,00	€ 0,00	€ 1.621.400,00		€ 1.621.400,00
2027-Q3	01. Jan 27	€ -	€ -	€ -	€ -	€ -		€ 730.700,00	€ 0,00	€ 730.700,00		€ 730.700,00
2027-Q4	01. Apr 27	€ -	€ -	€ -	€ -	€ -	€ 2.000.000,00	€ 0,00	€ 0,00	€ 0,00	€ 2.352.100,00	€ 0,00
2028-Q1	01. Jul 27	€ -	€ -	€ -	€ -	€ -		€ 0,00	€ 0,00	€ 0,00		€ 0,00
2028-Q2	01. Oct 27	€ -	€ -	€ -	€ -	€ -		€ 0,00	€ 0,00	€ 0,00		€ 0,00
2028-Q3	01. Jan 28	€ -	€ -	€ -	€ -	€ -		€ 0,00	€ 0,00	€ 0,00		€ 0,00
2028-Q4	01. Apr 28	€ -	€ -	€ -	€ -	€ -	€ -	€ 0,00	€ 0,00	€ 0,00	€ 0,00	€ 0,00
2029-Q1	01. Jul 28	€ -	€ -	€ -	€ -	€ -		€ 600.000,00	€ 0,00	€ 600.000,00		€ 600.000,00
2029-Q2	01. Oct 28	€ -	€ -	€ -	€ -	€ -		€ 0,00	€ 0,00	€ 0,00		€ 0,00
2029-Q3	01. Jan 29	€ -	€ -	€ -	€ -	€ -		€ 0,00	€ 0,00	€ 0,00		€ 0,00
2029-Q4	01. Apr 29	€ -	€ -	€ -	€ -	€ -	€ -	€ 0,00	€ 0,00	€ 0,00	€ 600.000,00	€ 0,00
2030-Q1	01. Jul 29	€ -	€ -	€ -	€ -	€ -		€ 0,00	€ 0,00	€ 0,00		€ 0,00
2030-Q2	01. Oct 29	€ -	€ -	€ -	€ -	€ -		€ 0,00	€ 0,00	€ 0,00		€ 0,00
2030-Q3	01. Jan 30	€ -	€ -	€ -	€ -	€ -		€ 0,00	€ 0,00	€ 0,00		€ 0,00
2030-Q4	01. Apr 30	€ -	€ -	€ -	€ -	€ -	€ -	€ 0,00	€ 0,00	€ 0,00	€ 0,00	€ 0,00
TOTAL		€ 18.709.433,20	€ 1.410.000,00	€ 20.119.433,20	€ 21.557.169,55	€ 20.059.749,55	€ 20.059.749,55	€ 15.275.000,00	€ 1.025.000,00	€ 16.300.000,00	€ 16.300.000,00	€ 37.857.169,55

*ESO contributions to Hardware given in EURO₂₀₁₅ subject to indexation (see 2.2.c)** Consortium contributions to Hardware against GTO as far as eligible, given in EURO₂₀₂₂ not subject to indexation

***Includes 2 M EUR ESO contribution to hardware (committed in 2022, Amendment No 2) equally as consortium contribution. ESO and Consortium contribution of each 2M EUR not subject to indexation.



Payment process:

The Payment process (Art. 22.1. and 22.2.) as stated in the agreement shall be understood and implemented as follows:

- When a Consortium procurement is foreseen to be started, ESO will be informed on the planned procurement in advance and in line with the estimated payments as listed in the planned expenditures in Annex 4 above.
- As soon as the Consortium's procurement/approval board needs to release its approval for starting procurements of the Consortium, ESO provides (within 14 days after notice) a letter of unconditional financial funding confirmation for the relevant planned payment for the MORFEO project/agreement. This is requested by the Consortium with notice to ESO (see above "request of confirmation"), 6 months or earlier (if required) for major procurements (>300k EUR).
- ESO shall transfer the payment to INAF, leading the Consortium and acting on behalf of the Consortium Partners, sufficiently in time (up to 3 months) ahead of the payments of the Consortium for the relevant Procurement done by the Consortium.
- Higher or lower amounts (in difference to the foreseen expenditures in Annex 4) requested by the Consortium and paid by ESO to the Consortium, will be taken into account for the next expenditures as listed in Annex 4, in order to ensure, that the amount of the total budget remains as specified in Article 2.2. of this Agreement.

The Consortium Management and the PI shall have a current summary of the actual and planned expenditure of the Project on third party supplies and services. The plan shall detail the ESO funded and Consortium funded expenditure over the duration of the project. The Planning shall also indicate the status of major procurements that will be required and when Commitments to funding shall be required from ESO. The Consortium Partners shall maintain the list of items to back up the contents of the Consortium's Planning and these shall be attached to the requesting of payments listed in Annex 4.