TERMS OF REFERENCE

Evaluation: 3D Printing for All

Field	Details
Evaluation Commissioner	MSF East Africa
Evaluation Focal Point	Silvestr Tkac, 3D Printing Advisor
Project	3D Printing for All
Evaluation window	October – December 2026
Expected report date	December 2026

1. Background and Project Overview

Médecins Sans Frontières (MSF) is an international humanitarian medical organisation providing emergency care in contexts of armed conflict, epidemic disease, and natural disaster. Its Transformational Investment Capacity (TIC) funds and supports time-limited innovation projects that aim to improve MSF's operational effectiveness. TIC projects follow an incubator model and are expected to transition to business-as-usual (BAU) upon completion.

The 3D Printing for All project is a TIC-funded initiative aiming to standardise and scale the use of Fused Deposition Modelling (FDM) 3D printing technology across MSF Operational Centres (OCs) and technical departments, including logistics, biomedical engineering, and energy. Its core ambition is to make 3D printing a practical, governed, and self-sustaining capability within MSF, reducing dependency on external supply chains for a defined category of items. The project has run across two phases.

Phase 1: June 2023 – December 2024

Phase 1 was led by MSF Germany and included the following achievements.

- Deployment of 3D printers in 4 field projects (Sierra Leone, South Sudan, Kenya (NBIOCA), Nigeria) and 2 HQ offices (Berlin, Brussels)
- Addition of a 3D printing kit and items to the MSF UNICAT catalogue
- Development of SOPs, guidelines, e-learning videos, and a 3D printing knowledge base on a dedicated SharePoint page
- Production of over 1,200 3D-printed items across more than 200 product types; 101 designs in the public repository with 2,731 downloads
- Training of 15 staff directly in 3D printing operation
- Receipt of over 100 product design requests; 30+ field requests and 10+ HQ requests in the final six months alone
- Engagement with expert communities including Autodesk University and Makerfaire
- Experimental recycling of PET bottles into filament in Sierra Leone

The TIC Selection Committee Accompaniers specifically highlighted the SharePoint knowledge infrastructure and congratulated the team on completing project objectives at half the budget.

Phase 2: August 2025 – December 2026 (Ongoing)

Phase 2 is sponsored by MSF East Africa and based in Nairobi, Technical support to hardware continues to be provided pro bono by Prusa Research.

Phase 2 focuses on:

- Scaling 3D printing capacity through ongoing training, documentation, and real-time support to field missions.
- Developing a target of 200 new products for the centralised repository (June 2025 – October 2026)
- Providing hands-on support to MSF operations deploying new 3D printers (target: 4 projects supported)
- Running at least 2 workshops per year for OCs in Nairobi; presence at 10 MSF events (June 2025 – October 2026)
- Building 3D Printing Champions and a Community of Practice (e.g. via Viva Engage) across the organisation
- Exploring cost-sharing models for the 3D Printing Advisor position post-TIC (e.g. hosted by a section on behalf of the movement)
- Exploring advanced applications combining 3D printing with NFC and IoT technologies

As of June 2026, Phase 2 main achievements are:

- Deployment of Basic 3D printing online Tembo course
- Development of advanced 3D printed products: MVA pelvis mannequin, X-ray phantom, oxygen concentrator monitor
- Supporting new projects with 3D printed items: Somalia, Darfur
- Supporting new projects with 3D printer: DRC, Bangladesh (order ongoing)
- Projects having 3D printer ordering their own filament and accessories

2. Purpose and Intended Use of the Evaluation

The 3D Printing for All project is ongoing through December 2026, and the evaluation has been initiated to understand where 3D printing delivers clear operational value for MSF, under what conditions, and how the project's support model should adapt to maximise relevance, cost efficiency, and impact.

The evaluation will directly inform:

- The next phase of TIC support, including decisions on guidance, governance, product design, standardisation, training, and deployment models.
- The sustainability and transition strategy, specifically design of a permanent 3D Printing Advisor position funded by MSF sections on behalf of the movement.
- The TIC Selection Committee's expectations regarding Champions, Communities of Practice, and Tembo integration.
- MSF-wide evidence on which 3D printing applications offer the strongest value, and when 3D printing is not the appropriate solution.

The primary audience is the MSF Eastern Africa Leadership, the 3D Printing for All project team. Secondary audiences include TIC selection committee, OC Logco’s and Medco’s, and field mission coordinators. The evaluation may also inform the wider humanitarian innovation community given MSF's engagement with external 3D printing networks.

3. Scope of the Evaluation

The evaluation will cover the full period of Phase 1 (June 2023 – December 2024) and the Phase 2 activities up to the point of evaluation fieldwork (August 2025 – approximately October 2026). The evaluation covers locations from Phase 1: Sierra Leone, South Sudan, Kenya, Nigeria, DRC,

Bangladesh (field projects) and Berlin, Brussels (HQ offices) as well as Phase 2 base, in Nairobi for 3D printing deployment and projects and expertise groups benefiting from 3D printed items (Somalia, Darfur), specifically OCA lab managers, biomed Working Group.

The evaluation covers the following themes:

- Operational relevance and use-case appropriateness: which categories of 3D printing application (spare parts, lab equipment, logistics tools, customised components, IoT, training models) respond to genuine MSF needs and which are better served by conventional procurement.
- Effectiveness of project support: quality and uptake of guidance, the product repository, design support, governance, and training delivered under both phases
- Cost and time efficiency: documented savings compared to conventional procurement and logistics, drawing on Phase 1 metrics and Phase 2 emerging data, projections based on selected products.
- Staff acceptance, perceived value, and barriers: how field and HQ staff perceive 3D printing and what drives or inhibits adoption.
- Implementation models: comparative assessment of HQ-based, hub-based (Nairobi), mission-level, and project-level deployment.
- Community and champion model: the effectiveness of the 'print-for-fun' strategy, local champion development, and early Community of Practice activity.
- Sustainability and transition: readiness of MSF to maintain and expand 3D printing know-how without continued TIC funding; viability of cost-sharing models.
- Governance, compliance, and risk management: adequacy of existing protocols for safety, IPC, quality assurance, and environmental considerations.

3.4 Exclusions

The following are explicitly outside scope:

- Detailed technical, legal, regulatory, IPC, or material engineering assessments,
- Clinical applications such as prosthetics or medically driven devices,
- Prusa Research's hardware support model or supplier performance.

4. Evaluation Questions

The following ten questions are grounded in evaluation criteria. The evaluation team should treat these as the primary framework and propose refined sub-questions in the inception report.

4.1 Relevance

1. To what extent does FDM 3D printing respond to documented operational needs across MSF's field and HQ contexts, and which categories of use case (spare parts, lab equipment, logistics tools, training models, IoT components) offer the clearest value proposition versus those better served through conventional procurement or logistics channels?
2. How well has the 3D Printing for All project aligned its support activities, including the UNICAT kit, product repository, guidelines, and Phase 2 Nairobi hub, with the actual priority needs of MSF OCs and technical departments (logistics, biomedical, energy, L&D, medical)?

4.2 Effectiveness

3. To what extent has the project achieved its Phase 1 and Phase 2 targets, including the 200-product repository, deployment of printers in 4 Phase 2 projects, 2 workshops per year, and development of governance arrangements, and what factors have driven or constrained delivery?
4. How effective has the project been in building and sustaining local 3D printing champions? What role did strategies such as 'print-for-fun' and community-building play in driving staff adoption, and what evidence exists of champion durability after project support is withdrawn?

4.3 Efficiency

5. In which use cases and contexts does 3D printing demonstrably save time or reduce cost compared to conventional alternatives, and how robust is the evidence for these efficiency gains against the full cost of the 3D printing pathway, including design time, advisor support, equipment, materials, and quality assurance?
6. How efficient have the project's own management and coordination arrangements been, including the single-FTE model with Nairobi-based advisor, pro-bono Prusa Research support, in delivering impact relative to the resources invested?

4.4 Impact

7. What documented operational outcomes, including equipment downtime reduction, procurement substitution, supply chain independence, and enhanced staff capability, have resulted from 3D printing deployment, and how has this evidence been captured and attributed to the project?
8. How have field staff's behaviours and approaches to repairs, ordering, and low-scale innovation changed because of the project, and what does this suggest about the transformative potential of 3D printing as a tool for operational culture change?
9. What is the projected impact (cost efficiency, quality of care, operational effectiveness) of the 3D printing within MSF on large scale given current traction and strategy. What are the key areas to focus on to maximize the impact.

4.5 Sustainability and Scale-up

10. To what extent are the conditions for responsible and effective scale-up currently in place, including the availability of design expertise, functioning governance and validation protocols, a viable Community of Practice, and adequate technical support structures, and what gaps remain?
11. What cost-sharing model or institutional arrangement (e.g. hosted advisor on behalf of the movement; integration into OC logistic or biomedical structures; self-service model) offers the most viable pathway for sustaining 3D printing expertise within MSF post-TIC funding, and under what conditions?

5. Methodology

MSF adopts a principles-based rather than prescriptive approach to evaluation methodology. Consultants are expected to propose a credible, context-appropriate design in their technical offer and to refine it in the inception report following an initial document review and stakeholder mapping. The following principles must guide the design.

5.1 Mixed Methods

The evaluation should draw on both quantitative and qualitative evidence. Quantitative data, e.g. production volumes, cost comparisons, items printed, repository downloads, design requests, staff trained, should be triangulated with qualitative insights from staff, managers, and technical partners.

5.2 Use-Case Analysis

A structured use-case analysis is central to this evaluation. The evaluation team should develop, and agree with the commissioning team at inception, a categorisation framework for assessing documented use cases against criteria such as operational usefulness, emergency responsiveness, cost and time efficiency, ease of implementation, staff acceptance, scalability, and risk. Phase 1 and 2 produced over 350 different product types and 120 repository designs; these provide the primary dataset for this analysis.

5.3 Stakeholder Inclusion

The evaluation must include perspectives from: field logistics, biomedical or medical staff who have used or considered 3D printing; OC Logco's and Medco's; TIC accompaniment group and project staff; MSF East Africa leadership; beneficiaries of 3D-printed items.

5.4 Technical Competence Requirement

The evaluators will need both technical 3D printing knowledge and familiarity with MSF's governance structures. The evaluation team may draw on specialist networks such as FabLabs, the Internet of Production Alliance, the Open-Source Hardware Association or other relevant institutions as appropriate.

5.5 Ethical Conduct

All data collection must adhere to MSF's ethical requirements. Where fieldwork takes place in conflict-affected or resource-constrained settings the team must apply safeguards for participant safety, informed consent, and data protection appropriate to those contexts.

5.6 Triangulation and Evidence Quality

Findings should be triangulated across multiple data sources. The report must clearly distinguish between well-evidenced conclusions and inferences resting on limited data. Given that data collection was not designed for an evaluation, the team should expect some gaps and should propose approaches to address these at inception.

5.7 Utilisation Focus

The evaluation must be designed for use, not compliance. The team is expected to engage the commissioning team at an emerging-findings stage, prior to reporting, to test preliminary conclusions and ensure findings can be acted upon within MSF's planning and funding cycles.

5.8 Suggested Methods (Non-Prescriptive)

The following methods may be appropriate; the evaluation team should argue for their proposed design in the technical offer:

- Systematic document review: Phase 1 and Phase 2 reports, the 3D printing catalogue and repository, SOPs and guidelines, M&E records, financial data, UNICAT documentation, and existing assessments.
- Key informant interviews: Silvestr Tkac and David Treviño (project team); OC Logco's and Medco's; 3D printing operators in projects; mission coordinators from Phase 1 and 2 sites; HQ offices (Berlin, Brussels, Paris).
- Field site visits (purposive sample) or remote structured consultations with Phase 1 and 2 deployment locations.
- Structured use-case assessment using an agreed categorisation framework.
- Cost and time efficiency analysis for documented use cases where data permit.
- Comparative review of 3D printing implementation and governance models in comparable humanitarian or low-resource contexts, drawing on external networks.

6. Deliverables and Timeline

The evaluation window of October–December 2026 is set in the Phase 2 workplan. Deliverable deadlines should be scheduled to ensure the final report is available by end of December 2026, ahead of the project's close date.

Deliverable	Description	Indicative Timing

Inception Report	Refined evaluation framework and questions; proposed methodology and data-collection tools; use-case categorisation framework for commissioning team agreement; data availability assessment; work plan; ethical clearance status. Should confirm field site sampling approach.	Within 2 weeks of contract signature (target: early October 2026)
Preliminary Findings Presentation	Virtual or in-person briefing presenting emerging findings and draft use-case analysis before finalisation. Enables factual corrections and input from the commissioning team and key stakeholders.	Approx. late November 2026
Draft Evaluation Report	Full report including executive summary; background and context; methodology; findings by evaluation question; use-case analysis; conclusions and recommendations (specific and actionable on sustainability and scale-up). Submitted for written review.	Early December 2026
Final Evaluation Report	Revised report incorporating commissioning team and reference group feedback. Maximum 25–30 pages excluding annexes. Language: English.	By 31 December 2026
Management Response Support (optional)	A facilitated half-day session to support TIC and MSF East Africa in developing a management response and priority action plan, particularly regarding BAU transition options.	January 2027 (post-project, if required)

The final report must include the following annexes: these terms of reference; a complete list of documents reviewed; data-collection instruments (interview guides, survey tools); and the use-case categorisation framework with full results.

7. Evaluation Team Composition and Required Competencies

Technical 3D printing literacy and familiarity with MSF's governance and structure are necessary for this evaluation. The commissioning team will assess technical competence in these areas during proposal review.

Required Competencies

- Demonstrated experience evaluating technology, innovation, or operational improvement projects in humanitarian or development settings.
- Working knowledge of FDM 3D printing technology, sufficient to assess use-case implications, quality and safety limitations, and governance requirements without requiring basic orientation from the project team.
- Proven capability in mixed-methods evaluation design, including structured use-case analysis or comparative case assessment.
- Understanding of MSF's structure, Operational Directorates, and mission coordination model, or equivalent experience with large, federated humanitarian organizations.
- Full independence from MSF and from any commercial interest in 3D printing equipment, materials, or services.
- English (Written and spoken)

Desirable Competencies

- Connections to or familiarity with FabLab networks, the Internet of Production Alliance, or the Open-Source Hardware Association and other stakeholders in 3D printing in humanitarian and low resource contexts.
- Experience with supply-chain, biomedical engineering, or logistics assessments in humanitarian settings.
- French (Spoken)
- Experience designing or assessing Communities of Practice or knowledge-management systems in decentralized organizations.
- Prior evaluation experience with MSF or comparable medical humanitarian organizations.

8. Management Arrangements

8.1 Commissioning and Oversight

This evaluation is commissioned by MSF Eastern Africa, main focal person is 3D printing advisor, Silvestr Tkac based in Nairobi. A reference group comprising TIC Accompaniment Group, MSF East Africa leadership, 3DP WG members, and representatives from at least one OC will be established to review key deliverables and provide technical guidance. Composition to be confirmed at the contract stage.

8.2 Field Access and Logistics

The 3D printing advisor (Focal Point) will facilitate introductions to mission coordinators and relevant field staff, provide logistics support, e.g. in-country contacts, security briefings, accommodation arrangements, where needed will be coordinated through the relevant OCs. International travel is the responsibility of the evaluation team. The Nairobi hub can serve as a coordination point.

8.3 Data Access

MSF TIC Accompaniment group and the project team will provide access to project reports, financial records, the 3D printing product catalogue and repository, M&E data (production volumes, design requests, downloads); training records; and SOPs and guidelines. The evaluation team must sign MSF's standard data protection and confidentiality agreement before receiving sensitive data.

9. Ethical Considerations

The evaluation team must adhere to the following principles throughout planning, data collection, analysis, and reporting:

- Informed consent: all participants must provide free, prior, and informed consent, with the right to withdraw at any time without consequence.
- Do no harm: methods must not expose participants, including field staff, patients, or community members, to risk, distress, or retaliation; this is of particular relevance in conflict-affected settings.
- Confidentiality and data protection: personal data must comply with MSF's data-protection policy; anonymisation must be applied in reporting unless explicit consent to attribution has been given
- Researcher positionality: team members must declare any prior relationship with MSF, with the 3D printing technology sector (including Prusa Research or affiliated distributors), or with any of the expert networks referenced in the scoping document
- Equity in participation: the evaluation must actively seek views from staff across different contexts and seniority levels, including those in locations where 3D printing was less successful or adoption was low
- Environmental sensitivity: given the project's explicit engagement with environmental sustainability (decision-making tool for what to print; responsible supplier selection; filament

recycling experimentation), the evaluation should assess, not overlook, environmental dimensions.

10. Budget

Technical and financial proposals must be submitted as separate documents. The financial proposal should itemise daily fees, travel (including any field site visits), per diems, and all other direct costs in Euros. MSF reserves the right to negotiate with preferred bidders.

11. Submission Requirements

Interested consultants or teams should submit the following by **15 August 2026**:

- A technical proposal (maximum 8 pages) covering: understanding of the evaluation scope and context; proposed methodology and use-case analysis approach; work plan and team roles.
- CVs of all proposed team members (maximum 4 pages each), explicitly addressing the requirements above.
- A financial proposal (separate document) itemising all costs in Euros.
- Two examples of previous evaluation reports of comparable scope, including at least one technology or innovation evaluation.
- A signed statement of independence confirming no conflicts of interest with MSF, with Prusa Research, or with any 3D printing equipment manufacturer, materials supplier, or service provider.
- Proposals should be submitted to **silvestr.tkac@nairobi.msf.org** with the subject line: ***"Evaluation Proposal – 3D Printing for All Phase 2 – [Organisation/Consultant Name]"***