

# Terms of Reference for the NAFEMS Manufacturing Process Simulation Working Group (MANWG)

## 1 TECHNICAL AREA COVERED BY THE GROUP

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The NAFEMS Manufacturing Process Simulation Working Group (MANWG) is concerned with developing all industrially relevant elements of creating and operating a valuable engineering simulation team whose work helps improve the outcomes of manufacturing processes.

The technical element of this scope includes the numerical prediction of process parameters and the resulting material state derived from simulation of the physical phenomena underpinning the manufacturing process. Additionally, practitioner competence requirements, definition of business value and interactions with other engineering domains are also addressed where they improve impact or uptake of manufacturing process simulation in industry.

The MANWG supports activities that are broadly applicable within the manufacturing simulation domain, with targeted efforts that provide tailored support for key manufacturing techniques, including but not limited to additive manufacturing, forging, forming, composites and assembly.

## 2 AIMS

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The MANWG aims to promote the development and use of virtual manufacturing tools within the product design and manufacturing cycle to improve outcomes in industrial manufacturing processes.

This will be achieved by being a focal point for independent and reliable information on simulation capabilities and requirements, specifically by pursuing its goals of:

- increasing awareness of virtual manufacturing and its value in real-world manufacturing
- making virtual manufacturing tools wide-spread and effective in design and execution of manufacturing processes
- making virtual manufacturing tools more reliable, accurate and efficient
- becoming a hub for modellers to be well-informed and to share their experience within the simulation community
- facilitating innovation through the promotion and support of virtual manufacturing tools within academia, policy makers and throughout the manufacturing community.

## 3 STRUCTURE OF THE WORKING GROUP

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The MANWG is composed of the Steering Committee underpinned by multiple Focus Teams. Each Focus Team is dedicated to a particular material, manufacturing process or fundamental competences of manufacturing simulation. The current structure of the MANWG can be seen in Addendum 1.

The members of the MANWG are all experts in the area of Manufacturing Process Simulation (MPS) who contribute their time and knowledge on a voluntary basis.

The MANWG communicates with the wider simulation community via the NAFEMS MPS Community. The MPS Community consists of individuals who are NAFEMS members who have an interest in MPS but are not necessarily experts in this area. The MANWG organises meetings with the MPS Community to keep them informed of developments in the field of MPS and to make the community aware of the activities that are being carried out by the MANWG.

### 3.1 RESPONSIBILITIES OF THE STEERING COMMITTEE

The responsibilities of the MANWG Steering Committee include:

- Maintaining the membership of the Steering Committee.
- Creating and disbanding Focus Teams.
- Maintaining contribution from and communication to the entire MANWG community, including regular meetings and other activities as necessary.
- Coordinating the activities of the Focus Teams. The Steering Committee provides the platform to share updates on the activities of each Focus Team. The Steering Committee should ensure that good ideas and lessons learned from one Focus Team translate across all of the Working Group. The Steering Committee will ensure that the guidance developed by each Focus Team is produced in a consistent fashion.
- Ratifying the priorities of the Focus Teams.
- Reviewing the scope and objectives of Focus Team outputs.
- Leading the creation of generic MPS guidance.
- Approving the outputs produced by the Steering Committee and Focus Teams.
- Identifying the needs of, and communicating with the MPS Community.

### 3.2 RESPONSIBILITIES OF THE FOCUS TEAMS

The responsibilities of a MANWG Focus Team includes:

- Maintaining the membership of the Focus Team.
- Identifying the needs of, and communicating with the MPS Community.
- Leading the creation of process-specific MPS guidance.
- Reviewing the outputs created by the Focus Team.

The outputs of the MANWG are created by both current working group members and external experts from the wider community. Where an output is produced by an external expert, the MANWG is responsible for ensuring that the output is technically accurate and relevant to the NAFEMS membership.

## 4 MANWG BYLAWS

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### 4.1 MANWG STEERING COMMITTEE

- The number of members on the MANWG Steering Committee should ideally range from between 5-10.

- The Chair of each Focus Team is considered to be a member of the MANWG Steering Committee.
- Members of the MANWG Steering Committee are listed on meeting minutes as present, sent apologies or absent.
- If a member of the MANWG Steering Committee does not contribute for more than 9 months, they will be warned that their membership of the Steering Committee may be terminated. An individual's membership of the MANWG Steering Committee may be terminated after 12 months of non-contribution, at the discretion of the Chair.

## 4.2 MANWG FOCUS TEAMS

- Focus Teams should ideally be composed of representatives from manufacturing companies, software companies and academic research institutes, to address process simulation questions with sufficient depth, but also with the necessary pragmatism to ensure short-term industrial impact.

## 4.3 MANWG STEERING COMMITTEE & FOCUS TEAMS

The following clauses are applicable to both the MANWG Steering Committee and Focus Teams:

- At the discretion of the Chair of the Steering Committee/Focus Team, participation may be represented by one of two or three individuals from the member organization to reduce the workload on individuals.
- The Steering Committee and each Focus Team should aim to meet at least 6 times a year but not less than 3 times a year.
- The primary method of meeting will be via a web-based platform to enable international involvement in the group. The MANWG is encouraged to take advantage of major NAFEMS or industry events to meet in-person. Where a physical meeting is scheduled, attempts should be made to provide a web-based connection to the meeting to allow participation of those who are not able to attend the meeting in-person.
- Minutes will be taken for all meetings and actions will be identified. The minutes should be circulated within a month (ideally less) of a meeting date.

At least two-thirds of the entire MANWG membership should represent an organisation which has an active membership with NAFEMS.

## 4.4 JOINING THE MANWG

- Potential new members should submit a curriculum vitae, or other summary of background/experience, to the NAFEMS Technical Working Group Manager (TWGM) indicating their knowledge and experience in the area of MPS. Potential new members should indicate which entity of the MANWG they are seeking to join (Steering Committee/Focus Team).
- This submitted information will be reviewed by the Steering Committee/Focus Team members and if approved, the person will be invited to attend meetings and participate. It is expected that all MANWG members hold a senior technical position and have significant expertise in the area of MPS.

#### 4.5 LEADERSHIP ROLES

- The position of Steering Committee Chair is open for review every three years on the anniversary of the initial appointment. There is no requirement for the role to be rotated. Only current members of the Steering Committee may vote. Only current Steering Committee members can be nominated as Steering Committee Chair.
- The position of Focus Team Chair is open for review every three years on the anniversary of the initial appointment. There is no requirement for the role to be rotated. Only current members of the Focus Team can be nominated as Focus Team Chair.
- The Chair of the MANWG Steering Committee should ideally be an industrial user of MPS technology.
- The Chairs of the Steering Committee and Focus Teams can appoint a Vice-Chair at their discretion.
- The Steering Committee Chair and Vice-Chair and the Chairs of the Focus Teams are considered to be members of the NAFEMS Technical Liaison Group.

#### 4.6 DECISION MAKING

- Where a vote is required it will be carried out via email or a web-based survey tool to the TWGM.
- Only current members of the MANWG are allowed to vote. Each organisation that has a representative in the working group will have one vote. If an organisation has more than one person participating in the working group, the vote will be shared between the participants.
- If required, the casting vote will be held by the relevant Steering Committee / Focus Team Chair.

#### 4.7 COMMUNICATION

MANWG communication should be carried out using the relevant group email address. The current communication addresses can be found in Addendum 1.

The Steering Committee and Focus Teams are encouraged to regularly communicate with the wider Manufacturing Process Simulation Community by making use of the forums on the NAFEMS website.

It is the responsibility of the NAFEMS TWGM to ensure that the MANWG email distribution list is current. It is the responsibility of all MANWG members to notify the TWGM of any change to their email address or organisation. Personal distribution lists are discouraged as they require constant updates.

## 5 MEASURES OF SUCCESS

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The success of the MANWG will be measured in terms of:

- MANWG Outputs include but are not limited to:
  - o Publications
  - o Events such as Webinars, Seminars and Conferences
  - o “How to..” Guides
  - o Training Courses
- MANWG Activity & Engagement including but not limited to:
  - o Number of MANWG meetings

- o Number of attendees per meeting
- o % of MANWG members who attended zero meetings in the last 12 months
- o Number of individuals leaving the group
- o Number of new membership enquiries

## 6 RESOURCE REQUIREMENTS

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The MANWG is administered by the NAFEMS Technical Working Group Manager (TWGM).

Logistical support for the group, consisting of providing a web-based meeting platform, scheduling meetings, minute-taking and web-hosting of working group output is provided by NAFEMS.

Funding is available from NAFEMS to support the development of working group outputs. This funding can take the form of contracts for authors and contracts for the individuals tasked with reviewing. Applications for funding should be made to the NAFEMS Technical Officer.

## 7 DURATION

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The MANWG will continue in perpetuity until terminated by the NAFEMS CEO.

## 8 APPROVAL

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CEO, NAFEMS

*T.R. Mory*

Date

15 / 06 / 2022

### Revision History

<u>Date</u>	<u>Revision</u>	<u>Description</u>
15/08/2018	1	Initial Version
17/01/2022	2	Update to reflect revised role for the SC

# Addendum 1

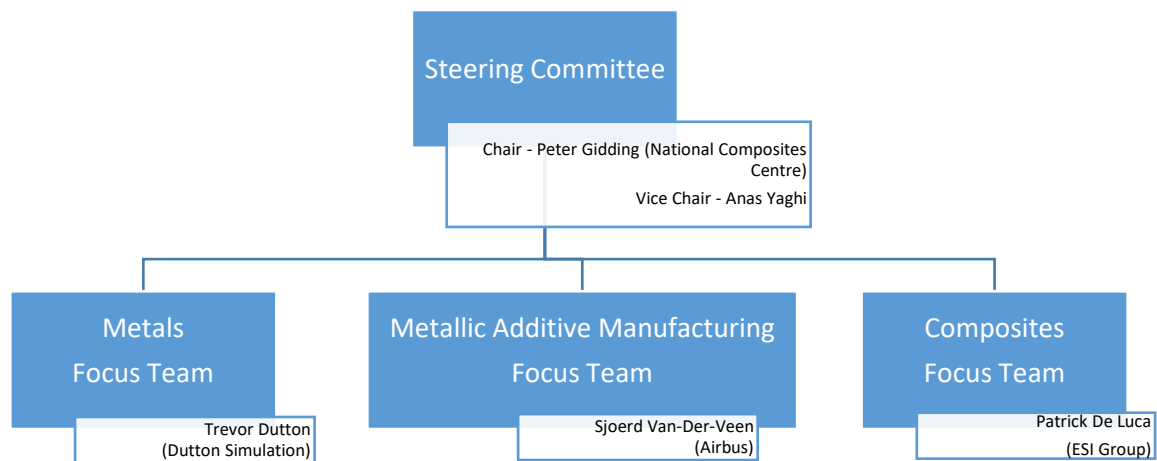
## WORKING GROUP EMAIL ADDRESSES

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- MANWG Steering Committee – [manwg-sc@nafems.org](mailto:manwg-sc@nafems.org)
- Metallic Additive Manufacturing Focus Team – [mam\\_manwg@nafems.org](mailto:mam_manwg@nafems.org)
- Metals Focus Team – [metals\\_manwg@nafems.org](mailto:metals_manwg@nafems.org)
- Composites Focus Team – [manwg-composites@nafems.org](mailto:manwg-composites@nafems.org)
- Whole MANWG membership – [manwg@nafems.org](mailto:manwg@nafems.org)

## CURRENT MANWG STRUCTURE

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## ROLES & RESPONSIBILITIES

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### MANWG Members

Responsible for:

- identifying the outputs and directing the activities of the working group
- ensuring that MPS output is technically accurate and relevant to the NAFEMS membership
- regularly contributing to MANWG activities. Contributions can include:
  - o attending and actively participating in working group meetings;
  - o participating in topic discussions and activities between meetings, whether individually or as part of a focus team;
  - o sending relevant comments or reports on agenda items to the Chair in good time for the meeting;
  - o volunteering for and carrying out actions arising from the meetings including developing outputs, reviewing MPS resources, authoring invitations to tender etc.
- ensuring their contact email address and organisation affiliation are kept up-to-date by notifying the Technical Working Groups Manager (TWGM) of any change.

**MANWG Chair**

Responsible for:

- providing leadership to the Steering Committee/Focus Team
- acting as the focal point for the MANWG
- ensuring that meetings are run effectively.

**MANWG Vice Chair**

Responsible for:

- supporting the Chair of the Steering Committee/Focus Team
- chairing the steering committee/focus team in the absence of the Chair.

**NAFEMS Technical Working Group Manager**

Responsible for:

- acting as the primary point of contact between the MANWG and NAFEMS
- MANWG meeting logistics, processing new member requests
- producing the minutes for MANWG Steering Committee meetings

**NAFEMS Technical Officer**

Responsible for:

- acting as the NAFEMS point of contact for MANWG funding
- acting as the NAFEMS point of contact for approving MANWG output

**NAFEMS CEO**

Responsible for:

- providing the authority to terminate or request a change of scope for the MANWG