

Professional PLM Initiative

In association with:



PLM AS A PROFESSION

INDUSTRY WHITE PAPER

An industry-wide overview and Position Statement
on the potential for a recognised PLM profession.

Version 4.0

08 August 2023

Foreword

On the face of it, PLM has been enormously successful. It has grown from a number of small vendors and customers clustered in the aerospace and automotive sectors into a to a multi-billion dollar global business that is used by most industrial companies around the world. All of this has happened because of people who had the skills and motivation to make PLM work and to continue to push the industry forward.

And yet things could be better. For all its growth, the development of PLM as a business and technical discipline has been unstructured and haphazard. Behind the scenes there are problems that could be improved, and PLM still falls short of its potential.

An obvious path to improvement is to become more professional; and this line of thought leads to the question: "Why is there not a widely-recognised Professional Body for PLM, as there is for so many other types of expertise?"

Because, as one practitioner so neatly expressed it:-

*"PLM is too important to let it be done by
people who do not understand it."*

There are arguments for and against this. A recognised profession would attract more people to the career; make it easier and more efficient to train them; expand awareness and adoption of PLM amongst other areas of a business; and would highlight what PLM is expected to achieve.

On the other hand, it might mean more bureaucracy, and restrictions on what PLM practitioners feel free to do.

It is time that the PLM industry agreed its position on this, so that action can be taken to improve the status quo.

This White Paper presents a Position Statement that can be the starting point for taking that action, and explains the logic that has led to this conclusion.

1 THE PROFESSIONAL PLM POSITION STATEMENT

The Professional PLM Premise is that PLM is a specialty that is sufficiently complex that its practitioners should be certified to carry it out; and is of sufficient value to the business world to warrant its being recognised as a profession.

The Vision is of a discipline that is recognised globally, championed by a Professional Body that acts on behalf of its members and of the industry as a whole.

Forming a PLM Profession, with everything that that entails, will have benefits to organisations that are applying, providing or advising on PLM; to individual practitioners on their career paths; and to education and training providers as they strive to offer a more complete and accurate syllabus.

Making the PLM industry more professional will bring its participants together with a common sense of purpose, and create an interactive platform for long-term improvement. The detailed process of establishing a profession will generate a neutral, agreed Body of Knowledge that will bring its own extensive benefits.

This White Paper therefore proposes that a recognised PLM Profession is formed, and that these benefits are realised.

PROFESSIONAL PLM - THE RATIONALE

TABLE OF CONTENTS

| | | |
|----|---|----|
| 1 | THE PROFESSIONAL PLM POSITION STATEMENT | 3 |
| 2 | PURPOSE OF THIS WHITE PAPER | 7 |
| 3 | PROPOSERS..... | 7 |
| 4 | METHODOLOGY..... | 7 |
| 5 | REVISION HISTORY | 8 |
| 6 | FURTHER INFORMATION | 8 |
| 7 | THE PROFESSIONAL PLM PREMISE..... | 9 |
| 8 | THE PROFESSIONAL PLM VISION | 10 |
| 9 | TYPES OF PROFESSION..... | 11 |
| 10 | PARAMETERS OF A PROFESSION..... | 12 |
| | 10.1 Global..... | 12 |
| | 10.2 One Professional World | 12 |
| | 10.3 Holistic Accreditation..... | 12 |
| | 10.4 Self-Sufficiency | 12 |
| 11 | BENEFITS TO INDUSTRY | 13 |
| | 11.1 PLM Visibility | 13 |
| | 11.2 Operational Effectiveness..... | 13 |
| | 11.3 Governance..... | 13 |
| | 11.4 Resource Planning..... | 14 |
| | 11.5 Staff Development | 14 |
| | 11.6 Client Confidence | 14 |
| | 11.7 Organisational Improvement | 15 |
| | 11.8 Global Integration | 15 |
| | 11.9 PLM Influence | 15 |

| | | |
|----|---------------------------------------|----|
| 12 | BENEFITS TO PRACTITIONERS..... | 16 |
| | 12.1 Proof of Competence..... | 16 |
| | 12.2 Clear Career Path..... | 16 |
| | 12.3 Roles and Grades..... | 16 |
| | 12.4 Skills Development..... | 17 |
| | 12.5 Reference Knowledge..... | 17 |
| | 12.6 Global Mobility..... | 17 |
| | 12.7 Industry Mobility..... | 17 |
| | 12.8 Fellows..... | 17 |
| 13 | EDUCATION AND ACADEMIA..... | 18 |
| | 13.1 Serving Education..... | 18 |
| | 13.2 Accreditation..... | 18 |
| | 13.3 Defined Expertise..... | 18 |
| | 13.4 Education Options..... | 19 |
| | 13.5 Market Improvement..... | 19 |
| 14 | BODY OF KNOWLEDGE..... | 20 |
| 15 | DELIVERABLES..... | 21 |
| 16 | ACHIEVING THE VISION..... | 23 |
| | 16.1 Industry Endorsement..... | 23 |
| | 16.2 Steering Group..... | 23 |
| | 16.3 Professional PLM Associates..... | 24 |
| | 16.4 Other Options..... | 24 |

2 PURPOSE OF THIS WHITE PAPER

The aim of this White Paper is to generate a neutral, agreed picture of the benefits or otherwise of a recognised Professional Body for PLM.

The scope, parameters, remit and governance of such a Professional Body have been part of this discussion.

The White Paper is intended to act as an industry-wide Position Statement on the future professionalisation of PLM.

It is hoped that, in addition to gathering opinions from the global PLM community, this White Paper will become a focal point for carrying the concept forward. Making the PLM industry more professional will require future resourcing and cooperation, led by a common sense of purpose.

3 PROPONENTS

Development of the White Paper has been managed by the PLM Interest Group, as part of the neutral *Professional PLM Initiative*.

4 METHODOLOGY

This White Paper was designed to be developed by iteration. Input to the White Paper was open to PLM practitioners from all parts of the industry, and all parts of the world.

Iteration through the revisions (Section 5) has been based on the feedback that was received since the Launch Version of 06 June.

Version 4.0 embodies all of those changes. It explains the logic that underlies the potential for a PLM Profession, and concludes with a definitive Position Statement.

5 REVISION HISTORY

Version 1.0 06 June 2023
First published draft.

Version 2.0 27 June 2023
Supersedes V1.0.
Updated based on feedback.

Version 3.0 18 July 2023
Supersedes V2.0.
Minor text edit to 'Foreword'.
Section 14 'Body of Knowledge' added.
Section 15 'The Professional PLM Position Statement' added.
'Add Your Feedback' streamlined to a single page.

Version 4.0 08 August 2023
Final version.

6 FURTHER INFORMATION

Further information about the White Paper and its follow-on can be requested via whitepaper@professionalplm.org.

More information about the Professional PLM initiative in general can be found at www.professionalplm.org.

7 THE PROFESSIONAL PLM PREMISE

In the four or five years of discussion that led to this White Paper, arguments have been made both in favour of, and against, the formation of a PLM Profession.

Some of the arguments against remain valid, such as: 'PLM can be covered by selected elements of other existing professions'; and: 'a profession would be too bureaucratic'.

However, there is an overwhelming view that things need to improve, and that the need for improvement easily overcomes the objections to moving forward.

This has been encapsulated as the Professional PLM Premise.

PLM practitioners believe that :-

- ✓ *PLM is a specialty in its own right;*
- ✓ *of sufficient complexity that its practitioners should be certified to carry it out;*
- ✓ *of sufficient value to the business world to warrant its being recognised as a profession; and,*
- ✓ *steps should be taken to establish that professional status.*

This is the starting point for the White Paper.

PLM should be carried out with as much skill and rigour as any other business discipline - and PLM practitioners should conduct themselves in a similarly professional way.

8 THE PROFESSIONAL PLM VISION

The Vision of the Professional PLM Initiative is to that PLM has been raised onto the same level as existing professions.

"The discipline of PLM is recognised as a profession throughout the business world. It is championed by a proactive Professional Body that acts on behalf of its members and of the industry as a whole; and supports and accredits a global education infrastructure that provides a career path from leaving school to the top of a company.

The structure of professional certification encompasses the spectrum of roles and grades, and incorporates modules from partner institutions in related disciplines. This enables practitioners to move freely with their qualifications across geographies, between users and providers, and upwards into senior management, applying an approved body of knowledge and skills.

Organisations can plan accurately for their PLM resourcing, and efficiently train or hire the staff they need, either internally or by calling upon accredited external educators. Staff skills and mobility infuse effective PLM across the enterprise, raising performance and enabling global manufacturing and support."

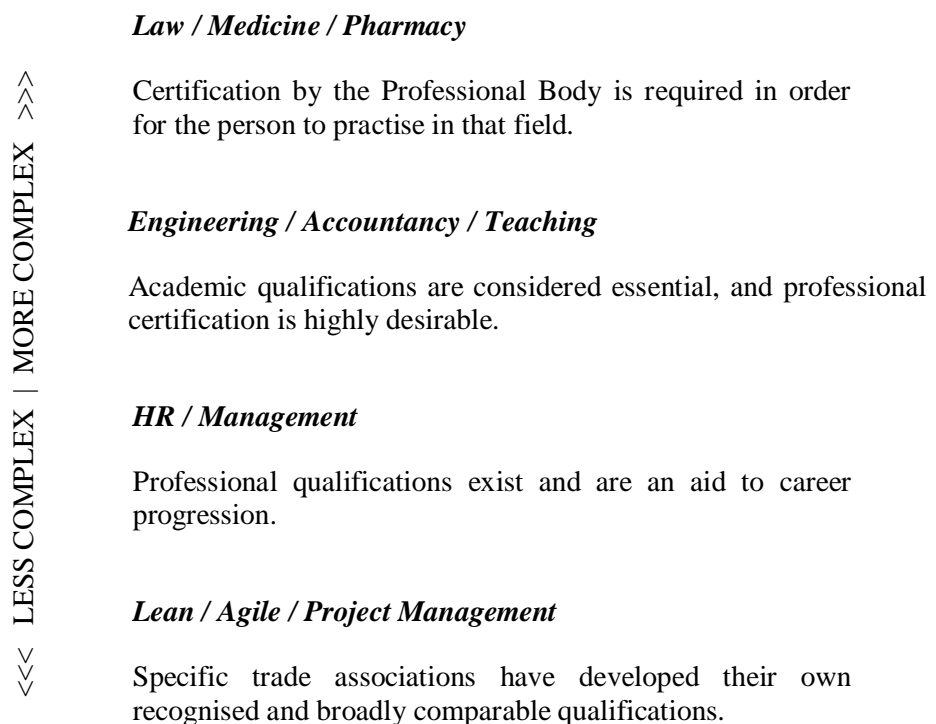
A Vision is a description of a future state, expressed in the present tense. It enables everyone to put themselves into the same future, and imagine what that will be like.

It is quite clear that, at present, PLM is not like this. This White Paper proposes that it should be.

9 TYPES OF PROFESSION

There have been some fairly scattered objections to the idea of a PLM Profession and its associated certification, ranging from: "Compliance will impose too much control on what we can do", to: "Certification is not sufficient to show that someone can do all the elements of PLM".

These statements are contradictory, and arise from the fact that there are several types of profession. Allowing for national variations, typical examples are:-



The structure and operation of a PLM Profession is envisaged to be on the lower half of this empirical scale, and may progress upwards over time.

10 PARAMETERS OF A PROFESSION

10.1 Global

With an estimated 50000-100000 people around the world who regard themselves as PLM practitioners, there are only enough to support one single Professional Body. This means that any new Professional Body must be live and relevant for PLM practitioners everywhere.

In order to be relevant it must also deal with country specifics - a Body based in France is unlikely to seem relevant in the USA, for example. There may also be legal requirements to be complied with in certain countries.

It is likely to need a centrally-organised, multi-national effort to develop and manage the work, with a distributed structure of national or local chapters.

10.2 One Professional World

The synchronisation and synergy created by a single Professional Body, as it provides accreditation for educators and qualifications for practitioners, will tend to harmonise the application of PLM. A common level of detailed understanding will permeate the various countries and industry sectors, which will make PLM skills and experience truly transportable.

The Initiative to achieve this will produce all of the documents, specifications and tools that are necessary to define the scope and activity of Professional PLM.

The effect, applied globally, will tend towards 'One Professional World' for PLM.

10.3 Holistic Accreditation

The aim of a Profession is not to generate new methods or techniques, nor to set difficult tests or exams to disqualify people from practising. In general, all it needs to do is to codify and structure what is already known in the form of 'implicit understanding'. Practitioners who are genuinely at a particular level should be able to do a bit of revision and pass.

10.4 Self-Sufficiency

When all the dust has settled, the PLM Professional Body should still be running in 20 years' time, (or for as long as PLM exists and is of value). Many organisations fail when their original proponents drop out, so the Body will need to be structured for the long term indefinite future.

11 BENEFITS TO INDUSTRY

11.1 PLM Visibility

The new visibility of PLM at all levels of the company due to its recognition as a professional business discipline eliminates questions such as "What is PLM?" and "It's an IT subject, isn't it?"; and all of the consequent delays and misunderstandings.

Everyone respects its practitioners and understands why they do what they do - which is the basic norm for every other business subject. New projects are justified with the same ease and practicality.

11.2 Operational Effectiveness

Despite years of experience, there is no single definition of what is 'Best Practice' in PLM, though many fragmented claims exist. This makes it very difficult for implementers of PLM to learn from what has been done already, and hence to shortcut to the best solution.

The process of compiling and structuring PLM knowledge into a form suitable for professional assessment will generate a clearer written definition of what works well and what is most effective.

11.3 Governance

One of the many tasks required of a senior practitioner is to establish an effective two-way management path from Board level down to operational level.

Members of the Board have a duty of due diligence to ensure effective performance and to apply company strategy, but there is often a disconnect down to the 'PLM coalface' which means they don't know what is actually going on.

It is much easier for the PLM practitioner to face the challenge of this upward management armed with professional material and justification. The enterprise as a whole benefits from the enhanced direction and feedback.

11.4 Resource Planning

Developing a PLM Profession will mean that all of the skills, roles and levels of expertise are clearly and openly defined.

The old question:-

"Our PLM projects are under-staffed - how can we show that we need more people?"

becomes:-

"What is the right number of correctly-skilled people to support PLM throughout the company?"

The HR Director can then work out how many PLM professionals are needed, this year and in future years, and at what grade; and then decide how many will be developed in-house, and how many will need to be recruited.

11.5 Staff Development

Instead of having to co-opt young people onto the PLM Team and wait until they are up to speed, companies can offer the clear and structured training path advocated by the Profession.

This fast-tracks them into effective work, shows them how their careers will benefit, and allows them to see how they can progress. It makes PLM a much more attractive option for the trainee, and the detailed role definitions ensure that they gain a wider and more complete set of skills.

11.6 Client Confidence

There is currently no way for a PLM practitioner, in any role and of any seniority, to prove how good they are. Everything is based on "track record", which is usually impossible to verify or calibrate.

Professional qualifications will show user companies that their new hires have the fundamental competence required for a given role. Providers and consultants will be able to demonstrate the calibre of their staff, and show the skill sets and experience needed for client support.

11.7 Organisational Improvement

PLM practitioners need to address a wider range of business and technical issues than many other disciplines, and 'Organisational Change' is often quoted as one of the most significant barriers to overcome.

Education to a professional standard will equip practitioners with these important 'soft' or 'internal consultancy' skills, with the result that organisational improvement can actually happen, with PLM as the driver.

11.8 Global Integration

One of the most far-reaching benefits of professionally-organised PLM will be gained by major corporations that manufacture in many different countries.

For such companies, differences in working practices, procedures, technical methods and IT infrastructure are endemic and can be very difficult to resolve.

A single worldwide Professional Body will tend to introduce consistency. This implicit global harmonisation will help corporations achieve their DASAMASA¹ goals, as PLM in all of their sites becomes consistent, and operations are transportable. A global manufacturing strategy is easy to implement, and improvements at any site can be applied to all others.

A similar effect happens for PLM practitioners. It no longer matters where they learned their PLM – their skills will be accurate and relevant everywhere else. It produces a genuinely international, transferable workforce.

11.9 PLM Influence

Major corporations also make \$million investments in PLM software and services, without always being satisfied with the 'product' or the outcome. Despite their size, many have found it difficult to influence the roadmaps of providers.

PLM has a massive impact on worldwide manufacturing capability, and yet there is no forum in which those who are expert in it can think about the way ahead.

The Steering Group, and the eventual Professional Body, will be the first high-level platforms for leading organisations of all types to come together and work on the present and future of PLM. Talking leads to agreement, and agreement leads to action that would not otherwise be possible.

¹ Design Anywhere, Sell Anywhere, Manufacture Anywhere, Support Anywhere

12 BENEFITS TO PRACTITIONERS

12.1 Proof of Competence

With professional qualifications that demonstrate their ability and achievements, a PLM practitioner no longer has to present his or her CV and receive a blank stare from the interviewer.

Instead, by showing the even wider range of skills that are gained in PLM compared to other disciplines, a PLM CV and track record becomes an advantage.

This visible certification opens up the possibility of career development within the various domains of large organisations; across the user / vendor / integrator / academia divide; and into completely different industries in which PLM skills are relevant.

12.2 Clear Career Path

A professional structure makes it possible for anyone to see in advance how their career will progress, and to make choices that will enhance that progress.

They can see the requirements of becoming a 'Practitioner', and their employer can show them the training courses and timetable that will enable them to progress to 'Advanced'. The further business experience needed to become a 'Fellow' is also defined, so the new starter in PLM can see with confidence where their career will be in 5 or 10 years' time.

12.3 Roles and Grades

Feedback to Version 1.0 of the White Paper pointed out the multiplicity of roles within the PLM spectrum, and the complex array of skills that each entail.

These may be difficult to define and categorise, but 'difficult' is not 'impossible', and this is one of the benefits that a Profession will bring. Once achieved, it will streamline resourcing and staff development immensely. It will also enable individual practitioners to cross-check that their roles are exposing them to the full range of skills they should be gaining.

12.4 Skills Development

At present, PLM practitioners can list skills on their CV that may appear like 'buzzwords', with no particular evidence to support them.

With a well-defined professional matrix to aim for, practitioners can develop skills in their ongoing role, providing a track record. They may also see opportunities to apply fresh skills they had not thought of, thus enhancing their repertoire.

12.5 Reference Knowledge

Before any certification or qualifications can be defined, the whole range of PLM knowledge will need to be reviewed, and formalised in preparation.

As this formalisation is captured, it will lead to a de facto, neutral, Body of Knowledge about PLM (Section 14) that can be shared and expanded. This will be a valuable resource for practitioners who are learning their way, and will also be useful for companies and corporations looking to leverage some best practice in their implementations.

12.6 Global Mobility

As PLM practitioners follow the harmonised training and development structured by the single Professional Body, their experience and expertise becomes applicable anywhere in the world. This means they can move anywhere and still be equally as effective.

12.7 Industry Mobility

Although there may be minor variations, the essentials of PLM are the same in every industry, and professional qualifications will enable practitioners to move confidently between industries that may seem quite different to each other.

12.8 Fellows

The PLM industry worldwide has many very experienced practitioners who have been in the role for a long time, know the subject in great detail, and are at the top level of their organisations. They may no longer care about career progress or recognition, but a Profession would give these 'Fellows' a platform to guide the industry and give back something of what they have learned to those coming through in the future.

13 EDUCATION AND ACADEMIA

13.1 Serving Education

The Professional Body will provide qualifications, but not training.

Its service to education will be to accredit academic and training organisations that provide the courses that many practitioners will undertake.

There may need to be a period of adjustment in which providers and the Professional Body interact with each other and align the various training options, but by working through this a more complete education scenario will be created for the world at large.

13.2 Accreditation

Education providers should be able to gain accreditation for their courses against the neutral agreed standard set by the Professional Body. Accreditation should be flexible enough to allow training elements to be provided, as well as the complete syllabus.

Major corporations have developed their own in-house training environments, and these too should be assessable against the Professional norms.

As the standard is developed over time, this is likely to increase the range of training offered and the number of providers able to offer it. The Steering Group or governance structure should enable collective agreement on how standards should change as PLM evolves.

13.3 Defined Expertise

The Working Group of the Professional PLM Initiative has already produced a first draft of a Neutral PLM Syllabus. This could be extended and developed into the core definition of the expertise required of the various roles and grades.

13.4 Education Options

PLM practitioners who want to improve their skills, or companies that want to train their staff, are faced with a scattered and confusing array of choices.

Some courses are commercial, some are academic. Some offer qualifications, others do not. Each course teaches its own particular syllabus, with no cross-referencing to any other course, or to any idea of what a total PLM education might be.

In a properly-functioning industry, practitioners should be able to draw on a wide range of consistent education and training options to develop their own skills and expertise in a structured and calibrated way.

This could build into a 'Global Education Map' that makes it easy for students everywhere to assess their options.

13.5 Market Improvement

At present, only a very small percentage of PLM practitioners are properly trained.

Harmonised and accredited training provision for PLM across the world will create a 'pull' effect for potential trainees, as they have more options and more confidence in what they will learn.

This should vastly increase the training take-up and throughput, until the majority of practitioners see training as a normal and necessary part of their career.

Not only will this vastly increase the size of the training marketplace, but it will provide a general boost to PLM as large numbers of practitioners become better educated, more skilled and consequently more effective in their work.

14 BODY OF KNOWLEDGE

In the early 2000s, at the dawn of PLM, it used to be said that "understanding PLM is like grasping fog".

Over time, as people became experienced and users, providers and advisors worked with each other, a rather diffuse 'common understanding' evolved, in which practitioners understood each other in a practical but unwritten way. Projects succeeded, and PLM thinking expanded, without that thinking being captured in a way that could be referred to and re-used.

Young people still had to learn about PLM by "asking and listening", instead of going straight to a syllabus. The world of education remained fragmented, with different establishments offering different aspects of the subject without any clear picture of the whole.

Most recently, experienced practitioners have observed the same old issues being discussed on social media as if they are new problems. In the absence of a defined Body of Knowledge, people are going over old ground and re-inventing the wheel.

We know about PLM, but we don't know what we know.

The process of scoping and establishing a Profession will resolve this problem by implicitly creating the Body of Knowledge that the industry needs.

A Professional Body should aim to provide certification to individuals and accreditation to education and training providers. This means that the required knowledge, skills and expertise need to be defined, structured in a way that matches the complexity of the subject, and published in writing.

This will become a central, core Body of Knowledge in the public domain. Its existence could have just as much of an impact as the Profession itself.

It is likely that the Body of Knowledge may have a life of its own. Young practitioners will refer to it as part of their learning, and experienced practitioners will debate its contents. User companies will draw on it to improve their implementations, and providers will use it to fast track their projects.

As it evolves, under the guidance of the Steering Group, elements of it will become a reference point for Best Practice, which will improve the path to advanced PLM.

15 DELIVERABLES

The Professional PLM Initiative will produce all of the documents, specifications and tools that are necessary to define the scope and activity of Professional PLM.

Deliverables from the formation of a Professional Body for PLM include:-

- ***Fundamentals of Professionalism***
How to act in a professional way as a PLM practitioner.
- ***Definition of PLM roles and skill sets***
These will help with recruitment and retention of staff, help new managers move into PLM, and enable PLM Managers to move onwards to more senior roles in other disciplines.
- ***Standard material for HR***
HR departments will have clear definitions of how PLM roles fit into the wider organisation, at all levels from graduate to VP.
- ***Maturity and Metrics***
Identification of KPIs for PLM activity, leading to the ability to prove good performance.
- ***Development of criteria for certification of PLM skills and experience***
Vendors and integrators will be able to demonstrate the calibre of their staff on client proposals.
- ***Definition of outline PLM training curricula***
Leading to global consistency in PLM education and training.

During the course of defining "What a PLM practitioner does", other useful deliverables are likely to be generated, such as:-

➤ ***Body of Knowledge***

A general encapsulation of what is known about PLM, to save people re-inventing the wheel..

➤ ***Metrics and KPIs***

To measure and confirm professional implementation, and demonstrate due diligence.

➤ ***Maturity Matrix***

Measurement of adoption and implementation Maturity. Professional requirements and standards for progress. Use of the Matrix to initiate improvement projects.

➤ ***Culture Change***

Guidance on how to embed PLM into the company culture, and overcome the most common cause of implementation failure.

➤ ***Value of PLM***

Spelling out and publicising the value of PLM to the general business world, obviating the need for the 'Elevator Pitch'.

➤ ***PLM Delivery***

Understanding of metrics and methods to ensure that PLM projects deliver what was initially promised in the justification.

16 ACHIEVING THE VISION

16.1 Industry Endorsement

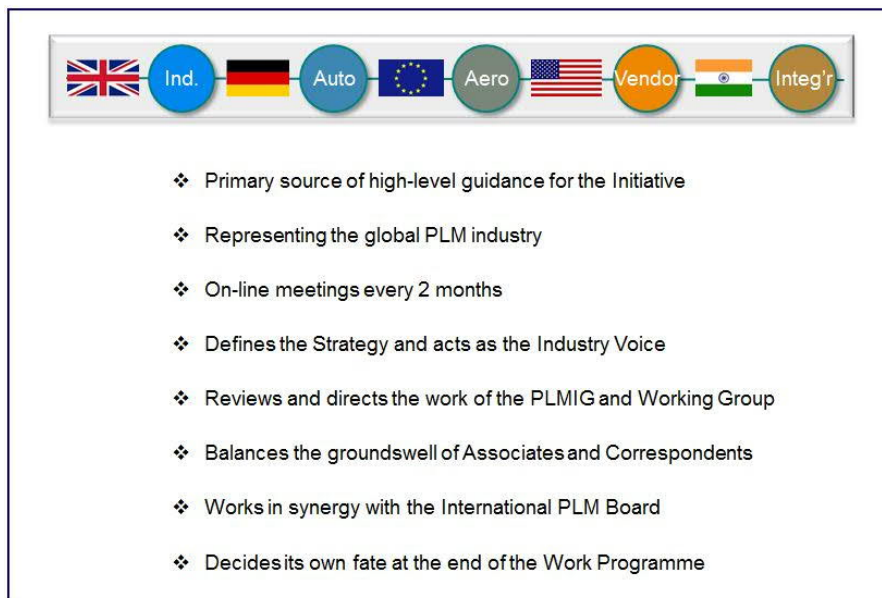
In order for a PLM Profession to be formed, with the parameters that are proposed here, it will need to have the support and endorsement of a majority of practitioners in the industry.

One result of this debate could be to show that PLM practitioners don't want a profession. This is not the desired outcome, but it is possible.

The aim of this White Paper is to demonstrate that a PLM Profession is desirable and viable, and to provide a clear written starting point for that to happen. To move on from the White Paper, there needs to be a vehicle or mechanism for supporters of the profession to move forward.

16.2 Steering Group

There is already a Steering Group for Professional PLM. It operates as a Round Table of organisations participating on an equal basis.



The Steering Group is seen as fundamental to the formation of a Profession. It is the best platform for capturing high-level expertise and direction, and drives the progress that other parts of the Initiative need.

16.3 Professional PLM Associates

The other great beneficiaries of a Profession will be younger practitioners who are in the formative stages of their careers.

The option exists to become a 'Professional PLM Associate', receiving all of the ongoing professional material and career guidelines. This route has not been activated yet, because it needs a minimum viable number in order for participants to have their own ideas-sharing platform, but it is ready to be enacted.

This also provides a route for practitioners in organisations for which PLM is a low priority to stay at the forefront of what is happening, and gain a stream of new working material to develop their implementation 'under the radar'.

16.4 Other Options

Various other ways of achieving the Vision are possible, including options such as an 'International Panel' of luminaries, and a 'Working Group' structure of volunteers.

The eventual option will be decided by consensus and support, and should be a follow-on to this Paper.