



BIM meets AGILE

ESSENTIALS

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AgileBIM

an AgileConstellation Star



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1 Introduction

AgileBIM is the natural union between the Agile and the Building Information Modeling (BIM) worlds. It offers an operative solution for supporting the construction business and the new multi-disciplinary challenges.

AgileBIM is the result of many studies and tests on the field and provides a **toolkit** which can be tailored to specific scenarios.

The following overview will summarize the highlights of the toolkit. You will find the details and the extended description of all the tools in the *Workbook* attached.

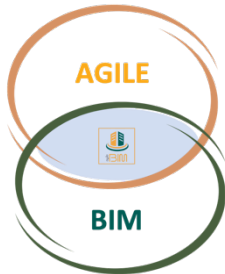
If you are not familiar with BIM and Agile or you need to review them, we would suggest taking a look at the AgileBIM ABF paper¹, which describes all the aspects of the two concepts.

¹ <https://www.agileconstellation.org>



2 Overview

2.1 Enabling Aspects



AgileBIM is an operative toolkit with which you can approach to the *Building Information Modeling (BIM)* with an Agile/Lean mindset. It involves all the aspects of both the perspectives:

- *collaboration between all the professionals that are concerned in every phases of the construction operation;*
- *digital sharing of the data and interoperability by open formats;*
- *continuous improvement;*
- *Inclination to test small incremental improvements.*

Such properties are represented in the following table:

Agile	BIM
<ul style="list-style-type: none"> • Active involvement of the customers; • Multi-disciplinary teams with delegation, decision-making power; • Evolving requirements, in a predetermined time; • Different levels of requirements and their visualization; • Incremental and iterative development in short lifecycles; • Focus on continuous delivery • Inspect and Adapt, continuously; • Test early and often; • Collaboration and cooperation with the stakeholders. 	<ul style="list-style-type: none"> • BIM: Online platform for collaboration, management and data exchange; • BIM: Emphasis on team's collaboration due to the centralization of the information (IFC, DCE); • BIM: Customer/stakeholder's involvement in the process (access to one or more of the four CDE areas); • BIM: Assessment gates for the flow and the coordination of the information



As a result, here is a list of goals which encourage to use AgileBIM:

- Improving the **efficacy** and the **effectiveness**;
- Improving the **communication**;
- Reducing the "ping-pong" effect;
- Optimizing **times** and **costs**;
- Enhancing the **quality of work**;
- **Delighting the customer**;
- Improving the Professionals' and the work groups' satisfaction.

As you can see, the focus is on the people's synergy, granting them the best operative conditions.

2.2 AgileBIM: an AgileConstellation Star

The AgileBIM foundation is based on the *Philosophy*, the *Principles* and *Practices* of the **AgileConstellation Manifesto**², of which AgileBIM is a *Star*, that defines practices and principles related to the domain.

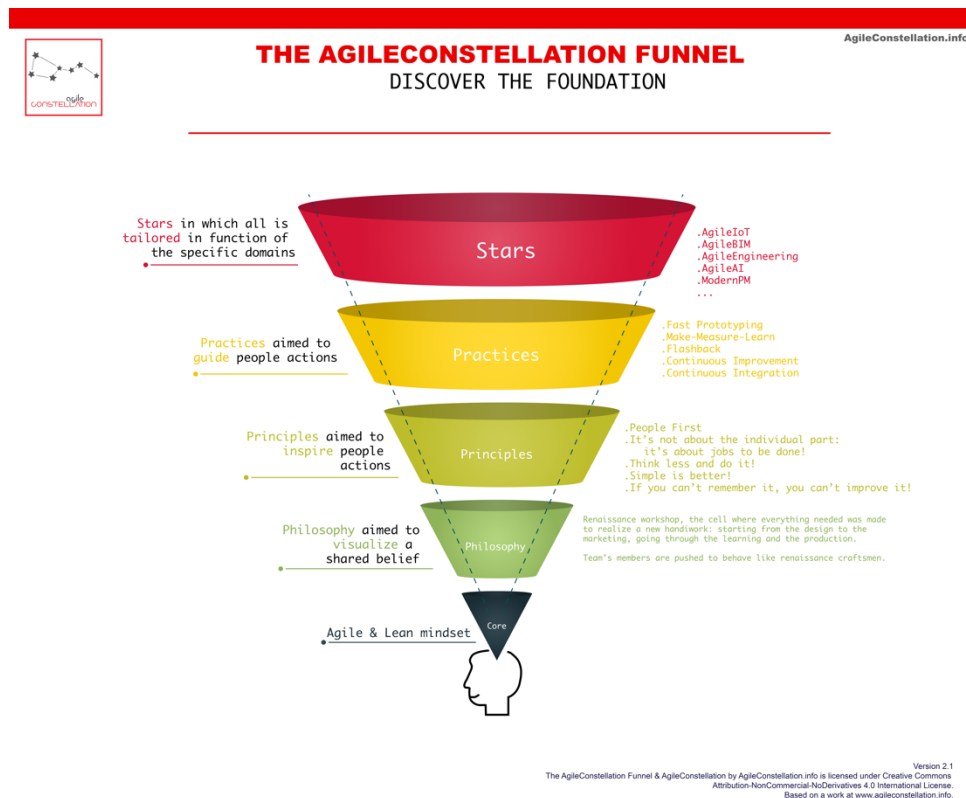


Figure 1 - AgileConstellation funnel



Therefore, we've got:

- **Philosophy**, inspired by the “**Renaissance Workshop**”, that is the cell that performs everything for the new operation. From design to construction and marketing.
- **Principles (core):**
 - It's not a matter of individual parts: the whole thing must be done well!
 - Think less, act before!
 - Simple is better!
 - If you cannot remember it, you can't improve it!
- **Practices (core):**
 - *Fast Prototyping*, validate the solution
 - *Make-Measure-Learn*, test the ideas quickly
 - *Flashback*, quick sync where the observer goes to the work desk
 - *Continuous Improvement*, make better every aspect
 - *Continuous Integration*, integrate the different actors of the solution



2.3 AgileBIM Poster

The overall AgileBIM Vision is summarized in the **AgileBIM Poster** below.

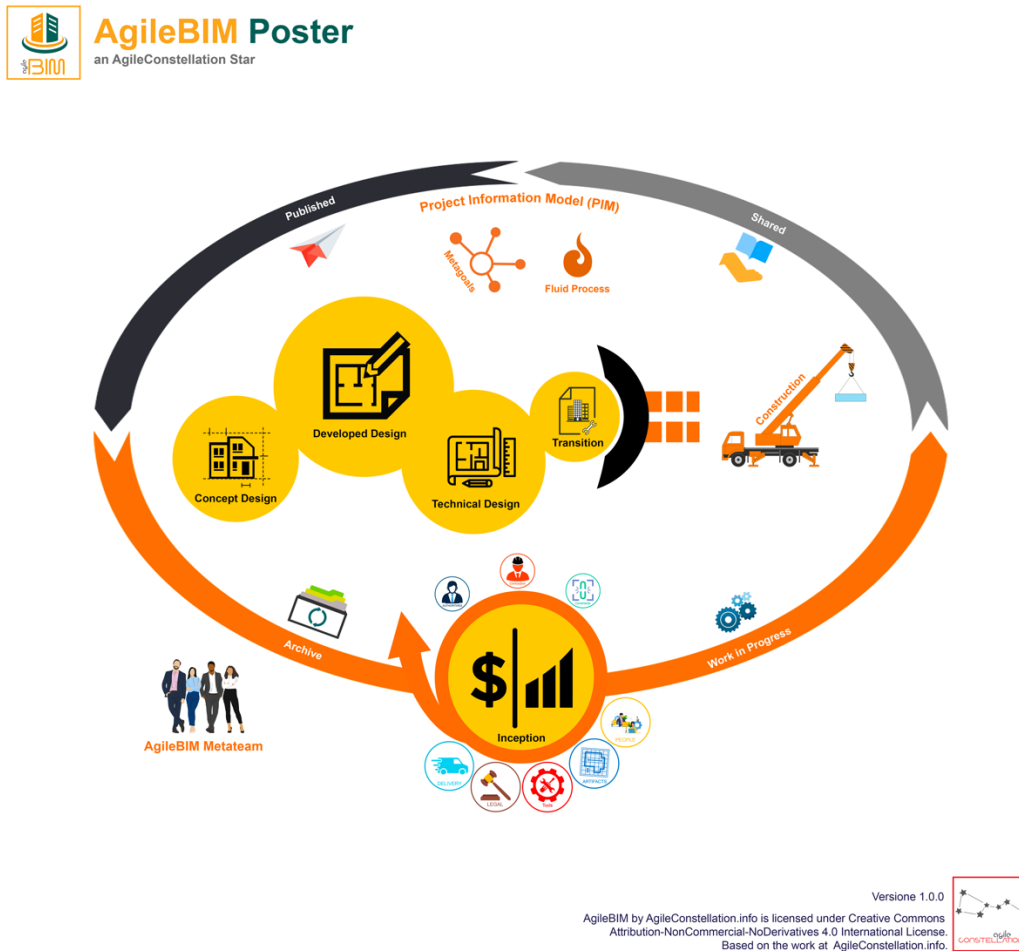


Figure 2 - AgileBIM Poster

You can see that the core toolkit operation focusses on, as we call them, **Metaphases**. These are reference buckets

The diagram highlights how the operational kernel of the toolkit focusses on what we call Metaphases, or rather the reference “container phases”. These allow grouping the progress of the work according to higher-order objectives.

AgileBIM provides **six reference Operational Metaphases: Inception, Preliminary (Concept Design), Definitive (Developed Design), Executive (Technical Design), Transition, Constructive (Construction)**. All Metaphases are supported operationally by the Common Data Environment



(CDE), which is required by BIM² regulation³. Thanks to the CDE it is possible to *collect, manage and exchange the model, non-graphic data and documentation, helping collaboration and reducing duplication and errors*.

The CDE guides the creation of the *Project Information Model (PIM)* and the *Asset Information Model (AIM)* through 4 specific stages or areas:

- **Work in Progress**, work area of a single document;
- **Shared**, sharing area for work artifacts, not necessarily in a final state;
- **Published Documentation**, deposit of finalized documents as approved by the client: the work is ready to be built;
- **Archive**, this area stores all design information relating to the built structure.

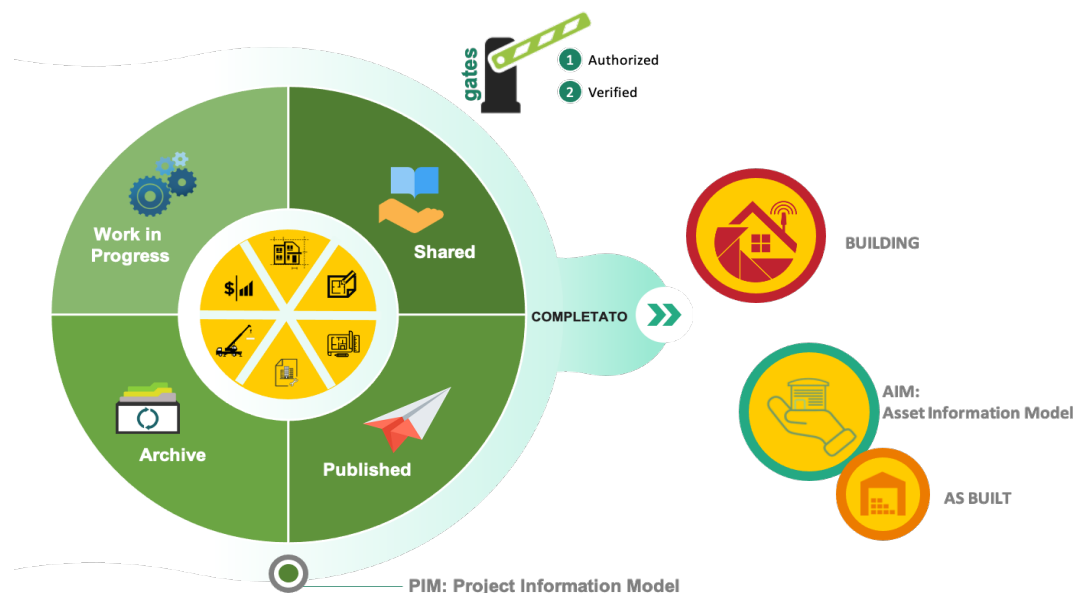


Figure 3 - AgileBIM & CDE

Each Metaphase has an accompanying operational **Metagoal**. This is a conceptual set of standard processes that help focus on the essential and widely applied elements in building work.

² See AgileBIM ABF paper at agilebim.info.

³ For the related AEC nomenclature see the last table at <https://www.ingenio-web.it/18530-fasi-informative-del-processo-edilizio-digitale---uni-11337>. The design levels are summarized according to various standards and recommends the best English translation. The international reference applied is the RIBA.



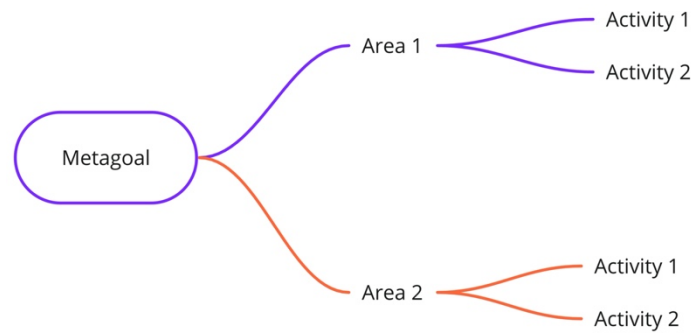


Figure 4 -Metagoal

2.4 Principles

The *principles* of AgileBIM, as anticipated, extend and specialize those of the *AgileConstellation Manifesto*, adapted to the specific domain:



Figure 5 - AgileBIM Principles

More specifically, we have:

- **Inspect & Adapt.** The philosophy of **Inspect & Adapt** is part of Agile methodologies' DNA, driving workgroups to really engage in processes and to customize their operating model according to what they experiences in the field.
- **Continuous Experimentation.** A **Continuous Experimentation** mindset leads the workgroup to experiment with new solutions, new tools and operating models in order to continuously improve and offer cutting-edge services.



- **Deliverable Ownership.** Each professional, member of the workgroup, is operationally responsible for his/her work, creating a specific engagement that allows him to carry out the task in the best contextual way.
- **Discussion & Collaboration.** The professionals involved in the work reserve enough time to **discuss and collaborate** with their colleagues, to realign and to share experiences, so these become a common heritage.
- **Actionable Metrics.** The workgroup is supported by actionable **metrics** which help self-improvement and verify if the actions taken generate an observable benefit.
- **Focus on Value Stream.** The focus is not exclusively on the single process (tactic), but mainly on the overall value to be generated (strategic). For this purpose, it is essential to consider the **value stream** when establishing operating methods, that is the overall workflow that generates the primary value.
- **Integrated Visual Management Environment.** Workgroups use integrated work platforms, supplemented by **Visual Management** tools that allow you to control the progress of the work, quickly and at any time.
- **Self-Organized and Multidisciplinary Teams.** The workgroups are self-organized and multidisciplinary; they independently choose the best way to carry out their work, rather than being forced to follow processes imposed by others, except for regulatory constraints. The multidisciplinary approach ensures that you have all the necessary skills to do the job with as little dependence as possible on others.

2.5 Practices

While principles inspire actions, *practices*, instead, suggest concrete actions to be implemented. Like the principles, they complement and specialize the practices of the *AgileConstellation Manifesto*:



Figure 6 - AgileBIM Practices



More specifically, we have:

- **Fluid Thinking.** This practice leads to approaching all the aspects characterizing the work action in a "fluid" way, that is, applying an active and flexible collaboration between the professionals involved. The goal is to remove the bureaucracy originated from process-oriented mindset, shifting the focus to real-time transparent communication.
- **Common Environments.** The processes take place in a physical and digital shared environment, favouring integrated platforms that support experimenting new solutions when required or convenient.
- **Extreme Building.** When one consider the physical realization of the work as a moment of final validation, and not as a passive acceptance of what was hypothesized and defined during the design phase. In this way, it will be possible to act faster and more smoothly on the unforeseen events that will inevitably arise during the actual construction.

In addition, the *Fast Prototyping* practice inherited from AgileConstellation is the basis of the Inception Metaphase, supporting *the validation of the sustainability of the work and stimulating concrete feedback on what is being prepared.*



Figure 7 - Fast Prototyping for AgileBIM



Compared to **the** basic practice⁴, AgileBIM adds *three new reference aspects* (bubbles):

- **Authorities**, that is the bodies and authorities in charge for authorizations on which one depends for the realization of the work;
- **Contractor**, professionals, specialists and third-party companies involved in the project;
- **Constraints**, the specific constraints that the working group have to take into account explicitly.

2.6 AgileBIM Metateam

AgileBIM introduces the idea of **Metateam**: a multidisciplinary work group able to follow the whole realization cycle of the work, from conception to construction. We say *Metateam* because the team composition is extremely dynamic, save for a core set of people, common to all the projects.

In AgileBIM, the Metateam specializes in relation to the specific task to be pursued, in particular there are:

- **Design Metateam**, focus on the first four metaphases, from the Inception to the Executive;
- **Construction Metateam**, has the sole responsibility of the Construction metaphase.

The hand-over processes from the Design Metateam to the Construction Metateam takes place in the *Transition metaphase*.

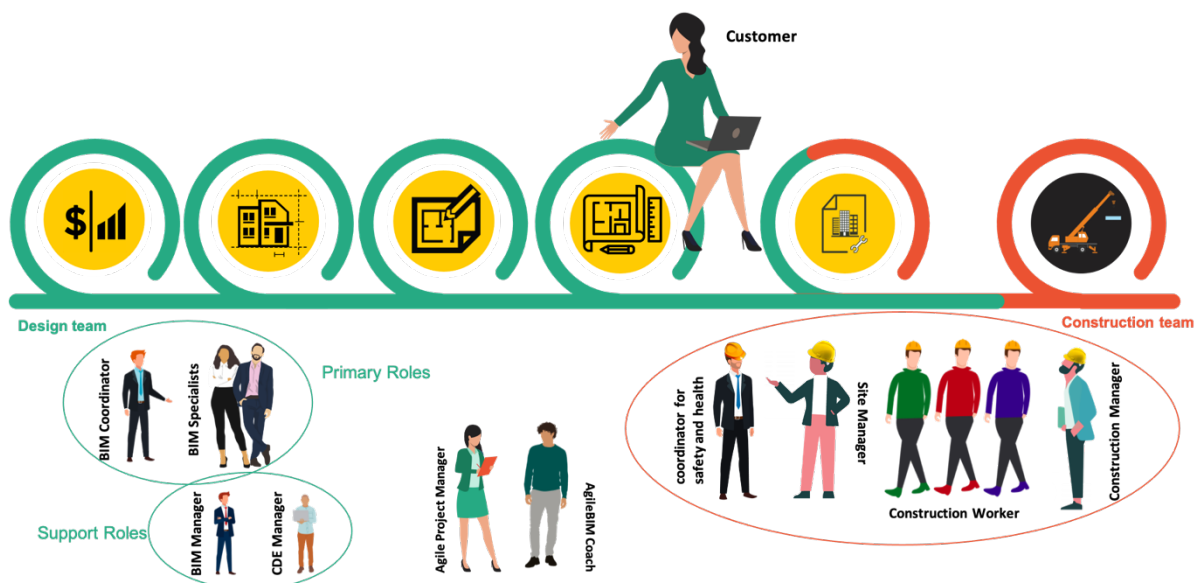


Figure 8 - AgileBIM Metateam

⁴ AgileConstellation Manifesto – agileconstellation.org.



The Agile Project Manager (APM) is responsible for keeping a holistic view of the project, supporting the different Metateams and the diverse professionals in each specific metaphase. The *AgileBIM Coach* help the entire Metateam in developing an Agile mindset. His/her focus is the practical adoption of AgileBIM and to stimulate continuous experimentation suggesting new improvement options, both from an approach and product perspective.

2.7 AgileBIM Fluid Process

The Metateam organizes its work based on the defined **Fluid Process**, which finds its basis in the hybrid scrumban approach and takes form in the following flow:

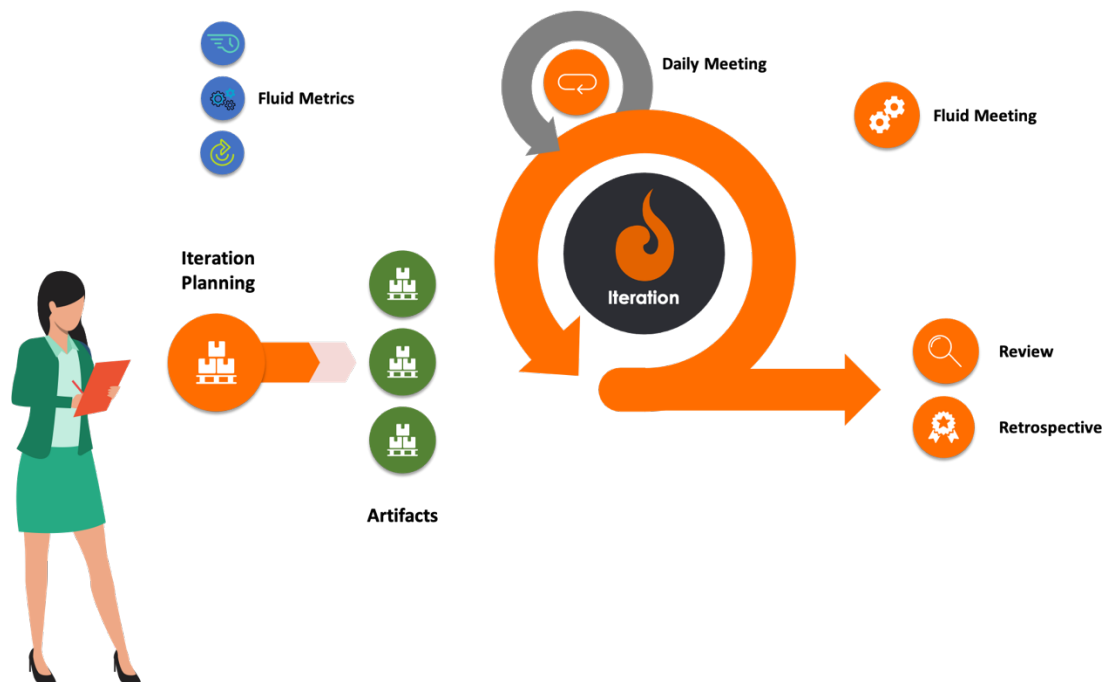


Figure 9 - Fluid Process

Shortly, the main aspects of the Fluid Process focus on:

- **Managing and Visualizing the Flow**, to closely monitor what is happening in the work group;
- **Limit the Work in Progress**, size the number of processes on the base of Metateam's actual operational capabilities;
- **Work in Short Cycles**, which allow you to evaluate work progression and synergy improvements in the Metateam;
- **Generate Multilevel Feedback**, to stimulate moments of discussion, anticipating them as much as possible to reduce the impact of any impediments and problems;



- **Continuously Improving and Experimenting**, to develop a shared vision on the objectives and how to achieve them, chosen by consensus, helping the metateam to continuously improve its Way of Working. All driven by the continuous experimentation of new ways of collaborating and innovating in one's work.

The Fluid Process, thanks to specific declinations of practices and tools, adapts to both the design and construction Metateams.



3 Final Remarks

As stated, this paper aims to present a general overview of AgileBIM, without going in too much details, highlighting its key aspects in relation to the various related areas.

If you are interested in further information and practical usage, contact us at bim@agileconstellation.info or through our social channels that you find listed on the official website.

Thank you for your attention.





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