

FAIR Maturity Matrix version 1.0

FAIR implementation project - Phase 3
2024-04-14

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Topics

- Why a FAIR organisational maturity model?
- Who is the FAIR Maturity Matrix for? And who created it?
- FAIR maturity matrix: Dimensions
- FAIR maturity matrix: Levels
- Digging deeper: content
- How to access, know more, get involved ?

Why a FAIR organisational maturity model?

- Organizations are at different stages in implementing FAIR data principles
- FAIR data metrics exist, but are not sufficient
- Benchmarking across organizations is very hard.
- Organizations spend time clarifying situations, defining possible actions for desired outcomes, and road mapping

→ How to assess, qualify, measure and manage progress towards FAIR implementation?



The FAIR Maturity Matrix V1.0

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Version: 1.0 Date: 2024-03

Pistoia Alliance

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| Metaphor |  |  |  |  |  |  |
|----------|---|---|---|---|---|---|
| | Junkyard | Flea market | Street Market | Local Markets | Hyper Market | Digital Online Store |
| | 0 Life is unFAIR | 1 Started the FAIR journey | 2 Getting FAIR | 3 Pretty FAIR | 4 Really FAIR | 5 FAIRest of them all |

<http://fairmm.pistoiaalliance.org/>

FAIR Maturity Matrix V1.0: contributors and sponsors

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From February 2023 to April 2024, over 20 experts contributed to the FAIR maturity matrix v1.0 documents.

| Coordination | Affiliation |
|-----------------|------------------|
| Giovanni Nisato | Pistoia Alliance |



This work was done in the FAIR implementation project, Best Practice Working Group.

Who is the FAIR Maturity Matrix for?



Leadership
implementing FAIR
data principles

Communities of
FAIR practitioners

- Life-science companies
- Contract Research organisations
- Technology and information providers
- Consulting firms
- Academic research organisations
- Regulatory authorities

FAIR maturity matrix: intended use

- Provide a frame for actionable conversations
- Descriptive (self-)assessment tool
- Align stakeholders (e.g. reach similar evaluation of the current state of an organisation)
- Provide possible directions for improvement
- Not prescriptive: each organization and their journey are unique
- “More FAIR” is not a goal *per se*: alignment with business goals

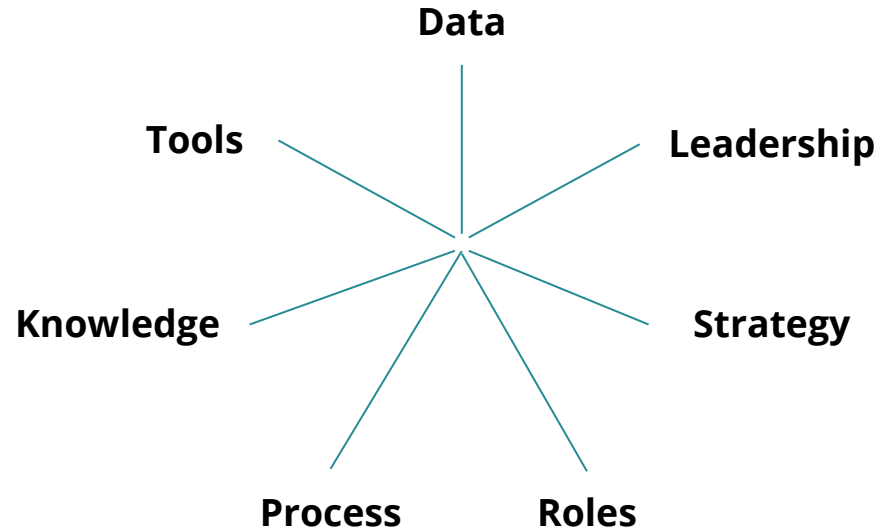


What can do now ?
FAIR business value ?



What would we
like to be able to
do next ?

FAIR maturity matrix: Dimensions



FAIR maturity matrix: Dimensions

- To articulate the maturity model, 7 dimensions were identified.
- The dimensions are not hierarchical
- Each dimension provides a complementary perspective on FAIR implementation journeys

| Dimension | Key notions |
|--|---|
| <i>FAIR data</i> | Data, metadata, data products |
| <i>FAIR leadership</i> | Types of leadership necessary for FAIR implementation |
| <i>FAIR strategy</i> | Approaches to implement FAIR data principles, use and business cases |
| <i>FAIR roles</i> | What kind of (human) roles are necessary to implement FAIR |
| <i>Processes for FAIR</i> | Which processes must we explicitly implement |
| <i>FAIR knowledge</i> | What needs to be known for FAIR implementation |
| <i>FAIR tools and infrastructures</i> | From persistent identifiers to controlled vocabularies to semantic models |

FAIR maturity matrix: levels - data markets analogies *



0 Life is unFAIR

1 Started the FAIR journey

2 Getting FAIR

3 Pretty FAIR

4 Really FAIR

5 FAIRest of them all

* Thanks to AstraZeneca

FAIR maturity matrix: Levels

- There are 6 maturity levels, L0-L5, in alignment with FAIR *data* frameworks.
- Capabilities tend to be cumulative (Level N encompasses Level N-1).
- Level 4 reflects current *best practice*
- Level 5 is aspirational

| Level | Nickname | Marketplace metaphor | Key Features |
|-------|-----------------------------|-----------------------------|---|
| 0 | "life is unFAIR" | "Junkyard" | Lack of awareness, possibly acquiring awareness. |
| 1 | "Started the FAIR journey." | "Flea market" | Awareness started, and the first pilots for implementation. |
| 2 | "Getting FAIR" | "Street Market" | Pilots for implementation are in place |
| 3 | "Pretty FAIR" | "Specialized Local Markets" | Transition to good and best practice |
| 4 | "Really FAIR " | "Hyper Market" | Operational, best practice known at the time of writing. Internal organisational focus. Emerging cross-organisation |
| 5 | "FAIRest of them all" | "Digital Online Store" | Aspirational. conceivable but still needs to be realised. Cross-organisation standards and Interoperability |

FAIR Maturity Matrix

- Each column and row point to the respective definitions
- Each cell points to a narrative text describing the related characteristics
- Each cell can be viewed in the context of each level (column) and also of its evolution (row)

| | 0 Life is unFAIR | 1 Started the FAIR journey | 2 Getting FAIR | 3 Pretty FAIR | 4 Really FAIR | 5 FAIRest of them all |
|-----------------|------------------|----------------------------|----------------|---------------|---------------|-----------------------|
| FAIR data | data 0 | data 1 | data 2 | data 3 | data 4 | data 5 |
| FAIR leadership | leadership 0 | leadership 1 | leadership 2 | leadership 3 | leadership 4 | leadership 5 |
| FAIR strategy | strategy 0 | strategy 1 | strategy 2 | strategy 3 | strategy 4 | strategy 5 |
| FAIR roles | roles 0 | roles 1 | roles 2 | roles 3 | roles 4 | roles 5 |
| FAIR processes | process 0 | process 1 | process 2 | process 3 | process 4 | process 5 |
| FAIR knowledge | knowledge 0 | knowledge 1 | knowledge 2 | knowledge 3 | knowledge 4 | knowledge 5 |
| FAIR tools | tools 0 | tools 1 | tools 2 | tools 3 | tools 4 | tools 5 |

<http://fairmm.pistoiaalliance.org/>

FAIR maturity matrix document: contents

- A summary of features, capabilities is provided for each level
- A summary of all the levels provides a first orientation

Level 2: "Getting FAIR"

| Level | Nickname | Marketplace metaphor | Features | Picture |
|-------|----------------|----------------------|---|---|
| 2 | "Getting FAIR" | "Street Market" | FAIR Pilots for implementation are in place |  |

Table - Level 2: "Getting FAIR"

Level 2: "Getting FAIR" summary

The organization initiates data conforming processes to local models in a shared data platform and progresses to system-level controls. These processes include Tools for metadata, controlled vocabularies, and persistent identifiers. Data is more "findable" thanks to unique identifiers. Emerging metadata and controlled vocabularies make accessing data with less specific knowledge requirements possible. Leadership awareness grows, initiating initial FAIR projects and forming champions within the company. Vision, strategy, and role development follow, integrating FAIR as a key element in the broader data strategy. Designated roles emerge, fostering prototypes and showcasing value. Formal training

FAIR maturity matrix document: digging deeper

Each level has description of general:

- Capabilities
- Business value
- Questions to ask

A description of the level s for each dimension

- Level 2 - FAIR data
- Level 2 - FAIR leadership
- Level 2 - FAIR strategy
- Level 2 - FAIR roles
- Level 2 - FAIR processes
- Level 2 - FAIR knowledge
- Level 2 - FAIR tools and infrastructures



Level 2 "Getting FAIR"



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[Level 2 - Capabilities](#)

[Level 2 - Business value](#)

[Level 2 - Questions to ask](#)

[Level 2 - FAIR data](#)

[Level 2 - FAIR leadership](#)

[Level 2 - FAIR strategy](#)

[Level 2 - FAIR roles](#)

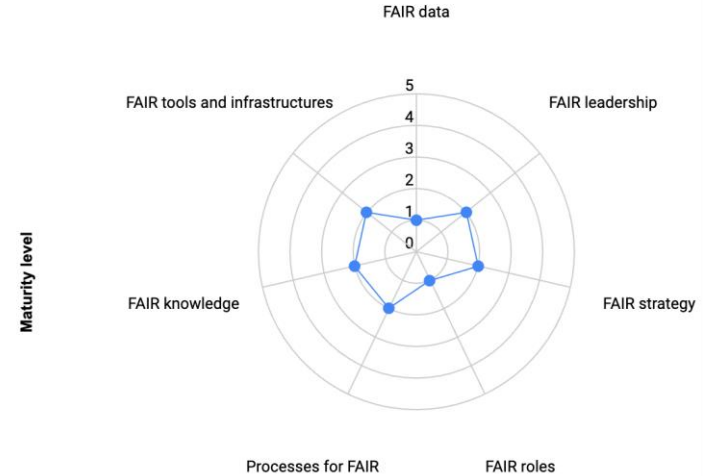
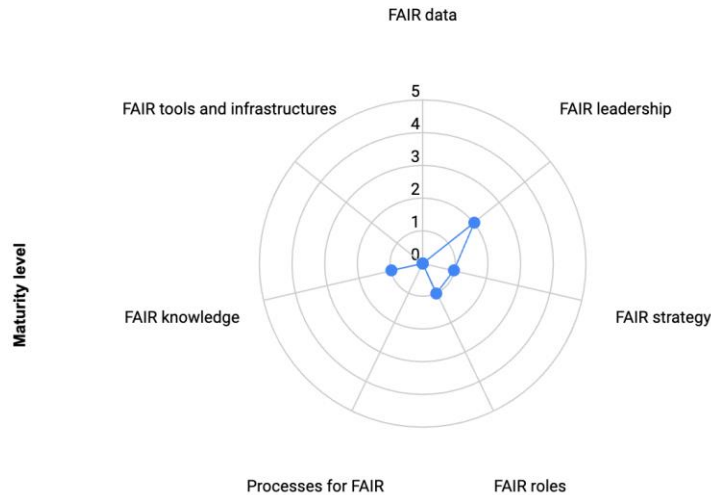
[Level 2 - FAIR processes](#)

[Level 2 - FAIR knowledge](#)

[Level 2 - FAIR tools and infrastructures](#)

| Level | Nickname | Marketplace metaphor | Features | Picture |
|-------|----------------|----------------------|---|---|
| 2 | "Getting FAIR" | "Street Market" | Pilots for FAIR implementation are in place |  |

FAIR maturity matrix: real-life assessments



- “Spider” diagram created experts using the FAIR matrix framework
- Example of journey stages: not all dimensions are in-sync
- More add-ons to be developed for Pistoia members

FAIR maturity matrix: access

fairmm.pistoiaalliance.org



| | | | | | |
|---|--|--|---|---|---|
|  Junkyard |  Flea market |  Street Market |  Local Markets |  Hyper Market |  Digital Online Store |
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- Feel free to use it: [CC BY 4.0](https://creativecommons.org/licenses/by/4.0/)
- What works for you? How would you improve the model?
- Feedback: fair-maturity-matrix@pistoiaalliance.org

What's next: Pistoia FAIR Community of Experts (CoE)

- The FAIR Community of Experts is looking for sponsors and participants
- Get involved in FAIR CoE to co-create the next version of the FAIR Maturity Matrix e.g.:
 - Maturity visualisation tools
 - (self)diagnosis questionnaires
 - actionable paths to FAIR improvements
 - connection to trainings
 - connect to business value
 - etc.

To get involved contact :
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Key Information
 Contact details
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 Project website
<https://www.pistoiaalliance.org/projects/current-projects/fair-implementation/>
 Key project information resources

Sponsors/ Steering

Contributors

ORCID

Thanks to our funders who are making this project possible, without their help this community would not exist or collaborate. Thanks for all the in-kind contributors for their time and expertise.

Resources

Since its inception in 2018, the FAIR implementation project created among others:

- [pistoiaalliance.org](https://www.pistoiaalliance.org/): resources and case studies of FAIR in life-science
- [fair4ch.pistoiaalliance.org](https://www.pistoiaalliance.org/): a document mapping FAIR in the clinical space
- [fairm.pistoiaalliance.org](https://www.pistoiaalliance.org/): an organizational maturity model for FAIR

FAIR implementation

To create value and guide strategic decision-making in Pharma and Life Science companies, data needs to be Findable, Accessible, Interoperable and Reusable (FAIR) by humans and machines. The objective of the Pistoia Alliance FAIR implementation project, from its inception in 2019 to today, is to enable precompetitive instruments for the implementation of FAIR data principles.

Working Groups Phase 3



| | Tools | Business Value | Best Practices | Thought Leadership |
|----------|--|--|---|---|
| P | Lack of interoperability. High costs. Lack of FAIR standards. Multiplication of CV and ontologies. | Who benefits from FAIR, who pays and for what? How to maintain "Common good" FAIR resources? | How to orient organisations during their complex FAIR data implementation journeys? | Implementations of FAIR data principles are understood differently across organisations. "Take FAIR" emerges. |
| O | | | | |
| B | | | | |
| E | | | | |
| M | Pistoia Alliance Pharma General Ontology | Defining personas: Towards an "ROI" of FAIR implementation | FAIR implementation Organizational Maturity Model | Dissemination of resources created in the project |
| S | | | | |
| C | | | | |
| P | | | | |
| E | | | | |

Selected Outcomes Working groups

| Tools | Business Value | Best Practices | Thought Leadership |
|--|---|--|--|
| Started survey for key concepts in Pharma top 40 | Identified a FAIR user "persona" and draft of value proposition canvas | Co-creation of a first maturity assessment model of FAIR data principle implementation at the organizational level. | In new use cases FAIR4BioSci FAIR4BioSci 2.0 |
| Structured key concepts with enterprise-level ontology (EOT) | Initial feasibility of creating simple models to address a company question | 10 maturity levels, LCL, 10 algorithms with FAIR data frameworks. We identified 7 dimensions to describe FAIR implementation journeys. | FAIR Webinars: • Best data model • New models • Sales tool, Bioinformatics |
| Define Pharma General ontology project charter | W10 methodology for Pharma projects ROI, towards FAIR ROI model | | Presentations at: BioRxiv 2023 BioWorld EU 2023 |
| Project kick off in April 2024 | | | FAIR at Pistoia Boston 2024 Publication in Data, 2024 2024 9 hours doi.org/10.3390/data4040055 |

Getting involved

FAIR continues as a "Community of Experts" in 2024 you are interested in sponsoring the activity (financially or in kind please join

Pistoia Alliance: Lowering barriers to R&D innovation

The Pistoia Alliance is a global, not-for-profit alliance of life science companies, vendors, institutions, and academic groups that work together to lower barriers to innovation in R&D.

Our members collaborate as equals on open projects that generate significant value for the worldwide life science community.

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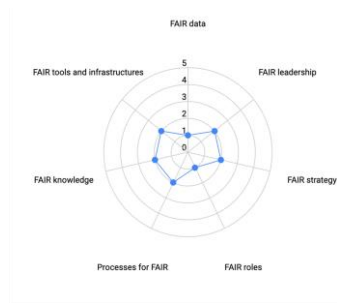
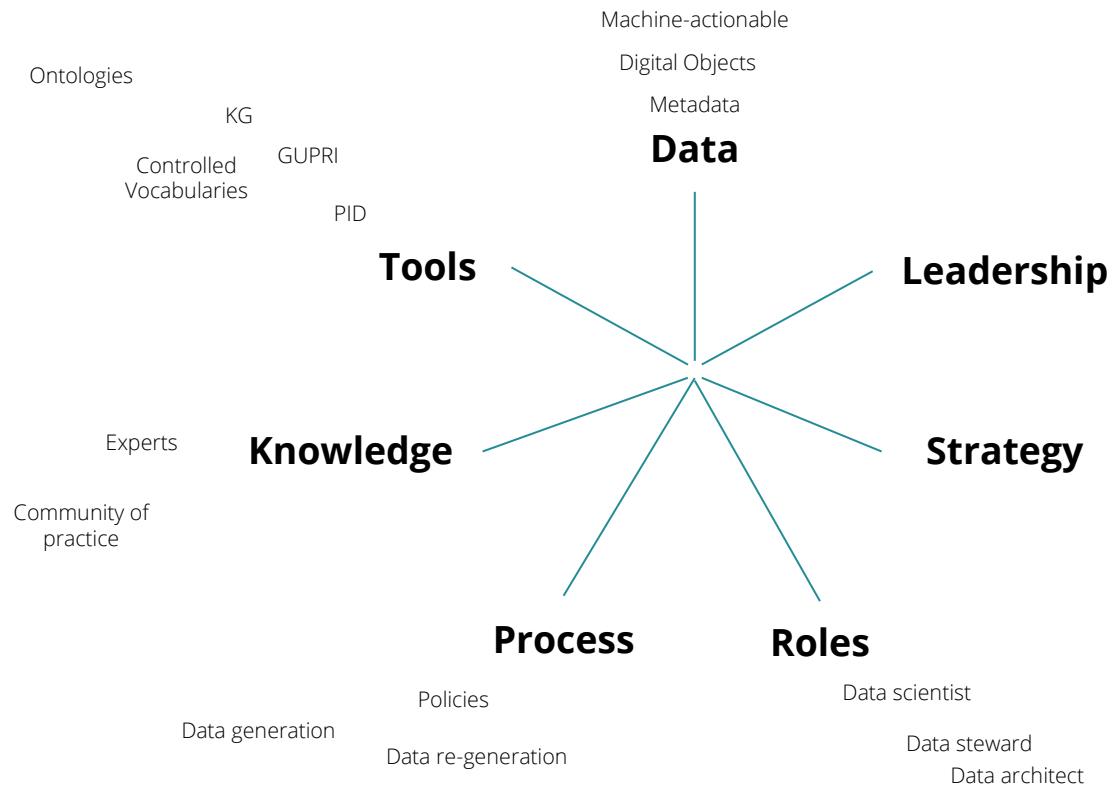
Thank you for your attention!

Questions?

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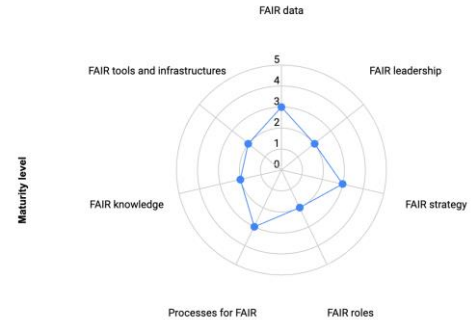
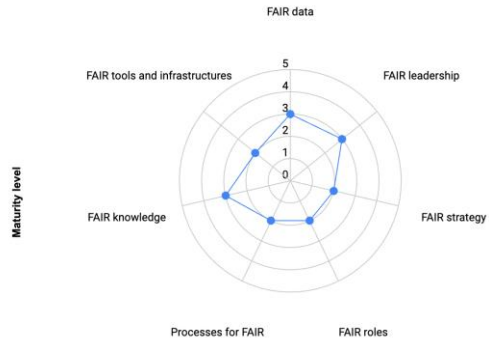
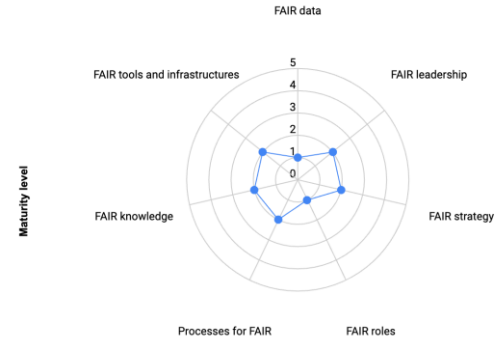
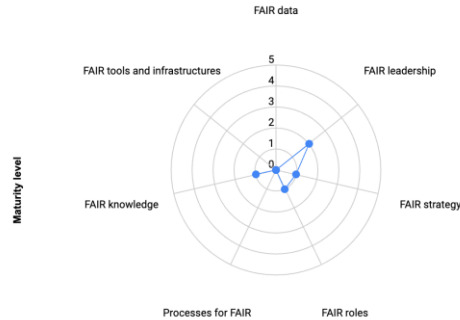
FAIR maturity matrix: Dimensions



Finance Time Commitment
 Decisions People
 now
 next step
 how



FAIR maturity matrix: real-life assessments



Process : from ideation to delivery

HOW AN IDEA BECOMES A PROJECT AT THE PISTOIA ALLIANCE

Project flow



Ideation



Communities of interest (CoI)

Validation discussions
Business case exploration



Project starts to take shape

Clear problem statement
Business case written



Member funded project



Member funded Community of Experts (CoE)

PROMOTING GLOBAL COLLABORATION FOR LIFE SCIENCE AND HEALTHCARE RESEARCH & DEVELOPMENT

Member fees

Sponsor fees



Pistoia FAIR public resources



<https://www.pistoiaalliance.org/projects/current-projects/fair-implementation/>



<https://fairtoolkit.pistoiaalliance.org/>



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