

A guide to open source earth observation mission science

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Open Data
Products

Open Source
Software
Projects

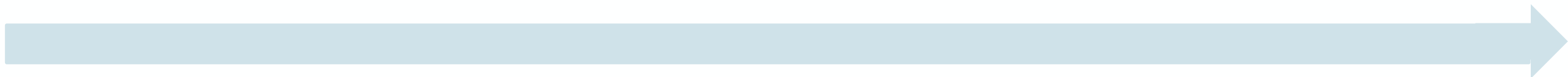


Open Data
Products





Open Source Algorithms



Open Source Software Projects





Open Source Algorithms

Open
Reproducible
Supporting documentation



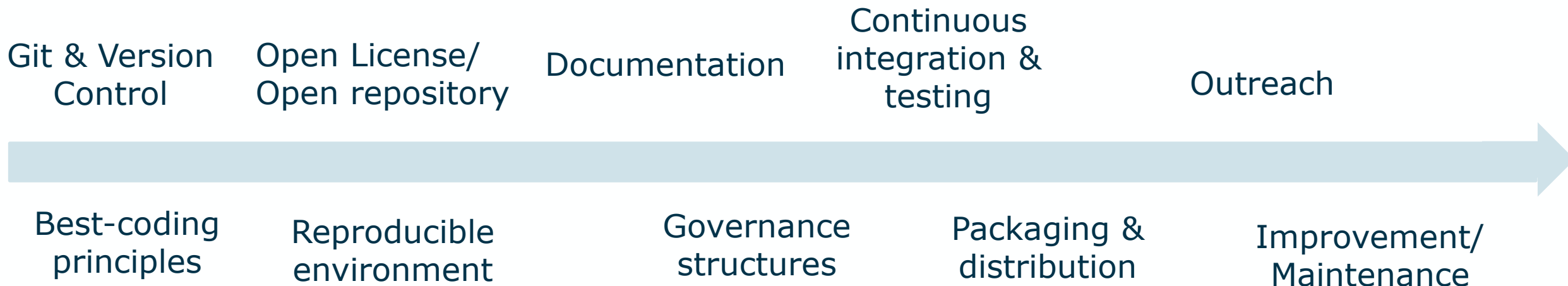
Open to collaboration
Ongoing maintenance & development
Community guidelines

Open Source Software Projects





Open Source Algorithms



Open Source Software Projects



BioPAL

BIOMASS Product Algorithm Laboratory



- = Open Source Software Project
- = official BIOMASS algorithms  python™
- = first time that official algorithms are made publicly accessible

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biopal.org



github.com/BioPAL



Banda, F.; Giudici, D.; Le Toan, T.; Mariotti d'Alessandro, M.; Papathanassiou, K.; Quegan, S.; Riembauer, G.; Scipal, K.; Soja, M.; Tebaldini, S.; Ulander, L.; Villard, L. "The BIOMASS Level 2 Prototype Processor: Design and Experimental Results of Above-Ground Biomass Estimation" Remote Sensing, 2020, 12, 985. doi.org/10.3390/rs12060985



Collaborative space to improve BIOMASS operational algorithms





Collaborative space to improve BIOMASS operational algorithms



Bridge between scientific discovery and BIOMASS operational algorithms



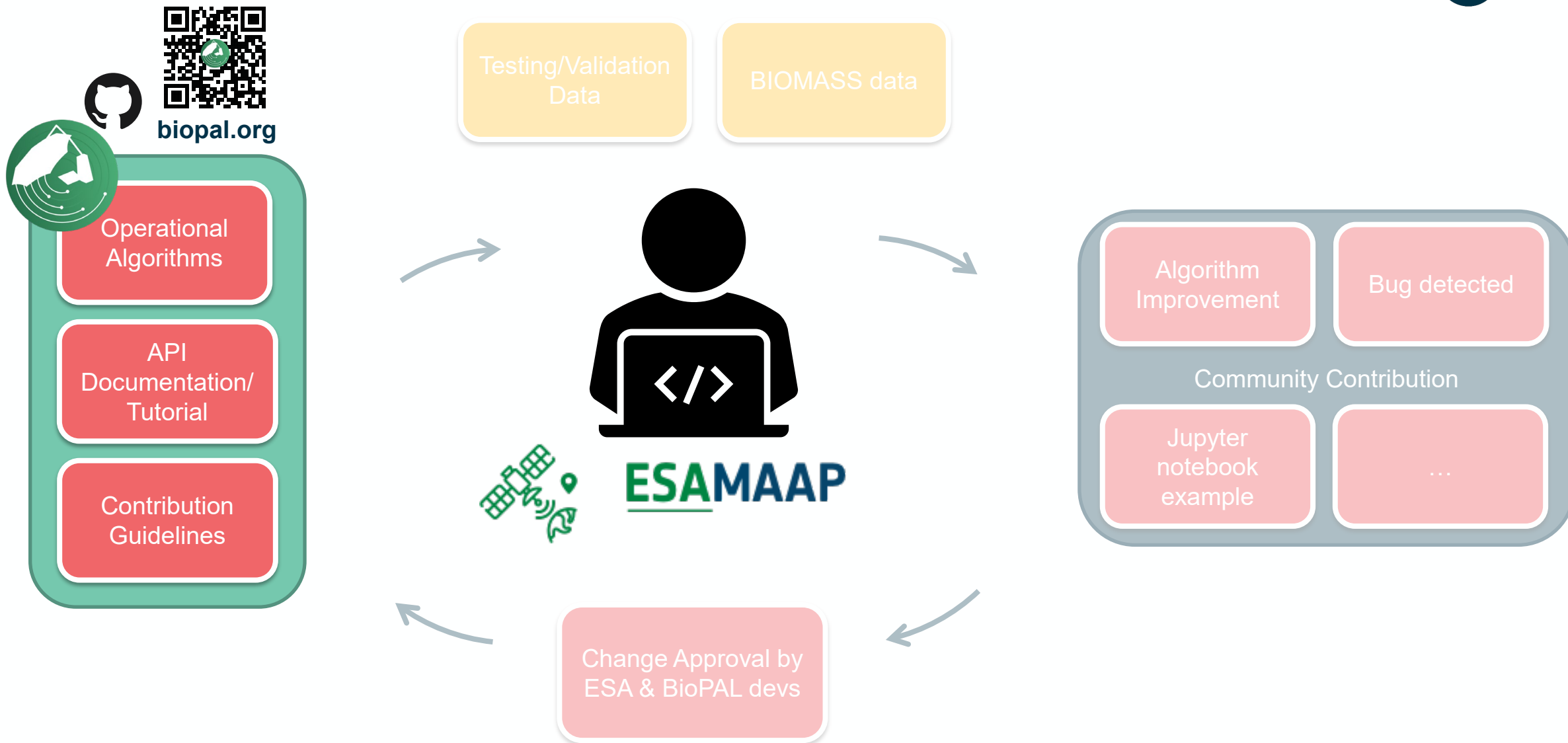
Collaborative space to improve BIOMASS operational algorithms



Bridge between scientific discovery and BIOMASS operational algorithms



Promote Best Practices for open scientific code development





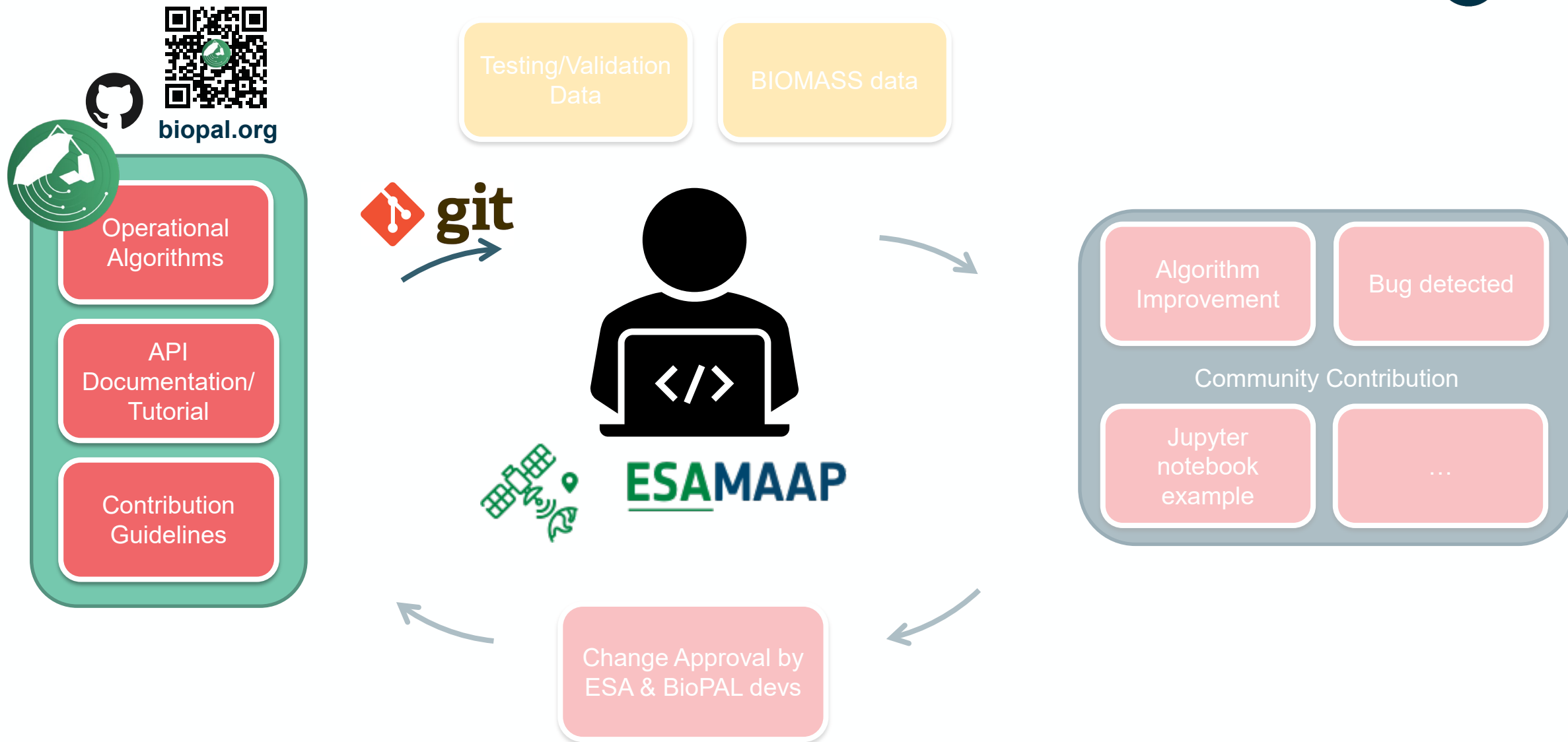
Welcome to BioPAL - The BIOMASS Product Algorithm Laboratory



Learn More

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an ESA sponsored project





Welcome to BioPAL - The BIOMASS Product Algorithm Laboratory

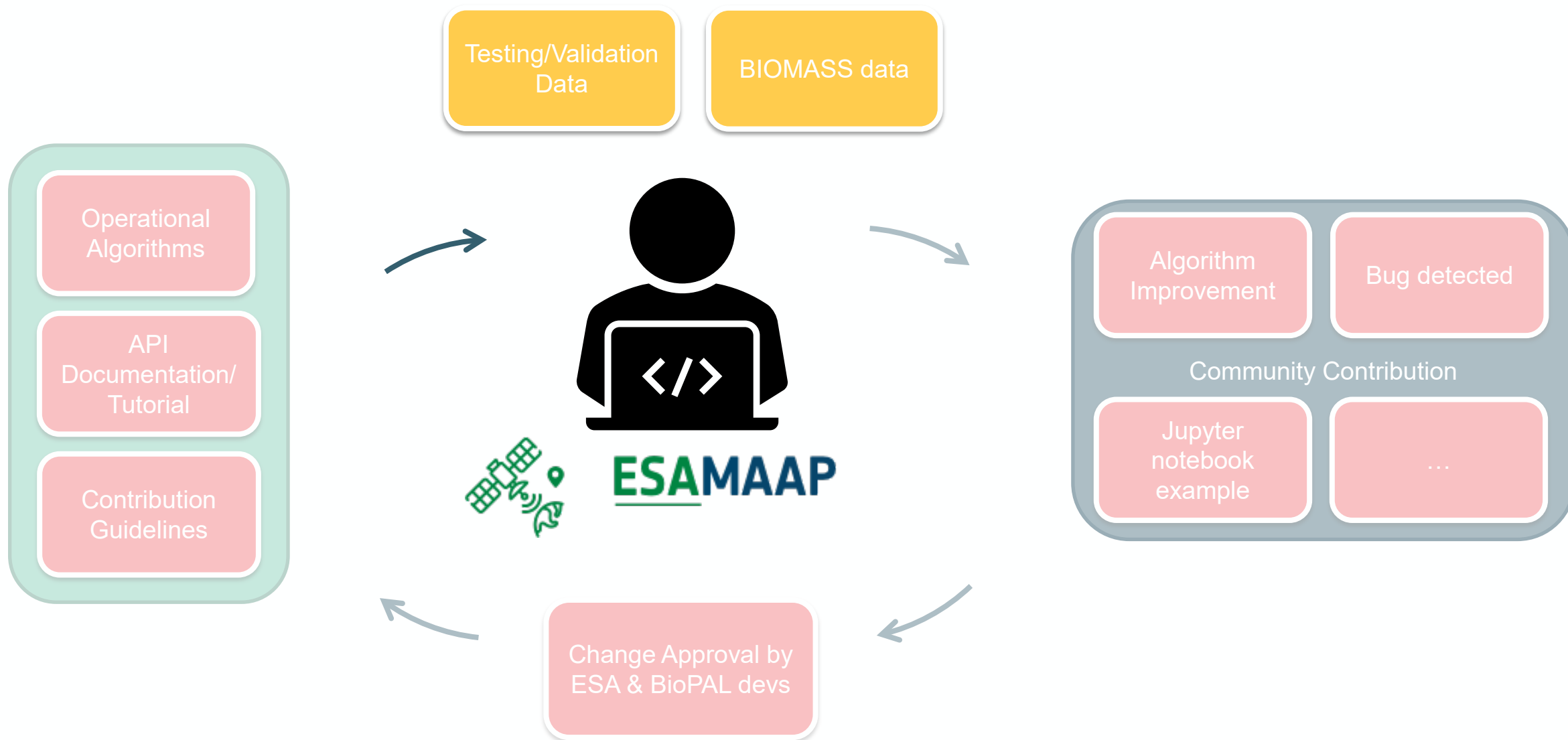


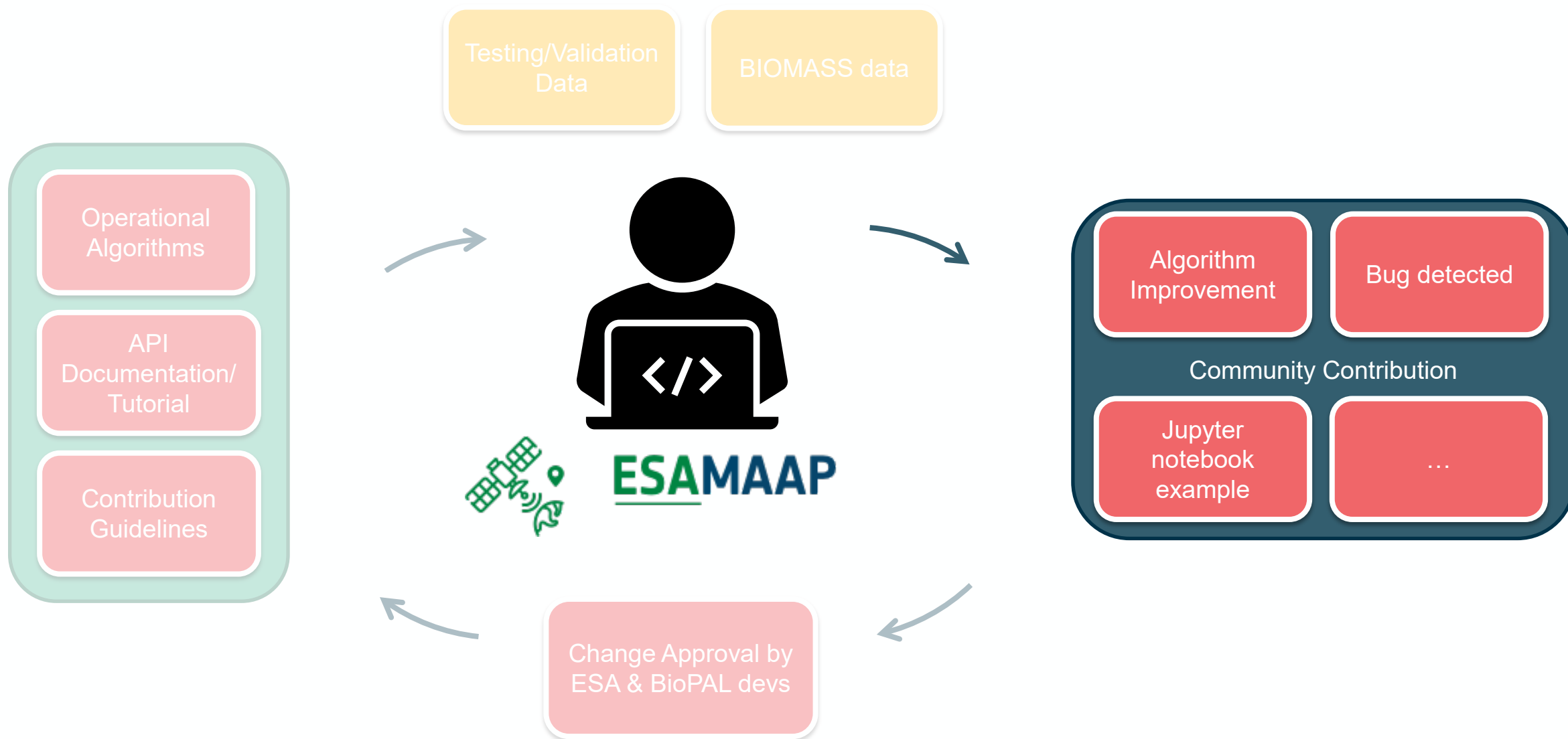
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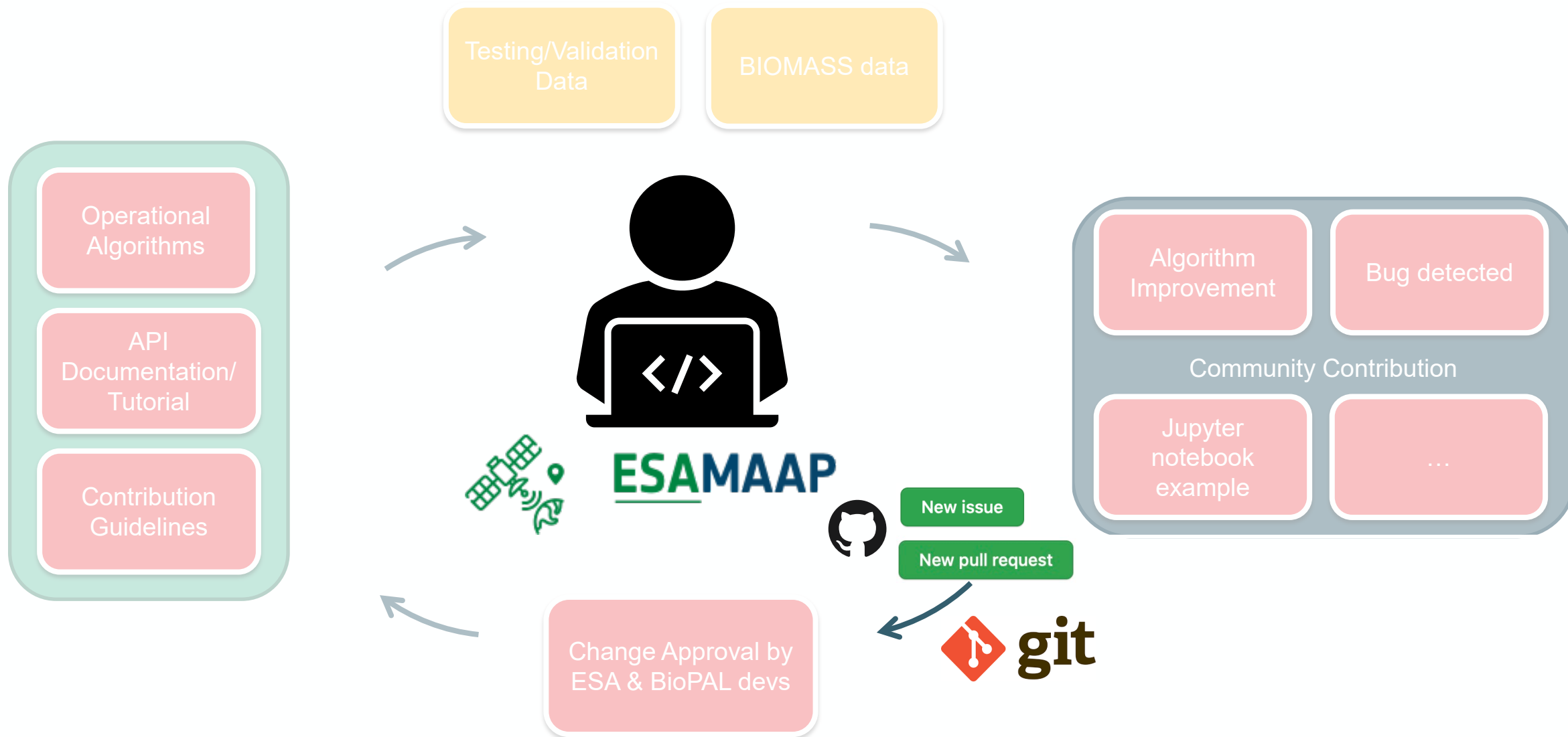
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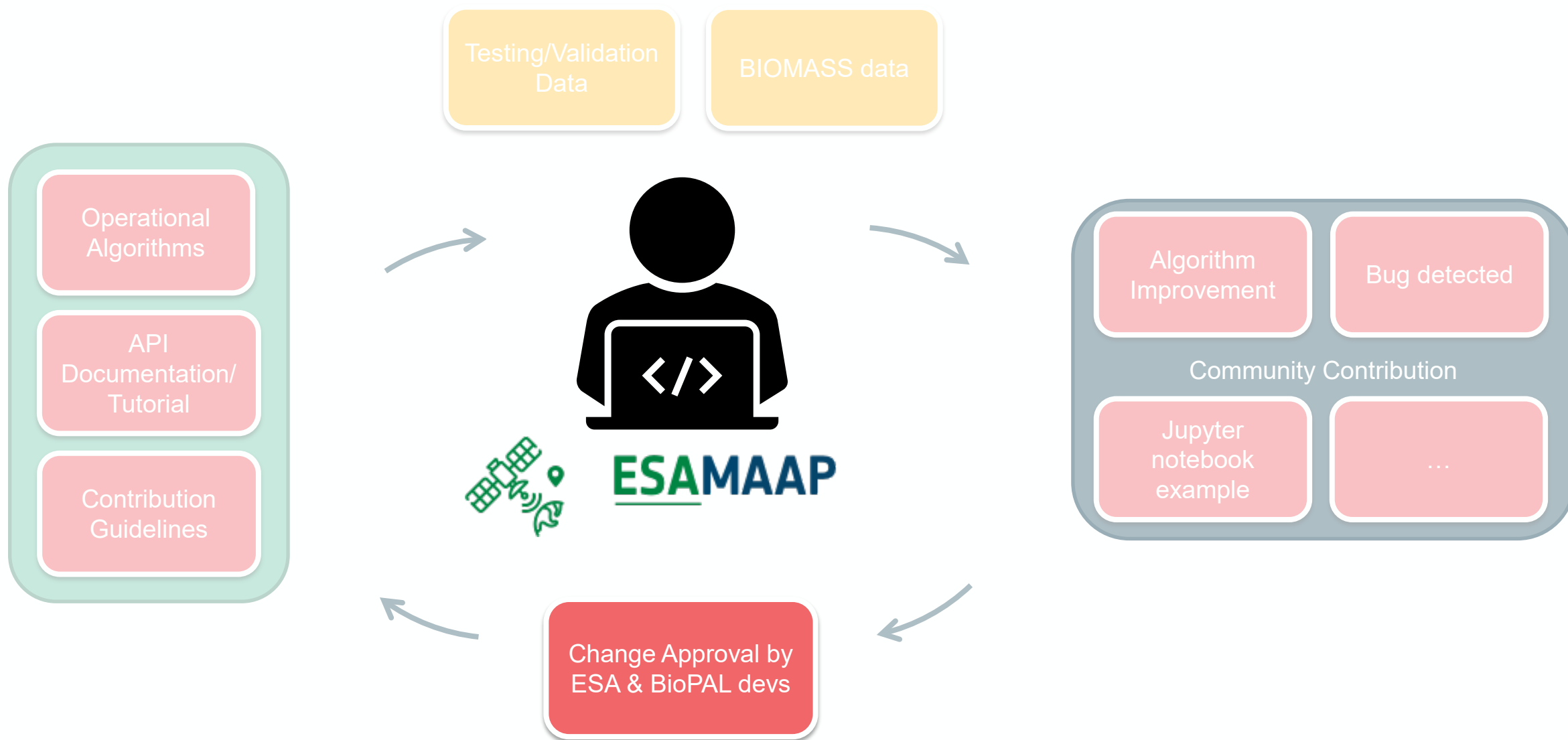
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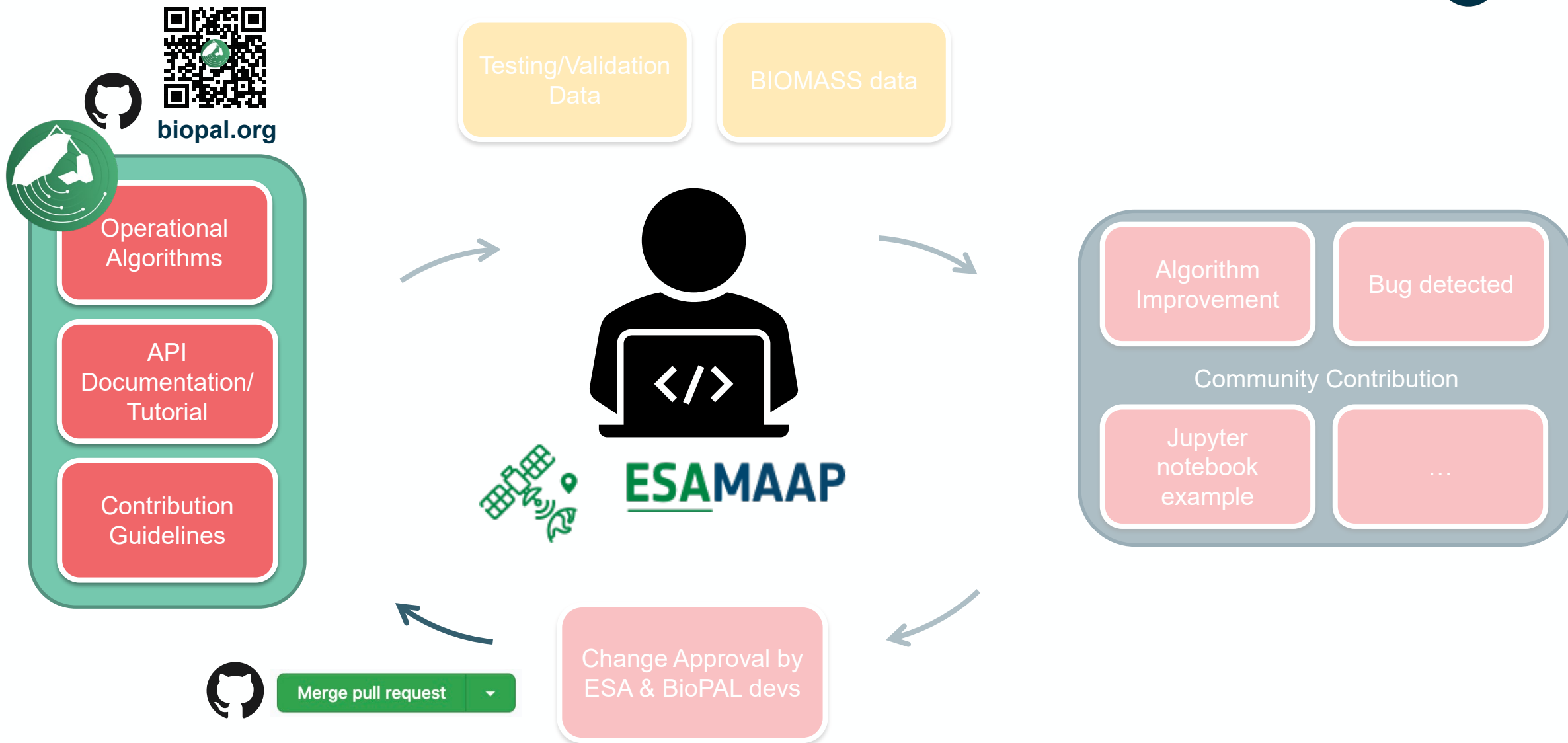








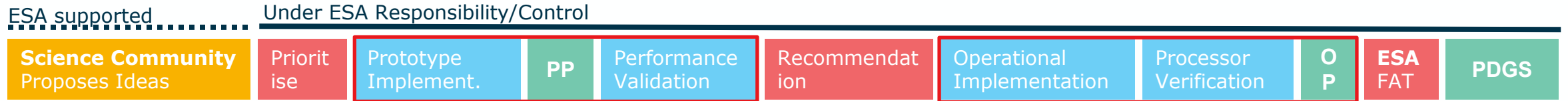




Workflow for a major level-2 processor update



Traditional Approach

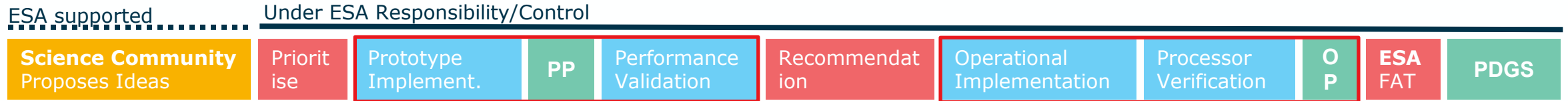


QWD (Quality Working Group)
DISC (Data Innovation and Science Cluster)



Workflow for a major level-2 processor update

Traditional Approach



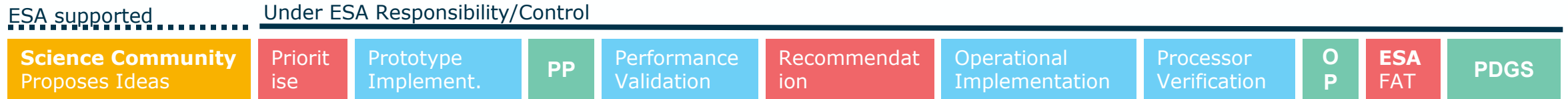
- PP not open to everyone. OP is not open. Single Point Failure Risk.
- PP and OP are different and fully independent
- If an idea does not pass the initial evaluation by the QWG it will never be tested in the processor environment.

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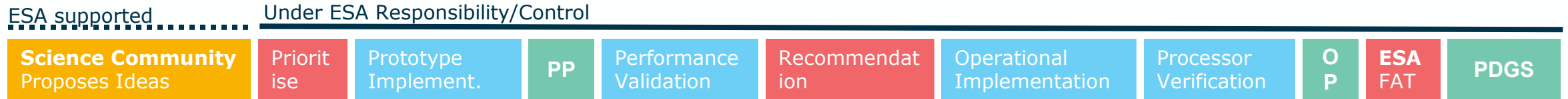
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Open Source Approach



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QWG (Quality Working Group)

DISC (Data Innovation and Science Cluster)

Open Source Approach



- Code is accessible to everyone.
- Enabling seamless integration of changes from Developer Branches to Master Branch
- Fosters direct collaboration between scientists and scientists and software engineers.
- Supports cross validation of different models (Intercomparison Experiments)

Lessons learned on open source development

- Open Source Software is **not only about the License!**
- Scientists have to familiarize themselves with **git**
- Benefits of establishing **common guidelines** and **best practices** as early as possible for teamwork
- Value of **transparency** and **centralized software review**
- Value of **different backgrounds and diversity** within our community for peer-review



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Thank you!

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