Famulus – from the WWW to the WWK

A short account for institutions of science and cultural heritage

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Abstract

Famulus is AI that shows its grounds: every answer is the conclusion of an argument from addressed evidence, and what the evidence does not carry is marked as not validated. From this way of working follows a perspective that reaches beyond the single project: a worldwide knowledge network in which examined holdings are connected by references to their evidence, as the World Wide Web connected documents. We call it WWK, World-Wide Knowledge. This short account says what of it runs today, what is still to come, and what an institution can contribute.

1 The problem

Language models answer fluently, but not with justification. Their statements come from trained weights, their citations can be invented, and a retrieval step supplies similar passages but no justification. For science, and for institutions that are responsible for holdings, that is too little: a statement without grounds open to view can be neither examined nor cited.

2 What Famulus does differently

Famulus keeps the substance of research outside the model. Every document, page, sentence and figure of an opened holding has a permanent address (`fr:`). An answer is the conclusion of an argument from such evidence; its grounds are open to view, and every sentence of a text is checked for whether it is factually validated. *Not validated* does not mean *false*: missing evidence justifies nothing and refutes nothing. Validation follows the standards of best explanation and justification of the discipline concerned; Famulus sets no truth standard of its own. Judgement stays with the expert.

3 The perspective: WWK – World-Wide Knowledge

The World Wide Web connected documents: every page was given an address, and every page could refer to every other. Famulus carries this thought over from documents to knowledge.

- **Everything citable has an address.** The sentence of a source, the figure, the register entry, the object of a domain expert, the published issue, and the notebook in which a result is produced.
- **A reference carries the justification with it.** A notebook that refers to evidence lays open what its statements rest on, and becomes a holding itself, to which others refer. What is connected is not documents but statements with their justifications.
- **Fallible and open to criticism.** The holdings hold not because an authority declares them true, but as far as their grounds lie open and stand up to examination by the scientific community. When a piece of evidence falls, it is named which statements lose their justification. An objection that convinces stands in the next version.
- **Without a centre.** Every institution publishes its holdings under addresses of its own in a signed register of its own. Nobody has to hand over data in order to be part of the network.

The Web grew because a reference cost one line. In the WWK the reference to a piece of evidence costs one line as well. That examined holdings will connect in this way about as fast as the pages of the Web once did is the expectation of the project; it has not been measured.

4 What runs today

As of 11 November 2026, in use within the project's own network of machines:

Component	What it does
Famulus Reference	Opened holdings with `fr:` addresses, citation and provenance; 29 collections in the shared store, among them holdings on Kepler, Euler, Kármán, Copernicus and Brahe
Famulus Proof	Justification of an answer from addressed evidence: evidence space, validity tree, named gaps
Famulus Notebook and Famulus Harness	The working medium: question, computation, check and provenance in one document; in the harness beside the conversation with Famulus, with versions and take-back
Famulus experts	Services with examined knowledge of a domain; the astronomy expert and the calendar expert are running
Famulus Expertise	Publication series published by OpenScienceTechnology, open access; five issues have been online since 10 November 2026
Addresses for notebooks	Notebooks, cells and results are addressable; a published issue is imported as a notebook by its address

5 What is still to come

Reference points of other institutions do not exist yet; the directory is set up and empty. No issue of the series carries the quality seal so far, and the issues lay their source in the notebook format open only with their next released version. The harness is not distributed publicly. Data protection and legal conformity are properties of the design, not a certification.

6 What an institution can contribute

An institution responsible for collections, editions or specialist knowledge can bring them in as a reference point of its own under the same rules: with its own addresses, its own register and the level of protection it chooses itself. Its holdings stay with it; they become citable and checkable for everyone it grants access. Specialists can register an expert of their field or publish results in the series Famulus Expertise. Each of these contributions is a node of the knowledge network.

7 The enterprise

Famulus is developed by Gerd Graßhoff (Philosophisches Institut, Humboldt-Universität zu Berlin; Forschungsinstitut des Deutschen Museums, Munich). The publisher of the series and of the public pages is OpenScienceTechnology GmbH, Duisburg. Public pages: `famulus.lettre.ai`.