

Workflow-basierte Verarbeitung und Archivierung von Ozeanbeobachtungsdaten

Prof. Dr. Wilhelm (Willi) Hasselbring

Lehrstuhl Software Engineering

<http://se.informatik.uni-kiel.de/>

Kompetenzverbund

Software Systems Engineering (KoSSE)

<http://kosse-sh.de/>



Kieler Marktplatz, 18.06.2013

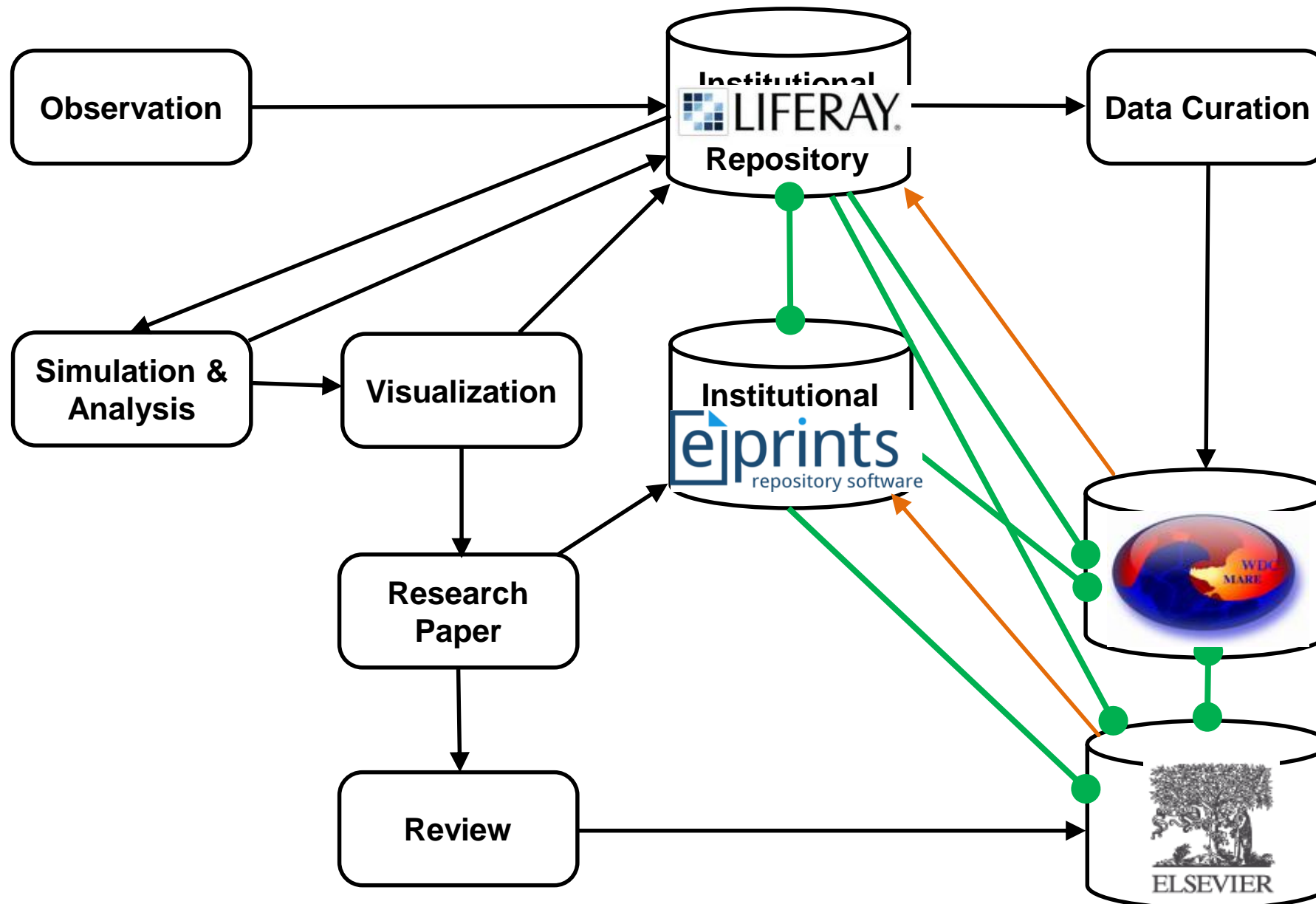
PubFlow



Agenda

-
1. Publikations-Workflows für Forschungsdaten
 2. CTD-Datenverarbeitung in PubFlow als Beispiel
 3. Provenienzdaten-Erfassung
 4. Zusammenfassung und Ausblick
-

Data and Paper Flow (in Ocean Science)



Kiel Data Management Infrastructure – Ocean Science Information System

SIGN IN WELCOME OSIS-KIEL / EXPEDITION-METADATA ABOUT US DATA MANAGEMENT (INTRANET) DATA PORTALS **SIGN IN**

Overview **Legs/Phases** Numerical Models Other...

Context: List all...

Welcome to Kiel's **Ocean Science Information System** for Cruises/Legs, Expeditions, Model-Experiments...

You can select one of the actions below to start your work in the portal. Notice, that most of the metadata is public and available to everyone. Access to uploaded files, data, etc. may be restricted but a link or other information whom to contact for gaining access should always be provided. If you feel that access restrictions should not apply and something seems odd please contact the data management team directly by phone (+49(0)431 600 4025) or mail to datamanagement [AT] geomar.de.

[View Terms of Use](#)

[Login for unrestricted access...](#)

Search for Events/Locations...

...by Year : 2000 - 2020

...by Latitude [°]: -90.0 - 90.0

...by Longitude [°]: -180.0 - 180.0

2D-Multi-Channel-Seismic | 2D-MCS []
3D Full Tensor Gradiometry | 3-D FTG
3D-Multi Channel Seismic | 3D-MCS [P-Cable]
ARGO Float | ARGOFL
Aanderaa
Access Point | AP
Acoustic Doppler Current Profiler | ADCP
Acoustic Modem | AM

...by Gear:

...by Leg/Expedition:

...by Locality:

...on sea: ...on land:

...with files:

Go...

Latest Legs/Expeditions

Label	Departure - Return	Chief-Scientist
ISL_00612_1	2012/09/20 - 2012/09/21	Vieira, Nuno
M81/2B	2010/03/29 - 2010/04/21	Werner, Reinhard
POS463	2013/11/16 - 2013/12/22	Bialas, Jörg

[View more...](#)

Latest Models

Label	Created	Responsible Person
MPI-ESM	2012/09/27	Wittke, Franziska
MPI-ESM	2012/09/13	Mohr, Viktoria
piControl-ocean	2012/09/12	Martin, Thomas

[View more...](#)

Latest Links

Link	Created
Print Publication linked to Leg M77/4	2012/09/27
Print Publication linked to Leg SO218	2012/09/27
Print Publication linked to Leg SO218	2012/09/27

[View more...](#)

This, and the following slides were provided by the Kiel Data Management Team.

GEOMAR – OceanRep

The screenshot displays the GEOMAR OceanRep website interface. At the top, the GEOMAR logo and the text 'Helmholtz Centre for Ocean Research Kiel' are visible. Below this is a navigation bar with tabs for INSTITUTE, RESEARCH, STUDY, DISCOVER, and SERVICE. The main content area is titled 'OceanRep' and shows search results for the query 'toste'. The search results are displayed in a list format, with each entry including the authors, year, title, journal name, and DOI. The first result is by Banyte, D., Tanhua, T., Visbeck, M., Wallace, D. W. R., Karstensen, J., Krahnemann, G., Schneider, A., Stramma, L. and Dengler, M. (2012) titled 'Diapycnal diffusivity at the upper boundary of the tropical North Atlantic oxygen minimum zone'. The second result is by Körtzinger, A., Bange, H., Breitbarth, E., Marandino, C., Quack, B. and Tanhua, T. (2012) titled 'Ocean-Atmosphere Coupling – Biogeochemical Processes and Material Exchange: Contributions from the Department of Chemical Oceanography'. The third result is by Stramma, L., Czeschel, R., Visbeck, M. and Tanhua, T. (2012) titled 'Stagnant flow and eddies in the oxygen minimum zone south of the Cape Verde Islands'. The fourth result is by Tanhua, T. and Keeling, R. F. (Submitted) titled 'Changes in column inventories of carbon and oxygen in the Atlantic Ocean'. The fifth result is by Tanhua, T. (2011) titled '1. Wochenbericht M84/3 UNSPECIFIED'. The sixth result is by Tanhua, T. (2011) titled '2. Wochenbericht M84/3 UNSPECIFIED'. The interface also includes a search bar, a 'QUICK SEARCH' button, and a 'BROWSE' section with links to Author, Research division, Document type, Year, and Course of Study. There is also a 'LATEST' section with links to Peer-reviewed Articles and All. The bottom of the page has a navigation menu with links to ABOUT US, GEOMAR LIBRARY, OPEN ACCESS, POLICIES, STATEMENTS, and HELP.

GEOMAR – OceanRep link to data

The screenshot displays the GEOMAR OceanRep website interface. The main content area shows a report titled "FS Poseidon Fahrtbericht / Cruise Report Arabia, 13.01.-02.03.2011" by Schmidt, Mark, Devey, Colin and Eisenhauer, Ralf. The report includes a text file for download (14MB) and an abstract describing the Jeddah Transect Project. A red box highlights the "Expeditionen/Modelle" section, which lists "Leg POS408/1" as a link. A red arrow points to this link. The right sidebar shows "General Leg Info" with details: Leg/Phase: POS408/1, Cruise/Expedition: POS408, Platform: Poseidon (POS), and Departure/Return: 2011/01/13 - Jeddah (Saudi Arabia) and 2011/01/31 - Jeddah (Saudi Arabia).

GEOMAR – OceanRep link to Pangaea

The screenshot displays the GEOMAR OceanRep website interface. At the top, there is a navigation bar with 'Home', 'Deutsch', 'Search', and 'Projects, Publications, Staff'. The main header identifies 'GEOMAR' as the 'Helmholtz Centre for Ocean Research Kiel'. Below this is a menu with categories: 'INSTITUTE', 'RESEARCH', 'STUDY', 'DISCOVER', and 'SERVICE'. On the left, the 'OceanRep' section includes links for 'OceanRep Home', 'Contact', and search options like 'QUICK SEARCH', 'Simple Search', and 'Advanced Search'. The main content area features a record titled 'Enhanced modern heat Transfer to...' by Spielhagen, Robert F., Werner, Kirstin, Sørensen, Steffen Aagaard, Zamelczyk, Katarzyna, Kandiano, Evgeniya S., Budéus, Gereon, Husum, Katrine, Marchitto, Thomas M., and Hald, Morten. The record includes a citation, an abstract, and a 'Supplementary data' section with a 'DATA' icon. A red box highlights the 'PANGAEA' logo and the 'Data Description' section, which contains the citation and abstract text. A map of the Arctic region is visible on the right side of the record page.

Home Deutsch Search Projects, Publications, Staff

GEOMAR Helmholtz Centre for Ocean Research Kiel

INSTITUTE RESEARCH STUDY DISCOVER SERVICE

OceanRep

- > OceanRep Home
- > Contact

QUICK SEARCH

> Simple Search

> Advanced Search

BROWSE

- > Author
- > Research division
- > Document type
- > Year
- > Course of Study

LATEST

Enhanced modern heat Transfer to

Spielhagen, Robert F., Werner, Kirstin, Sørensen, Steffen Aagaard, Zamelczyk, Katarzyna, Kandiano, Evgeniya S., Budéus, Gereon, Husum, Katrine, Marchitto, Thomas M. and Hald, Morten (2011). pp. 450-453. DOI [10.1126/science.1197397](https://doi.org/10.1126/science.1197397)

Text
2011_Science_Spielhagen_et_al_450-3.pdf - Full Text Restricted to Registered users only
[Download \(910Kb\)](#) | [Contact](#)

Official URL: <http://dx.doi.org/10.1126/science.1197397>

Supplementary data:

Abstract

The Arctic is responding more rapidly to global warming than most other areas on our planet. Northward flowing Atlantic Water is the major means of heat advection towards the Arctic and strongly affects the sea ice distribution. Records of its natural variability are critical for the understanding of feedback mechanisms and the future of the Arctic climate system, but continuous historical records reach back only ~150 years. Here, we present a multidecadal scale record of ocean temperature variations during the last 2000 years, derived from marine sediments off Western Svalbard (79°N). We find that early-21st-century temperatures of Atlantic Water entering the Arctic Ocean are unprecedented over the past 2000 years and are presumably linked to the Arctic Amplification of global warming.

PANGAEA®
Data Publisher for Earth & Environmental Science

Data Description

Citation: Spielhagen, RF et al. (2011): Planktic foraminiferal distribution and stable isotope ratios of sediment core MSM05/5_712-1 from the Arctic Ocean. doi:10.1594/PANGAEA.755114, Supplement to: Spielhagen, Robert F; Werner, Kirstin; Sørensen, Steffen Aagaard; Zamelczyk, Katarzyna; Kandiano, Evgeniya S; Budéus, Gereon; Husum, Katrine; Marchitto, Thomas M; Hald, Morten (2011): Enhanced modern heat transfer to the Arctic by warm Atlantic water. *Science*, 331(6016), 450-453, doi:10.1126/science.1197397

Abstract: The Arctic is responding more rapidly to global warming than most other areas on our planet. Northward flowing Atlantic Water is the major means of heat advection towards the Arctic and strongly affects the sea ice distribution. Records of its natural variability are critical for the understanding of feedback mechanisms and the future of the Arctic climate system, but continuous historical records reach back only ~150 years. Here, we present a multidecadal scale record of ocean temperature variations during the last 2000 years, derived from marine sediments off Western Svalbard (79°N). We find that early-21st-century temperatures of Atlantic Water entering the Arctic Ocean are unprecedented over the past 2000 years and are presumably linked to the Arctic Amplification of global warming.

Project(s): Integrierte Analyse zwischeneiszeitlicher Klimadynamik (INTERDYNAMIK)

Coverage: Median Latitude: 78.914531 * Median Longitude: 6.773434 * South-bound Latitude: 78.911000 * West-bound

Not logged in (log in or sign up)

Always quote citation when using data!

Show Map Google Earth RIS BnTrX

Hybrid

Greenland Sea Barents Sea

Imagery ©2012 NASA, TerraMetrics - Terms of Use

Kielprints

The screenshot shows a web browser window with the URL <http://eprints.uni-kiel.de/15488/>. The page header includes the CAU logo and navigation links like Home, Search, Contact, Sitemap, Legal Notice, Privacy, and Deutsch. The main content area displays the title "Online performance anomaly detection for large-scale software systems" and the author "Bielefeld, Tillmann Carlos (2012)". Below the title, there is a "Tools" section with a dropdown menu set to "RDF+XML" and an "Export" button. The abstract text is visible below the title, starting with "Provisioning satisfying Quality of Service (QoS) is a challenge when operating large-scale software systems." The left sidebar contains navigation options like Home, Quick search, Simple search, Advanced Search, Browse, Author, Division, Document type, and Year.

Dr. Leslie Carr, scientific director of the Eprints project at the University of Southampton, gives a Kieler Woche Talk: Friday, June 28th at 10:00 h.

Agenda

-
1. Publikations-Workflows für Forschungsdaten
 2. **CTD-Datenverarbeitung in PubFlow als Beispiel**
 3. Provenienzdaten-Erfassung
 4. Zusammenfassung und Ausblick
-

PubFlow Project Consortium

Funded:

Software Engineering Group, University Kiel

Associated:

- Excellence cluster “Future Ocean”
- Data and computing center of GEOMAR
- **Library** of GEOMAR
- Computing center of University Kiel
- **Library** of University Kiel
- ZBW
German National **Library** of Economics -
Leibniz Information Centre for Economics

Deutsche
Forschungsgemeinschaft

DFG



future ocean
KIEL MARINE SCIENCES



GEOMAR
Helmholtz-Zentrum für Ozeanforschung Kiel

C | A | U

Christian-Albrechts-Universität zu Kiel

ZBW
Leibniz-Informationszentrum
Wirtschaft
Leibniz Information Centre
for Economics

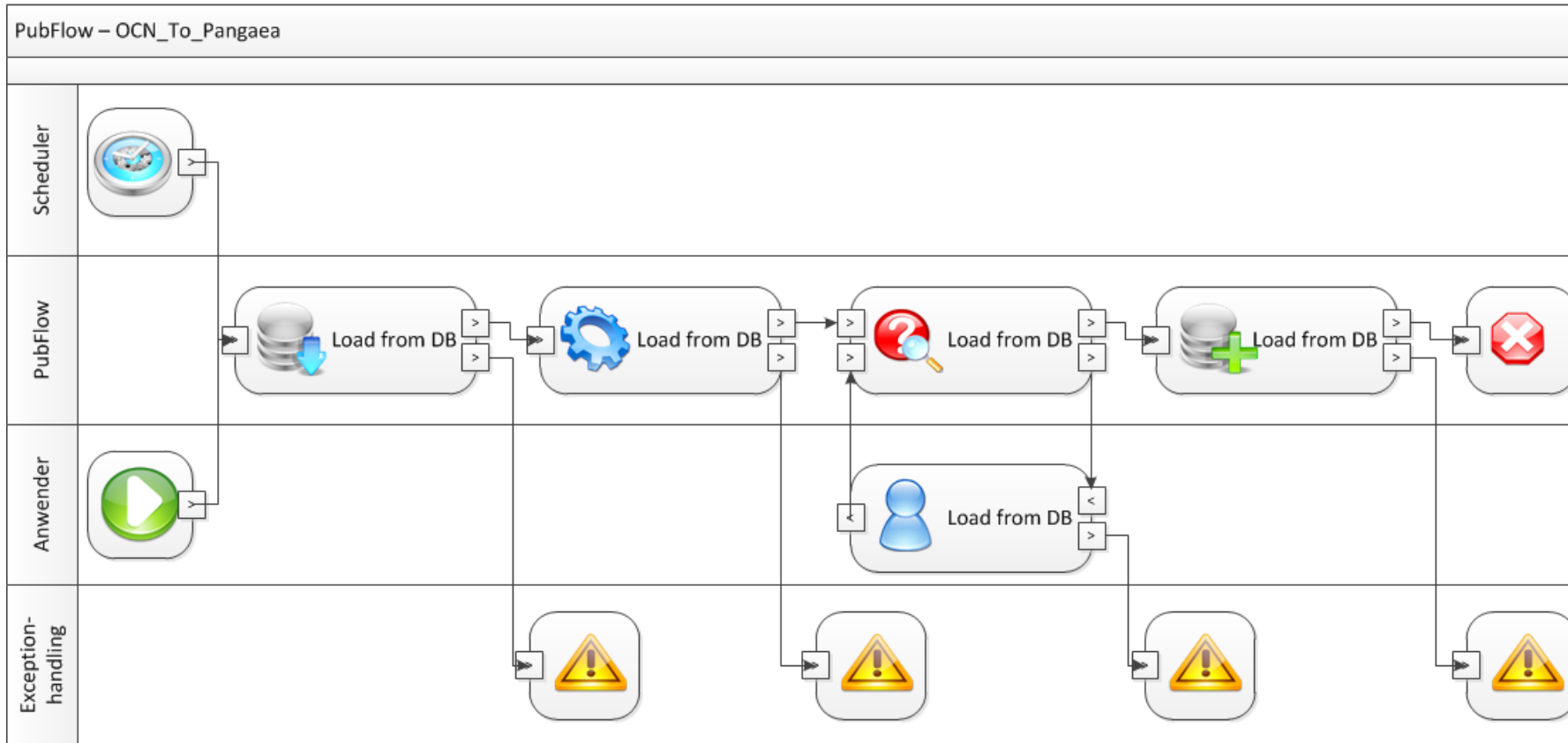
The initial PubFlow case study

CTD Rosette System

(Conductivity /
Temperature /
Depth/pressure
sensor).



CTD Workflow



run process

Leg Id	7001
PID	PID
Login	LOGIN
Source	SOURCE
Author	AUTHOR
Project	PROJECT
Topology	TOPOLOGY
status	STATUS
Zielpfad (z.B. /home/test/...)	/home/ari/7001.txt
Reference	REFERENCE
FileName	FILENAME
Comment	COMMENT

Do it close



Agenda

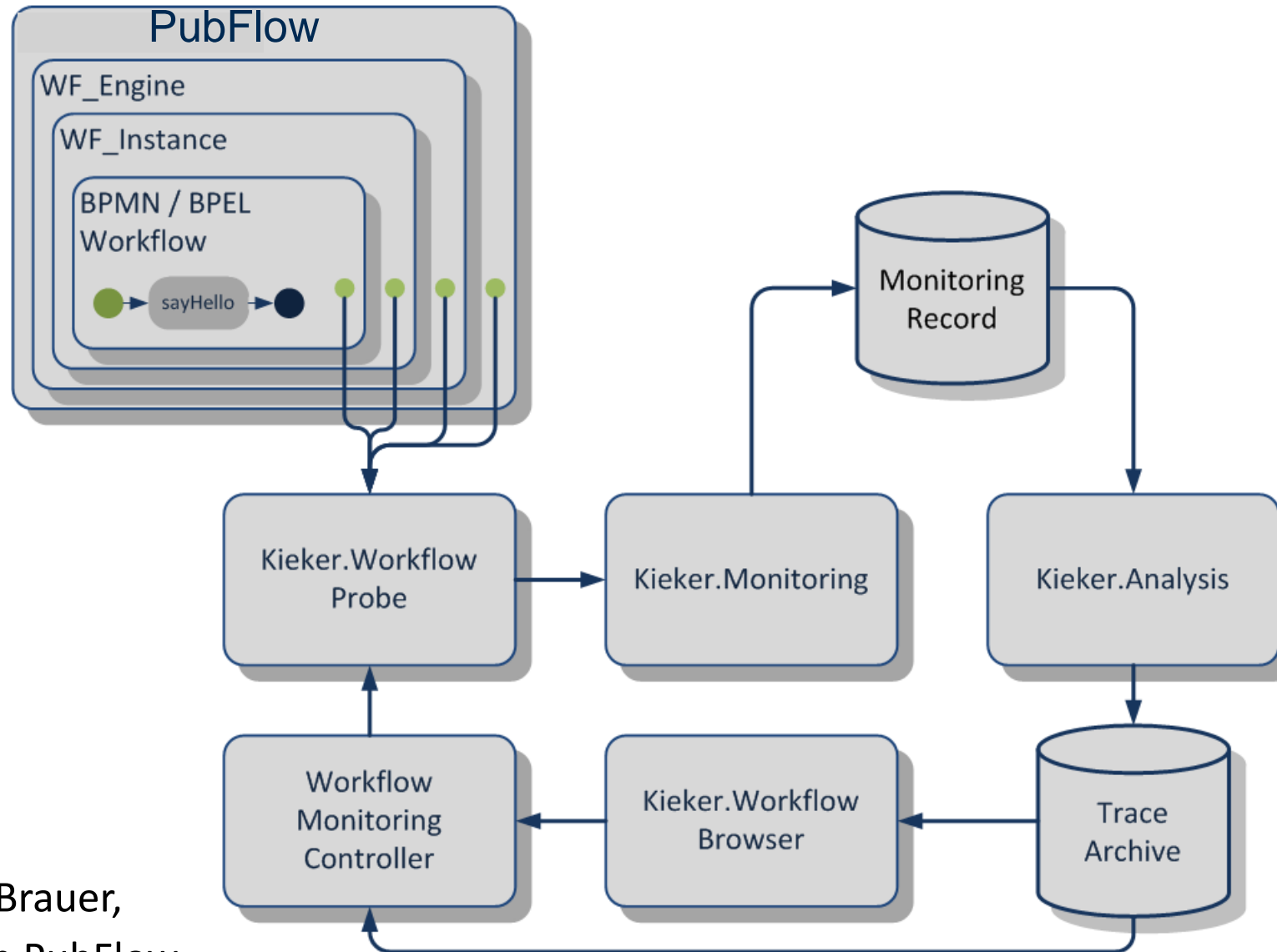
-
1. Publikations-Workflows für Forschungsdaten
 2. CTD-Datenverarbeitung in PubFlow als Beispiel
 - 3. Provenienzdaten-Erfassung**
 4. Zusammenfassung und Ausblick
-

Collecting provenance data

Provenance information describes the origins and the history of (research) data in its life cycle, and the process by which it arrived:

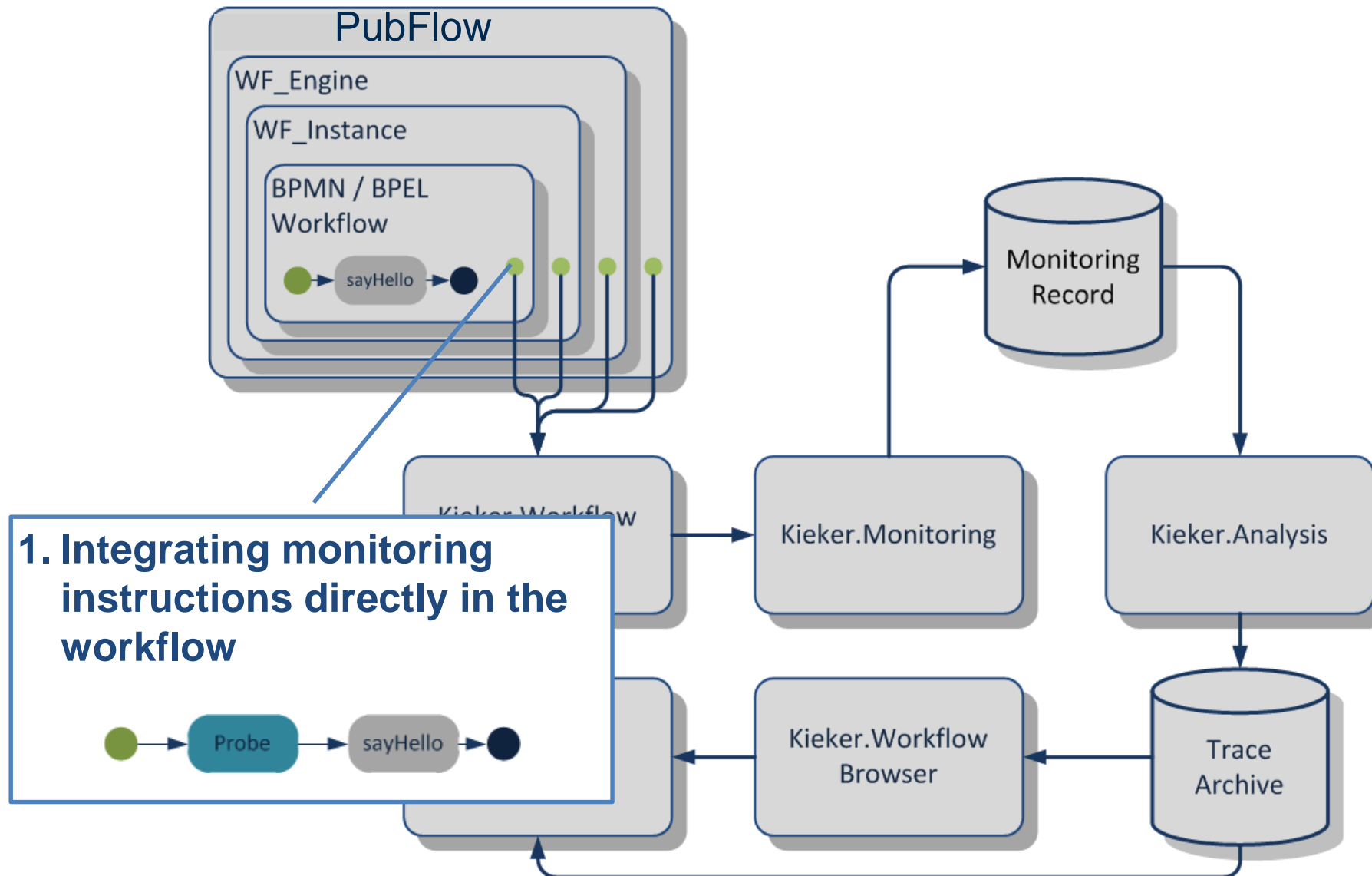
- A description of all modifications and changes
- A list of all methods applied
- A list of all systems and persons involved
- Answers to
 - When,
 - where,
 - how,
 - why.
- Given the documented history of an object, the object attains an **authority** that allows scholars to appreciate its importance, whereas, in the absence of such history, the object may be treated with some skepticism.
- Usually collected and used in databases, data warehouses, workflow systems, scientific data processing, Web services, etc.

Provenienzdaten-Erfassung in PubFlow

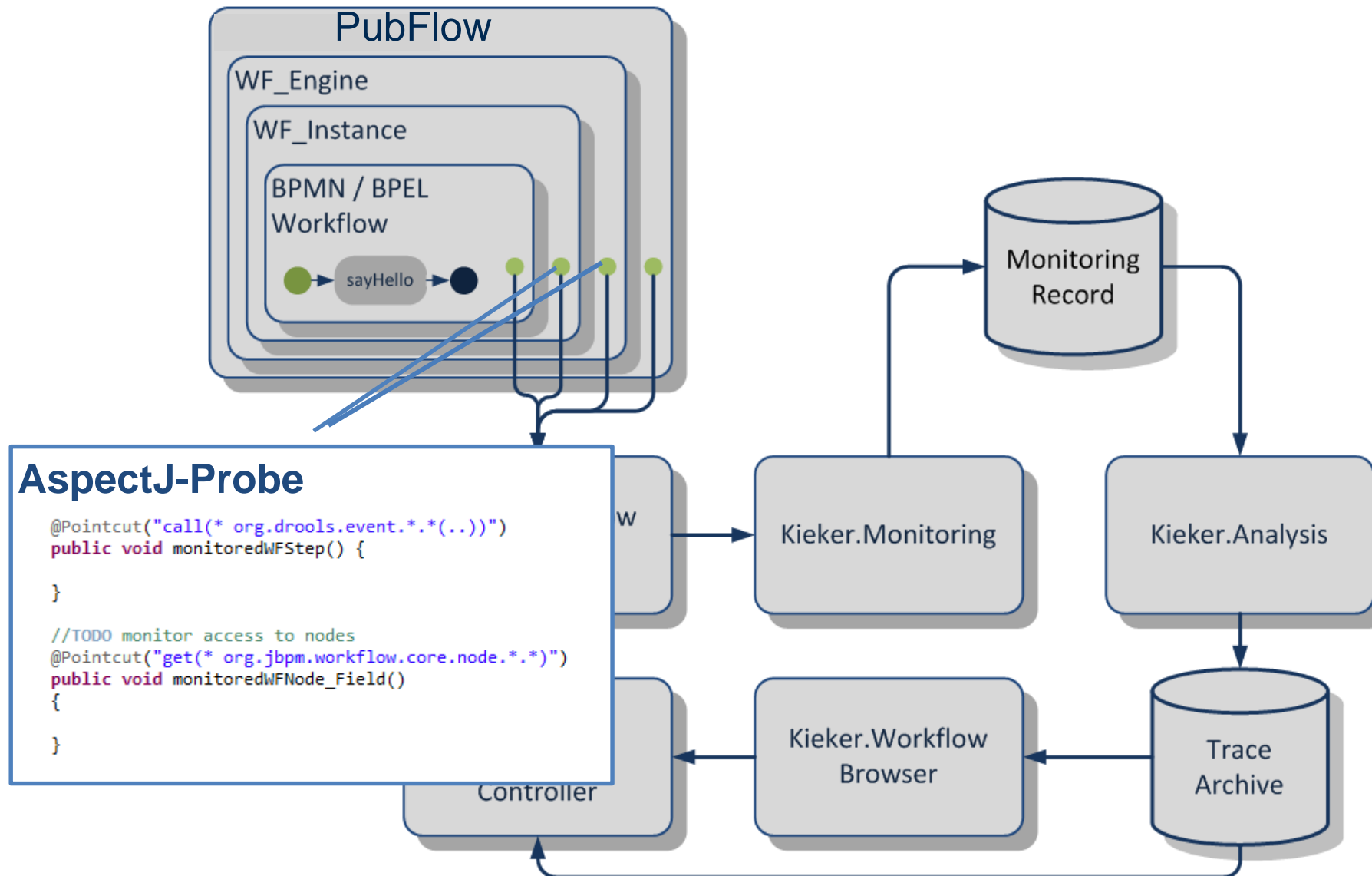


Quelle: Peer Brauer,
Mitarbeiter in PubFlow

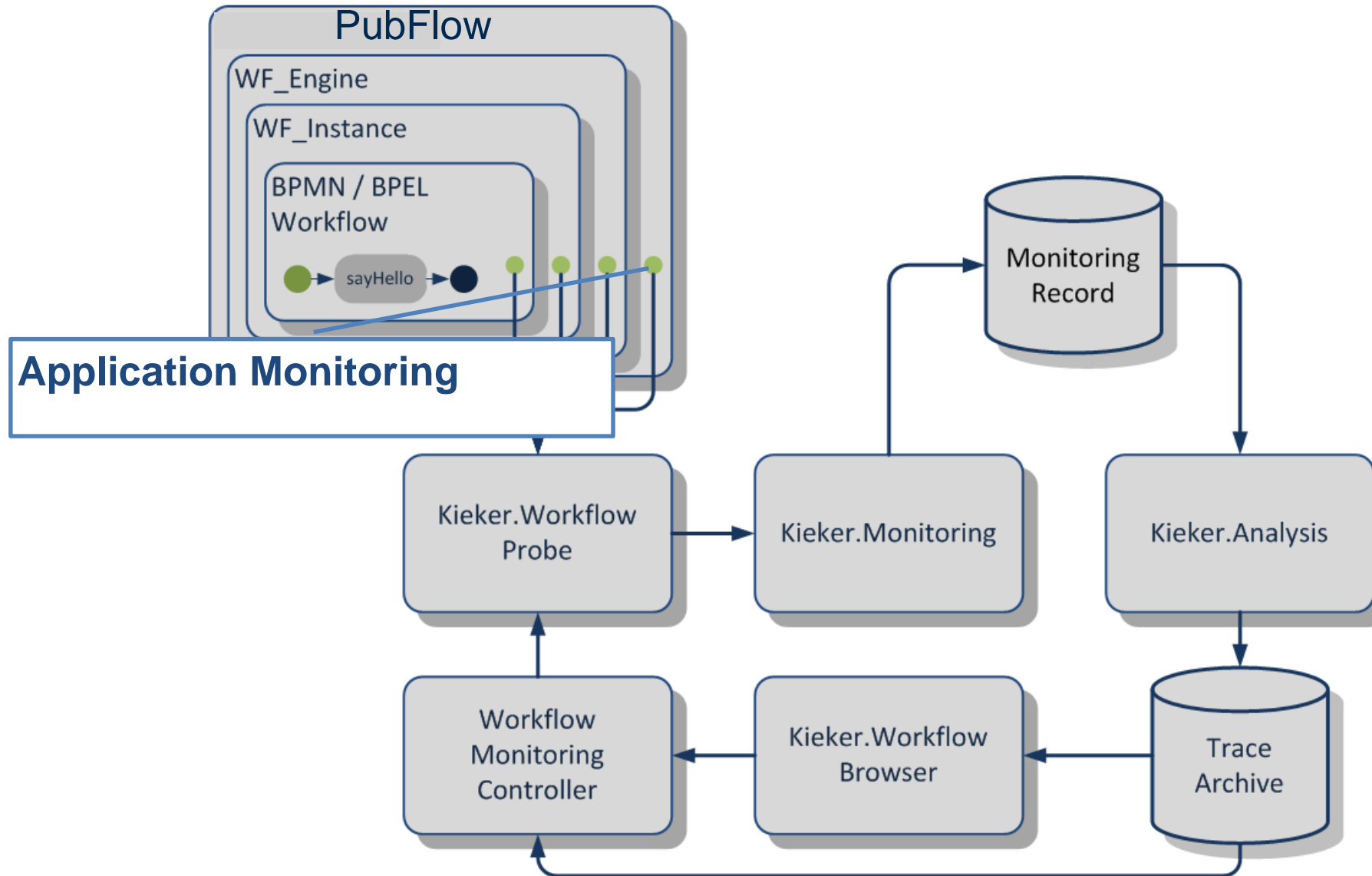
Provenienzdaten-Erfassung in PubFlow



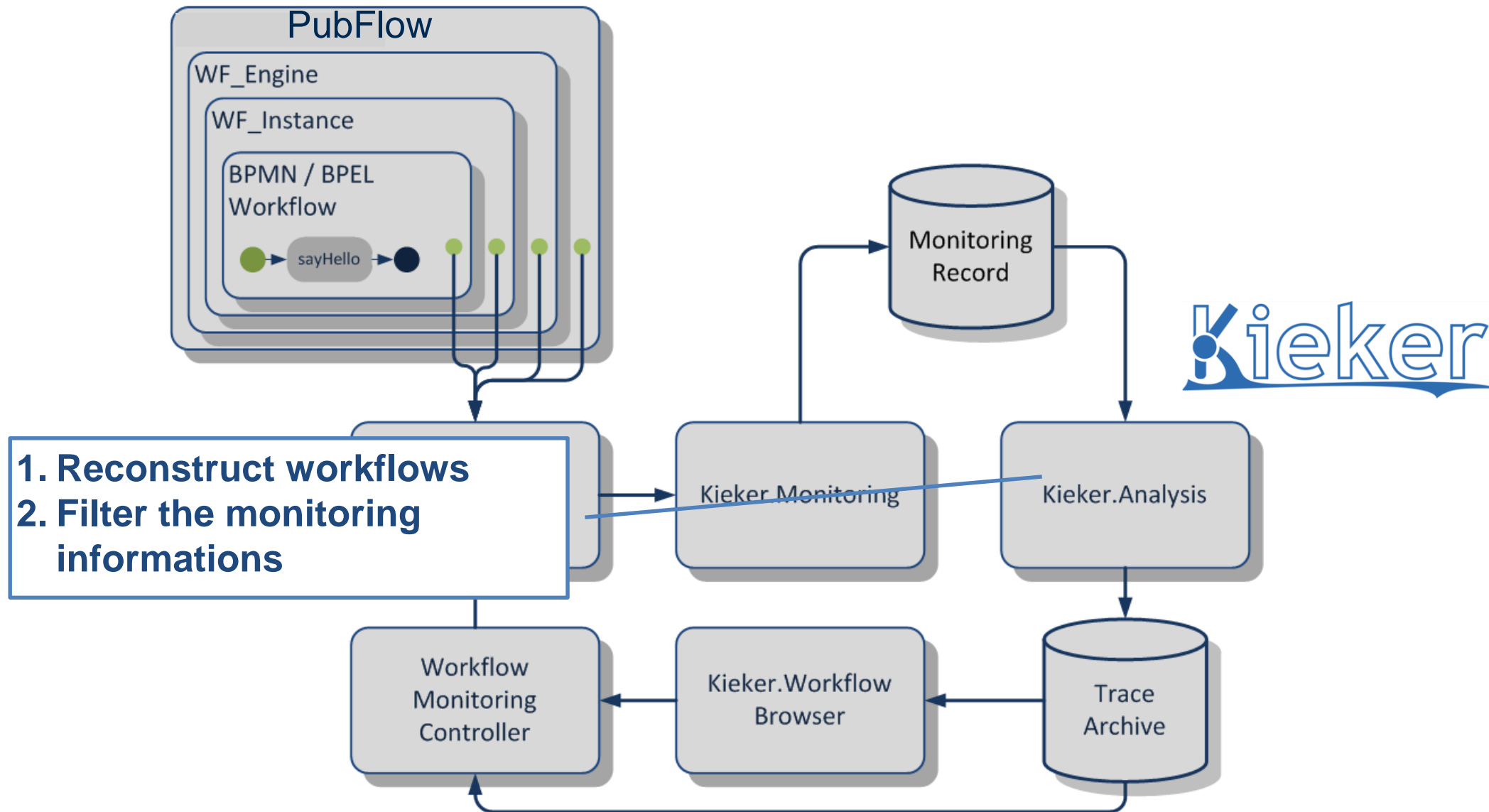
Provenienzdaten-Erfassung in PubFlow



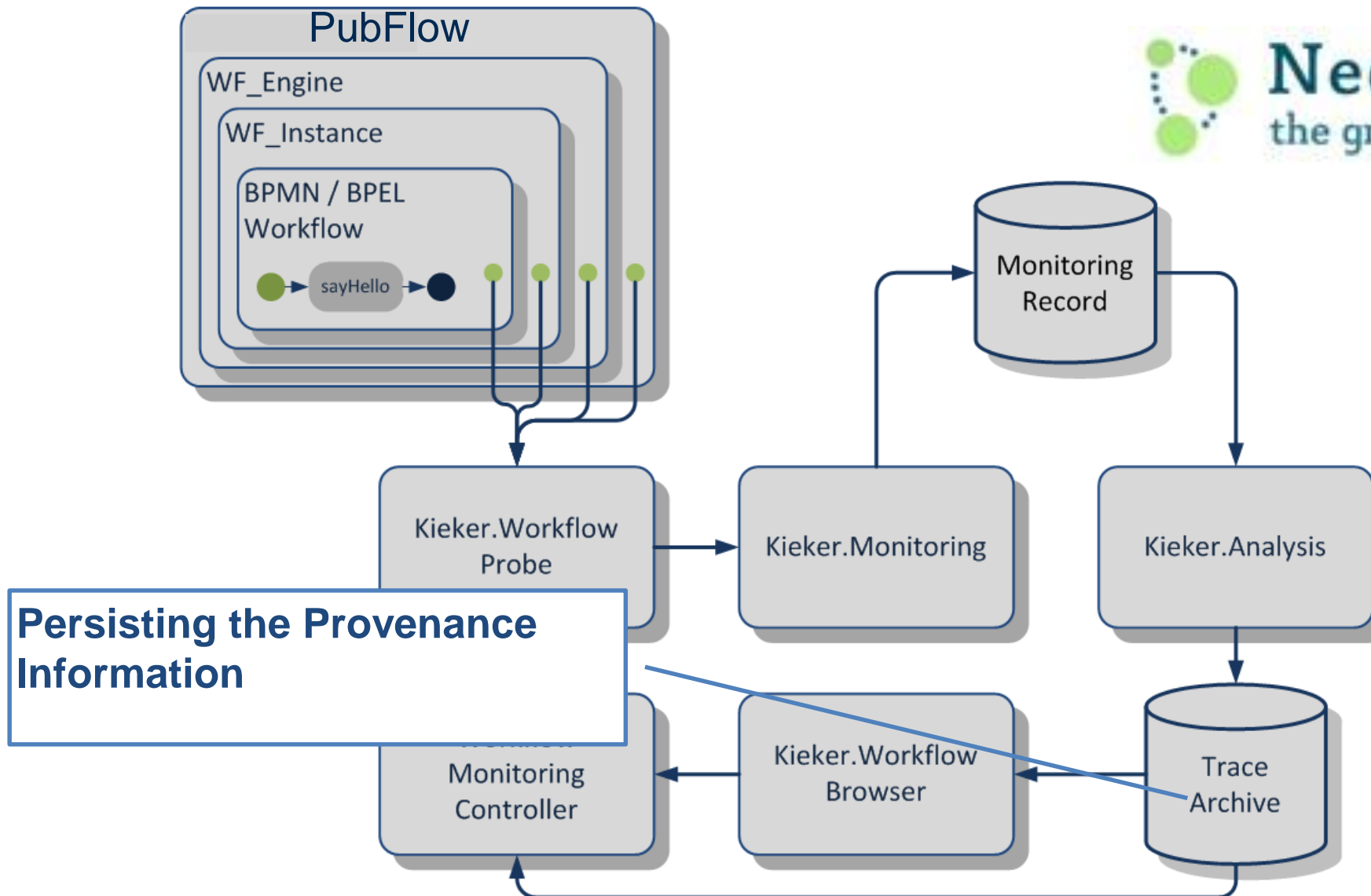
Provenienzdaten-Erfassung in PubFlow



Provenienzdaten-Erfassung in PubFlow



Provenienzdaten-Erfassung in PubFlow



PubFlow Provenienz-Daten Viewer

The screenshot shows a web browser window titled "GraphBrowser" displaying a provenance graph. The address bar shows "localhost:8080/pages/GraphBrowser.xhtml". The interface includes a menu bar with "Repository", "Edit", "Export", and "Help". On the left, a "Provenance-Recordsets" panel shows a tree view with "OCN_to_Pangaea" expanded to "2012.10.10" and "11:01 - run 000". The main area, "Provenance Graph", displays a graph with nodes: "Pangaea-Dataset <Entity>", "OCN-Workflow <Activity>", "OCN-Dataset <Entity>", "PubFlow-System <Agent[Software-Agent]>", and "DataManager <Agent[Person]>". Edges are labeled: "WasGeneratedBy" (OCN-Workflow to Pangaea-Dataset), "WasDerivedFrom" (OCN-Dataset to Pangaea-Dataset), "Used" (OCN-Workflow to OCN-Dataset), "WasAssociatedWith" (OCN-Workflow to PubFlow-System), and "AddedOnBehalfOf" (PubFlow-System to DataManager). An "Info" panel on the right shows: "Name:OCN_To_Pangaea", "Type:Publication Workflow", "Time:2012.10.10 11:01", "Duration:23s", "Note:none". The footer of the graph area says "Graph for OCN_to_Pangaea 2012.10.10 11:01 run 000" and the PubFlow logo is at the bottom center.

Zusammenfassung und Ausblick

- Workflow-basierte Verarbeitung und Archivierung von Ozeanbeobachtungsdaten
 - Insbesondere zur Publikation von Forschungsdaten
 - Kombination von Workflow-Management und Aufgaben-Management
- Interdisziplinäre Zusammenarbeit in PubFlow u.a.
 - mit dem Kieler Datenmanagement Team,
 - mit der ZBW und den Bibliotheken der CAU und des GEOMAR,
 - mit den Rechen- und Datenzentren der CAU und des GEOMAR,
 - mit MaNIDA, dem Portal Deutsche Meeresforschung (Helmholtz-Initiative mit AWI, BSH, GEOMAR, HZG, Marum; CAU assoziiert) und
 - mit der Universität Southampton (UK).
- Fachbeirat mit Mitgliedern aus AWI, Pangaea/Marum, GEOMAR, DKRZ, DLR, IKMB
- Ausblick u.a.
 - Direkte Integration in das KDMT-Portal
 - Weiterer Anwendungsfall im Bereich CVOO (Cap Verde Ocean Observatory) angedacht
 - Grundlegende Arbeiten im Bereich der Monitoring-basierten Provenienzdaten-Erfassung.

References

1. Peer Brauer, Wilhelm Hasselbring: “PubFlow: provenance-aware workflows for research data publication.” In: 5th USENIX Workshop on the Theory and Practice of Provenance (TaPP '13), April 2-3, 2013, Lombard .
2. Peer Brauer, Wilhelm Hasselbring: “Capturing provenance information with a workflow monitoring extension for the Kieker framework.” In: Proceedings of the 3rd International Workshop on Semantic Web in Provenance Management, May 2012, Heraklion, Greece
3. Matthias Rohr, André van Hoorn, Jasminka Matevska, Nils Sommer, Lena Stoever, Simon Giesecke, and Wilhelm Hasselbring: Kieker: “Continuous monitoring and on demand visualization of Java software behavior.” In Claus Pahl, editor, Proceedings of the IASTED International Conference on Software Engineering 2008 (SE'08), pages 80–85, February 2008.
4. André van Hoorn, Matthias Rohr, Wilhelm Hasselbring, Jan Waller, Jens Ehlers, Sören Frey, and Dennis Kieselhorst: “Continuous monitoring of software services: Design and application of the Kieker framework.” Technical Report TR-0921, Department of Computer Science, University of Kiel, Germany, November 2009.
5. André van Hoorn, Jan Waller, and Wilhelm Hasselbring: “Kieker: A framework for application performance monitoring and dynamic software analysis.” In Proceedings of the 3rd ACM/SPEC International Conference on Performance Engineering (ICPE 2012), pages 247–248. ACM, April 2012.