

PEARL developments: A retrospective lens on versions 9.2, 9.3 & 9.4

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Client Conference 2026

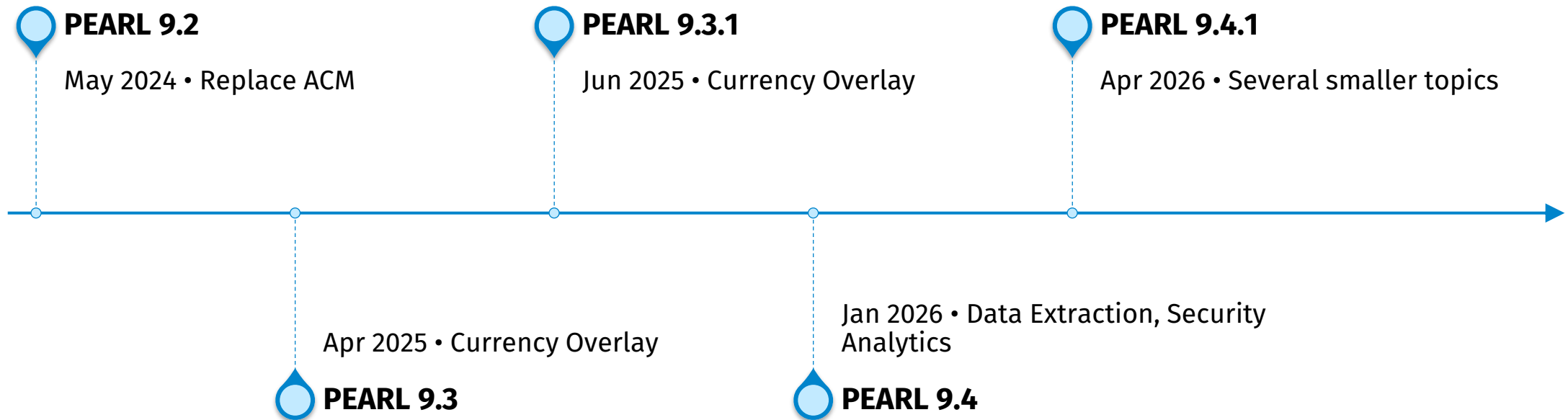


Agenda

- Introduction
- Security analytics and ESG data
- Data extraction
- Currency overlay
- Quick fire – smaller changes
- Future developments

PEARL release timeline

Roadmap of major releases and key features, May 2024 to April 2026





Security analytics and ESG data

- ESG and other non-financial metrics become more prominent
- Calculate and analyze easily on:
 - Bucketing of securities using ESG metrics
 - Rolling up ESG related metrics to portfolio or fund level
 - Attributing the impact of investment and ESG decisions on non-financial metrics
 - Attributing change over time in ESG metrics at fund/portfolio level to various driving factors



Security analytics and ESG data

Configure and load security analytics

Look through Virtual accounting Currency **Other**

Other Analytics settings ▾

Security analytics settings ▾ **Select columns** **Filter** × + Add row Import data Export data

<input type="checkbox"/>	Provider	Target analytic ID	Interpolation strategy	Scaling factor
<input type="checkbox"/>	ESG Analytics	EMISSIONS	LAST_VALUE	
<input type="checkbox"/>	ESG Analytics	TAX_PAID	LAST_VALUE	
<input type="checkbox"/>	ESG Analytics	WATER_CONSUMPTION	LAST_VALUE	

Input data Securities Properties Overruling

Input data Other ▾

EXT_SECURITY_ANALYTICS ▾ **Select columns** **Filter** × + Add row Import data Export data

<input type="checkbox"/>	Analytics provider ↑	Property value	Analytic	Date	Value	Deleted
<input type="checkbox"/>	BM X Provider	Security A	Market_Cap	2026-05-08	12,000,000,000	N
<input type="checkbox"/>	BM X Provider	Security B	Market_Cap	2026-05-08	13,000,000,000	N
<input type="checkbox"/>	ESG Analytics	Security A	EMISSIONS	2026-05-08	835,000	N
<input type="checkbox"/>	ESG Analytics	Security B	EMISSIONS	2026-05-08	735,000	N

Security analytics and ESG data

Derive buckets from delivered analytics

Definition

Save **Cancel**

Name Market size (bucket)

ID MARKET_SIZE_BUCKET

Category Security

Type Bucket

Analytics universe F099 Security Analytics Hierarchy

Source Market Capatilization

Default bucket Small Cap

Property values

+ Add value Copy Delete

Property value	Description	Bucket start
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="checkbox"/> LC	Large Cap	6000000000
<input type="checkbox"/> MC	Mid Cap	5000000000
<input type="checkbox"/> SC	Small Cap	0

Security analytics and ESG data

Use these buckets like any other property label

Definition Return Model **Hierarchy** Calculation Measures Reports

Hierarchy

[Edit](#)

Include contribution-only levels ⓘ No

Fund F099

- To Market size (bucket)
 - For All segments
 - To Security

Brinson Attribution [Select measures](#)

Description	Ccy	Market Value	PF Weight	BM Weight	XS Weight	PF Return	BM Return	XS Return
▼ Fund F099	EUR	3.419	100.0000%	100.0000%	0.0000%	3.8962%	3.1255%	0.7707%
> Large Cap	EUR	1.916	56.1559%	50.0000%	6.1559%	3.5818%	4.2071%	-0.6253%
> Mid Cap	EUR	0.000	0.0000%	0.0000%	0.0000%	1.1322%	1.7371%	-0.6050%
> Small Cap	EUR	1.503	43.8441%	50.0000%	-6.1559%	3.1386%	0.2082%	2.9304%

Security analytics and ESG data

Present the analytics in the reports

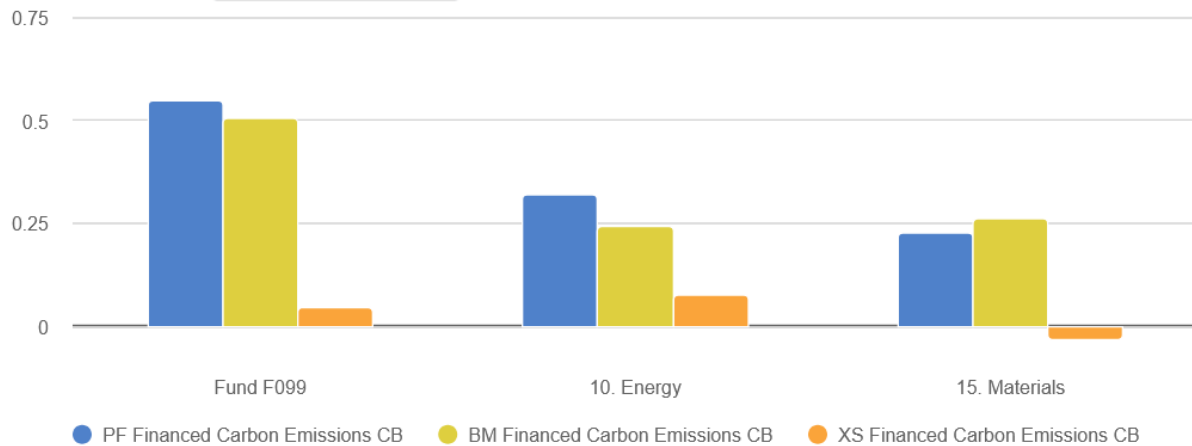
Emissions

Select measures

Description	PF Weight	PF CO2e t CO2e	PF CO2e Contr. t CO2e	BM Weight	BM CO2e t CO2e	BM CO2e Contr. t CO2e	XS Weight	XS CO2e t CO2e	XS CO2e Contr. t CO2e
<input type="text"/> T P ▼ Fund F099	100.0000%	546,744	546,744	100.0000%	503,081	503,081	0.0000%	43,663	43,663
T P > 10. Energy	56.1711%	568,787	319,494	50.1368%	487,771	244,544	6.0342%	81,016	74,951
T P > 15. Materials	43.8289%	518,500	227,250	49.8632%	518,500	258,537	-6.0342%	0	-31,288

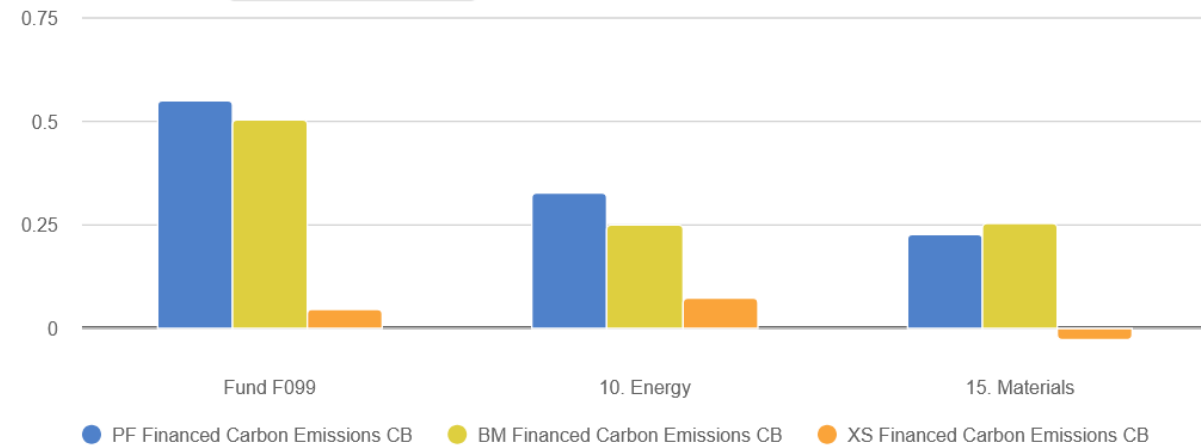
Emissions End

Select measures



Emissions start

Select measures





Security analytics and ESG data

Further product plans

- Expand PEARL with quantile/relative bucketing
- Expand reporting possibilities
 - Decision report & Composite benchmarks
 - Capped benchmarks
 - Decomposition of analytics over time



Data extraction

- API integration has been the most requested improvement in recent Client Satisfaction Surveys.
- Goal of this feature is to improve the efficiency of getting data out of PEARL and have a better data integration.



Data extraction

Key features

- Export large volumes of PEARL output to other systems
- Provide automated export files
- Execute large volumes of API calls efficiently and in a controlled manner
- Offer a fixed output format for other systems to interact with
- Allow for delta detection of changed output to be implemented



Data extraction

Configuration

1. Build an extractor
 - Choose a template
 - Specify columns of the file to generate (Measures, start dates, ...)
 - Specify the File format (JSON, CSV)
 - Specify the source environment
2. Define extraction batches
 - Batches bundle extractors
 - Batches specify a set of parameters
3. Manage per batch extractor parameters

Demo tomorrow

11.30h – 12.15h | Mastering PEARL Reporting: Tips, Tricks & Use Cases

Data extraction

Generate output

1. Run a set of batches with the Data Extraction Job
2. Files can be obtained:
 - Automatically uploaded (ETL-like) to SFTP location
 - Downloaded on-demand via new REST API

Data extraction		
DELETE	/bulk-extract/data/csv/{stagingTable}	Delete data file (CSV)
GET	/bulk-extract/data/csv/{stagingTable}	Download data file (CSV)
DELETE	/bulk-extract/data/json/{stagingTable}	Delete data file (JSON)
GET	/bulk-extract/data/json/{stagingTable}	Download data file (JSON)
GET	/bulk-extract/generation	List asynchronous file generation tasks
PUT	/bulk-extract/generation/{fileType}	Queue asynchronous file generation task
DELETE	/bulk-extract/generation/{taskGuid}	Cancel pending asynchronous file generation task
GET	/bulk-extract/generation/{taskGuid}	Get asynchronous file generation task status
GET	/bulk-extract/metadata/{stagingTable}	Get file metadata

Create a new job

General

Executable: Data Extraction

Name: Data Extraction

Execute: Now

Executable parameters

Data Extractor batch identifier: Batch 03: Multiple report dates; time series templates B_03

Notifications

Use notifications:

Create **Cancel**

Data extraction

Deltas overview

The screenshot shows a web interface for 'Deltas overview'. At the top, there are navigation tabs: Batches, Extractors, Extraction parameters, Files, Deltas overview (highlighted), and Templates. Below the tabs, the main heading is 'Deltas overview' with a dropdown menu set to 'Fund deltas'. There are three action buttons: 'Reset backdated changes' (with a trash icon), 'Export data' (with a download icon), and 'Backdated change delay: 1 Days'. Below these is a table with the following columns: 'Category', 'Fund', and 'Most backdated change'. Each row in the table has a checkbox on the left. The table contains the following data:

<input type="checkbox"/>	Category	Fund	Most backdated change
<input type="checkbox"/>	Decision	Fund F002 Pension Fund F002	2018-05-09
<input type="checkbox"/>	Decision	Fund F003 Decision-based Attribution F003	2018-05-08
<input type="checkbox"/>	Decision	Fund F006 Risk Measures - Daily, Unhedged F006	2018-05-01
<input type="checkbox"/>	Decision	Fund F023 Notional Base on Overlay F023	2018-05-09
<input type="checkbox"/>	Decision	Fund F024 Notional Base TD F024	2018-05-04
<input type="checkbox"/>	Decision	Fund F025 Gap Overlay Measures F025	2018-05-09



Data extraction

Further product plans

- Use the Delta Overview to automatically regenerate extracted data
- Add an audit trail to the Deltas Overview
- Add pivot options on the extractor files: display columns as row values
- Expand on the upload methods and formats to different systems
 - Snowflake
 - Databricks



Currency overlay

- Decision & currency overlay analysis at the heart of PEARL (for asset owners)
- Fund-level overview of added value
 - Decision-based attribution → Capture impact of market decisions
 - Currency overlay attribution → Capture impact of (fund-level) currency strategy
- Currency overlay module very often customized
 - New types of currency decisions
 - Number of currency decisions to capture value
 - Increasingly common hybrid hedging approaches
- PEARL 9.3 → Completely rebuild currency overlay module



Currency overlay

What was introduced in PEARL 9.3

Currency overlay in fund performance reporting – “Total” node	<ul style="list-style-type: none">• Show total fund in regular hierarchy reporting• Single smoothing source for both decision and currency overlay analysis• Automated virtual hedge offset
Currency benchmarks	<ul style="list-style-type: none">• More flexibility when modelling currency strategy decisions• “Unlimited” number of decisions
Hedge basis adjustments	<ul style="list-style-type: none">• Allow separate parts of the fund to be managed differently
Breakdown hierarchy in currency overlay reporting	<ul style="list-style-type: none">• Group currencies (e.g. base/DM/EM)• Drill down to instrument level
Single currency contracts interface	<ul style="list-style-type: none">• Single source of truth for currency contracts in the portfolio
Technical framework	<ul style="list-style-type: none">• Currency overlay calculations use same framework as regular attributions

Currency overlay

What have we done the past year?

- Scaled attributions to the TOTAL node
- Selection effect on contribution levels in currency overlay analysis

Description	Selection	PF Hedge Return	BM Hedge Return
<input type="text"/>			
[I] > Norwegian Krone	0.0000%	0.0000%	-0.0247%
[T] > Polish Zloty	0.0000%	0.0000%	-0.3114%
[T] > Singapore Dollar	0.0000%	0.1914%	0.1831%
[T] > Swedish Krona	0.0000%	0.0000%	0.4591%
[T] > Swiss Franc	0.0000%	-0.5664%	-0.5609%
[T] v US Dollar	-0.0010%	-0.0682%	-0.0575%
[T] DEAL_AP_AO_HGP_USDAUD_001	-0.0001%	-0.0610%	0.0000%
[T] DEAL_AP_AO_HGP_USDAUD_002	-0.0009%	-0.0719%	0.0000%



Currency overlay

What have we done the past year?

- New currency benchmark types
 - Scale to Total Hedge Weight → Split manager allocation effect
 - Aggregate → Combine currency benchmarks
- Presentation nodes
 - “TOTAL” node benchmark is always a combination of a market (conventional) and currency benchmark → Too limiting for all cases
 - SAA/Policy benchmark uses hedged indices
 - SAA/Policy benchmark simply CPI + 2%
 - Presentation node(s) sit above TOTAL node, where regular benchmarks can be assigned
 - Can be used as starting point for decision analysis

Currency overlay

What have we done the past year?

- Attributions on TOTAL and presentation nodes
 - Total fund breakdown
 - Can break down virtual hedge offset

Description	Ccy	PF Contribution	BM Contribution	XS Contribution
<input type="text"/>				
T P ▼ Total Fund vs Strategic PF	EUR	-0.0892%	0.2764%	-0.3656%
T P > Cash	EUR	0.0000%	0.0000%	0.0000%
T P ▼ Equity	EUR	-0.3162%	0.0335%	-0.3497%
T P ▼ Market	EUR	-0.2542%	0.0955%	-0.3497%
T P British Pound Sterling	EUR	-0.3529%	0.0118%	-0.3646%
T P Euro	EUR	0.0986%	0.0837%	0.0149%
T P ▼ Virtual Hedge Offset	EUR	-0.0619%	-0.0619%	0.0000%
T P British Pound Sterling	EUR	-0.0619%	-0.0619%	0.0000%
T P Euro	EUR	0.0000%	0.0000%	0.0000%
T P > Fixed Income	EUR	0.2475%	0.2756%	-0.0282%

Quick fire – smaller changes

Checks

- Lag period for checks
- Unexpected input data within lifetime
- Node comparison check

Fund node comparison ▼ Select columns Filter + Add row Import data Export data

Filter check results

Status Open Confirmed On hold Resolved Acknowledged Solved

Priority Critical Major Minor

<input type="checkbox"/>	Node 1	Node 2	Periodicity	Relative start date	Measure	Ccy type	Start date	End date	Absolute threshold	Relative threshold
<input type="checkbox"/>	F001_AM_CO	F002	M	YTD	PF_RET	BASE	2026-05-01	-	0.0001	0.01

Run Apply filter Cancel



Quick fire – smaller changes

Risk

- Lots of new risk measures!
 - Sortino ratio
 - Drawdowns
 - Not just maximum, also second and third
 - Date of peak and trough for all types
 - Recovery date
 - Upside and downside capture
 - Calmar ratio
 - Geometric versions of many risk measures



Quick fire – smaller changes

Analysis and properties

- IRR, PME, Direct alpha in attributions
- Mixed properties in reporting
- Overruling of properties

Quick fire – smaller changes

Quality-of-life improvements

- Copy reports between environments
- Stage indicator
- Add comments to previous calculation runs

Reports

+ Create  Copy  Delete  Import  Export

9	Description
10	Currency Overlay
11	Hedged Currencies
27	Unhedged Currencies
28	Brazilian Real

History

+ Create a new job  Export

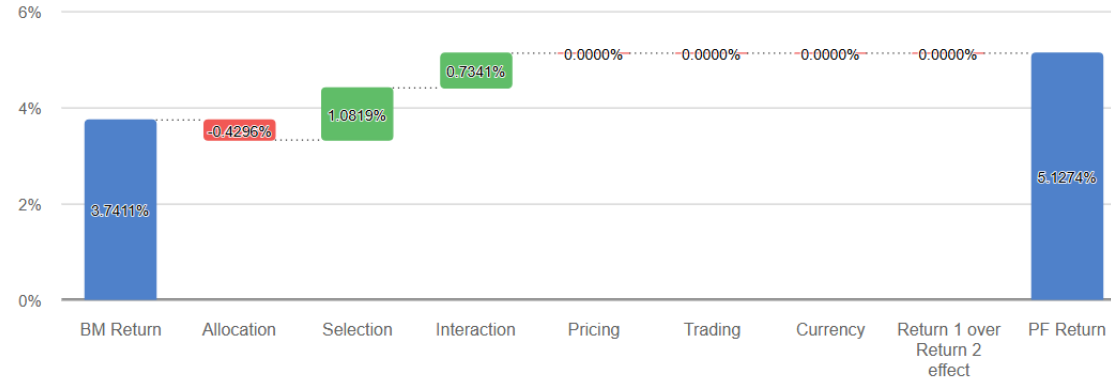
ID	Name	Executable	Started at	Ended at	Duration	Status	Check results	Warnings	Scheduled by	Comment
40245	Automated run after installation	Full run excl Data Interfacing	2026-05-19 12:23:37	2026-05-20 03:24:53	15h 01m 16s	Completed	No	0	Joost Meerwijk	Everything is ok again from here
40241	Automated run after installation	Full run excl Data Interfacing	2026-05-19 10:28:20	2026-05-19 12:00:19	01h 31m 59s	Cancelled	No	0	Joost Meerwijk	Cancelled because I wanted to make another change before restarting the run
40239	Automated run after installation	Full run excl Data Interfacing	2026-05-19 09:41:37	2026-05-19 09:58:44	00h 17m 07s	Failed	No	1	Joost Meerwijk	This run failed because it was interrupted by the planned monthly maintenance

Quick fire – smaller changes

Reporting

- Waterfall charts in the Web Portal

Attribution Effects



- Multiple nodes/paths in time series API (also Excel)



Future developments

Functional extensions

- ESG improvements
- Data extraction & integration
- Data interfacing - Transaction based interface
- What-if analysis
- Private Markets

- Cloud readiness, AI and system modernization:
 - Join tomorrow's session | 13.15h – 14.00h
 - PEARL is Moving to the Cloud! | Presented by Bas Leerink & Henjo van Rees



Questions?





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