



Front Runner of
BI and Reporting Tools

FineReport (V10.0) Whitepaper

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Catalogue

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1.What is FineReport?

FineReport is a “professional, simple and flexible” enterprise reporting software developed by FanRuan Software Co., Ltd, architecturally designed based on “no-code development” concept. With FineReport, users can quickly design complex reports and good-looking dashboards by dragging and dropping report elements and incorporates reports and dashboards to establish a decision-making platform . FineReport is a leading reporting software in China with the highest domestic market share and widespread clients from various industries and departments.

(1) Powerful Functions

With a deep understanding of user behaviors and demands, and after studying the development of all walks of industries, FineReport becomes the one that knows reports the best and outperforms competitors especially in complex report processing. For over ten years, FineReport has focused on function research and mainstream innovation, so as to identify and fulfill the core demands of clients at the fastest pace.

(2) Extremely-low Learning Costs

FineReport is easy to learn, operate and integrate. There are a variety of learning resources available including online training, city class, etc. Besides, users can receive technical supports by online chat, telephone, e-mail, etc.

(3) Extensive Experience

FineReport possesses a unique understanding of enterprise informatization in various industries and has demonstrated its rich experience in industrial applications. It can provide users with practical advice concerning strategy, operation, organization, finance and marketing.

(4) Efficient Services

By adhering to the “timely, professional, thoughtful and meticulous” service spirits, FineReport has established a comprehensive after-sales service and technical support system which have passed the ISO9001 International Quality System Certification, to deliver complete and effective after-sales services and technical support to our clients.

(5) Dedicated Culture

The culture of FineReport is to “Devote ourselves to our enduring undertakings with heart of original inspiration and wisdom of maturity” . In FanRuan, everyone can rise to new challenges through constant learning, seeking to provide our clients with excellent products and meticulous services.

1.1. Why do Software Companies Need FineReport?

For software companies, with the help of FineReport, problems arising from coding from scratch or developing reports based on open source software can be eliminated. What's more, FineReport will accelerate your project progress and lower project costs.

Until recently, most projects were developed through custom codes or based on customized development platforms. However, this kind of development solutions has many disadvantages in the long term, such as:

- Long project life cycle and frequent delays
- Project members are under pressure and working overtime
- Poor demand expansibility and the inability to fast respond to new demands

- Poor software quality and system performance with lots of bugs
- Difficult and complicated maintenance process
- High turnover risk and series consequences of brain drain

Open-source software is now being applied in some projects to save costs. Although the software license cost is eliminated, such software is usually inferior to code development because the project may be delayed due to problems including:

- Limited functionality that cannot meet your requirements
- Unguaranteed services and product bugs
- High learning costs, requiring long-term study

The advent of FineReport can free you from the problems mentioned above and enable you to develop report applications efficiently. Thanks to the easy-to-use feature of FineReport, end users can maintain and update the system through easy modifications after the project delivery.

1.2. Why do End Users Need FineReport?

There are common problems arising during the process of information construction of enterprises:

1.2.1. The volume of business data shot up yet few of them are used for operation analysis and business management.

During informatization, enterprises will witness an increase of business data. Although most companies hold the opinion that data are a huge wealth, they don't know how to make use of them. Most data are merely accumulated together without effective data analysis and display, and very few of them are used to support operation decisions, operation analysis and business control.

1.2.2. Business data are disperse and difficult to utilize.

In most cases, an enterprise has several business systems (e.g. CRM, ERP and OA) which are operated independently from each other. Under these circumstances, you have to access different platforms to query data, and this makes it extremely hard to integrate and leverage business. In addition, multi-source data collection can lead to duplicate entries, data out of sync and different data structures, which can negatively impact the consistency and accuracy of enterprise data.

1.2.3. Processing data manually results in a heavy workload, low accuracy and poor data security.

When senior managers require comprehensive cross-department and cross-system data, the business department has to manually summarize and modify data via excel, and this results in heavy workload, low efficiency and the increased probability of data error. Besides, daily and monthly reports are made repeatedly and separately, making the reports inconvenient to prepare, maintain and view. Excel only has a simple authorization function which is far from enough to guarantee enterprise data security.

1.2.4. Original reports can no longer meet the requirements of new business.

When an enterprise customize reports for business analysis, the original reports may not meet the requirements from the changing business. In this case, secondary development is generally required to adjust the reporting system, which imposes great burdens on end users and software companies. Furthermore, the lack of linkage and correspondence among the reports makes it difficult to conduct a further comprehensive analysis.

1.2.5. Lack of a unified reporting management portal.

Although each business system has its directory, there lacks a common portal based upon which the administrators can inquire and manage all reports and allocate authorities to departments.

1.2.6. Displaying data in a straightforward way fails to give managers a holistic view of all the information.

The built-in reports in the business system only have basic data summary and display functions, and are weak in data visualization and analysis, not to mention business forecasting and pre-warning to support multiple business applications. Therefore, it is difficult for the managers to grasp global information and make decisions strategically.

1.2.7. People on business trips cannot view reports conveniently.

Today, mobile officing has become a trend. With portable terminals, the management can make better use of their fragmented time and take real-time control of the enterprise no matter where they are. However, due to all sorts of reasons, at least 80% of enterprises still work with reports on PCs, and this inhibits managers from getting real-time information and making decisions to adjust business timely.

Because of the problems described above, the decision making of the management is still dependent on experience, making adverse impacts on the management and operation of enterprises.

FineReport reporting software provides solutions to tackle all these problems.

a) Data Integration:

- Conveniently connect to multiple data sources.
- Retrieve data from multiple sources via a drag-and-drop interface.
- Related businesses data are combined in one report to support operation analysis and business monitoring.

b) Data Collection:

- Easily realize data entry to databases using reports as the interface.
- Ensure the correctness of the collected data via data validation and intelligent submission control.
- Conveniently collect data in online and offline modes anytime and anywhere.

c) Data Visualization

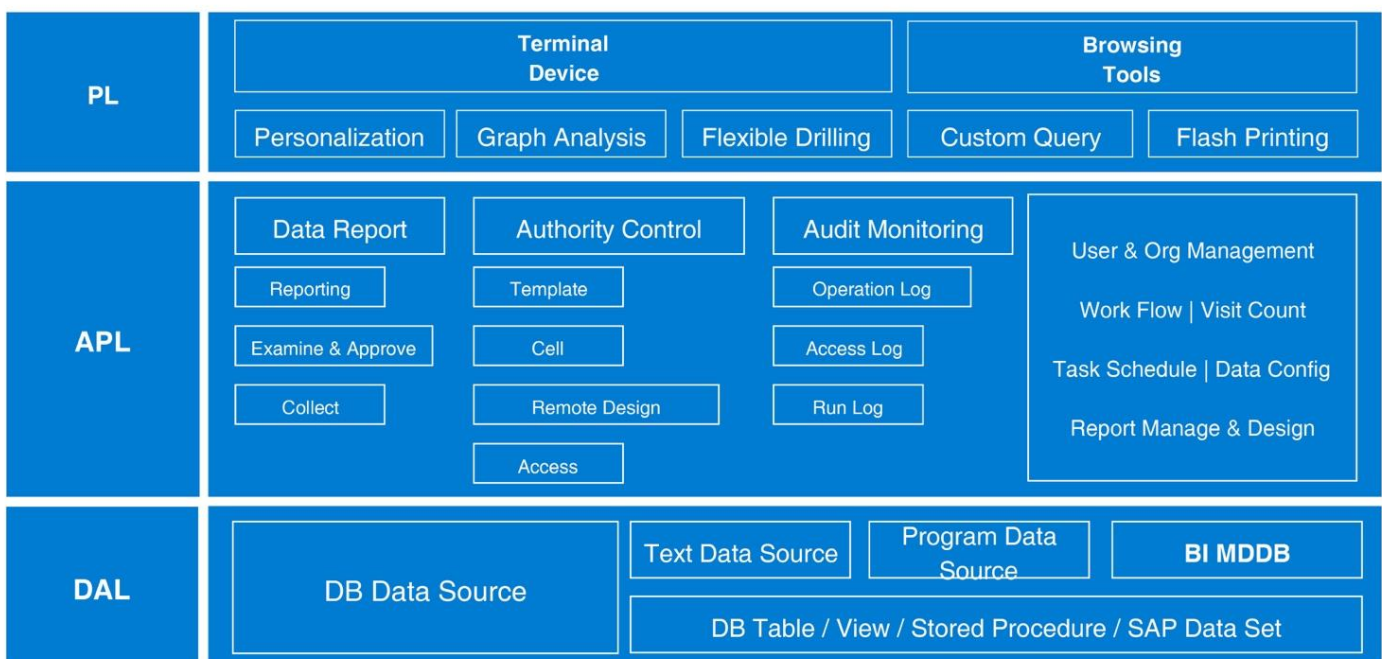
- Reports with informative tables and charts can be accessed via PCs or mobile devices.

- Gain deep insights through various analysis methods: chart analysis, drill-down analysis, multi-dimensional analysis, custom analysis, and real-time analysis.

2. FineReport System Structure

2.1. System Structure

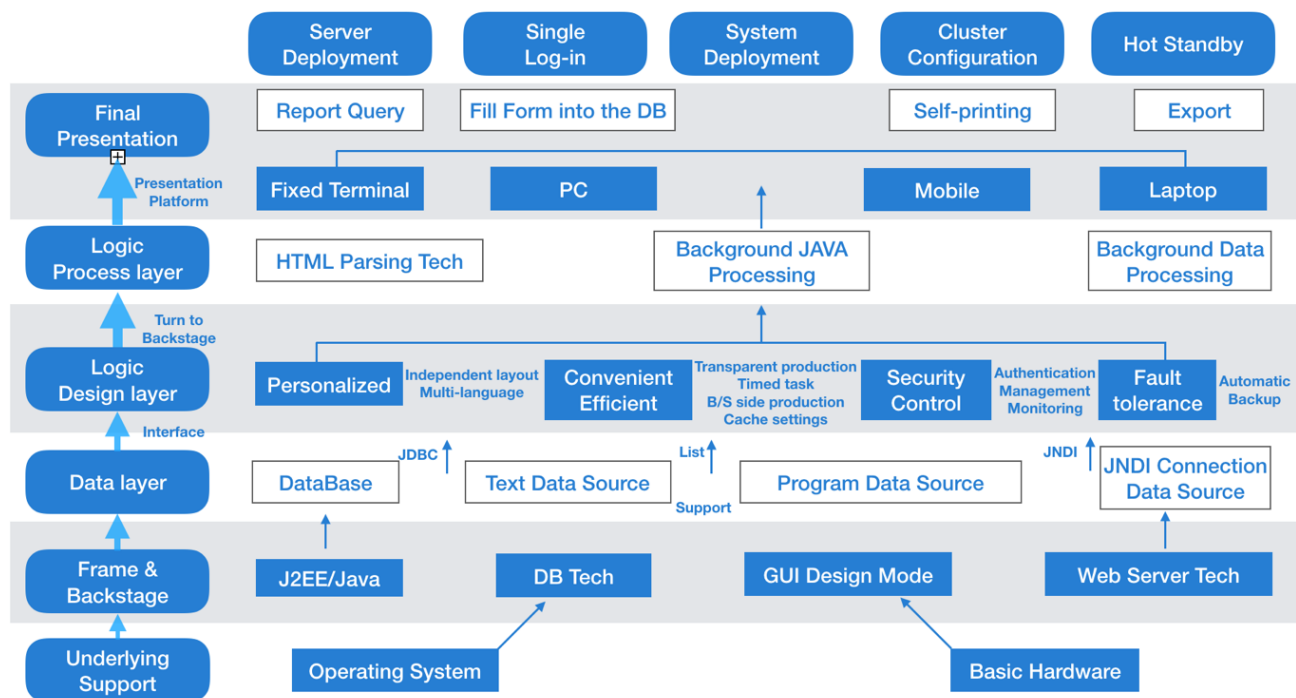
2.1.1 Functional Structure of FineReport



Report developers prepare the data source and design reports; administrators configure the report users and manage authorities; report users perform the query, analysis, printing, export, and data entry on reports on the front end. The report application supports PC/tablet/mobile/large screen devices, and is compatible with mainstream browsers.

2.1.2 Technology Architecture

FineReport is a pure Java software which has good cross-platform compatibility. It can be integrated with various business systems and be deployed in multiple operating systems and mainstream web application servers. FineReport uses HTML language as the front-end language.



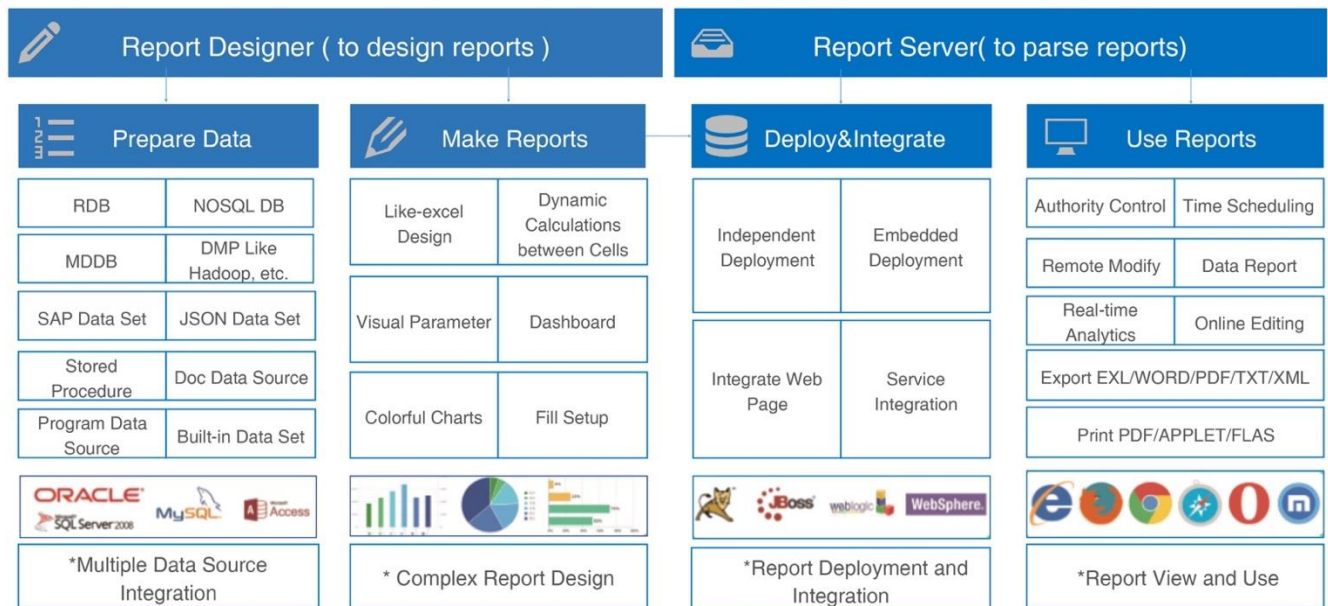
2.2. Product Composition

FineReport system is mainly composed of two parts:

- A report designer for designing report templates
- A report server for parsing report templates

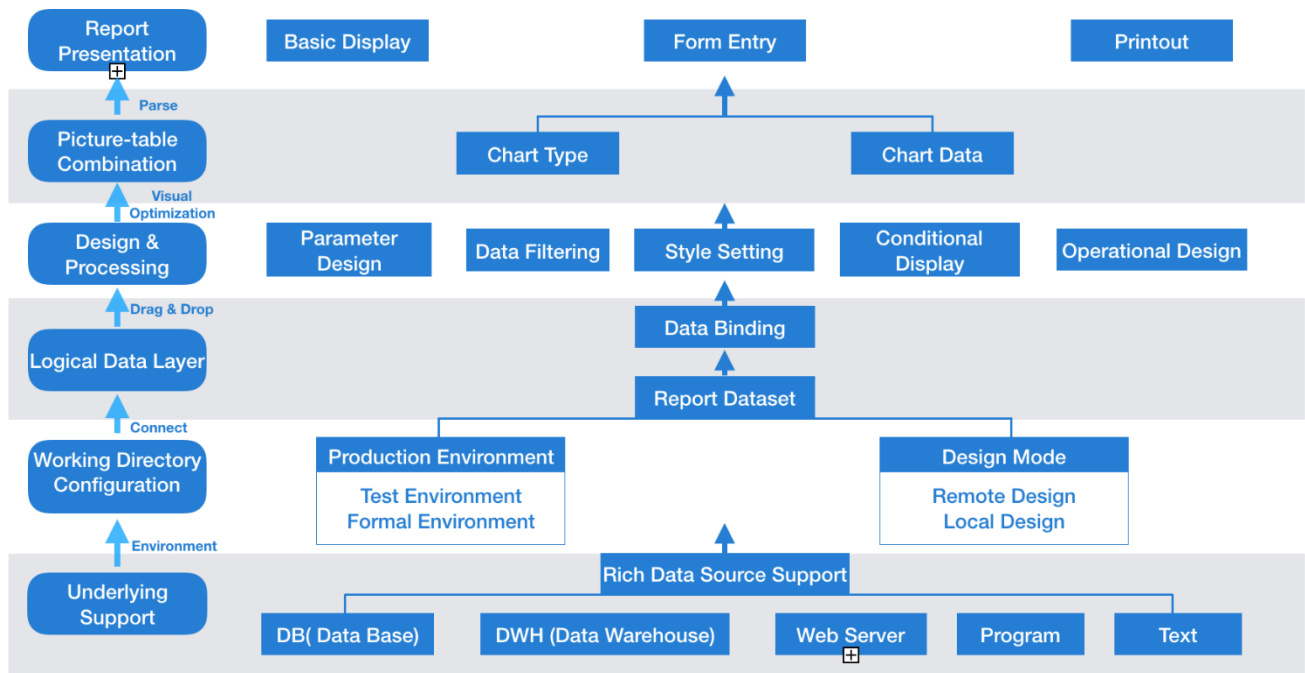
It is built with a three-tier structure.

- Connecting various data sources.
- Making reports in the report designer.
- Presenting reports through parsing templates by the report server.



2.2.1. Report Designer

FineReport designer supports various functions such as tables, charts, parameters, widgets, data entry, printing, and exporting. It is an integrated platform for development, debugging, and deployment.



2.2.2. Report Server

A report server is a server in the form of a servlet that parses a report in a web environment. The user interacts with the application through a browser and a report server.

- **Report parsing:** FineReport server turns report templates into readable and interactable reports by converting the template into an HTML page, making it convenient for users to view, modify and print data through the browser.
- **Cache management:** To reduce resource waste caused by frequent access, FineReport provides a powerful caching mechanism for data caching, making user access more efficient.
- **Connection pool configuration:** By establishing a database connection pool, the connections can be efficiently and safely reused.

- Performance management: FineReport supports distributed clusters, big data computing, and massive concurrency.

3. FineReport Function Overview

3.1. Data Support

FineReport can connect to data sources in a variety of ways. It can directly connect to popular databases through JDBC, or share a data connection with the application server through JNDI. What's more, SAP systems can be connected to FineReport through JCO.

Supported data sources are:

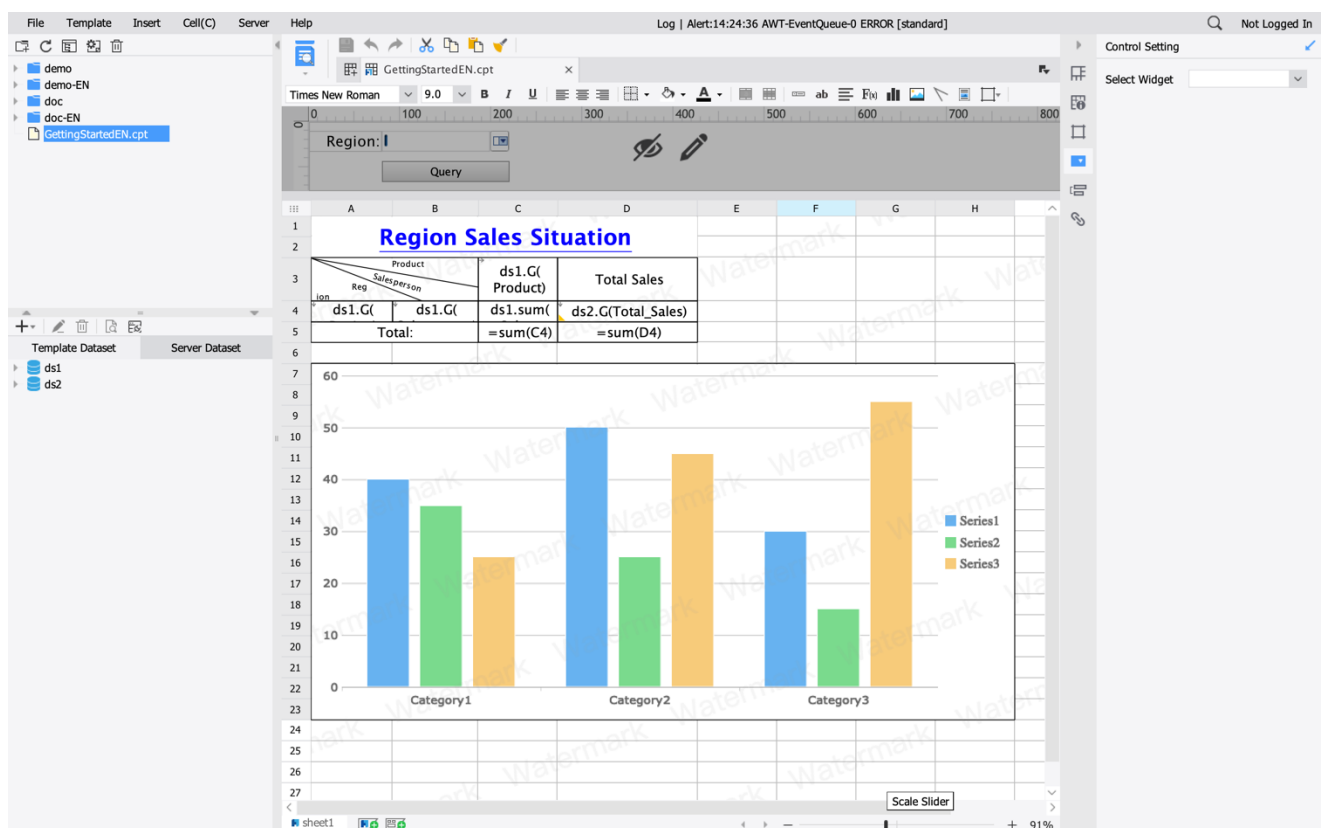
- Relational data sources: Oracle, SQL Server, MySQL, DB2, Sybase, Informix, and other mainstream relational databases; support SQL to retrieve data tables or views, as well as stored procedures.
- Text data sources: Excel files, TXT files, XML files, etc.
- Built-in data sources: Built-in server datasets and embedded datasets in report templates.
- Multidimensional databases: Essbase, SSAS, SAP BW, Hadoop, and FineBI cubes, etc.
- NoSQL data sources: Non-relational databases such as MongoDB.
- Other data sources: Program data sources, JSON data, SAP data sources, etc.

3.2. Designer Introduction

3.2.1. Code-free Development, Drag & Drop Operations

FineReport has an interface similar to Excel, and this significantly reduces the cost of learning. Anyone who is familiar to Excel can become a fast learner of FineReport.

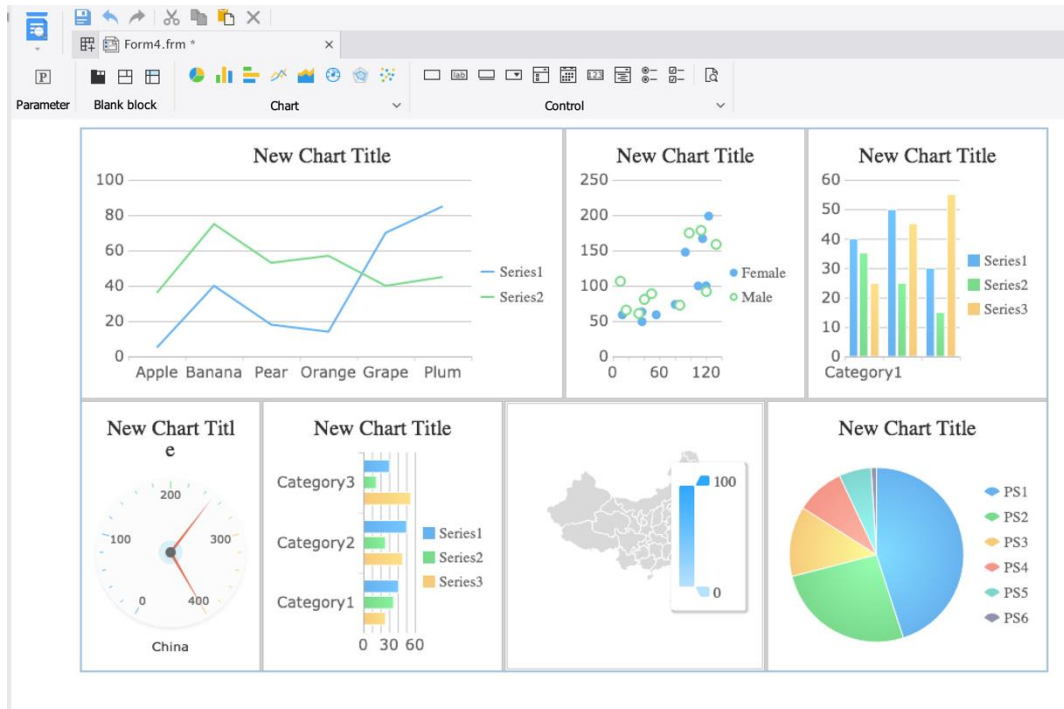
FineReport supports multiple-sheet and crosssheet calculations and is perfectly compatible with Excel formulas. Users can design complex report patterns in a WYSIWYG fashion.



The aggregation report design mode supports the design of large irregular reports. By contrast, the traditional Excel grid interface requires frequent merging and splitting of cells when processing irregular reports, which is extremely tedious.

| 质量设计结果一览表 | | 订单编号 | 客户代码 | 名称 | 目标销量 | 生产销量规格 | 订单尺寸 | 尺寸换算成毫米 | | | 检查 | | | | | | | | | | | | |
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| 标准代号 | 产品名称代码 | 调质度 | 钢种 | 退火区分 | ZCR区分 | 表面状态 | 冷轧宽度指定 | 用途代码 | 边缘状态 | 尺寸代码 | 时效区分 | 订单等级 | 检查机构 | 木材属性 | 外部认证和标志区分 | 涂漆印刷和检验 | 镀锌 | 镀锌内容 | | | | | |
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| 厚度指定 | | 厚度公差 | | 短边公差 | | 长边公差 | | 余量尺寸 | | 厚度超差 | | 不平度 | | | | | | 边降 | | | | | |
| 代码 | 数值 | 保证位置 | Min | Max | Min | Max | Min | Max | 短边 | 长边 | Min | Max | 输入 | 边缘 | 中间段 | 水平测量 | 垂直测量 | 切片测量 | 测量位置 | | | | |
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| 合格 | | | | | | | | | | | | | | | | | | | | | | | |
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| 拉伸试验1 | | 拉伸试验2 | | 粗糙度试验 | | 涂油 | | | | | | | | | | | | | | | | | |
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| 后处理附着量1 | | 后处理附着量2 | | 烘烤后结构重量 | | 耐腐蚀性试验值 | | 膜层试验 | | | | | | | | | | | | | | | |
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| 膜附卷重1 | | 膜附卷重2 | | 膜附卷重3 | | 膜附卷重4 | | 膜附卷重5 | | 膜附卷重6 | | 膜附卷重7 | | 膜附卷重8 | | 膜附卷重9 | | 膜附卷重10 | | 膜附卷重11 | | 膜附卷重12 | |
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The dashboard design mode enables you to create eye-catching management dashboards. It allows you to freely combine charts, widgets and report bodies on a canvas by drag-and-drop operations and realize component linkage and data drill down.

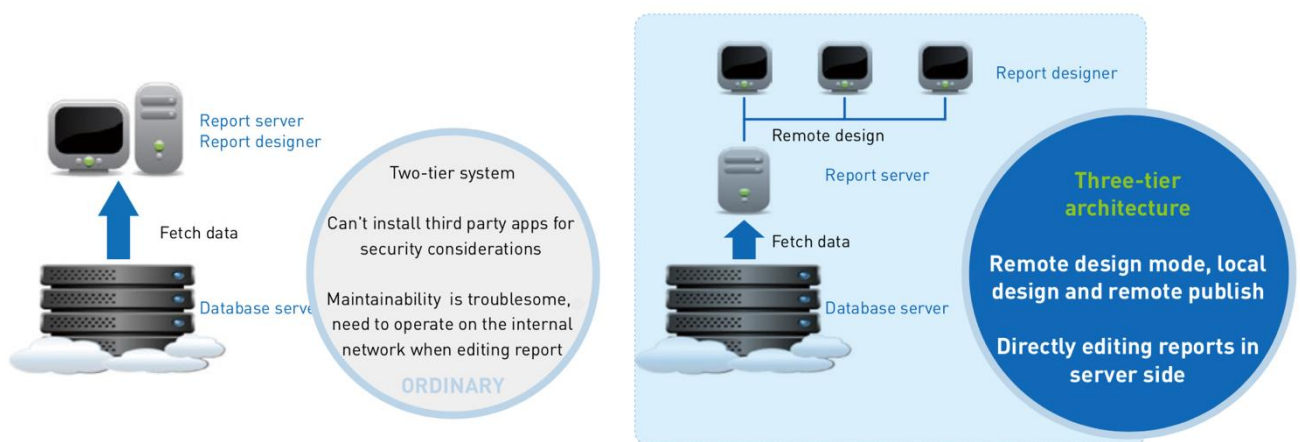


3.2.2. Remote Design

When traditional reporting tools work on an internal network, it requires to deploy both the designer and the reporting project to servers – this is often referred to as a two-tier architecture, which creates several problems. For instance, companies that use internal networks pay high attention to server security, so they tend to use a specific server to connect to the database. Under such circumstances, installing the designer on the server not only increases the maintenance difficulty of the server administrator, but also reduces the security level of the

server. What's worse, when the reporting requirements change, it requires technicians to do on-site operations, which is cumbersome and inefficient.

FineReport uses a three-tier architecture technology that allows users to design templates locally and publish them remotely via remote design. Furthermore, users can edit and change report templates directly on the server-side.



3.2.3. Multiple Working Directories

FineReport introduces the concept of a working directory for reporting. An individual report application or an integrated report environment can be considered as a working directory. Each working directory contains a corresponding jar file, a report template file, a resource management file, etc. When FineReport is installed on your computer, the built-in webroot folder under the local installation directory will function as an independent local working directory.

In practice, designing reports in remote directories becomes a common requirement. After report server integration is deployed in a real system, report designers can configure and edit report template files directly by connecting the designer to a remote environment. In the case of multiple environments, such as test environment, production environment, etc., FineReport's capability to conveniently switch among multiple work directories can provide a great convenience for designers.

3.2.4. Multiple-designer Collaboration

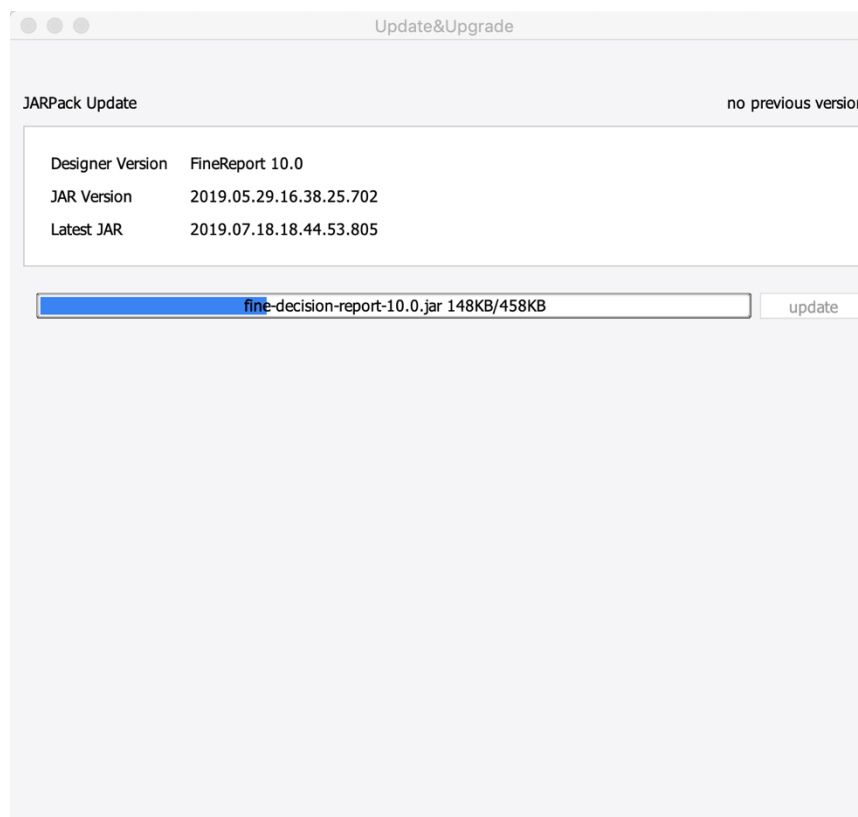
A system development team inevitably has many people engaged during the development of reports. The general method of version management is to apply SVN/VSS/CC, but the real-time performance is unsatisfactory, especially when facing the requirement of report backup and restore.

With FineReport, collaborative report design is practice. Multiple report designers can connect to the same report development environment through the remote designer. In addition, FineReport supports authorization, so as to control the scope of operation of each report maker and ensure data security. To prevent conflicts caused by multiple people editing the same file at the same time, FineReport offers a function to lock and unlock templates. Specifically, when report maker A is editing a report template, the system will lock the template and prevent others from editing the file at the same time.

3.2.5. Online Update & Upgrade

FineReport is the first report designer to support online updates in the industry. It allows users to upgrade to the latest version and timely experience the latest features without reinstallation.

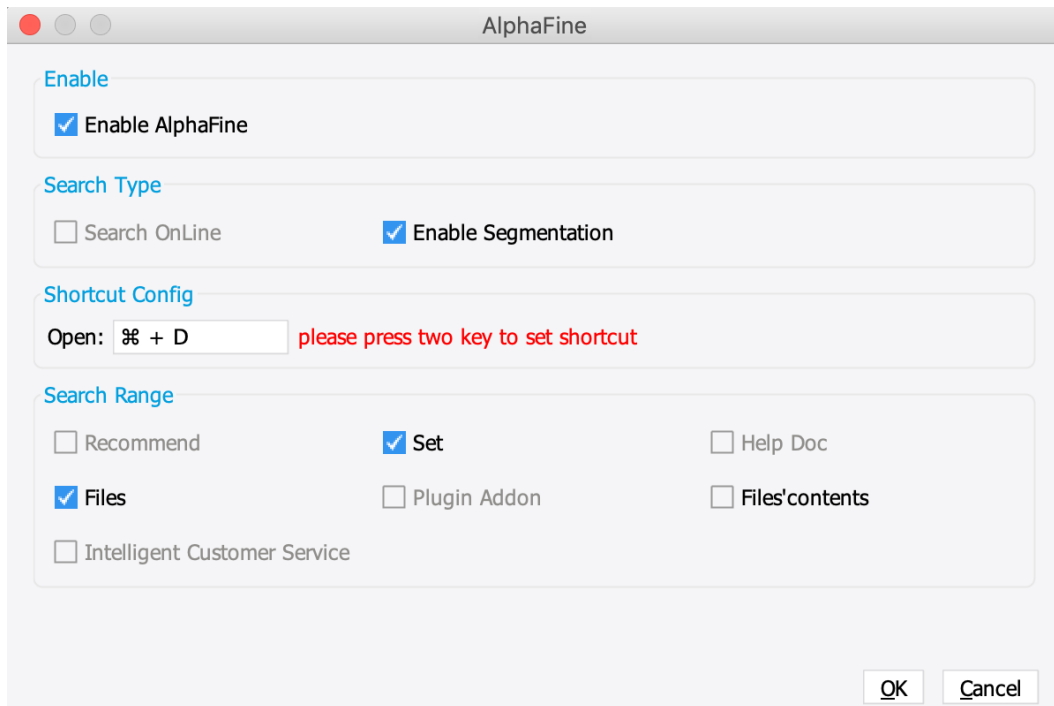
It supports automatic backup before the upgrade, and users can restore historic versions according to the backup node. Support displaying each update content and searching for update content.



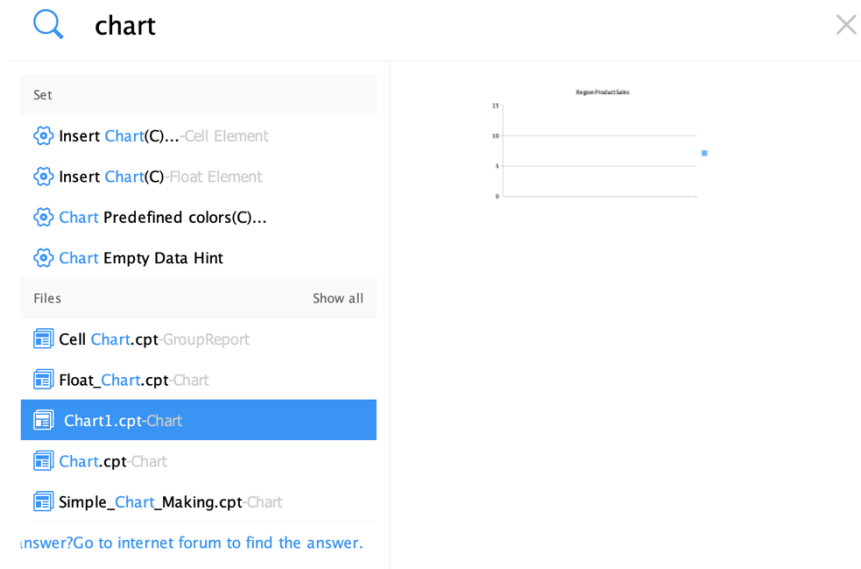
3.2.6. AlphaFine Intelligent Assistant

AlphaFine is an innovative report making intelligent assistant developed by FanRuan. It can help users fully understand and use FineReport.

Through AlphaFine, users can easily and quickly know the following information: product functions, demo templates, components & plugins, function settings, error message & corresponding solutions, etc. Users can access the available resources through AlphaFine to facilitate report production.



The following figure shows the search interface of AlphaFine, which allows you to search template content, function settings, and so on.



The following figure shows the intelligent detection function of AlphaFine. Based on the problem knowledge base in the cloud, users can quickly know the cause of the current error and the corresponding solution.



Oops!!! Sorry, Something Wrong.

Error codes:11300002 Line height and column width exceed the page size. Error Target: Row1

| Detail Message | Solution |
|---|----------|
| <pre>com.fr.stable.DeathCycleException: Error codes:11300002 Line height and column width exceed the page size. Error Target: Row1 at com.fr.page.generator.PaginateReportPageGenerator.dealWithRowBreak(Unknown Source) at com.fr.page.generator.PaginateReportPageGenerator.calcPageCount(Unknown Source) at com.fr.page.generator.PageGenerator.dealWithPageInforByPaperSize(Unknown Source) at com.fr.page.PG.dealWithPageInfor(Unknown Source) at com.fr.page.PG.getReportPages(Unknown Source) at com.fr.report.worksheet.AbstractResECWorksheet.getPageSetWithMapp</pre> | |

3.3. Complex Report Processing

3.3.1. Multi-source Data Association

FineReport provides a heterogeneous data source model that enables multi-source data association. Data in the same report can come from multiple tables in the same database or different databases.

| Region | Salesperson | Beverages | | | Desserts | | Sales Volume | Province |
|-------------|---------------|-------------|------|--------------|-----------|------------|--------------|----------|
| | | Apple Juice | Milk | Orange Juice | Chocolate | Dried Beef | | |
| East China | Sun Lin | 140 | 431 | 176 | 333 | 789 | 1869.0 | A |
| | Jin Shipeng | 290 | 635 | 500 | 420 | 156 | 2001.0 | B |
| | Zhang Shan | 300 | 324 | 340 | 318 | 289 | 1571.0 | C |
| | Sun Yang | 120 | 644 | 540 | 256 | 562 | 2122.0 | H |
| | Yuan Chengjie | 220 | 343 | 563 | 583 | 546 | 2255.0 | D |
| North China | Zhang Ying | 250 | 234 | 300 | 352 | 218 | 1354.0 | E |
| | Wang Wei | 180 | 666 | 490 | 384 | 541 | 2261.0 | I |
| | Zhang Wu | 233 | 700 | 233 | 435 | 219 | 1587.0 | F |
| | Han Wen | 123 | 111 | 760 | 356 | 345 | 1695.0 | G |

Data comes from table Sales_Volume of database A.

Data comes from table SaleRental of database B.




Data comes from table ds3 of database C.




3.3.2. Row and Column Symmetry

Some traditional reporting tools, due to the flaws in the strip-like presentation, the display effect of horizontally expanded data is not as satisfactory as the effect of vertically expanded data. This makes it difficult to make crosstabs and complicated reports. FineReport utilizes a processing model that naturally supports symmetry of rows and columns, and all operations on vertically expanded data can be fully applied on those expanded horizontally.

3.3.3. Row/Column Split, Pagination and Group report

The row/column split report allows the user to customize the number of lines per column and the number of columns per line, repeat certain lines and columns and automatically supplement blank lines. This function is especially suitable for the production of employee information cards and book information cards.

| | | | | | |
|-------------------|---|----------------------|---|--------------------|---|
| Zhang Ying | EMPID1.BMP | Zheng Jianjie | EMPID4.BMP | Jin Shipeng | EMPID7.BMP |
| No ID: |  | No ID: |  | No ID: |  |
| Job Position: | Sales manager | Job Position: | Internal sales coordinator | Job Position: | Clerk |
| Date of Birth: | 1979-12-08 00:00:00 | Date of Birth: | 1988-09-19 00:00:00 | Date of Birth: | 1985-05-29 00:00:00 |
| Address: | No. 245, Fuxingmen | Address: | No. 789, Qianmen Street | Address: | No. 119, Cheng Fu Road |
| Zip Code: | 100098 | Zip Code: | 100053 | Zip Code: | 210062 |
| Contact: | 010-65559857 | Contact: | 010-65558122 | Contact: | 025-87119093 |

| | | | | | |
|-----------------|---|-----------------|---|--------------------|---|
| Wang Wei | EMPID2.BMP | Zhao Jun | EMPID5.BMP | Liu Yingmei | EMPID8.BMP |
| No ID: |  | No ID: |  | No ID: |  |
| Job Position: | Clerk | Job Position: | Sales manager | Job Position: | Internal sales coordinator |
| Date of Birth: | 1985-02-19 00:00:00 | Date of Birth: | 1975-03-04 00:00:00 | Date of Birth: | 1988-01-09 00:00:00 |
| Address: | No. 890, Luomahuayuan Residential area | Address: | No. 78, Xueyuan Road | Address: | No. 76, Jianguomen |
| Zip Code: | 300193 | Zip Code: | 201800 | Zip Code: | 201400 |
| Contact: | 022-65559482 | Contact: | 021-65554848 | Contact: | 021-65551189 |

For the purpose of browsing and printing, we often want to display the contents of the report on different pages according to certain rules. This can be realized by pagination. FineReport supports a variety of report pagination settings:

- Specify pagination: Users can decide how to paginate according to the actual situation. For example, you can specify a fixed number of pages and display a fixed number of lines in each page, or let the report to paginate according to groups.
- Dynamically repeat title and end lines: No need to repeat input and design to achieve titles and footers on different pages.
- In-page total: Totals all data displayed in the page at the end of each page.
- Non-pagination preview: All data are displayed on a single page, and the user can browse the entire page by dragging the scroll bar.
- Freeze the header: When dragging the scroll bar up and down or left and right, the position of the first row or the first column is fixed relative to the window.

Grouping reports in irregular formats are commonly used in enterprises. In order to support such reports perfectly, FineReport supports a variety of report grouping settings.

- Custom formula grouping: Data are grouped according to a certain field, such as a date field, and each date corresponds to a group. Considering the grouping is too detailed, you can choose to group data by year and week.
- Custom condition grouping: Custom condition grouping means to group data by range. The groups are specified by defining a range of data, such as according to the score range, age range, time period, etc. Record values fall in a certain value range are displayed in the corresponding group.

- **Adjacent consecutive grouping:** The database table data is entered in time series. When displaying data, FineReport can realize that the field value in adjacent rows are the same according to the time sequence, making the report have a natural grouping.
- **Grouping:** In sales analysis, the exists markets with high sales. When reporting the sales performance, report makers tend to use these markets as the main analysis target and summarize the data of other markets as an “Other” group. This can be realized by merge grouping.
- **Hierarchical tree:** For enterprises with hierarchical groups or departments, FineReport can quickly and automatically process the data structures with hierarchy.

| Attendance Record Analysis | | | | | | | |
|----------------------------|------------------------------|------------------------------|-------------------------|-------------|-------------|-------|----|
| Company | Department | Employer | Basic System | | | Total | |
| | | | Late | Leave Early | Absenteeism | | |
| Sky Technology, London | Departments of Branch Office | Employers of Branch | 9 | 8 | 1 | 18 | |
| | Personnel Department | Emplyers fo departments | 3 | 2 | 1 | 6 | |
| | Planning Department | Emplyers fo departments | 4 | 5 | 0 | 9 | |
| | | Nicole | 1 | 1 | 0 | 2 | |
| | | Robert | 0 | 0 | 0 | 0 | |
| | | Olina | 2 | 1 | 0 | 3 | |
| | | Mavis | 1 | 1 | 0 | 2 | |
| | | Polly | 0 | 2 | 0 | 2 | |
| | | Sales Department | Emplyers fo departments | 2 | 1 | 0 | 3 |
| | Sky Technology, Bristol | Departments of Branch Office | Employers of Branch | 4 | 6 | 0 | 10 |

3.3.4. Dynamic Cross-cell Calculation

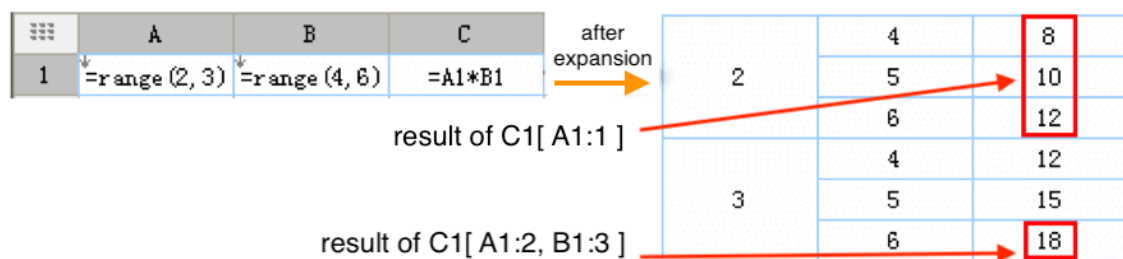
Based on the characteristics of data expansion in the lattice interface (i.e. the one-to-many relationship between the design interface and the preview result, FineReport provides a computing system for positioning and referencing data which are expanded when being

previewed. This system utilizes hierarchical coordinates to realize cross-cell calculation. The mechanism behind hierarchical coordinates is:



whereby Cellx refers to the target cell, Lk refers to the left parent of Cellx, Tk refers to the upper parent of Cellx.

You can better understand the idea with the example below:



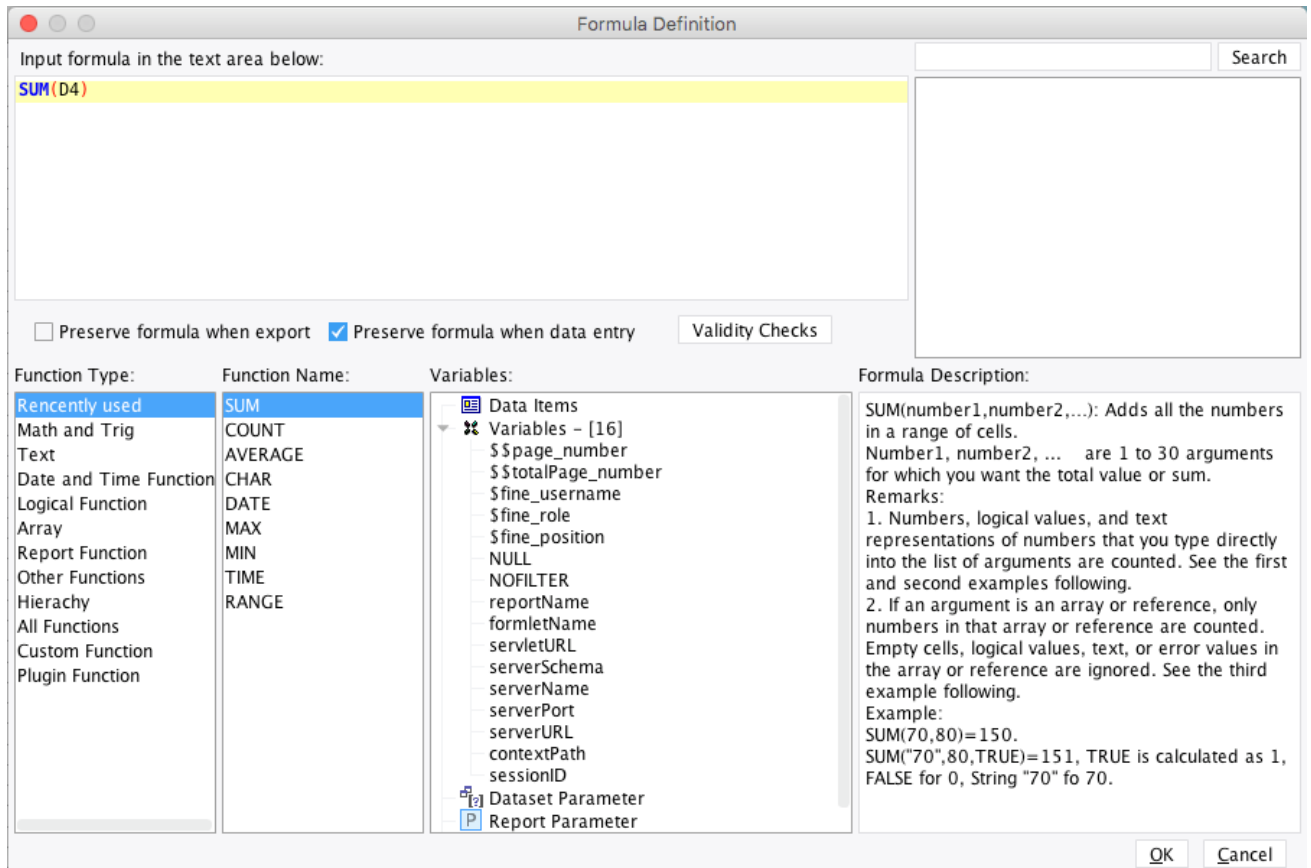
Dynamic cross-cell calculation covers calculations commonly used in reports: proportion, ratio, ranking, row number, running total. Additionally, you make these calculations within data groups or cross data group, so as to generate indexes like MoM ratio, YoY ratio, ranking within group, etc.

3.3.5. Formula

In the process of template making, formulas are frequently used to generate statistics.

FineReport is fully compatible with Excel formulas and offers a set of functions. All the wrapped functions have detailed descriptions to enable fast learning. The function of formula and rich

functions reduce repeated manual work during template production and make report maintenance easier.



Types of functions provided by FineReport: math and trigonometric functions, text functions, date and time functions, logical functions, array related functions, table data functions, hierarchical coordinate functions, and other functions.

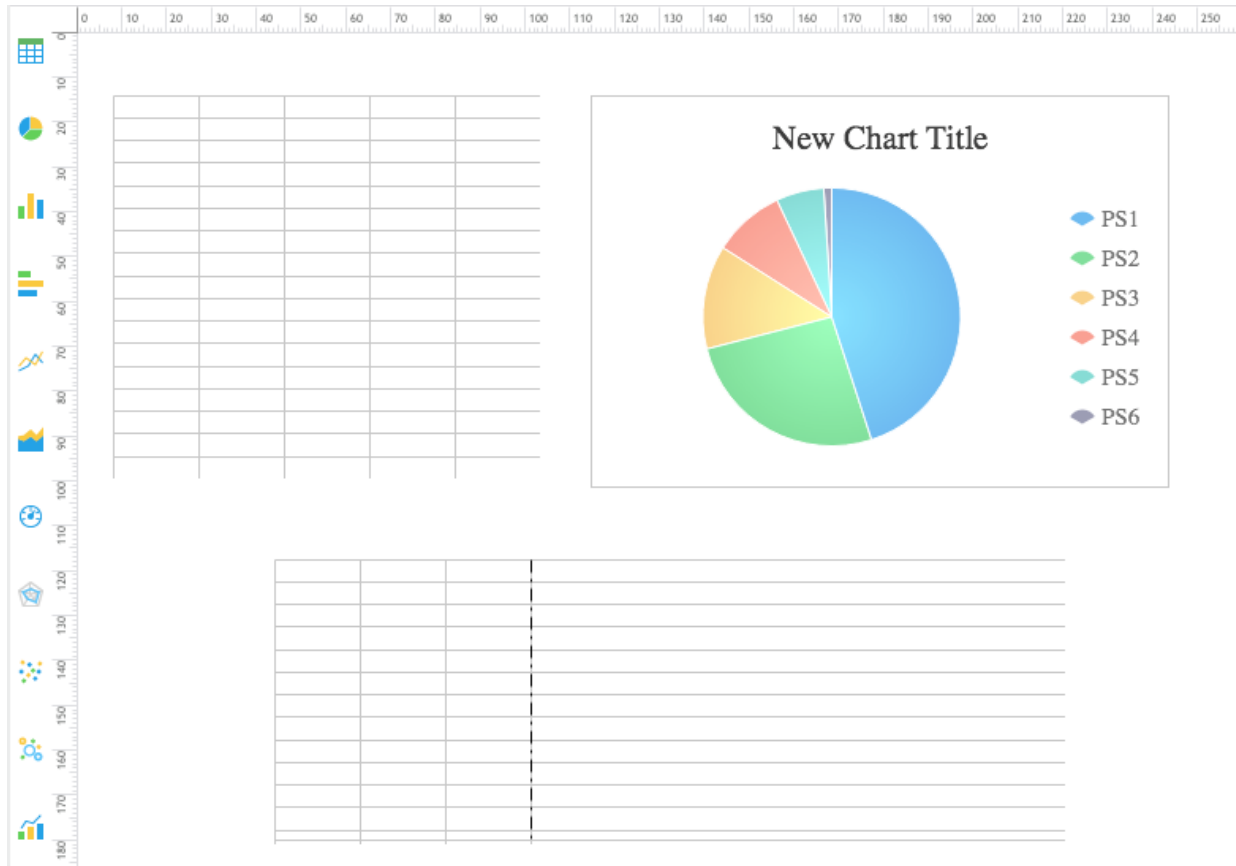
FineReport allows users to customize functions according to special business requirements. The function definition is based on Java and should follow FineReport function definition rules.

3.3.6. Aggregation Report

Some complex large reports display data in fragmented areas and involves many statistics and indicators. It is difficult to produce such reports using conventional methods.

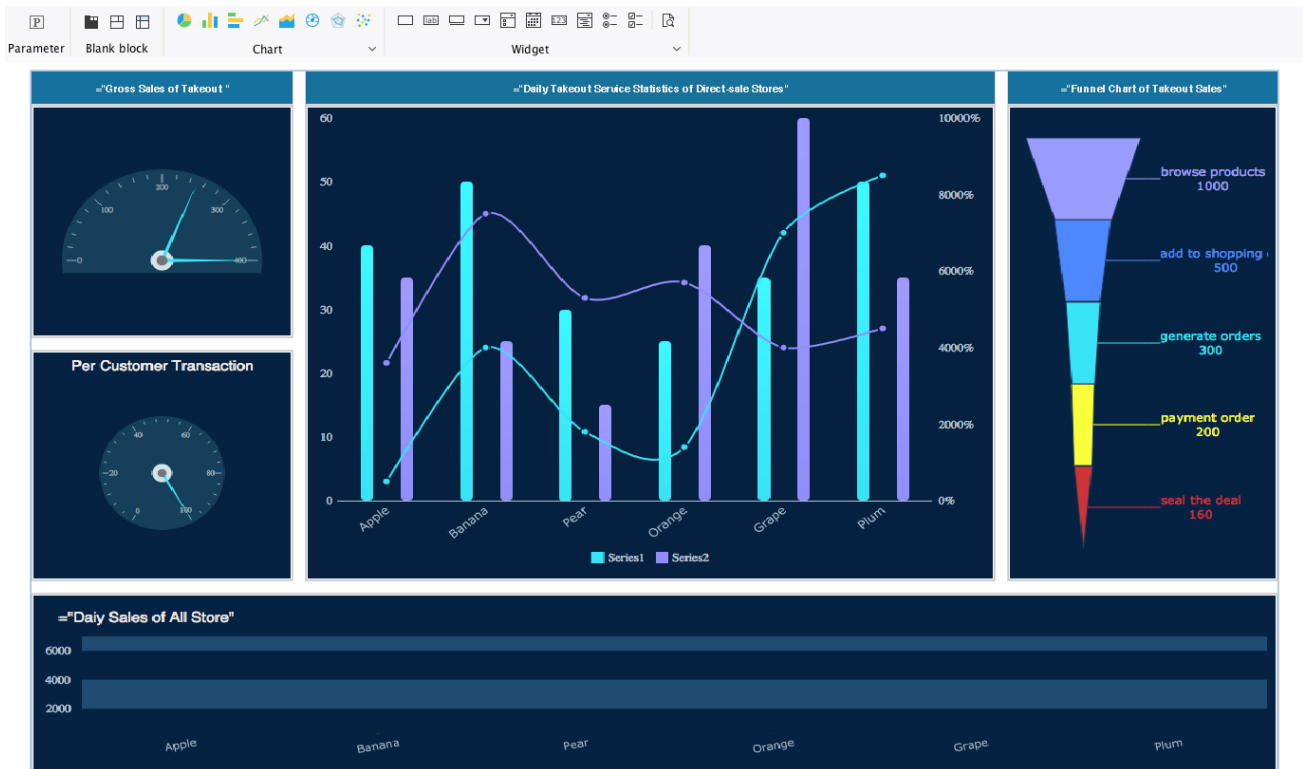
| Transportation Revenue (CNY) | | | | | | | | Train Access to Each Station | | | | | | | | | | | | |
|------------------------------|--------|------------------|-------------|---------------|----------|----------------|-----------|------------------------------|----------|--------------------|--------|------------------|--------|------------------|-----------|----------|----------|------------|---------|-------|
| Today | | | | Monthly | | | | Yearly | | | | Entrance & Exit | | hand over | | | | receive | | |
| 33974872.47 | | | | 33974872.47 | | | | 8914304128.66 | | | | | | 10,000-ton | normal | loaded | ton | 10,000-ton | normal | empty |
| All lines | | Train | | Workload | | Turnaround | | Stopping | | 1 day | | Huanghua Harbour | | 14 | 64 | 4707 | 318485 | 78 | | 4762 |
| Plan | 10424 | 6949 | 1.5 | 11.5 | Wangzuo | | 13 | 45864 | 45864 | | | | | 13 | 728 | | | | | |
| Actual | 10180 | 7486 | 1.36 | 10.3 | | | Suning | | 2 | | | | | 6552 | 6552 | 2 | 104 | | | |
| Technical Station Status | | | | | | | | | Shengang | | 10 | 41580 | 41580 | 10 | 653 | | | | | |
| South Station | | | | | | | | Tianjing Subway | | | 5 | 20526 | 20526 | 6 | 396 | | | | | |
| Train Used | | Loaded Train | Empty Train | Weight (tons) | Stopping | | Mean-time | | | Inside the station | | 22 | 91528 | 91528 | 21 | 1383 | | | | |
| Plan | SH | 1050 | | 451667 | 20 | H | 1.5 | H | Total | | | 14 | 116 | 210757 | 524535 | 0 | 130 | 8026 | | |
| Actual | SH | 796 | 317 | 479 | 480586 | | H | 1.3 | | | H | 1 month | | Huanghua Harbour | | 14 | 64 | 4707 | 318485 | 78 |
| Full Site | 935 | 450 | 485 | Disintegrated | | Marshalling | | Handling Train | | Wangzuo | | | | | | 13 | 728 | 45864 | 13 | 728 |
| | | | | | | | | | | | | | | | | Train | | 488 | | Train |
| North Station | | | | | | | | Tianjing Subway | | 10 | 659 | 41580 | 10 | 653 | | | | | | |
| Train Used | | Loaded Train | Empty Train | Stopping | | Mean-time | | | | Inside the station | | 5 | 330 | 20526 | 6 | 396 | | | | |
| Plan | 900 | | | 2 | H | 1.4 | H | Total | | | | 14 | 116 | 7976 | 524535 | 0 | 109 | 6643 | | |
| Actual | 474 | 132 | 342 | 5 | H | 1.2 | H | | | 1 year | | Huanghua Harbour | | 2341 | 16773 | 1177943 | 78710243 | 19132 | 1176817 | |
| Weight (tons) | | Rejection Weight | | Fill Empty | | Handling Train | | Wangzuo | | | | | | 3022 | 169206 | 10659962 | 3016 | 168643 | | |
| Plan | 406287 | 13 | Train | 16 | Train | 433 | Train | | | | | | | Suning | | 621 | 32292 | 2034390 | 621 | 32289 |
| Actual | 460888 | 137 | Vehicle | 127 | Vehicle | 28579 | Vehicle | Shengang | | 4696 | 306166 | 1784818 | 4693 | | | 305936 | | | | |
| | | | | | | | | | | Tianjing Subway | | 1012 | 66700 | 4152415 | 924 | 60918 | | | | |
| | | | | | | | | Inside the station | | | | 4805 | 316564 | 20072754 | | | | | | |
| | | | | | | | | | | Total | | 2341 | 30929 | 2068871 | 117414582 | 0 | 28386 | 1744603 | | |

Based on the characteristics of complex large reports, FineReport introduces the function of aggregation report. An aggregation report consists of several report blocks (which are called aggregation blocks). The blocks are placed independently and the data inside can have relationships.



3.4. Dashboard

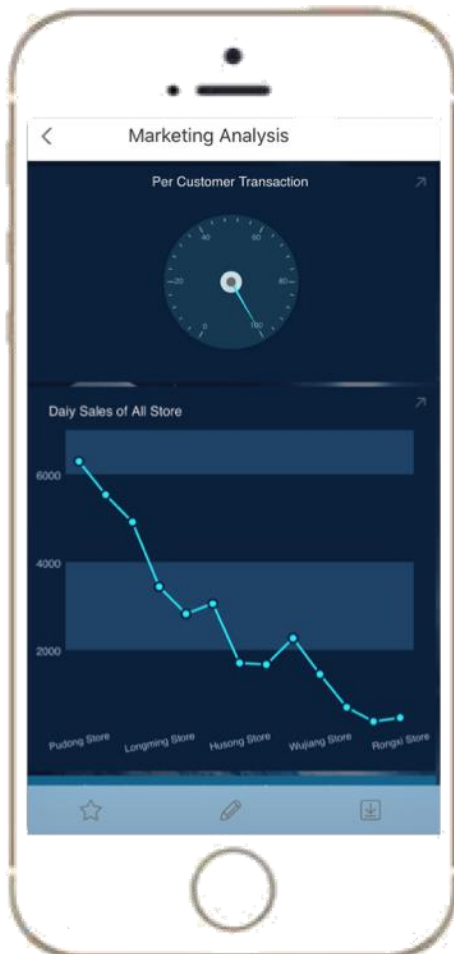
Dashboard design in FineReport is based on a canvas-style operation interface, which can adjust to large screens and mobile terminals. It can help users to create powerful and comprehensive dashboards through simple drag and drop operations. These dashboards are able to integrate different enterprise data on the same page, vividly display various business indicators of the enterprise, and realize multi-perspective data analysis.



FineReport dashboards possess several advantages:

3.4.1. Multi-screen Adaptation

Support horizontal adaption and bi-directional adaption to screens. The dashboard template only need to design once, and when being previewed, they can be adaptively displayed on PCs, tablets, mobile phones, TVs and other terminal equipment.



3.4.2. Rich Dashboard Components

FineReport dashboards support a wide range of components: 50+ chart types, 20+ widgets, and report blocks. You can freely combine these components and customize visual effects of components based on JavaScript API.



3.4.3. Multiple Layout Modes

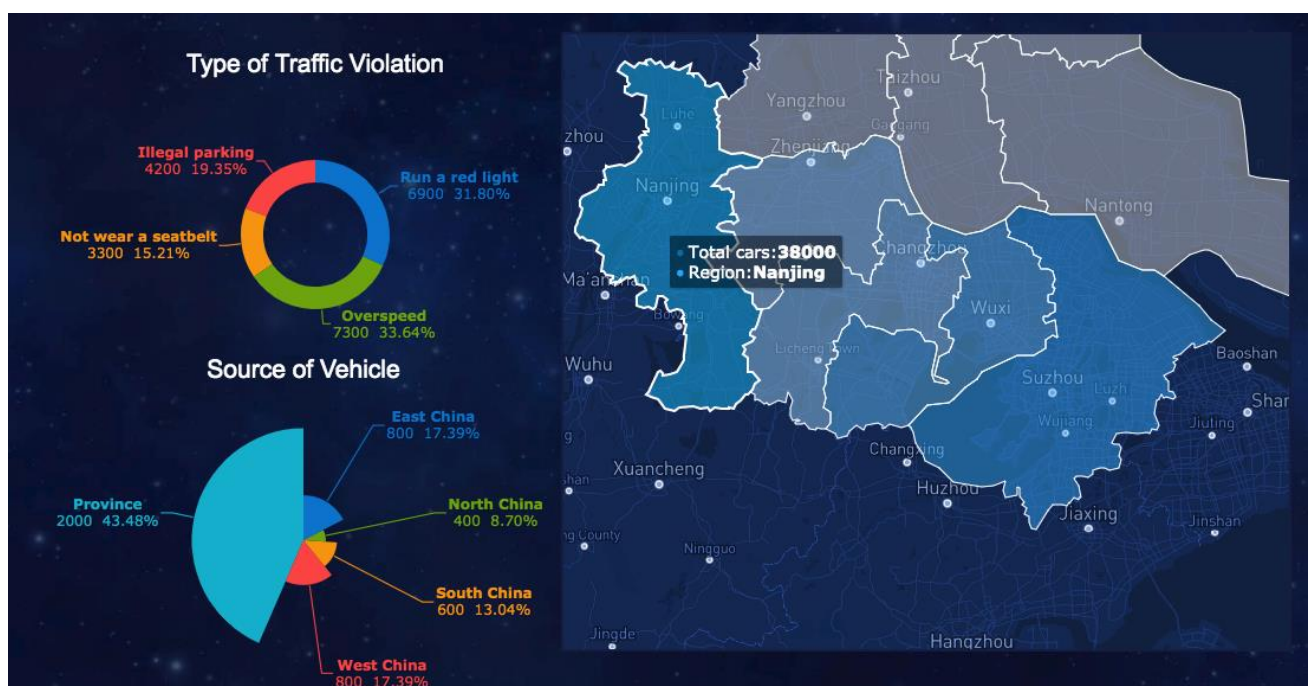
Dashboard design supports a variety of layout methods: adaptive layout, absolute layout and tab layout. Under adaptive layout mode, components zoom to fit the screen. Absolute layout mode allows components to overlap with each other. Tab layout enables you to display different information in each tab, so as to make the most of the dashboard space.

3.4.4. Component Reuse

You can copy, cut, and paste any dashboard component and reuse them in the same or different dashboard templates. The component reuse let users make good-looking reports more quickly.

3.4.5. Component Linkage and Analysis

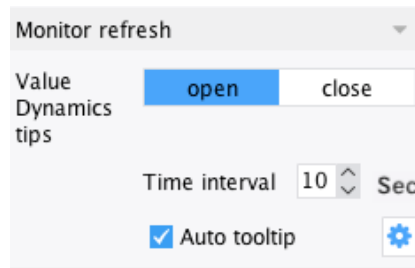
Components in the dashboard can be linked and the linkage enables you to make analysis. For instance, when you click on one region in a map, the linked charts will be refreshed and the data for the selected region are displayed accordingly.



3.4.6. Data Monitoring

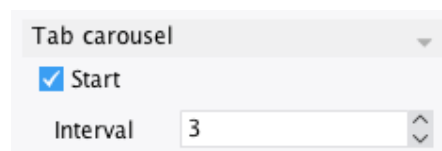
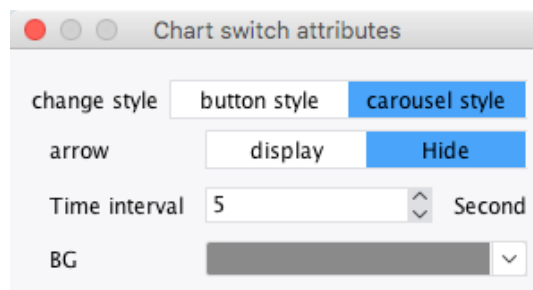
The connected data source can be monitored and compared. When data are changed, the preview result on the browser is updated in time, so you can always view the latest data.

Different from the refresh function of common reports, dashboards support partial refresh of components, and each component can have independent settings. The refresh function of charts also supports dynamic prompting of changed data.



3.4.7. Carousel

The function of carousel enables dashboard to display components with different data sources in the same position. The carousel can be based on charts or tabs. The carousel time interval can be customized by users.



3.4.8. Large screen combined with hardware

FanRuan cooperates with top hardware manufacturers, so as to project FineReport dashboards to various large-screen terminals, including all-in-one machines, smart TVs, spliced screens, LED screen walls and so on.



3.5. Report Export and Printing

3.5.1. File Export

FineReport supports exporting files on the designer and on browsers.

- Export format: PDF, Word, Excel, TXT, SVG and image format (PNG, JPG, BMP, etc.).
- Export big data: Provide API for exporting big data in Excel format.
- Output property setting: Control the export of hidden rows and hidden columns.

Support setting open passwords and edit passwords.

3.5.2. No client Printing and Local Software Printing

"No Client Printing" is to call the printing function of the browser. Some browsers also support silent print. This printing mode is lightweight and flexible.

"Local Software Printing" is realized by downloading the client locally and calling the local client. You can configure printer, the number of copies, the page range, the layout style, the paper size, and margins. You can save the settings to realize silent print without previewing.

Overall, the FineReport report printing solution has various advantages: precise pagination, precise alignment, no footer/header interference, self-defined paper orientation and format, continuous printing, and cross-browser printing.

3.5.3. Multiple printing options

The combination of no client printing and local software printing fulfills the application requirements in usage scenarios . The supported printing options are listed as follows.

- Print pre-printed forms: Support absolute positioning of invoice sets, check sets, etc.
- Pagination: Force the sheet to paginate according to the number of rows or the number of data groups; support duplicate headers, title/end rows, and title/end columns; fill space with blank lines to ensure uniform printing format;
- Zoom: When the template page size and printer page size does not match, you can set a zoom ratio for the template to make it fit the printer page size.

- Silent printing: When you click the print button, the printer setting window does not pop up and the printing task begins directly. This function is only supported by IE and local software.
- Offset: Different printers may print the same template differently; for instance, the position of the content demonstrates an offset compared to the desired effect. FineReport enables you to customize the offset of the printer so as to achieve the desired printing effect.
- Automatically select paper and orientation: The page settings of the template can be passed to the printer, so the paper size and orientation can be identified automatically.
- Print sheets from the same report template in different page sizes.
- Bulk print: When there are a lot of templates to print and each template contains several parameters, you can use JavaScript to call FineReport's print method to print the templates in batches.

3.6. Data Query and Filtering

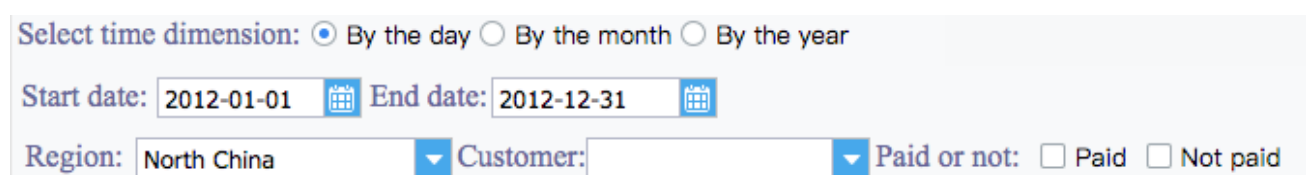
In many cases, users want to enter condition values to query data and control the displayed range of data. FineReport offers the definition of parameters and a parameter interface, so users can control the content and the form of the report by inputting query conditions through the interface.

In addition to the parameters entered by users, some of the necessary parameters are determined by the system environment, such as the username, role, current date and time of the currently logged in user. These parameters allow you to perform flexible data analysis and their values can be obtained through FineReport designer and system configuration.

The parameters supported in the FineReport report can be categorized into template parameters and global parameters according to their scope of use. Global parameters can be used by all templates under the current project application while template parameters is applicable only in the current template. If considering the ways being used, parameters can be divided into template parameters and dataset parameters. Dataset parameters are defined in SQL statements and directly extract the data satisfying the condition. Differently, template parameters obtain the required data by participating in filtering conditions after taking out all the data. When the data amount is considerable, the usage of dataset parameters can improve the rendering efficiency of the report.

3.6.1. Rich control widget types

FineReport provides a variety of widgets, such as text, text area, number, password, button checkbox, checkbox group, radio button group, date drop-down box, drop-down check box, date, file, iframe, list, drop-down tree and view tree. You can custom widget attributes and use predefined widgets.



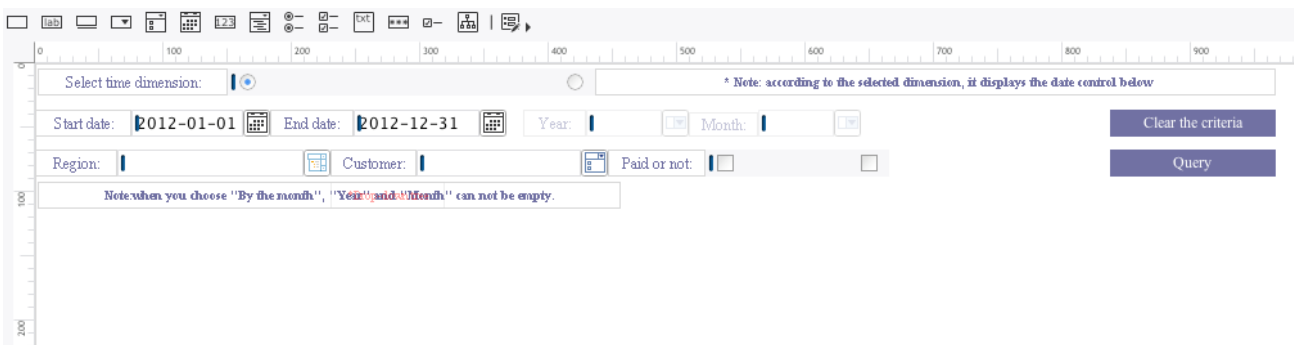
Select time dimension: By the day By the month By the year

Start date: End date:

Region: Customer: Paid or not: Paid Not paid

3.6.2. Flexible parameter interface

In order to allow users to quickly implement data query via parameters, FineReport provides a parameter interface (a panel) to place widgets involved in data query. The user can design the interface by simply dragging widgets. The parameter interface of FineReport is probably the best in the industry.



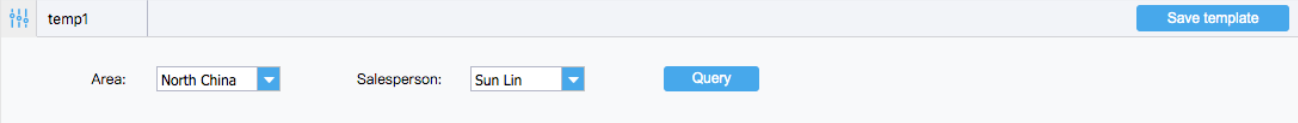
Users can perform simple attribute setting on the parameter interface. The settable attributes include whether to display the parameter interface, display the report content before clicking the query button, the background of the parameter interface, and the display position of the parameter interface.

3.6.3. Advanced functions of parameter query

- **Parameter linkage:** The available values of the latter parameter will change according to the former one. This function is often used for filtering queries with multiple levels; for example, if “China” is the value of parameter country, the available values of the parameter provinces are “Jiangsu, Shanghai, Anhui, Zhejiang” , etc. Similarly, if you enter the United States for country, the available values for province are US states.

- **Dynamic columns:** In most cases, a report displays a table of data with fixed number of columns. However, we may encounter situations where the columns of a dataset need to be queried, and such effect is named dynamic columns. FineReport can achieve the effect in two ways: one is through the use of functions, and the other is through the definition of datasets.
- **Automatic query:** The user can view the query result directly after inputting the parameter values without clicking a query button.
- **Empty parameter values to show all:** If users directly clicks the query button without defining the values of some parameters, and the ordinary reporting tool may directly prompt the SQL spelling error. FineReport can pre-set the parameter value to get all the values.
- **Dynamic display parameter widgets:** In many cases, some widgets only need to be displayed when certain conditions are met. For instance, if select “annual report” , the parameter interface will display the drop-down box with year options; similarly, if select “monthly report” , it will display the drop-down box with year and month options.
- **View different reports according to parameters:** When querying data, the common practice is to display- different data according to different parameter values; specifically, the parameters control the data. Parameters in FineReport also allow users jump to different reports according to parameter values.

- Record user's common parameter combination: User's most commonly used parameter query combinations are stored and and be called directly at the next time. FineReport also supports intelligent recommendation of common parameter combinations according to user habits.



temp1 Save template

Area: North China Salesperson: Sun Lin Query

3.7. Chart

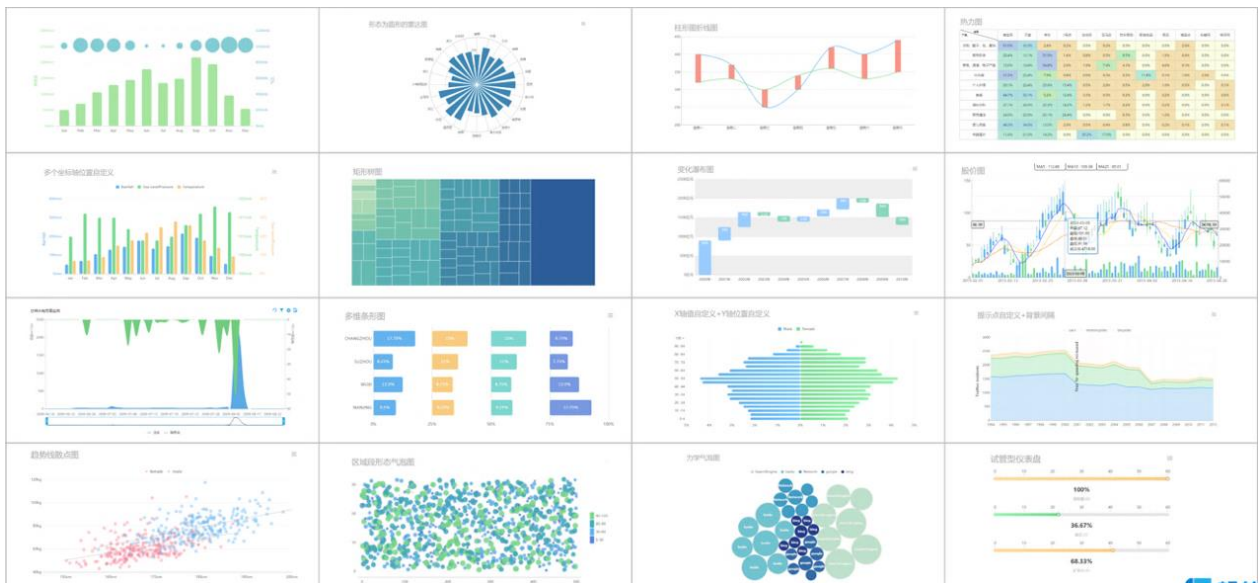
3.7.1. Advanced Chart Technology

The chart technology of enterprise reporting tools and business intelligence products often rely on third-party charting widgets, such as FusionCharts and JFreeChart, but such approach has natural defects: weak underlying functionalities, additional fees for advanced charts, weak technical support and the lack of upgrade security.

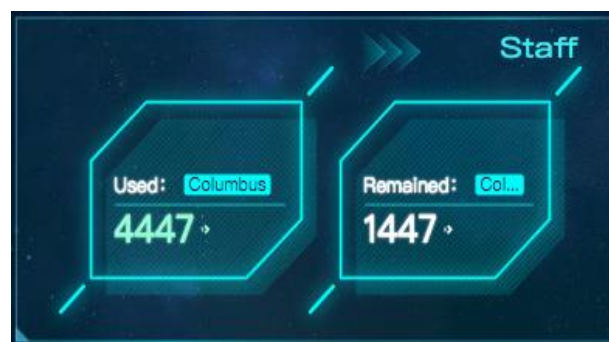
FanRuan provides users with self-developed HTML5 charts, with advantages such as flexible parameter passing and good interaction effects. It perfectly supports Android and iOS mobile operating systems. A chart types support rich animation effects and have rich customizable settings. In addition, FineReport provides a interface that enables users to introduce third-party chart widgets according to their needs.

3.7.2. Rich chart types and styles

Chart types supported in FineReport: pie, column, bar, line, area, gauge, radar, scatter, bubble, combination, multilevel pie, map, drill map, rectangular treemap, funnel, heatmap, word cloud, gantt, structure map. Each class is subdivided into various sub-types; for instance, column chart includes stacked column chart and percentage stacked column chart.



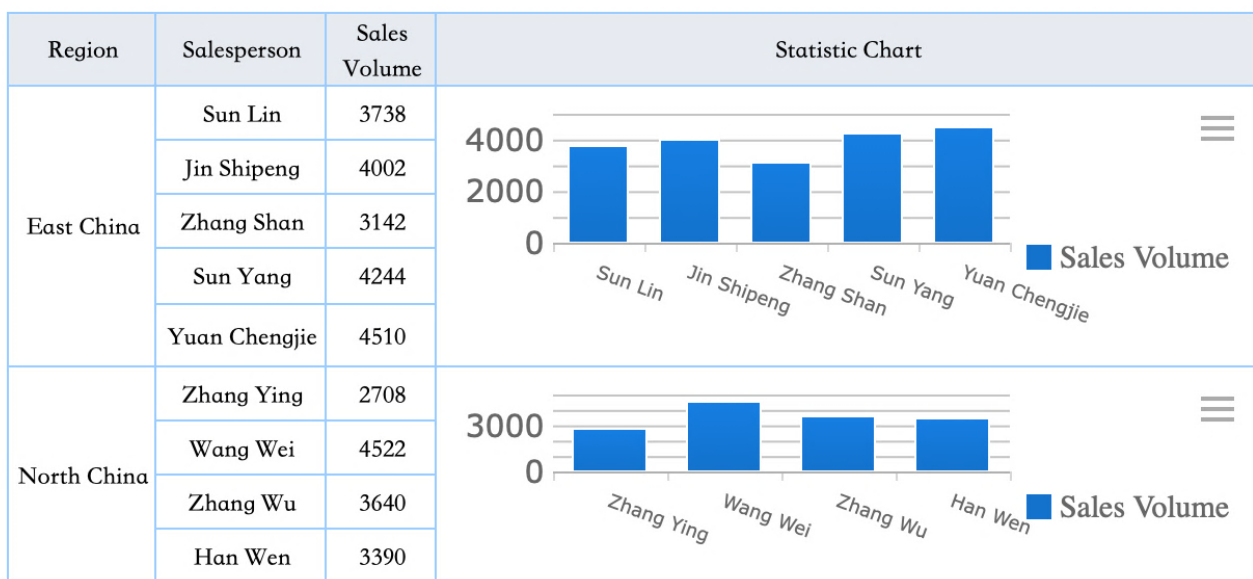
FineReport includes a "Extended Chart" type in version 10.0, which supports 3D rotating GIS point maps, particle counters, carousel KPI or cards, time gears and other cool 3D chart types to meet the display needs of large screens in different scenarios..





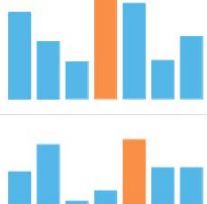



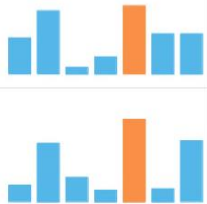



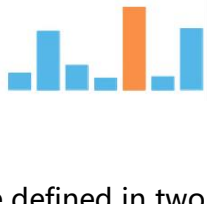







FineReport supports DIY chart . Users can freely modify the axis, data table, icon layout and style settings, chart title, legend, series settings and other attributes to make the chart more beautiful.

FineReport supports inserting a chart into a cell or inserting a floating chart on the report body for arbitrary movement. Charts inserted into cells can inherit properties of parent-child relation and cell expansion. properties.



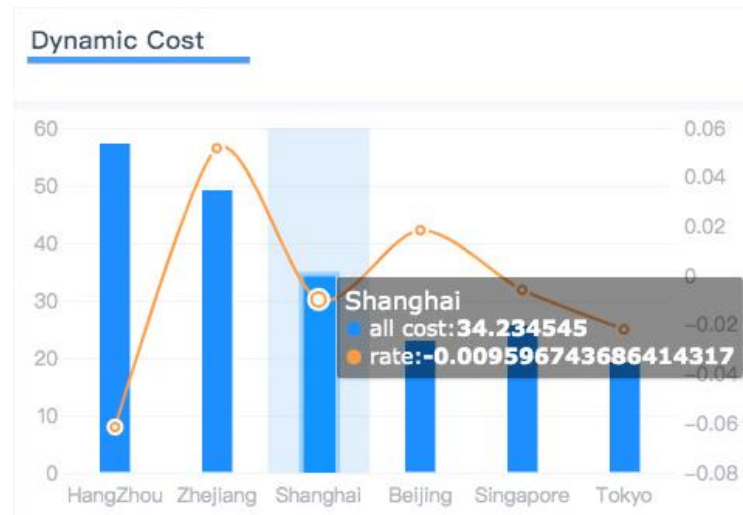
| YEAR MO NTH | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | Mini Bar | LineChart | Avg | Mini Bar2 | Pie |
|-------------------|------|------|------|------|------|------|------|---|--|-------|---|---|
| Jan | 58.8 | 57 | 9.2 | 64.2 | 2.7 | 54.4 | 93.8 |  |  | 48.59 |  |  |
| Feb | 73.6 | 49 | 31.5 | 88.1 | 80.5 | 32.6 | 52.9 |  |  | 58.31 |  |  |
| Mar | 50.7 | 87.9 | 10 | 24.6 | 95.2 | 56.3 | 56.9 |  |  | 54.51 |  |  |
| Apr | 18.5 | 66.6 | 27.6 | 13.8 | 93.8 | 15.1 | 69 |  |  | 43.49 |  |  |

The data source of FineReport can be defined in two ways. One is to use datasets as the data source, which is applicable when only the chart is needed and the data themselves are not required to be displayed. The other is to use cell data as the data source, and this is suitable for displaying both the raw data and charts in the same report.

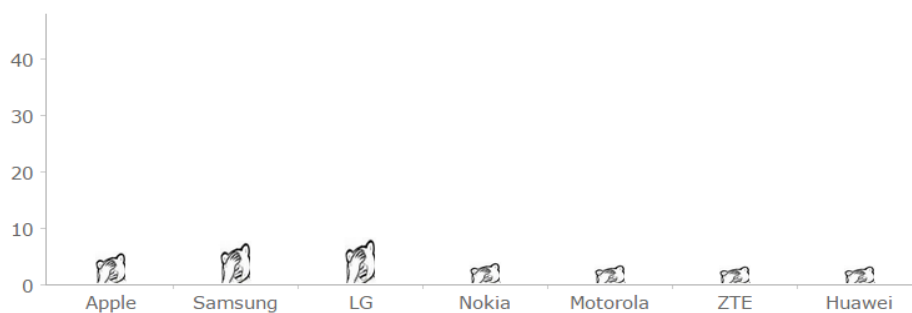
3.7.3. Diverse chart interaction effects

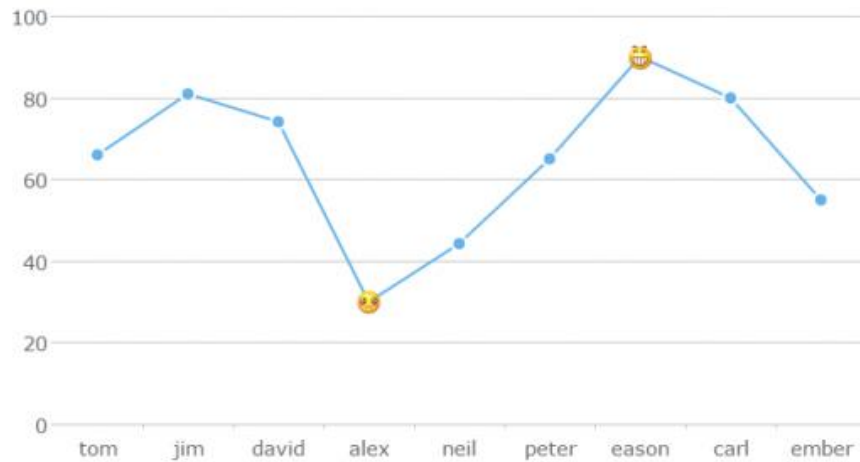
Rich chart interactions help users read data conveniently and greatly enhance the user experience. FineReport charts support the following interaction effects.

- **Tooltip:** When the mouse moves to a data point in the chart, the coordinate value and other information of the data point is displayed.

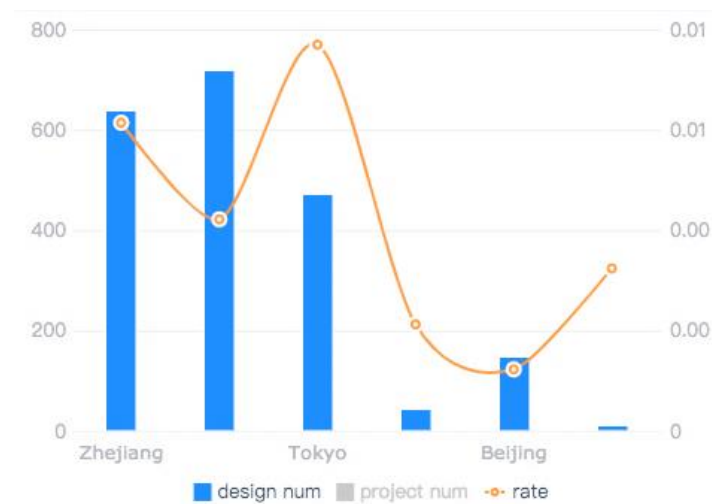


- Interactive highlighting: When the mouse moves a data point, the line/area/column that contains the point will be highlighted. Additionally, you can let a data point be highlighted when a certain condition is met.
- Customize data points: Allow you to resize points and even replace points with images. As shown in the figure below, you can fill in some pictures with special meanings, which makes the line chart more informative.

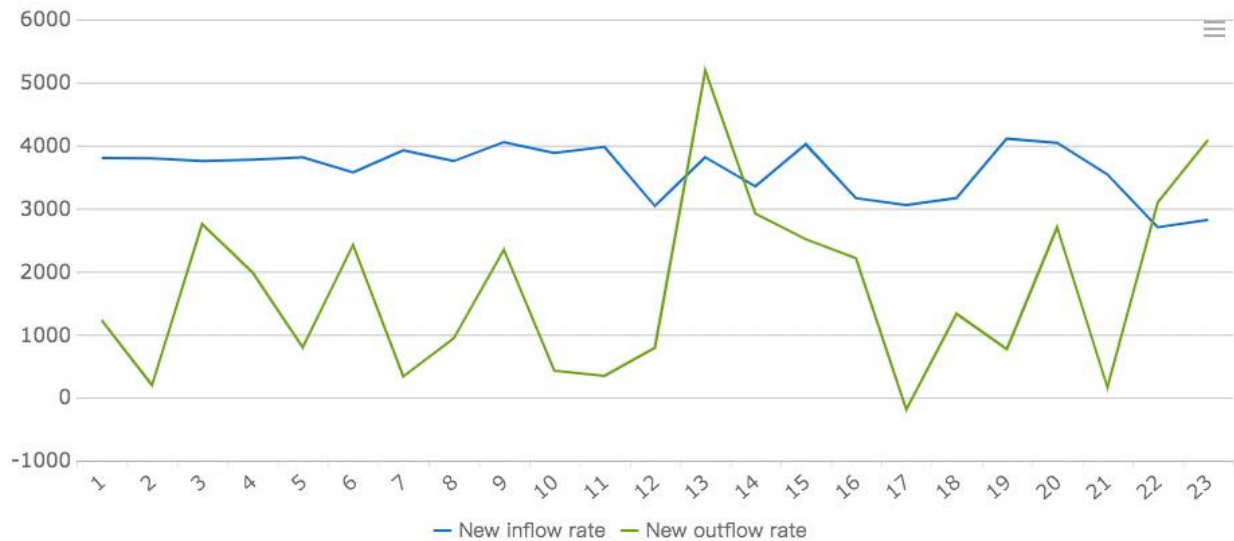




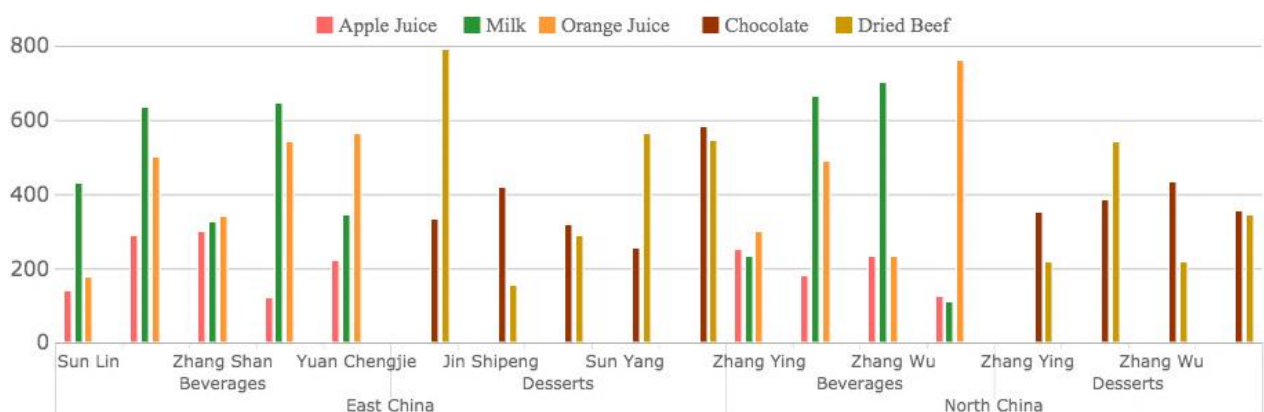
- Series interaction: Click on the series to hide or display the series , and this makes it easier for users to read the data.



- Chart zoom: The chart can be zoomed in and out by mouse gestures. The axis can also be zoomed.

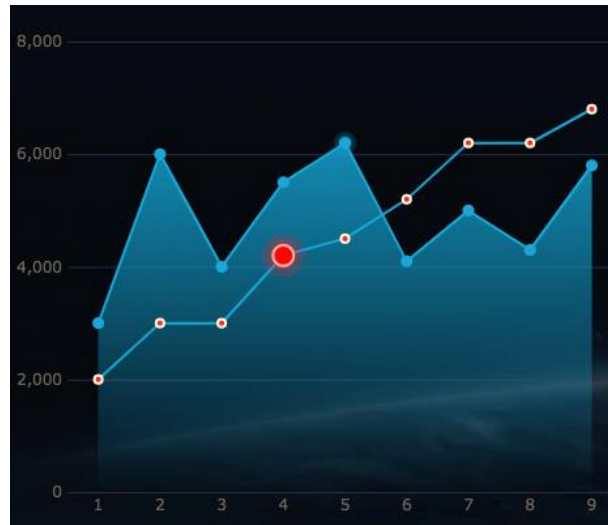


- Multi-level axis: Display multiple levels of axis to compare data and make analysis from different perspectives.

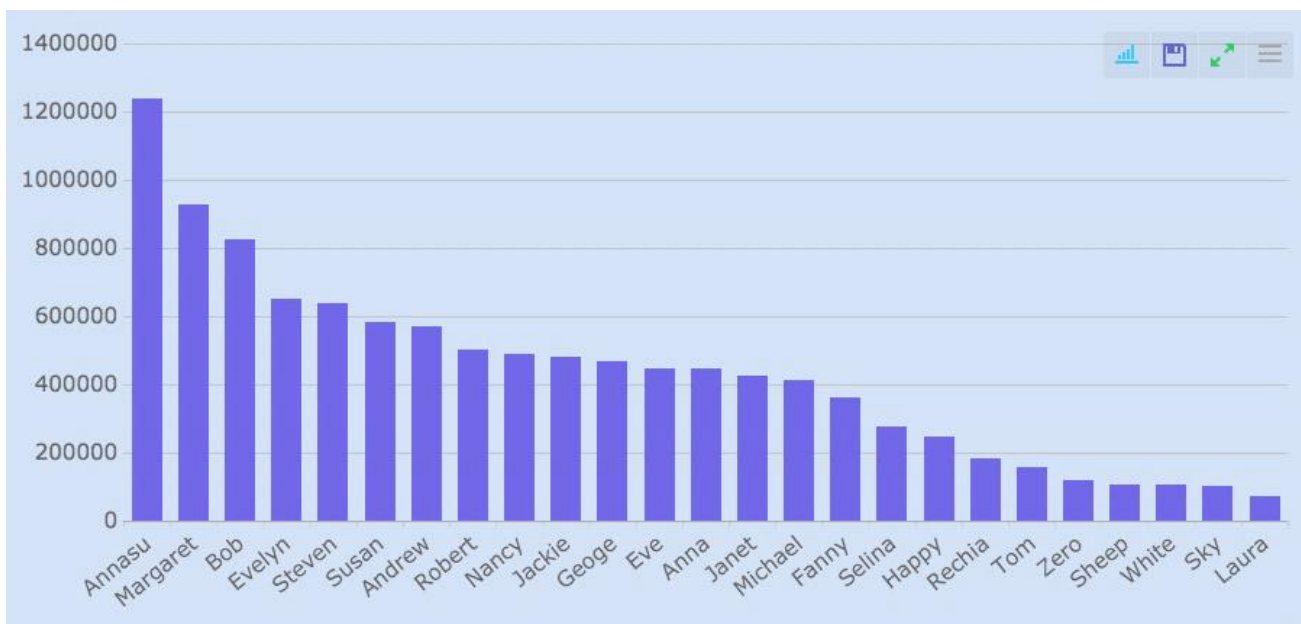


- Online chart switching: Support switching the chart type directly on the browser side, and this only requires you to make one template. FineReport also supports automatic switching to meet the needs of dynamic display on large screens.
- Chart real-time refresh: of the system can monitor the background data in real-time. The data changes will be dynamically displayed and relevant information can be shown in tooltips.

- Flashing: Highlight certain points that meet pre-defined conditions.

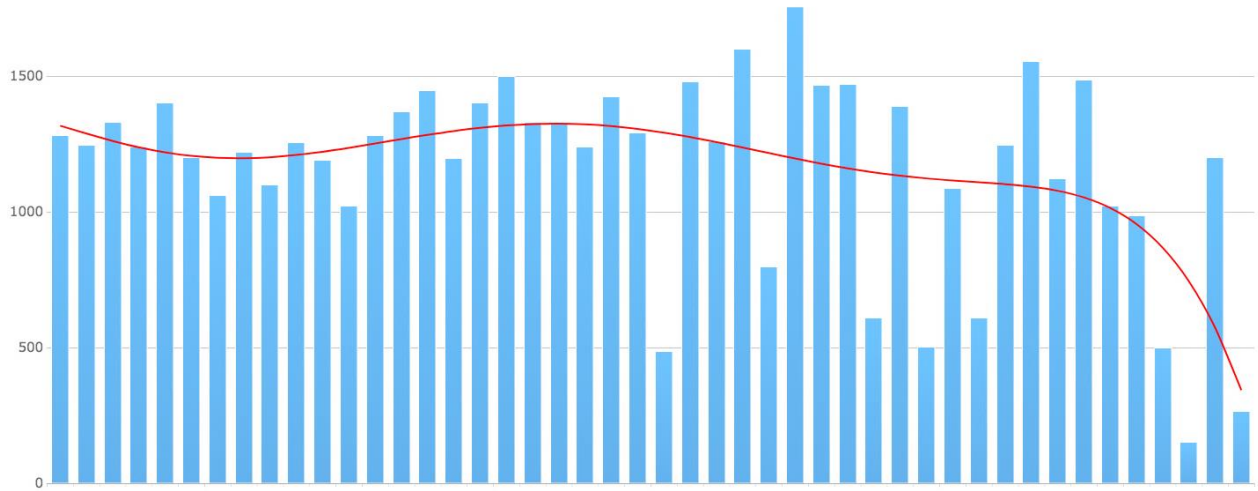


- The browser side supports interactive operations such as sorting, saving, and full screen display.

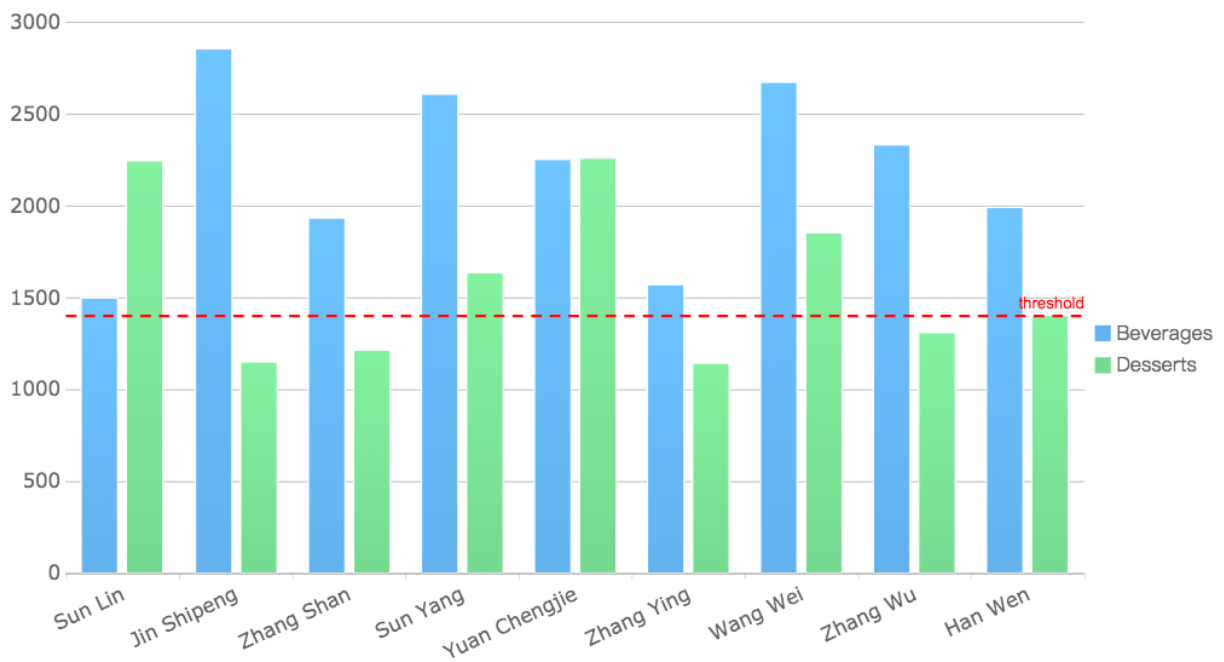


3.7.4. Rich customizable settings

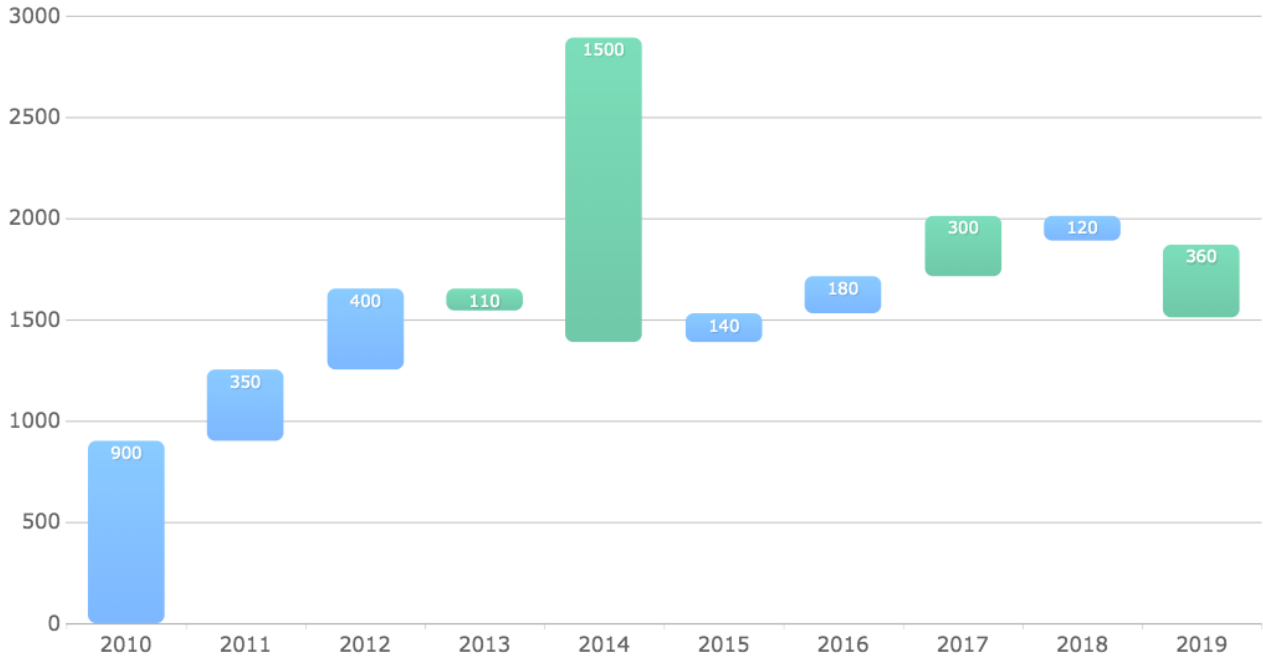
Trendline:



Alert line:



Color columns using conditions:



Order of axis labels:

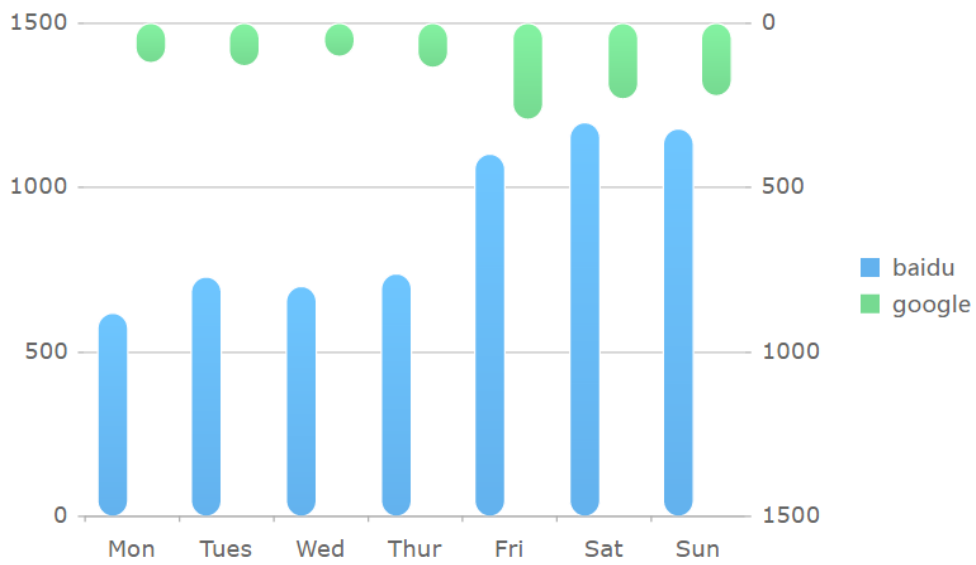
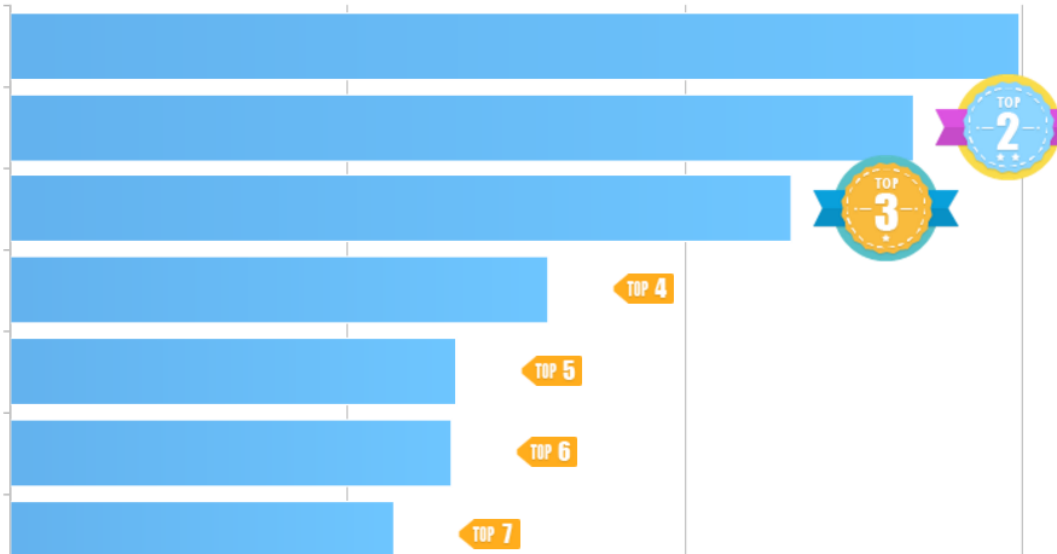
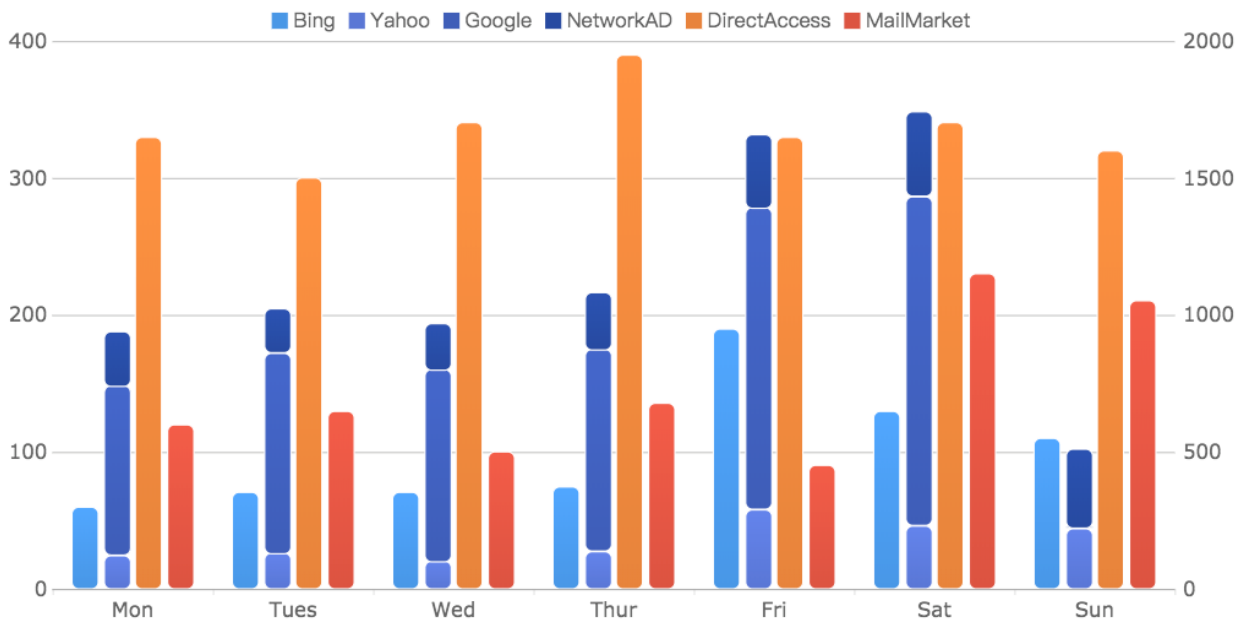


Image as label:



Stacked column chart:



Plot background:

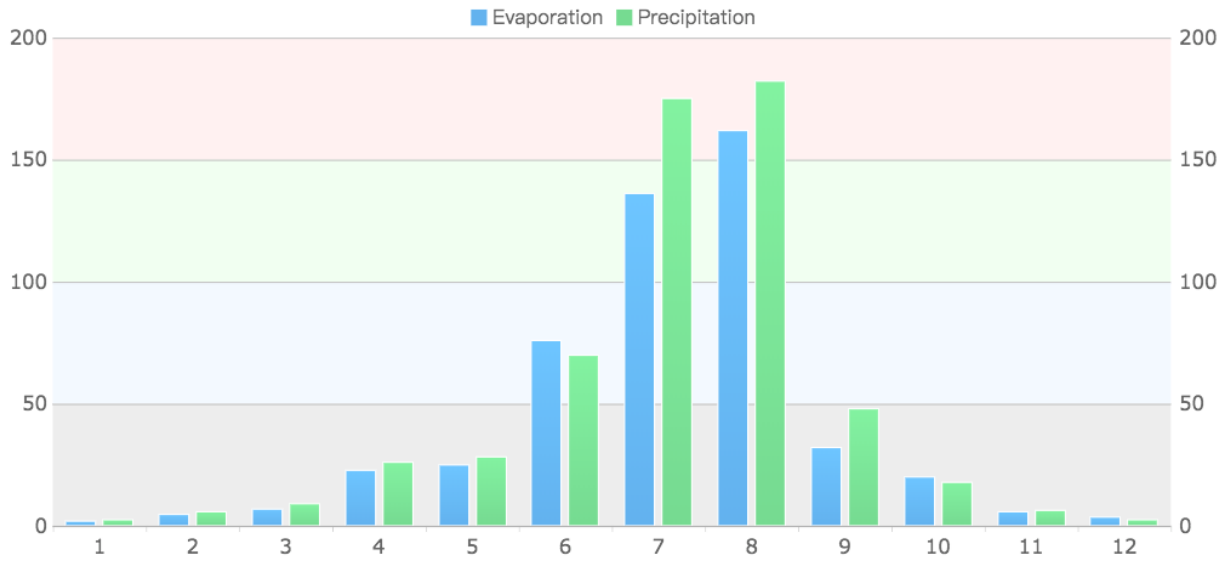
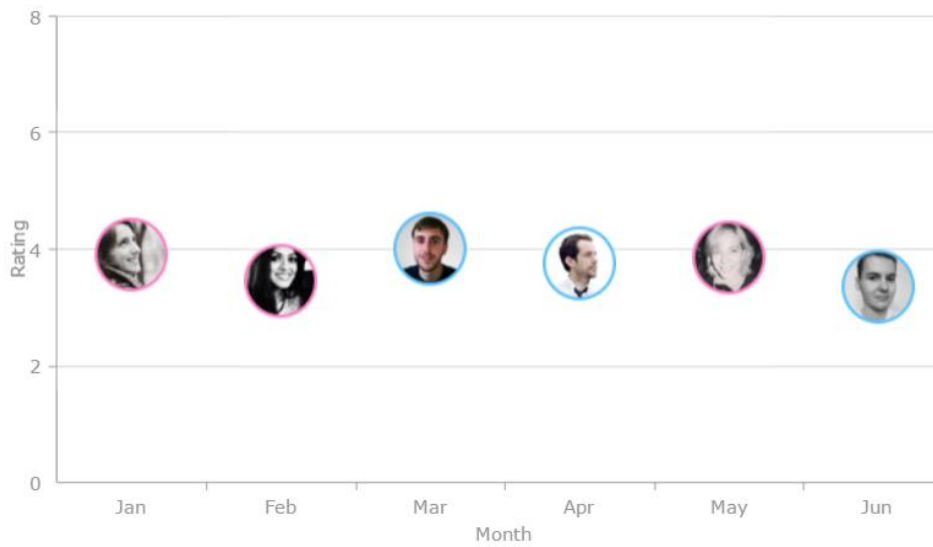
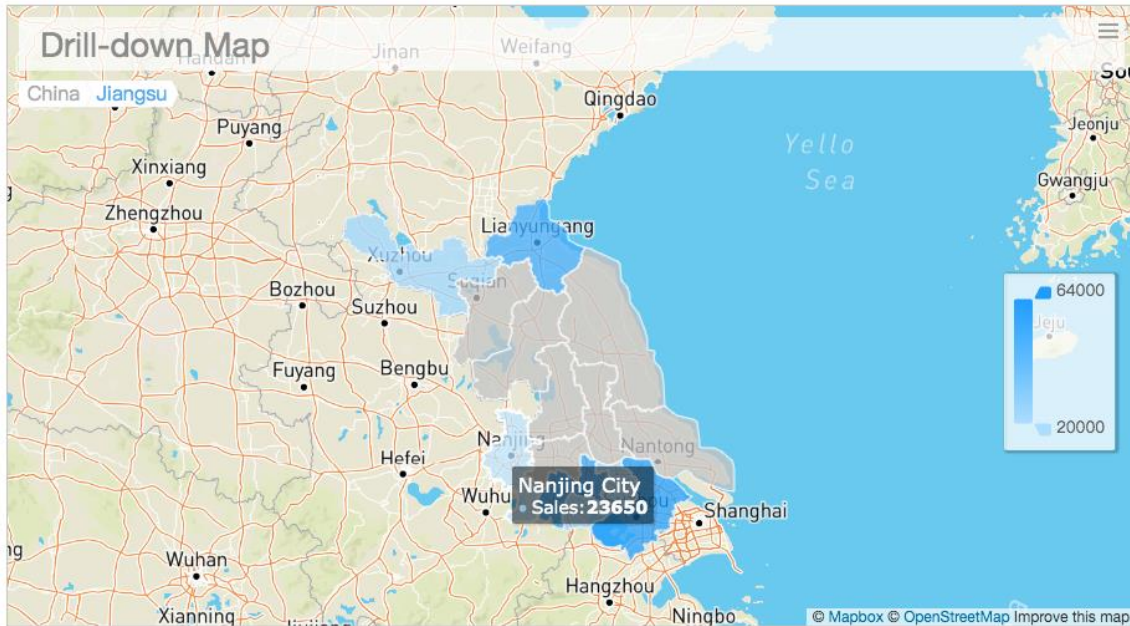


Image as data point:



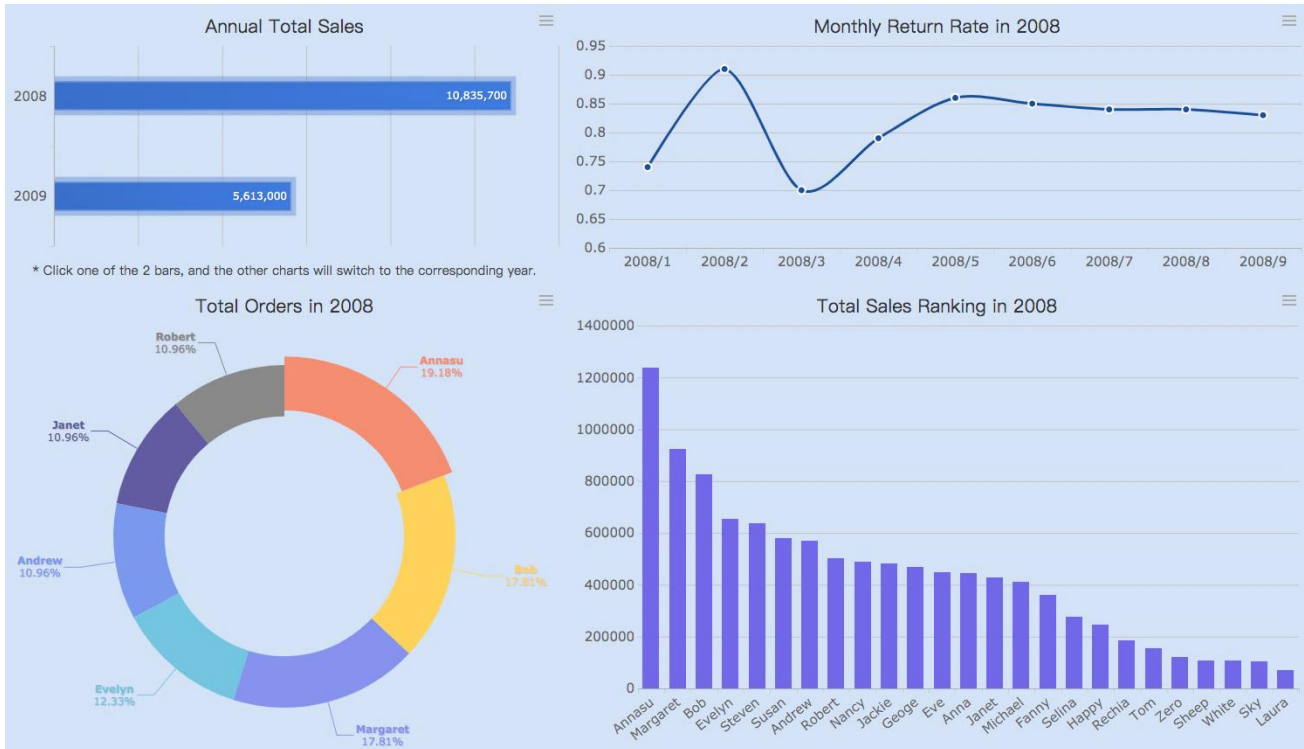
3.7.5. Chart drill-down

As shown in the chart below, the map will zoom to a province to show the detailed information after you click on the province. You can view city-level data if you click one of the cities..



3.7.6. Chart linkage

Click on a series in one chart, and other charts will change the displayed data according to the clicked series. The effect of chart linkage is displayed automatically and does not require you to refresh the whole report.. As shown in the chart below, if you click on one column in the upper left chart, the other charts will follow the linkage to display return, orders and sales in the corresponding year.



3.7.7. Data Map

A large amount of enterprise data is associated with the geographical location, such as sales and profit of each region. In this case, maps can visualize the data in a more intuitive way comparing to tables.. Data maps are an approach to represent geographic data and the advantages are:

- Create a location-based visual map that demonstrates the regional distribution and trends of business indicators;
- Uncover potential data value and identify future market opportunities;
- Enhance the corporate image and competitiveness.

FineReport's data map function presents business data in a new and different way than traditional tables. It is an advanced means of business analysis and can provide enterprises with a lot of visual information.

The data map function is powerful. It has rich built-in maps and supports drill-down maps, heat maps, flow maps, bubble maps, etc. It can integrate with Baidu, Google and other GIS map service. Map functions such as zooming and location positioning are supported. Like other charts, the maps support customizing settings such as background. You can also utilize Web Map Service (WMS) to create offline maps.

- Rich built-in maps: FineReport has embedded the latest world maps, national maps, provincial maps, etc., and these maps can meet the visualization and analysis requirements of most users.



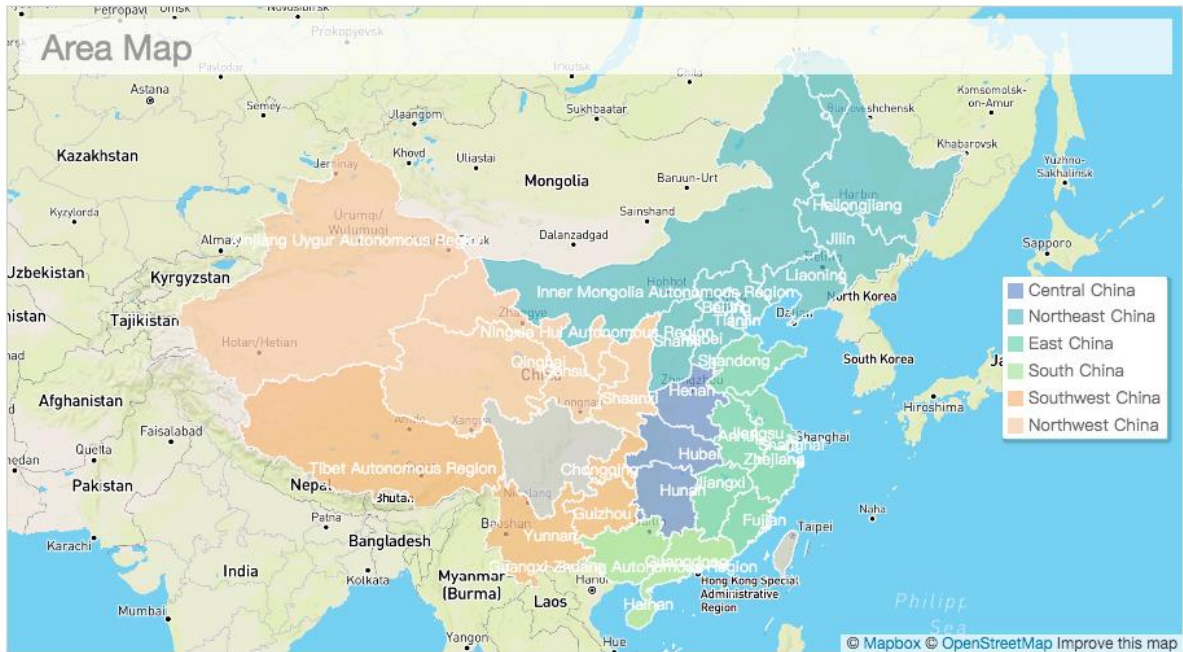
- Custom maps: Different companies have their unique requirements for displaying location data, and some of them are difficult to meet using existing atlas. FineReport

allows users to upload images as the base maps and bind map areas with tabular data.

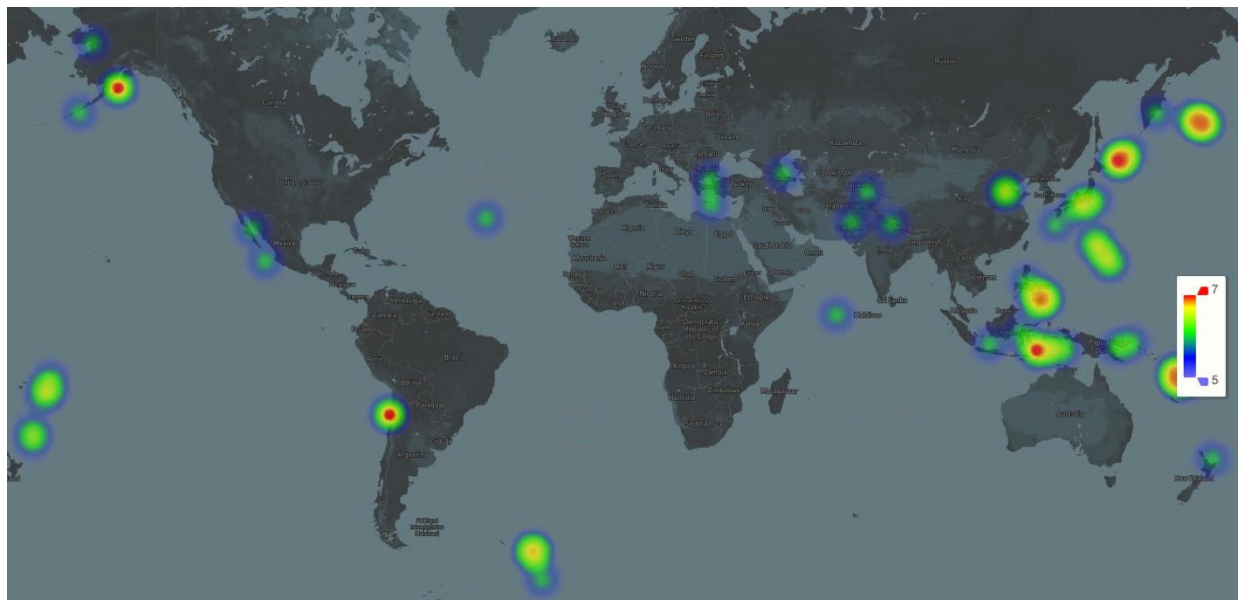
The function of custom map helps to delineate the location of stores business areas.



- Map drill-down and linkage: FineReport natural supports multi-level map drill-down and users can define the map layer of each level.. In addition, users can customize the linkage between map areas and charts to achieve analysis purpose. .

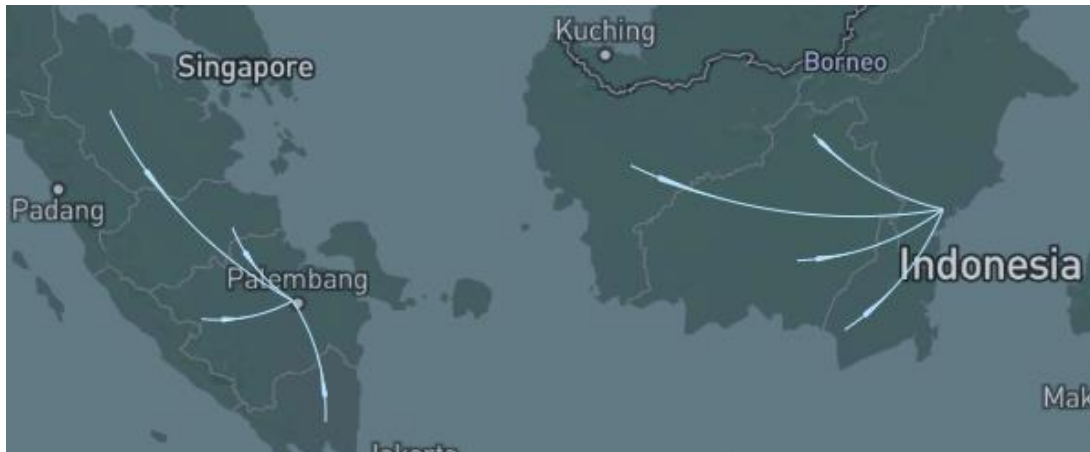


- Heat map: The intensity/hue represents the data value and users can view the changes and distribution of data points intuitively.



- GIS map: FineReport can integrate GIS maps (e.g. Mapbox) to realize map zooming, position positioning, and drilling.

- Flow map: FineReport supports using flow maps demonstrate inter-regional trades, traffic flow, population migration, shopping behavior, flow of communication information and aviation routes.



3.8. Interactive analysis

A good interactive analysis experience can help users better read reports and discover data value. The interactive analysis methods supported by FineReport include chart drill-down, chart linkage and parameter query and here is a comprehensive introduction of how these functions assist business.

3.8.1. Linkage

Linkage, as suggested by its name, means that the change of data in one report element will lead to changes in other elements. One element can be linked by one or more elements.

There are two types of linkage. One is chart linkage, which has been described in previous section; the other is data linkage, which means that if you click on a table to trigger changes in table data, the chart data also change. For instance, in the report below, if you switch to data in

a different region, the data in the chart area will also change to display the situation in the new region.

| Region | Salesperson | Volume |
|-------------|---------------|--------|
| East China | Sun Lin | 3738 |
| | Jin Shipeng | 4002 |
| | Zhang Shan | 3142 |
| | Sun Yang | 4244 |
| | Yuan Chengjie | 4510 |
| North China | Zhang Ying | 2708 |
| | Wang Wei | 4522 |
| | Zhang Wu | 3640 |
| | Han Wen | 3390 |



3.8.2. Drill-down

Drill-down is to switch from summarized data to detailed data to observe the patterns in the new dimensions. For example, when a user analyzes "sales by region/city", drilling down the data helps to analyze the sales in a certain city by year, and the yearly data can be further drilled down to quarter level.

With the function of drill-down, users can have a deeper understanding of the data and it becomes easier to find problems and make the right decisions.

The advantages of FineReport's drill-down functions:

- Multi-dimensional drill-down: You can drill-down from one record to different dimensions. As shown in the figure below, click on one order number, and you can choose to drill down to view order details or logistics information.

| Order List | | | | |
|-----------------------|--------------|---------------|----------------|-------------|
| Order_ID | Order_Date↑↓ | Customer name | Responsible ID | Paid or not |
| 10287 | 2010-08-22 | RICAR | 14 | Yes |
| 10296 | 2010-09-03 | LILAS | 17 | No |
| 10297 | 2010-09-04 | BLONP | 5 | Yes |
| 1 | | MAGAA | 2 | No |
| 1 | | ANATR | 10 | No |
| 10319 | 2010-10-02 | TORTU | 7 | No |
| 10325 | 2010-10-09 | KOENE | 1 | Yes |

- Drill-down combinations: Charts can be drilled down to charts, tables. Similarly, tables can be drilled to tables and charts. Therefore, the drill-down relationship includes chart-chart, chart-table and table-table.
- Infinite drill-down levels: Users can set infinite drill-down levels. .

3.8.3. Multi-perspective data analysis

Multi-perspective data analysis is a comprehensive application, which is realized by the functions of dashboard, chart, parameter query, drill-down and linkage

3.8.4. Real-time data analysis

The usual data analysis is based on logical data layer for filtering analysis, but in this way, the data on the current page cannot be directly used for in-depth analysis.

In order to realize convenient analysis in real time, FineReport provides the function of secondary analysis which enables you to sort and filter data on current page.

| Order ID | Customer ID | Sign Date | Ship Date | Ship Port | Amount | Whether Paid |
|----------|-------------|-----------|-----------|-----------|----------|--------------|
| 10001 | 1.0 | 2008/1/1 | 2008/1/4 | A | 53500.00 | true |
| 10002 | 2.0 | 2008/1/2 | 2008/1/14 | B | 51000.00 | false |
| 10003 | 3.0 | 2008/1/3 | 2008/1/8 | C | 45500.00 | true |
| 10004 | 4.0 | 2008/1/7 | 2008/1/10 | D | 70600.00 | true |
| 10005 | 5.0 | 2008/1/8 | 2008/1/12 | A | 26000.00 | true |
| 10006 | 6.0 | 2008/1/9 | 2008/1/21 | B | 67500.00 | true |
| 10007 | 7.0 | 2008/1/11 | 2008/1/16 | C | 92000.00 | false |
| 10008 | 8.0 | 2008/1/14 | 2008/1/24 | D | 52000.00 | true |
| 10009 | 9.0 | 2008/1/15 | 2008/1/28 | D | 46800.00 | true |
| 10010 | 10.0 | 2008/1/17 | 2008/1/19 | A | 44000.00 | true |
| 10011 | 11.0 | 2008/1/22 | 2008/2/4 | B | 96000.00 | false |
| 10012 | 12.0 | 2008/1/13 | 2008/1/15 | C | 59500.00 | true |
| 10013 | 13.0 | 2008/1/24 | 2008/1/28 | D | 49500.00 | true |

Sort(Portrait) ▾
Ascending
Descending

Condition filter

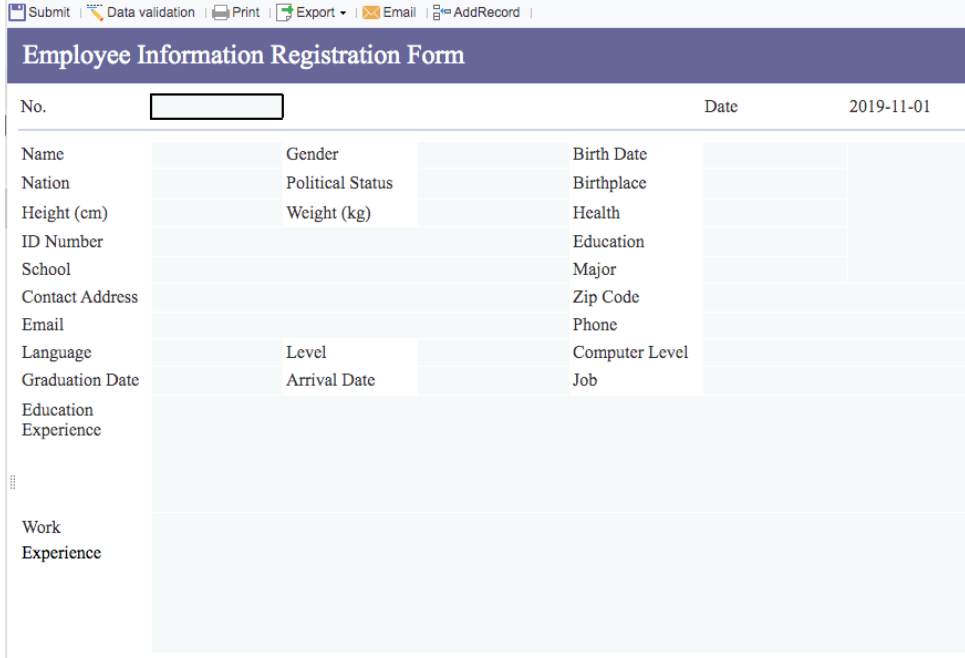
3.9. Data Entry

Traditionally, reports are responsible for data visualization. CRM, ERP, OA and other basic information systems will contain some pages for business personnel or users to add, modify, delete and perform other operations with report data, and the changes will later be used to update the database. Such a page is called a form. In FineReport, the function of data entry is designed specially to design forms.

FineReport's data entry is powerful enough to meet enterprise requirements.

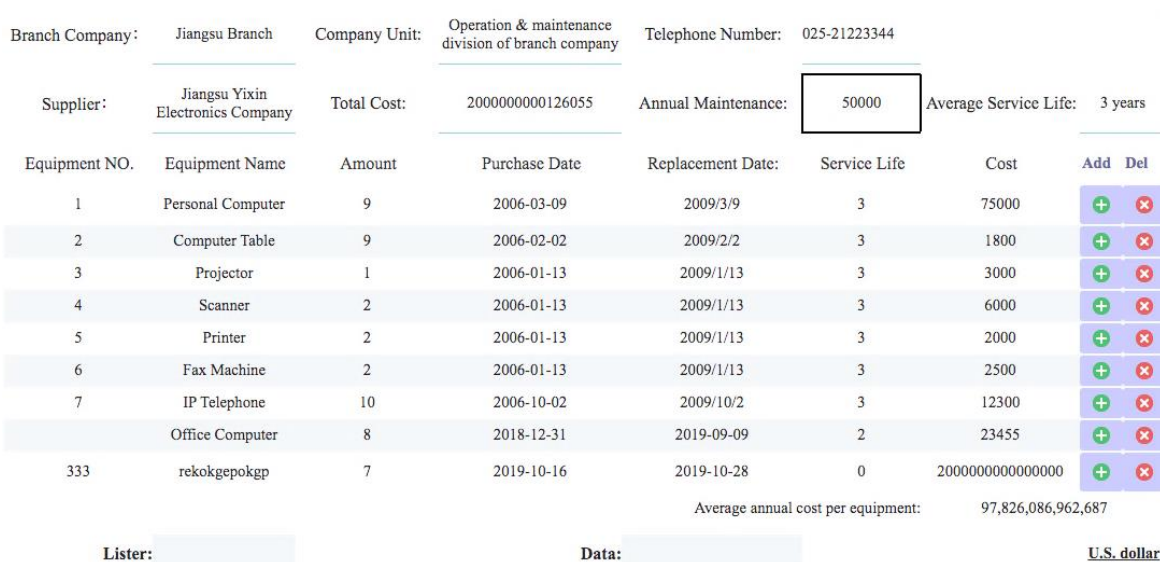
- Multi-source data entry: The data in one report can connect to multiple different databases or data tables.
- Independent data input and output: The form data can be retrieved from one database and the editing result can be submitted to another database or several different databases. The source and destination of the data can be completely independent.

- Irregular layout: For the financial, service, medical and other industries, the data entry interface tend to have irregular layout and diversified editing styles.



The screenshot shows a web-based form titled "Employee Information Registration Form". At the top, there are navigation buttons: Submit, Data validation, Print, Export, Email, and AddRecord. The form fields are arranged in a non-standard, irregular manner. Fields include: No. (with an empty input box), Date (2019-11-01), Name, Gender, Birth Date, Nation, Political Status, Birthplace, Height (cm), Weight (kg), Health, ID Number, Education, School, Major, Contact Address, Zip Code, Email, Phone, Language, Level, Computer Level, Graduation Date, Arrival Date, Job, Education Experience, and Work Experience.

- Row-based form: If you need to add, delete, and modify the data from database tables, you can create row-based forms to simulate the table structure.



The screenshot displays a row-based form for equipment management. It includes fields for Branch Company (Jiangsu Branch), Company Unit (Operation & maintenance division of branch company), Telephone Number (025-21223344), Supplier (Jiangsu Yixin Electronics Company), Total Cost (2000000000126055), Annual Maintenance (50000), and Average Service Life (3 years). Below these is a table of equipment with columns for Equipment NO., Equipment Name, Amount, Purchase Date, Replacement Date, Service Life, Cost, and Add/Del buttons. The table contains 8 rows of equipment data, including Personal Computer, Computer Table, Projector, Scanner, Printer, Fax Machine, IP Telephone, and Office Computer. At the bottom, there is a summary row for "Average annual cost per equipment" with a value of 97,826,086,962,687. The form also includes "Lister:" and "Data:" fields, and a currency indicator "U.S. dollar".

| Equipment NO. | Equipment Name | Amount | Purchase Date | Replacement Date | Service Life | Cost | Add | Del |
|---------------|-------------------|--------|---------------|------------------|--------------|------------------|-----|-----|
| 1 | Personal Computer | 9 | 2006-03-09 | 2009/3/9 | 3 | 75000 | + | x |
| 2 | Computer Table | 9 | 2006-02-02 | 2009/2/2 | 3 | 1800 | + | x |
| 3 | Projector | 1 | 2006-01-13 | 2009/1/13 | 3 | 3000 | + | x |
| 4 | Scanner | 2 | 2006-01-13 | 2009/1/13 | 3 | 6000 | + | x |
| 5 | Printer | 2 | 2006-01-13 | 2009/1/13 | 3 | 2000 | + | x |
| 6 | Fax Machine | 2 | 2006-01-13 | 2009/1/13 | 3 | 2500 | + | x |
| 7 | IP Telephone | 10 | 2006-10-02 | 2009/10/2 | 3 | 12300 | + | x |
| | Office Computer | 8 | 2018-12-31 | 2019-09-09 | 2 | 23455 | + | x |
| 333 | rekokgepokgp | 7 | 2019-10-16 | 2019-10-28 | 0 | 2000000000000000 | + | x |

- Form pagination: When data volume is large, the loading speed will be limited by the performance of the browser. FineReport supports display form data in pages to ensure user experience.

3.9.1. Diverse reporting style

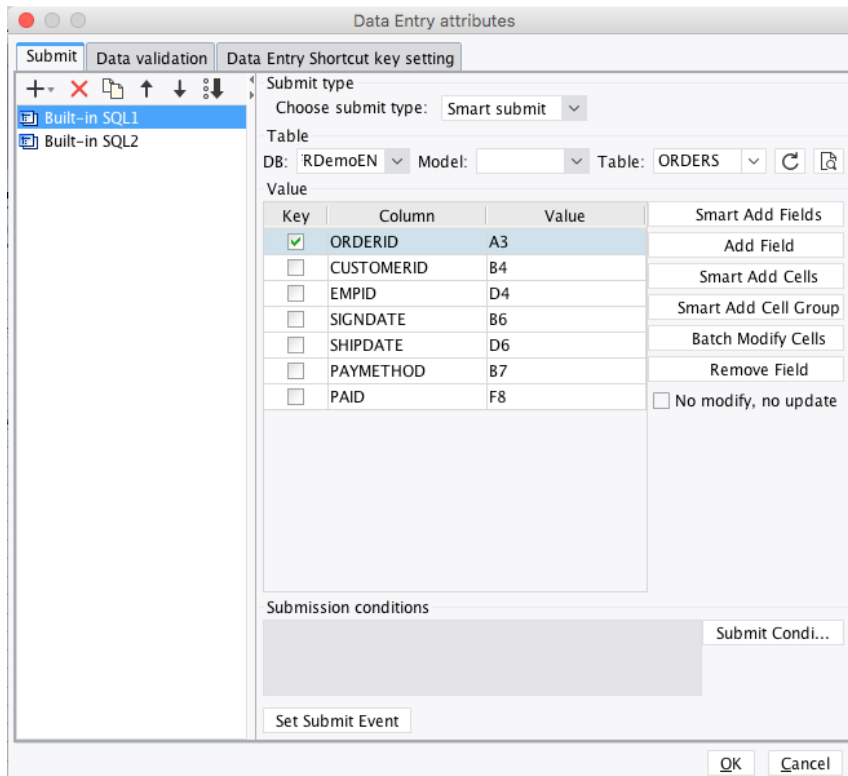
To use the input data to update the database, the data should be contained in widgets which will interact. FineReport provides a variety of widgets to realize different data entry requirements.

Data entry widgets include text, text area, number, password, button, checkbox, radio group, checkbox group, drop-down box, drop-down checkbox, date, file, list, iframe, drop-down tree and view tree.

| Customer Data Management | | | |
|--------------------------|--|-----------------|-----------|
| * Customer Name | Address | * Customer NO. | Zip Code |
| Chairman | Gender <input type="radio"/> male <input type="radio"/> female | Duty | Telephone |
| Bank | Age | Undertaker | |
| Account | Cash Situation | Attitude | |
| Tax Number | Cash Flow | Date of Payment | |

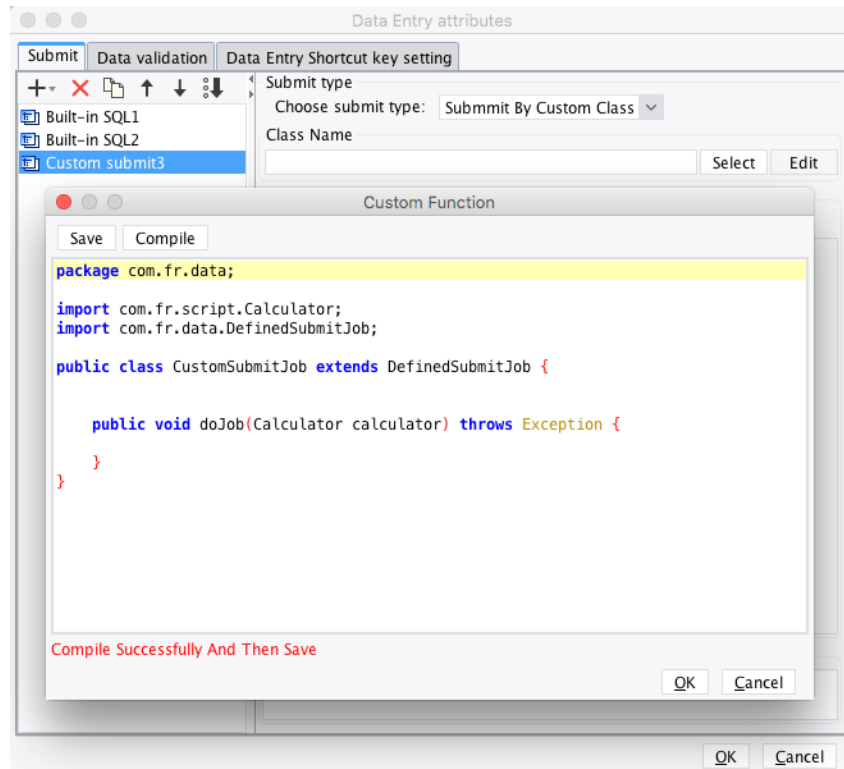
3.9.2. Submission control

FineReport supports multiple submission methods such as smart submission, insert submission, update submission and delete submission. You can also set to prohibit submission if certain cells are not edited. In order to make the process of form design easier, FineReport provides functions to smart add fields and smart add cells (groups).



By setting submission conditions, you can filter the submitted data. Specifically, when data are submitted to database, they are judged by conditions and only those meet the condition can be submitted to the database.

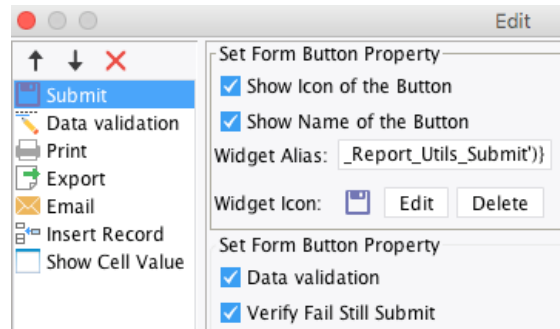
Custom submission control via Java API is also supported.



3.9.3. Data validation

FineReport supports validate data in cells, between cells and between sheets. To guarantee data validity, you can apply various methods such as timely validation, submission validation, formula validation, and JS validation. Data validation informs users with the illegal data and effectively reduces the error rate of input data.

In some cases, users need to submit data for some reason even if they not legal. To meet these requirements, FineReport provides mandatory submission to submit illegal data to the database.

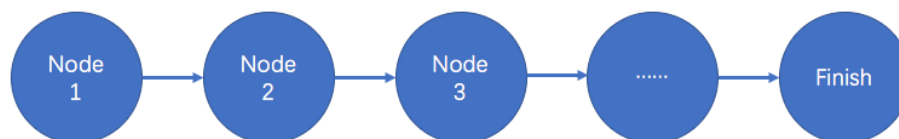


3.9.4. Multi-level reporting

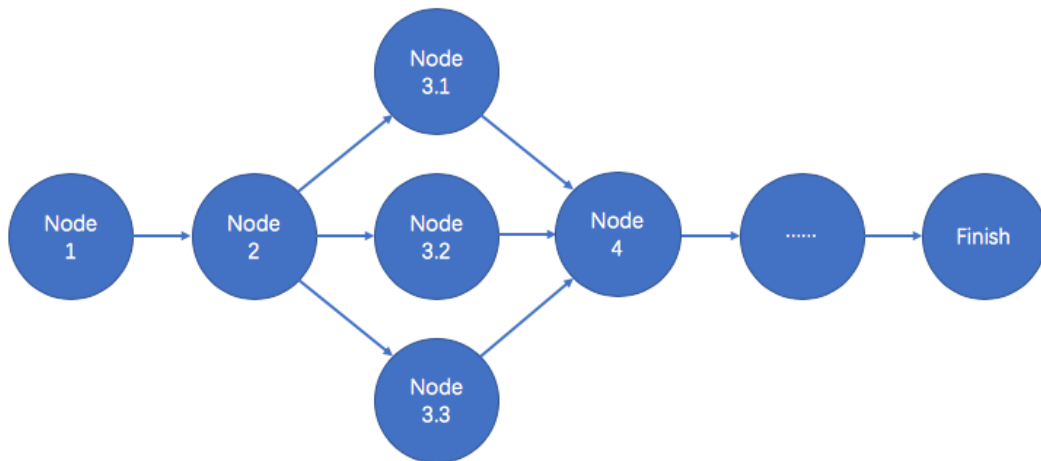
In most cases, after a form is reported, the data directly enter the database. However, in enterprises, after staff enter data, it is necessary to let higher-level managers to process and verify the data and only those pass the review can enter the database. This workflow is called multi-level reporting.

The function of multi-level reporting supports multiple styles of workflow and allows users to enter data via emails, system messages, etc. It also supports process control such as setting time limits on user submission and scheduling of managers' review tasks.

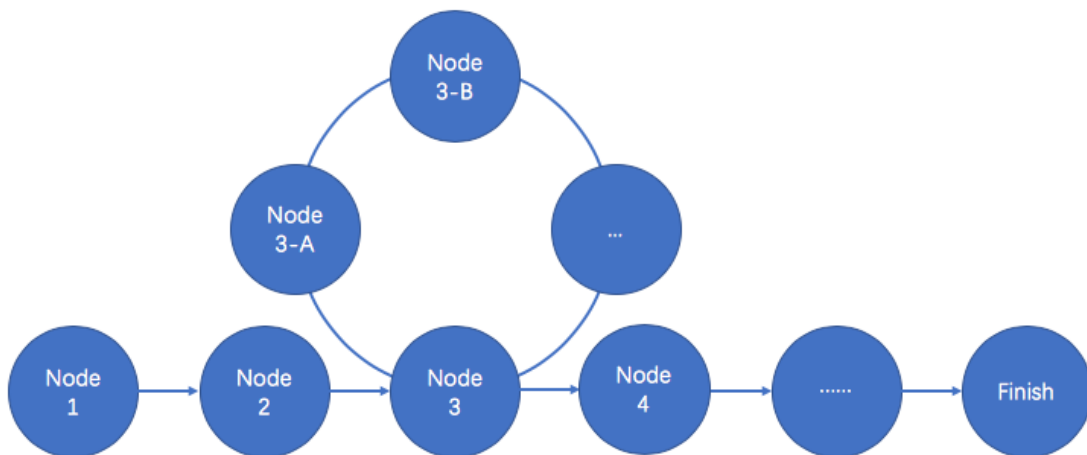
- Simple reporting: Tasks flow from lower levels to higher levels. The process resembles a straight line.



- Joint data entry and reporting: During the process of the task flow, some nodes are forked, and multiple users can participate in the task on one node.



- Distributed and level-by-level reporting: It means that during the process of the task flow, the users responsible for one node can create a sub workflow. When the sub workflow is completed, the task returns to the start node and the main workflow continues.



3.9.5. Offline data entry

Under some circumstances, users have to enter data in offline mode:

- Users open the form in a connected state. Due to network interruption, the data cannot be directly submitted to the server database;
- Users need to collect data in an environment without a network, so the forms cannot be accessed directly.

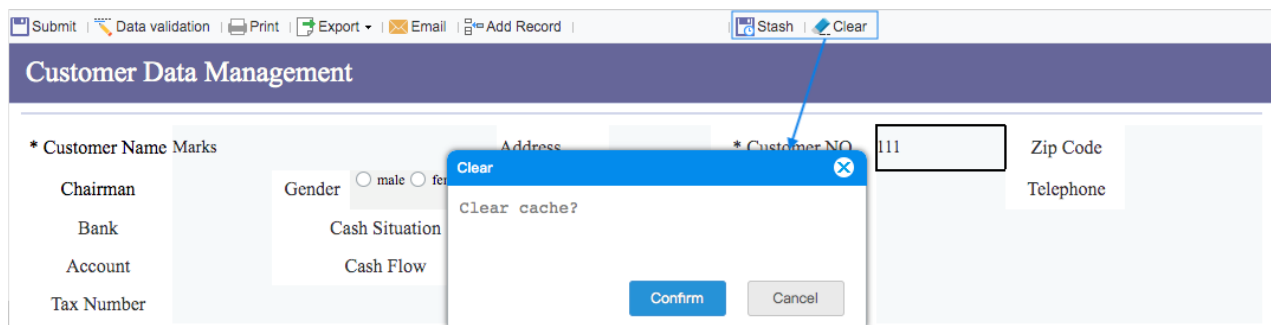
The principle of offline data entry is to output the form as an offline html report in a connected state and export result is a compressed package. The offline html report and the compressed package can be transferred to an environment without a network. For example, you can copy the compressed package to a machine without a network or directly disconnect the network. After decompressing the package, you can directly open the html report and enter data in the browser. The offline report still preserves the functions of the widget display, parameter linkage, formula calculation, data verification, etc. After the data entry is completed, the data are temporarily saved in the local browser, and then when you reconnect to a network, you can click the submit button on the report toolbar to submit the data to the database.

3.9.6. Data temporary storage

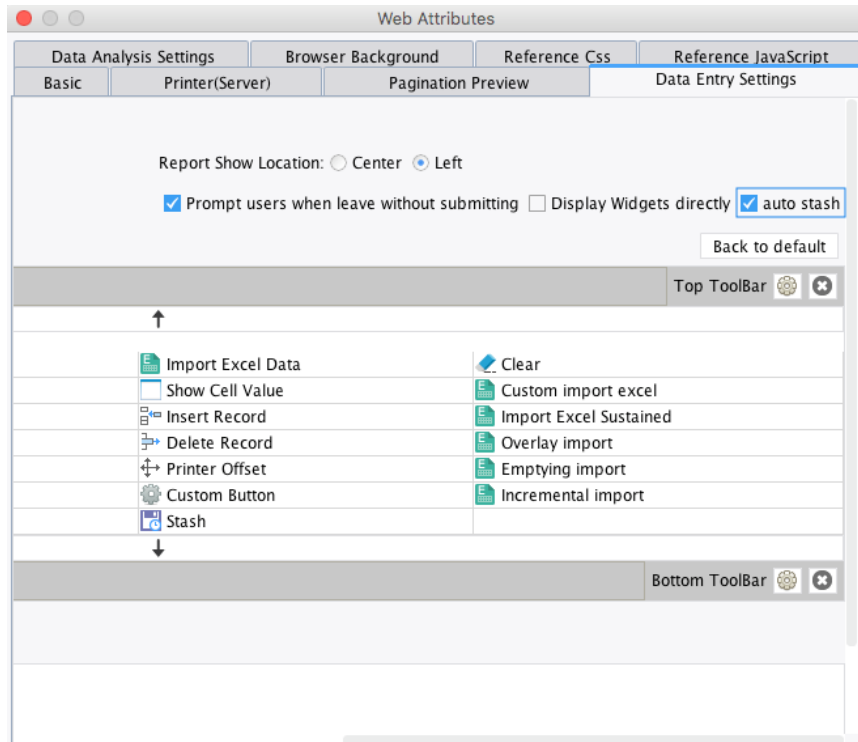
In some forms, there are a lot of content to fill, and this takes users a long time. During this process, there might exist unexpected situations such as mis-operation, network interruption, server problems, etc., and they may lead to loss of data. In addition, there are times when the content is still up in the air and users want to rethink before submission. In this case, the data should not enter the database directly and users may hope to temporarily store the entered

data. To solve the problems, FineReport provides a function of stash to realize temporary storage of data.

As shown in the figure below, business personnel can temporarily store and clear the entered data by clicking corresponding buttons. The temporarily stored data are saved in the built-in hsql database. After submitting the data, the stashed data will be cleared automatically.

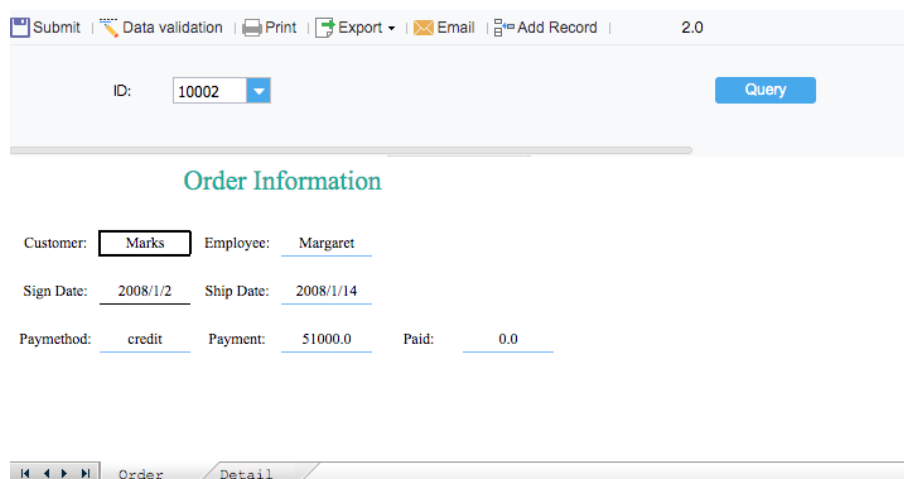


Sometimes, users may forget to click the stash button, so the function of automatic stash is provided. After turning on the function, the entered data will be saved automatically and will be cleared after being submitted.



3.9.7. Multi-sheet data entry

Similar to Excel, a report template can contain multiple sheets of form, and this enables users to edit multiple forms at the same time and print the forms in batches. The settings of each form are determined separately, and users can decide to submit one form or all forms at a time.



Submit | Data validation | Print | Export | Email | Add Record | APP006

ID:

| Product | Price | Quantity | Cost | Add | Delete |
|---------------|--------|----------|--------|---|---|
| Water heater | 4800.0 | 5.0 | 3800.0 | <input type="button" value="+ Insert Row"/> | <input type="button" value="x Delete Row"/> |
| Computer dest | 400.0 | 30.0 | 300.0 | <input type="button" value="+ Insert Row"/> | <input type="button" value="x Delete Row"/> |
| Scanner | 1000.0 | 15.0 | 900.0 | <input type="button" value="+ Insert Row"/> | <input type="button" value="x Delete Row"/> |

Order Detail

In a report with multiple sheets, users can implement cross-sheet calculation which means the calculation in one sheet can reference cell values in another sheet. In addition, data validation can take place across sheets.

3.9.8. Excel data import

Currently, most business personnel are familiar with the operations in Excel. FineReport supports exporting forms as Excel files and users can enter data locally. Afterwards, the Excel file can be imported to the corresponding form.

The match between the Excel file and the form is a major concern. FineReport has two types of matching logic: matching by title or position matching, so the function of Excel data import supports importing different styles of report including row-based reports and irregular reports.

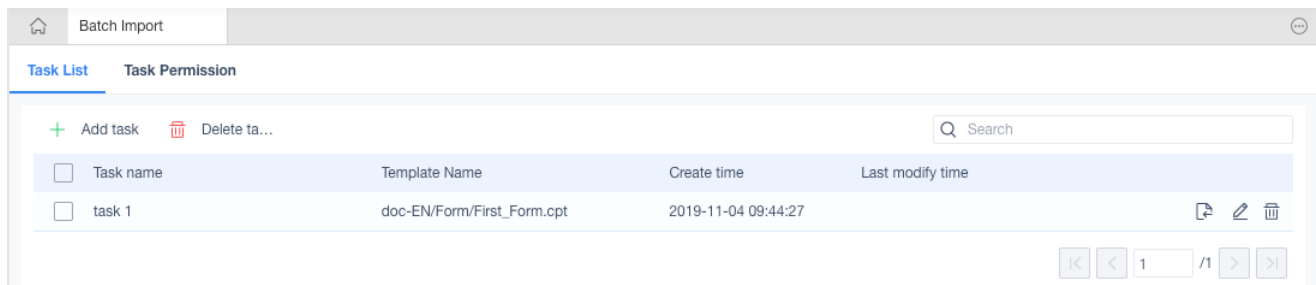
Submit |
 Data validation |
 Print |
 Export |
 Email |
 Add Record |
 Import Excel Data

Employee Information Registration Form

No: Date: 2019-11-04

| | | |
|-----------------|------------|---|
| Name: | Gender: | <input type="radio"/> M <input type="radio"/> F |
| BirthDate: | Hire date: | |
| Position: | Country: | |
| Qualification: | School: | |
| Family Address: | Post Code: | |
| Mobile Phone: | Language: | |
| Remark: | | |
| | | |

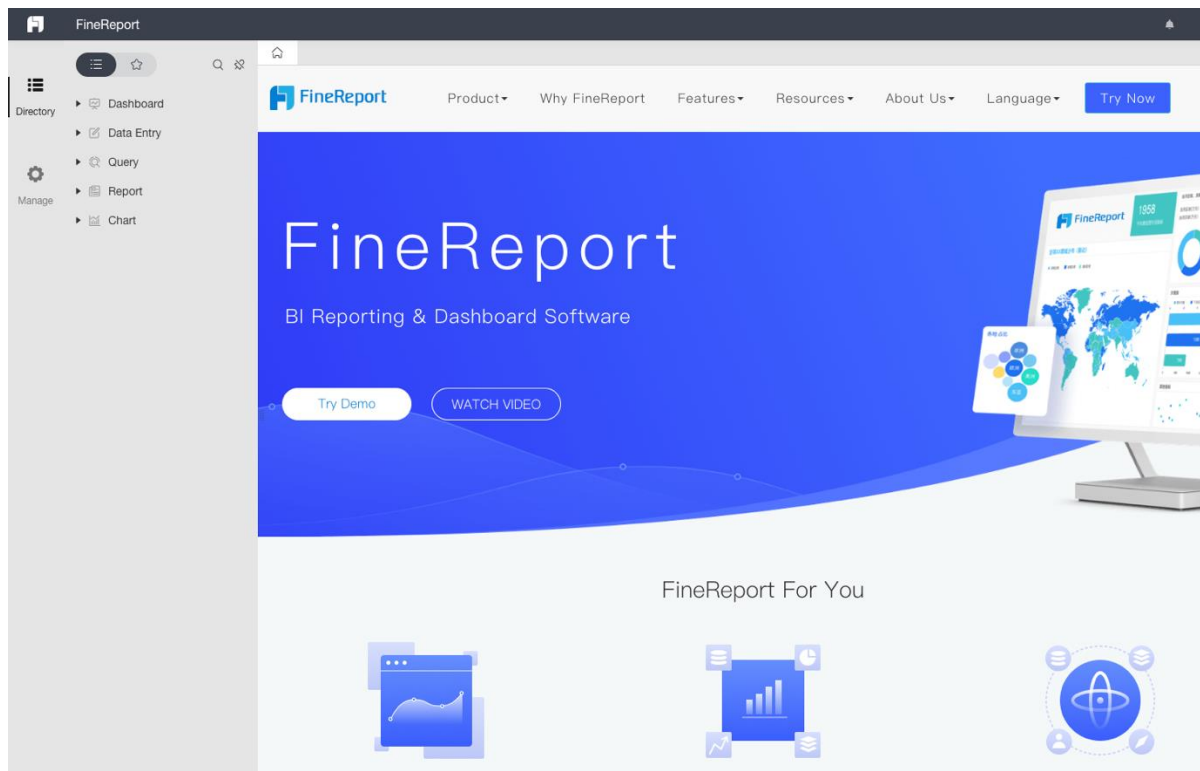
Considering that enterprise users may generate a large amount of excel files to import, FineReport provides a function of Excel data batch import which enables you to manage and monitor the batch import tasks in a unified interface.



In addition, you can custom the specific Excel content to import such as sheets, rows and columns.

3.10. Decision-making Platform

Based upon the decision-making platform, enterprises can build a report center covering functions of report management, user management, authorization. The platform has customizable system settings and supports business analysis on various topics.



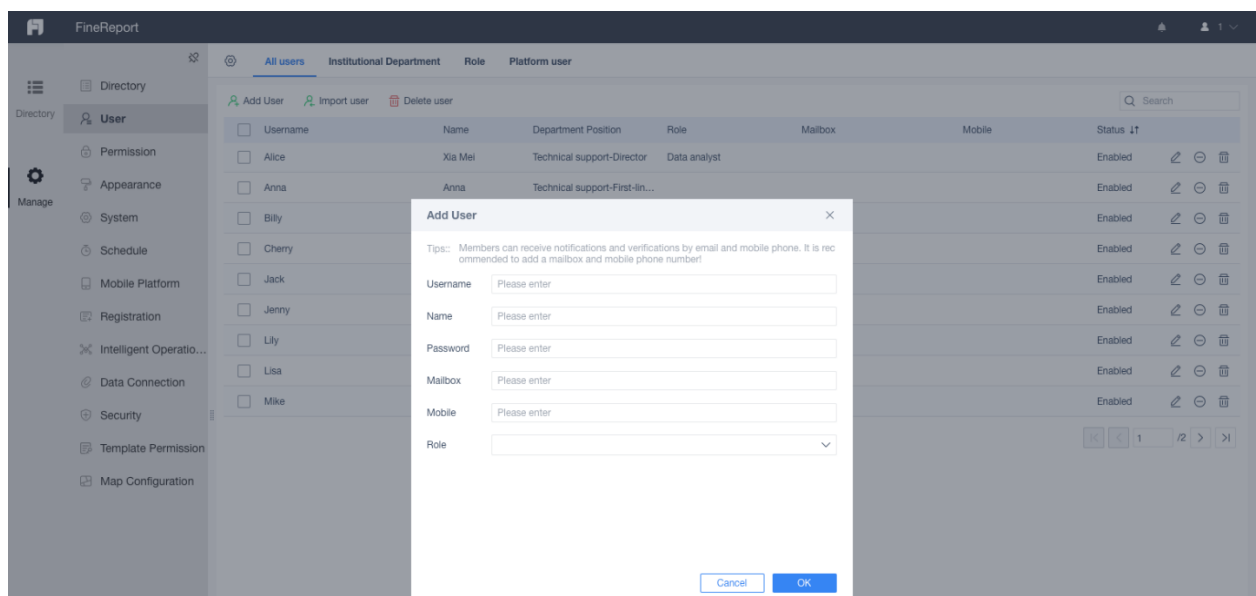
- One-stop platform: Users with different roles can view reports related to their business on the same platform, and this is realized by user management and authorization.
- Centralized management: The system provides administrators with a centralized management environment for regular management of system resources, user accounts, authorization, report templates, logs and tasks.

3.10.1. Directory Management

- Directory management: To add, delete and modify the directory tree of the platform, and the directory can be freely adjusted.
- Node Management: Administrators or other authorized users can edit the content to be displayed on each directory node, and the content can be report templates, URL links, or multi-level reporting processes. The edit includes setting the preview mode of the report, display terminal and report parameters.
- Support sorting directories and nodes by dragging operations.

3.10.2. User Management

- User Add: Support manual addition, importing users and synchronizing user datasets to add users in batches. Support manually disabling and enabling users. Support automatically notifying the user after resetting the password for the user.

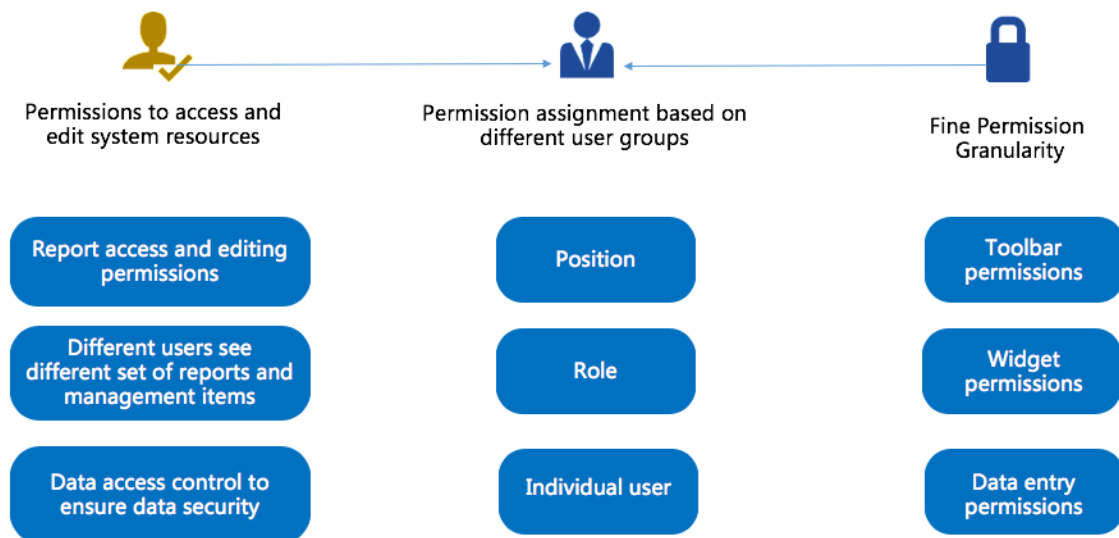


- Department: Users can be classified and managed according to organizational structure.
- Role: Users can be classified and managed by role.
- User authentication: Provide three methods for user authentication when users log in: built-in authentication, LDAP authentication and HTTP authentication, and all of them can be perfectly integrated with other business systems. Built-in authentication utilizes the user information inside the platform for authentication. If the username and password are matched with the built-in user information, the authentication is passed. LDAP authentication passes the username and password to the LDAP system for authentication. If the authentication succeeds, the login succeeds. HTTP authentication passes the username and password to a verification page for authentication. If the authentication succeeds, the login succeeds.

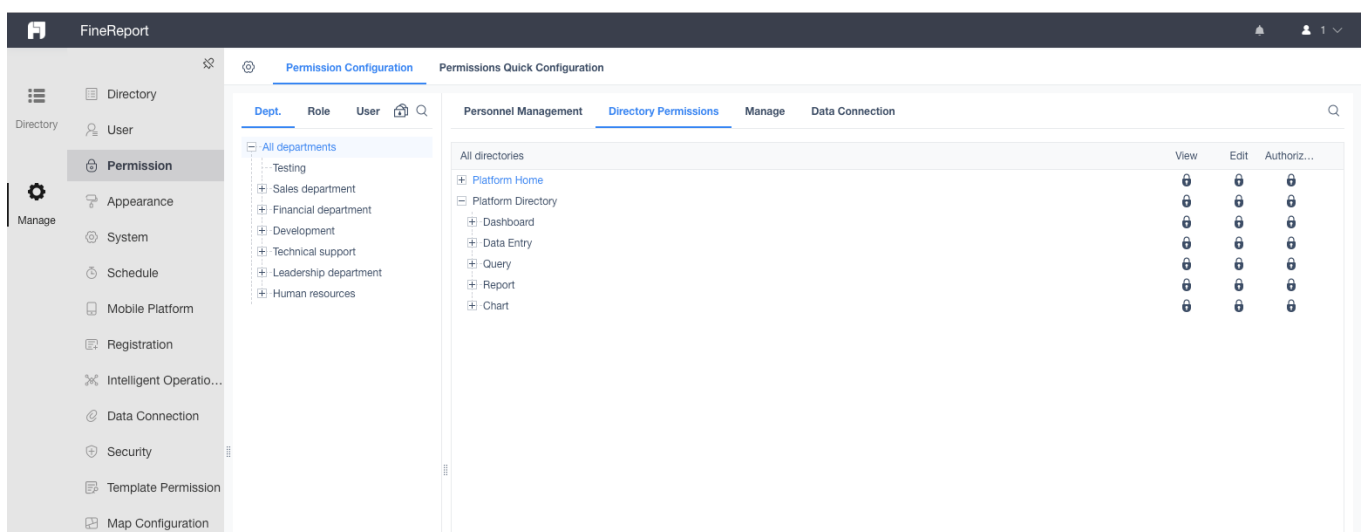
3.10.3. Authorization

Authorization is the process of determine who can use what platform resource. Users can only access resources with permissions.

- The platform resources include reports, management permission and data connections.
- The assignment of permissions can be based on department positions, roles or usernames.



The decision-making platform provides an interface for authorization.



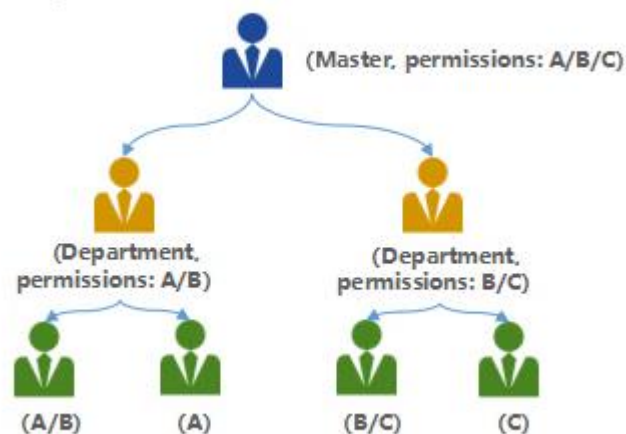
- **Permission configuration:** Assign permissions based on department positions, roles or usernames.
- **Privilege quick configuration:** Assign permissions based on the directory nodes.

- Permission reuse: Enable administrators to clone the rules of permission assignment which can be reused on users in the same department or have the same role. This function can greatly improve the efficiency of permission allocation.
- Template permission: Control permission to access reports for third party systems.
- Report content: You can let different users to view different report data and toolbar widgets. The right to use report functions such as data entry can also be assigned to a subset of users.

3.10.4. Hierarchical Authorization

For some enterprises, each subsidiary/department has its own administrator and assigns permissions to employees. Under this circumstance, it requires a super administrator controls all permissions and the sub-administrators manage users and report templates within responsible department.

Example

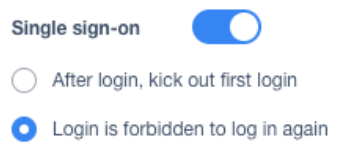


- Hierarchical authorization: Assign the authorization authority to the role of the lower-level administrator, and configure the role (object) to which the role can be assigned. At this time, when the role of the subordinate administrator logs in to the system, the authority that he or she has authorized can be assigned to the corresponding role. Template permissions include viewing, authorization, and editing.
- Report editing: Report editing includes adding, editing, and deleting directories, and adding, editing, and deleting reports. If a user has editing rights to a report directory, the user has all the report management permissions.
- Data connection control: Assign and authorize data permissions through role permission control, including viewing, filing, and design permissions. Users with design permissions can design and edit reports remotely. When a non-administrator remote design, all the places involved in selecting a data connection can only select the data connection that the role has the viewing permission, such as "database query" and "storage procedure" and data dictionary when adding the data set. There are no restrictions on program data sets, file data sets, and built-in data sets. Some data in the server dataset does not see this server dataset if it comes from a data connection that the role does not have permission to use.

3.10.5. System Management

Provide functions such as login settings, password settings, print settings, SMS platform, mail server, cache, and more. Among them, the login setting supports single login, last login information reminder, password policy, login verification, and login lock.

- Single login: Some customers want to log in only one place for security reasons. Single login settings are available in the platform.



- Last login information reminder: After logging in, the login decision platform will prompt the last login information.
- Password policy: Including forgotten password, password update regularly, password strength limit, and password verification method.

Password policy settings

Forgot your PWD

Hint: 1. After the server sets the mailbox, and the user binds the mailbox, you can use the mailbox to verify.
 2. The server starts the SMS service, and after the user binds the phone, you can use SMS authentication.

Password Update

 Update ...
 Advance dayRemind Update

PWD limitation
 Length can not less than Digit

 IncludeNumber

 IncludeLowercase

 IncludeUppercase

 IncludeSymbol

Modify AUT SMS Bind the phone number

 Email Bind E-Mail

- Login verification: three verification methods: slider, SMS, and email.

 Login Authentication Settings

Slider Tip: After opening, if you enter the wrong password once, the slider verification will appear.

SMS Bind the phone number

Email Bind E-Mail

- Login lock: If you enter the wrong password more than a certain number of times, the account will be locked to prevent brute force cracking of the user password.

Login lock setting

Login Locked

Error times Limita... Incorrect Password ,lock minutes

Lock Target Account IP

Lock Administrat...

Administrator Unl... Unlock Target

| Lock Target | Lock Time | Automatic unlock time |
|--------------------------|-----------|-----------------------|
| <input type="checkbox"/> | | |

3.10.6. Intelligent Operation and Maintenance

Intelligent operation and maintenance consists of six modules: memory management, cluster configuration, backup and restore, intelligent detection, cloud operation and maintenance, and platform log.

- **Memory Management:** Real-time monitoring and alerting including memory and CPU utilization. Support intelligently clear sessions and free up memory. By limiting the maximum number of rows in the template dataset, the maximum number of cells, and the maximum sql execution time, the system is prevented from being jammed by excessive templates. Support setting the life cycle of the session to ensure stable operation of the server.

Real-time memory

Memory Utilization Total memory: 1.8G

CPU utilization

Intelligent Alert Save

Intelligent Alert

Trigger condition Memory is higher than %, lasts minutes

Alert Mode

SMS alert

Platform Message

Email Alert

- Cluster Configuration: Quickly configure the cluster environment with a simple operation. Support configuration of state servers and file servers in the platform, and support hot deployment of add/drop nodes.

Basic Settings

| | | | |
|----------------------|---|-------------------------------------|--|
| Status Server | open | <input checked="" type="checkbox"/> | |
| Cache System | Redis single machine | <input type="text"/> | How to configure the cache system? |
| Host | localhost | <input type="text"/> | |
| Port | 6379 | <input type="text"/> | |
| Password | Please enter | <input type="text"/> | |
| | <input type="button" value="Test connection and save"/> | Re-login after saving configuration | |
| File Server | open | <input checked="" type="checkbox"/> | |
| Agreement | FTP | <input type="text"/> | |
| Encoding | UTF-8 | <input type="text"/> | |
| Host | Please enter | <input type="text"/> | |
| Port | Please enter | <input type="text"/> | |
| Username | Please enter | <input type="text"/> | |
| Password | Please enter | <input type="text"/> | |
| Path | Please enter | <input type="text"/> | |
| | <input type="button" value="Test connection and save"/> | | |

- Backup and restore: Support backup and restore of platform configuration information, templates, jars, plug-ins, etc., and can set the frequency of backup, the maximum number of copies, and the backup capacity. It also supports online update and upgrade of server engineering.

FineReport version 10.0.0

jar version 2019.09.27.20.47.56.591

Latest jar The latest version is currently available [View new features](#)

- **Intelligent Detection:** It is divided into three categories: server configuration detection, report management detection, and global attribute detection. For problems such as preview template error, or server memory overflow, or loss of predefined styles, the data decision making system uses the smart detection function to identify problems and provide suggestions.
- **Cloud O&M:** After this function is enabled, the cloud generates a test report after the system automatically or the user manually uploads the data packet (no business data is involved), and gives the user operation and maintenance proposal, which is combined with the local operation and maintenance function and better protects the stability of the system.

Cloud advantage:

Big calculations - giving more accurate, smarter, and more comprehensive operational recommendations through a large number of complex computational models, big data-based statistics, comparisons, and fittings

Zero cost – no need to consume local computing resources, large calculations are done in the cloud center provided by FanRuan

Low threshold - no need to maintain the operation and maintenance tool itself

(Operation and maintenance tools are deployed in the cloud, maintained by FanRuan's professionals)

High growth - the operation and maintenance platform continuously updates and

grows. The function update does not require additional processing by the user, and does not impose any burden on the user.

Data Security:

Data desensitization - only involves data for product improvement and application operation and maintenance, and never involves business data

Data disclosure - users can see which data was uploaded at any time

Confidentiality agreement - may sign a confidentiality agreement if required

Supported features:

Performance Problem Template Recommendations - based on system usage, recommend a template with performance issues

- Platform Log: Monitors and analyzes the running status of the system. This function allows you to view various indicators of the system running status, including access statistics, user behavior, template heat, performance monitoring, management logs, and error logs.

System Visits



Operation time: 2019-11-03 - 2019-11-04 Operation type: Please select [Query](#)

[Export](#) Details

| Template Name | Physical Path | Maximum response time (ms) ↓↑ | Short response time (ms) ↓↑ | Average Time (ms) ↓↑ | Average Memory (KB) ↓↑ |
|---------------|----------------------------------|-------------------------------|-----------------------------|----------------------|------------------------|
| | doc-EN/Form/Multi-sheet_Form.cpt | 378 | 378 | 378 | 27 |
| | doc-EN/Form/First_Form.cpt | 219 | 21 | 120 | 37 |

3.10.7. Message Center

The platform has a built-in message center that supports system message reminders, escalation messages, and template messages. The system message refers to the message notification inside the platform, which can be used for timing scheduling failure reminder, timed scheduling task notification, memory threshold notification, etc; the report message is a reminder message in the multi-level report task, and when the specified streaming operation is completed, a system message reminder is given to a specific user; the template message is triggered by the template event. For example, after the report is successfully completed, the previously edited message is sent to the specific user. Newly received messages, the system will be notified in the upper right and lower right corners.

For example, the system message notification in the following figure:

[Mark as read](#) [Delete](#) 0Article Unread message

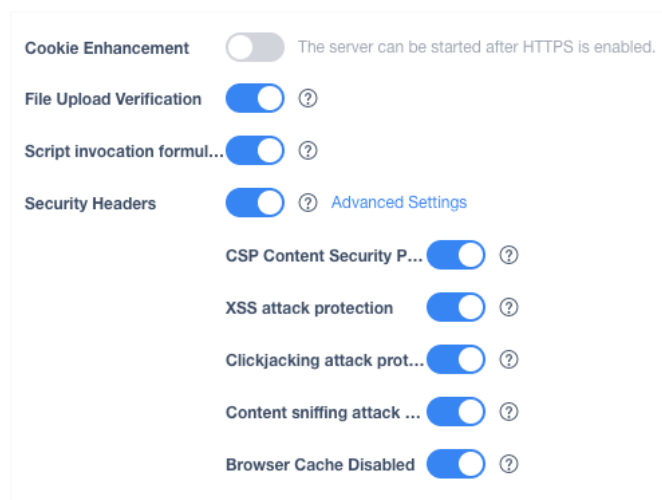
| <input type="checkbox"/> Message | Time | |
|---|---------------------|-------------------------|
| <input type="checkbox"/> test completed | 2019-10-10 10:37:20 | Process |
| <input type="checkbox"/> test completed | 2019-10-10 10:35:16 | Process |
| <input type="checkbox"/> test completed | 2019-10-10 10:34:49 | Process |
| <input type="checkbox"/> test completed | 2019-10-10 10:32:08 | Process |
| <input type="checkbox"/> test completed | 2019-10-10 10:31:51 | Process |
| <input type="checkbox"/> test completed | 2019-10-10 10:27:41 | Process |
| <input type="checkbox"/> test completed | 2019-10-08 16:39:55 | Process |
| <input type="checkbox"/> The server has not set up a mailbox, and members of the system cannot receive notifications, verifications, etc. by mail. In order to use the system more conveniently and safely... | 2019-09-26 13:34:31 | Process |

In addition to message notifications, FineReport also supports SMS, email, app notifications, WeChat notifications and DingTalk notifications. Users can choose the appropriate notification route according to their usage scenarios.

3.10.8. Safety Management

In order to ensure the security of enterprise applications, FineReport10.0 focuses on security, and improves application security from both patching and active defense.

- Security protection: including cookie enhancement, file upload verification, and Security Headers. After the file upload verification is enabled, the suffix and size of the long-distance file in the report and the appearance configuration of the platform are verified. After the Security Headers are turned on, the HTTP Security Header attribute will be attached to the request, and the vulnerability attack will be blocked.



- Access control: divided into two parts: the access frequency limit and the current interception list. After the access frequency limit is enabled, the specific limit frequency can be set, and the access request of the report is limited in frequency. If the limit

frequency is exceeded, the interception list is pulled. The interception list provides IP information that exceeds the access frequency limit and joins the interception. The administrator can remove the IP in the list.

Access frequency limit

Frequency Limit When turned on, it will limit the frequency of report access, alleviating CC attacks, crawl crawling and violent polling

Access frequency Single IP allowed access in seconds time

- **SQL Anti-Injection:** You can prevent the injection of malicious parameters by disabling special keywords and changing the meaning of characters.

Special Keywords

Forbid Keywords

Disabled special keywords [Edit](#)

\b(?:and\b
\b(?:exec\b
\b(?:insert\b
\b(?:select\b
\b(?:delete\b
\b(?:update\b
\b(?:count\b
\b(?:chr\b
\b(?:mid\b
\b(?:master\b
\b(?:truncate\b
\b(?:char\b

\b(?:declare\b
\b(?:or\b
\b(?:drop\b
\b(?:create\b
\b(?:alert\b

Role

Escape character

Escaped characters [Edit](#)

- **Last login information reminder:** After logging in, the login decision platform will prompt the last login information.

 **Last login information**

Time: 2017-08-01 12:30:23
 IP address: 255.255.0.0
 Location: Jiangsu Nanjing

- Password policy: including forgotten password, password update regularly, password strength limit, and password verification method.
- Login verification: three verification methods: slider, SMS, and email.
- Login lock: If you enter the wrong password more than a certain number of times, the account will be locked to prevent brute force cracking of the user password.
- Management log: Records all operations related to management settings in the platform.

Operation time: 2019-11-03 - 2019-11-04 Advanced Query Conditions [Query](#)

[Export](#)

| Module | Settings | Operation User | Operation IP | Operation time | Accessed Resources | Operation type |
|---------------------|--------------------|----------------|--------------|---------------------|-------------------------------|----------------|
| System | Login | 1(1) | localhost | 2019-11-04 10:40:49 | Last login information prompt | Open |
| Security | SQL anti-injection | 1(1) | localhost | 2019-11-04 10:30:38 | Escape haracter | Open |
| System | Login | 1(1) | localhost | 2019-11-04 10:14:44 | Slider | Open |
| System | Login | 1(1) | localhost | 2019-11-04 10:14:06 | PWD limitation | Open |
| System | Login | 1(1) | localhost | 2019-11-04 10:14:05 | Password Update | Open |
| System | Login | 1(1) | localhost | 2019-11-04 10:14:03 | Forgot your PWD | Open |
| System | Login | 1(1) | localhost | 2019-11-04 10:13:59 | Last login information prompt | Close |
| System | Login | 1(1) | localhost | 2019-11-04 10:13:29 | Last login information prompt | Open |
| System | Login | 1(1) | localhost | 2019-11-04 10:12:41 | Single sign-on | Open |
| Template Permission | Global Settings | 1(1) | localhost | 2019-11-04 10:07:14 | | Update |

/ 3

3.10.9. Registration Management

Users can choose a registration method in local machine information authentication, private cloud authentication, and public cloud authentication according to their own usage environment.

- Local Machine Information Authentication: The physical information of the report server needs to be bound.

Version information

| | |
|---------------------------|---|
| Application Name | webroot |
| Core Module | Version number: 10.0.0 JAR:Build#persist-2019.09.27.20.30.08.325 |
| Data Source Module | Version number: 10.0.0 JAR:Build#persist-2019.09.27.20.30.36.339 |
| Platform | Version number: 10.0.0 JAR:Build#persist-2019.09.27.20.32.06.853 |
| Report | Version number: 10.0.0 JAR:Build#persist-2019.09.27.20.47.56.591 |

Registration Information

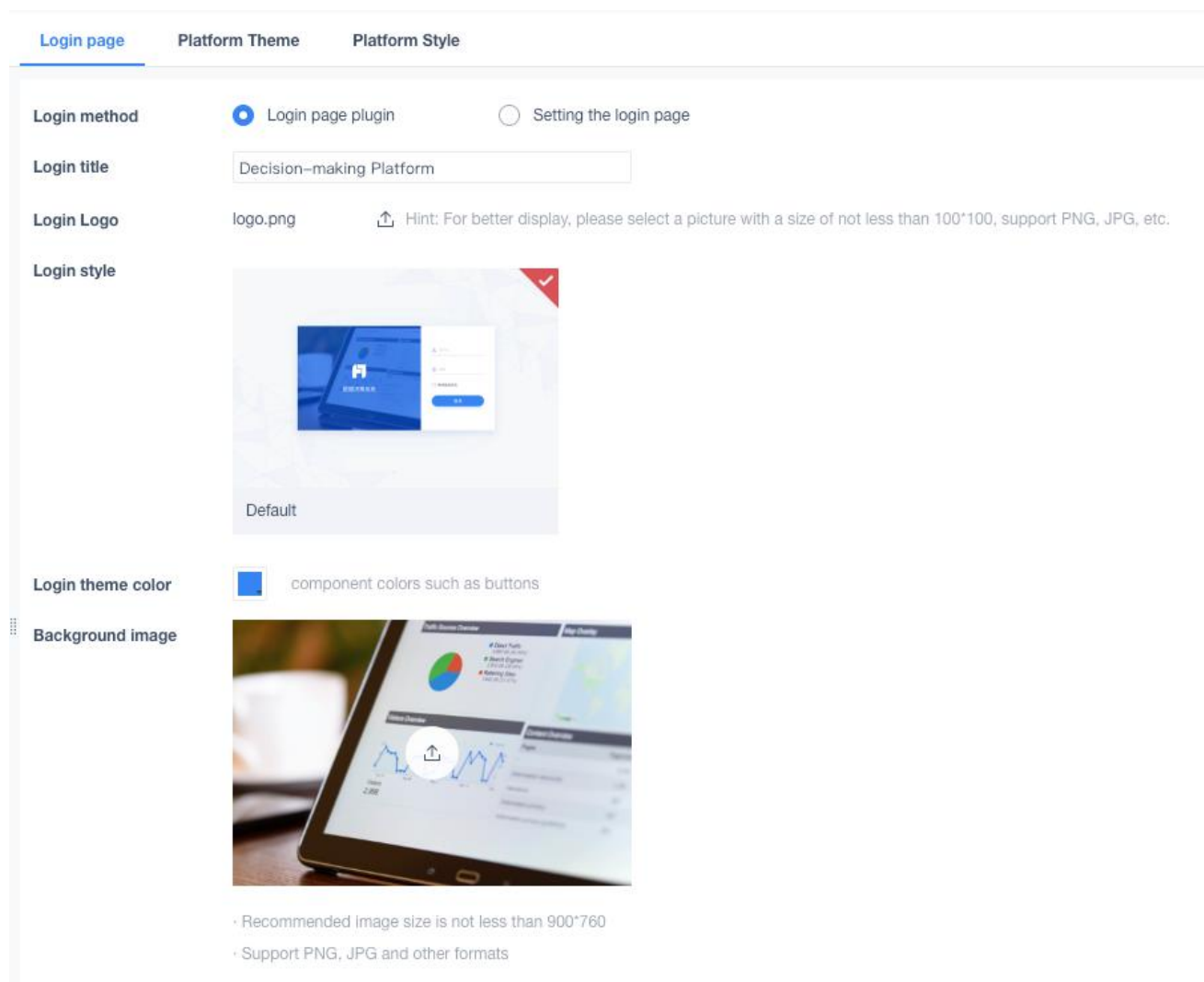
Version registration Not registered [Sign up now](#) Unregistered version can also access the template IP number is limited to 2! [How to register?](#)

- **Private Cloud Authentication:** Applicable to deploying a system to a cloud platform (such as Alibaba Cloud's ACE) or a machine without fixed physical information.
- **Public Cloud Authentication:** Users do not need to provide machine physical information, they can go directly to the FanRuan authentication server for online authentication, which is convenient, fast, safe and reliable.

3.10.10. Appearance customization

Each enterprise does not have a single system, and it is hoped that each system can have a unified UI specification, such as platform style, login interface, home page, and so on. In this regard, FineReport is the first in the industry, completely open the API of the system appearance, users can customize the decision system theme.

The aesthetics of a system is determined by the login interface style + large background + overall color + logo icon + theme package. The login interface style can be changed by the official plug-in; the overall color matching is mainly determined by the background and color matching, which can be visually configured in the decision-making platform-management system-platform appearance, as shown in the following figure.



The interactive effects and menu layout are mainly done by the theme package. The more code is written, the more things can be changed. Of course, the background image and the theme

color can also be used in the theme package code through the open API. Modifications are not limited to configuration in the platform appearance options.

3.11. Task Scheduling

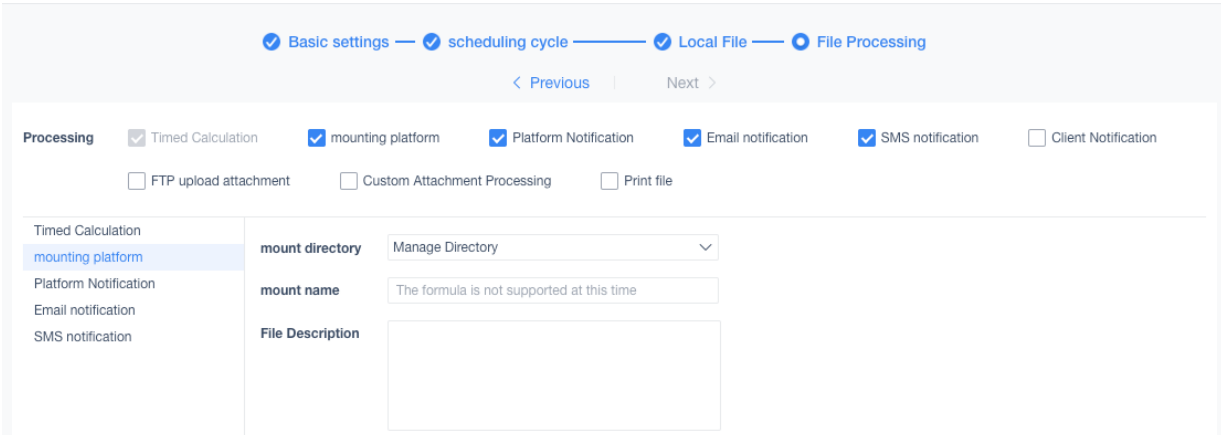
3.11.1. Timing tasks

Business users may face such a situation that reports need to be generated regularly and they have to do the same thing regularly to get the reports they want. FineReport's timed scheduling function allows users to free themselves from the troublesome repetitive operations. It can conveniently and quickly set up daily, monthly, quarterly, annual reports and other tasks without additional work. After the scheduled tasks are set, the server will automatically complete at the specified time. Set the tasks, generate the required files, and even notify you of the generated results by email, SMS, and platform message notifications, allowing you to analyze and make decisions in a timely manner.

- Regular daily report: The daily report function is to generate data for a fixed period of time every day, for example, to generate all the data of 00:00:00 to 23:59:59 yesterday, which can be pdf, word, cpt, xls, etc. The format is saved in the directory you have set up. This kind of function is quite practical and popular in some enterprises.
- Regular monthly or annual report: The sales performance of each branch is counted at a fixed time each month. The sales performance of each branch can also be counted at the end of the year. These data can be saved in pdf, word, cpt, xls and other formats. In

the set directory, and then back up the data, you need to set multiple timer tasks for a template.

- **Timed task file processing:** After the timed task is completed, the result file can be saved in the specified directory, FTP or as an attachment to send email reminders, SMS notifications, platform message notifications, and push to mobile terminals.



- **Conditional timing task:** Perform a conditional check judgment before executing the timed task. If the condition is not met, it will not be executed or the test will be verified again after the delay (Only when the task restart is checked, the delay will be verified again after a delay). Conditional judgments consist of three types of choices: always execution, formula judgment, and custom class judgment.

Basic settings — scheduling cycle — Local File — File Processing

[< Previous](#) | [Next >](#)

Start time Configure immediately after execution Set start time

Executio... Only execute once Simple repeat execution Detailed frequency setting Expression Settings

End time End of the task once it has been executed

Execution condi... Always execute Formula judgment Custom class judgment

Task restart If the task is interrupted, restart at the following frequency

Restart frequency: every minutes

Maximum number of attempts to restart: time

Basic settings — scheduling cycle — Local File — File Processing

[< Previous](#) | [Next >](#)

Select template

Type Preview Report Analysis New report

Parameter setting In addition to the general results, the results are generated separately from the users in the default user group.

[\[Set parameter defaults\]](#)

File name

Accessory Archive Result Report excel03 excel07 word pdf

File Proc... Clearing at the end of the task Remaining only 1 times Remaining only 5 times Do not clean up Custom

- **Task management:** For the scheduled tasks that have been set, you can perform centralized management, including task running status viewing, pause, edit, copy, and SO ON.

[Task Management](#) | [Run Monitoring](#)

+ Add a task Delete task

| Task name | Use template | Last run time ↓↑ | Next run time ↓↑ | Run status ↓↑ | |
|---|--|---------------------|---------------------|---------------|--|
| <input type="checkbox"/> Scheduled_Daily_Report | doc-EN/Advanced/Cacuate_Between_Cells/Daily_Report.cpt | | 2019-10-10 10:26:00 | Paused | |
| <input type="checkbox"/> test | GettingStartedEN.cpt | 2019-10-10 10:37:07 | | Closed | |
| <input type="checkbox"/> test2 | doc-EN/Form/Multi-sheet_Form.cpt | 2019-10-10 10:28:29 | | Closed | |

/ 1

3.11.2. Permission control of scheduled tasks

Through the permission control function of the timed task, the implementation can generate different results for different users.

- Timed task content permission control: Generally, there will be salary options in the company's system. At the end of the month, you can click to view the salary information of the current month. With the FineReport timing function, you can mount the salary information of the current user's current month at the specified salary node at the end of each month.
- Timed task mail delivery enables different people to send different content: In the general sales industry, there will be many distributors under one manufacturer, the distributors need to purchase from the manufacturers, remittances, etc., and the manufacturers will also have regular operations. Send an email to these distributors to inform them about the remaining condition of the goods, the remittance, etc., and when the company pays the salary, it will also send a salary email to the employee about the employee. Then, the need to send different content emails to different people on a regular basis can be easily achieved with the FineReport timing function.

3.11.3. Scheduled filling

FineReport also supports timing filling, and through the use of report templates, the data is loaded, summarized, and filled into the library at regular intervals. For example, monthly statistical statistics of each company's sales performance, these data are stored in the database

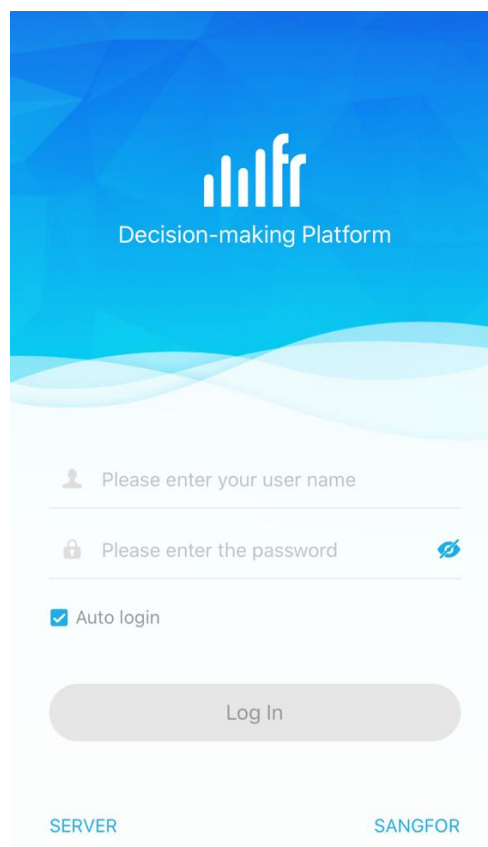
of the branch, using the timed reporting function, the total performance of each division of the company can be stored in the head office database.

Select template

Type Preview Report Analysis New report

3.12. Mobile apps

In the era of mobile Internet, information is everywhere. By making full use of mobile applications, people can get rid of the limitations of office space and make full use of the fragmentation time, which in turn can be “managing between the thumbs, making decisions thousands of miles away” .



FineReport supports the integration of reports into mobile applications, and can display reports according to the operating characteristics of mobile devices, such as support for page enlargement and reduction. It supports offline viewing, supports mobile terminal for online filing and offline reporting, supports sharing templates with PCs, and reduces development.

The native app developed by FineReport (app name: data analysis), supports IOS, Android system, has a comfortable experience, supports chart gesture operations, various drill linkage and other interactive features. It supports mobile device hardware address binding, supports VPN, supports multiple logins, password protection and other security settings to ensure user information security.

3.12.1. ReactNative combined with native

The core framework of the native APP application system adopts ReactNative technology, designed and implemented according to the MVC idea, and the view and model are separated to maintain the scalability of the view and the reusability of the model. The entire system has good stability and scalability.

At the same time, the table display in the APP adopts the native rendering technology, which is optimized for the mobile processor. Compared with the traditional HTML report, the rendering speed and the smoothness of the interactive operation are greatly improved.

3.12.2. OEM Cloud Packaging & Personalization

In addition to providing official apps, it also supports customizing enterprise personalization applications through the OEM cloud packaging platform, which can replace application names, icons, startup pages, copyright information; built-in enterprise-specific servers, VPN configurations, and so on. At the same time, the enterprise can control its version iteration independently, and improve the personalization and stability of mobile applications.

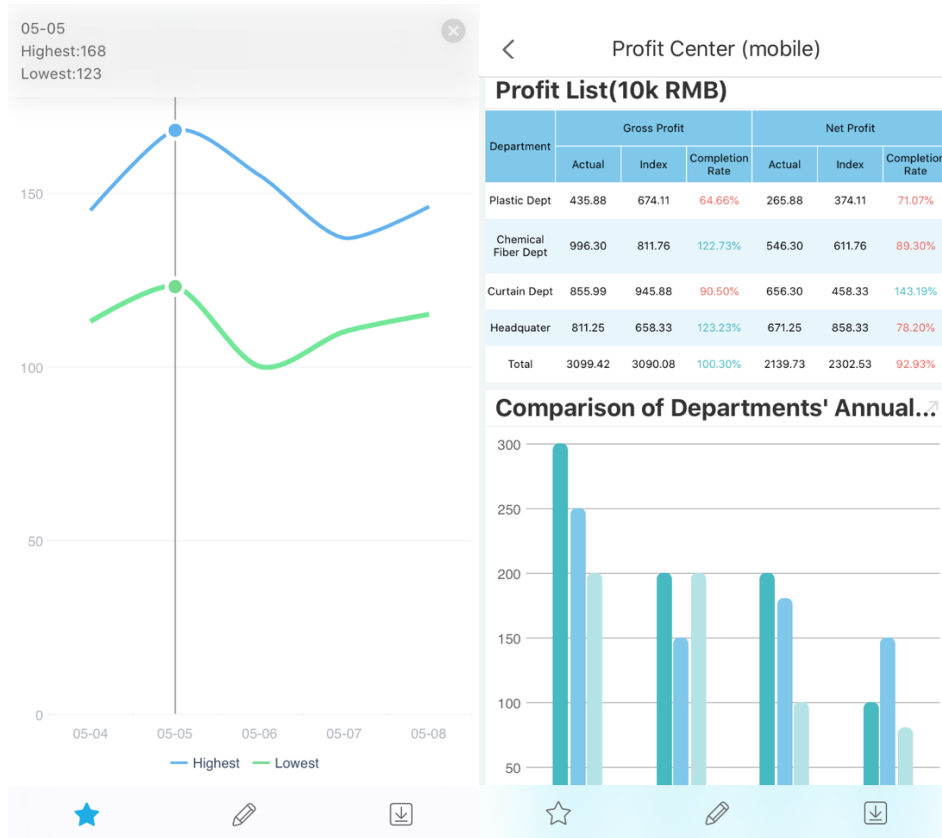
The mobile side also supports a variety of personalized customization solutions such as custom theme plugins, directory style plugins, adding directory banners, and modifying directory icons.

3.12.3. HTML5 report

In addition to native parsing, FineReport also supports HTML5 parsing, which can be easily integrated with third-party applications. At the same time, HTML5 reports use the same set of underlying code architecture as APP, and the interaction, experience, and functionality are highly consistent with APP.

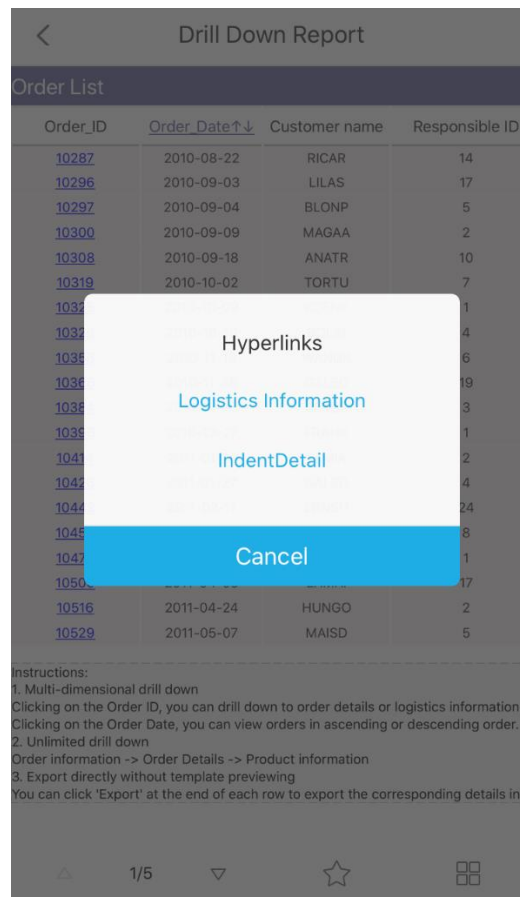
3.12.4. Mobile Adaptive and Zooming

Whether it is APP native or HTML5 report, it can adapt to different resolution screens, zoom the report page to achieve the best effect, and on the mobile side, the decision report will be converted into stream layout adaptive display according to the component order. Users can also analyze individual components by component magnification, while supporting two-finger zoom for partial magnification for a clearer view of some detail data.



3.12.5. Mobile Drilling and Linkage

- The mobile terminal is the same as the PC end, supports data drilling, chart drilling, and supports multi-dimensional (multi-target) drilling, and the drilling effect is in line with the characteristics of the mobile terminal. With the linkage operation, the effect of the mobile terminal is basically the same as that of the PC.

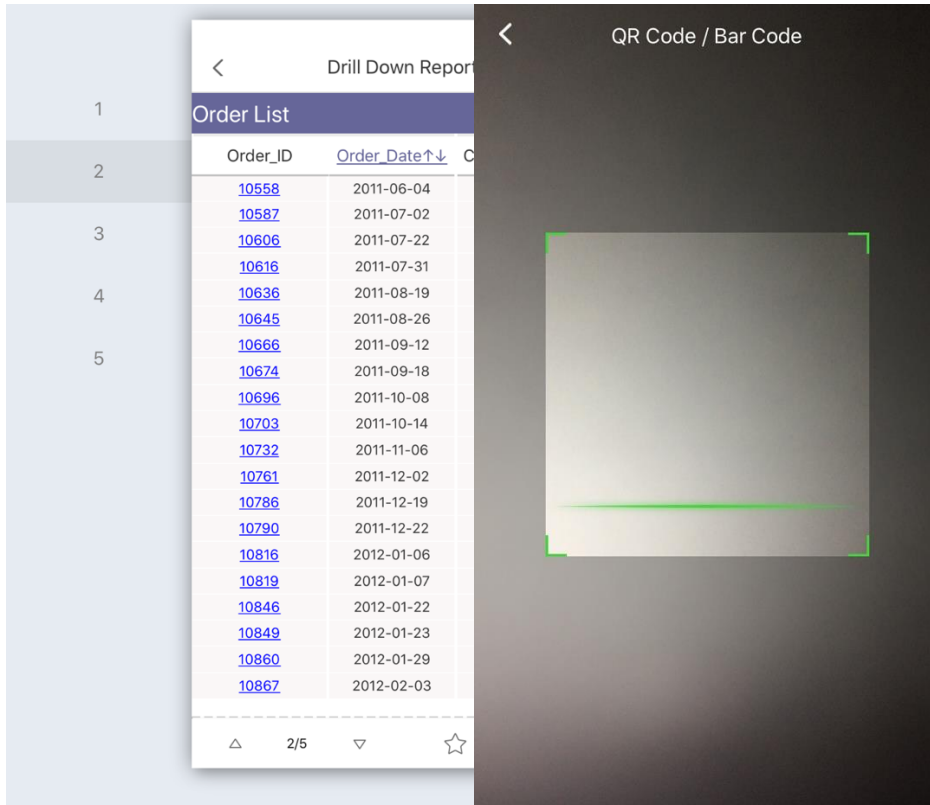


3.12.6. Mobile terminal filling

On the PC side, FineReport has a complete filling function. In the mobile APP, the FineReport filling function is still powerful, supports various control inputs, and supports data filling and verification, and the effects are also mobile UI. On this basis, it also incorporates the unique features of the mobile terminal, such as: scan code input, get current location information, photo upload and so on.

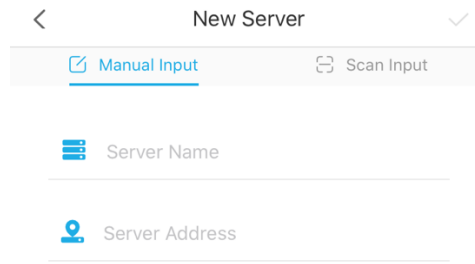
3.12.7. Mobile interactive experience

FineReport has a good mobile experience, and all controls and parameter queries have been moved. Some small functions such as page turning, collection, annotation sharing, scanning barcodes, and calling camera photos to upload files also show good mobile experience.



3.12.8. Adding devices and bindings

FineReport supports manual input of URLs and QR code scanning to add servers, which is convenient and quick.



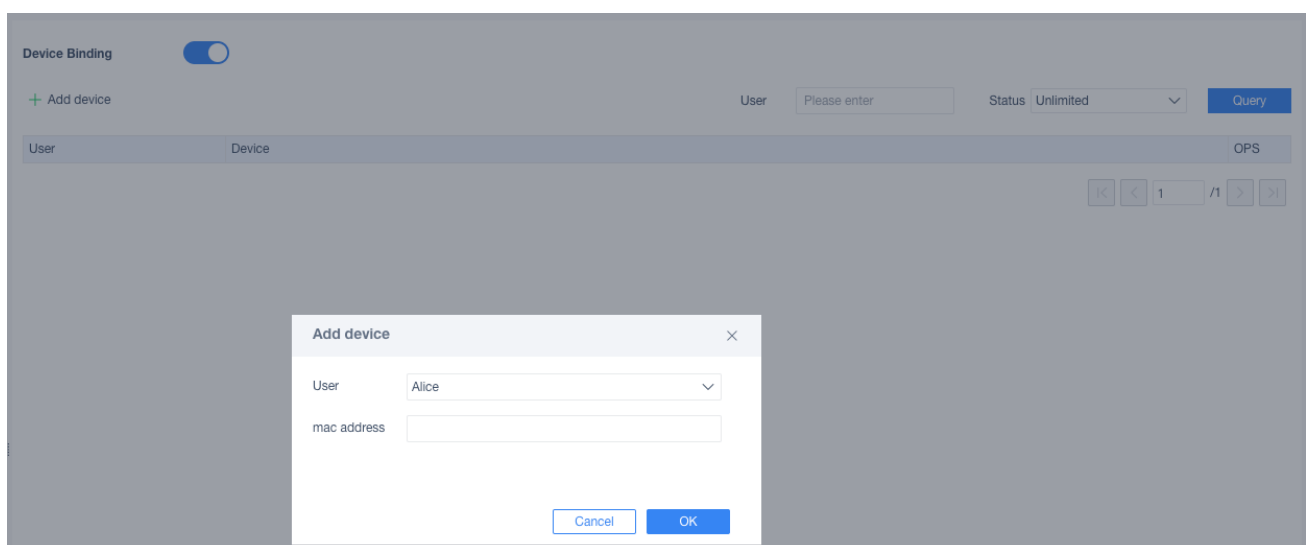
< New Server >

Manual Input Scan Input

Server Name

Server Address

FineReport supports the device binding function. After the device is bound, only authorized devices can connect to the server to view reports, and the security is greatly improved. If the loss of the mobile phone occurs, as long as the authorization of the device is released on the server in time, the device cannot connect to the server to view the report.



Device Binding

+ Add device

User Status

| User | Device | OPS |
|-----------|--------|-----|
| < 1 / 1 > | | |

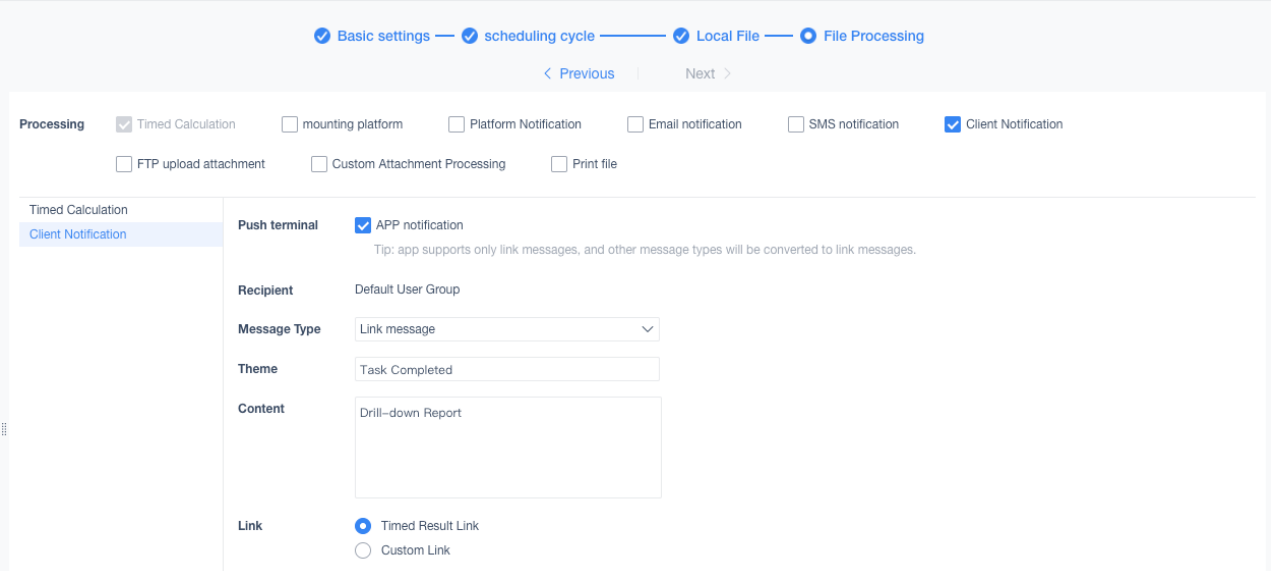
Add device ×

User

mac address

3.12.9. Mobile message push

The mobile Internet has made office beyond the limits of space, and the needs of enterprise management to grasp the core business data of enterprises at any time and place have been met. FineReport supports message push to mobile APP, WeChat, DingTalk. The push message can set the timing frequency, trigger condition, etc., and can realize the timed push of the daily/monthly report data; it can also be used to monitor whether the indicator is within the specified range. If the threshold is exceeded, it will be sent to the relevant responsible person's mobile APP or WeChat for reminding.




The screenshot shows the configuration interface for mobile message push in FineReport. At the top, there are navigation tabs: "Basic settings", "scheduling cycle", "Local File", and "File Processing". Below these are navigation buttons for "Previous" and "Next".

The main configuration area is divided into two sections:

- Processing:** Contains several checkboxes:
 - Timed Calculation
 - mounting platform
 - Platform Notification
 - Email notification
 - SMS notification
 - Client Notification
 - FTP upload attachment
 - Custom Attachment Processing
 - Print file
- Timed Calculation:** A sub-section with a sidebar menu containing "Timed Calculation" and "Client Notification". The "Client Notification" settings include:
 - Push terminal:** APP notification. A tip below states: "Tip: app supports only link messages, and other message types will be converted to link messages."
 - Recipient:** Default User Group
 - Message Type:** Link message (selected from a dropdown menu)
 - Theme:** Task Completed
 - Content:** Drill-down Report
 - Link:** Timed Result Link, Custom Link

Message ClearRead < Task Completed



Task Completed
Drill-down Report

2019-11-04 11:26:17

Order List

| Order_ID | Order_Date↑↓ | Customer name | Responsible ID |
|-----------------------|--------------|---------------|----------------|
| 10287 | 2010-08-22 | RICAR | 14 |
| 10296 | 2010-09-03 | LILAS | 17 |
| 10297 | 2010-09-04 | BLONP | 5 |
| 10300 | 2010-09-09 | MAGAA | 2 |
| 10308 | 2010-09-18 | ANATR | 10 |
| 10319 | 2010-10-02 | TORTU | 7 |
| 10325 | 2010-10-09 | KOENE | 1 |
| 10326 | 2010-10-10 | BOLID | 4 |
| 10356 | 2010-11-18 | WANDK | 6 |
| 10366 | 2010-11-28 | GALED | 19 |
| 10384 | 2010-12-16 | BERGS | 3 |
| 10396 | 2010-12-27 | FRANK | 1 |
| 10414 | 2011-01-14 | FAMIA | 2 |
| 10426 | 2011-01-27 | GALED | 4 |
| 10442 | 2011-02-11 | ERNSH | 24 |
| 10456 | 2011-02-25 | KOENE | 8 |
| 10473 | 2011-03-13 | ISLAT | 1 |
| 10500 | 2011-04-09 | LAMAI | 17 |
| 10516 | 2011-04-24 | HUNGO | 2 |
| 10529 | 2011-05-07 | MAISD | 5 |

Instructions:

1. Multi-dimensional drill down
Clicking on the Order ID, you can drill down to order details or logistics information.
Clicking on the Order Date, you can view orders in ascending or descending order.
2. Unlimited drill down
Order information -> Order Details -> Product information
3. Export directly without template previewing
You can click 'Export' at the end of each row to export the corresponding details in Exce

Directory
 Common
 Message
 Setting

△ 1/5 ▽

3.13. International language support

As the leading brand of Chinese reporting software, FineReport has stepped out of China and marched into the world. Currently there are designers (software installation packages) in multiple languages such as Simplified Chinese, Traditional Chinese, English, Korean, and Japanese.

In addition, FineReport also supports the international reporting function, which achieves the effect of "displayed in Chinese in China and displayed in English in the United States", by switching the designer language, switching browser language and other simple operations.

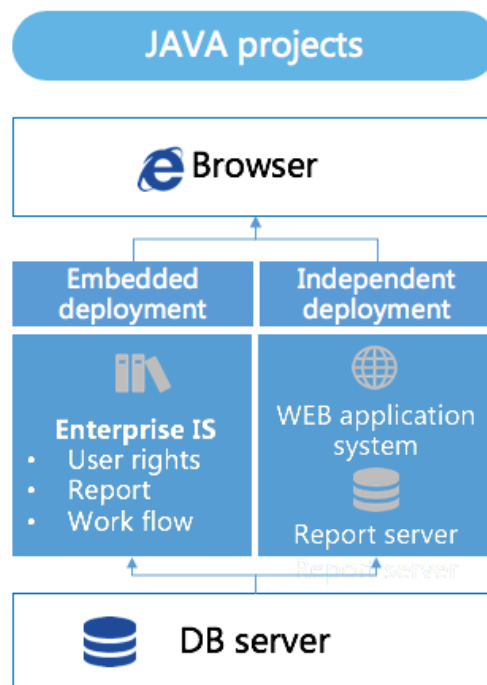
4. Application Deployment

Application Deployment is divided into two parts: report engineering deployment and web page integration. FineReport is perfect for page integration. For engineering purposes, report engineering can be deployed as a stand-alone project or integrated into existing projects.

4.1. System Integration

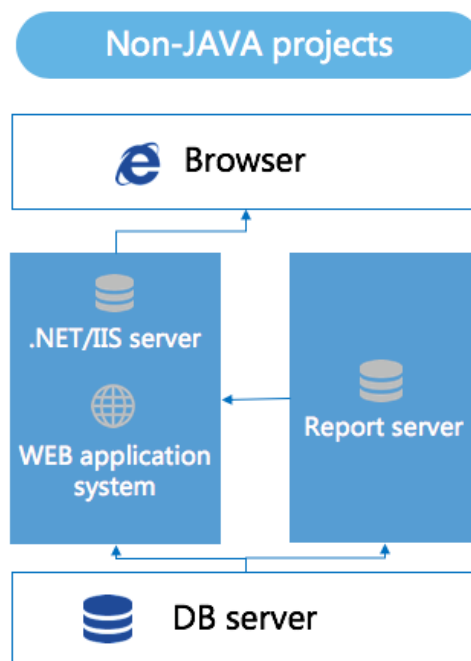
4.1.1. Java project integration

FineReport is a pure Java software, so for J2EE projects, seamless integration is possible. The integration principle is as follows:



4.1.2. Non-java project integration

For non-J2EE projects, FineReport requires a separate web application server to support it. Independently running a report server and WeB/Service independently of the application system, the main application accesses the report through the url mode, and can also perform parameter assignment and other control. Finally, it is displayed to the user through the browser, and the user can also view, edit, submit, and output (PDF, EXCEL, WORD, etc.). Especially for Windows IIS server, FineReport provides a connector between Tomcat and IIS, which facilitates the integration of FineReport report server and IIS server.



4.1.3. C/S project integration

Today's mainstream reports are based on browsers, which is convenient for off-site office and statistics. However, for companies with strong confidentiality such as government and military,

or companies that only have internal management and do not want to communicate with the external network, the C/S system is more in line with the actual needs of enterprises and units.

FineReport uses a strategy of embedding a browser in a program to call a report to integrate with a C/S project.

In this way, the background operation is the same as that of the ordinary B/S system, but the report can only be displayed in the browser, so it is impossible to directly call the url like the ordinary B/S system when the report is connected in the foreground.

4.2. Web page integration

Reports present data through various styles such as tables, charts, etc. for statistical analysis.

Such a data table or chart can be implemented by the user when developing the system, but the workload is large and the maintenance is difficult. Users often use off-the-shelf report software to develop reports, and finally embed the prepared reports into their own systems to save the project development cycle.

Now the user-developed system basically tends to the browser/server mode of the BS architecture. These systems may be developed by different languages, such as HTML, ASP, JSP, PHP, etc., so the prepared reports need to be embedded in these pages as part of the page.

FineReport integrates reports into web pages through the Frame framework.

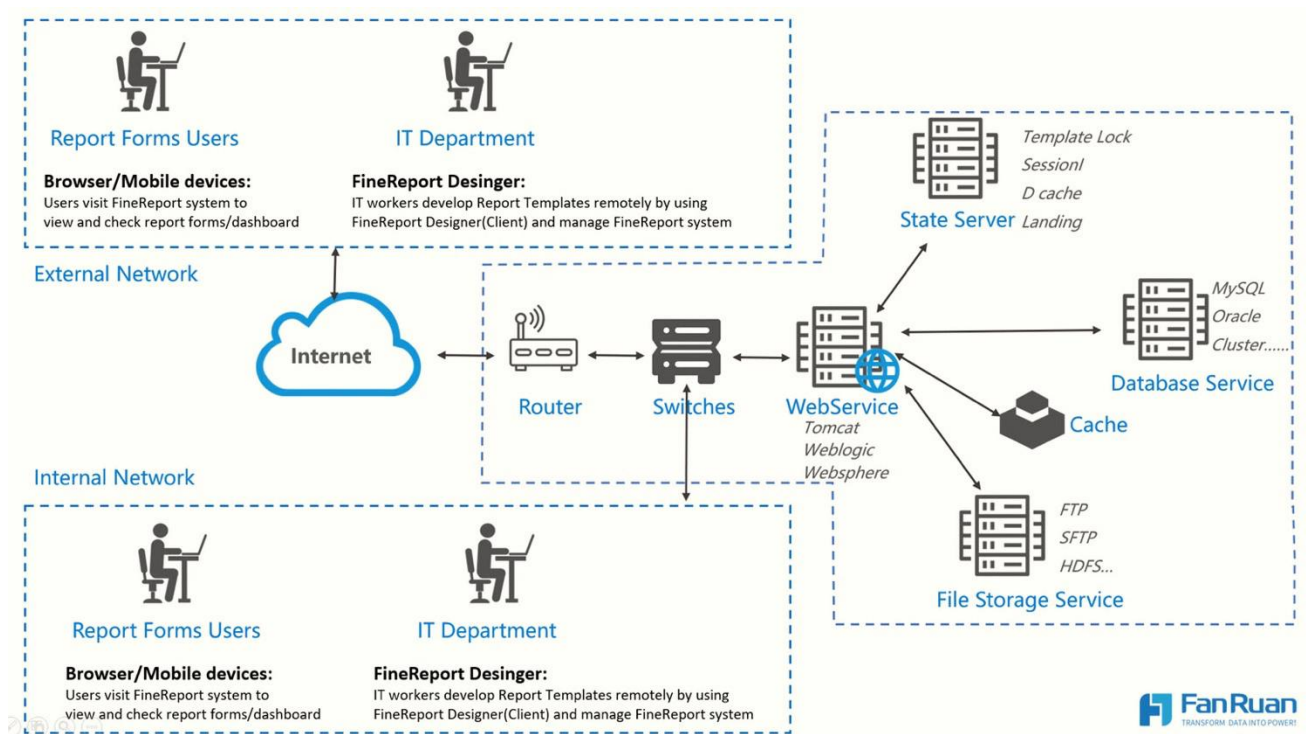
```

<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
<html>
<head>
<title>FineReport Demo</title>
<meta http-equiv="Content-Type" content="text/html; charset=GBK" />
</head>
<body>
<iframe id="reportFrame" width="900" height="400" src="/WebReport/ReportServer?reportlet=/doc/Primary/Parameter/Parameter.cpt"></iframe>
</body>
</html>

```

4.3. Clustering

FineReport has introduced a new cluster in the 10.0 version. The cluster adopts a hostless mode. After the node is down, the system can be used normally. The load of each node is more balanced, and the nodes increase the concurrency linearly. Simple operation, high consistency, configuration and resource modification can be synchronized at any time. At the same time, it has the functions of memory monitoring and dynamic sensing node joining, adapting to various network environments, systems and web servers.



The advantages of the 10.0 cluster are:

- **High Consistency:** All configurations and files made through the FineReport can be synchronized to each node of the cluster at any time.
- **High Availability:** All stand-alone features are supported. After a single node is down, the system can still access normally.
- **Powerful Features:** As the number of nodes increases, the concurrency supported by the system grows almost linearly. And the load of each node is more balanced.
- **Simple to Use:** The cluster environment can be quickly configured through simple operations in the platform, where the addition and deletion of nodes supports hot deployment. In addition, you can monitor the health and logs of each node in the platform.

4.4. Single Sign-On

FineReport offers a variety of single sign-on methods to meet the needs of different applications.

1 AJAX

Support cross-domain, asynchronous identity authentication and authentication timeout processing.

2 iframe

Support cross-domain, but not asynchronous authentication. Does not support timeout processing.

3 Action submission

When the report authority is verified, the url in the form can be used to trigger the url verification, which is convenient and quick.

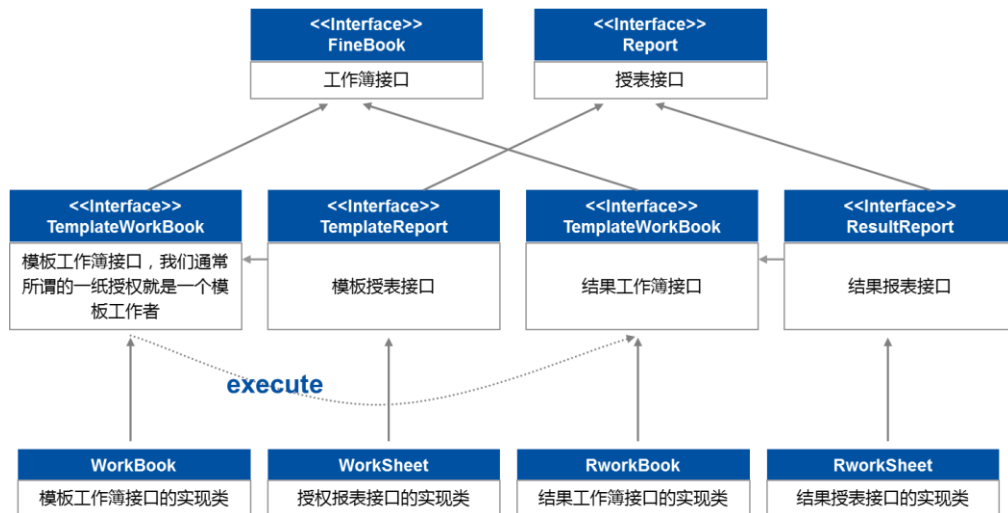
4 CAS single sign on

Support Central Authentication Service.

5. Extended development of FineReport

With the development of FineReport, it provides designers and servers to meet most of the needs of users, fully realize zero-coded software development, revolutionize software development speed and improve software stability. But the demand is ever-changing, and the functions included in FineReport are typical in the reporting industry. Maybe some personalized functions can't be realized by FineReport. To this end, FineReport supports application developers to use in-depth development and control of FineReport using web scripts and API interfaces to meet their individual needs.

The FineReport kernel is designed as shown below:



The template of FineReport is separated from the result. The workbook or report that has not been executed is the template, and the result is executed.

5.1. API interface

FineReport provides a rich, open, well-structured API interface. The application system can flexibly call the built-in functions of various reports according to system requirements to achieve deeper integration and control.

5.1.1. Program data source

The main problem with the production of reports is the problem of the data source. When a general customer makes a report, it uses some data sources such as a database data source, a text data source, and an xml data source. However, a considerable number of industries cannot directly connect to the data source. They can only call related data through some interfaces.

FineReport reads data sources through the AbstractTableData abstract class, enabling customers to meet complex and variable data sources when reporting.

5.1.2. Report format settings

The user can control multiple properties of the report object's cell properties, web properties, parameters, page settings, etc., and can freely control the display style of the cell, the buttons of the toolbar, the display of the parameter panel, the assignment of parameters, and the like.

5.1.3. Custom interaction

In actual report production, there are many times when trigger events are needed to make report creation more convenient and friendly. FineReport reports use the jquery v1.5.2 framework, which makes it easier for users to process HTML documents, events, animation effects, and easily provide AJAX interaction for websites, and it is compatible with various browsers (IE 6.0+, FF 1.5+, Safari2.0+, Opera 9.0+). After the FineReport report is parsed, it will eventually become an html page, so you can use js to process the report. Users can use the jQuery framework to manipulate the report. On this basis, FineReport also encapsulates many built-in js methods.

5.1.4. Custom filling

The user can define the filling method according to his own needs, and fill in the interface to save the user operation log to the database, and perform various processing when the report succeeds and fails.

5.1.5. Report reprocessing

FineReport Designer can basically design most reports with zero code. However, the requirements are ever-changing. Maybe some personalized functions can't be realized by the designer. Therefore, the template can be read into the program, modified and then exported. Access the report in a browser. Obviously, this is cumbersome. For this case, you can also directly save the read template as a program network report and directly access the defined program network report on the web side.

5.1.6. Custom Functions

FineReport has provided a large number of built-in functions, which are enough to meet the user's report production requirements under normal circumstances, but in some special fields, some special functions may be needed. In this case, FineReport provides a custom function mechanism. The user defines some functions according to the business needs, but these functions must meet the FineReport function definition rules: Functionname (Para,Para,...), where Function name is the function name and Para is the parameter.

In FineReport, each function is defined as a class. This class must implement the Function interface. In the operation, the class is first retrieved by function name reflection, and then its run (Object[] agrs) method is called.

5.1.7. Import and export

FineReport provides powerful input and output functions, all of which are in the com.fr.report.io package. The input of the report refers to the creation of a Workbook object from the template

file (in XML format) of the report. The output refers to saving the report as various format files.

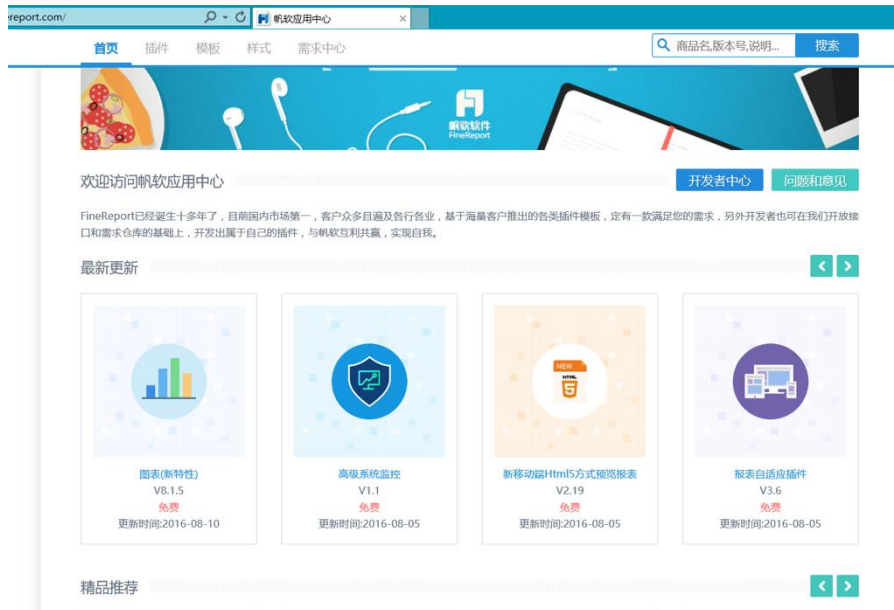
FineReport supports saving the report as cpt, built-in data cpt, Pdf, Excel, Word, Svg, Csv and other file formats to release the export process.

5.2. Plugin development

A plugin is a program written in accordance with a certain specification of the application interface. Many softwares have plugins, and there are countless plugins. For example, in IE, after installing the relevant plug-ins, the WEB browser can directly call the plug-in to implement a specific function.

FineReport has opened a lot of API interfaces for users to customize their personalization needs, and provides a complete set of plug-in development, installation, use, and management solutions. In this way, the user can implement a certain function by FanRuan official, or by himself, or other technical personnel.

For the plug-ins that have been developed, FanRuan provides a plug-in mall for users to choose, as shown below.



At the same time, FanRuan is working hard to build the FineReport ecosystem, allowing more technicians to benefit from the development of FineReport plug-ins. FanRuan officially publishes various types of paid plug-in development bidding from time to time. Interested developers can carry out the bidding, and the plug-in developed can obtain the official cash reward as long as it is qualified. In addition, developers can also develop various types of plug-ins based on their

own understanding of the industry, and sell them to the FanRuan Plug-in Mall for continuous profit. Corporate customers, if they have individualized needs, cannot meet the existing functions, or they can publish their own bidding plans to attract developers to help you meet your needs.

6. FineReport performance and optimization

In addition to the functions of the finished software, users are more concerned about the stability, number of concurrent, data volume and other performance. This section introduces you to this aspect.

6.1. Measured data

The measured data shows that the common details or grouped reports, after opening FanRuan' s line engine, 500,000 rows and 5 columns of data, that is, 2.5 million grids, memory consumption between 100-150M, response time is about 1.5S; Million lines, 5 columns of data, that is, 5 million grids, memory consumption is around 130-200M, response time is about 2.5S.

For concurrency, FineReport on the Intel(R) Core(TM) i7-2600 CPU @3.4GHz 3.39GHz/16G memory machine, 500,000 data reports of about 2.5 million cells, 100 users concurrent access, the average response time is 28s; and 1 million data reports of about 5 million cells, 100 users concurrent access, the average response time is 32S.

6.2. Performance Optimization

In the actual system, various performance problems are often encountered. For example, the system access time is too long; frequent access to large data reports consumes too much server memory and causes memory overflow; excessive user concurrent access causes the server to crash; accessing a complex report for a few minutes and then accessing again, still have to wait the same time to see the result; the web page frequently appears request timeouts, etc., which greatly affects work efficiency and experience.

Based on more than ten years of experience, FineReport has summarized a set of practical performance optimization solutions. From the data source acquisition, report production ideas, control usage to server configuration, there is a complete set of solutions.

6.2.1. Report performance optimization

- Optimize report fetch: The designer spells out the final SQL, passes the SQL statement to the database, executes the database, and returns the data to the designer. So we can improve the performance of the report by controlling the amount of data and pre-processing the data, such as using SQL statements to take specific fields, direct grouping in SQL instead of grouping in reports, direct sorting in SQL instead of sorting in reports, use Views, stored procedures, and more.
- Optimize the calculation time of the report: After completing the report fetch, the designer will expand, group, list, summarize and other data returned by the database. Good template making habits can often optimize the calculation time of the report,

such as using blank cells, use hidden rows and columns carefully, use merged cells with caution, use parent chart, and so on.

- Using parameter injection: For multi-dataset related reports, the report will be slow to display when the data is large, or complicated by writing SQL statements. At this point, using the dynamic parameter injection function can not only speed up the presentation of the report, but also eliminate the need to write complex SQL statements.
- Data set cache and sharing: For large data volume reports, if you query the data directly from the database each time, it not only increases the pressure of the database server, but also greatly affects the speed of fetching and reduces the execution speed of the report. For this purpose, FineReport provides data set caching and sharing. FineReport can first cache the results of its data set query. For the cached data, when you use the same data set again, you don't need to connect to the database again to re-query the data, and directly use the cached result, that is to use FineReport's data set sharing mechanism , to achieve resource reuse, reduce the access time and thus improve the presentation speed of the report.
- Enable row engine execution layered report: Very simple for report form, just a simple single data source detail report, but the amount of data is very large, millions, millions or even more. Report fetching and calculation time is quite long. At this point, you can enable the line engine to improve the display speed of the report. For the user, the query report will not feel lagging.

6.2.2. Server performance optimization

- **Memory:** JVM stack memory is a key indicator to determine the performance of the application server. The default memory configuration of the server is relatively small. In larger applications, this memory is not enough, so you can improve performance by viewing and modifying the web server memory size.
- **Concurrency:** Concurrent means that multiple clients access the application system at the same time. The number of connections is the maximum number of simultaneous accesses to the server. The number of control connections can optimize the performance of the server and ensure the efficiency of the server. FineReport provides two methods: static concurrency and priority access concurrency control.
- **Server cluster:** The cluster can use multiple computers for parallel computing to achieve high computing speed. It can also be backed up by multiple computers, so that any one machine breaks, the whole system still works normally. FineReport fully supports server clusters. It must be clear that the servers in the cluster need to have intranet communication support. Reporting applications on different servers must be consistent.

7. Product environment support

7.1. Software environment

The specific software environment requirements are as follows:

Operating system: Solaris, Aix, Windows, Linux, Unix, IRIX;

Database: Oracle, SqlSever, Mysql, Access, Sybase, DB2, Postgre, Derby (mainly some relational databases and multidimensional databases);

Server: web application server such as Tomcat, JBoss, Weblogic, WeB/Sphere, Tongweb, resin, etc.

Browser: Main browsers such as IE, FireFox, and Chrome.

7.2. Hardware environment

The specific hardware environment requirements are as follows:

| Number of registered users | System online number | Mean concurrency | Recommended configuration | Minimum configuration |
|----------------------------|----------------------|------------------|-----------------------------|----------------------------|
| 2000~5000 | 400~1000 | 0~100 | Stand-alone (JVM memory 8G) | Stand-alone (JVMmemory8G) |
| 4000~10000 | 800~2000 | 0~200 | Stand-alone (JVMmemory12G) | Stand-alone (JVMmemory8G) |
| 6000~15000 | 1200~3000 | 200~300 | Stand-alone (JVMmemory16G) | Stand-alone (JVMmemory12G) |
| 8000~20000 | 1600~4000 | 300~400 | Two-node(JVMmemory12G) | Two-node(JVMmemory8G) |
| 10000~25000 | 2000~5000 | 400~500 | Two-node(JVMmemory16G) | Two-node(JVMmemory12G) |
| 12000~30000 | 2400~6000 | 500~600 | Three-node(JVMmemory16G) | Three-node(JVMmemory12G) |

| | | | | |
|----------|---------|---------|--------------------------|--------------------------|
| 30000 以上 | 6000 以上 | 600~900 | Three-node(JVMmemory16G) | Three-node(JVMmemory16G) |
|----------|---------|---------|--------------------------|--------------------------|

Description:

Number of registered users: Users registered by the system

Number of online users: The number of online users at the same time in a certain period of time (between 5% and 20% of the total number of registered users, 20%)

Number of concurrent users: The number of users who send requests to the server at the same time (usually about 10-25% of the number of online users)

Recommended configuration: 90% of users have access time less than 2s

Minimum configuration: 90% of users have access times below 4s

JVMmemory: The memory assigned to the FineReport container Tomcat.

Physical memory: The hardware's memory is recommended to be at least 1.25 times that of jvmmemory.

CPU: The test server cpu has two pieces, the model is Intel Xeon E5-2620 V4.

Note: Network and database sql processing affect the experience duration. This report only deals with the length of FineReport processing, intranet, non-complex sql, and can ignore network speed and database factors.

8. Contact us

Learn more about FineReport, you can -

- Product official website: <http://www.finereport.com/en/>

- FanRuan Forum: bbs.fanruan.com
- Business consultation number: 4008-5050-48
- Business consultation mail: international@fanruan.com

Looking for technical help with FineReport, you can -

- QQ: 800049425
- Technical support number: 4008-5050-48
- Technical support mail: support@fanruan.com
- Complaint feedback number: 186-0252-2339
- Complaint feedback mail: complain@fanruan.com
- Online documentation: help.finereport.com
- QQ group: 370362224、166295690、165887890、305156612

9. About FanRuan

Fanruan Software Co., Ltd. is the front runner of BI and reporting tools, leading its peers in size, service network, brand influence, market share and sales. FanRuan focuses on business

intelligence and data analysis for 12 years. In 2017, sales of soft sales exceeded 278 million yuan, and it has been the leader in domestic big data/business intelligence (BI) for many years.

After 12 years of development, FanRuan has cooperated with over 7,000 world and China Top 500 customers and organizations, including CITIC Bank, Industrial Securities, Tianhong Fund, 58 City, Greentown Group, Shanghai Pharmaceutical, Geely Automobile, Taier Heavy Industry, SF Express, Xiamen Airlines, Yonghui Supermarket, Uniform Starbucks, Mengniu Dairy, TCL, Xinhua Bookstore, Deloitte Consulting, Peking University, Datang Telecom, Yuntianhua Group, China Railway, State Taxation Bureau, New Hope Liuhe Group, Fu Star Group and so on.

FanRuan has business intelligence and data analysis products with independent intellectual property rights, and is the only domestic manufacturer to be selected as Gartner Global Market Guide. Empowering over 2 million end users with big data analysis by providing efficient, easy-to-use, simple and intelligent big data analytics tools. Its products include: enterprise-level WEB reporting software - FineReport, the global market guide for Gartner reporting platform; BI tools for self-service big data analysis - business intelligence FineBI, selected for CEIA China Enterprise IT Award - Best BI solution; platform dedicated to mobile data analysis - FineMobile; large-screen data visualization solutions focused on large-screen smart decision-making; and powerful and easy-to-use cloud application building tools - Jian Daoyun; these products are in a leading position in their fields.

FanRuan has been involved in the data analysis industry for more than ten years. We firmly believe that data is an important asset for enterprises, organizations and even individuals. We are committed to helping companies understand and use their data, so that business intelligence and data analysis can enhance the ability to create wealth for enterprises. Make data truly productive!

Brand Leadership

1. Organization size:

FanRuan believes in doing excellent things with outstanding people. At present, the company has over 700 employees, more than 90% of which are from domestic famous schools, and have absorbed outstanding graduates from overseas Ivy League universities. “High quality, high academic qualifications and strong ability” is a common feature of FanRuan employees.

2.Scope of services

At present, FineReport has 11 branch offices and 37 offline service outlets in America, Thailand, Korea, Japan, Taiwan and other places across the Mainland China, delivering exquisite, professional, timely and highly efficient local services to all large and medium-sized cities and regions. We also provide various services to handle your problems in time.

3. Sales performance

Since its establishment, FanRuan has maintained rapid growth. In 2017, its sales amounted to nearly 278 million yuan, ranking first in the business intelligence software field in China.

4. Total customer

Since its development, FanRuan has developed more than 7,000 partners, such as Starbucks, Nike, IBM, HITACHI, Huawei, Alibaba, and so on. FanRuan has been widely recognized and praised by users.

Brand influence

In the past ten years, FanRuan has accumulated a large number of loyal users and good reputation with high-quality products, and the brand influence has increased year by year.

1. Typical clients

62 of "Fortune" Top 100 Chinese enterprises choose FanRuan; 52 of Forbes China's most potential 100 listed companies cooperated with FanRuan.

69 of China's top 100 software companies are our partners; 142 of China's 244 primary system integrators cooperate with FanRuan

Among the top 100 enterprises in China's pharmaceutical industry, real estate industry, manufacturing industry and chemical industry, FanRuan's customer coverage rate is above 36%, ranking first in the industry.

2. Industry coverage

FanRuan users are spread across all 233 sub-sectors covered by the National Bureau of Statistics (GB/T 4754-2011) statistical standards, including finance, real estate, construction, health care, vehicles, machinery manufacturing, transportation, trade circulation, and consumer spending.

Cultural media, service consulting, education and research, government organizations, public

services, the Internet, electronics, communications, software services, petrochemicals, environmental agriculture.

3. User scale

FanRuan products have been successfully used in information projects of 20,000 companies or organizations. User developers with more than 30W, more than 200W users every day, use FanRuan products for data analysis, query, and filling.

4.Brand attention

FanRuan and its products ranked first in the industry in terms of comprehensive attention to search engines, social media and vertical websites, with an increase of 81% in 2017. FanRuan has received dozens of awards and honors from a number of professional IT consulting organizations and vertical media including Gartner.

5.Product System

The product system covers all the data analysis application scenarios of the enterprise, and provides the large business intelligence solution from big data collection, processing, analysis to big data visualization based on the advantages of natural integration of original products.

FineBI, a new generation of BI tools for self-service big data analytics, is designed to help business users in their business departments fully understand and leverage their data. With a powerful big data engine and automatic modeling, FineBI can create a wide variety of data visualization information by simply dragging and dropping operations in the dashboard panel, and can perform data drilling, linkage and filtering operations. The data generated during the

business operation process is analyzed and explored, and business decision adjustments are made in a timely manner, so that big data releases more unknown potential.

FineReport, enterprise-level web reporting tool, front runner of Chinese reporting software.

FineReport is easy to learn and use, powerful, and simple drag-and-drop operation can produce Chinese-style complex reports, easily realize the diverse display of presentations, interactive analysis, data entry, rights management, timing scheduling, printout, portal management and mobile applications. With the non-encoding concept of FineReport, implementers can easily build flexible data analysis, network direct reporting and other application systems, greatly shortening the project cycle and reducing implementation costs. For the final enterprise user, FineReport can solve the problem of enterprise information islands perfectly, and let the enterprise completely out of the weird circle of software industry- “The new software that needs to spend money every year to buy new software, but the new software bought can not meet the changing needs of the year” .

FineMoblie, a mobile data analysis platform, provides mobile-side data analysis and display solutions for all products of FanRuan. It adopts two parsing methods of HTML5 and native APP, has a good interactive experience, multiple security protections, and functions comparable to PC: support mobile data entry, data query, data linkage and drill, support mobile scanning code input, annotation Share, take photos and more. At the same time, it can support the integration with WeChat and DingTalk to meet the needs of multi-scenario mobile data analysis.

FanRuan also provides digital large-screen solutions for enterprises. Through the data analysis products, users can build a powerful and comprehensive “management dashboard” . Without

special design, the data management information of the enterprise can be perfectly placed on any Screens, such as trading halls, control centers, production workshops, exhibition centers and other places on the LED large screen. It can achieve perfect adaptive effect. For large-screen real-time monitoring information, such as stock price and real-time trading status of double 11 activities, the database data can be synchronized in real time through the automatic refresh function of chart attributes. It also supports users to design DIY for large-screen display content. It holds nearly 20 chart types and extended chart styles, and supports adding text, images, and web information to realize various DIY layout styles.

At the same time, based on the years of accumulation of enterprise-level data analysis software services and the continuous deepening of the industry in the field of productization, FanRuan also provides industry-oriented consulting services for industry customers with more valuable enterprise information and data management. At present, consulting services have been successfully carried out in many industries and government organizations, such as banking, communications, medical and health, chemical metals, retail e-commerce, real estate, securities futures, textile and footwear, and taxation. FanRuan expects to continue to provide the application value of FanRuan products and the overall data and information level of the industry through continuous precipitation and sharing.

-END-