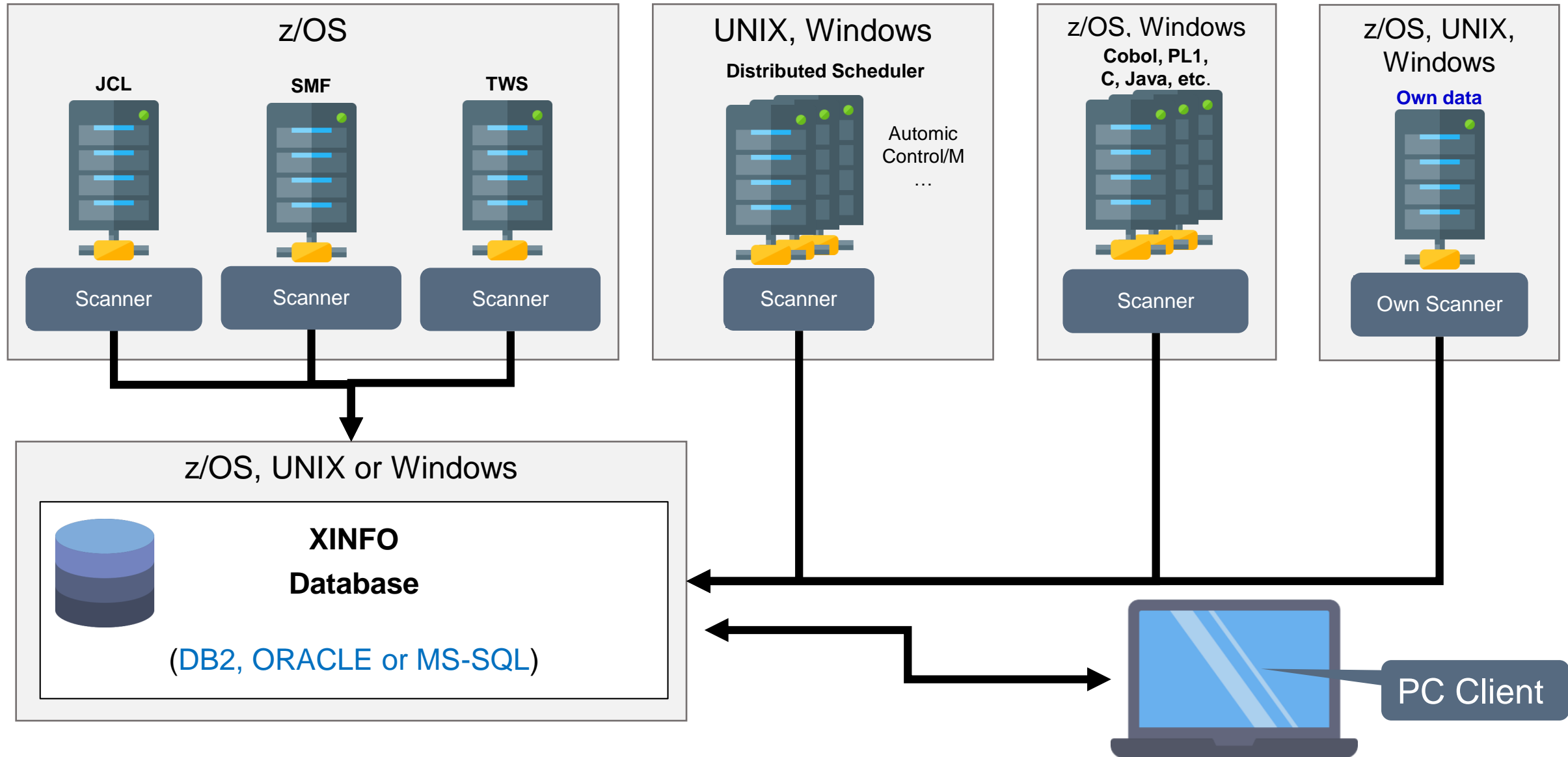




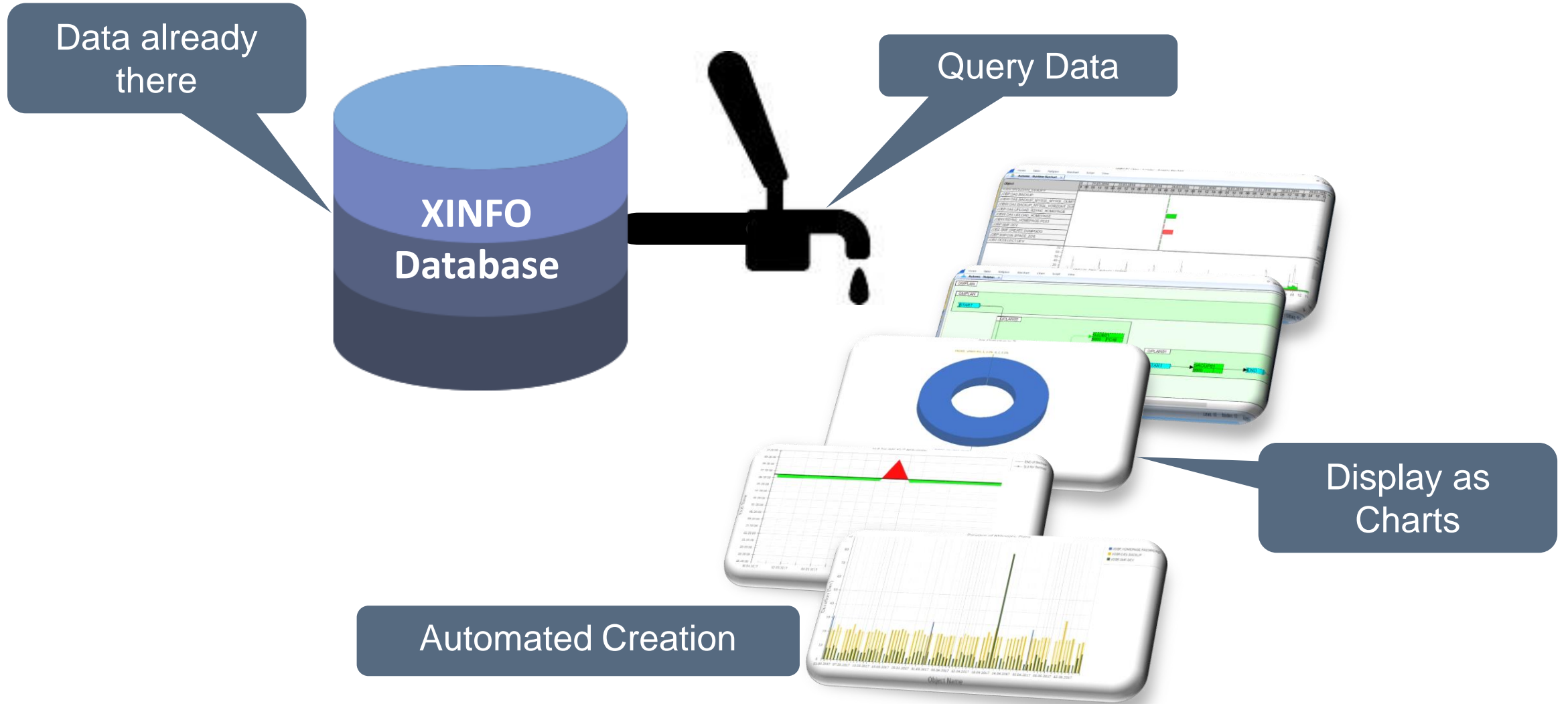
HORIZONT

XINFO Charts and IT-Charts

Technical Overview



Use Data Sources



XINFO Chart

The screenshot shows the XINFO PC Client interface for 'TWS z/OS - Job Run Times'. The main window is divided into several sections:

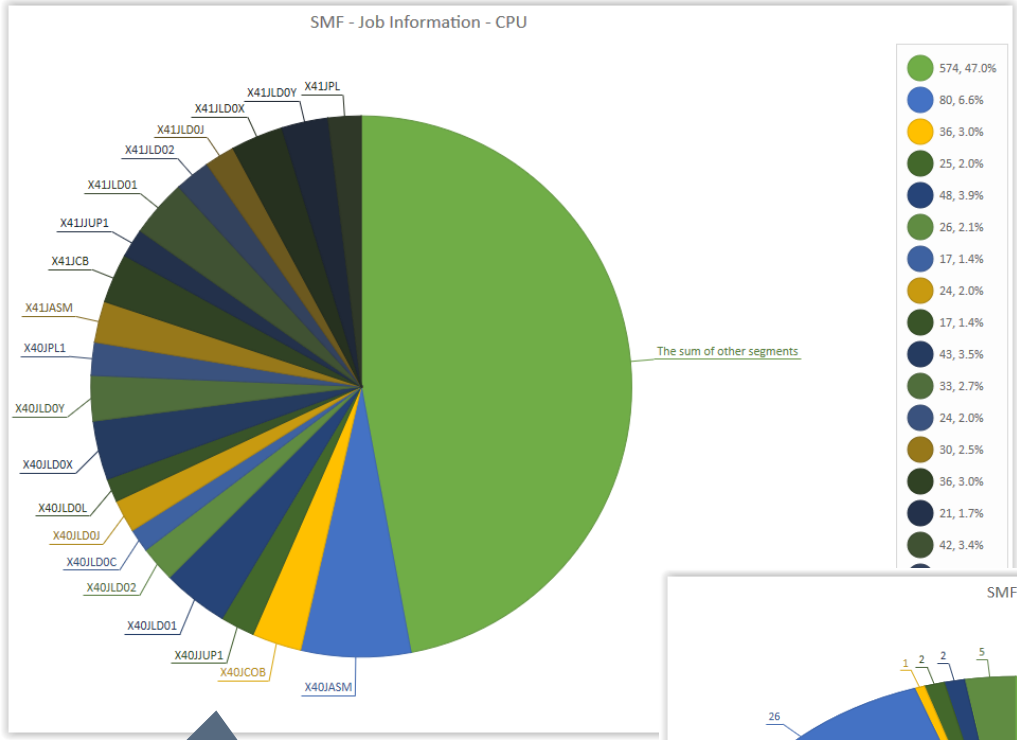
- Menu Bar:** File, Home, Table, Netplan, Barchart, Chart, Script, View.
- Toolbar:** Includes 'Copy', 'Select All', 'Toggle Selection', 'Customize', 'Group', 'Statistics', 'Show SQL', 'Show criteria', 'Inverse Filter', 'New', and 'Library Explorer'.
- Workspace Tree:** A tree view on the left showing folders like 'Scheduler', 'Automatic', 'Bagjas', 'CA7', 'Control-M', 'EJM', 'Streamworks', 'TWS z/OS', and 'Application Data'.
- Table:** A data table with columns: Application ID, ON, Jobname, Job Start Time, and Date. It contains several rows of job execution data.
- Chart Area:** A central area displaying four different chart types: a line chart, a pie chart, a bar chart, and a horizontal bar chart.

Create Chart

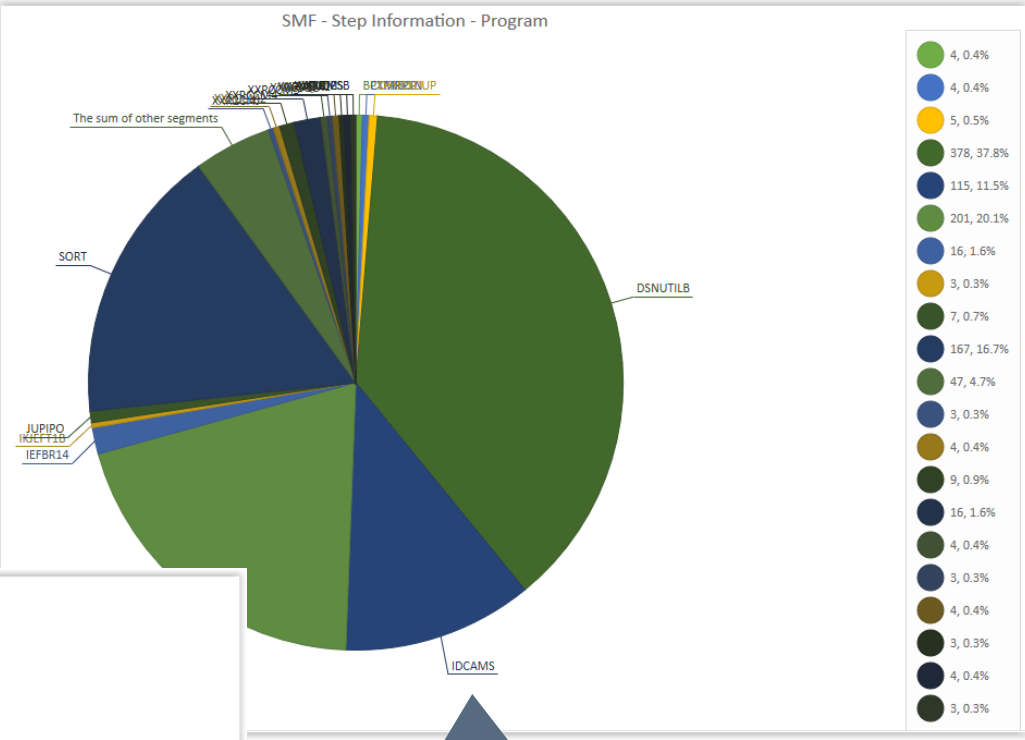
Result Table

Data Query

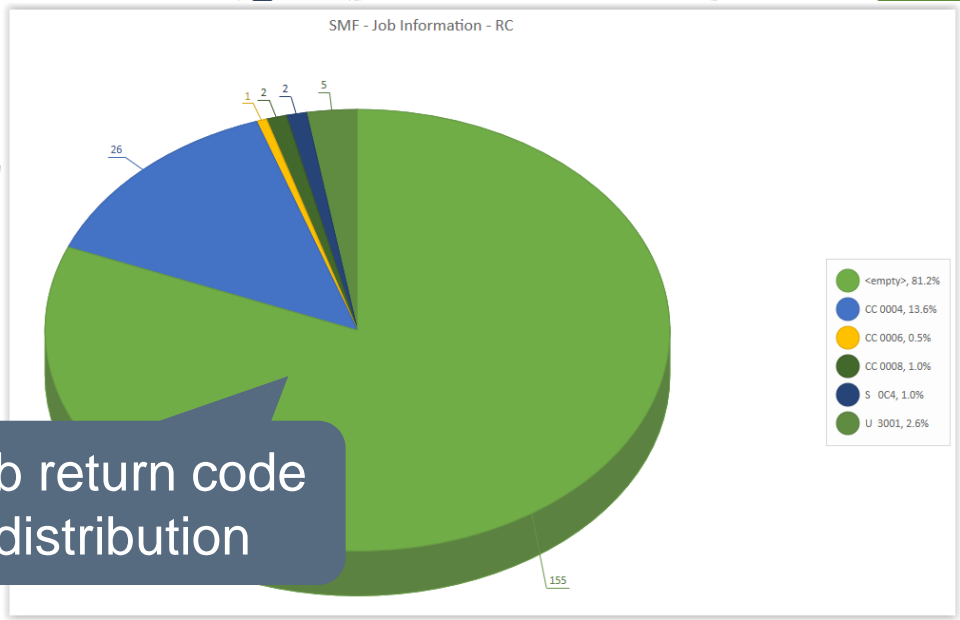
Chart Sample SMF



Top CPU using jobs

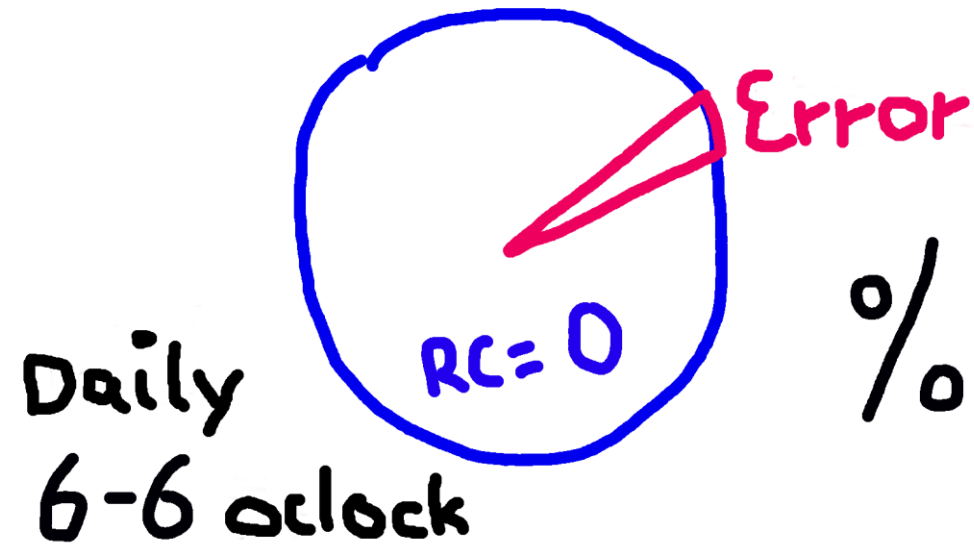


Top called programs



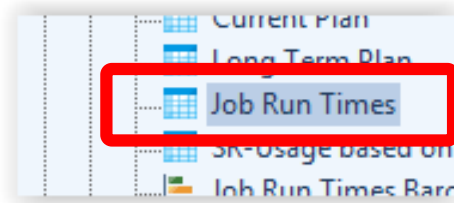
Job return code distribution

Job Status History

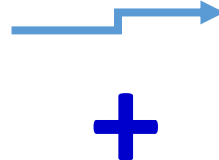


How it works
with XINFO Charts

Chart Step 1– Data Provisioning



Data Source



Job Start Time >= YESTERDAY,06:00:00 DD.MM.YYYY,HH:MM:SS
 Job End Time <= TODAY,05:59:59 DD.MM.YYYY,HH:MM:SS

Selection



Application ID	ON	Jobname	Job Start Time	Job End Time	Duration	S	Code	WSID	V	I.Arr.Date	IA-Time
<all>		<all>	<all>	<all>	<all>		<...>	<a...>		<all>	<all>
DCPA01	001	TIME	13.06.2017,17:00:29	13.06.2017,17:00:29	00:00:00	C	0000	DMY	Y	13.06.2017	17:00:00
DCPA01	001	TIME	13.06.2017,09:00:28	13.06.2017,09:00:28	00:00:00	C	0000	DMY	Y	13.06.2017	09:00:00
DCPA01	002	DCPJ00	13.06.2017,17:00:29	13.06.2017,17:01:58	00:01:29	C	0000	WAIT	Y	13.06.2017	17:00:00
DCPA01	002	DCPJ00	13.06.2017,09:00:28	13.06.2017,09:01:56	00:01:28	C	0000	WAIT	Y	13.06.2017	09:00:00
DCPA02	001		13.06.2017,17:01:58	13.06.2017,17:01:58	00:00:00	C	0000	DMY	Y	13.06.2017	17:00:00
DCPA02	001		13.06.2017,09:01:56	13.06.2017,09:01:56	00:00:00	C	0000	DMY	Y	13.06.2017	09:00:00
DCPA02	010	DCPJ01	13.06.2017,17:01:58	13.06.2017,17:03:27	00:01:29	C	0000	WAIT	Y	13.06.2017	17:00:00
DCPA02	010	DCPJ01	13.06.2017,09:01:56	13.06.2017,09:03:24	00:01:28	C	0000	WAIT	Y	13.06.2017	09:00:00
DCPA02	020	DCPJ02	13.06.2017,17:01:58	13.06.2017,17:05:58	00:04:00	C	0000	CPU	Y	13.06.2017	17:00:00
DCPA02	020	DCPJ02	13.06.2017,09:02:29	13.06.2017,09:06:30	00:04:00	C	0000	CPU	Y	13.06.2017	09:00:00
DCPA02	030	DCPJ03	13.06.2017,17:01:58	13.06.2017,17:05:27	00:03:29	C	0000	WAIT	Y	13.06.2017	17:00:00
DCPA02	030	DCPJ03	13.06.2017,09:01:56	13.06.2017,09:05:24	00:03:28	C	0000	WAIT	Y	13.06.2017	09:00:00

Result Table

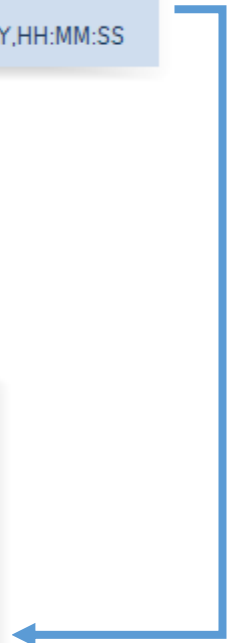


Chart Step 2 – Presentation Description



Presentation Type

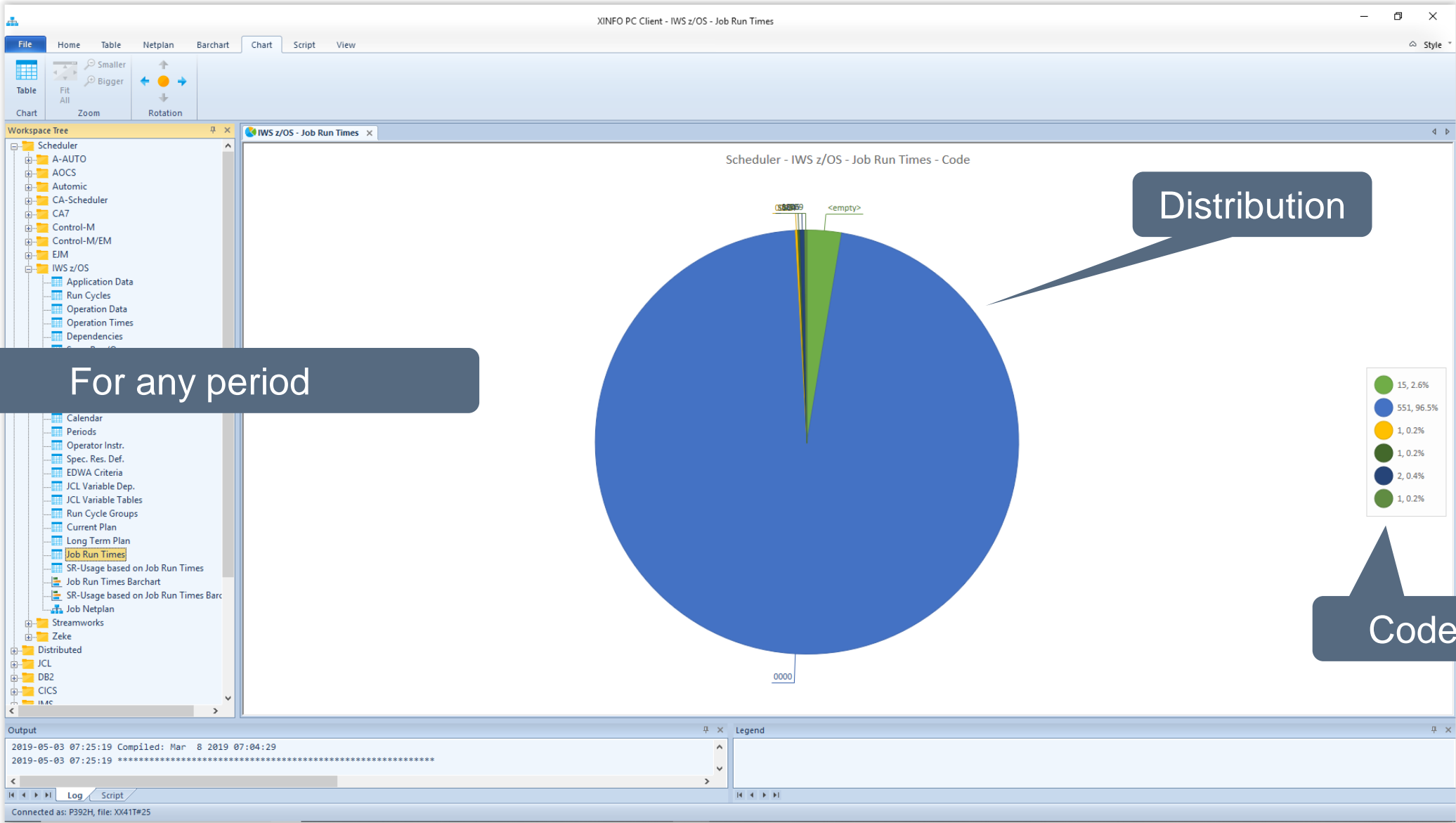
Select data fields

and finished

Legend



Chart: Job Status History

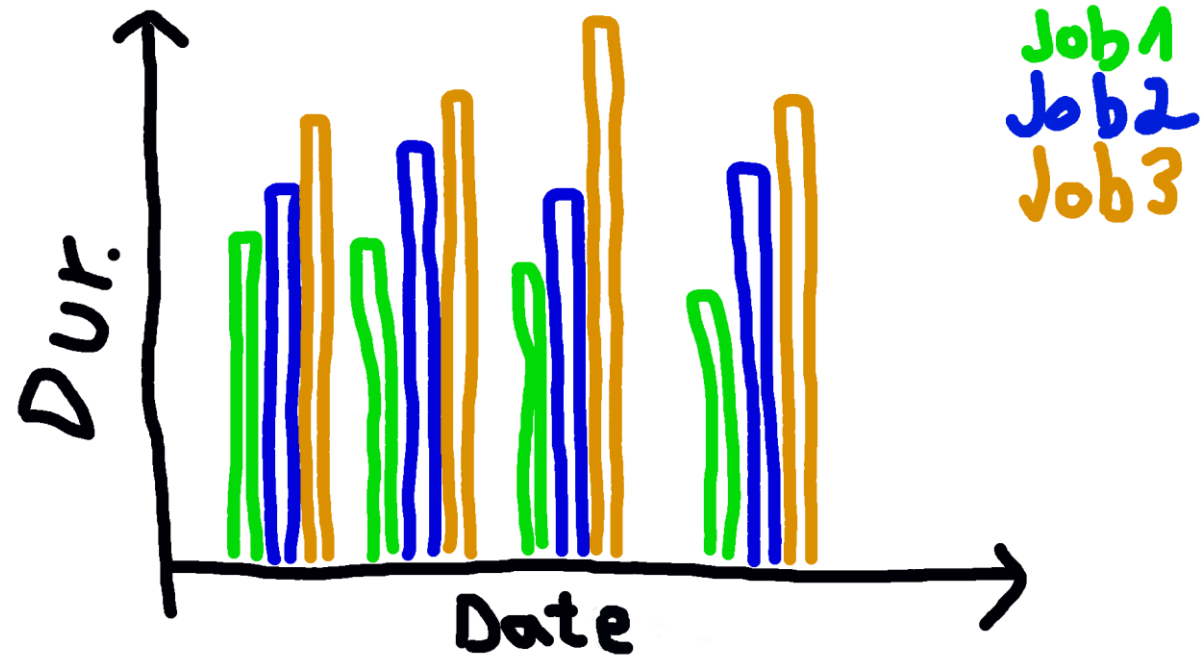


For any period

Distribution

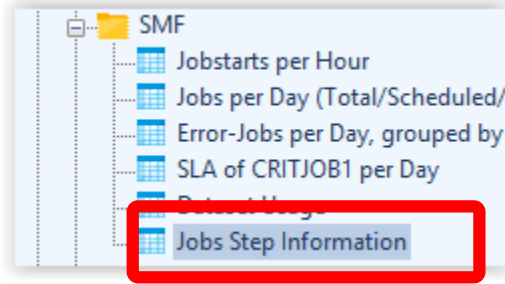
Codes

Run-time Variations



How it works
with XINFO Charts

Chart Step 1 – Data Provisioning



Data Source



A screenshot of a selection criteria form. The form has several fields with dropdown menus and input boxes. The following fields are highlighted with red boxes:

- Jobname: = [dropdown] X40JJUP*
- Start Time (Date): >= [dropdown] 05.06.2017 DD.MM.YYYY
- End Time (Date): <= [dropdown] 11.06.2017 DD.MM.YYYY

Selection

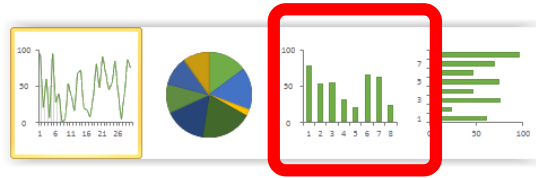


Jobname	Jesname	Stepname	Stepnumber	System ID	Return-Code	Start Time (Date)	Start Time (Time)	End Time (Date)	End Time (Time)	Duration (sec)	Time since Submit	CPU-Time (sec)	EXCP	Submit Time (Date)
X40JJUPM	JOB10772	MDB2USQL	35	S0W1		11.06.2017	01:09:02	11.06.2017	01:09:10	8	212	1	1362	11.06.2017
X40JJUPM	JOB10772	MJOBDBDX	34	S0W1		11.06.2017	01:08:59	11.06.2017	01:09:02	3	208	0	86	11.06.2017
X40JJUPM	JOB10772	MDB2UTS	33	S0W1		11.06.2017	01:08:57	11.06.2017	01:08:59	2	206	0	118	11.06.2017
X40JJUPM	JOB10772	MDB2UT1	32	S0W1		11.06.2017	01:08:53	11.06.2017	01:08:57	4	203	0	462	11.06.2017
X40JJUPM	JOB10772	MXXRTOJV	31	S0W1		11.06.2017	01:08:50	11.06.2017	01:08:53	3	200	0	134	11.06.2017
X40JJUPM	JOB10772	MXXRTCCR	30	S0W1		11.06.2017	01:08:49	11.06.2017	01:08:50	1	199	0	91	11.06.2017
X40JJUPM	JOB10772	MXXRTAFT	29	S0W1		11.06.2017	01:08:47	11.06.2017	01:08:49	3	196	0	136	11.06.2017
X40JJUPM	JOB10772	MXXRTBFR	28	S0W1		11.06.2017	01:08:44	11.06.2017	01:08:46	3	193	0	136	11.06.2017
X40JJUPM	JOB10772	MXXRTJBS	27	S0W1		11.06.2017	01:08:42	11.06.2017	01:08:44	1	192	0	89	11.06.2017
X40JJUPM	JOB10772	MXXRTGJB	26	S0W1		11.06.2017	01:08:41	11.06.2017	01:08:42	1	191	0	86	11.06.2017
X40JJUPM	JOB10772	MXXRTJGR	25	S0W1		11.06.2017	01:08:38	11.06.2017	01:08:41	4	187	0	139	11.06.2017
X40JJUPM	JOB10772	MXXRTSCH	24	S0W1		11.06.2017	01:08:34	11.06.2017	01:08:38	4	184	0	144	11.06.2017
X40JJUPM	JOB10772	MXXRTEXP	23	S0W1		11.06.2017	01:08:31	11.06.2017	01:08:34	2	181	0	122	11.06.2017
X40JJUPM	JOB10772	MXXRTSTA	22	S0W1		11.06.2017	01:08:31	11.06.2017	01:08:31	1	181	0	128	11.06.2017
X40JJUPM	JOB10772	MXXRTSET	21	S0W1		11.06.2017	01:08:30	11.06.2017	01:08:31	1	180	0	104	11.06.2017
X40JJUPM	JOB10772	MXXRTCMD	20	S0W1		11.06.2017	01:08:27	11.06.2017	01:08:30	3	177	0	127	11.06.2017
X40JJUPM	JOB10772	MXXRTCMT	19	S0W1		11.06.2017	01:08:22	11.06.2017	01:08:27	5	172	0	436	11.06.2017

Result Table



Chart Step 2 – Presentation Description



Presentation Type

Select data fields

Bar size

Sum of field values

Number of records

Bar bundles

Field

Format

Assignment

Series

Single series (one bar in each bundle)

More series (more bars in each bundle) defined by

Select Data Fields

Set additional options

Options

Legend position Bundle style 3D style

Show the summary bar for bundles which can't be displayed Show labels

Description

X-Axis

Y-Axis

Title

Save to library as

Name

Legend

Define one or more series

Properties

Field value

Description

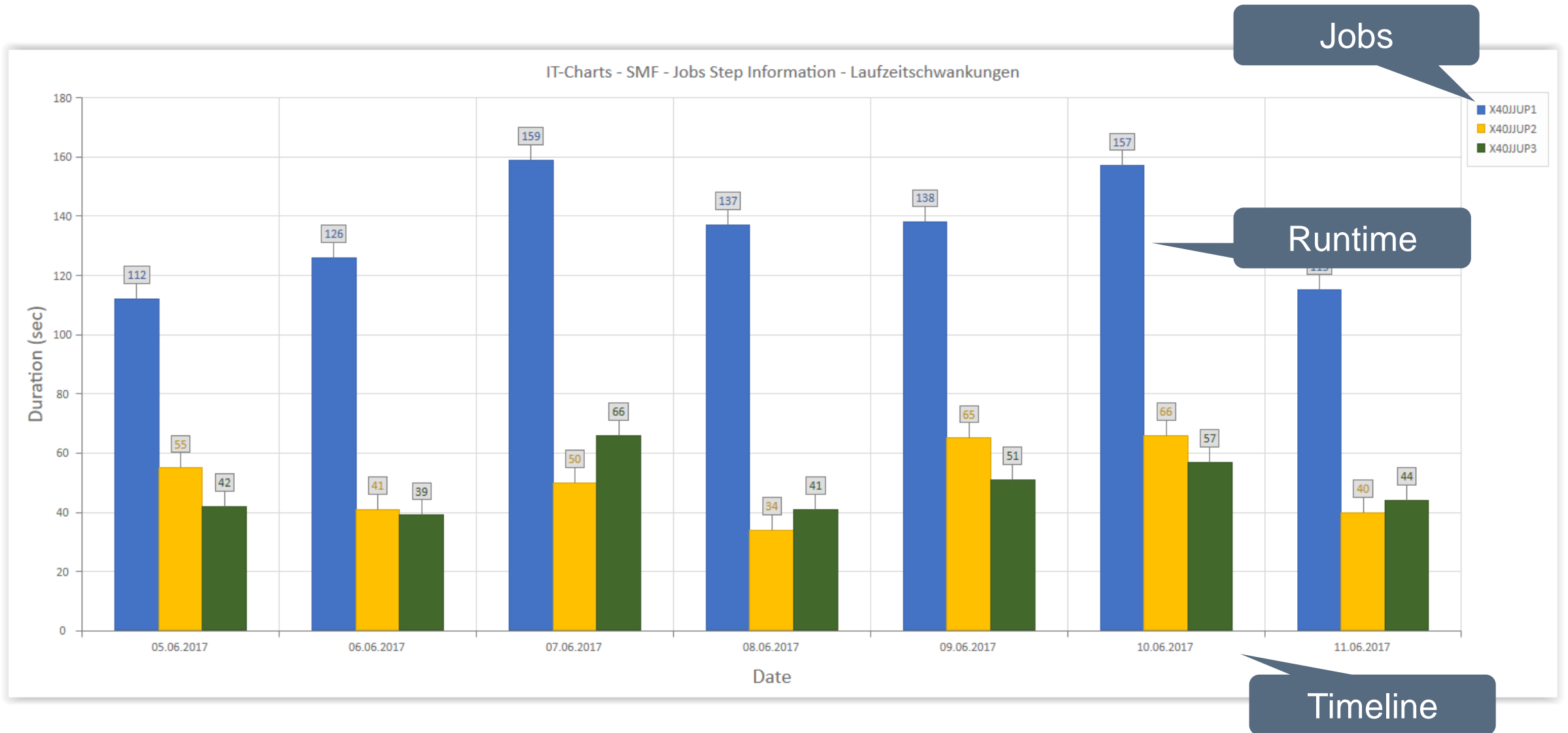
Color

Value	Description	Color
X40JJUP1	X40JJUP1	Automatic
X40JJUP2	X40JJUP2	Automatic
X40JJUP3	X40JJUP3	Automatic

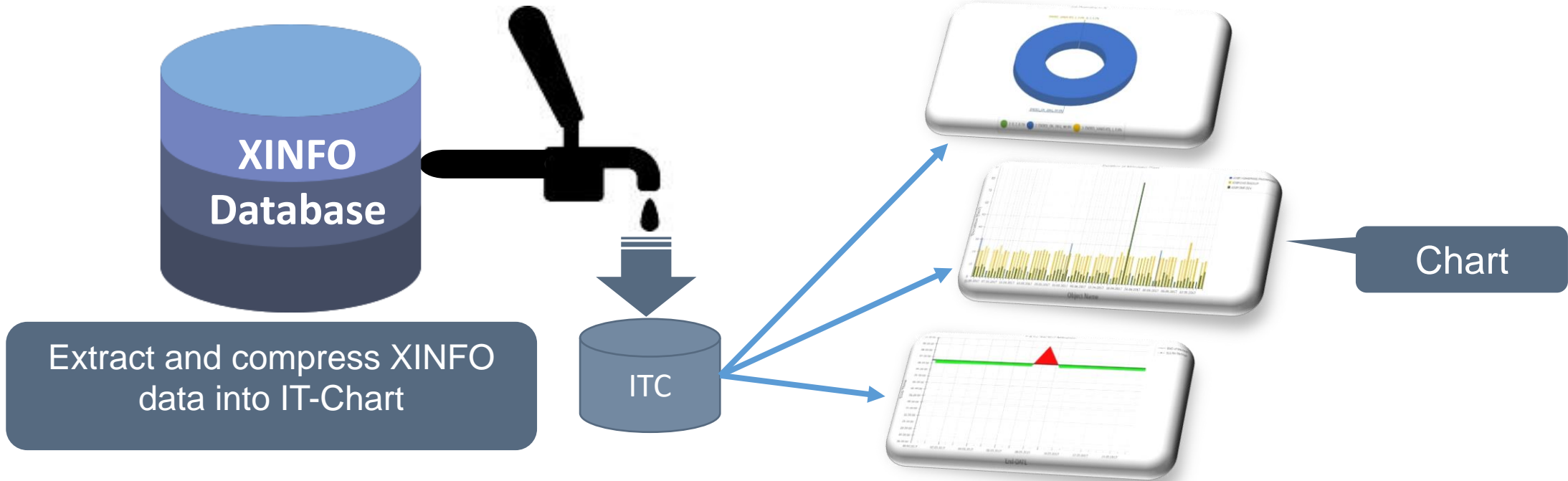
Curve Presentation

finished

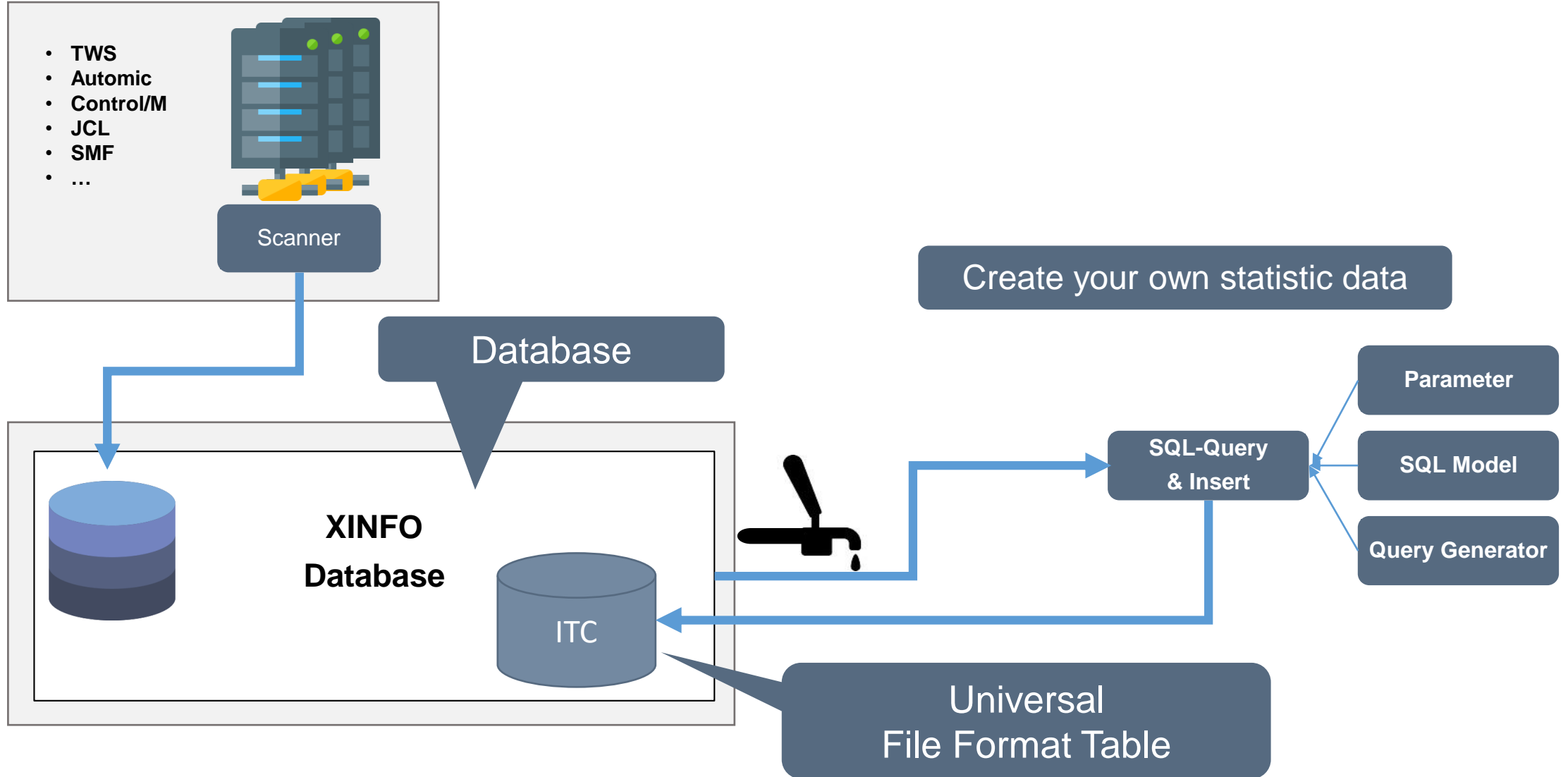
Chart: Runtime Variations



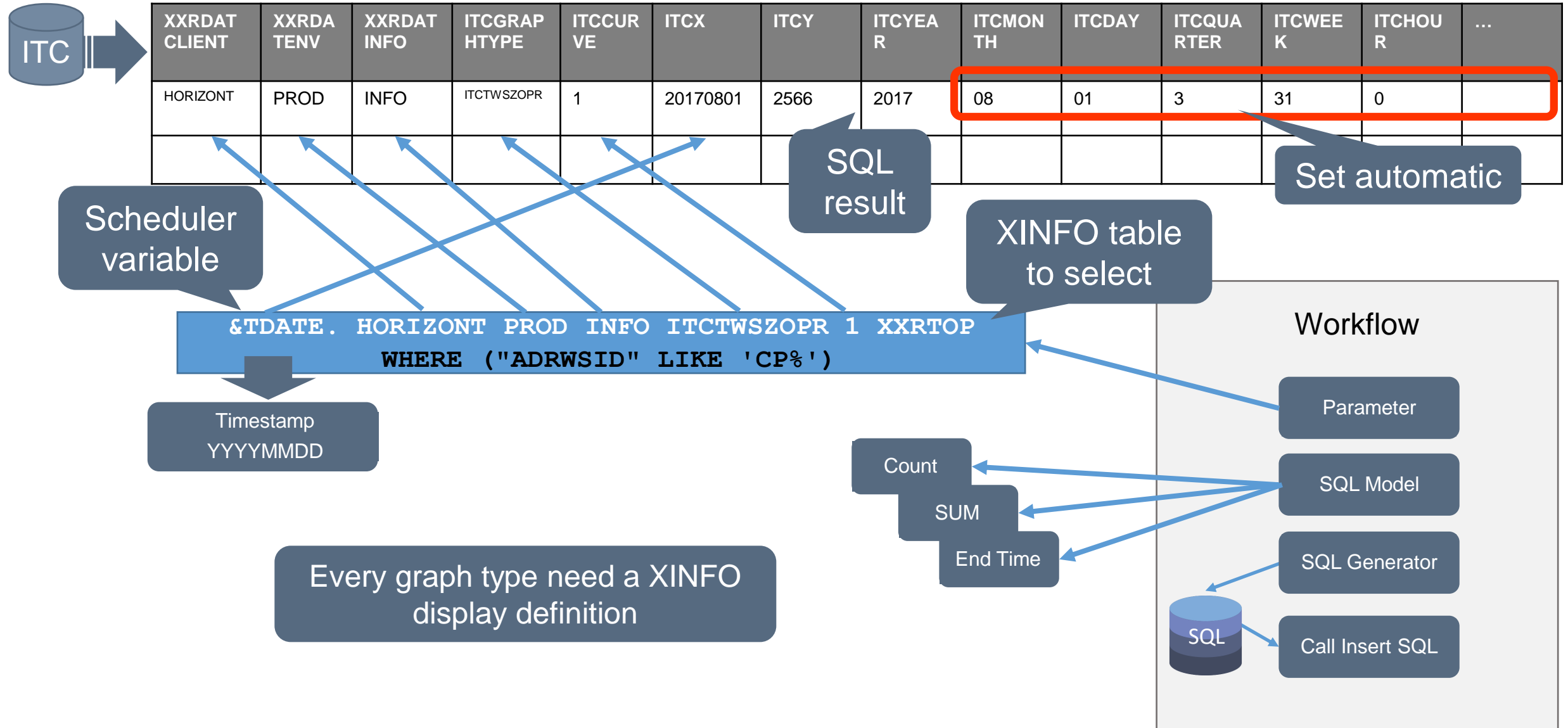
IT- Charts



Build IT-Chart Data



Statistic data for IT Charts



Sample JCL

XXRDAT CLIENT	XXRDAT ENV	XXRDATI NFO	ITCGRAPHT YPE	ITCCURVE	ITCX	ITCY	ITCYEAR	ITCMONT H	ITCDAY	ITCQUAR TER	ITCWEEK	ITCHOUR	...
HORIZONT	PROD	INFO	ITCTWSZOPR	1	20170801	2566	2017	08	01	3	31	0	

SQL result

JCL

```
//S010 EXEC ITCJ2TSO,MODEL=ITCSQCNT
//*****
//* GENERATE ITC INSERT SQL AND CALL IT
//*****
//PARAM DD *
&TDATE. HORIZONT PROD INFO ITCTWSZOPR 1 XXRTO
WHERE ("ADRWSID" LIKE 'CP%')
```

Where clause

Model

```
INSERT INTO XXR41.XXRTITC
(XXRDATCLIENT,XXRDATENV,XXRDATINFO,ITCGRAPHTYPE,ITCCURVE,ITCX,ITCY,
ITCYEAR,ITCMONTH,ITCDAY,ITCQUARTER,ITCWEEK,ITCHOUR,ITCMINUTE,ITCSECOND,
ITCFILLUP)
VALUES
('$V2.', '$V3.', '$V4.', '$V5.', '$V6.',
'$V1.',
(SELECT COUNT(*) AS NUMBER
FROM XXR41.$V7.
)SEL
'$ITCYEAR.', '$ITCMONTH.', '$ITCDAY.',
(SELECT VARCHAR_FORMAT(TIMESTAMP_FORMAT('$V1.', 'YYYYMMDD'), 'Q')
FROM SYSIBM.SYSDUMMY1),
(SELECT VARCHAR_FORMAT(TIMESTAMP_FORMAT('$V1.', 'YYYYMMDD'), 'WW')
FROM SYSIBM.SYSDUMMY1),
$ITCHOUR.', '0', '0', 'N');
```

select variable

(SELECT VARCHAR_FORMAT(TIMESTAMP_FORMAT('\$V1.', 'YYYYMMDD'), 'Q')

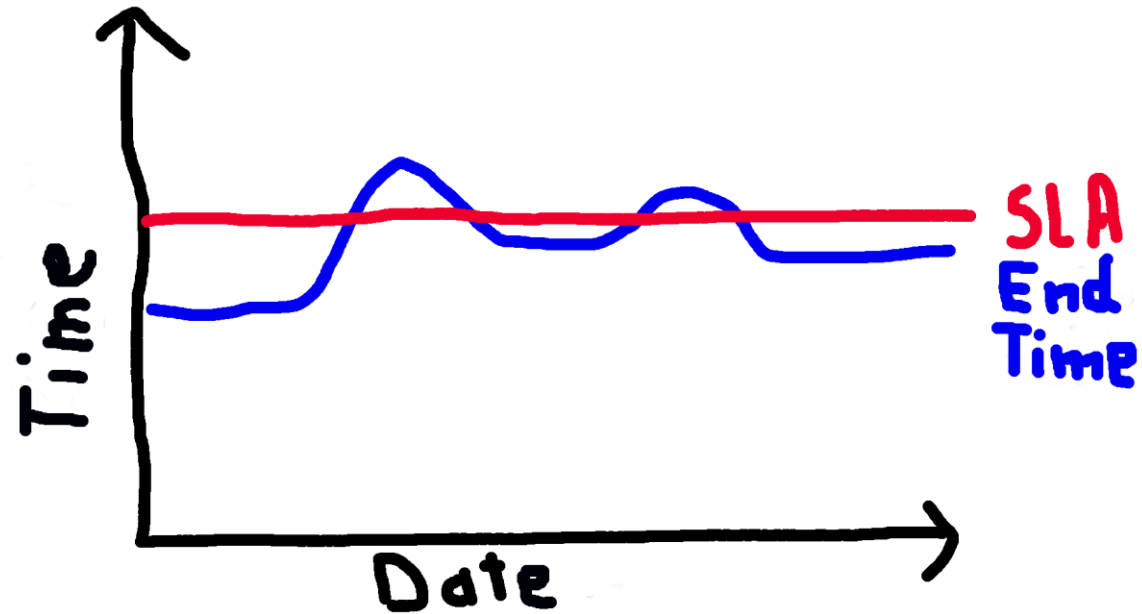
FROM SYSIBM.SYSDUMMY1),

(SELECT VARCHAR_FORMAT(TIMESTAMP_FORMAT('\$V1.', 'YYYYMMDD'), 'WW')

FROM SYSIBM.SYSDUMMY1),

\$ITCHOUR.', '0', '0', 'N');

SLA Runtimes



How it works
with XINFO Charts

Chart Step 1 – Data Provisioning

A tree view of IT-Charts. The root node 'IT-Charts' is highlighted with a red box. Underneath, several folders are listed: Admin, CA7, Control-M, JCL, IWS z/OS, SMF, SPACE, and Automic. Under the SMF folder, several chart types are listed: Jobstarts per Hour, Jobstarts per Hour a DAY, Jobs, Error-Jobs, and SLA. The SLA chart type is highlighted with a red box.

Data Source

A selection dialog box with two rows. The first row is 'Year = 2019' and the second row is 'Month = 4'. Both rows are highlighted with red boxes.

Selection

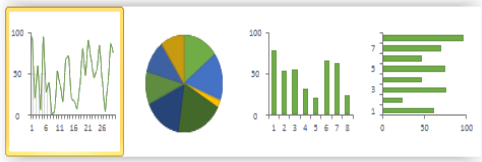
+

=

Client	Environment	DatAddInfo	Graphic-Type	Curve	X	Y	Year	Month	Day	Quarter	Week	Hour	Minute	Second	Fillup
<all>	<all>	<all>	<all>	<...>	<all>		<...>	<all>	<...>	<all>	<a...>	<...>	<all>	<all>	<...>
HORIZONTAL	PROD	INFO	ITCSMFSLACJ1	1	20190401	1859	2019	4	1	2	13	0	0	0	N
HORIZONTAL	PROD	INFO	ITCSMFSLACJ1	1	20190402	1858	2019	4	2	2	14	0	0	0	N
HORIZONTAL	PROD	INFO	ITCSMFSLACJ1	1	20190403	1848	2019	4	3	2	14	0	0	0	N
HORIZONTAL	PROD	INFO	ITCSMFSLACJ1	1	20190404	1847	2019	4	4	2	14	0	0	0	N
HORIZONTAL	PROD	INFO	ITCSMFSLACJ1	1	20190405	1851	2019	4	5	2	14	0	0	0	N
HORIZONTAL	PROD	INFO	ITCSMFSLACJ1	1	20190408	1859	2019	4	8	2	14	0	0	0	N
HORIZONTAL	PROD	INFO	ITCSMFSLACJ1	1	20190409	1859	2019	4	9	2	15	0	0	0	N

Result Table

Chart Step 2 – Presentation Description



Presentation Type

Data definition

Assign data fields to axes

Virtual columns

Name	Based on	Function	Format
------	----------	----------	--------

Data assignment

X-Axis: X Y-Axis: Y

X-Format: YYYYMMDD Y-Format: HH:MM

Start time: 17:00 HH:MM

Curves in the chart

Single curve (all data in one line)

More (Select the column that determines the curve)

Next Cancel

Assigning Axes

Single curve

Define properties of the curve from all data

Curve properties

Legend: Milestone Job Mark color: Blue

Line type: Solid Mark type: Circle

Line style: Simple Line thickness: 1 Mark size: 6

Line color: Gray

Back Next Cancel

Curve Presentation

Options

Set additional options

Legend position: Right-Top

Show horizontal major grid lines Show vertical major grid lines

Show horizontal minor grid lines Show vertical minor grid lines

Show horizontal interlacing Show vertical interlacing

Description

X-Axis: End Time

Y-Axis: Date

Title: SLA for Milestone

Save to library as

Name: SMF SLA Example Job EndTimes (HOR70050)

Back Finish Cancel

Legend

Interline areas

Define interline areas

Interline area

Curve A: SLA Deadline Region: A above B

Curve B: Milestone Job Fill color: Dark green

Opacity: 50%

Add Update Delete

Curve A	Curve B	Region	Fill color
Milestone Job	SLA Deadline	A above B	Yellow
SLA Deadline	Milestone Job	A above B	Dark green

Interline Areas

Constants

Define constant lines

Constant line

Value: 19:00 Legend: SLA Deadline

Type: Solid Line thickness: 1

Line color: Automatic

Add Update Delete

Value	Legend	Line color
19:00	SLA Deadline	Red

SLA Constant

Chart: SLA Runtime



Usage of defined Chart

A screenshot of the IT-Charts menu. The 'IT-Charts' folder is highlighted with a red box. Below it, the 'SLA' option is also highlighted with a red box. Other options include Admin, CA7, Control-M, JCL, IWS z/OS, SMF, Jobstarts per Hour, Jobstarts per Hour a DAY, Jobs, Error Jobs, SPACE, and Automic.

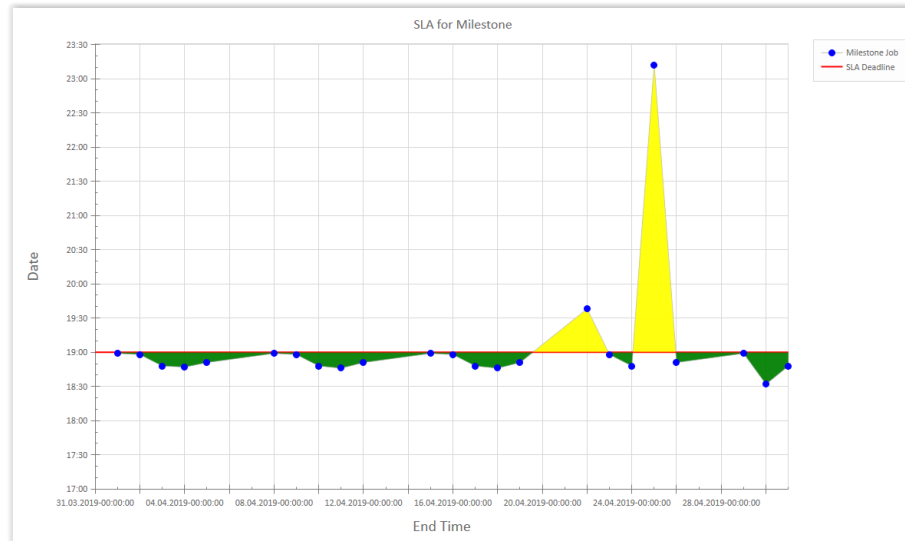
Data Source

A screenshot of a selection dialog box. The 'Year' field is set to '2019' and the 'Quarter' field is set to '2'. Both fields are highlighted with red boxes. The dialog also has fields for Month and Day.

Selection

Special IT-Chart field

=



Display Chart

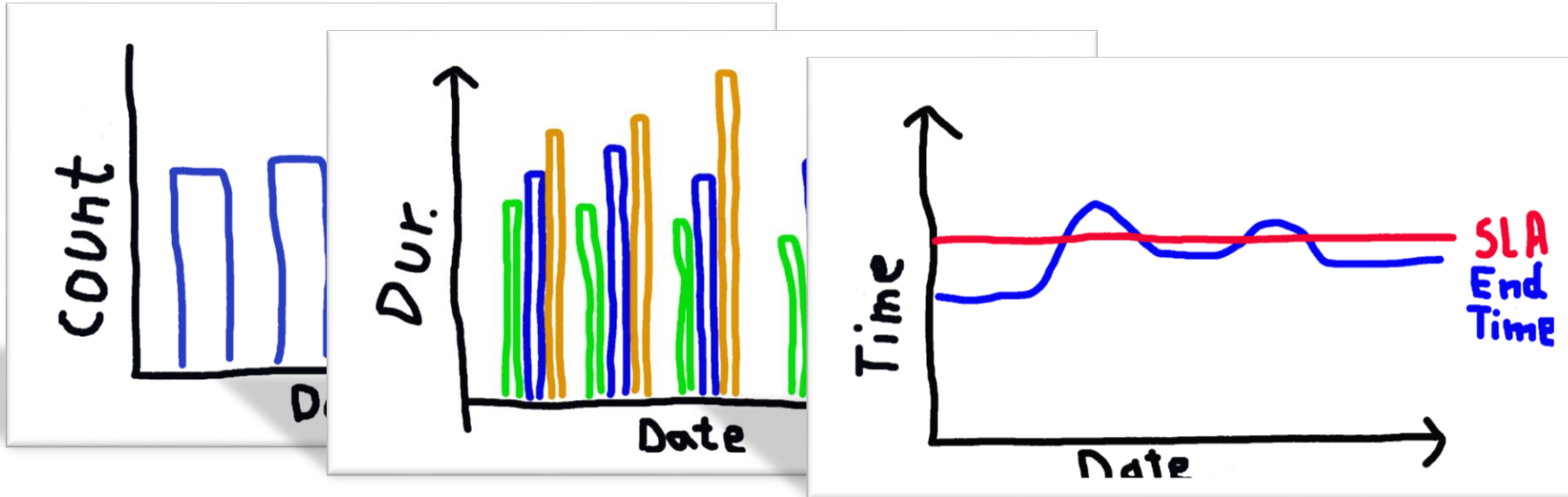
A screenshot of the 'Select a chart' dialog box. It contains a table with columns 'Name' and 'Type'. The selected item is 'SMF SLA Example Job Endtimes (HOR70050)' with a 'Line' type. A callout box labeled 'Select Chart' points to this item. At the bottom are 'OK', 'Table', and 'Cancel' buttons.

Select Chart definition

Month	Day	Quarter	Week	Hour	Minute	Second	Fillup
all	>	<	>	<	>	<	>
4	1	2	13	0	0	0	N
4	2	2	14	0	0	0	N
4	3	2	14	0	0	0	N
4	4	2	14	0	0	0	N
4	5	2	14	0	0	0	N
4	8	2	14	0	0	0	N
4	9	2	15	0	0	0	N

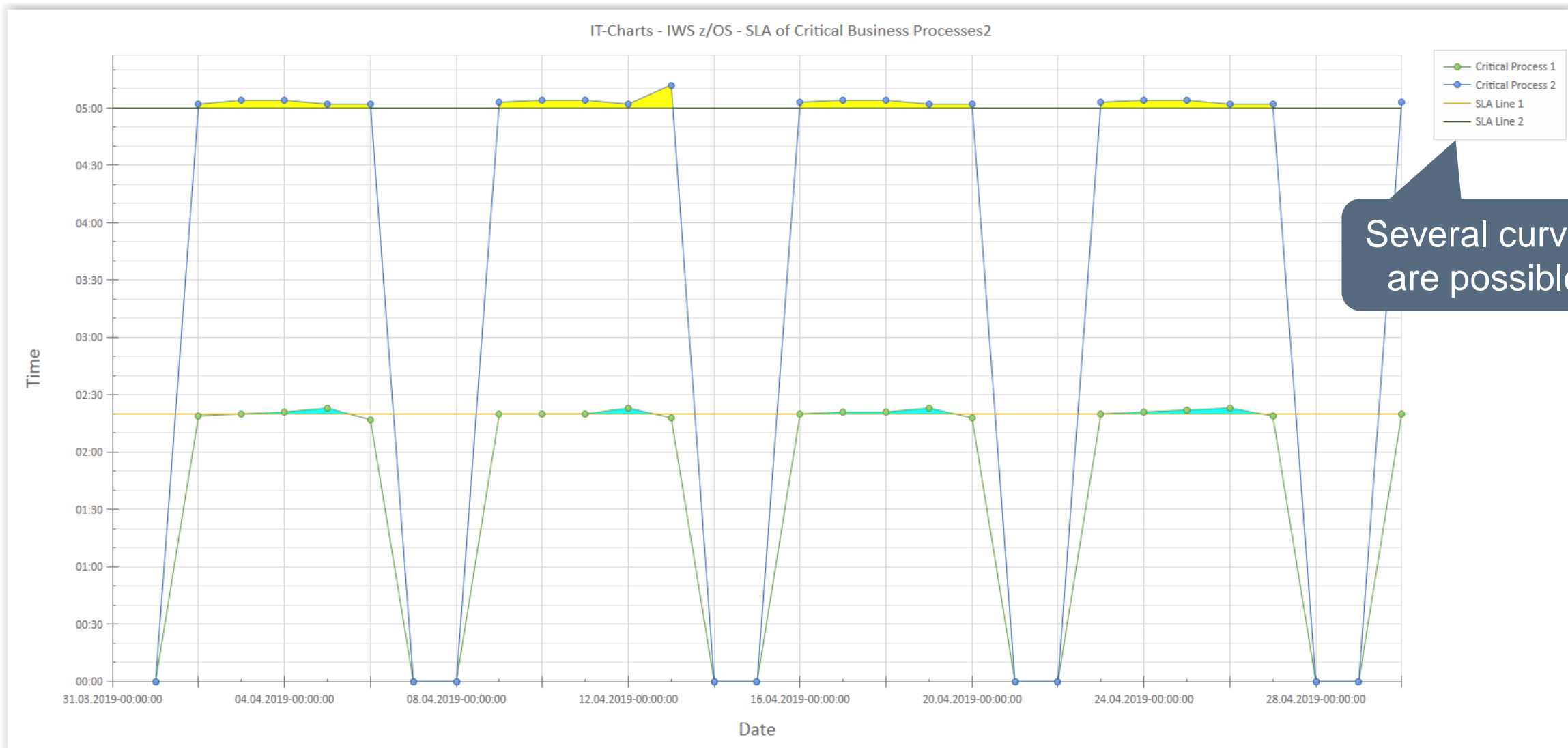
Result Table
Only in background

More examples



How it works
with XINFO Charts

Chart Example: Several SLA



Several curves are possible

Chart Example: Number of Operations

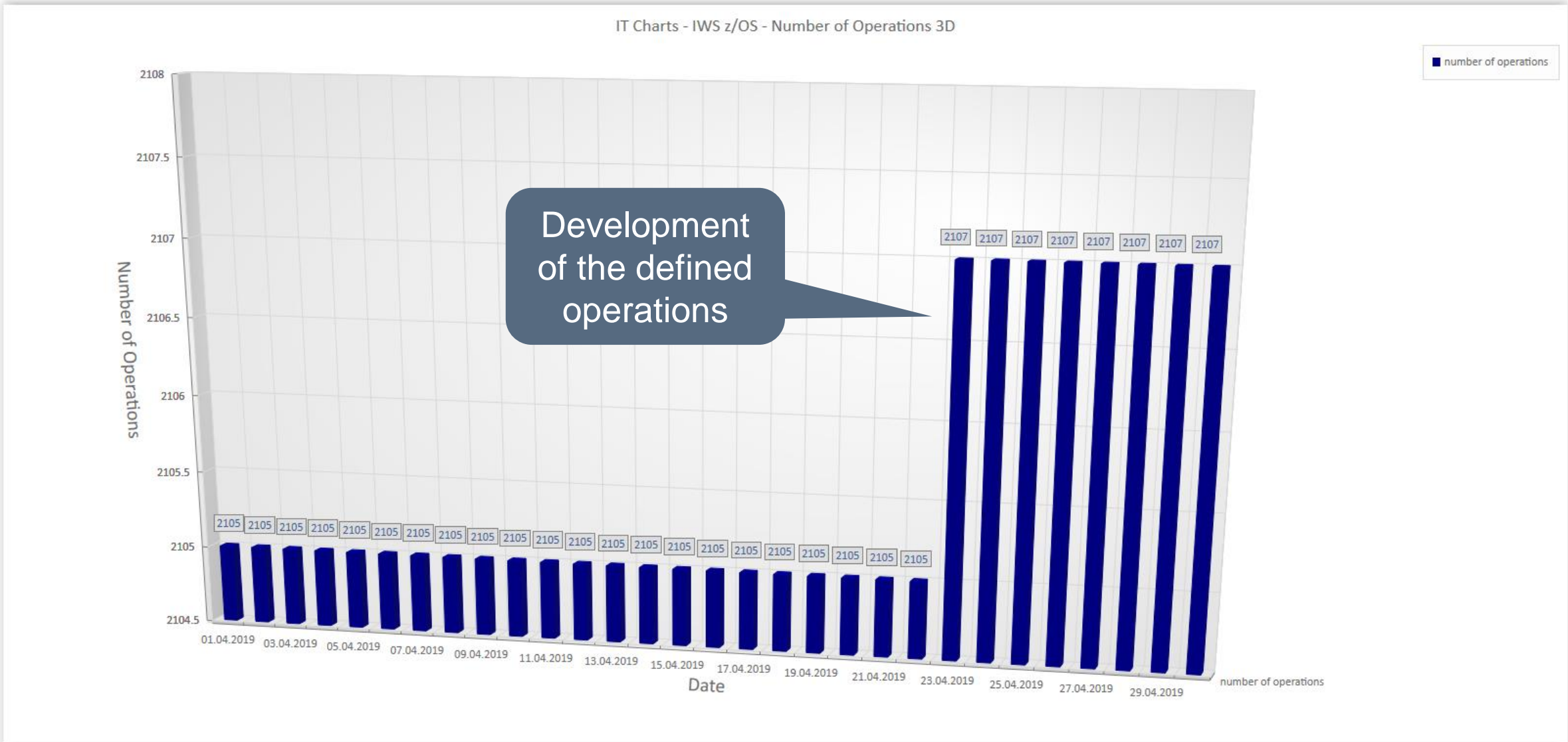


Chart Example: History EXEC Calls JCL

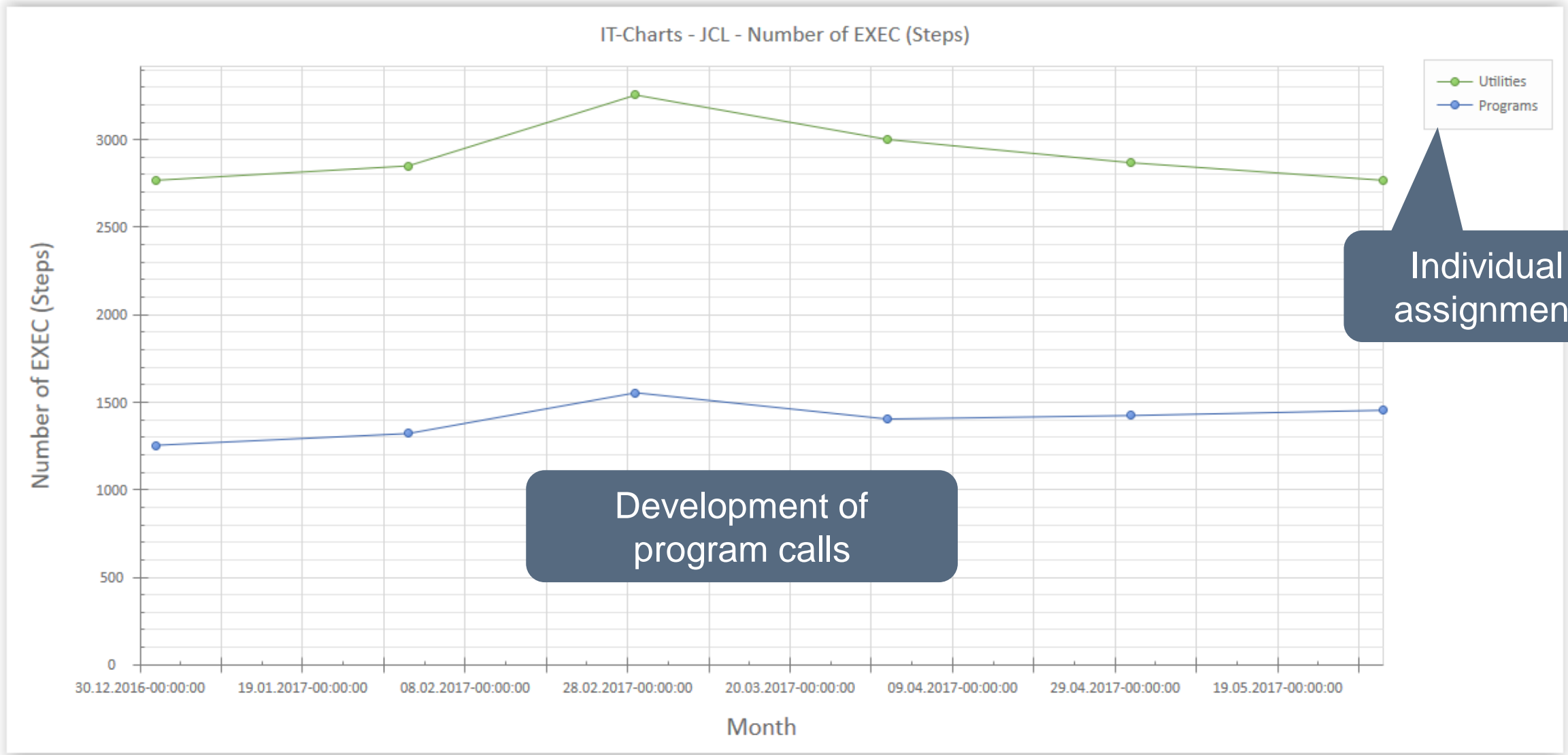
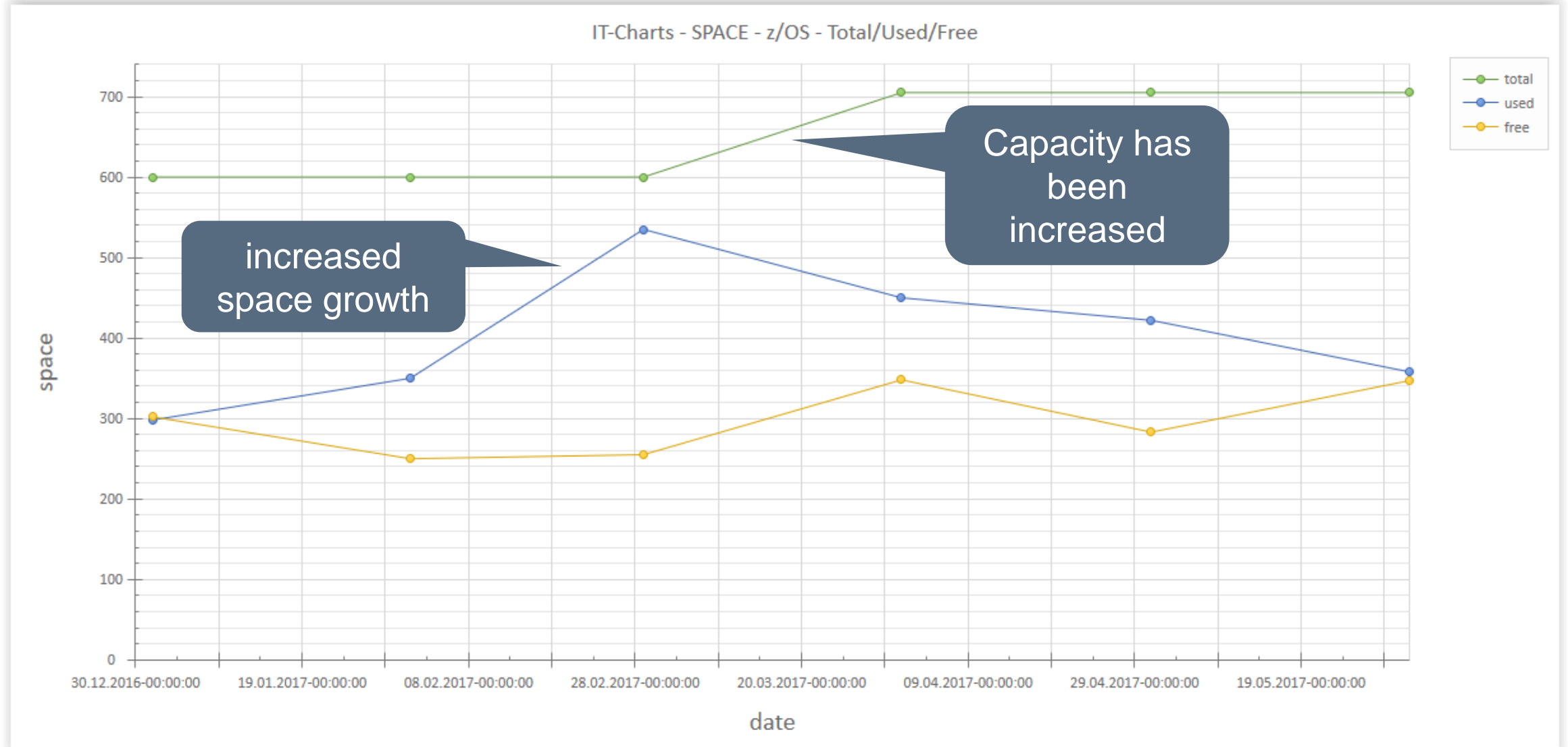


Chart Example: Space Utilization



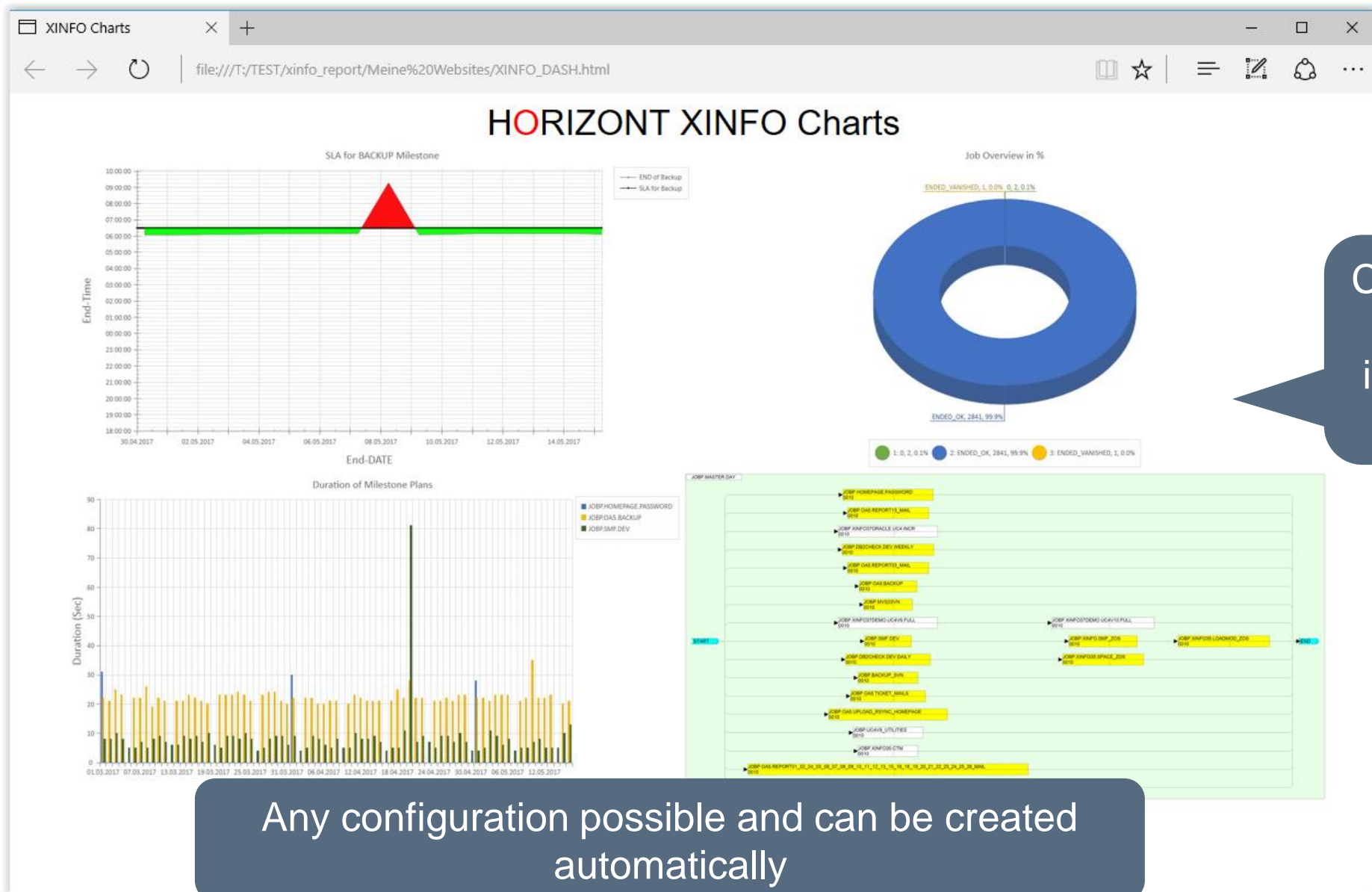
There is much more...

- Line chart
 - IT-Charts - JCL - Number of EXEC (Steps)
 - IT-Charts - SMF - Jobs per Day (Total/Scheduled/User)
 - IT-Charts - SMF - Jobstarts per Hour
 - IT-Charts - SMF - SLA of CRITJOB1 per Day
 - IT-Charts - SPACE - z/OS - Total/Used/Free
 - IT-Charts - TWS z/OS - Error Jobstarts per Day
 - IT-Charts - TWS z/OS - Jobstarts per Hour
 - IT-Charts - TWS z/OS - Error Jobstarts per Hour
 - IT-Charts - TWS z/OS - Jobstarts per Month
 - IT-Charts - TWS z/OS - Error Jobstarts per Month
 - TWS z/OS - Number of Applications (year/previous year)
 - TWS z/OS - Number of Operations (year/previous year)
 - IT-Charts - TWS z/OS - SLA for Business Process Applicat
 - IT-Charts - Control-M - Job History
 - IT-Charts - SMF - Dataset Usage
 - IT-Charts - TWS z/OS - Job Run Times
 - IT-Charts - UC4 - Runtimes

- Vertical bar chart
 - SMF - Job Information
 - IT-Charts - Control-M - Number of Jobs (year/previous year)
 - Control-M - Number of Tables (year/previous year)
 - SMF - Error-Jobs per Day, grouped by CC, System-, User-Code
 - IT-Charts - SMF - Jobstarts per Hour
 - IT-Charts - TWS z/OS - Jobstarts per Day
 - IT-Charts - TWS z/OS - Jobstarts per Hour
 - IT-Charts - TWS z/OS - Jobstarts per Month
 - IT-Charts - TWS z/OS - Error Jobstarts per Month
 - TWS z/OS - Number of Operations (year/previous year)
 - IT-Charts - UC4 - Number of JOBPlans (year/previous year)
 - IT-Charts - UC4 - Number of JOBS (year/previous year)
 - IT-Charts - SMF - Jobs Step Information
 - IT-Charts - UC4 - Runtimes

- Pie chart
 - Scheduler - TWS z/OS - Job Run Times
 - Scheduler - Automic - Run-Data - Runtimes

Charts on the Web



Create HTML pages included the charts

Any configuration possible and can be created automatically

Thanks for your attention! Do you have any questions?

The logo for 'HORIZONT' features the word in a bold, sans-serif font. The letter 'O' is highlighted in red, while the other letters are in dark grey. A large red curved shape is on the left side of the slide, and a thin white line with several small square markers is drawn across the background.

HO R I Z O N T

Please feel free to visit us in Munich or send an email to
info@horizont-it.com