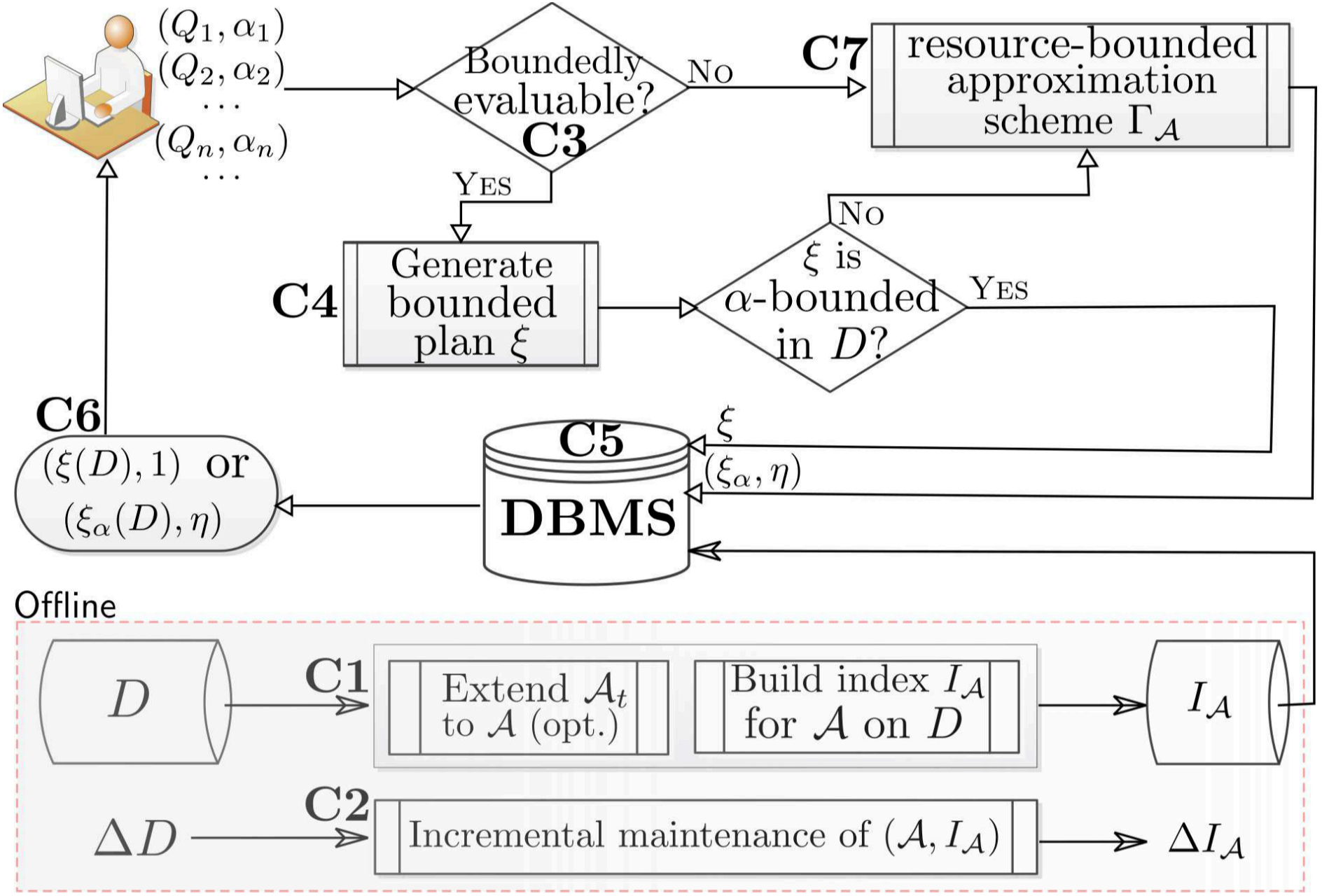
18

BEAS[7] Workflow

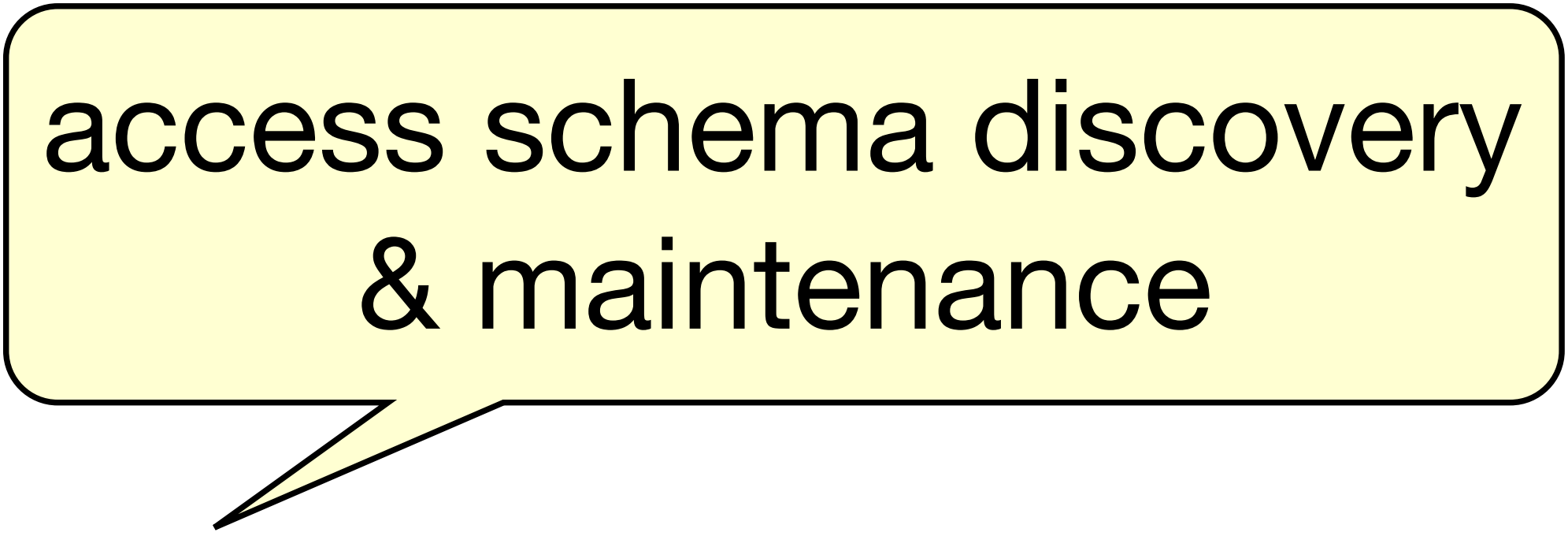

(Q_1, α_1)
(Q_2, α_2)
...
(Q_n, α_n)
...
Boundedly evaluable?
C3
No
C7
resource-bounded approximation scheme $\Gamma_{\mathcal{A}}$
Yes
C4
Generate bounded plan ξ
ξ is α-bounded in D?
No
Yes
C6
$(\xi(D), 1)$ or $(\xi_\alpha(D), \eta)$
C5
DBMS
ξ
(ξ_α, η)
Offline
D
C1
Extend $\mathcal{A}_t$ to $\mathcal{A}$ (opt.)
Build index $I_{\mathcal{A}}$ for $\mathcal{A}$ on D
$I_{\mathcal{A}}$
ΔD
C2
Incremental maintenance of $(\mathcal{A}, I_{\mathcal{A}})$
$\Delta I_{\mathcal{A}}$

- Can be built on top of any RDBMS (*e.g.,* MySQL, Postgres, …)
- Providing legacy RDBMS with resource-bounded query evaluation

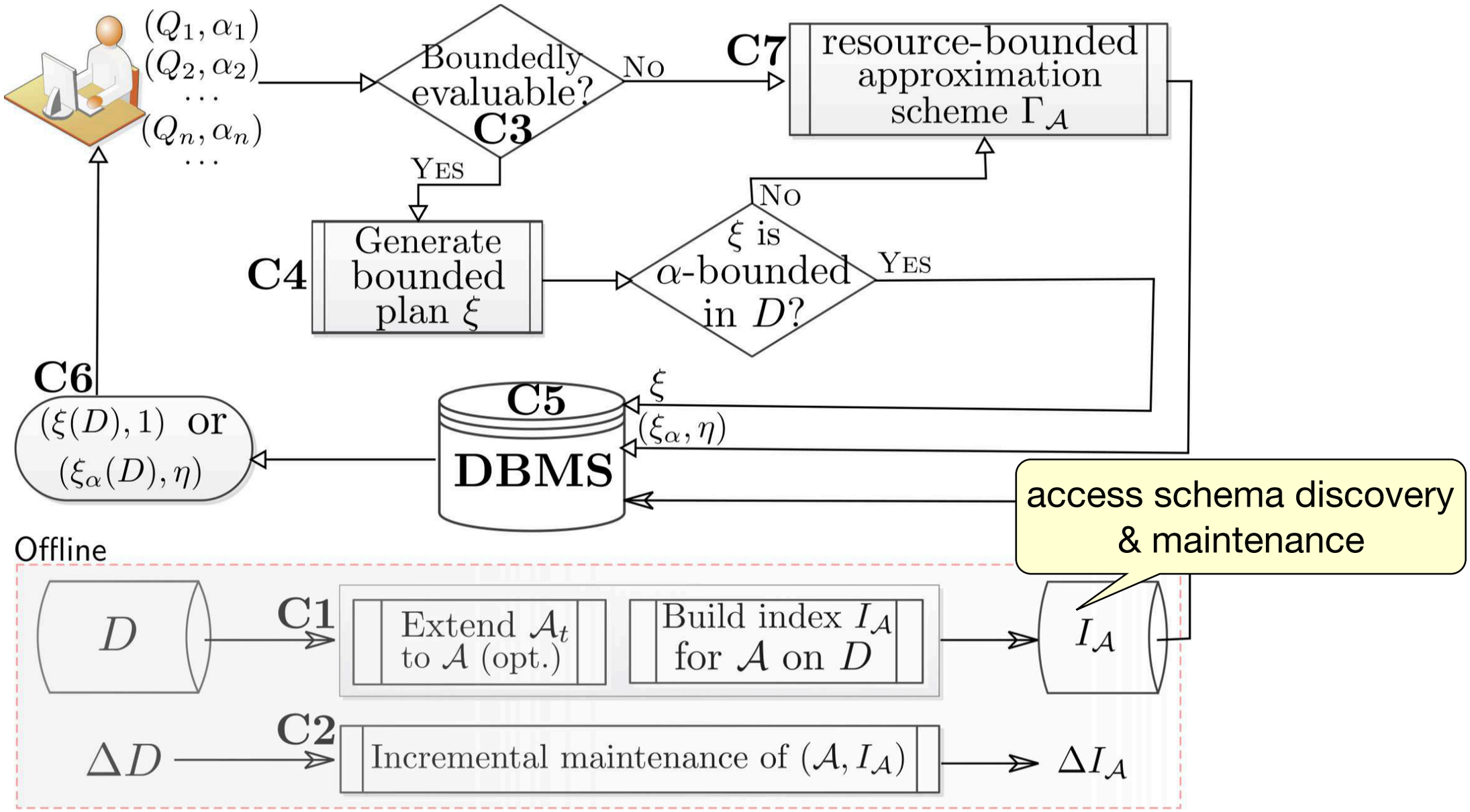
[7] Y. Cao, W. Fan, Y. Wang, T. Yuan, Y. Chen: BEAS: Bounded Evaluation of SQL Queries, SIGMOD 2017 (demo)

Plug in BEAS and play with big data

provide small business with an immediate capacity of big data analytics


access schema discovery
& maintenance

BEAS[7] Workflow

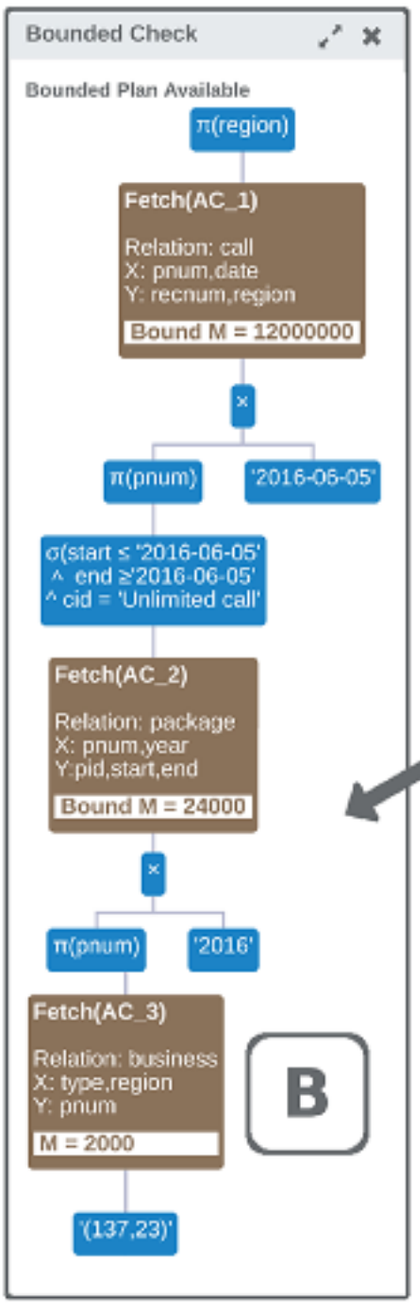


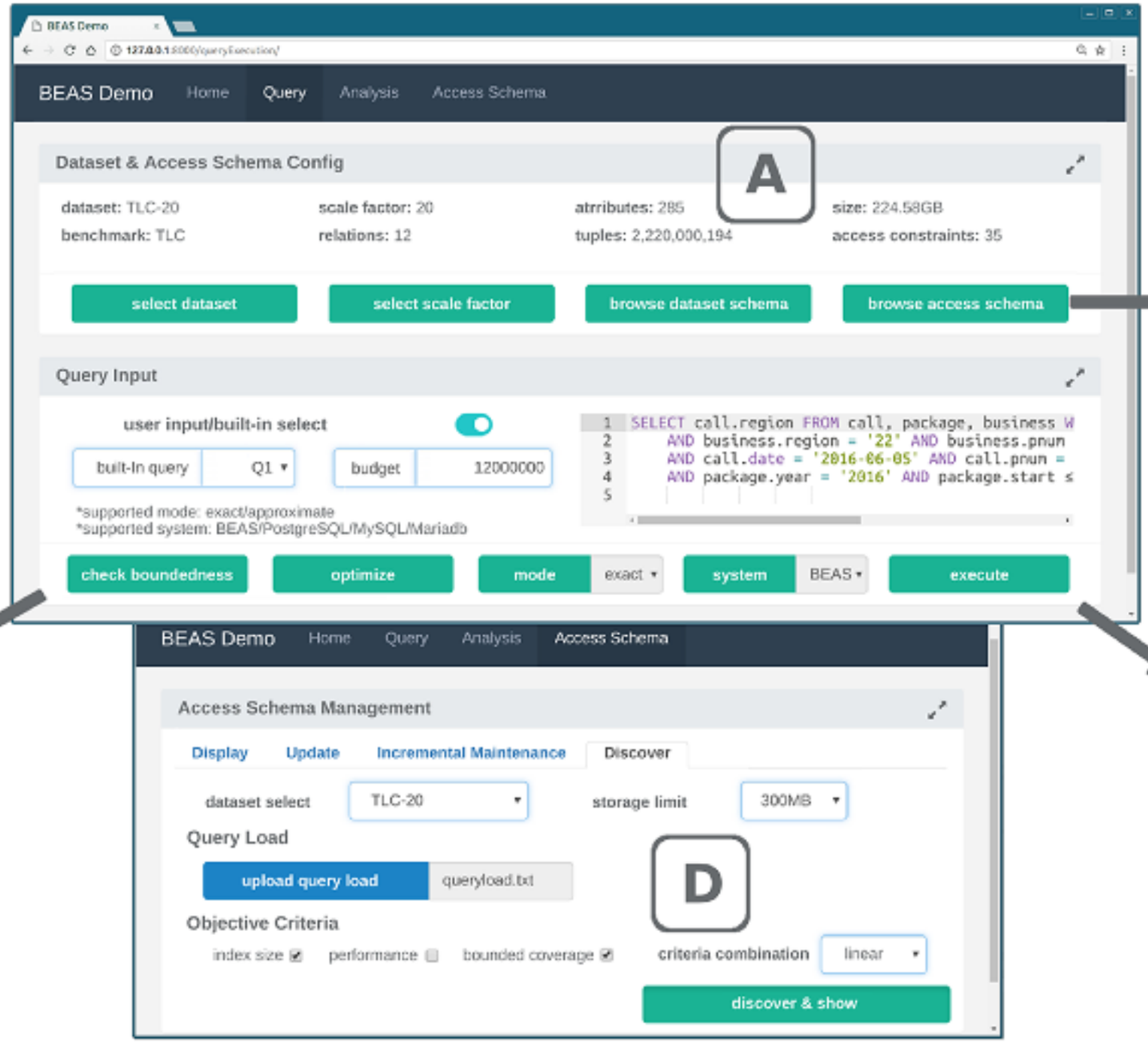
- Can be built on top of any RDBMS (*e.g.*

provide small business with an immediate capacity of big data analytics

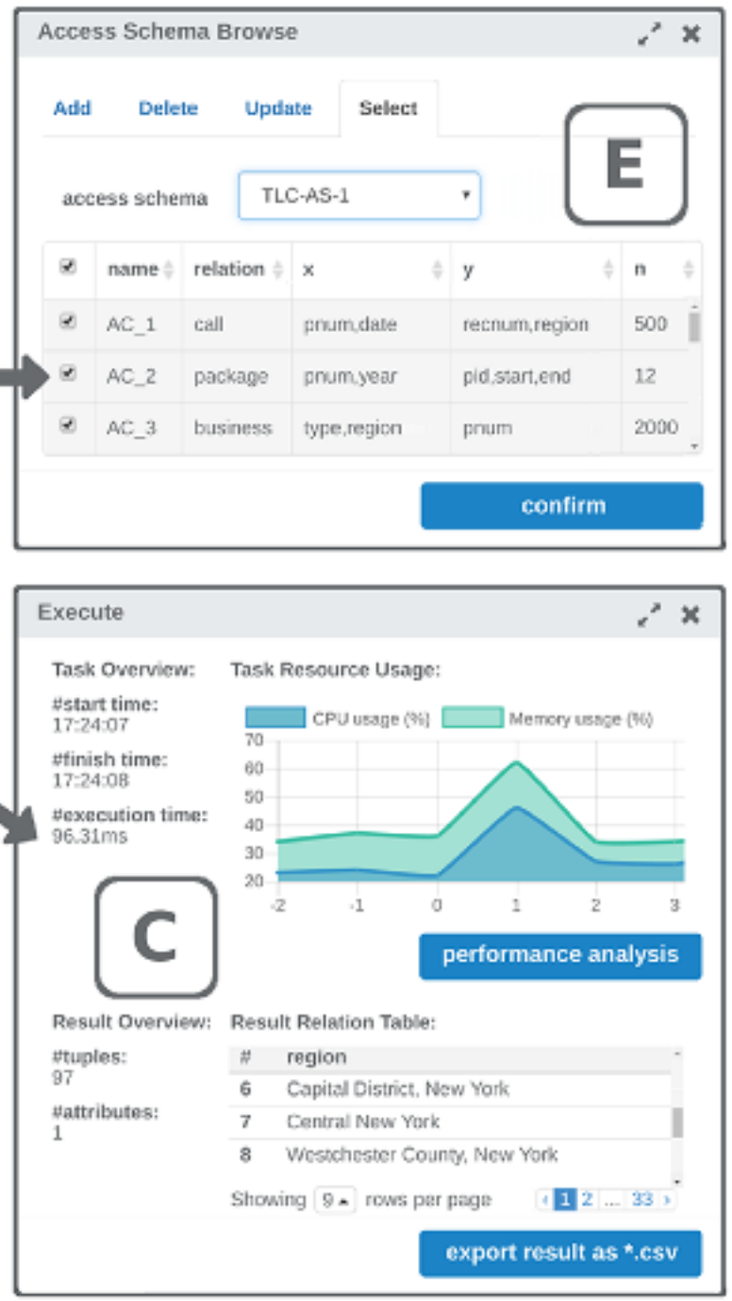
Plug in BEAS and play with big data

[7] Y. Cao, W. Fan, Y. Wang, T. Yuan, Y. Chen: BEAS: Bounded Evaluation of SQL Queries, SIGMOD 2017 (demo)


Bounded Check
Bounded Plan Available
π(region)
Fetch(AC_1)
Relation: call
X: pnum,date
Y: recnum,region
Bound M = 12000000
×
π(pnum)
'2016-06-05'
σ(start ≤ '2016-06-05'
^ end ≥'2016-06-05'
^ cid = 'Unlimited call'
Fetch(AC_2)
Relation: package
X: pnum,year
Y:pid,start,end
Bound M = 24000
×
π(pnum)
'2016'
Fetch(AC_3)
Relation: business
X: type,region
Y: pnum
M = 2000
'(137,23)'
B


BEAS Demo
Home
Query
Analysis
Access Schema
Dataset & Access Schema Config
A
dataset: TLC-20
scale factor: 20
atrributes: 285
size: 224.58GB
benchmark: TLC
relations: 12
tuples: 2,220,000,194
access constraints: 35
select dataset
select scale factor
browse dataset schema
browse access schema
Query Input
user input/built-in select
built-In query
Q1
budget
12000000
*supported mode: exact/approximate
*supported system: BEAS/PostgreSQL/MySQL/Mariadb
check boundedness
optimize
mode
exact
system
BEAS
execute
SELECT call.region FROM call, package, business W
AND business.region = '22' AND business.pnum
AND call.date = '2016-06-05' AND call.pnum =
AND package.year = '2016' AND package.start ≤

BEAS Demo
Home
Query
Analysis
Access Schema
Access Schema Management
Display
Update
Incremental Maintenance
Discover
dataset select
TLC-20
storage limit
300MB
Query Load
upload query load
queryload.txt
D
Objective Criteria
index size
performance
bounded coverage
criteria combination
linear
discover & show


Access Schema Browse
Add
Delete
Update
Select
E
access schema
TLC-AS-1
name
relation
x
y
n
AC_1
call
pnum,date
recnum,region
500
AC_2
package
pnum,year
pid,start,end
12
AC_3
business
type,region
pnum
2000
confirm
Execute
Task Overview:
Task Resource Usage:
#start time:
17:24:07
#finish time:
17:24:08
#execution time:
96.31ms
CPU usage (%)
Memory usage (%)
C
performance analysis
Result Overview:
Result Relation Table:
#tuples:
97
#attributes:
1
#
region
6
Capital District, New York
7
Central New York
8
Westchester County, New York
export result as *.csv