



TKonsult

applied  
advanced  
analytics

a<sup>3</sup>

Real data,  
powerful  
decisions.

---

Breaking Down Complexity in Pricing:  
An introduction to a<sup>3</sup>'s Pricing Knowledge  
and Simulation Platform

---

In the Telco world, casualties from price wars abound...

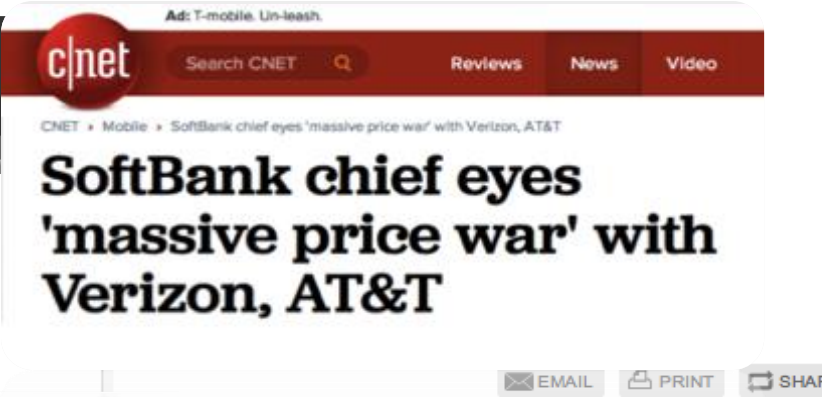


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# Investors flee telecom on price-war fears after AT&T price cut

BY **SINEAD CAREW** AND SRUTHI RAMAKRISHNAN  
Mon Feb 3, 2014 5:58pm EST



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# SoftBank chief eyes 'massive price war' with Verizon, AT&T

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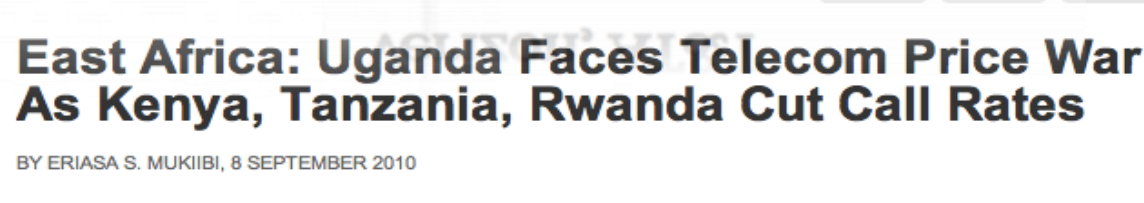
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**Business > Telecommunications**

# Tight 3G race spurs price war

## Firms slash rates for smartphone data plans

Published: 5 Oct 2012 at 00:00 | Viewed: 1,640 | Comments: 0



# East Africa: Uganda Faces Telecom Price War As Kenya, Tanzania, Rwanda Cut Call Rates

BY ERIASA S. MUKIIBI, 8 SEPTEMBER 2010



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# Airtel's 4G at 3G price: Beginning of yet another telecom price war?

By Firstbiz Staff | 🐦 | ✉️



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February 26, 2014, 5:56 a.m. ET

# Bouygues Raises the Pressure in French Telecom Price War

# Traditional Data-warehouse solutions struggle to meet the demands of simulating pricing scenarios on complete Call Data Records

## Too much...

Traditional Warehouse solutions struggle to keep up with volume and sources of data.

## Too expensive...

Storing and processing costs per terabyte is high, in the thousands of dollars.

## Too slow...

With the ever increasing velocity and variability of customer behaviour, marketing departments often left with the choice of making partially informed decisions, or taking leaps of faith.

## Too restricted...

With a high cost per TB, there is a reward for performing analysis on samples rather than entire base. Client applications, are restricted to slice and dice. New analysis often requires new extraction and transformation.



## Too many clients...

Serving both line and non-line, demands on DWH are often victim of both human and computational resource bottlenecks.

## Too complex...

Proper sampling, data extraction and creation of “new reports” requires skilled Data Scientists, who are both rare and expensive.

a<sup>3</sup>s Pricing Platform is at the forefront of the Hadoop revolution bringing the power of Big Data technologies to Pricing analytics:

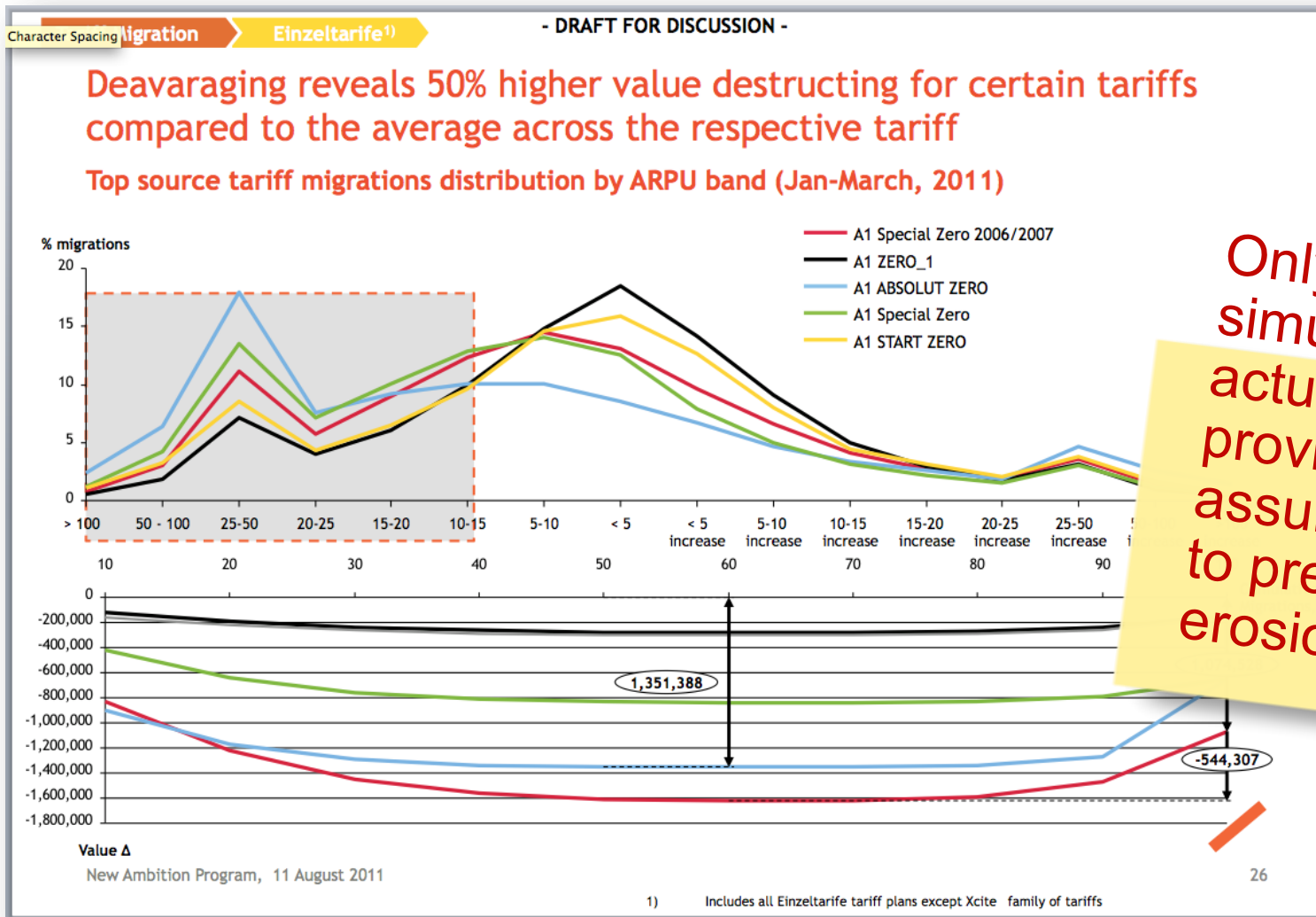
- ☑ **Designed for **Business Users**, not data analysts**
- ☑ **Interactive Tools** – with an industry specific interface
- ☑ **Focuses on a **High Volume, Heavy Processing** problem**

## The challenge

- ▶ **Pricing expertise and skills** are hard to find and retain
- ▶ **Dichotomy** between **product** managers and **pricing** m
- ▶ Operators with a segment driven Organizational structure developed for **one segment result in massive cannibalization of another**
- ▶ Product driven Organizations can often neglect customer driven aspects and **rules established with previous plans**
- ▶ Within operations in the development of new tariffs and offerings, **a full 360 view** is not often taken into consideration – hasty decisions taken under the guise of NBA type campaigns can often result in unnecessary erosion
- ▶ **Sharing experiences and expertise** across the group is difficult – There is no central repository of pricing related knowledge and experience and we are all forced to reinvent the wheel
- ▶ Dearth of tools catering to **both the strategic as well as the number crunching** aspects of pricing
- ▶ Traditional Data-mining tools allow analysis based on averages at best, and are heavy on assumptions. Only specialized tools allow actual simulation based on **CDR reprocessing**

Product managers are often put in difficult positions and pressured into manipulating assumptions to arrive at a "favourable" result

The skewedness and concentration of the traffic and revenue distributions make relying on average estimates or samples a dangerous proposition



Only direct simulation using actual CDRs provide the level of assurance required to prevent value erosion

# Capturing, retaining and propagating pricing knowledge is imperative

## Procedural Knowledge

Theoretical and technical knowledge, the **how-to of pricing**. Combination of **general and country specific knowledge** – not often documented. Currently resides mostly with individual experts

## Empirical Knowledge

**Experience** relating to pricing plans and tariffs that have been **tested** in specific markets.

## Business Intelligence

**Results relating to the simulation** of new price plans and tariffs in different markets and operations – both launched and aborted. Currently can not be carried out using CDRs but only at a 30K foot aggregate level or with limited samples.

## Collective Intelligence

**“Universally distributed intelligence, constantly enhanced, coordinated in real time, and resulting in the effective mobilization of skills”** (Pierre Levy). Currently knowledge is very localised, sharing across the group is difficult, inefficient and costly.



a<sup>3</sup>'s pricing platform looks to address this challenge by creating an ecosystem in which pricing knowledge, experience and business intelligence can be shared globally



**Procedural Knowledge**

The cloud based user interface breaks pricing into building blocks ensuring that all tariff modifiers are taken into consideration and guiding through the creation of a tariff

**Empirical Knowledge**

"Published" tariffs are tagged at different stages of their life-cycle and experience can be shared across the group in a tariff "library"

**Business Intelligence**

The cloud based interface allows users to access tariff plans and knowledge from the cloud, and launch directly against Opco data.

**Collective Intelligence**

The a<sup>3</sup> platform is central group wide repository of pricing knowledge and experience – the discussion and chat features in the next iteration will further enhance collaborative features



# Agenda

I. The platform

I. The tool

II. The Technology

# With 3+ levels of interaction the platform defines the parameters of usage for different levels of users

**“Cloud” Knowledge:** Pricing rules and published

**Local Experimentation:** Tariff development and testing



**Academy (group):**  
Covers all operations group wide with a “library” of “Published” tariffs from all operations



**Playground (Operation):**  
Playground rules (time and traffic rules and modifiers), that is what are the boundaries for the OpCo plans



**Sandbox (user):**  
Experiment with definitions of new tariffs (collection and prioritization of rules billing) in a private space within the playground



**Laboratory (User) Group or OpCo users with special permission to experiment with not only new tariffs but new rules in a private space**

*While the platform encourages sharing, it also promotes innovation by providing private experimentation spaces*

Viewing: All

Viewing: Group and specific OpCo

Viewing: Group and specific OpCo

Viewing: Group and specific OpCo

Edit: Group

Edit: Playground monitors

Edit: individual

Edit: group or OpCo with special authorization

Publish: Playground Monitors

Publish: Playground Monitors, sandbox and lab users

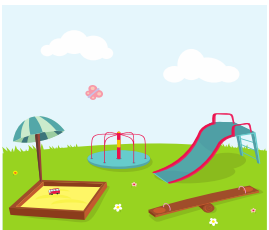
Simulation: all users group and OpCo

Simulation: group and OpCo with special authorization

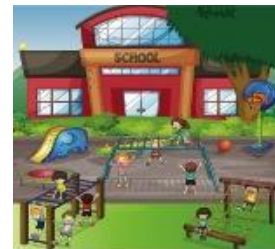
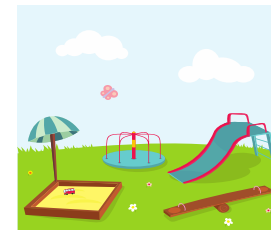
# a<sup>3</sup>'s pricing tool digitizes the tariff definition workflow, effectively guiding the tariff creation process



Interface



OR



User

**Playground Monitor:** OpCo level lead and “champions” of the platform

**Sandbox or Lab users:** individual users with varying degrees of freedom of experimentation. A Lab user can also redefine the OpCo level time and traffic rules for the purposes of simulation. E.g. modify timings for off-peak. Individual users can experiment in their private spaces and publish to the OpCo level when satisfied. Tariffs can be published at different stages of the lifecycle

**Playground Monitor:** OpCo level leads and “champions” can select which tariffs to share across the group

**All users across the group** can “view” and copy published tariffs from individual OpCos

Location



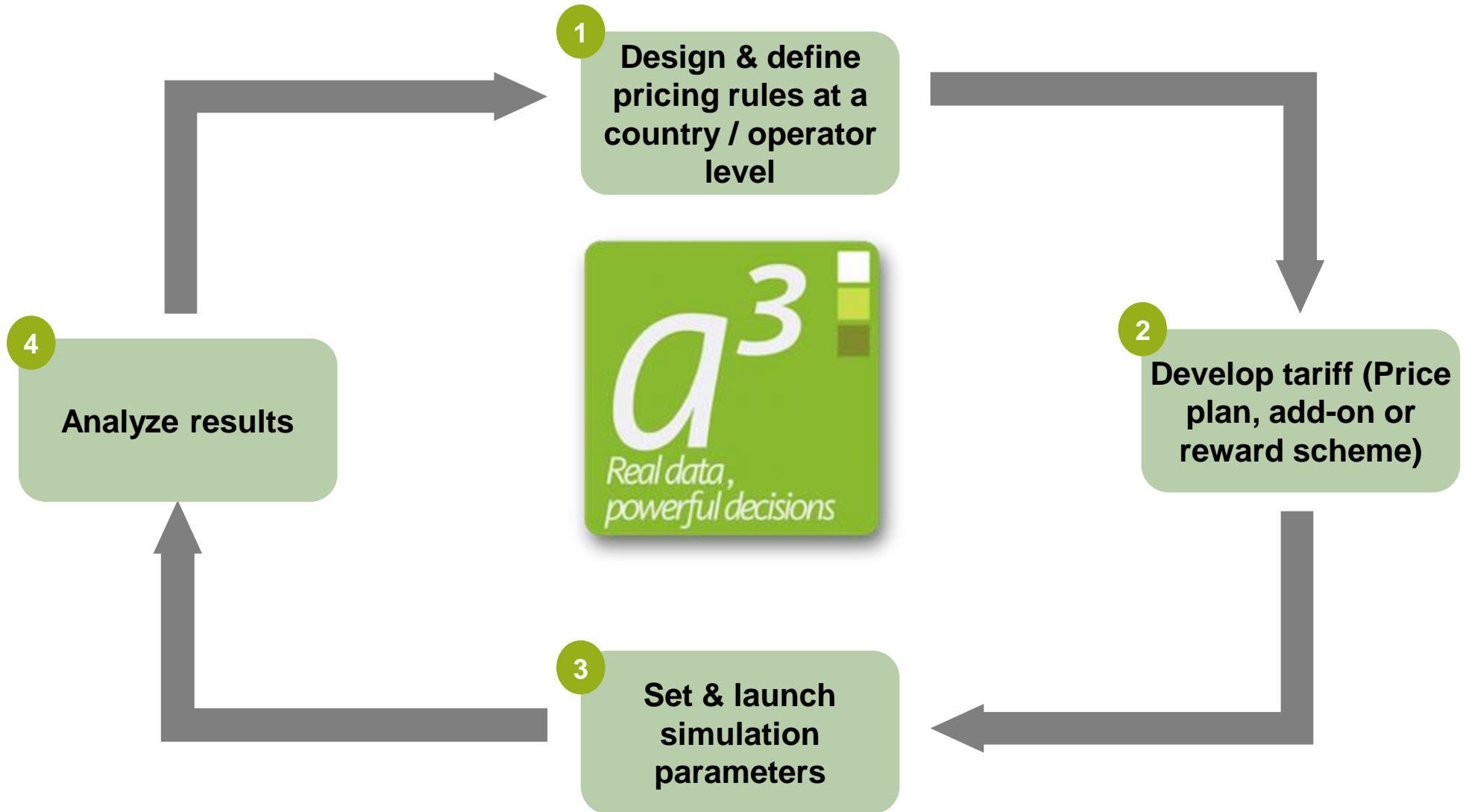
# Agenda

I. The platform

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# Our Pricing Platform is a stand-alone application for the design, development and testing of new pricing schemes



The interface breaks down pricing and tariff structures into basic building blocks

WHAT

**Traffic type** (Voice, SMS, MMS, video, data)

WHEN

**Time rules** (peak /off-peak , weekend, nights, happy-hours etc)

WHO

**Destination** rules for B party (onnet/offnet but also specific e.g. Friends and family, MSISDN based rules or broken by service, URL, QoS for data)

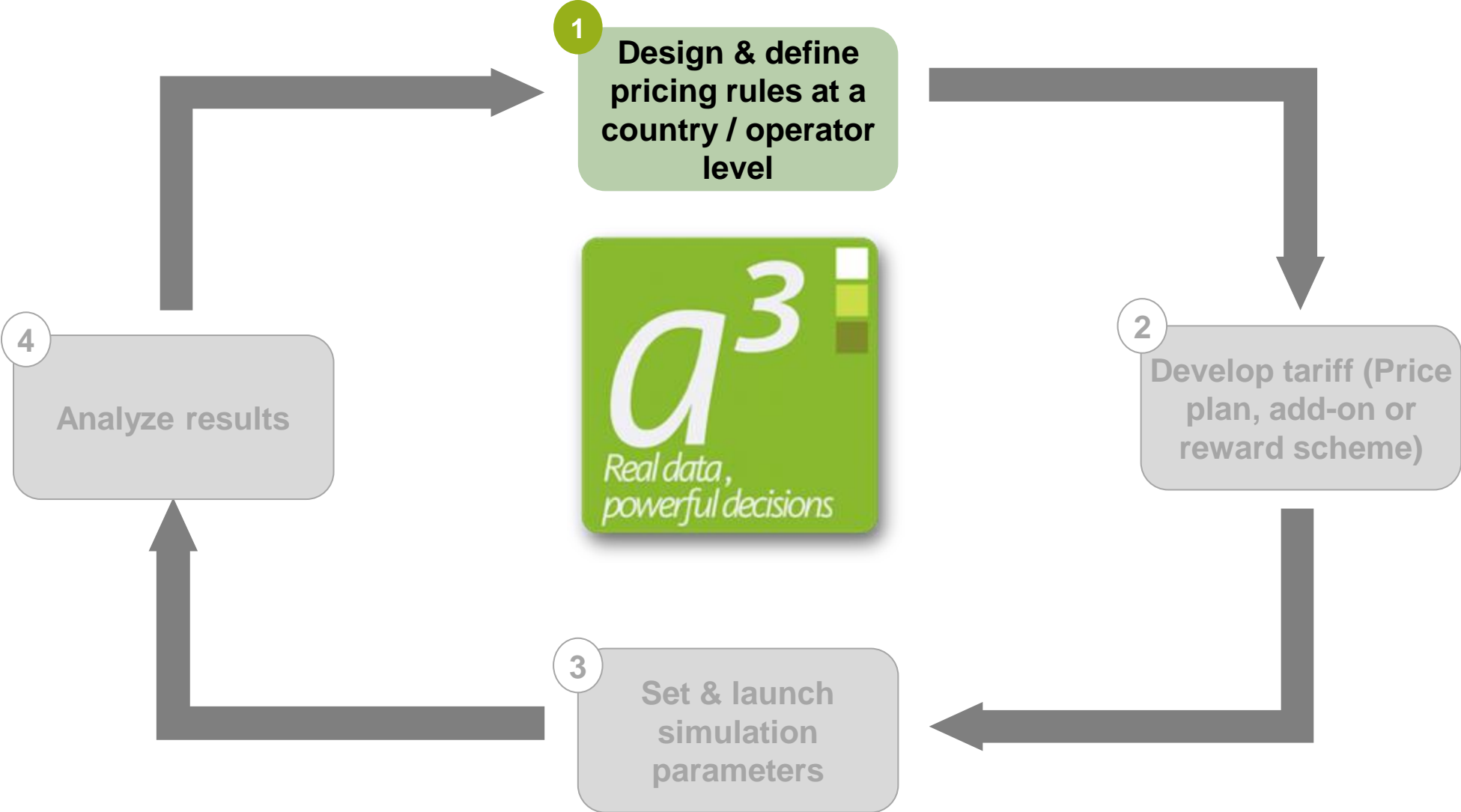
WHERE

**A and B party** (when applicable e.g no b party in data) **location** (cell site (e.g. "home"), area, city etc..)

The interface captures best practices and functions as step-by-step guide. The ABC of pricing!



# Designing and defining pricing rules



# Designing and defining pricing rules: Time criteria

try

Time criteria

Voice/SMS de

	Name	Lifecycle	Criteria	Happy hour	Start day	Start time	End day	End time
1	Wizard Off peak	Active	daily	0	sunday	23	satur...	5
2	TLN peak	Active	daily	0	sunday	6	satur...	17
3	TLN off peak	Active	daily	0	sunday	18	satur...	5
4	MobCom Happy Hour	Active	choose hours	1	sunday	0	satur...	23
233	Default time	Active	block	0	sunday	0	satur...	23

233 Def...

Top B-s

Top A-t

Top Destir

Edition

Copy selection to sa

Playground

group\_uqbiardemo

OpCo Management Tool

Data destination

Segmentations

Name	Segmentation	Description	Lifecycle	Created by	Used from	Until
Default data	1	Behavioural	Based on combination of value and actual usage profiles	Active	lutshome	1/20/14
Regional promo	233	Default - all base	No segmentation, covers whole base	Active	lutshome	1/20/14

Definition of time rules

AV TLN off peak Active Describe the time criteria

Creation lutshome 1/20/14 NA 1/1/00

Validity: 1/20/14 - 1/1/00

daily

Happy hour 0

Starts sunday End saturday

From 6:00 PM To 5:00 AM

	1	2	3	4	5	6
1						
2						

Cancel OK

group\_uqbiardemo academy

# Designing and defining pricing rules: Origin & destination criteria

The image displays a complex pricing management interface with several overlapping windows and data tables.

**Source Country Table:**

Country	IDD
15 Avalon	28
217 Tuvalu	688

**Time criteria Table:**

Name	Li
1 Wizard Off peak	Ar
2 TLN peak	Ar
3 TLN off peak	Ar
4 MobCom Happy Hour	Ar
233 Default time	Ar

**Voice/SMS destinations Table:**

Name	Lifecycle	Destination	Number Fav. A Cells
1 Onnet	Active	onnet national	0
2 National	Active	national	0
3 International	Active	international	0
4 Offnet	Active	offnet+fixed national	0
5 Friends Onnet 3	Active	friends and family	0
6 Friends 4 + 1	Active	friends and family	0
7 Friends 1 + 1	Active	any	0

**Rules for traffic termination Dialog:**

AV Friends 4 + 1 Active

Validity: 1/20/14 - 1/1/00

Top A-cells: 0, B-cells: 0, Countries: 0

Summary Table:

onnet national	offnet national	national	international	any
1	4	1	0	0

**OpCo Management Tool Window:**

Source Country: Avalon (28), Tuvalu (688)

Time criteria: Wizard Off peak, TLN peak, TLN off peak, MobCom Happy Hour, Default time

Voice/SMS destinations: Onnet, National, International, Offnet, Friends Onnet 3, Friends 4 + 1, Friends 1 + 1

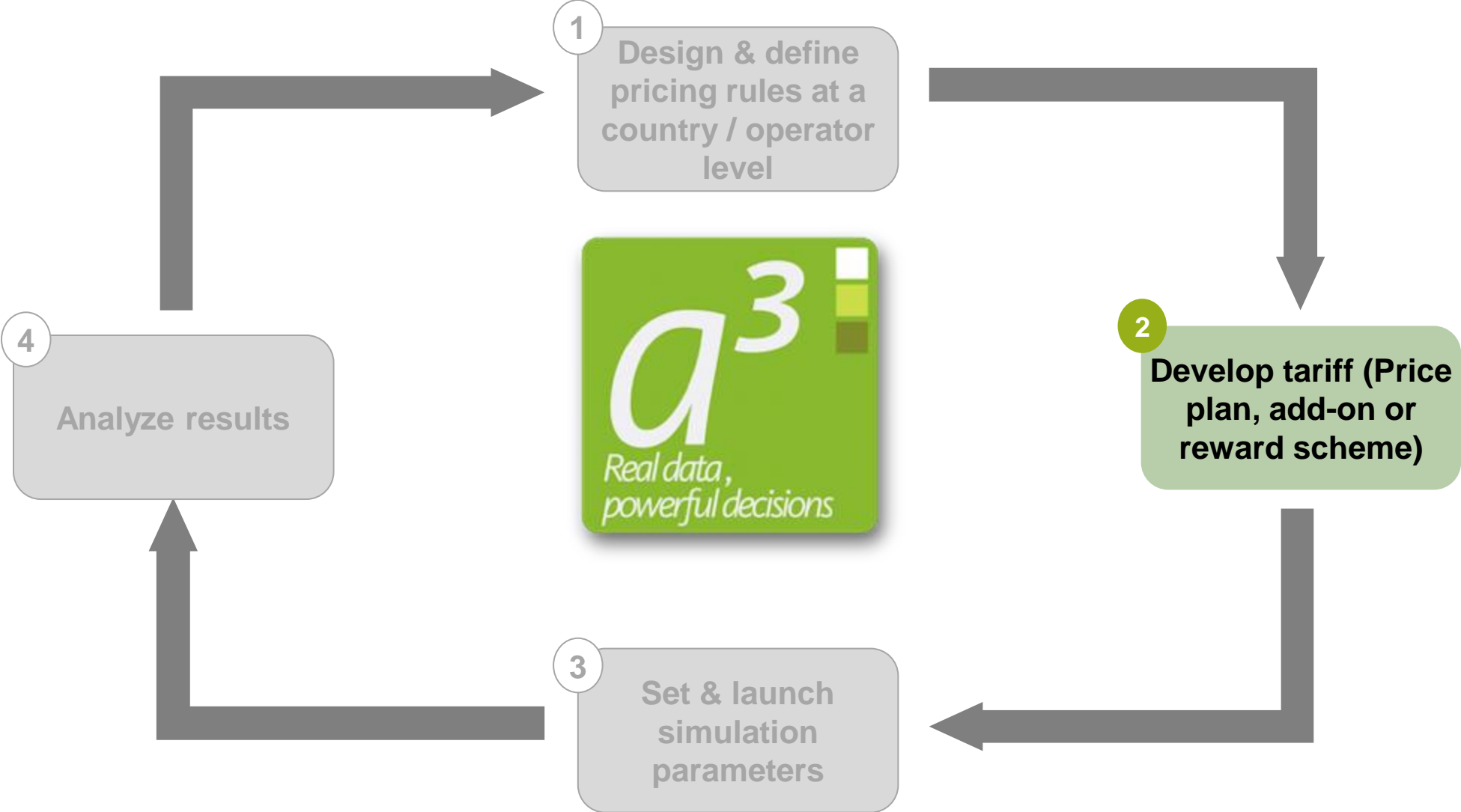
Data destination Table:

Name	Lifecycle	Destination	Number Fav. A Cells
233 Default data	Active	any	0
234 Regional promotion	Active	any	0

A-cell sites list:

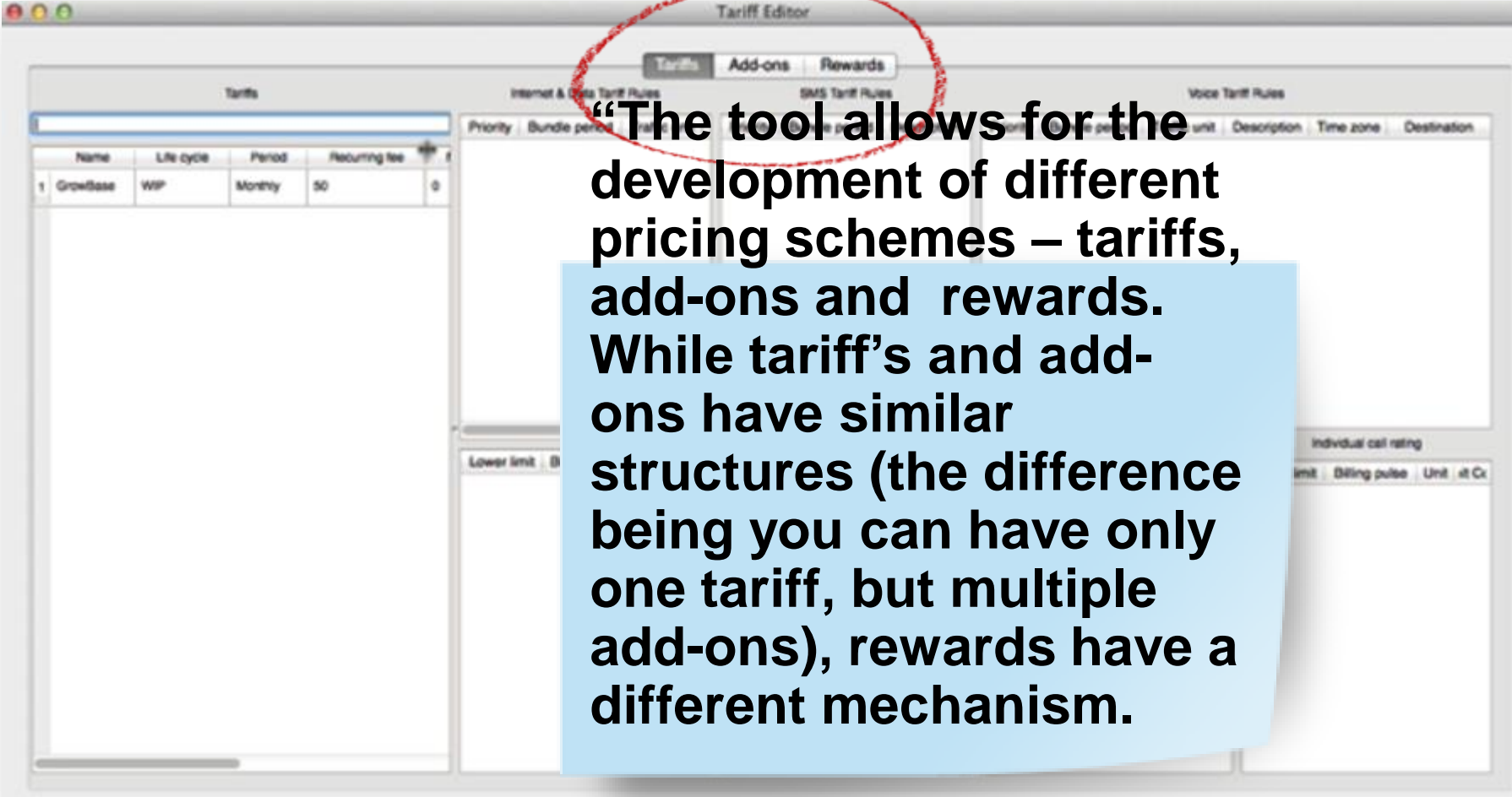
- Uqbar
  - Shangrila
  - EiDorado
    - District South
    - District North
    - District West
    - District East
- Camelot
- Jibad
- Quivira

# Developing tariffs, add-ons and rewards



# Developing tariffs, add-ons and rewards

## Adding a tariff, add-on, or reward



The screenshot shows a software interface titled "Tariff Editor" with three tabs: "Tariffs", "Add-ons", and "Rewards". The "Tariffs" tab is active, displaying a table with columns for Name, Life cycle, Period, and Recurring fee. A single row is visible with the name "GrowBase", life cycle "WP", period "Monthly", and recurring fee "50". The interface also includes sections for "Internet & Data Tariff Rules", "SMS Tariff Rules", and "Voice Tariff Rules". A red circle highlights the "Tariffs" tab. A blue text box is overlaid on the right side of the interface, containing the following text:

**“The tool allows for the development of different pricing schemes – tariffs, add-ons and rewards. While tariff’s and add-ons have similar structures (the difference being you can have only one tariff, but multiple add-ons), rewards have a different mechanism.**

# Developing tariffs, add-ons and rewards

## Tariffs with complex structures can be designed

The image displays three overlapping screenshots of a 'Tariff Editor' application. The top-left screenshot shows a table of 'Internet & Data Tariff Rules' with columns for Priority, Bundle period, Traffic unit, Description, Time zone, and Destination. The top-right screenshot shows a 'Detailed tariff info' dialog box with a red circle around the 'Recurring fees...' section. The bottom-left screenshot shows a table of 'Cost per unit of data' with a red circle around the 'Block fee' column. The bottom-right screenshot shows a table of 'Voice Tariff Rules' with a red circle around the 'Digressive rates...' section.

**Recurring fees...**

**Stepped charging...**

**Digressive rates...**

Traffic can be measured in units, in blocks, billing pulses can vary, recurring fees can be added...



# Developing tariffs, add-ons and rewards

## Add-ons have similar structure to tariffs

The screenshot displays the TariffSimulation application with several configuration windows open:

- Tariff selection:** A list of tariffs, including 'Alghan rules' with a description 'just to double...' and type 'plan'.
- Internet & Data Tariff Rules:** A table with columns: Priority, Bundle period, Traffic unit. Row 1: 2, 1, monthly, gigabyt...
- SMS Tariff Rules:** A table with columns: Priority, Bundle period, Description. Row 1: 2, 1, monthly, Describ...
- Voice Tariff Rules:** A table with columns: Priority, Bundle period, Traffic unit, Description, Time zone, Destination. Row 1: 2, 1, monthly, minutes, Describ..., Any time, Any destin...
- Lower limit / Block fee / Unit rate:** Three tables for different rule types.
 

Lower limit	Block fee	Unit rate
4	10	100
5	10	100
7	20	100
8	30	100
- Individual call rating:** A table with columns: Lower limit, Billing pulse, Unit, Unit.
 

Lower limit	Billing pulse	Unit	Unit
1	300	30	\$...
3	600	30	\$...
- Data Modifiers - Country:** A table with columns: Description, Fav. A Cellsites, URLs.
 

Description	Fav. A Cellsites	URLs
1 ADSL rep...	3	
648 Any destination		
698 Default	0	
- Country:** A table with columns: Country, IDD.
 

Country	IDD
1 Afghanistan	93
2 Albania	355
3 Algeria	213
- Voice/SMS Destination Modifiers - Country:** A table with columns: Description, Fav. B Numbers, Fav. A Cellsites, Fav. B Cellsites, Fav. IDD destinations, Destination.
 

Description	Fav. B Numbers	Fav. A Cellsites	Fav. B Cellsites	Fav. IDD destinations	Destination
436 Any destination					any
699 Fav Intl country	0	0	0	1	internatic
700 Friends and family	5	0	0		national
701 Home traffic	0	3	0	0	national
- Time Modifiers - Country:** A table with columns: Criteria, Start time, End time, Start day, End day, Description, Start detail.
 

Criteria	Start time	End time	Start day	End day	Description	Start detail
162 daily	0	23	sunday	satur...	Any time	
233 daily	0	23	sunday	satur...	New time criteria	

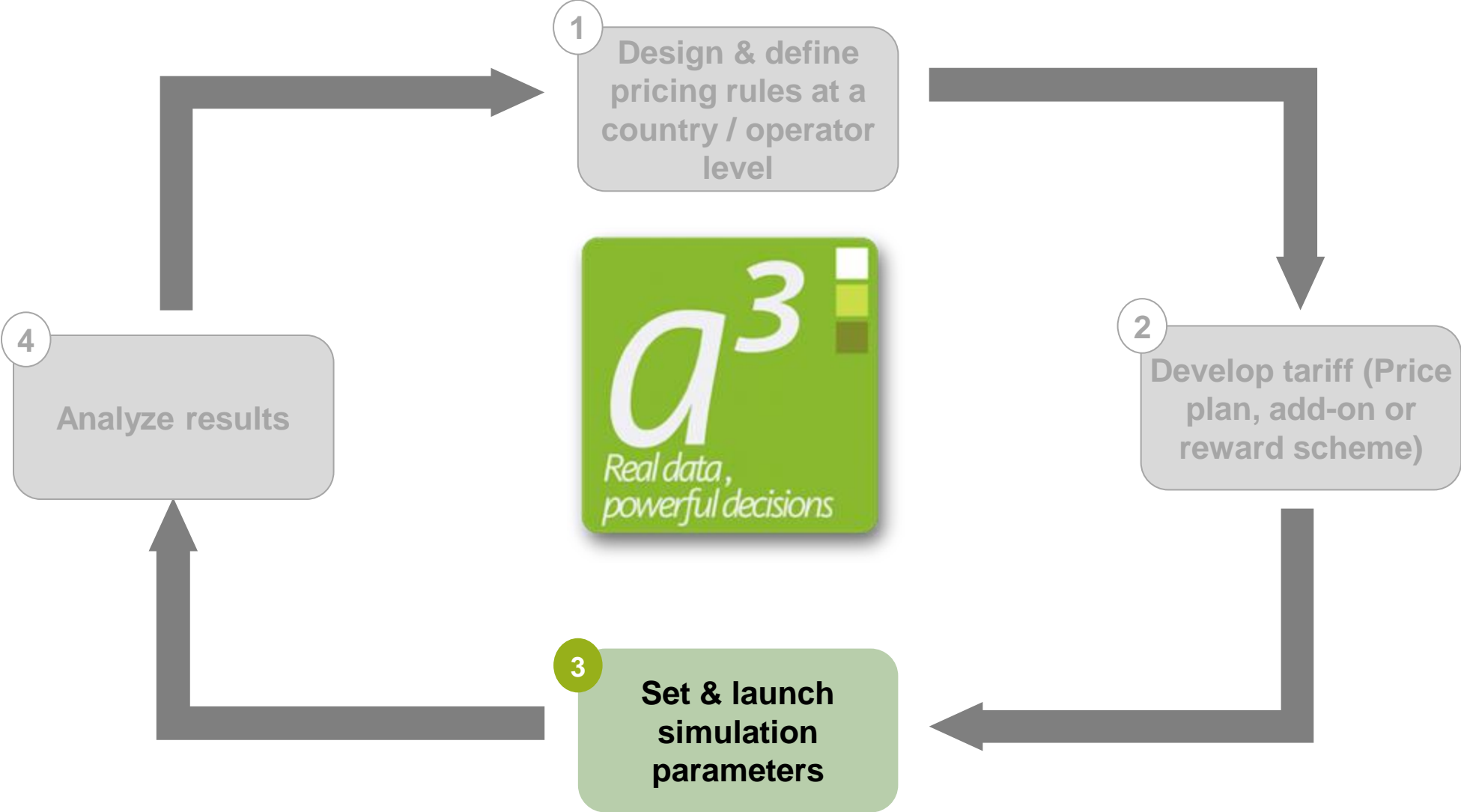
# Developing tariffs, add-ons and rewards

## Rewards are based on triggers

**Rewards have a trigger that is based on specific events, spending, or usage for all traffic types**

...

# Setting and launching simulation parameters



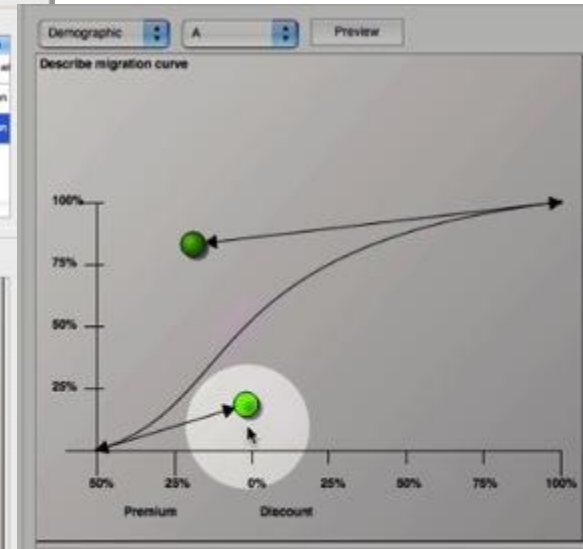
# Setting and launching simulation parameters

**Scope and date range can be varied**

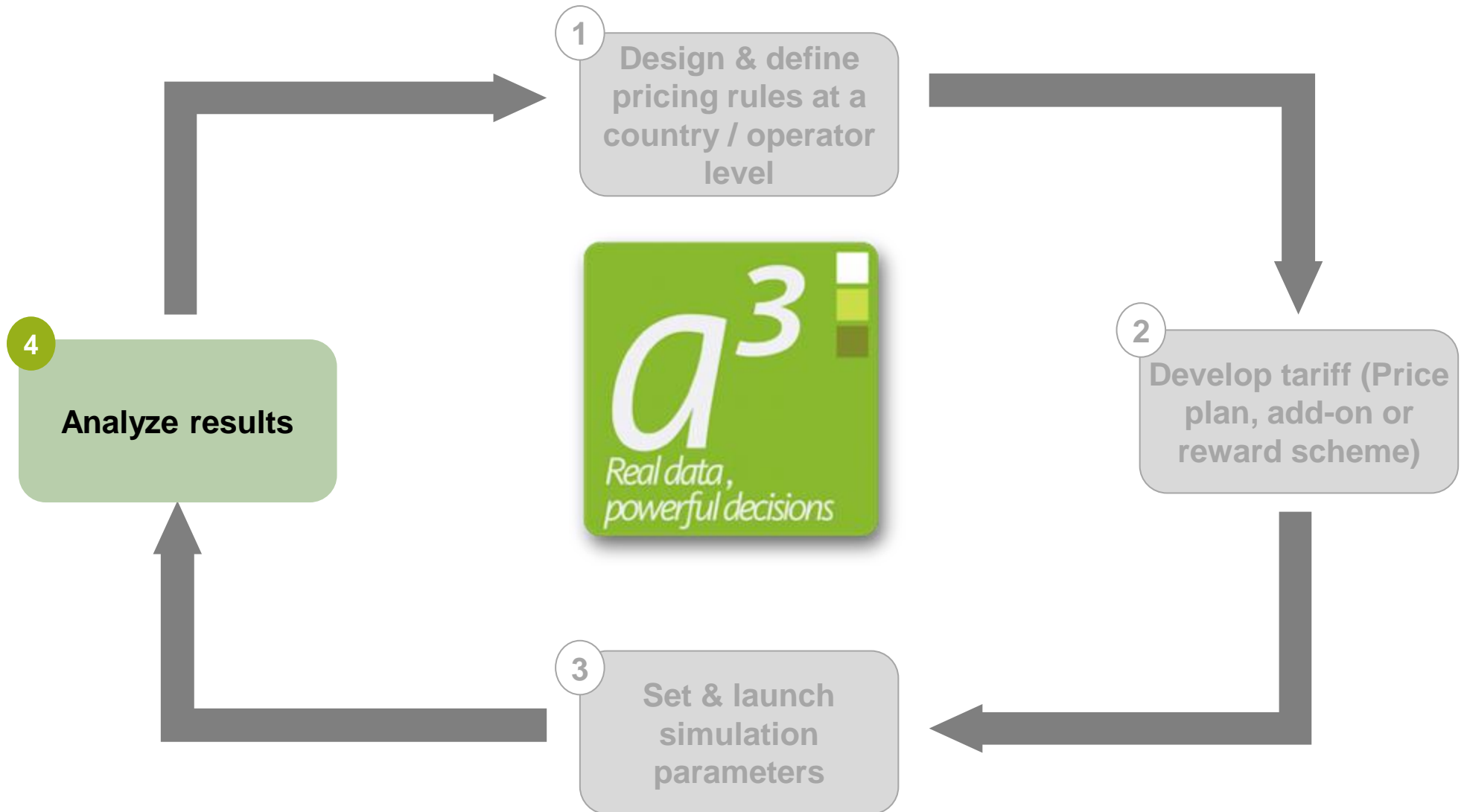
**Multiple tariffs can be simulated at the same time**

**Assumptions can be pulled from template and modified**

**Migration curves can be graphically manipulated**



# Analyzing results



# Analyzing results

Simulation results can be saved and retrieved at anytime

The image shows a software interface for simulation analysis. On the left, a dialog box titled 'Save simulation results...' is open, with a red dashed circle around the 'Save simulation results...' button. Below it is a table for 'Additional report Criteria'.

Segmentation	Description
56 Default - all base	No segmentation, covers all
234 Demographic	Describe the segmentation
238 Usage	Describe the segmentation

In the center, a red dashed circle highlights a list of simulation results with the text 'Selecting saved results' overlaid in red. The list includes:

1. Designing an offer to address the youth segment without
2. Finetuning the youth offer with better understanding of its
3. Playing around with the tool. Do not use for reporting.

On the right, a 'Downloads' window shows a 'Details' view for a simulation. It includes fields for 'Revised youth segment offer', 'Status' (Editor), 'Validity' (01/05/2014), and 'Created' (1/5/2014). Below this is a table of 'Add-ons simulated' and 'Reward simulated'.

Name	Life cycle	Period
1. Feedback	Editor	Monthly
2. GeniBase	Editor	Monthly
3. Mission 100	Editor	Monthly
4. Mission 85	Editor	Monthly
5. Mission 60	Editor	Monthly
6. TUK Anytime	Editor	Monthly
7. TUK Freedom	Editor	Monthly
8. TUK Youth	Editor	Monthly

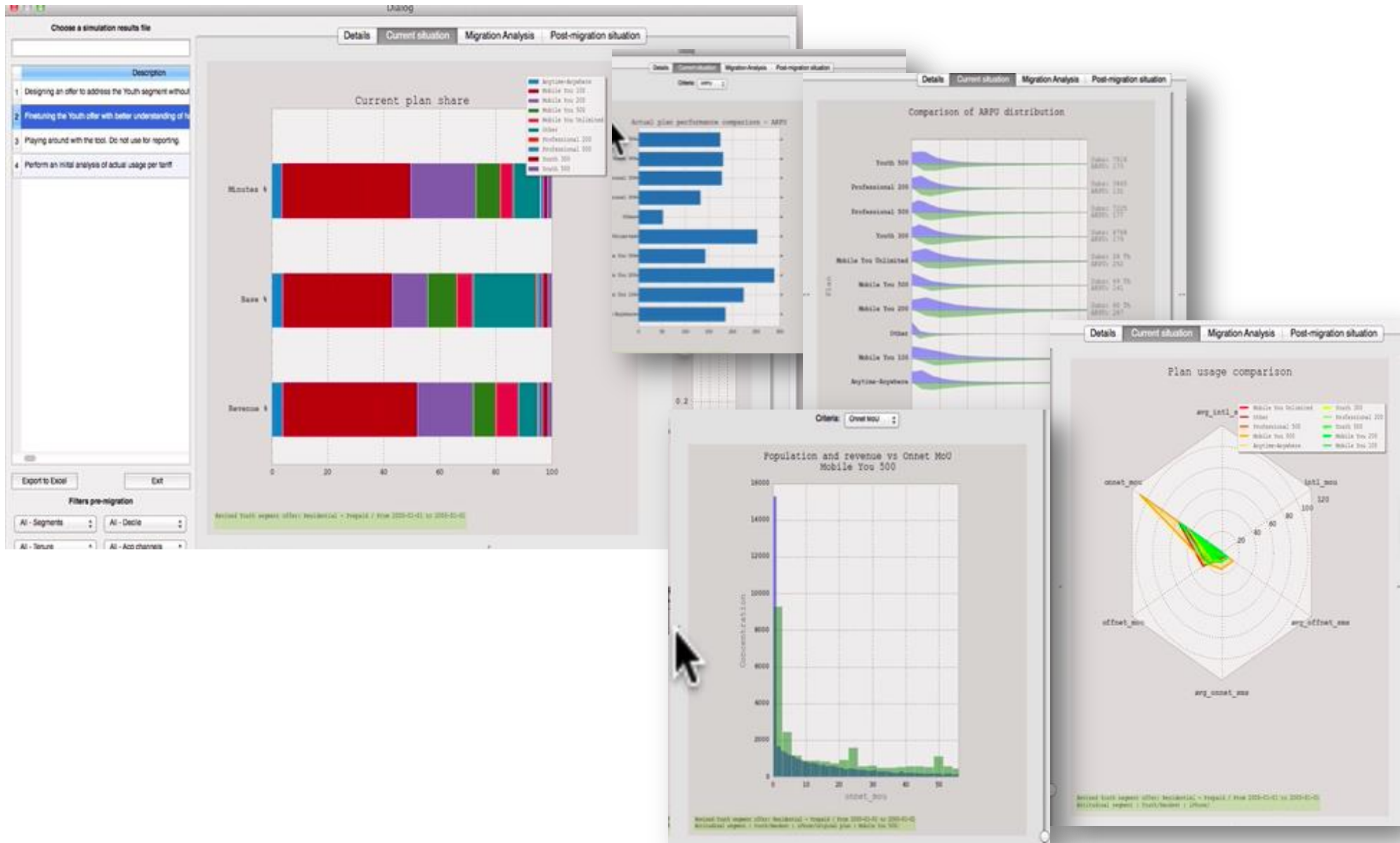
At the bottom right, there is a 'Migration assumptions vs discount distribution' chart showing a migration curve with three lines (A, B, C) on a graph of Premium vs Discount.

When retrieving saved results, all assumptions and parameters used are displayed...



# Analyzing results

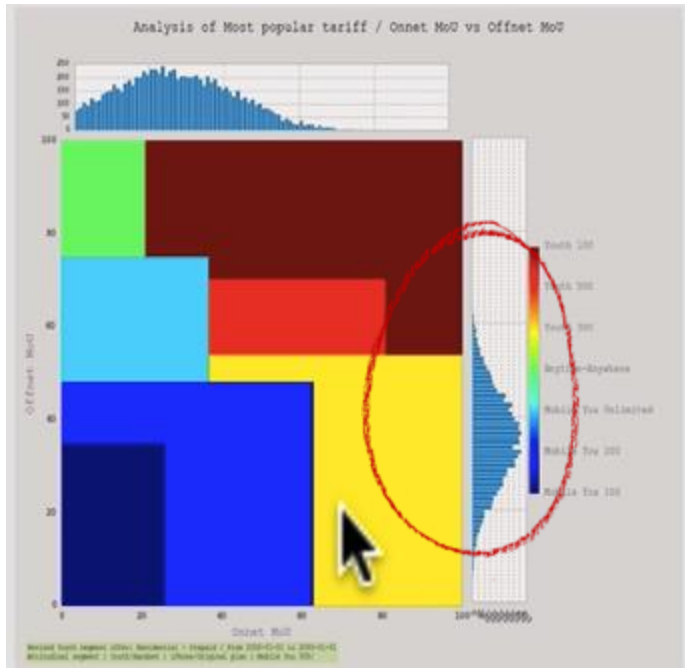
Detailed analysis on usage, behaviour, revenue and customers is available



## Analyzing results

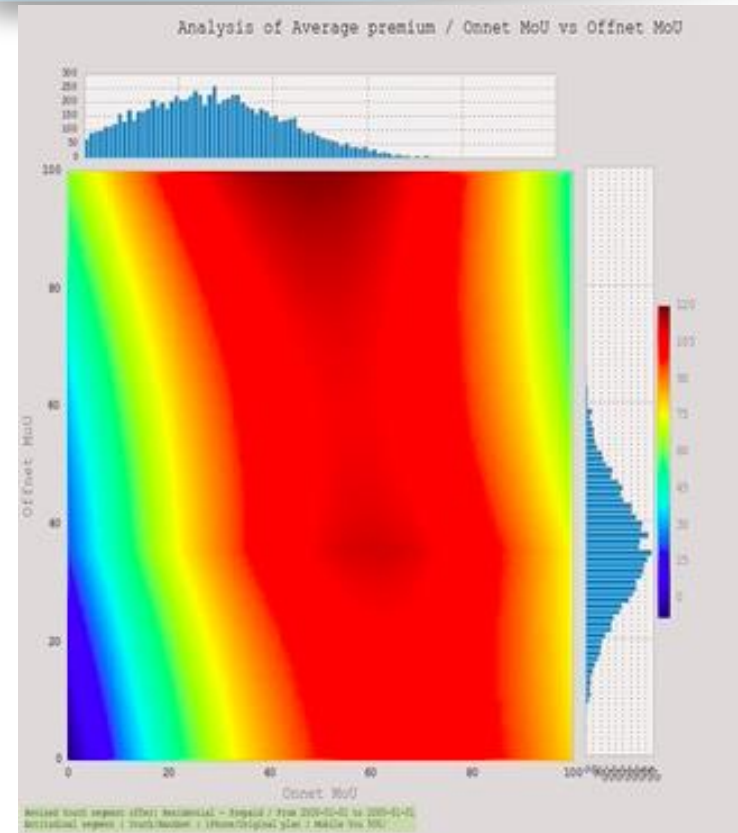
Heat maps provide inside into competitive landscape

Heatmaps provide insight into not only competitive market coverage but also track the depth of premiums and discounts



Histograms plot customer density on each usage axis

“Heat maps show optimal plan for all customers based on their actual usage. Users can change x and y axis to map based on traffic of their choice...”



# Analyzing results

## Migration impact is easily assessed



# Key Features

- ▶ **Different User levels** – Given the different mix of pricing know how within the organization, Pricing Managers can give users different levels of access:
  - Sandbox: A Sandbox allows a user to enter a tariff within a set of established opco rules established by the Playground Monitor. This allows the pricing team to give product and segment managers access to the tool
  - Lab user: For members of the pricing tool, qualified to experiment with structural tariff changes (e.g. Time definition). Lab users can create an entirely different scenario for the Opco (e.g. what would happen if we changed our definition of Off-peak?)
- ▶ **Maximum flexibility:** the Tariff editor allows the definition of tariffs taking a variety of different elements, at a generic but also very specific level. Tariffs for specific BTS (e.g. Home BTS), for top numbers, for top hours (e.g. implementing a happy hour)
- ▶ **Automatic tariff validation** – Given the complexity of the multiple dimensions on which tariffs can be defined, the tool automatically checks that all traffic types have rules defined to cover them (e.g. “SMS tariff between 11 am and 12 pm on Friday is not defined”), or conversely are ambiguously defined (e.g. specific traffic covered by too many rules). This feature is particularly important when training users new to pricing and can help highlight possible ambiguities before implementing in the billing system and with communication.

# Key Attributes of a Business Case

- ▶ **Logical Assumptions:** Assumptions need to be **realistic and documented** – the tool needs to ensure that it is the tariff that is modified to allow for a acceptable business case and not the assumptions
  - Graphical interface to enter migration assumption curves – the interface forces users to think of migration as a curve, and as a logical continuum
  - Saving standardized business cases: An standard format with pre-approved migration assumptions can be used
- ▶ **Preview:** While full re-processing of the entire base is recommended, give the processing time the preview tool runs on a sample to allow tweaking of tariff elements and assumptions
- ▶ **Portfolio\*** – The simulation tool is capable of running a a portfolio combining multiple new tariffs at the same time – thus different scenarios can be created using multiple new tariffs (each simulation is saved under a specific name). Simulations are thus stored and available for comparisons to actuals once tariff is launched
- ▶ **Easy to work with Results** – Flexibility – top-line summary results are displayed on the interface however detailed results are exported to xl along with documented assumptions. The XL breakdown as well as the topline results can be customized at a group and even at an opco level
- ▶ **Heat-maps** – the tool allows users to check competitive positioning against specific tariffs selected on multiple dimensions (e.g voice vs data but also International voice vs Onnet voice)

\* For the purposes of the demo this feature has been disabled as it requires heavy processing)

# Agenda

I. The platform

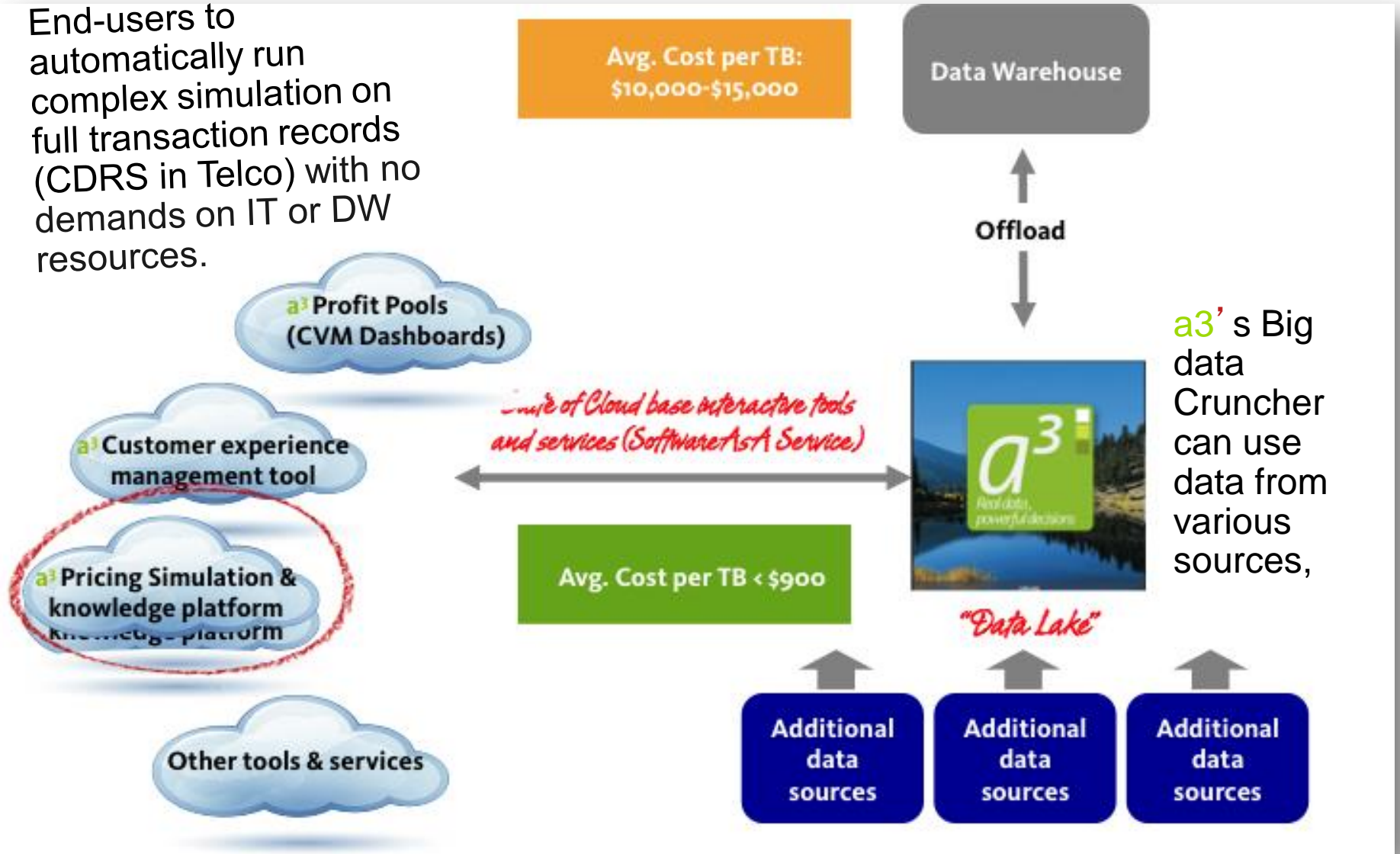
I. The tool

II. The Technology



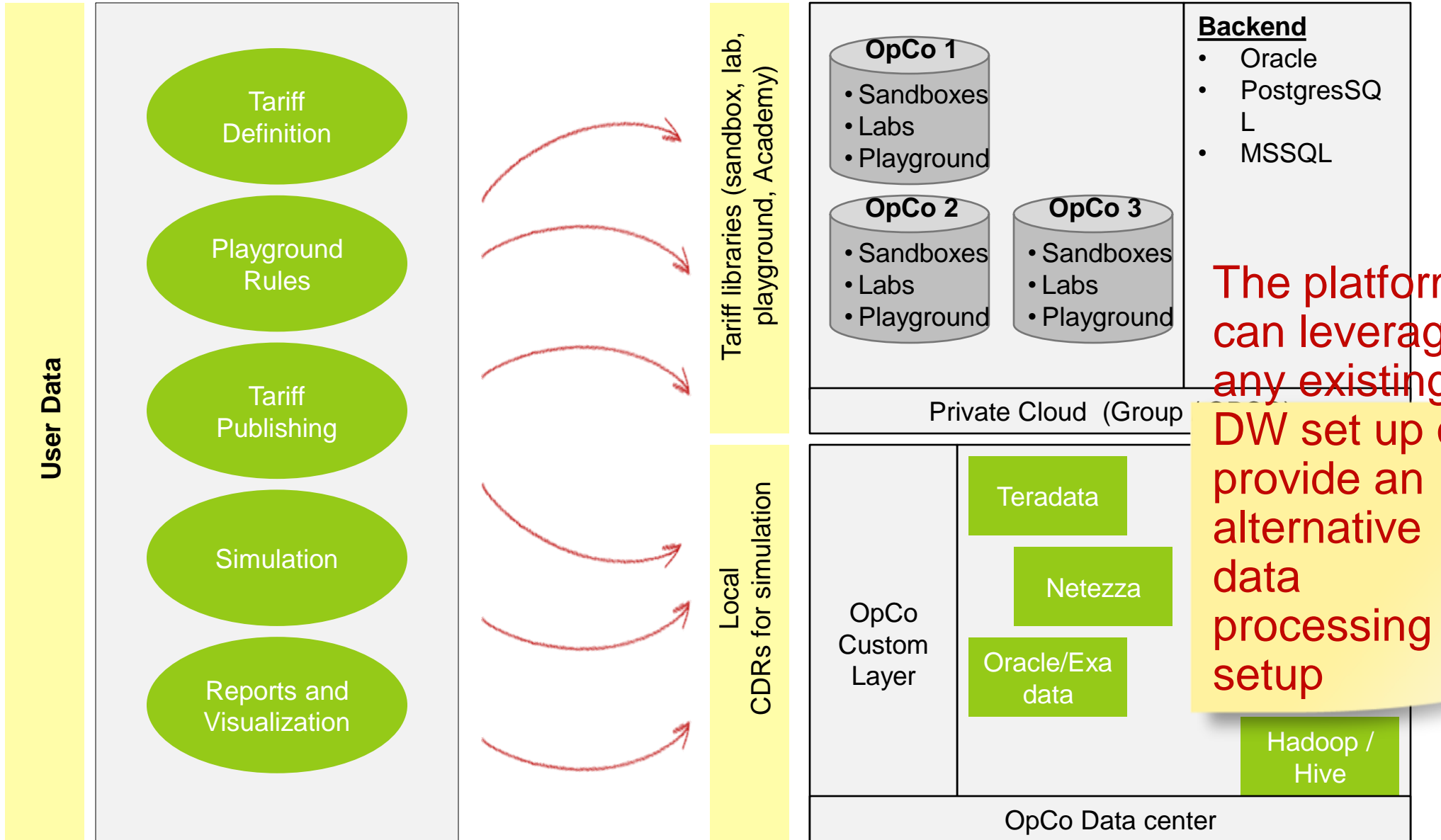
With the heavy cost of storing and processing data in traditional D/W the reward for off-loading resource hungry functions to **a<sup>3</sup>** Big Data applications is considerable...

End-users to automatically run complex simulation on full transaction records (CDRS in Telco) with no demands on IT or DW resources.

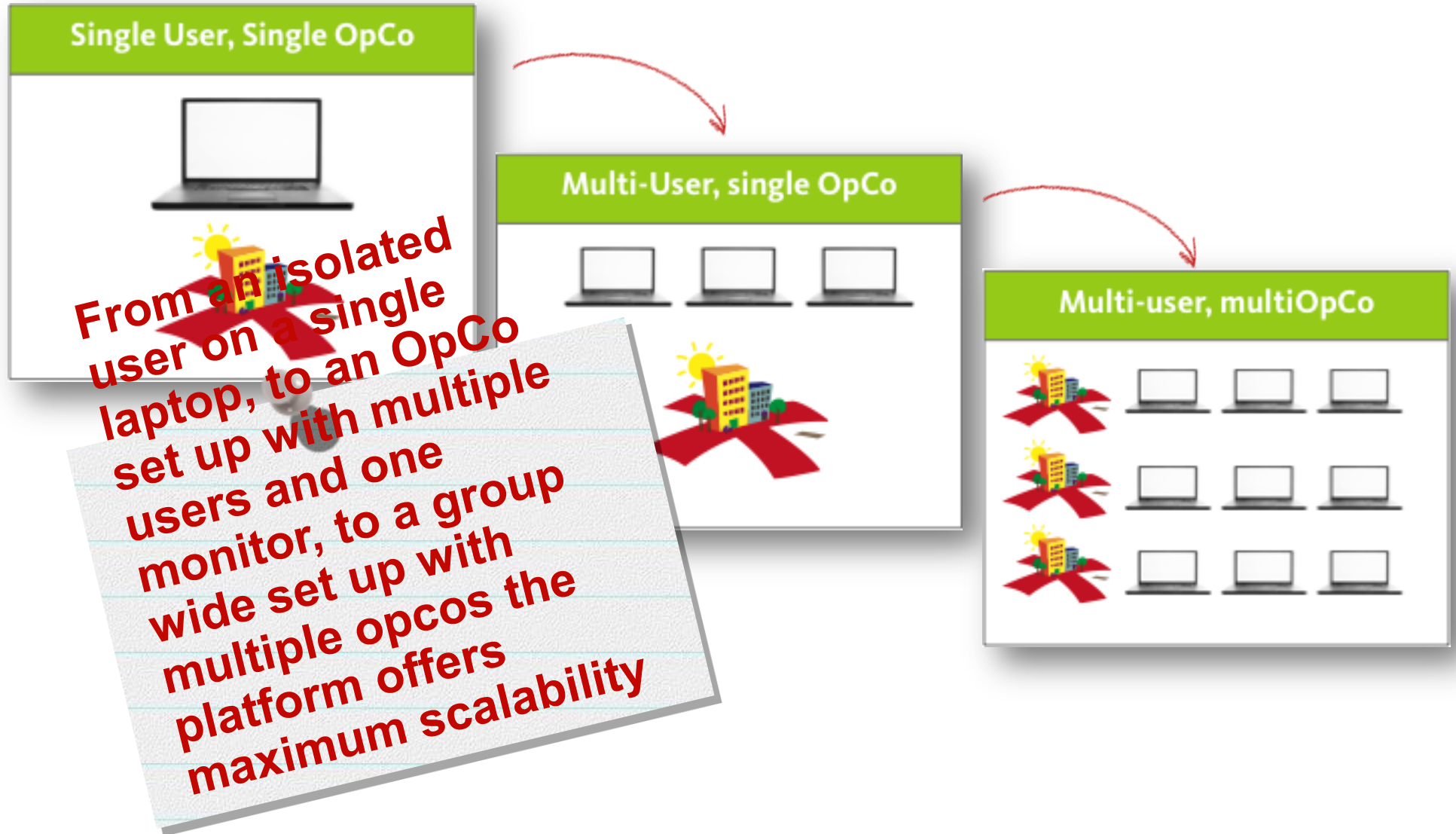




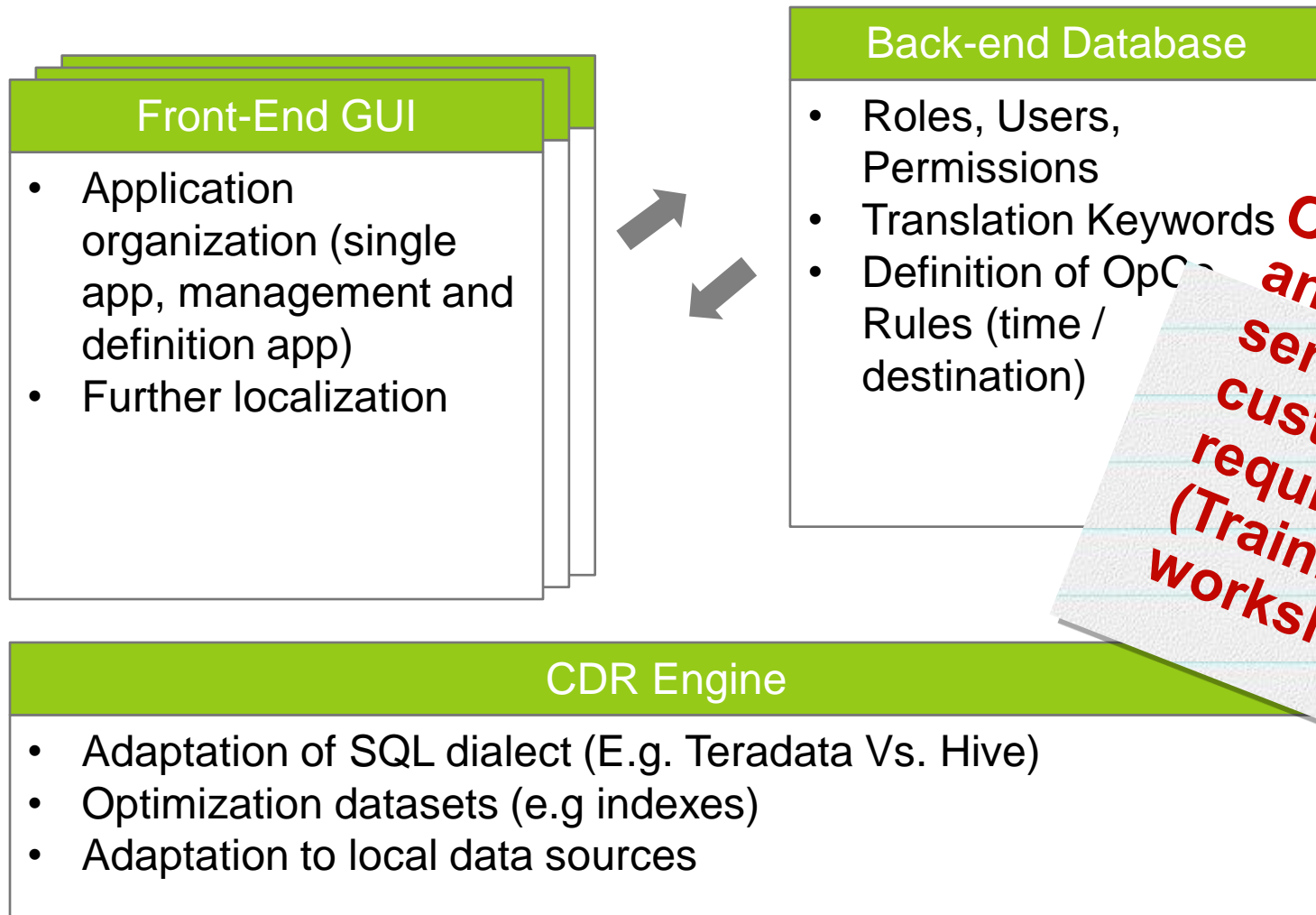
a<sup>3</sup> uses the power of “Big Data” and the cloud to create a hybrid global / local architecture...



...Which allows for multiple use cases



# a<sup>3</sup>'s Layered approach also allows for multi-level customization



**Of course, "soft" services can also be customised to required levels (Training, workshops etc.)**

## a<sup>3</sup>'s Value proposition in a nutshell

### Big data Technologies

We use the power of big data to offer solutions with low start up costs

### Knowledge platform in the Cloud

The power of cloud computing to capture and leverage knowledge across organizations

### Best practice inspired

user interfaced designed (based on our collective years of experience) to build-in sanity checks, and allow different usage levels to match different levels of expertise

### Strategically relevant granular analytics

A meta-data configuration layer that allows for analysis at very specific levels of granularity to cater to creation and testing of very customised value propositions

### Flexible and usable reporting

A flexible reporting engine that can be further customised to organizational needs