

# Global Innovation and Knowledge Academy

TURNING KURT LEWIN ON HIS HEAD: NOTHING IS SO THEORETICAL AS A GOOD PRACTICE

## Strategic modeling to improve services and operation to energy industries' customers

Dr. Carlos A. Fróes Lima, Brazil

March 2016



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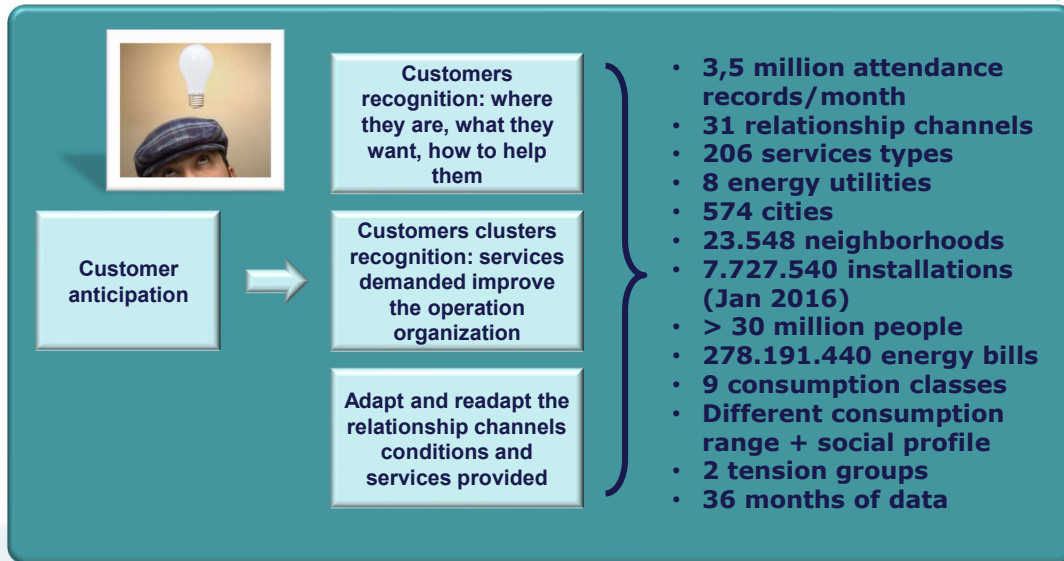
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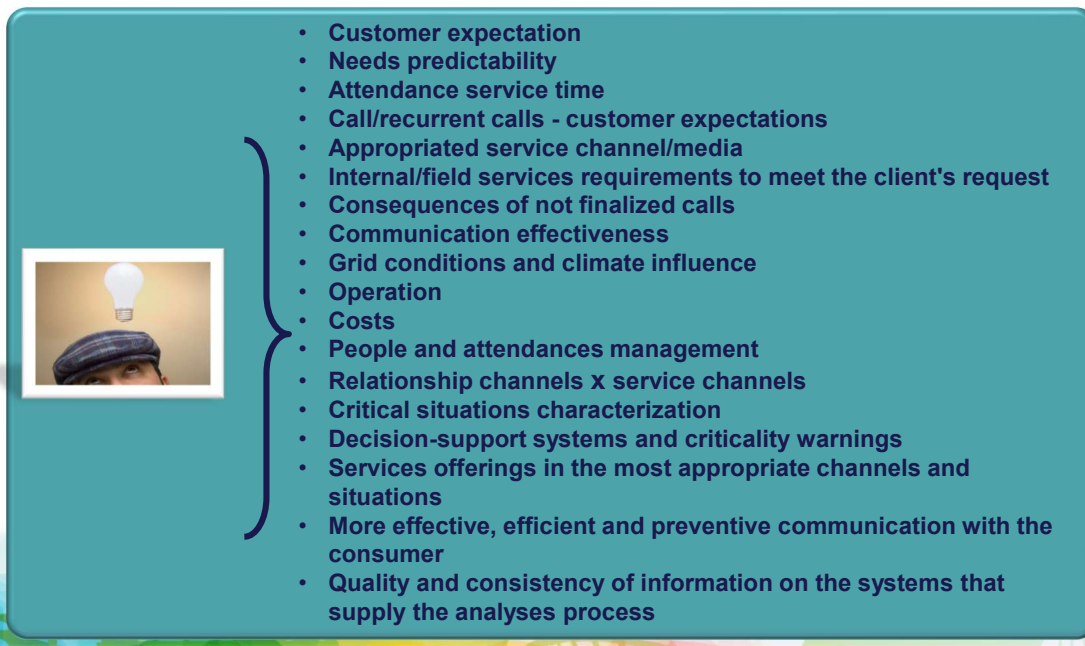
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## Problem dimensioning

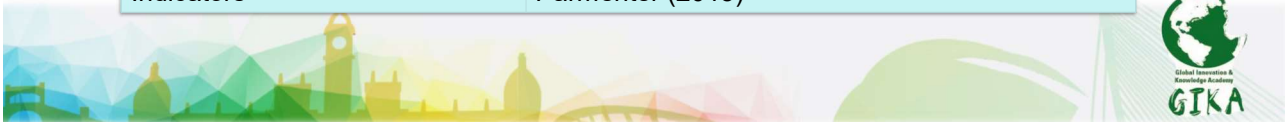


## Solution dimensioning

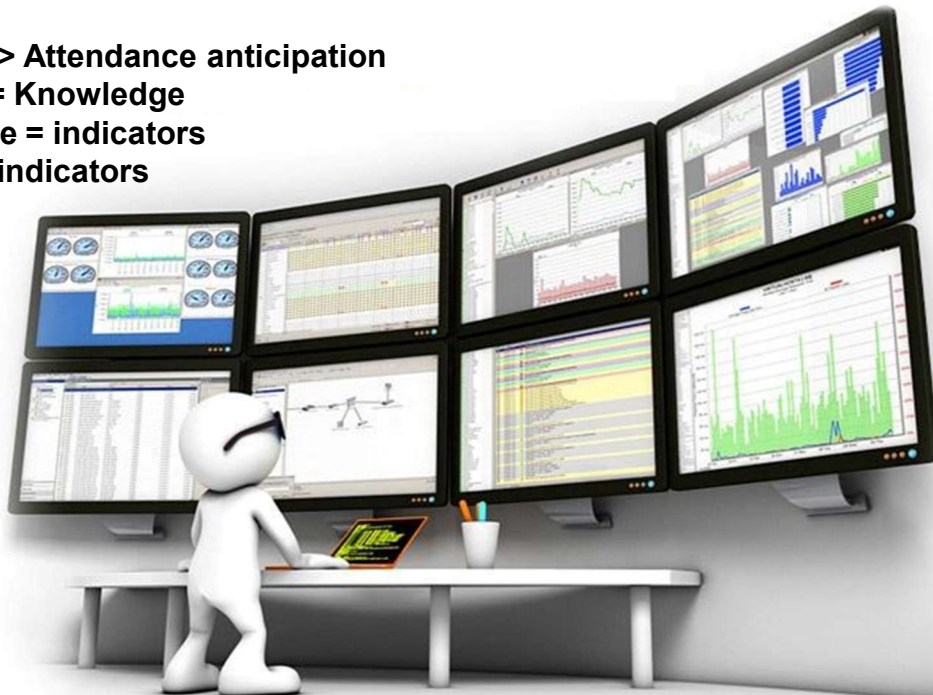


## Research dimensioning

Major references	
Customer relationship services improvement	Kotler, Kartajava, & Setiawan (2010)
Smart grid customer approach	DOE (2013)
Customer engagement	Gangale, Mengolini, & Onyeji (2013)
Data mining	Clifton (2004)
CRISP-DM organization	IBM
Big Data	La Valle, Lesser, Shockley & Kruschwitz (2011), Soares (2012)
Big Data Analytics	Sathi (2012)
Brazilian Regulation	ANEEL (2014)
Indicators	Parmenter (2015)



**Controls -> Attendance anticipation**  
**Controls = Knowledge**  
**Knowledge = indicators**  
**Control = indicators**



### Vision duality: Services x channels



customers and demanded services



**Methodology + Systems**

**neighborhood granularity + KPI + KQI + warnings**

**Energy customer profile**

client utility

Relationship needs

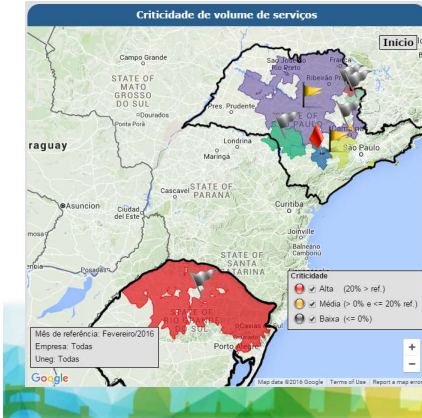


## Regional indicators & criticality maps

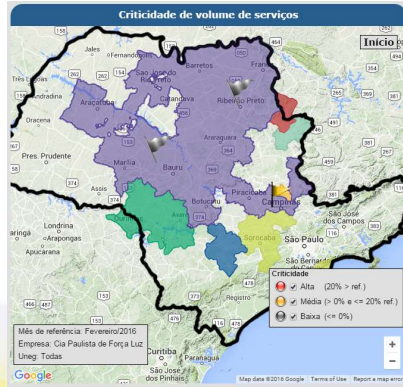
Monthly, annually, historical, based on:  
**Attendance volume, costs, customers' volume**  
**Clustering (customers' profile and/or region)**  
**Media used to communication**



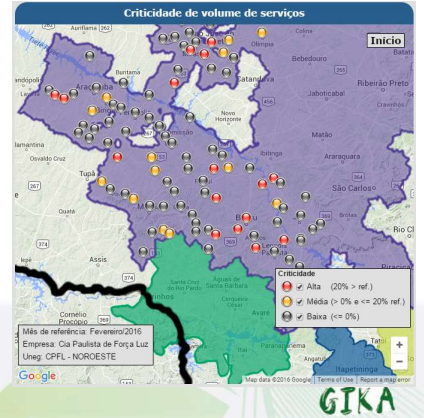
Criticality at energy companies



Criticality at company subdivision



Criticality at city and neighborhood



## Studied Cases



### Reasons to communication

- energy fault (20%)
- payments correlated (60%)
- others (20% - new connections, documentation, contracts)

### Ways to improve communication

- relationship channels availability
- services availability
- Usability

### Services organization

- response time
- field services
- services availability at channels

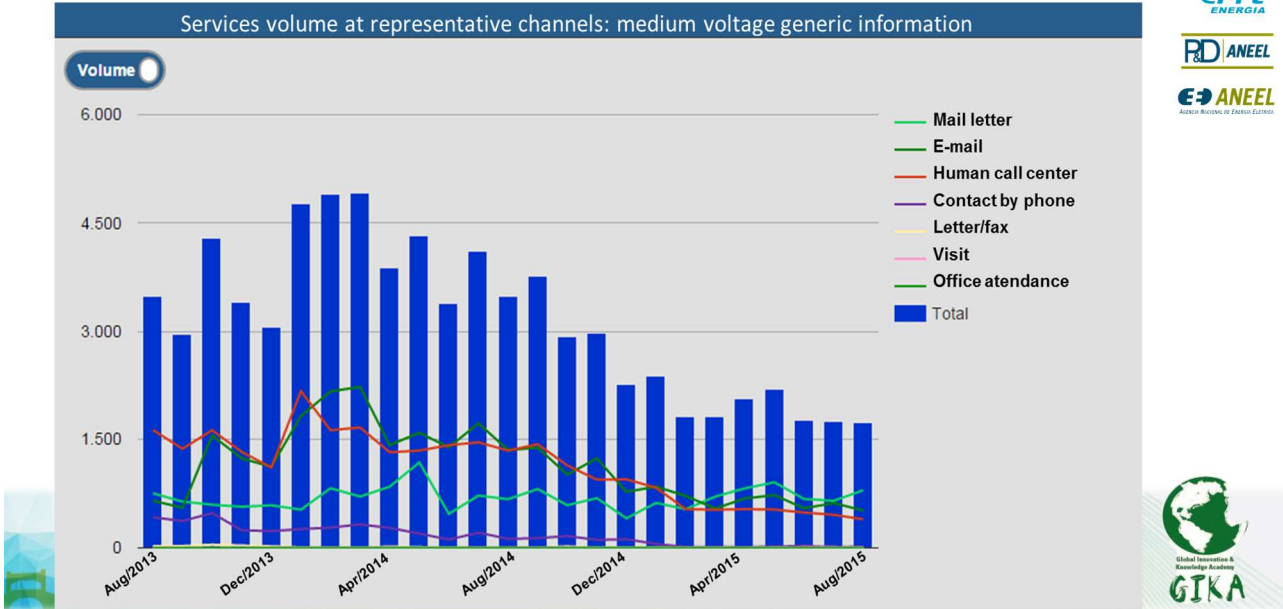
### Costs

- channels defined costs
- responsiveness
- available time to improve communication (idleness)



## Service decrease trend after distributor internal campaign & training approaches

Services volume at representative channels: medium voltage generic information



## Results to now



- Data quality improvement
- Channels services improvement
- Human attendance reorganization, new scripts and training
- Clustering attendance based on energy consumption
- Usability (web and mobile access)
- Costs reorganization and idleness used to proactive communication
- Monthly warnings, historical tendencies



**KPI – Key Performance Indicators**

- 31 relationship channels
- 206 services types
- 8 energy utilities
- 574 cities
- 23.548 neighborhoods
- 7.727.540 installations (Jan 2016)
- 278.195.410 energy bills
- 9 consumption classes
- 10 different consumption ranges - social profile
- 2 tension groups

**NOTHING IS SO THEORETICAL AS A GOOD PRACTICE!**



**Operational warnings and production, seasonality and new services profitability**



**KQI – Key Quality Indicators**

- KPI association – monthly, quarterly, monthly indicators representability and new services introduction
- QCA



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