

# RAPID PLANNING



## SUSTAINABLE INFRASTRUCTURE, ENVIRONMENTAL AND RESOURCE MANAGEMENT FOR HIGHLY DYNAMIC METROPOLISES

STAKEHOLDER CONFERENCE

AT-VERBAND, IUWA, CANISIUS GAKWAYA

NOVEMBER 9<sup>TH</sup> 2016, KIGALI, RWANDA

### Session 1

**Data gathering to combine urban consumption patterns with building structures**

## DATA GATHERING OVERVIEW

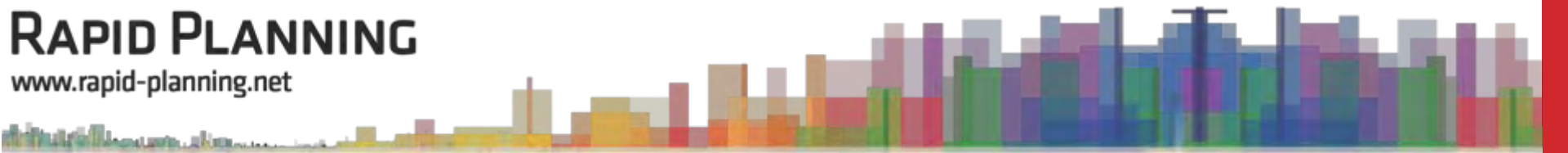
Data gathering to combine urban consumption patterns with building structures

### Three working steps:

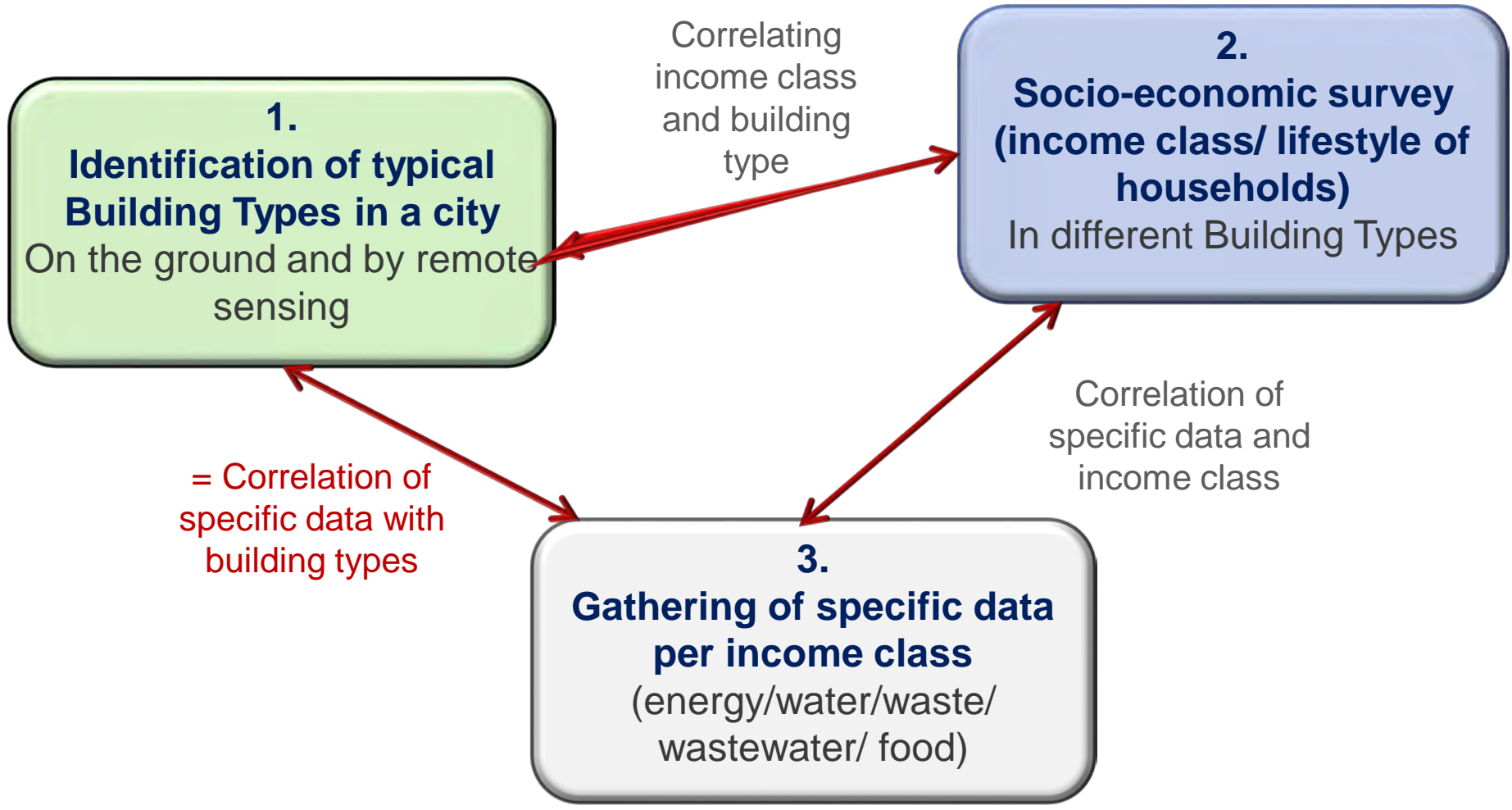
- Identification of Building Types
- Socio-economic survey on household level (for matching income class and building type)
- Gathering of specific data (energy, water, waste water, waste, food) on household level (next step: public/ commerce/ industry level)



Data basis for supply and disposal infrastructure planning  
(centralised/ decentralised)




## DATA GATHERING OVERVIEW





## DATA GATHERING OVERVIEW

### Specific data (energy/water/waste/food) on building level



Building Standard Properties:

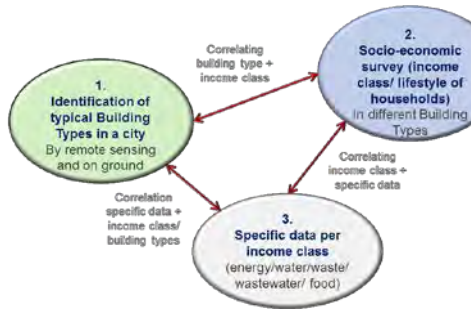
- Category
- DisplayType
- FlatRoofTexture
- FloorCount: 1
- FloorHeight: 4
- PersonsPerBuilding: 0
- RoofType: Hip
- SlopeRoofTexture
- Type: 5 (Object)
- WallTexture
- baseFloorHeight: 2

Reports:

Report	N	%	Sum	%	Av
Building Area	1	0.00	119.90	0.00	119.9
Count of flats	1	0.00	1.00	0.00	1.0
Energy [kW/Y] 5	1	0.00	184.00	0.00	184.0
Floor Area	1	0.00	119.90	0.00	119.9
Gross Floor Area	1	0.00	119.90	0.00	119.9
Residents in 5	1	0.00	4.00	0.00	4.0
Waste [kg/Y] 5	1	0.00	184.00	0.00	184.0



## DATA GATHERING - SOCIO-ECONOMIC SURVEY/MAPPING



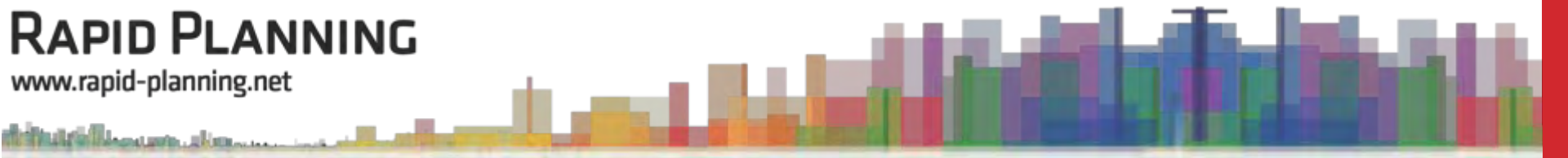
Socio-Economic Mapping within Rapid Planning

	PROCESSES	Data pooling	Data computation	Trans-sectoral scenario building	Scenario Simulation	Scenario result practicability
ACTIVITY	<ul style="list-style-type: none"> <li>-Supply &amp; disposal infrastructure relevant data</li> <li>-GIS data</li> <li>-Remote sensing</li> <li>-Determine specific data (e.g. quantity per capita and day)</li> <li>-Building structure</li> <li>-House typology</li> <li>-Socio-economy (income and consumption pattern)</li> </ul>	<ul style="list-style-type: none"> <li>-Identification of linkage between socio-economy and housing type</li> <li>-Merging spatial data (RS, BS, HT) and specific values</li> <li>-Data consistency check</li> <li>-Applying rule-based method to calculate 3D building models &amp; building attributes</li> </ul>	<ul style="list-style-type: none"> <li>-Trans-sectoral planning/ design</li> <li>-Break down "silo thinking" (change management)</li> <li>-Trans-sectoral capacity building</li> <li>-Baseline scenario definition</li> <li>-(Trans-sectoral) Scenario building S1-Sn</li> <li>-Practical "Entry Projects" at begin</li> </ul>	<ul style="list-style-type: none"> <li>-Transfer of scenario design into simulator</li> <li>-Transfer of the necessary data into simulator</li> <li>-Run scenario simulation</li> <li>-Output analysis</li> <li>-Transfer into planning procedures</li> <li>-Reality check</li> <li>-Transferability check</li> </ul>	<ul style="list-style-type: none"> <li>-Definition of "thematic goal" (= scenario result)</li> <li>-Definition of "defining objectives"</li> <li>-Development of an I.O map</li> <li>-Sequencing in time</li> <li>-Start project with "Rapid Results"</li> </ul>	
TOOLS	<ul style="list-style-type: none"> <li>-Questionnaires</li> <li>-Maps, surveys, census, statistics</li> <li>-Satellite image processing tools</li> <li>-Methods to determine specific planning values</li> <li>-Apps (data coll.)</li> <li>-Housing photo documentation</li> </ul>	<ul style="list-style-type: none"> <li>-GIS, database, file system</li> <li>-Series of specific tables/ forms with input/ output masks</li> <li>-RP-program interface</li> <li>-Digital terrain model</li> <li>-Web interface</li> </ul>	<ul style="list-style-type: none"> <li>-Method to organising stakeholder</li> <li>-"Silo breakdown" method (change management techniques)</li> <li>-Trans-sectoral technical &amp; other knowledge blocks</li> <li>-Cross Impact Balance analysis</li> </ul>	<ul style="list-style-type: none"> <li>-Simulator</li> <li>-Reality check method</li> <li>-Transferability check method</li> </ul>	<ul style="list-style-type: none"> <li>-Obstacle based planning method</li> <li>-Rapid Results method</li> <li>-Other TOC techniques</li> </ul>	

## Procedure of the socio-economic mapping in Kigali:

- Identification of building types by remote sensing and on ground (classification of building types) ✓
- Identification of testing areas (accumulation of same building types) ✓
- Conduct socio-economic mapping in different testing areas ✓
- Correlate different building types to different income/ lifestyle classes  
→ *In progress*

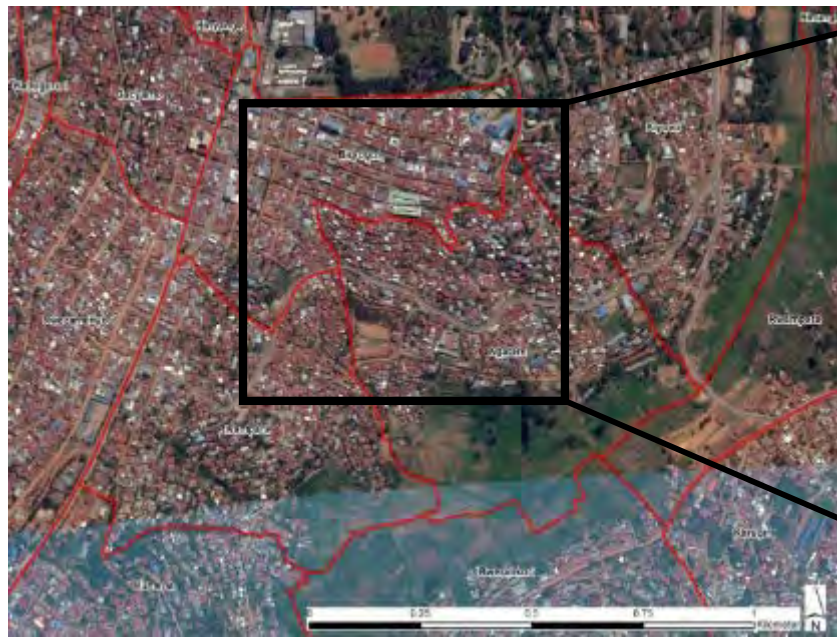




## DATA GATHERING - SOCIO-ECONOMIC SURVEY/MAPPING

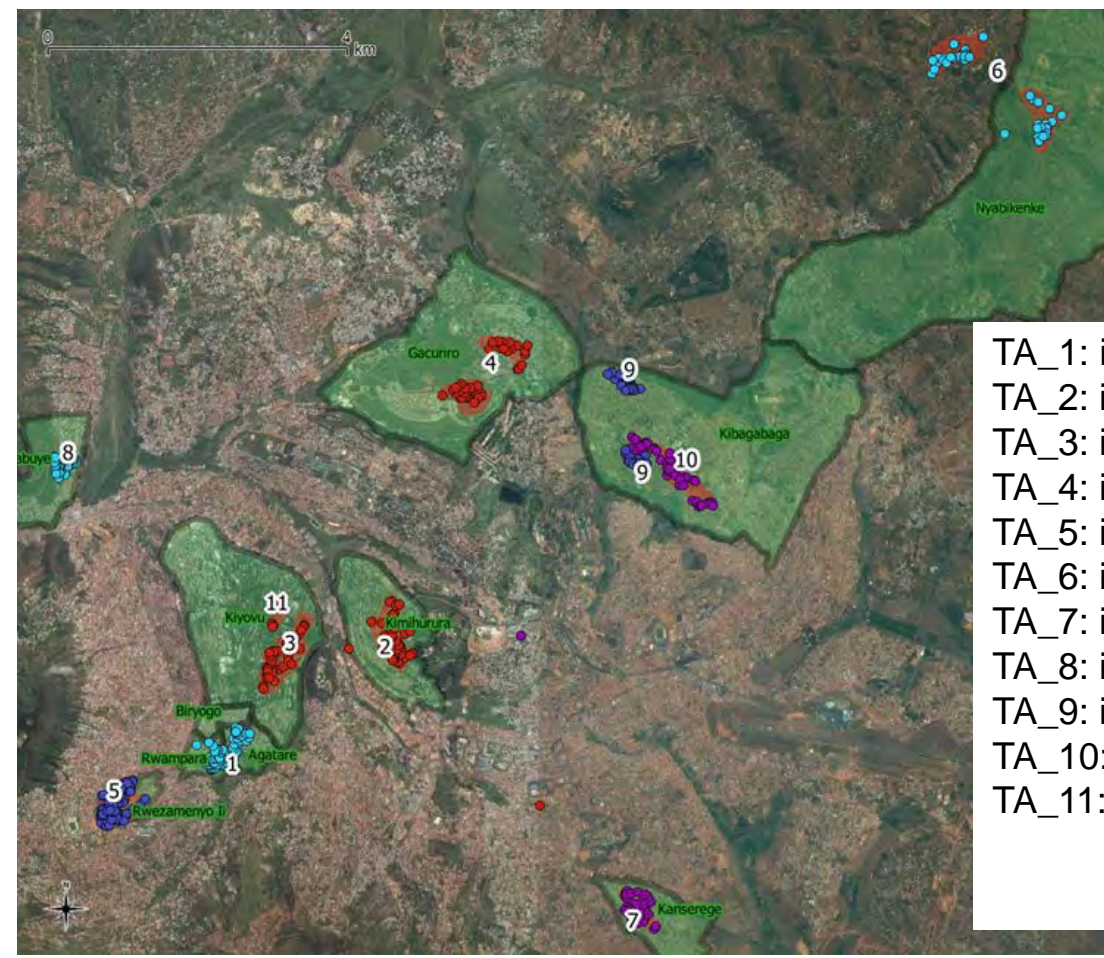
### Identification of testing areas:

- First: looking for typical accumulation of same building types by remote sensing
- Second: looking for typical accumulation of same building types on the ground





## DATA GATHERING - SOCIO-ECONOMIC SURVEY/MAPPING



### Identified and surveyed testing areas (TA):

- TA\_1: in Agatare/Rwampara, interviewed HH - 132
- TA\_2: in Kimihurura, interviewed HH - 48
- TA\_3: in Kiyovu, interviewed HH - 35
- TA\_4: in Gacuriro, interviewed HH - 40
- TA\_5: in Rwezamenyo II, interviewed HH - 83
- TA\_6: in Nyabikenke, interviewed HH - 46
- TA\_7: in Kanserege, interviewed HH - 39
- TA\_8: in Nyamabuye, interviewed HH - 79
- TA\_9: in Kibagabaga, interviewed HH - 47
- TA\_10: in Kibagabaga, interviewed HH - 54
- TA\_11: In Kiyovu (Apartments), interviewed HH - 6

### **Socio-economic survey**

- Survey on income/ lifestyle done by questionnaire (tablet application in Kinyarwanda and English)
- 6 survey persons, 3 weeks of field work, 609 households interviewed

#### Questionnaire was divided into the following categories

- Housing and infrastructure (flat size, flat infrastructure, etc.)
- Specific information on the household (household size, qualification, etc.)
- Specific items, devices and features of the household
- Expenditures of the household
- Food and buying habits
- Earnings of the household
- Assessment by the interviewer

## DATA GATHERING - SOCIO-ECONOMIC SURVEY/MAPPING

Extract from the digital questionnaire:

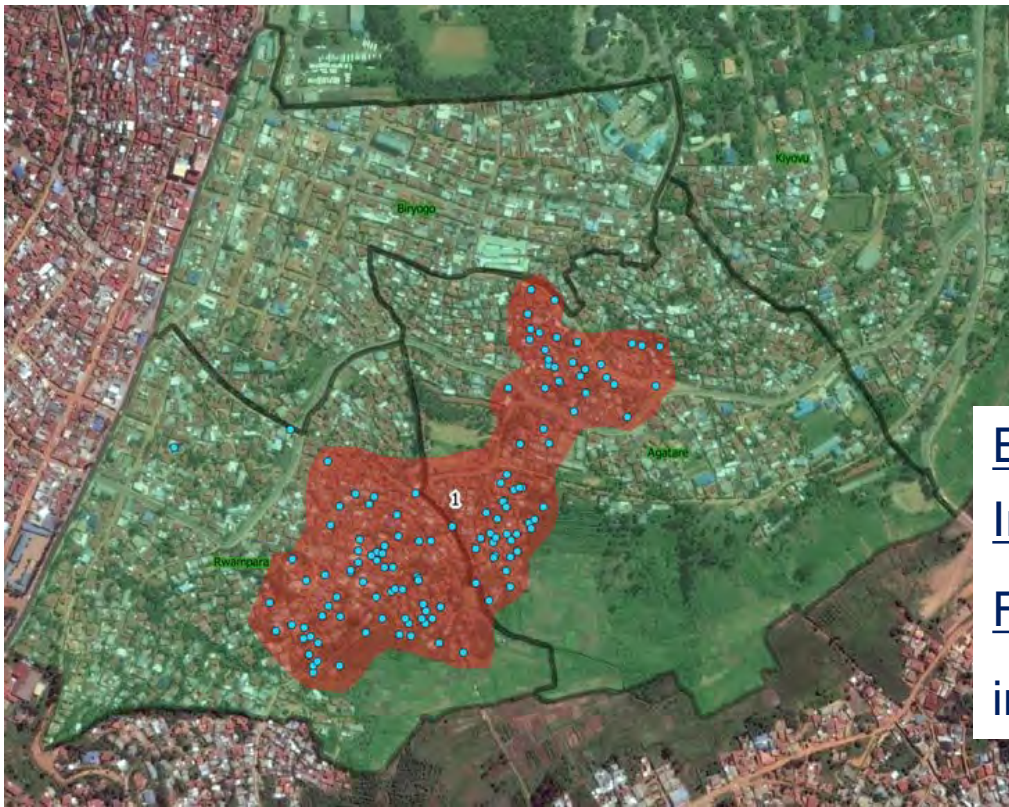




## DATA GATHERING - SOCIO-ECONOMIC SURVEY/MAPPING

### Testing Area 1: Agatare/ Rwampara

Building Type:  
single/ multi family; rudimentary

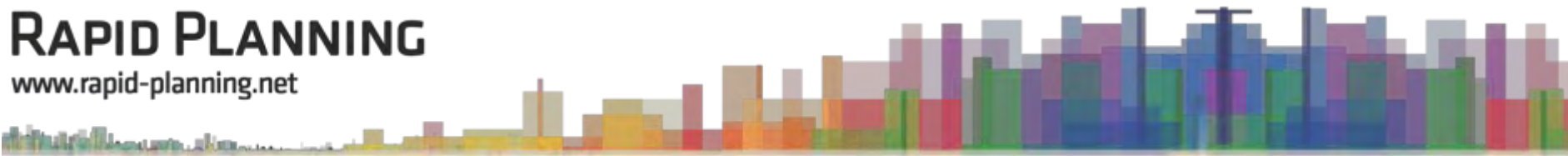


Expected income/ lifestyle class → *low*

Interviewed HH → 132

First rough data check:

income/ lifestyle class → *low*



## DATA GATHERING - SOCIO-ECONOMIC SURVEY/MAPPING

### Team, Socio-Economic Data Gathering Activities in Kigali, Sept. 2016





## Thank You!

[English]

## Cảm On!

[Vietnamese]

## Danke!

[German]

## Murakoze!

[Kinyarwanda]

## Shukran!

[Arabic]



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