



Hrvatsko asfaltno društvo



Croatian asphalt association

Fair & sustainable alternative proposals in road business: a mine of solutions & opportunities

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International seminar ASPHALT PAVEMENTS 2017**

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0. CONTENT

1. Why proposing alternative solutions?
2. A team's work
3. Need for clear rules (existing) and professional owners
4. Examples: A380 runway, army vehicles, TGV platform, private logistic platform...
5. Brake the barriers to progress: first existing proposals & benchmark
6. Conclusion

I. WHY ALTERNATIVE SOLUTIONS?

PUBLIC MONEY...



ANSWER TO FUNCTIONNAL NEEDS





ENVIRONMENTAL ISSUES...





NEW STRESSES...





COMPLEX PROJECTS



DELAYS REDUCTION

Déviatation



II. WHO MUST DO THAT?

... TEAM'S WORK

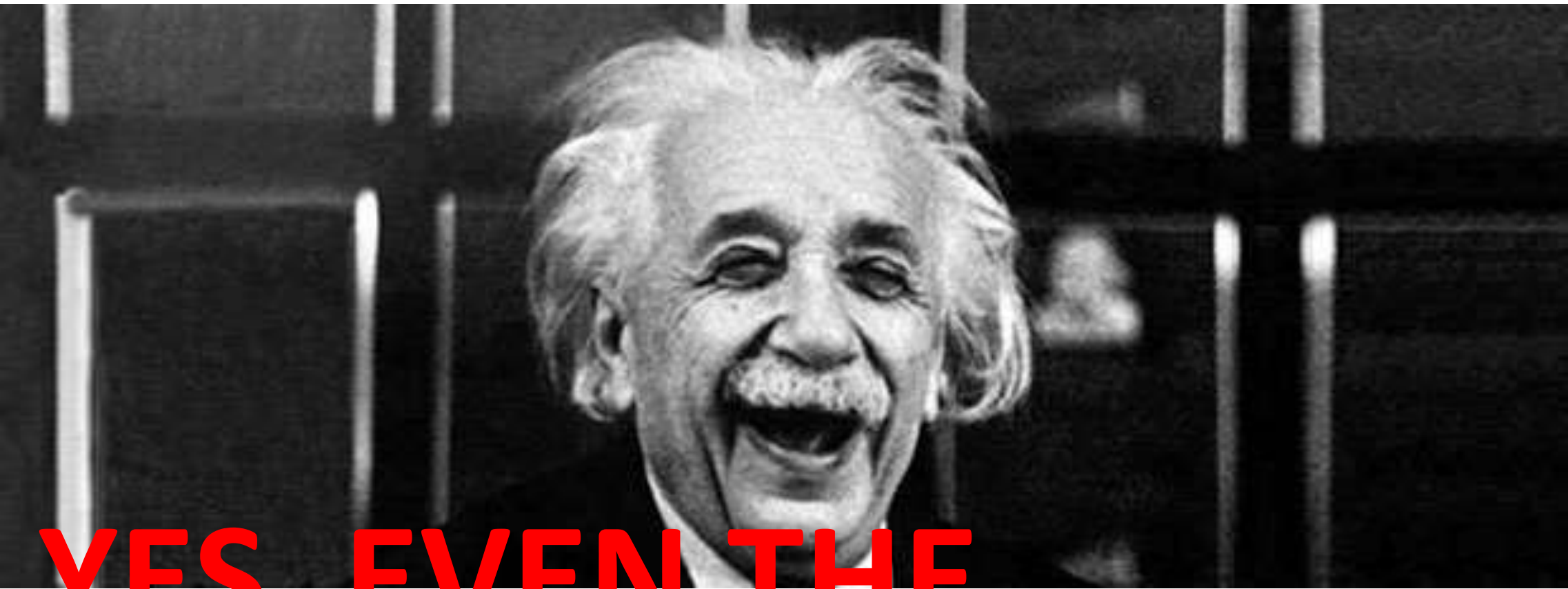


**NOT ONLY...
NOT ANYMORE?**

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WE OPEN THE WAY



**YES, EVEN THE
CONTRACTORS!**

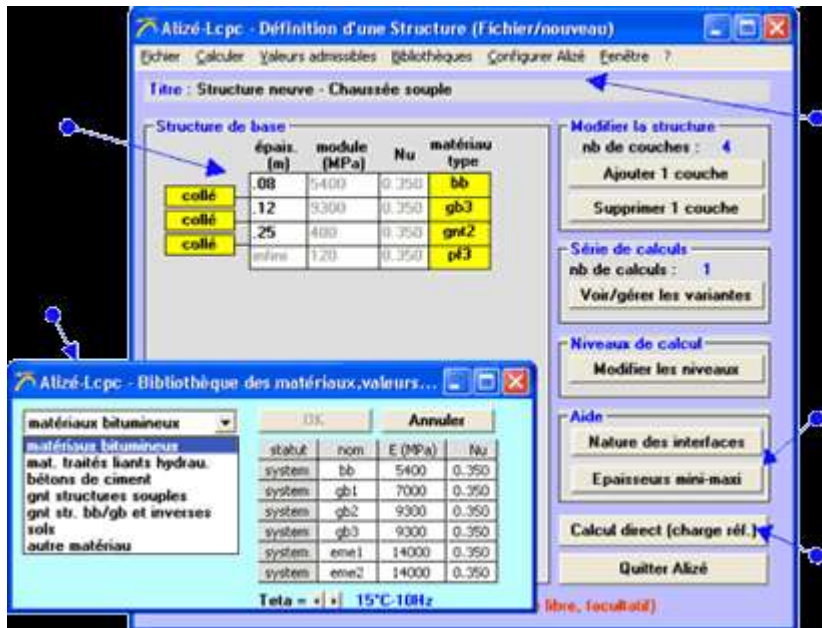


**CST: 0,8% TOTAL REVENUE
IN 2016**



III. NEED FOR CLEAR RULES (EXISTING) AND PROFESIONNAL OWNERS

CLEAR RULES AND METHODS ARE REQUIRED



ALYZE DESIGN TOOL USED IN MORE THAN 110 COUNTRIES, AND RECOGNIZED BY COURTS & EXPERTS

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PERFORMANCE (*AND COST EFFICIENT*) ORIENTED NORMS AND RULES



CE

WE NEED FOR THAT:

- **GOOD OWNERS,**
- **GOOD SUPERVISORS,**
- **SERVICE ORIENTED PROJECTS,**
- **CREDIT GIVEN TO INNOVATION.**

IV. BENEFITS OF ALTERNATIVE SOLUTIONS IN EXAMPLES

INTRINSIC CHARACTERISTICS OF A MATERIAL (ASPHALT)

$$E = \frac{\textit{stress}}{\textit{strain}} = \frac{F/A}{\Delta l/l_0}$$



SOLUTIONS EXIST !

BEST COSTS & SERVICE SOLUTIONS

RUFLEX®

NFP 98-150, from 1992

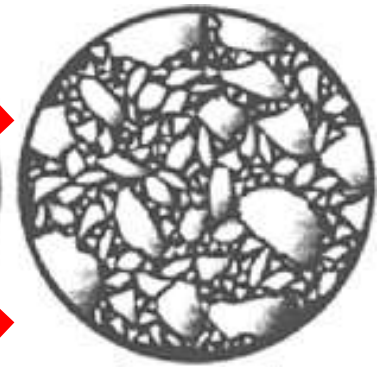
- Thickness 3 to 5 cm, 0/10 or 0/14,
- **5,4%** bitumen (PMB),
- Often discontinuous formulas,
- Costs reduction,
- Good skid resistance,
- Users' comfort.



SMA



Stone Matrix
Asphalt
SMA



Conventional
Hot Mix Asphalt
HMA

SPECIFIC PRODUCTS & SMART ALTERNATIVE SOLUTIONS:

TOULOUSE AIRPORT EXAMPLE

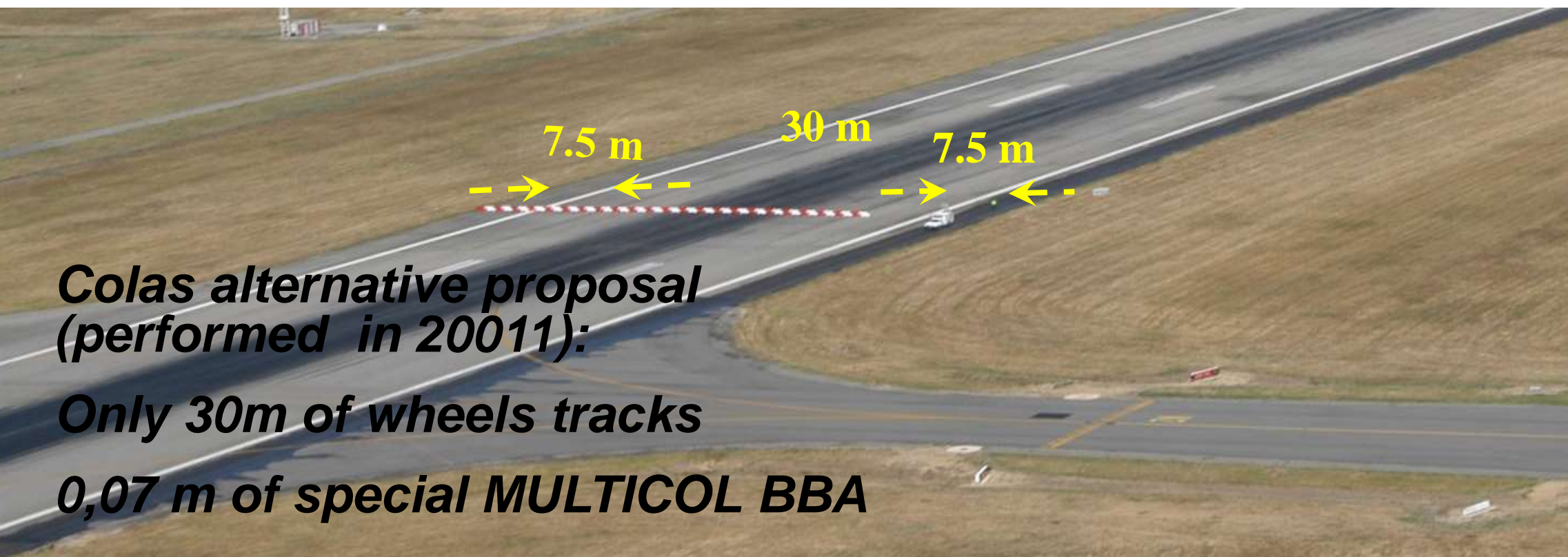


Airbus A380

Take off weight: 560 t Fuel: 248 t (295 000 l)
Load per wheel: 28,6 t Tyre pressure: 15,4 bars
Runway length 4 200 m ; width 60 m

Basic solution:

- Milling of existing runway
- Paving new structure:
 - 0,06 m BBA (aeronautical asphalt – UE normed)
 - 0,12 m EME (high modulus asphalt)



***Colas alternative proposal
(performed in 20011):***

Only 30m of wheels tracks

0,07 m of special MULTICOL BBA

Multicol:

- Very high performance mix,
- Dedicated to high & aggressive trafic,
- Product entering in the public testings & research protocols:

Airbus-PEP, FAA-NAPTF, HTPT (High Tire Pressure Test)

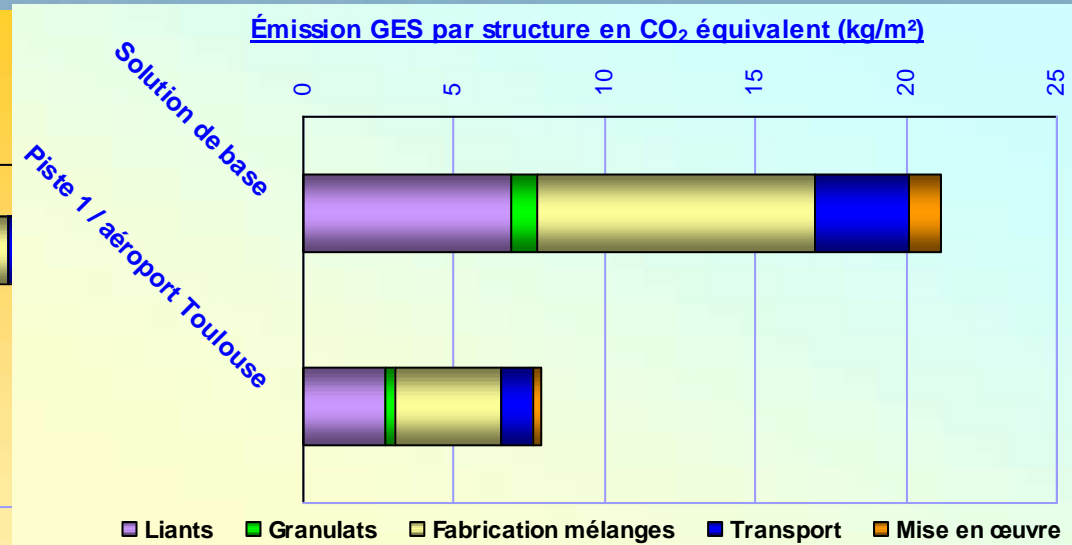
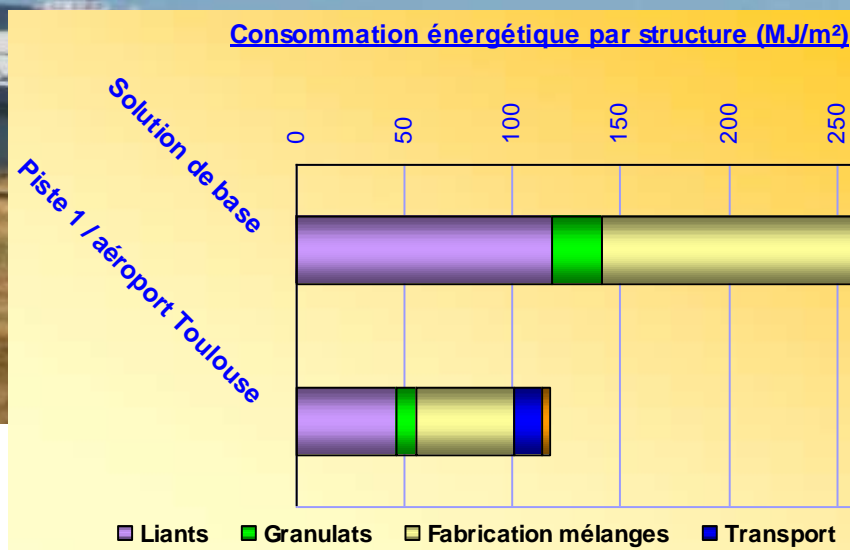


Benefits:

Capex savings > 50% initial budget,

Reduction of runway closing times (70%),

Energy consumption & carbon footprint reduced up to 60%



SWITZERLAND: LEOPARD ARMORED VEHICULE TEST SITE

- HEAVY TRUCKS: 50 PL/J
- LEOPARD & ROLLING GUNS M109 : 35 / DAY
- MAX WEIGHT: 57 T

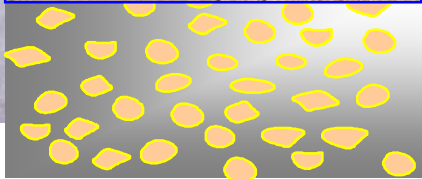
SERVICE DURATION: 20 YEARS

ROAD TEMPERATURE: -25 TO 80 °C

- BASIC SOLUTION:



0,20 m Concrete A



0,20 m Concrete B

Alternative solution done in 2009, in Multicol

Multicol wearing course : 0,05 m

Existing slabs

Fiber glass based
Géogrid

COLAS

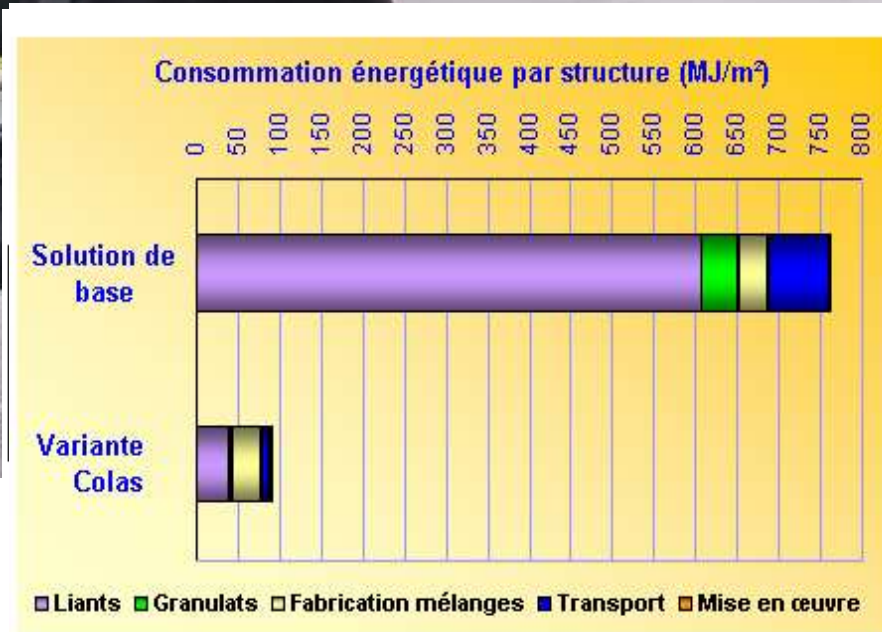
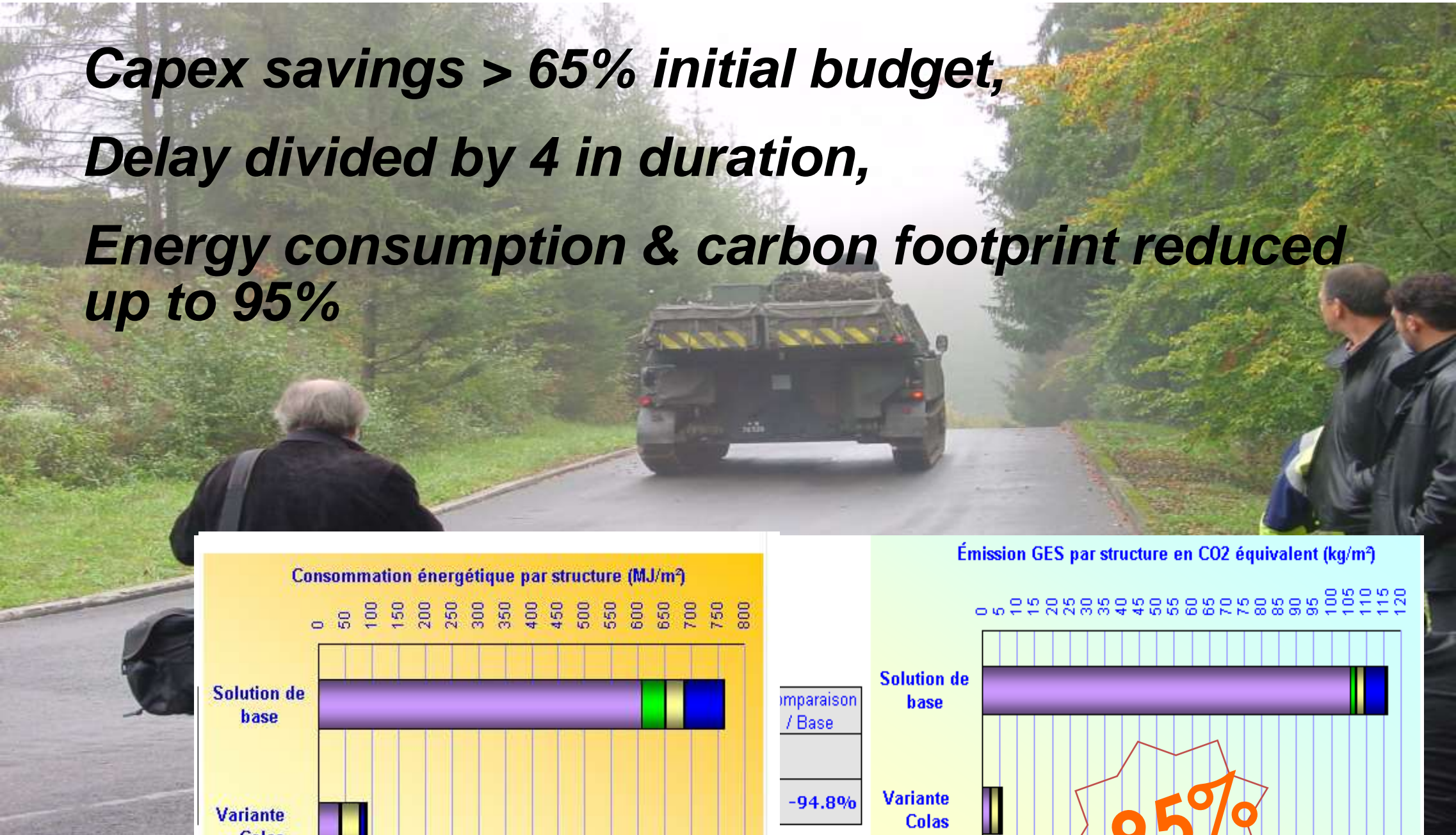
WE OPEN THE WAY

Benefits:

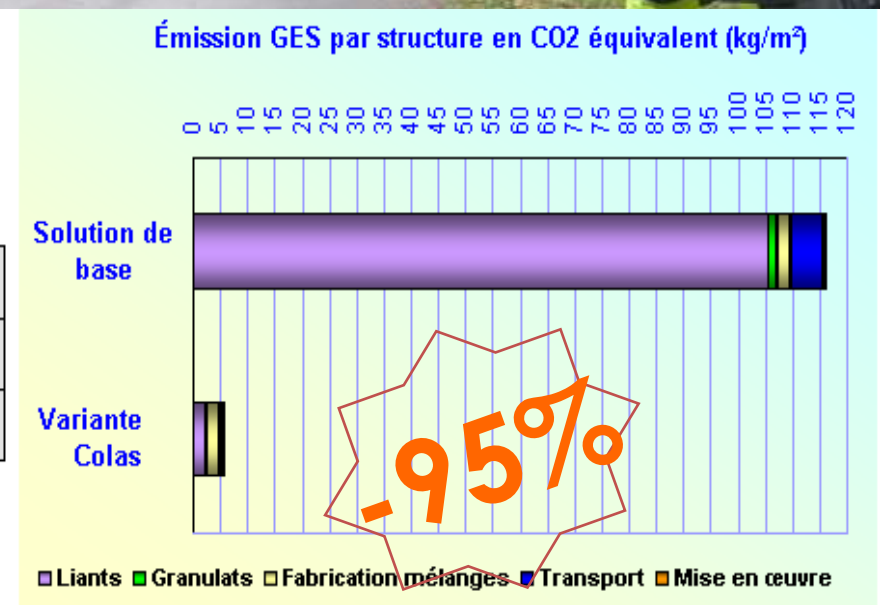
Capex savings > 65% initial budget,

Delay divided by 4 in duration,

Energy consumption & carbon footprint reduced up to 95%



comparaison / Base
-94.8%



-95%



AMAZON IN POLAND

LOGISTIC PTF WROCLAW

- **HEAVY TRUCKS: 750 PL/J**
- **SERVICE DURATION: 10 YEARS**
- **7 /7, 24H/24H**
- **BASIC SOLUTION HEAVY ROADS**
 - **AC 11, PMB, 0,05 M**
 - **AC 16, 50/70 0,05 M**
 - **ACL 22S, 50/70 0 1 M**
 - **GRAVEL CEMENT 0,2 M**
 - **CRUSHED AGG, 0/32 0,15 M**

ALTERNATIVE SOLUTION PERFORMED IN 2016

- AC 11, BETOFLEX, PMB 0,06 M
- AC 16, OPTIBASE, 20/30 0,1 M
- CRUSHED AGG, 0/32 0,15 M

SIMILAR APPROACH ON LIGHT ROADS, PARKINGS & DOCKING AREAS

-16%

on selling price



FRENCH HIGH SPEED TRAIN, COVERING LAYER IN ASPHALT

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V. BRAKE THE BARRIERS TO PROGRESS: SET OF FOREIGN COUNTRIES EXPERIENCES

HOW TO PROMOTE ALTERNATIVE SOLUTIONS?

1. **Benchmark** from your colleagues (Jasper support, bilateral cooperation, associations...),
2. **First use good old recipes** (ex: free use of RAPS less than 10% asphalt mixes),
3. **Make innovation test sites** (organized by tender) for new techniques,
4. **Open tenders** to basic alternative solutions (base course...?),
5. Take in to account **other criteria in the tenders** (schedule, environment, disturbances...),
6. **Train your team(s).**



SOME OWNERS ARE USED TO, FOR LONG...



Alternative techniques to promote maintenance

Savings sharing



International Federation of Consulting Engineers (FIDIC)



Alternative authorized by default



BRAKE THE BARRIERS...

**Only 1 company can do it?
And?**

Here, it does not work...

We never do like that...

I do not know...



BRAKE THE BARRIERS...

With clear rules & limits !



VI. CONCLUSION

- ✓ **Most existing technology & techniques are already used in many countries,**
- ✓ **Lots of common sense, and entrepreneurship,**
- ✓ **The financial, public and environmental pressure is anyhow coming,**
- ✓ **Politics have to push to break barriers, and engineers too,**
- ✓ **We need smart, demanding & professional owners,**
- ✓ **The road industry must move more ahead.**





THANK YOU

Guillaume BASTIEN

