The ISSUE foresight workshop Molise January 2013

Five steps to foresight!

1. Adopt a robust frame of reference to describe our field of interest
2. Identify our current assumptions about where changes might happen and what uncertainties these generate
3. Identify the key factors likely to induce change over the next 10 -20 years
4. Judge where these change factors could impact on our opening assumptions and with what outcomes
5. Identify discrete futures from the set of outcomes associated with different combinations of change factors

2 Synthesis: Generating issues

The change statements you submitted were grouped into “issue clusters” within each of the four domains.

We asked how important and how likely you considered each one (out of 5) in next 10 years:

The top 7 achieving a score of more than 2.8 out of 5 were:

1.4 More want to travel more
1.7 Demand for better informed travel choice
2.4 Cities grow bigger
2.5 Improved network utilisation
4.1 Improved logistical supply systems
3.6 Low emission vehicle use grows /4.3 Adoption of low emission vehicles

Demand issues	1.1 fewer travel to work 1.2 social journeys dominate 1.3 growing underclass denied mobility 1.4 more want to travel more 1.5 older and infirm travel needs diverge from others 1.6 fewer shopping trips 1.7 demand for better informed travel choice
Network issues	2.1 less travel outside of city 2.2 more local point to point services 2.3 areas excluded from transport access 2.4 cities grow bigger 2.5 improved network utilisation 2.6 networks differentiated by speed and service 2.7 suburbanization of jobs
Supply issues	3.1 shared vehicle use/rental grows 3.2 multiple local mobility services begin 3.3 multi mode mega service providers develop 3.4 smart virtual service and network operators emerge 3.5 unusual mobility solutions introduced 3.6 low emission vehicle use grows
Performance issues	4.1 improved logistical supply systems 4.2 reserved space for green transport 4.3 adoption of low emission vehicles 4.4 green tech networks 4.5 smart environments

Which outcomes were more plausible?

With each issue were several outcomes which you associated with that issue

You said which were the MOST plausible and the LEAST plausible outcomes. (at least 10 and a margin of 5 and marked x or y)

These are in BLACK CAPITALS in the 4 sets of issue tables
(but we have not indicated which is which!)

The most uncertain outcomes (score of >10 but no majority)
are in RED CAPITALS in the tables

1. DEMAND ISSUES AND OUTCOMES

1 UNCERTAIN OUTCOME	2 OUTCOME X	3.ISSUE STATEMENT 1.1-1.7	4. OUTCOME Y	5 UNCERTAIN OUTCOME
MORE DIVERSE WORK JOURNEYS	PEOPLE MOVE CLOSE TO WORK	1.1 FEWER TRAVEL TO WORK	INCREASING WORK FROM HOME	
VIRTUAL COMMS INCREASE N0. OF VISITS		1.2 SOCIAL JOURNEYS PREDOMINATE	LOCALISED PRODUCTION REDUCES SUPPLY LINKS (NEEDS)	IMMERSIVE SOCIAL NETWORKS REPLACE VISITS
RURAL AREAS HAVE WORSE LINKS	RURAL AREAS DEPOPULATE MORE	1.3 GROWING UNDERCLASS DENIED MOBILITY	DEPRIVED SUBURBS FORM	OLD UNABLE TO DRIVE, HAVE POOR MOBILITY
	PEOPLE HAVE LESS TIME TO TRAVEL	1.4 MORE WANT TO TRAVEL MORE	DEMAND FOR MORE COMFORT/EASY TRAVEL	
	OLDER MOVE TO COUNTRY	1.5 OLD & INFIRM TRAVEL NEEDS DIVERGE	OLDER NEED POINT TO POINT SERVICE	
	FEWER CONCENTRATED TRIPS TO MEGA MALLS	1.6 FEWER SHOPPING TRIPS SCORE	ONLINE SHOP/BANKING = FEWER OUTLETS MORE HOME DELIVERY	
	MORE COMPLEX JOURNEYS TO MORE REMOTE FRIENDS	1.7 DEMAND FOR BETTER INFORMED TRAVEL CHOICE	MORE DEMAND FOR SAVING TIME SEARCHING FOR SPACE/CONNECTIONS	*MORE CAR POOLING/ PAY AS YOU GO USE OF CARS*

The deeper the colour of the issue the more significant you scored it

2 NETWORK ISSUES AND OUTCOMES

1 UNCERTAIN OUTCOME	2 OUTCOME X	3.ISSUE STATEMENT	4. OUTCOME Y	5 UNCERTAIN OUTCOME
LOCAL AIR SERVICE LINKS WILL GROW	GREATER USE OF WATER TRANSPORT	2.1 LESS TRAVEL OUTSIDE CITY	LONG DISTANCE TRAVEL SHIFTS TO RAIL	
INCREASE IN INTER SUBURBAN FLOWS	LOCAL CAR TRIPS DECLINE	2.2 MORE LOCAL POINT TO POINT SERVICES SCORE 2.29	LOCAL BUS/BIKE SERVICE LINKS	*Fewer long distance hubs /More sub regional supply links*
	" POOR COMMUNITIES DEPRIVED OF MOBILITY"	2.3 AREAS EXCLUDED FROM TRANSPORT ACCESS SCORE 2.1	CITY CENTRES EXCLUDE CAR TRAFFIC	PREMIUM SUSTAINABLE "GREEN" SERVICES
Sub regional centres grow at cost of centre	OLDER CITIES REPOPULATE	2.4 CITIES GROW BIGGER SCORE 3.28	URBAN SPRAWL ACCELERATES	PUBLIC TRANSPORT NETWORKS EXTENDED
"INTELLIGENT" HIGHWAYS REAL TIME ACCESS CONTROL		2.5 IMPROVED NETWORK UTILISATION SCORE 3.26	BETTER INTEGRATION OF DIFFERENT NETWORK SERVICES	GREATER SUBURBAN NETWORK EXTENSION
	EXPANSION OF HIGHWAY NETWORK	2.6 NETWORKS DIFFERENTIATED BY SPEED AND SERVICE	PEAK TRAFFIC FLOWS GROW	MIXED MODE NETWORKS TO SERVE OUTER AREAS
DISPERSAL OF JOURNEY TO WORK FLOWS		2.7 SUBURBANIZATION OF JOBS	CAR USE GROWS TO SERVE OUTER AREAS	REVERSE COMMUTING GROWS ,

The deeper the colour of the issue the more significant you scored it

3 SUPPLY ISSUES AND OUTCOMES

1 UNCERTAIN OUTCOME	2 OUTCOME X	3.ISSUE STATEMENT	4. OUTCOME Y	5 UNCERTAIN OUTCOME
	ROADS BECOME LESS CONGESTED	3.1 SHARED VEHICLE USE/RENTAL GROWS SCORE 1.96	NEW PARKING NODES FOR MODAL TRANSFER	LACK OF INNOVATION PUBLIC SERVICE
	LOCAL CAR TRIPS DECLINE	3.2 MULTIPLE LOCAL MOBILITY SERVICES BEGIN SCORE 2.29	INNOVATIVE GREEN SERVICES INITIATIVES	*Informal mobility services start up*
Private funded transport networks	AUTO COMPANIES BECOME MOBILITY PROVIDERS	3.3 MULTI MODE MEGA SERVICE PROVIDERS DEVELOP SCORE 1.85	SERVICE/MODE INTEGRATION	HIGH SPEED REGIONAL RAIL
Road charging privatised & Automated route networks	DRIVERLESS CARS AND TAXIS	3.4 SMART VIRTUAL SERVICE & NETWORK OPERATORS EMERGE SCORE 2.38	INTEGRATED TICKETING /PAYMENT SYSTEMS ADOPTED	CITY MOBILITY APPS PROVIDED TO ALL
		3.5 UNUSUAL MOBILITY SOLUTIONS INTRODUCED	BIKE ONLY ROUTES	More air services /Local drone surveillance
MICRO PERSONAL (TINY) E CARS ADOPTED/	NETWORK OF H2 FUEL STATIONS	3.6 LOW EMISSION VEHICLE USE GROWS SCORE 3.28 4.3 ADOPTION OF LOW EMISSION VEHICLE TECH SCORE 2.96	E recharging networks for City E car fleets (PUBLIC TRANSPORT LEADS IN LOW EMISSIONS USE)	BUSES GO ELECTRIC RAPIDLY *Gas guzzlers taxed off road*

The deeper the colour of the issue the more significant you scored it

4. PERFORMANCE ISSUES AND OUTCOMES

1 UNCERTAIN OUTCOME	2 OUTCOME X	3.ISSUE STATEMENT	4. OUTCOME Y	5 UNCERTAIN OUTCOME
	LONGER LIFE PRODUCTS LIMIT SHOP TRIPS	4.1 IMPROVED LOGISITC SUPPLY SYSTEMS SCORE 2.8	MORE SMART HOME DELIVERY SYSTEMS	
	RESERVED HIGHWAY LANES FOR E VEHICLES	4.2 RESERVED SPACE FOR GREEN TRANSPORT SCORE 2.31	CITY CENTRE BAN ON CARS INCREASED POLLUTION TAXES	
Rapid transit networks develop	AUTOMATED HIGHWAYS OF MPV'S	4.4 GREEN TECH NETWORKS SCORE 2.24	ROUTE/TRIP OPTIMISATION INFORMATION SYSTEMS	*Managed access road networks charging by time/distance/flow*
	URBAN FARMING	4.5 SMART ENVIRONMENTS SCORE 2.09	CITY LOCATION BASED TRACKING APPS FOR ALL	POLLUTER PAYS IN REAL TIME SYSTEMS

The deeper the colour of the issue the more significant you scored it

3. The change factors

We asked you what you think might be the most important factors likely to induce change in future mobility in our urban regions.

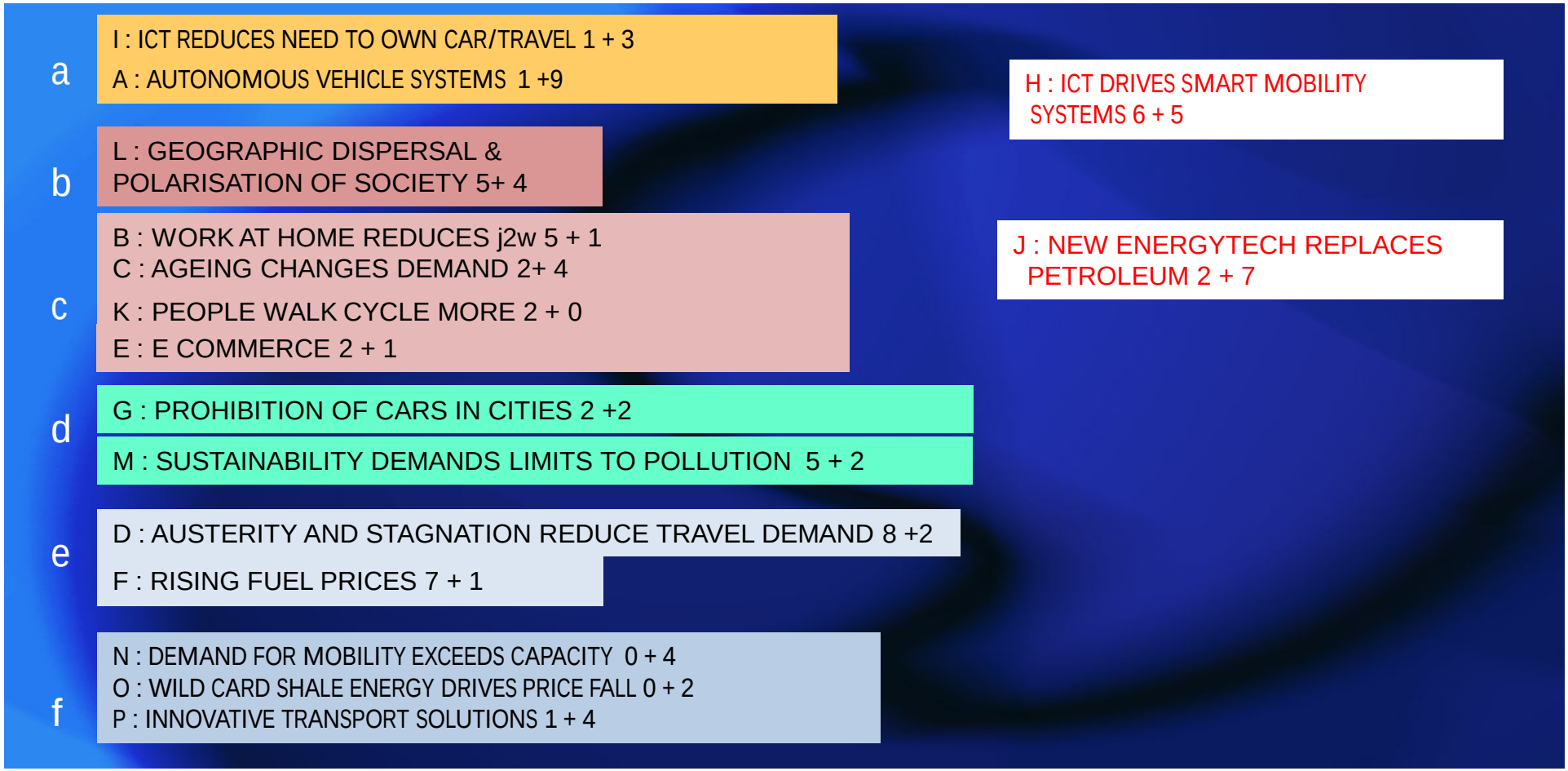
We asked you to suggest at least one factor likely to cause change in the next 10 years

and another over 20 years from now.

CONSOLIDATED CHANGE FACTORS
Number of times cited for 10 : 20 year horizon

a : Autonomous vehicle systems 1 +9
b : Work at home reduces j2w 5 : 1
c : Ageing changes demand 2: 4
d : Austerity and stagnation reduce travel demand 8 :2
e : E commerce 2 : 1
f : Rising fuel prices 7 : 1
g : Prohibition of cars in cities 2 : 2
h : ICT drives smart mobility systems 6 : 5
i : ICT reduces need to own car/travel 1 : 3
j : New energy tech replaces petroleum 2 : 7
k : People walk cycle more 2 : 0
l : Geographic dispersal & polarisation of society 5 : 4
m: Sustainability demands limits to pollution 5 : 2
n : Demand for mobility exceeds capacity 0 : 4
o : Wild card shale energy drives price fall 0 : 2
p : Innovative transport solutions 1 : 4

CHANGE FACTOR GROUPS



1 UNCERTAIN OUTCOME	2 OUTCOME X I	3.ISSUE STATEMENT	4. OUTCOME Y	5 UNCERTAIN OUTCOME
MORE DIVERSE WORK JOURNEYS	PEOPLE MOVE CLOSE TO WORK	1..1 FEWER TRAVEL TO WORK SCORE 2.43	INCREASING WORK FROM HOME	
VIRTUAL COMMS INCREASE N0. OF VISITS		1.2 SOCIAL JOURNEYS PREDOMINATE	LOCALISED PRODUCTION REDUCES SUPPLY LINKS (NEEDS)	IMMERSIVE SOCIAL NETWORKS REPLACE VISITS
RURAL AREAS HAVE WORSE LINKS	RURAL AREAS DEPOPULATE MORE	1.3 GROWING UNDERCLASS DENIED MOBILITY	DEPRIVED SUBURBS FORM	OLD UNABLE TO DRIVE, HAVE POOR MOBILITY
	PEOPLE HAVE LESS TIME TO TRAVEL	1.4 MORE WANT TO TRAVEL MORE SCORE 3.2	DEMAND FOR MORE COMFORT/EASY TRAVEL	
	OLDER MOVE TO COUNTRY	1.5 OLD & INFIRM TRAVEL NEEDS DIVERGE	OLDER NEED POINT TO POINT SERVICE	
	FEWER CONCENTRATED TRIPS TO MEGA MALLS	1.6 FEWER SHOPPING TRIPS SCORE 2.3	ONLINE SHOP/BANKING = FEWER OUTLET HOME DELIVERY	
	MORE COMPLEX JOURNEYS TO MORE REMOTE FRIENDS	1.7 DEMAND fOR BETTER INFORMED TRAVEL CHOICE SCORE 3.3	MORE DEMAND FOR SAVING TIME SEARCHING FOR SPACE/CONNECTIONS	*MORE CAR POOLING/ PAY AS YOU GO USE OF CARS*
LOCAL AIR SERVICE LINKS WILL GROW	GREATER USE OF WATER TRANSPORT	2.1 LESS TRAVEL OUTSIDE CITY	LONG DISTANCE TRAVEL SHIFTS TO RAIL	
INCREASE IN INTER SUBURBAN FLOWS	LOCAL CAR TRIPS DECLINE	2.2 MORE LOCAL POINT TO POINT SERVICES SCORE 2.29	LOCAL BUS/BIKE SERVICE LINKS	*Fewer long distance hubs /More sub regional supply lik*
	" POOR COMMUNITIES DEPRIVED OF MOBILITY"	2.3 AREAS EXCLUDED FROM TRANSPORT ACCESS SCORE 2.1	CITY CENTRES EXCLUDE CAR TRAFFIC	PREMIUM SUSTAINABLE "GREEN" SERVICES
Sub regional centres grow at cost of centre	OLDER CITIES REPOPULATE	2.4 CITIES GROW BIGGER SCORE 3.28	URBAN SPRAWL ACCELERATES	PUBLIC TRANSPORT NETWORKS EXTENDED
"INTELLIGENT" HIGHWAYS REAL TIME ACCESS CONTROL		2.5 IMPROVED NETWORK UTILISATION SCORE 3.26	BETTER INTEGRATION OF DIFFERENT NETWORK SERVICES	GREATER SUBURBAN NETWORK EXTENSION
	EXPANSION OF HIGHWAY NETWORK	2.6 NETWORKS DIFFERENTIATED BY SPEED AND SERVICE	PEAK TRAFFIC FLOWS GROW	MIXED MODE NETWORKS TO SERVE OUTER AREAS
DISPERSAL OF JOURNEY TO WORK FLOWS		2.7 SUBURBANIZATION OF JOBS	CAR USE GROWS TO SERVE OUTER AREAS	REVERSE COMMUTING GROWS ,
	ROADS BECOME LESS CONGESTED	3.1 SHARED VEHICLE USE/RENTAL GROWS	NEW PARKING NODES FOR MODAL TRANSFER	LACK OF INNOVATION PUBLIC SERVICE
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Road charging privatised & Automated route networks	DRIVERLESS CARS AND TAXIS	3.4 SMART VIRTUAL SERVICE & NETWORK OPERATORS EMERGE	INTEGRATED TICKETING /PAYMENT SYSTEMS ADOPTED	CITY MOBILITY APPS PROVIDED TO ALL
		3.5 UNUSUAL MOBILITY SOLUTIONS INTRODUCED	BIKE ONLY ROUTES	More air services /Local drone surveillance
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	LONGER LIFE PRODUCTS LIMIT SHOP TRIPS	4.1 IMPROVED LOGISITC SUPPLY SYSTEMS	MORE SMART HOME DELIVERY SYSTEMS	
	RESERVED HIGHWAY LANES FOR E VEHICLES	4.2 RESERVED SPACE FOR GREEN TRANSPORT	CITY CENTRE BAN ON CARS INCREASED POLLUTION TAXES	
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	URBAN FARMING	4.5 SMART ENVIRONMENTS SCORE 2.09	CITY LOCATION BASED TRACKING APPS FOR ALL	POLLUTER PAYS IN REAL TIME SYSTEMS

Impacts matrix :

for

Driver set I

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Impacts matrix :

for

Driver set II

The Groups of change factors

We have named the six factor groups a – f . There is one technology , two economic, one political and two social factors :

a. Autonomous systems emerge
b. Population disperses &residential location polarises
c. People make more local trips
d. Sustainability drives emission limits
e. Fuel price/austerity limit mobility
f. Let it rip- cheap fuel rules

The drivers of change, sets I & II

SET I (CDE)

The primary driver is the rising cost of fuel , economic austerity and drive for sustainability limits on car access, lead to reduced travel demand and encourage a shift in travel behaviour and increase dependence on smarter public transport services, using new energy technologies

SET II (ABF)

The primary driver is the application of ICT to manage smart network access for all vehicles, with more convenient use of cars on demand, encouraging use of new energy technologies and autonomous systems to cater for growth of individual mobility on demand at an affordable price