

ISUFT 2008, Arlington, Texas, March 20-22, 2008
5th International Symposium on Underground Freight Transportation by Capsule
Pipelines and Other Tube/ Tunnel Systems

FOODTUBES

“The transport industry Internet – Really Fast Food”.

ENERGY SAVING PIPELINE CAPSULE GOODS TRANSPORT

Noel Hodson

PROPOSITION: 92% of the energy used to transport food and other supermarket goods, is spent on moving the vehicles; only 8% is used to move the goods. FOODTUBES proposes scientific research of the concept that by replacing heavy road vehicles (HGVs) with lightweight cargo-capsules running in pipelines, directly to and from loading bays in shops, distribution, processing and food-production centres – i.e. by changing the existing logistics industries - that billions of litres of fuel and up to 18% (up to 4 billion tonnes) of the CO₂ added to the air each year, would be saved. No pipeline-capsule system on this scale exists. This project will create a new energy-efficient industry and reduce the costs of food and other goods. The project requires US\$2 million for Research & Development and innovation.

Summary visual – 4 slides: http://www.noelhodson.com/index_files/Foodtubes-All-in-One.ppt

120,000 Homes – City Example – 41 slides: http://www.noelhodson.com/index_files/feb08foodtubes-croydon-v5.ppt

EC Research Proposal: http://www.noelhodson.com/index_files/Foodtubes26JUN07PART-B-V12c.pdf

Summary Targets: http://www.noelhodson.com/index_files/foodtubes_targets.xls

Calculations, Logic and Outline: http://www.noelhodson.com/index_files/foodtubes9DEC06.xls

Financial “What-If?” Project Plan: http://www.noelhodson.com/index_files/ftubesfinancials_28Sep07_v15.xls

Pipeline Symposium Texas: http://www.noelhodson.com/index_files/isuftmarch2008foodtubes.pdf

State of the Art report: http://www.noelhodson.com/index_files/StateoftheArt-foodtubes2FEB07.htm

Project Team: http://www.noelhodson.com/index_files/foodtubes-project-team.htm

Sponsoring Organizations: http://www.noelhodson.com/index_files/foodtubes-sponsors.htm

Commercial Construction Consortium: http://www.noelhodson.com/index_files/foodtubes-CCC.htm

Home Page - Main Proposal: http://www.noelhodson.com/index_files/foodtubes-main-proposal-links.htm

Main Website: <http://www.noelhodson.com>

NOEL HODSON: I believe in always working from the known to the unknown. I am not an engineer or scientist. My profession, skills and background for over 30 years, are in creating practical business solutions and plans, usually newly proposed businesses, for fund-raising, and this paper is written from that viewpoint. Please be patient when faced with my numbers – and try not to drift into a trance, as I and an average 90% of people do, so psychologists report, when we are exposed to a page of numbers.

I became interested in efficient transport in 1978 through 1980 when I was MD of Mallalieu Cars, Abingdon, UK, famous for handcrafted, exotic Bentley Specials. We collaborated with William Towns, the Aston Martin car designer, who had invented Microdot – a six foot long, 3 seater, petrol/electric hybrid concept prototype. We worked with many famous car and battery makers, aiming for the first, luxury, limited-edition, 100mpg, 100mph car; targets which our 50 engineers got very close to; and in the process I got hooked on Minimum-Weight-Vehicles (MWVs) fuel efficient, green-transport issues.

From a business perspective I believe FOODTUBES is a practical and profitable proposition – it is therefore finance-able. All that you pipeline engineers and scientists have to do ...is to make it work.

My home base is in Oxford, England – so, still working from the known to the unknown, the “What-If?” Project Planning Tool I have drafted for FOODTUBES and quote from here, is mostly based on UK data.

UK DATA: The UK feeds a population of about 62 million, living in about 23 million homes in an area of 93 thousand square miles, nearly 3 times smaller than Texas and with 3 times the population – so about 9 times more densely populated.

All these closely packed, patiently queuing subjects (we are the Queen’s Subjects – not Citizens) are watered daily, cheaply and quietly, by pipeline, and an equal amount of foul water is piped out. We get our daily energy needs and fuel by pipeline or by wires. Our daily food needs, just as vital as water and fuel, however, are not delivered by pipeline. FOODTUBES wants to change that.

HGVs - HEAVY GOODS VEHICLES: Where I live, in the UK’s South-East, around Greater London, is one of the most densely populated regions on the planet, where road and rail space is limited and transport planning is a thankless, political black-art rather than a scientific discipline. 25% of all commercial road and rail traffic carries food; BUT when the food is prepared, processed and packaged ready for sale in the supermarkets, and when it is carefully stacked and spaced so that it will not be crushed in the lorries that carry it, those lorries are

mostly transporting air. 92% of the weight transported is not the food we need – but is the weight of the lorries, vans, fuel tanks, drivers, engines, gearboxes, axles, wheels, containers and the lorry driver’s cucumber sandwiches, triangular, with the crusts neatly cut-off – for his/her afternoon tea.

Imagine a six-axle truck carrying a steel container 35 feet long, 8 feet wide, 8 feet high, that’s 83 cubic yards – filled to the brim – with packets of cornflakes – thundering along a freeway. What do the container, tractor, trailer, fuel and driver weigh? And what do the cornflakes weigh? The vast majority (92%) of the weight being transported is the vehicle – not the food (8%).

Can we make a better job of it?

LINEAR INDUCTION: At the FOODTUBES project, we started out with the idea of pneumatic powered capsules – but when I discussed the need for capsule speed and unobstructed pipes with one of our consultants, physics professor Fred Taylor of the Clarendon Laboratories Oxford, he immediately recommended that we investigate linear-induction as the driver – and – to reduce friction on bearings and the pipes, investigate suspending the capsules with magnetic levitation (Mag-Lev). We want to achieve a speed of 150 kph / 94 mph.

LIGHTWEIGHT-CAPSULES: The pipelines are envisaged as 1 metre diameter, conveying capsules 2 metres long. In American; the Imperial equivalents are roughly 1 by 2 yards – a cargo capacity of 1.57 cubic metres. Each capsule will be addressed front and rear with a computerised code, like an internet packet is, and weigh as little as possible – some 17 kilograms or 35 pounds. Currently we assign a life of 30 months to the capsules; though part of the thinking is to be able to use capsules as sales-displays in the shops, straight from the pipes – so with that extra low-handling cost benefit, the capsules may be more elaborate and robust – and cost more. Stood on end they are about six feet high. 30 – 50 capsules are needed to replace just one of the largest permitted road trucks (44 tonnes in Europe; 50 – 60 tonnes in the US).

TERMINALS: Food travels in many forms. From the farms, from mass processors, from specific manufacturers, as solids or liquids or powders, from packagers; chilled, deep-frozen, cooked, via distribution warehouses and hubs, to supermarkets, small shops and large restaurants. All of these locations are “terminals” on a FOODTUBE system. And FOODTUBES will not only carry food but also all suitable consumer goods, as are stocked at supermarkets.

WEIGHT and VOLUME. To feed a nation requires a certain minimum weight of food – which has to be calculated to include the liquids we rely on - daily - and the kitchen and bathroom products we normally buy every week. Each family of, say, 3.2 persons consumes a calculable weight of food – which the transport industry has to cater for.

But the guiding principle for the food transport is not the weight. The lorries and vans that carry food have a huge overcapacity on a weight basis, and our capsules will also have a huge overcapacity for the required weight. In theory, filled with water or Coca-Cola or beer, a full capsule could weigh 1.5 metric tonnes, or 1.5 US tons. But to return to the concept of carrying Cornflakes, boxed and packaged ready for sale – an average capsule will be partially full and will carry a light payload – just as the road vehicles do. An extra advantage of capsules is that they do not have to make space for people getting inside them for loading and unloading – as vehicles do.

The main transport factor is VOLUME not weight. With all the care that needs to be taken when handling food and with the environmentally vexed question of food packaging, it is how much space the products occupy that dictates transport, handling, storing and display. For our average 3.2 person family, the volume of a week's shopping can be measured.

In the "What-If" Project Planning Tool, the variable factors are entered at around 78 lbs a week per household – or for the UK population about 155,000 tonnes of food and drinks per day. Every day of the year.

The volume or space required for this packaged shopping is somewhere around 0.7 cubic metres per person per week, which works out for the 23 million UK households at 6.2 million cubic metres per day. Every day of the year.

And the financial calculator, in EXCEL, allows these factors to be varied to suit local communities.

\$10 PER CARGO-CAPSULE: So the job of the proposed pipelines and capsules is to transport that volume of goods every day of the year at a competitive price – or people get hungry. The "What-If?" Project Planning Tool, forecasts very handsome profits, even charging as little as \$10 per capsule cargo, based on an assumed average capsule-cargo-miles journey, and an average recurrence per capsule of 3 cargo-journeys a day. Empty capsules are circulated at FOODTUBES' expense.

Calculations of the energy requirements will be based on the total weight being moved through the FOODTUBES system – of full and empty capsules – on friction; which depends on the pipeline materials and capsule bearings - and on uphill and downhill gradients. It may be cost effective to follow existing level railway and canal routes to minimise gradients, even if this extends pipe-trench distances.

Another of our consultants, Brink Weaver, an engineer and businessman who runs Pneutrans, Canada, recommends that we look at charging on a weight and distance basis. This would be a good basis if weight were the crucial factor. However, as volume is the governing factor and given that a FOODTUBES

system will operate millions of capsules every day, I am inclining more towards the One-Price-Fits-All concept.

I remember reading that it took 150 years for the Royal Mail to consider and then to change to the One-Penny-Stamp for all letters, regardless of distance or weight, which became the business model adopted by most countries. No doubt the method of FOODTUBES charging will be debated many times in the coming years.

POLYPROPYLENE PIPES: ADVANTICA, from-British Gas, and other pipeline experts recommend that we investigate using polypropylene 1 metre pipes. These have an underground lifetime of 50 years. The depreciation rate of the basic infrastructure is a critical factor in financial planning. ADVANTICA also advise that it can cost around \$5,000,000 (\$5M) per kilometer, \$8,000,000 (\$8M) per mile (at US\$2 per UK£1) to lay large diameter pipes, so Smart-Routing of the trenches and pipes to keep the distances short, is vital.

SMART ROUTING: A very difficult area of mathematics, I am told as I am no mathematician, is The Travelling Salesman Algorithms, or how to plan Smart-Routing for the capsules. Currently we envisage the system running in loops, with ring-mains and minor loops similar to water pipelines. The financial model allows for computer monitoring and control of all the capsules, allows for power engines at regular intervals (every kilometer) and for Junction Buildings at longer intervals (every ten kilometers).

RENEWABLE ENERGY SOURCE: It is hoped that the electricity required will be from new, renewable energy sources such as solar, wind and tidal, and will be a dedicated power source (like telephones) – to ensure our food keeps coming regardless of other energy crises. Pipeline cargos are famously safe – even oil at \$90 a Barrel running through wild and hostile territories, such as New York’s Central Park, is rarely hi-jacked – so with dedicated power, small capsules (compared to HGVs) and underground pipes, FOODTUBES could safely be extended to remote farmers in far-off lands, cross deserts, mountains, rivers and oceans and carry small but vital food crops and specialist products – safely and far more cheaply than air or other shipment.

ROADS VERSUS PIPES: A European supermarket environmental manager thought about FOODTUBES for a moment and then she launched an attack on it. “Have you thought of the environmental costs of laying the pipes? ...It will ruin the countryside – And the road system is already there – Have you worked out the Carbon Footprint of the civil engineering?”

I came back with cobbled together figures of the damage HGVs (heavy goods vehicles) do to our roads; of the environmental costs of making the HGVs, of the fuel they use and of road repairs. But I knew I was being unconvincing. It was an hour later that it came to me that planting miles of polypropylene pipes underground for 50 years or more actually locks away masses of oil (carbon) that

would otherwise be out in the environment. And it set me thinking about a fully functioning system.

It seems, from the “What-If?” financial model that even a short run of say, 250 miles, in a well populated area, will make an extremely good, competitive business franchise for the operators.

GLOBAL STANDARDS AGENCY: We are assuming that the brilliant FOODTUBES’ pipeline experts, civil engineers, scientists and designers can draw a blueprint that will become the basis for a Global Standards Agency, and that all FOODTUBES franchises, large and small will be licensed to use these standards. As the operating companies build their networks, they will be able, like internet providers, to link networks across regions, share the use of capsules, tracking software and power sources – and service the whole world – one day.

LINKED-NETWORKS: There will doubtless be many negotiations about the transfer charges between the operating companies. But it will benefit them all to cooperate and to give and receive access rights to each other’s networks.

THE FIRST LARGE FUEL SAVING: To replace one of the largest road HGVs requires from 30 – 50 capsules. The capsules are lightweight and are from 40 – 80 times more fuel efficient for the same cargo space, as the HGV’s they replace. This is the first major fuel saving and environmental benefit.

THE SECOND AND LARGEST FUEL SAVING: The second and far larger fuel saving and huge benefit to the community is that when relieving the roads of freight traffic – both freeways and urban roads – the rest of the traffic runs more freely, takes a shorter time and burns less fuel. In the crowded UK and around most major cities, taking a few percent of vehicles out of traffic jams, frees up gridlock and saves 40% to 50% of the time and fuel used by all other travellers. (CATRAL, Paris 1997)

CREATE A NATIONAL BLUEPRINT: A FOODTUBES system for any region should therefore be carefully planned to service the terminals currently reached by road transport. By counting the lorries and vans that carry food in a region, it is possible to plan the number of capsules needed to replace them – then double that number for parked, empty and damaged capsules. To carry the food and goods the public needs, (based on cargo volume), about 200 capsules may be required per kilometer – half of which will be outside the pipes at any one time.

4 MILLION CAPSULES: In a FOODTUBES system serving all terminals (all farms and shops etc) for all the households, e.g. the UK – some 23 million homes – about 4 million capsules would circulate through about 20,000 kilometres of pipes – one-third to a half of the capsules being empty or outside the pipes.

All these estimates, taken from the financial modelling, are of course subject to rigorous research and reality testing.

STONER SOFTWARE: ADVANTICA's specialist department STONER SOFTWARE, a US team, will create a computer simulation model of such a system from the civil-engineering perspective. The two models – business and engineering - will be matched up and reconciled and peace will reign on Earth.

PROFITS OR LOSSES? - FINANCIAL EXTRACTS: Here come some of the financial figures and the variable “What-If?” factors they are based on:

Financial – the model to date can be accessed at: (needs Microsoft EXCEL)

http://www.noelhodson.com/index_files/ftubesfinancials_28Sep07_v15.xls

fTubes - Forecasts Standard units based on UK households	YEAR 1		YEAR 2		YEAR 3		
CO2 - Annual Reduction for serviced population		0.21%		2.44%		23.17%	
TRADING & PROFIT & LOSS ACCOUNT	€ 521,227	€	€ 528,560	€	€ 642,724	€	
Active pipe terminals Households Base	7,500	5,000,000	17,685	10,000,000	31,028	23,000,000	
Total Revenues	€	3,909,202,789	€	9,347,577,683	€	19,942,114,997	%T
Less: Power and Energy Costs	1,121,782,077		1,945,713,390		3,738,030,691		18.74%
Less: Depreciation & Maintenance of infrastructure.	466,132,552		718,564,256		1,384,754,293		6.9%
Less: Replacement Capsules	192,783,387		170,006,328		416,571,209		2.09%
Less: Wayleaves (ground rents etc)	885,181		1,869,530		3,935,634		0.02%
Less: Royalties & Standards Agency Licence	42,854,495		100,312,028		220,914,611		1.11%
Less: Sales & Marketing via MAJORS (Supermarkets)	21,387,129		69,864,782		133,267,501		0.67%
Less: Advertising & PR Campaigns	17,279,903		42,901,069		82,201,365		0.41%
Less: Fees & Salaries	3,993,478		15,278,414		41,270,617		0.21%
Less: Bank VISA etc collection charges	84,048,190	1,951,146,394	180,717,932	3,245,227,728	171,389,496	6,192,335,416	0.86%
Adjust - Stock of Capsules calculation		168,381,290		97,881,290		237,132,890	-1.19%
NET DIRECT INCOME	54%	2,126,437,686	66%	6,200,231,245	70%	13,986,912,472	
COSTS:							
Legal & professional fees	436,821		712,243		1,566,309		0.01%
Insurances	448,198		708,882		981,513		0.00%
Telecoms	433,407		960,594		1,077,001		0.01%
Offices - Rent, Rates, Overheads	14,077,604		61,454,234		106,183,919		0.53%
Contingency (of bankings)	291,430,048		637,421,844		880,113,809		4.41%
Office Equip & Computers	850,955		2,397,658		2,675,294		0.01%
Bank Interest & Fundraising.	245,564,098	553,241,132	80,000,000	783,655,455	290,000,000	1,282,597,845	1.45%
Profit (Loss) for the Period	40%	1,573,196,554	58%	5,416,575,790	64%	12,704,314,627	64%
ESTIMATED REDUCTION OF CARBON DIOXIDE	million tonnes	10.1	million tonnes	20.2	million tonnes	46.5	100%

The above 3 Year's forecast, partially reproduced here – is no more than a template or outline that starts to test the FOODTUBES suppositions and identifies the many variables that need to be tested through research and development. When the “What-If?” model finds consensus among all the participants, it will be used as part of the briefing to the business-planning team, who will build a fund-raising prospectus, in turn subjected to “Due Diligence” by independent accountants and lawyers. It must also match-up with the engineers’ models of a working FOODTUBES system.

A NO-BRAINER: However, as an American banker put it after just 5 minutes of learning about FOODTUBES, “It’s a no-brainer – It will obviously save costs and its not rocket science”.

...But then, he didn’t have to solve the ten thousand problems between concept and actuality. From a financial planning viewpoint however, he was, in my opinion, right.

And if a conceptual idea is seen to be ultimately profitable, then it makes the work invested into innovation, the many inventions, the problem solving and all the vexations – more worthwhile and rewarding than working on a proposal that looks as if it will cost the Earth and make a loss. Foodtubes will save the Earth and make a profit.

You can try the ever evolving “What-If?” model by going to the link above. Remember, it is not a fully fledged or tested business forecast.

Assuming that the Euro values in the EXCEL model would translate straight into US dollars (which is a reasonable working assumption) for a US built FOODTUBES system; what this snapshot shows, by the 3rd Year of operation, having grown to serve 23 million households (i.e. UK sized), is that by charging \$10 per cargo-capsule, the system does feed the population, earns revenues of \$19.9 billion, earns profits before expenses of 70%, or \$13.9 billion and establishes a business worth \$182 billion. The infrastructure capital costs (see Balance Sheet extract below) amount to \$70.4 billion before annual depreciation and maintenance costs.

The next question is “Will America build it and set the global standards before the UK, EU, China, India or Russia does?”

EXECUTIVE VARIABLES – THE WHAT-IF? FACTORS

fTubes - Executive Variables. (STANDARD UNITS ARE BASED ON UK DATA)		10th Oct 07	
NOTE - THIS "PROJECT PLANNING TOOL" OR "WHAT-IF" TEMPLATE NEEDS MONTHS OF EXPERT TEAM-WORK TO BECOME A RELIABLE BUSINESS-PLAN.			
Copyright - Noel Hodson - Oxford UK - 2007			
"FOODTUBES - THE TRANSPORT INTERNET"		Freight Fuel saved by Supermarkets (YR 3) 57% € 4,872,768,968 at retail prices	
VARIABLES - 'SAVE-AS' MASTER & COPY, THEN CHANGE GOLD/BLUE VARIABLES. E.G.		€50.00	Update 10th Oct 07
FOODTUBES - Strictly Confidential - Directors Only	Year 1	Year 1	Year 2
Profit (Loss) per Accounts	40%	€1,573,196,554	58% €5,416,575,790
Balance Sheet Check		OK	OK
CASH IN/OUT Check		OK	OK
.Dark blue Boxes are Variables. Others on SHEETS (see tabs bottom of screen).			
Revenues Banked	€2,914,300,479	Revenues Banked	€8,498,957,916
	€2.91 billion		€8.50 billion
Revenues Banked	€17,602,276,180	Revenues Banked	€17,602,276,180
	€17.60 billion		€17.60 billion
PIPELINES AT YEAR ENDS - KLMS - LIFE YEARS	50	4,721	8,192
TOTAL CAPSULES AT YEAR ENDS - LIFE MONTHS	30	1,122,542	1,775,084
Equivalent fuel/energy cost per litre	23,048,327	€1.31	€1.31
DAILY TONNES - HOUSEHOLDS (UK BASE)	88,571	23,048,327	4 kilos/day/family - incl fluids & packg
Key Driver - HOUSEHOLDS SERVED	5,000,000	served via shops	10,000,000 served via shops
Trenches & Pipes laid by the year-end			
Pipe & trench - pre-trade period - klm	1,250		
SET-UP STANDARD UNITS (PER 23m HOUSES)			
Ring-Main Trenches (per 23M households)	6,000	klm Standard Unit	UK based guess - Requires Smart-Routing plans
Pipes laid in each Ring-Main trench	2		Cheaper to put several pipes in one trench
Typical Klm of Trench for a Ring-Minor	300	klm Standard Unit	Guess based on UK geography
Ring-Minor Trenches (per 23M households)	4,000	klm Standard Unit	13 Ring-Minors eg UK
Pipes laid in each Ring-Minor trench	1		
NB- conditional messages	built by year end	built by year end	built by year end
Klms of Trenches constructed by Year End	3,419.4	klm	5,588.7 klm
Klms of pipes laid by Year End	4,721.0	klm	8,191.9 klm
			11,229.0 klm
			17,216.5 klm
LEAD/BUILDING TIME - MONTHS	pre-Trade-months	36	Months - Constructing first fully functioning pipeline loop/s.
Capsules per Klm of Pipes - Max Capsules	188	1,122,542	188 1,775,084
Empty and/or parked capsules. Average Month	35%	250,513	35% 516,601
Capsule-Journeys per day - all journeys p.a.	3	502,457,821	3 1,036,153,510
Capsule length & Gap between capsules - Metres	2	3	2 3
Max Capsule Weight (n.b. water cargo) - Tonnes	1.57		1.57
Average % filled - All capsules tonnes/day	75%	1,644,289	75% 3,390,804
Tonnes food needed/day - TIMES system	19,214	86	38,429 88
Shopping needed/day M ³ - TIMES system	1,345,000	1.2	2,690,000 1.3
INCOME/REVENUE			
			70 6,189,083
			1.0 6,187,000

The template above shows about a fifth (1/5th) of the variable or “What-If?” factors identified to date as needing research and solutions. We have calculated that our team of 20 experts needs one-and-a-half to two years to design and test a system, to be simulated by STONER SOFTWARE, and accompanied by a viable business-plan. This R&D will cost around US \$2M and will found a licensing body - Foodtubes Global Standards Agency – inspired by the structure of the Internet Standards Agency ICANN.

Like all “What-If?” models, the values of some variables are absolutely critical and affect the outcomes significantly and fundamentally, and others are very tolerant of change within a wide margin, without sabotaging a good outcome.

HOW MANY YEARS? WAR AND PEACE: If Stop-Global-Warming is the primary purpose, there would be a strong argument for installing FOODTUBES even if it cost more to daily transport food and goods. However, it doesn’t cost more, it costs far less – which logically follows from the large fuel/energy savings. I was asked by BBC Radio Oxford “How long will it be before we see FOODTUBES operating?” The answer is it depends on political will. Put on a war-footing “The war against forced migration and chaos”, inventors could design the system and civil-engineers could lay pipelines very rapidly. **EVEN IF GLOBAL WARMING WERE NOT A THREAT** – FOODTUBES will help to clean the air we breathe, reduce the cost of food and clear the roads we all use. I Imagine that this conference could give a ball-park figure for how many kilometers a top-team could lay in a month – and how many construction teams could be fielded – around the globe. For years, my brother ran a profitable US water pipe business in West Africa – until Chinese competitors arrived at one third of the price, doing the job 3 times faster. The assumptions we rely on can change shockingly - when we live in interesting times.

You can try the “What-If?” model yourselves by using the link – and if you find glitches in this early stage outline – please feed-back to me noel@noelhodson.com.

This second template panel below contains the pricing policy per cargo-capsule-journey, shown here as YEAR 1 \$7.50 – YEAR 2 \$8.50 and YEAR 3 \$10. The faded grey figures below show the price for 50 capsules – equivalent to a 44 tonne HGV. In the detailed business-plans yet to come, such comparisons will look at person-hours, loading/ unloading, government taxes, tolls, capital & maintenance etc. etc.

INCOME/REVENUE							
Profit (Loss) per Accounts		40%	€ 1,573,196,554	58%	€ 5,416,575,790	64%	€ 12,704,314,627
CAPSULE CHARGES & INCOME (VAT IGNORED)							
System Operational DAYS per Year	360						
Capsules Journeys per month (avg. of 12 months)		65,668,703		103,842,406		203,094,035	
All Capsules at the year end		1,122,542		1,775,084		3,471,693	
Solo Capsule-Cargo-journey (Ex-VAT/Sales Tax)	€ 7.50	€ 3,768,433,657	€ 8.50	€ 8,807,304,832	€ 10.00	€ 18,912,444,619	
Compare price with largest HGV 78.4 cubic metres	50	€374	€424	€499			
MAJORS (supermarkets) pay to join network. EACH	€10,000,000	€20,000,000	€100,000,000	€90,000,000			
Major Outlets & major suppliers. New MAJORS this year.	19	2	7	10	7	9	
Max Terminals - all shops, processors, farms, etc	(Source stats?)	1,200,000	All of EUROPE	1,200,000		1,200,000	
EU all possible TERMINALS (source stats?)			UK only	144,000		144,000	
Average conversion of depots into TERMINALS		0.250%		0.350%		0.450%	
TERMINALS (CUSTOMERS) /PIPE/KLM - Max Possible	2.5	11,802	max. possible terminal	20,480	max. possible terminals:	43,041	
Attrition or Churn of TERMINALS quitting contract	0.00%	4,802	1.75%	2,795	1.50%	12,014	
Depots (TERMINALS) signed-up AT THE YEAR END		7,500		17,685		31,028	
AVERAGE TERMINALS MONTH ENDS (phased)	23%	2,738	68%	14,018	57%	24,668	
Rent per capsule per year - (reality check)	per capsule year	€3,357	per capsule year	€4,788	per capsule year	€5,070	
Profit (Loss) per Accounts		40%	€ 1,573,196,554	58%	€ 5,416,575,790	64%	€ 12,704,314,627

REALITY-CHECK: This reality-check table below “Capsule rentals Income reality check” is a typical accountant’s “control-account” which recasts the figures from the underlying 500 x 36 cell matrix – each cell carrying a formula that needs to be correct – and compares them to this back-of-an-envelope summation. So far, it matches up to reality, but extreme entries in the variables will almost certainly winkle out some formula errors. If so, let me know.

Capsule rentals Income reality check.					
		YEAR 1	YEAR 2	YEAR 3	
Average month end total capsules		715,752	1,476,002	2,694,080	
Capsules empty or parked outside pipes		35%	35%	35%	
Operating capsules average month		465,239	959,401	1,751,152	
Operating days per month		30	30	30	
Capsule Journeys per day		3	3	3	
Capsule journeys average month		41,871,485	86,346,126	157,603,705	
Capsule journeys total YEAR		502,457,821	1,036,153,510	1,891,244,462	
Charge or fee per capsule journey		€ 7.50	€ 8.50	€ 10.00	
Multiply		€3,768,433,657	€8,807,304,832	€ 18,912,444,619	
Per Trading & P&L accounts (BAL-P140)		€3,768,433,657	€8,807,304,832	€ 18,912,444,619	
Difference		€ -	€ -	€ -	
Reconciliation - difference		0%	0%	0%	
NB - Differences w ith summary accounts. Accounts are capsule-cargo-journeys + other income.					
Where the above values are of capsule-rents only, multiplying simple averages.					
Charges /Fees - BILLIONS		€ 3.77	€ 8.81	€ 18.91	

THE BALANCE SHEET: forecast tells us if the model is balanced in accountancy terms – which it seems to be - and this section shows the capital required to finance a FOODTUBES franchise serving from in YEAR 1, 5M; to YEAR 2, 10M; to YEAR 3, 23M households. The settings entered here show Infrastructure Costs by the end of YEAR 3 of \$70.4 billion; a stock of short-life capsules costing \$503 million and a comfortable \$2.5 billion in the bank. The corporate value (based on 23M households) amounts to \$186 billion.

If only real businesses ran as smoothly and efficiently as this model.

	€	€	€	€	Sale value B €	€ 182.9 €
BALANCE SHEET						
Shares and accumulated profits(losses)						
Share Capital (pre-trade capital & costs)	4,556,409,856	24,556,409,856	3,256	32,556,409,856	2,676	61,556,409,856
Shares - Standards Agency R&D team	50,000,000		50,000,000		50,000,000	
	0	50,000,000	0	50,000,000	0	50,000,000
Profit & Loss Appropriation A/C		644,646,997		3,313,473,549		7,547,304,283
	Billion		Billion		Billion	
TOTAL CAPITAL	€ 25.3	25,251,056,853	€ 35.9	35,919,883,406	€ 69.2	69,153,714,139
Licences - Global Standards Agency		50,000,000		50,000,000		50,000,000
Fixed Assets - Pipes, Engines, Stations	23,306,627,598		36,394,345,340		70,422,411,469	
Depreciation to date	466,132,552	22,840,495,046	1,184,696,808	35,209,648,532	2,569,451,101	67,852,960,368
Capsules - Stock at Cost		168,381,290		266,262,581		503,395,471
Current Assets						
Cash at Bank	1,697,491,249		162,341,960		2,575,593,540	
Trade Debtors - (MONTHS)	994,902,310		1,843,522,077		4,183,360,894	
	2,692,393,559		2,005,864,037		6,758,954,434	
Current Liabilities						
Bank Overdraft	0		0		0	
Trade Creditors	185,573,732		85,007,876		157,259,659	
Corporation Taxes	314,639,311		1,526,883,868		5,854,336,475	
	500,213,043		1,611,891,744		6,011,596,134	
Net Current Assets/Liabilities		2,192,180,516		393,972,293		747,358,300
	Billion		Billion		Billion	
TOTAL ASSETS	€ 25.3	25,251,056,853	€ 35.9	35,919,883,406	€ 69.2	69,153,714,139
Pipelines - kilometres	4,721		8,192		17,216	
All Capsules - empty & full	1,122,542		1,775,084		3,471,693	
Monthly paid staff & consultants	299		417		491	
Average annual fee	€ 13,365	0	€ 36,640	0	€ 84,096	0

Planning Model copyright - Noel Hodson, 14 Brookside OXFORD OX3 7PJ, UK Tel +44 1865 760994 noel@noelhodson.com

TEXAS, AMERICA, AND THE WORLD: You might think that laying pipes, power and control systems at this rate, over three years, is beyond the capabilities of any community. And you would be right. But if Global Warming is the emergency that many scientists and politicians warn of, then switching onto a war footing might speed up normal processes. Texas has a seaboard – that will flood. Florida is barely keeping its head above water. The waves are lapping at Long Island. California burns in extreme drought. Dust bowls threaten the Mid-West. My friend in London lives in a ground floor apartment, one mile from the River Thames Estuary – just 12 feet above the estuary sea level – with about 500,000 neighbours. If underground, pipeline, capsule transport was given the resources recently spent by both our nations on the middle-east wars – then how quickly could it build the infrastructure needed to help to save the planet?

Each region that installs a FOODTUBES system will encounter different conditions affecting the costs and benefits. A big country with a low density

population – like Russia or China – will need to dig more trenches, lay more pipelines and transmit fewer cargo-capsules (which in this model is the main revenue driver). On the other hand, Russian pipeline companies will not have to negotiate with as many Local Authorities as, for example, London engineers must. So many diverse business models will emerge to suit local conditions.

CONCLUSIONS: November 2007 – At this stage, the FOODTUBES project seeks to demonstrate that in principle it will:

- 1) Win the necessary US\$2M R&D funding for its world-class team.
- 2) Save significant amounts of CO₂ and money spent on fuel and energy.
- 3) Transmit goods underground and supply a region with its food needs.
- 4) Take up to 25% of commercial traffic off the roads (and rails).
- 5) Create profitable business franchises and create 21st century jobs.
- 6) Function in viable engineering, computer-control and scientific terms.
- 7) Be supplied with dedicated, sustainable, renewable green energy.
- 8) Become the equivalent to the Internet for the global transport industry.

CONTENTS

PROPOSITION:	1
NOEL HODSON:	2
UK DATA:.....	2
HGVs - HEAVY GOODS VEHICLES:	2
LINEAR INDUCTION:.....	3
LIGHTWEIGHT-CAPSULES:	3
TERMINALS:.....	3
WEIGHT and VOLUME.....	3
\$10 PER CARGO-CAPSULE:	4
POLYPROPYLENE PIPES:	5
SMART ROUTING:.....	5
RENEWABLE ENERGY SOURCE:.....	5
ROADS VERSUS PIPES:	5
GLOBAL STANDARDS AGENCY:.....	6
LINKED-NETWORKS:	6
THE FIRST LARGE FUEL SAVING:	6
THE SECOND AND LARGEST FUEL SAVING:.....	6
CREATE A NATIONAL BLUEPRINT:	6
4 MILLION CAPSULES:.....	6

STONER SOFTWARE:7
PROFITS OR LOSSES? - FINANCIAL EXTRACTS:7
A NO-BRAINER:8
EXECUTIVE VARIABLES – THE WHAT-IF? FACTORS10
HOW MANY YEARS? WAR AND PEACE:11
REALITY-CHECK:12
THE BALANCE SHEET:13
TEXAS, AMERICA, AND THE WORLD:14
CONCLUSIONS:15