

Bevezetés

A Zöld Út nyelvvizsgarendszernek hallott szövegértés mérése 2009-ben átalakult, és a környezetvédelmi témájú szövegek mellett minden vizsgában megjelentek a saját szaknyelvre jellemző, azaz műszaki szaknyelvi témák is. Természetesen, a műszaki szaknyelvi tankönyvekben található gyakorló hanganyag, sokszor hasonló típusú feladatokkal, azonban célzottan a Zöld Út vizsgára felkészítő, műszaki témákat is felölelő hanganyag eddig nem létezett.

A mostani válogatásban első részében a Zöld Út nyelvvizsgán felhasznált, de mostanra az éles nyelvvizsgáztatásból kivont, valódi vizsgaformátumú anyagok találhatók (1-2. track). Az első anyag mintavizsga jellegű - szünetekkel, utasításokkal, a felvételek kétszeri meghallgatásra szerkesztett formájával. A második vizsgaanyag terjedelmi okokból csak egyszeri meghallgatással szerepel az audio CD-n. A vizsgaanyagok mindegyike tartalmaz 1 környezetvédelmi és 1 műszaki témájú feladatot, ahogy az a hallott szövegértés vizsgán is szerepel.

A CD további részében rádióadásokból, podcastokból származó hanganyagokat bocsájtunk közre, amikhez gyakorló feladatokat írtunk. Értelemszerűen az első két track anyaga pontosan a vizsgán megjelenő specifikációt tükrözi, míg az utóbbiak (3-12.track) kissé különbözhetnek a felvétel hossza, minősége, esetleg beszédtempó, akcentus vagy háttérzaj tekintetében, és csak egyszer szerepelnek a CD-n. A CD-n szereplő felvételek és feladatok a hallott szövegértés készségét fejlesztik, de természetesen tematikailag nem fedik le teljesen a lehetséges témák körét, a vizsgán a honlapon is feltüntetett nagy, átfogó témakörökbe tartozó bármilyen hanganyag előfordulhat.

A Zöld Út Nyelvvizsgarendszer 2017-es egynyelvűsítése óta, a feladatok utasításai mind nyomtatott formában, mind a hangfelvételen angol nyelven szerepelnek.

Mind a 14 hangfelvételhez megtalálható a leírt szöveg (tapescript), és a feladatgyűjtemény végén a megoldások is megtalálhatók.

Hogyan használjuk a hallott szövegértés feladatokat gyakorlásra?

Először érdemes az első teljes vizsgán felmérni a jelenlegi tudásunkat, hogy hol tartunk most. Hagyjuk meg a második teljes vizsgát a gyakorlás végére, hogy azon meglássuk, mennyit fejlődtünk.

Készítsük elő a gyakorló anyagok meghallgatását úgy, hogy a cím és rövid bevezetés alapján gondoljuk át, mit tudunk az adott témáról, milyen angol kifejezések jöhetnek elő a téma kapcsán. Ha a téma viszonylag ismeretlen, keressünk hozzá egy hasonló témájú angol cikket, olvassuk el, tájékozódjunk!

Oldjuk meg a feladatot kétszeri meghallgatással!

Ellenőrizzük a megoldásoknál a válaszainkat! A helyesírási hibák ellenére a választ jónak tekintjük, ha a hibás írásmód nem egy másik értelmes szót eredményezett (pl. sea-see). A válaszoknál a rokon értelmű szavakat is elfogadjuk.

Hallgassuk meg még egyszer a felvételt úgy, hogy közben **olvassuk a szöveget!**

Hallgassuk meg utoljára most a szöveg nélkül, az eredeti feladatlapot nézve. Ki tudjuk-e már hallani azokat a szavakat és kifejezéseket, amiket az első két hallásnál nem tudtunk beazonosítani?

Ha a probléma nem a hallás volt, hanem az, hogy ismeretlen szavak voltak az elvárt válaszok, akkor **nézzük meg őket a szótárban**, és tanuljuk meg őket! Ezek valószínűleg a középfokon elvárható aktív szókincs részei.

Ha még mindig nem egészen értjük a fontos részeket, **fordítsuk le a szöveget!**

Lehetséges beszéd- és íráskészség fejlesztés: **Foglaljuk össze a hallott szöveget** szóban vagy írásban!

Sokat segít még a hallott szövegértés fejlesztésében, ha a CD-n található gyakorló anyagokon kívül angol nyelvű híreket hallgatunk vagy nézünk angol vagy amerikai hírsatornákon, illetve ha az interneten angol nyelvű szakmai híreket keresünk, és az oda belinkelt videókat vagy podcastokat meghallgatjuk.

Eredményes felkészülést kívánok!

A szerkesztő

Complete exams

1. exam: Plastic Bags – Steel

Task 1

Listen to the text. Based on the text, decide if the statements are true (T) or false (F). Write your answers in the table below, according to the example (0). *Please note that if all your answers are marked as true or as false, your test will be disqualified.*

STATEMENTS	TRUE OR FALSE
0. London is planning to ban the use of plastic bags. (Example)	<i>T</i>
1. 1.6 billion plastic bags are used in London annually.	
2. One shopper uses 400 bags a year.	
3. According to a spokesman, London is already behind other cities in this issue.	
4. The British Retail Consortium supports the plan of the ban.	
5. Retailers have already promised to reduce their environmental effect by a quarter by the end of next year.	
6. According to a spokesman, shoppers should be encouraged to bring a bag with them.	
7. 92% of Londoners think plastic bags should be banned or taxed.	

Task 2

Listen to the text. Use what you heard to answer the questions with no more than 4 words each, according to the example (0).

QUESTIONS		ANSWERS
0.	Where is Bethlehem Steel? (Example)	..... In the US.....
1.	What forced the steel plant to close down? (Give 1 example!)	.....
2.	What are the buildings on the site like?	.....
3.	How many people did the plant employ?	.....
4.	Which of Richard Check's family members worked in the plant? (Give 1 example!)	.....
5.	According to Richard Check, what was the company like?	.....
6.	According to Richard Check, what was built from the company's steel? (Give 1 example!)	.....
7.	In which historical periods were they big steel suppliers?	.....
8.	What stopped in Bethlehem Steel in 1998?	.....
9.	What did the closure mean for the community?	.....
10.	How big is the polluted site around the plant?	.....
11.	How many jobs are they creating in Bethlehem now?	.....
12.	What facilities are they planning on the plant site? (Give 2 examples!)	.....
13.		.....

2. exam: Machine Sucks CO₂ – Google Phone

Task 1

Listen to the text. Based on the text, decide if the statements are true (T) or false (F). Write your answers in the table below, according to the example (0). *Please note that if all your answers are marked as true or as false, your test will be disqualified.*

STATEMENTS	TRUE OR FALSE
0. <i>The Sandia National Lab is in the USA.</i>	T
1. The new machine makes liquid fuel from CO ₂ in the air.	
2. The idea was first described in a science fiction novel.	
3. The short name of the machine is CR 5.	
4. Sandia Lab is also working on a method of burying CO ₂ underground.	
5. The new machine needs 15-20 years before used in everyday life.	
6. The method is good for producing fuel for cars rather than for airplanes.	
7. The method is proved to reduce our carbon footprint considerably.	

Task 2

Listen to the text. Use what you heard to complete the table with your notes of no more than 4 words each, according to the example (0).

Notes on Nexus One phone

The specialist has seen and*used*..... it. (0. *Example*)

Looks like a typical (1)

Similar to the iPhone in the following: (*Give 2 examples!*)

..... (2)

..... (3)

Other handsets on the market:

From Apple, Blackberry, Nokia

Things running Google's (4)

The difference:

The aspect Google (5)

Google won some of the market

It is imperative to the company's (6)

Strategy of Google, a brand (7)

There's value for them in the (8)

Data Google could know about you through your phone: (*Give 1 example!*)

..... (9)

These data are massively (10)

Now Google knows a lot about people through: (*Give 2 more examples!*)

- The search engine

- YouTube video

- (11)

- (12)

Google's ambition: to be (13)

3. recording: Smart Meter

Listen to the text. Use what you heard to complete the table with your notes of no more than 3 words each, according to the example (0).

Notes on the new electricity meter

Trial of smart meter in:(0) 5,000 homes(Example)

Technology used: (1)

Hopefully it will: - change behaviour

- (2)

According to Michael Peterson from (3):

- The display of the meter will get out of (4)

- Consumers will need in determining ways of saving.(5)

- The proportion of savings in his home: (6)

- Household appliances he could save energy on: -(7)

-(8)

- Amount of money he could save: (9)

According to Alistair Buchanan of Ofgem:

Smart meters:- improve and information (10)

- talk directly to the company

- if you have a at home, you can sell
electricity back (11)

- are expensive but consumers should have (12)

4. recording: Shipbuilding

Listen to the text. Use what you heard to complete the table with your notes of no more than 3 words each, according to the example (0).

British ship-building	
3-part series to celebrate the British <i>industrial heritage</i>	(Example)
- a year ago	(1)
- Ship-building now	
- next year	(2)
The peak years of British ship-building:	..... (3)
The time when moving images started:	..... (4)
No film about building the famous ship:	..... (5)
But a stage by stage about building the ship “Olympic”	(6)
- The various elements of building it	
- Final part:	..... (7)
- In a remarkable	(8)
Britain gave 60% of	(9)
Did very well during:	(10)
..... in the 1930s	(11)
Competitions from countries like	(12)
The programme includes:	(13)

5. recording: History of Information

Listen to the text. Use what you heard to answer the questions with no more than 5-6 words each, according to the example (0).

	QUESTIONS	ANSWERS
0.	<i>What is the name of the programme?</i> (example) :	..... <i>Discovery</i>
1.	What kind of writer is the guest of the programme?	.....
2.	What process does he describe in his book?	.....
3.	What theory did Claude Shannon work out?	.....
4.	What was Babbage's original profession?	.....
5.	What did he invent?	.....
6.	How did they improve his invention?	.....
7.	How did they create a network of this machine?	.....
8.	Who used the old system in France?	.....
9.	What happened, when the electric version of his invention appeared?	.....
10.	What game was played with the help of this instrument?	.....

6. recording: First Transatlantic Satellite

Listen to the text. Based on the text, decide if the statements are true (T) or false (F). Write your answers in the table below, according to the example (0). *Please note that if all your answers are marked as true or as false, your test will be disqualified.*

STATEMENTS	TRUE OR FALSE
0. The first Telstar satellite was launched in 1950.	T
1. It transmitted television pictures from the USA to Britain.	
2. Billions of people watched the experiment.	
3. The British host was very excited.	
4. The first picture showed a manager from an American company.	
5. Both British and American telephone companies worked on the development.	
6. The parameter of the first satellite was 75-80 centimeters.	
7. There was uncertainty about the success until the last moment.	
8. Satellite stations had to be built in three countries for Telstar.	
9. The British location was exactly on the same spot as Marconi's radio station.	
10. The Telstar saucers were put on Marconi's tall masts.	

7. recording: Scottish Recycling Plant

Listen to the text. Use what you heard to complete the table with your notes of no more than 3 words each, according to the example (0).

Scottish recycling plant	
Waste management systems in Scotland: 0. <i>old</i> (landfill) and <i>new</i> (recycling, intelligent transfer station)	
Control room: 1.....	system
origin of the system: 2.....	invention
stages of recycling:	
3. through	(to avoid dust, smell)
4., 5.	to take out moisture-
6. sitting, 7.	
8.	(sieves, fans, magnets)
materials taken out:	
9. ferrous and non-ferrous	, glass,
10....., 11. material for.....	and
solid fuel replacement.	
Out of 65,000 tons of waste –12. tons go to landfill	
Ideal, sustainable solution:	
13. no solution	
1 dirty bin , picked up 14.	
avoiding quality assurance issues: right waste into the 15.,	
organising picking up with different vehicles at different times.	
overall advantages:	
simpler, 16.	
17. as a result of investment, ratio of recycling: % compost	

8. recording: Windfarms

Listen to the text. Use what you heard to answer the questions with no more than 3-4 words each, according to the example (0).

	QUESTIONS	ANSWERS
0.	What is the British target of green energy by 2020?	..... 15%
1.	What can you expect when changing to renewable energy?	.....
2.	What kind of concept does NIMBY stand for?	.....
3.	What kind of energy was dominant in this part of Wales?	.....
4.	How many windturbines are there in this valley?	.....
5.	How does the journalist find the landscape?	.....
6.	How does he view the wind farms?	.....
7.	What might the wind turbines do to the landscape of the valley?	.....
8.	What kind of noise do the windfarms emit?	.....
9.	What advantages might they provide for a farm?	.....
10.		.....
11.		.....

9.recording: Olympics Project

Listen to the text. Use what you heard to complete the table with your notes of no more than 5 words each, according to the example (0).

Olympics Project

The state of the project 1 year before the 2012 Olympics: 0 (example)*On time , on budget...*

1. a finished building for the project:
2. John Armitt's feelings on the state of the project:.....
3. budget of Olympics:
4. Olympic park is the biggest in
5. difficulties of the Olympic project: (1 example):
6. John Armitt's previous rescue cases (1 example):
7. J. A' s degree: diploma in
8. A famous place where he worked:
9. His strength with communication:
10. Completion on time will be beneficial for sector:

10.recording: Form and Function in Architecture

Listen to the text. Use what you heard to complete the table with your notes of no more than 3 words each, according to the example (0).

theme of programme: trade-off between 0. *FORM AND FUNCTION*

comparison of	ASDA	Waitrose
main aim of design:	1.	6.
	2.	7.
less important in design:	3.	8.
shelving, isles:	4.	9.
advantage of chosen approach to design:	5.	10.

11. recording: Wheelchair map

Listen to the text. Use what you heard to answer the questions with no more than 3 words each, according to the example (0).

	QUESTIONS	ANSWERS
0.	What is the website the wheelchair map is available?	..... <i>Wheelmap.org</i>
1.	What kind of site is this?	.....
2.	How can information be updated on this site?	.....
3.	How many users have added information in the first year?	.....
4.	How many places have been included in the first year?	.....
5.	How is accessibility marked on the map?	.....
6.	What does the grey marking mean?	.....
7.	Which parts are the most difficult ones for wheelchair drivers in Berlin?	.....
8.		.....
9.	How can you narrow your search?	.....
10.	What is wheelmap for the users?	.....
11.	What sense does it help to form?	.....

12. recording: Data transfer

Listen to the text. Based on the text, decide if the statements are true (T) or false (F). Write your answers in the table below, according to the example (0). *Please note that if all your answers are marked as true or as false, your test will be disqualified.*

STATEMENTS	TRUE OR FALSE
0. The German research team showed their findings on the trade fair in Berlin.	T
1. The old Banhoff building houses an exhibition on modern technical inventions.	
2. Visitors sometimes have problems with the audio guides that can be rented.	
3. Data transfer by LED lights can provide better targeting than the audio guides.	
4. The LED data transfer method has already been fully developed and can be used in the homes as well.	
5. This method of data transfer needs newly developed equipment.	
6. The distance of the laptop from the LED light can be as much as 50 metres.	
7. Data modulation happens through switching on and off the stream of visible light.	
8. An Ethernet cable connects the receiver to the computer.	
9. This new data transfer method needs a new computer language as well.	

Tapescripts

1. exam: Plastic Bags – Steel

Text 1 – Plastic bags (1'59'')

London may soon be changing the habits of shoppers in the city and helping the environment by banning the use of the ubiquitous plastic shopping bag. Estimates are that Londoners and tourists use 1.6 billion plastic bags each year, many of which are thrown away after just one use. Shoppers may soon have to buy reusable bags in an attempt to reduce the strain on landfill sites, where the bags take 400 years to break down. Local authorities have asked the British government to ban retailers from giving away free plastic bags. A spokesman said stores should sell reusable bags and pass the money raised on to environmental projects. "As a society, we need to do far more to reduce the amount of waste we are sending to landfill and London as a city is determined to take an ambitious lead on this issue," he said.

Retailers are up in arms at the idea and have promised to fight the government to stop the ban from going ahead. The British Retail Consortium said there was no need for the ban as it would simply cause inconvenience to shoppers. A spokesman told reporters: "We think it's excessive and misguided [because] retailers are already committed to reducing the environmental impact of bags by 25 per cent by the end of next year." He was worried the ban would affect sales, saying: "If somebody is going to go into a supermarket or convenience store, it's hard to see in practical terms, unless they have brought a bag with them, how they will be able to buy more than a few items." A recent survey found 92 percent of Londoners supported a total ban on plastic bags or a tax on them.

Text 2 – Steel Transformation (2'18'')

- Bethlehem Steel was once the second-largest steel plant in the U.S. Economic troubles and foreign competition forced it to close its doors a decade ago. But now the plant is undergoing a major transformation.

The blast furnaces have been cold for a decade and the buildings that remain at this site are quiet. It's difficult to imagine today that this was once home to the second-largest steel manufacturer in the United States: Bethlehem Steel. This plant operated for nearly a century and at one time employed more than 30,000 people.

Richard Check, senior worked for Bethlehem Steel for 44 years following in the footsteps of his father and his seven older brothers. He is still proud of the company.

- "They were the best. They just got better, and better and better, because that's all they knew how to do, was to make the best of the materials used in the world. It showed it in the Golden Gate Bridge and 80% of the skyline in New York."

- Bethlehem was also a major supplier of steel during the First and Second World Wars, and helped build the sprawling interstate highway system in the 1950s and 60s. But in March of 1998, all production here ceased. What happened? Steve Donches, who was Bethlehem Steel's Vice President of Public Affairs at the time, says, "Reasons for the failure were complex." When the steel mill closed, it not only meant a loss of jobs for this community of 73,000 people, it also left a brownfield or a polluted site, measuring more than seven square kilometers on the banks of the Lehigh River.

- "In the steel site, you have the largest brownfield in the United States," John Callahan is mayor of Bethlehem. He says what was a liability is now becoming an asset. "We are rebuilding on that site and bringing thousands of family-sustaining jobs back to this community and developing in a way that represents every possible use you can imagine."
- Bethlehem Steel initially took the lead in transforming the site from industrial to commercial use, with plans to put in facilities for recreation and entertainment, a conference center, and a museum of industry.

2. exam: Machine Sucks CO₂ – Google Phone

Text 1 – Machine Sucks CO₂ (1'57')

Engineers at a U.S. laboratory may have discovered one answer to the problem of global warming. They have made a machine that can suck carbon dioxide from the air and convert it into liquid fuel. Researchers at the Sandia National Labs believe their creation can provide a sustainable form of renewable energy. Their device sounds like something from science fiction. In fact, the name of it is probably the most difficult thing to understand. It is the Counter-Rotating-Ring Receiver Reactor Recuperator, or CR5 for short. Lead developer Rich Diver is excited about his project. He said sucking CO₂ from the environment could be an alternative to carbon sequestration. This is a method of burying CO₂ deep underground. Sandia calls the process carried out by CR5 "Sunshine to Petrol". The researchers say their invention is still 15 to 20 years away from being in full operation. It is currently just a prototype – a small model of the real thing. A Sandia spokeswoman said it "holds a real promise of being able to reduce carbon dioxide emissions". She added it would allow us "to keep using fuels we know and love". It is possible that by 2030, cars and airplanes will run on the converted fuel. It will produce fuels such as methanol and gasoline. It will be interesting to see if this machine can actually lower our carbon footprint. Yes, it reduces carbon dioxide in the atmosphere, but its liquid fuel product causes pollution when it burns.

Text 2: GooglePhone (2'10")

- I have seen the Nexus One phone, I have actually used it but when you see it, it looks fairly much like a typical smart phone now, very similar to the i-phone. It's got a touch screen, lots of snazzy animations and nice pictures and it's very easy to use and it's very fast. That doesn't really distinguish it from the rest of the market, to be honest, there's, there's a lot of other handsets out there from Apple, from Blackberry, from Nokia and also from Google, things running Google's own software.

What does make here the difference I think is the aspect that Google is taking control, they really won a slice of the mobile phone market. I think it's absolutely imperative to the future of the company and they are not standing by and watching someone else have to do it for them, you know, they are really taking the ...

- How does it fit in to the overall strategy though, because, I mean, they are a much trusted brand, you know the search engine of choice for many people. Is it a diversification too far?

- It's interesting to see where Google is going. There is clearly a lot of value in the mobile market for them. I mean you imagine the kind of things that you do with your phone and the data that Google could know about you if it had control over your phone as well. I mean where you are, who you talk to, what you are doing. All of these things are absolutely massively valuable to Google. The question is if they start to get more and more of that information, how do people feel about it and you know a lot of people are feeling ambivalent about the idea that Google not only knowing everything they type into a search engine, every video they watch on YouTube, every advert they click on, every e-mail they send. You know, now Google might also know everything you do with your phone, that's kind of scary. But it also shows the massive ambitions that Google has, you know it wants to be the biggest company we have ever seen before and you know this is the latest step in that story.

3. recording: Smart Meter (2'47'')

Would you like to know how much electricity every appliance in your house is using at any given time? Well, apparently now you can.

The government is to begin trials of so called smart meters in 15,000 homes over the next 2 years. Mobile phone technology will be used to monitor household appliances and relay information to a central meter which can check it any time. And the hope is that it will change behaviour and reduce energy use. So for example you'll be able to see how much energy your refrigerator for example is using at any given time. I'm joined by Michael Peterson from Digital Living which makes the technology that the meters use and Alistair Buchanan chief executive of the regulator Ofgem. Michael Peterson, the thought is that that will alter people's behaviour but do you think they will alter their behaviour?

MP: Yes, they will, in time. I mean the whole point about the smart meter is that it takes the meter out of the cupboard, out from under the stairs or at least the display and create so much better awareness of the energy being used. I think that consumers will still need some help in order to determine what best to do in respect of energy savings.

PRSENTER: You have smart meters in your home. Has it altered your behaviour?

MP: Yes, it has. We have progressively worked through a list of savings. We've been able to see the effect. They are relatively small but cumulatively they add up to 10 or 11 per cent.

PRESENTER: Well, give us an example.

MP: Well, I mean, for example, not using a tumble drier and hanging the clothes out is one particular saving. We've gone through making sure that the refrigerators are defrosted, which, Ok it's only about 10 or 15 pounds a year but it's significant when you add it up.

- MP from Digital Living, thank you for that. So, Alistair Buchanan of Ofgem. You regulate the market. What're your views on smart meters?

AM: Good, morning. We're very excited by smart meters. And not only does it improve the consumer data and information in the home. Two additional features excite me a lot. First of all, it will end the meter reader coming round to your home because the meter talks directly to the company and secondly if you've got a wind farm at home or your own fuel cell boiler you can sell your own output back on to the grid and use the meter to do that. So some very attractive features of smart meters.

PRESENTER: But who is going to pay for it? These meters all have to be installed, don't they?

AM: The intelligent meters, those that end meter reading that give you that information that to allow you to sell back on to the grid are a bit more expensive and what we want to do is to make sure that consumers can look at a serious benefit against that cost.

PRESENTER: Alistair Buchanan from Ofgem, thank you for that.

4. recording: Shipbuilding (2'02")

- I'm one of the people involved in this big curatorial project. It's a 3-part series celebrating our industrial heritage. We tackled coal mining just over a year ago, ship building now and steel next year.

- Right. And for the ship building thing, it's ideal in a way isn't it because the great period of shipbuilding you have film showing that because it started in what eighteen, nineteen, something.

- Yes, I mean the heyday of British shipbuilding was about the 1870s. Moving images began in the 1890s. So it's almost perfect synchronicity.

- What sort of pictures have you got?

- Well, we have amazing footage of ships being launched including, we don't have any footage of the Titanic being built in the early 1910s. But we do have an almost a stage by stage documentary of the building of the sister ship, the SS Olympic. You can see all the various elements that go into making it and then finally the launch. And that was shot in 1910. And the footage is in remarkable condition.

- And the idea that Wright said who built the ships, that is true. I mean the huge proportion of the world shipping was built here.

- O, it's astonishing. At its peak it was 60 % of all worldwide shipbuilding was being carried out in Britain.

- That's extraordinary, isn't it? And now?

- They did very well during the war years because obviously we desperately needed ships because we obviously desperately needed ships to replace the ones that were being sunk. But

then there was a horrific depression in the 1930s. And then the competition after the war from other countries like Japan getting into shipbuilding.

- It was. There were also some notoriously toxic sort of the management and labour relations.

- What a fascinating period in our industrial history. And when is the exhibition?

- All right, yes. We are showing, there is a number of film programmes that are being shown in London in South Bank, in Tyneside cinema, in Glasgow film theatre, Queen theatre Belfast, all from shipbuilding areas.

5. recording: History of Information (3'39")

Hello, I'm Colin Grant. And in this edition of Discovery on BBC World Service I'll be talking to James Gleick about the ideas that have been illuminated in his long-awaited and much acclaimed new book: The Information.

Gleick is a science writer, who first came to prominence in the 1980s with Chaos: Making a new science. His ground-breaking book chronicling the development of chaos theory. Now comes The information: a history, a theory, a flood.

The new book charts the evolution of the language of communication from the talking drum to the personal computer.

Several heroic and pioneering figures are thrown up in Glick's account. They include Ada Byron who some regard as the first computer programmer long before the birth of computers.

Charles Babbage, the 19th century inventor of an analytical machine is also a key player.

But at the heart of The Information is an examination of information theory which was first proposed by the mathematician Claude Shannon in 1948.

Information theory underpins all digital communication. It has gained many enthusiasts in the world of science as well as in other disciplines, such as psychology and sociology.

Babbage was in many ways ahead of his time and he was interested in all sorts of things, he was interested in various forms of fast communication.

And he was also a sort of chryptographer. Before the telegraph era he was concerned with deciphering secret codes, and just imagined that maybe some day this new thing, electricity could be used for sending fast messages, although that was not something he'd ever worked out.

I was struck also about the way that when the telegraph was brought in place in France a lot of thought was given as to whether a message was worthy of transmission.

The first surprise for me was that before there was an electric telegraph, there already was a telegraph, and that was, in France, as you say, and it was nothing to do with electricity, it was a sort of semaphor. Wooden arms were clacking up and down on high towers so they were

visible 5 or 10 miles away and coded messages could be transmitted from tower to tower. And the Napoleonic government constructed chains of these towers, there were networks of them. And it never occurred to the French that something like this could or should be used for private messages. For one thing, it was too expensive, there weren't enough towers, and there were too many people, so, yes, it wouldn't have been practical. But the idea that you would just say hello to a friend – well, it didn't make sense to do that.

So this was Government owned, government controlled system. It was used only for official state purposes and military purposes. I think one of the Napoleons used it once to announce the birth of a son.

But of course everything changed when the electric telegraph came on the scene in the United States and in the UK. Because there, maybe because the culture was different, maybe because of the nature of the technology this was seen right away as a more democratic thing that virtually anybody could use. Not the way the telephone was, when you could have it in your house - it still required some expertise to code and decode messages, but people were using the early telegraph to play games of chess.

6. recording: First Transatlantic Satellite (2'14'')

Today we're taking you back almost fifty years to the first ever transatlantic satellite broadcast. Simon Watts has been talking to one of the people who made it happen.

It's July 1962, and a dawn of a new era in telecommunications.

„This is our friend Telstar. If you were with us this evening you will know what this is, if you won't, let me say very quickly. It is the near miracle satellite now in orbit in space. It's going to transmit to us the first ever live public television pictures from the United States of America.”

Millions of people tuned in to this historic TV broadcast linking Europe and America by satellite for the first time. The British host was Raymond Baxter.

„Here we are. Here we are. There is a bar. Now we are antic(ipating..)… That's a man's face. There it is. There it is! That's the picture! You see... You see it for yourself. There it is. It's a man.”

That man was a rather nervous looking executive from the American firm AT&T. A few years earlier phone companies on both sides of the Atlantic had agreed to work together on the huge technical challenge of Telstar. Brian Oaks worked on the project for what is now British Telecom.

„The satellite was a matter of 75-80 centimeters in diameter.”

75-80 centimeters is less than a metre. So it was something you could literally almost pick up and hold between your hands.

„Yes, indeed. The Telstar satellite was an extremely small target for an aerial to hit.”

-How hard were you and everyone working on this project?

„We were working very long hours. Last minute preparations, last minute testing. It was exciting, although the uncertainty was whether the whole thing would be a success.”

Telstar involved satellite stations in Britain, France and the US. Brian Oaks’ job was to find the right site for the British station. He ended up choosing a location called Goonhilly, just a few kilometres from where Marconi had made his pioneering radio transmissions.

„Our parameters were exactly those of Marconi and that was to be as far south and as far west as possible, and having land on which we could build, in Marconi’s case tall masts, in our case a moving structure. From a distance it was described as a saucer, its line of sight was looking up the horizon.”

7. recording: Scottish Recycling Plant (04’04”)

The past and the future lie side by side on a peat moss just outside Dumphries. The old is the council landfill tip full of a century’s worth of household waste, the new, the intelligent waste transfer station or Eco-deco plant next door.

From the control room we have an automatic computer system that controls the two cranes.

It’s an Italian invention and this is the first in Scotland.

So, how does it work? Well, bring the rubbish from your doorstep, and tip it into the building through a mist of water, which keeps in the dust and the smell. The waste is put through a shredder, then air is passed through it to take out the moisture, which accounts for 30% of the weight. It’s left to sit for 12 days before being shredded again more finely. Then it is put through a complex sifting system using sieves, fans and magnets to separate out anything reusable.

The plant is run by commercial company Shanks Waste Management, which won a PFI contract to manage Dumphries and Galloway’s waste for the council.

The general manager is Andy Carey:

„Over the year the 65,000 ton of waste will be processed through the plant. There will be a certain amount of reject material which we’ll take to landfill but it will drop dramatically.”

The sytem takes out both ferrous and non-ferrous metals, glass and stone for use as aggregate, material for composting and a solid fuel replacement with 2/3 the calorific value of coal.

The plant can deal with 65,000 tons of waste a year with only about 8,000 tons having to go to landfill. „There’s a strategy the company decided a number of years ago and we felt this

was an ideal process, it's tried and proved in Italy, and also in plants in East London which are working. I'm afraid it's tried and proved process."

Because the plant sorts the waste Dumphries and Galloway has not had to go down the multi-bin route taken by many Scottish local authorities.

Alistair Speedy, of the Council's Environment Department:

„I believe that this solution is by far the most sustainable. Basically, we have one dirty bin, that is picked up outside, that is picked up weekly, rather than a whole selection of bins, where there is a real quality control issue that the right waste or the right materials must go in the right bin, and you then have the ability, the capacity of vehicles that have to pick them up at various times fortnightly or weekly or whatever. I believe this system is far more simple, and it represents value for money."

By its own admission Dumphries and Galloway council stood still in recycling terms while this was being developed.

The last official figures showed nearly 90% of rubbish here is still going to landfill, the worst in Scotland, but the Eco-deco plant has the potential to change that dramatically.

Alister Speedy again:

„This particular plant will bring us into the 21st century as far as our waste management is concerned. We've stood still over a number of years with low recycling figures, because we've obviously had to invest in all the infrastructure you now see behind me.

Our current figure for recycling and composting now the plant is commissioned is sitting at 31.5%, which has more than tripled in the past 9 months. So we are absolutely delighted that we now we have the evidence of our investment and the confidence that a good strategic decision has been made."

The Eco-deco plant will be opened officially by Princess Alexandra this morning.

8. recording: Windfarms (03'17")

BBC World Service, I'm Mike Williams, Welcome to One Planet and (walesiül):..... Welcome to Wales. The UK government has published its roadmap to renewable energy, and these vallies and hills around me are in it prominently.

Like many governments around the world, Britain has set a target for clean and green energy some 15% by 2020. Other nations have been more ambitious, some haven't set targets at all.

But if you do want to switch to renewable energy sources, you can expect challenges. Financial and technical of course, but also local and political. We're going to hear about those challenges today. In particular, that idea of the NIMBY, N-I-M-B-Y, not in my back yard. We'll start here on a windy hillside in the South Wales valleys, where once coal was king. I'm high above the village of G. It

means „red valley” in Welsh, it’s a beautiful place. There’s lush green pasture for cattle and sheep, trees far below beside the river, broad skies today, wet and grey.

And there are the wind turbines, 20 of them here. They are tall, maybe 50 metres high, slender, white and rotating briskly in this hard wind. Personally, I find it compelling to watch them turn, and for me, they have a rather strange beauty. But it’s easy for me to say that because they are not in my back yard. They are though in Kay Leek’s yard. She’s lived in G. for 70 years.

-Kay, when you look at these things, what do you see?

-I can’t swear, Mike, they are monstrosities. They are not a pretty sight to encircle a valley. I can cope with the ones that we see at the moment, but when they’re gonna be right around the valley, overshadowing all our property and the houses, I think... that’s.. just not.... we should not be able to accept that. We are fighting and keep fighting until we beat the developers. And that’s the backing of all the community as well.

I’m just walking up through a field of sheep a little closer to the turbines. They are on private land. But the farmer next door has said I can go through his field, and get as close as possible. He also said, though he didn’t want to be interviewed, he also said, that he wouldn’t mind having ten of them on his land. They’d provide a nice little revenue, he said they’re produce clean energy and you can even continue to graze the land underneath them. I can’t get any further now, but here, about 30 metres away, I’m actually surprised at how quiet they are, there is a sushing sound and a rhythmic pulse in the air. When the wind changes direction, the turbines turn to face it, and there is a brief groaning noise, but beyond that I can’t hear much. But then again as I’ve said, this is not my back yard. And the noise these things make is one of the disputed, contentious issues.

9. recording: Olympics Project (03’17”)

The Mayor of London, Boris Johnson in Trafalgar square celebrating the start of the twelve month countdown to the London Olympics this week. „with a year to go, it’s on time, it’s on budget, the Great Stadium is finished”.

Alongside the Prime Minister it’s usually Lord Coe, who is the public face of the London Games. But the man bringing what’s turning out to be the biggest boost to British construction for decades is the chairman of the Olympic Delivery Authority, John Armitt. „It’s all gone very well, I am just very pleased by the fact that we are doing what we said we would do. We’ve got to this point with a year to go with everything substantially complete”.

Whatever one may think of 9 billion pounds being spent on a summer of sport, the Olympic Park is Europe’s largest public construction projects and J. A.’s. leadership has been its guiding hand.

When he joined 4 years ago, the real Olympic Delivery Authority was in a quagmire in East London, and not just a pile of mud. Boggled down in budget difficulties, internal squabbles, and claims of chaos resulting in the previous chairman throwing in the towel. As Joey Gardner from Building, the trade magazine for the construction industry explains J.A. had seen crisis before, and he seemed to relish tackling it.

„ As you can see from his CV, that he is a rescue specialist. We've had a number of high profile problems in the past, we've had debacle over Wembley stadium, we've had the Office of Trading investigating the construction industry for bid rigging. The ability to deliver the Olympic Games under time and under the eventual budget has been absolutely vital in providing the kind of positive image of the construction industry to counter some of the more popular misconceptions.”

Born in London in 1946, he grew up in Portsmouth. He wasn't a classic high-flyer as a teenager. Disenchanted with school and floundering at college, he was finally guided by a lecturer, who spotted his potential. He completed a diploma in civil engineering at the local tech before starting as a trainee with John Lang, the construction firm. He rose to the top easily, building Sizewell B nuclear power station on the way. Unusually for an engineer perhaps, he was good with people, too. „I think he has basic acting skills which can stood him in very good stead, I suppose, when you sort of presenting corporate views and things I mean you need to be able to present them in an understandable way. So he understands language and he is very good at putting things forward.

Tom Fowlkes from the Institution of Civil Engineers says if Armitt gets it right it will put Britain on the podium, too. „The fact that the London Olympics a year out has now delivered all the infrastructure ahead of time and under budget is something which I would be very surprised has ever happened before in the world, and I think that's probably going to be John's lasting legacy that he has demonstrated that the UK construction industry can deliver as well if not better than anyone in the world.

10. recording: Form and Function in Architecture (02'57")

In this weeks programme Evan Davis asks his panel of top executives about raw materials and building design.

Well, let's bring our other guest in on the subject of buildings more generally. In particular I'm interested in the trade-off between form and function, between the aesthetic of a building and the functionality of it. In modern capitalism I think an interesting question is whether we delivered buildings that are too intricate and too much about showing off, or do we not put enough effort into the aesthetic importance of a building? I'm looking at you, Andy, because I seem to think those ASDA supermarkets are quite functional.

And beautiful. I think, you know, they are designed primarily for purpose, you know. And they are very very high intensity buildings, you know, the number of people go through an ASDA store, in some of our busiest stores it's 80,000 people a week. So they do need to be built for efficiency. But I don't think it's always at the cost of form. And I think that both the supermarkets generally but also the planning authorities are increasingly aware of the need to design buildings that are at least somewhat attractive. Many, many of the supermarkets that are constructed today are built as part of multi-use facilities. And so, you know, there's quite a lot of thought gone into that design from an aesthetic point of view as well. But I wouldn't

refute the fact that a big ASDA supermarket has got to be designed to be purposeful. It's ... arguably not to everyone's taste to find our very linear design to shelving, you know, straight up and down, and yet it is by far the most efficient way to design a store, and if you changed it customers would be frustrated 'cause it will take an extra fifteen minutes to get around and, you know, people do value their time. And so you've always got to have that trade off.

I have to say from the Waitrose perspective we think the form is really important. We try to make sure that wherever we are or whatever we do is sympathetic with the environment. Now in some cases that means it does look like a supermarket, in others, our shop in Belgravia for instance, we've kept the facade of some very beautiful old buildings and we built our shop within that, because that's right for that environment. Having said that there has to be a balance in terms of making sure that whatever we build is fit for purpose and efficient, so that we can obviously be profitable. But by and large we do spend about five to ten percent more than the average on our buildings and our fit-out, because we think the aesthetics are important.

Do the customers respond to a more aesthetically pleasing building?

Well I think they do. I think that the dwell times're longer, I think people enjoy being in our shops, so it's not primarily built just for function. It has to be efficient, but we think that creating an environment with wider aisles and nicer shopping environment actually encourages people to come in, spend longer and spend more. But there is a cost we incur, so we have experimented in the past with one or two supermarkets where we radically cut back on our fit-out cost, against some others, and we found there has been no net advantage to us in doing that.

11. recording: Wheelchair map

R.K. is an „ideas' ” man. The 31-year-old has worked in advertising and radio, and 7 years ago he decided with some friends to focus on social innovations. One of his latest projects is Wheelmap.org, an online platform for wheelchair users or wheelchair drivers, as K. puts it.

Two years ago a friend of mine was sitting with me in a cafe and he told me he hates this cafe where we meet every day, and he wants to go to another place.

As a wheelchair driver, I am a wheelchair driver, you always have the problem that you don't know which cafe is wheelchair accessible. That conversation formed the basis of what became wheelmap.org. We started to think about how would it be if we could connect the knowledge of those 1.6 million wheelchair drivers to share the knowledge about accessible places or non-accessible places, so cafes, bars, cinemas, doctors, whatever. And then we had the idea to open up an online platform where everyone can share their places. In just one year 2,000 users have mapped over 73,000 places and over a hundred new places are tagged every day.

Each entry is rated according to its accessibility and given a colour. Green means a place is fully accessible, yellow is partly accessible, which means there is no wheelchair toilet, red is not accessible, and places coloured in grey are unknown.

Wheelmap has become an indispensable resource for many of its users, like I. S., a 30-year web-developer. Berlin for the most part is an accessible city, but old buildings and public transport can be difficult.

Most challenges are when I have to use trains and trams and buses, because not all the lines are accessible, you have to take every second bus or every second tram which is accessible. On the wheelmap site you can filter your search by clicking on a type of place you want to go, like a cafe and choosing to only see accessible cafes on the map.

By highlighting these problems V. and K. hope not only to provide valuable resources for wheelchair users, but also to create a real sense of social mobility.

Cenemmon Nepod, Berlin

12. recording: Data transfer

Now we all know that data transfer rates are getting faster and faster all the time, a F. team working on devices to allow data transfer via visible light presented their results at the IFA consumer electronics trade fair in Berlin, earlier this month. They believe these devices will take data by light communications one step closer to our everyday life.

J.G reports:

The old Hamburger Banhoff building in central Berlin is the rather spectacular home to a wide array of modern art displays. At the moment, huge, other worldly rubber spheres connected with spiderweb-like strands, cables and ropes greet you at the main display area.

But as with a lot of that, getting some background information on the artists or installations some context with which you can make sense of the display, can really help your understanding.

And if you can't go on a guided tour, audio guides can do just this. Generally that means carrying around an audio player with tracks that correspond to tags around the exhibition. But sometimes you find the guide gets ahead or behind you, or you have the wrong audio for what you're even looking at. Or even you find yourself accidentally back at the beginning.

What if the audio or even video information could be narrowcast to you, projected, if you like, to your player at your spot in front of a display. It's a bit like broadcasting, but to a narrower target.

Well, with visible lights communication or data transfer by LED lights this could very well be done.

So what you will see here is on lab level, because we are preparing the exhibit

Maybe a year or two before we can actually see gadgets that can actually transmit and receive data via LED in our homes, but researchers at the F. institute in Berlin have developed a

receiver and LED transmitting system that can already transfer enough data for high quality audio or even video.

So what you have here is a laptop which contains a video, a high definition video, and then we have an ethernet connection, this is going after our sender, these are common commercial LEDs with adapted circuitry so that you can have data modulation, so data modulation is switching on and off the light... but as you can see....

That's I.P. who leads the visible light communications team here in Berlin. The demonstration involves a laptop on a desk some 50 cm-s under an LED light. The light seems to be continuous to the human eye but it is actually modulating, switching on and off to send the data in the form of ones and zeroes to a matchbox sized receiver, which is itself plugged via a standard ethernet cable to the computer.

You are watching the result on the laptop screen. Our transmission method is just complimentary to a standard transmission. So we are not administrating the signal, we are just providing a medium through which the signal is transmitted. In other words, the F. team are developing how best to transmit data by LED lights but not trying to reinvent the wheel by writing new protocols, or languages computers use to communicate. It's all standard, as is the laptop, as is the LED, which the team believes will make light data communication possible outside of the lab quicker and easier.

Answer keys

1. exam: Plastic Bags – Steel

Text 1: Plastic Bags: 1T 2F 3F 4F 5T 6F 7T

Text 2: Steel

1. Economic troubles / foreign competition, 2. Quiet, 3. (more than) 30,000, 4.(His) father / (seven older brothers), 5. the best / got better (and better), 6. Golden Gate Bridge / skyline in New York, 7.(1st and 2nd) World Wars, 8. (all) production, 9. Loss of jobs, 10. (More than) 7km², 11. thousands. 12.-13 (*Any 2 of*) Recreation / entertainment / conference centre / museum of industry / commercial

2. exam: Machine Sucks CO₂ – Google Phone

Text 1: Machine Sucks CO₂: 1T 2F 3T 4F 5T 6F 7F

Text2: Google Phone

1. smart phone, 2. *For 2 and 3 any two of*: 3. Touch screen / (lots of) (snazzy) animations / nice pictures / easy to use / very fast, 4. own software, 5.takes control / is taking control, 6. future, 7.(much) trusted, 8. mobile market, 9..*Any 1 of*: where you are / who you talk to / what you are doing 10. valuable, 11. advert (they click on), 12. e-mail (they send), 13. the biggest (company)

3. recording: Smart Meter

1. mobile phone, 2. reduce energy use, 3. Digital Living, 4. the cupboard, 5. some help, 6. 10 or 11 %, 7. tumble drier, 8. refrigerator, 9. 10-15 pounds/year, 10. consumer data, 11. wind farm / fuel cell boiler, 12. (serious) benefit

4. recording: Shipbuilding

1.coal mining, 2. steel, 3. 1870s, 4. 1890s, 5. Titanic, 6. documentary, 7. (the) launch, 8. condition, 9. (all) worldwide shipbuilding, 10, (the) war years, 11. (horrific) depression, 12. Japan, 13. exhibition / film

5. recording: History of Information

1. Science writer, 2. the development of the language of communication, 3. information theory, 4. cryptographer, 5. telegraph, 6. they made it electric 7. chains of towers, 8. the goverment/military 9. it became more democratic/ private 10. chess

6. recording: First Transatlantic Satellite

1T, 2F, 3T, 4T, 5T, 6F, 7T, 8T, 9F, 10F.

7. recording: Scottish Recycling Plant

1. automatic computer, 2. Italian invention, 3. mist of water, 4. shredder 5. air 6. 12 days' 7. shredded again 8. complex sifting system, 9. metals, 10. stone, 11. composting 12. 8,000 tons, 13. multi-bin, 14. weekly, 15. right bin, 16. value for money, 17. 31.5%

8. recording: Windfarms

1.challenges/ problems, 2. not in my back yard. 3. coal, 4. 20, 5. beautiful/ lush / green/ lush green, 6. compelling / strange beauty, 7. ruin / not a pretty sight, 8. sushing/ rhythmic pulse/ groaning (együtt is, bármelyik kombinációban), 9. provide revenue, 10, produce clean energy, 11. graze the land under(neath) it (9-11 bármelyik sorrendben)

9. recording: Olympics Project

1.Great stadium, 2. satisfied, pleased 3. 9 billion pounds, 4. Europe, 5. chaos, budget difficulties, previous chairman resigned, 6. Wembley stadium, / OFT investigation of constuction industry, 7. civil engineering, 8. Sizewell B nuclear power station, 9. good with people/ putting things forward, presenting in an understandable way, 10. construction industry

10. recording: Form and Function in Architecture

1. purpose, 2. efficiency, 3. aesthetics, 4. linear, 5. saves time / people can find everything, 6. form / aesthetics / beautiful, 7. right for the environment, 8. fit for purpose / efficient, 9. wider, / nicer shopping, 10. spend longer, spend more

11. recording:

1. (open) platform, 2. (by) sharing / adding information (by wheelchair drivers) , 3. 2,000, 4. 73,000, 5. colour coding/ given a colour/ by (different) (4) colours, 6. unknown, 7. old buildings, 8. public transport, 9. (by) filter(ing), 10. valuable resource , 11. social mobility

12. recording: 1.F, 2.T, 3.T, 4.F, 5.F, 6.F, 7.T, 8.T, 9.F