

# The birth of text messaging

**Wednesday 18 March 2026**

## Welcome

The event will start at 7:00pm

**Introduction:** Kevin Foster CEng, FIET, Chairman, Anglian Coastal Local Network

**Presenter(s):** Kevin Holley, Technical Standards Director and Distinguished Engineer, BT

**Questions:** Live in the Atrium & via Q&A Messaging in Teams. In Teams, please type in your questions and these will be taken in a Q&A session at the end of the presentation.

**Close:** Approximately 8:15pm



# The Birth of Text Messaging

Kevin Holley  
March 2026

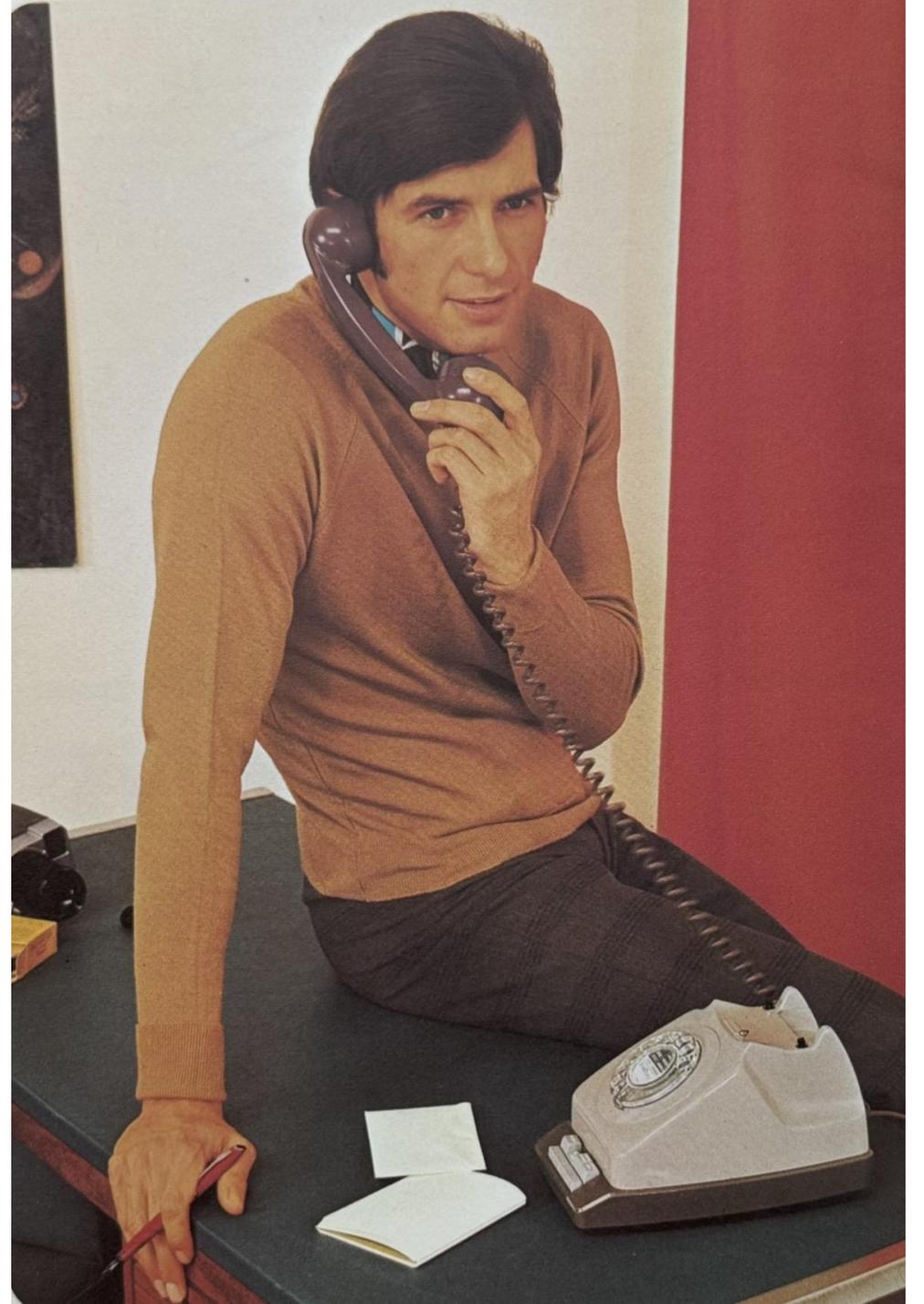


**PHONE**

# PHONE?



# PHONE?



**PHONE?**



# PHONE

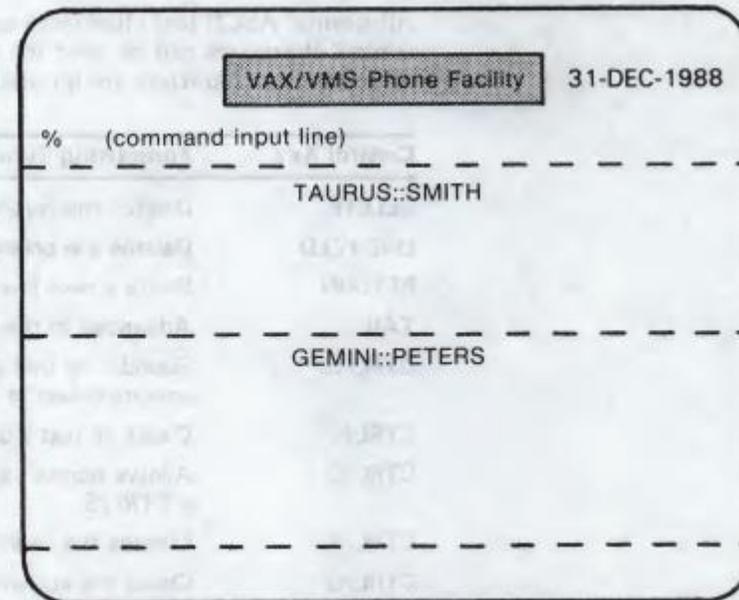
1985

## PHONE Description

The VMS Phone Utility (PHONE) allows you to communicate with other users on your system or with any other VAX system connected to your system by DECnet-VAX. PHONE is designed to simulate some of the features of actual telephone communications, such as the hold button, conference calls, and telephone directories.

To invoke the Phone Utility, type PHONE at the DCL prompt and press RETURN. You can specify the username of the person with whom you want to communicate before or after you enter the Phone Utility. When you invoke the Phone Utility, PHONE takes control of your terminal and displays the PHONE screen layout as shown in Figure PHONE-1.

Figure PHONE-1 PHONE Format



Note: The switch hook character is always displayed in column 1 of the command input line.

# TEXT?

C Prototype

```
int sys$brkthru (unsigned int efn, void *msgbuf, void *sendto, unsigned int  
sndtyp, struct _iosb *iosb, unsigned int carcon, unsigned int flags, unsigned  
int reqid, unsigned int timeout, void (*astadr)(__unknown_params), int  
astprm);
```

ARGUMENTS

efn

msgbuf

OpenVMS usage: char\_string

type: character-coded text string

access: read only

mechanism: by descriptor--fixed-length string descriptor

**Message text to be sent to the specified terminals.** The msgbuf argument is the address of a descriptor pointing to this message text.

# 1986

**The \$BRKTHRU service allows the message text to be as long as 16,350 bytes;** however, both the system parameter MAXBUF and the caller's available process space can affect the maximum length of the message text.

# TEXT?

...and Presence

...and abbreviations

IIRC, LOL, CUL8R

Although SWALK was much earlier.

# 1990s



**But where did  
personal  
messaging  
really start?**

**We have to go  
further back in  
time...**



# What about the page?

Capacity – about 10 words

Personal – found you and told you the news

Memory – one message at a time



# Just a castaway?

Capacity – a long letter

Not Personal – anyone could read

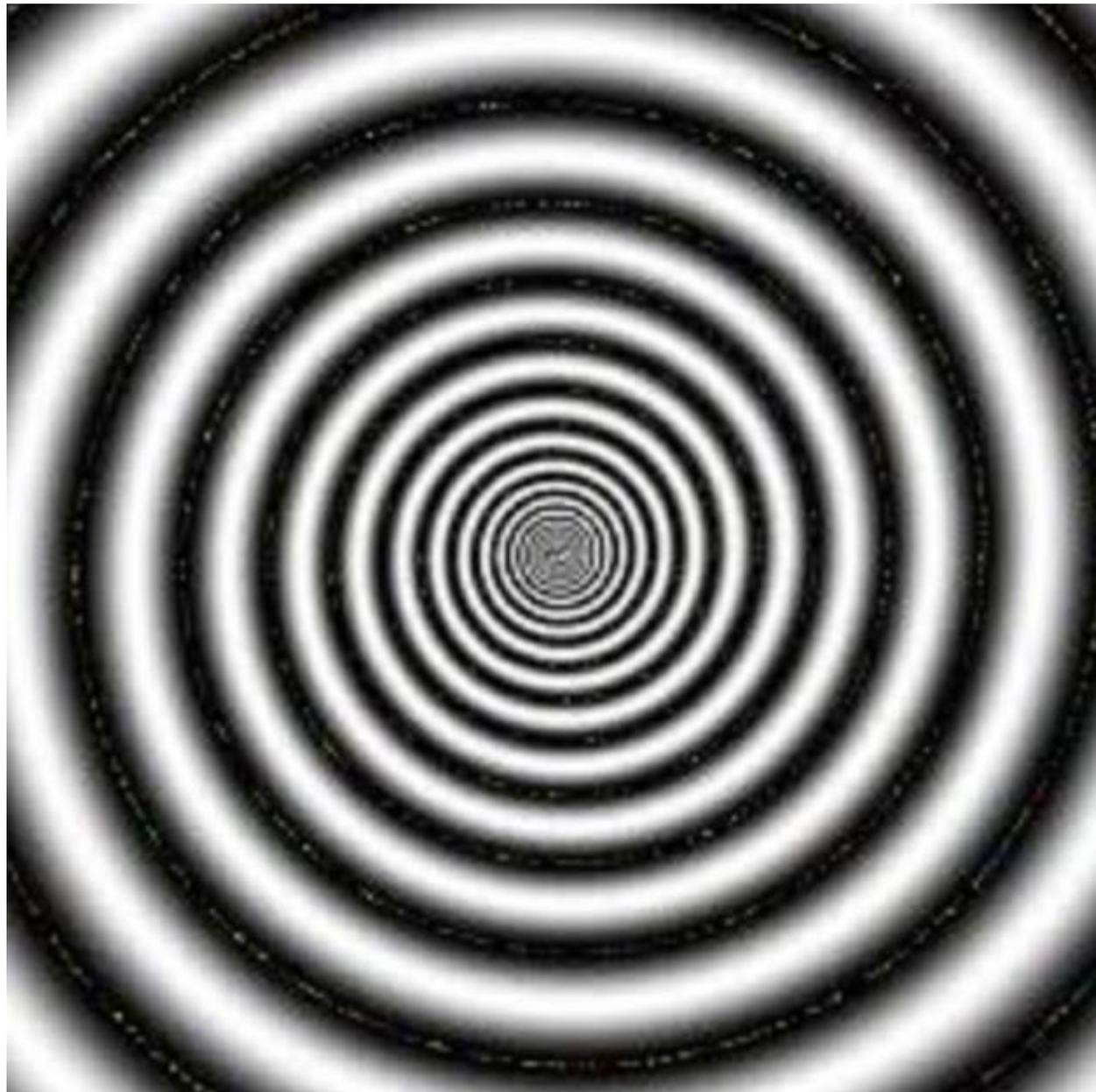
Addressing – random delivery

Reliability – risk of water ingress or bottle breakage

Latency – very high



**Winding forward  
again... from the  
1960s...**



# Late 1980s

## Email arrives!

From: WEBA::PSI%PSS.2402001357::LYCKSELL  
"E Lycksell, Swedish Telecom Radio, +46 x xxx xxxx" 11-JUL-1988 11:38  
To: K\_HOLLEY,LYCKSELL  
Subj: RE: Mail to GSM PN



From: R11F: "[finn@uninett.nta.re.odin](mailto:finn@uninett.nta.re.odin)" 26-JAN-1989 13:41  
To: [holley@uk.co.bt.ta7a](mailto:holley@uk.co.bt.ta7a)  
Subj: Test EAN E-mail -> Arpanet address

Received: from ukc.ac.uk by zaphod.axion.bt.co.uk via Janet with NIFTP id aa12096; 26 Jan 89 13:42 WET

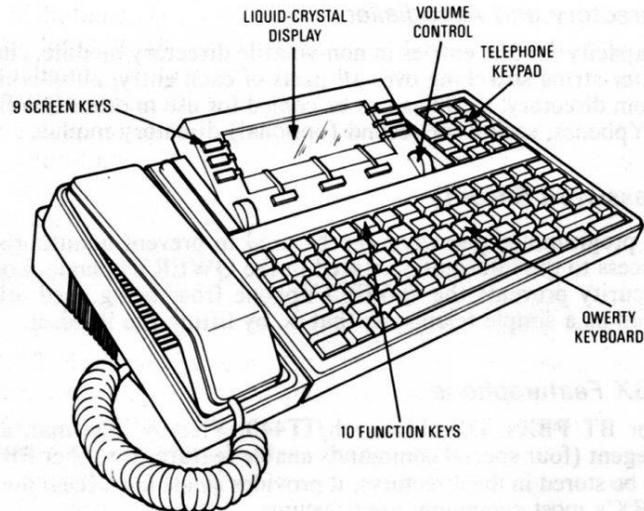
Received: from ean-relay.ac.uk by kestrel.Ukc.AC.UK via Janet (UKC CAMEL FTP) id aa07371; 26 Jan 89 13:34 GMT

Received: from Ean.Ean-Relay.AC.UK by Ean-Relay.AC.UK via EAN id aa04206; 26 Jan 89 13:20 GMT

Date: 26 Jan 89 13:21 +0100

# Electronic Pagers

- **“Bleepers”**
  - First Pager System used in Detroit in 1921
  - “Pager” term introduced by Motorola in 1959
  - By 1994 there were >60 million pagers in use
- **Messaging Pagers**
  - Popular in the 1980s and 1990s
  - In the UK, a typical message limit would be 90 characters



- **BT Qwertyphone**

- Acknowledged messaging project in BT labs
- Enabled dial-up to send a message
- Dial back to confirm delivery
- Worked well but transmitter was bigger than the pager...no customer appeal

# How long is long enough?

To say something meaningful?

To be, or not to be: that is the question:  
Whether 'tis nobler in the mind to suffer  
The slings and arrows of outrageous fortune,  
Or to take arms against a sea of troubles,  
And by opposing end them? To die: to sleep;  
No more; and by a sleep to say we end  
The heart-ache and the thousand natural shocks  
That flesh is heir to, 'tis a consummation  
Devoutly to be wish'd. To die, to sleep;  
To sleep: perchance to dream: ay, there's the rub;  
For in that sleep of death what dreams may come  
When we have shuffled off this mortal coil,  
Must give us pause: there's the respect  
That makes calamity of so long life;  
For who would bear the whips and scorns of time,  
The oppressor's wrong, the proud man's contumely,  
The pangs of despised love, the law's delay,  
The insolence of office and the spurns  
That patient merit of the unworthy takes,  
When he himself might his quietus make  
With a bare bodkin? who would fardels bear,  
To grunt and sweat under a weary life,  
But that the dread of something after death,

# Shakespeare's sonnets take about 600-700 characters

- But how much can you remember?
- “Shall I compare thee to a summer’s day?”



# Japanese Haiku poetry takes about 60-70 characters per verse

"As the wind does blow  
Across the trees, I see the  
Buds blooming in May"



Source: UCLA Asia Institute

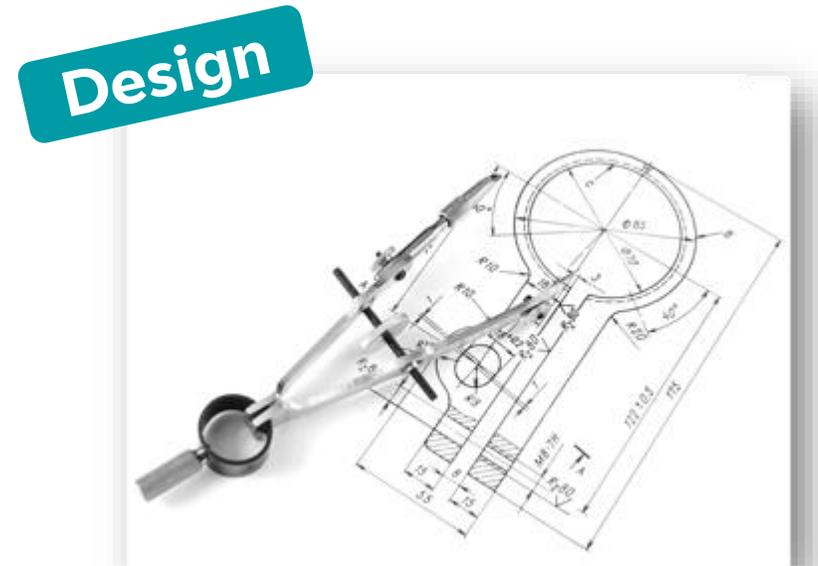
# Meanwhile, GSM was being standardised

- **Not just for in-car** phones
  - Small, handportable devices were envisaged
- **Integration of alphanumeric** paging was included
  - Starting February 1985
- But **what length** should the messages be?
  - Message pagers provided 90 characters, so how about double?
    - 180 characters?
  - Would this be achievable technically?

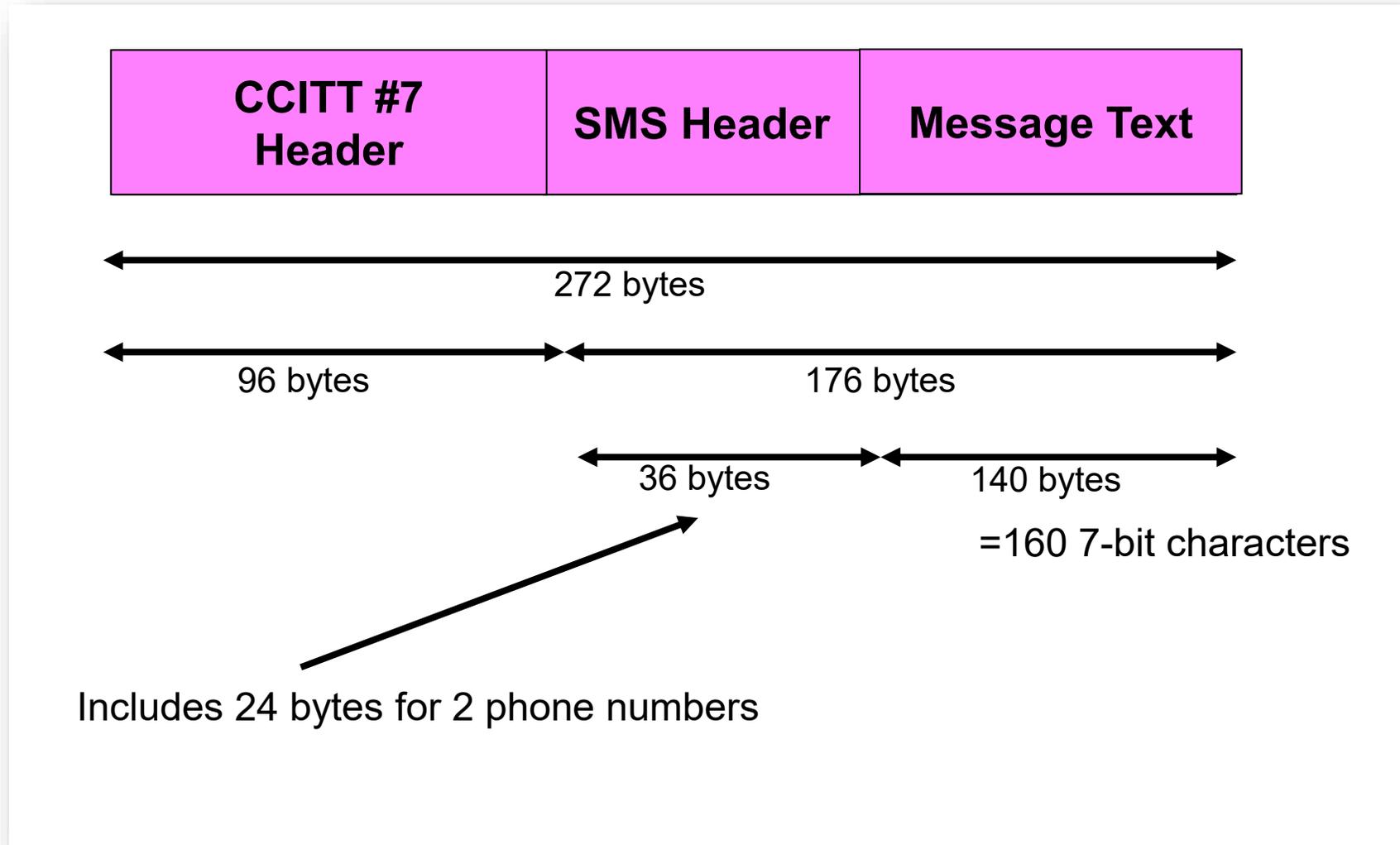


# What were the critical technical factors?

- **SMS had to be sent via signalling channels**
  - To avoid high cost, sent alongside other signalling such as location updating
  - In the GSM Core Network, this meant using CCITT Number 7 (telephony signalling) links
  - This restricted the complete packet to 272 bytes, including headers
- **GSM's feature list kept expanding**, and so did the headers
- **SMS itself had a growing list of features** and its own header information expanded



# SMS Header Usage



# 1991 calculation

## Annex 5 - Breakdown of SMS PDU lengths

### Mobile Originated

|                |     |
|----------------|-----|
| User Data      | 140 |
| MTI,VPF,SRR    | 1   |
| Message Ref    | 1   |
| Dest Addr      | 12  |
| Protocol Id    | 1   |
| Data Code Schm | 1   |
| Validity Per   | 7   |
| User Data Len  | 1   |

TPDU TOTAL 164

|                 |     |
|-----------------|-----|
| TPDU            | 164 |
| TPDU Length     | 1   |
| RP-Message type | 1   |
| RP-Message ref  | 1   |
| RP-OA,RP-DA     | 14  |

RPDU TOTAL 181

### Mobile Terminated

|                |     |
|----------------|-----|
| User Data      | 140 |
| MTI,MMS,SRI    | 1   |
| Orig Addr      | 12  |
| Protocol Id    | 1   |
| Data Code Schm | 1   |
| SC Timestamp   | 7   |
| User Data Len  | 1   |

TPDU TOTAL 163

Source: GSM4 126/91

# More Headers

- In late 1991, more features were proposed for C7 headers

The maximum length of TPDU that MAP version 2 can support without segmentation is 126 octets (which equates to 102 octets for SMS characters or 116 characters; see attached calculation). The reduction in length has been caused by additions to the TCAP protocol for the white book version.

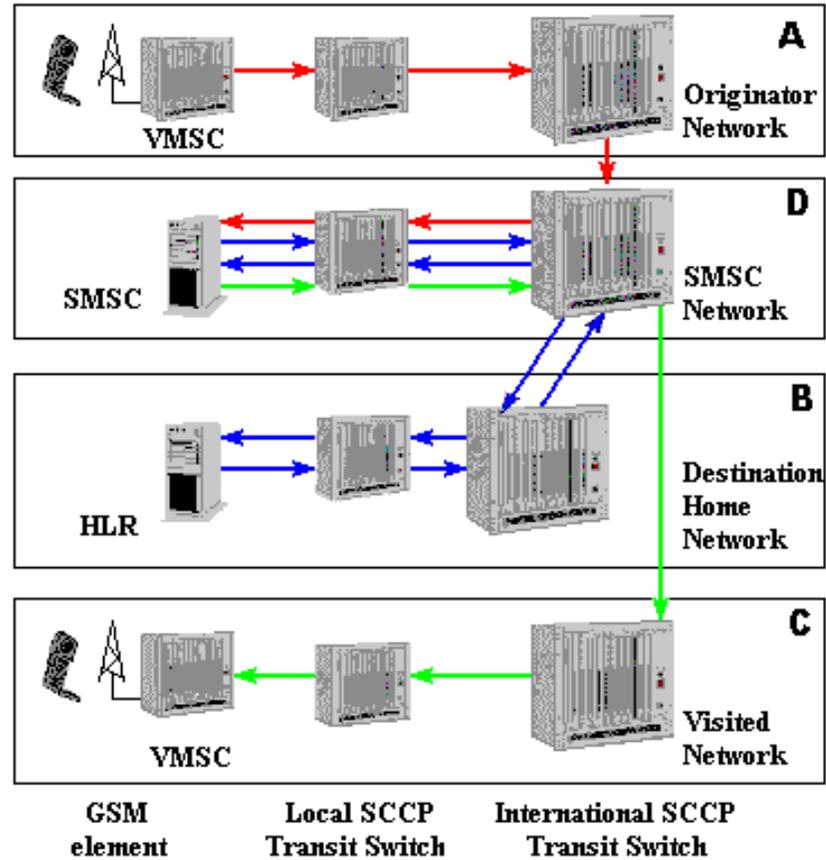
Source: GSM4 278/91

## Note

This would have reduced the SMS length to **116 characters**.  
Fortunately, I managed to fix this

# The Past Messaging Landscape – 1990s

- Deployment of SMS



# Remember... phones were limited

- 10 or 20 character display
- 5 messages on the SIM
- Up to 20 in the phone
- Limited connectivity to the SMS Centres



Members of the project team with the Short Message Service Centre at Croydon – from left John Rees, Kevin Holley, Ray O'Hagen and Paul Bennett.

# Early 1990s SMS Messages

**Timestamp** 94/03/28 09:01:57 GMT-11.00H

**From** 23532620000519 (Unknown E.164)

**Service Centre** +44385016003

**Protocol ID** Default      **Data Coding** GSM Default Alphabet

**Message 4 (MT)**

Please Call "0635503270"

010107914483056100F300  
0E81323562020050910000  
**493082**901000754C18507  
6393C2F838661361B2482  
D966B51A6C26BBC14410  
03F012

These are some of the oldest SMS messages still available in full binary format in the way they were transmitted at the time!

**Timestamp** 94/06/24 12:47:23 GMT+10.00H

**From** 901 (Unknown E.164)

**Service Centre** +44802000331

**Protocol ID** Replace SM Type 1      **Data Coding** GSM Default Alphabet

**Message 9 (MT)**

Callback! Key "901" 001 new message

# Going Beyond Basic SMS Messages

- What about Application to Person (A2P)?

Yesterday 16:00

TravelAlert [16:00](#):  
Circ: Minor delays  
clkwise due to a  
temporary shortage  
of Train Operators.  
See [http://  
www.tfl.gov.uk](http://www.tfl.gov.uk)

# What Factors Enabled A2P in the mid 1990s?

- Pre-Existing Paging Market
  - Windows Apps supporting TAP (Telco API)
- Mobile Operators supporting TAP (Telco API)
  - Ability to monetize SMS via phone call charge
- Microsoft Dynamic Data Exchange (MS-MAPI API and others)
- Emergence of Information on the Internet (http API)
  - News sites in particular

# Demonstration Systems Developed

- Started with Email and pre-existing software
  - Would forward all my email to SMS
  - Quickly found limitations, didn't like the output as it wasted characters
- Built my own TAP software using DDE
  - Fast queuing, separated DDE layer from UI layer from Comms layer
- Built my own MAPI software
  - Read emails and send using address (subject) message format

# Beyond Email

- The Internet... developed software to pull real live data from web pages

```
<HTML><!-- Auto-generated HTML (C) Richard K. Lloyd 1996 --><!-- Machine:
HP 9000/735, HP-UX A.09.03, 144MB RAM --><HEAD><TITLE>The UK National
Lottery</TITLE></HEAD><BODY><P ALIGN=center><A HREF=/lottery/Logo.html><
<IMG SRC=/lottery/Lottery.gif ALT="[Temporary UK National Lottery
Logo]"></A><P ALIGN=center><B><A
HREF=/htbin/say?02,09,22,26,32,44,40>winning numbers</A> for<A
HREF=/lottery/archive/Lott064.html>Lottery #64</A> (Saturday 3rd February
1996):</B><BR><IMG SRC=archive/Balls064.gif ALT="[02 09 22 26 32 44
(40)]"><BR><B>6 tickets each won a <A
HREF=/htbin/say?1625476>&#163;1,625,476</A> jackpot prize</B><P
ALIGN=center><B>UK National Lottery <A HREF=Newsflashes.html>Newsflash</A>
(Monday 5th February 1996):</B><BR>One of last Saturday's six jackpot
prizes is still unclaimed. Meanwhile, the <A
HREF=mailto:creative@dial.pipex.com>winner</A> of<A HREF=Virtual/>virtual
Lottery</A> #15 has claimed their &#163;450 prize.<BR><P ALIGN=center>The
&#163;50 prize for the free entry <A HREF=Virtual/>Virtual Lottery #16</A> is
sponsored by<BR><A HREF=http://www.lott.li/lott/><IMG
SRC=/lottery/Virtual/worldb4.gif ALIGN=middle ALT="[InterLotto]"></A>- check
out the <A HREF=InterLotto/>InterLotto Statistics</A> area<P ALIGN=center>
<A HREF=/lottery/archive/Lott065.html>Next Lottery (#65)</A> |<A
HREF=winning_index.html>All winning Numbers</A> |<A
HREF=QuickPick.html>Quick Pick</A><BR><A HREF=HaveWon.html>Have You won
?</A> |<A HREF=Perms.html>Lottery Perms</A> |<A HREF=MultiCheck.html>Ticket
Checker</A><BR><A HREF=Links/>Lottery Links</A> |<A HREF=wheel/>wheeling
Challenge</A> |<A HREF=Info/>Background Info</A><BR><A
HREF=Analysis/>Numerical Analysis</A>| <A HREF=whatsNew/9602.html>what's
New</A><P ALIGN=center><H5 ALIGN=center>&copy; <A
HREF="mailto:rk1@csc.liv.ac.uk">Richard K. Lloyd</A> & <A
HREF=/>Connect</A> 1996<BR><A HREF=/lottery/AutoGen.html>Auto-generated</A>
at 2.16pm GMT on Monday 5th February 1996</H5></BODY></HTML>
```

Saturday 3rd February 1996:  
02 09 22 26 32 44 (40)

# Applications became **limitless**



- **News, every 2 hours**, suddenly everyone wanted to get the headlines!
  - 97-12-01 18:00:03 Korean electronics giant Samsung has reacted to financial turmoil in Asia by shelving plans for a £450 million investment in the UK.



- **Euro96** – Germany scores and an SMS is sent!
  - 96-06-17 20:25:02 CROATIA 3-0 DENMARK , **RUSSIA 0-3 GERMANY** , FRANCE 1-1 SPAIN , SCOTLAND 0-2 ENGLAND , CZECH REPUBLIC 2-1 ITALY , PORTUGAL 1-0 TURKEY , BULGARIA 1-0 ROMANIA , SWI



- **Wimbledon**
  - 96-07-05 13:22:22 Date 2-6 6-2 3-6 Graf , Washington 5-7 1-2 Martin , Boogert 3-6 3-6 0-0 Novotna , Philippoussis 1-2 Woodbridge , Nastase 7-6 4-6 2-1 Newcombe , Curren 7-5 6-4 0



- **Stock Info**
  - 97-12-01 16:53:19 BT: 467.25(+11) FTSE: 4925 (+93.2) Oftel says BT has "significant market power"; Interphone payphones now take BT Chargecards



- **Weather**, on a “pull” basis by sending control email messages (to my email address)

## Adastral's SMS Gateway Traffic was >2% of total SMS traffic and >30% of non-voicemail traffic

```
Total Records: 34274

Earliest Record : 96/05/31 00:00:01
Latest Record  : 96/05/31 23:59:37

Callback          : 32244 = 94.08%
TAP Dialup       :   838 = 02.45%
Mobile Originated: 1175 = 03.43%
```

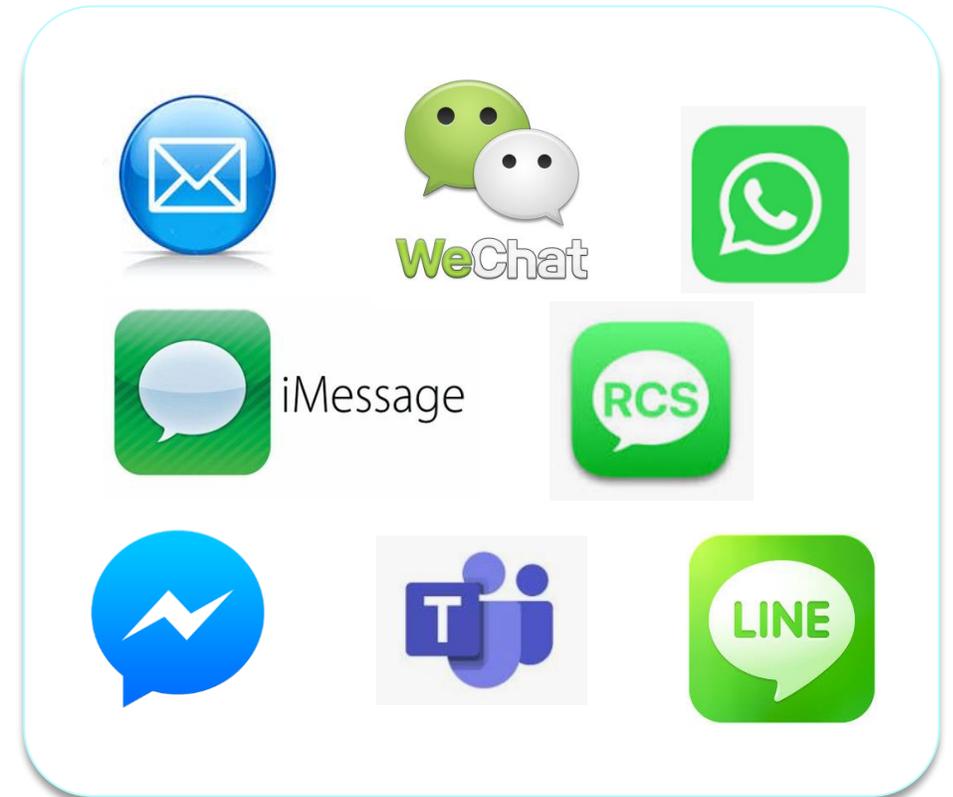
# But... where was the money?

- Who would pay? How much? How to invest in a real system?
- Sadly **Adastral's SMS Gateway** remained just a prototype



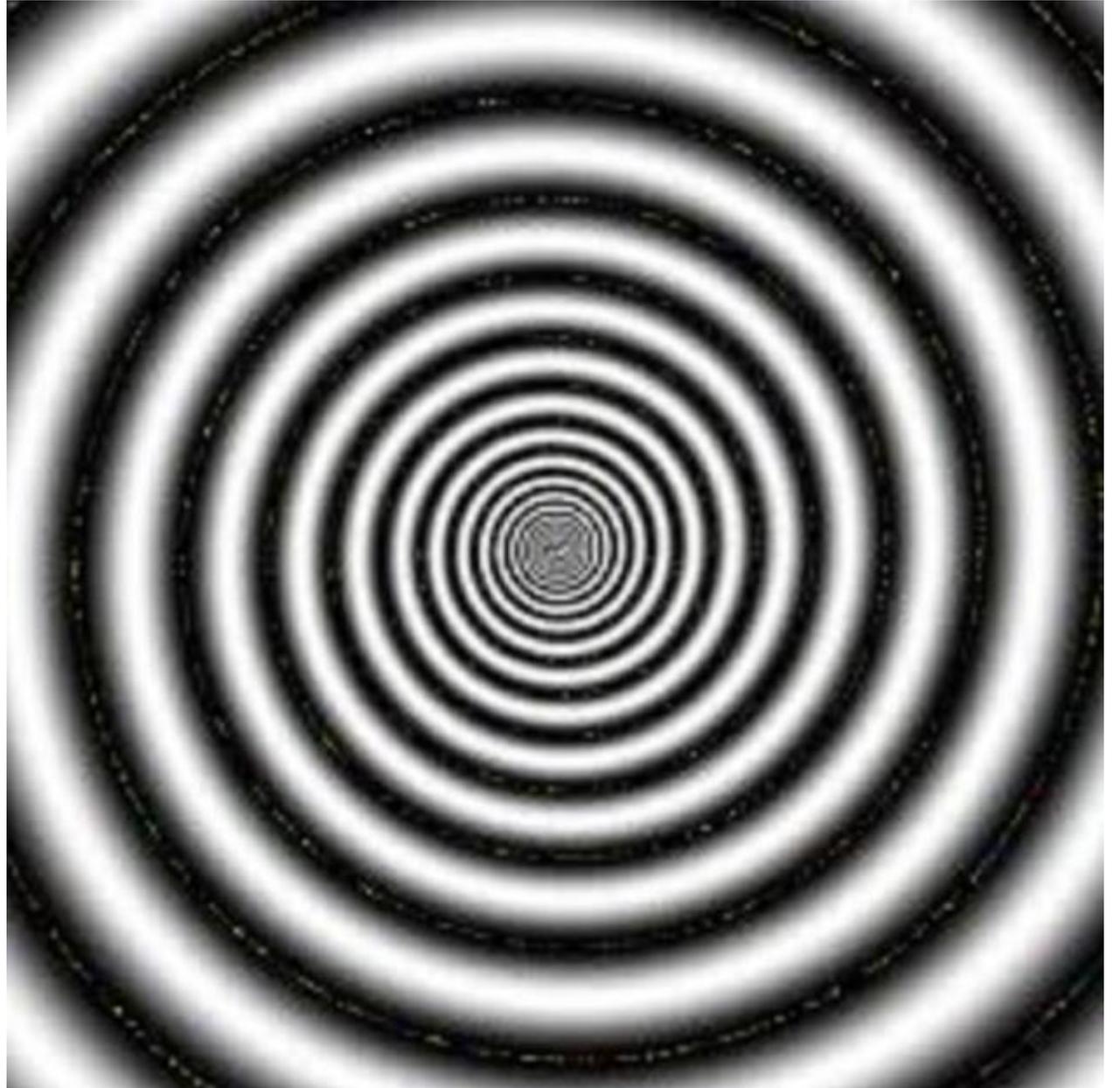
# Today's Messaging Landscape

- SMS is still used very widely because of universality
- While IM solutions, including mobile IM, have come and gone, other capabilities have emerged:
  - MMS
  - Teams
  - RCS
  - iMessage
  - WhatsApp/WeChat/Line/...
  - Facebook Messenger



**The Future...**

**... maybe with AI  
it's voice!**



**Questions?**





# Thank you for your attendance

Future IET Anglian Coastal Local Network events:

- 23 April 2026 (online only), **The Cavity Magnetron**, Prof. Peter Grant, Emeritus Professor, The University of Edinburgh
- 20 May 2026 (visit), **Bawdsey Radar Museum**

For more details and how to register please visit:

<https://engx.theiet.org/local-networks/ea1>

Event CPD Certificate and Slides/Video (subject to permission) will be available on this site.

## Anglian Coastal



The volunteers of the IET Anglian Coastal Network organise events and other activities covering engineering and technology topics for engineers and also members of the public who have an interest in engineering and technology. Even if you're not a member of the IET, you're still welcome to join us at any of our events.

We cover the areas of Norfolk, Suffolk and north Essex. Over the past few years we have organised a large number of highly successful Webinars when face-to-face meetings have not been possible. We are now able to resume face-to-face events. We aim to retain many of the benefits of the Webinar format where practical. Most of the lecture events will be hybrid offering both face to face attendance or online options. We also organise occasional visits to places of engineering interest (e.g. Bentwaters Cold War and Bawdsey Radar museums).

### Breaking News (New feature!)

We have launched our own YouTube Channel which we will use to publish videos of our events (subject to speaker permission). Do check it out if you have missed a previous event.

<https://www.youtube.com/@AnglianCoastalLN/videos>

### Blogs and Articles (New!)

Was this helpful?

Yes (30)

No

In this Article

Breaking News (New feature!)

Blogs and Articles (New!)

Contact us

Car parking in Ipswich (face to face event)

Foothold (needs your help)

Watch one of our event videos

CPD Certificates for our events

Previous event information (slides and videos)

Our committee

Created over 4 years ago

Updated 10 days ago

Upcoming Events

The History of Text Messaging

18 Mar 2026 7:00 PM to 8:15 PM

The Cavity Magnetron, key to the success of WW2 airborne RADAR

23 Apr 2026 7:00 PM to 8:15 PM

