

Index

- abuse of dominance 7–8, 10, 11, 20–23, 24, 27, 29, 56, 59, 300, 307
- dominance of online platforms *see separate entry*
- Google Search investigations *see separate entry*
- information-based abuses *see separate entry*
- law on 89–108
- policy recommendations *see separate entry*
- administrative law 280
- advertising 3, 23, 41, 45, 61, 98–9
 - behavioural/targeted 39–40, 41, 77, 81–2, 118, 136, 144–5, 146, 162, 196, 199
 - Google 39, 41, 65, 77, 113–14, 117–18, 130, 136–7, 139–45, 160, 227
 - AdSense for Search 125, 140, 142, 145, 170, 176, 178–9, 251
 - AdWords *see separate entry*
 - factors in success 163
 - price for advertising 80, 153–4, 163, 197, 202, 211
 - revenues 142–3, 162, 163, 173, 182, 183, 196, 201, 225, 245, 246
 - personalised 39, 52, 163, 201
 - two-sided markets/platforms 64–7, 78, 83
 - vertical search engines 139–40
 - WhatsApp 47
- AdWords 63, 120, 142, 153, 170, 176–212, 233, 289, 303
- keywords 183, 201
- restrictions on portability of
 - advertising data *see separate entry*
- Alphabet 5, 125, 251, 264–5, 271
- Amazon 3, 5, 24, 36, 46, 131, 146–7, 157, 159, 172, 174–5, 223, 297, 306
 - anticompetitive allegations 54–6, 57, 284, 285, 299
 - commons 309
 - fairness 100–101
 - intellectual infrastructure 44
- anticompetitive agreements, decisions and concerted practices (Art 101) 11, 56, 103–4, 120
- Apple 157, 172, 208–9, 297, 306
- application programming interfaces (APIs) 49, 120, 177–9, 181, 184, 194, 204, 205–7, 211, 212, 260
- as efficient competitor test 16
- asymmetry
 - of information 160–61, 196
 - of knowledge 51
 - of power 50, 101, 275, 280, 299, 306–9
- auction remedy 268
- audit of algorithms 297
- Austria 147
- barriers to entry 6, 82, 140, 143, 185, 242
 - AM and FM radio 231
 - big data or personal data 24, 38–9, 48, 67, 77, 78, 79, 81, 145, 161–2, 165–6, 194, 200, 279, 293, 300–301, 302
 - Google 145, 152, 159–66, 197, 200, 301, 302
 - trial-and-learning effects *see separate entry*
- behavioural economics 6, 166–9
- Belgium 147, 217
- bias(es) 237, 307
 - search *see separate entry*
 - status quo 167, 168, 202, 302

- big data 3, 5, 24, 36–41, 42, 56–7, 63, 96, 100, 197, 249, 274, 286, 307
- barrier to entry: personal data or 24, 38–9, 48, 67, 77, 78, 79, 81, 145, 161–2, 165–6, 194, 200, 279, 293, 300–301, 302
- definition 37
- essential facility 244, 246, 292–3
- market power: personal data or 77, 81–2, 87, 155
- pro-competitive 39
- thirst for: trigger for anticompetitive behaviour 45–56
 - Amazon allegations 54–6
 - Facebook case and abusive data policy 46–54
- two- or multi-sided platforms 78, 118
 - see also* commons
- Bing 144, 150, 151, 159, 161–2, 163, 170, 178, 196, 229
- black box society 307
- break-up 266–8
- bundling and multi-product discounts 21
- business models 36, 41, 45, 145, 272, 278–9, 286, 301
 - behavioural advertising 39–40
 - Facebook 77, 145
 - Google 77, 98, 119, 136, 138, 144, 145, 163, 180–184, 200–201, 218, 233, 245, 246, 267, 287
 - online social networking services 46, 50
 - personalised advertising 52
 - social goals and competition law 96
 - trade secrets 203, 278
 - two-sided markets 64, 73
- cellophane fallacy 84
- characteristics of digital markets 58–74
 - network effects, trial-and-learning effects, winner-takes-it-all 58–9, 60–64
 - potential competition and innovation 11, 59, 67–72, 73–4
 - two-sidedness of platforms 59, 64–7
- Charter of Fundamental Rights of the European Union (CFR) 235, 236
- co-investment 151, 169, 172, 218, 248, 304
- cognitive cost or effort 139, 159, 161, 167, 168, 169
- collusive behaviour 17, 78
- commitment decisions 12, 14–15, 115–16
 - fines 253, 257, 270
 - Google 115, 123–5, 130, 132, 179, 250–52, 253, 254–8, 268, 271–2
 - choice between prohibition and commitments 258–63
 - United States 178, 207, 208, 257
 - judicial review 250, 258
 - Microsoft 198, 270
 - Motorola 209
 - Samsung 209
- commons 23–4, 37, 276, 278, 281, 299, 302
 - information as commodity vs 41–4, 56–7, 73, 126–7, 279, 282, 302
 - fairness 28, 56–7, 97–8, 101, 279, 302, 308–9, 312
 - see also* restrictions on portability of advertising data; search bias
- competition on the merits 11, 90, 92, 106–7, 113–14, 142, 173, 198, 220–21, 234, 248, 271, 304
- objective justifications and 286–7, 300, 305
 - superior quality 227
- consent 161–2, 216, 305
 - Facebook: Germany 4, 50, 53, 146
- consumer choice 94, 95, 170, 178, 181, 185, 194, 199, 200, 203, 211, 300, 303
 - informed 35
- consumer inertia 72, 154, 166–7, 277, 299
- consumer welfare 4, 7–8, 13–14, 15, 23, 29, 91, 93, 277, 300
 - competition on the merits 106, 107, 113
 - convenience argument 4
 - cumulative and connective information 35
 - definition 94
 - exclusionary discrimination 214, 216

- Google 129
 - restrictions on portability 178, 183, 185, 188, 190, 199, 203, 204, 210–11
 - search neutrality 266
- innovation 71
 - disruptive 70
- Microsoft 188, 190, 199
- objective justifications 104, 113–14, 204
- open standards and full interoperability 185, 203
- personal data and free services 155
- privacy 307
- single monopoly profit theory 293–4
- static and dynamic welfare considerations 207
- three dimensions 281
- welfare standard in digital markets 28, 94–5, 113, 280–82, 286
 - fairness 28, 97, 112
 - special responsibility 103
- contracts/contract law 41, 42, 183, 290
 - Google 170
 - AdSense for Search 125, 140, 142, 145, 170, 176, 251
 - restrictions on portability of advertising data *see separate entry*
- copyright 20, 32, 74, 122, 187, 192–3, 205
 - application programming interfaces 177
 - information as commodity 41
- corporate governance 2
- Court of Justice of European Union (CJEU) 15, 90–91, 282
- commitment decisions 256
- consumer welfare 29
- exclusionary discrimination 284
 - vertical foreclosure 224
- foreclosure and consumer harm 93
- Google 119, 271
- levels of dominance 105–6
- prohibition decisions and commitments 271
- refusal to licence
 - exceptional circumstances test *see separate entry*
- refusal to supply 114
 - essential facilities doctrine 241–2, 243
- creative destruction 69, 72
- credence good 6, 28, 32, 102–3, 136, 154, 161, 245, 246
 - market power analysis 44–5
- Czech Republic 147, 149–50
- damages 15–16, 255
- data portability 43, 280
 - restrictions on portability of advertising data *see separate entry*
- data protection 54, 155, 305
 - competition law 50–52, 57
 - General Data Protection Regulation (GDPR) 43, 49–52, 280
- database protection 42
- deception and algorithmic markets 98
- defensive leveraging 11, 218, 231
- definitions
 - behavioural advertising 40
 - big data 37
 - consumer welfare 94
 - dominance 75–9
 - exclusionary abuse 90
 - information 34
 - information-based abuses 46
 - interoperability 184
 - net neutrality 265
 - search bias 127, 129, 213
 - social network, online 46
- Denmark 147, 296
- difference-in-differences analysis 230
- digital markets, characteristics of 58–74
- dominance of Facebook in German market 47
- dominance of Google 134–75, 302–3
 - geographical market 134, 147–9, 174
 - market power, sources of 152, 159
 - barriers to expansion and entry 152, 159–66
 - countervailing buyer power 152, 167–9
 - Google's own actions 169–73
 - multi-homing 152, 166–7
 - market share 140, 149–51, 164
 - relevant product market 134, 174

- definition vs evolving reality 135–6
- general search services 136–8
- market for gathering and monetising data 145–7
- online search advertising 140–45, 146
- vertical search services 138–40
- substitutability
 - general search engine 155–9
 - SSNIP 151–5, 174
- dominance of online platforms 75–88
 - definition of dominance 75–9
 - Google *see* dominance of Google
 - market power in digital markets 79–82
 - relevant market *see separate entry*
- DoubleClick 144, 145, 149, 163, 200–201
- eBay 131, 146–7, 297, 306
- ebookers 157, 174–5
- economics 16, 18
 - behavioural 6, 166–9
 - error-cost approach to enforcement 18–19, 262
 - of networks 6
- economics-based approach 14–16, 93, 282
- economies of scale 48, 61, 80–81, 92, 156, 165–6, 172, 185, 288, 291
- natural monopolies and network effects 10, 289
- economies of scope 92, 156, 165
- effects-based approach or *per se* rule 12–20, 24, 59, 93, 300
- enforcement costs 18, 261, 262
- equal treatment 131–2, 213, 234, 235, 236, 252, 261, 263–6, 272, 283–4
- error-cost approach to enforcement 18–19, 262
- errors 15, 18–19, 32, 262
 - Type I: false positives 12–14, 18, 19, 32, 72, 99, 262
 - Type II: false negatives 12–14, 18, 72, 262
- essential facilities doctrine 9–10, 24, 42, 74, 173, 220–21, 238–47, 248, 300, 309–11
 - certain standard of service 245–7
 - indispensable facility 243–4
 - relevance in analysis of digital markets 287–95
 - top search results 244–5
 - users' data 247
- European Commission 5–6, 10, 13, 17, 22–3, 82, 90, 103, 274, 276, 281–3, 300, 305, 309
- Amazon 54–6, 57, 284, 285, 299
- consistency 31
- consumer welfare 94, 95
- economics-based approach 14–15, 93
- foreclosure and consumer harm 92–3
- Google Search investigations *see separate entry*
- guidance combining position of Courts and 31
- Guidance Paper 2009 11, 17, 93, 95, 104, 216
 - vertical refusals to supply 8–9
- Guidelines bind only 15
- merger of Google and DoubleClick 144
- Microsoft/Skype* merger case 82, 83
- procedures and actions
 - commitment decisions *see separate entry*
 - prohibition decisions *see separate entry*
 - remedies *see separate entry*
- European Consumer Organisation (BEUC) 268
- European Parliament 266–7, 297, 306
- exceptional circumstances test 9, 42, 180, 183, 186–91, 290–91
- portability restrictions 183, 191, 211–12, 303, 311
 - indispensability 191–4
 - objective justifications 203–5
 - refusal eliminates all
 - competition in relevant market 194–9
 - technical development
 - limited to detriment of consumers 199–203
 - standard-essential patents 207–10
- exclusionary abuse 4, 14, 17, 23, 53, 78, 90, 129, 277, 299–300

- definition 90
- discrimination 15, 17
 - exclusionary *see separate entry*
 - price 10, 16, 17, 214, 215
- fairness 97
- foreclosure and consumer harm 91–3
- refusals to deal/supply/give access 8–10, 11, 16, 21–2, 24, 29, 71, 91, 104, 113, 114, 172, 173, 184, 212, 215, 220, 277, 300
 - essential facilities doctrine *see separate entry*
 - refusal to access interoperability information *see* restrictions on portability of advertising data
 - refusal to license *see separate entry*
- tying 15, 21, 91, 172, 173, 188, 190, 198, 215, 219, 220, 269–70, 277, 300
- exclusionary discrimination/theory of self-preferencing 10–11, 22, 91, 111, 113, 213–14, 220–23, 248, 261–2, 271, 283, 303–4, 311
 - Art 102(c) 214–17
 - criteria for 248–9
 - appreciable effect on adjacent market 227–31
 - harm to innovation 232–5
 - objective justifications 235–7
 - potential foreclosure 223–7
 - per se* prohibition 283–5
- exclusive dealing arrangements 16, 21
- exclusive obligations 123, 140–41, 142, 170, 176, 194–5, 303
- Expedia 139–40, 152
- exploitative abuse 4, 14, 17, 53, 277, 300, 307
 - Facebook business terms:
 - Bundeskartellamt 48–54
 - fairness 97
- expression, freedom of 235, 278
- Facebook 3, 5, 24, 36, 37, 57, 98–9, 143, 145, 151, 199, 278, 280, 292, 297, 306
 - abusive data policy 46–54
 - Business Tools 49
 - data collection outside
 - Facebook 49, 51, 52–3
 - restrictions on Facebook 52–3
 - advertising 41, 61, 65, 77
 - APIs 49, 177
 - barrier to entry 38–9, 165–6
 - commons 309
 - competitor access to data of 56–7
 - fairness 100–101, 279
 - Germany 4, 38–9, 46, 47–54, 57, 61, 79, 101, 107, 146, 149, 165–6, 279, 286, 299, 305, 307
 - Higher Regional Court of Dusseldorf 4, 53–4, 305
 - intellectual infrastructure 44
 - profiling 51, 56, 143
 - search engine 157–8
 - switching 60–61
- fair, reasonable and non-discriminatory (FRAND) 119, 207–10
- fairness 2, 43, 55, 77, 103, 278, 287, 311
 - as additional goal 8, 23, 95–101, 108, 222, 274, 279–82, 300, 302, 306, 308–9
 - information as commons 28, 56–7, 97–8, 101, 279, 302, 308–9, 312
 - algorithmic 296–7, 308
 - big data 36–7, 51–2, 56–7
 - consumer welfare and 28, 97, 112
 - no-fault monopoly 78
 - remuneration 115, 182
 - search bias 4, 119, 127, 311
 - search neutrality 266
 - small businesses 181
 - terms and conditions and personal data 24, 51–2, 279
 - towards 37, 101, 281
 - competitors 97
 - customers/suppliers 97
 - two-sided markets 73
 - unfair trading conditions 215
 - vague 97, 99, 281, 308
- FairSearch.org 121, 122
- false negatives 12–14, 18, 72, 262
- false positives 12–14, 18, 19, 32, 72, 99, 262
- feedback, positive 31, 164–5

- search bias 127–32
 - US investigations 119–20
- dominance of Google *see separate entry*
- finances 25, 110, 124, 125, 126, 131, 253, 254, 258, 262, 271, 272, 303, 304
 - legal procedures and actions
 - commitments *see Google under commitment decisions*
 - prohibition decisions
 - see Google under prohibition decisions*
 - remedies *see separate entry*
 - restrictions on portability of advertising data *see separate entry*
 - search bias *see separate entry*
 - Statement of Objections 124, 125, 130–31, 132, 251, 258, 259, 264
- government and regulators 171, 269, 296
- hypothetical monopolist test 5, 135
 - SSNIP test 25, 84–5, 87, 133, 151–5, 174
- incentives to invest and innovate 29, 73–4, 103, 108, 214, 281
 - Amazon allegations 55
 - digital monopolist 69
 - mandatory access to data and information 41, 44, 203, 301
 - no-fault monopoly 78
 - objective justifications 203, 205
 - over-enforcement of antitrust law 19
 - prohibition decisions or commitments 260
 - protection of 7, 28
 - remedies 115
 - break-up 267
 - design of 269
 - equal treatment 264
 - structural 272
 - restrictions on portability of advertising data 178, 182, 184, 203, 205, 207, 211
 - two kinds of 71
- information 27, 56–7, 294, 299
 - appropriation 36, 40
 - asymmetry 160–61, 196
 - big data 4, 5, 36–41, 42, 56–7
 - anticompetitive behaviour: recent cases 45–56
 - barrier to entry 38–9, 48
 - case-by-case analysis 39
 - definition 37
 - services for data 37–8, 39
 - characteristics 34–6
 - as commodity vs commons 41–4, 56–7, 73, 126–7, 279, 282, 303
 - social values 28, 56–7, 97–8, 101, 279, 302, 308–9, 312
 - competition law and thirst for 1–5
 - credence good and market power analysis 44–5
 - cumulative and connective 35
 - defining 34–6
 - experience good 44
 - refocusing competition assessment of 276–80
 - search good 44
 - see also* restrictions on portability of advertising data; search bias
- information-based abuses 3, 4, 46–56, 97–8, 100–101, 275, 282, 299, 301–6, 311
 - challenges to application of Art 102 to 5–12
 - per se* rule or effects-based approach to 12–20, 300
 - see also* Google Search investigations
- infrastructure theory 43–4, 294–5
- innovation 6, 7, 18, 19–20, 27, 30, 44, 82, 150, 245, 247, 285, 291
 - break-up 268
 - disruptive 69–70, 72, 78, 87, 202–3, 234, 311
- fairness 99
- government and regulators 171, 269
- harm to 29, 94–5, 194, 232–5
- incentives to invest and innovate *see separate entry*
- market analysis (IMA) 71–2
- objective justifications 32, 71

- potential competition and 11, 59, 67–72, 73–4, 83, 146, 203
- prohibition decisions or
 - commitments 260–61, 262
- restrictions on portability of
 - advertising data 185, 202–3, 205, 211
- temporary monopoly 31
- trade secrets 205, 206
- Instagram 47, 49, 52, 81, 174–5, 199, 297, 306
- intellectual infrastructure 295
- intellectual property rights (IPRs) 20, 22, 71, 74, 183, 216, 242, 278
 - big data 42, 293
 - copyright *see separate entry*
 - essential facilities doctrine 42, 74, 289, 290
 - information as commodity 41–2
 - patents *see separate entry*
 - personal data 189–90
 - refusal to license 8, 9, 114, 180, 186, 242, 291, 292, 311
 - exceptional circumstances test *see separate entry*
 - trade secrets *see separate entry*
- interim measures decisions 116, 216, 259
- investment *see* incentives to invest and innovate
- Italy 122, 147, 166
- justice 2, 99, 100, 101
- Kaldor-Hicks efficiency 254
- Kayak 152
- law and economics 167–8
- learning costs 160, 167, 168
- legal certainty 22, 103, 115, 168, 252, 255, 261, 265, 283
- legal procedures and actions
 - commitment decisions *see separate entry*
 - prohibition decisions *see separate entry*
 - remedies *see separate entry*
- leveraging market power to adjacent markets 217–20
- ‘Like’ or ‘Share’ buttons 49
- lock-in 61, 161, 167, 171, 185, 197, 202, 227, 291
- machine learning 5, 40, 57, 225, 226, 287
- market definition *see* relevant market
- market power 6, 31, 33, 40, 63, 65–6, 72, 73, 74, 78, 79–82
 - big data or personal data 77, 81–2, 87, 155
- Google: market share 140, 149–51, 164
- Google: sources of 152, 159
 - barriers to expansion and entry 152, 159–66
 - countervailing buyer power 152, 167–9
 - Google’s own actions 169–73
 - multi-homing 152, 166–7
- Google: substitutability
 - general search engine 155–9
 - SSNIP 151–5
- information as credence good:
 - implication for analysis of 44–5
- market share 79–80, 82, 83, 87
 - Google 140, 149–51, 164, 179
- see also* characteristics of digital markets
- Masquerade 47, 49
- mergers 223
 - Google with DoubleClick 144, 145, 149, 163, 200–201
 - Microsoft/Skype merger case 82, 83
- Microsoft 82, 83, 159, 188–90, 195, 197, 198, 199–200, 204, 208, 262, 297
 - must-carry (browser choice) remedy 269–70
- minimum spanning tree 72, 139, 169, 244, 277, 299, 305
- multi-homing 182, 183, 203
 - Google 120, 141–2, 152, 166–7, 178, 181, 183, 198–9
 - Microsoft 198
- multi-sided markets/platforms 59, 72, 78, 102, 155, 174, 183
- national competition authorities (NCAs)
 - 31, 258, 274, 305, 306, 309
 - Belgium 217

- France 143, 216–17
- Germany *see* Bundeskartellamt
under Germany
- Netflix 278
- Netherlands 147
- network effects 72, 86, 226, 280, 300–301, 310
 - barriers to entry 24, 39, 67, 73
 - dominance 76, 78, 80–81
 - Facebook 48, 60–61, 107
 - first-mover advantages and tipping of market 107, 162, 200
 - foreclosure effect 92
 - Google 115, 118, 151, 162, 164–5, 169–70, 200, 246, 247
 - identity-based direct 48, 60–61
 - indirect 61, 63, 201, 277, 291, 299
 - inferior goods 74
 - invest to create 63
 - lock-in 167
 - multi-homing 182, 199
 - natural monopolies 10, 62–3, 289, 291
 - nature of and connected phenomena 60–64
 - new kinds of 58–9
 - potential competition and innovation 69, 70
 - rebates to buyers 170
 - restrictions on portability and 178, 183, 185, 189, 196, 199, 200, 201, 211
 - technological add-ons 169–70
 - total welfare 95
 - two-sided markets and 64–5, 117, 118, 164–5, 196
 - vertical search engines 172
- no-fault monopoly 78–9, 86
- Norway 147
- nudging 98, 300
- objective justifications 5, 9, 11–12, 90, 190, 278
 - business justifications 11, 27, 28, 32, 108, 112, 203, 212, 235–7, 286–7, 301, 303
 - competition on the merits and 286–7, 300, 305
 - exceptional circumstances test 187, 188, 189, 190, 242, 243, 303, 309–10
 - Google 179, 203–5, 212, 221, 235–7, 249, 262, 271, 303, 304
 - improving quality 113–14
 - innovation 32, 71
 - Microsoft Corp v Commission*: absence of 189
 - role of 103–7
 - Oculus 47, 49
 - OECD (Organisation for Economic Co-operation and Development) 31, 162
 - over-enforcement 14, 19
 - Type I error 12–13
 - Page, Larry 98
 - Pareto efficiency 254
 - patents 32, 74, 205, 206, 227, 244, 293
 - Google Patents 169, 171, 218
 - information as commodity 41
 - standard-essential 119, 207–10
 - path dependence 163
 - per se* prohibition of self-preferencing 283–5
 - per se* rule or effects-based approach 12–20, 24, 59, 93, 300
 - personal data 24, 38–40, 42–3, 63, 195, 267, 292–3
 - barrier to entry: big data or 24, 38–9, 48, 67, 77, 78, 79, 81, 145, 161–2, 165–6, 194, 200, 279, 293, 300–301, 302
 - exceptional circumstances: refusal of access to 189–90
 - Facebook terms and conditions 48–54, 279, 297
 - Google expanding control of user 197
 - Google and vertical search services 139, 156, 171
 - loss of control over 51, 54
 - market power: big data or 77, 81–2, 87, 155
 - selling to advertisers 99
 - services paid for with 37–9, 66, 73, 78, 153, 155, 166, 174, 247
 - market power 81

- Poland 147
- policy recommendations 274–98
- essential facilities doctrine 287–95
 - information, competition assessment of 276–80
 - new kinds of abuses 282–3
 - other forms of regulation 295–8
 - per se* prohibition of
 - self-preferencing 283–5
- positive feedback 31, 164–5
- power asymmetry 50, 101, 275, 280, 299, 306–9
- precedent 12, 115, 223, 256, 257, 258, 271, 274, 286, 300, 306, 307
- predatory pricing 15
- privacy 2, 17, 39, 41, 42, 78, 99, 286, 305
- as additional goal 8, 50, 53, 66–7, 96, 274, 279–80, 305–6, 309
 - Germany: Bundeskartellamt 50–51, 53, 307
 - Google 153, 155, 170, 247
 - right to 155, 278, 279
 - two-sided markets/platforms 66–7, 73
- product life cycle 29–30, 68
- profiling
- Facebook 51, 56, 143
- prohibition decisions 12, 250, 256, 257
- Google 110, 115–16, 123, 136, 250–54, 270–71, 304
 - Android 124
 - choice between prohibition and commitments 258–63
 - Motorola 209
- proportionality 104, 105, 254–5, 267, 271, 287
- public good *see* commons
- public sphere, digital
- advertising revenue of news and media sites 41
- rational decision making 167
- refusal to license 8, 9, 111, 114, 172, 180, 186, 219, 242, 288, 291, 311
- exceptional circumstances test *see separate entry*
- refusals to deal/supply/give access *see under* exclusionary abuse
- relevant market 30, 31, 32, 59, 67, 73, 80, 82–6, 87, 88
- cellophane fallacy 84
 - data 78, 145, 155
 - Facebook 47–8, 81, 146, 149
 - geographical market 59, 76, 79, 85–6, 87
 - Facebook 48, 149
 - Google 134, 147–9, 174
 - hypothetical monopolist test 5, 135
 - SSNIP test 25, 84–5, 87, 133, 151–5, 174
- potential competition and innovation 67–8
- privacy 39, 78, 155
- product market 6–7, 39–40, 59, 70, 75–6, 79, 82–5, 87
- definition vs evolving reality 135–6
 - general search services 136–8
 - Google 134, 135–47, 174, 179, 302
 - market for gathering and monetising data 145–7
 - online search advertising 140–45, 146
 - vertical search services 138–40
- quality of product/service 6, 7, 31, 33, 68, 75, 79, 81, 82, 83, 84, 87, 134–5, 154, 245
- SSNIP test 25, 84–5, 87, 133, 151–5, 174
- two-sided markets 6, 59, 65–6, 79, 80, 83
- Google 134–5, 152–3
 - SSNIP test 84–5, 87, 152–3
- see also* characteristics of digital markets
- remedies 12, 21, 116, 125, 143, 246, 252, 261, 263
- auction 268
 - break-up 266–8
 - equal treatment 131–2, 213, 234, 235, 236, 252, 261, 263–6, 272, 283–4
 - Germany: restrictions on Facebook 52–3
 - periodic reports 264
- rent-seeking problems 18
- reputation 204, 212, 277, 292, 299

- research and development 7, 68, 69, 74, 76, 83, 159, 203
- restrictions on portability of advertising data 113, 114–15, 126, 130, 141, 170, 176–212, 303
 - business model 180–84
 - exceptional circumstances test 183, 186–91, 211–12, 303, 311
 - indispensability 191–4
 - objective justifications 203–5, 262, 271
 - refusal eliminates all
 - competition in relevant market 194–9
 - technical development 199–203
- legal procedures and action 178, 179, 260, 262, 271
- perfect remedy 269–70
- refusal to access interoperability information 184–6, 211, 212, 303
- Software Directive 205
- standard-essential patents 207–10
- trade secrets 187, 188, 189, 190, 191, 203–5, 206–7, 212, 311
- United States 177–8
- reverse engineering 205
- scrapping 42, 120, 121, 123
- search bias 4, 6, 17, 23, 25, 111, 112–13, 114–15, 119, 121, 123, 124, 125, 126, 127, 165, 179, 213–49, 258, 277, 285, 300
 - aim of 172, 218, 220, 305
 - background on investigations 127–32
 - commitments *see* Google *under* commitment decisions
 - commons, information as 42, 303
 - criticism of Commission's approach 220–23
 - definition 127, 129, 213
 - discrimination (Art 102(c)) 214–17
 - criteria for exclusionary 223–37
 - essential facilities doctrine 220–21, 238–43, 248, 287, 309–10
 - certain standard of service 245–7
 - indispensable facility 243–4
 - top search results 244–5
 - users' data 247
 - exclusionary discrimination, criteria for 223–37, 248–9, 303–4
 - appreciable effect on adjacent market 227–31
 - harm to innovation 232–5
 - objective justifications 235–7, 262
 - potential foreclosure 223–7
 - fines 110, 125, 126, 131, 253, 303
 - leveraging market power to adjacent markets 217–20
 - merchant platforms and comparison shopping services 147
 - prohibition *see* Google *under* prohibition decisions
 - remedies 125
 - equal treatment 131–2, 213, 234, 235, 236, 252, 261, 263–6, 272, 283–4
 - perfect 269–70
 - Statement of Objections 124, 125, 130–31, 132
 - United States 119, 127–9
- self-determination
 - Facebook user: informational 51
- self-preference 4, 24, 25, 55, 56, 237, 271, 287
 - exclusionary discrimination/theory of self-preferencing *see* *separate entry*
 - per se* prohibition 283–5
- self-regulation 280, 297–8
- 'Share' or 'Like' buttons 49
- single monopoly profit theory 173, 219, 293–4
- Skyscanner 297, 306
- Slovenia 150
- small businesses 120, 178, 181
- Snapchat 81, 98–9
- social goals as accompanying goals of competition law 8, 23, 50, 53, 54, 66–7, 95–101, 108, 222, 274, 279–82, 300, 302, 306, 308–9
- social networks, online 38, 157–8
 - definition 46
 - Facebook *see* *separate entry*
- Software Directive 205
- Spain 147, 166

- special responsibility 5, 18, 90, 101–3, 108, 112, 283, 284, 285, 311
 - data portability 181, 183, 199
 - dominant undertakings 28, 113
 - fairness 99, 100, 103, 302
 - commons or commodity 98
 - information fiduciaries 57
 - super-dominance 105
- SSNIP (small but significant and non-transitory increase in price)
 - test 25, 84–5, 87, 133, 151–5, 174
- standardisation 30, 68, 182–3
 - de facto* standards 2, 102, 108, 115, 144, 157, 163, 181–3, 192, 193, 195, 202, 203, 211, 285, 307
- start-ups 70, 74
- status quo bias 167, 168, 202, 302
- super-dominance 105–6
- Sweden 147
- switching 59, 60–61, 84, 85, 148, 152, 154, 155, 196–7, 229
 - costs 4, 62, 72, 159, 160–61, 163, 166–7, 170, 178, 196, 200, 210, 289
- trade secrets 32, 74, 278, 285, 290, 301, 302
 - APIs and data 181
 - big data 42
 - bottlenecks 63
 - Google AdWords 182, 183–4
 - Google foreclosure 227
 - Google's search algorithm 44
 - information as commodity 41
 - market power 171
 - no unified system of protection
 - under EU law 32
 - restrictions on portability of
 - advertising data 187, 188, 189, 190, 191, 203–5, 206–7, 212, 311
- transaction costs 13, 14, 160
- transitory digital monopoly 29–30
- transparency 40, 252, 296–7, 306, 308
 - prices for advertisements 197
 - special responsibility 103
- trial-and-learning effects 31, 63–4, 73, 85, 162, 165–6, 226, 246, 249, 291, 295, 300–301
- TripAdvisor 297, 306
- Twitter 81, 145, 177
- two-sided markets/platforms 6, 45, 59, 72, 78, 80
 - Amazon 55
 - free products and 6, 64–7, 73, 78, 79, 82, 83, 117–18, 152–3, 163–5, 174, 183, 196, 202, 226–7, 245–6, 267, 301
 - SSNIP test 84–5, 87, 152–3, 174
 - Google 117–18, 152–3, 163–5, 174, 196, 202, 226–7, 245–6, 267, 301
- tying 15, 21, 91, 172, 173, 188, 190, 198, 215, 219, 220, 269–70, 277, 300
- Type I and Type II errors *see* errors
- uncertainty 19–20
- under-enforcement
 - Type error 12–13
- unfair trading conditions 215
- United Kingdom 147, 166
 - Streetmap* 227–9, 287
- United States 19, 92, 280
 - Bing 150, 170
 - copyright 205
 - essential facilities doctrine 239–40, 244
 - Google: FTC investigations 111, 115, 118, 119–20, 132–3, 257
 - relevant market 136, 144
 - restrictions on portability of
 - advertising data 177–8, 181, 207–8
 - search bias 127–9, 132, 233, 244
 - Google market share 150, 179
 - Google Panda algorithm 225
 - leveraging 172–3, 219
 - patents 205, 244
 - Sherman Act 20, 89, 119
- vertical integration 11, 55, 92, 107, 169, 204, 214, 283–4, 292, 294
 - search neutrality 266
- vertical search services, role of Google's 139, 171–3

- welfare standard 97
 consumer welfare *see separate entry*
 total welfare 95, 282, 286
- WhatsApp 46, 47, 48, 49, 52, 81
- Yahoo! 150, 151, 196, 229
- YouTube 47, 81, 98–9, 139, 168, 169, 277

