Index

3G technology 56–7, 63–4, 243, 273–4, 281
4G technology 56–7, 68
Adamsson, P. 94
Adobe's PDF format 41
Aghion, P. 105, 106
Alfonso, S. 348
Allison, J. 21
Anderman, S. 15, 369, 373, 374, 385, 393, 394, 396, 400, 403
Andewelt, R. 248, 420
anti-competitiveness
cartels as standard derived patent tool as see patent pools, standard setting and comparative analysis of patent pools, standard derived patent pool as anti-competitive cartel
comparative analysis see comparative analysis and critique of EU and US antitrust regulation of standards, anti-competitive considerations
standardization agreements see standardization agreements and adjoining collaborations, regulation of, EU competition rules, anti-competitiveness
technology pools’ structure see patent pools, structure of technology pools and alleged pro- and anti-competitive effects
anticommons problem
patent thickets 32, 53–4, 92–3, 112, 113, 114, 250
R&D collaborations 6–7
Archibugi, D. 48
Areda, P. 103
Armentano, D. 99, 100–101
Arrow, K. 89, 100, 104–5, 110, 368
audiovisual industry
CD-Rom technology and patent misuse doctrine 286–90, 392, 394, 395
ICT industry, CD, DVD and Blu-ray standards 3, 56, 267, 268, 278–9, 280
MPEG see MPEG (Moving Picture Experts Group)
‘mutual assured destruction’ (MAD) capability 22
patent divisionals 24, 143–4
see also consumer electronics; ICT industry
Austin, M. 123
Baird, S. 3, 39, 40, 41, 52, 54, 55, 56
Baron, J. 4–5, 33, 77, 118, 403–4, 407
Barton, J. 9, 20, 25, 26, 33, 75, 79, 95, 298, 420
Baumol, W. 81, 82, 84, 85, 95, 100, 232, 276, 296, 349, 408
Beenev, G. 248
Bekkers, R. 1–3, 8–9, 32, 34, 44, 47, 51–2, 56–64, 70, 76–7, 85, 208–9, 231, 233, 245–6, 273–4, 276–7, 297
Belgium
Belasco price cartel 192–3
CEG trade association, water quality monitoring 192
National Association of Water Suppliers (ANSEAU) 192
bilateral agreements
patent pools, Business Review Letters 263
patent pools, EU antitrust approach 269–70
patent pools, R&D collaborations 8–9
standard essential patents (SEPs), sale and purchase 311–14
see also licensing
biotech industry
business patent strategy model and outsourcing 73
divisionals of already submitted patent applications 24
follow-on innovation 95
infringement situations, creation as strategic patenting 24
patent flooding 21
patent thickets 29–30
specialization and outsourcing 68
see also ICT sector
Blind, K. 41–3, 44, 52, 133
block exemptions 194–7, 271
Brimelow, A. 423
Brown, J. 151, 163
Bulow, J. 79
bundling suggestion, patent pools 264, 275
business patent strategy models 72–81
all-industry inclusive standardization and stable oligopolies 77–8
benign covenants and contract violations 78–9
consortia voting powers 77
defensive patenting 74–5, 79
field-of-use restriction, violation of 79
IP Banks see IP Banks
large vertically integrated multinational firms 73–4, 77
MAD capability as revenue-creating source of income 78
manufacturing-only firms and second-generation innovations 76, 78, 79
marketing and branding of products 78
network effects and defensive patenting 74–5
PAEs (patent assertion entities) 79–80
patent trolls and abuse of standard-setting system 80
planned obsolescence 79
privateering 80
public-private partnerships 73
R&D outsourcing 73
royalty stream mechanism in relevant patent pool agreements 79
small specialized R&D-intensive firms 74, 78, 79
standard-setting process as collective innovation 73, 76–7
system leaders 74–5, 80
value chain control 77–8
see also IP Banks; patent management strategies
Business Review Letters and joint collaborations, anti-competitive considerations 282, 284, 388
on SDOs see standardization agreements and adjoining collaborations, regulation of, US antitrust law and standard-setting collaborations, Business Review Letters on SDOs
US antitrust law see patent pools, modern approach under US antitrust law, Business Review Letters, early
C Programming language 41, 44
cable specifications development 41, 43, 55–6, 214–18
see also telecommunications industry
Calderini, M. 25
Cargill, C. 27, 43, 52, 53, 72, 151, 152, 166
Carlson, S. 237
Carrier, M. 65, 323, 332
cartels
  anti-competitive cartel, standard
  derived patent tool as see patent
  pools, standard setting and
  comparative analysis of patent
  pools, standard derived patent
  pool as anti-competitive cartel
  buyer cartels, collective obligation to
  supply 208–11, 293
  collusion on winning technology 83,
  84–5
  comparative analysis of EU and US
  antitrust regulation of standards
  371–2
  dangers of, technology consortia
  84–7
  ‘fraud’ standardization agreements
  and price restriction 199–200
  litigation prevention 136
  monopsonies 208–11, 293
  price cartels, standard-setting
  procedures and dynamic
  competition theories, problems
  between 113–14
  price-fixing claims and cartel
  royalties 253–4, 255
  product diversification restrictions
  207–8
  see also consortia; monopolies; R&D
  collaboration agreements
cease-and-desist orders 330, 333
Chien, C. 329
Choumeflova, D. 274
Christ, J. 18, 278, 280, 370, 396
Ciborra, C. 81
Clarkson, G. 291–2
  collaboration see R&D collaboration
  agreements
  collective innovation 27–8, 45, 73,
  76–7, 403–4
  see also innovation
  comfort letter procedure, patent pools
  267
  comparative analysis and critique of EU
  and US antitrust regulation of
  standards 365–418
  globalization effects 365, 370
  ‘good governance’ rules, need for
  development of 366–7, 371, 376
  New Economy and SSOs 365, 368
  safe harbours, identification of 366,
  371
  specialization among firms 365
  standard identification 365–6
  standard-setting process and
  competition law 366
  comparative analysis and critique of EU
  and US antitrust regulation of
  standards, anti-competitive
  considerations 381–402
  anti-competitive agreements under
  infrastructure standards 391–3
  anti-competitive agreements under
  interoperability standards 393–9
  Business Review Letter procedure
  and joint collaborations 388
  competition by substitution 395–6
  competition law application 384–9
  future innovation considerations
  394–5
  IP Banks see IP Banks
  joint R&D agreements 381, 383, 385,
  386–7
  PAEs and patent portfolio rise 388–9
  patent ambush 384
  patent blockers as non-competitive
  385–7, 394
  patent thickets 401
  royalties and patent pools 383
  and rule of reason 389, 392
  safe harbours 384–9, 391–2
  safe harbours, competition law
  application outside 389–90
  standardization collaboration 381–2,
  384–5, 390, 401
  tipping effects 396
  video coding interoperability
  standard (MPEG) 397–9, 401
  comparative analysis and critique of EU
  and US antitrust regulation of
  standards, anti-competitive
  considerations, patent pools
  382–3, 391–2
  exclusion of competing technologies
  390, 392–3
exclusion conditions 400
lock-in effects 400
and product design standards 399–401
and royalties 383
comparative analysis and critique of EU and US antitrust regulation of standards, competition policy and law limitations 367–81
cartel decisions 371–2
competitive harm identification 374
consortia-created standards 369–70, 377–8, 380
consumers and technical solution choices 369–70
de facto standards created through network effect, possible inferiority to de jure standard 369
dormant commerce clause 380
free movement of goods and access to markets 377–9
government and courts, standard decision involvement 370–75, 378–9
infrastructure (interoperability) standards 367–9
interface between competition law and trade rules 375–81
market development and wealth creation 367–9
National Standards-Setting Organizations (NSOs) and good governance 376
New Approach and good governance 376, 378–9
New Approach and private standards 375
New Economy effects 368–9
patent pools, procedural aspects of standard-setting 374–5
performance standard identification 371–2
product or design standards 367
standard-setting process abuse 373
standardization process 376, 378
superior technology identification 371–2
technical committees, judging 380
trial and error, lack of room for 367–70
comparative analysis and critique of EU and US antitrust regulation of standards, patent pools, pre-standardization agreements and technology agreement 402–7
and ‘competition on the merits’ 406–7
consortia collaboration 404–5
consortia and increased efficiency 407
exclusionary nature of technology research path 405–6
interoperability standard collaboration 406
irrelevant standard-setting procedures 407
patent thicket creation 403
standard-setting as collective innovation 403–4
comparative analysis and critique of EU and US antitrust regulation of standards, procedural rules for scrutinizing SSOs, need for more developed and stringent 414–18
collaboration agreements, ‘prior art’ covenants 418, 422–3
ex ante negotiations between the patentees, need for 417–18
FRAND as ex post procedure 417
‘good governance’ rules 414–17
patent ambush, dealing with 416–17
royalty rate decisions as ex post procedure 417–18
WTO principles for standard setting as starting point 415
comparative analysis and critique of EU and US antitrust regulation of standards, unilateral conduct under standards 408–13
competition by substitution 411
infrastructure/interoperability standards and design/product standards, division between 408–9
market failure cases 409
new entry, joint litigation schemes to prevent 413
PAEs (patent assertion entities) 410, 411–13
IP Banks 412–13
patent ambush 408
patent trolls 411–12
pre-standardization conduct 410
standard-setting procedure access and exceptional circumstances doctrine 409
competition by substitution 325–6, 395–6, 411
competing patents in patent pool 169
competing technologies’ exclusion, anti-competitive considerations, patent pools 390, 392–3
competitive advantage, technology consortia 81, 83, 84–5, 86–7
competitive harm identification 374
‘competitively disadvantaged’ meaning 295
law application, anti-competitive considerations 384–9
and patent functions 88–9, 90, 93
perfect competition definition, innovation incentive and discovery process 100, 101–2
policy, comparative analysis see comparative analysis and critique of EU and US antitrust regulation of standards, competition policy and law limitations
process, unpredictability of 98–100
as trial and error 100–101
competition, dynamic competition theories Business Review Letters, early 247–8 and standard-setting procedures see standard-setting procedures and dynamic competition theories, problems between

versus static 101–2
competition versus monopoly 103–9
competition and evolutionary economics 105
competition as innovation incentive 105
competition and ‘less product differentiation’ 106
imitation and innovation incentive reduction 106–7
innovation and wealth creation 102
joint R&D collaborative research, effects on competition 107–8
knowledge spillover and collaborative research 107–8
monopolies and innovation 102–6
monopolies and risk avoidance 104
network effects 105–6
ongoing debate 105–6
consent order and FRAND procedure 336–8
consortia collaboration, patent pools, pre-standardization agreements and technology agreement 404–5
consortia-created standards 369–70, 377–8, 380
consortia-derived standards 119, 124–5, 191
consortia-driven standard-setting procedure (US) 139–42
and competition 46–54
and increased efficiency, pre-standardization agreements and technology agreement 407
as purchaser, and open licensing 314
standard-setting, ICT industry 42–3, 54–5
standards’ sources 39–44, 52–3
technology see technology consortia voting powers 77
see also cartels; R&D collaboration agreements
consumer electronics 54–72
business patent strategy model and outsourcing 73–4
patent pools 67–9, 70
relevant product market and
dominant position abuse 71–2
specialization and outsourcing 67–9
specialization and outsourcing,
independent research suggestion
69
standards and outsourcing 67–72
and technical solution choices
369–70
technology acquisition and exclusion
of competitors 71
see also audiovisual industry
consumer electronics, ICT industry
54–65
CableLabs standard 55–6
CD, DVD and Blu-ray standards 3,
56, 267, 268, 278–9, 280
ETSI standards 25–6, 57–8, 60–64
LCD standard/technology 56
OCAP standard 54–6
patent pools 55–6
standard-setting consortia 54–5
standard-setting procedure 70–71
Wi-fi standard 55
see also ICT industry
consumer electronics,
television industry
3G mobile network technology 56–7,
63–4, 243
4G technology 56–7, 68
CDMA technology 60, 63, 64, 96
CEPT standards 58–9
and coopetition 56–7
Ericsson and UMTS standards 64
ETSI standards 25–6, 57–8, 60–64
GSM standard as open standard 25–6,
27, 57, 58–61, 96, 173, 293,
311–12
hold-up programmes 70
IP licensing by SDOs
(licence-by-default) 60–63
joint R&D ventures and negotiations
in the pre-standardization phase
58, 63, 64–5
joint R&D/product development 60
licensing on FRAND terms 61, 64
patent trolls 57
public-private partnerships 72
Qualcomm and CDMA technology
60, 64
Qualcomm and UMTS standards
64–5
specialization and outsourcing 68,
69–70, 72
TDMA standard 63
technology transfer agreements 59,
60
see also telecommunications industry
consumer electronics,
technologies industry,
patent wars and smartphones 65–7
coopetition 46–54, 56–7
Crane, D. 76, 83, 232, 285–6, 294, 296
cross-licensing
EU Philips/Sony cross-licensing
agreement 207
Horizontal Guidelines and
technology standards 199
patent pools 232–3, 247–8, 266, 269–
70, 271, 283
patent thickets 92–3
see also licensing
Curran, C.-S. 65
customer demand analysis, lack of,
Business Review Letters, early
247
David, P. 91
Davis, R. 359
De Schrijver, D. 15
default licences 274
defensive patenting 20–21, 22, 24–5,
74–5, 79
DeKorte, D. 292
DeLacey, B. 55, 139, 141, 143, 219
design standards
collected under grant-back clauses
293–4
competition policy and law
limitations 367
Horizontal Guidelines and
technology standards 198–9,
204
interoperability/infrastructure
standards 28, 408–9
patent pools, anti-competitive considerations 399–401
standardization agreements and adjoining collaborations 225–6
technology agreements, rise of 36, 37–8
divisionals of already submitted patent applications 22–4, 143–4
Dolmans, M. 3, 9, 15, 27, 34, 43, 57, 61–2, 69, 74, 83, 85, 166, 194–5, 207–9, 226, 273, 277, 298, 392
dominance abuse 71–2, 302–5, 345–6, 348
Drexl, J. 4, 18, 27, 45, 73, 87, 101, 109–11, 158, 196, 198, 224, 304, 326, 369, 381, 391, 403, 409–10
Dunning, J. 49
Dutfield, G. 420, 421, 422
DVD Business Review Letters see patent pools, modern approach under US antitrust law, Business Review Letters, early, DVD
Business Review Letters
Eisenberg, R. 6, 32, 33
electronics, consumer see consumer electronics
esentiality requirements
essential facility doctrine 177
essential patent expiry 242–3
IP disclosure rules 181
new standard to reveal, Business Review Letters on SDOs 180, 181
unilateral conduct under standards see unilateral conduct under standards, essentiality and workarounds
EU
block exemptions and competition law 388
comparative analysis of antitrust regulation of standards see comparative analysis and critique of EU and US antitrust regulation of standards
competition law and intellectual property law solutions 342–3
competition rules and standardization agreements see standardization agreements and adjoining collaborations, regulation of, EU competition rules
consortia-derived standards 119–20, 191
dominance abuse and ‘exceptional circumstances’ doctrine 324, 326
European Member States SDOs 128–9
European SSOs 120–27
follow-on innovation 97
harmonized standards 120–23, 125–6
Horizontal Guidelines and technology standards see standardization agreements and adjoining collaborations, regulation of, EU competition rules, Horizontal Guidelines and technology standards
ICT consortia-developed standards 124–5
injunctions and patent access 323–4
innovation market doctrine, criticism of 158
intellectual property as physical product 91
licence tying for non-essential patents 261
marginal squeeze offence 296
New Approach and deregulation of technical specifications 28, 121–2, 127, 139
patent ambushes as unfair competition 301, 302–5
patent pools, antitrust approach see patent pools, EU antitrust approach
Philips/Sony cross-licensing agreement 207
price cartels 113–14
price discrimination rule 295, 296
R&D investment rise 48–9
R&D joint ventures 5
Regulation on European
Standardization 119, 119–20,
123, 124, 191, 376, 378, 379–80,
404
SEP as relevant technical market
93
smartphones and PAE lawsuits 66
Sun antitrust investigation 62–3,
209–10
technical committees 125–6, 144
technical substitution and
standardization agreements
290
TFEU see TFEU
see also individual countries
European Cement Association
(Cembureau) 201–4
European Committee for
Electrotechnical Standardization
(CENELEC) 120, 123, 125, 128,
130, 187–8
European Environmental Citizens
Organization for Standardization
(ECOS) 120–21
European Organization for the Safety of
Air Navigation (Eurocontrol)
185–8
European Standard Setting
Organizations (ESOs) 120, 122–3,
124
European Standardization
Committee (CEN) 41, 116,
120–23, 126–30, 133, 135,
187–8, 191, 201–4, 370–71, 379,
380
European Telecommunications
Standardization Institute (ETSI)
competition restrictions 379, 380
essential IPRs 138–9, 311, 312, 346
hold-up prevention 208–11
infrastructural and interoperability
standards 146–7
jurisdiction limitations, patent
management strategies 25–6
members 127–8
patent disclosure 305
patent platforms 273
standards, consumer electronics
25–6, 57–8, 60–63
Ewing, T. 25, 80, 264, 316, 411, 412,
413
exclusion orders
anti-competitiveness and collusive
and joint exclusionary conduct
170–73, 175
collective exclusion or boycott, EU
competition law 225–6
competitors, consumer electronics
71
group boycott and exclusionary
standards, US antitrust law and
standard-setting collaborations
173–8
patent pools and competing
technologies 390, 392–3
patent pools, price discrimination,
royalty rates and marginal
squeeze 296–7
product design standards 400
single technologies and competition
exclusion 112
technology research path,
pre-standardization agreements
405–6
unilateral conduct under standards
331, 333
exemptions
block exemptions 194–7, 271
SDOs and standardization
agreements 150–53, 188,
190–91
fair, reasonable, and non-discriminatory
(FRAND) terms see FRAND
terms
Farrell, J. 14, 138, 231–2, 276, 349
fees see royalties
Feldman, R. 264, 412, 413
Fine, F. 15
follow-on innovation see innovation, follow-on
FRAND requirement
Business Review Letters on SDOs 180
definition see unilateral conduct under standards, FRAND
definition
as ex post procedure 417
follow-on innovators 241, 242
FRAND ambush 28–9
Horizontal Guidelines and technology standards 201
licensing terms 61, 64
patent ambush cases 172–3
patent pools 232, 241, 242, 274, 275–6, 293–5
patent wars and smartphones 66–7
problem solution 422
royalties 8–9, 25–6
SEPs representing ‘inventive step’ 93
SEPs, sale and purchase 311–18, 337
standard setting organization (SSOs), governance and institutional structure 138
technology consortia 86
‘fraud’ standardization agreements 199–200
free access question, patent pools 258
free movement of goods and access to markets 377–9
Fuchs, A. 149, 304, 383
Gabuzda, L. 321, 323, 328, 331, 334
Gandal, N. 16, 76
Gauch, S. 41, 42, 43, 44, 52, 133
Geradin, D. 173, 231, 276, 293, 349, 382
Gilbert, R. 21, 154, 155–6, 169, 196, 244, 250, 259, 413
Gitter, D. 421
Glader, M. 3, 26, 41, 43, 46, 52, 55, 67, 125, 226, 342–3, 350, 374, 396, 408
globalization effects 39–44, 52–4, 365, 370
good governance rules 366–7, 371, 376, 378–9, 414–17
Google 88, 91, 93, 177, 303, 330
Gordon, G. 251, 286
governance
  good governance rules 366–7, 371, 376, 378–9, 414–17
SSOs see standard setting organization (SSOs), governance and institutional structure
standard decision involvement 370–75, 378–9
Granstrand, O. 59, 349
grant-back clauses 239–41, 242, 248, 283, 293–4
group boycott and exclusionary standards 173–8
GSM standard 25–6, 27, 57, 58–61, 96, 173, 293, 311–12
Hagedoorn, J. 48–9
Hall, B. 19, 20, 21, 27, 30, 31, 60, 318, 333
Hamilton, D. 71
Hansen, M. 15
Haracoglou, I. 68
Harhoff, D. 4, 19, 20, 21, 23, 24, 28, 143
Hay, G. 154, 156
Hayek, F. 98–9, 101, 105, 109, 110, 367, 368
He, H. 138
Heide, T. 15
Heller, M. 6, 32, 33
Hoerner, R. 154, 156, 251, 286
hold-up strategies 6–7, 44–5, 70, 112
Holgersson, M. 349
Hovenkamp, H. 88, 103, 172, 173, 175, 176–7, 226, 285, 297, 373, 374, 390
Iammarino, S. 49
Iandiorio, J. 51, 381
ICT sector
  anticommons problem 32
  consortia-derived standards 119
consortia-developed standards (EU) 124–5
consortia-derived standards 191
defensive patenting 20–21
divisionals of already submitted patent applications 24
industry standards 3
interoperability standards 37–8
monopoly position 16
patent application, reasons for proliferation 19–20
patent divisionals 144
patent pools and royalties 86
patent thickets 29–30, 86, 112
product interoperability and technical standards 28
public procurement procedures (EU) 124–5
smartphone technology and patent wars 26, 29
standards development 39–40
strategic patenting 21–2
technical specification standards (EU) 124
technology consortia 42–3
technology standardization agreements 2–3, 4–6
see also biotech industry; consumer electronics; telecommunications industry
infrastructure standards see interoperability/infrastructure standards
infringement claims, patent management strategies 20–21, 22, 24, 25–6
injunctions and patent access, unilateral conduct see unilateral conduct under standards, injunctions and patent access (patent exclusivity and access to a technical standard), competition law and IP law compared
innovation collective 27–8, 45, 73, 76–7, 403–4
competition, Horizontal Guidelines and technology standards 198–200
future considerations 230, 394–5
monopolies and innovation 103–6
second-generation and manufacturing-only firms 76, 78, 79
innovation, follow-on 95–7, 241, 242, 248
first inventors and dissemination control 96
knowledge dissemination, welfare enhancing properties 95–6
licensing contracts to access protected knowledge 95, 96–7
open access to knowledge, problems with 96–7
patent pools, cross-license demands and grant-back clauses 96–7
wealth creation possibilities 95
innovation incentive and discovery process 91–2, 98–101, 105
competition process, unpredictability of 98–100
competition as trial and error 100–101
joint ventures, effects on creativity 100
market accessibility 99–100
perfect competition definition 100, 101–2
production output and competition 99–100
institutional structure, SSOs see standard setting organization (SSOs), governance and institutional structure
intellectual property see IP
Intellectual Ventures 80, 264, 413
International Telecommunication Union (ITU) 128, 129, 130–32, 135, 136, 139
interoperability/infrastructure standards
anti-competitive considerations
174–5, 178, 391–9

collaboration, pre-standardization agreements and technology agreement 406

competition policy and law limitations 367–9
design/product standards 28, 408–9
ICT sector 37–8
implementation problems 110–11, 113
and patent thickets 31–2
standardization agreements and adjoining collaborations 224–5, 227–8
technology agreements, rise of 36–7, 36–8
telecommunications and patent pool development problems 281
virtual infrastructure networks 17–18, 19, 38, 39, 87, 114, 225, 273, 367, 370, 391
see also network effects; technology transfer
invalid patents 248–9
inventive step 22, 30, 92–4
IP Banks (holders of business assets)
joint R&D agreements and unilateral licence agreements 385–7, 419
and PAEs (patent assertion entities) 412–13
and standard-setting 77–8, 80–81
vertical and horizontal prohibitions 387–8, 404
see also business patent strategy models
IP policies
call for limiting strength and breadth 420–23
disclosure rules and essential patents 181
licensing by SDOs (licence-by-default) 60–63
patent functions 88–9, 90, 91–2
standard setting organization (SSOs), governance and institutional structure 136–9
standardization agreements and adjoining collaborations 168–9
IP rights and rise of standards, proliferation 16–115
business patent strategy models 72–81
competition, dynamic versus static 101–2
competition versus monopoly 102–8
consumer electronics 54–72
innovation, follow-on 95–7
innovation incentive and discovery process 98–101
network effects and interoperability 16–19
patent functions 88–104
patent management strategies 19–29
patent thickets 29–33
standard-setting procedures and dynamic competition theories, problems between 109–14
technology agreements, rise of 34–54
technology consortium 81–7

Jaffe, A. 14, 88, 249
Japan
3G standard 63–4
R&D investment rise 47–8
joint R&D agreements see under R&D collaboration agreements
Jorde, T. 107, 154
Kallaugher, J. 15, 369, 373, 374, 393, 394, 396, 400
Katz, M. 16, 20, 31, 76, 107, 108
Kerber, W. 105
Kirselow, S. 134
Kjölbye, L. 15
knowledge spillover and collaborative research 107–8
see also R&D collaboration agreements
Kobak, J. 299, 300
Koelman, K. 17, 106
Kroes, N. 350
456  Standardization under EU competition rules and US antitrust laws

Kur, A. 327
Lang, J. 156, 206
Laufert, M. 316, 317, 412
Lawrence, D. 375
Layne-Farrar, A. 232, 276, 349
LCD standard/technology 56
Lee, N. 9, 298
Leiponen, A. 77
Lerner, J. 14, 88, 107, 237, 249
Levang, B. 14, 421
licensing
bilateral agreements see bilateral agreements
cross-licensing see cross-licensing
licence-by-default rule 60–63, 208–11
non-essential licences and prevention of patent thickets 237–41
open licensing agreements 237, 314
patent pools and exchange agreements 230, 231
restrictions, Horizontal Guidelines and technology standards 210–11
telecommunication industry 60–63, 64
terms, disclosure of 139, 165
tying for non-essential patents 254–5, 258–61
unilateral licensing, IP Banks 385–7, 419
Lichtman, D. 86, 349, 359
Lim, D. 289, 306
Liotard, I. 60, 208
lobbying practices 45
lock-in effects 400
‘low-key’ technology as dominant standard, risk of 82
Lundin, P. 48, 49
MacCarthy, M. 45
McGowan, D. 16, 31–2, 421
MAD (mutual assured destruction) capability 21, 22, 24–5, 26, 78, 315, 316, 385
Majewski, S. 49, 51, 73, 74, 83, 108–9
manufacturing-only firms and second-generation innovations 76, 78, 79
markets
accessibility and innovation incentive 99–100
development and wealth creation 367–9
effects, standard wars 281
failure cases, unilateral conduct under standards 409
free movement of goods and access to markets 377–9
integration, EU competition rules 213–14
monopolies see monopolies
power question 83–4, 251, 253, 255, 261–2
product marketing and branding 78
SEP as relevant technical market (EU) 93
shares in related product markets 155–6
Marquis, M. 15
Martin, S. 50, 96, 103, 104, 105, 108
Masoudi, G. 170, 235
Maurer, S. 84, 383
Melamed, D. 85, 166, 233, 260, 261
Merges, R. 14, 107, 419–20, 422
Milner, H. 123
Mireles, M. 32, 421
mobile network technology see under telecommunications
monopolies
‘innovation market’ definition 154–5
oligopolies 24–5, 77–8
patent pools and market monopoly 251, 271
patent pools and profit availability 296
technology consortia, monopolistic structures, possibility of 82, 83–4, 87

Björn Lundqvist - 9781781954867
Downloaded from Elgar Online at 12/30/2018 07:52:26PM
via free access
versus competition see competition
versus monopoly
see also cartels
monopsonies 208–11, 293
see also cartels
Moore, K. 23, 24, 143
Mortensen, B. 121
‘most favoured nation’ clause, patent pools and prevention of patent thickets 237, 238–9, 242
Motta, M. 85
MPEG (Moving Picture Experts Group)
40, 56
anti-competitive considerations 397–9, 401
MPEG-2 pool and patent thicket prevention see patent pools, modern approach under US antitrust law, Business Review Letters, early, MPEG-2 pool and prevention of patent thickets
see also audiovisual industry
Mueller, F. 322, 360
Narula, R. 48–9, 242
National Standards-Setting Organizations (NSOs) and good governance 120–21, 125–6, 127, 135, 376
Nelson, P. 62, 209, 257, 260
Netherlands
injunctions and patent access 323
SCK certification institution and parallel trade restriction 192
network effects
competition policy and law limitations 369
competition versus monopoly 105–6 and defensive patenting 74–5
global standards, inability of governments to create 19
interoperability effects 17–19, 174–5
monopoly power 16–17, 18–19
standard process misuse as competitive harm 19
standard-setting procedures 18–19, 109, 110–11, 113
standardization agreements and adjoining collaborations 225, 226–8
supply driven, and standard wars 280
virtual infrastructure 17–18, 19, 38, 39, 87, 114, 225, 273, 367, 370, 391
see also interoperability/infrastructure standards
New Approach 365, 368–9, 375, 376, 378–9
new entrants
barriers 24–5, 26, 83
joint litigation schemes to prevent 413
royalties from 83–4, 86
Newberg, J. 97, 247, 249, 292
Newberry, D. 21
non-essential patents 254–5, 258–61
OECD, Chinese Taipei 69, 251, 278
Ohana, G. 9, 34, 57, 231, 276, 297–8
oligopolies 24–5, 77–8
see also monopolies
open access requirements, patent pools, Business Review Letters, latest 263
open licensing agreements 237, 314
see also licensing
Open Software Foundation (OSF) SSO and UNIX operating system standardization agreements and adjoining collaborations, regulation of, US antitrust law and standard-setting collaborations, National Cooperative Research and Production Act (NCRPA) and joint R&D 163–4
standardization agreements and adjoining collaborations, regulation of, US antitrust law and standard-setting collaborations, Standard Development Organization Advancement Act amendment to NCRPA 163–4
Standardization under EU competition rules and US antitrust laws

open source for technology standards 45–6, 52–3
outsourcing 67–72

PAEs (patent assertion entities)
business patent strategy models 79–80
and patent portfolio rise, anti-competitive considerations 388–9
patent thickets and royalty rates 32–3
patent wars and smartphones 66
privateering 25, 80
R&D collaborations 8
technology agreements, rise of 44–5
unilateral conduct under standards 329–30, 410, 411–13
as victims of buyer cartels 293
patent ambush
anti-competitive considerations 384
patent management strategies 23–4, 28–9
procedural rules for scrutinizing SSOs, need for more developed and stringent 416–17
royalty rates 172–3, 262
standardization agreements and adjoining collaborations 164–5, 169, 170
technical committees 144
unilateral conduct under standards see unilateral conduct under standards, patent ambush
patent functions 87–104
and competition 88–9, 90, 93
compulsory licensing under intellectual property law 90
cross-licensing agreements and patent thickets 92–3
FRAND rules and SEPs truly representing ‘inventive step’ 93
intellectual property as knowledge, and innovation incentives 91–2
intellectual property law system 88–9, 90, 91
intellectual property as physical product 91–2
joint and individual R&D and intellectual property rights, differences between 94
patent thickets and anticommons problem 92–3
SEP infringements and IP rights 88–9
SEP as relevant technical market (EU) 93
SEPs not representing ‘inventive step’, limitation under IP law 92–3
SEPs truly representing ‘inventive step’ 93
technology-only firms, SEPs truly representing ‘inventive step’ 93–4
patent management strategies 19–29
collective innovation, standard-setting and transparency 27–8
complex patents, increase in 21
defensive patenting 20–21, 22, 24–5
divisionals of already submitted patent applications 22–4
ETSI jurisdiction limitations 25–6
EU New Approach and deregulation of technical specifications 28
FRAND ambush 28–9
FRAND royalties 25–6
infringement claims and defensive patenting 20–21, 22
infringement situations, creation as strategic patenting 24, 25–6
inventive step, lack of 22, 30
inverse patent thickets 29
joint litigation agreements 25
joint patent trolls, accusations of 25
‘mutual assured destruction’ (MAD) capability 21, 22, 24–5, 26, 385
new entrants, barriers 24–5, 26
oligopolistic markets, lack of litigation between 24–5
patent ambush 23–4, 28–9
patent flooding 21
patent portfolio maximization 22
patent publishing times 23
patent thickets 27, 28–9
privateering (PAE outsourcing) 25
Index

product interoperability and technical standards 28
product standard creation time 23
proliferation, reasons for 19–20
R&D, effects on 26–7
SDO standardization 22–3, 28
smartphone technology and patent wars 26, 29
SSO standardization 22
strategic patenting 20, 21–5, 28–9
‘submarine’ patents 29
technology complexity producing numerous patents 19–20
see also business patent strategy models
patent mosaics see patent thickets
patent platform failures 275, 281
patent pools 229–98
anti-competitive considerations see comparative analysis and critique of EU and US antitrust regulation of standards, anti-competitive considerations, patent pools
Business Review Letters, open access requirements 263
collaboration see R&D collaboration agreements
competing patents 169
competition policy and law limitations 374–5
consumer electronics 67–9, 70
consumer electronics, ICT industry 56
National Cooperative Research and Production Act (NCRPA) and joint R&D 157
packaging of essential and non-essential patents 347–9
R&D collaborations 1–2, 5, 8 and royalties, ICT sector 86
royalty stream mechanism in relevant patent pool agreements, business patent strategy models 79
standardization agreements and adjoining collaborations 157, 182, 199
technology agreements, rise of 40, 51–2, 53–4, 85–6
technology consortia 82, 83–4, 86
technology transfer agreements 266, 269–70, 271, 272, 284, 290, 294–5
patent pools, EU antitrust approach 265–72
bilateral agreements 269–70
block exemptions 271
comfort letter procedure 267
cross-licensing agreements 266, 269–70, 271
DVD 6C pool 267, 268
famous patent pools 266–9
horizontal and vertical effects 268–9, 270–71
joint R&D and technology standards 268
market monopoly 271
MPEG-2 pools 267
pool structure 269–72
technology transfer agreements (TTBER) 266, 269–70, 271, 272
TFEU Article 101 exemption 268
patent pools, modern approach under US antitrust law 234–65
bundling competing patents 264
Business Review Letters, latest 262–3
future direction and IP rights 263–4
Intellectual Ventures 264
patent pools, modern approach under US antitrust law, Business Review Letters, early 234–50
cross-licence feature 247–8
customer demand analysis, lack of 247
dynamic competition effects 247–8
essential patent requirement 246–7, 248, 249–50, 344
follow-on innovation and grant-back clauses 248
international standard approval 247
invalid patents 248–9
patent thicket and anticommons problem 250
Standardization under EU competition rules and US antitrust laws

patent pools, modern approach under
as business network 246
essentiality requirement 245
fee mechanism and royalty allocation 246
as joint R&D venture 245–6
MPEG-2 comparison 245–6, 344
technology standardization agreement 245

patent pools, standard setting and comparative analysis of patent pools, price-fixing claims and cartel royalties 253–4, 255
pro-competitive effects 256
and royalty rates 262
transaction cost argument 257–8
patent pools, standard setting and comparative analysis of patent pools, price discrimination, royalty rates and marginal squeeze 294–7
‘competitively disadvantaged’ meaning 295
exclusionary conduct under standards 296–7
FRAND rules 294–5
monopoly profit availability 296
technology transfer agreements 294–5
patent pools, standard setting and comparative analysis of patent pools, standard derived patent pool as anti-competitive cartel 281–94
and Business Review Letters and good governance 282, 284
collusion where cartel is in downstream product markets facilitated by patent pool 285–6
cross-licensing obligations 283
design or product standards collected under grant-back clauses 293–4
FRAND rules 293–4
grant-back obligations 283, 293–4
joint royalty rate agreements 282–3
joint ventures and joint SDOs 283–4
lump sum royalties 283
PAEs as victims of buyer cartels (monopsonies) 293
price collaborations and antitrust 282
rule of reason standard 283
safe harbour use 282
SSOs’ IP arrangements and technology pools, support for different treatment 284–5
substitute patent as competing patent 290
Summit/VISX patent pool, collusion and patent thickets 282, 291–4, 390, 400

Björn Lundqvist - 9781781954867
Downloaded from Elgar Online at 12/30/2018 07:52:26PM
via free access
technology transfer agreements 284, 290

U.S. Philips II case, CD-Rom technology and patent misuse doctrine 286–90, 392, 394, 395

patent pools, standard setting and comparative analysis of patent pools, standard wars 277–81

Blu-Ray v. HD DVD 280

DVD technology 278–9

market effects 281

network effects, supply driven 280

VHS v. Betamax 277–8

patent pools, standard setting and comparative analysis of patent pools, telecommunications and patent pool development problems 273–7

3G platforms 273–4, 281

Bluetooth Special Interest Group (SIG) 277

bundling suggestion 275

default licences 274

differing business strategies of patentees 275

FRAND terms 274, 275–6

interoperability infrastructure standards 281

patent platform failures 275, 281

UMTS patent licensing programme 275

patent pools, structure of technology pools and alleged pro- and anti-competitive effects 230–34

clear pool agreement 230

cross-licensing 232–3

FRAND terms 232

future innovation agreements 230

horizontal competitive features 231

licence exchange agreements 230, 231

patent choice and technology standard-setting 232–3

pool structure 231

royalty rates 233

standard licensing agreements 230

telecommunication standards and ETSI 231–3

vertically integrated firms 231, 232, 234

patent publishing times 23

patent thickets 29–33, 66, 109

anticommons problem 32, 53–4, 92–3, 112, 113, 114, 250

antitrust law requirement 31

creation, pre-standardization agreements and technology agreement 403

ICT sector 29–30, 86, 112

identification and measurement tests 30–31

and interoperability technology standards 31–2

inventive step, lack of 22, 30

inverse 29

patent assertion entities (PAEs) (technology-only firms), excessive royalty rates for SEPs 32–3

and patent fragmentation 30

and patent holdups 6–7

patent management strategies 27, 28–9

Patent Trademark Office (PTO), lenient application of patentability criteria 30, 31, 420–21

pre-standardization consortia 33

prevention, and MPEG-2 pool see MPEG-2 pool and patent thickets prevention see patent pools, modern approach under US antitrust law, Business Review Letters, early, MPEG-2 pool and prevention of patent thickets problem solution, possible 422–4

requirements 30

and standard essential patents (SEPs) access 31

standardization agreements and adjoining collaborations, regulation of, EU competition rules, competition law, de lege ferenda (future law) regulation 228

as trade barrier 31
Standardization under EU competition rules and US antitrust laws

- patent trolls and abuse of standard-setting system 80
- joint patent trolls, accusations of 25 telecommunication industry 57
- unilateral conduct under standards 329, 411–12
- Patterson, M. 293
- Peeperkorn, L. 15
- performance standards 36–7, 371–2
- Peritz, R. 88, 90–91
- Peterson, S. 170, 283
- Petit, M. 81
- pharmaceutical industry
  - divisionals of already submitted patent applications 24
  - infringement situations, creation as strategic patenting 24
  - joint R&D agreements 71
  - outsourcing 71
  - standard-setting 70–71
- Philips, outsourcing patents to PAEs, accusations of 80
- Piilola, A. 15
- Pitofsky, R. 240, 420
- planned obsolescence, business patent strategy models 79
- Plompen, P. 180, 373
- Pohlmann, T. 4–5, 33, 77, 118, 403–4, 407
- Popofsky, M. 316, 317, 412
- pre-standardization agreements
  - comparative analysis see comparative analysis and critique of EU and US antitrust regulation of standards, patent pools, pre-standardization agreements and technology agreement
  - joint R&D ventures and negotiations, telecommunication industry 58, 63, 64–5
  - patent thickets 33
  - R&D collaborations 4–5
  - system leaders, technology agreements, rise of 43–4
- price discrimination, patent pools and standard setting see patent pools, standard setting and comparative analysis of patent pools, price discrimination, royalty rates and marginal squeeze
- price-fixing claims and cartel royalties 253–4, 255
  - see also cartels
  - Priest, G. 86
- prior art covenants 418, 422–3
- private standards
  - antitrust enforcement, limitation of 150
  - and New Approach 375
  - public-private partnerships 48, 72, 73
  - self-regulatory private or semi-private agencies 116–17
- privateering 25, 80
- pro-competitive effects, technology pools’ structure see patent pools, structure of technology pools and alleged pro- and anti-competitive effects
- procedural rules for scrutinizing SSOs, comparative analysis see comparative analysis and critique of EU and US antitrust regulation of standards, procedural rules for scrutinizing SSOs, need for more developed and stringent product
  - interoperability/infrastructure standards see interoperability/infrastructure standards
  - markets see markets
  - standards see design standards
  - public standards, decline of 117
  - public-private partnerships 48, 72, 73
- Queen, T. 150
- R&D, investment statistics, technology agreements, rise of 46–51
- R&D collaboration agreements
  - anti-competitive considerations 381, 383, 385, 386–7
  - Business Review Letter procedure 388
- competition, effects on 107–8
- creativity, effects on 100
Index

interoperability standard 406
IP Banks and unilateral licence agreements 385–7, 419
joint and individual R&D and intellectual property rights, differences between 94
joint R&D and NCRPA see standardization agreements and adjoining collaborations, regulation of, US antitrust law and standard-setting collaborations, National Cooperative Research and Production Act (NCRPA) and joint R&D
joint ventures, acceptability of 5–6, 8–9
knowledge spillover and collaborative research 107–8
negotiations in the pre-standardization phase, telecommunication industry 58, 63, 64–5
outsourcing 73
patent assertion entities (PAEs) 8
patent pools and price collaborations 282
patent standards 4–5
patent thickets and patent holdups 6–7
pharmaceutical industry 71
Standardization under EU competition rules and US antitrust laws

rule of reason standard
anti-competitive considerations 283, 389, 392
Business Review Letters on SDOs 181
National Cooperative Research and Production Act (NCRPA) and joint R&D 163, 169
Standard Development Organization Advancement Act amendment to NCRPA 163, 169

safe harbour use
anti-competitive considerations 384–90, 391–2
Horizontal Guidelines and technology standards 197, 200, 204, 205, 211, 224
identification of 366, 371
standard derived patent pool as anti-competitive cartel 282
US antitrust law and standard-setting collaborations 150

Salop, S. 261
Samuelson, P. 92, 421
Scellato, G. 25
Schallop, M. 9, 16, 18, 75–6, 298
Schellingerhout, R. 62, 210
Schepe, H. 28, 116, 117, 120, 128, 134, 158, 167, 192, 193, 202, 375, 376
Schreiner, F. 98, 101, 102, 295, 423
Schmidt, H. 385, 403
Schovsbo, J. 327
Schumpeter, J. 98, 101, 103–4, 109, 110, 367, 368
Scott, S. 17, 84, 95, 106, 217, 283, 383
Scott, J. 96, 99, 100, 103, 104, 105
SDOs see standard development organizations (SDOs)
SEPs see standard essential patents (SEPs)
Serafin, D. 52
Shah, O. 15
Siegel, D. 50, 108
Simco, T. 55
single technologies and competition exclusion 112
Skitol, R. 236, 292, 293
Slovak, A. 18, 278, 280, 370, 396
smartphones see under telecommunications industry
Smith, J. 15
specialization 67–70, 72, 365
SSOs see standard setting organizations standard development organizations (SDOs)
anti-competitiveness in standard-setting process 168–70
governance and institutional structure see standard setting organization (SSOs), governance and institutional structure, standard developing organizations (SDOs), de jure institutional structure
inclusion, technical committees 143–4, 146–7
IP or patent policies for, governance and institutional structure 136–9
National Cooperative Research and Production Act (NCRPA) and joint R&D 151–3, 166–8
patent management strategies 22–3, 28
R&D collaborations 4, 8
technology agreements, rise of 40, 43, 44, 52–3
standard essential patents (SEPs)
anti-competitive considerations, patent pools 401
FRAND terms and royalties 8–9
infringements and IP rights 88–9
‘inventive step’, lack of 92–3
and patent thickets 31
patent wars and smartphones 66
R&D collaborations 6–7, 8
as relevant technical market (EU) 93
sale and purchase, unilateral conduct under standards see unilateral conduct under standards, sale
and purchase of standard essential patents (SEPs)
standard setting organizations (SSOs)
IP arrangements and technology pools, support for different treatment 284–5
IP Banks 77–8, 80–81
members of 170–78
patent management strategies 22
and patent pools see patent pools,
standard setting and comparative analysis of patent pools
technology agreements, rise of 39
standard setting organizations (SSOs), governance and institutional structure 116–48
accountability decline 117
cartel litigation prevention 136
code of practice 136–7
disclosure rule 137–9
FRAND requirement 138
IP or patent policies for SDOs 136–9
IP or patent policies for SDOs, technology standards 136
licensing terms 139
patent misuse doctrine 117
public standards, decline of 117
self-regulatory private or semi-private agencies 116–17
standard developing organizations (SDOs) 116
standard setting organizations (SSOs), governance and institutional structure, standard developing organizations (SDOs), de jure institutional structure 118–35
consensus agreements (EU) 126–7
consortia-derived standards (EU) 119
consortia-driven standard-setting procedure (US) 139–42
de facto work in SSOs and SDOs 139–42
European Member States SDOs (national standard-setting bodies (NSOs)) 127–8
European system 120–27
harmonized standards (EU) 120–23
harmonized standards (EU), stand-still period 123
ICT public procurement procedures (EU) 124–5
international standard-setting organizations 129–32
international standard-setting organizations, draft international standard (DIS) 130
international standards, fast-track alternative adoption model (AAP) 131–2
International Telecommunication Union (ITU) standard adoption 130–32
ISO standards and consensus 129–30, 132, 135
technical committees (EU) 125–6
US standard-setting organizations 132–5
voluntary consensus standards (US) 119
WiFi standard case study 139–42, 147, 285
WTO Principles and Technical Barriers to Trade (TBT) Agreement 118–20, 133, 134–5, 415
standard setting organizations (SSOs), governance and institutional structure, technical committees 125–6, 142–4, 146–7
misuse of standard-setting process 146
patent ambush 144
patent divisionals 143–4
SDO inclusion 143–4, 146–7
standard wars, and patent pools see patent pools, standard setting and comparative analysis of patent pools, standard wars standard-setting procedure as collective innovation 73, 76–7
and competition law 366
standard-setting procedures abuse, patent trolls 80
as collective innovation 45, 73, 76–7, 403–4
competition policy and law limitations 373
consortia, ICT industry 54–5
consumer electronics, ICT industry 70–71
exceptional circumstances doctrine 409
transparency, technology consortia 87
standard-setting procedures and dynamic competition theories, problems between 109–14
differing market solutions 109, 110–11
infrastructure standard, implementation problems 110–11, 113
network effects 109, 110–11, 113
patent mosaics 109
patent thicket and anticommons 112, 113, 114
price cartels 113–14
product standard collaborations 113–14
single technologies and competition exclusion 112
standard-setting as collective innovation and competition 111
technical ‘hold-up’ strategies 112 ‘trial and error’ method, problems with 110–11
standardization agreements and adjoining collaborations, regulation of, EU competition rules 184–228
competition law and free trade rules, undertakings and connection between 184–91, 193
EMC case and cement market cartel 191, 193, 201–4, 225, 370–72, 380, 410–11
exemption of SDOs and their handling of technologies and IP rights 188, 190–91
Fr. bo case and SSO scrutiny under TFEU Article 34 185, 188–90, 191, 225, 377–8, 380
ICT consortia-derived standards 191
joint exploitation of regulatory standard system 211–12
parallel trade and competition restriction 192
‘public power and thereto connected conduct’ exemption (CJEU) 188
Selex case and Eurocontrol 185–8, 191, 197, 380
technical committee work under SDO as agreement between undertakings 193
TFEU Article 101, assessment under 191–4, 222
TFEU Article 101 and anti-competitiveness 205–6, 212
TFEU Article 101 and R&D block exemption to standard-setting activities 194–7
standardization agreements and adjoining collaborations, regulation of, EU competition rules, anti-competitiveness 5–14, 224, 225–6
buyer cartels, collective obligation to supply and monopsonies 208–11, 293
licence-by-default rule 208–11
objective test 200, 205
Philips/Sony cross-licensing agreement 207
product diversification restrictions and cartels 207–8
TFEU Article 101 205–6, 212
standardization agreements and adjoining collaborations, regulation of, EU competition rules, case law 214–22
standardization agreements and adjoining collaborations, regulation of, EU competition rules, competition law, de lege ferenda (future law) regulation 224–8

Björn Lundqvist - 9781781954867
Downloaded from Elgar Online at 12/30/2018 07:52:26PM
via free access
Index 467

collective exclusion or boycott 225–6
design standards 225–6
design standards as performance standards 226
infrastructure technologies 224–5
interoperability technologies 227–8
network effects 225, 226–8
patent thickets 228
standardization agreements and adjoining collaborations,
regulation of, EU competition rules, Horizontal Guidelines and technology standards 34, 197–205, 290, 379, 398
cross-licensing 199
FRAND terms 201
‘fraud’ standardization agreements (disguised price cartels) and price restriction 199–200
innovation competition 198–200
licensing restrictions 210–11
patent pools 199
product creation under standards 198–9, 204
as safe harbour for standard-setting activities 136, 184, 197, 200, 204–5, 211, 224, 376, 384–5
transparency requirements 200–201, 205, 208
standardization agreements and adjoining collaborations,
regulation of, US antitrust law and standard-setting collaborations 149–83
exempted SDOs 150–53
group boycott and exclusionary standards 173–8
IP policies 168–9
private antitrust enforcement, limitation of 150
’safe harbour’ for R&D collaboration, creation of 150
and Section 2, Sherman Act 150
standardization agreements and adjoining collaborations,
regulation of, US antitrust law and standard-setting collaborations,
anti-competitiveness in standard-setting process 168–78
anti-competitive intent on part of at least some competitors 175–6
collusive and joint exclusionary conduct 170–73, 175
essential facility doctrine 177
interoperability or network standards 174–5, 178
members of SSOs 170–78
patent ambush cases, royalty rates and FRAND calculation 172–3
patent pool with competing patents 169
product standards 172
royalty rates 168
SDOs 168–70
superiority of standardized technology, demonstration of 176–7
standardization agreements and adjoining collaborations,
essential patents and applications, new standard to reveal 180
ex ante IP negotiations 182
and FRAND terms 180
IEEE letter 181
IP disclosure rules and essential patents 181
and Justice Department 179–80, 182–3
licensing requirements 181, 182
maximum royalty rates, revelation requirements 180, 182–3
NCRPA collaboration and private and public suits immunity 179–80
patent pools after implementation of technology standard 182
rule of reason 181
standardization agreements and adjoining collaborations,
regulation of, US antitrust law and standard-setting collaborations, National Cooperative Research
and Production Act (NCRPA) and joint R&D 149–58
innovation market 153–7
innovation market doctrine, criticism of 158
innovation market identification 156
joint venture requirements 151–2
market shares in related product markets 155–6
members of SDOs under 166–8
members of SDOs under, antitrust liability avoidance 167–8
Open Software Foundation (OSF) SSO and UNIX operating system 163–4
‘patent ambush’ incidents 164–5, 169, 170
patent licensing terms, disclosure of 165
pooling effects, anti-competitive effect 157
royalty rates 165
and rule of reason 163, 169
Standard Development Organization Advancement Act amendment 150–52, 158–9, 166, 178, 197, 384
Standard Development Organization’ (SDO), specific meaning of 151–3
‘submarine’ patents 29
substitution 290, 411
Sunshine, S. 154, 155–6, 196
Suthersanen, U. 420, 421, 422
Swanson, D. 232, 276, 296, 349, 408
Sweden
joint ownership of inventions/innovations and joint proprietors to patents 94
TeliaSonera 219
system leaders, business patent strategy models 74–5, 80
Taiwanese Federal Trade Commission (TFTC), CD-R manufacturers’ complaint 251
Tapia, C. 2, 3, 17, 18, 23, 25, 45, 142–3, 145, 277, 330, 345
Tassey, G. 36
technical committees 125–6, 380
governance and institutional structure see standard setting organization (SSOs), governance and institutional structure, technical committees
technical solutions, consumers and technical solution choices, comparative analysis and critique of EU and US antitrust regulation of standards, competition policy and law limitations 369–70
technologies
acquisition and exclusion of competitors 71
complexity producing numerous patents 19–20
single technologies and competition exclusion 112
superior technology identification 371–2
technology agreements, rise of 34–54
antitrust law and standard specification 36
consortia and coopetition 46–54
coopetition, meaning of 46
design standard (prescriptive or product standard) 36, 37–8
economic climate effects 41–2
global SSOs, rise of 52–4
infrastructure (basic) standards 36–7
interoperability standards 36–8
joint R&D agreements 43–4, 46, 48–50, 51, 53–4
lobbying practices 45
open source as source for standards 45–6, 52–3
patent assertion entities (PAEs) and individual patentees 44–5
patent families and output 48
patent pooling rights and profit 85–6
patent pools 40, 51–2, 53–4
patent thickets and anticommons 53–4
Index

| Performance standard (general uniformity or non-product standard) | 36–7 |
| Product compatibility | 34, 38 |
| Public-private R&D consortia rise | 48 |
| R&D investment statistics | 46–51 |
| R&D investment statistics, applied science focus | 50–51 |
| SDOs and SSOs, differences between | 72 |
| Standard development organizations (SDOs) | 40, 43, 44, 52–3 |
| Standard development organizations (SDOs), hold-up problems | 44–5 |
| Standard setting as collective innovation | 45 |
| Standards’ overlap | 38 |
| Standards setting organizations (SSOs) | 39 |
| Standards’ sources | 39–46 |
| Standards’ sources, global fora and consortia | 39–44, 52–3 |
| System leaders and pre-standardization | 43–4 |
| Technical specification | 34–5 |
| Technology standards | 34–8 |
| Technology standards, ISO classification | 35–6 |
| Technology consortia | 81–7 |
| All-industry inclusive collaborations and virtual infrastructures | 87 |
| Cartel collusion on winning technology | 83, 84–5 |
| Cheating, reduced risk of | 86 |
| Competitive advantage | 81, 83, 84–5, 86–7 |
| FRAND agreements | 86 |
| Future products, agreement on features of | 87 |
| ICT sector | 42–3 |
| ‘Low-key’ technology as dominant standard, risk of | 82 |
| Market power | 83–4 |
| Monopolistic structures, possibility of | 82, 83–4, 87 |
| New entrant barriers | 83 |
| Patent pool and strategic alliances | 82, 83–4, 86 |
| Price cartels, dangers of | 84–7 |
| Research efficiency possibilities | 82 |
| Royalties from new entrants | 83–4, 86 |
| Standard-setting procedure transparency | 87 |
| Technology standard creation | 82, 83–4 |
| Technology transfer agreements anti-competitive considerations | 393–9 |
| Comparative analysis see comparative analysis and critique of EU and US antitrust regulation of standards, patent pools, pre-standardization agreements and technology agreement | |
| Patent pools | 266, 269–70, 271, 272, 284, 290, 294–5 |
| Telecommunications industry | 59, 60 |
| Unilateral conduct under standards | 340–41 |
| See also interoperability technology-only firms | 93–4 |
| Teece, D. | 107, 154 |
| Telecommunications industry Bluetooth Special Interest Group (SIG) | 277 |
| Business patent strategy model | 77 |
| Cable specifications development | 41, 44, 55–6, 214–18 |
| Consumer electronics see consumer electronics, telecommunication industry |
| Divisionals of already submitted patent applications | 24 |
| ETSI see European Telecommunications Standardization Institute (ETSI) |
| GSM standard as open standard | 25–6, 27, 57, 58–61, 96, 173, 293, 311–12 |
| Hold-up prevention | 208–9 |
| Industry standards | 3 |
| Interoperability standards | 36–7 |
| Mobile network technology see 3G technology | 4G technology |
mutual assured destruction’ (MAD) capability 22, 26
patent divisional 143–4
patent pool development problems see patent pools, standard setting and comparative analysis of patent pools, telecommunications and patent pool development problems
patent thickets 112
product interoperability and technical standards 28
smartphones and patent wars see consumer electronics, patent wars and smartphones
standards’ development 39, 42, 44–5
strategic patenting 21–2, 28–9, 92–3
technology standardization agreements and IP rights 2–3
UMTS standard 57, 58, 63, 64, 173, 243, 275, 293, 311–12
see also ICT sector

TFEU
Article 34 117, 185, 188–90, 191, 193–4, 213–14, 376–80
Article 36 193, 379

TFEU, Article 101
competition restriction 184
dominance abuse 71, 318
exclusionary agreements 190
free movement of goods 189
patent pool establishment 31, 268–9, 347
price discrimination rule 295
product standards 224, 387–8
standard-setting assessment 186, 191, 197, 214, 372
Tindal, S. 422
Tolwinski, B. 81
Tom, W. 97, 247, 259
transparency requirements 87, 200–201, 205, 208
Treacy, P. 15
Ullrich, H. 2, 7–9, 15, 20, 33, 46, 50, 52, 74, 76, 82, 89, 90–92, 94, 98, 149, 198, 231–2, 270, 272, 276, 286, 298, 319–20, 326, 382, 386, 420, 423
UMTS telecommunication industry standard 57, 58, 63, 64, 173, 243, 275, 293, 311–12
unilateral conduct under standards 299–364
comparative analysis see comparative analysis and critique of EU and US antitrust regulation of standards, unilateral conduct under standards
Dell and Video Electronics Standards Association (VESA) 299, 409
IP Banks, joint R&D agreements and unilateral licence agreements 385–7, 419
Union Oil Company of California (Unocal) and California Air Resources Board (CARB) 164, 299–300
unilateral conduct under standards, essentiality and workarounds 344–9
dominant position and over-declaring number of essential patents 345–6, 348
economic essentiality 344, 348
incentives to cause patents to become non-essential 345–7, 348–9
injunctions, and patents as SEP 348
patent pools, packaging of essential and non-essential patents 347–9
standard essentiality 344–5
technical essentiality 344–5
unilateral conduct under standards,
cases involving 350–51
consent order and FRAND procedure 336–8
damages possibility and injunctions 351–2, 353, 359–60
fair return of a patent 350–51
Georgia-Pacific factors 350–51, 354, 355–8
injunctions in standard-essential contexts 351–4
inverse FRAND hold-up 352, 363–4
and patent pool collaboration 360
royalty rates 352, 354–9, 360, 363
unilateral conduct under standards, injunctions and patent access
(patent exclusivity and access to a technical standard), competition law and IP law compared 319–43
cease-and-desist orders 330, 333
competition by substitution, lack of 325–6
de jure and de facto standards, applicable to both 322
eBay case 12, 66, 89, 90, 91, 177, 328–33, 341, 343, 347, 350–51, 352, 360, 401, 405, 408, 412
EU competition law and intellectual property law solutions 342–3
exclusion orders 331, 333
German Standard Tight-Head Drum 320, 324–6, 378
licensing under FRAND terms 320, 322–3, 325, 326–7, 331–2, 334, 335–41, 342, 343
market dominance 324–5
PAEs denied injunctions 329–30
patent trolls 329
reversed injunction use in US District Courts 332
technology transfer agreements 340–41
unfair competition rule 337
US and EU doctrines compared 341–3
unilateral conduct under standards, patent ambush
dominance under US antitrust law and EU competition rules 302–5
early incidents 299–301
and equitable doctrine of implied waiver 305–6
and excessive pricing 303–4, 307–8
and FRAND terms 301, 304, 305, 307–8
misuse of standard-setting procedure 308–9
monopolization attempts 301, 306, 307
refusal to license 304
as unfair competition 301
unilateral conduct under standards, sale and purchase of standard essential patents (SEPs) 311–19
bilateral transactions 311–14
consortium as purchaser, and open licensing 314
FRAND rule 311–18, 337
purchasers/assignees 311–14
sellers/assignors 315–18
sellers/assignors, competitors’ costs increase 316–18
sellers/assignors, and FRAND terms 315–17
US 3G standard 64, 174
American National Standard Institute (ANSI) 119, 133–5, 152
ASTM International SDO 119, 135, 161
Business Review Letters, US antitrust law see patent pools, modern approach under US antitrust law,
Business Review Letters, early comparative analysis of antitrust regulation of standards see comparative analysis and critique of EU and US antitrust regulation of standards
compulsory licensing under intellectual property law 90
consortia-driven standard-setting procedure 139–40
dormant commerce clause 380
follow-on innovation 96, 97
FTC Act 298, 301, 302, 307, 313, 335, 337–8, 342, 408
Horizontal Merger Guidelines 158
Institute of Electrical and Electronics Engineers (IEEE) 39, 140–42, 181, 380, 410
intellectual property as physical product 91
joint consortium agreements 83
legal protection of intellectual property, proliferation problem 14
Licensing Guidelines and intellectual property 91
National Cooperative Research and Production Act (NCRPA) and joint R&D see standardization agreements and adjoining collaborations, regulation of, US antitrust law and standard-setting collaborations, National Cooperative Research and Production Act (NCRPA) and joint R&D
National Institute of Standard and Technology (NIST) 119, 133
National Technology Transfer and Advancement Act (NTTAA) 119, 404
patent ambush, dominance position and antitrust law 302–5
patent ambushes as unfair competition 301
patent misuse doctrine 117
patent pools and antitrust law see patent pools, modern approach under US antitrust law
patent rights and antitrust policy 89, 90
price discrimination rule 295–7
R&D investment 47
R&D joint ventures 5, 49–50, 51
Robinson-Patman Act 296
smartphones and PAE lawsuits 66
SSOs and dormant commerce clause 117, 185
standard-setting collaborations and antitrust law see standardization agreements and adjoining collaborations, regulation of, US antitrust law and standard-setting collaborations
standard-setting organizations 132–5
Standards Development Organization Advancement Act 150–52, 158–9, 166, 178, 197, 384
‘state action’ exemption 380
Stevenson-Wydler Technology Advancement Act 404
unfair competition rule 337, 342
voluntary consensus standards 119
voluntary consensus standards (US), standard setting organization (SSOs), governance and institutional structure, standard developing organizations (SDOs), de jure institutional structure 119
Varian, H. 16, 115, 280, 369, 406
Venit, J. 324
vertical effects 73–4, 77, 231, 232, 234, 268–9, 270–71, 387–8, 404
VHS v. Betamax 277–8
virtual infrastructure networks 17–18, 19, 38, 39, 87, 114, 225, 273, 367, 370, 391
Vollebregt, E. 15
### Index

| Waldman, M. 79 | Wyatt, E. 80, 411 |
| Walsh, J. 32 | Zeck, K. 348 |
| Wi-fi standard 55, 139–42, 147, 285 | Zhang, L. 57, 58, 60, 65, 68, |
| Williamson, D. 51, 73, 108–9 | 96–7, 112, 139, 275, 277, |
| WTO Principles and Technical Barriers to Trade (TBT) Agreement 118–20, 133, 134–5, 415 | 327 |