

Preserving Cooperative Standardization in Digital Markets

Prof. Jonathan Barnett
University of Southern California
Gould School of Law

Agenda

1. Modern ICT markets rely on cooperative standardization structures. This compares favorably with standardization mechanisms based on government or private monopolies.
2. Cooperative standardization relies on secure IP rights, quasi-contractual “FRAND” licensing principles, and limited use of antitrust law to support R&D, disclosure and implementation incentives.
3. Policy interventions by regulators and courts in SEP-dependent markets rely on unfounded empirical assumptions and have placed at risk the legal infrastructure behind cooperative standardization.

The Standardization Imperative

- Contemporary ICT markets demand standardization and interoperability. This has two positive effects:
 - Network effects: dramatic increases in consumption value by lowering cost of delivering information over user-user and user-developer pathways.
 - Breaking up the supply chain: enabling component-level entry enhances specialization efficiencies and competitive intensity.
- Enabling standardized data pathways in the 5G environment demands maximally efficient technological and organizational solutions.

Standardization Solutions

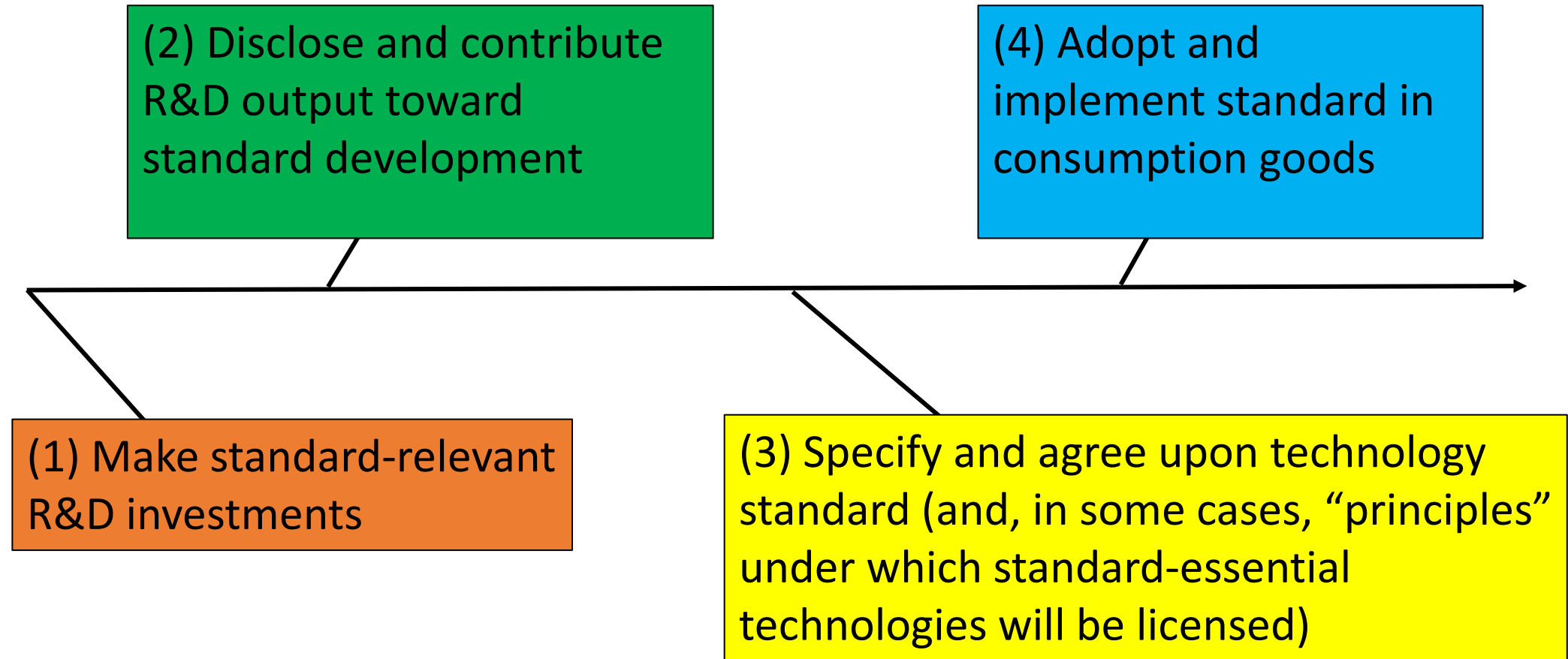
ICT markets have achieved standardization through three types of structures.

Structure	Legal Status	Examples
Government monopoly	De jure	FCC, FDA, FAA
Private-firm monopoly	De facto	AT&T (telephony pre-1982), MS (Windows OS), IBM (mainframe)
Multi-firm cooperative entity	De facto	DVD, Blu-Ray, Bluetooth, USB, 3GPP, ETSI, ISEE

Comparing Standardization Solutions

Entity/Task	Task 1: R&D/Development	Task 2: Standard Selection	Task 3: Standard Implementation
Government monopoly	Much less preferred	Less preferred	Less preferred
Private monopoly	More preferred	More preferred	More preferred
Multi-firm cooperative entity (SSO/SDO)	More preferred	More preferred	<u>Most</u> preferred

Cooperative Standardization Timeline



Legal Inputs for Cooperative Standardization

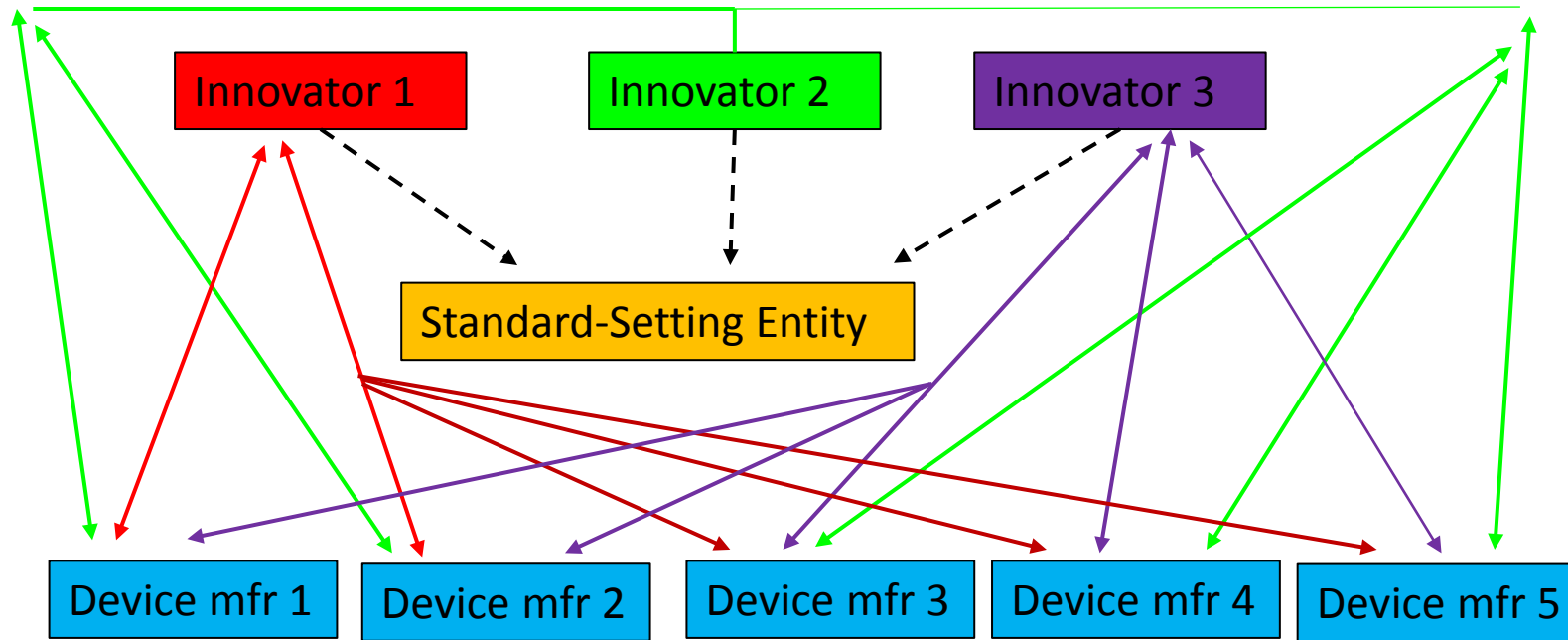
- Secure IP rights
 - Supports incentives to innovate and disclose prior to market launch
 - Enables downstream licensing and protects innovators against “patent holdout” by implementers.
- “FRAND” licensing commitments, supplemented by industry norms
 - Protects implementers against “patent holdup” by innovators.
 - Loosely defined licensing commitments may be “efficiently incomplete”.
- Antitrust safeguards
 - Complements, not substitutes
 - No agreement on royalty rates (floor or ceiling)
 - In pool structures, use of third-party administrator, non-exclusivity and non-discrimination between IP licensors/licensees.

IP Ownership and SSO Participation: 4G/5G

<u>Firm</u>	<u>Estimated % 5G-related standard-essential patent families</u>	<u>% technical contributions submitted to 4G</u>	<u>% technical contributions submitted to 5G</u>
Qualcomm	8.6%	6.23%	5.06%
Huawei	7.92%	12.54%	11.93%
LG	7.38%	1.5%	3.07%
Ericsson	6.74%	17.21%	8.16%
Samsung	5.77%	3.29%	3.47%
ZTE	4.1%	5.15%	5.84%
Nokia (incl. Alcatel IP)	5.54%	9.09%	10.31%
Intel	3.04%	2.32%	3.62%
NTT DOCOMO	2.61%	2.58%	2.29%
NEC	1.91%	1.67%	2.03%
TOTAL (top 10)	53.61%		

Source: Pohlmann 2018a, b

The Cooperative IP Standardization and Monetization Model (Simplified)



←→ = royalty/IP exchange
- - - -> = IP/technical contribution

The Wireless Success Story: Theory Meets Facts

- Conventional wisdom: high “patent intensity” will promote patent thickets, patent holdup, royalty stacking, leading to increased prices, limited output and delayed innovation.
- No evidence that high patent intensity has harmed wireless/ICT markets.
 - During 2007-17, annual unit shipments in the global smartphone market grew from 124M to 1.47B (Dedrick & Kraemer 2017).
 - Quality-adjusted prices on SEP-dependent products have fallen absolutely and relatively to non-SEP dependent products (Galetovic et al. 2015).
 - Estimated aggregate royalty rates on smartphone devices are in single to mid-digit royalty rates (Galetovic et al. 2017, Sidak 2016, Mallinson 2016), not double digits as often claimed.
 - Continuous entry into the handset production market (Gupta 2015, Mallinson 2016).

Solutions in Search of a Problem

Based on patent holdup and related theories, regulators and courts have eroded the patent security that supports cooperative standardization.

Year	Regulator/Court	Firms	Action
2007, 2011, 2013	DOJ, FTC, USPTO	N/A	Statement that FRAND-encumbered patents not generally eligible for injunctive relief.
2012, 2013 2015	N.D. Ill., N.D. Cal., 9 th Cir.	Motorola	Same.
2015	DOJ	N/A	“Pre-clears” IEEE policy change limiting SEP owners’ ability to seek injunctive relief.
2015, 2016, 2017	NDRC, KFTC, TFTC	Qualcomm	Antitrust actions resulting in fines (up to \$975M) and reduced royalty rates.

Adverse Effects of a “Property-Lite” Patent System

- Structural distortions: As IP regimes adopt top-down, “administrative” models in place of bottom-up, market-driven models, firms likely to “re-integrate” supply chains to internalize returns on R&D and deliver interoperability for end-users. This would impede specialization, raise entry costs and frustrate vertical IP licensing structures.
- Rent-seeking distortions: Policy actions to “protect” against patent holdup implement wealth transfers from net technology producers to net technology users (firms and economies), which are then incentivized to compete in the courts and agencies rather than the marketplace.

Competitors over Competition?

- Origins of the FRAND commitment

- Pre-wireless European markets controlled by telecom carrier and equipment supplier monopolies in entry-protected national markets.
- In connection with the launch of the GSM network, ETSI adopted FRAND commitment as compromise between monopoly carriers, who sought royalty cap and no-injunction commitment, and Motorola, a pioneer innovator in wireless communications.

- Chinese standardization policy

- Faces large net IP payment deficit (IMF data).
- Unsuccessful efforts to establish multiple “indigenous” Chinese standards in ICT markets (e.g., TD-CDMA, WAPI).
- 2015: Antitrust regulator (NDRC) settles antitrust action against Qualcomm, incl. \$975M fine and reduced royalty rates for local device manufacturers.

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