

FSW – Licensing & Patents

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17-20 May 2010

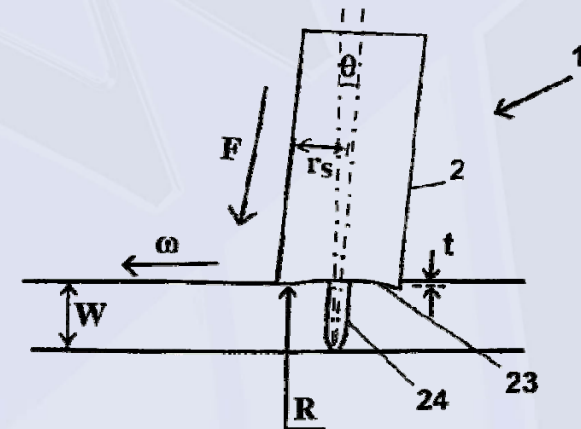
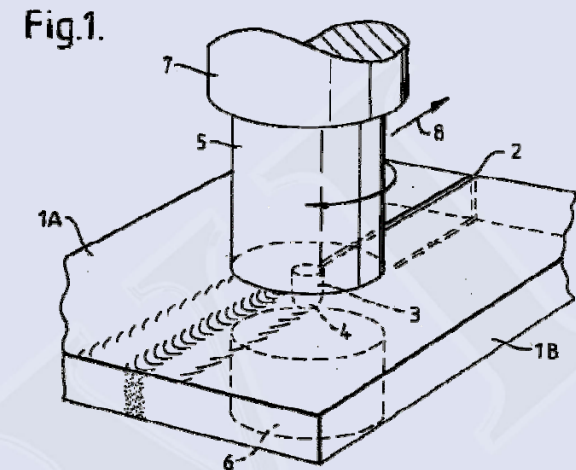


Technology Engineering

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FSW Patents held by TWI

- Initial patent filed in UK Dec. 91
- Granted as US 5,460,317 etc.
- Last patent expires 27 Nov. 2012
- Further patent filed by Norsk Hydro in Norway Mar. 94
- Hydro patent assigned to TWI Jul. 96
- Granted as US 5,813,592 etc.
- Last patent expires 29 Sep. 2015



TWI FSW Licences

- **Territories:**

Australia, Belgium, Canada, China, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Hong Kong*, Italy, Japan, Korea, Netherlands, Norway, Poland, Portugal, Russia, Singapore*, Spain, Sweden, Switzerland, USA.

* Hong Kong & Singapore covered until Nov. 2012



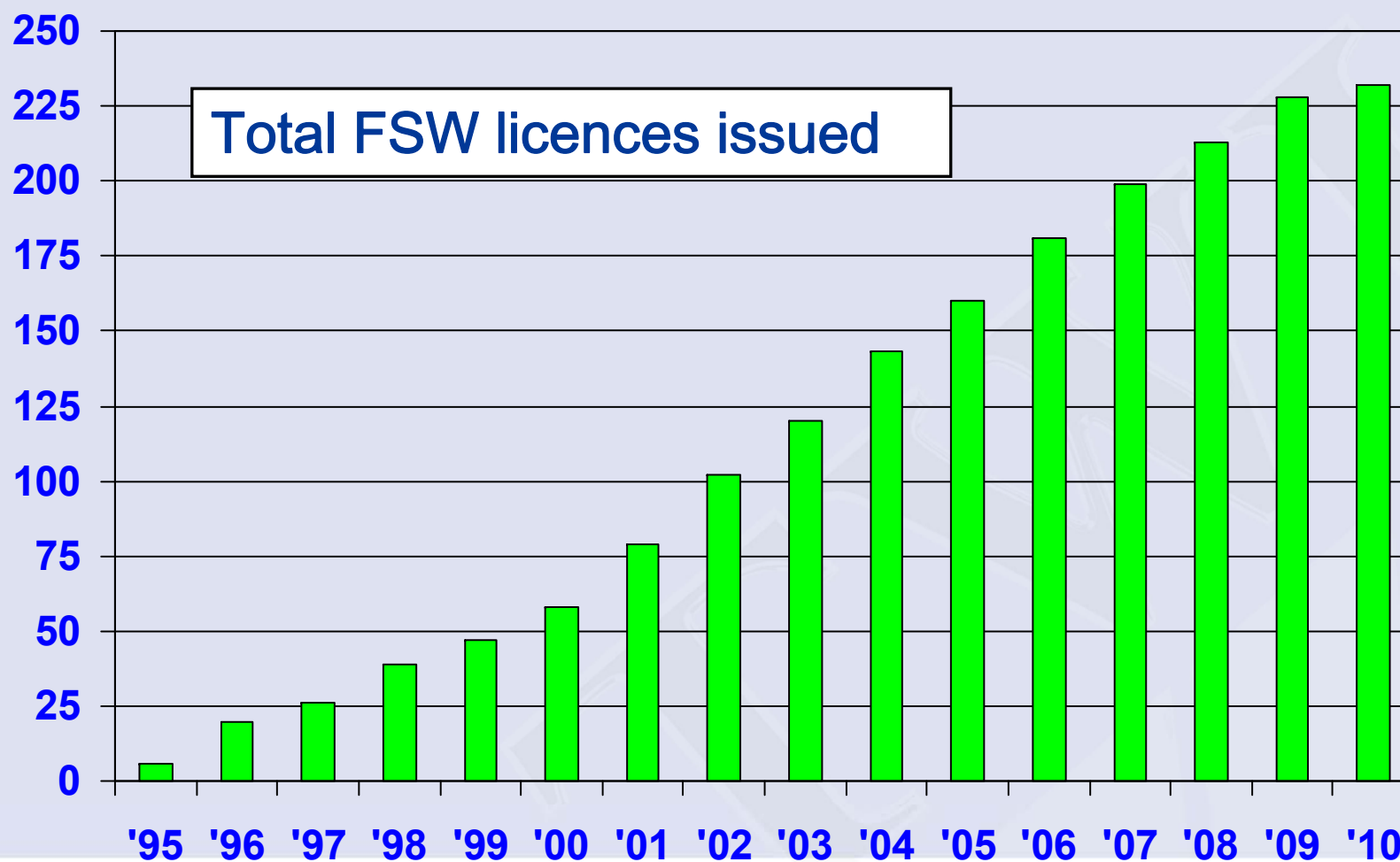
TWI's Licensing Policy for FSW

- Non-exclusive - wide user base
- Flexible - can be tailored to user's needs
- Inexpensive - cheaper than talking to your lawyer !
 - Standard end-user licence
 - £25,000* per year per site for TWI Members
 - £36,500* per year per site for non-Members

*2010 prices

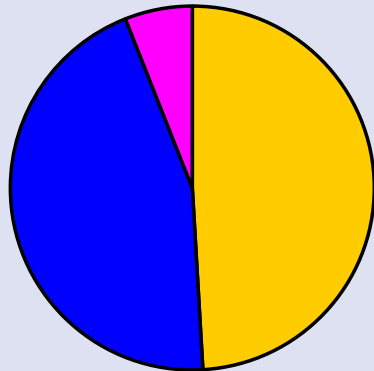


Take-up of FSW by Industry

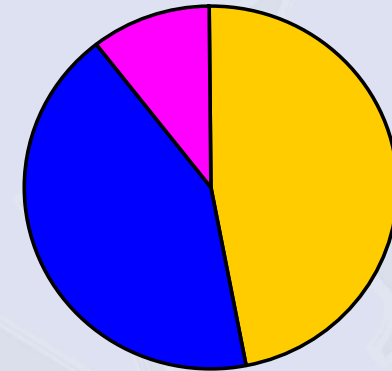


FSW current licensees by type

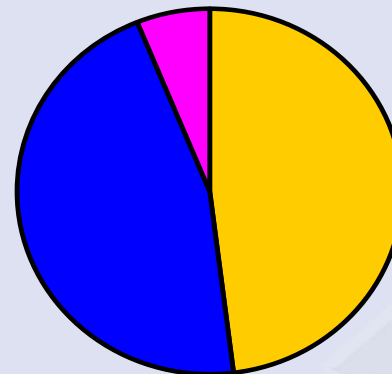
UK & EU - 65



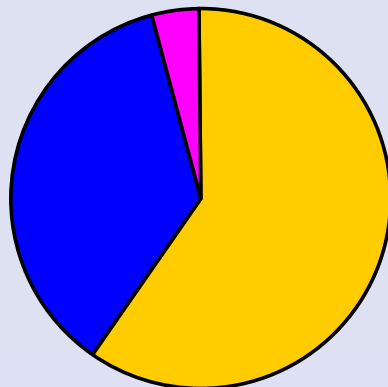
USA & Canada - 47



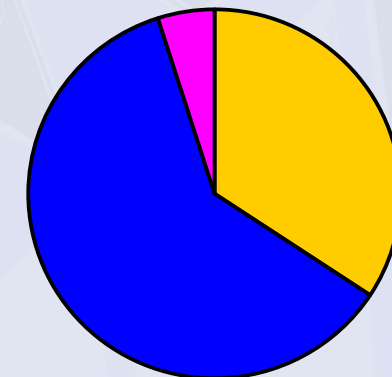
Overall - 198



Japan - 45

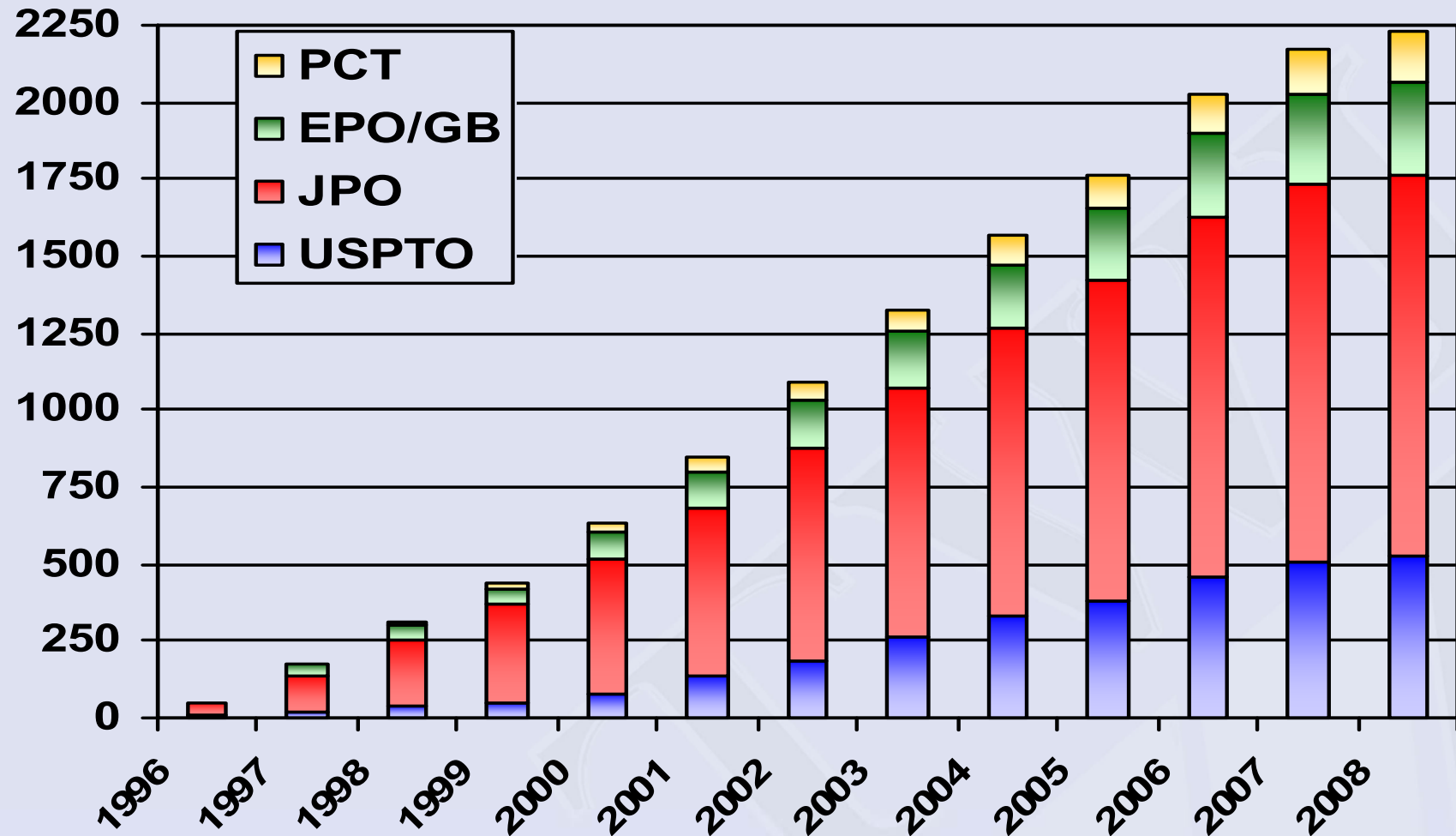


China & SEA - 41



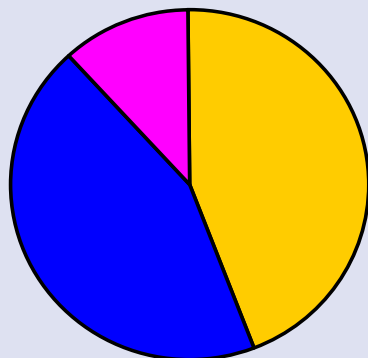
■ Industrial
■ Academic
■ Equipment Suppliers

Patent Filings by 3rd Parties

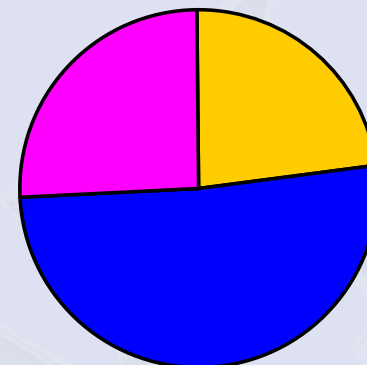


Patent Applications by region

USPTO - 592



EPO - 320



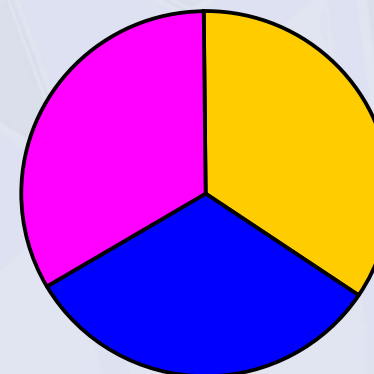
Overall - 2,456



JPO - 1347

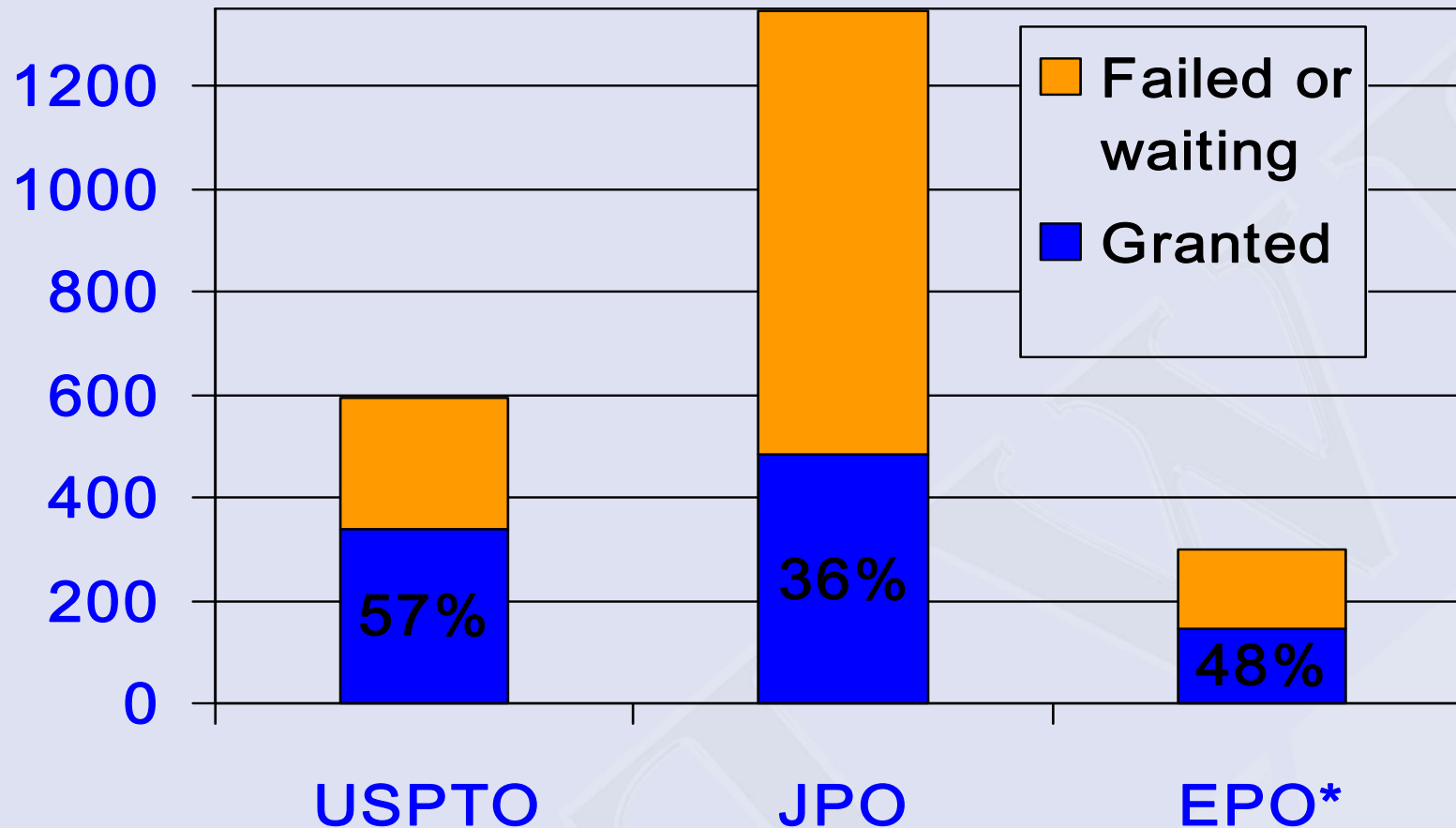


PCT - 197



■ USA
■ Japan
■ EU+RoW

Patent Filing Success Rates



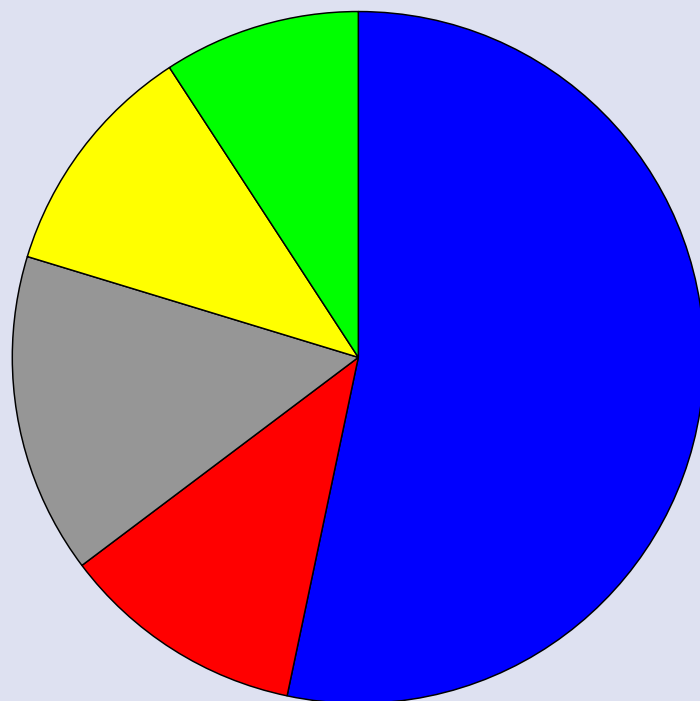
* Excl. GB (77% success rate)

Most successful patentees

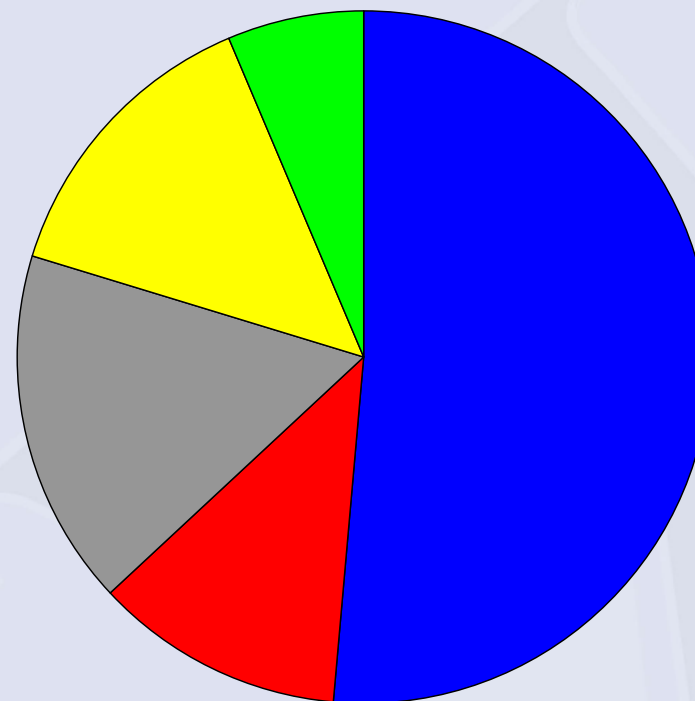
<i>Company</i>	<i>Granted Patents</i>	<i>Activity</i>
Hitachi	275	Railcars
Boeing	102	Aerospace
Showa Denko	88	AI supplier
KHI	67	Rail / Auto
NLM	50	AI supplier
SLM	45	AI supplier
MHI	43	Heavy engineering
Honda	41	Automotive
Mazda	34	Automotive
Nippon Sharyo	16	Railcars

Main Themes in filings

Filed (2,456)



Granted (983)



■ Product/Applic. ■ Tool shape ■ Apparatus ■ Process var. ■ FSSW

Conclusions

- FSW is a mature process, in industrial use world-wide
- More than 200 organisations have been licensed to use this process
- TWI will continue to offer non-exclusive licenses until the expiry of the second base patent in 2015
- Around 2,500 patent applications related to FSW have been filed, and around 1,000 of them have been granted

Thank you for listening

Any questions?

