

# MERGER POLICY FOR INNOVATION


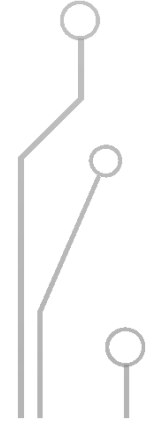
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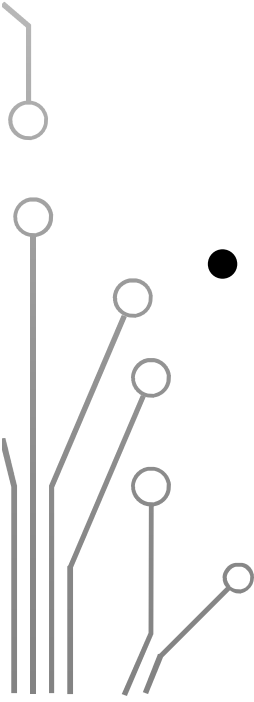
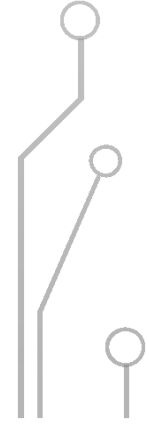


# INNOVATION CONCERNS FOR MERGER POLICY

- Merger may curtail or delay investment in research and development, thereby reducing the availability or quality of new products or services
  - Merger may eliminate future price competition if the merging parties successfully innovate in the same market
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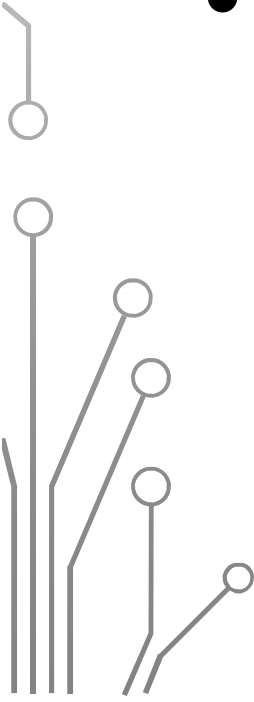
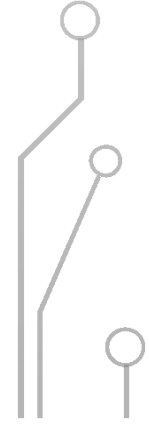


# MERGER BENEFITS FOR INNOVATION

- Merger may bring together complementary capabilities to promote innovation
  - Merger may allow the merging parties to appropriate greater value by exploiting economies of scale
  - Merger may allow the merging parties to appropriate greater value by reducing spillovers
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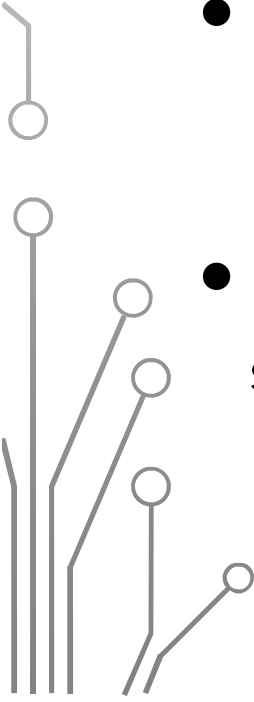
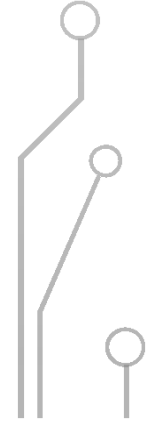


# MERGER BENEFITS FOR INNOVATION

- Merger may achieve economies by eliminating duplicative research and development expenditures
  - Higher prices from a merger can increase incentives for R&D, making consumers better off in some circumstances
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# IT'S COMPLICATED

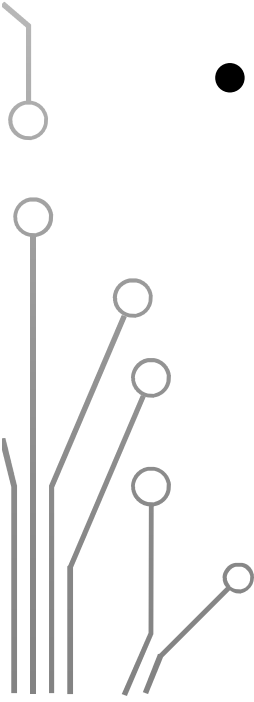
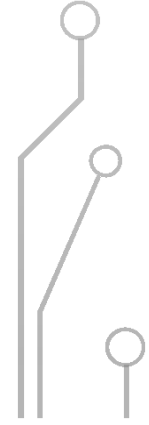
- Theoretical models do not have robust conclusions about competition and innovation
    - Easy to “tweak” models and get different results
    - Dynamics add further complications
  - Robust empirical results are hard to find
    - Little evidence that mergers promote innovation, but also not a lot of evidence that mergers harm innovation
  - Incentives and effects are industry and product-specific
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# EMPIRICAL STUDIES

- Innovation output and capability are hard to measure
  - Research and development expenditure is not the same as innovation
  - Patenting is the not the same as innovating
  - Recent success is not the same as innovation capability
- Innovation effects often cannot be estimated using common empirical techniques such as “difference-in-differences”



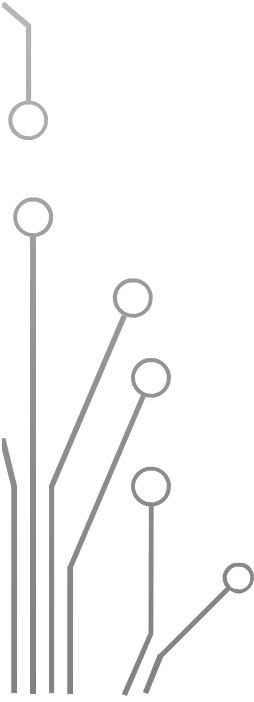
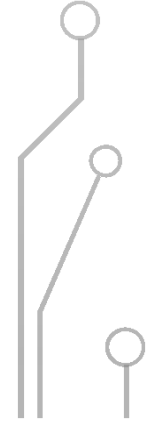
# LESSONS FROM CASE STUDIES

- Innovation is hard to predict
  - Little empirical evidence about the effectiveness of antitrust remedies for innovation
  - Some “remedies” may have been counter-productive and harmed innovation
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# INNOVATION IS HARD TO PREDICT AND REMEDIES CAN BE COUNTER-PRODUCTIVE

American Home Products-American Cyanamid  
(1995) (become Wyeth)

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- US Federal Trade Commission conditioned approval on divestment of rotavirus vaccine (for severe diarrhea) research assets to the Korean Green Cross Corporation
  - What happened?



ROTAVIRUS VACCINES FROM THIRD PARTIES  
NONE FROM WYETH (SUCCESSOR TO AHP) OR  
KOREAN GREEN CROSS

RotaTeq  
(Merck, 2006)



Rotarix  
(GSK, 2008)



Wyeth/Korean  
Green Cross

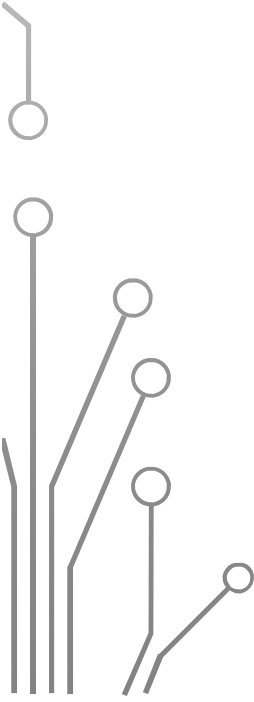
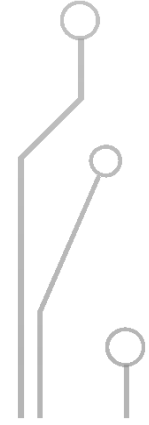




# INNOVATION IS HARD TO PREDICT AND REMEDIES CAN BE COUNTER-PRODUCTIVE



Ciba-Geigy/Sandoz (1997) (merger formed  
Novartis)

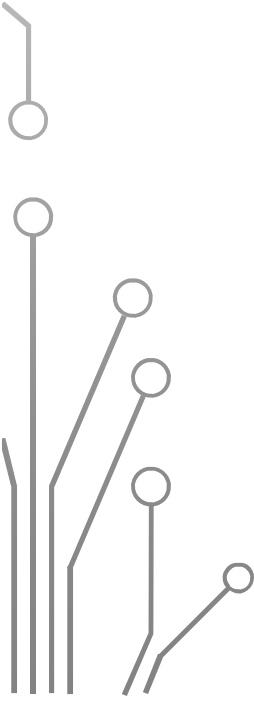
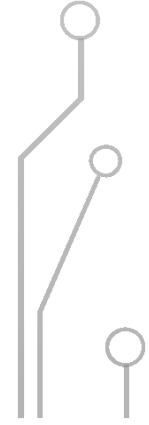
- Gene therapies (Ciba-Geigy 46.5% ownership of Chiron)
  - FTC: “Sales of all gene therapy products are projected to reach \$45 billion by 2010”
  - FTC required non-exclusive licenses to Rohne-Poulenc-Rorer (now part of Aventis)
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# INNOVATION IS HARD TO PREDICT AND REMEDIES CAN BE COUNTER-PRODUCTIVE



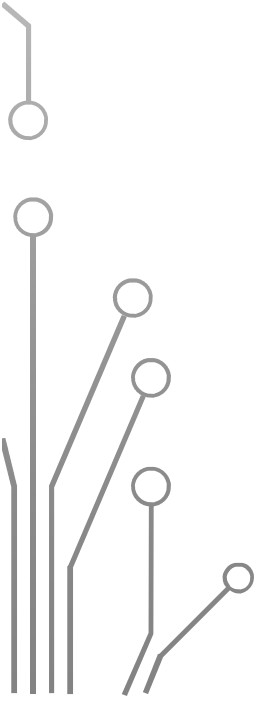
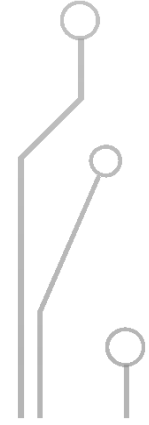
Ciba-Geigy/Sandoz (1997)

- 20 years later, there is little progress in gene therapies
    - Novartis obtained approval in 2017 for a treatment for leukemia (invented and initially developed at the University of Pennsylvania)
    - None from Aventis (acquired by Sanofi)
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# INNOVATION IS HARD TO PREDICT AND REMEDIES CAN BE COUNTER-PRODUCTIVE

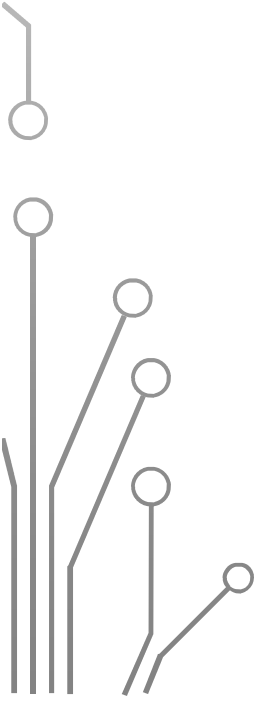
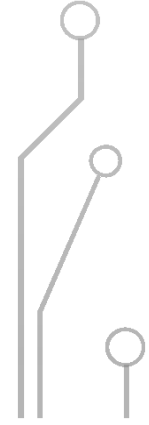
## Glaxo Wellcome-SmithKline Beecham (2000)

- Prophylactic Herpes vaccine
  - SKB was in Phase III and Glaxo in Phase II trials
  - FTC required Glaxo to divest its related assets to Contab Pharmaceuticals
  - No prophylactic Herpes vaccine on the market today (some in clinical trials, but none from GSK or Contab)
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# INNOVATION IS HARD TO PREDICT AND REMEDIES CAN BE COUNTER-PRODUCTIVE

## Bayer-Aventis (2002)

- FTC alleged that the merger would harm innovation for “New Generation Chemical Insecticide Active Ingredients”. Claimed that
    - Bayer and Aventis have unique product development and commercialization skills for these Als
    - Syngenta was the only other firm with significant development for these Als
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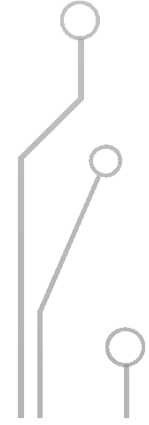
# ARE THERE “GOOD” INNOVATION ENFORCEMENT CASES?

Two examples among many:

- Thoratec – HeartWare (2009)
  - Nielsen Holdings – Arbitron (2014)
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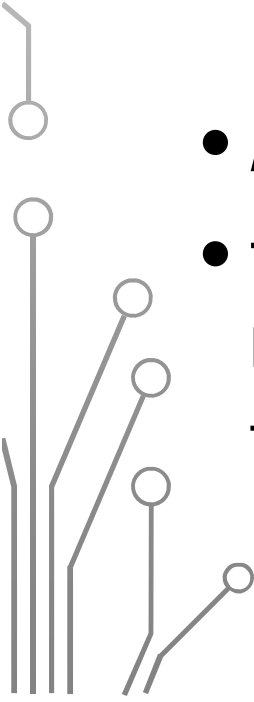
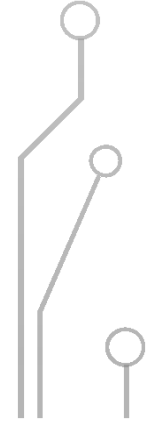
# THORATEC – HEARTWARE (2009)

- Left ventricular assist devices (LVAD)
  - Thoratec's HeartMate II was the most successful LVAD approved for use in the US
  - HeartWare had promising clinical trials in Europe for its HVAD device
  - FTC challenged the merger alleging harm to innovation and future price competition. Parties abandoned the merger.
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# THORATEC – HEARTWARE (2009)




- “Project-to-product” innovation case
    - Similar to an “actual potential competition” case
    - The merged company would have profits at risk from innovation: “replacement/cannibalization effect”
      - Post-merger, innovation would divert sales from the merged firm’s existing product(s)
  - Medtronic bought HeartWare for \$1.1 billion in 2016
  - Today, Thoratec (now owned by St Jude Medical) sells the HeartMate II and the HeartMate III and Medtronic sells the HVAD
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# NIELSEN HOLDINGS – ARBITRON (2014)

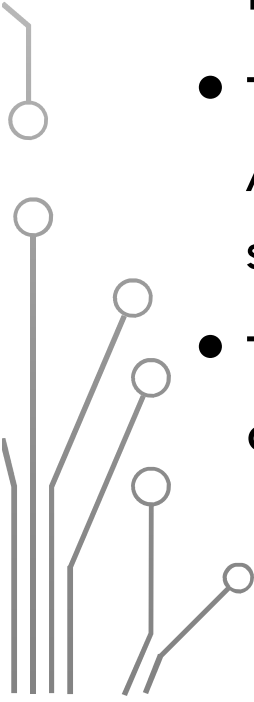
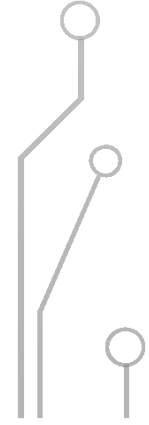


- Nielsen is the most established provider of television audience measurement services in the US
- Arbitron is the most established provider of radio audience measurement services in the US
- Both companies were developing national cross-platform audience measurement services (television, radio, smartphones, tablets, computers)
- “Big data” issues: Nielsen and Arbitron have unmatched proprietary large audience panels and proven audience measurement technology assets
- FTC alleged harm to innovation and harm to future price competition



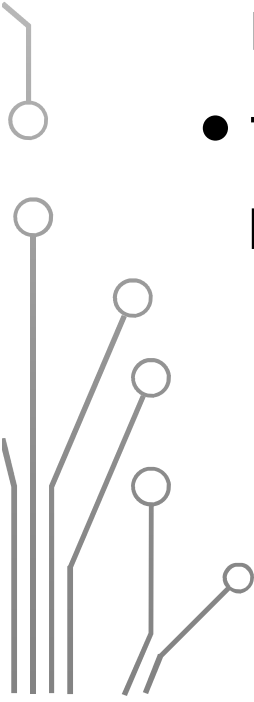
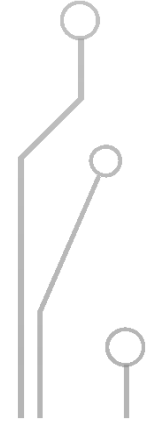
## NIelsen HOLDINGS – ARBITRON (2014)



- “Project-to-project” innovation case
  - FTC conditioned the merger on a requirement that Arbitron divest assets related to its cross-platform audience measurement business, including data from its representative panel. FTC required Nielsen to provide a royalty-free license to data, including individual-level demographic data.
  - The buyer was Comscore, which had formerly partnered with Arbitron to develop cross-platform audience measurement services
  - Today, both Nielsen and Comscore offer cross-platform audience measurement services
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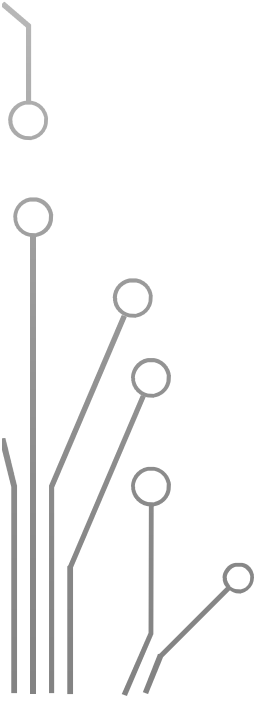
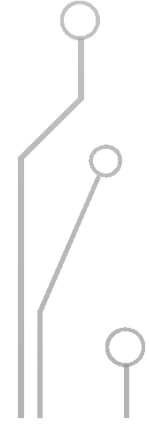


# WHAT MAKES A STRONG INNOVATION MERGER CASE?

- Relevant innovations, although inherently uncertain, are nonetheless relatively predictable
  - The merging firms are both likely innovators in the same product space
  - The relevant “research and development market” is highly concentrated
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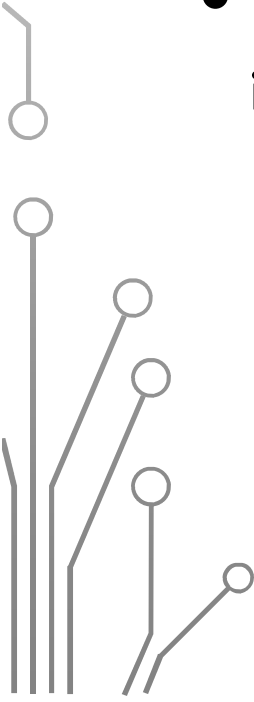
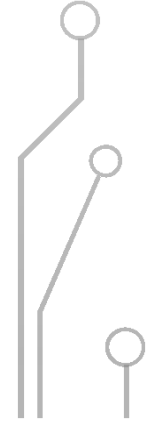


# WHAT MAKES A STRONG INNOVATION MERGER CASE?

- Appropriation is high and information spillovers are low
    - Note that strong intellectual property rights do not imply an absence of competition or information spillovers
    - E.g., competition among many patented statins that likely benefited from previous statin innovations
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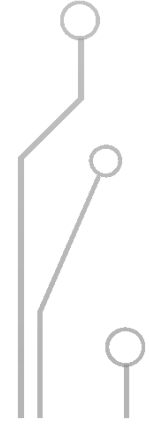


# WHAT MAKES A STRONG INNOVATION MERGER CASE?

- The merger is not necessary to achieve significant economies of scale, efficiencies or synergies that promote innovation or enhance its benefits
  - The merger or acquisition was not necessary to motivate innovation in the first place
    - Incumbent acquisition as an exit strategy
    - E.g., biotech industry would disappear if antitrust policy prohibits incumbent firms from acquiring promising drugs
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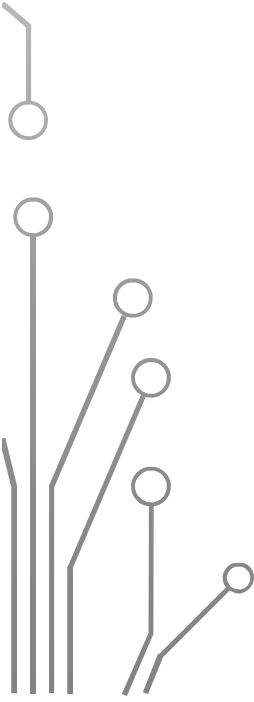
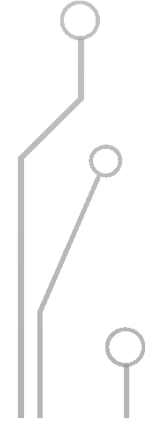


# WHAT MAKES A STRONG INNOVATION MERGER CASE?

- Likely large future price effects
    - If both firms successfully innovate, they are likely to be close rivals in a market with few other rivals and relatively inelastic demand
    - Other factors (such as regulation) do not constrain prices
  - Merging parties do not have strong innovation incentives that are independent of competition
    - Durable goods – innovate to create new demand
    - Crop resistance, patent expiration
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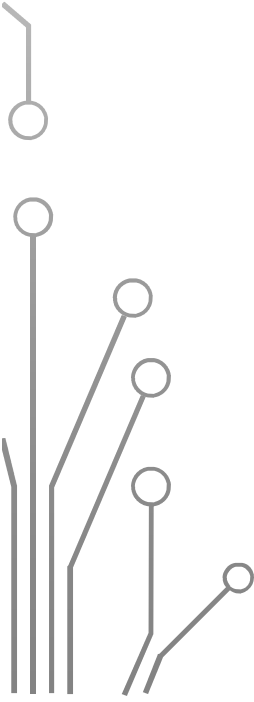
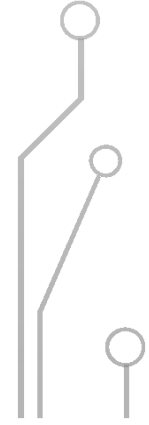


# WHAT MAKES A STRONG INNOVATION MERGER CASE?

- Large merger-specific replacement/cannibalization effects
    - Do one or both merging parties have profits that are at risk from innovation?
    - Does the merger increase these replacement/cannibalization effects?
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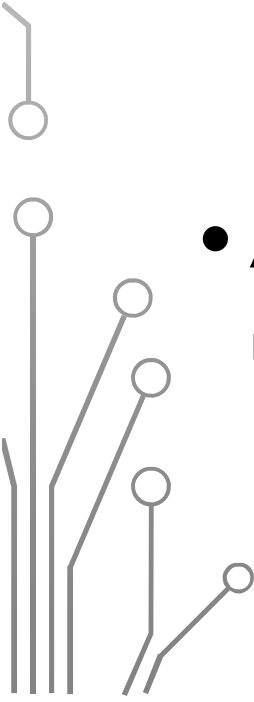
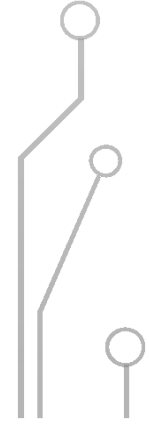
A merger can increase the profits at risk from innovation because:

- The merger would create market power for existing products (a separate reason to challenge the transaction)
  - The merger combines separate products or services, both of which would be at risk from innovation
    - E.g., cross-platform audience measurement services could erode profits from both
      - Television audience measurement (Nielsen)
      - Radio audience measurement (Arbitron)
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# WHAT MAKES A STRONG INNOVATION MERGER CASE?

- There are effective remedies to address alleged adverse effects for innovation incentives
    - A pre-existing firm that has similar capabilities and business objectives (e.g., a firm that has partnered with one of the merging parties in the past)
  - A commitment to challenge the merger is an “effective remedy”, although one that may sacrifice merger benefits
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# WHAT MAKES A STRONG INNOVATION MERGER CASE?

	Thoratec-HeartWare	Nielsen Holdings-Arbitron	Dow-DuPont (for projects not yet in pipelines)
Innovations are relatively predictable	Yes	Yes	No
Potential innovators can be identified with reasonable certainty	Yes	Yes	No
The merging firms are both likely innovators in the same product space	Yes	Yes	?

# WHAT MAKES A STRONG INNOVATION MERGER CASE?

	Thoratec-HeartWare	Nielsen Holdings-Arbitron	Dow-DuPont (for projects not yet in pipelines)
The relevant research and development market is highly concentrated	Yes	Yes	?
The innovations are likely to occur in the near term	Yes	Yes	No

# WHAT MAKES A STRONG INNOVATION MERGER CASE?

	Thoratec-HeartWare	Nielsen Holdings-Arbitron	Dow-DuPont (for projects not yet in pipelines)
Appropriation is high and information spillovers are low	Yes	Yes	Yes
The merger or acquisition was not necessary to motivate innovation in the first place	Yes	Yes	Yes

# WHAT MAKES A STRONG INNOVATION MERGER CASE?

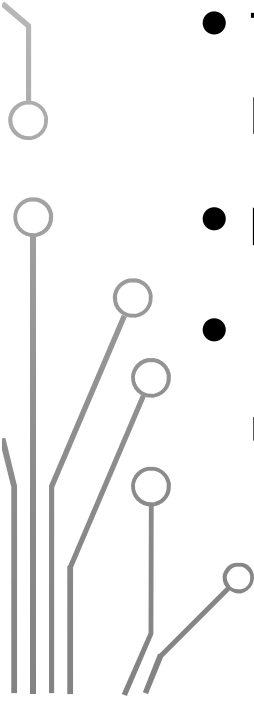
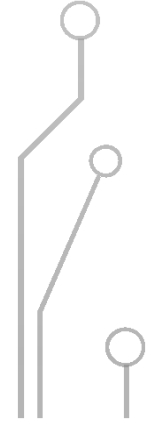
	Thoratec-HeartWare	Nielsen Holdings-Arbitron	Dow-DuPont (for projects not yet in pipelines)
Likely large future price effects if firms remain independent	Probable	Yes	?
Large merger-specific replacement/ cannibalization effects	Yes	Yes	?
Merged firm does not have independent reasons to innovate (e.g., sell upgrades, crop resistance)	Yes	Yes	No

# WHAT MAKES A STRONG INNOVATION MERGER CASE?

	Thoratec-HeartWare	Nielsen Holdings-Arbitron	Dow-DuPont (for projects not yet in pipelines)
The merger was not necessary to achieve significant economies of scale, efficiencies or synergies that promote innovation or enhance its benefits	Yes	Yes	? (“only the big 5 have the large scale and financial resources required to engage in crop protection discovery and development”)
Sound remedy	Yes (abandoned)	Yes	?



## THORATEC- HEARTWARE WAS A STRONG CASE BUT NOT A “NO-BRAINER”

- It was not certain that Thoratec would have either cancelled the HVAD, or the HeartMate II, or failed to develop the HeartMate III if it had acquired HeartWare
  - There could be synergies between Thoratec and HeartWare. Thoratec had more experience with clinical trials.
  - Not a market with intense price competition?
  - Perhaps one firm should select and promote the best LVAD, rather than having two firms claiming that each is the best?
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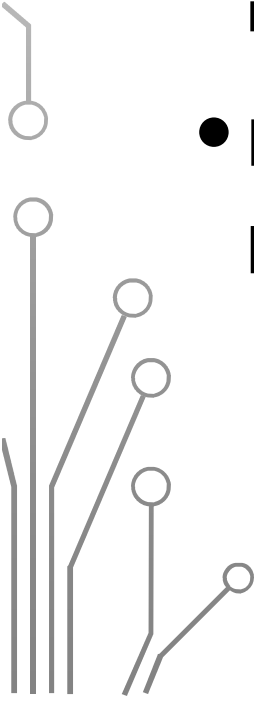
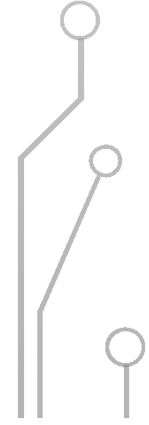
# FTC COMMISSIONER WRIGHT DISSENT IN NIELSEN HOLDINGS – ARBITRON

A future market case, such as the one alleged by the Commission today, presents a number of unique challenges not confronted in a typical merger review or even in “actual potential competition” cases. For instance, it is inherently more difficult in future market cases to define properly the relevant product market, to identify likely buyers and sellers, to estimate cross-elasticities of demand or understand on a more qualitative level potential product substitutability, and to ascertain the set of potential entrants and their likely incentives. Although all merger review necessarily is forward looking, it is an exceedingly difficult task to predict the competitive effects of a transaction where there is insufficient evidence to reliably answer these basic questions upon which proper merger analysis is based. Without these critical inputs, our current economic toolkit provides little basis from which to answer accurately the question of whether a merger implicating a future market will result in a substantial lessening of competition.



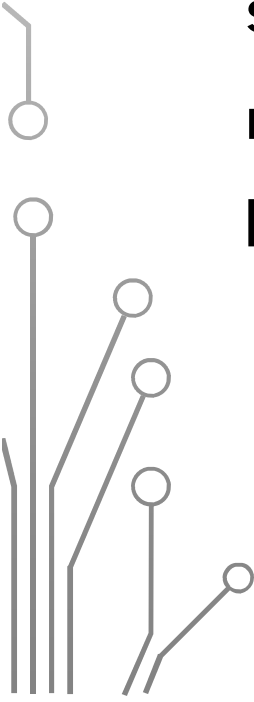
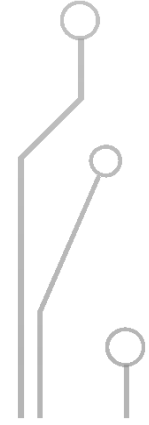


# SOME CONCLUDING OBSERVATIONS

- Innovation concerns are an important issue for antitrust enforcement
  - There is theoretical support that mergers lower innovation incentives under limited circumstances
  - Replacement effects are important if increased by merger
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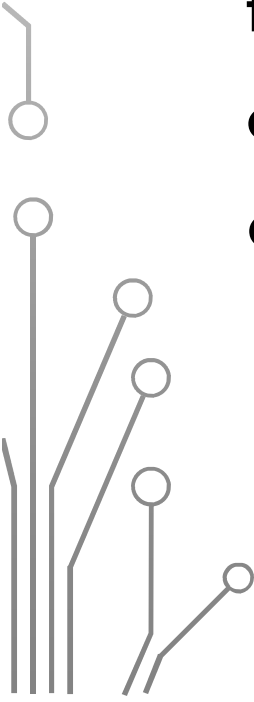


## SOME CONCLUDING OBSERVATIONS

- Empirical evidence is mixed, in part because innovation is difficult to measure
  - Neither theory nor empirical studies generally supports large adverse innovation effects from a merger when the relevant R&D market is not highly concentrated
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## SOME CONCLUDING OBSERVATIONS

- Innovation is hard to predict and “remedies” can be counter-productive
  - Innovation concerns are important and a useful tool in the enforcement toolbox, but antitrust enforcers should approach innovation issues with appropriate caution
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