

Overview

IP Activities for Supporting Hitachi’s Social Innovation Business

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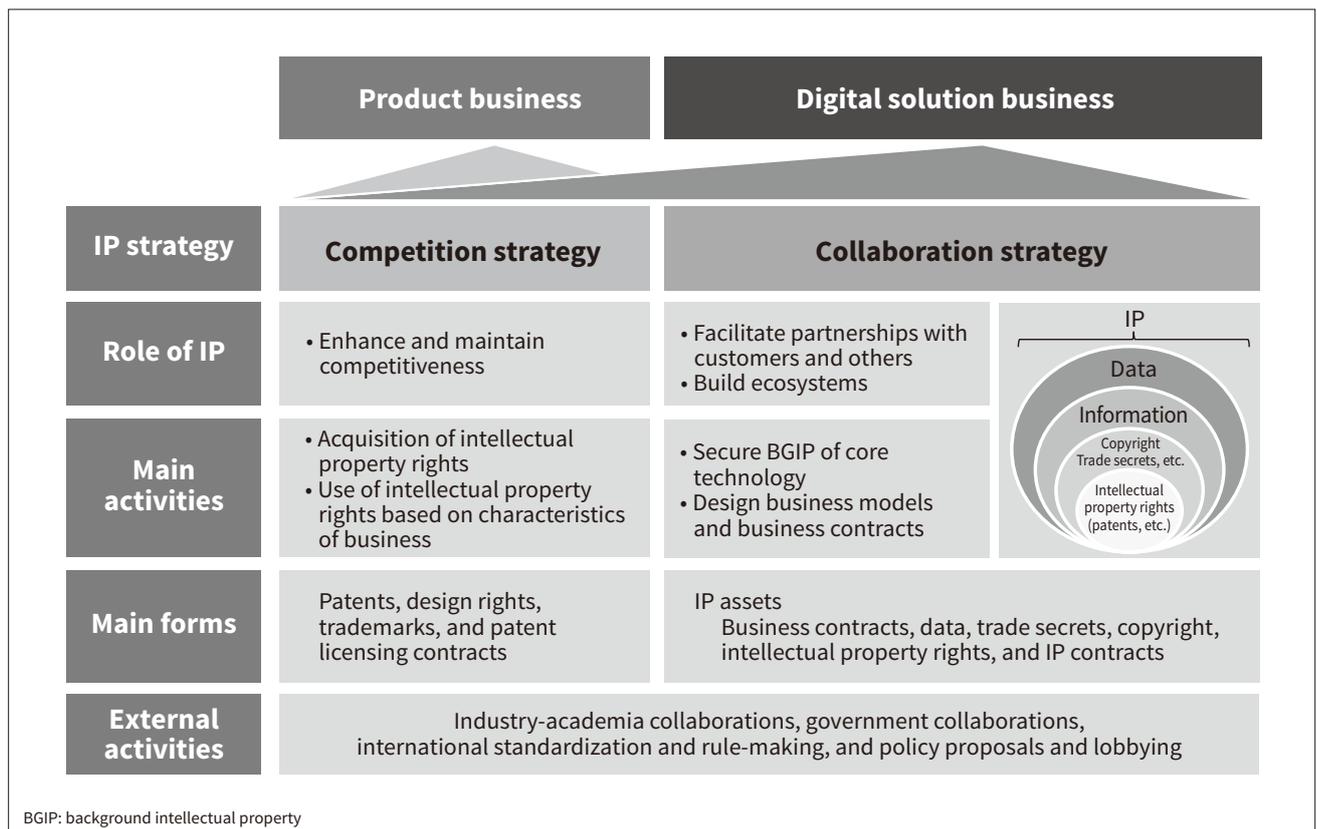
1. Introduction

To become an innovation partner for the Internet of Things (IoT) era, Hitachi has placed its Social Innovation Business at the heart of its business plans,

sharing issues with customers and partner companies and promoting collaborative innovation using digital technologies⁽¹⁾. Hitachi’s Social Innovation Business seeks to overcome the diverse challenges facing customers and society by providing total solutions that combine operational technology (OT), information technology (IT), and products. “Lumada,” which

Figure 1 — IP Activities at Hitachi’s Social Innovation Business

The figure shows an overview of intellectual property (IP) activities in Hitachi’s product businesses and digital solution businesses.



is the key to the Social Innovation Business, contains the accumulated knowledge of Hitachi built up through collaborative creation with customers and partners, and thereby enables the delivery of a wide variety of solutions⁽²⁾.

Hitachi's Social Innovation Business is broadly divided into product businesses and digital solution businesses. **Figure 1** shows an overview of intellectual property (IP) activities for each of the businesses.

The product businesses provide technically excellent equipment and systems to customers and their IP strategy deals primarily with "competition." That is, the role of IP is to enhance and maintain competitiveness against competitors. The main IP activity is the acquisition of intellectual property rights, primarily patents, so as to protect points of differentiation, and to use these rights in the business as a barrier to entry. The scope of IP is mainly patents, design rights, and trademarks. In recognition of the increase of joint research with universities over recent years, it also includes engaging in activities that support industry-academia collaborations.

Digital solution businesses, on the other hand, create new value through innovation by collecting, extracting, and analyzing data with Lumada at the core, and the key of their IP strategy is "collaboration." That is, the main role of IP is to build ecosystems and facilitate partnerships with customers and others. The main IP activities include securing the background intellectual property (BGIP) for core technologies, designing business models and business contracts, and supporting the building of partnerships using IP. The scope of IP has expanded much wider than in the past, including not only intellectual property rights such as patents, copyrights, and trade secrets, but also data and other new information assets.

In terms of new IP activity challenges that are common to both product and digital solution businesses, Hitachi is also actively involved in areas like industry-academia collaborations, government collaborations, international standardization and rule-making, and policy proposal and lobbying.

The following sections describe the IP activities in product and digital solution businesses, and the new IP activity challenges.

2. IP Activities in Product Businesses

Hitachi's product businesses cover a wide range of product categories, including rolling stock; escalators and elevators; servers, storage, and other information and telecommunication systems; medical and healthcare devices such as particle beam therapy systems; industrial equipment such as air compressors and transformers; automotive equipment; and home appliances.

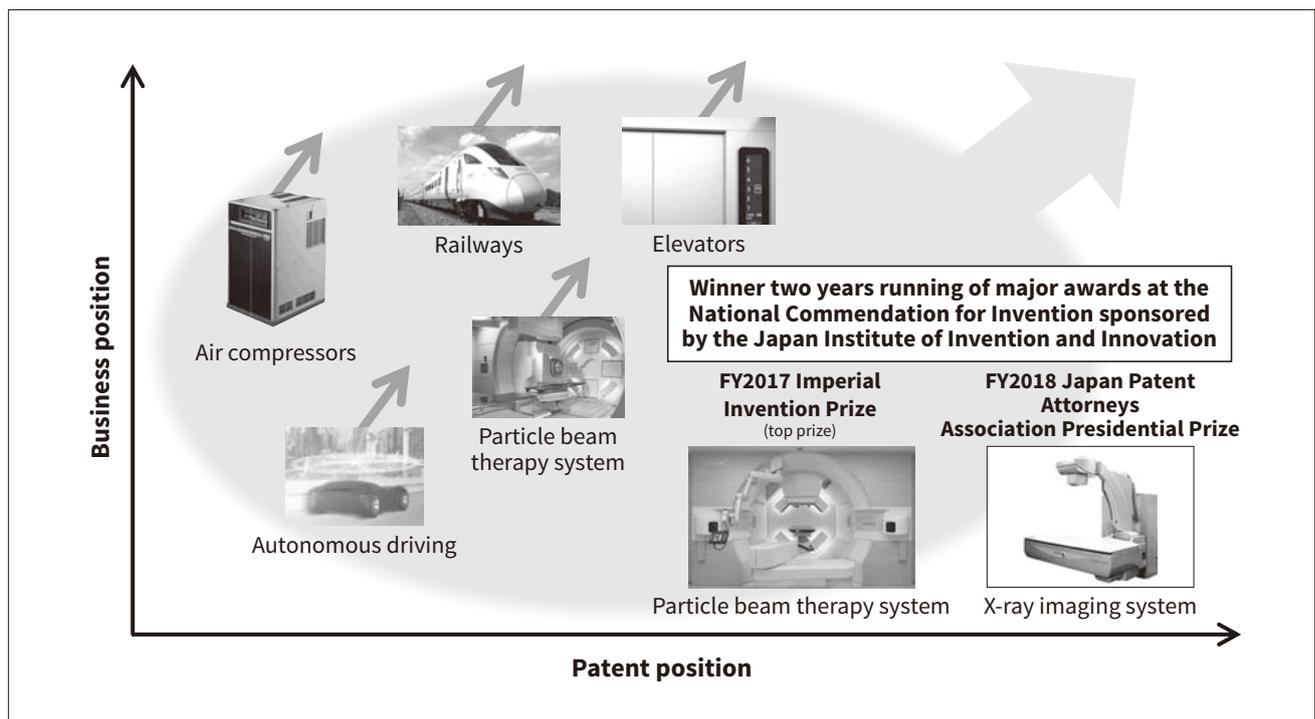
At the heart of the IP activities of these product businesses is the IP Master Plan⁽³⁾. Because the characteristics of each business (product) is different, IP strategies (IP Master Plans) are customized to their respective business characteristics, covering approximately 20 major products. The IP Master Plans aim to enhance the positioning of the products by improving the competitiveness of the associated product business through the IP strategies (see **Figure 2**).

A key feature of the IP Master Plan is to utilize the power of IP to lift up a business and enhance the position of the business through the formulation and execution of an IP strategy that is integrated with the business strategy. IP activities that are integrated with the business include those associated with open innovation, including industry-academia collaborations, government collaborations, and international standardization and rule-making, depending on the circumstances of the business, with such activities becoming more prevalent in recent years in response to the trends of digitalization and openness.

One example of an outcome of this type of activity is an industry-academia collaboration between Hokkaido University and Hitachi on a particle beam therapy system. This involved the commercialization of a scanning irradiation technology that can track moving organs by combining Hitachi's spot-scanning irradiation technology with Hokkaido University's real-time tumor tracking radiotherapy technology. Both Hokkaido University and Hitachi recognize the importance of IP in industry-academia collaborations, and the jointly entered core inventions won the FY2017 Imperial Invention Prize (top prize) at the National Commendation for Invention sponsored

Figure 2— Use of IP Activities to Enhance Competitiveness of Product Businesses

Enhance business and patent position through the formulation of an IP strategy that is integrated with the business.



by the Japan Institute of Invention and Innovation. This was the first such achievement by Hitachi in approximately 20 years⁽⁴⁾. Details of the industry-academia collaboration are contained in the article in this issue of *Hitachi Review* entitled, “Industry-Academia Collaboration and Intellectual Property Creation in Development of Particle Beam Therapy System” (page 64).

3. IP Activities in Digital Solution Businesses

Having set out to become “an innovation partner for the IoT era,” Hitachi’s digital solution businesses aim to create new value for customers through innovation by collecting, extracting, and analyzing data, with Lumada at the core⁽²⁾.

Various IP is generated at each step in the collection, extraction, and analysis of data. For example, a wide range of IP is generated when delivering a solution through the analysis of customer data by artificial intelligence (AI), including the raw data, data for learning, trained model, and the resulting AI outputs. How to handle the customer data and the various IP generated from its analysis is key to the digital solutions business.

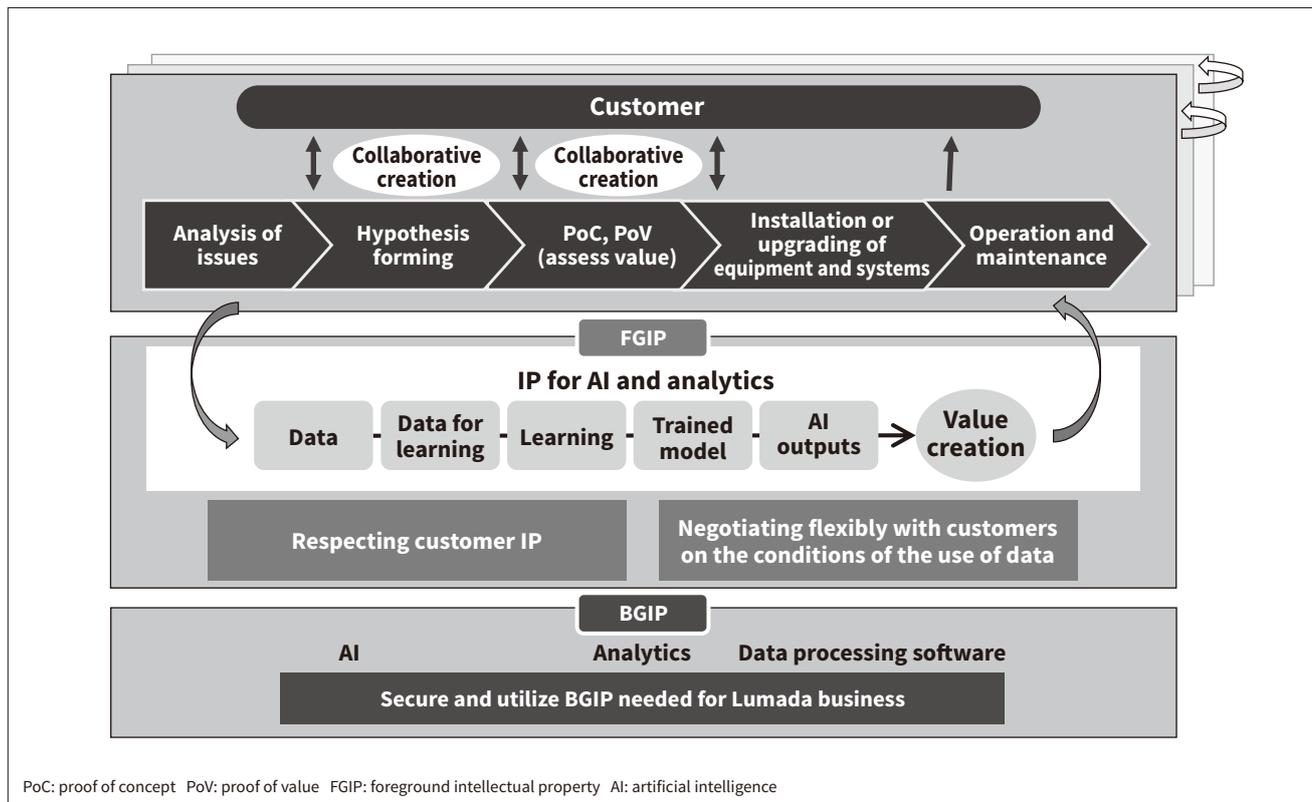
Specifically, along with the need to formulate an IP strategy that covers the attribution and conditions of use for the IP embodied in the created solution in a way that takes account of the circumstances of the customer, issues such as negotiating the terms of the contract with the customer, data management and handling, how outcomes will be delivered, and how information will be disclosed to third parties need to be addressed with care when putting that strategy into practice, with consideration for the business as a whole.

The basic approach adopted by Hitachi in this regard is to propose IP frameworks that enable win-win relationships with customers, respecting customers’ IP and negotiating flexibly with customers on the conditions of the use of data. It is no exaggeration to say that the success of a digital solution business comes down to whether Hitachi can establish such relationships (see **Figure 3**).

The Intellectual Property Division has participated in a variety of collaborative creation projects, with an involvement in about 300 such contracts during FY2017. It has also been working on how to deal with the emergence of new technologies such as AI, robotics, and autonomous driving, and also new rules and

Figure 3 — IP Activities that Expedite Digital Solution Businesses

The diagram shows how BGIP and FGIP are treated in digital solution businesses.



regulations as exemplified by Europe’s General Data Protection Regulation (GDPR). Through these efforts, the Intellectual Property Division has been building win-win relationships between Hitachi and its customers and also taking action to ensure that compliance with new rules and regulations goes smoothly.

At this point, when taking an overview of the trends both in Japan and overseas relating to the use and protection of data that is a determining factor in the success of a digital solutions business, it cannot be said that the systems and practices for data are properly in place either in Japan or elsewhere, despite the importance of data to society, the economy, and industry growing rapidly in response to digitalization. Under these circumstances, various councils deliberating the use and protection of data have been set up at the government’s initiative, with deliberations being undertaken jointly by industry, academia, and government. In addition to participating as a member of these councils, Hitachi has cooperated with the government and has actively gone about providing case studies and expressing its views, including by submitting opinion papers on draft guidelines issued by

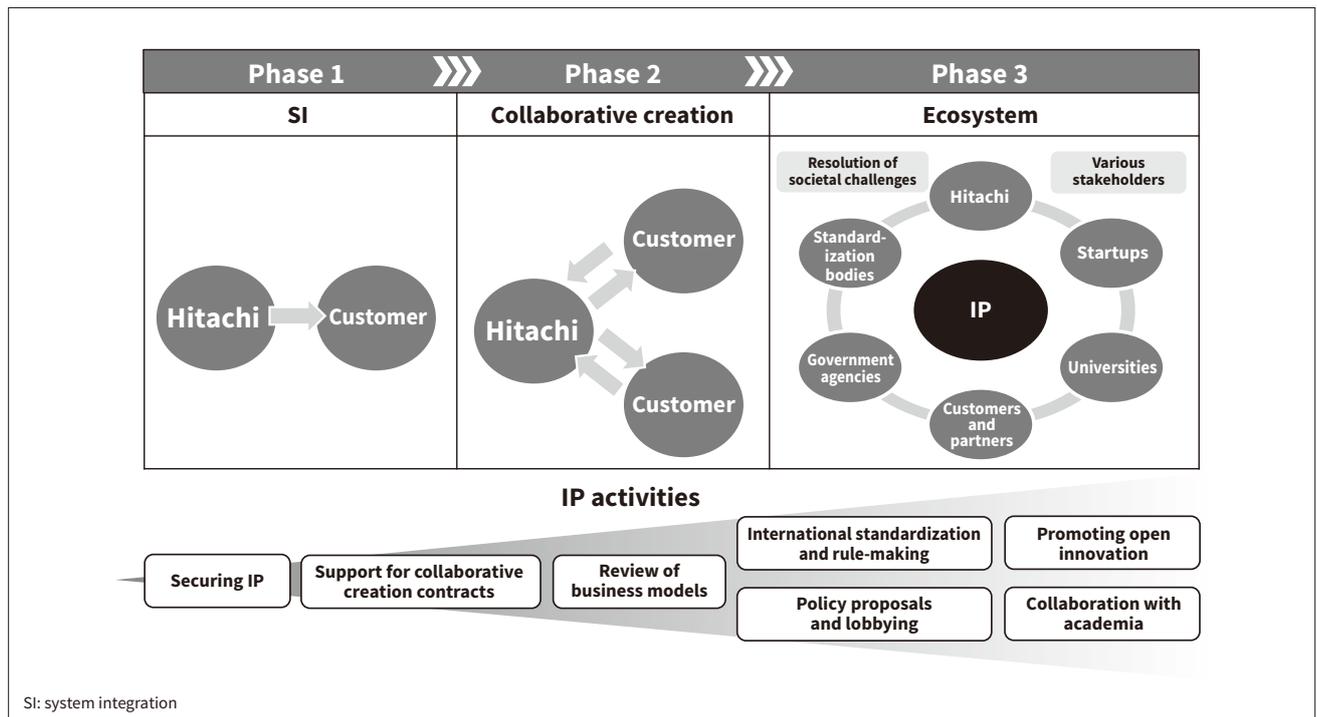
the government. The industry-academia-government collaboration on the formulation of these systems and practices for data, and the measures taken with reference to these, can be thought of as essential to the progress of digital solution businesses. Details of these activities are described in the article in this issue of *Hitachi Review* entitled, “Fourth Industrial Revolution Brought about by Data and AI” (page 57).

4. New IP Activity Challenges

Japan has in recent years been promoting Society 5.0 as a new concept of society. Society 5.0 is described as the fifth society following the hunting society, agricultural society, industrial society, and information society, and is defined as “a human-centered society that balances economic advancement with the resolution of social problems by a system that highly integrates cyberspace and physical space”⁽⁵⁾. The realization of this society would also result in the achievement of the Sustainable Development Goals (SDGs)⁽⁶⁾ set by the United Nations.

Figure 4 — New IP Activity Challenges

The diagram shows the steps involved in using IP to build an ecosystem.



In response, the Japan Business Federation (the Keidanren) has embarked on work that “treats the SDGs as a means of enhancing international competitiveness to help bring about Society 5.0”⁽⁷⁾. In conjunction with these initiatives, Hitachi is also seeking to overcome societal challenges and contribute to realizing Society 5.0 and achieving the SDGs by creating new economic, social, and environmental value through its Social Innovation Business⁽⁸⁾.

Vital to realizing Society 5.0 and achieving the SDGs is the use of data to link different services and industries and to bring about greater and more diverse forms of innovation. This will lead to the resolution of societal challenges by making possible efficiency improvements and advances on a scale that is not possible within a single field⁽⁹⁾. This resolution of societal challenges cannot be accomplished by a single company on its own, requiring not only various different stakeholders working together, but also the establishment and broad adoption of platforms and rules at a societal level.

Accordingly, Hitachi’s Social Innovation Business is also working with a wide variety of stakeholders, including customers, partner companies, universities, startup companies, and government agencies.

Moreover, the establishment and broad adoption of new rules not only calls for new business strategies, but also complementary strategies for international standardization and rule-making. From the point of view of IP, the challenge can be thought of as ecosystem-building in which IP has a central role, utilizing strategies for international standardization and rule-making including proposals for IP systems and measures for openness (see Figure 4).

While achieving this will not be easy, one such initiative involves the Chief Architect Office at the Technology Strategy Office of the Research & Development Group and the International Standardization Promotion Office of the Intellectual Property Division working together to take up the challenge of new activity on international standardization and rule-making.

5. Conclusions

Hitachi in its 2021 Mid-term Management Plan has set a goal to become a global leader in Social Innovation Business, stating its intention to focus on businesses that will grow as a result of innovations

and solutions in growth fields in various regions⁽¹⁰⁾. Looking to the societies of the future, Hitachi believes that the key to achieving a prosperous and comfortable way of life involves the ability to create solutions that resolve the challenges faced by customers and society. More than just the wealth embodied in goods, this rests, rather, on the question of how much value can be created, which is to say, the ability to create solutions that resolve the challenges faced by customers and society. In terms of IP, Hitachi intends to take the lead in creating ecosystems, seeking to deliver value to customers and partners through the creation of IP, whether it be in the form of products, platforms, or solutions, and putting it to use in an open manner.

The ultimate goal is to have solutions to solve social issues widely adopted by people all over the world through the ecosystems in which IP has a central role. Moreover, by promoting IP-driven innovation to come up with a steady stream of new innovations in response to the new challenges that arise out of this, Hitachi intends to engage in IP activities that create a sustainable virtuous circle.

The new IP activity challenges represent unknown territory where even leading global companies are still finding their way, both in Japan and elsewhere. By acting boldly and building up knowledge through a process of trial and error, Hitachi is seeking to accomplish the ambitious goal of realizing Society 5.0 and achieving the SDGs.

References

- 1) Hitachi, Ltd., “2018 Mid-term Management Plan: Progress and Prospects,” http://www.hitachi.com/New/cnews/month/2018/04/f_180427apre.pdf
- 2) Hitachi, Ltd., About Social Innovation, <https://social-innovation.hitachi/en/about/>
- 3) Suzuki et al., “Hitachi’s IP Strategy for Business Growth,” *Hitachi Review*, 64, pp. 309–314 (Jul. 2015).
- 4) The National Commendation for Invention, “National Commendation for Invention 2017 – Winners List,” http://koueki.jiii.or.jp/hyosho/zenkoku/2017/zenkoku_jusho_ichiran.html in Japanese.
- 5) Cabinet Office, “Achieving Society 5.0,” https://www8.cao.go.jp/cstp/english/society5_0/index.html
- 6) United Nations, “About the Sustainable Development Goals,” <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>
- 7) The Japan Business Federation (Keidanren), “Creating New Value through the ‘Three Business Principles for Achieving Society 5.0,’” <http://www.keidanren.or.jp/policy/2018/042.html> in Japanese.
- 8) Hitachi, Ltd., Contribution to Sustainable Development Goals, <http://www.hitachi.com/sustainability/sdgs/index.html>
- 9) Hitachi, Ltd., Business opportunities with Society 5.0, <http://www.hitachi.co.jp/products/social/society5/en/business-opportunities/index.html>
- 10) Hitachi News Release, “Hitachi to Strengthen Business Structures for a Transformation into a Global Leader, as Laid Out in the 2021 Mid-term Management Plan,” (Feb. 2019), <http://www.hitachi.com/New/cnews/month/2019/02/190201b.html>

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