

CEA OUTLOOK

CREATIVE ECONOMY PROSPECTS | JULY - DECEMBER, 2019

02

THAILAND'S DESIGN INDUSTRY

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**THAILAND'S
DESIGN
INDUSTRY**

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PREFACE

Looking back at the history of the world economy, each wave of the industrial revolutions drastically changed the lifestyles of the people in that era. Factors that precipitated the manufacturing revolution, including the World Wars I and II and deadly disasters, brought upon resource scarcity, poverty and degrading quality of life for the world population. In such a precarious moment, knowledge, technology, and creativity were utilized to bring humanity out of the crisis, building the foundation for innovation and new production processes for the next generation to come.

Design is the product of such revolutions, and it has served the public well for a long time. In the Scandinavian countries, famine and homelessness caused the government to allocate housing for the citizens. In the face of such an extreme condition, extravagance must be reduced while simplicity and functionality emphasized. This concept completely transformed the design industry, which must produce items to meet postwar demands. In other countries, the product of a political stand and civil rights movement contributed to the growth of the fashion industry. For example, Mary Quant's miniskirt symbolizes women's liberation and refusal to succumb to inequality.

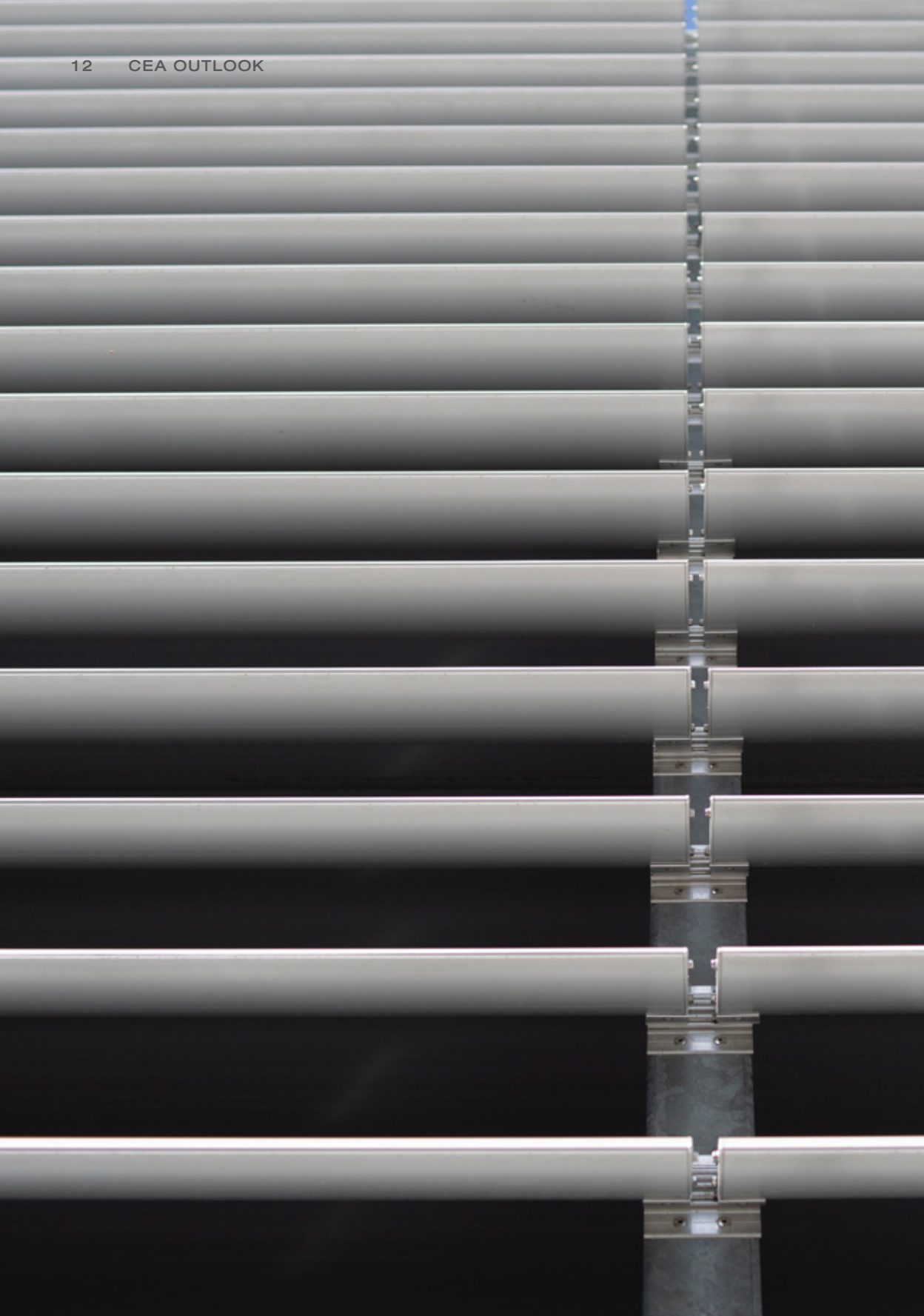
The design industry therefore brilliantly reflects the era in which it takes place. Design outputs of each period indicate the origins of the problems, thinking, and trends that happen and evolve. At present, the design industry expands its reach to accommodate the needs of a diverse and highly specific society. Similarly, a body of knowledge for design grows into a field of study that is fused with technology and innovation, making creativity concrete and tangible – be it infrastructure, automobile, and spacecraft, or medical equipment that is most critical in a certain moment in human lives. When it comes to mental health, design remains an essential tool that brings a sense of happiness and joy to people.

For Thailand, the modern design industry has continued its journey for more than half a century, especially in the field of education. Design education programs have been developed to generate creative workforce to support the industry and economic growth. Thailand adopted the first National Economic and Social Development Plan (1961 - 1966), which aims to expand industrial production to meet the increasing need for industrial products, focusing primarily on the use of domestic resources. At the same time, the infrastructure such as roads, water supply, and electricity was installed, enabling urban growth. As a result of economic expansion, the design industry integrated as part of the infrastructure - including architecture, decoration, product design - also grew. Simultaneously, the consumption boom created the needs for design that reflect the more-complex-more diverse lifestyle in Thailand.

The landscape of Thailand's design industry today expands and evolves in line with societal needs. We see new design disciplines that use creativity and culture to generate originality and uniqueness. We appreciate how the design industry has become such an important driver of the Thai economy. Yet, there are some challenges for the design industry to overcome – including competitive advantage, professional proficiency, business mergers, and cluster development – in order to promote the design industry as part of the manufacturing industry and service sectors such as tourism, alternative medicine and health, food and processed agricultural products, and development and promotion of livable cities.

In this edition of CEA OUTLOOK, we take a deep dive into the people in the design industry to gain insights that can inform how to drive forward the design industry, how to create products that serve international demands and, ultimately, how to make design the key force of Thailand's economy for today and the future.

Apisit Laistrooglai
Executive Director



Design has played an important role in economic policies in several countries. In the UK, it is one of the highest-grossing industries. Cities throughout the world, including Shenzhen, Taipei, and Turin brand themselves as cities of design, and thus new destinations for investments and tourism. More than a few industrial designers, fashion designers, and architects are responsible for iconic products that have permanently changed the way we live. On many occasions, design has been widely used in political campaigns and to communicate social issues.

Today's world sees a new chapter of design where its powerful scope extends beyond household appliances, product functionality or aesthetic values. Design cements its status as an economic and social tool with high dynamic range. It is, therefore, necessary for Thailand to study its competitive advantage in the area of design at every turn. The "design industry" can be categorized into different disciplines of study and practice. There are also other external factors that pose a challenge to the industry, including consumer demand, rapidly-changing manufacturing processes due to new technology and innovation, digital financial instruments and investments – not to mention the trade war engaged by other countries, which affect Thailand's export industry.

As the landscape of the design industry becomes clearer, measures and mechanisms formulated to strengthen each design discipline will become sharper with the ability to effectively overcome limitations. Statistics, data and the views of people in the design industry can serve as a springboard for Thailand to steadily enter the global competition without falling into any traps that may exist.



1. DESIGN INDUSTRY AS ECONOMIC DRIVER

The Thai government has included creative industries as part of the national strategy to enhance its competitive advantage in the 12th National Economic and Social Development Plan (2017-2021) and its Thailand 4.0 development model. Thailand currently recognizes four main groups of creative industries with twelve sub-groups and three related industries as shown in the table below:

MAIN GROUPS	INDUSTRIES	CATEGORY
Cultural Heritage	Crafts Thai Food Thai Traditional Medicine Historical & Cultural Tourism	Sub-industry Related industry Related industry Related industry
Arts	Performing Arts Visual Arts	Sub-industry Sub-industry
Media	Broadcasting Music Film Publishing	Sub-industry Sub-industry Sub-industry Sub-industry
Functional Creation	Design Fashion Architecture Advertising Software	Sub-industry Sub-industry Sub-industry Sub-industry Sub-industry

Amongst the four main groups, two - media and functional creation - have direct linkages to design disciplines, having been categorized as 'creative, culture and high-value services' that are considered the new engines of growth. The design industry itself has an immense potential to grow.

A study on creative districts by TCDC conducted in 2017 looks at the supply chain and related businesses in each creative industry, giving insights into how creative industries and design disciplines are linked as shown below:

MAIN GROUPS	SUB-INDUSTRIES	RELATED DESIGN DISCIPLINES
Media	Broadcasting Music Film Publishing	1) Animation and computer graphics design 2) Graphic design
	Advertising	
Functional Creation	Software Architecture	3) Architecture 4) Interior architecture 5) Landscape architecture
	Design	6) Industrial design 7) Exhibition design 8) Service design
	Fashion	9) Fashion design

The table above indicates nine design disciplines that are related to the creative industries:

-
- 1) Animation and computer graphics design
 - 2) Architecture
 - 3) Interior architecture
 - 4) Landscape architecture
 - 5) Graphic design
 - 6) Industrial design
 - 7) Exhibition design
 - 8) Service design
 - 9) Fashion design

A study on the potential of the creative industries conducted by TCDC in 2017 targets eight design disciplines:

- 1) Animation and computer graphics
- 2) Architecture
- 3) Interior architecture
- 4) Landscape architecture
- 5) Graphic design
- 6) Industrial design
- 7) Exhibit design
- 8) Service design



2. THAILAND'S DESIGN DISCIPLINES

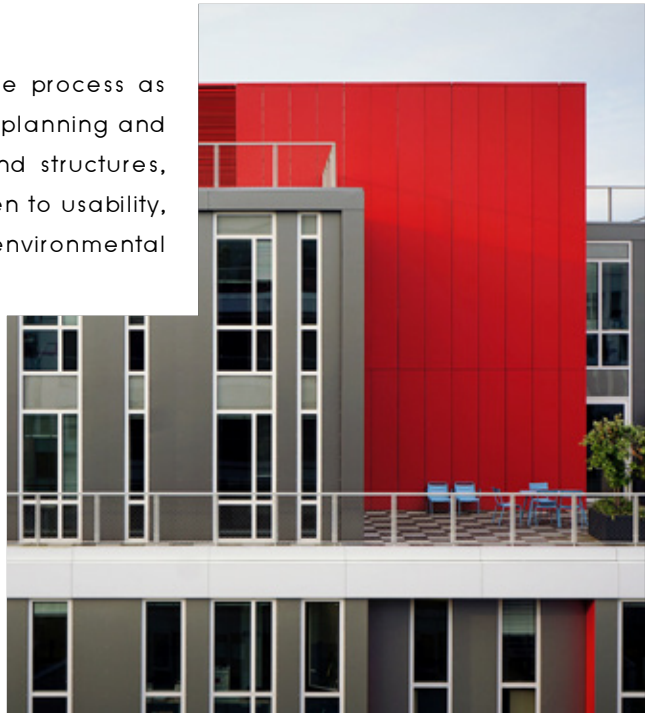
In its 2017 study on the potential of Thailand's creative industries, TCDC defines 'design' as the process of planning and envisioning for the construction of an output in the form of an object, a place, a publication or a service, with which people can engage through sight, awareness, touch or service usage. In design, important elements to be considered are the aesthetics and usability in terms of both economic and social impact.

Each design discipline is defined as follows:



1) Architecture

Architecture is both the process as well as the product of planning and designing buildings and structures, with consideration given to usability, durability, beauty and environmental impact.



2) Interior architecture

Interior architecture is the design of space within a building and how it is used by the building's occupants, concerned with spatial design and human interactions.





3) Landscape Architecture

Landscape architecture is the design, planning, and management of land, both in natural and urban environments, taking into account natural resource conservation and environmental considerations.

4) Industrial Design

Industrial design is the process of design applied to products that involves manufacturing, marketing, and systematic thinking, culminating in new products for quality living. The discipline includes product design; furniture design; graphic & packaging and ceramic, textile and metal design.





5) Graphic Design

Graphic design uses design and communication to convey ideas and messages through visual representations.



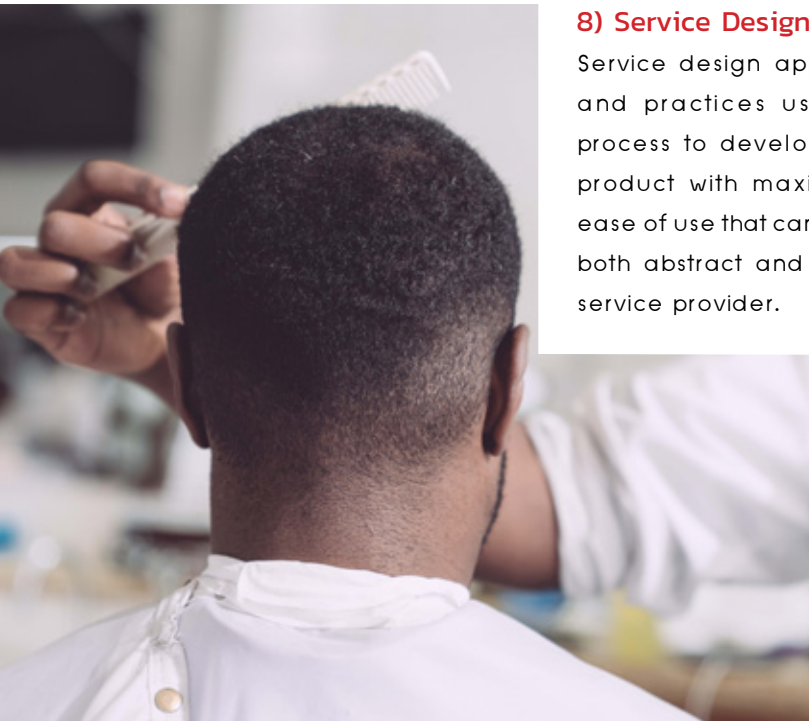
6) Animation & Computer Graphics Design

Animation & computer graphics design generate 2D and 3D animated images. It can be divided into three sub-industries: animation, gaming, and character.



7) Exhibition Design

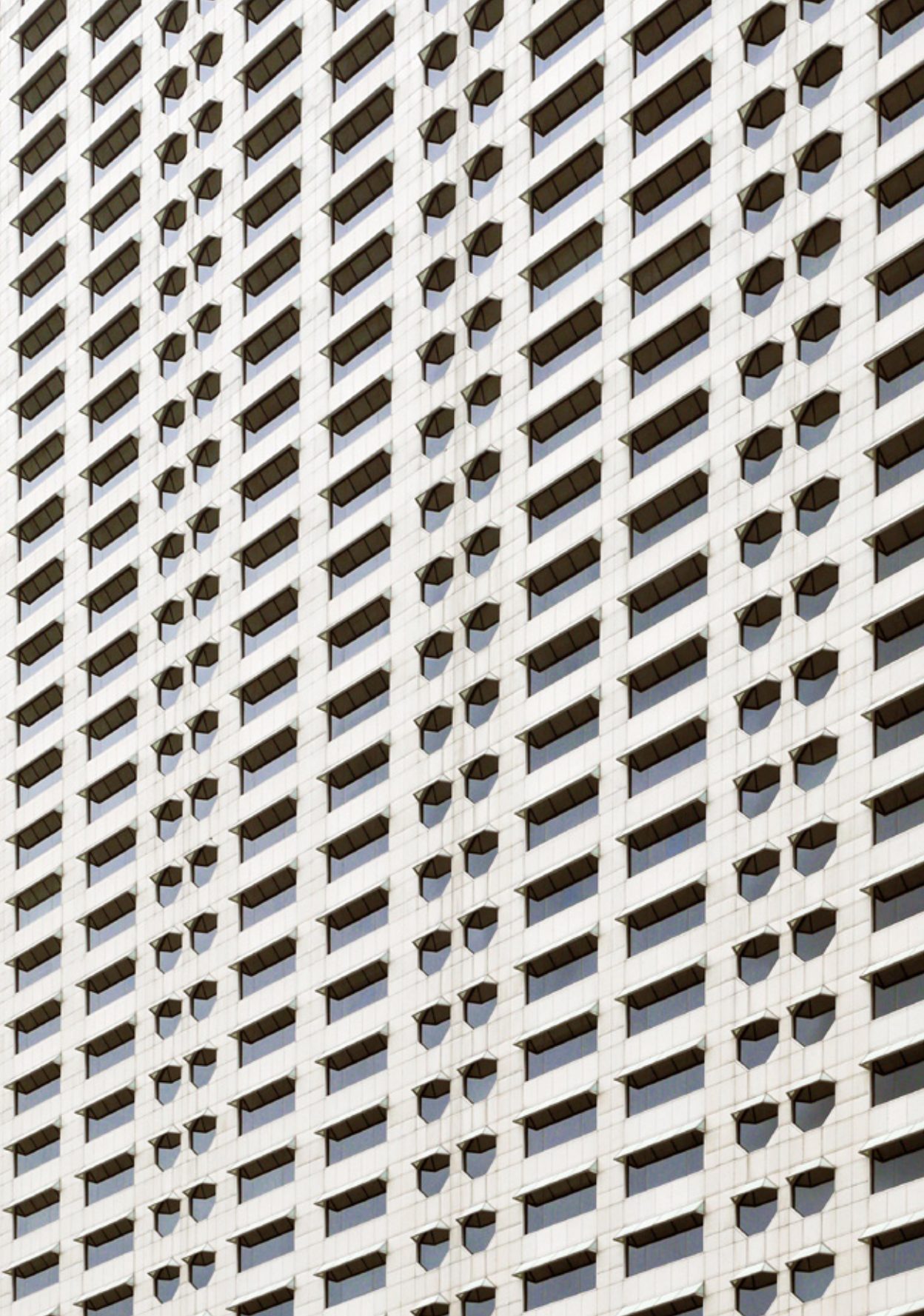
Exhibition design is the design of a tool or a medium used to communicate ideas, knowledge, advertisement or information to the public.



8) Service Design

Service design applies the thinking and practices used in a design process to develop a service or a product with maximum utility and ease of use that can generate return, both abstract and concrete, to the service provider.





3. DEVELOPMENT OF DESIGN PROFESSIONS IN THAILAND

History of design professions in Thailand

Design as a profession in Thailand dated a long way back, with its roots in 'craftsmanship' covering architecture as in temples and other religious sites, and handicrafts. Talented craftsmen would be selected to work for the royal court. During the reign of King Rama IV, Thailand embraced Western influence and began to modernize the country. Artisans came from Europe, bringing with them European-style architecture. In addition, members of the royal family and high-level officials were sent overseas to be educated, after which they returned to serve the country. Modern arts and crafts education emerged in what was called the Arts and Crafts Club (Samosorn Chang) during the reign of King Rama V in 1905 – 1910. After a push to institutionalize the arts and crafts education, including architecture, the School of Arts and Crafts (Poh Chang) was formally established in 1913 (Chatree, 2016). Architecture is thus considered one of the first design disciplines in Thailand that were reformed and modernized following the western education model.



Shaping up design professions

The period between 1933 and 1956 marks the beginning of the formal design professions in Thailand, with the Association of Siamese Architects Under Royal Patronage established in 1933 as a platform for Thai architects to share ideas and exchange knowledge. In the following year of 1934, the Department of Architecture was set up in Chulalongkorn University.

The design curriculum was upgraded to the higher education level providing bachelor's degree and diploma programs between 1939 and 1956. Chulalongkorn University offered a bachelor's degree in design, recognizing the Faculty of Architecture in 1939 while establishing the Faculty of Fine and Applied Arts, which offered a program in industrial design in 1943. Following a similar pattern, Silpakorn University established the Faculty of Architecture in 1955 and the Faculty of Decorative Arts in the following year, offering courses in interior architecture and visual communication design.

The government first took an interest and provided support to the design disciplines in 1965 in which the Ministry of Interior passed the Architecture Profession Act BE 2508. Professional requirements such as architectural licensing examination were launched as the profession's integrity is important for people's safety.



Design associations

Over the 17 years from 1972 to 1989, associations were formed among various design professions, seeking to strengthen their occupations. During that time, four design professional bodies were created in three disciplines: product design, interior architecture and landscape architecture. 1972 saw the first contract for a landscape architecture service in Thailand. The Thai Leather Goods Association was established in 1977, Industrial Designers Society Thailand in 1979, Thailand Interior Designers' Association in 1985, and Thai Association of Landscape Architects in 1989.

The government's first recognition of design and creativity

Recognizing the important role of design and creativity in economic growth, the government started to do its part in promoting the design professions. The Office of Innovation and Value Creation (formerly DITP Service Center) was established in 1991 under the Department of International Trade Promotion, Ministry of Commerce, with an aim to add value to Thai export products through design and increase the competitive advantage in the global market.

In the following seven years from 2000 to 2007, much progress was made in the design professions from the continued support given by the public and private sectors. Among the key developments that took place in this period are the establishment of the Architect Council of Thailand, the promulgation of the Architect Act, BE 2543, which covers all three architectural professions namely architecture, interior architecture and landscape architecture.

In 2002-2003, many state and private agencies related to design and creativity were founded, including the National Software Industry Promotion Agency (SIPA), ACM SIGGRAPH Bangkok Chapter - an international community whose mission is to foster and celebrate innovation in computer graphics, Bangkok Art and Culture Center, and Thai Graphic Designers Association.

In an effort to boost the economy, increase the country's competitive advantage, and ensure a steady and sustainable economic growth, the government established the Thailand Creative and Design Center (TCDC) in 2004 with an aim to promote creativity and generate young visionaries, designers and entrepreneurs.

Within the private sector that operates in the design industry, associations were also formed to strengthen business operations and seek support from the government. In 2004-2005, the Thai Animation and Computer Graphics Association (TACGA) and Business of Creative and Event Management Association (EMA) were established.

Advancing the creative economy

Creativity was first linked to the national development in the 10th National Economic and Social Development Plan (2007- 2011). Since then, Thailand has continued to implement creative economy policies, which have been included in the 11th and 12th National Economic and Social Development Plans (2012-2016) and (2017-2021), respectively, for more than 10 years.

In 2018, the government took the role of creativity to the next level as the Creative Economy Agency (Public Organization) was established and tasked to promote Thailand's creative economy as a driver of balanced and sustainable economic growth. The agency's scope of work includes design professions.

The creative economy is targeted as one of the national strategies to increase the competitive advantage, indicating that design professions will be one of the key drivers of economic growth and urban development.

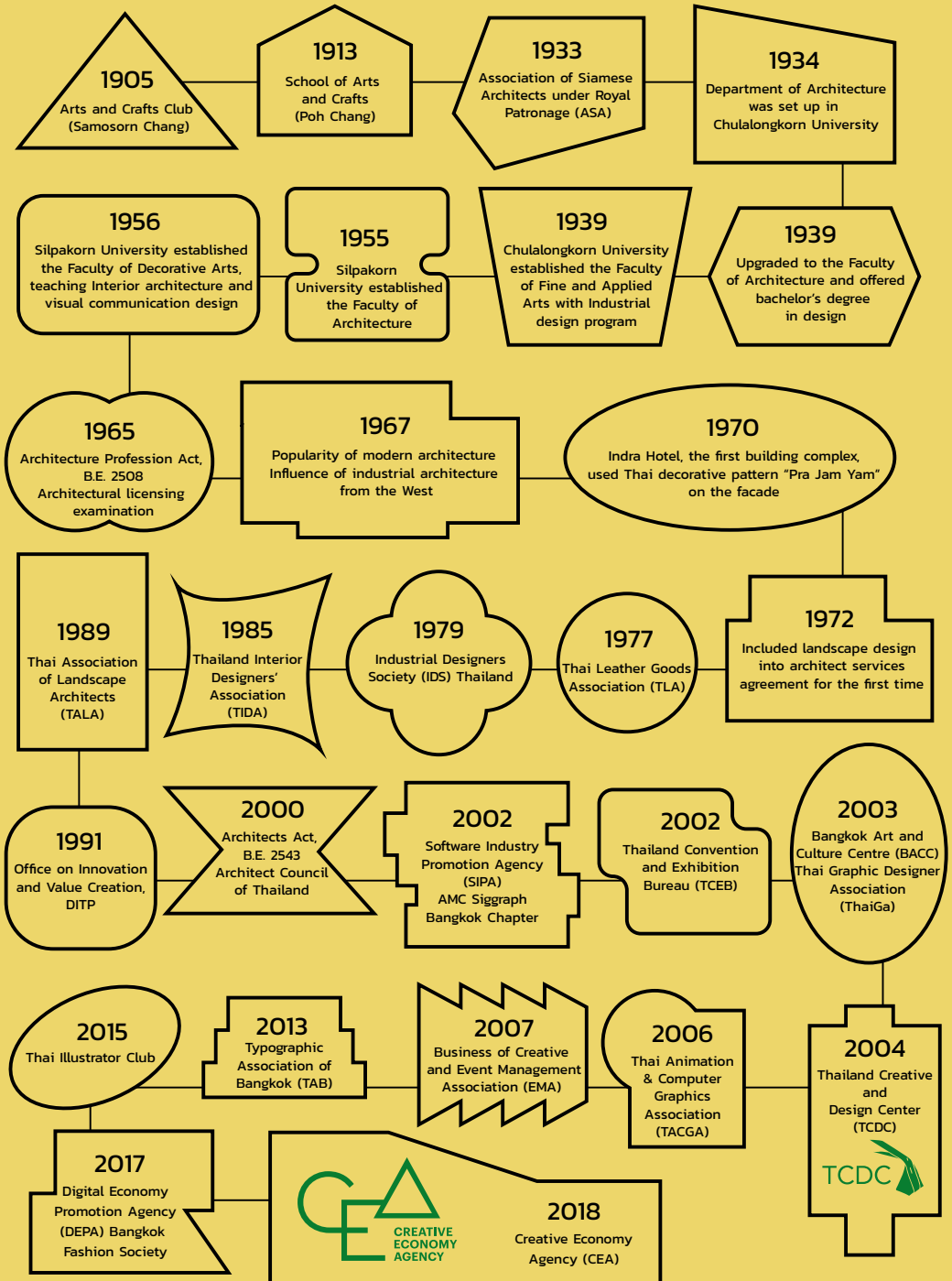


Figure 3-1 Timeline of Thailand's design profession development

4. STATUS OF THAILAND'S DESIGN INDUSTRY

4.1 Professional associations and organizations

4.1.1 Levels of formality in professional associations in the design industry

Each design discipline in Thailand is at different stages in terms of patterns and formality of professional bodies. Currently, the design disciplines can be divided into four levels in terms of professional bodies: (1) Formalized body with achieved professional standards, (2) in the process of achieving formalized professional bodies, (3) bodies formed for commercial benefits and (4) no professional bodies formed. The characteristics of each level are as follows:

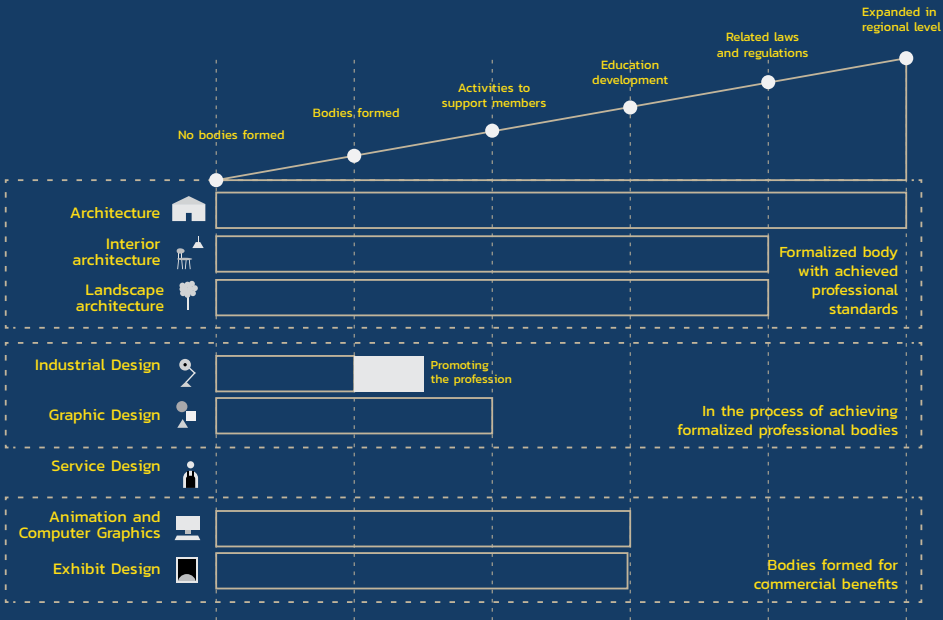


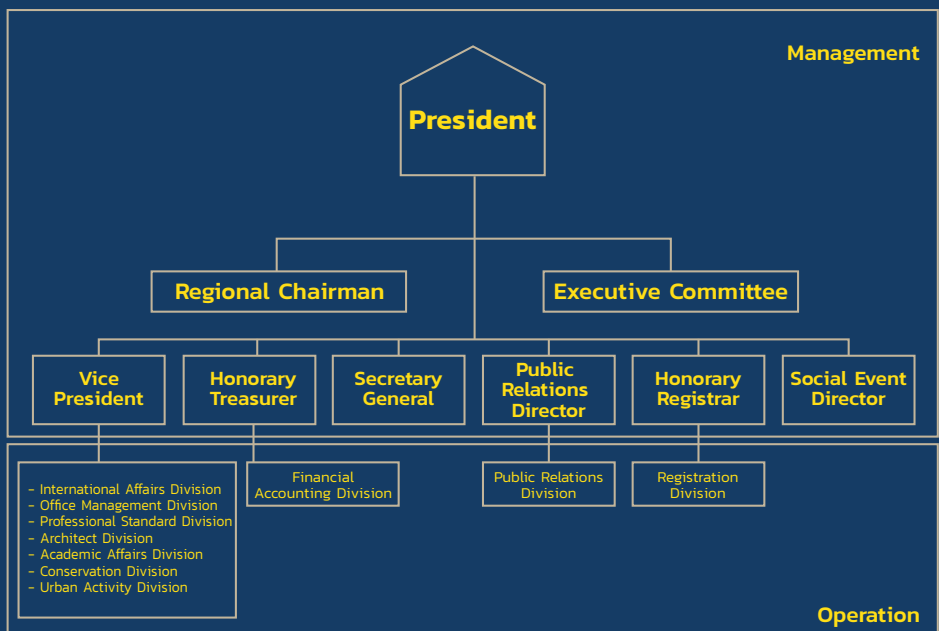
Figure 4-1 Levels of professional bodies and organizations in Thailand's design industry

(1) Formalized body with achieved professional standards

At this level where a professional body is robust, formalized and regulated by the law, the Architect Council of Thailand is currently the only body with this level of advancement. The Council, established under the Architects Act BE 2543, includes three disciplines of architecture: architecture, interior architecture, landscape architecture, with requirements of professional ethics, legal registration, curriculum certification, and professional licensing examination.

In addition to the overarching body, each discipline formed their own associations, namely the Association of Siamese Architects, Thailand Interior Designers' Association, and Thai Association of Landscape Architects, aimed to further the research and body of knowledge as well as give credibility to the profession. Such organizations maintain robust databases of members, have clear organization structures and hold elections to choose the presidents.

Structure of a formalized body with achieved professional standards



The operation sections are separated from the management team / Dedicated division in charge of member relations

Figure 4-2 Structure of a formalized association which has achieved professional standards

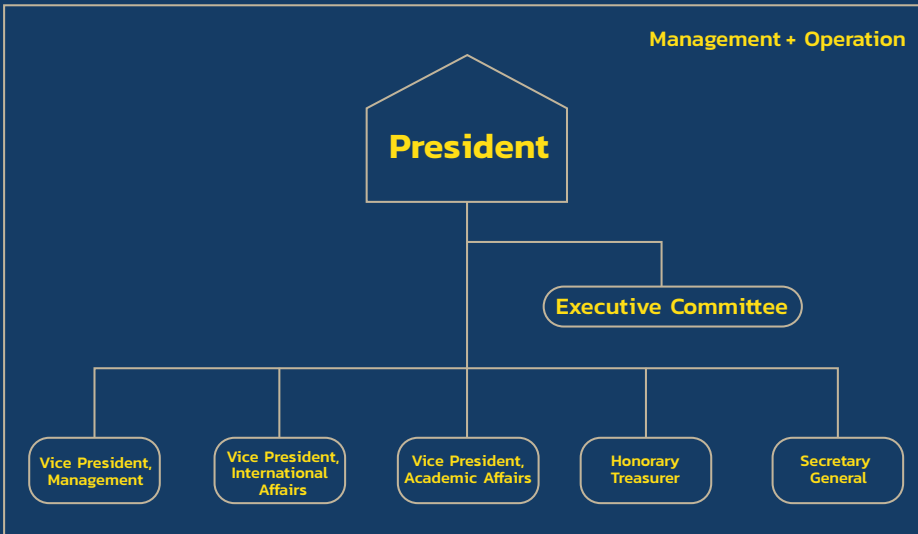
The Association of Siamese Architects has a management structure at the regional level, with chairmen of the northern (Lanna), northeastern (Esan) and southern (Taksin) regions and offices situated in the main provinces of the regions.

(2) In the process of achieving formalized professional bodies

The design disciplines at this level of advancement are graphic design and industrial design. Both have formed associations with activities such as seminars and exchange of ideas, but lack databases of member registration, regular meetings among members, regulatory requirements and clear organizational structure.

Both associations have been in operation for quite some time. Noticing the nature of design work which is diverse with no clear scope of work in place, members are keen to formalize their professional bodies. However, the lack of mechanisms to strengthen the professions - such as databases, professional standards and strong support from the government - remains an issue.

Structure of an association in the process of achieving a formalized body



Incomplete separation of management and operation sections

Figure 4-3 Structure of an association in the process of achieving a formalized body

(3) Bodies formed for commercial benefits

In this level, a body is formed as a business association rather than a professional organization. Such business body is aimed at promoting the profession to the public, focusing on commercial benefits and relationships with state and private agencies. At present, the professions which formed business associations are animation & computer graphics design and exhibition & event design.

Both associations play a role in negotiating and seeking support from the government as well as being involved in the development of education programs. They provide internship programs for design students to intern in member companies. They also work with education institutions to develop new programs to ensure that graduates will have the right skillsets that match the job market.

(4) No bodies formed

Service design has been promoted on a wider scale, with the Creative Economy Agency (CEA) established as the state body tasked with connecting people who work in this discipline with entrepreneurs seeking such service. No professional body has been formed for service design yet.

4.1.2 Gaps in professional bodies

In general, a professional body leads to further advancement, professional standards, databases, and commercial benefits while serving as a platform for members to exchange ideas and information. The much-needed support to form formalized professional organizations, when provided, will enable the design disciplines in Thailand to continue developing until they can adopt the international standards, increase their ability to compete domestically and internationally, become well known by the general public, and able to express opinions, negotiate, inspect, give advice and participate in the national public projects, making it possible for the public to have access to high-quality design.

In addition, with a robust database that comes with a formalized professional association, related organizations will be able to plan and formulate strategies that contribute to the advancement of the profession, thus leading to economic, social and environmental development as well as improvement in public service delivery. At present, the level of needs each design discipline require vary.

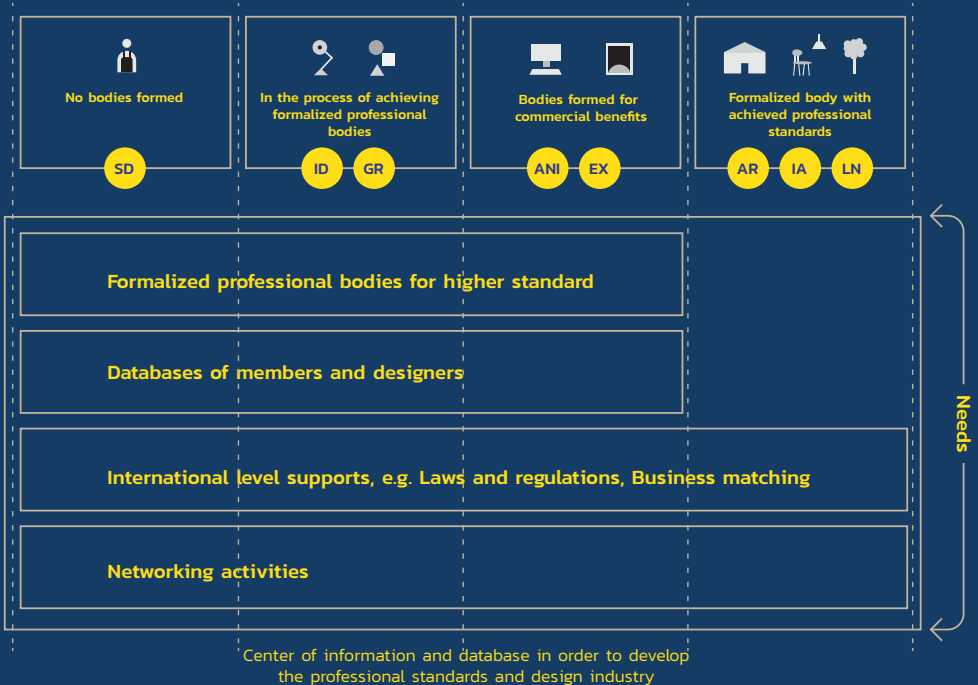


(1) Gaps in industries with formalized bodies with professional standards

The design disciplines of architecture, interior architecture and landscape architecture have professional bodies that uphold professional standards, maintain databases and organize activities to consistently further professional advancement. They are the strongest disciplines in this regard. However, interviews with professional experts shed light on the struggles that they are facing, with issues such as unfair remuneration and difficulty in taking on overseas work, among others, caused by the fact that the professional standards are not yet at the level acceptable by the international community. There is clearly a need to push the three disciplines to adopt the international standards with respect to regulations concerning buildings and structures or the type of materials used in construction, which have a direct impact on the safety of persons and property.

(2) Gaps in industries without formalized bodies

With respect to the other design disciplines, it is evident that the need lies in the formation of formalized professional bodies to strengthen the professions and bring about development that meets the needs of the professionals as well as market demands. Furthermore, efforts are needed in urging the professionals and related entrepreneurs to recognize the benefits of professional organizations and make it a standard to form one. Databases related to the profession should be set up, maintained and utilized in planning the development of the profession in a systematic manner, which is missing in the disciplines of animation & computer graphics design and exhibition design in which bodies were formed only for commercial gains. Even the disciplines that are in the process of establishing such associations, namely industrial design and graphic design, still lack robust management – not to mention service design which has not formed professional organizations of any kind.



4.2 Thailand's competitiveness in the design industry

4.2.1 Producing Thai designers

(1) **Design curriculum and educational institutes in Thailand** In 2017, 125 tertiary educational institutions under the aegis of the Office of the Higher Education Commission across Thailand offered design courses, with 128 bachelor's programs, 44 master's programs and 12 PhD programs. The institutions are detailed by disciplines as follows:



Northern Region

Chiang Mai 4
Phayao 1
Phitsanulok 1

Central Region

Bangkok 14
Pathum Thani 3
Nakhon Pathom 1
Nonthaburi 1

Eastern Region

Chonburi 1

Northeastern Region

Khon Kaen 1
Nakhon Ratchasima 3

Southern Region

Nakhon Si Thammarat 1
Songkhla 2

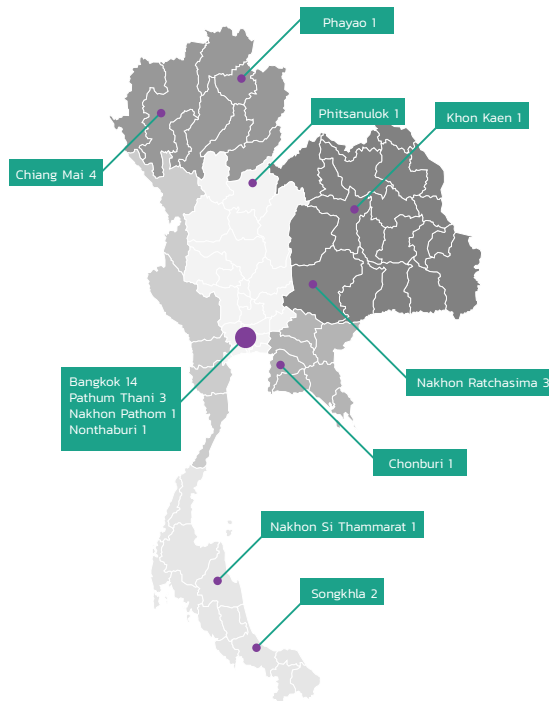
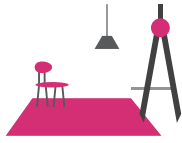


Figure 4-5 Number and locations of educational institutions that offer architecture programs

33 institutions: 6 in the north, 19 in Bangkok and the central region, 1 in the east, 4 in the northeast, 3 in the south.



INTERIOR ARCHITECTS

Northern Region

Chiang Mai 1

Central Region

Bangkok 10

Pathum Thani 3

Northeastern Region

Maha Sarakham 1

Nakhon Ratchasima 1

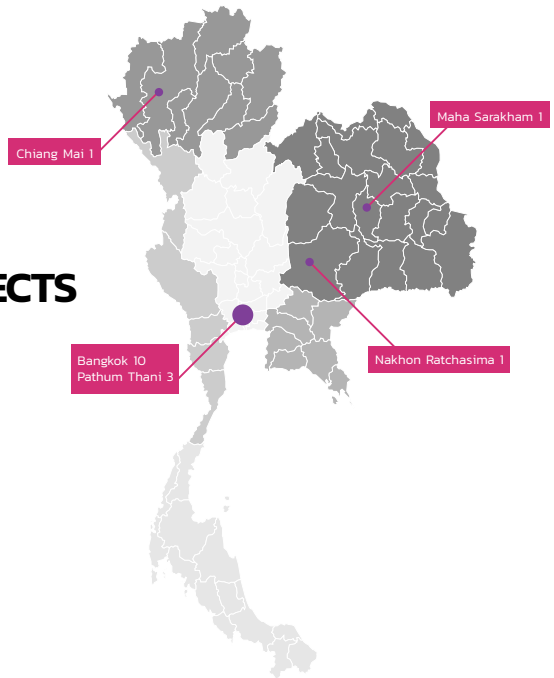
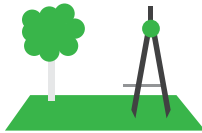


Figure 4-6 Number and locations of educational institutions that offer interior architecture programs

16 institutions: 1 in the north, 13 in Bangkok and the central region, 2 in the northeast.



LANDSCAPE ARCHITECTS

Northern Region

Chiang Mai 1

Central Region

Bangkok 4

Pathum Thani 1

Northeastern Region

Maha Sarakham 1

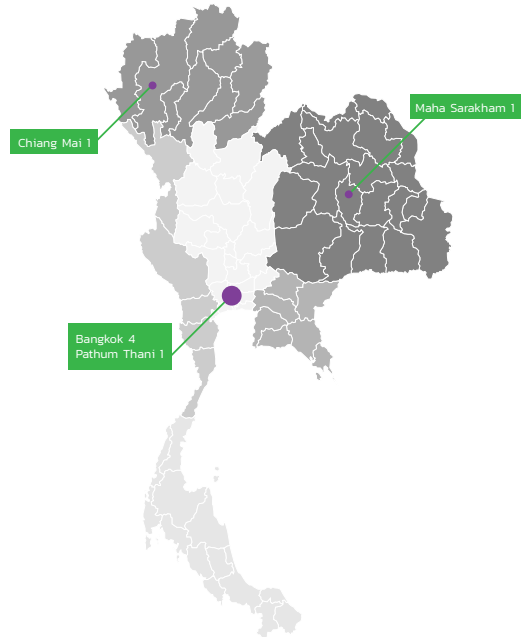


Figure 4-7 Number and locations of educational institutions that offer landscape architecture programs

7 institutions: 1 in the north, 5 in Bangkok and the central region, 1 in the northeast.

INDUSTRIAL DESIGNERS



Northern Region
Chiang Mai 1
Central Region
Bangkok 14
Pathum Thani 5
Eastern Region
Chonburi 1
Northeastern Region
Khon Kaen 1
Kalasin 1
Southern Region
Nakhon Si Thammarat 1
Songkhla 1

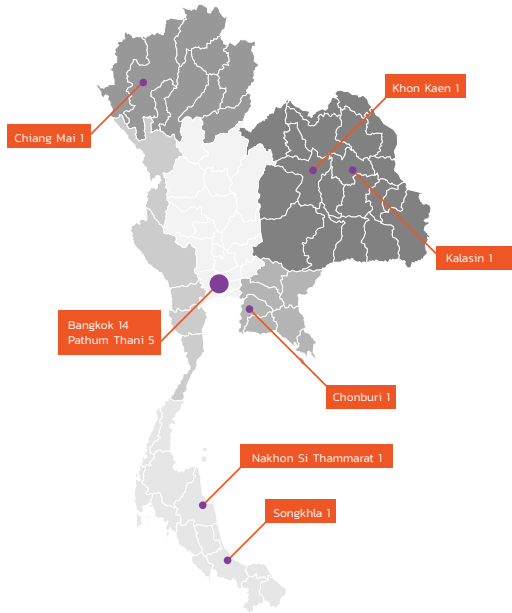


Figure 4-8 Number and locations of educational institutions that offer industrial design programs

25 institutions: 1 in the north, 19 in Bangkok and the central region, 1 in the east, 2 in the northeast, 2 in the south.

GRAPHIC DESIGNERS



Northern Region
Chiang Mai 2
Phitsanulok 1
Central Region
Bangkok 8
Pathum Thani 4
Eastern Region
Chonburi 1
Northeastern Region
Khon Kaen 1
Nakhon Ratchasima 1
Maha Sarakham 1
Ubon Ratchathani 1

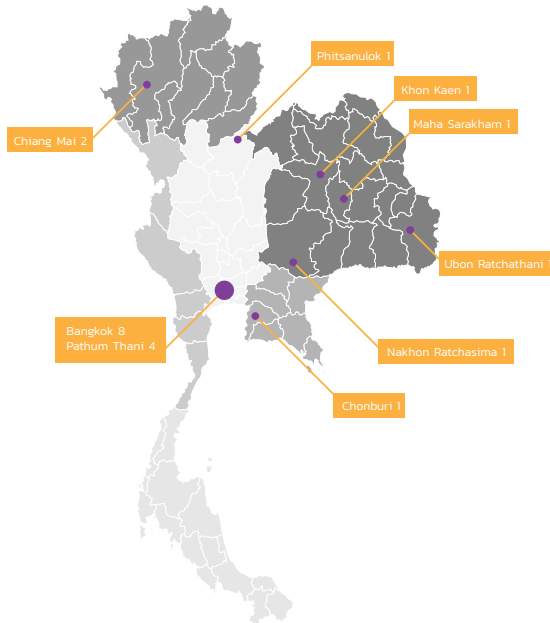


Figure 4-9 Number and locations of educational institutions that offer graphic design programs

20 institutions: 3 in the north, 12 in Bangkok and the central region, 1 in the east, 4 in the northeast.

ANIMATORS & COMPUTER GRAPHIC

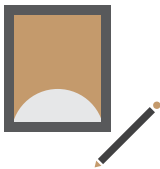


Northern Region
Chiang Mai 2
Chiang Rai 1
Central Region
Bangkok 9
Pathum Thani 2



Figure 4-10 Number and locations of educational institutions that offer animation & computer graphics design programs
14 institutions: 3 in the north, 11 in Bangkok and the central region.

EXHIBIT DESIGNERS



Central Region
Bangkok 4
Pathum Thani 2
Eastern Region
Chonburi 1
Northeastern Region
Khon Kaen 1
Southern Region
Songkhla 1

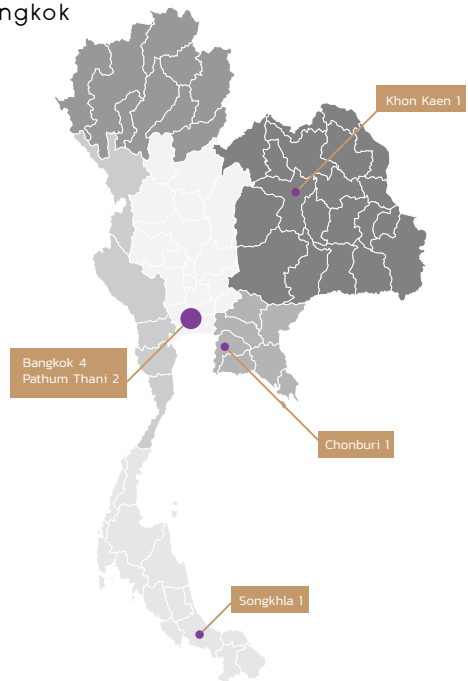


Figure 4-11 Number and locations of educational institutions that offer exhibition and event design programs
10 institutions: 6 in Bangkok and the central region, 1 in the east, 1 in the northeast, 2 in the south.

(2) Number of design students in Thailand

When it comes to producing designers into the workforce, Thai education has full capacity in training designers to work in the domestic market without the need to seek designers from overseas.

Designers produced in 2017

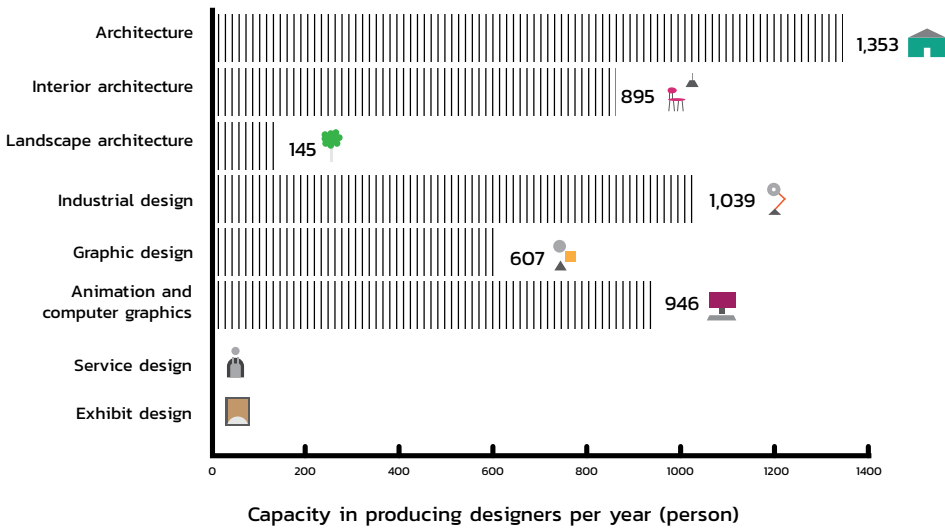


Figure 4-12 Capacity in producing designers into different industries in 2017

In 2017, architecture produced the highest number of designers (approximately 1,180) compared to other disciplines. In that year, no education programs were offered in exhibition design and service design. Designers in these two professions mostly switch from or expand on other design disciplines. Nevertheless, event and exhibition associations have reached out to several educational institutions to help them establish programs in these two disciplines, which will produce designers with the skillsets much needed in the market.

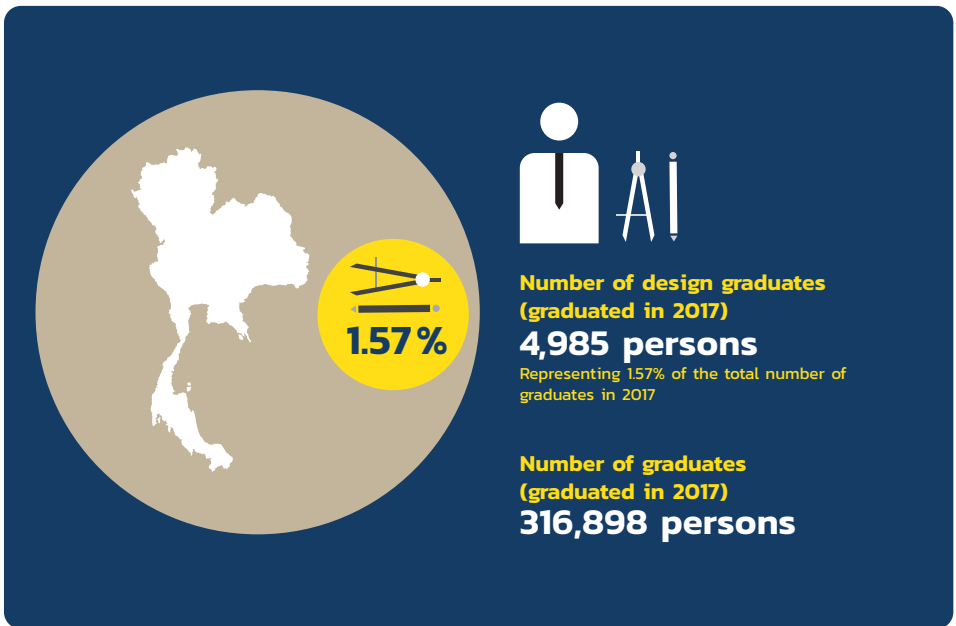


Figure 4-13 Percentage of design graduates in comparison with the total number of graduates throughout the country in 2017

Overall, in 2017, there were approximately 4,985 design graduates, representing 1.57% of the total number of graduates (316,898) in the same year.

Currently, there is a mismatch between the education system and job market, causing some graduates not getting hired in the field of their training; many of them end up in a similar line of work. Moreover, the rapid advancement of technology, plus consumer needs that become more diverse, call for more specialized designers. It is critical for the business and education sectors to work together to anticipate and adjust curriculum in response to the rapidly changing needs in the job market.

(3) Education's sector overall capacity in producing design professionals

Design education in Thailand covers all design professions, with the exception of service design in which no tertiary education program has been established; only workshops provided by TCDC and an elective course offered in the industrial design program. The mismatch between education and business needs proves to be a major problem. There are more job options in the workforce, which are related to design but not actual design work, for example, real estate, project management, and project consultancy. The changing world, technology advancement, and varied consumer demands contribute to the need for more specialized designers.

The interviews with professional association presidents and education personnel, conducted as part of a study investigating the potential of Thailand's design industry, reveal a major problem, which is the mismatch between the education system and job market, causing some graduates not getting hired in the field of their training; many of them end up in a similar line of work. Those employed in careers that match their training account for only a small percentage of the total number of graduates. After entering the workforce, some graduates do not possess the skills needed to do the job. The businesses in industries such as exhibition design and animation & computer graphics design are forced to set up training themselves, incurring additional costs in time and expenses, to build the capacity of new hires before they can start working.



This problem can be fixed by linking data between educational institutions and businesses to ensure that education programs match with business needs in terms of the number of workers and the skillsets anticipated to be in demand in the future.

In addition to ensuring that education programs match with the job market, every discipline should promote integrative learning by including other curricula, especially business management, into the program. This will provide designers with basic knowledge and understanding in running their own businesses or the businesses of their employers. Knowledge in marketing and finance, coupled with design, will help them provide a design service that meets the needs of users, increasing the chance of winning overseas projects.

Besides business know-how, knowledge in other fields that build on design will create specialized expertise, giving birth to new careers that support the design professions. For example, knowledge in interactive design and lighting design can be used in exhibition design. Green building and pre-fabrication can be applied to architecture.

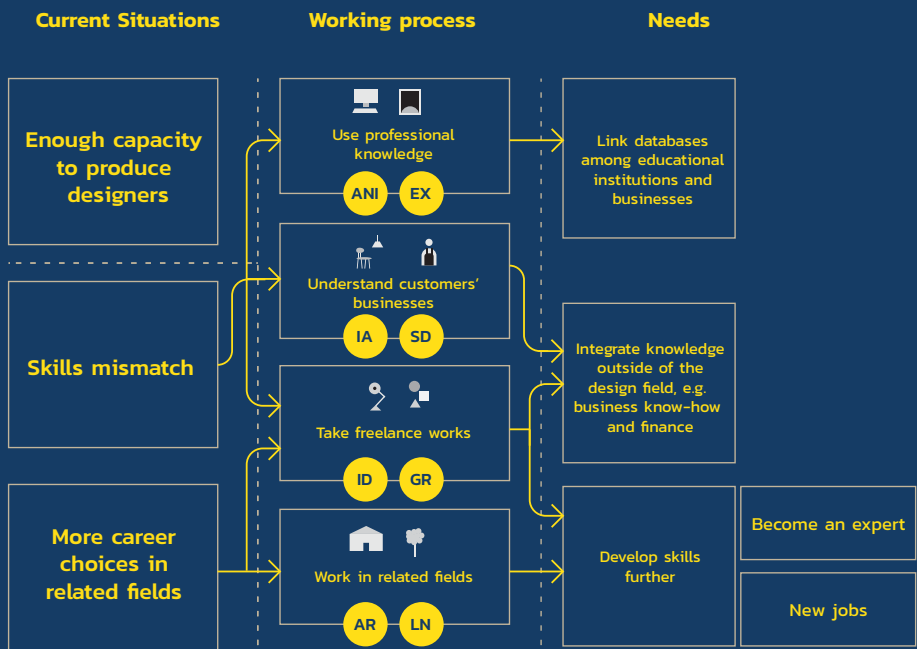


Figure 4-14 Education sector's overall capacity in producing design professionals

4.2.3 Thai designers in the global scene

Although Thailand's design industry is not yet widely known on a global scale, Thai designers in certain professions possess the right skillsets that match demands from overseas. The level of acceptance by the international community can be divided into three as follows:

1) International recognition

At present, the design professions that have been recognized internationally are interior architecture and industrial design, as seen by the government's continued support for export and guarantee for quality. The Office of Innovation and Value Creation under the Department of International Trade Promotion, Ministry of Commerce recently held the Design Excellence Award 2019 (DEmark), which is equivalent to Japan's internationally recognized Good Design Award (G-mark).

DEmark is a collaboration between Thailand's Office of Innovation and Value Creation of Thailand, the Japan Institute of Design Promotion (JDP), and the Japan External Trade Organization (JETRO), with the Japanese bodies providing support in expert judges and award criteria. DEmark winners are considered to be on par with the international standards, thus making them eligible for G-Mark.

DEmark has an award category for Hotel / Restaurant / Café, recognizing the design merit in interior architecture, showing that the profession is internationally recognized in the hospitality sector (hotels, resorts, restaurants, etc.) A study illustrates that Thailand's interior architecture is met with strong approval, with many international hotel and resort groups seeking to use Thai interior design service for their facilities in both Thailand and overseas. The works by Thai interior designers have consistently won the International Property Awards since 2011, with more than 79 winners in the Asia Pacific region.

In addition to large projects, the interior architecture profession is recognized for adding value to small commercial structures such as shops, restaurants, and cafés. Interior design is seen by business owners as an important element that sets the project apart and makes it known to the public.

Similarly, industrial design is another design discipline that is internationally recognized. Since 2008, 749 products have won DEmark in the industrial design category, 412 of which won G-Mark. This clearly shows that Thai industrial products have what it takes to compete in the global arena.

As the capacity of Thai industrial design is hard to ignore, the state bodies consistently provide support and promote Thai products in the global market. DEmark-winning products are exhibited in international expos such as Milan Design Week and receive privileges from the Department of International Trade Promotion, for example, the use of DEmark logo with no additional cost, 50% discount on entry fees when participating in international expos, and publicity to boost sales in and outside Thailand through advertisements in various media.

2) Personnel export or contract manufacturers

Thailand houses landscape architects with the skills to match their international counterparts, thanks to the fact that the country has offered landscape architecture education since 1978, the longest among ASEAN countries. Thai landscape architects have been recognized among international companies, with many involved in overseas landscape design projects. Despite the fact that many architects work in international projects, their works are often packaged as the foreign companies’ outputs, thus not being highlighted as the products by Thai landscape architects.

In animation & computer graphics design, there are three sub-industries: animation, gaming, and character. A study illustrates that there are three types of related business: (1) Manufacturers who own the intellectual property rights (2) Contract manufacturers (3) Distributors, importers, and dealers

Across the three sub-industries, Thailand’s focus is on importing products and content for distribution.

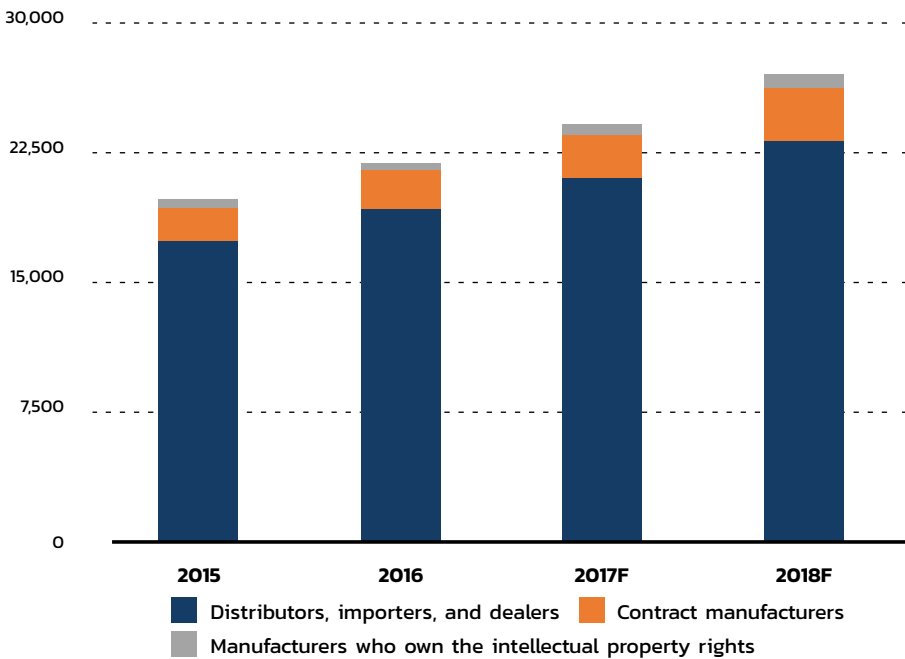


Figure 4-15 Gross value of animation & computer graphics industry
 Source: Digital Economy Promotion Agency, Animation, Game and Character Industry Data (2017)

Looking specifically at the animation industry, the revenue from contract manufacturing has steadily increased since 2015. A study by the Digital Economy Promotion Agency illustrates that Thailand, having high-quality workers, is able to produce animated content with international standards while the labor cost is relatively low. For this reason, Thailand is chosen as one of the leading producers of animation. 25 educational institutions in Thailand train over 2,000 students in animation per year.

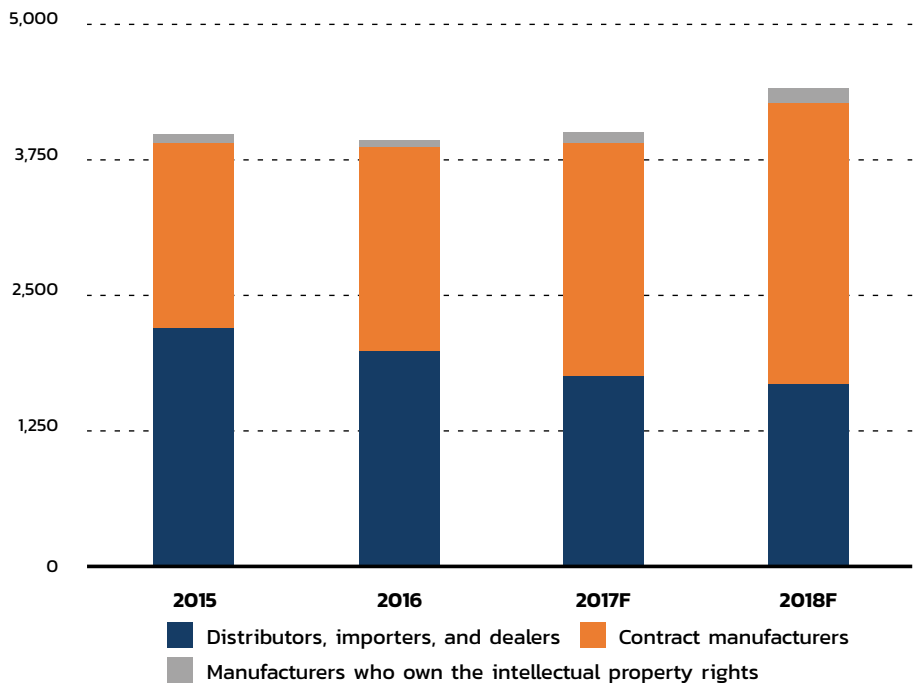


Figure 4-16 Gross value of the animation industry

Source: Digital Economy Promotion Agency, Animation, Game and Character Industry Data (2017)

3) Individual accolade from the international community

Thai individual designers in the fields of architecture, graphic design, industrial design, and exhibition design have received many international awards, and the number of awardees is likely to continue each year.

5. OPPORTUNITIES AND CHALLENGES IN GLOBAL MARKET

A rapidly changing world in which we live presents both opportunities and challenges for the design professions both domestically and overseas. For Thailand, both can be seen in the fast-paced technology and the government's support in assisting Thai design industry to secure its place in the global market.

5.1 Opportunities and challenges in technology

At present, the technology trends are evolving by leaps and bounds with an immense impact on the design industry as follows:

1) Technological advancement results in changes in tools of the trade

Technological advancement influences the way designers think, work and operate. As seen in architecture, interior architecture, and landscape architecture, technology is used to facilitate design and construction. The transition from computer-aided design (CAD) to building information modeling (BIM) over the past several years has changed the way construction design, drawing, and use of materials work, increasing accuracy with real-time model analysis.

Meanwhile, this also poses a challenge to designers in that they need to keep up with the fast-paced evolution of the technology, having to adapt to and acquire skills for new tools.

2) Technology results in need for new type of digital outputs

As the communication platform has changed from analog to digital, industrial, graphic, and exhibition designers are prompted to create outputs in a new type of media, creating new opportunities for the design industry within the country.

3) Technology is the source and main component of the industry

Animation & computer graphics design is originated from technology; its scope being wider and quality of work getting better depends on technological advancement.

Technological advancement can provide opportunities in building capacity to compete in the international market and expanding the customer base, from which many design industries can benefit. For instance, animation can go beyond the limit by keeping up with new software and hardware. Original equipment manufacturers are able to produce more quickly with new technology such as 3D printing.

4) Push for the design industry to receive support in technology

Regardless of how technology plays a role in the design professions, government support is needed across the board. Such support includes access to new technologies, less financial burden for copyrighted software, and push for local innovation.

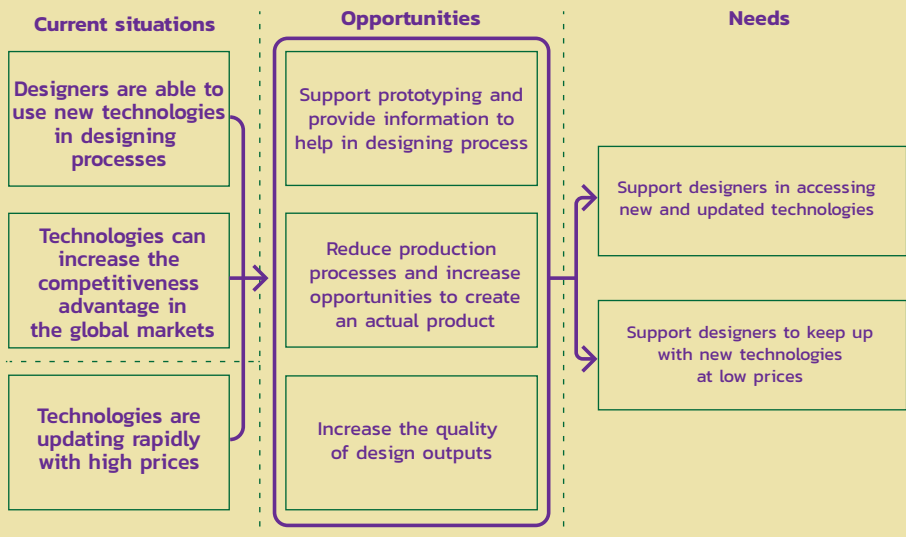


Figure 5-1 Design industry's needs for support in technology

Software and hardware as work tools are not seen as part of the capital for producing design outputs, which is why no direct support is given, when, in fact, they are necessary assets that come with high costs. A mechanism to support designers to keep up with new technological developments at low prices will increase the competitive advantage in the global market.

5.2 Opportunities and challenges for the government to support Thailand's design industry

Currently, the government provides support to the sub-industries, focusing on the products; no support that contributes to the overarching design industry is given. What is also lacking is incentives for starting a design business, which include business privileges, promotion of Thai design services both in and outside the country, strong copyright laws that create an enabling environment, and continuous capacity building. Other gaps include the lack of robust databases of design professions, which could make it possible for service design to drive the economy forward. Moreover, the government should provide support by using design to improve public infrastructure and service delivery. These will help each design profession keep up with the fast-paced world.



(1) Business privileges

During the interviews, service design experts agreed that the government support is currently focused on the promotion of design products, from which only the industrial design can benefit. Other design professions offer design services, which currently receive no support or incentives from the government.

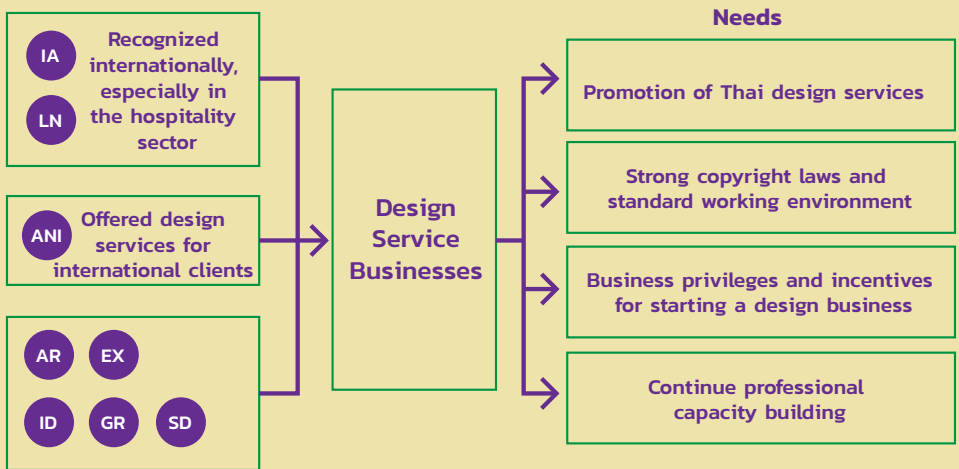


Figure 5-2 Design industry's needs for business privileges

The challenge for the government is to increase the capacity of Thai designers so they can work internationally by providing business privileges, promoting design services offered by Thai designers domestically and internationally, strengthening copyright laws conducive to design businesses - as the value of copyrighted outputs steadily increases since 2015, especially in animation & computer graphics design - and giving continuous support in professional capacity building in order to assist each design industry to keep up with the changing world.

(2) Pushing design services as a mechanism to drive forward the economy

All of the eight design professions offer design services, with the capacity to take on international projects both at the individual and industry levels. They have the potential to be the economic driver and add value to other businesses. However, Thailand’s design industry contributes to economic growth more in exported products and manufacturing than design services. This is because other business operators do not have the understanding nor the recognition of the value of design and how it can improve their businesses. In addition, the design industry itself lacks planning and strategy to effectively develop the profession to match its needs as well as the market’s. There is no clear indicator used to measure the impact or the ability to create economic value of the design industry due to the lack of comprehensive and systematic professional databases.

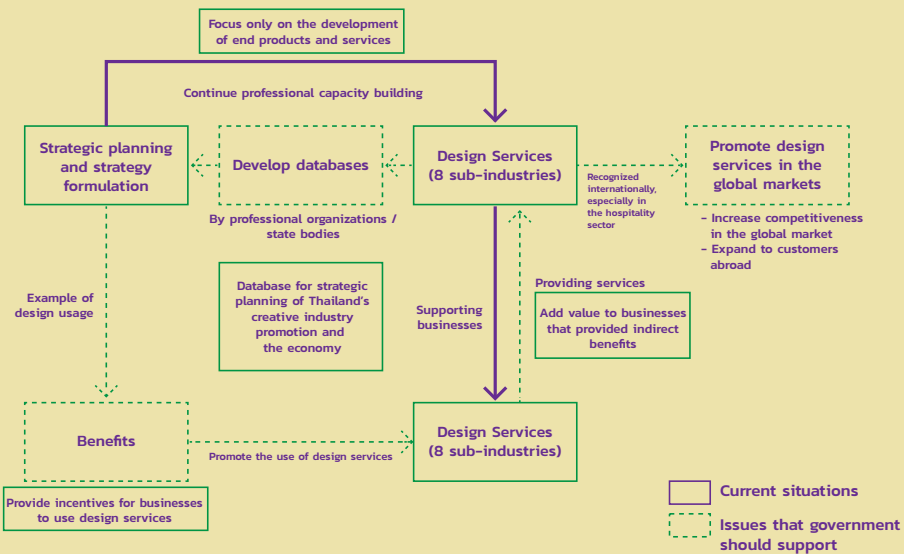


Figure 5-3 Design industry’s needs for support in driving forward the economy

To push forward the design industry in its role of an economic driver, the government must support the development of the creative economy database, to be included as one of the missions of the state bodies and professional organizations. The data will provide useful analysis of the design professions' economic potential that will feed into the planning and strategy of Thailand's creative industry promotion, and ultimately the national economic strategy. Other supports include business privileges and service exports, for which Thai designers in the interior and landscape architecture disciplines have the capability. They are recognized internationally, especially in the hospitality sector, already providing services overseas.

Additionally, data collection and analysis should be done on the whole design chain and how different disciplines interlink. For example, interior architecture involves the use of products/ furniture which are the products of industrial design. In any given project, a logo is made through graphic design, the publicity assisted by media produced through animation & computer graphics, and the service experience mapped out through service design. Design services promotion will assist in the effort to increase the competitive advantage of Thailand's design industry and expand its client base both within and outside the country.



(3) Pushing design to be part of the government’s infrastructure and services projects

Nowadays, Thai designers are involved in many private-owned projects that are comparable to the government’s public projects in that they involve a large number of users. For instance, a real estate project requires structure, interior, and landscape design; graphic design is important in public signage aligned with international standards; and service design is used in business development in the service sector such as hospitals, hotels, etc. Character and animation design, as well as exhibitions, feature prominently in business identity. It is a standard for large private organizations to use the service of designers.

This well illustrates how the private sector sees the benefits of and has confidence in Thai designers. Based on the interviews with industry experts, some government agencies have begun to recognize the importance of using more diverse design services. Nevertheless, there are very few opportunities given to Thai designers to work on public projects, which are dominated by monopolies. The government views design only in terms of adding business value when, in fact, it is a fundamental right of all citizens alike to have access to universal design in public buildings, sidewalks, high-quality city surroundings, traffic signage, and good public services.

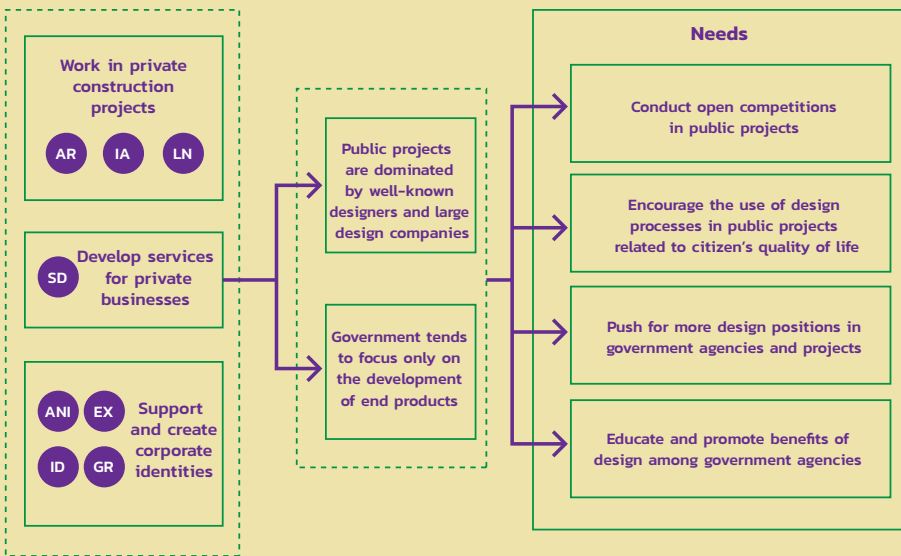



Figure 5-4 Design industry’s needs for participation in government projects



The experts have an overall opinion that there should be a push for consistent use of designs in public projects through inserting design into projects that are used daily by the public, including public spaces, sidewalks, urban surroundings, and public services. Every state project's scope of work should require a design component to improve the quality of life and raises public awareness of the true benefits of design. The government should lead the effort to conduct an open competition in public projects to avoid work being given to a limited group of designers and providing opportunities for young designers to express their talent. The government, in turn, will receive the best quality of work.

In addition, the government should also push for more design positions in government agencies, where relevant, such as those working on improving the scenery at the national, city and district levels; those involved in product development, production and export; transportation agencies; and public service delivery agencies.

The challenge for the government agencies in driving forward the design professions is to show other state agencies the significance and empirical benefits of design through educating and presenting ways to benefit from design, covering all aspects of the design industry.

Increasing the role of designers in the public sector and raising awareness of design benefits are two activities that must be implemented together to effect clear changes in the way state projects are developed in the future.

DESIGN AND DEVELOPMENT OF BANGKOK

No one is perfect. If Bangkok was a person, she would not have a perfect appearance, but her charming and vivacious personality would be something that most people find attractive and alluring. She would adore convenience and comfort, was highly flexible, and very clever in solving unexpected problems. With such diverse characteristics, it's no wonder why people often have a love-hate relationship with Bangkok.

A variety of tools were used to develop Bangkok. One of the most important tools is the comprehensive city plan, which took effect in 1990. The plan provides control and guidance on the physical development of the city and sets out the management of urban sprawl through zoning to ensure alignment with the transportation, infrastructure, and utility systems for optimal benefits. It outlines the operation for land development in different areas of the city/ community to ensure organized and visually-pleasing urban growth that is consistent with social and economic development so that land use will serve the public interest. The plan also governs community management in a way that responds to future changes. The Bangkok city plan (4th revision), to take effect in 2019, is aimed at promoting Bangkok as the business and commercial hub of Thailand and Southeast Asia, and promoting the creative



economy in response to the Thailand 4.0 agenda through improving the infrastructure and facilities for investment in order to gain a competitive edge. Charoenkrung-Khlongsan and Chulalongkorn University areas are designated as commercial districts for creative business, trade, services and recreation activities.

However, Bangkok is still missing other city planning tools that address other areas not covered by the comprehensive city plan, including specific city plans, land allocation, local regulations – to name a few – in developing special areas such as the creative economy district, innovation district, or other districts with specific development needs. Rome was not built in one day, nor can such a complex and unique city as Bangkok. It may take a generation and a massive budget to do so. It is not enough to solely rely on the government to develop the city alone. It is thus a huge challenge to invite all sectors: government, private, education, social and people, to come together in this effort to drive forward the city development. Not only physical planning but also creativity and design are required to initiate new approaches to problem-solving that will preserve and develop such a complex and highly unique city as Bangkok, making it livable, safe and attractive to tourists and investors.



Design as a tool to develop a city

Design is therefore an important tool used to sustainably drive Bangkok forward in the following aspects: 1) conservation, rehabilitation, and development of historic areas, 2) addressing community issues, 3) responding to changes such as floods, disasters, pollution and population growth, and 4) pushing for design-driven industries as an important part of Bangkok's economy and the key to the value-based economy.

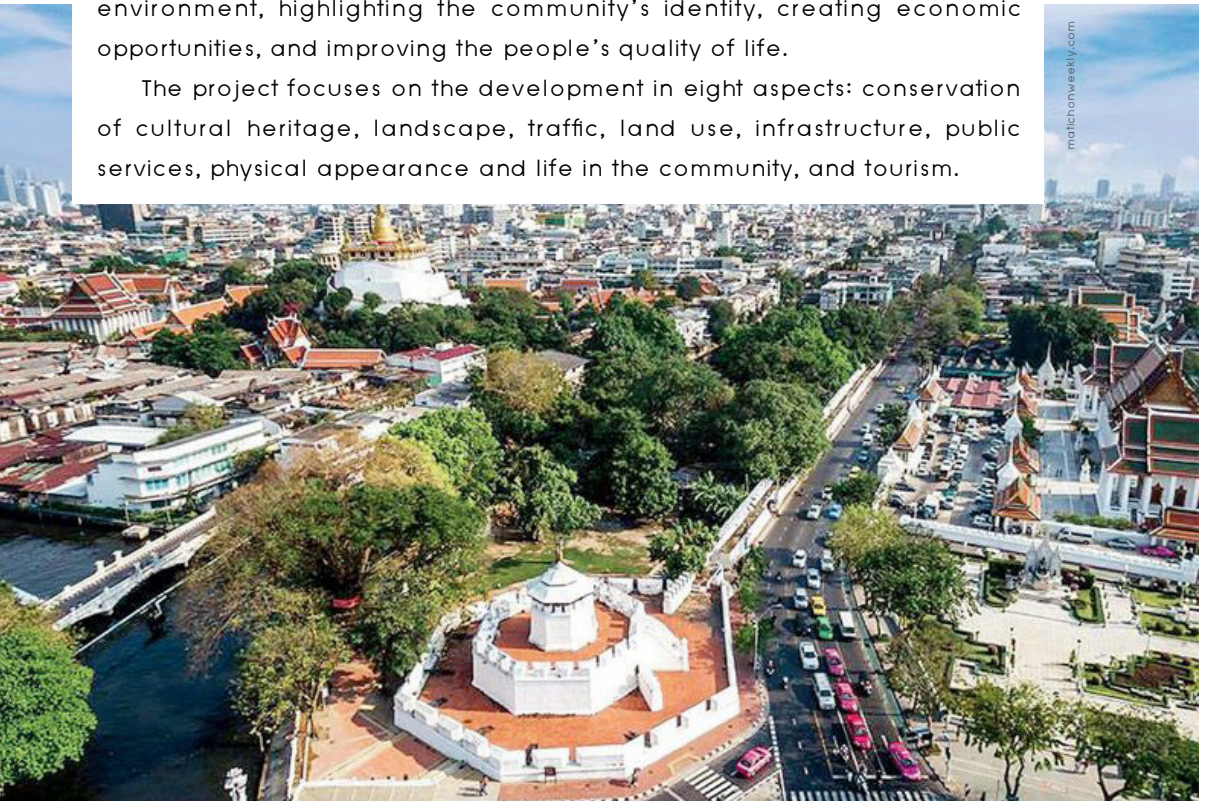
1) Conservation, rehabilitation, and development of historic areas

1.1 Urban Conservation

- **Rattanakosin Island conservation and development masterplan**

The plan consists of related projects in Rattanakosin Island and the surrounding area of 12.8 square kilometers, covering both inner and outer quarters including Thonburi. Focusing on participation and policy integration, the plan is aimed at systematically and efficiently preserving the cultural heritage of the old city while being able to respond to the rapidly changing environment, highlighting the community's identity, creating economic opportunities, and improving the people's quality of life.

The project focuses on the development in eight aspects: conservation of cultural heritage, landscape, traffic, land use, infrastructure, public services, physical appearance and life in the community, and tourism.





1.2 Urban rehabilitation

• BANGKOK 250

Bangkok 250 is a city rehabilitation plan to mark the 250th anniversary of Bangkok in 2032, with the goal to improve the physical environment of inner-city areas, create economic and social opportunities for various groups of people in the city, and increase the city's competitiveness through discussions with the locals as well as partners from the government, private, education and civil society sectors. The pilot areas are Kadeejeen-Khlong San, Prachan-Chang-Tien Piers, Yothi-Ratchawithi, and Thonglor-Ekkamai.



- **Phra Pok Klao Sky Park**

Phra Pok Klao Sky Park, as the name suggests, is a project to build a public park on an unfinished and abandoned skytrain structure located between the in-and-outbound lanes of the Phra Pok Klao Bridge. The park will serve as a bridge for pedestrians crossing the Chao Phraya River to reduce accidents, connect the historical areas on both sides of the river, and develop a new city landmark. Focusing on public participation, the project will use the urban development model that involves all stakeholders, with the aim to improve the quality of life and preserve the riverside identity through cooperation with the local communities. It will create awareness and understanding within the communities as to how design can help transform the city. The project is planned to launch in March 2020.



1.3 Development and conservation of old-town communities along the Chao Phraya River

- **Kadeejeen-Khlong San**

Cooperation between the Bangkok Metropolitan Administration (BMA), Chulalongkorn University's Urban Design and Development Center (UDDC) and the Rockefeller Foundation, the Kadeejeen-Khlong San rehabilitation project is a model for utilizing design in community development. The project is aimed to rehabilitate the riverside communities in Kadeejeen-Khlong San, one of Bangkok's oldest historical and cultural districts, with unique cultural diversity of Buddhist, Muslim and Christian communities. This project has conducted several public hearings with the government, private sector, academics, historians, locals in the community, and religious representatives. Many sub-projects grew out as a result, for example, the merit-making fundraising project for the community's public areas development and the annual design festival, which promotes cooperation between people within the community.

After ten years of continued implementation, the Kadeejeen-Khlong San Community Foundation was set up in 2018 in order to enable the community to be self-sustainable.



- **Yannawa Riverwalk**

Yannawa is piloted for a riverside regeneration project as it is located right by the Chao Phraya within a near distance of the central business districts in Bang Rak, Silom, and Sathorn; yet it lacks a public space to promote the wellbeing of the people.



2) Addressing community issues

- **Sports Ground**

Abandoned land under the expressway is turned into public space that connects the local communities and promotes good health through sports. Having won an international award in participatory design, the project prioritizes local participation.





- **Klongtoey Community**

Using design and participatory approach, the Klongtoey development plan is aimed to improve the living quality of one of the biggest slum areas in Bangkok, with a large number of underprivileged people and social issues. The plan consists of many small projects:

- Unusual Football Field Project by property developer AP Thailand has transformed deserted, trashed spaces, previously used for illegal activities, into new football pitches that are not in a

normal rectangular shape, like any other fields. The spaces welcome all people in the community (it made Time Magazine's Best Innovations of 2016.)

- Conne(x)t Klongtoey, an extra-curriculum activity for children of Klongtoey that allows the children to use their creativity and talent to tell the stories of Klongtoey through art and design.



3) Responding to changes

- **Design for a resilient city**

Design is utilized to prepare a city and its citizens for changes and the impacts of increasing economic, social, and environmental issues in the 21st century such as disasters, flooding, traffic, climate change, stress, aging society, etc. In 2015, Bangkok was selected to participate in the Rockefeller Foundation's 100 Resilient Cities. Bringing planning and strategy to implementation, the program intends to equip Bangkok with stability to cope with severe impacts that arise from severe and sudden events that may take place now and in the future.

- **Chulalongkorn Centenary Park**

The 29-rai public green space sits at the heart of Bangkok in Suanluang-Samyen area, dedicated to promoting the wellbeing of city people. Not only a place for creative activities and learning, but the park is also designed to assist Bangkok in coping with climate change impacts and flooding as it can absorb water, slow down runoff, and retain rainfall during the rainy season to be used in the dry season, equipped with wastewater treatment.

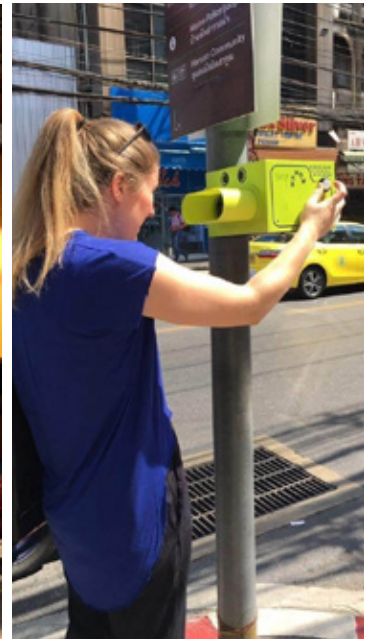




4) Pushing for design-driven industries as the key to the value-based economy

- Charoenkrung Creative District

As CEA's core mission, a creative district has been developed to propel the economy. Charoenkrung has been revived and made into a model for the development of creative industries as well as local business operators. Working with local designers and creators, the district generates new products and outputs that improve the living quality and create economic opportunities within the district. As a result, the number of abandoned establishments decreased by 62% from 2015 to 2017



- **Innovation District**

The National Innovation Agency (NIA) has implemented policies to promote areas conducive to innovation ecosystems, using the districts' own identities combined with creative ideas in science and technology. With the goal to attract innovation operators such as start-ups and tech companies, the innovation district is equipped with the infrastructure and tools that enable innovations and improve the living quality of its residents, connecting people and ideas together. The six pilot districts are Rattanakosin Innovation District - the creative hub in the heart of old town, Yothi Innovation District - the medical knowledge center, Kluaynamthai Innovation District - the commercial hub for electronics, multimedia, and digital business, Latkrabang Innovation District - the transport and logistics center, Khlongsan Innovation District - the knowledge center, and Pathumwan Innovation District - a center for entrepreneurs of all levels.



Next step for Bangkok

To achieve urban development and branding, many mechanisms are required, from creating a city image through branding campaigns, designing symbols, and organizing various festivals to developing city areas. One important mechanism that clearly enhances the competitiveness of a city/ country is to join networks that are internationally recognized by the creative and design industry.

Bangkok is rich in economic, cultural, and human capital with great potential to be a commercial hub. With diverse design education, it is the home of highly recognized designers in the region. It is also very adaptive; Bangkokians are known for using informality to cope with challenges. Design thus can be used to upgrade local wisdom and integrate it into other disciplines, making Bangkok a flexible city with the capacity to handle the challenges of the 21st century. Changes in population structure and environmental issues including rapid urban growth are Bangkok's main challenges. Stakeholder participation, resources, and capital integration, plus new technology and city management tools are the key drivers for using design to deal with the challenges in order to achieve comprehensive and sustainable urban development goals.

For Bangkok, being part of the UNESCO's Creative Cities Network or selected as the World Design Capital by the World Design Organization, if successful, will open new doors and opportunities, from creating the city image through design and various projects to develop urban areas to implementing city development policies using design and creativity. Not only will this create a positive impact for Bangkok, but also Thailand on a wider scale.

Bangkok City of Design

About UNESCO Creative Cities Network

Since the beginning, UNESCO or United Nations Educational, Scientific and Cultural Organization has been globally recognized as an agency that has listed the world heritage sites around the world. But in 2004, it added one more mission, which was to promote cultural diversity alongside citizen-led economic and social development. Such a development policy through cultural and creative dimensions has brought about UNESCO Creative Cities Network (UCCN). This program relies on cooperation with and among governmental agencies, private organizations, and educational institutions. Cities globally are connected together through local policies, forming a network that aims at strengthening creative industries for sustainable economic development. Every member city needs to be assessed every four years and present reports of its progress according to the Membership Monitoring Guidelines.

UNESCO's 'Creative Cities' refers to those which hold cultural activities so diverse that they have an economic and social impact on their respective cities. They are also a creative hotspot where a host of artists and creative individuals take up residence. The Network of Creative Cities covers seven creative fields: Crafts and Folk Art, Design, Film, Gastronomy, Media Arts, Literature and Music. Currently, the Network is made up of 246 cities from all around the world. For Thailand, Phuket joined the Network of gastronomic creative cities in 2015, while Chiang Mai has been recognized as a creative city in Crafts and Folk Art since 2017. In 30 October 2019, Bangkok is the latest creative city to join the Network in Design and Sukhothai in Crafts and Folk Art along with 64 other cities.

Bangkok's path towards becoming UNESCO Creative City

UNESCO's designation of creative cities involves rigorous evaluation and selection processes. Below are some of the attributes that successfully landed Bangkok in the latest listing of the UNESCO Creative Cities Network (UCCN):

1. Availability of design projects and events in the chosen creative field: Bangkok is filled with design events and movements, one of which being Bangkok Design Week.

2. Distinctive human capital: Bangkokians are known as adaptive, accommodating and able to cope with various challenges with informality though design. Bangkok is also home to several regionally acclaimed designers.

3. Support for cultural and economic development and employment opportunities in local communities: the design industry plays a major role in driving the Thai economy and making the country known internationally.

4. Use of creativity in the development of local communities: the creative districts flourishing all over Bangkok best attest to this.

Benefits as Bangkok City of Design

- A channel for promoting Bangkok's commercial potential, investment opportunities and tourism to a global audience;
- New opportunities for cooperation in art and cultural development and creative endeavors and for exchange of knowledge and personnel with other members in the network;
- Membership does not expire (however, a city leaving the network will not be able to rejoin).



United Nations
Educational, Scientific and
Cultural Organization



Designated
UNESCO Creative City
in 2019







酒店 EL

CHINA TOWN HOTEL

ของเที่ยว

振成豐

ห้างสรรพสินค้า

LONGSARP TRAVEL

Hotel Royal

大金行

Hotel Royal Bangkok Chinatown

ให้ทุกเมนู **พริกเผา**
อร่อยลงลิ้นด้วย
ฉ่ำ สะ เล็ง



ให้ทุกเมนูพริกเผา
อร่อยลงลิ้นด้วย
ฉ่ำ สะ เล็ง

蔡合盛

CITIZEN HADO

ISSASAKI



ร้าน
ชุมชน



CAMPER

CAMPER

KERRY
EXPRESS

No. 1 brand

เอกสารอ้างอิง

ศูนย์สร้างสรรค์งานออกแบบ. (2560). โครงการศึกษาศักยภาพอุตสาหกรรมการออกแบบของประเทศไทย. กรุงเทพมหานคร

สำนักงานสภาพัฒนาการเศรษฐกิจและสังคมแห่งชาติ. (2553). วารสารเศรษฐกิจและสังคม ปีที่ 47 ฉบับที่ 4 ตุลาคม-ธันวาคม 2553. กรุงเทพฯ
(ที่มา: https://www.nesdb.go.th/ewt_w3c/ewt_dl_link.php?filename=economic_magazine&nid=4877)

International Property Media. Award Winner. Asia Pacific. Interior Design. (2011-2018). สืบค้นเมื่อวันที่ 12 กรกฎาคม 2561
(ที่มา: <https://propertyawards.net/winners/>)

กรมส่งเสริมการค้าระหว่างประเทศ. (2562). กระทรวงพาณิชย์เปิดเส้นทางส่งเสริมผลงานนักออกแบบไทย แสดงศักยภาพการออกแบบสู่สากลในโครงการ DEmark (สืบค้นเมื่อวันที่ 12 กรกฎาคม 2561)
(ที่มา: <https://gnews.apps.go.th/news?news=38248>)

ทรงกลด บางยี่ขัน. (2560). Designer of the Year: ตามเป้า. The Cloud. สืบค้นเมื่อวันที่ 12 กรกฎาคม 2561
(ที่มา: <https://readthecloud.co/designer-9/>)

ชาตรี ประภิตนนทการ. (2559). สถาปนิก ความสำเร็จ โรงเรียนสถาปัตยกรรม. วารสารหน้าจั่ว ฉบับที่ 13. สืบค้นเมื่อวันที่ 12 กรกฎาคม 2561 (ที่มา: <https://www.tci-thaijo.org/index.php/NAJUA/article/download/72877/58608/>)

ชมชน พูลินไพบูลย์. (2559). ประวัติศาสตร์นิพนธ์ด้านสถาปัตยกรรมสมัยใหม่ ในประเทศไทย. วารสารหน้าจั่ว ฉบับที่ 13. สืบค้นเมื่อวันที่ 12 กรกฎาคม 2561 (ที่มา: <https://www.tci-thaijo.org/index.php/NAJUA/article/view/72880>)

ยุสดี ทิพทัส. (2539). สถาปนิกสยาม: พื้นฐาน บทบาท ผลงาน และแนวคิด (พ.ศ. 2475-2537) เล่ม 1. สมาคมสถาปนิกสยาม. กรุงเทพฯ.

วิมลสิทธิ์ ทรายงกูร และคณะวิจัย. (2536). พัฒนาการแนวความคิดและรูปแบบของงานสถาปัตยกรรม: อดีต ปัจจุบันและอนาคต. สมาคมสถาปนิกสยาม. กรุงเทพฯ.

สมาคมสถาปนิกสยาม ในพระบรมราชูปถัมภ์. เกี่ยวกับสมาคม. สืบค้นเมื่อวันที่ 12 กรกฎาคม 2561
(ที่มา: <https://asa.or.th/about-us-th/>)

Interior Decoration Association of Thailand. About. สืบค้นเมื่อวันที่ 12 กรกฎาคม 2561
(ที่มา: <http://www.tida.or.th/about.html>)

พระราชกฤษฎีกา จัดตั้งสำนักงานส่งเสริมเศรษฐกิจสร้างสรรค์ (องค์การมหาชน). (2561).

พระราชบัญญัติ การพัฒนาดิจิทัลเพื่อเศรษฐกิจและสังคม. (2560).

พระราชบัญญัติ สถาปนิก. (2543)

ระบบเผยแพร่สารสนเทศอุดมศึกษา ศูนย์สารสนเทศอุดมศึกษา สำนักงานคณะกรรมการการอุดมศึกษา. (2560). ผู้สำเร็จการศึกษา. สถิติอุดมศึกษา. สืบค้นเมื่อวันที่ 12 กรกฎาคม 2561
(ที่มา: http://www.info.mua.go.th/info/index_user.php)

ระบบเผยแพร่สารสนเทศอุดมศึกษา ศูนย์สารสนเทศอุดมศึกษา สำนักงานคณะกรรมการการอุดมศึกษา. (2560). นักศึกษารวม. สถิติอุดมศึกษา. สืบค้นเมื่อวันที่ 12 กรกฎาคม 2561
(ที่มา: http://www.info.mua.go.th/info/index_user.php)

Good Design Award. (2008-2018). Online Gallery. สืบค้นเมื่อวันที่ 12 กรกฎาคม 2561
(ที่มา: <https://www.g-mark.org/award/>)

สำนักงานส่งเสริมเศรษฐกิจดิจิทัล. (2560). ข้อมูลอุตสาหกรรม แอนิเมชัน เกม และคาแรคเตอร์. สืบค้นเมื่อวันที่ 12 กรกฎาคม 2561 (ที่มา: <https://www.depa.or.th/th/article-view/thailand-digital-economy-glance>)

ACM SIGGRAPH. About ACM SIGGRAPH. สืบค้นเมื่อวันที่ 12 กรกฎาคม 2561 (ที่มา: <https://www.siggraph.org/about/>)

TACGA. เกี่ยวกับเรา. สืบค้นเมื่อวันที่ 12 กรกฎาคม 2561 (ที่มา: <http://www.tacga.net/about.php>)

ไทยก้า. เกี่ยวกับสมาคม. สืบค้นเมื่อวันที่ 12 กรกฎาคม 2561 (ที่มา: <https://www.thaiga.or.th/howeare>)

สมาคมนักออกแบบผลิตภัณฑ์อุตสาหกรรมแห่งประเทศไทย. About. สืบค้นเมื่อวันที่ 12 กรกฎาคม 2561 (ที่มา: http://www.idsocietythailand.org/index.php?route=information/about&information_id=4)

หอศิลป์วัฒนธรรมแห่งกรุงเทพมหานคร. ความเป็นมาของหอศิลป์วัฒนธรรมแห่งกรุงเทพมหานคร. สืบค้นเมื่อวันที่ 12 กรกฎาคม 2561 (ที่มา: <https://www.bacc.or.th/content/27.html>)

Design Excellence Award. About DEmark. สืบค้นเมื่อวันที่ 12 กรกฎาคม 2561 (ที่มา: <http://demarkaward.net/th/about>)



