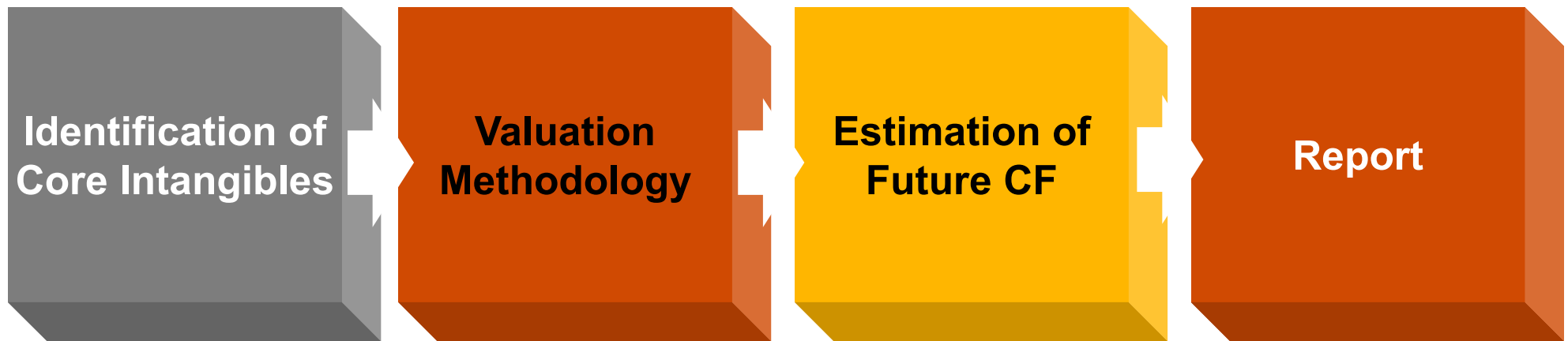


# Statement of Core Intangibles: Sample report



## 01 Overview of process



## 02 Identification of Core Intangibles




### Identification of Core Intangibles

**“We identified the game Batman Begins that is currently in service, the game Batman Returns, Amazing Spiderman and Avengers Endgame that are scheduled to be in service, and the trade name as the Company’s core intangibles.”**

- Individual units producing separate future cash flows
  - Collective group of Intangibles to produce separate CF
- Not necessarily meet the definition of Intangible asset under IFRS

## 03 Valuation Methodology



**Valuation  
Methodology**

**“The valuation methodologies applied to estimate the fair value of the Company’s core intangibles are Multi-period Excess Earnings Method or Relief-From-Royalty Method”**

- Entity needs to choose an appropriate valuation method
  - Depending on the characteristic of Core Intangibles

## 04 Estimation of Future CF



### Estimation of Future CF

**“The future sales of the game Batman Begins, which is currently in service, is estimated based on the past performance and monthly sales growth rate, and K Data analysis.”**

- **Determination of factors**
  - Benchmark figures (e.g., monthly sales decreasing rate after the launch of benchmark games)
  - Discount rate
  - Contributory Asset Charges (deduction)

## 05 Report



**“The table below presents our estimates of the fair value of core intangibles of Company ABC (the “Company”) as of December 31, 2018 (the “Valuation Date”)”**

- Assumption of industrial guidance
  - Possible work scope of NSS
- Voluntary report and outside of external audit
  - For now, but mandatory in the future

# Statements of Core Intangibles

Valuation of core intangibles of Company ABC

As of December 31, 2018

“The attached statements of core intangibles are prepared by the Company management.”

Company ABC CEO XXX

## **Disclaimer**

The statements of core intangibles, not subject to external audit, is a management estimate of the intangible assets held by the Company and is prepared to help understand the Company's financial position along with the financial statements that are subject to external audit. The method of identifying, classifying and evaluating the core intangibles of the Company is based on the 'Guideline on reporting core intangibles by industry' (the "Guideline"), established by the Korea Accounting Institute. The estimates of fair value represent our conclusions of value based on the analysis outlined in this report.



# Table of Contents

|    |                            |    |
|----|----------------------------|----|
| 1. | Executive Summary          | 4  |
| 2. | General Assumptions        | 7  |
| 3  | Core Intangibles Valuation | 13 |
| 4. | Appendices                 | 24 |

1

# Executive Summary

## Executive Summary (1/2) – Core Intangibles

The table below presents our estimates of fair value of core intangibles of Company ABC (the “Company”) as of December 31, 2018 (the “Valuation Date”).

| KRW in millions                   | 2018          | 2017 | 2016 | Reference |
|-----------------------------------|---------------|------|------|-----------|
| <b>Games Developed Technology</b> | <b>19,591</b> | xxx  | xxx  |           |
| Games in service                  | 2,755         | xxx  | xxx  |           |
| Batman Begins                     | 2,755         | xxx  | xxx  | P14       |
| Games scheduled to be in service  | 16,836        | xxx  | xxx  |           |
| Batman Returns                    | 11,427        | xxx  | xxx  | P16       |
| Amazing Spiderman                 | 4,710         | xxx  | xxx  | P18       |
| Avengers Endgame                  | 699           | xxx  | xxx  | P20       |
| <b>Trade name</b>                 | <b>1,286</b>  | xxx  | xxx  | P22       |
| <b>Total</b>                      | <b>20,877</b> | xxx  | xxx  |           |

(\*) The intangible assets listed above are either not accounted in the statements of financial position as of the Valuation Date or are accounted at their cost at the time of acquisition. In addition, the valuation results may vary significantly depending on the changes in the Company’s business plan and market environment post the Valuation Date.

# Executive Summary (2/2) – General Principles

**The general principles to estimate the fair value of the Company's core intangibles are described below:**

- In accordance with the Guideline on reporting core intangibles by industry (“Guideline”), the Company's core intangibles are estimated separately either as games in service or games scheduled to be in service. The level of trust on the valuation result of the two classifications might be different given the degree of uncertainty in forecasting future cash flows.
- For those games that are under development or are not scheduled for release in the near future are not identified as core intangibles as we believe the reliability on the projected cash flows is deemed to be low in accordance with the Guideline.
- According to the Guideline, the value of the games developed technology and the trade name were estimated using the multi-period excess earning method and the relief-from-royalty method, respectively.
- Fair value of core intangibles is estimated by using the projected financial information, which is based on the Company's business plan. The discount rate applied is based on the weighted average cost of capital (“WACC”), plus additional risk premium corresponding to the risk inherent in the core intangibles.

2

General Assumptions

# Identification of Core Intangibles

**We identified game Batman Begins that is currently in service, game Batman Returns, Amazing Spiderman and Avengers Endgame that are scheduled to be in service, the trade name as the Company's core intangibles.**

- As of the Valuation Date, the Company has released game Batman Begins, a multiplayer mobile RPG, and it is providing services in Korea.
- The Company is currently developing new RPG games including Batman Returns, Amazing Spiderman, and Avengers Endgame, and it is planning to launch Game Batman Returns and Amazing Spiderman in 2019 and game Avengers Endgame in 2020, respectively, both in Korea and overseas markets.
- Under IFRS, an intangible asset is identifiable if it meets the separability criterion or the contractual-legal criterion. Since the Company's games meet the contractual-legal criterion and are also separable from other assets, they can be identifiable as separate intangible assets. In addition, we believe the games scheduled to be in service according to the Company's business plan satisfy the definition of assets as they are expected to bring future economic benefits after the games are being launched.
- In addition, trade name is identified as one of the core intangibles as they will continuously contribute to bring future economic benefits to the Company. The Company estimated the economic useful life of trade name from the perspective of market participants and assumed that the trade name will be maintained for the next 10 years.

# Valuation Methodology

The valuation methodologies applied to estimate the fair value of the Company's core intangibles are as follows:

## Multi-period Excess Earnings Method

- The multi-period excess earnings method (MEEM) is a method used for measuring the fair value of intangible assets. The fundamental principle underlying the MEEM is isolating the net earnings attributable to the asset being measured.
- An intangible asset's fair value is equal to the present value of the incremental after-tax cash flows (excess earnings) attributable solely to the intangible asset over its remaining useful life. Intangible assets are generally used in combination with other tangible and intangible assets to generate income.
- The key assumptions of the MEEM, in addition to the projected cash flows over the asset's remaining useful life, include consideration of the followings, each of which is discussed in the subsequent sections: Discount rate, Contributory asset charges(CAC) and Tax amortization benefits.
- The value of games developed technology was estimated using the MEEM.

## Relief-From-Royalty Method

- Relief-from-royalty method (RFRM) is a commonly used method for measuring the fair value of intangible assets that are often the subject of licensing, such as trade names, patents, and proprietary technologies. The fundamental concept underlying this method is that in lieu of ownership, the acquirer can obtain comparable rights to use the subject asset via a license from a hypothetical third-party owner.
- The asset's fair value is the present value of license fees avoided by owning it (i.e., the royalty savings). The royalty savings are calculated by applying a reasonable royalty rate to the assets subject to royalty. When using the relief-from-royalty method for estimating the fair value of intangible asset, it is common to apply the same royalty rate to related sales each year.
- The royalty rate is derived from royalty payment cases and qualitative evaluation indicator within the industry.
- The relief-from-royalty method is applied in evaluating the Company's trade name.

# Discount rates

**The discount rates applied to estimate the fair value of the Company's core intangibles is 16.8% and 17.8% for game in services and games to be scheduled in services, respectively.**

- An appropriate discount rate should be applied to reflect the risk of the projected cash flows attributable to the core intangibles as of the Valuation Date. To calculate the discount rate, the cost of equity capital is estimated using the most commonly used capital asset pricing model (“CAPM”) and the cost of debt is measured given the Company’s cost of borrowing, weighted by their respective contributions of capital.
- In order to measure the cost of equity, we applied risk-free rate of return of 2.0%, market risk premium of 10.1% and beta of the selected guideline public companies as of the Valuation Date. (15 companies in the game industry were selected for the purpose of obtaining a proxy for an industry beta and capital structure)
- The cost of debt is the expected return required by a reasonable debt investor for the Company’s interest-bearing debt. The pre-tax cost of debt is based on the weighted average interest rates of the Company’s long-term borrowings as of the Valuation Date. The marginal tax rate, which is reflected in the calculation of the Company’s cost of debt, is based on the corporate tax rate of 22%.
- The weighted average cost of capital (“WACC”) is based on the weighted average of cost of debt and capital according to the Company’s target capital structure. The target capital structure is derived from the average capital structure of the guideline public companies as of the Valuation Date.
- The discount rate applied in estimating the fair value of core intangibles is calculated by adding the additional risk premium to the WACC to consider the risk inherent in the core intangibles. In addition, we have applied the additional 1% risk premium to the discount rate in order to reflect the uncertainties within the pre-commercial nature regarding the games scheduled to be in service.



# Contributory Asset Charges (“CAC”)

**CAC or “economic rents” are deducted from the total net after-tax cash flows projected for the combined group to obtain the residual or “excess earnings” attributable to the intangible asset**

- The principle behind a CAC is that each intangible asset “rents” or “leases” from a hypothetical third party all the other assets it requires to produce the cash flows resulting from the subject asset’s use. As a result, a fair return is assumed to be paid to the owner of the rented assets.
- Thus, we have deducted the charges for the use of contributory assets, representing the required return on the other assets employed to generate future income, from the estimated profit to be generated by the target intangible asset. CAC is based on the fair value of each asset.
- The CAC represent the charges for the use of an asset of group of assets (e.g., net working capital, fixed assets, other tangible assets) and should be calculated considering all assets that contribute to the realization of cash flows for a particular intangibles.
- After-tax average annual CAC, calculated using a required return as % of revenue of the game being valued, is as follows. Refer to Appendix 1 for further details.
  - Net working capital: 0.3%
  - Fixed assets: 0.2%
  - Trade name: 1.5%
  - Assembled workforce: 2.5%

# Tax Amortization Benefits (“TAB”)

**Our estimation of fair value of the core intangibles includes the value related to the tax savings from amortization of the assets for tax purposes.**

## **Tax amortization benefit**

- When estimating the fair value of the core intangibles using the income approach, it is necessary to consider not only the tax expenditure on the estimated profit, but also the benefits from tax saving effect from amortization of intangible assets.
- This benefit is added on the premise that a potential purchaser will be willing to pay an amount that reflects the present value of the tax amortization benefit of the intangible asset. Under the market approach, this amount is included in the indicated market/transaction price.
- To estimate tax amortization benefit, the probability of amortization, amortization period under the tax law, appropriate discount rate, and the target country’s corporate tax rate must be considered. The amortization period to calculate the benefits of corporate tax amortization is assumed to be 5 years.

## **Applied tax rate**

- The corporate tax rate during the projection period is 11% for income of KRW 200 million or less, 22% for income of KRW 20 billion or less, 24.2% for KRW 300 billion or less, and 27.5% for income greater than KRW 300 billion.

3

## Core Intangible Asset Valuation

# Valuation of Core Intangibles - Batman Begins

As of the Valuation Date, the estimated value of core intangible Batman Begins is KRW 2,755 millions.

## Estimated Fair Value of Batman begins - MEEM

| KRW in millions                                   | Historical fiscal years |          |         | For the projected fiscal years ending December 31, |            |         |         |         |
|---|-------------------------|----------|---------|--|------------|---------|---------|---------|
|   | 2016(A)                 | 2017(A)  | 2018(A) | 2019(F)  | 2020(F)    | 2021(F) | 2022(F) | 2023(F) |
| <b>Revenue attributable to Batman begins</b>      | -                       | 970      | 4,678   | 4,914  | 2,523      | -       | -       | -       |
| Adjusted EBIT attributable to Batman begins       | -                       | (2,809)  | (2,059) | 2,572  | 1,315      | -       | -       | -       |
| Adjusted EBIT margin                              |                         | (289.5%) | (44.0%) | 52.3%  | 52.1%      |         |         |         |
| Less: Tax expense at tax rate of 24.2%            |                         |          |         | 622  | 318        | -       | -       | -       |
| After-tax earnings, prior to contributory charges |                         |          |         | 1,950  | 997        | -       | -       | -       |
| Less: Return on net working capital               |                         |          |         | 21   | 15         | -       | -       | -       |
| Less: Return on PP&E                              |                         |          |         | 5  | 3          | -       | -       | -       |
| Less: Return on Trade name                        |                         |          |         | 75   | 38         | -       | -       | -       |
| Less: Return on assembled workforce               |                         |          |         | 123  | 63         | -       | -       | -       |
| Excess earnings attributable to Batman begins     |                         |          |         | 1,726  | 878        | -       | -       | -       |
| Mid-year convention                               |                         |          |         | 0.5000   | 1.5000     | -       | -       | -       |
| Present value factor at discount rate of 16.8%    |                         |          |         | 0.9253   | 0.7922     | -       | -       | -       |
| <b>Present value of excess earnings</b>           |                         |          |         | <b>1,597</b>                                       | <b>695</b> | -       | -       | -       |
| <b>Summary of estimated Fair Value</b>            |                         |          |         |  |            |         |         |         |
| Present value of excess earnings                  |                         |          |         | 2,292  |            |         |         |         |
| Plus: Tax amortization benefit                    |                         |          |         | 463  |            |         |         |         |
| <b>Estimated Fair Value</b>                       |                         |          |         | <b>2,755</b>                                       |            |         |         |         |

\* In accordance with the Company's business plan, operating profit is estimated by subtracting operating expenses from sales. The annual operating profit ratio indicated in the table above is based on the Company's business plan.

# Primary inputs and key assumptions – Batman Begins

The primary inputs and key assumptions to estimate the value of game Batman Begins are as follows.

- Valuation approach – The value of game Batman Begins was estimated using the MEEM. Sales, service period, operating expenses and contributory asset charges attributable solely to the game Batman Begins were forecasted for the purpose of valuation.
- Sales – The future sales of game Batman Begins, which is currently in service, is estimated based on past performance and monthly sales growth rate, K Data analysis (monthly sales decreasing rate after the launch of benchmark games). Estimated future sales are KRW 4,914m in FY19 and KRW 2,523m in FY20. The following table shows the results of K Data analysis used for the estimating future sales. Please refer to Appendix 2 for details.

| Period                | Monthly changes | Note  |
|-----------------------|-----------------|---|
| Jan. 2019 ~ Oct. 2019 | 5.6% decrease   | Applied monthly sales decreasing rate of domestic RPG games with high grade under K Data(1~2 years) |
| Nov. 2019 ~ Oct. 2020 | 3.5% decrease   |   |

- Assumed 22 months for game Batman Begins by taking into account the average service period of games similar in genre as of the Valuation Date.
- Operating expenses – consist of labor costs, depreciation, payment commissions, and other expenses.
  - Labor costs were estimated based on the average labor cost per person in FY18 according to future workforce plan and target wage growth rate. The number of games, service area, past experience on required development period, the number of games scheduled to be in service, and the required workforce based on expected sales are considered for workforce planning.
  - Depreciation: future CAPEX plan and depreciation policy are assumed to be maintained during the projection period.
  - Commissions were estimated by considering the commissions paid to actual sales in FY18 and the annual consumer price inflation.
  - Other expenses mainly consists of the fixed cost items. It is estimated based on annual consumer price inflation.
- Operating margin – The estimated operating margin of game Batman Begins is 52.3% and 52.1% for FY19 and FY20, respectively.

# Valuation of Core Intangibles - Batman Returns

**As of the Valuation Date, the estimated value of core intangible Batman Returns is KRW 11.43 billions.**

## Estimated Fair Value of Batman returns - MEEM

| KRW in millions                                    | Historical fiscal years |         |         | For the projected fiscal years ending December 31, |               |              |              |              |
|--|-------------------------|---------|---------|--|---------------|--------------|--------------|--------------|
|  | 2016(A)                 | 2017(A) | 2018(A) | 2019(F)  | 2020(F)       | 2021(F)      | 2022(F)      | 2023(F)      |
| <b>Revenue attributable to Batman returns</b>      | -                       | -       | -       | <b>18,742</b>                                      | <b>10,133</b> | <b>4,819</b> | <b>3,182</b> | <b>2,462</b> |
| Adjusted EBIT attributable to Batman returns       | -                       | -       | -       | 9,809  | 5,282         | 1,617        | (343)        | 842          |
| Adjusted EBIT margin                               | -                       | -       | -       | 52.3%  | 52.1%         | 33.5%        | (10.8%)      | 34.2%        |
| Less: Tax expense / (benefit) at tax rate of 24.2% |                         |         |         | 2,374  | 1,278         | 391          | (83)         | 204          |
| After-tax earnings, prior to contributory charges  |                         |         |         | 7,435  | 4,004         | 1,225        | (260)        | 638          |
| Less: Return on net working capital                |                         |         |         | 79   | 59            | 20           | 14           | 10           |
| Less: Return on PP&E                               |                         |         |         | 20   | 12            | 8            | 9            | 4            |
| Less: Return on Trade name                         |                         |         |         | 284  | 154           | 73           | 48           | 37           |
| Less: Return on assembled workforce                |                         |         |         | 471  | 254           | 121          | 80           | 62           |
| Excess earnings attributable to Batman returns     |                         |         |         | 6,582  | 3,525         | 1,003        | (412)        | 525          |
| Mid-year convention                                |                         |         |         | 0.5000   | 1.5000        | 2.5000       | 3.5000       | 4.5000       |
| Present value factor at discount rate of 17.8%     |                         |         |         | 0.9214   | 0.7821        | 0.6640       | 0.5636       | 0.4785       |
| <b>Present value of excess earnings</b>            |                         |         |         | <b>6,064</b>                                       | <b>2,757</b>  | <b>666</b>   | <b>(232)</b> | <b>251</b>   |

### Summary of estimated Fair Value

|                                  |               |
|----------------------------------|---------------|
| Present value of excess earnings | 9,506         |
| Plus: Tax amortization benefit   | 1,921         |
| <b>Estimated Fair Value</b>      | <b>11,427</b> |

\* In accordance with the Company's business plan, operating profit is estimated by subtracting operating expenses from sales. The annual operating profit ratio indicated in the table above is based on the Company's business plan.

# Primary inputs and key assumptions – Batman Returns

The primary inputs and key assumptions to estimate the value of game Batman Returns are as follows.

- Valuation approach - The value of game Batman Returns was estimated using the MEEM. Sales, service period, operating expenses and contributory asset charges attributable solely to the game Batman Returns were forecasted for the purpose of valuation.
- Sales
  - Game Batman Returns, a RPG game, is scheduled to be in service in June 2019 in Korea. The future sales of Batman Returns is estimated based on the required development period, the number of development personnel, and the result of K-Data analysis (level of peak sales classified by genre/grade/region and the monthly sales decreasing rate after the launch of benchmark games).

| Period                      | Monthly changes                               | Note   |
|-----------------------------|---|--|
| Release date<br>(June 2019) | Assumed KRW 11,289M<br>based on gross revenue | The minimum sales level of domestic RPG games with high grade under K Data. Applied 35% revenue share from gross revenue |
| June 2019 ~ May 2020        | 13.3% decrease                                | Applied monthly sales decreasing rate of domestic RPG games with high grade under K Data (1~3 years)                     |
| June 2020 ~ May 2021        | 5.6% decrease                                 |  |
| June 2021 ~ May 2022        | 3.5% decrease                                 |  |
| May 2022 ~                  | 2.0% decrease                                 | Applied 2% monthly sales decreasing rate   |

- The service period is assumed to be 55 months, based on the working period of development personnel, the expected sales level after release date, and the average service period of games similar in genre.
- Operating expenses – consist of labor costs, depreciation, commissions, etc. Other cost components are similar to those of game Batman Begins.
- Operating margin – The estimated operating margin of game Batman Returns is 52.3% in FY19 and 52.1% in FY20, 33.5% in FY21, (-)10.8% in FY22, 34.2% in FY23.

# Valuation of Core Intangibles - Amazing Spiderman

As of the Valuation Date, the estimated value of core intangible Amazing Spiderman is KRW 4,710 millions.

## Estimated Fair Value of Amazing Spiderman - MEEM

| KRW in millions                                    | Historical fiscal years |         |         | For the projected fiscal years ending December 31, |               |              |              |         |
|--|-------------------------|---------|---------|--|---------------|--------------|--------------|---------|
|  | 2016(A)                 | 2017(A) | 2018(A) | 2019(F)  | 2020(F)       | 2021(F)      | 2022(F)      | 2023(F) |
| <b>Revenue attributable to Amazing Spiderman</b>   | -                       | -       | -       | <b>1,057</b>                                       | <b>10,553</b> | <b>7,980</b> | <b>5,451</b> | -       |
| Adjusted EBIT attributable to Amazing Spiderman    | -                       | -       | -       | 553  | 5,500         | 2,677        | (587)        | -       |
| Adjusted EBIT margin                               | -                       | -       | -       | 52.3%  | 52.1%         | 33.5%        | (10.8%)      | -       |
| Less: Tax expense / (benefit) at tax rate of 24.2% |                         |         |         | 134  | 1,331         | 648          | (142)        | -       |
| After-tax earnings, prior to contributory charges  |                         |         |         | 419  | 4,169         | 2,029        | (445)        | -       |
| Less: Return on net working capital                |                         |         |         | 4  | 61            | 33           | 25           | -       |
| Less: Return on PP&E                               |                         |         |         | 1  | 13            | 14           | 16           | -       |
| Less: Return on Trade name                         |                         |         |         | 16   | 160           | 121          | 83           | -       |
| Less: Return on assembled workforce                |                         |         |         | 27   | 265           | 200          | 137          | -       |
| Excess earnings attributable to Amazing Spiderman  |                         |         |         | 371  | 3,670         | 1,661        | (705)        | -       |
| Mid-year convention                                |                         |         |         | 0.5000   | 1.5000        | 2.5000       | 3.5000       | -       |
| Present value factor at discount rate of 17.8%     |                         |         |         | 0.9214   | 0.7821        | 0.6640       | 0.5636       | -       |
| <b>Present value of excess earnings</b>            |                         |         |         | <b>342</b>   | <b>2,871</b>  | <b>1,103</b> | <b>(397)</b> | -       |

### Summary of estimated Fair Value

|                                  |              |
|----------------------------------|--------------|
| Present value of excess earnings | 3,918        |
| Plus: Tax amortization benefit   | 792          |
| <b>Estimated Fair Value</b>      | <b>4,710</b> |

\* In accordance with the Company's business plan, operating profit is estimated by subtracting operating expenses from sales. The annual operating profit ratio indicated in the table above is based on the Company's business plan.



# Primary inputs and key assumptions – Amazing Spiderman

The primary inputs and key assumptions to estimate the value of game Amazing Spiderman are as follows.

- Valuation approach - The value of game Amazing Spiderman was estimated using the MEEM. Sales, service period, operating expenses and contributory asset charges attributable solely to the game Amazing Spiderman were forecasted for the purpose of valuation.
- Sales
  - Game Amazing Spiderman, a RPG game, is scheduled to be in service in December 2019 in the overseas market. The future sales of Amazing Spiderman is estimated based on the development period, the number of development personnel, and the result of K-Data analysis (level of peak sales classified by genre/grade/region and the monthly sales decreasing rate since the launch of benchmark games).

| Period                          | Monthly changes                                  | Note   |
|---------------------------------|--|--|
| Release date<br>(December 2019) | Assumed KRW 3,774M<br>based on the gross revenue | The average sales level of worldwide RPG games with F-grade under K Data. Applied 28% revenue share from gross revenue |
| Dec.2019 ~ Nov.2020             | 2.9% decrease                                    | Applied monthly sales decreasing rate of worldwide RPG games with low grade under K Data (1~3 years)                   |
| Dec.2020 ~ Nov.2021             | 1.9% decrease                                    |  |
| Dec.2021 ~ Nov.2022             | 3.0% decrease                                    |  |

- The service period is assumed to be 36 months, based on the working period of development personnel, expected sales level after the release date, and the average service period of games similar in genre.
- Operating expenses – consist of labor costs, depreciation, commissions, etc. Other cost components are similar to those of game Batman Begins.
- Operating margin – The estimated operating margin of game Amazing Spiderman is 52.3% for FY19, 52.1% for FY20, 33.5% for FY21, (-)10.8% for FY22.

# Valuation of Core Intangibles - Avengers Endgame

**As of the Valuation Date, the estimated value of core intangible Avengers Endgame is KRW 699 millions.**

## Estimated Fair Value of Avengers endgame - MEEM

| KRW in millions                                    | Historical fiscal years |         |         | For the projected fiscal years ending December 31, |         |         |         |         |
|--|-------------------------|---------|---------|--|---------|---------|---------|---------|
|  | 2016(A)                 | 2017(A) | 2018(A) | 2019(F)  | 2020(F) | 2021(F) | 2022(F) | 2023(F) |
| <b>Revenue attributable to Avengers endgame</b>    | -                       | -       | -       | -  | 758     | 2,791   | 491     | 254     |
| Adjusted EBIT attributable to Avengers endgame     | -                       | -       | -       | -  | 395     | 936     | (53)    | 87      |
| Adjusted EBIT margin                               | -                       | -       | -       | -  | 52.1%   | 33.5%   | (10.8%) | 34.2%   |
| Less: Tax expense / (benefit) at tax rate of 24.2% |                         |         |         | -  | 96      | 227     | (13)    | 21      |
| After-tax earnings, prior to contributory charges  |                         |         |         | -  | 299     | 710     | (40)    | 66      |
| Less: Return on net working capital                |                         |         |         | -  | 4       | 12      | 2       | 1       |
| Less: Return on PP&E                               |                         |         |         | -  | 1       | 5       | 1       | 0       |
| Less: Return on Trade name                         |                         |         |         | -  | 11      | 42      | 7       | 4       |
| Less: Return on assembled workforce                |                         |         |         | -  | 19      | 70      | 12      | 6       |
| Excess earnings attributable to Avengers endgame   |                         |         |         | -  | 264     | 581     | (64)    | 54      |
| Mid-year convention                                |                         |         |         | 0.5000   | 1.5000  | 2.5000  | 3.5000  | 4.5000  |
| Present value factor at discount rate of 17.8%     |                         |         |         | 0.9214   | 0.7821  | 0.6640  | 0.5636  | 0.4785  |
| <b>Present value of excess earnings</b>            |                         |         |         | -  | 206     | 386     | (36)    | 26      |

### Summary of estimated Fair Value

|                                  |            |
|----------------------------------|------------|
| Present value of excess earnings | 582        |
| Plus: Tax amortization benefit   | 118        |
| <b>Estimated Fair Value</b>      | <b>699</b> |

\* In accordance with the Company's business plan, operating profit is estimated by subtracting operating expenses from sales. The annual operating profit ratio indicated in the table above is based on the Company's business plan.

# Primary inputs and key assumptions – Avengers Endgame

The primary inputs and key assumptions to estimate the value of game Avengers Endgame are as follows.

- Valuation approach - The value of game Avengers Endgame was estimated using the MEEM. Sales, service period, operating expenses and contributory asset charges attributable solely to the game Avengers Endgame were forecasted for the purpose of valuation.
- Sales
  - Game Avengers Endgame is a lighter version of game Batman Returns where battle royal function is excluded. Game Avengers Endgame is scheduled to be in service in December 2020, that is 18 months after the launch of game Batman Returns. The future sales of Avengers Endgame is estimated based on the development period, the number of development personnel, and the result of K-data analysis (level of peak sales classified by genre/grade/region and monthly sales decreasing rate since the launch of benchmark games).

| Period                          | Monthly changes                                  | Note   |
|---------------------------------|--|--|
| Release date<br>(December 2020) | Assumed KRW 2,165M<br>based on the gross revenue | The average sales level of domestic RPG games with D-grade under K Data. Applied 35% revenue share from gross revenue<br><br>Applied monthly sales decreasing rate of domestic RPG games with mid grade under K Data (1~3 years) |
| Dec. 2020~Nov. 2021             | 20.3% decrease                                   |  |
| Dec. 2021~Nov. 2022             | 5.8% decrease                                    |  |
| Dec. 2022~Nov. 2023             | 4.1% decrease                                    |  |

- The service period is assumed to be 36 months, based on the working period of development personnel, expected sales level after the release date, and the average service period of games similar in genre.
- Operating expenses – consist of labor costs, depreciation, commissions, etc. Other cost components are similar to those of game Batman Begins.
- Operating margin – The estimated operating margin of game Avengers Endgame is 52.1% for FY20, 33.5% for FY21, (-)10.8% for FY22, 34.25% for FY23.

# Valuation of Core Intangibles – The corporate trade name

As of the Valuation Date, the estimated value of core intangible, the Company's trade name, is KRW 1,286 millions.

## Estimated Fair Value of Trade name

| KRW in millions                                    | 2019(F)      | 2020(F)    | 2021(F)    | 2022(F)   | 2023(F)   | 2024(F)   | 2025(F)   | 2026(F)   | 2027(F)   | 2028(F)  |
|--|--------------|------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|----------|
| Revenue attributable to trade name                 | 24,888       | 24,447     | 17,688     | 10,791    | 19,534    | 19,534    | 19,534    | 19,534    | 19,534    | 19,534   |
| Probability of continuing use                      | 100.0%       | 90.0%      | 80.0%      | 70.0%     | 60.0%     | 50.0%     | 40.0%     | 30.0%     | 20.0%     | 10.0%    |
| Adjusted revenue attributable to trade name        | 24,888       | 22,002     | 14,150     | 7,553     | 11,720    | 9,767     | 7,813     | 5,860     | 3,907     | 1,953    |
| Royalty payments avoided at royalty rate of 2%     | 498          | 440        | 283        | 151       | 234       | 195       | 156       | 117       | 78        | 39       |
| Less: Tax expense / (benefit) at tax rate of 24.2% | 120          | 106        | 68         | 37        | 57        | 47        | 38        | 28        | 19        | 9        |
| After-tax royalties avoided                        | 377          | 334        | 215        | 115       | 178       | 148       | 118       | 89        | 59        | 30       |
| Mid-year convention                                | 0.5000       | 1.5000     | 2.5000     | 3.5000    | 4.5000    | 5.5000    | 6.5000    | 7.5000    | 8.5000    | 9.5000   |
| Present value factor at discount rate of 16.8%     | 0.9253       | 0.7922     | 0.6783     | 0.5807    | 0.4972    | 0.4257    | 0.3644    | 0.3120    | 0.2671    | 0.2287   |
| <b>Present value of royalties avoided</b>          | <b>349</b>   | <b>264</b> | <b>145</b> | <b>66</b> | <b>88</b> | <b>63</b> | <b>43</b> | <b>28</b> | <b>16</b> | <b>7</b> |
| <b>Summary of estimated Fair Value</b>             |              |            |            |           |           |           |           |           |           |          |
| After-tax value of trade name                      | 1,070        |            |            |           |           |           |           |           |           |          |
| Plus: Tax amortization benefit                     | 216          |            |            |           |           |           |           |           |           |          |
| <b>Estimated Fair Value</b>                        | <b>1,286</b> |            |            |           |           |           |           |           |           |          |

# Primary inputs and key assumptions – Trade name

**The primary inputs and key assumptions to estimate the value of the trade name are as follows.**

- Valuation approach – The value of the trade name was estimated using the relief-from-royalty method, which is a form of the income approach. Sales attributable to the Company's trade name was forecasted and an arm's length royalty rate was selected to apply to the sales measure. The Company's trade name is assumed to be maintained for the next 10 years.
- Sales
  - Assumed that all the sales generated from the Company's games will be branded with the Company's trade name moving forward. Therefore, the amount of sales applied in estimating the trade name is based on the Company's business plan for the next five years. From a conservative perspective, we assumed that sales will remain at a similar level to year 5 sales during the years of 6 to 10.
  - Assumed that the value of the Company's trade name will gradually disappear at the end of their economic useful life, not exactly at the end of economic useful life. Therefore, we assumed that the sales will decrease by 10% every year since the year 2 based on probability of continuing use.
- Royalty rate
  - The royalty rate of 2.0% was selected to calculate the royalty savings based on third-party license agreements and perceived brand awareness of the Company's trade name.

# Appendices

# 4

# Appendices 1 - Contributory asset charges

| <b>KRW in millions</b>                                 | <b>2018(A)</b> | <b>2019(F)</b> | <b>2020(F)</b> | <b>2021(F)</b> | <b>2022(F)</b> | <b>2023(F)</b> |
|--|----------------|----------------|----------------|----------------|----------------|----------------|
| Revenue  | 4,965          | 24,888         | 24,447         | 17,688         | 10,791         | 19,534         |
| <i>Growth rate %</i>                                   |                | <i>401.3%</i>  | <i>(1.8%)</i>  | <i>(27.6%)</i> | <i>(39.0%)</i> | <i>81.0%</i>   |
| <b>Net working capital</b>                             |                |                |                |                |                |                |
| Beginning net working capital                          | 82             | 115            | 2,122          | 903            | 656            | 382            |
| Plus: Investment / (divestment) in net working capital | 33             | 2,006          | (1,219)        | (247)          | (274)          | 872            |
| Ending net working capital                             | 115            | 2,122          | 903            | 656            | 382            | 1,254          |
| Average net working capital                            | 99             | 1,119          | 1,512          | 780            | 519            | 818            |
| Required return on net working capital at 9.4%         | 9.4%           | 9              | 105            | 142            | 73             | 49             |
| <b>Required return as a % of revenue</b>               | <b>0.2%</b>    | <b>0.4%</b>    | <b>0.6%</b>    | <b>0.4%</b>    | <b>0.5%</b>    | <b>0.4%</b>    |
| <b>PP&amp;E</b>  |                |                |                |                |                |                |
| Beginning PP&E   | 21             | 166            | 188            | 207            | 214            | 207            |
| Less: Economic depreciation                            | 27             | 42             | 56             | 71             | 86             | 75             |
| Plus: Capital expenditures                             | 172            | 63             | 75             | 77             | 79             | 81             |
| Ending PP&E  | 166            | 188            | 207            | 214            | 207            | 213            |
| Average PP&E   | 94             | 177            | 198            | 210            | 210            | 210            |
| Required return on PP&E at 14.8%                       | 14.8%          | 14             | 26             | 29             | 31             | 31             |
| <b>Required return as a % of revenue ("return on")</b> | <b>0.3%</b>    | <b>0.1%</b>    | <b>0.1%</b>    | <b>0.2%</b>    | <b>0.3%</b>    | <b>0.2%</b>    |
| <b>Brand</b>   |                |                |                |                |                |                |
| <b>After-tax royalty rate</b>                          | <b>1.5%</b>    | <b>1.5%</b>    | <b>1.5%</b>    | <b>1.5%</b>    | <b>1.5%</b>    | <b>1.5%</b>    |
| <b>Assembled Workforce</b>                             |                |                |                |                |                |                |
| Estimated Fair Value of assembled workforce            | 742            | 3,719          | 3,653          | 2,643          | 1,612          | 2,919          |
| Growth   | N/A            | 401.3%         | (1.8%)         | (27.6%)        | (39.0%)        | 81.0%          |
| Required return on assembled workforce at 16.8%        | 16.8%          | 125            | 625            | 614            | 444            | 271            |
| <b>Required return as a % of revenue</b>               | <b>2.5%</b>    | <b>2.5%</b>    | <b>2.5%</b>    | <b>2.5%</b>    | <b>2.5%</b>    | <b>2.5%</b>    |

\* Net working capital, PP&E, brand, assembled workforce are the contributory assets that contribute to generate revenues for the target games being evaluated

## Appendices 2 - K data analysis (Role Playing Game) (1/2)

| Region      | Rank      | Grade    | Monthly peak sales (KRW in millions) |        |        | Grade         | Monthly sales decreasing rate |               |               |
|-------------|-----------|----------|--------------------------------------|--------|--------|---------------|-------------------------------|---------------|---------------|
|             |           |          | Max.                                 | Avg.   | Min.   |               | Year 1                        | Year 2        | Year 3        |
| Worldwide   |           |          |                                      |        |        | <b>Total</b>  | <b>(7.4%)</b>                 | <b>(3.3%)</b> | <b>(2.7%)</b> |
|             | 1 ~ 10    | <b>A</b> | XX,XXX                               | XX,XXX | XX,XXX | <b>High</b>   | (11.0%)                       | (3.5%)        | (3.8%)        |
|             | 10 ~ 25   | <b>B</b> | XX,XXX                               | XX,XXX | XX,XXX | <b>Mid</b>    | (7.2%)                        | (3.0%)        | (2.7%)        |
|             | 25 ~ 50   | <b>C</b> | XX,XXX                               | XX,XXX | X,XXX  | <b>Low</b>    | (2.9%)                        | (1.9%)        | (3.0%)        |
|             | 50 ~ 100  | <b>D</b> | XX,XXX                               | XX,XXX | X,XXX  | <b>Lowest</b> | (3.5%)                        | (5.6%)        | (3.2%)        |
|             | 100 ~ 200 | <b>E</b> | XX,XXX                               | X,XXX  | X,XXX  |               |                               |               |               |
|             | 200 ~ 300 | <b>F</b> | XX,XXX                               | X,XXX  | XXX    |               |                               |               |               |
| 300 ~ 500   | <b>G</b>  | X,XXX    | X,XXX                                | XXX    |        |               |                               |               |               |
| South Korea |           |          |                                      |        |        | <b>Total</b>  | <b>(17.9%)</b>                | <b>(6.7%)</b> | <b>(4.1%)</b> |
|             | 1 ~ 10    | <b>A</b> | XX,XXX                               | XX,XXX | X,XXX  | <b>High</b>   | (13.3%)                       | (5.6%)        | (3.5%)        |
|             | 10 ~ 25   | <b>B</b> | XX,XXX                               | X,XXX  | X,XXX  | <b>Mid</b>    | (20.3%)                       | (5.8%)        | (4.1%)        |
|             | 25 ~ 50   | <b>C</b> | X,XXX                                | X,XXX  | X,XXX  | <b>Low</b>    | (25.8%)                       | (7.3%)        | (5.2%)        |
|             | 50 ~ 100  | <b>D</b> | X,XXX                                | X,XXX  | XXX    |               |                               |               |               |
|             | 100 ~ 200 | <b>E</b> | X,XXX                                | XXX    | XXX    |               |                               |               |               |
| Japan       |           |          |                                      |        |        | <b>Total</b>  | <b>(4.8%)</b>                 | <b>(8.0%)</b> | <b>(6.0%)</b> |
|             | 1 ~ 10    | <b>A</b> | XX,XXX                               | XX,XXX | X,XXX  | <b>High</b>   | (3.5%)                        | (3.8%)        | (3.4%)        |
|             | 10 ~ 25   | <b>B</b> | XX,XXX                               | XX,XXX | X,XXX  | <b>Mid</b>    | (5.4%)                        | (2.7%)        | (2.5%)        |
|             | 25 ~ 50   | <b>C</b> | XX,XXX                               | X,XXX  | X,XXX  | <b>Low</b>    | (9.0%)                        | (1.5%)        | (2.2%)        |
|             | 50 ~ 100  | <b>D</b> | XX,XXX                               | X,XXX  | XXX    |               |                               |               |               |
| 100 ~ 200   | <b>E</b>  | X,XXX    | X,XXX                                | XXX    |        |               |                               |               |               |
| Asia        |           |          |                                      |        |        | <b>Total</b>  | <b>(16.3%)</b>                | <b>(7.6%)</b> | <b>(5.5%)</b> |
|             | 1 ~ 10    | <b>A</b> | XX,XXX                               | X,XXX  | X,XXX  | <b>High</b>   | (12.3%)                       | (7.9%)        | (5.8%)        |
|             | 10 ~ 25   | <b>B</b> | X,XXX                                | X,XXX  | X,XXX  | <b>Mid</b>    | (13.8%)                       | (8.6%)        | (6.6%)        |
|             | 25 ~ 50   | <b>C</b> | X,XXX                                | X,XXX  | XXX    | <b>Low</b>    | (21.9%)                       | (6.7%)        | (4.4%)        |
|             | 50 ~ 100  | <b>D</b> | X,XXX                                | X,XXX  | XXX    |               |                               |               |               |
| 100 ~ 200   | <b>E</b>  | X,XXX    | XXX                                  | XXX    |        |               |                               |               |               |



## Appendices 2 - K data analysis (Role Playing Game) (2/2)

| Region         | Rank      | Grade | Monthly peak sales (KRW in millions) |       |       | Grade | Monthly sales decreasing rate |        |        |
|----------------|-----------|-------|--------------------------------------|-------|-------|-------|-------------------------------|--------|--------|
|                |           |       | Max.                                 | Avg.  | Min.  |       | Year 1                        | Year 2 | Year 3 |
| North America  | 1 ~ 10    | A     | x,xxx                                | x,xxx | x,xxx | Total | (1.7%)                        | (2.6%) | (1.9%) |
|                | 10 ~ 25   | B     | x,xxx                                | x,xxx | x,xxx | High  | (1.7%)                        | (2.9%) | (2.4%) |
|                | 25 ~ 50   | C     | x,xxx                                | x,xxx | x,xxx | Mid   | (2.3%)                        | (3.9%) | (4.3%) |
|                | 50 ~ 100  | D     | x,xxx                                | xxx   | xxx   | Low   | (3.0%)                        | (5.0%) | (3.7%) |
|                | 100 ~ 200 | E     | x,xxx                                | xxx   | xx    | Total | (1.6%)                        | (1.9%) | (2.1%) |
| Western Europe | 1 ~ 10    | A     | x,xxx                                | x,xxx | xxx   | High  | (1.9%)                        | (2.1%) | (2.6%) |
|                | 10 ~ 25   | B     | x,xxx                                | x,xxx | xxx   | Mid   | (2.6%)                        | (2.8%) | (3.2%) |
|                | 25 ~ 50   | C     | x,xxx                                | xxx   | xxx   | Low   | (5.3%)                        | (3.4%) | (4.4%) |
|                | 50 ~ 100  | D     | xxx                                  | xxx   | xx    | Total | (1.6%)                        | (1.9%) | (2.1%) |
|                | 100 ~ 200 | E     | xxx                                  | xxx   | xx    | High  | (1.9%)                        | (2.1%) | (2.6%) |

# Glossary

| <b>Term</b>     | <b>Definition</b>                   |
|-----------------|-------------------------------------|
| <b>CAC</b>      | Contributory Asset Charges          |
| <b>CAPM</b>     | Capital Asset Pricing Model         |
| <b>EIU</b>      | The Economist Intelligence Unit     |
| <b>FY</b>       | Fiscal Year                         |
| <b>KRW</b>      | Korean Won                          |
| <b>MEEM</b>     | Multi-period Excess Earnings Method |
| <b>P</b>        | Page                                |
| <b>PP&amp;E</b> | Property, Plant and Equipment       |
| <b>RFRM</b>     | Relief-From-Royalty Method          |
| <b>RPG</b>      | Role-playing Game                   |
| <b>RS</b>       | Revenue share                       |
| <b>WACC</b>     | Weighted Average Cost of Capital    |

Thank you