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Arquitectura y Modularización en Preguntados

SwiftBA

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Agenda

- Interaction Driven Design
  - Arquitectura basada en IDD
  - Ventajas
- Modularización

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Interaction Driven Design

¿Qué es IDD?

- Metodología de diseño y desarrollo de software basado en Outside-In Development.
- Se hace foco en el uso externo del sistema.
- Desarrollo iterativo.

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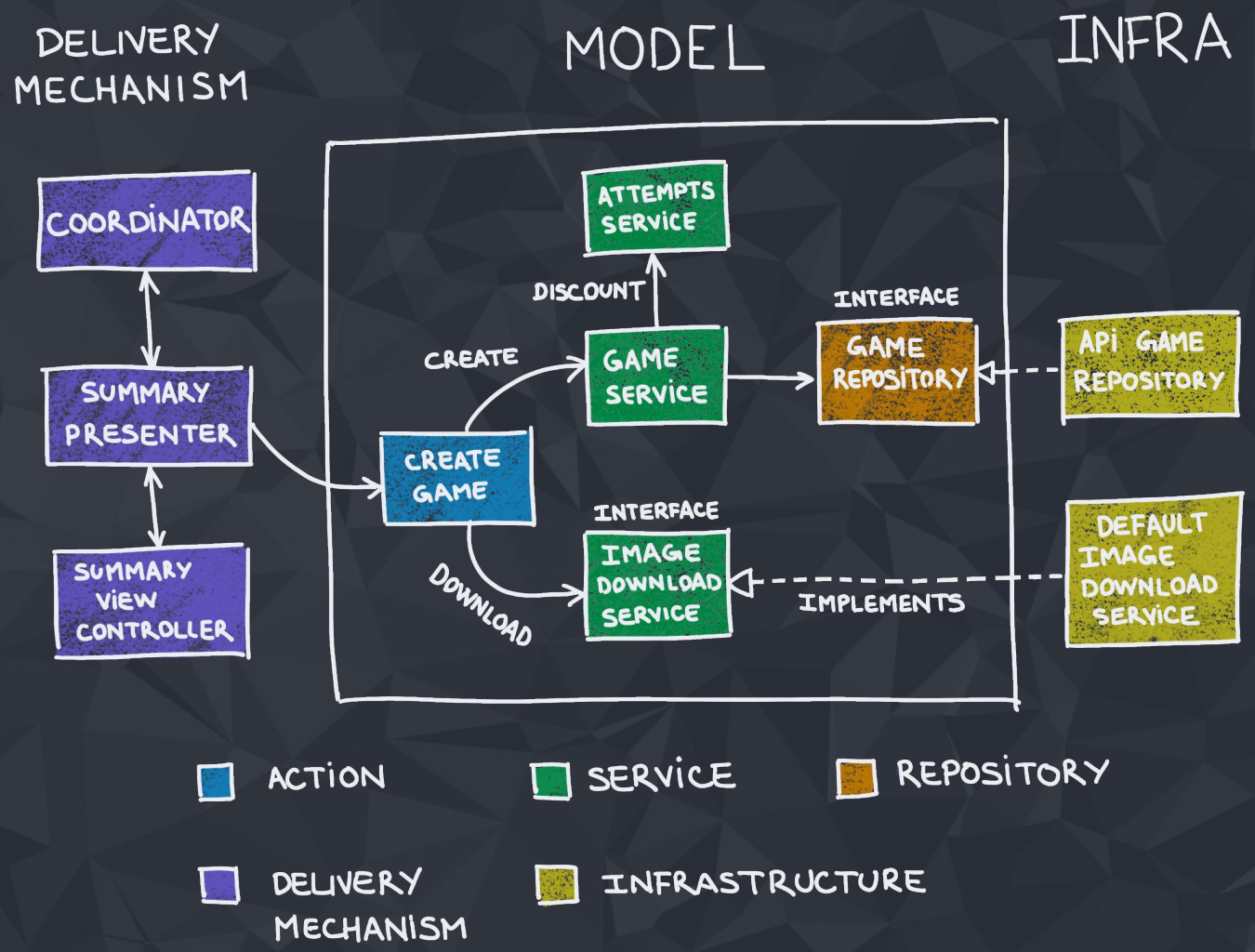
Arquitectura de un módulo de Preguntados basada en IDD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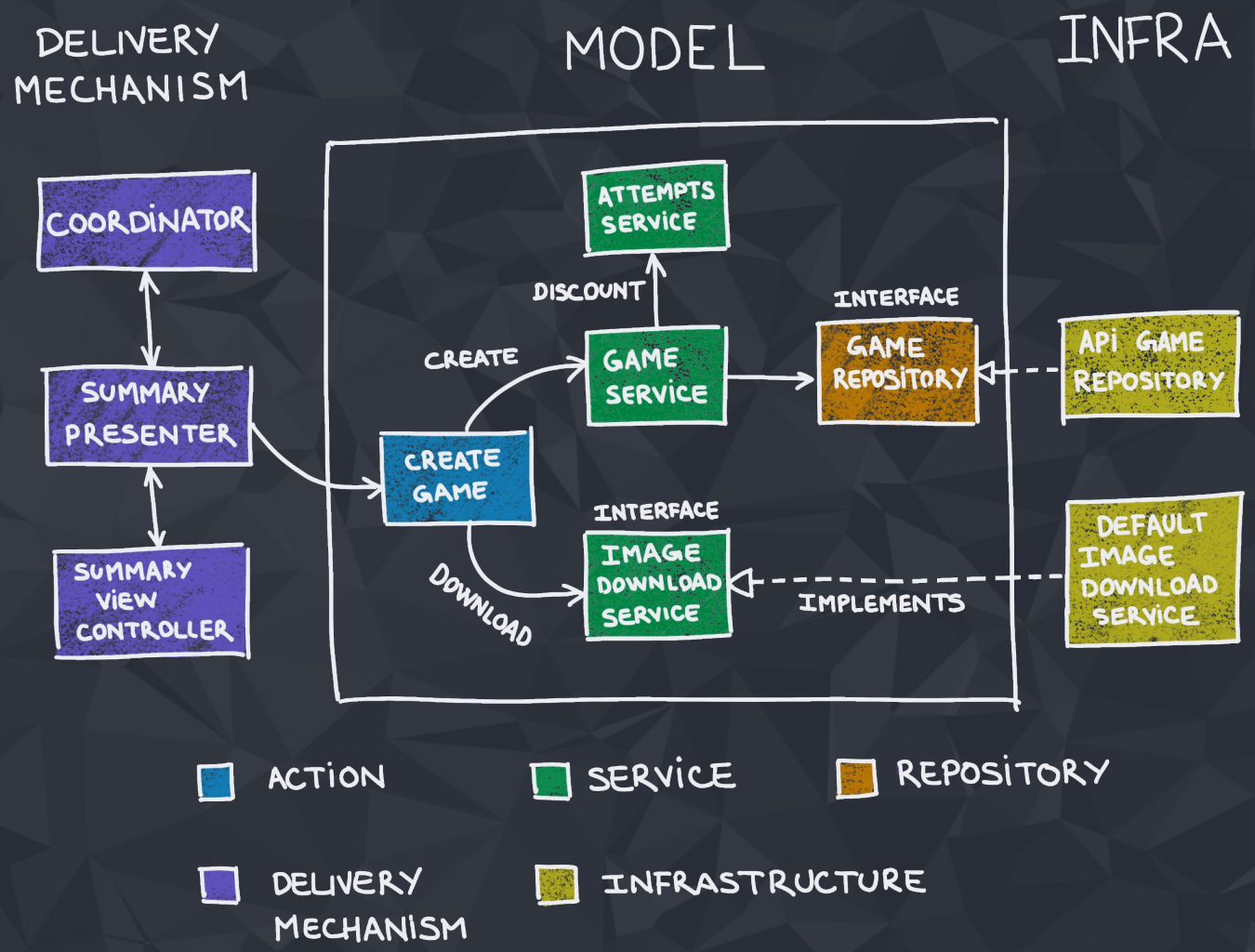
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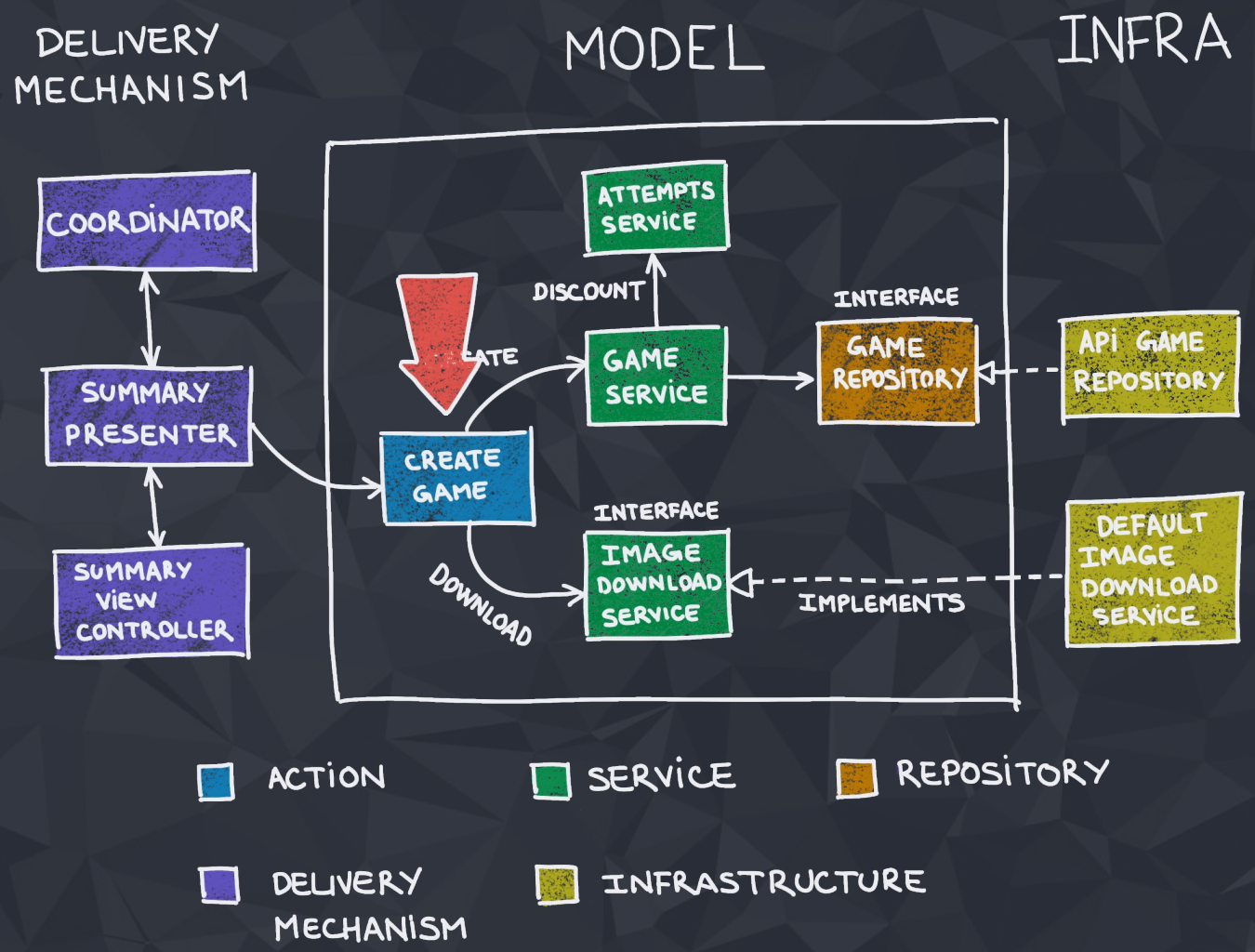
Componentes de Arquitectura

Actions

- Representan acciones que pueden realizar los usuarios para interactuar con el sistema.
- Son el punto de entrada al modelo de la aplicación o del feature.
- Exponen un único método público llamado *execute*.
- Son ejecuciones a alto nivel, delegan los detalles a los servicios.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```
protocol CreateGame {

    func execute(topic: Topic) -> Single<Game>
}

class DefaultCreateGame: CreateGame {

    private let gameService: GameService
    private let imageDownloadService: ImageDownloadService

    init(gameService: GameService, imageDownloadService: ImageDownloadService) {
        self.gameService = gameService
        self.imageDownloadService = imageDownloadService
    }

    func execute(topic: Topic) -> Single<Game> {
        return gameService
            .createGame(topic: topic)
            .do(onSuccess: { game in self.downloadImages(in: game) })
    }

    private func downloadImages(in game: Game) {
        imageDownloadService.downloadImages(in: game.questions)
    }
}
```

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```
protocol CreateGame {

    func execute(topic: Topic) -> Single<Game>
}

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    private let gameService: GameService
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    init(gameService: GameService, imageDownloadService: ImageDownloadService) {
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    }

    func execute(topic: Topic) -> Single<Game> {
        return gameService
            .createGame(topic: topic)
            .do(onSuccess: { game in self.downloadImages(in: game) })
    }

    private func downloadImages(in game: Game) {
        imageDownloadService.downloadImages(in: game.questions)
    }
}
```
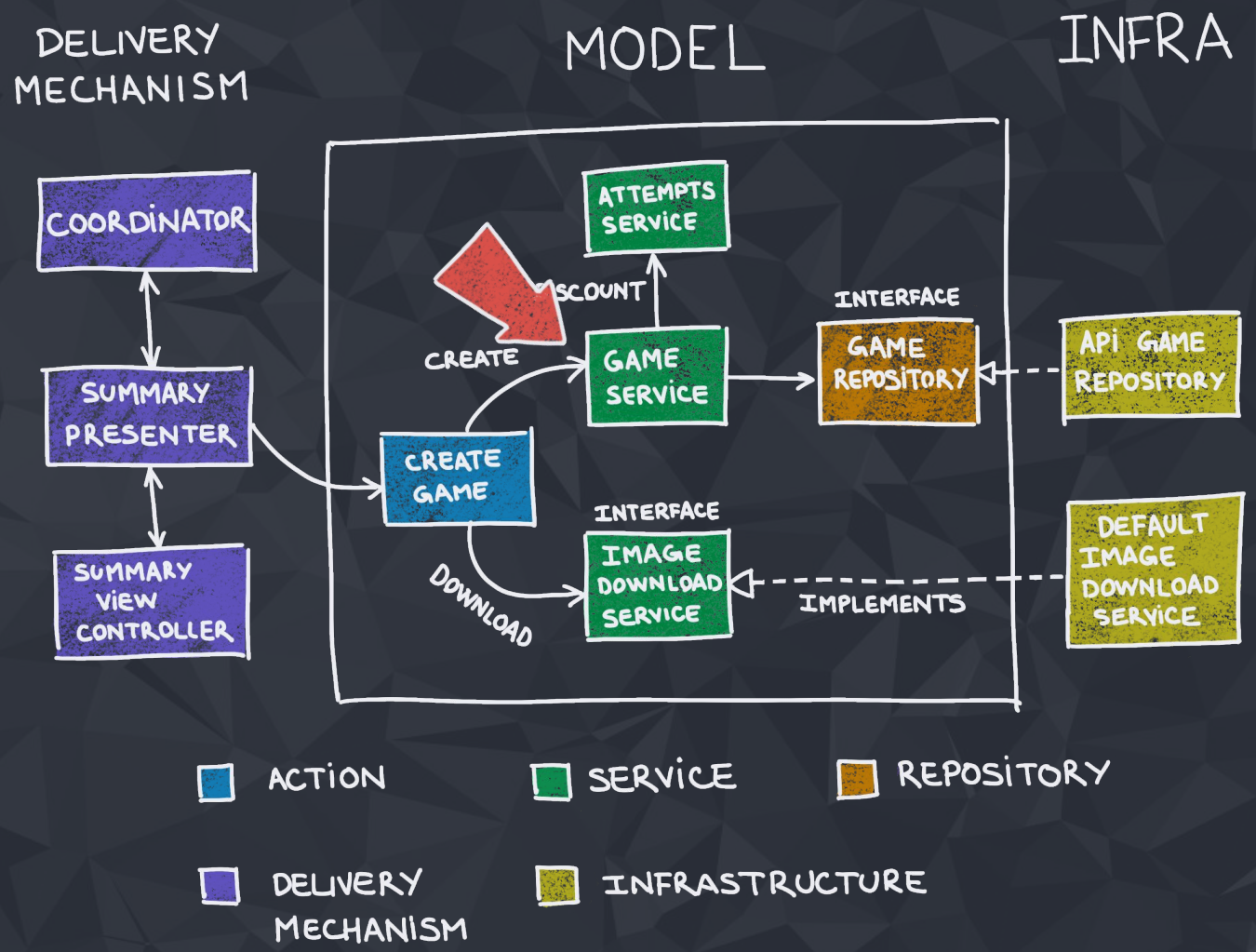

Services

- Contienen a la mayoría de lógica de dominio.
- Comportamiento relacionado a múltiples instancias de la misma entidad o diferentes entidades.
- Comportamiento que no aplica específicamente a ninguna entidad.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```swift
protocol GameService {

    func createGame(topic: Topic) -> Single<Game>
}

class DefaultGameService: GameService {

    private let attemptsService: AttemptsService
    private let gameRepository: GameRepository

    init(attemptsService: AttemptsService, gameRepository: GameRepository) {
        self.attemptsService = attemptsService
        self.gameRepository = gameRepository
    }

    func createGame(topic: Topic) -> Single<Game> {
        guard attemtsService.hasAvailableAttempts(for: topic) else {
            return .error(.notAvailableAttempts)
        }

        return gameRepository
            .create(topic: topic)
            .do(onSuccess: { _ in self.attemptsService.discountAttempt(for: topic) })
    }
}
```

Entities y Value Objects

- Representan elementos del modelo.
- Las Entities representan elementos del modelo cuya identidad es importante. Sus valores pueden mutar con el tiempo.
- Los value objects por el contrario son elementos cuya identidad no es relevante y son inmutables.

```swift
class Game {

    let id: GameId
    let topic: Topic
    let questions: [Question]

    private(set) var score: Score
    private(set) var isFinished = false

    init(id: GameId, topic: Topic, questions: [Question], score: Score) {
        self.id = id
        self.topic = topic
        self.questions = questions
        self.score = score
    }

    func answerQuestion(with answer: Answer) {

        if answer.isCorrect {
            score = score.increatedByOne()
        }
        else {
            isFinished = true
        }
    }
}
```

```swift
struct Score {

    let value: Int

    func increaseByOne() -> Score {
        return Score(value: value + 1)
    }
}
```

```swift
class Game {

    let id: GameId
    let topic: Topic
    let questions: [Question]

    private(set) var score: Score
    private(set) var isFinished = false

    init(id: GameId, topic: Topic, questions: [Question], score: Score) {
        self.id = id
        self.topic = topic
        self.questions = questions
        self.score = score
    }

    func answerQuestion(with answer: Answer) {

        if answer.isCorrect {
            score = score.increatedByOne()
        }
        else {
            isFinished = true
        }
    }
}
```

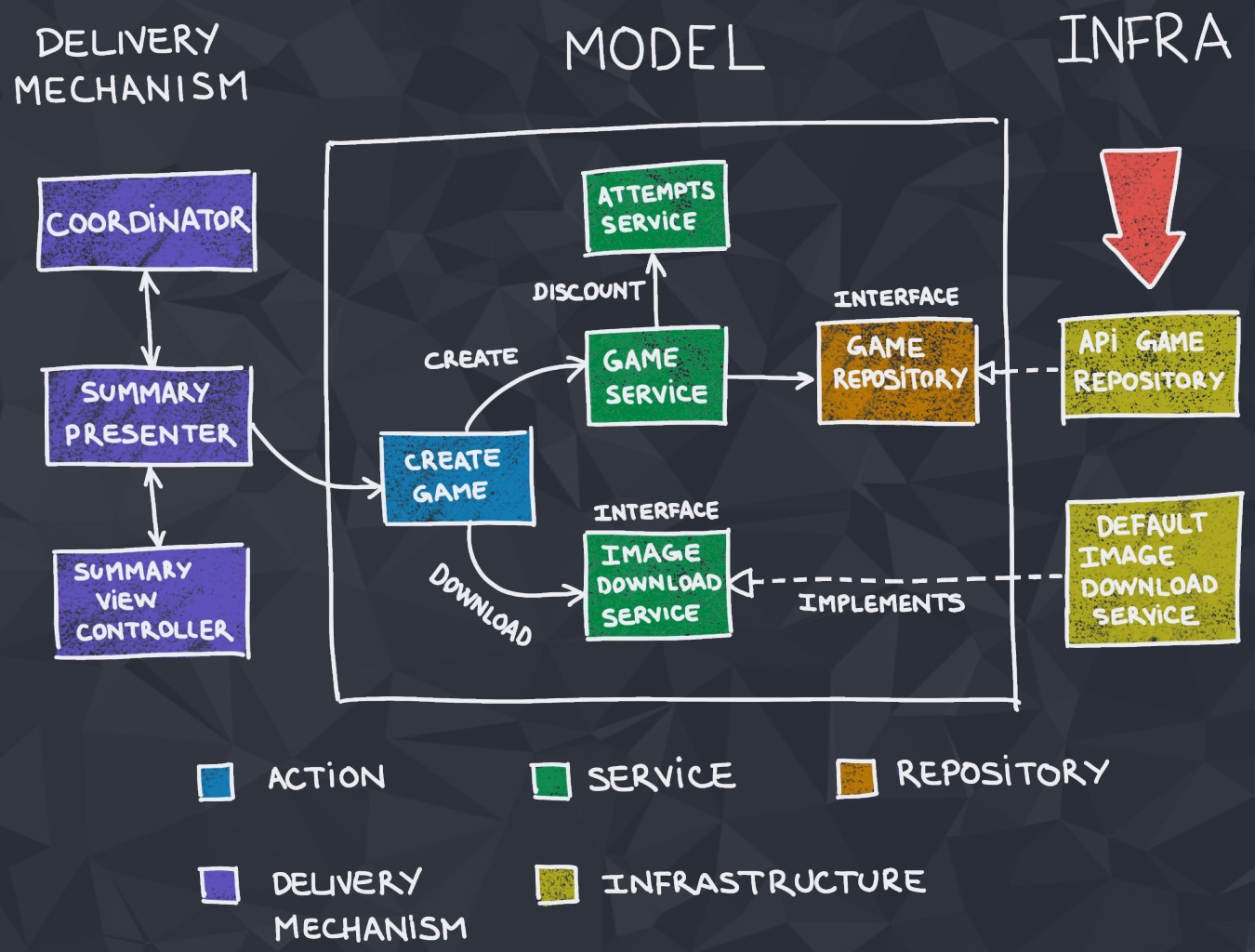
```swift
struct Score {

    let value: Int

    func increaseByOne() -> Score {
        return Score(value: value + 1)
    }
}
```

Repositories

- Representan colecciones de objetos del dominio.
- Su protocolo pertenece al modelo pero su implementación a la infraestructura.
- Devuelve objetos de dominio.
- Los objetos de dominio no implementan Decodable.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```
protocol GameRepository {

    func create(topic: Topic) -> Single<Game>
}

class ApiGameRepository: GameRepository {

    func create(topic: Topic) -> Single<Game> {

        let request = buildCreateGameRequest(topic: topic)

        return URLSession.shared.rx
            .data(request: request).asSingle()
            .map { data in self.parseGameData(data) }
    }

    private func parseGameData(_ data: Data) -> Game {
        // Use a Decodable to parse the data,
        // then create a Game from the Decodable
    }
}
```

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```
struct GameDTO: Decodable {

    let id: String
    let topic: TopicDTO
    let questions: [QuestionDTO]
    let score: Int

    func toGame() -> Game {
        // Mapping code
    }
}
```

```
struct TopicDTO: Decodable {

    // Decodable properties

    func toTopic() -> Topic {
        // Mapping code
    }
}

struct QuestionDTO: Decodable {

    // Decodable properties

    func toQuestion() -> Question {
        // Mapping code
    }
}
```

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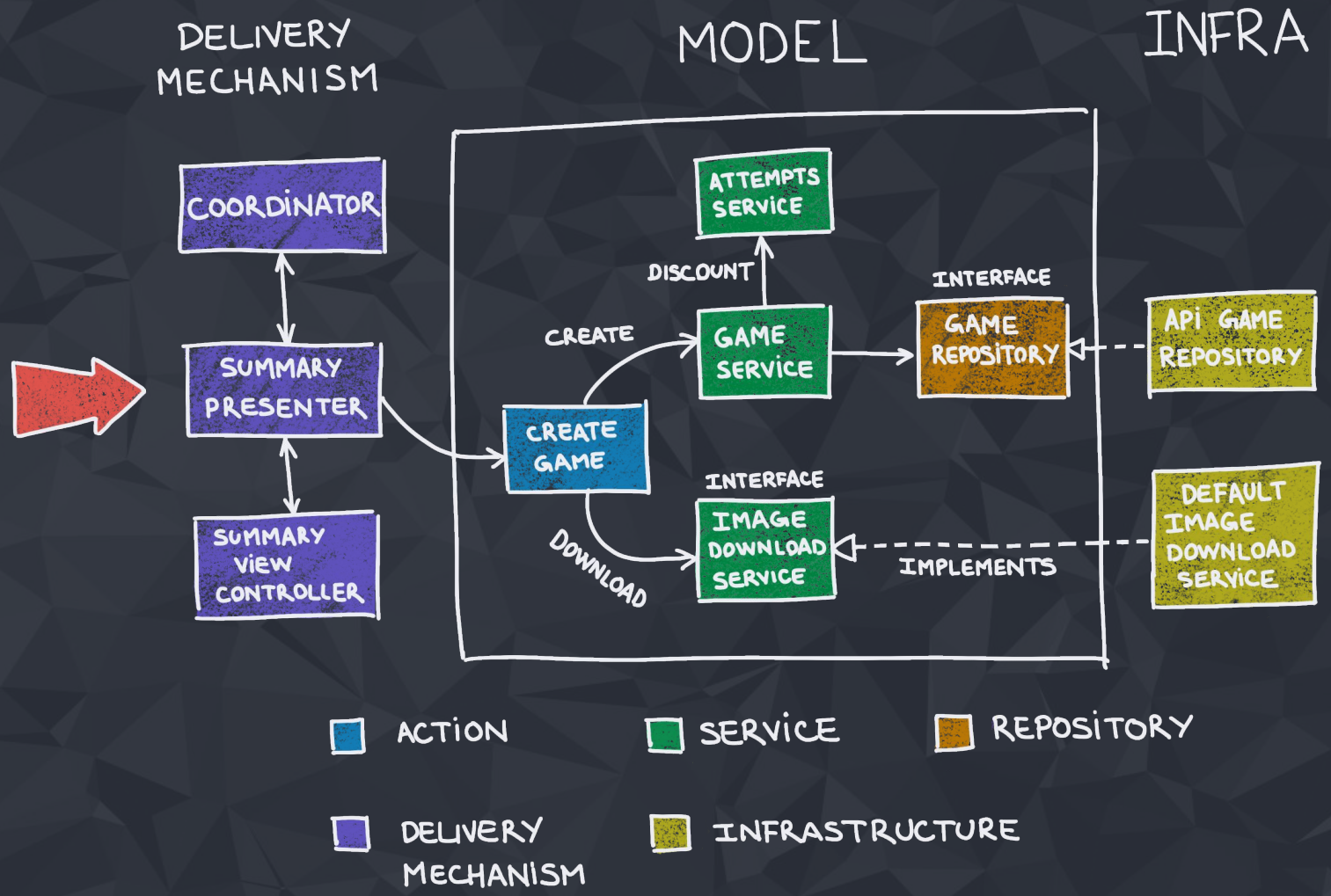
```swift
struct GameDTO: Decodable {

    let id: String
    let topic: TopicDTO
    let questions: [QuestionDTO]
    let score: Int

    func toGame() -> Game {
        // Mapping code
    }
}
```

```swift
class Game {

    let id: GameId
    let topic: Topic
    let questions: [Question]

    private(set) var score: Score
    private(set) var isFinished = false

    init(id: GameId, topic: Topic, questions: [Question], score: Score) {
        self.id = id
        self.topic = topic
        self.questions = questions
        self.score = score
    }

    func answerQuestion(with answer: Answer) {

        if answer.isCorrect {
            score = score.increatedByOne()
        }
        else {
            isFinished = true
        }
    }
}
```

Presenters

- Pertenecen al mecanismo de delivery.
- Representa al Presenter en un esquema MVP.
- Posee lógica de presentación, independiente de UIKit.
- Interactúa con las acciones del modelo.
- Interactúa con el Coordinator.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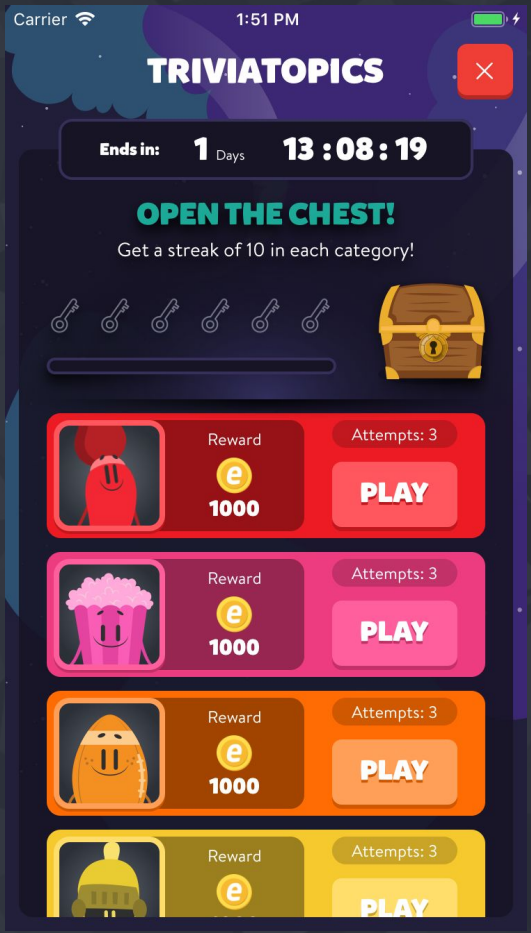
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TRIVIATOPICS
Ends in:
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OPEN THE CHEST!
Get a streak of 10 in each category!
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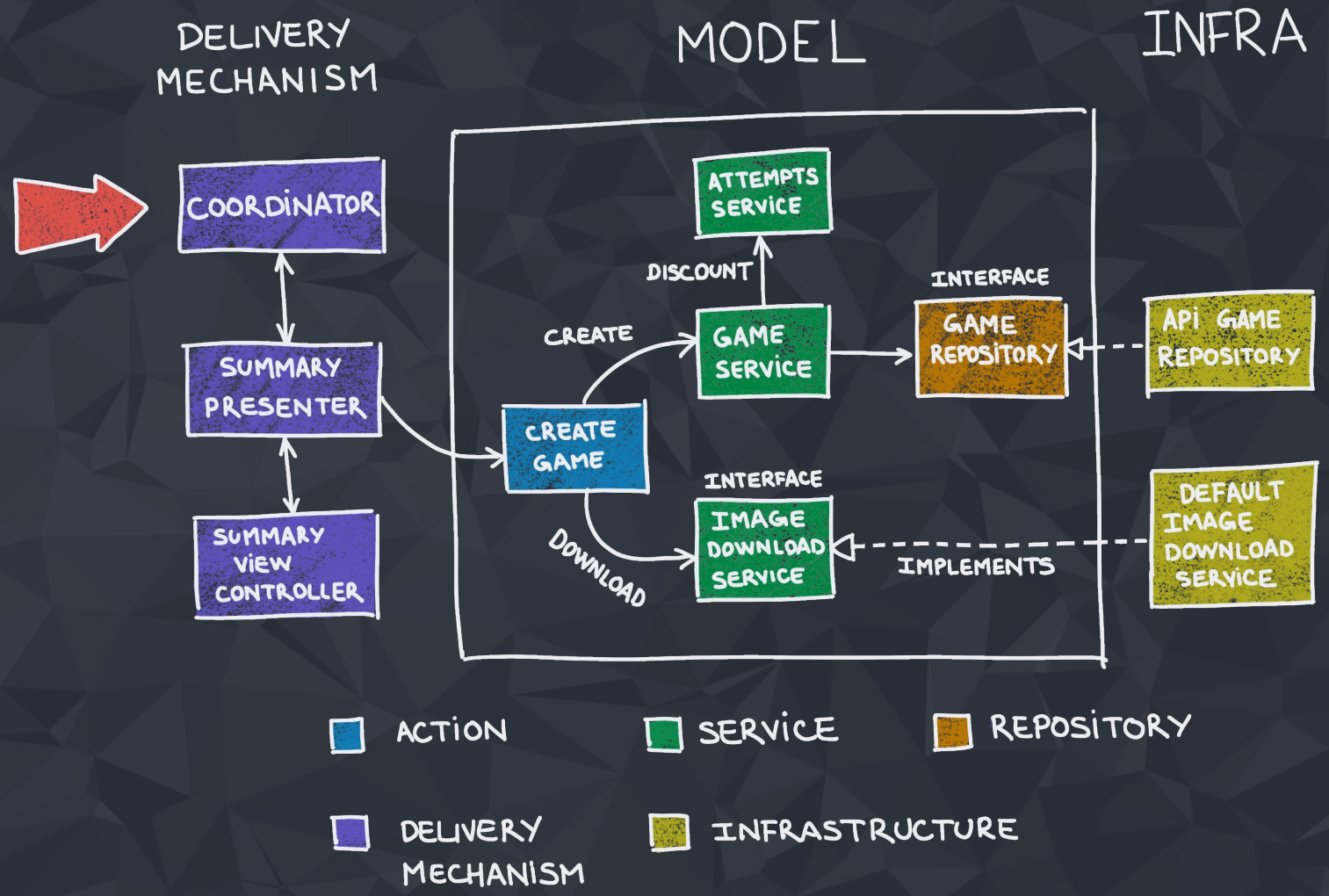
Attempts: 3

```swift
protocol SummaryPresenter {

    func setView(_ view: SummaryView)
    func topicSelected(at index: Int)
}

class DefaultSummaryPresenter: SummaryPresenter {

    private let coordinator: SummaryCoordinator
    private let createGame: CreateGame

    private weak var view: SummaryView?

    init(coordinator: SummaryCoordinator, createGame: CreateGame) {
        self.coordinator = coordinator
        self.createGame = createGame
    }

    func setView(_ view: SummaryView) { self.view = view }

    func topicSelected(at index: Int) {

        createGame
            .execute(getTopic(at: index))
            .subscribe(onSuccess: { game in self.coordinator.gameCreated(game) })
    }
}
```

Coordinators

- Pertenecen al mecanismo de delivery.
- Es el punto de entrada al módulo.
- Se encarga de la navegación entre distintas pantallas.
- Se pueden utilizar otros coordinators dentro del módulo si los flujos son muy complejos.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```
class Coordinator {

    private let navigationController: UINavigationController

    init(navigationController: UINavigationController) {
        self.navigationController = navigationController
    }

    func start() {
        showSummaryController()
    }
}
```

```
protocol SummaryCoordinator {

    func gameCreated(_ game: Game)
}

extension Coordinator: SummaryCoordinator {

    private func showSummaryController() {

        let createGame = CreateGameFactory.createGame()
        let presenter = DefaultSummaryPresenter(coordinator: self, createGame: createGame)
        let viewController = SummaryViewController(presenter: presenter)

        navigationController.pushViewController(viewController, animated: true)
    }

    func gameCreated(_ game: Game) {
        showGameController(game)
    }
}
```

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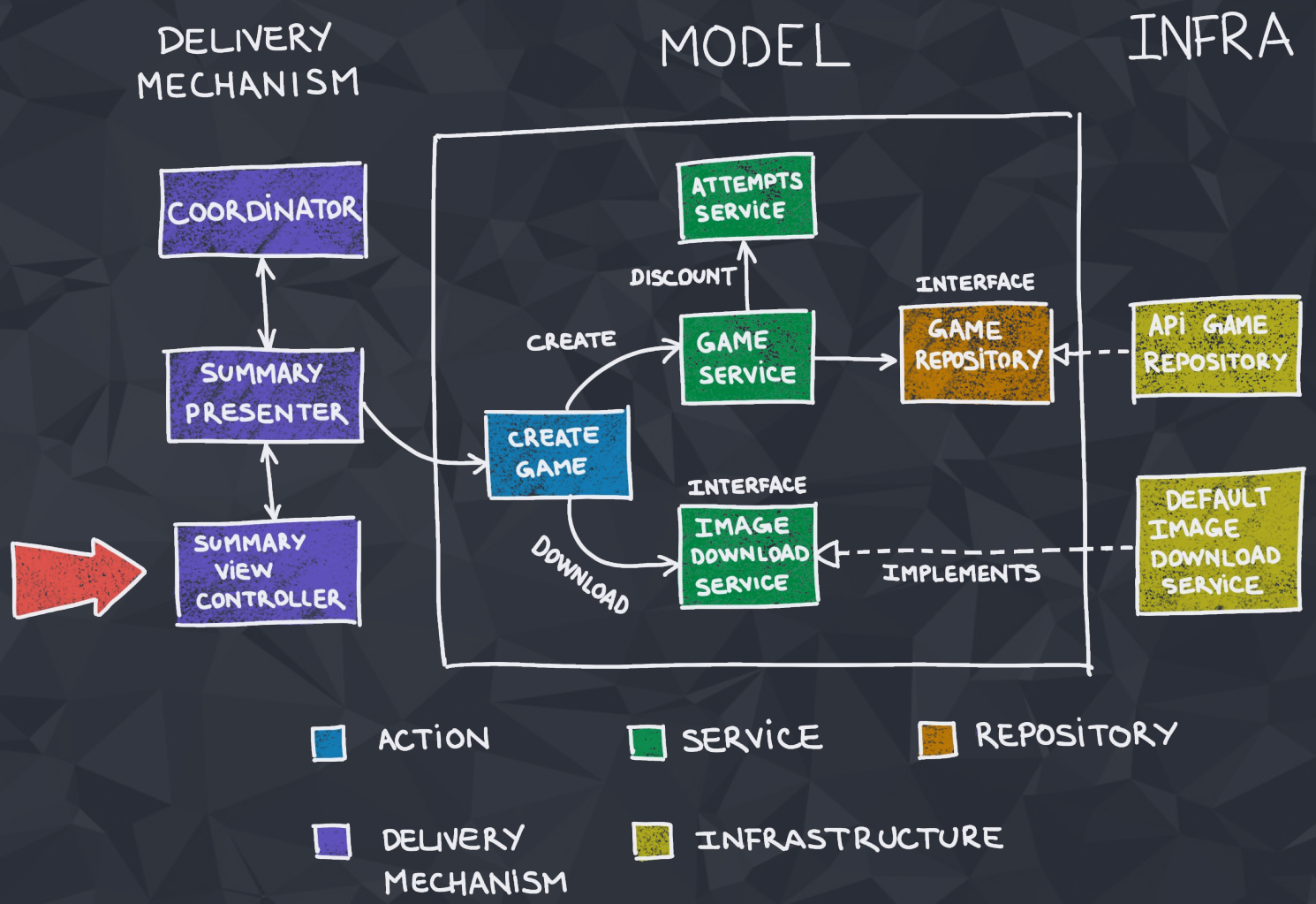
```
class CreateGameFactory {

    static func createGame() -> CreateGame {

        let gameRepository = ApiGameRepository()
        let attemptsService = DefaultAttemptsService()
        let imageDownloadService = DefaultImageDownloadService()

        let gameService = DefaultGameService(attemptsService: attemptsService,
                                             gameRepository: gameRepository)

        return DefaultCreateGame(gameService: gameService,
                                 imageDownloadService: imageDownloadService)
    }
}
```

View Controllers

- Pertenecen al mecanismo de delivery.
- Representa a la vista en un esquema MVP o MVVM.
- Es la vista propiamente dicha y depende de UIKit.
- No tienen lógica de navegación.
- No suelen ser testeados.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```
protocol SummaryView: class {

    func setTimeLeftText(_ text: String)
}

class SummaryViewController: UIViewController, SummaryView {

    @IBOutlet var timeLeftLabel: UILabel!

    private let presenter: SummaryPresenter

    init(presenter: SummaryPresenter) {
        self.presenter = presenter
        super.init(nibName: "SummaryViewController", bundle: nil)
    }

    override func viewDidLoad() {
        super.viewDidLoad()
        presenter.setView(self)
    }

    func setTimeLeftText(_ text: String) {
        timeLeftLabel.text = text
    }
}

extension SummaryViewController: UITableViewDelegate {

    func tableView(_ tableView: UITableView, didSelectRowAt indexPath: IndexPath) {
        presenter.topicSelected(at: indexPath.row)
    }
}
```

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Ventajas de arquitectura IDD

- Orientada a casos de uso.
- Arquitectura separada en capas.
- Componentes testeables.
- Permite diferir decisiones de infraestructura.
- Ayuda al desarrollo Full Stack

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Modularización

Contexto: Equipo Preguntados

- Aplicación utilizada por millones de usuarios diarios.
- Equipo de 60 personas, conformado por 6 squads con diferentes focos de negocio.
- Necesidad de introducir cambios con un mínimo riesgo.

Ventajas de utilizar módulos

- Facilita trabajo en simultáneo en la aplicación por varias personas.
- Hace mucho más visibles las dependencias externas.
- Pueden ser compilados y testeados individualmente.
- Facilita el versionado de features.

Referencias

- Introducing Interaction Driven Design
- Interaction Driven Design (slides)
- A Case for Outside-In Development

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¿Preguntas?

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¡GRACIAS!